

Offshore Wind Projects

*The Project off Long Beach Island, New Jersey, the Process & A
More Sensible Approach*

Save Long Beach Island, Inc.

www.SaveLBI.org

July 2022

About Save Long Beach Island, Inc.

- Non-profit, non-partisan organization
- Approaching 1500 supporters
- Have members that support, oppose and who want to see more specific benefits vs costs re offshore wind energy in general
- The bond, if pursued, don't cause major collateral damage in siting turbines.
- The current site off LBI is one of those, and there are better alternatives farther offshore.
- Do professional level work, research, facts,

The Anticipated Atlantic Shores Wind Project

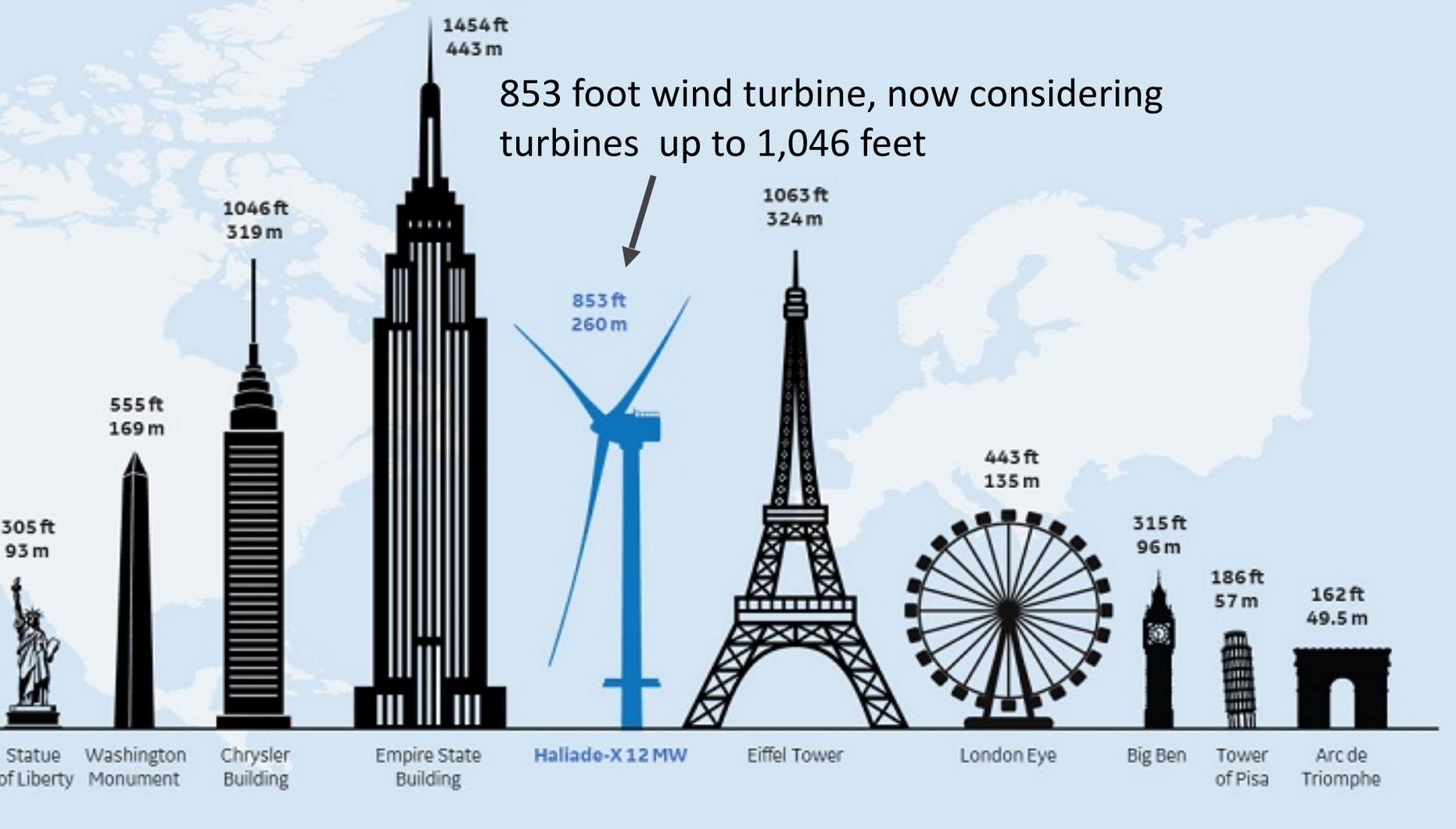
- **Three hundred and fifty-seven 13.6 megawatt(mw) to 20 mw, gearbox turbines, along the entire 18-mile LBI coast, starting south**
- **Turbines closely spaced, ~0.6 miles**
- **Up to 1046 feet high(three football fields), Eiffel Tower**
- **Largest and closest of any modern project in the world, starting 9 miles out.**
- **Turbine placement, December, 2023?**

Proximity to Coast: Other large turbine projects vs. LBI project at 9 miles

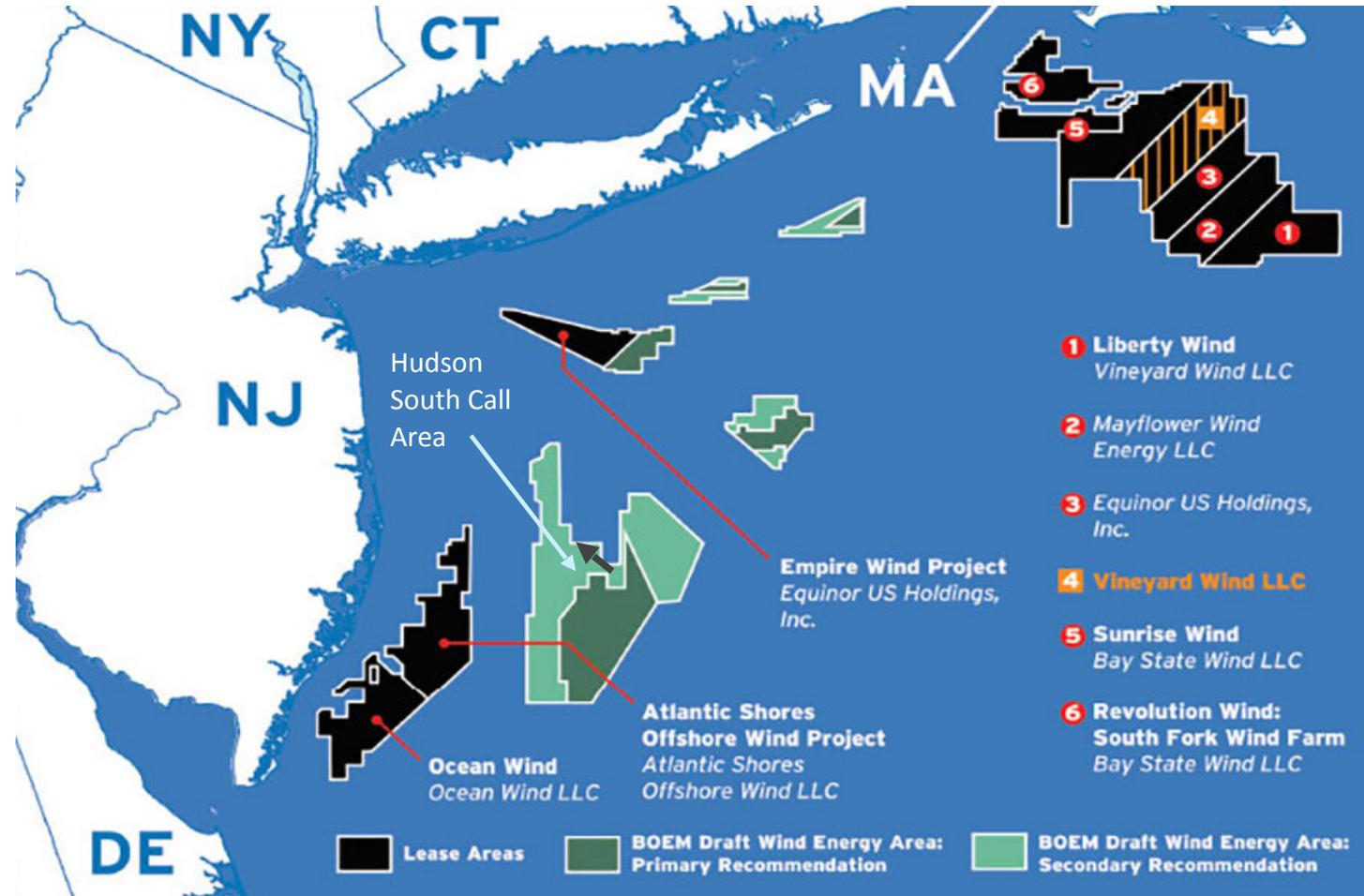
Project name	Location	Country	Distance from coast (miles)
Ocean Wind	Atlantic City, NJ	US	15
Vineyard 1	Nantucket, MA	US	15
Skipjack	Ocean City, MD	US	20
Dominion Energy	Virginia	US	27
Cape Wind	Cape Cod, MA	US	5 (cancelled, local opposition)
Humboldt	Eureka, CA	US	21
Morro Bay	San Simeon, CA	US	33
Hornsea 1		UK	75
Sinan project		S. Korea	80
Dogger Bank --257 turbines		UK	78
East Anglia 3		UK	43
Changua		Taiwan	23 to 58

**The BOEM exclusion zone for New York turbines is 17 miles from their coast....
At 9 miles from our beaches, LBI project is extreme.**

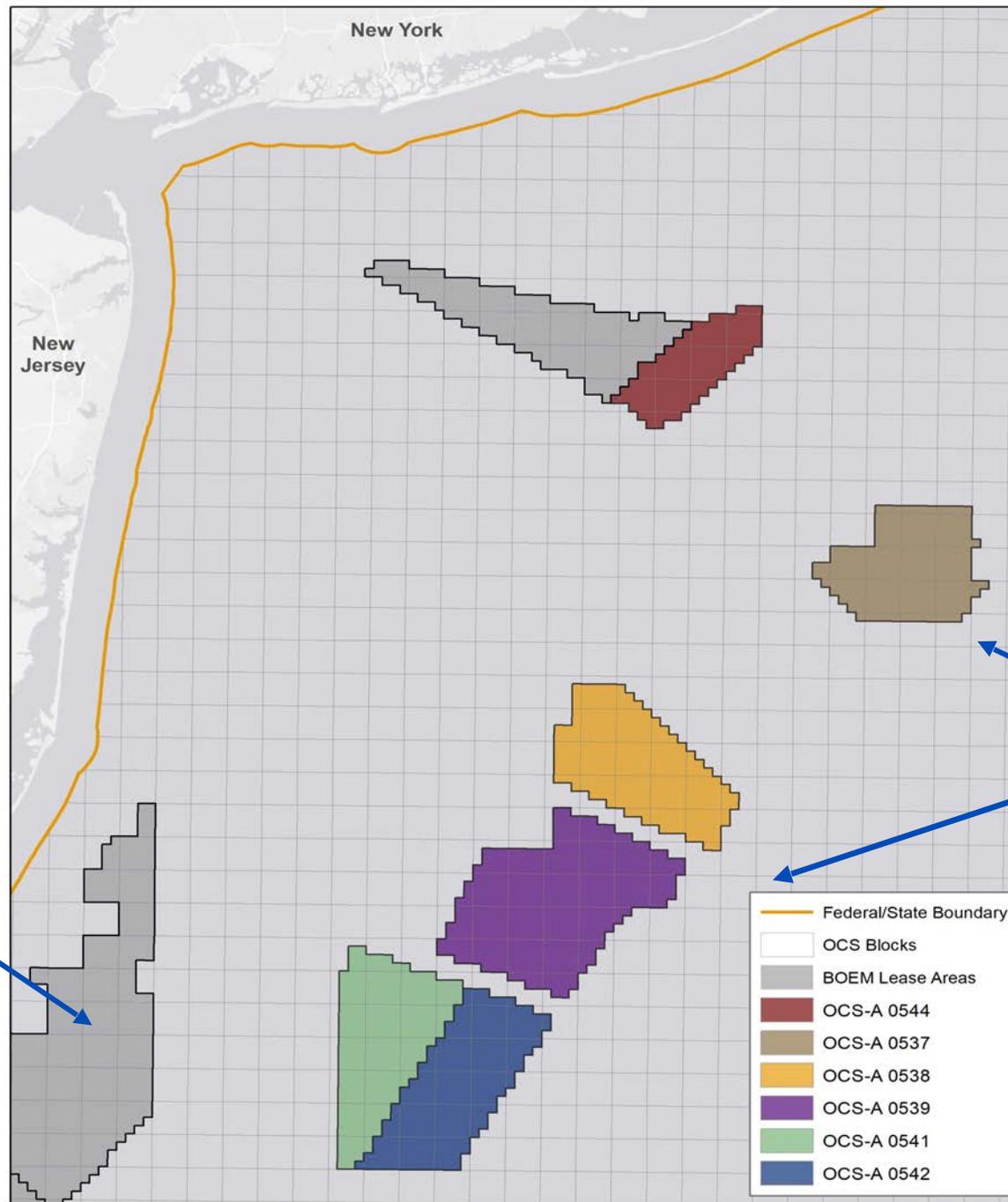
Comparisons



The wind project off LBI & other areas being leased (in green)



Atlantic Shores



Recent Lease Area sales

Views of Turbines from Shore –Visible Renditions

Computer program placement of turbine dimensions, distances onto photograph and lighting conditions.

Have Had Difficulty Getting.

Project Construction and Operations Plan, Appendices II-M and II-O

- *Starting from Seaside Heights, sunny, turbines too far away, out of sight

- *Loveladies, sunny, turbines still far away

- *Beach Haven, 13.5 miles to nearest turbine, pre-dawn, poor lighting

- *Manor, 32 miles inland in Edwin P Forsythe Reserve , sunny , far away, ground cover

- *North Brigantine, 9 miles away, overcast

- *Atlantic City, 11.5 miles away, overcast

No clear day renditions from the project for relevant, closer observation points

Beach Haven , Pre-Sunrise, 13.5 miles, Atlantic Shores COP, II-M

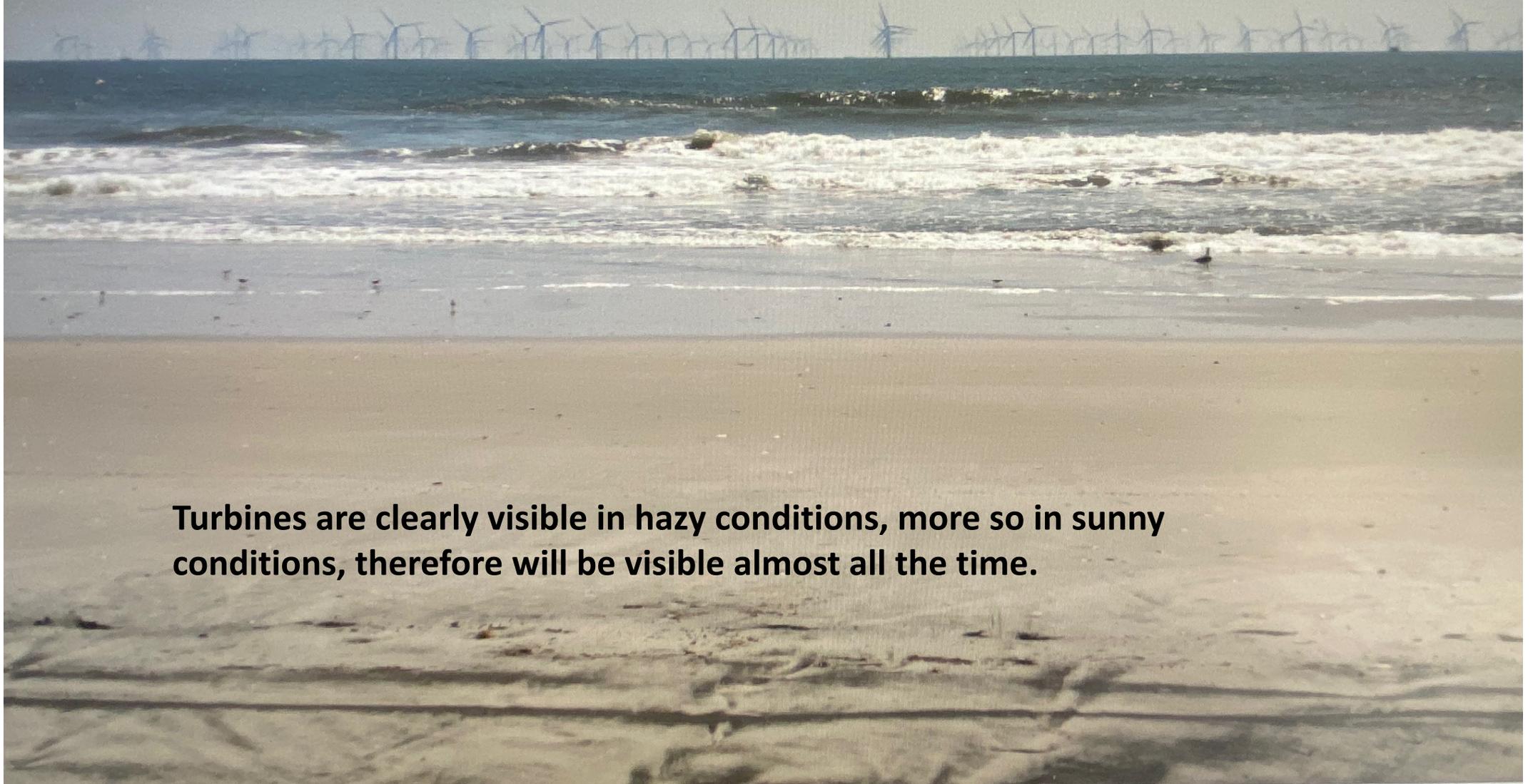


Not labeled pre-sunrise, misleading, not representative of daytime view

Beach Haven , Some Daylight



**Visual from the Atlantic Shores Plan, Turbines 9 Miles
Away, Hazy Conditions.**



**Turbines are clearly visible in hazy conditions, more so in sunny
conditions, therefore will be visible almost all the time.**

11.4 miles to the nearest turbine, Project Construction Plan, Appendix II-M



Similar to what would be seen from LBI in overcast conditions-more visible on sunny days.



- Rendering from University of Delaware study for clear weather conditions
- Turbines pictured are 6 megawatt (574' tall) starting 8 miles from shore.
- Similar to what the larger turbines would look like at 12 miles out

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

Small Turbines , 2 megawatts (mw), 7% reduction in wind speed 6 miles downwind of wind complex

Wave Height decreases with Wind Speed

Large turbines, 9 miles downwind, could make significant change ??

Moderate Turbines, 3.6 and 6.2 mw, 28 miles downwind , 1.1 degree air temperature Increase

Large turbines, 9 miles downwind ??

Impact on Local and State Economy

- **Several surveys done of public reaction to visible turbines, including NCSU, a federal one by UDEL, and a recent one of 10,000 prior LBI renters by us.**
- **Forty six to fifty percent** of those who previously rented said they would rent again at that beach town.
- **Nineteen percent** said they would not visit that beach town again
- **Nine percent** would take a different vacation altogether, rather than go to any beach town, a State-wide loss in coastal tourism and rental revenue.
- **Seventy-one percent** said they favored the turbines sited farther out where they cannot be seen. Only **3 percent** said that the turbines can be placed closer to shore.
- **Applying the 19 and 9 percent** respectively results in **1100** tourism related job losses from LBI and **500** State-wide.
- **Property value loss of \$200k-\$1million for ocean front and ocean view properties, implications for others**
- **Results are consistent, do not bode well for shore economies.**

Historic Properties –Impact of Visible Turbines

National Historic Preservation Act –Section 106 Review

Beach Haven Historic District, Barnegat Lighthouse

Adverse Impact? If so, mitigation

Building itself versus Context, Visitors to district and museums and the beach as the experience?

Context criteria in Project Assessment, maritime history , local historic associations, views of sea, location near sea and historic relation with the sea

But then the Project says no adverse impact?

If adverse impact, then could consider a turbine exclusion zone of 20? miles from the Historic District and Barnegat Lighthouse?

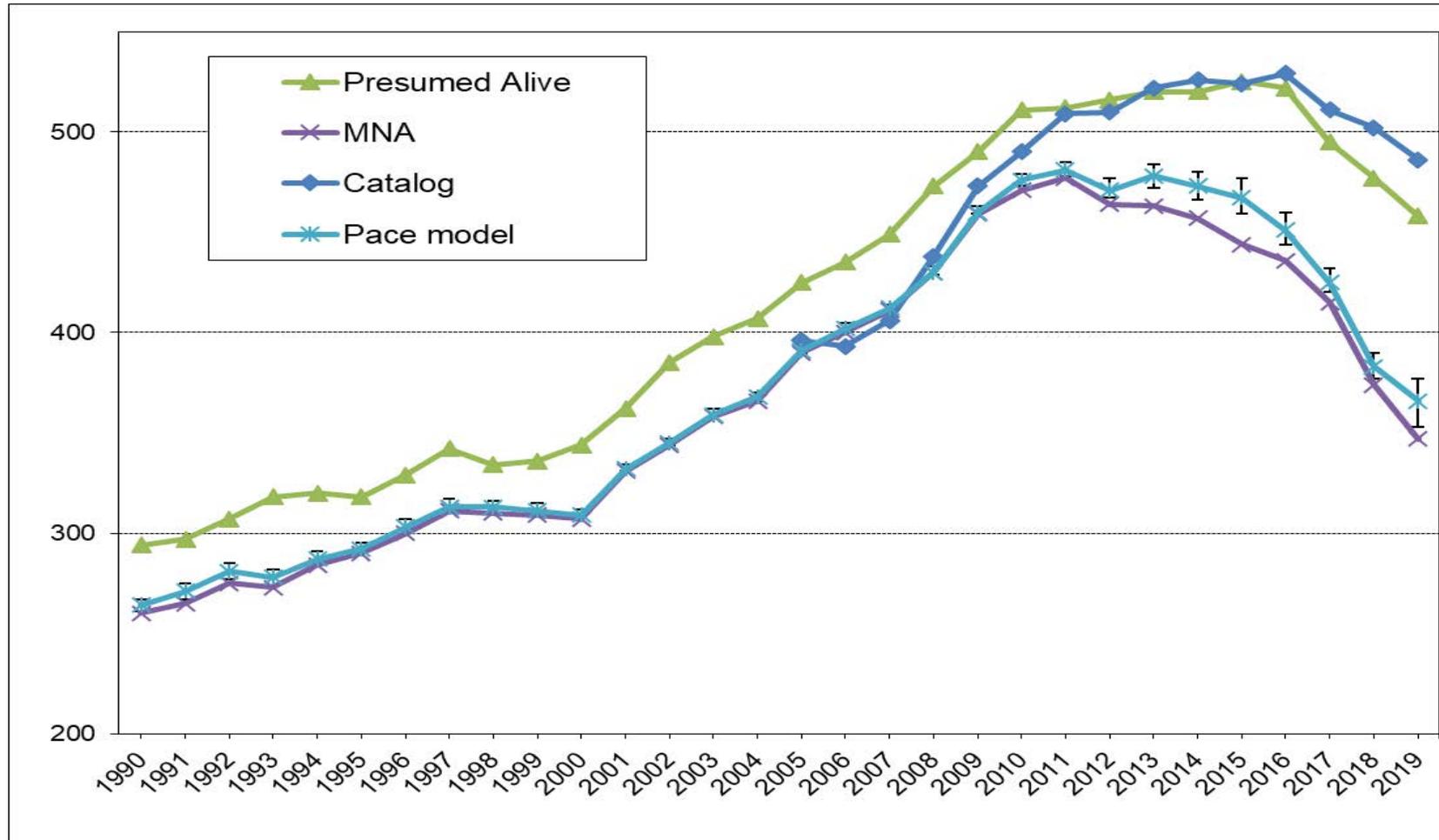
The North Atlantic right whale

- **Critically endangered North Atlantic right whale, slaughtered for oils, struggling to survive.**
- **Current population: ~350 and declining**
- ***Recent study indicates human induced stressors are stunting their growth.**
 - **Scientists have observed 5–10-year-old whales about the size of 2-year-old whales**
 - **An 11-year-old whale observed was the same size as 1.5-year-old whales**
- **Current risks include net entanglement and vessel strike.**

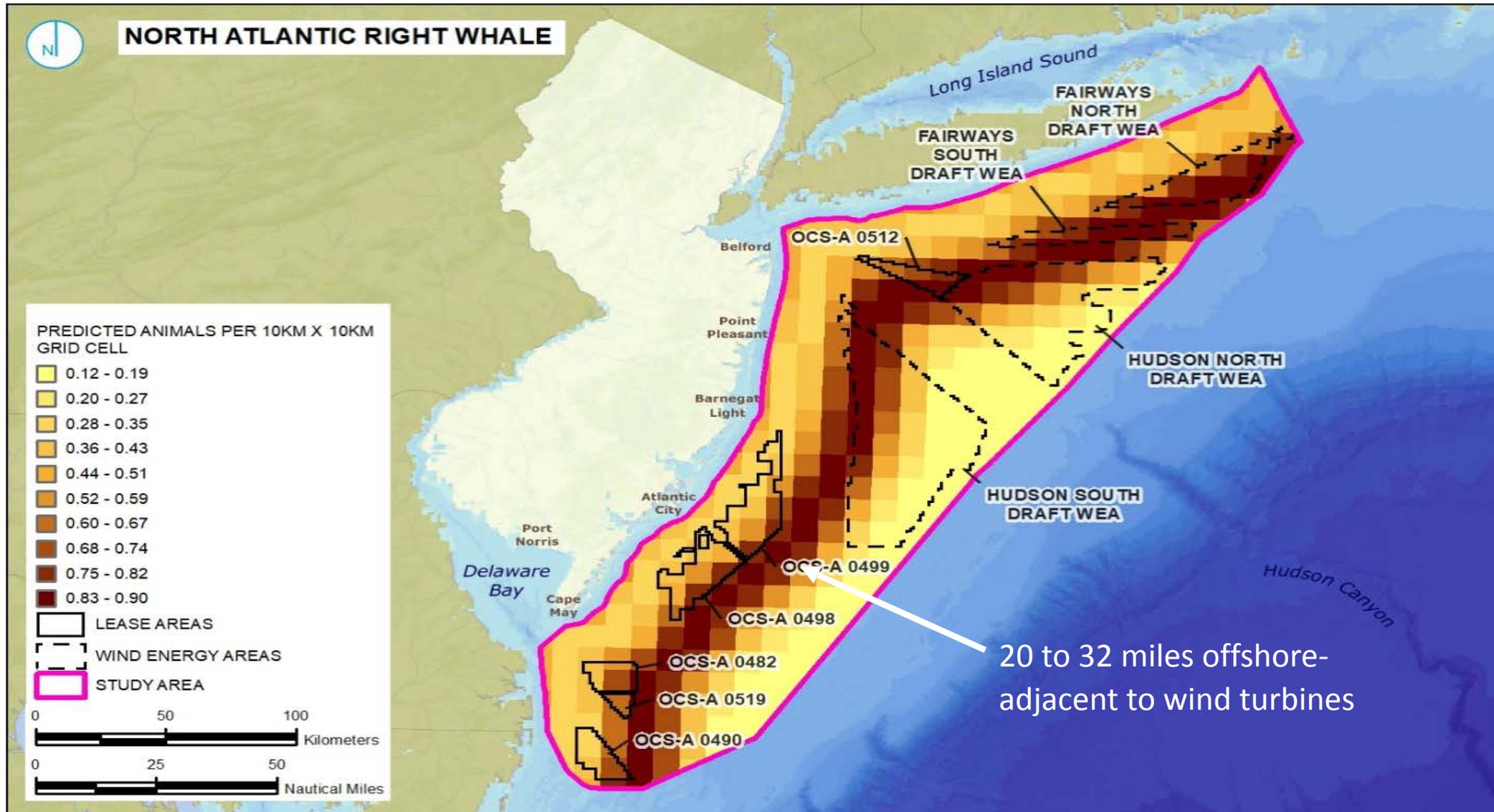


- **New risks: noise from vessel surveys, turbine installation(pile driving), and now from larger turbine operation.**
- **If human-induced stressors, including noise, are not lowered - the right whales' chances of survival are dim.**

Population Decline of the North Atlantic Right Whale



Migration Corridor-North Atlantic right whale



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

Increasing Underwater Noise with Turbine Power

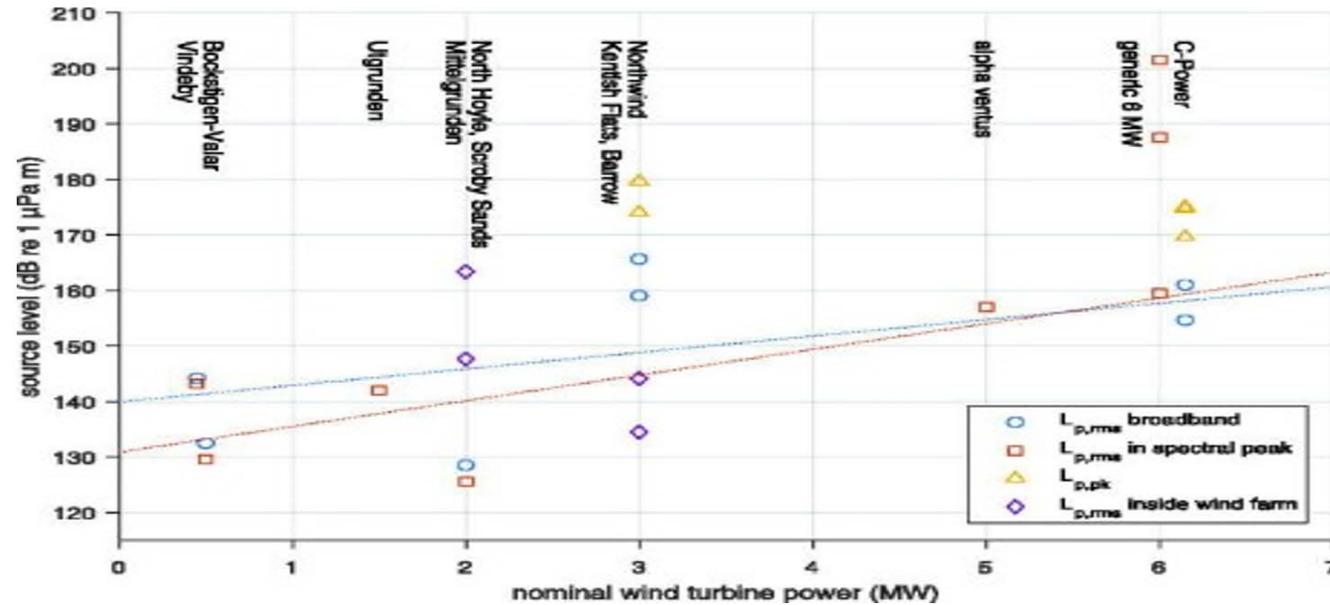


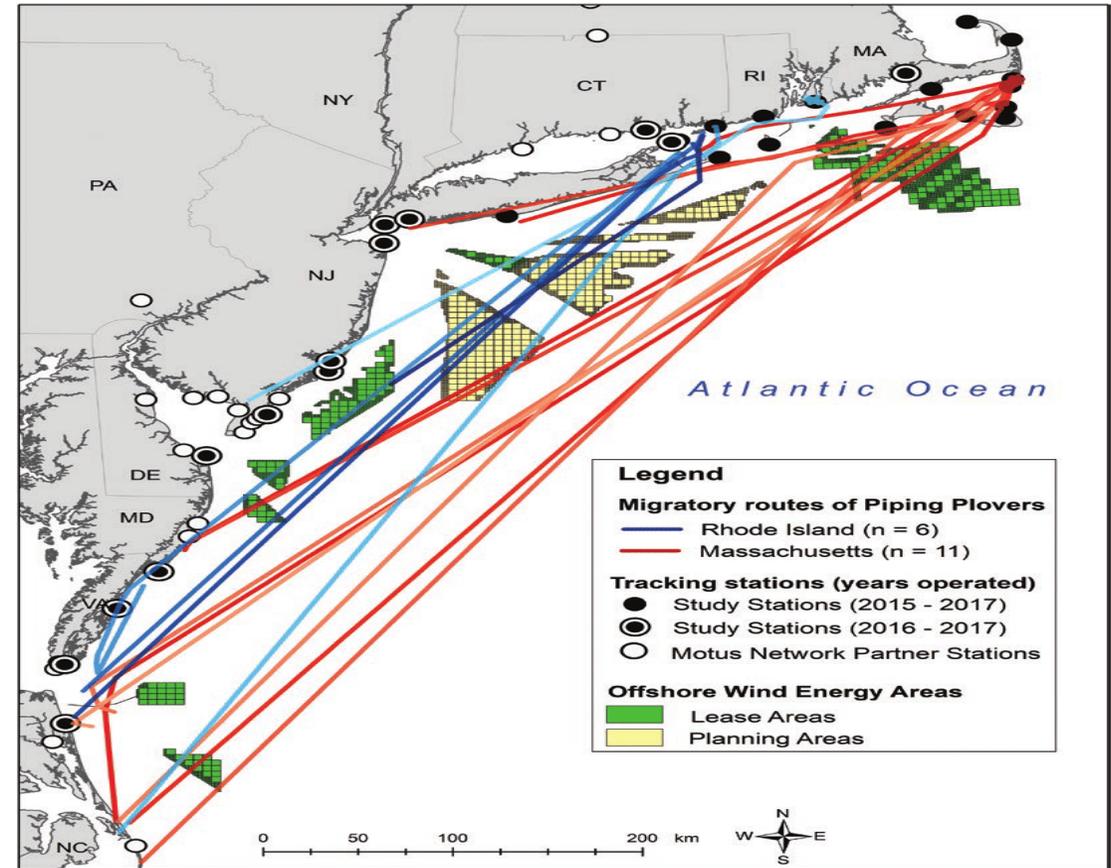
FIG. 1. (Color online) Source SPLs versus nominal wind turbine power as listed in Table I. The names of wind farms or the data source are indicated at the top of the figure. Regression lines for broadband levels (blue) and sound levels at spectral peaks (red) show the increasing trend.

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

Impact of *Operating, Continuous*, Turbine Noise on Endangered Whales

- **Whales rely on sound for communication, navigation, mating, detecting prey, and predators-to survive.**
- **North Atlantic right whale migration corridor 20 to 32 miles out, adjacent to outer project at 20 miles**
- **Larger turbines, higher noise source levels, at least 180 decibels(dB),**
- **Need 22 miles for noise to dissipate down to 120 dB-not to disturb the whales behavior, more than the 12-mile wide corridor**
- **Noise levels will exceed 120 dB throughout the entire corridor, potentially blocking the right whale's migration.**

The Piping Plover



Impact on the Piping Plover

- Existence “threatened” under the U.S. Endangered Species Act, “endangered” per State law.
- Migrates offshore, north-south^(PP1)
- About 86 protected plovers nest in Holgate and Barnegat Light
- New nesting ground at Horseshoe Island
- Would have to cross multiple rows of turbines to fly in and out from nests
- 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 percent per year*
 - Uncertain avoidance percentage
 - Static “Band Model” for collision risk



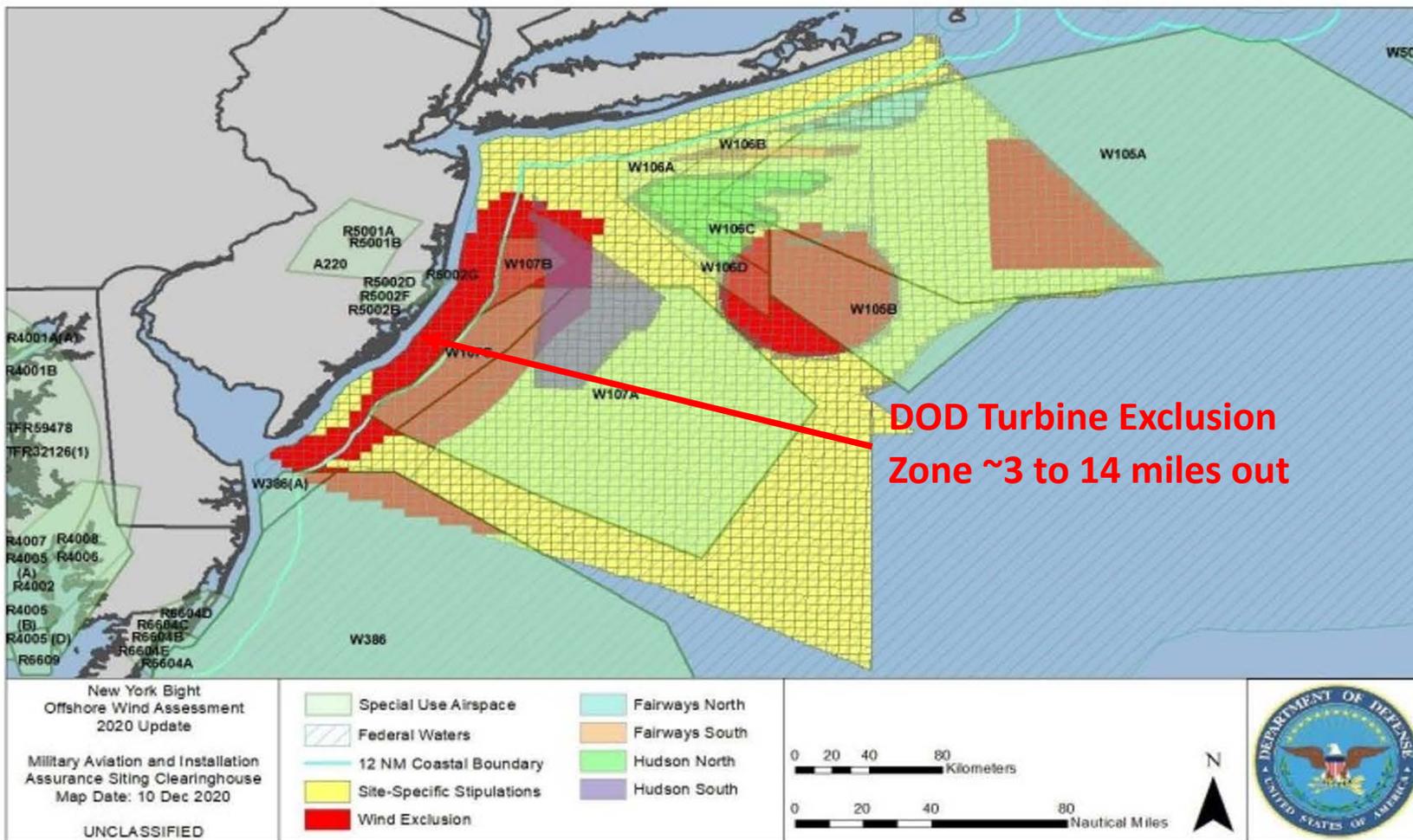
*Based on Michelle L. Stantial, Flight Behavior of Breeding Piping Plovers: Implications for Risk of Collision with Wind Turbines, New York College of Environmental Science and Forestry Syracuse, New York, December 2014, Figure 2.25, average of Chapin, Dead Neck, Avalon, Stone Harbor results; also consistent with percent of transit area blocked by rotating blades and 2 flights per bird in & out.



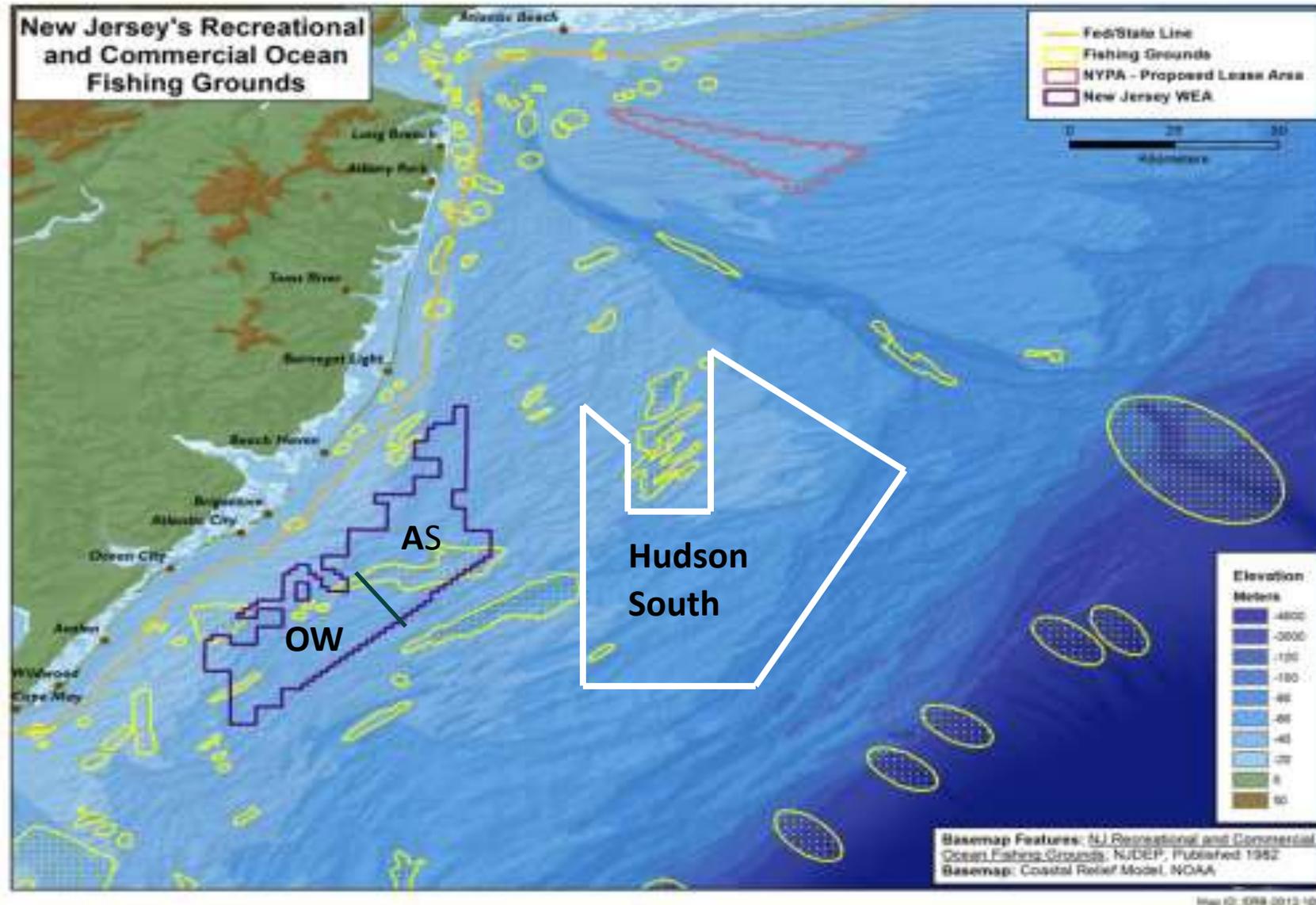
SUSTAINMENT

Dept of the Navy Assessment

OASD (Sustainment)

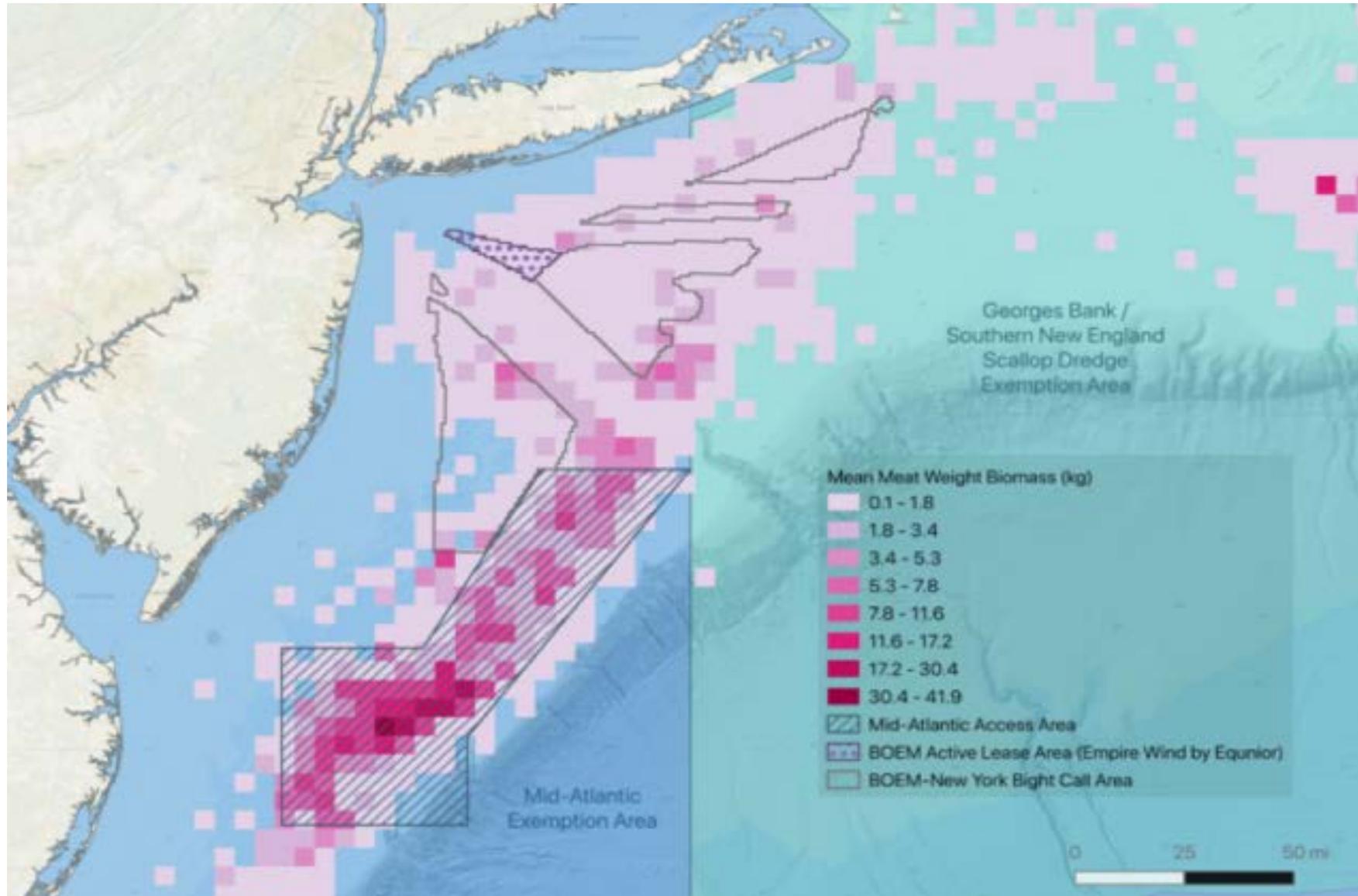


Intersections with Fishing Grounds: in light green



- AS:
Atlantic Shores
project off
entire coast of
LBI
- OW:
Ocean Wind
project off
Atlantic City &
Ocean City, NJ

Scallop Beds



Current Process-Summary

Key federal decisions: (1) Select the wind energy area (WEA) where turbines will be (2) Lease areas within it, and (3) Approve specific project turbine number, size, spacing.

(1) Most critical decision is the WEA--“locks in” visible impacts on shore communities, endangered species, fishing and navigation impacts. Now made by proponent gov’t agencies without any alternative area EIS review and public input. “Show stoppers” not likely to be identified. *Lawsuit filed by Save LBI inc. to require an EIS.*

(2) Leasing: opportunity for an EIS look at “reasonably foreseeable” turbine impact before \$\$\$ committed. Not done, assessment of survey actions only.

(3) Project approval: EIS done with public comment but major decisions already made, wind area, turbine number (state power purchase), turbine size(largest available), and turbine spacing(efficiency).

Makes for poor decisions, unsuitable sites, and no meaningful public role.

Summary, Impacts and Conflicts

The largest (357 turbines), densest (0.6 miles), tallest (1,046 feet), closest (9 miles) offshore wind project in the world

Impact	Conflict
Scars a rare and prized unvarnished seascape, with significant impacts on the shore economy.	CZMA, NHPA, NEPA, OWDA public
<i>Turbine operation and vessel surveys</i> can block the migration of the critically endangered right whale, drive other whales towards shore	ESA, MMPA, NEPA, public
Threatens the local piping plover population	ESA, public
In a Department of Defense “exclusion zone”, interferes with civilian and military aircraft and marine radar	OCSLA, NEPA, public
Reduces shore breezes, waves and increases Island air temperature, may be audible at the beach	Public
Massive project like this not needed to meet the State goal of 7500 mw	Public
National Environmental Policy Act (NEPA), Coastal Zone Management Act(CZMA), National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA), Outer Continental Shelf Lands Act (OCSLA). NJ Offshore Wind Development Act (OWDA)	

A Much Better Location to consider: Hudson South

- **30 to 57 miles offshore, eliminating visibility, tourism, rental and property value concerns.**
- **Screened by BOEM for:**
 - Wind energy potential**
 - Water depth, monopile foundations still viable**
 - Cost of development, increased cable cost not a driver**
 - Visible impact**
 - Navigation and fishing conflicts**
- **Approved for wind energy, recent lease sales, 4209 megawatts**
- **Greater wind energy potential, 6890 megawatts**
- **Room to deal with the right whale problem.**

Alternate –Shore Protection Option

- **NJ goal, 7500 megawatts (mw)**
- **Farther out Hudson South area, lease areas so far, 4209 mw**
- **Ocean Wind project to the south, so far 2248 mw**
- **Capacity so far without the AS project, 6457 mw**
- **Potential for another 2681 mw in Hudson South via an expedited, unsolicited bid process.**
- **May be able to meet goal without AS project or with a much limited AS project.**

Act Now



Support Us

- Filed first lawsuit to require EIS preparation and public input before turbine locations are selected.
- Seeking donations to fund other lawsuits
- Get this Program Done Right
- Successful outcomes will benefit many shore towns
- Multiple ways to donate at www.SAVELBI.org
- Sign in for updates, finally, need active volunteers
- Counting on your support...

We know you love LBI... Right now LBI Needs You!

Right Whales –See Them



<https://www.youtube.com/watch?v=byElUwZZIWw>

Larger Offshore Wind Program Issues

- **Electric Supply, Cost Increases, Reliability**
- **Benefit to Climate Change**

Impact on jobs and electric bills, Atlantic Shores 1510 megawatt project 1

	BPU Strategic Plan July 2020 ^(J1)	BPU Press Release June 2021	Beacon Hill Report June 2011 ^(CB1)
Full time equivalent jobs created	289 to 859	2025	----
Full-time jobs lost statewide from higher electric rates	----	----	(3046)
Increase in electric rate ²	----	2.0%	2.9%
Increase in residential electric bill- Annual	----	\$ 27	\$ 36
Cost of federal and state subsidies, tax credits-Annual	----	?	\$ 8
Total Cost-Annual	----	?	\$ 44

For the full 7500 megawatt program: multiply by 7500/1510 = 10% residential, 15% commercial, 18% industrial electric rate increases (BPU numbers), \$36 billion total over 20 years, plus taxpayer subsidy and decommissioning costs.

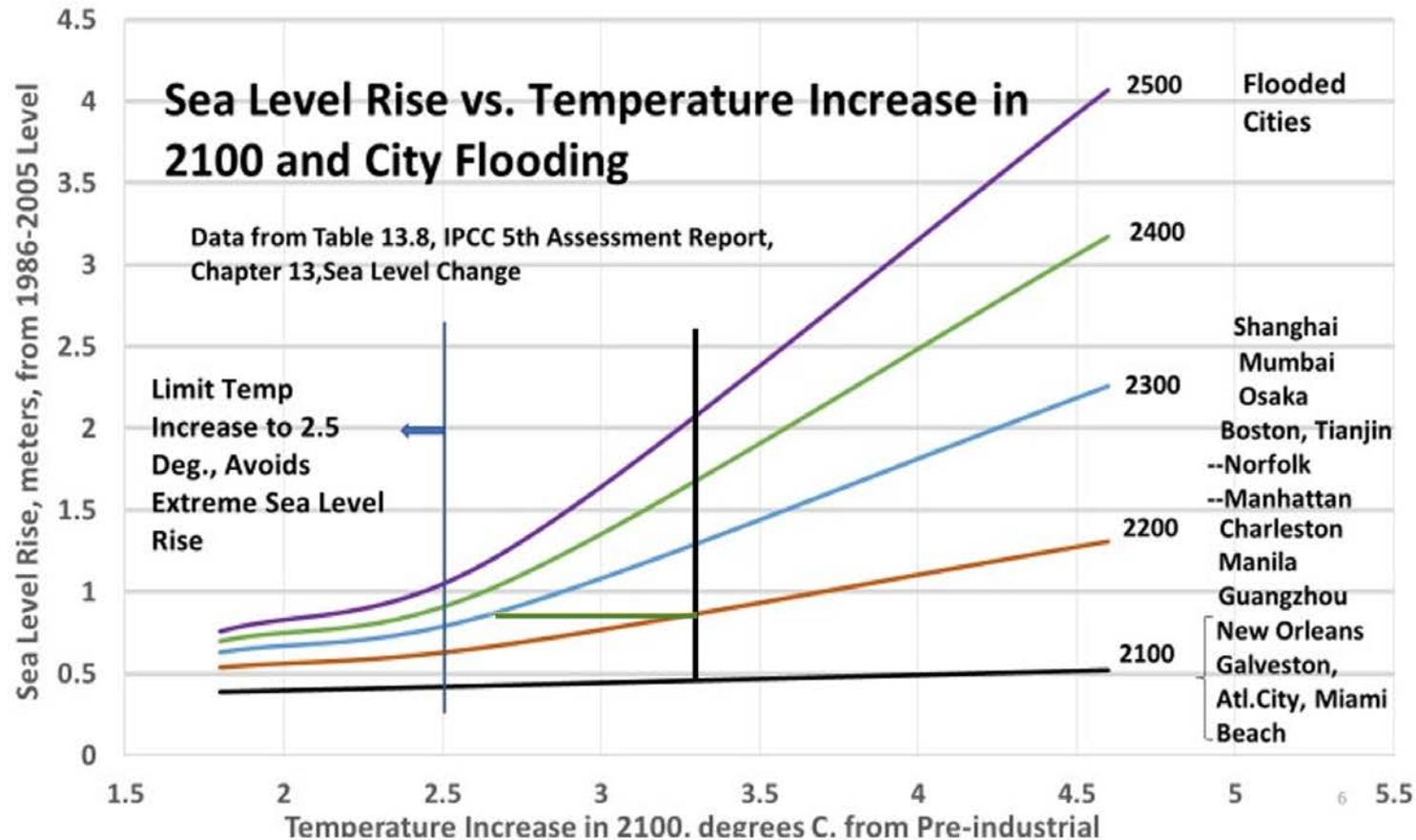
- Actual cost may be greater, depending on need for natural gas plants back-up.

Will the Atlantic Shores project mitigate rising sea levels?

- Federal agency Final EIS, Vineyard Wind Project, will have “negligible impacts on climate change”, Table A.8.1-1.
- Sea level rise from greenhouse gases(GHG) is different than other air pollutants.
- GHG emissions raise the earth’s surface temperature, predicted in 2100
- Subsequent long term heat transfer to ice caps and oceans causes the sea level rise
 - Depends on the 2100 temperature rise and the time elapsed afterward.
- Earth is currently headed to a 3.3 degree celsius rise in 2100
- In that regime, chart shows the effect of a lower temperature rise from a GHG reduction is to delay, not reduce or prevent, future sea level rise.
- A 90 percent reduction (41 *billion* metric tons) of annual global GHG emissions is required to go from 3.3 degrees to a desired 2 degrees.
- The Atlantic shores project offers a GHG reduction of 2.6 *million* metric tons (BPU press Release 6/2)
- Project results in a 0.00016 degree lower 2100 temperature rise (w credit for an early reduction).
- Chart shows a 0.65 degree reduction is needed to delay a given sea level rise by 100 years.
- So project impact (0.00016 degrees lower) is a delay of future sea level rise of about 9 days.

The wind turbine project off LBI will not prevent or reduce rising sea levels.

Correlation between rising sea levels, temperature increase & time



Sea level rise depends on earth's temperature rise and elapsed time afterward.

References: Visible and Shore Community Impact

V1. 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>

V2. University of Delaware, Atlantic Offshore Wind Energy Development: Values and Implications for Recreation and Tourism, sponsored by the Bureau of Ocean Energy Management(BOEM), March, 2018

<https://epis.boem.gov/final%20reports/5662.pdf>

V3. North Carolina State University, the Amenity Costs of Offshore Wind Farms- Evidence from a Choice Experiment in August 2017.

<https://cenrep.ncsu.edu/cenrep/wp-content/uploads/2016/03/WP-2017-017.pdf>

V4. The Bureau of Ocean Energy Management, BOEM, Renewable Energy Viewshed Analysis and Visual Simulation for the New York Outer Continental Shelf (OCS) Call Area: Compendium Report OCS Study, BOEM 2015- 044, 2015.

<https://www.boem.gov/renewable-energy/state-activities/renewable-energy-viewshed-analysis-and-visualization-simulation>

V5. The Bureau of Ocean Energy Management, BOEM, Turbine Exclusion Zone for New York State Based on Visible Impact, Federal Register Notice, Commercial leasing for Wind Power in the Outer Continental Shelf in the New York Area, April 18, 2018.

<https://www.federalregister.gov/documents/2018/04/11/2018-07445/commercial-leasing-for-wind-power-on-the-outer-continental-shelf-in-the-new-york-bight-call-for>

References: Endangered Whales

W1. New Jersey Offshore Wind Strategic Plan, Environment and Natural Resource Technical Appendix, Figure 21, North Atlantic Right Whale.

<https://www.njcleanenergy.com/renewable-energy/programs/nj-offshore-wind/strategic-plan>

W2. Uwe Stober and Frank Thomsen, How could operational underwater sound from future offshore wind turbines impact marine life? The Journal of the Acoustical Society of America 149, 1791 (2021); <https://doi.org/10.1121/10.0003760>

W3. Thomsen et al., The Effects of Offshore Wind Farm Noise on Marine Mammals and Fish, July 06 2006.

https://seagrant.gso.uri.edu/oceansamp/pdf/presentation/present_gill_europe.pdf

W4. Madsen et al., Wind turbine underwater noise and marine mammals: implications of current knowledge and data needs, Marine Ecology Progress Series, Vol 309:279-295, 2006 <https://www.int-res.com/articles/meps2006/309/m309p279.pdf>

W5. Nowacek et al., North Atlantic right Whales ignore ships but respond to alerting stimuli, The Royal Society, May 20, 2003. <http://myweb.facstaff.wvu.edu/shulld/ESCI%20432/Nowacek2004.pdf>

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>

W7. NJDEP, Ocean/Wind Power Ecological Baseline Studies, Volume III, page 5-35, marine mammals, the right, fin and humpback whales

https://www.nj.gov/dep/dsr/ocean-wind/Ocean%20Wind%20Power%20Ecological%20Baseline%20Studies_Volume%20Three.pdf

References: Piping Plover

PP1. 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,

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

References: Jobs

J1. New Jersey Offshore Wind Strategic Plan, Board of Public Utilities, Appendices, Chapter 6. Supply Chain and Workforce Analysis, Section 6.12, Summary.
[OffshoreWindStrategicPlanBPUAppendices.pdf](#)

References: Costs & Benefits

CB1. The Beacon Hill Institute, The Cost and Benefit of New Jersey's Offshore Wind Initiative, June, 2011. <https://www.beaconhill.org/BHISTudies/NJ-Wind-2011/NJWindReport2011-06.pdf>