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New Jersey Agricultural Experiment Station

What's Happening With Offshore Wind Off New Jersey?

March 4, 2023

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Marine Extension Agent for Ocean, Atlantic, and Monmouth Counties
Rutgers Cooperative Extension
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NJ Agricultural Experiment Station

The NJ Agricultural Experiment Station (NJAES) was established in 1880 to carry out the land grant mission focused on serving the needs of NJ's residents, communities, and businesses through research and education.

Commercial Agriculture

Environment and Natural Resources

Fisheries and Aquaculture

Food, Nutrition, and Health

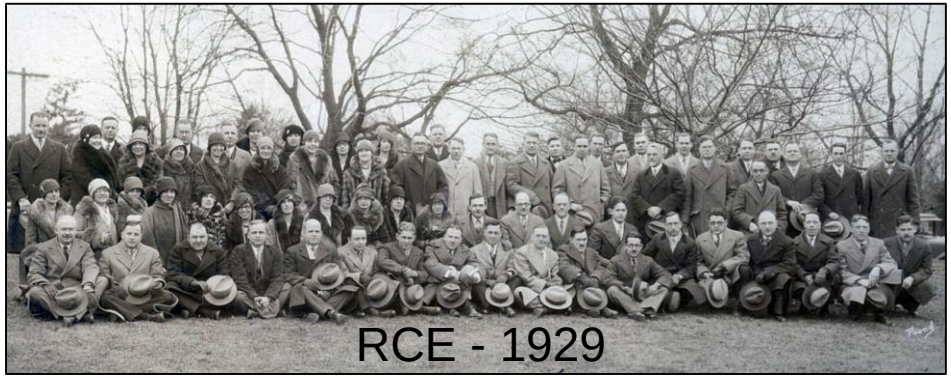
Home, Lawn, and Garden

Youth and Community Development

https://njaes.rutgers.edu/

Rutgers Cooperative Extension

- Rutgers Cooperative Extension (RCE) was established in 1914 and brought Rutgers faculty members into all of NJ's 21 counties.
- Mission: "…help the diverse population of NJ adapt to a rapidly changing society and improve their lives and communities through an educational process that uses science based knowledge".



RCE - 1929

RUTGERS COOPERATIVE EXTENSION 1914-2014 100 ANNIVERSARY EXTENDING KNOWLEDGE CHANGING LIVES

njaes.rutgers.edu/extension100years

https://njaes.rutgers.edu/extension/

Presentation Outline

- Overview of Offshore Wind
- Offshore Wind and Fisheries Interactions
- Questions & Answers

LBIF ARTS + SCIENCE

THE LONG BEACH ISLAND FOUNDATION OF THE ARTS AND SCIENCES
120 Long Beach Boulevard, Loveladies, NJ 08008

+ SCIENCE

What's Happening With Offshore Wind Off New Jersey?

Presenter:
Dr. Douglas Zemeckis
virtual platform: ZOOM

This presentation will provide an overview of offshore wind energy development off the coast of New Jersey, including information about windfarms in different locations off our coast. An emphasis will be placed on the potential impacts on fisheries and fisheries resources, including ongoing research to better understand and prepare for these impacts. Websites and other educational resources where attendees can learn more will also be provided throughout the presentation.

Dr. Douglas Zemeckis serves as a County Agent III (Assistant Professor) with Rutgers Cooperative Extension. In this role, he conducts educational programming and applied research on issues related to fisheries, aquaculture, and marine resource management focusing on Ocean, Atlantic, and Monmouth Counties.

To find out more about science and educational programming at the LBIF, call the main office at (609) 494-1241 or visit **www.lbifoundation.org**.

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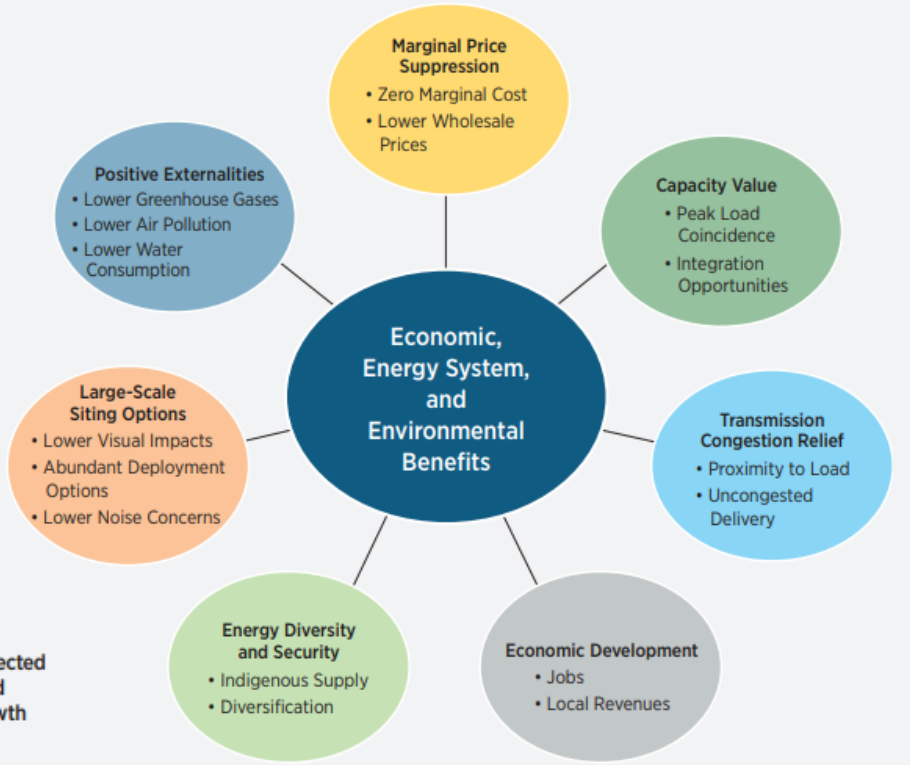
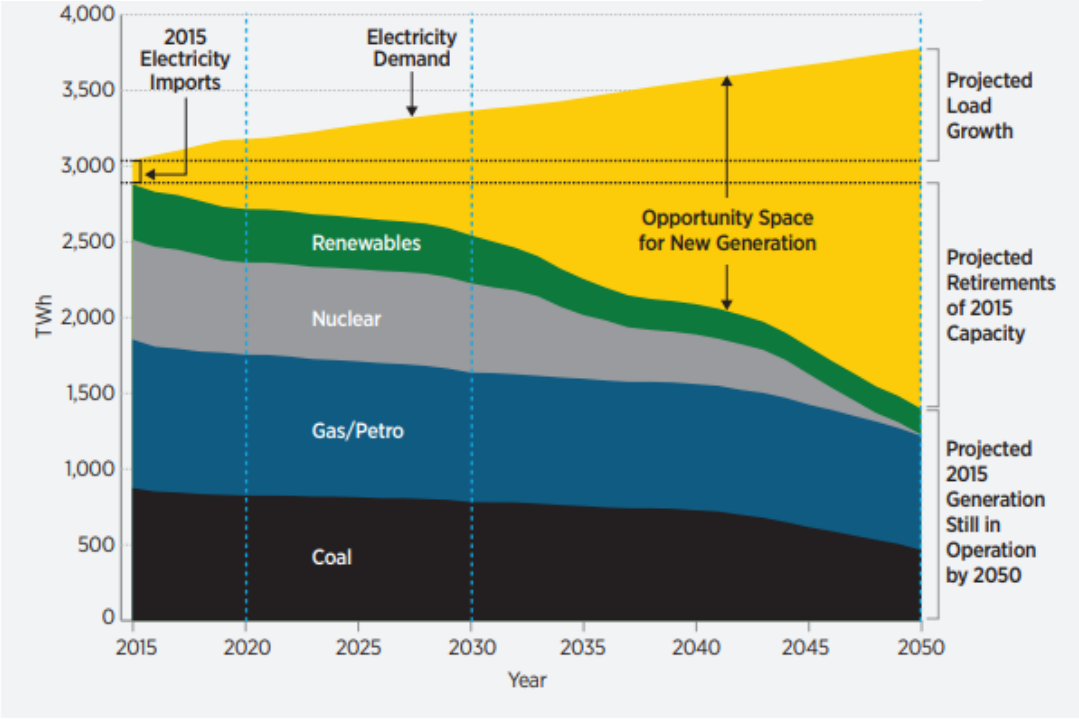




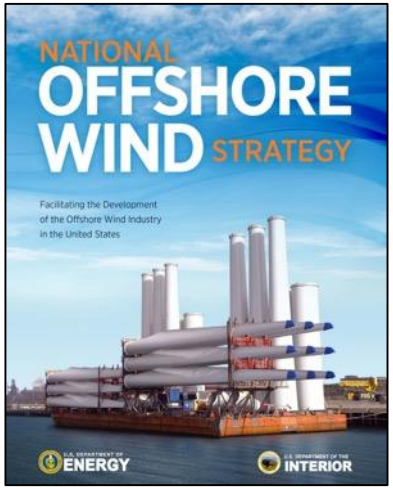
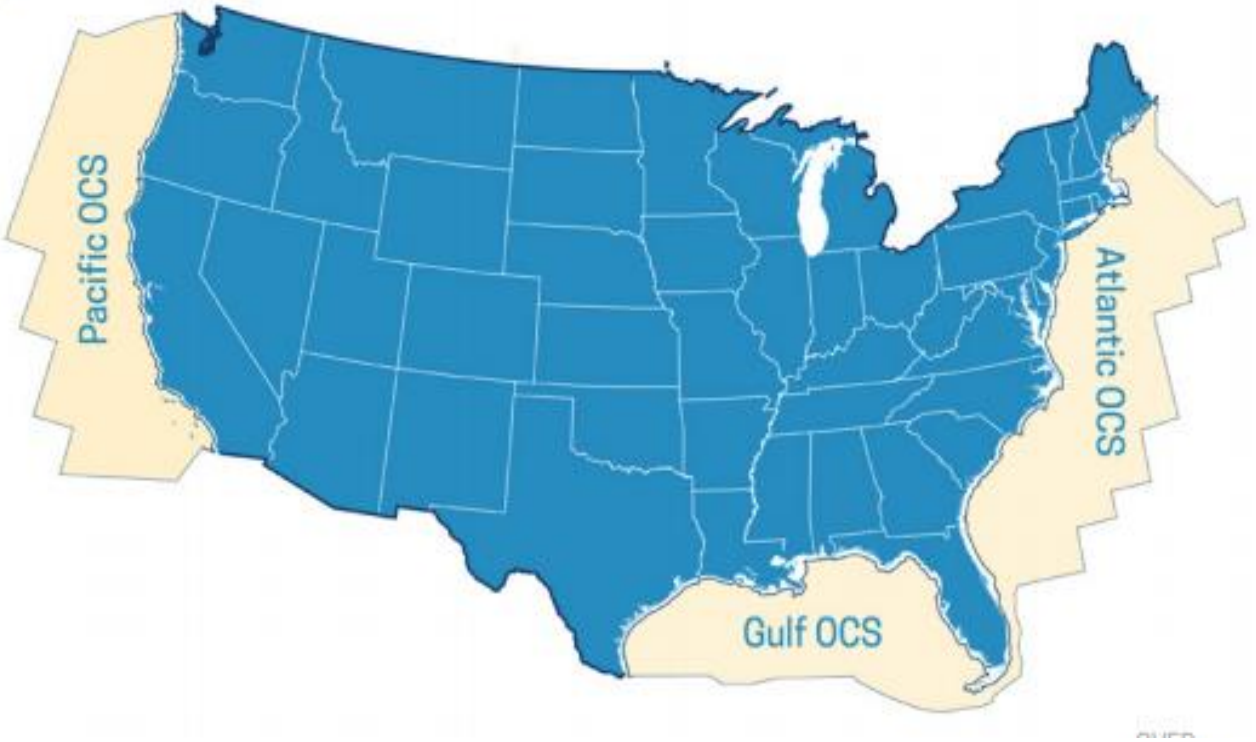


Figure 2.6. Scheduled and age-based retirements and load growth create opportunity for new offshore wind generation in coastal regions [22]

https://www.boem.gov/sites/default/files/renewable-energy-program/National-Offshore-Wind-Strategy-report-09082016.pdf

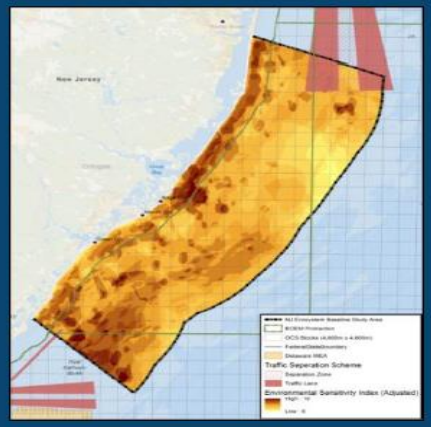
BOEM

Bureau of Ocean Energy Management

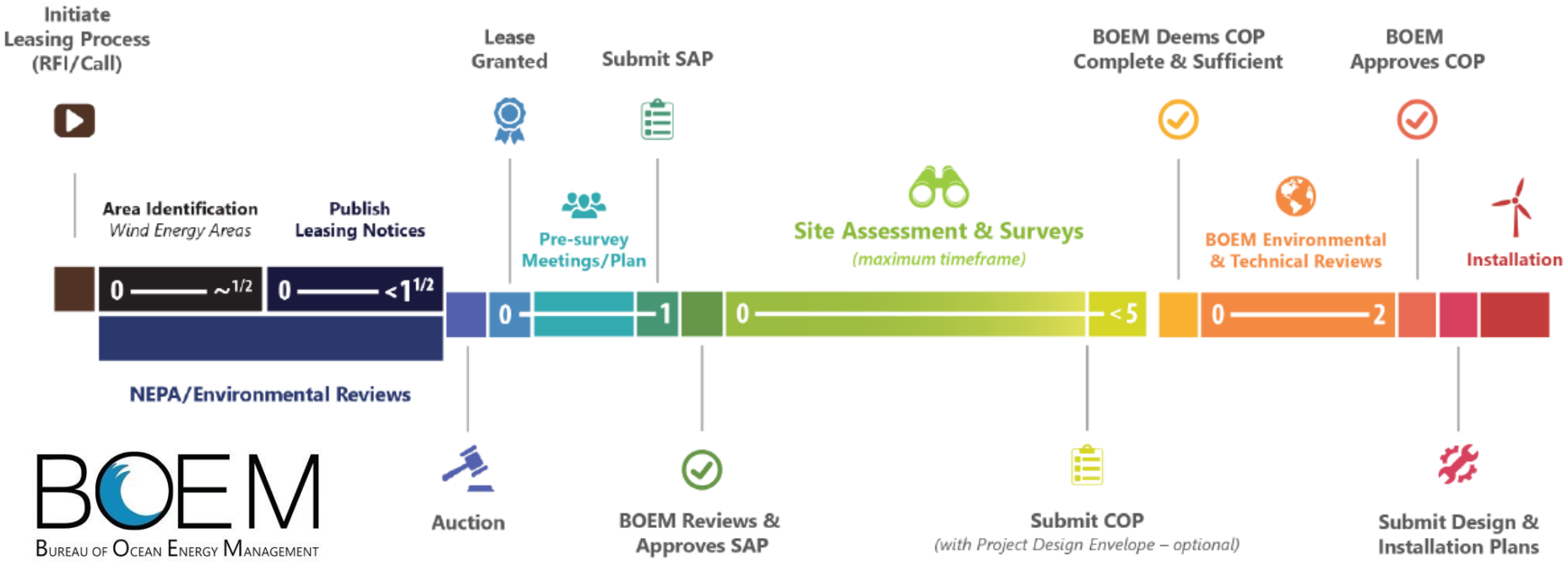


https://www.boem.gov/sites/default/files/documents/about-boem/BOEM_FactSheet-AboutBOEM-2-26-2020_0.pdf

Planning & Analysis | Leasing | Site Assessment | Construction & Operations



[Planning & Analysis] [Leasing] [Site Assessment] [Construction & Operations]



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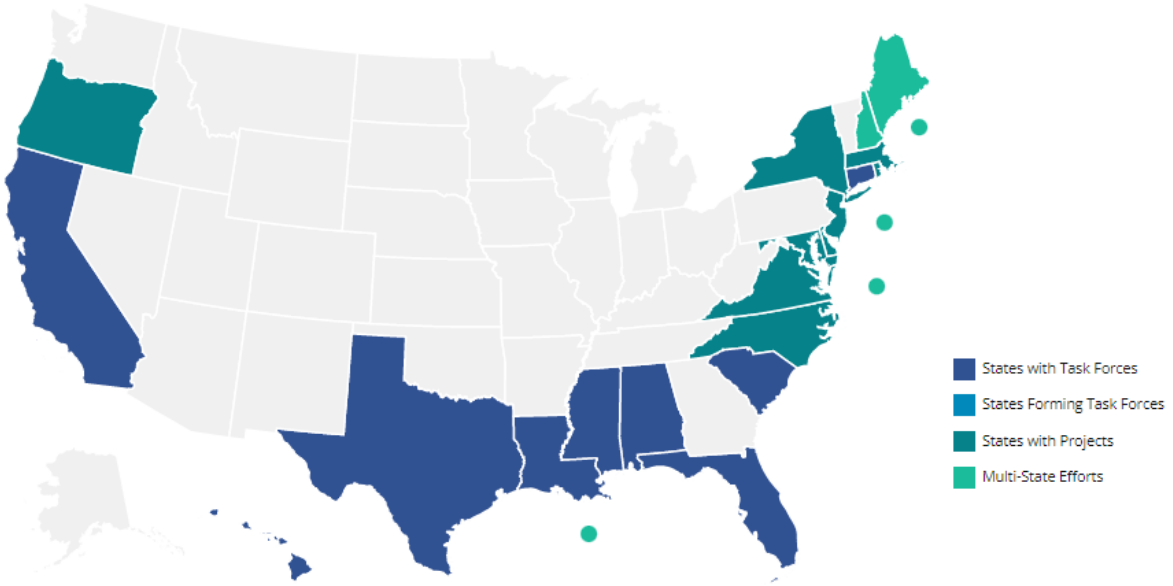
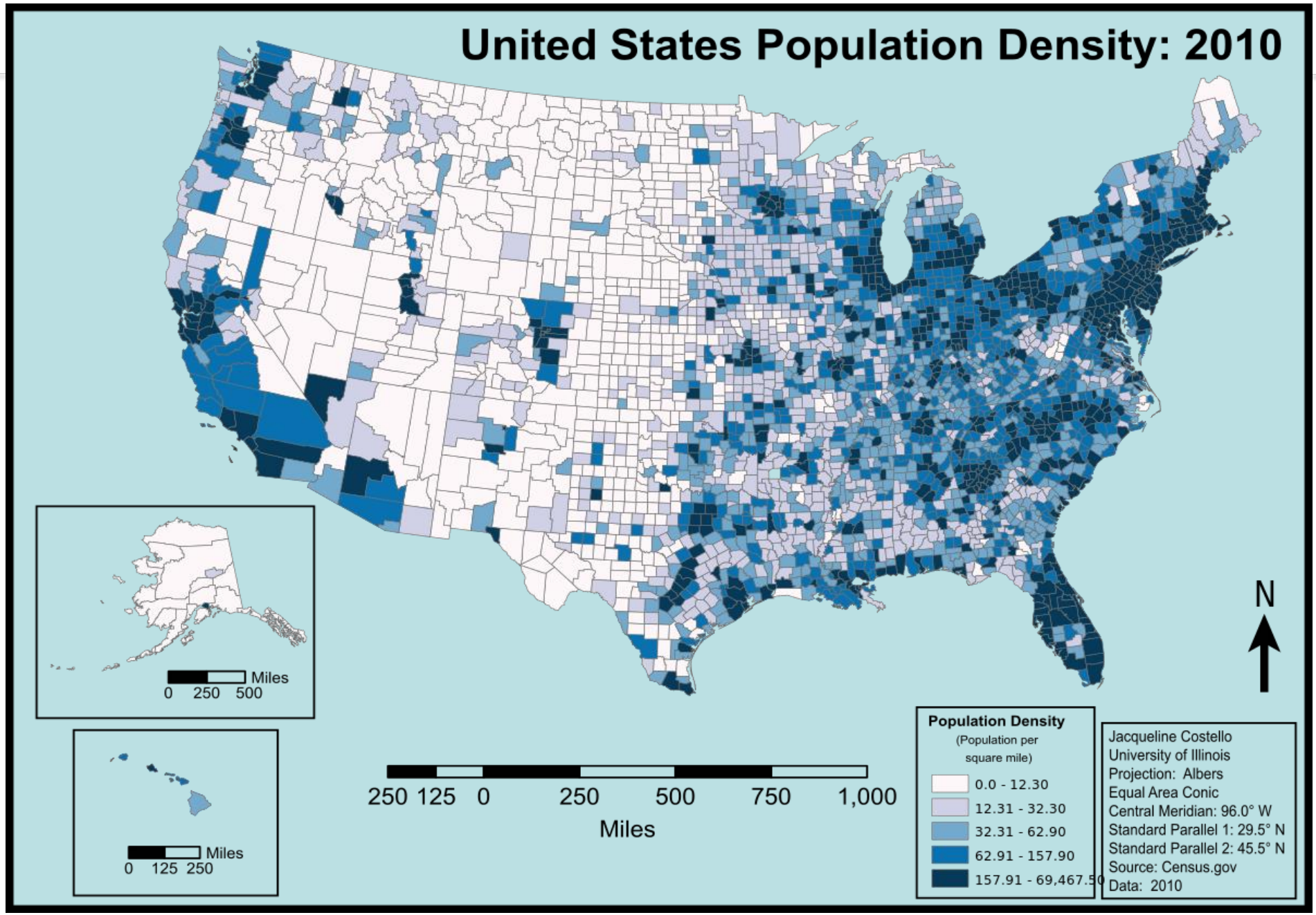
State Activities

BOEM has seen very strong interest in offshore renewable energy projects on the Outer Continental Shelf (OCS). BOEM is working closely with several states regarding offshore energy development and is in the process of coordinating federal-state task forces in certain coastal states. A summary of the status of activity in the different states can be found below.



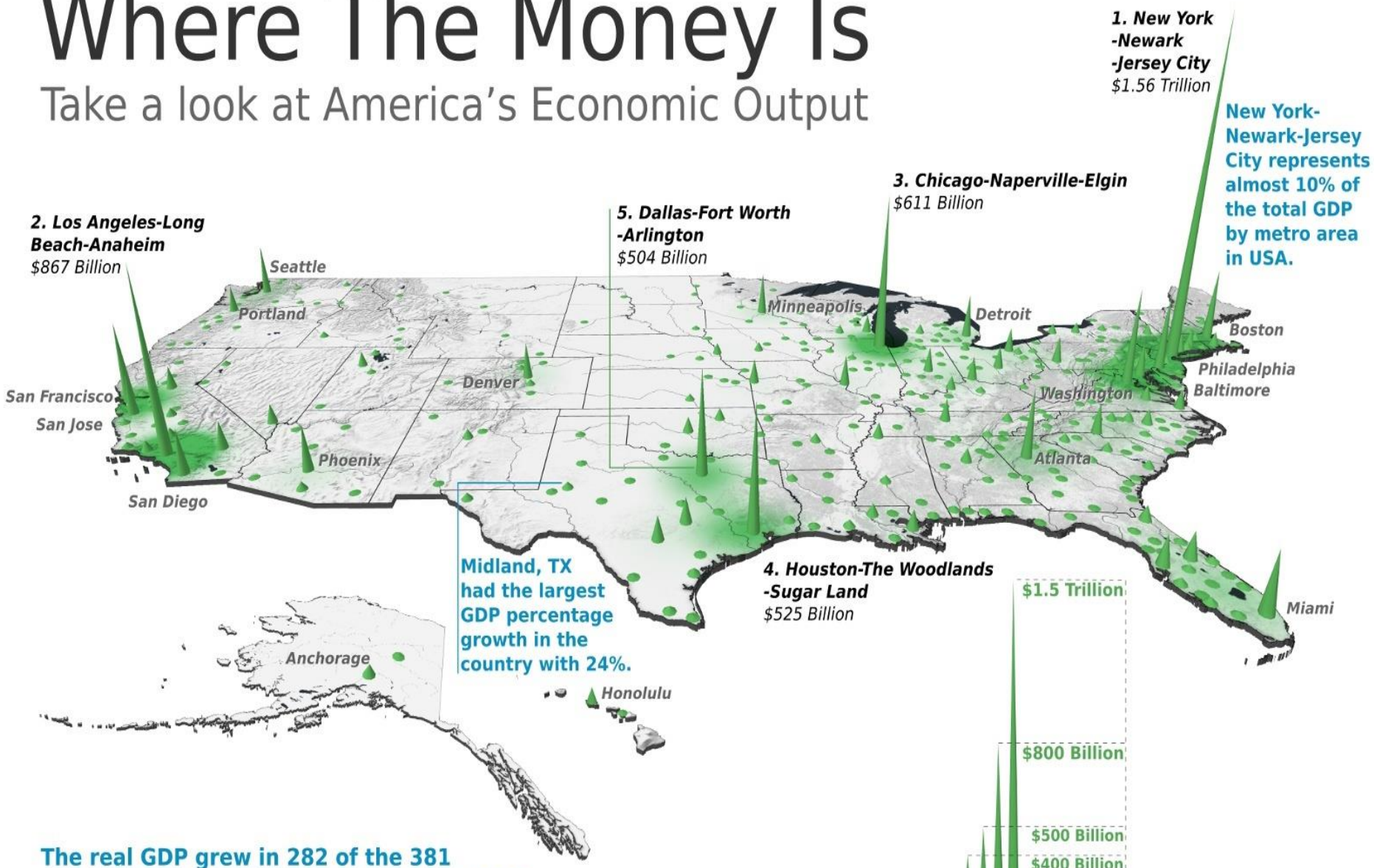
https://www.boem.gov/renewable-energy/state-activities



https://commons.wikimedia.org/wiki/File:United_States_Population_Density.svg

Where The Money Is

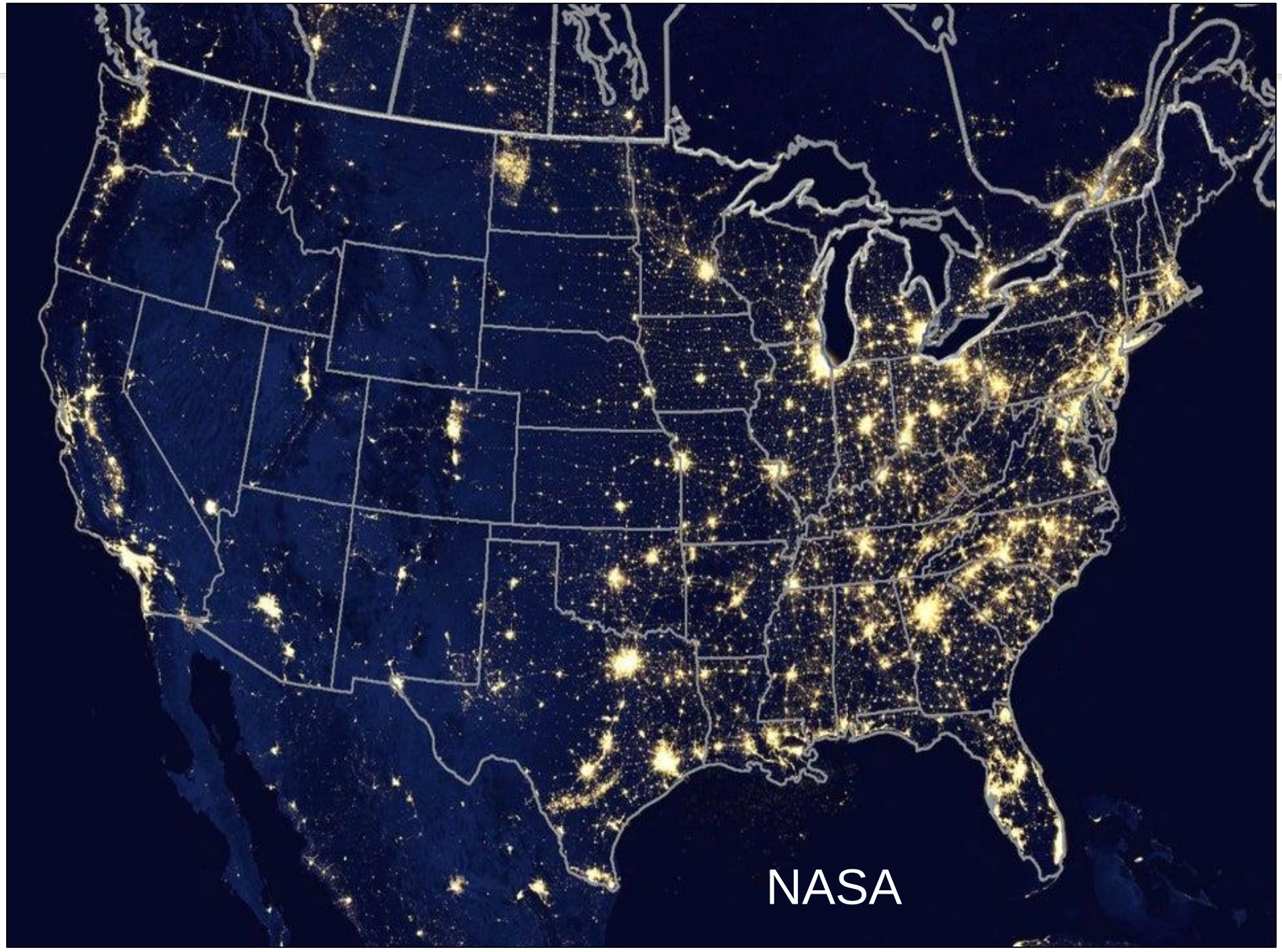
Take a look at America's Economic Output



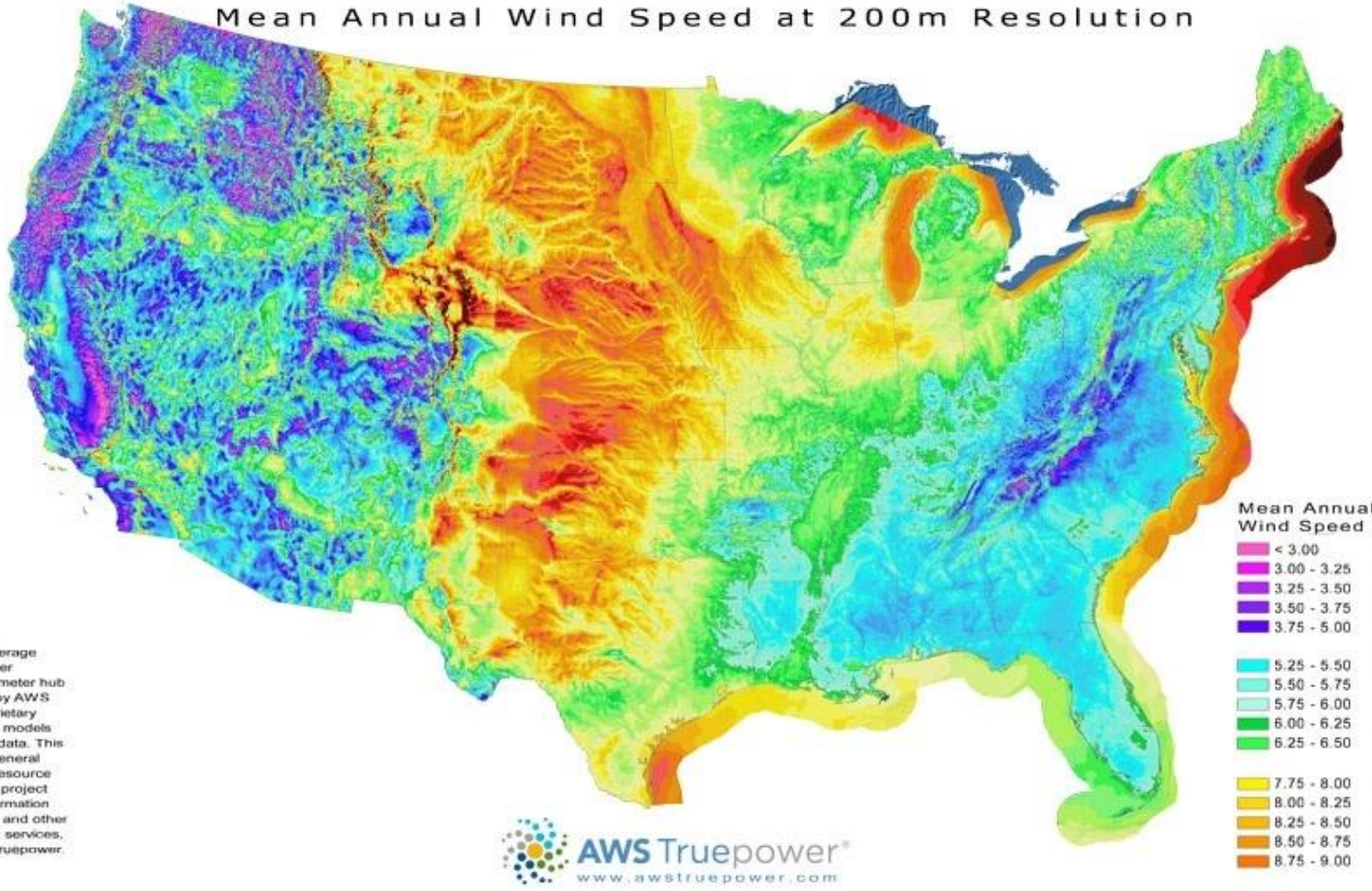
The real GDP grew in 282 of the 381 metropolitan areas across the U.S. in 2014.

Source: http://www.bea.gov

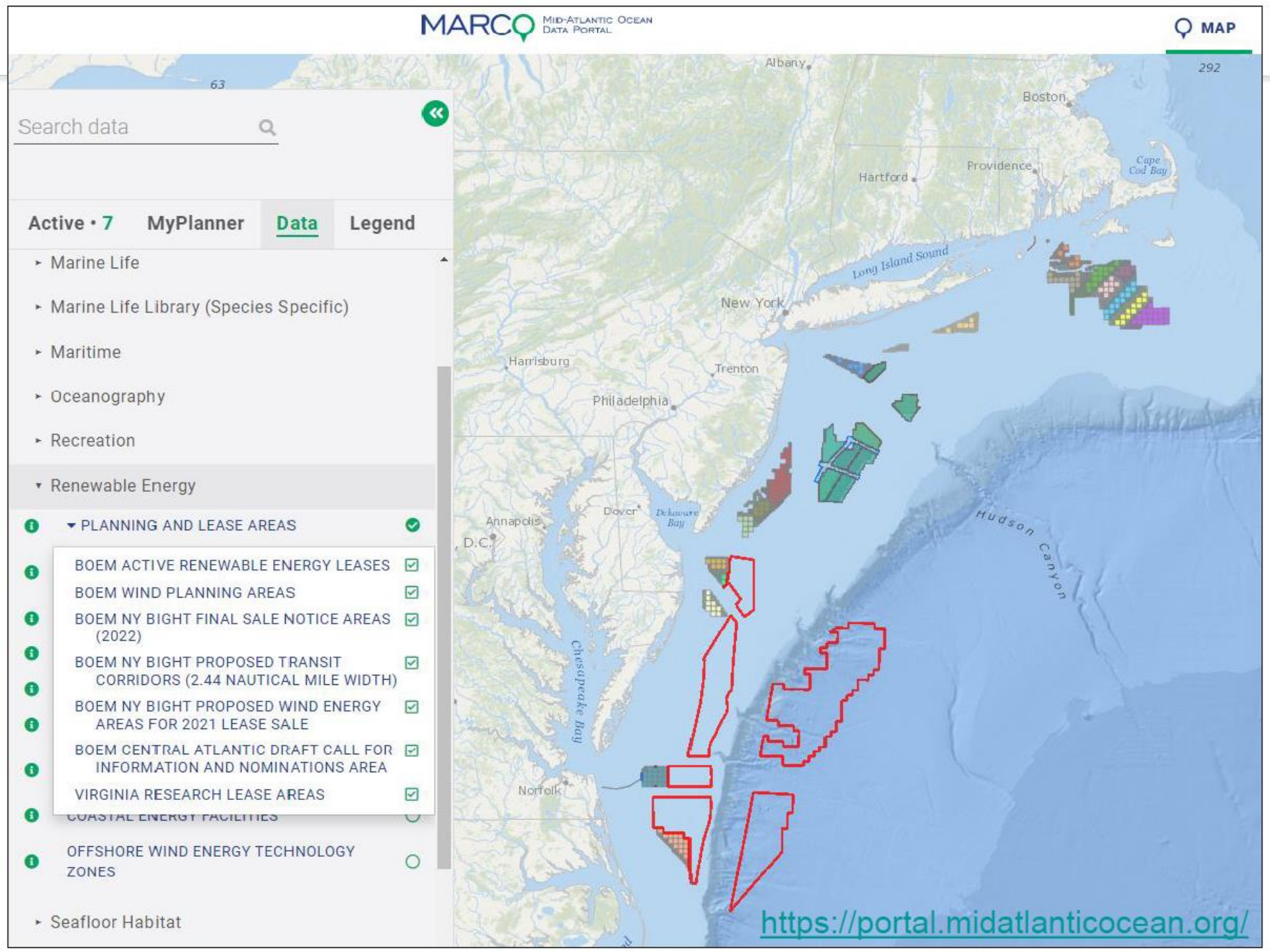
howmuch.net


NASA

WIND RESOURCE OF THE UNITED STATES



This map depicts the approximate annual average wind speed at 200 meter resolution and an 120 meter hub height. It was created by AWS Truepower using proprietary advanced atmospheric models and historical weather data. This map is provided as a general indication of the wind resource and is not intended for project design. For further information on wind project design and other wind energy consulting services, please contact AWS Truepower.


MARCO
Mid-Atlantic Ocean Data Portal
MAP
Search data
Active • 7
MyPlanner
Data
Legend
Marine Life
Marine Life Library (Species Specific)
Maritime
Oceanography
Recreation
Renewable Energy
PLANNING AND LEASE AREAS
BOEM ACTIVE RENEWABLE ENERGY LEASES
BOEM WIND PLANNING AREAS
BOEM NY BIGHT FINAL SALE NOTICE AREAS (2022)
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BOEM NY BIGHT PROPOSED WIND ENERGY AREAS FOR 2021 LEASE SALE
BOEM CENTRAL ATLANTIC DRAFT CALL FOR INFORMATION AND NOMINATIONS AREA
VIRGINIA RESEARCH LEASE AREAS
OFFSHORE WIND ENERGY TECHNOLOGY ZONES
Seafloor Habitat
Albany
Boston
Hartford
Providence
Cape Cod Bay
Long Island Sound
New York
Harrisburg
Trenton
Philadelphia
Annapolis
D.C.
Dover
Delaware Bay
Chesapeake Bay
Norfolk
Hudson Canyon
https://portal.midatlanticocean.org/

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New Jersey Activities

State Overview | Leasing History

Call for Information

The Outer Continental Shelf (OCS) Lands Act requires BOEM to award leases competitively, unless BOEM determines there is no competitive interest.

New Jersey Wind Energy Area

Apr. 2011: BOEM published the Call for Information and Nominations – Commercial Leasing for Wind Power on the Outer Continental Shelf Offshore New Jersey in the Federal Register for public review. The purpose of the "Call" was to determine if competitive interest existed for the construction of an offshore wind facility offshore New Jersey in addition to requesting information about site conditions, resources, and multiple uses within the area identified within the Federal Register Notice that would be relevant for commercial wind leasing.

Materials relating to the "Call" are below.

- New Jersey Call for Information and Nominations for Commercial Leasing for Wind Power on the OCS Offshore New Jersey
- Map Showing the New Jersey Call for Information and Nominations Area
- Map Showing the New Jersey Call for Information and Nominations Area with a NOAA Nautical Chart Background
- New Jersey Call for Information and Nominations Area Boundary Coordinates
- GIS File of the New Jersey Call Area (UTM Zone 18, NAD 83)

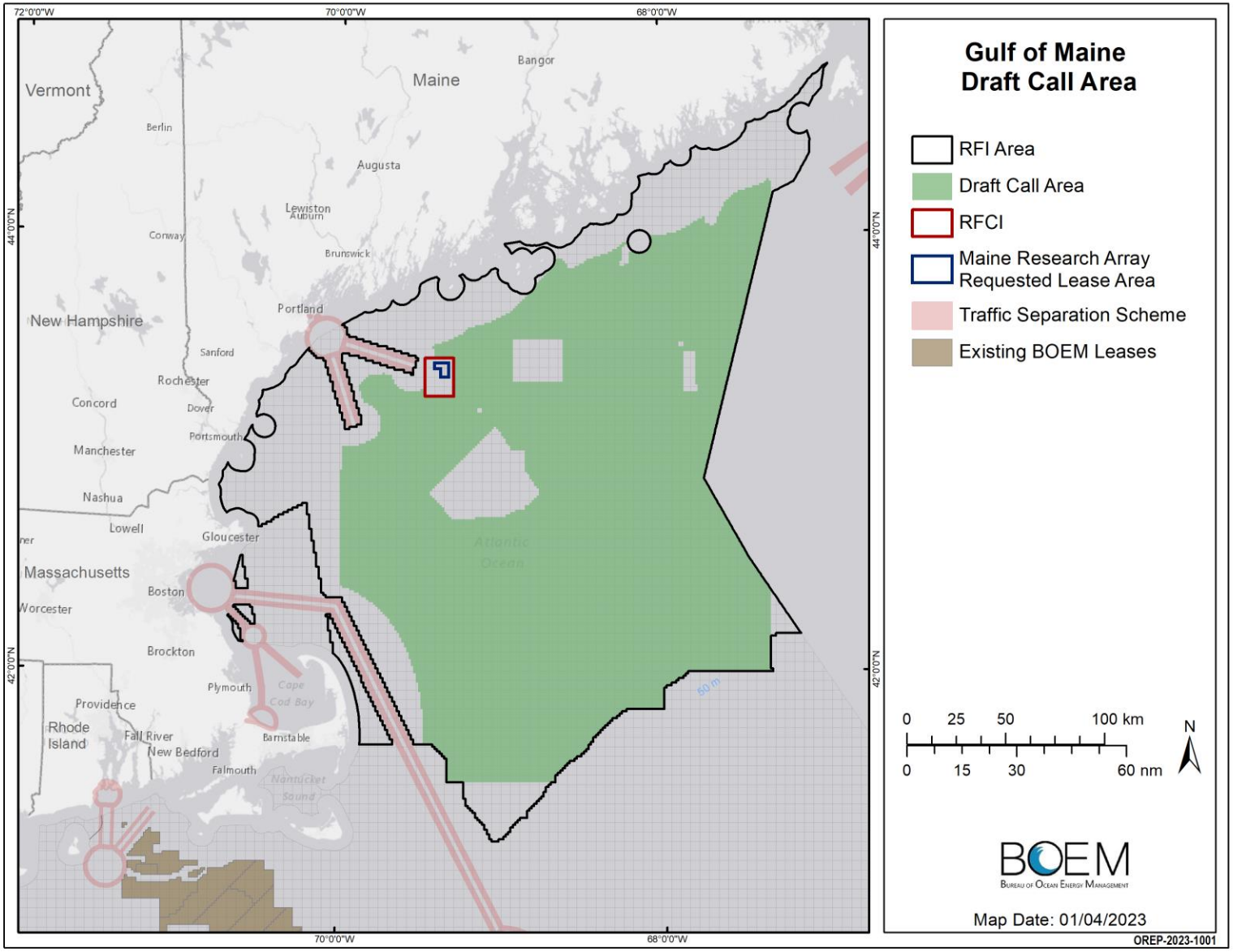
Jun. 6, 2011: The public comment period for the Call closed. In response, BOEM received 11 commercial indications of interest to obtain a commercial lease for a wind energy project. BOEM initiated a review of these parties' submissions to assess filing completeness, as well as legal, technical, and financial qualifications to hold an OCS renewable energy commercial lease.

BOEM also received a number of comments, which can be viewed by clicking here.

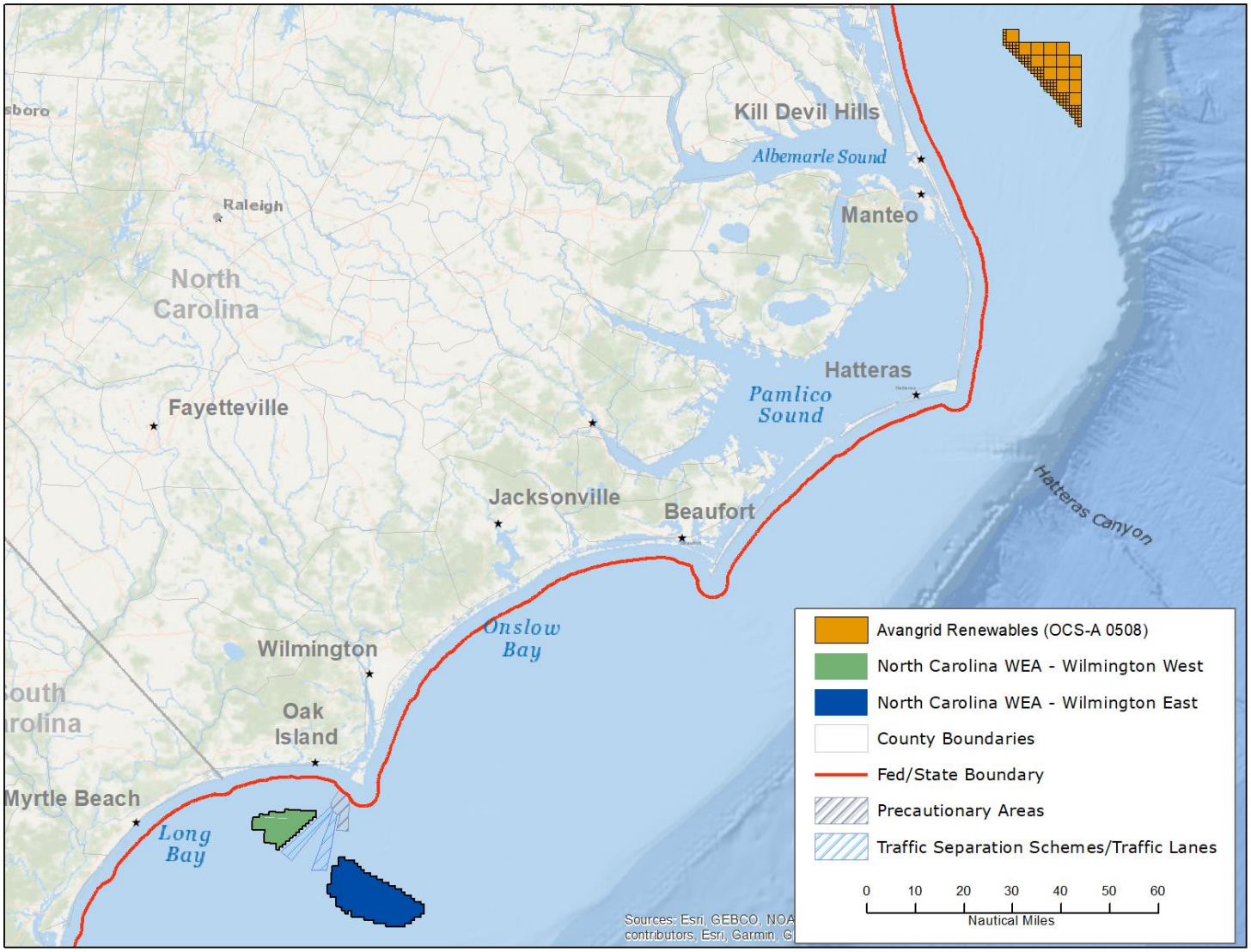
After analyzing new available Automatic Identification System (AIS) data and holding discussions with the United Stated Coast Guard, the New Jersey Renewable Energy Task, and maritime stakeholders BOEM decided that it would be appropriate to remove OCS Blocks Wilmington NJ18– 02 Block 6740 and Block 6790 (A, B, C, D, E, F, G, H, I, J, K, M, N) and Block 6840 (A) to alleviate navigational safety concerns resulting from vessel transits out of the New York Harbor.

National Renewable Energy Laboratory Assessment Report

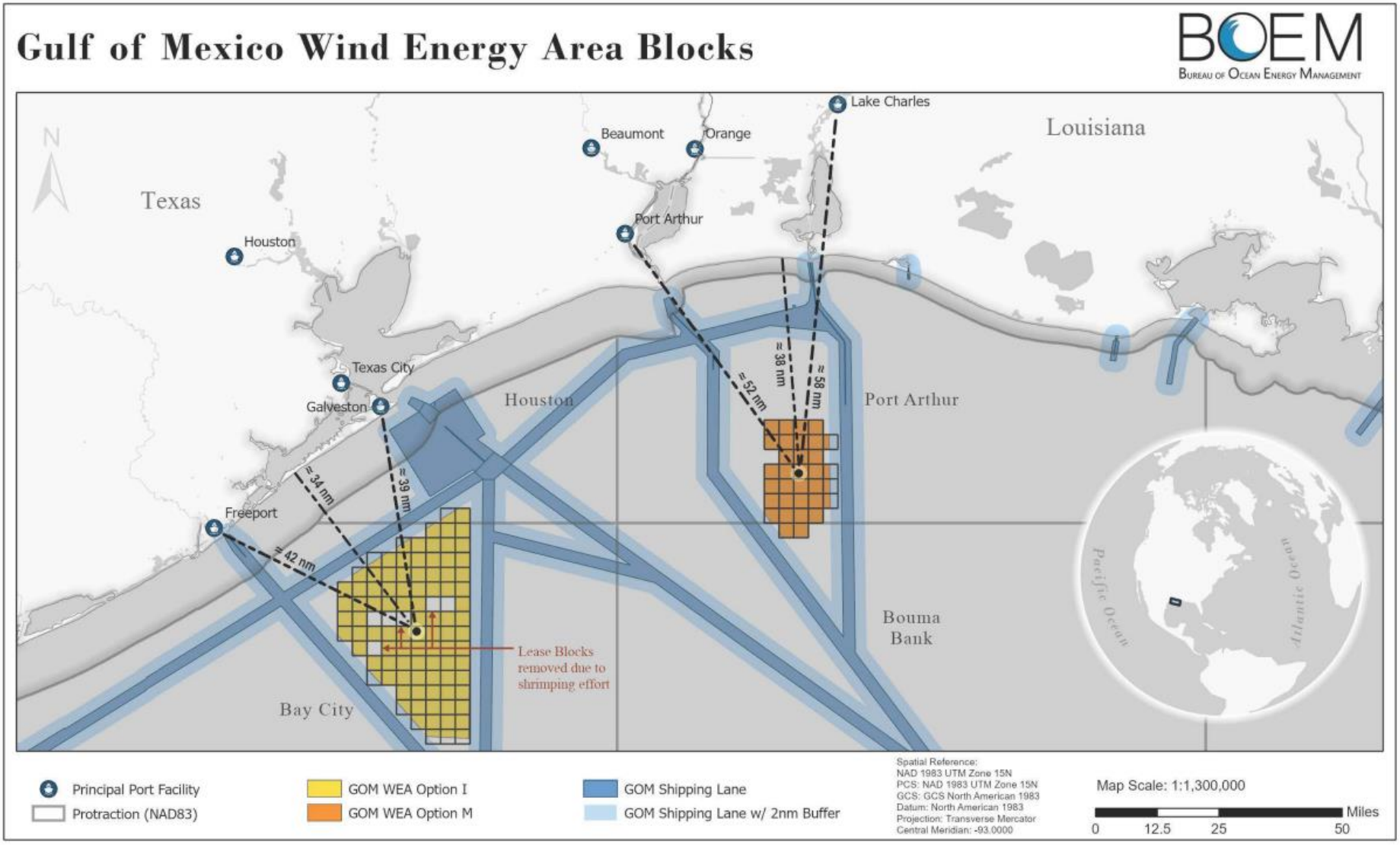
https://www.boem.gov/renewable-energy/state-activities/new-jersey-activities



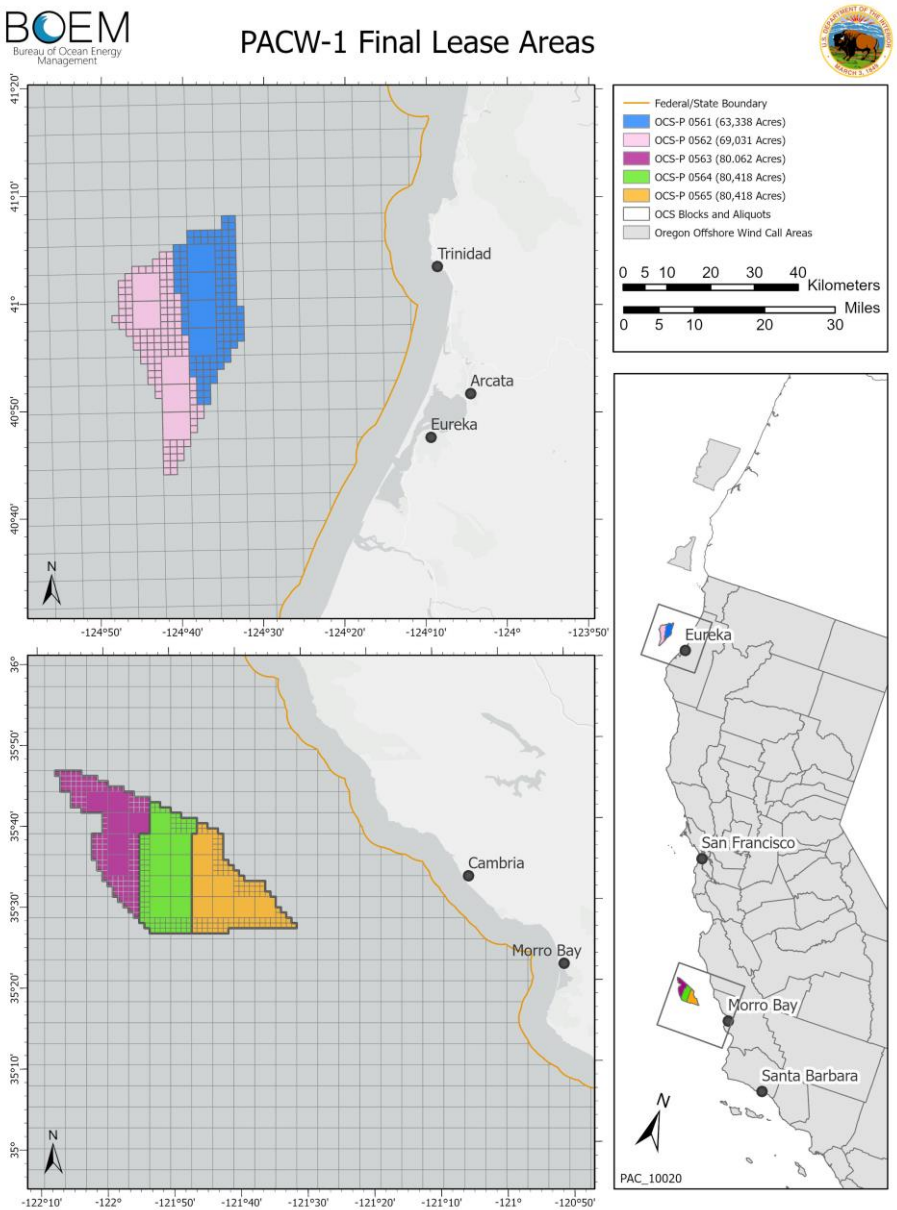
https://www.boem.gov/renewable-energy/state-activities/gulf-maine-draft-call-area-engagement-meetings



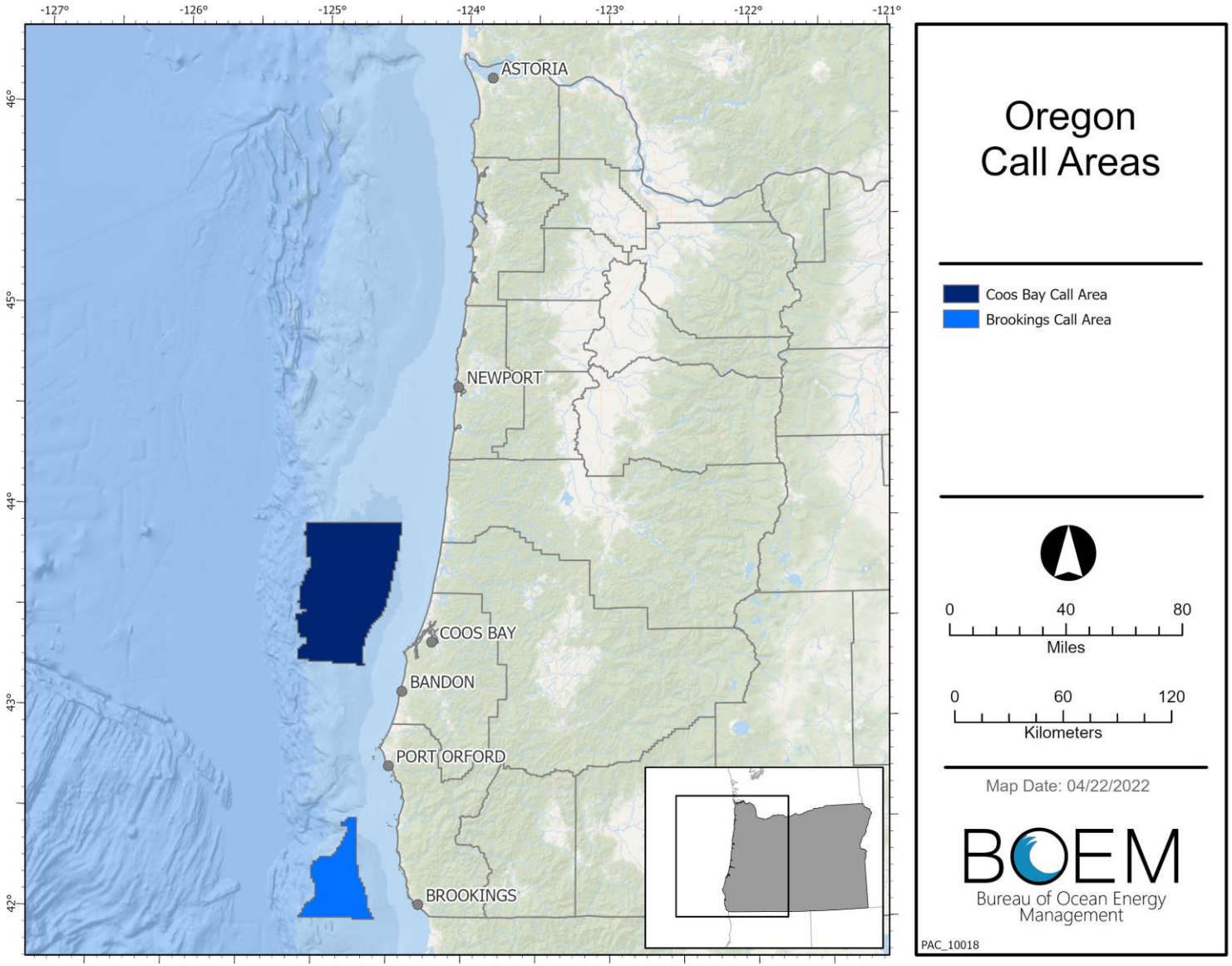
https://www.boem.gov/renewable-energy/state-activities/north-carolina-activities



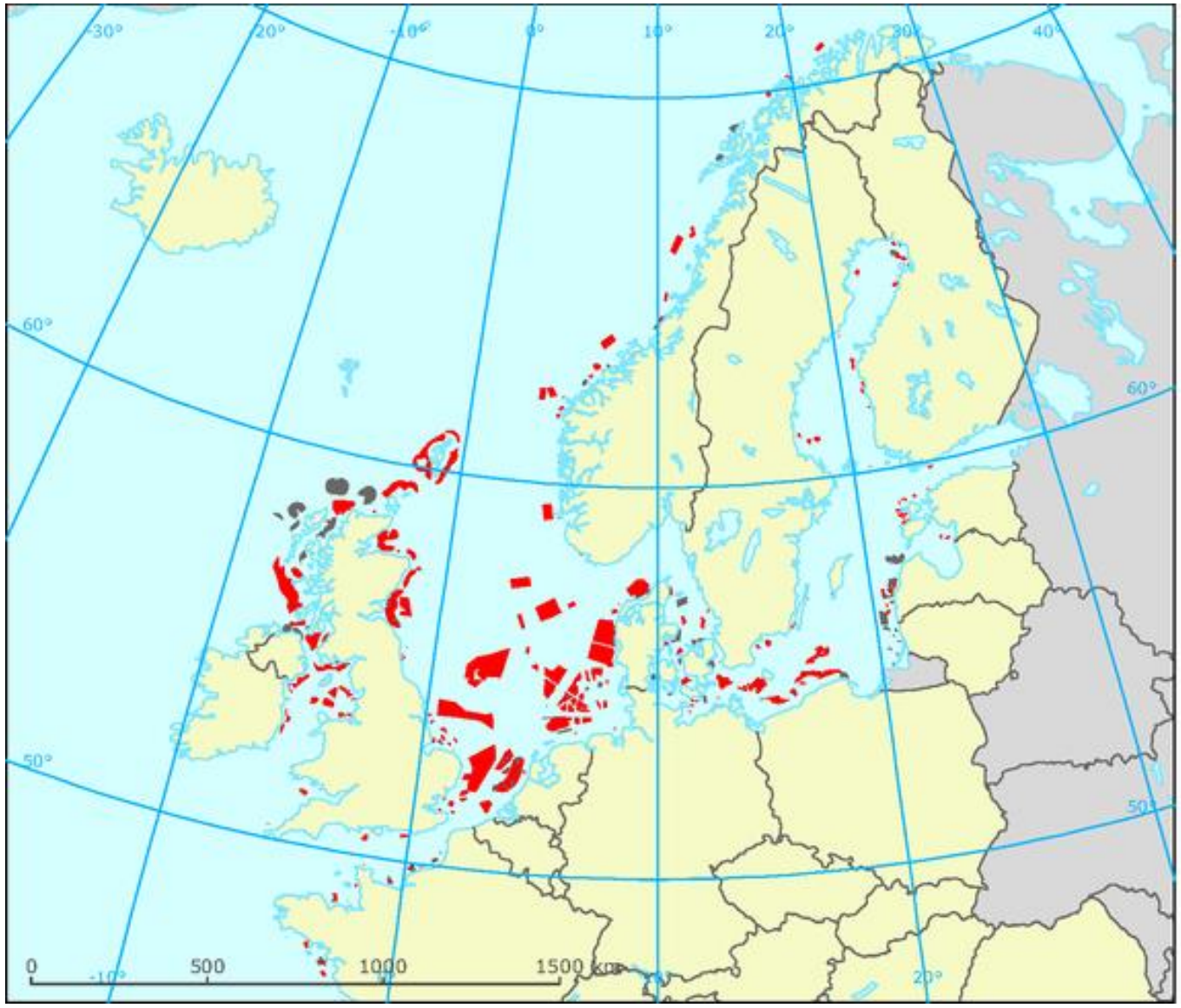
https://www.boem.gov/renewable-energy/state-activities/gulf-mexico-activities

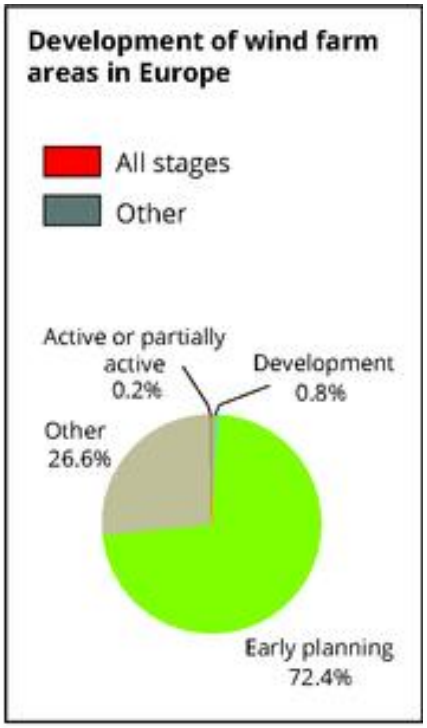


https://www.boem.gov/renewable-energy/state-activities/california



https://www.boem.gov/renewable-energy/state-activities/Oregon

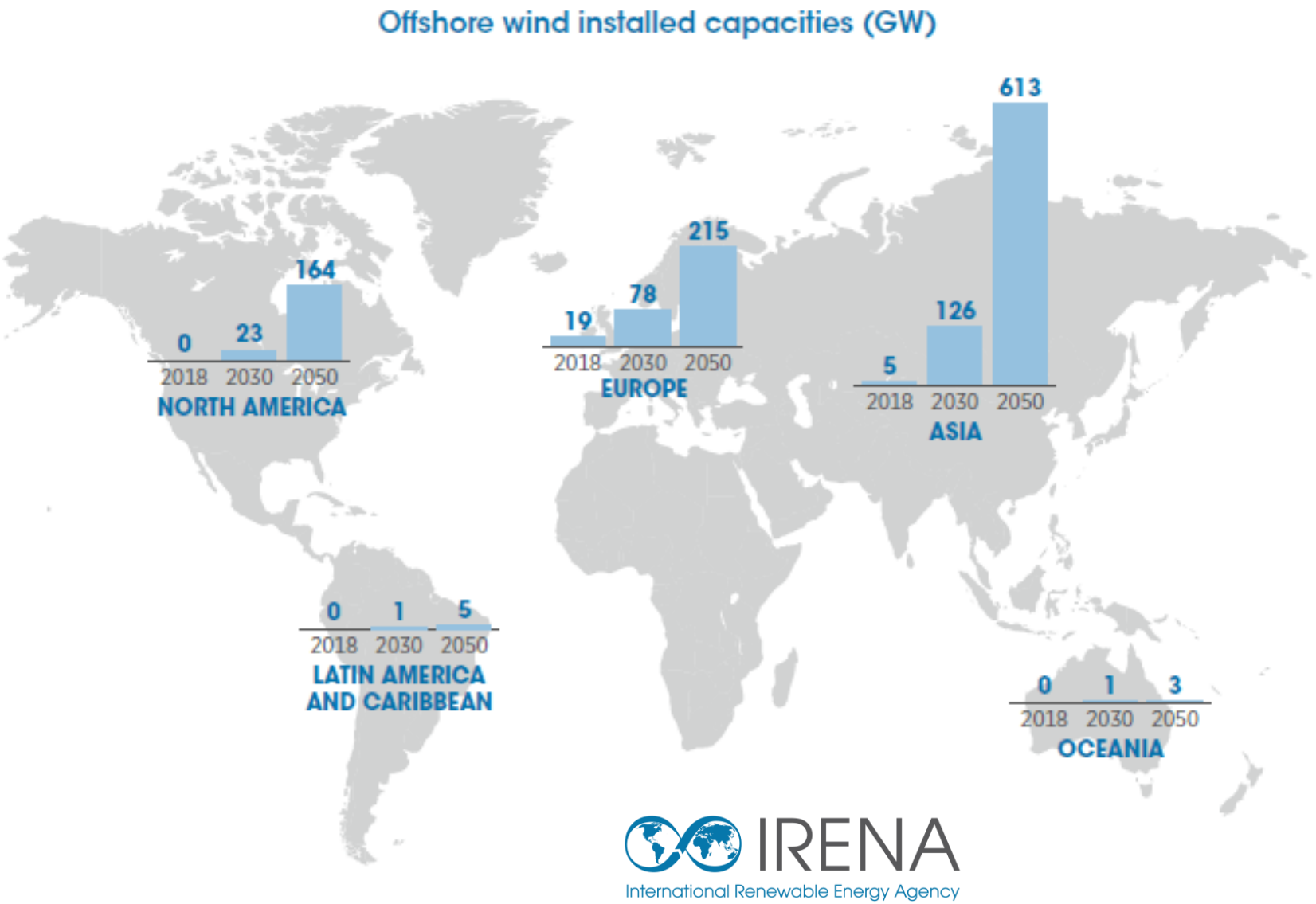




European Environment Agency

December 2022

https://www.eea.europa.eu/data-and-maps/figures/development-of-wind-farm-areas



January 2020 Presentation:
https://www.irena.org/-/media/Files/IRENA/Agency/Webinars/07012020_INSIGHTS_webinar_Wind-and-Solar.pdf?la=en&hash=BC60764A90CC2C4D80B374C1D169A47FB59C3F9D

How It Works

Offshore wind turbines work to harness the ocean's vast wind and convert it into 100% renewable electricity.

Overview of Power Generation

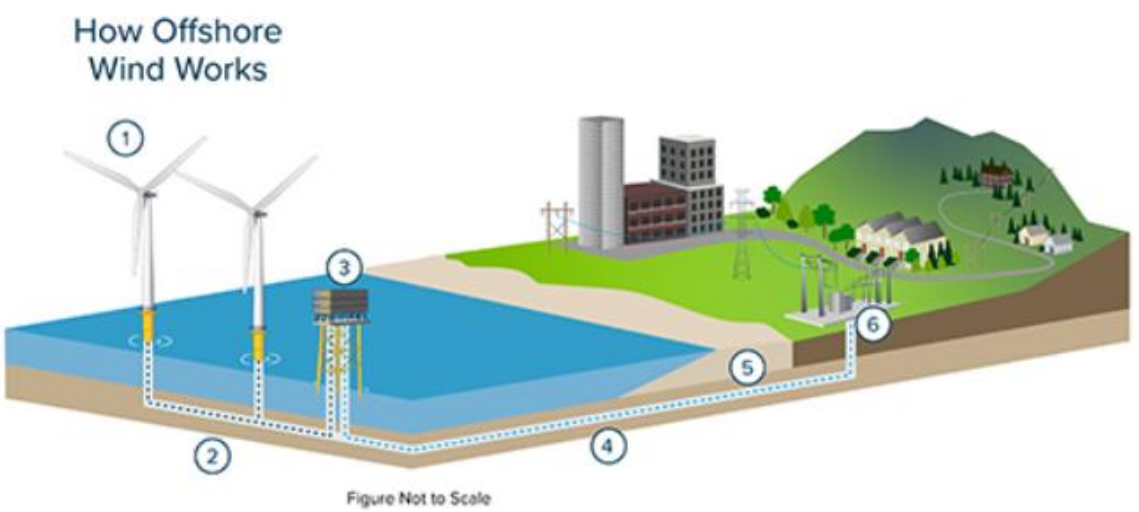


Figure Not to Scale

1. **Offshore Turbines** capture the wind's energy and generate electricity.
2. **Foundations** secure turbines to the ocean floor and cables transmit electricity to an offshore substation
3. **Electricity** flows through a buried cable to an onshore substation and is transferred to the existing transmission network.

https://www.nyserda.ny.gov/All-Programs/Programs/Offshore-Wind/About-Offshore-Wind/Offshore-Wind-101

https://www.nyserda.ny.gov/All-Programs/Programs/Offshore-Wind/About-Offshore-Wind/Offshore-Wind-101

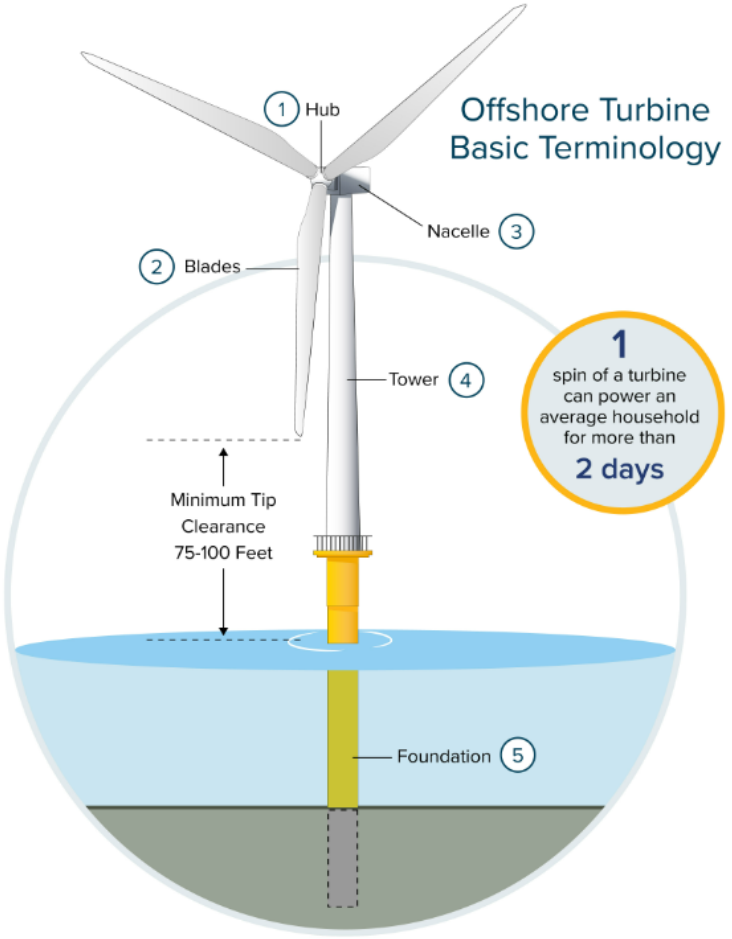
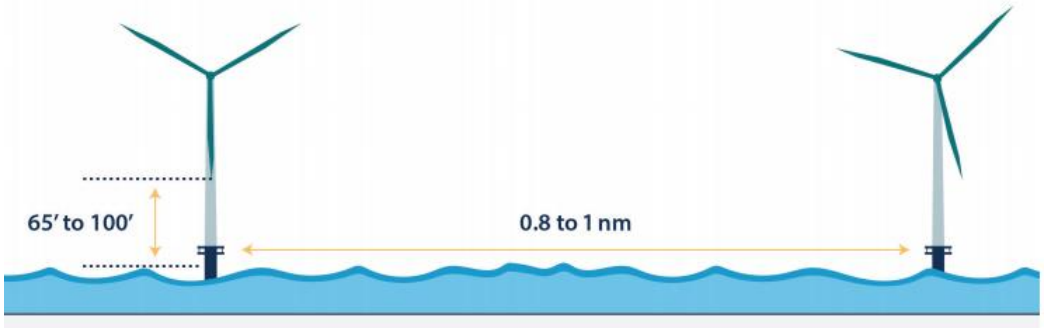


Figure Not to Scale

1. **Hub.** The hub supports the blades and houses the pitch system, which optimizes blade angle and rotation speed.
2. **Blades.** Blades capture the wind's energy and convert it into mechanical energy.
3. **Nacelle.** The nacelle houses the components that convert mechanical energy to electrical energy.
4. **Tower.** The tower supports the mass of the nacelle, hub, and blades.

More



gure 3.3. Six different offshore wind substructure types. The three on the far left are fixed-bottom substructures (monopile, jacket, ıd inward battered guide structure [also known as a twisted jacket]), and the three on the right are floating substructures (from ft: semisubmersible, tension leg platform, and spar). *Illustration by Josh Bauer, NREL*

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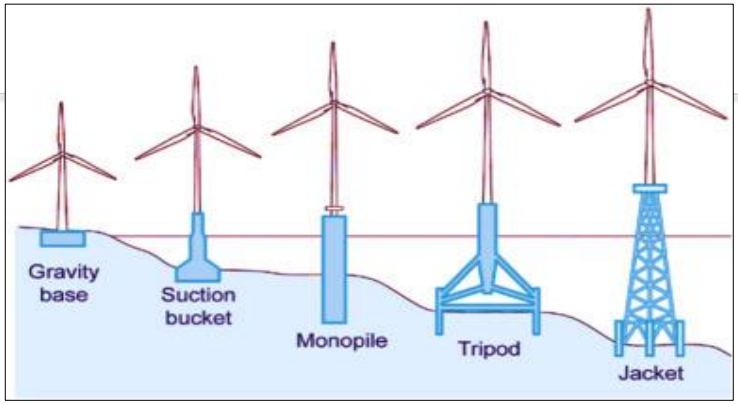
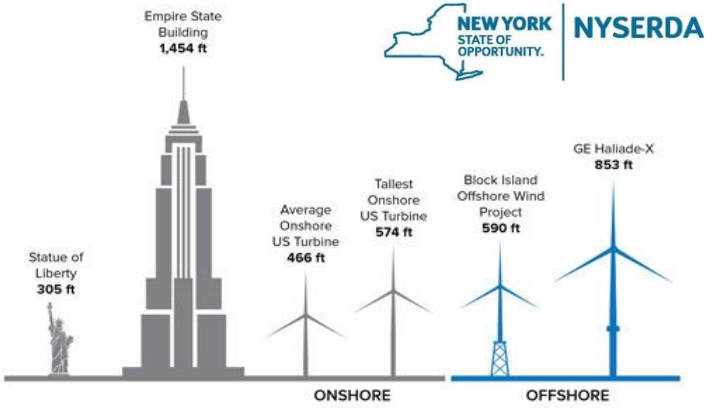


NEW YORK STATE OF OPPORTUNITY. | NYSERDA



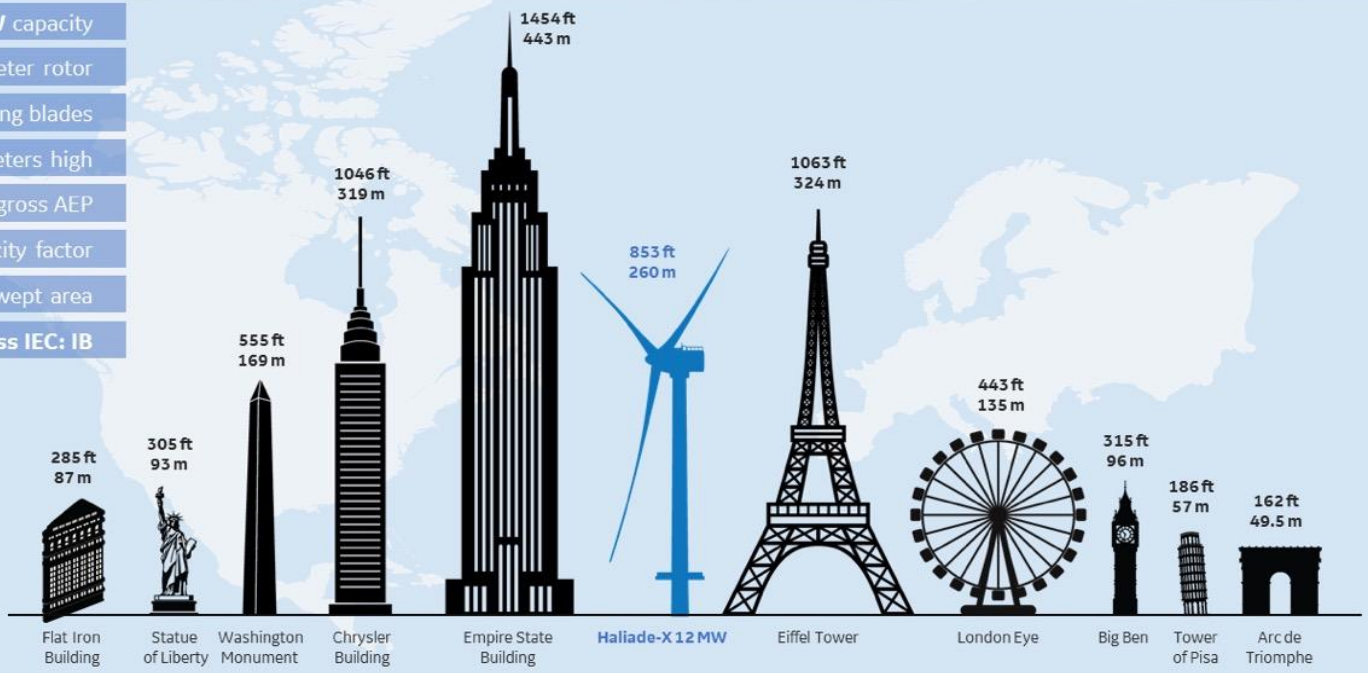
HALIADE-X 12 MW

GE Renewable Energy is developing **Haliade-X 12 MW**, the biggest offshore wind turbine in the world, with **220-meter rotor**, **107-meter blade**, leading capacity factor **(63%)**, and **digital capabilities**, that will help our customers find success in an increasingly competitive environment.

One **Haliade-X 12 MW** can generate **67 GWh annually**, which is **45% more** annual energy production (AEP) than most powerful machines on the market today, and twice as much as the Haliade 150-6MW.

The **Haliade-X 12 MW** turbine will generate enough clean power for up to **16,000** European households per turbine, and up to **1 million** European households in a 750 MW configuration windfarm.

- **12 MW** capacity
- **220**-meter rotor
- **107**-meter long blades
- **260** meters high
- **67 GWh** gross AEP
- **63%** capacity factor
- **38,000** m² swept area
- **Wind Class IEC: IB**



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Atlantic Shores selects Vestas as preferred turbine supplier for its 1.5 GW project in New Jersey, USA, powering over 700,000 homes

News release from Vestas-American Wind Technology and Atlantic Shores Offshore Wind

October 6, 2022, Atlantic City, NJ (New Jersey), USA

Vestas

Introducing the V236-15.0 MW™

80 GWh

A single V236-15.0 MW™ is capable of producing 80 GWh per year depending on site-specific conditions.

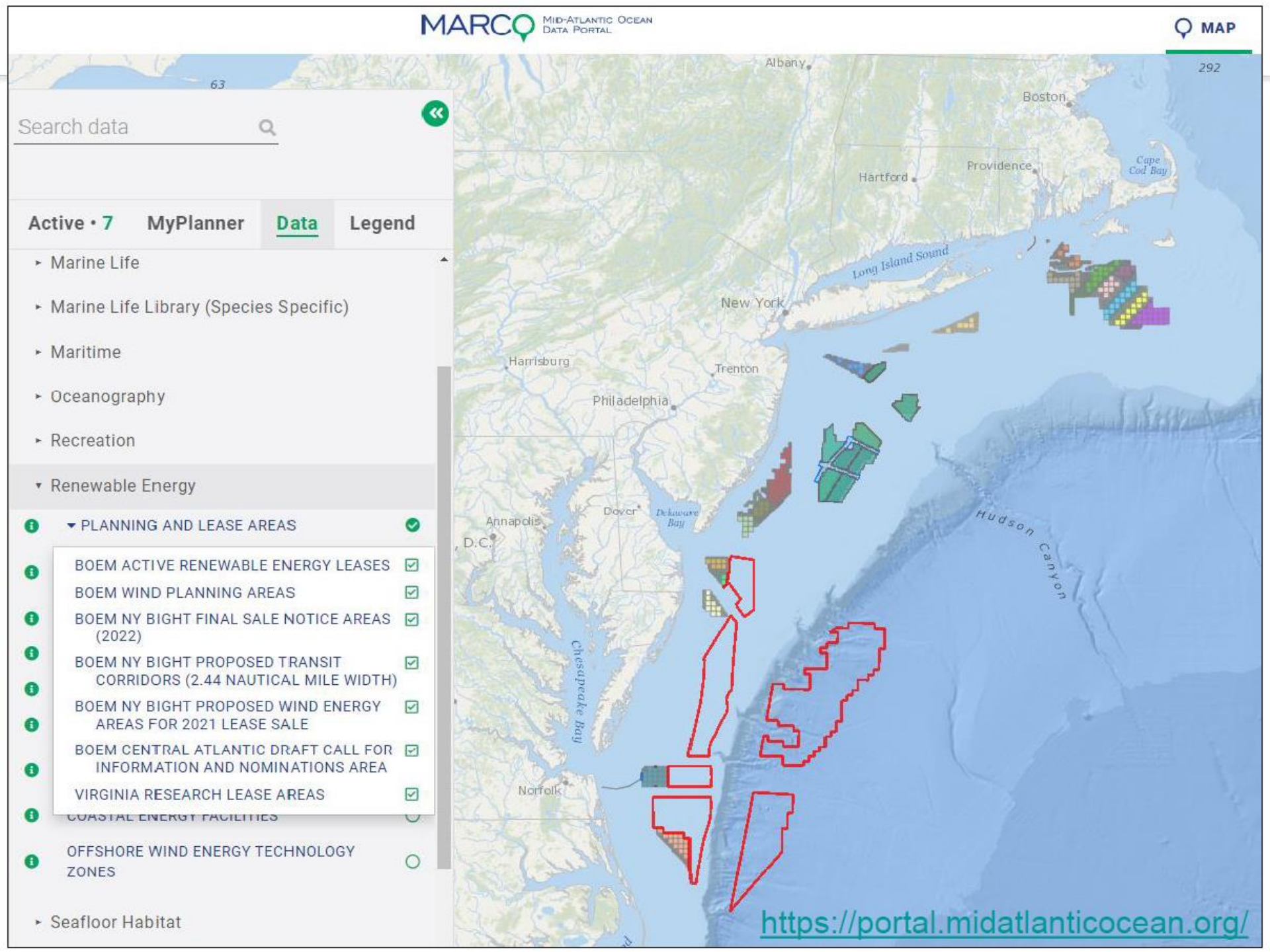
43,742 m2

An industry-leading swept area provides peak annual energy production performance.

Reliable

Leveraging 25 years of offshore installation and service experience, Vestas is your offshore partner-of-choice.

https://us.vestas.com/en-us/products/offshore/V236-15MW


MARCO
Mid-Atlantic Ocean Data Portal
MAP
Search data
Active • 7
MyPlanner
Data
Legend
Marine Life
Marine Life Library (Species Specific)
Maritime
Oceanography
Recreation
Renewable Energy
PLANNING AND LEASE AREAS
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BOEM NY BIGHT FINAL SALE NOTICE AREAS (2022)
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BOEM CENTRAL ATLANTIC DRAFT CALL FOR INFORMATION AND NOMINATIONS AREA
VIRGINIA RESEARCH LEASE AREAS
OFFSHORE WIND ENERGY TECHNOLOGY ZONES
Seafloor Habitat
Albany
Boston
Hartford
Providence
Cape Cod Bay
Long Island Sound
New York
Harrisburg
Trenton
Philadelphia
Annapolis
D.C.
Dover
Delaware Bay
Chesapeake Bay
Norfolk
Hudson Canyon
https://portal.midatlanticocean.org/

New Jersey Offshore Wind Solicitations

Solicitation	Minimum Capacity Target (MW)*	Capacity Awarded (MW)	Issue Date	Submittal Date	Award Date	Estimated COD
1	1,100	1,100	Q3 2018	Q4 2018	Q2 2019	2024-25
2	1,200 – 2,400	2,658	Q3 2020	Q4 2020	Q2 2021	2027-29
3	1,200 - 4,000		Q1 2023	Q2 2023	Q4 2023	2030
4	1,200**		Q3 2024	Q4 2024	Q2 2025	2032
5	1,200**		Q3 2026	Q4 2026	Q2 2027	2034
6	1,200**		Q3 2028	Q4 2028	Q2 2029	2036
7	1,200**		Q3 2030	Q4 2030	Q2 2031	2038
Total Awarded + Target	**11,000**					

*The Board may award projects above or below the target

**To be adjusted based on previous solicitation awards

BPU | New Jersey's cleanenergy program™

https://www.njcleanenergy.com/renewable-energy/programs/nj-offshore-wind/solicitations

Ocean Wind 1
An Ørsted & PSEG project

About the project | Resources & FAQs | Media | About us | Contact us

https://oceanwind.com/

Ocean Wind open house

The first offshore wind project in New Jersey delivering 1,100 MW of clean, reliable energy

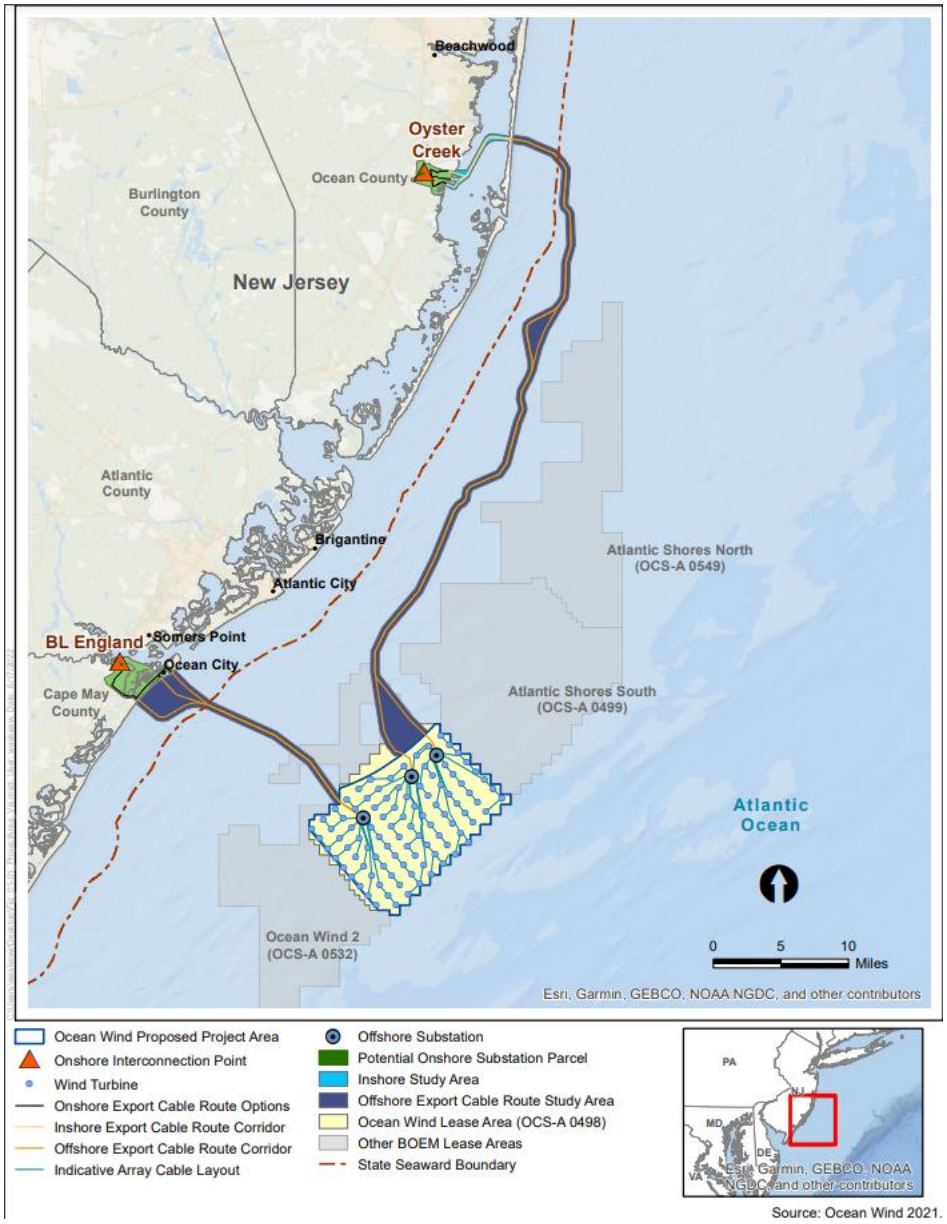
Located 15 miles off the coast of southern New Jersey, and creating enough electricity to power half a million homes

Read about the project

NOTICE OF GREEN ACRES PUBLIC SCOPING HEARING

View the Green Acres Scoping Hearing Presentation →

Get more information about the hearing



Source: Ocean Wind 2021.

https://www.boem.gov/ocean-wind-construction-and-operations-plan

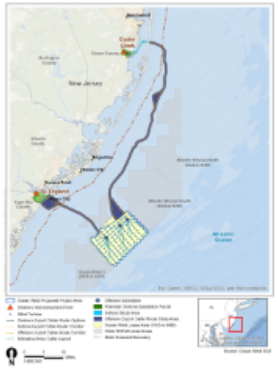
Ocean Wind 1 Construction and Operations Plan for Commercial Lease (OCS-A 0498)

On July 7, 2022 an error in the inshore export cable route options associated with the Oyster Creek Point of Interconnection (POI) was discovered in the Ocean Wind 1 COP. Approximately 1000 feet of route deviations were identified; however the updated/corrected route is entirely within the inshore cable study area identified the COP. Ocean Wind 1 has issued a technical correction to the relevant figures in the COP which can be found below. A corresponding technical correction for the Ocean Wind 1 DEIS was issued on July 22. 2022 and can be found on the BOEM Ocean Wind 1 DEIS Page.

- Ocean Wind 1 COP Technical Correction

On May 27, 2022, Ocean Wind 1 submitted an updated Construction and Operation Plan. This version of the COP informs the basis for the Draft Environmental Impact Statement (EIS) that will be published on June 24, 2022

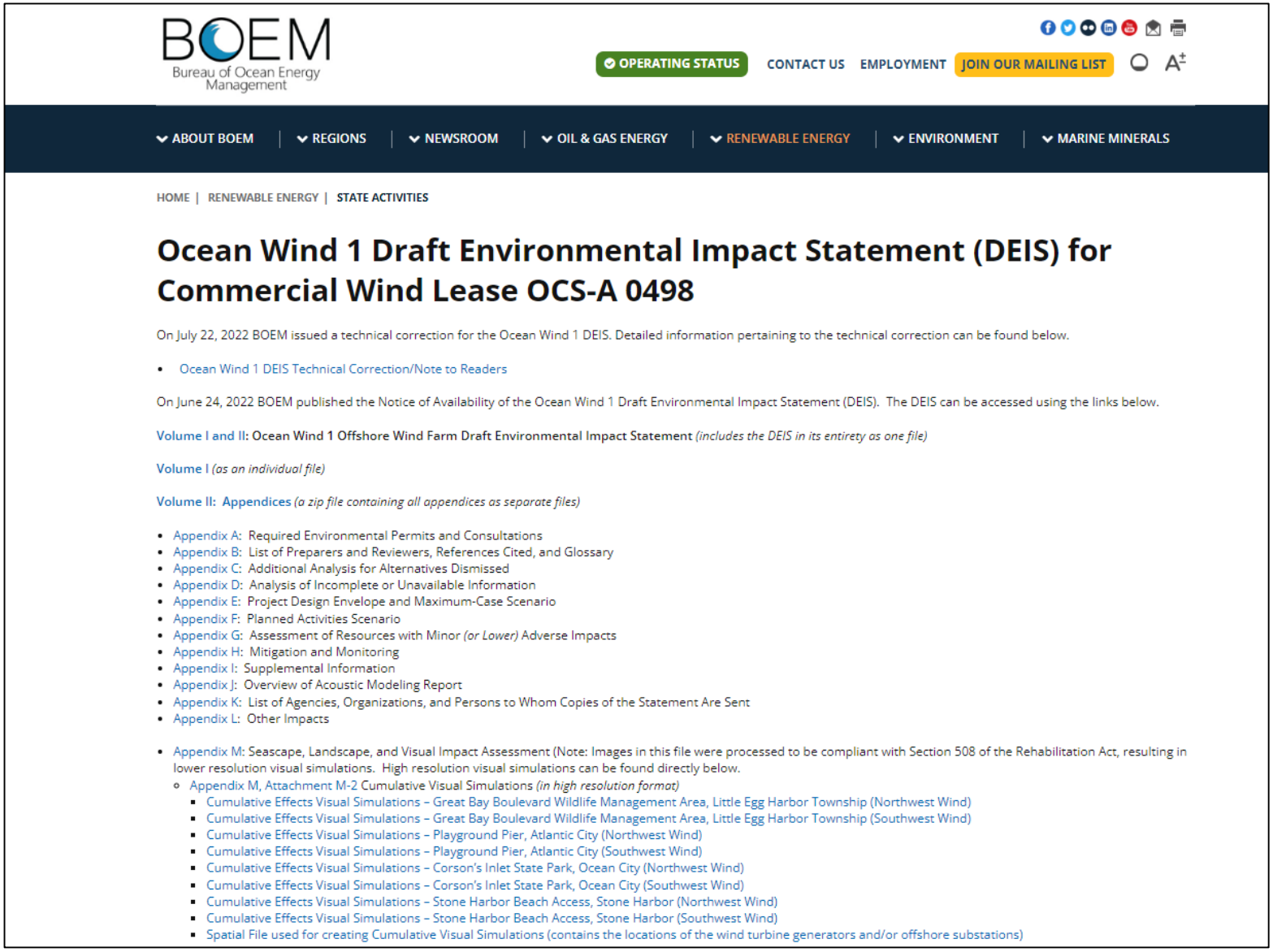
- Volume I: Project Information
- Volume II: Affected Environment
- Volume III: Appendices
  - Appendix A – Emergency Response Plan, Including Oil Spill Response Plan *(Confidential)*
  - Appendix B – Safety Management System *(Confidential)*
  - Appendix C – Certified Verification Agent Services *(Confidential)*
  - Appendix D – Marine Site Investigation Report *(Confidential)*
  - Appendix E – Biological Survey Results
  - Appendix F – Archaeology and Historic Properties Survey Report *(Confidential)*
    - F-1 Maritime Archaeological Resources Assessment (MARA) *(Confidential)*
    - F-2 Terrestrial Archaeological Resource Assessment (TARA) *(Confidential)*
    - F-3 Assessment of Visual Effects on Onshore Historic Properties *(Confidential)*
    - F-4 Historic Properties Treatment Plans
    - F-5 Terrestrial Unanticipated Discoveries Plan, Marine (Submerged) Unanticipated Discoveries Plan
  - Appendix G – Locations for Offshore Turbines and Substations
  - Appendix H – Assessment of the Potential Effects of the Ocean Wind Offshore Wind Farm on Birds and Bats
  - Appendix I – Atlantic Sturgeon Supplementary Material
  - Appendix J – Marine Mammal Supplementary Material
  - Appendix K – Sea Turtle Supplementary Material
  - Appendix L –
    - Appendix L-A
    - Appendix L-B
    - Appendix L-C
    - Appendix L-D
    - Appendix L-E
    - Appendix L-F
    - Appendix L-VIA
    - Time Lapse Video Simulation
    - Nighttime Aircraft Detection Lighting System (ADLS) Simulation
  - Appendix M (Part 1): Navigation Safety Risk Assessment
  - Appendix M (Part 2): Navigation Safety Risk Assessment
  - Appendix N – Air Quality Analysis *(Confidential)*
  - Appendix O – Fisheries Communication and Outreach Plan
  - Appendix P – Technical Information in Support of EFH Consultation
  - Appendix Q – Coastal Zone Consistency Assessment
  - Appendix R - Noise Supplementary Material
    - R-1 Over-air Noise Supplementary Material
    - R-2 Underwater Noise Supplementary Material
  - Appendix S – BOEM's Best Management Practices
  - Appendix T – Departure Requests *(Confidential)*
  - Appendix U – Conceptual Plans and Typical Design Drawings
  - Appendix V – Environmental Justice Supplementary Material
  - Appendix W – Metocean Monitoring Information
  - Appendix X – Munitions and Explosives of Concern (MEC) and Unexploded Ordnance (UXO) Supplemental Information *(Confidential)*



Ocean Wind 1 Project Map

Ocean Wind
An Ørsted Initiative

https://www.boem.gov/ocean-wind-1-construction-and-operations-plan



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Ocean Wind 1 Draft Environmental Impact Statement (DEIS) for Commercial Wind Lease OCS-A 0498

On July 22, 2022 BOEM issued a technical correction for the Ocean Wind 1 DEIS. Detailed information pertaining to the technical correction can be found below.

- Ocean Wind 1 DEIS Technical Correction/Note to Readers

On June 24, 2022 BOEM published the Notice of Availability of the Ocean Wind 1 Draft Environmental Impact Statement (DEIS). The DEIS can be accessed using the links below.

Volume I and II: **Ocean Wind 1 Offshore Wind Farm Draft Environmental Impact Statement** *(includes the DEIS in its entirety as one file)*

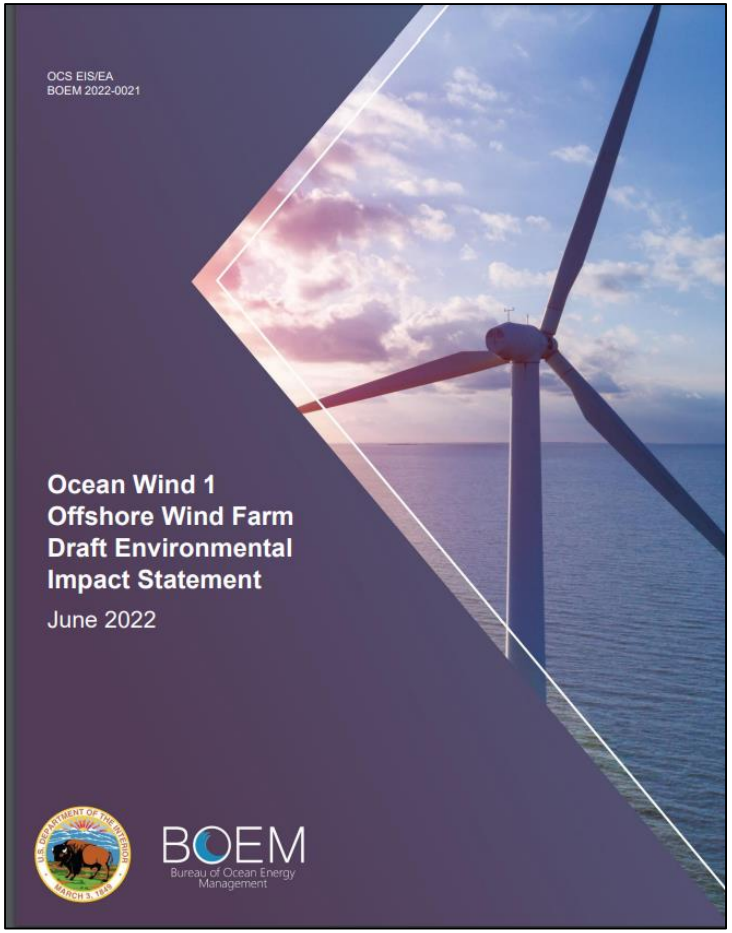
Volume I *(as an individual file)*

Volume II: Appendices *(a zip file containing all appendices as separate files)*

- Appendix A: Required Environmental Permits and Consultations
- Appendix B: List of Preparers and Reviewers, References Cited, and Glossary
- Appendix C: Additional Analysis for Alternatives Dismissed
- Appendix D: Analysis of Incomplete or Unavailable Information
- Appendix E: Project Design Envelope and Maximum-Case Scenario
- Appendix F: Planned Activities Scenario
- Appendix G: Assessment of Resources with Minor *(or Lower)* Adverse Impacts
- Appendix H: Mitigation and Monitoring
- Appendix I: Supplemental Information
- Appendix J: Overview of Acoustic Modeling Report
- Appendix K: List of Agencies, Organizations, and Persons to Whom Copies of the Statement Are Sent
- Appendix L: Other Impacts

- Appendix M: Seascape, Landscape, and Visual Impact Assessment (Note: Images in this file were processed to be compliant with Section 508 of the Rehabilitation Act, resulting in lower resolution visual simulations. High resolution visual simulations can be found directly below.
  - Appendix M, Attachment M-2 Cumulative Visual Simulations *(in high resolution format)*
    - Cumulative Effects Visual Simulations – Great Bay Boulevard Wildlife Management Area, Little Egg Harbor Township (Northwest Wind)
    - Cumulative Effects Visual Simulations – Great Bay Boulevard Wildlife Management Area, Little Egg Harbor Township (Southwest Wind)
    - Cumulative Effects Visual Simulations – Playground Pier, Atlantic City (Northwest Wind)
    - Cumulative Effects Visual Simulations – Playground Pier, Atlantic City (Southwest Wind)
    - Cumulative Effects Visual Simulations – Corson's Inlet State Park, Ocean City (Northwest Wind)
    - Cumulative Effects Visual Simulations – Corson's Inlet State Park, Ocean City (Southwest Wind)
    - Cumulative Effects Visual Simulations – Stone Harbor Beach Access, Stone Harbor (Northwest Wind)
    - Cumulative Effects Visual Simulations – Stone Harbor Beach Access, Stone Harbor (Southwest Wind)
    - Spatial File used for creating Cumulative Visual Simulations (contains the locations of the wind turbine generators and/or offshore substations)

https://www.boem.gov/renewable-energy/state-activities/ocean-wind-1-draft-environmental-impact-statement-deis-commercial



https://www.boem.gov/renewable-energy/state-activities/ocean-wind-1-draft-environmental-impact-statement-deis-commercial

ENVIRONMENTAL IMPACT STATEMENT FOR THE OCEAN WIND 1 OFFSHORE WIND FARM

DRAFT (X) FINAL ( )

Lead Agency: U.S. Department of the Interior, Bureau of Ocean Energy Management, Office of Renewable Energy Programs

Cooperating Federal Agencies: National Oceanic and Atmospheric Administration, National Marine Fisheries Service
U.S. Department of Defense
U.S. Department of Defense, U.S. Army Corps of Engineers
U.S. Department of Homeland Security, U.S. Coast Guard
U.S. Department of the Interior, Bureau of Safety and Environmental Enforcement
U.S. Environmental Protection Agency
U.S. Department of the Interior, U.S. Fish and Wildlife Service

Participating Federal Agencies: U.S. Department of the Interior, National Park Service

Cooperating State Agencies: New Jersey Department of Environmental Protection
New York State Department of State

Contact Person: Lisa Landers
National Environmental Policy Act Coordinator
Office of Renewable Energy Programs, Environment Branch for Renewable Energy
Bureau of Ocean Energy Management
Office (703) 787-1520
lisa.landers@boem.gov

Area: Area of Renewable Energy Lease Number OCS-A 0498

Date for Comments: August 8, 2022

Abstract:

This Draft Environmental Impact Statement (EIS) assesses the reasonably foreseeable impacts on physical, biological, socioeconomic, and cultural resources that could result from the construction and installation, operations and maintenance, and conceptual decommissioning of the Ocean Wind 1 Offshore Wind Farm (Project) proposed by Ocean Wind, LLC (Ocean Wind), in its Construction and Operations Plan (COP). The proposed Project described in the COP and this Draft EIS would be approximately 1,100 megawatts in scale and sited 15 miles (13 nautical miles) southeast of Atlantic City, New Jersey, within the area of Renewable Energy Lease Number OCS-A 0498 (Lease Area). The Project would serve demand for renewable energy in New Jersey. This Draft EIS was prepared in accordance with the requirements of the National Environmental Policy Act (42 United States Code 4321–4370f) and implementing regulations of the Council on Environmental Quality and the Department of the Interior. This Draft EIS will inform the Bureau of Ocean Energy Management's decision on whether to approve, approve with modifications, or disapprove the Project's COP. Publication of the Draft EIS initiates a 45-day public comment period, after which all the comments received will be assessed and considered by BOEM in preparation of a Final EIS.

Appendix A. Required Environmental Permits and Consultations

A.1. Required Environmental Permits

Table A-1 includes a summary of federal, state, and local permits or approvals that are required for Project implementation.

Table A-1 Required Environmental Permits and Consultations for the Proposed Project

Agency/Regulatory Authority	Permit/Approval	Status
Federal (Portions of the Project within Federal Jurisdiction)		
BOEM	COP Approval	COP filed with BOEM on August 15, 2019. Updates to the COP were submitted on March 13, 2020, September 24, 2020, March 24, 2021, November 16, 2021/December 10, 2021, and May 27, 2022.
BSEE	Oil Spill Response Plan	Planned
FAA	FAA Form 7460-1, Notice of Proposed Construction or Alteration (for Hazard to Air Navigation Determination)	Submitted in October 2020
NMFS	MMPA Section 101(a)(5) Letter of Authorization	Complete application received February 2022
USACE	CWA Section 404 and RHA Section 10 Individual Permit	Submitted in April 2022
USACE	Section 408	Submitted in April 2022
USCG	PATON authorization	Planned
USCG	Local Notice to Mariners per Ports and Waterways Safety Act	Planned
USEPA	CAA OCS Air Permit	Submitted in March 2022
State (Portions of the Project within State Jurisdiction)		
NJDEP, DLUR	Waterfront Development Permit and Coastal Consistency Determination	Planned
NJDEP, DLUR	Coastal Areas Facility Review Act Permit and Coastal Consistency Determination	Planned
NJDEP, DLUR	Coastal Wetlands Permit	Planned
NJDEP, DLUR	Flood Hazard Area Permit	Planned
NJDEP, DLUR	Freshwater Wetlands Permit	Planned
NJDEP, DLUR	Section 401 Water Quality Certification	Planned
NJDEP, Division of Water Quality	Stormwater Construction General Permit (5G3)	Planned
NJDEP, Division of Water Quality	Short Term De Minimis General Permit (B7)	Planned
NJDEP, Bureau of Water Allocation and Well Permitting	Temporary Dewatering Permit	Planned
NJDEP, Bureau of Tidelands Management	Tidelands License	Planned
NJDEP, Green Acres Program	Major Diversion of Parkland	Planned
NJDEP, Division of Parks and Forestry, Natural Heritage Program	New Jersey Endangered Species Conservation Act, threatened and endangered species consultation	Correspondence dated December 2021 will be included with the DLRP permits
NJDEP, New Jersey Historic Preservation Office	NHPA Act Section 106 Review and New Jersey Register of Historic Places Act	Ongoing BOEM coordination as part of NHPA Section 106 process. Historic and cultural resources assessment also part of the DLRP permits
NJDEP, Site Remediation and Waste Management Program	Linear Construction Project Notification	Planned
NJDEP, Division of Parks and Forestry	Consultations and approvals for activities on State Lands and Parks	State House Commission Initial Review of Lease Summary prepared by NJDEP
New Jersey Department of Transportation	Highway Occupancy Permit	Planned
New Jersey Pinelands Commission	Development Application	No development application required.
New Jersey Department of Community Affairs	Construction Permit	Planned
Local (Portions of the Project within Local Jurisdiction)		
Ocean County Soil Conservation District	Soil Erosion and Sediment Control Plan Certification	Planned
Cape Atlantic Soil Conservation District	Soil Erosion and Sediment Control Plan Certification	Planned
Atlantic County Division of Engineering	Utility Opening/Highway Occupancy Permit	Planned
Ocean County Engineering Department	Road Opening Permit	Planned
Municipal/county building and zoning permits and approvals	Lacey Township, Ocean Township, Ocean City, Upper Township, Ocean County, Atlantic County, Cape May County	Planned

CAA = Clean Air Act; DLRP = Division of Land Resource Protection; DLUR = Division of Land Use Regulation

https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Ocean-Wind1-DEIS-App-A-Required_Permits.pdf

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Ocean Wind 1 | Atlantic Shores | Ocean Wind 2 | Empire Wind | NJ Wind Port | NY Bight

Ocean Wind 1

Ørsted's Ocean Wind 1 lease area (OCS-A 0498) is located approximately 15 miles off New Jersey's coast. On June 21, 2019 the NJBPU announced that Ørsted's Ocean Wind 1 Project was awarded a solicitation for 1,100 MW offshore wind project. This 1,100 MW project has the potential to power nearly half a million homes in New Jersey.

Ocean Wind 1's Construction and Operations Plan (COP) was submitted to BOEM on August 15, 2019, with updated versions submitted on March 13, 2020, September 24, 2020, and March 24, 2021. BOEM will review the COP and approve, disapprove, or approve with modifications the proposed activities. On March 30, 2021, BOEM published a Notice of Intent to Prepare an Environmental Impact Statement for Ocean Wind 1. The Notice of Intent initiates a 30-day public comment period and triggers the beginning of the State's review process under a Federal Consistency review. On June 24, 2022, BOEM published a Notice of Availability (NOA) for the Ocean Wind 1 Draft Environmental Impact Statement (DEIS) which initiates a 45-day public comment period that ends on August 8, 2022. The Ocean Wind 1 DEIS can be viewed here. Ocean Wind 1 is targeting construction commencement for the first quarter of 2023, with commercial operations expected by the end of 2024.

More information on Ørsted's Ocean Wind 1 project.

More information on BOEM Lease area OCS-A 0498.

NJDEP Comments on Ocean Wind LLC's Notice of Intent to Prepare an Environmental Impact Statement.

NJDEP Comments on the Ocean Wind 1 Draft Environmental Impact Statement.

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Atlantic Shores selects Vestas as preferred turbine supplier for its 1.5 GW project in New Jersey, USA, powering over 700,000 homes.

https://www.atlanticshoreswind.com/

Atlantic Shores Offshore Wind

Construction and Operations Plan

Lease Area OCS-A 0499

Volume I: Project Information

Submitted to:

BOEM
Bureau of Ocean Energy Management

Submitted by:

ATLANTIC SHORES offshore wind

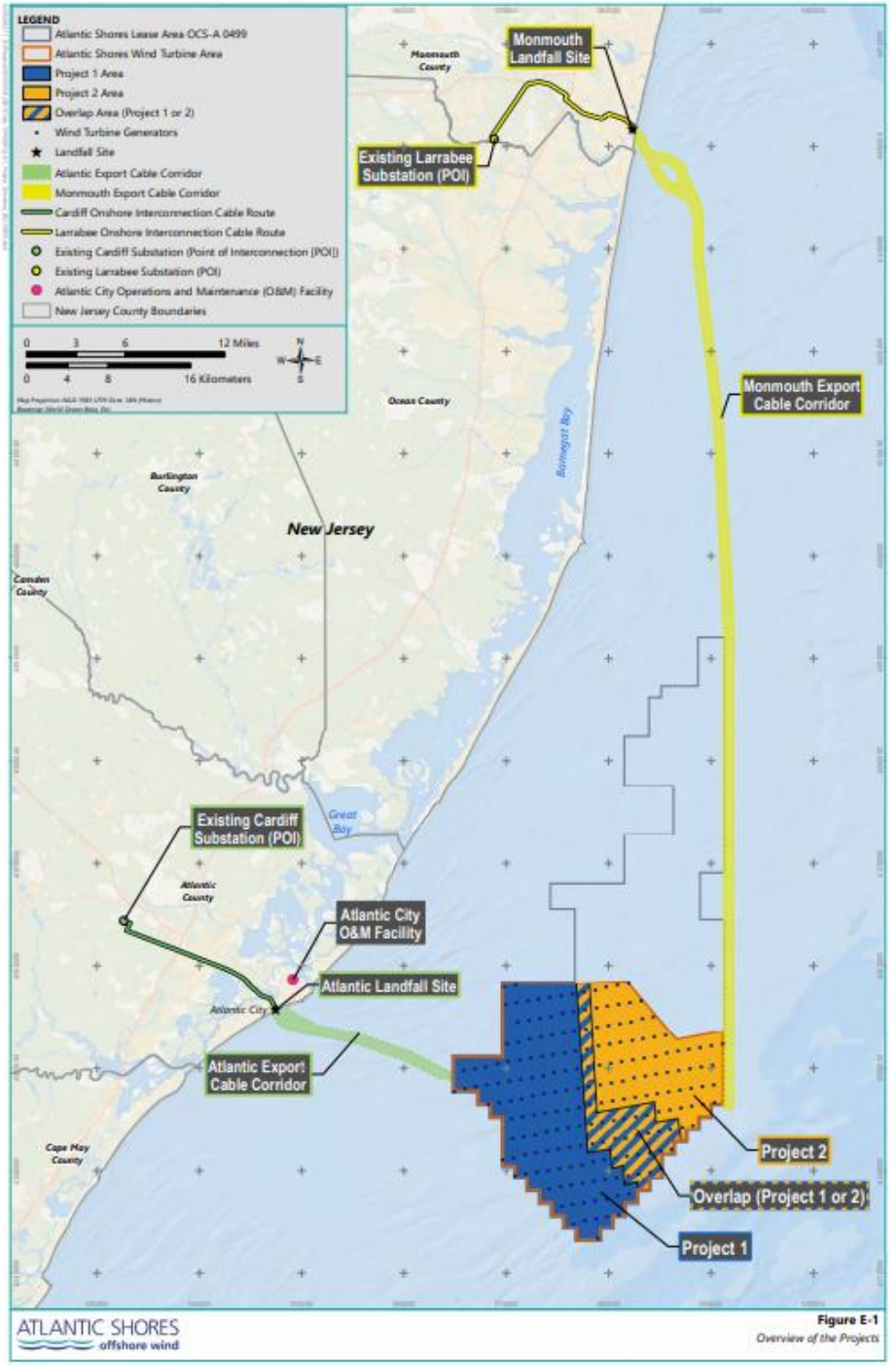
Prepared by:

EDR a better environment

Epsilon Associates Inc.

September 2021

https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Atlantic-Shores-COP-Volume-1-Project-Description.PDF



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Atlantic Shores Offshore Wind Construction and Operations Plan for Commercial Lease OCS (OCS-A 0499)

As a result of the June 30, 2021 New Jersey Board of Public Utilities (NJ BPU) Offshore Renewable Energy Certificate (OREC) award, ASOW updated Volume I (Project Information) of the COP in August 2021 to include two Projects. COP Volume II (Affected Environment) and applicable Appendices do not currently include this update and will be updated to reflect Projects 1 and 2 as part of a December 2021 COP revision.

Volume I – Project Information

- Volume I: Project Information
- Volume I with Associated Appendices

Volume II: Affected Environment

- Volume II: Affected Environment
- Volume II with Associated Appendices

Appendices (Volume I and Volume II)

- Appendix I-B: Engagement with Agencies, Tribes, Municipalities, and Other Stakeholders
- Appendix I-C: Coastal Zone Management Consistency Statement
- Appendix I-D: Draft Oil Spill Response Plan
- Appendix I-E: Draft HSSE Safety Management System
- Appendix II-A: Geology, Hazard, and G&G Reports
  - Appendix II-A1: Geophysical and Geohazard Report *(Confidential)*
  - Appendix II-A2: Atlantic Shores Offshore Wind Farm Geoscience-focused Desktop Study *(Confidential)*
  - Appendix II-A3: *(Confidential)*
    - Appendix II-A3a: Munitions and Explosives of Concern (MEC) Hazard Assessment *(Confidential)*
    - Appendix II-A3b: Munitions and Explosives of Concern (MEC) Risk Assessment with Risk Mitigation Strategy *(Confidential)*
  - Appendix II II-A4:
    - Appendix II-A4a: Natural Resources Conservation Service Mapped Soils Report – Cardiff Onshore Cable Route
    - Appendix II-A4b: Natural Resources Conservation Service Mapped Soils Report – Larrabee Onshore Cable Route
- Appendix II-B: Metocean Reports
  - Appendix II-B1: Metocean Analysis Report *(Confidential)*
  - Appendix II-B2: Metocean Design Basis (Redacted for Confidential Information)
- Appendix II-C: Air Emissions Calculation Methodology
- Appendix II-D: Wetlands and Waters Report
  - Appendix II-D1: Wetland and Stream Delineation Report – Cardiff
  - Appendix II-D2: Wetland and Stream Delineation Report - Larrabee
- Appendix II-E: Coastal and Terrestrial Habitat and Fauna Report
  - Appendix II-E1: Habitat Suitability Assessment Report - Cardiff
  - Appendix II-E2: Habitat Suitability Assessment Report - Larrabee
- Appendix II-F: Avian Appendix *(Expected December 2021 pursuant to the supplemental filing schedule)*
- Appendix II-G: Benthic Reports
  - Appendix II-G1: 2019 Benthic Assessment Report - Buoy Installation Areas and Sites of Interest
  - Appendix II-G2: 2020 Benthic Assessment Report

https://www.boem.gov/renewable-energy/state-activities/atlantic-shores-offshore-wind-construction-and-operations-plan

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Atlantic Shores

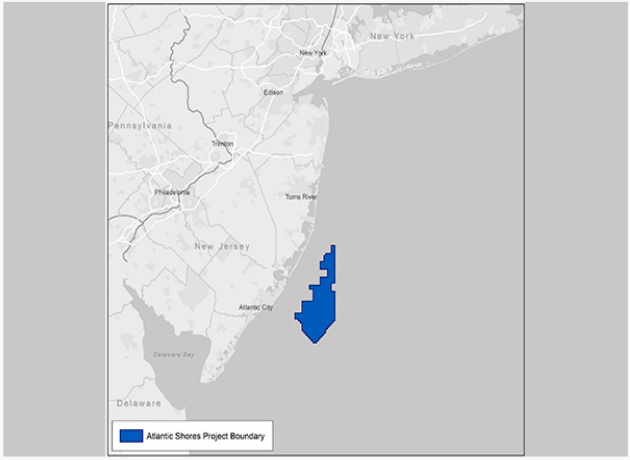
Atlantic Shores Offshore Wind, LLC is a 50:50 partnership between Shell New Energies US LLC and EDF Renewables North America. Atlantic Shores Offshore Wind proposes to develop a 183,353 acre lease area (OCS-0499) off the coast of New Jersey. Their lease area is approximately 10 miles off New Jerseys coast with the potential for turbines to be located between 10-20 miles offshore. Atlantic Shores has the potential to power nearly 1 million homes.

On April 8, 2021 BOEM approved Atlantic Shores Site Assessment Plan (SAP). On March 25, 2021, Atlantic Shores submitted their COP which is currently under review with BOEM. On June 30, 2021 the NJBPU awarded Atlantic Shores OREC's for their 1,509.6 MW Project. The wind turbines are expected to begin generating power in 2028.

More information on Atlantic Shores Offshore Wind project.

More information on BOEM Lease area OCS-A 0499.

NJDEP Comments on Notice of Intent to Prepare an Environmental Impact Statement for the Atlantic Shores Offshore Wind, LLC



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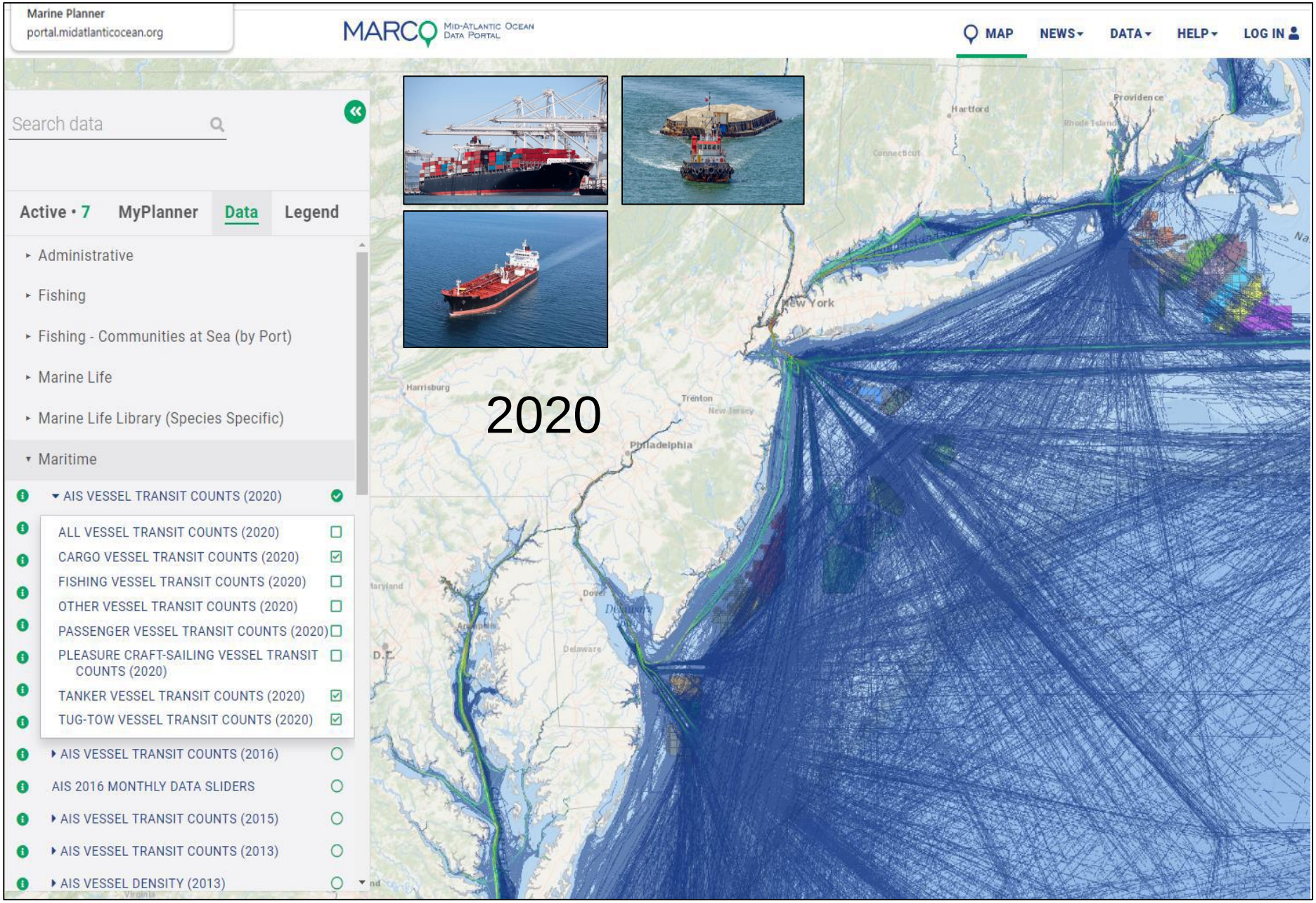

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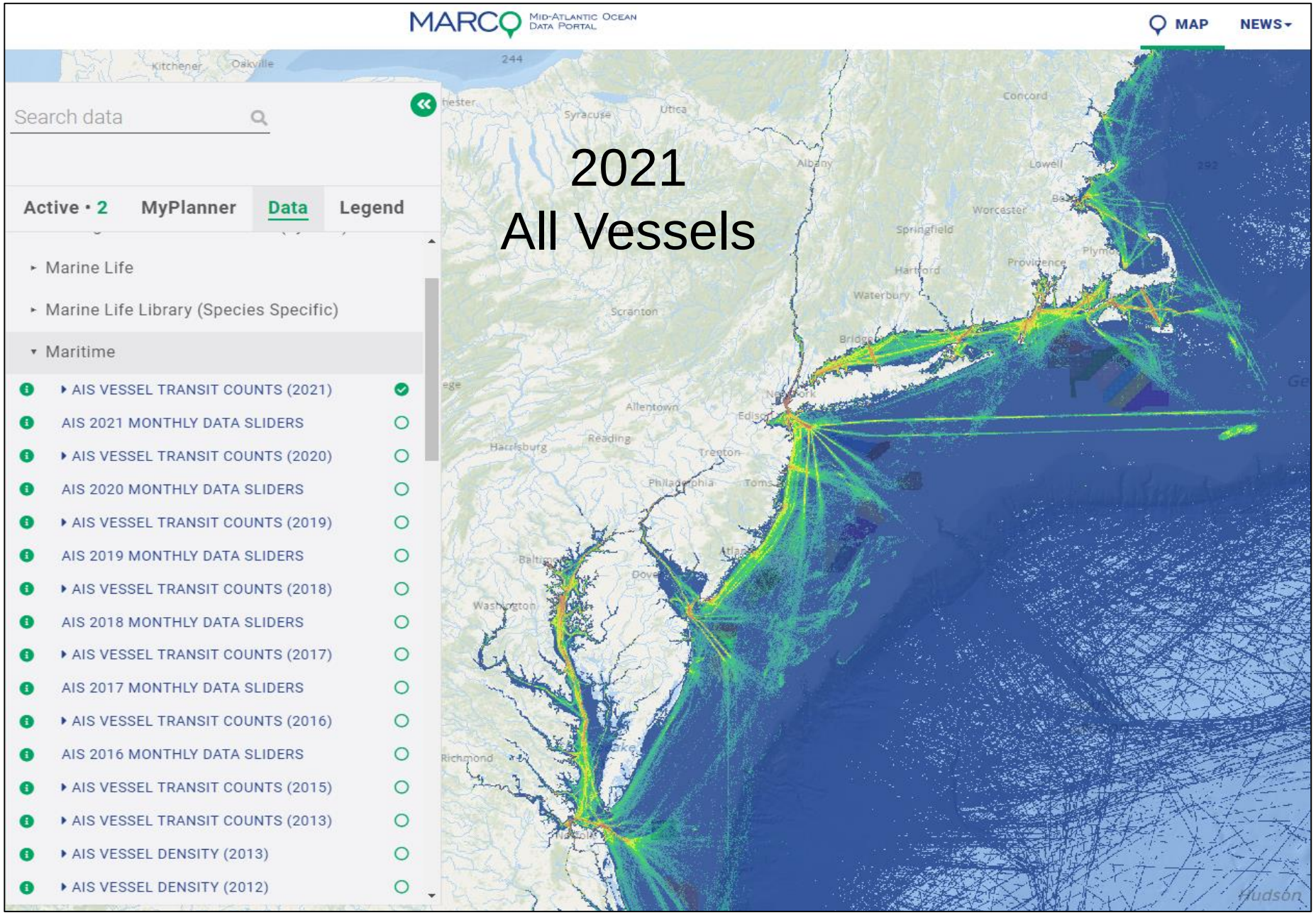

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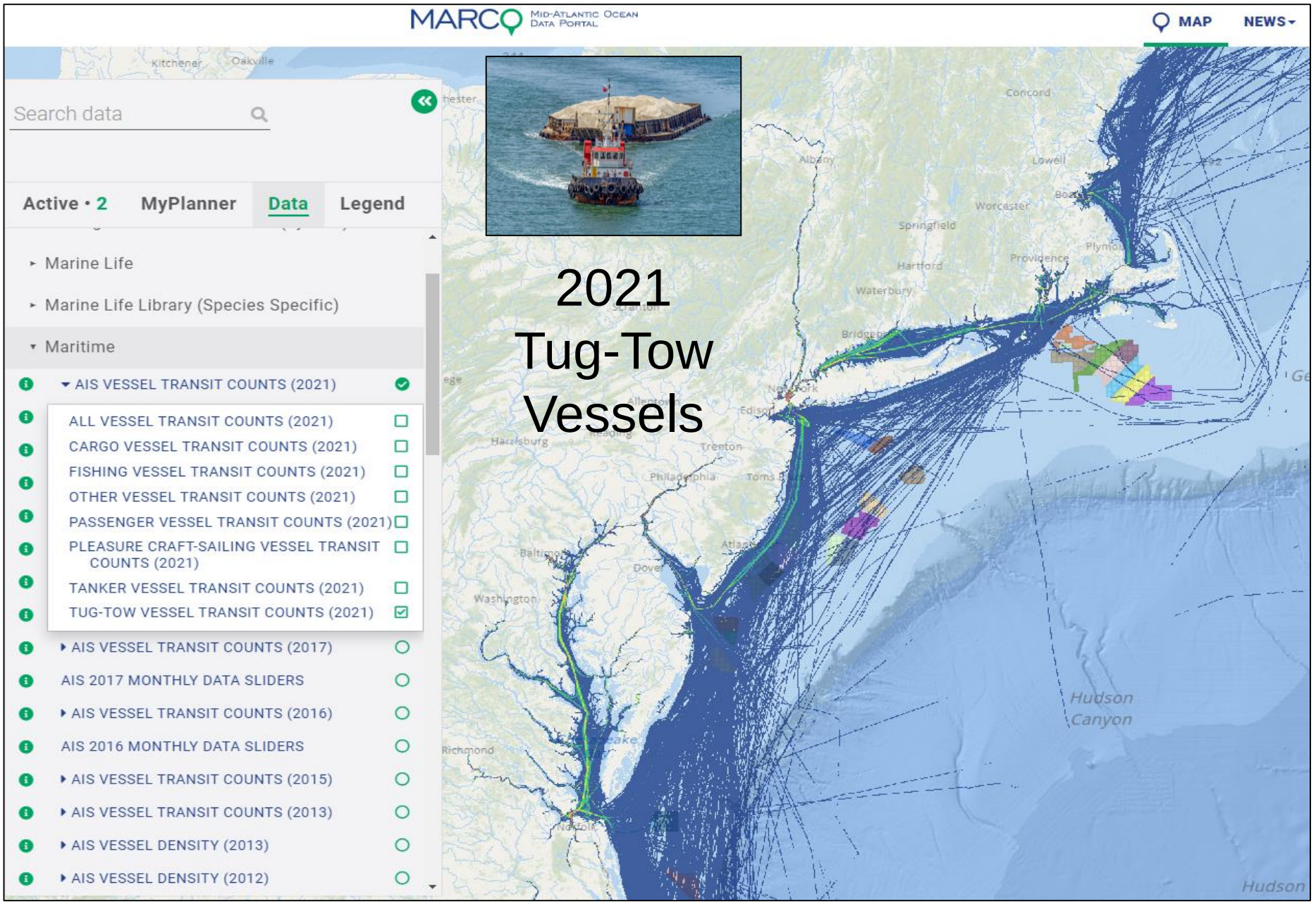

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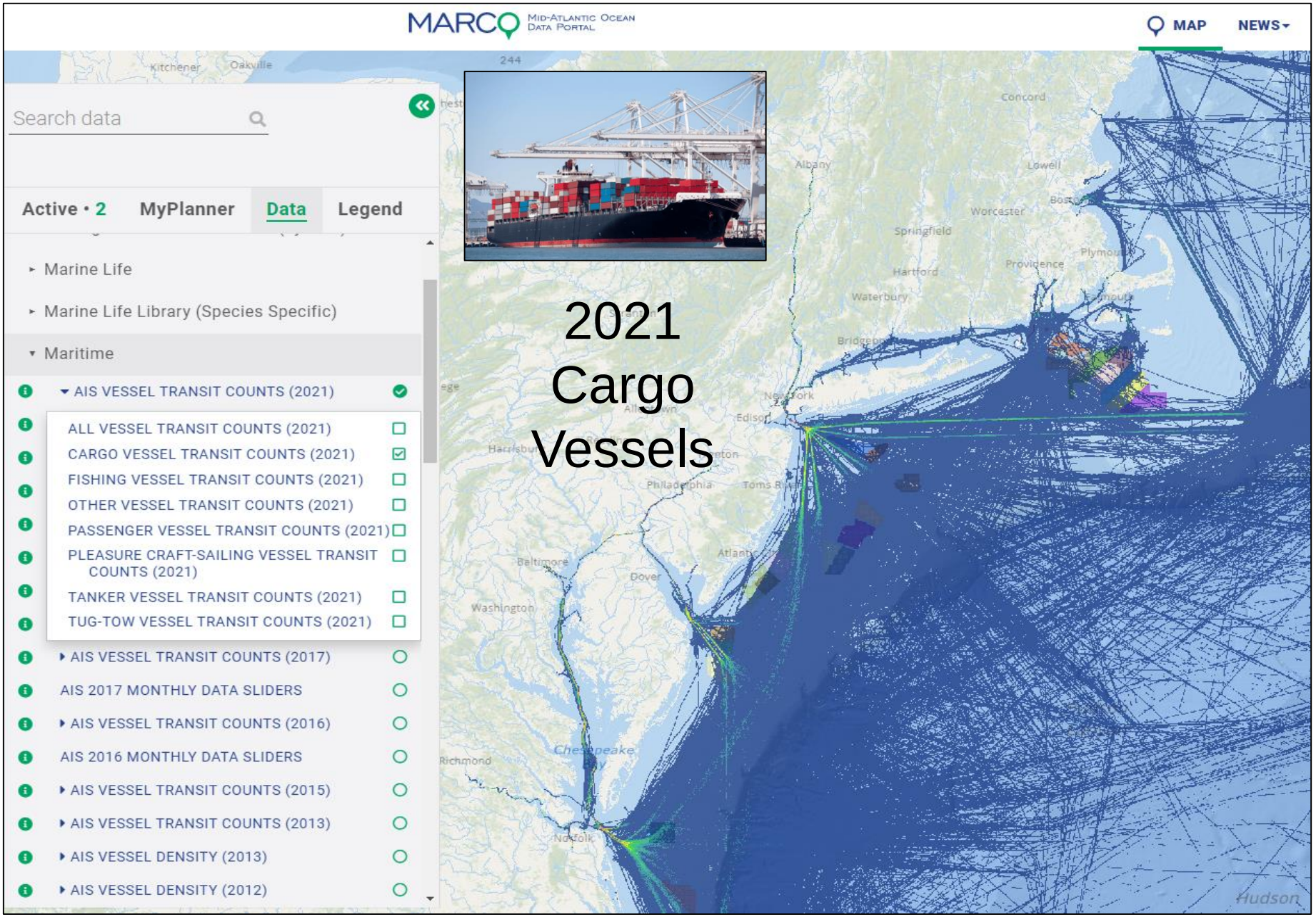

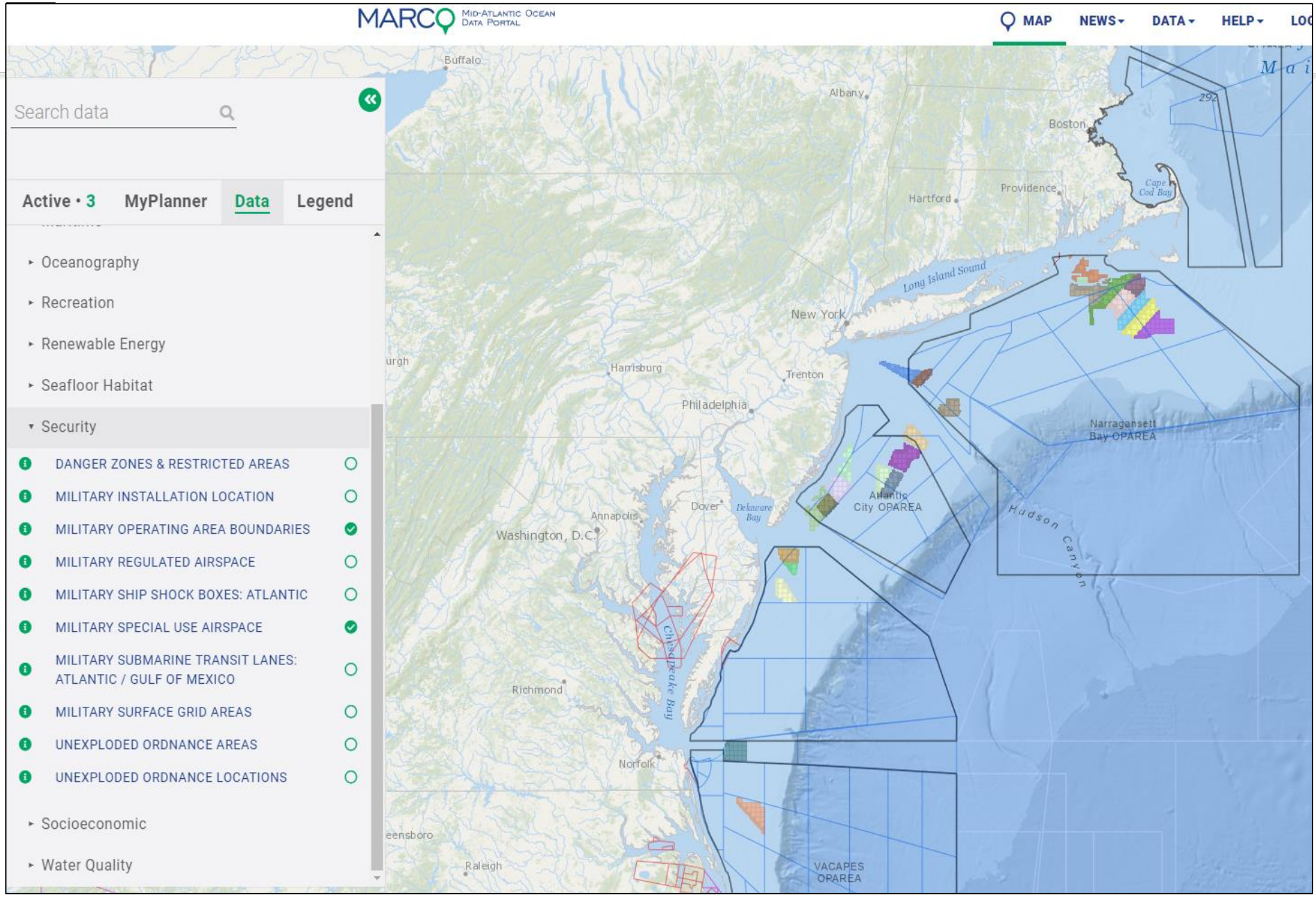

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New Jersey's Commercial Fisheries

Table 6. Sales, Income and Value-Added Impacts Generated by the U.S. Seafood Industry, 2018 (thousands of dollars)

State	Sales	Income	Value Added
U.S. Total	$165,063,417	$42,899,203	$67,058,135
California	$29,081,406	$6,135,840	$10,259,928
Florida	$19,200,443	$3,591,245	$6,422,185
Massachusetts	$16,047,420	$3,940,967	$6,131,820
New Jersey	$10,266,150	$2,109,011	$3,555,401
Washington	$8,333,266	$2,153,320	$3,317,018
New York	$6,708,367	$1,388,413	$2,329,948
Texas	$5,393,461	$1,317,551	$2,083,863
Alaska	$4,386,922	$1,945,289	$2,412,608
Maine	$3,268,748	$952,033	$1,426,818
Virginia	$3,239,457	$799,762	$1,248,196
Georgia	$3,049,051	$668,751	$1,105,417
Maryland	$2,518,497	$581,825	$927,821
Louisiana	$2,039,601	$750,091	$1,020,285
Oregon	$1,335,925	$456,662	$644,824
Rhode Island	$951,999	$232,939	$367,585
North Carolina	$862,164	$232,277	$351,716
Hawai'i	$776,205	$233,373	$343,554
Connecticut	$720,408	$147,447	$248,453
New Hampshire	$655,022	$165,382	$256,404
Alabama	$610,479	$236,815	$312,035
Mississippi	$316,859	$124,857	$161,775
South Carolina	$174,821	$49,626	$73,865
Delaware	$83,705	$16,436	$27,626

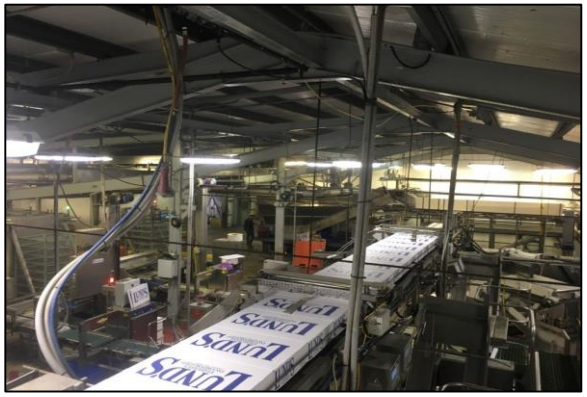
NOAA. 2021. Fisheries economics of the United States, 2018.
https://www.fisheries.noaa.gov/resource/document/fisheries-economics-united-states-report-2018

New Jersey's Commercial Fisheries

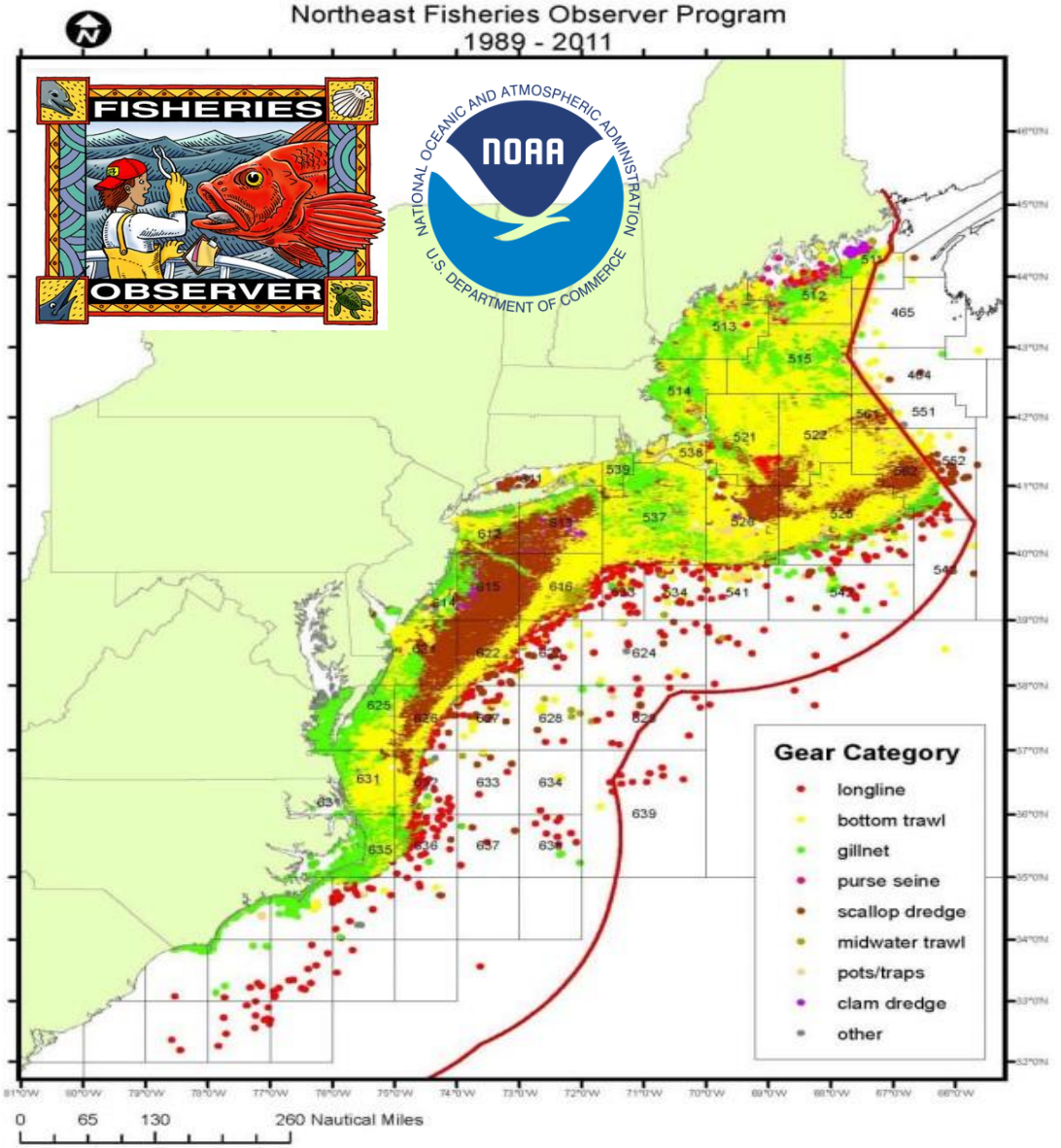
New Jersey's Commercial Fishing Ports

2018 Economic Impacts of the New Jersey Seafood Industry (millions of dollars)

	With Imports			
	#Jobs	Sales	Income	Value Added
Total Impacts	49,398	10,266	2,109	3,555
Commercial Harvesters	1,996	274	72	117
Seafood Processors & Dealers	1,575	171	65	85
Importers	24,930	8,068	1,293	2,459
Seafood Wholesalers & Distributors	4,061	760	244	332
Retail	16,835	993	435	562



NOAA. 2021. Fisheries economics of the United States, 2018.
https://www.fisheries.noaa.gov/resource/document/fisheries-economics-united-states-report-2018



https://www.fisheries.noaa.gov/new-england-mid-atlantic/fisheries-observers/fisheries-monitoring-operations-northeast

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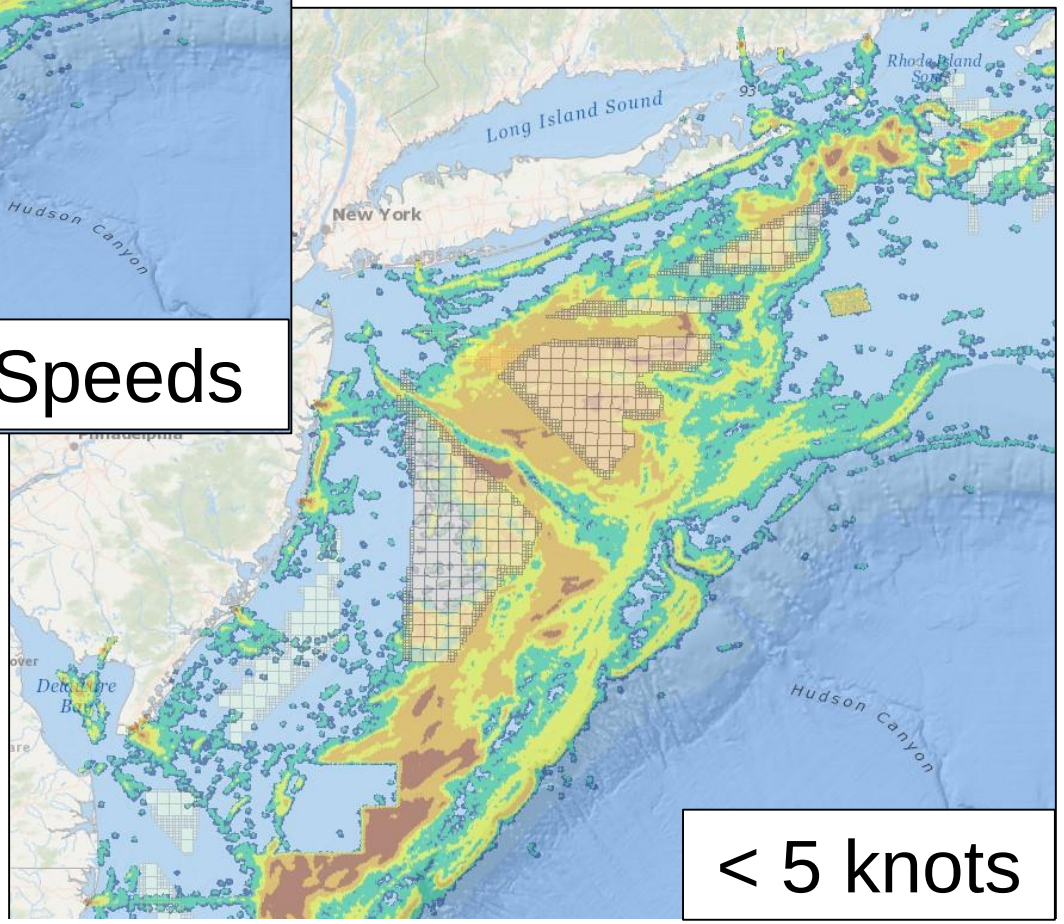

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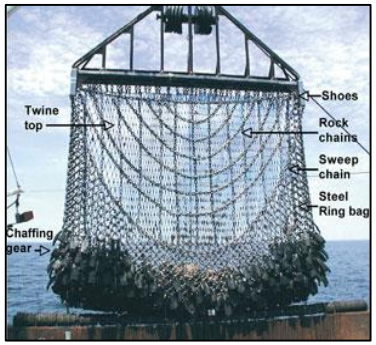

Commercial Sea Scallop Fishery – Vessel Monitoring System (VMS) – 2015-2016

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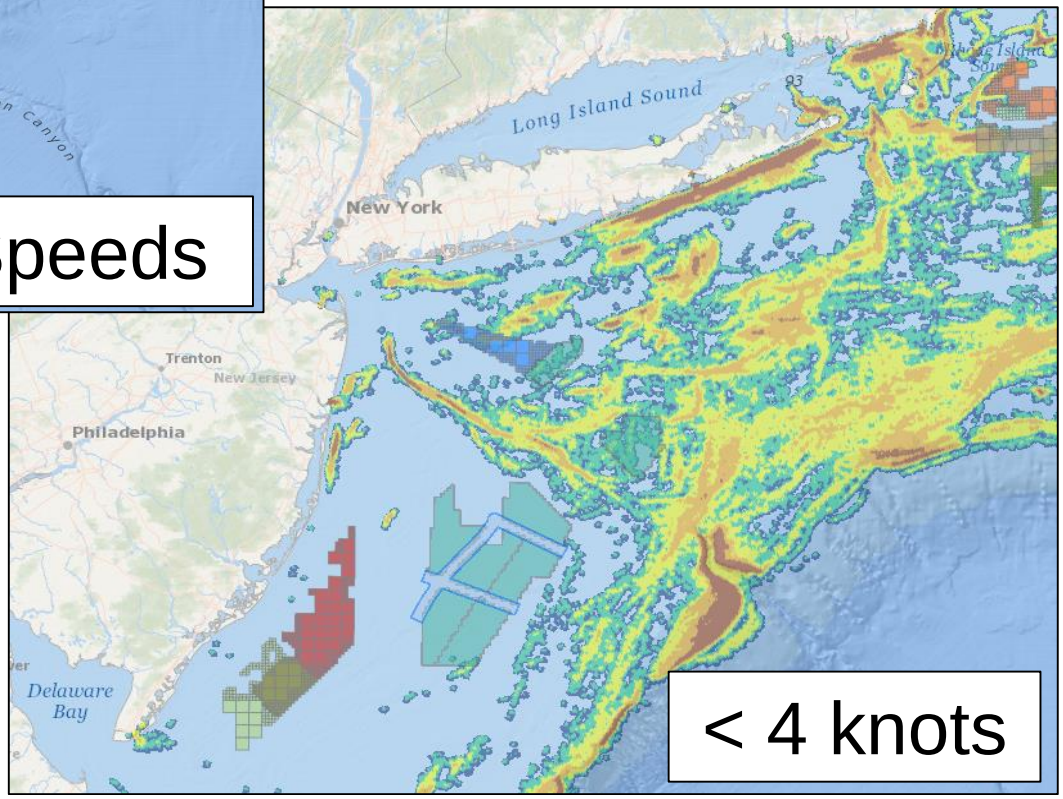
All Speeds



< 4 knots

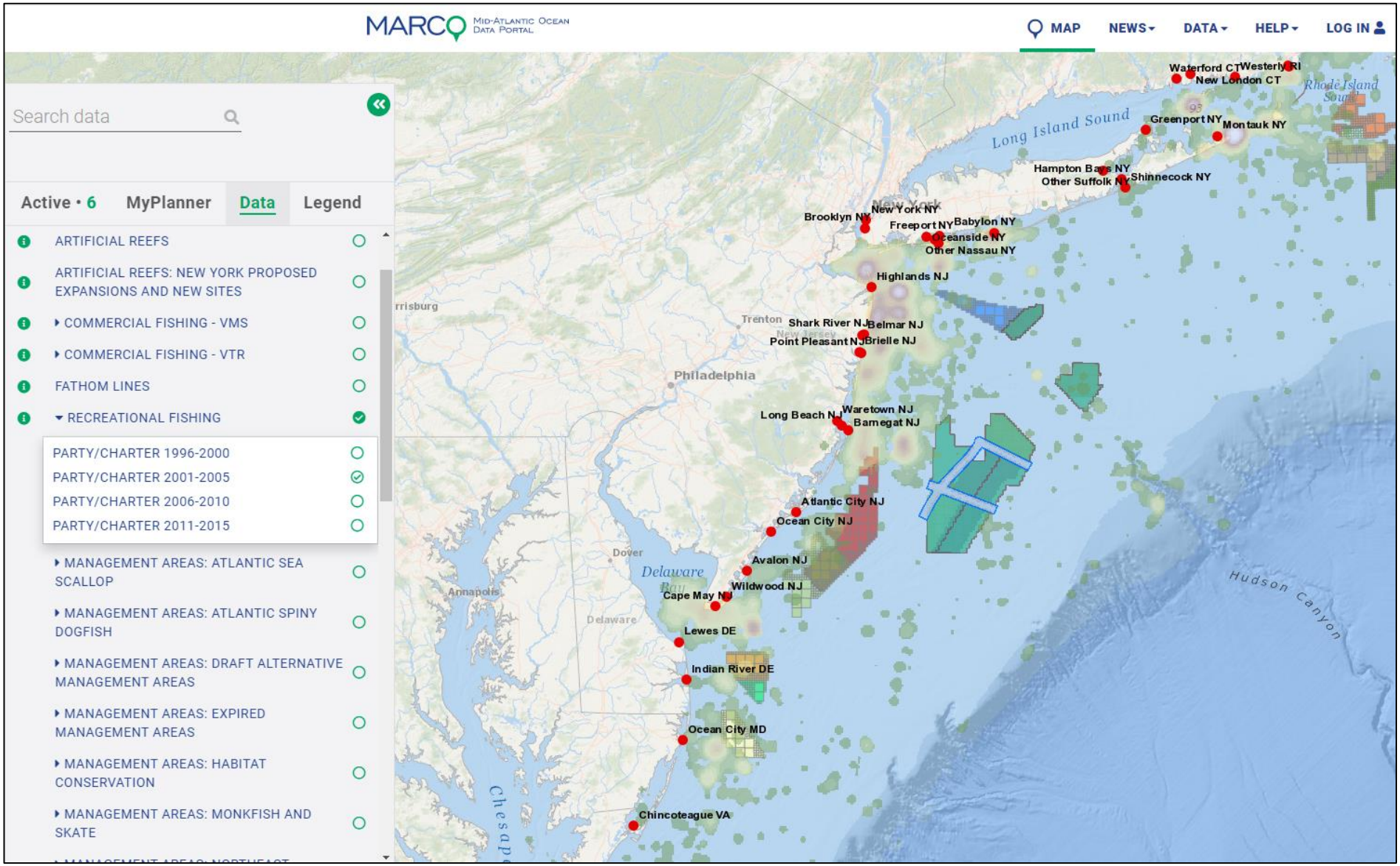
Squid – Bottom Trawl – Vessel Monitoring System (VMS) – 2015-2016

New Jersey's Recreational Fisheries

2018 Economic Impacts of New Jersey Recreational Fishing Expenditures (thousands of dollars)

		#Jobs	Sales	Income	Value Added
Trip Impacts by Fishing Mode	For-Hire	464	49,439	18,030	31,067
	Private Boat	1,891	322,462	127,590	204,737
	Shore	1,391	198,335	86,196	132,974
Total Durable Expenditures		10,649	1,329,984	582,861	902,905
Total State Economic Impacts		14,395	1,900,220	814,677	1,271,683

NOAA. 2021. Fisheries economics of the United States, 2018.
https://www.fisheries.noaa.gov/resource/document/fisheries-economics-united-states-report-2018



https://portal.midatlanticocean.org/

https://www.fisheries.noaa.gov/resource/data/socioeconomic-impacts-atlantic-offshore-wind-development

NOAA FISHERIES

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RESOURCES

Socioeconomic Impacts of Atlantic Offshore Wind Development

December 06, 2022

Reports summarizing previous fishing activity within each offshore wind lease area and approved project area.

Data | New England/Mid-Atlantic

NOAA Fisheries developed reports summarizing fishing activity from 2008-2021 within each offshore wind lease area and currently approved project area along the U.S. Atlantic Coast from Maine to North Carolina. Lease areas used for these reports reflect areas posted on the Bureau of Ocean Energy Management (BOEM) website as of August 19, 2022.

More Information

› Offshore Wind Energy Development in New England/Mid-Atlantic Waters

Report Contents

For commercial fishing trips in each lease area, these reports highlight annualized landings and revenue by species, gear type, fishery management plan, port, and state; individual vessel fishing revenue dependence within the area; small and large business count and associated revenue; fishing effort (count of vessels and trips) by species, fishery, and port; and area-based annual landings and revenue as a percentage of total regional values for each species and fishery. Party/charter vessel reports highlight annualized kept catch by species and management category (a proxy for fishery management plan), annualized revenue based on passenger fees and number of anglers per trip, annualized vessel and angler trips by port, and vessel/angler dependence upon operations in each lease area.

New Jersey

Atlantic Shores North (OCS-A-0549)

- Commercial
- Party/Charter

Atlantic Shores South (OCS-A-0499)

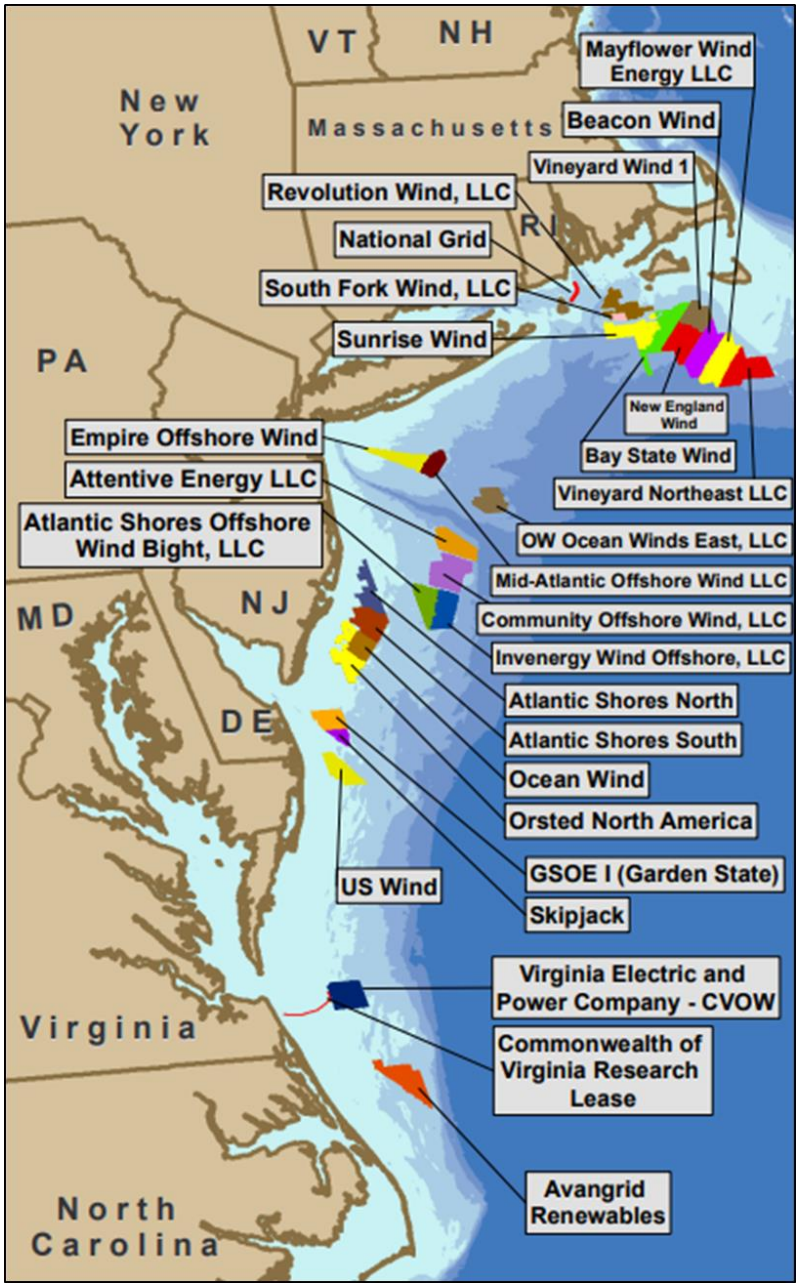
- Commercial
- Party/Charter

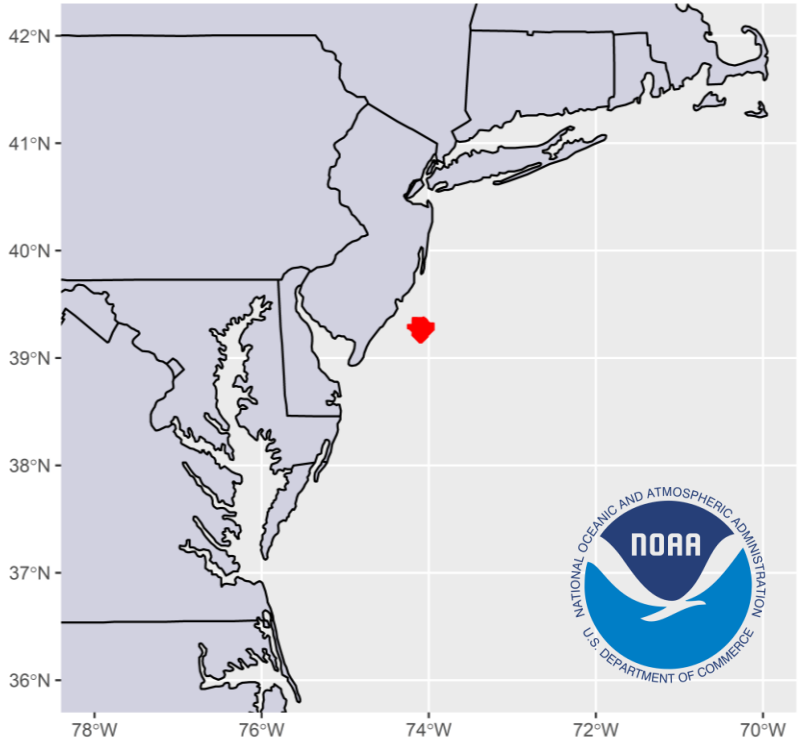
Ocean Wind (OCS-A-0498)

- Commercial
- Party/Charter

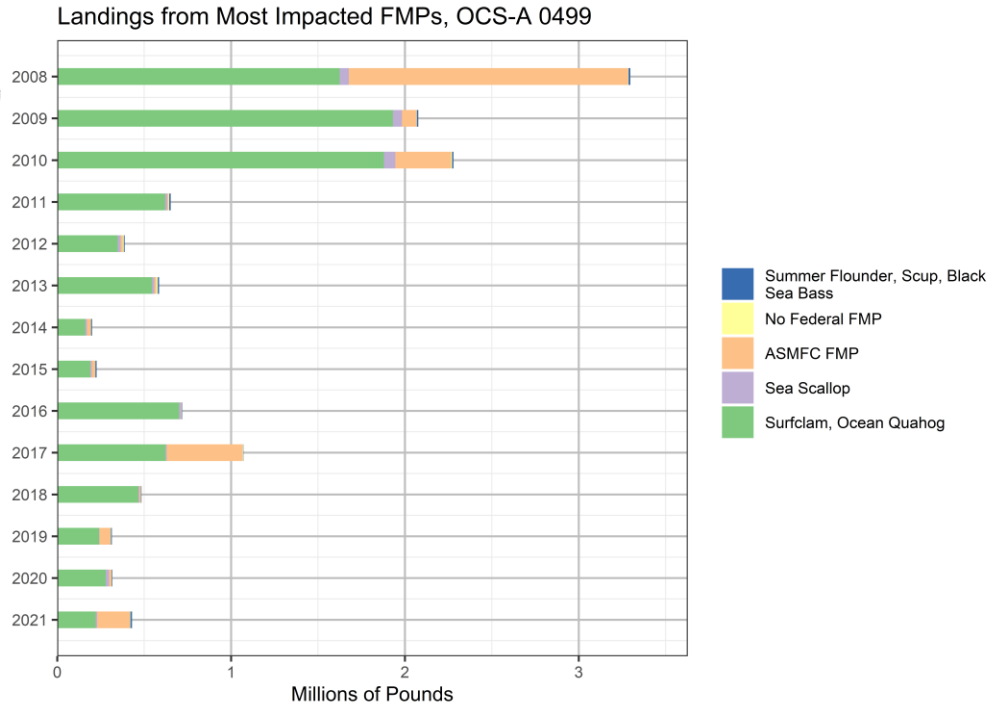
Ocean Wind 2 (OCS-A-0532)

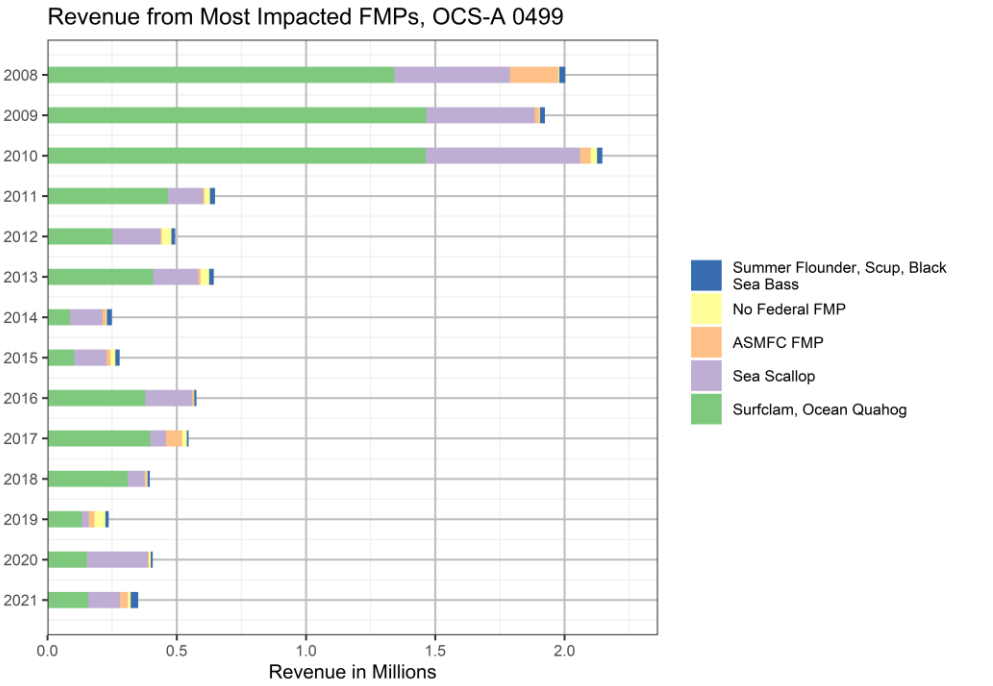
- Commercial
- Party/Charter





https://www.fisheries.noaa.gov/resource/data/socioeconomic-impacts-atlantic-offshore-wind-development





Potential Fisheries Impacts

- **Accessibility**: Before, during, and after construction
  - Placement and spacing of turbines and cables
  - During fishing activities and while transiting – *also, research surveys*.
  - Cumulative impacts
- **Ecosystem Impacts**: Influences on physical and biological processes
  - Ocean-atmosphere interactions, surface and bottom currents
  - Distribution, behavior, reproduction, and survival of marine fishery resources
- **Navigation and Safety**: During fishing activities and while transiting
  - Varying weather conditions, different user groups, radar impacts

THE

RESPONSIBLE OFFSHORE DEVELOPMENT ALLIANCE

Research Priorities 2022

The following list describes specific research recommendations gathered from the surveys, categorized by broad topic area.

1. BUSINESS, COMMUNITIES, & SOCIOECONOMICS
2. ENVIRONMENTAL IMPACTS
3. FISHING REGULATIONS AND MANAGEMENT IMPACTS
4. MONITORING AND REVIEW RECOMMENDATIONS
5. SAFETY
6. SUPPLY CHAIN
7. TRANSMISSION

RODA

https://rodafisheries.org/wp-content/uploads/2021/12/RODA-Research-Priorities_vDec1-1.pdf

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Bureau of Ocean Energy Management

UNITED STATES DEPARTMENT OF THE INTERIOR
Bureau of Ocean Energy Management
Office of Renewable Energy Programs

June 2019

Guidelines for Providing Information on Fisheries for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585

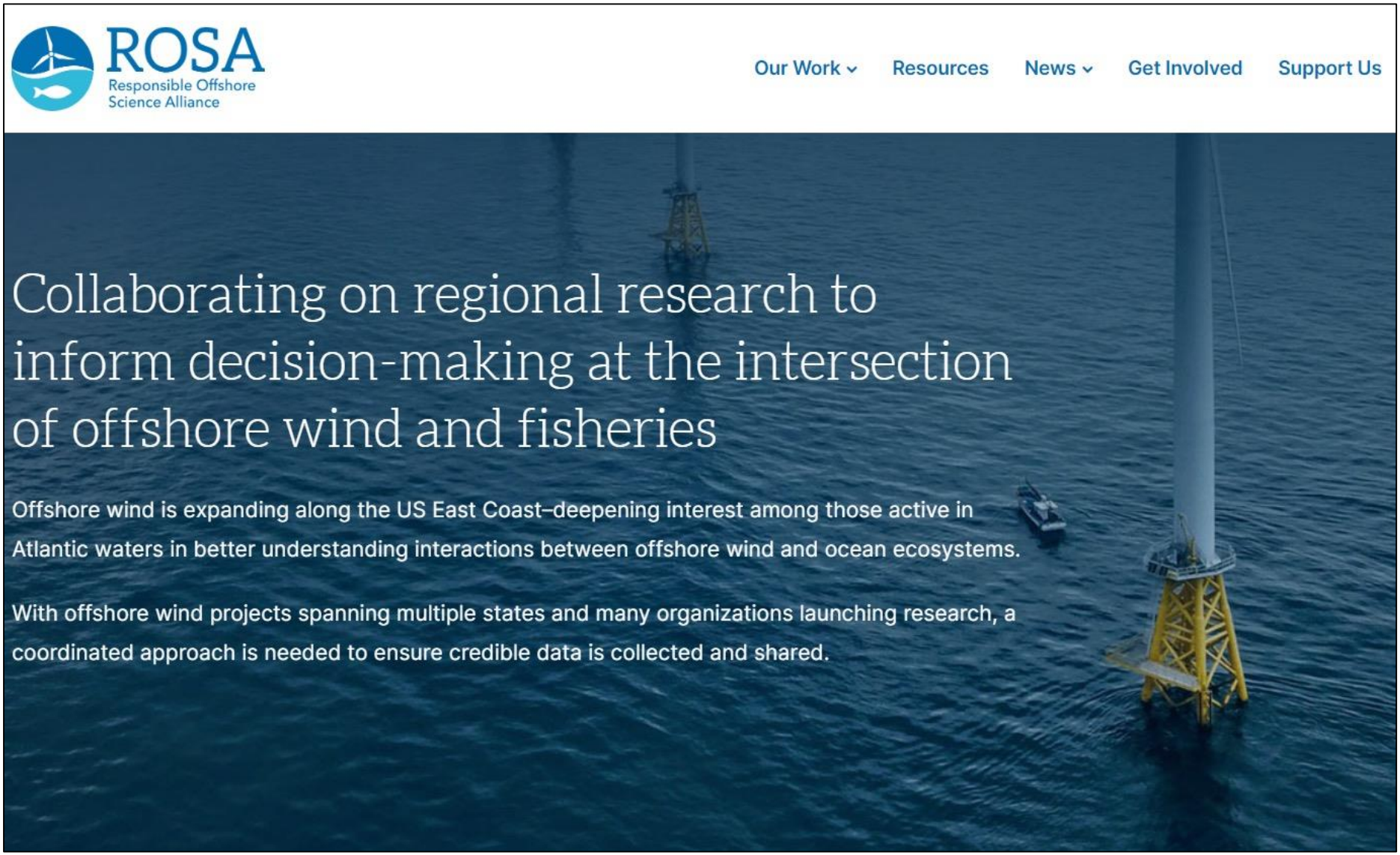
I. Guidance Document Statement

The Bureau of Ocean Energy Management (BOEM) issues guidance documents to clarify, supplement, and provide more detail about certain BOEM regulatory requirements and to outline the information required of the lessee to support their various submittals. This guidance document sets forth a policy and an interpretation of a regulatory requirement to provide a clear and consistent approach to complying with that requirement. A lessee may use an alternate approach for compliance; however, early and frequent coordination with BOEM will be especially critical to ensure the work conducted meets BOEM's regulatory requirements.

The overall purpose of the required information is to describe the key species and habitat within the survey area possibly affected by the proposed operations. The fisheries survey plan should aim to:

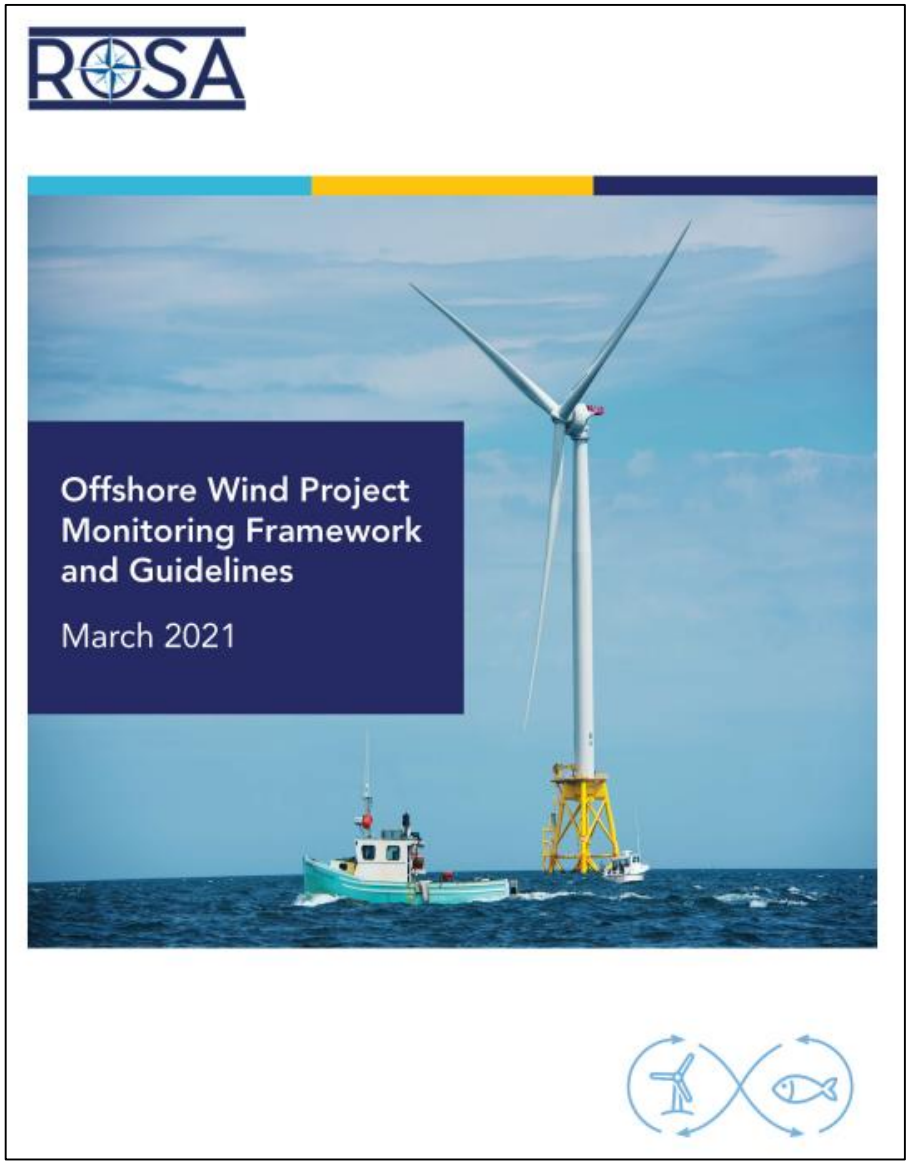
- Identify and confirm which dominant benthic, demersal, and pelagic species are using the project site, and when these species may be present where development is proposed;
- Establish a pre-construction baseline which may be used to assess whether detectable changes associated with proposed operations occurred in post-construction abundance and distribution of fisheries;
- Collect additional information aimed at reducing uncertainty associated with baseline estimates and/or to inform the interpretation of research results; and
- Develop an approach to quantify any substantial changes in the distribution and abundance of fisheries associated with proposed operations.

https://www.boem.gov/sites/default/files/renewable-energy-program/Regulatory-Information/BOEM-Fishery-Guidelines.pdf



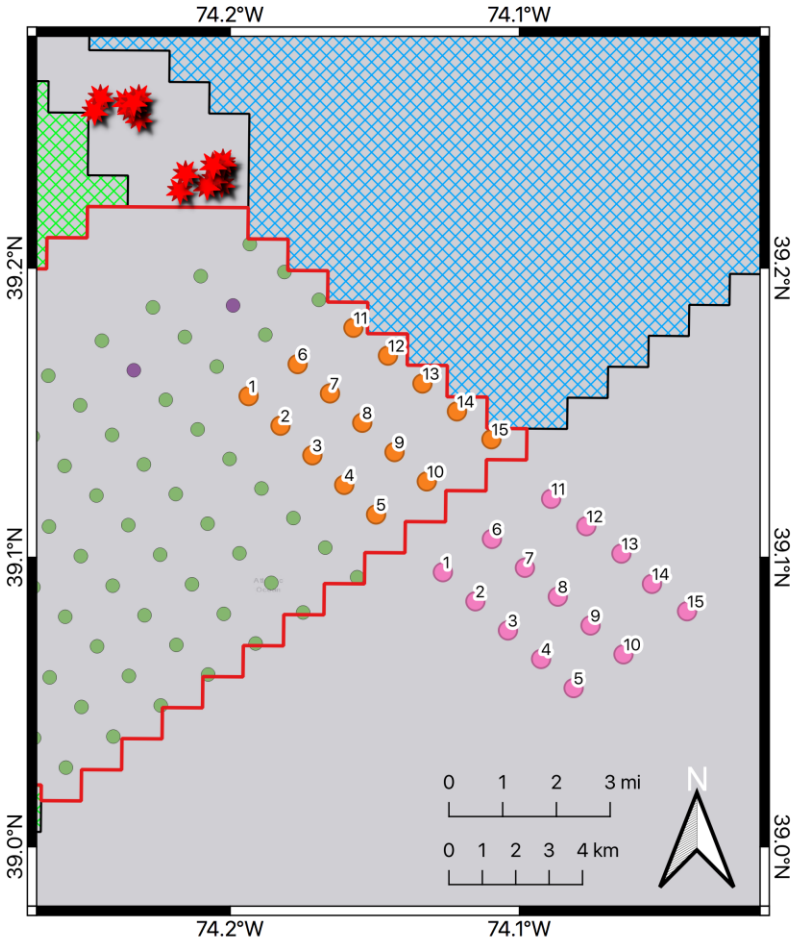
https://www.rosascience.org/

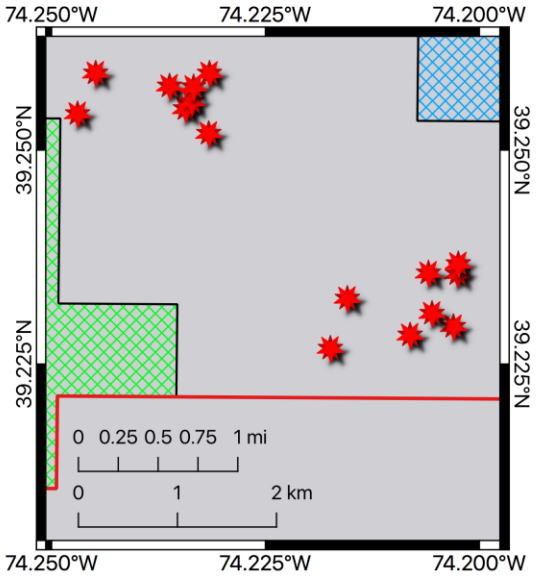
Figure 1: Integrated Monitoring Approach

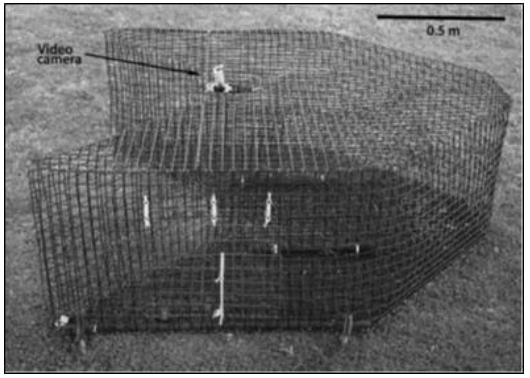


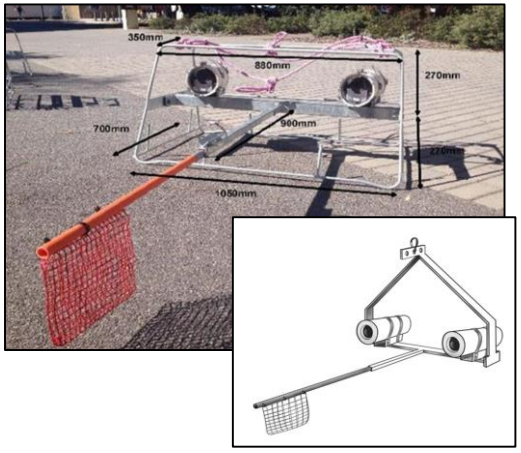
https://4d715fff-7bce-4957-b10b-aead478f74f6.filesusr.com/ugd/99421e_b8932042e6e140ee84c5f8531c2530ab.pdf

Ocean Wind 1 – Fisheries Monitoring Plan

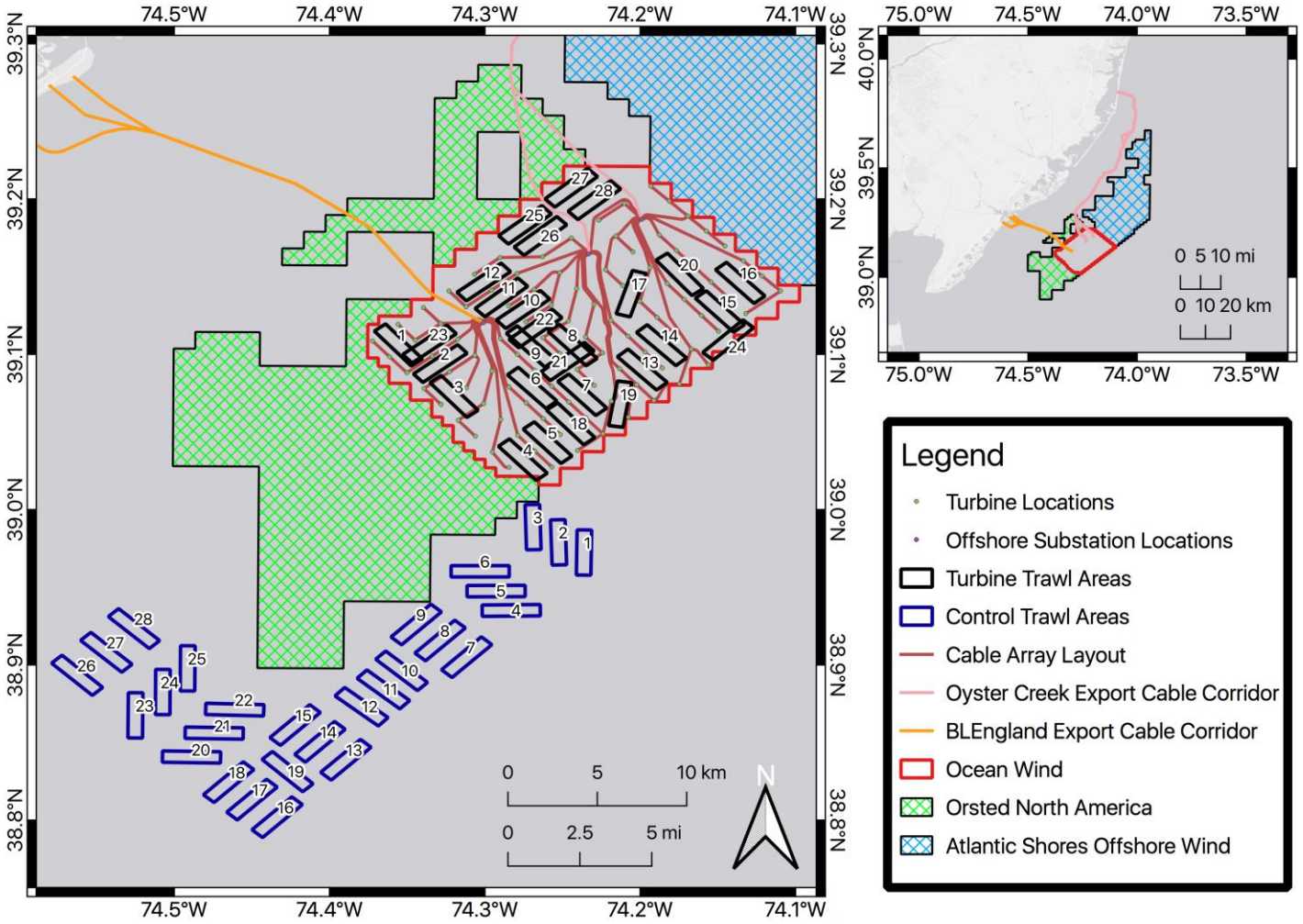








Ocean Wind 1 – Fisheries Monitoring Plan



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Rutgers Offshore Wind Living Resource Studies

Turbine Photo credit: Ørsted

What's happening?

Rutgers University scientists are working to understand and document how offshore wind-powered turbines affect marine animals through changes to their habitat. Data collection for these studies spans many techniques due to the variety of sizes and habits of marine animals.

What is the approach?

Studies start before wind farm development begins and continues during and after installation for several years. Data collection in an area where a wind farm will be developed is matched by collection in a similar area where development is not happening for comparison. This is because animal communities can change for many reasons aside from wind farm development. The sampling approach allows for some effects to be teased out.

Change to the water environment is the first order driver of changes to habitat use. Enormous forces such as storms and hurricanes, currents from neighboring regions, river discharge off land, atmospheric heating and cooling, already naturally change animal distributions daily, seasonally, and yearly. Harvest can also cause huge changes to marine animal populations from shellfish to whales. Many smaller changes can layer onto this. Rutgers projects are structured to address 5 major processes that wind farms could change with an impact on living resources. These resolve into 5 hypotheses that can be tested:

1. Wind turbine placement could change fishing practices, fish harvest, and therefore fish communities.
2. Wind farm turbines form artificial reefs that could change predator-prey relationships, food habits, and fish community structure.
3. Wind turbines could mix surface and deeper water (layering or "stratification") with consequences to food production.
4. The electromagnetic flux of buried cables that bring power to shore might attract or hinder fish crossing and change migration or movement patterns.
5. Energy use from wind farms instead of fossil fuels could slow or reverse climate change, which already is having a strong effect on marine communities off New Jersey.

https://rowlrs.marine.rutgers.edu/

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Reducing or Avoiding Impacts of Offshore Wind Energy on Fisheries

Draft Fisheries Mitigation Guidance | RFI on Fisheries Mitigation Guidance

Draft Fisheries Mitigation Guidance

BOEM, in consultation with the National Marine Fisheries Service (NMFS) and affected coastal states, held virtual public meetings to discuss draft guidance for ways to mitigate impacts from offshore wind projects on commercial and recreational fisheries and fishing. The guidance was developed based on public input received in late 2021.

The Draft Fisheries Mitigation Guidance was shared with the public for review and input for a 60-day comment period, which closed on Aug. 22, 2022. Comments can be viewed here: https://www.regulations.gov/docket/BOEM-2022-0033. Guidelines developed through this process may be updated periodically based upon public feedback and evaluation by BOEM staff.

- Public meetings Summary (July 11 East Coast Meeting, July 15 West Coast Meeting, July 18 Gulf Coast Meeting, July 21 Developers Meeting)

The workshops primarily engaged commercial and recreational fishermen on the West Coast, the Gulf, and the Atlantic Coast, as well as developers. However, the meetings were open to the general public to participate.

Resources

- Fisheries Mitigation Meeting Presentation
- Fisheries Mitigation Recording
- Draft Fisheries Mitigation Guidance
- Appendix A. Data and Methodology for Developing Revenue Exposure Estimates in the Northeast Atlantic
- Overview – Guidance for Mitigating Impacts to Commercial and Recreational Fisheries from Offshore Wind Energy Development

https://www.boem.gov/renewable-energy/reducing-or-avoiding-impacts-offshore-wind-energy-fisheries

Oceanography
THE OFFICIAL MAGAZINE OF
THE OCEANOGRAPHY SOCIETY

Volume 33 | Number 4 | December 2020

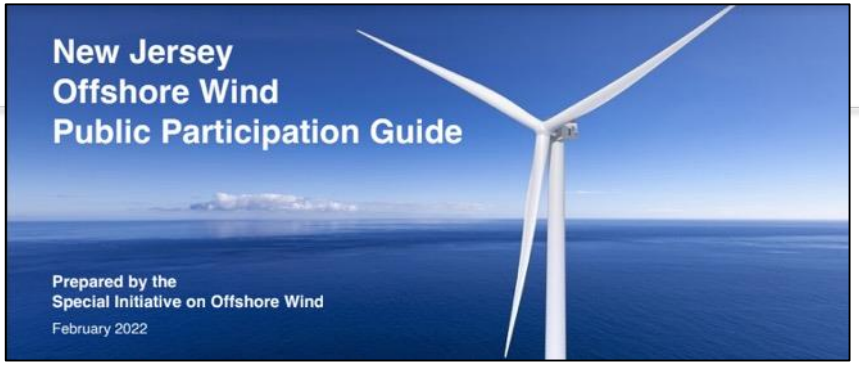
Special Issue on Understanding the Effects of Offshore Wind Energy Development on Fisheries

On the Cover: Constructed in 2015–2016, Block Island Wind Farm off the coast of Rhode Island was the first commercial offshore wind farm in the United States. It provided an opportunity to begin to understand the potential effects of such development on coastal resources in the US Atlantic, a focus of several articles in this special issue. *Photo credit: Ørsted*

Cover PDF

SPECIAL ISSUE FEATURES

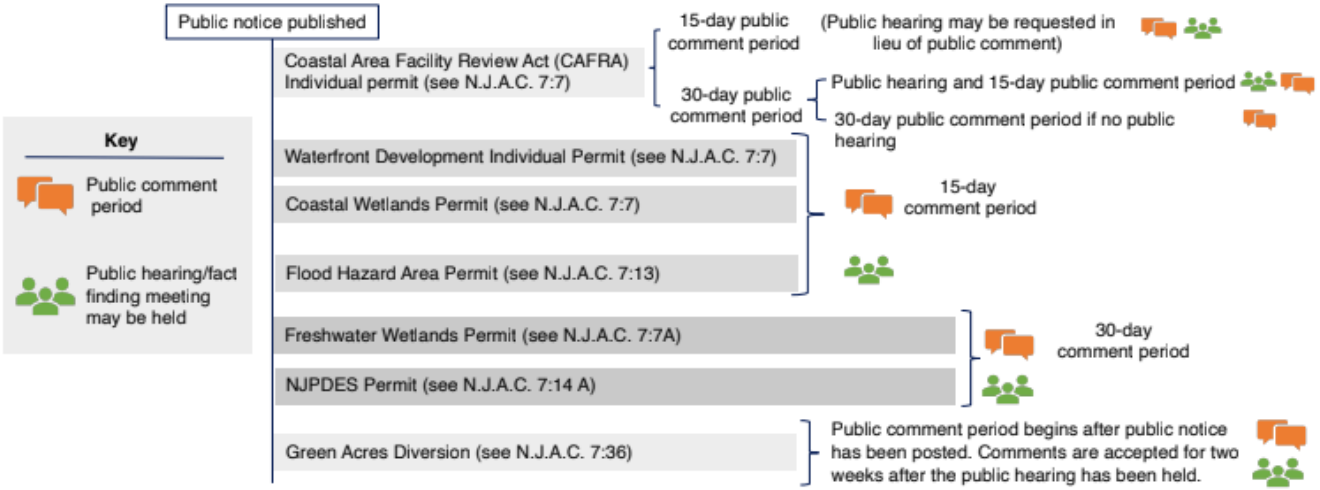
https://tos.org/oceanography/issue/volume-33-issue-4



State Permits and Approvals

The following permits or approvals only apply if a portion of an offshore wind project, such as an export cable, falls within state lands or jurisdictional waters. Each approval and permit serves a different purpose in ensuring the conservation of New Jersey's natural resources for the benefit of the people of New Jersey. It is at the discretion of the offshore wind developer as to the timing of submitting the applications for these permits and approvals as they must navigate both federal and state processes while weighing other projects considerations.

Following the submission of an application, the DEP will publish a public notice that the application is available for public review in the NJDEP Bulletin. The date of this publication typically commences a public comment period. The length of the comment period generally varies from 15 to 30 days, depending on the permit or approval. For some permits or certifications, a public hearing or fact-finding meeting may be held by the DEP or may be requested during the public comment period.



Public Comment Period: Allows interested parties, including the public, opportunities to provide formal written comments on permits, certifications, and other state regulatory actions for proposed offshore wind development projects. Comments are accepted via email or by mail and in some cases written requests for a public hearing may be accepted. See NJ Bulletin for notice of public comment periods.

Public Hearing/Fact Finding Meeting: Allows the state regulatory agency to engage in additional fact-finding meetings and opportunities for interested parties, including the public, to provide oral comments and voice concerns regarding proposed activities. A public hearing may be requested during the formal comment period in writing. See NJ Bulletin for notices of public hearings.

https://dep.nj.gov/wp-content/uploads/offshorewind/nj-offshore-wind-public-participation-guide.pdf

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NJ Climate Change Alliance

Opportunities for Public Participation in Offshore Wind Planning in New Jersey

February 2020

Prepared for the New Jersey Climate Change Alliance

Matthew Campo, Senior Research Specialist, Environmental Analysis & Communications Group, Rutgers, The State University of New Jersey; and Carolyn Iwicki, Rutgers University PhD candidate Ecology and Evolution

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This guide provides New Jersey citizens with background information regarding the developing offshore wind energy sector, how to be engaged in that process, and links to additional resources.

WHAT IS OFFSHORE WIND ENERGY?

Offshore wind energy is a form of renewable energy produced when wind and air currents are captured out at sea and converted into electricity. According to the US Energy Information Administration in 2018, natural gas and nuclear power together provided 94% of New Jersey's utility-scale electricity net generation (https://www.eia.gov/state/?sid=NJ). Several companies will soon begin to construct wind turbines in the ocean off of New Jersey to meet New Jersey's energy goal of 7,500 megawatts of offshore wind energy generation by the year 2035.

Offshore wind turbines look like enormous fans, with long blades that spin on top of a tower. The tower can float in the ocean, or developers can attach the tower to the ocean floor. As the wind passes through the turbine blades, the rotation creates the power that will get distributed onshore to NJ for use by residents, businesses, and others in the region.

https://njadapt.rutgers.edu/docman-lister/resource-pdfs/207-opportunities-for-public-participation-in-offshore-wind-planning-in-new-jersey/file

https://www.boem.gov/sites/default/files/renewable-energy-program/KW-CG-Broch.pdf

Questions?

Teaching Evaluation Feedback?

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• Rutgers Cooperative Extension