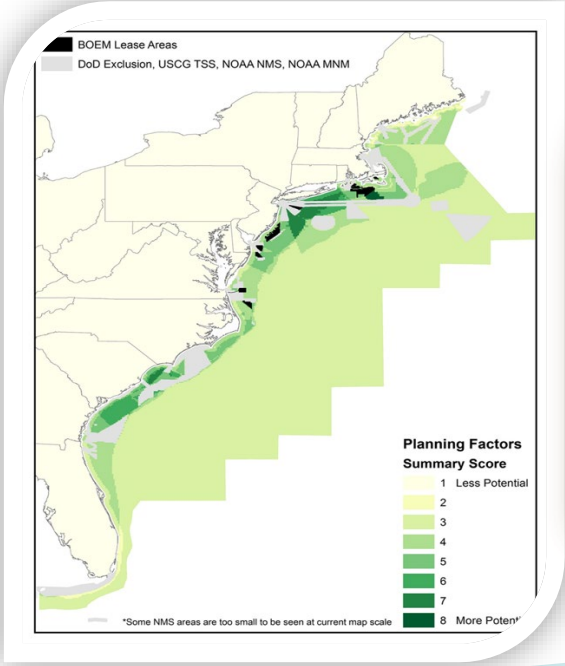
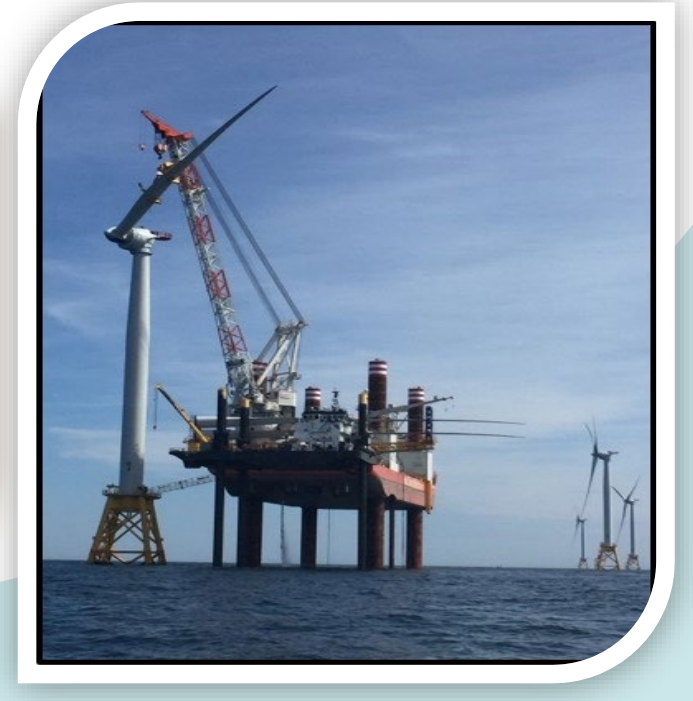
Fisheries and Wind Co-Existence Overview of Issues, challenges and opportunities

Jon Hare and Andy Lipsky
Northeast Fisheries Science Center

NOAA FISHERIES

Northeast Fisheries Science Center





August 8, 2019

Outline

- Rapid Expansion of Offshore Wind
- Interactions with NOAA Fisheries Scientific Mission
- Key Challenges & Opportunities
- Conclusions

https://www.nefsc.noaa.gov/rcb/photogallery/scenic-ocean.html

Rapid Expansion of Offshore Wind

- Co-existence of wind development, fisheries, and protected species
- This is a *"rest of our careers"* issue
- We need to work together to be successful

MarineLink

BOEM "Blown Away" by Record U.S. Offshore Wind Auction

By Nichola Groom | December 15, 2018

A U.S. government auction for three wind leases off the coast of Massachusetts ended on Friday with record-setting bids totaling more than $400 million from European energy giants including Royal Dutch Shell Plc and Equinor ASA.. Photo: © benoitgrasser/AdobeStock

5 SHARES

A U.S. government auction for three wind leases off the coast of Massachusetts ended on Friday with record-setting bids totaling more than $400 million from European energy giants including Royal Dutch Shell Plc and Equinor ASA.

The Bureau of Ocean Energy Management (BOEM) announced the sale's three winners - Equinor Wind US LLC, Mayflower Wind Energy LLC, and Vineyard Wind LLC, at the conclusion of the two-day sale that attracted 11 bidders and lasted 32 rounds.

Rapid Expansion of Offshore Wind

BOEM is Lead Federal Agency

- 15 leases in the Atlantic
- Upcoming lease sale in NY
- Planning Activities in NC & SC, and recently **MA, NH & ME**
- Planned Leasing Activities on West Coast and Hawaii

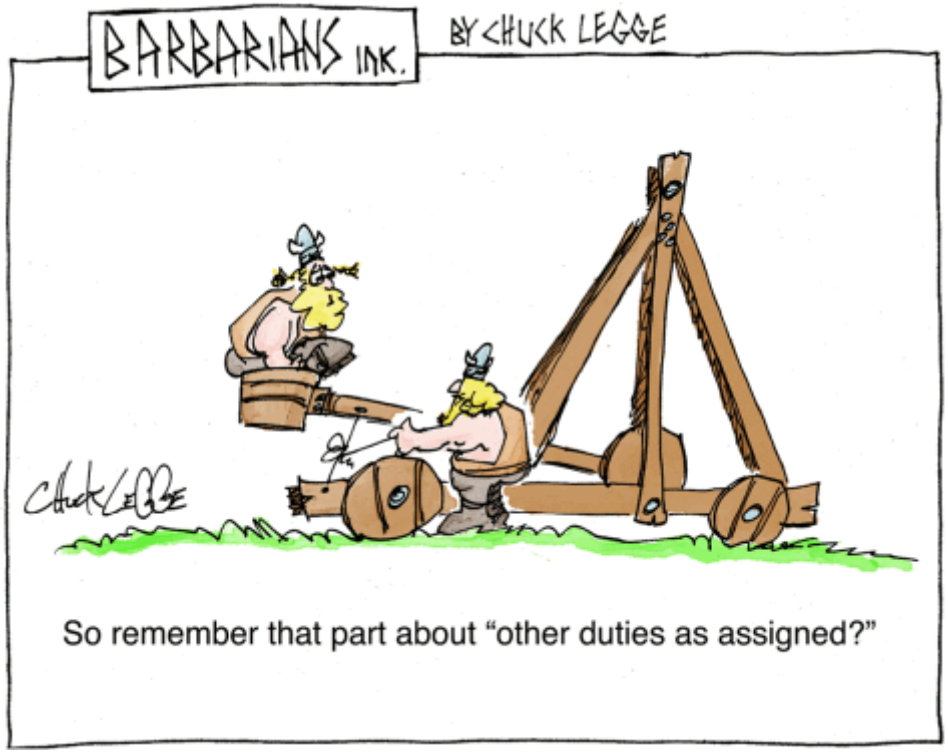
Not just a Northeast Issue

Regional Wind Team

Team composition:

- Greater Atlantic Regional Fisheries Office
- Northeast Fisheries Science Center
- NOAA-Headquarters
- Fisheries Management Councils

"Other duties as assigned"



Rapid Expansion of Offshore Wind

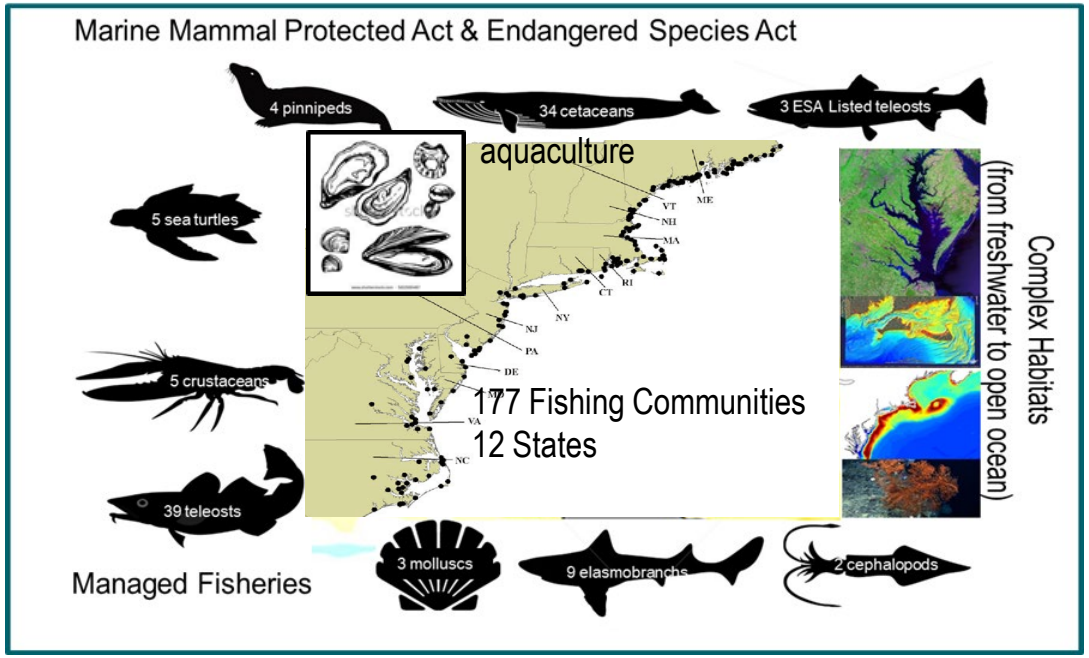
- Planned projects extend to 2027 (& 20 years)
- Does not include all current leases nor new leases
- Does not include areas where moored technology would be used
- *"Rest of our careers"*

Year*	Project	Company
2020	Coastal Virginia Offshore Wind	
2021	Vineyard Wind (MA)	
2022	South Fork (NY, RI, MA)	
2022	Ocean Wind (NJ)	
2022	Bay State Wind (MA)	
2022	U.S. Wind (MD)	
2023	Revolution Wind (RI, MA)	
2023	Skipjack Windfarm (DE)	
2025	Dominion Energy (VA)	
2026	EDF Renewables (NJ)	
2027	Empire Wind (NY)	
2027	Kitty Hawk (NC)	

Rapid Expansion of Offshore Wind

Wind development interacts with all NOAA Fisheries Interests

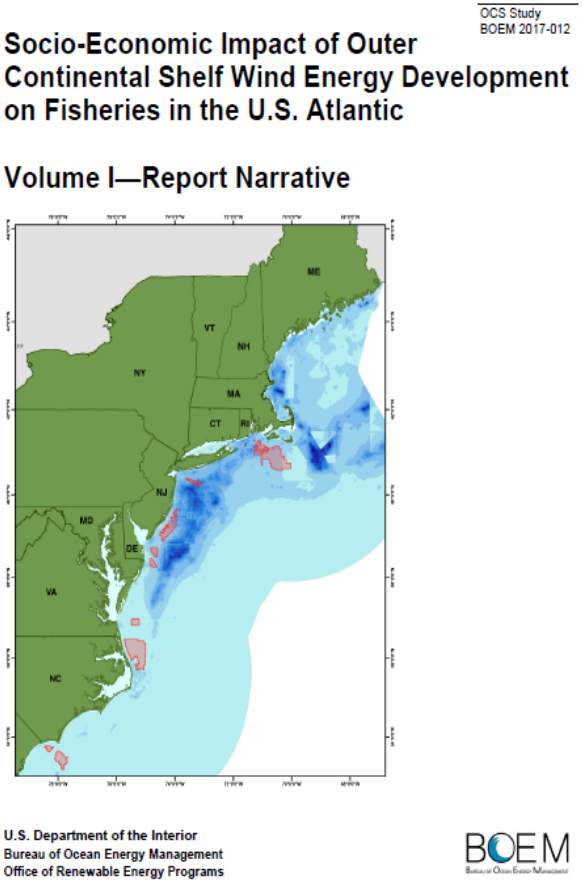
- Fisheries
- Fishing Communities
- Marine Mammals
- Endangered Species
- Essential Fish Habitat
- Aquaculture
- Marine Ecosystems



Interactions w/ NOAA Fisheries Mission

Baseline Studies (BOEM & NMFS)

- Fishing revenue studies
- Habitat Characterization
- Marine Mammal Surveys (AMAPPs)
- Seabird Surveys
- Sound studies
- 50+ years of survey effort



Interactions w/ NOAA Fisheries Mission

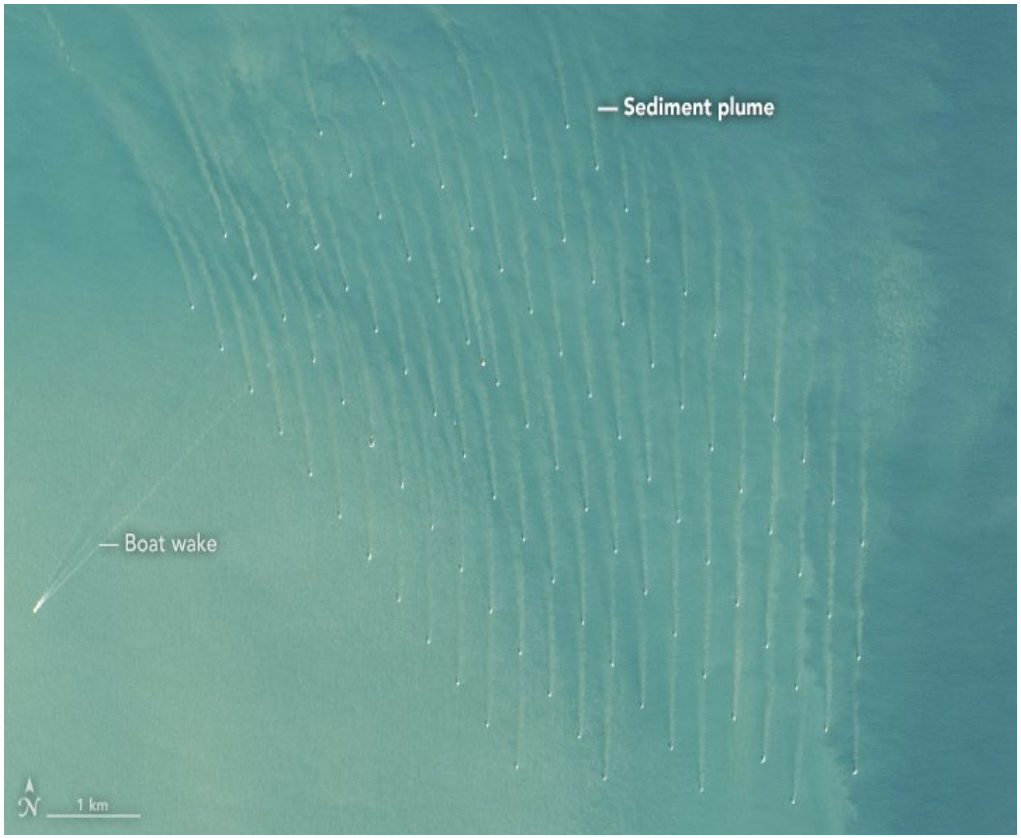
Construction (soon) & Decommissioning (20+ yrs later)

- Seafloor Disturbance
- Sediment Suspension and Deposition
- Dredging & Cabling
- Noise & Vessel Traffic
- Lighting
- Displacement of Fishing Effort

Interactions w/ NOAA Fisheries Mission

Operations (for 20+ yrs)

- Seafloor & Water Column Disturbance
- Habitat Conversion
- Noise & Vessel Traffic
- Electromagnetic Fields
- Lighting & Vessel Safety

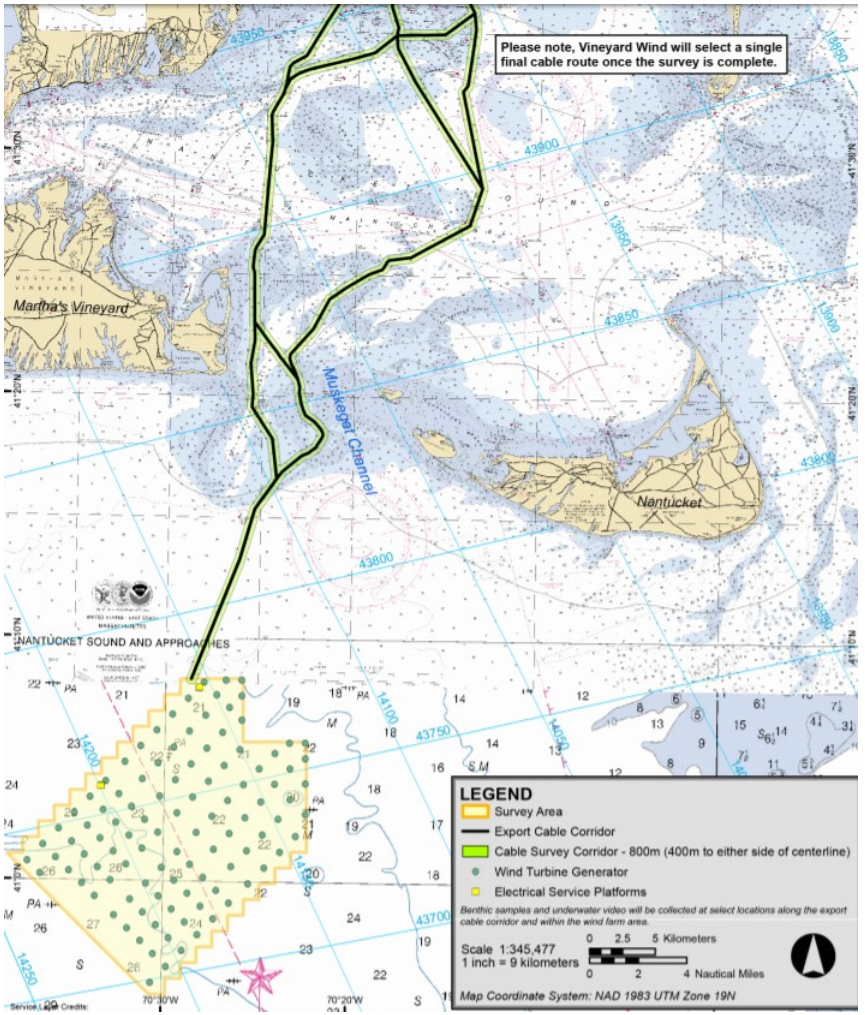


https://earthobservatory.nasa.gov/images/89063/offshore-wind-farms-make-wakes

Interactions w/ NOAA Fisheries Mission

Construction, Operation, Deconstruction

- Cabling another component both inside & outside of lease areas
- Understanding of electromagnetic fields limited



https://cdn.offshorewind.biz/wp-content/uploads/sites/2/2018/05/29104823/vineyard-wind-starts-environmental-surveys.jpg

Interactions w/ NOAA Fisheries Mission

Fisheries Interactions

- Exclusion of some fishing activity
- Creating new habitat (species & ecosystem-level affects)
- Biological effects of noise, electromagnetic fields, etc

Rhode Island Sea Grant

Recreational and Commercial Fishermen View the Block Island Wind Farm Through a Different Lens

https://seagrant.gso.uri.edu/recreational-and-commercial-fishermen-view-the-block-island-wind-farm-through-a-different-lens/

https://turnto10.com/news/local/construction-finishes-on-block-island-wind-farm

Interactions w/ NOAA Fisheries Mission

Marine Mammal Interactions

- Exclusion / attraction
- Behavior - feeding, socializing, nursing
- Stress (noise)
- Ecosystem changes (oceanography, prey, habitat)

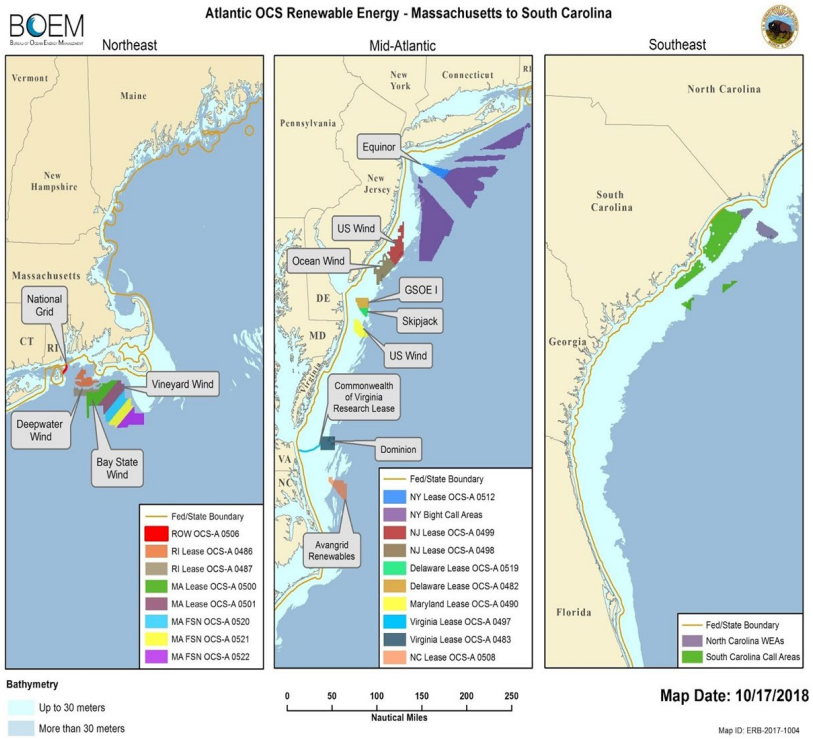
Image collected under MMPA Research permit number 775-1875;Photo Credit: NOAA/NEFSC/Christin Khan

Kraus, S.D., R.D. Kenney, and L. Thomas. 2019. A Framework for Studying the Effects of Offshore Wind Development on Marine Mammals and Turtles. Report prepared for the Massachusetts Clean Energy Center, Boston, MA 02110, and the Bureau of Ocean Energy Management. May, 2019.

Interactions w/ NOAA Fisheries Mission

Cumulative Impacts

- Multiple projects constructed over next 7+ years
- Operations over next 27+ years
- What are cumulative ecosystem effects?
- How do we evaluate?



Interactions w/ NOAA Fisheries Mission

- What are affects of construction, operation, and deconstruction on fisheries, protected species, aquaculture, habitats, and ecosystems (including human communities)?
- Can these effects be mitigated?
- How will components of the system adapt?

http://www.thecolledge.org/jennys-blog/the-scientific-method-the-question

Interactions w/ NOAA Fisheries Mission

Operations (20 years)

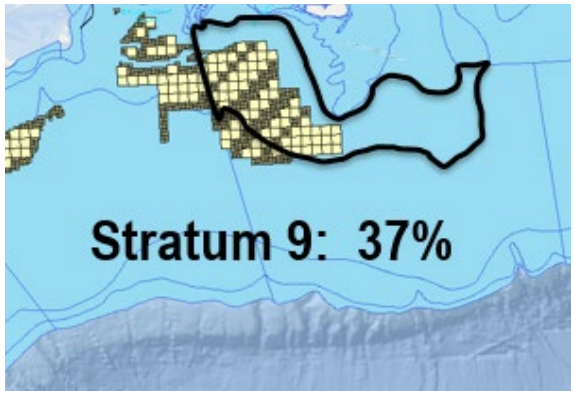
- Displacement of Fishing Effort
- Displacement of Survey Effort
  - shipbased & aerial (50+ yrs)

Interactions w/ NOAA Fisheries Mission

Displacement of Survey Effort

- Random-stratified design
- Ship and aircraft line transects
- Habitat effects of wind-farms

Bigelow-Albatross Calibration magnified x5, x10, x50, x100 ??



"~60% of Southern New England Survey Blocks for NARW Aerial Surveys will be impacted"

NOAA scientist: Offshore wind projects will likely affect viability of fishery surveys

By Chris Chase
April 19, 2019

SHARE

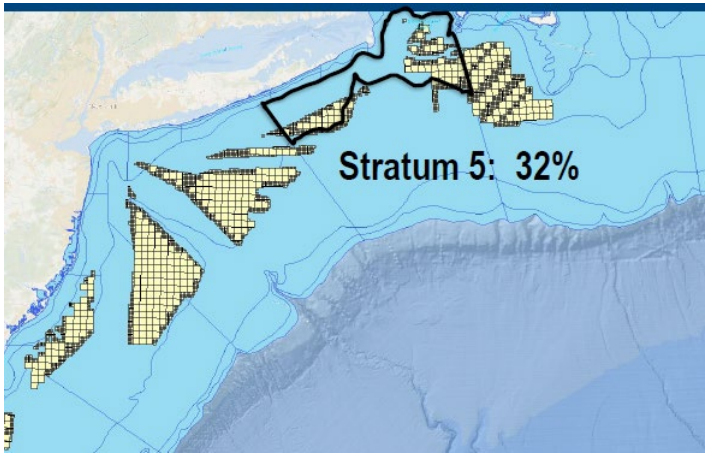
https://www.seafoodsource.com/news/supply-trade/noaa-scientist-offshore-wind-projects-will-likely-affect-viability-of-fishery-surveys

Interactions w/ NOAA Fisheries Mission

Survey Issues

- Outside wind energy area
- Inside wind energy area
- Calibration / Detectability
- Statistical survey design
- Assessments

- Initiated Center WG - first order evaluation
- Will work with partners and stakeholders to address



Key Challenges & Opportunities

- Committing staff without dedicated funding (some temp funding)
- Wind team
- Regulatory review
- Unable to be responsive to science requests
- Doing best we can

Bloomberg

Climate Changed

Connecticut Is Set to Join in $70 Billion Offshore Wind Expansion

By Chris Martin
June 5, 2019, 7:57 AM EDT

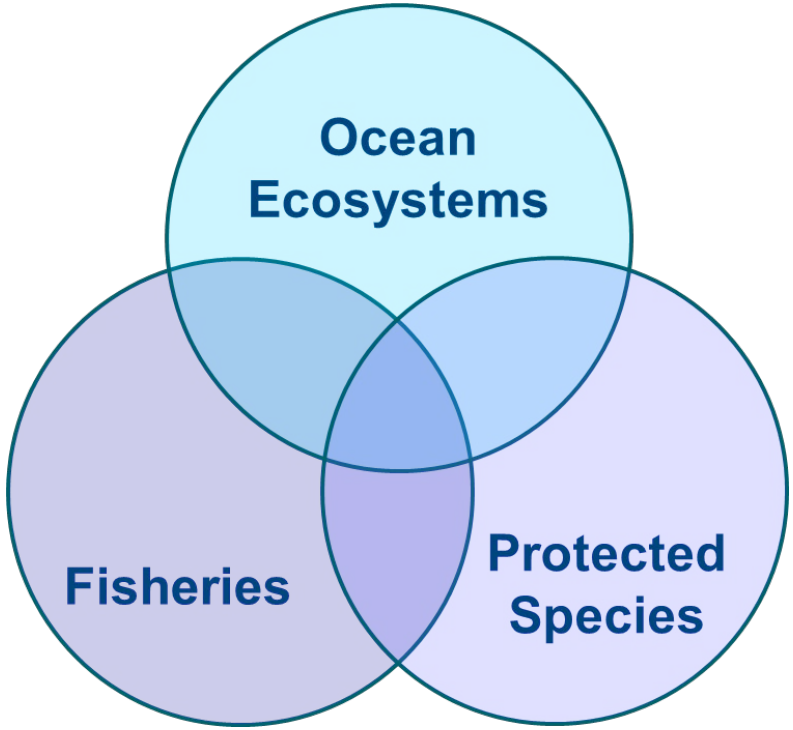
- Move mirrors actions in New York, New Jersey, Massachusetts
- Senate bill now with governor would meet third of state's need

LIVE ON BLOOMBERG
Watch Live TV >
Listen to Live Radio >
Bloomberg Television

https://www.bloomberg.com/news/articles/2019-06-05/connecticut-set-to-join-in-70-billion-offshore-wind-expansion

Key Challenges & Opportunities

- Pace & scale of development
- Effectively engaging NOAA Fisheries stakeholders in the process
- Addressing science questions (e.g., fisheries, protected species, ocean ecosystems)



Key Challenges & Opportunities

- How will floating wind technology change map of wind development?
- What knowledge is transferrable for pile to floating developments? Scientific, regulatory, design, …

Maine Aqua Ventus floating wind farm gets green light

Published on June 24, 2019 by Dave Kovaleski

Key Challenges & Opportunities

Joint MOU NOAA, BOEM, and RODA (Responsible Offshore Development Association)

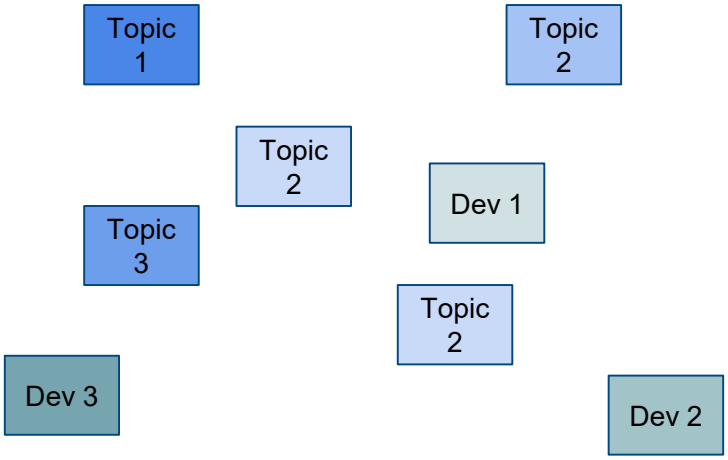
"NOAA/NMFS, BOEM, and RODA (Parties) have a mutual interest in the responsible planning, siting, and development of offshore wind power … in a way that considered impacts to the fishing industry, fisheries resources protected resources, and the marine habitats upon which fishery resources depend"

Key Challenges & Opportunities

Responsible Offshore Science Alliance

How do we work together?

fishing industry, wind developers, **states**, feds, universities, energy companies, others



Regional Framework					
Dev 1	Dev 2	Dev 3	Topic 1	Topic 2	Topic 3

Key Challenges & Opportunities

- European Experience (20+ years)

Working Group on Marine Renewable Energy

Affiliation: HAPISG

Chair: Marijke Warnas

The Working Group on Marine Renewable Energy (WGMRE) coordinates the flow of science between certain working groups and its application in relation to offshore energy installations.

WGMRE's remit includes correlating the science from groups on specialist topics such as seabirds, benthic ecology, and fish ecology and its application in planning, consenting and regulatory processes in relation to tidal (in-stream and barrage), wave and offshore wind energy.

Print it Send to Share it

© Kovalenko Inna, Fotolia

LINKS

- View all members of this group
- WGMRE Terms of Reference

Reviews in Fisheries Science & Aquaculture

ISSN: 2330-8249 (Print) 2330-8257 (Online) Journal homepage: https://www.tandfonline.com/loi/brfs21

Meta-Analysis of Finfish Abundance at Offshore Wind Farms

Elizabeth T. Methratta & William R. Dardick

To cite this article: Elizabeth T. Methratta & William R. Dardick (2019) Meta-Analysis of Finfish Abundance at Offshore Wind Farms, Reviews in Fisheries Science & Aquaculture, 27:2, 242-260

To link to this article: https://doi.org/10.1080/23308249.2019.1584601

Thanet Fishermens Association and Wind Farms

Merlin Jackson and John Nichols

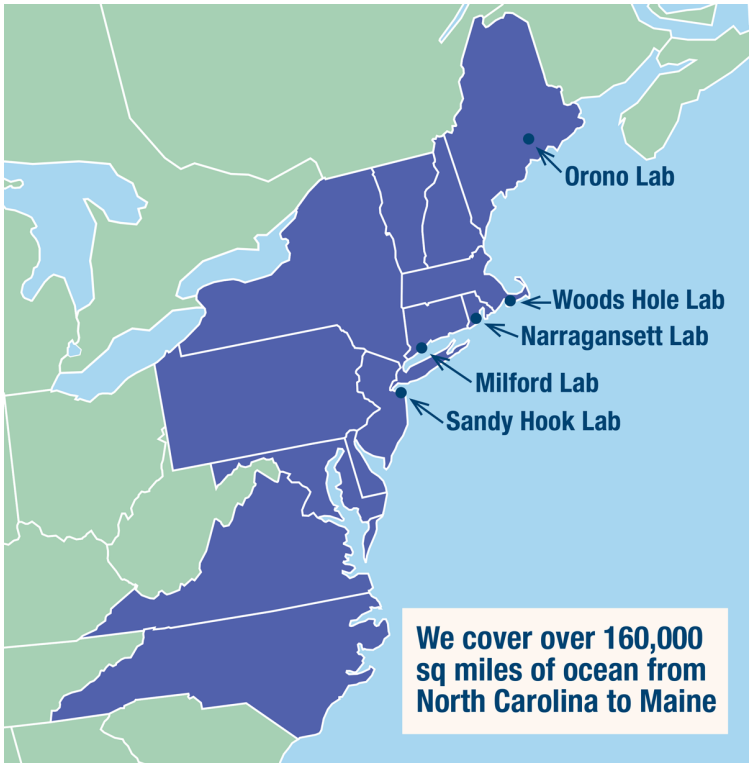
ICES CIEM

Key Challenges & Opportunities

- Working Group to Evaluate NEFSC Surveys (WGEval)
- Continue to support development of regional science framework
- Strengthen support for RODA-BOEM-NMFS MOU
- Continue wind energy-related research

150 Years Devoted to:

Science in service to the American public
Promoting prosperity of fisheries and marine resources
Working with others to find opportunities and solve problems



Conclusions

- *"Rest of our careers"*
- Co-existence
- Fisheries and fishing communities
- Protected species
- Aquaculture
- Habitats & ecosystems
- Renewable energy

https://www.sciencemag.org/careers/2017/09/research-your-career-options-well-graduation

How to include in our science / how to conduct science?

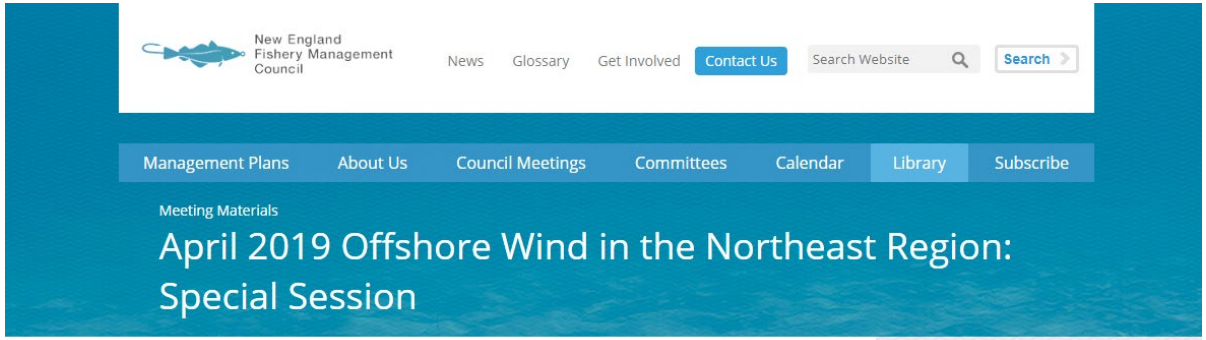
Conclusions

- Opportunity to collaborate
- Opportunity to develop regional science frameworks
- Opportunity to implement coexistence through Ecosystem Based Management

https://www.nefsc.noaa.gov/ecosys/

More information

http://www.mafmc.org/northeast-offshore-wind



https://www.nefmc.org/library/april-2019-offshore-wind-in-the-northeast-region-special-session

NMFS Roles and Responsibilities for Offshore Wind

Michael Pentony
Regional Administrator
Greater Atlantic Regional Fisheries Office
ASMFC Meeting
August 8, 2019

Rapid Expansion of Offshore Wind

Leasing

- 15 commercial wind energy leases in the Atlantic
- Upcoming lease sale in New York

Site Assessment Plans (SAP)

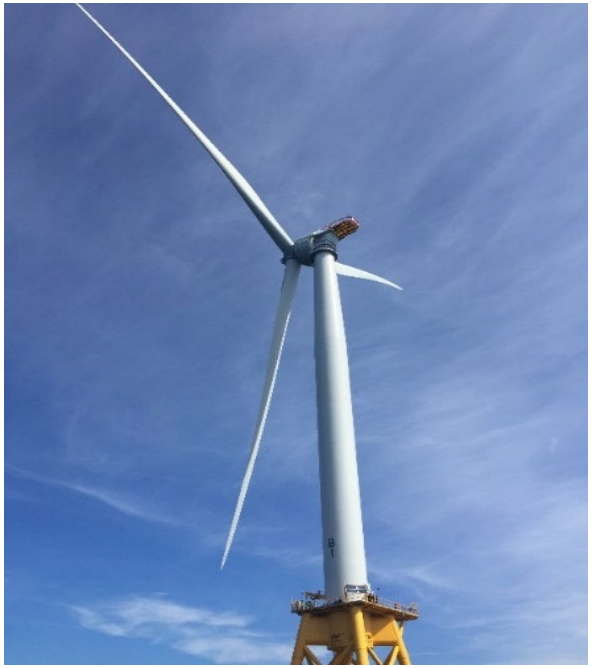
- 7 approved (MA, RI, VA, MD, NJ, NY)

Construction and Operations Plans (COP)

- 4 projects in progress (Vineyard Wind, South Fork, Bay State Wind, and Skipjack)
- 7 more projects expected within the next 12 months

Roles and Responsibilities Related to Offshore Wind

- BOEM is the lead Federal agency and primary decision-maker
- NMFS provides advice to BOEM
- NMFS advice limited to statutory mandates provided by Congress
  - Advice and comments (NEPA, MSA)
  - Incidental Take Authorization (MMPA)
  - Biological Opinion (ESA)
- BOEM is only required to consider our advice and comments



Environmental Process for Offshore Wind

- Administration issued Executive Order 13807 to streamline environmental reviews and improve collaboration during the review process for “major infrastructure projects”
- Establishes a two year goal for completion of all environmental reviews under NEPA
- Creates a “One Federal Decision” policy that requires Federal agencies to rely on the same environmental documents

One Federal Decision (OFD) Process

- NOAA must serve as a NEPA cooperating agency if invited
- NOAA must provide written concurrence on three points during the NEPA process:
  - Purpose and need
  - Range of alternatives
  - Preferred alternative
- Concurrence under OFD: 'there is sufficient information to move to next step'
- Agencies have 10 business days to provide written concurrence
- Non-concurrence results in an internal elevation process

Agency Responsibilities

MMPA Incidental Take Authorization

- Project proponent applies for Incidental Harassment Authorization (IHA) or Letter of Authorization (LOA)
- Authorization issued if the take:
  - Will be of small numbers
  - Have no more than a “negligible impact”
  - Not have an unmitigable adverse impact

ESA Section 7 consultation

- At the request of BOEM
- All federal actions are considered under the biological opinion
- Determine whether project is likely to jeopardize ESA listed species or adversely modify critical habitat

Agency Responsibilities

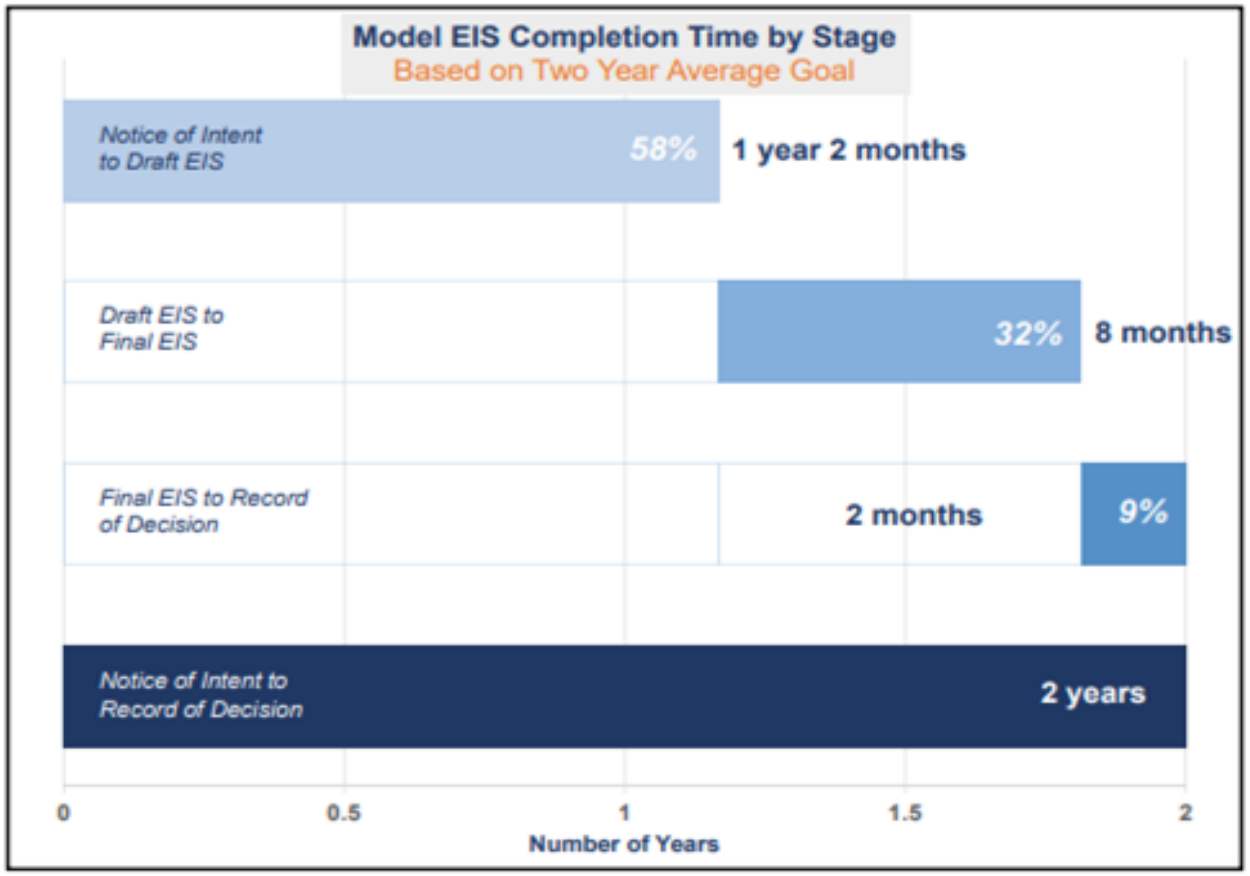
EFH consultation

- All offshore wind consultations are likely expanded EFH consultations
- Assess potential adverse effects to EFH
- Provide conservation recommendations to avoid, minimize, or mitigate impacts to EFH.

Fishery Resources and Fishing Industry/Communities

- NEPA – evaluate impacts and cumulative effects on marine trust resources (i.e., fish and fishing communities)
- Standard of Review ?????

One Federal Decision Timeline

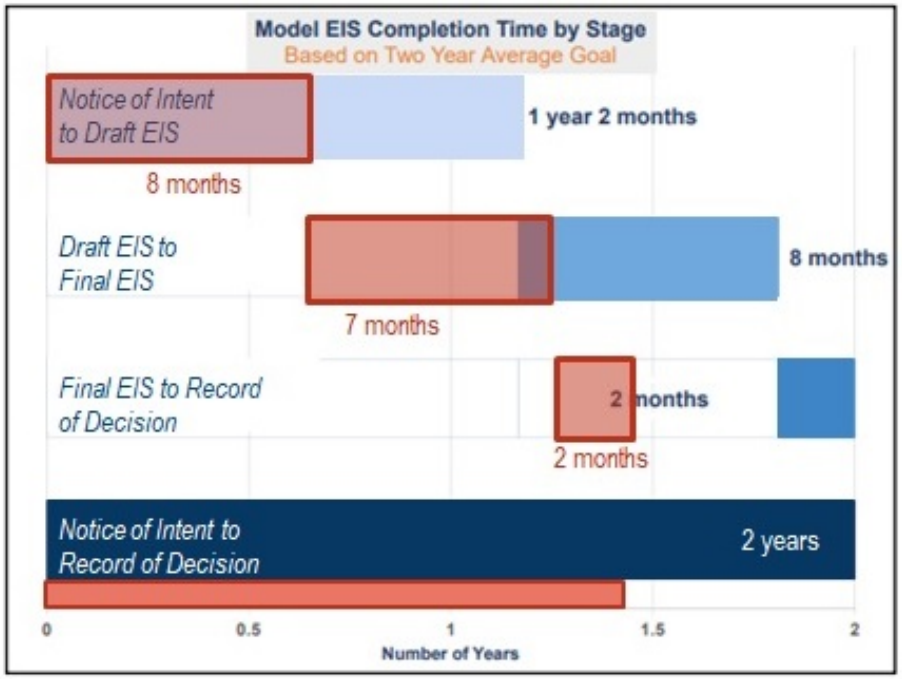


Additional Directives for Wind Energy Projects

Department of Interior Order :

- Sets page limits for Environmental Impact Statements (150-300 pages)
- Compresses timeline

BOEM's timeline

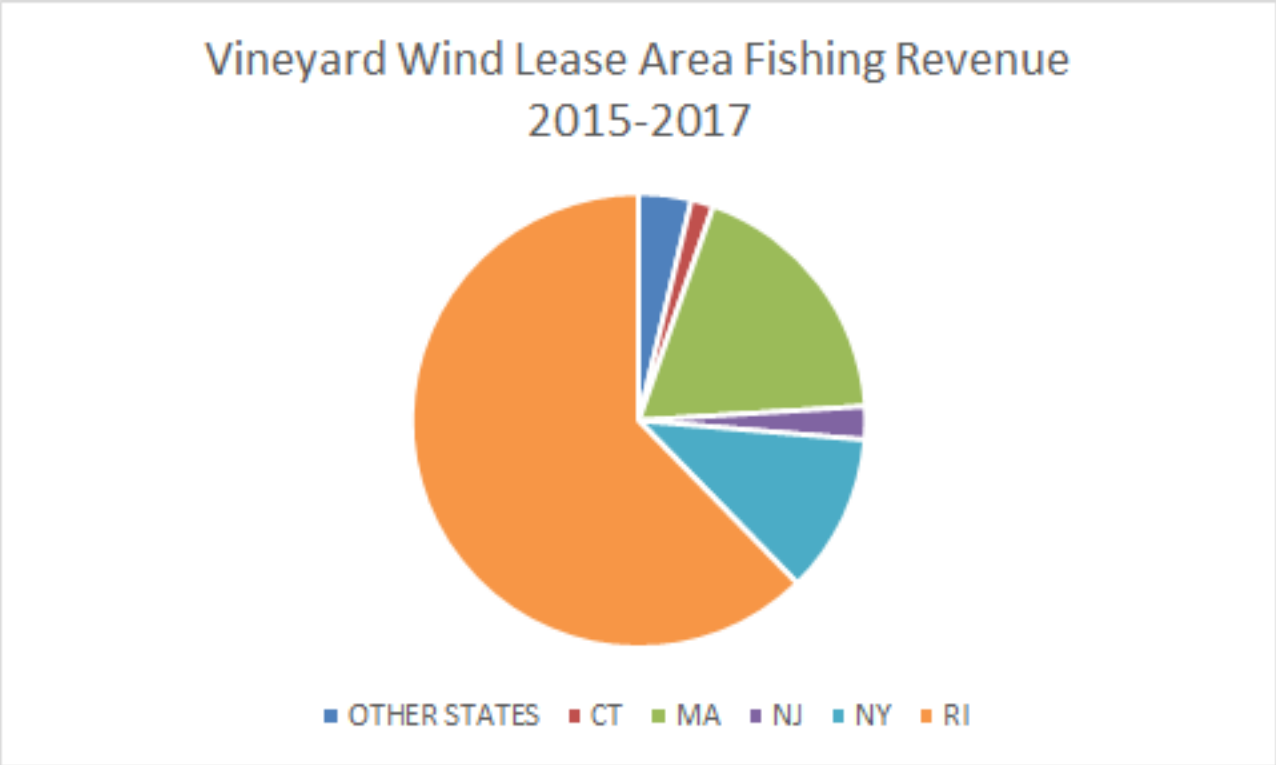


Northeast Regional Offshore Wind Team

- Provide full coordination and collaboration between the Regional Office, NMFS headquarters, and Science Center to support offshore wind projects
- Partnership with Mid-Atlantic and New England Regional Fishery Management Councils
- Coordination with ASMFC
- Operates under a charter
- Monthly calls and meetings as needed

Interstate Impacts

- Costs and benefits are beyond immediate adjacent coastal states



Fed/State Coordination Issues and Questions

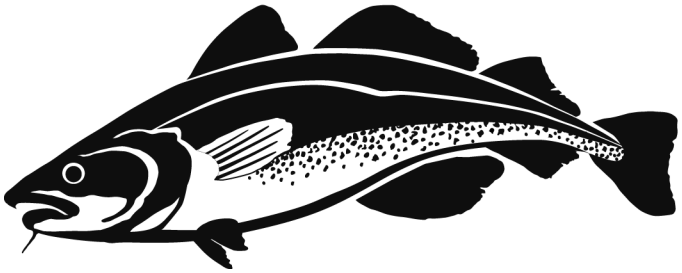
- Which agencies do we work with, and when?
  - e.g. MA DMF, CZM, or EEA?
  - Better define roles/responsibilities/POCs.
- How do the states coordinate amongst themselves?
  - Each state operates differently.
- When is it appropriate to have staff to staff vs. leadership discussions?
- Regional forums as a tool to improve coordination
  - e.g. RODA/ROSA

Questions?

MA DMF State Level Policy and Research Activities Offshore Wind Development

August 8, 2019
ASMFC Summer Meeting

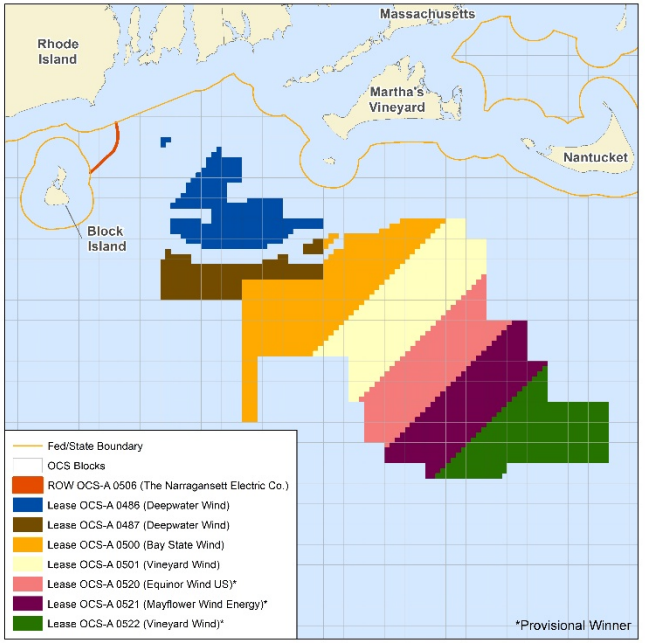
MarineFisheries
Commonwealth of Massachusetts



Strong Executive and Legislative support for Offshore Wind

- State legislation passed in 2016 and 2018 calls for 1,600 MW of offshore wind energy by 2027 and another 1,600 MW by 2035.
- Massachusetts has 5 adjacent lease blocks in the Mass WEA. They are leased to Baystate Wind/Orsted-Eversource, Vineyard Wind, Equinor, and Mayflower Wind/Shell.
  - Baystate and Vineyard Wind have been conducting survey activities.

- Vineyard Wind is the only company engaged in state permitting
  - 84 turbines with two offshore export cables
  - In the final stages of state-level permitting
  - Some appeals
  - Most recently: granted private use of public lands to land the cable underneath a public beach (Legislature passed in May, the governor signed the bill into law Aug 5, 2019.)



DMF Involvement in Offshore Wind

- Massachusetts-Rhode Island Intergovernmental Task Force
  - Advises the Bureau of Ocean Energy Management (BOEM) on its siting and leasing of wind energy areas (WEAs) - Since 2009
- Mass Fisheries Working Group on Offshore Wind,
  - A forum to discuss issues related to commercial and recreational fisheries. In-state and out-of state industry have attended.
  - DMF & MA CZM hosted
- Environmental review project comments on federal, state, and local permits for offshore wind
  - Recommendations to avoid and minimize development impacts on commercial and recreational fisheries and fish resources and habitats.
- Scientific collection permits for in-state baseline surveys
- Letter of authorization for handling lobster gear snagged in the pre-lay grapnel run for cable laying.
- ***Note: No new staff have been hired to address these issues. Up to 10 DMF employees have been tasked to contribute on ad hoc basis***

Challenges: Fishing Industry Concerns

- Wind farms (and cable routes to shore) will be off limits to mobile gear
  - turbines spaced 1 mile to ¾ mile apart.
  - cables being exposed due to weather and tides;
  - cables needing armoring with many protective hard and elevated “mattresses” that cannot be trawled over;
  - future prohibition of fishing within the arrays.
- Wind farms will impact safety for all fisheries
  - navigational difficulties caused by radar interference made even more difficult and treacherous due to tides, storms, and bad weather;
  - very restricted fishing areas forcing vessels to compete for space between and among turbines;
- Wind farms will increase costs of fishing
  - inflated insurance costs if insurers perceive increased risk for accidents around turbines;
  - possible negative impacts on fish and shellfish distribution and abundance;
  - increased fuel costs due to need to route around wind farm;
- Wind farms will change recreational fishing patterns and gear;

Fisheries Mitigation

- Discussions are ongoing with VW regarding compensatory mitigation for revenue losses in their development area due to construction and operation impacts on fishermen.

- Other mitigation efforts include construction time-of-year restrictions to minimize impact to spring-time squid trawl fishery in Nantucket Sound and an emphasis on maintaining adequate cable burial depth.

Other VW funded studies

- VW funded WHOI to conduct ocean-atmosphere testing in the development area.
- VW funded SMAST to develop a fisheries survey plan last winter and has hired SMAST to implement the plan, which includes drop camera surveys, trawl surveys, and a ventless trap and larval survey. These surveys are underway.
- MA CZM is working on incorporating seafloor data collected by VW to improve the seafloor substrate model used in ocean planning.

State Level Research Activities

- Mass. Clean Energy Center has been engaged in developing information and capacity in support of offshore wind since 2011.
  - Heavy focus on workforce and supply chain development
  - 4 years of marine mammal aerial surveys (2011-2015) by NEAq, College of Staten Island, and Cornell
  - Fisheries studies being developed now

CEC Fisheries Studies

- Mass CEC partnered with BOEM and RI on a $1 million fisheries-focused research agenda.
  - A request for proposals is being prepared and targeted for release in mid-August.
  - for fisheries habitat,
  - fisheries resources, and
  - compatibility of offshore wind and commercial and recreational fisheries.

  MA DMF, NYDEC, and NMFS are on the steering committee with CEC, BOEM, and RI in an effort to ensure maximum value and to minimize redundancy across our multiple research initiatives.

  DMF heavily involved in recommending studies (report here)

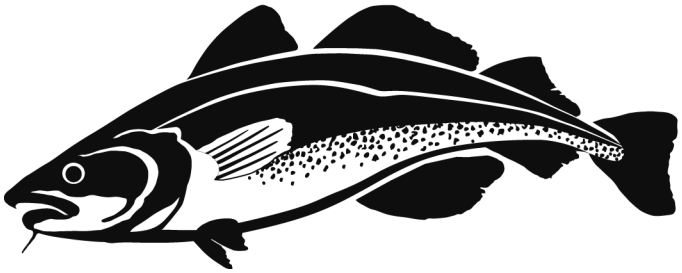
Regional Coordination

- DMF worked with NOAA, NY, RIDEM, and BOEM on "Management Objectives and Research Priorities for Offshore Wind and Fisheries."
  - Identifies and prioritize regional and site-specific research needs.
    - 3 primary focus areas:
      - Fishing Industries,
      - Fish Resources and Habitat, and
      - Fisheries Management.
  - It lays out several key principles, such as open data and standardized data collection.
- DMF is considering support for the Responsible Offshore Science Alliance (ROSA)
  - a non-profit focused on leveraging funds to study issues of relevance to fisheries on a regional scale.
  - Attended meeting in Philadelphia to discuss the potential structure for ROSA.

Thank You

August 8, 2019
ASMFC Summer Meeting

MarineFisheries
Commonwealth of Massachusetts



Report on Rhode Island Wind Activities to the ASMFC

August 8, 2019

Background

- The RIDEM is supportive of offshore wind energy development in an effort to mitigate the impacts of climate change and reduce greenhouse gas emissions

- Along with this support, RIDEM is committed to ensuring that the local and regional environmental and socioeconomic negative impacts of offshore wind development are minimized

Contributions

- The following is a listing of our contributions to the successful development of offshore wind farms so far:
  - Contributing best available science and data to understand impacts of development on both marine resources and the fisheries that depend on them
  - Working directly with offshore wind developers to make project siting and layout recommendations to minimize fishing and environmental impact to RI resources

Contributions

- Our contributions to the successful development of offshore wind farms so far (cont.):
  - Reviewing/analyzing trawl and ventless lobster pot survey data collected as part of a Before-After-Control-Impact assessment of Block Island Wind Farm to better understand potential impacts of offshore wind development on local species and habitats
  - Reviewing all submitted materials from Deepwater Wind and National Grid to ensure permit compliance (i.e., EMF surveys, hardbottom habitat monitoring, cable burial surveys)

Contributions

- Our contributions to the successful development of offshore wind farms so far (cont.):
  - Organizing RI Marine Fisheries Council meetings w/ developers to create opportunities for public input
  - Working as a cooperating agency with the Bureau of Ocean Energy Management (BOEM) during National Environmental Policy Act (NEPA) permitting process
  - Serving on both the Rhode Island Intergovernmental Renewable Energy Task Force (IRETF) and engaging on the New York IREFT under BOEM

Contributions

- Our contributions to the successful development of offshore wind farms so far (cont.):
  - Serving on the NY Fisheries Technical working group
  - Contributing directly to the creation of a regional collaborative to study the impacts of offshore wind development on marine habitats, fish, invertebrates, and the fishing industries that rely upon them
    - Providing $200K to the regional MA/BOEM scientific data collection effort and serving on the effort's steering committee
  - Participating in the ROSA regional science framework

Products

- During these processes, RI has created several products:
  - Vessel Monitoring System (VMS) Analysis
    - There are still limitations to the approach created by RI
      - Not all fisheries are covered by VMS (lobster, Jonah Crab) therefore used other methods for economic analysis
      - There is not 100% coverage for fisheries with VMS requirements (e.g squid started in 2014)
      - Earlier years should be interpreted cautiously with a strong understanding of each dataset utilized
    - Spatiotemporal and Economic Analysis of Vessel Monitoring System Data within Wind Energy Areas in the Greater North Atlantic (including Addendum I) (http://www.dem.ri.gov/programs/bnatres/fishwild/pdf/RIDEM_VMS_Report_2017.pdf)

Products

- During these processes, RI has created several products (cont.):
  - Vessel Monitoring System (VMS) Analysis (cont.)
    - Spatiotemporal and Economic Analysis of Vessel Monitoring System Data within Wind Energy Areas in the New York Bight Call Areas (http://www.dem.ri.gov/programs/bnatres/fishwild/pdf/RIDEM_VMS_Report_2018.pdf)
    - Rhode Island Fishing Value in the Vineyard Wind Construction and Operations Plan Area (http://www.dem.ri.gov/programs/bnatres/marine/pdf/RIDEM_VWValue.pdf)

Products

- During these processes, RI has created several products (cont.):
  - Comment letters
    - NY Call Areas, Proposed Sale Notice of NY Wind Energy Area, NYSERDA Area for Consideration, Letter to BOEM Re: Development of the NY Lease Area, Comments on NY WEA EA, Comments on Vineyard Wind DEIS, DEM Revolution Wind Advisory Opinion to the Public Utilities Commission, Comments on Notice of Intent to Prepare an EIS for the South Fork Wind Farm

Products

- During these processes, RI has created several products (cont.):
  - Rhode Island Sea Grant Research
    - Principal Investigator: Understanding Marine Resource User Response to Ecological Impacts of Offshore Wind Energy: A Case Study of the Block Island Wind Farm
    - Co-PI: Values of recreational boating activities associated with the Block Island Wind Farm
    - Investigator: Impacts of the Block Island Wind Farm on Recreational Fishing

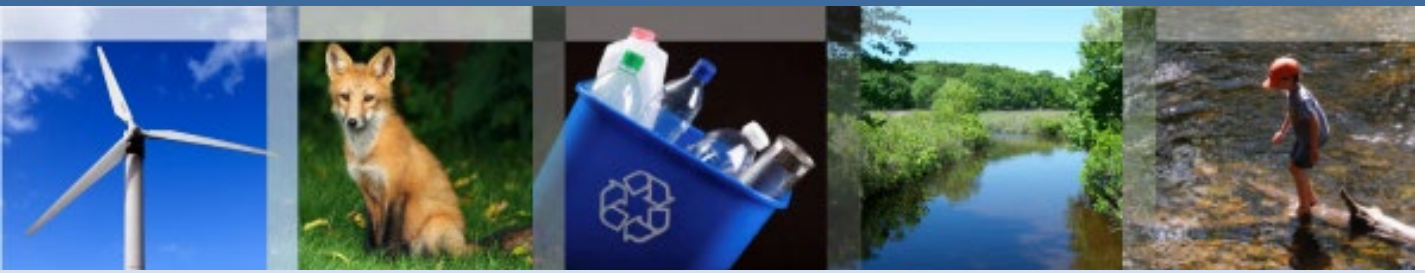
Products

- During these processes, RI has created several products:
  - RIDEM DMF Offshore Wind webpage: http://www.dem.ri.gov/programs/marine-fisheries/offshore-wind.php

Conclusion

- These highlight that even in its infancy, the projects are large, complex, and rife with interactions with our fishing industry
- Navigating the process is difficult, but can be easier if done right and initiated early
  - DWW project off RI went relatively well
  - VW project was much more challenging for our state
- We hope others can learn from the things RI has done and produced, and we look forward to collaborating with our partners on the ASMFC as we proceed forward with offshore energy development

Connecticut Department of Energy and Environmental Protection



Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

CT Offshore Wind

- 2017-18: CT DEEP conducted two solicitations and selected two proposals:
  1. 200 MW from Revolution Wind
  2. 104 MW from a Revolution Wind expansion
- 2019: Public Act 19-71 requires DEEP to conduct one or more solicitations for up to 2,000 MW
- DEEP required to conduct a solicitation in 2019

CT Offshore Wind

- 2019 RFP Timeline:
  1. Draft RFP released on July 1st
  2. Two week public comment period (closed July 15th)
  3. Final RFP to be released on Aug 15th

CT Offshore Wind

- 2019 RFP: DEEP must include requirements for selected bids that require selected bidders to:
  - pay not less than the prevailing wage
  - promote electric distribution system reliability, including winter peak demand
  - engage in a good faith negotiation of a project labor agreement
  - include plans for use of skilled labor
  - include an environmental and fisheries mitigation plan for the construction and operation of offshore wind facilities

Commission on Environmental Standards

"Pursuant to the Act, it is the job of the Commission to provide input on such best practices for avoiding, minimizing and mitigating any impacts to wildlife, natural resources, ecosystems and traditional or existing water-dependent uses, including, but not limited to, commercial fishing. In making any selection of offshore wind proposals, the commissioner shall consider whether the proposal uses practices to avoid, minimize or mitigate such impacts."

CT Offshore Wind

Commission on Environmental Standards: Timeline

- June 7th: H.B. 7156 signed by Gov. Lamont
- June 14th: First meeting of CES, split into subgroups
- June 21st: Information for consideration due to DEEP staff.
- July 10th: Subgroups report on recommendations.
- July 17th: Draft report released for public comment.
- July 25th: Public comment period closed.
- August 7th: Report finalized.

Commission on Environmental Standards Recommendations

1. ADAPTIVE OPERATIONAL PLAN

It is not possible to anticipate all potential impacts to the environment and commercial fishing operations that might arise from offshore wind development along the northeast Atlantic shelf. Some impacts may be immediate and easily observed, while others may be more subtle and take years to manifest. A sustained monitoring and research effort will be necessary to fully understand the impacts of development.

The Commission recommends that the information obtained from these ongoing studies serve as the basis for an adaptive operational plan, in which the developer, DEEP, and other stakeholders periodically assess information gathered and make "course corrections" to mitigation efforts.

Commission on Environmental Standards Recommendations

2. MITIGATION FUND

The Commission advises that the developer commit some amount of money "up front" to a mitigation fund. This fund should be separate to the funding source used to support activities pursuant to the Adaptive Operational Plan (see above).

The mitigation fund should be used to offset economic losses or burdens to the commercial fishing industry, elements of the environment, and other stakeholders that arise from unavoidable impacts of offshore development. This fund should not be used in place of avoiding or minimizing impacts. Developers should follow the principle of first *avoiding* conflicts or impacts, then *minimizing* those that are unavoidable, *mitigating* the impacts from new development through appropriate use of communications and technology, and finally, only once those have been adhered to, considering *compensation* for any residual losses.

Commission on Environmental Standards Recommendations

3. DECOMMISSIONING PLAN AND FUNDING

The Commission recommends that the developer provide plans for decommissioning installations at the end of their service life, including for infrastructure, such as cables, that is in state (non-federal) waters. The Commission suggests that this plan include information on procedure for decommissioning and intended state of the installation site after decommissioning is complete. Developers should also identify the source of funding for decommissioning and provide assurances as possible that this funding will be available at the time of decommissioning.

Commission on Environmental Standards Recommendations

4. WILDLIFE RISKS

The Commission recognizes that proposals will be in various stages of completion. It is therefore important that the application contain three main components. These components are an *Assessment and Monitoring Plan*, an *Avoidance and Mitigation Plan*, and a *Data Reference and Sharing Plan*.

Commission on Environmental Standards Recommendations

5. HAZARDS TO NAVIGATION, SAFETY AT SEA, AND INTERFERENCE WITH FISHING OPERATIONS

Installation of wind turbines in offshore areas transited by commercial fishermen has the potential to pose serious hazards to navigation and safety, and may also interfere with deployment of certain fishing gears. The Commission encourages the bidder to present an assessment of potential hazards and measures that will be taken to minimize those hazards.

Commission on Environmental Standards Recommendations

6. IMPACTS TO FEDERAL FISHERIES ASSESSMENT SURVEYS

NOAA National Marine Fisheries Service (NMFS) conducts trawl surveys in federal waters to assess the status of a multitude of economically and ecologically important fish and invertebrate species. These surveys play a major role in the inter-state fisheries management process conducted by the Atlantic States Marine Fisheries Commission and Federal Fisheries Management Councils. Offshore wind development in some areas may exclude NMFS trawl vessels from long-term sampling sites, thus impacting the scientific foundation of the fisheries management process. The bidder should provide an inventory of any scientific surveys which will be impacted by development, and their plans to collaborate with the entities conducting those surveys to mitigate impacts, as advised by the Commission.

General Information on NY's Technical Working Groups

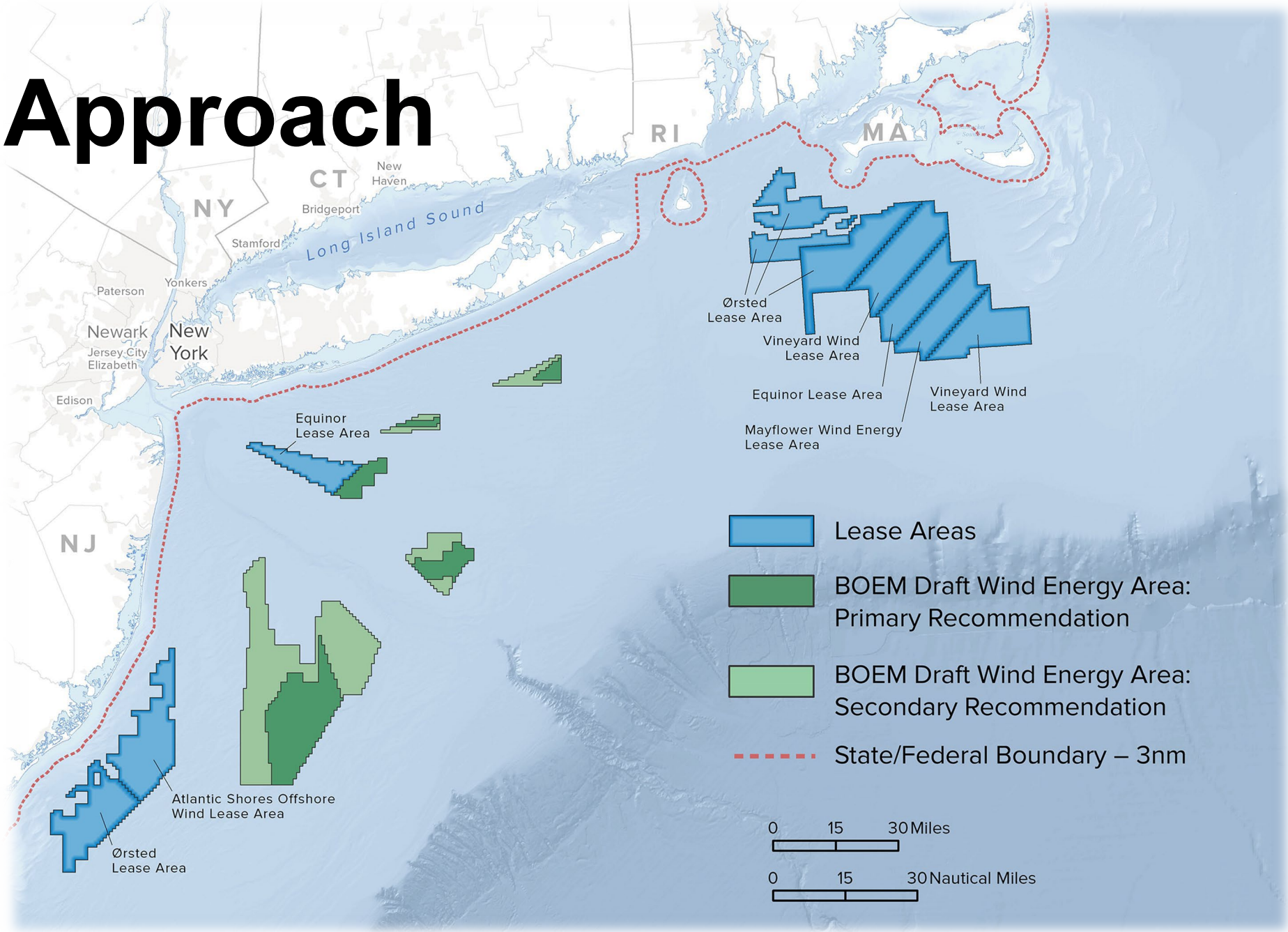
- The NYS Offshore Wind Master Plan recognizes the need for widespread collaboration with individuals and entities who have technical knowledge, practical experience, and professional interest in topics relevant to the nascent OSW industry in NY

- The Master Plan identifies jobs and supply chain, commercial and recreational fishing, maritime activities and environmental issues as areas that are ripe for the formation of Technical Working Groups to begin addressing some of the challenges associated with offshore wind development

Regional Approach

New York's Market Reach and Influence is Broad

- New York's market reach spans from the MA lease areas through NJ
- 9GW presents the Region's largest market
- Stakeholders do not follow state lines
- NYS collaboration is appreciated by the industry



Commercial Fishing Technical Work Group (F-TWG)

GOALS

- Development of Fisheries BMPs.
- Identification of research needs.
- Improve understanding of impacts to commercial fishing.
- Improve communications between developers and commercial fishing.

Led by NYSDEC and NYSERDA

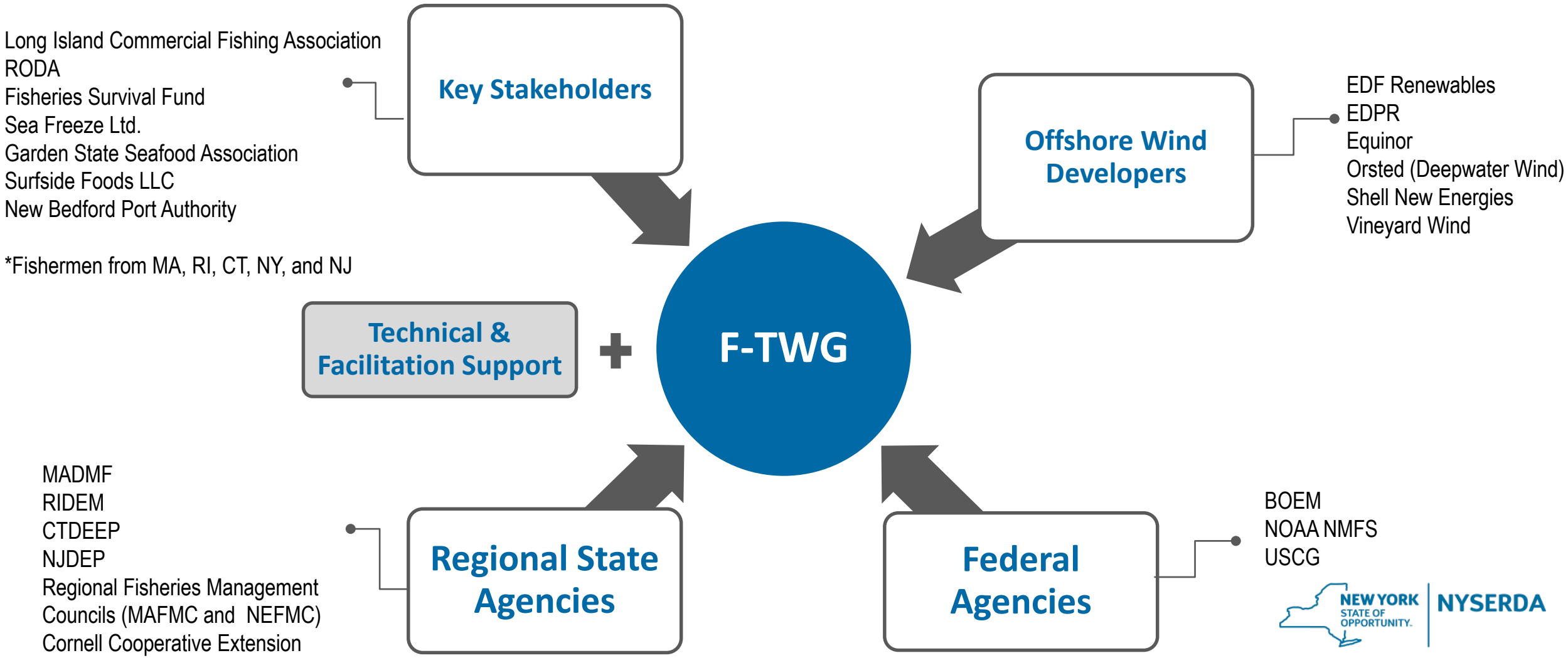
NY's F-TWG Website: **https://nyfisheriestwg.ene.com**

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

F-TWG Mission Statement

*To provide **advice and guidance** to help steer the State's efforts to advance offshore wind development in environmentally responsible way, while also protecting the **State and region's** valuable fisheries and fishing communities*

F-TWG Membership



F-TWG Highlights to Date

- Meetings were Fall of 2018 and Summer of 2019
- Creation of the F-TWG website to distribute information related to offshore wind and fishing activities **https://nyfisheriestwg.ene.com**
- Launch of the Offshore Wind Lease Mapper Tool
  - A tool to help fishermen and other stakeholders identify and understand the status of projects and where they are located
- Worked with RODA to hold the first Commercial Fishing Transit Workshop for the NY Bight in Spring of 2019
  - Explore the interests and needs of commercial fishermen in transiting through and around the New York Bight
  - Explore how these transit lanes may interact with proposed Wind Energy Areas
  - Summary report can be found on F-TWG website

F-TWG Highlights to Date

- Working with the winning bid teams to discuss the evolution of the fishing mitigation plans
- Winning proposals from the NYSERDA Environmental and Fishing Research Solicitation will be discussed and future research needs will be evaluated
  - $2 million for five projects – 2 projects will focus on ecosystem dynamics, 1 project on fisheries access within Wind Energy Areas (WEAs), and, 1 project on approaches to offshore wind pre- and post construction monitoring, and 1 project on the use of non-traditional fisheries data
- Continuing the conversation on Commercial Fishing Transit within the NY Bight
- Working on the inclusion of fishing communities from regional states into the Jobs and Supply Chain Database

Additional State Efforts Related to Fisheries and Offshore Wind

- The Fish and Fisheries Study as part of the NYSERDA Offshore Wind Master Plan
  - Highlighted fish habitat and fishing activities across the Mid-Atlantic planning area
  - Completion of a quick overview of observer data for NY fishing vessels in the Mid-Atlantic Bight
- As mentioned above, Fisheries Mitigation Plans were required as part of NYS's first Offshore Wind Solicitation put out by the Public Service Commission
  - This requirement will also be for future Offshore Wind Solicitation
- DEC is funding a species distribution model for sea scallops in the Mid-Atlantic Bight through the University of Maine
- NYS has expressed interest and support for the need for regional research and monitoring of fisheries and offshore wind interactions - ROSA

Environmental (E-TWG)

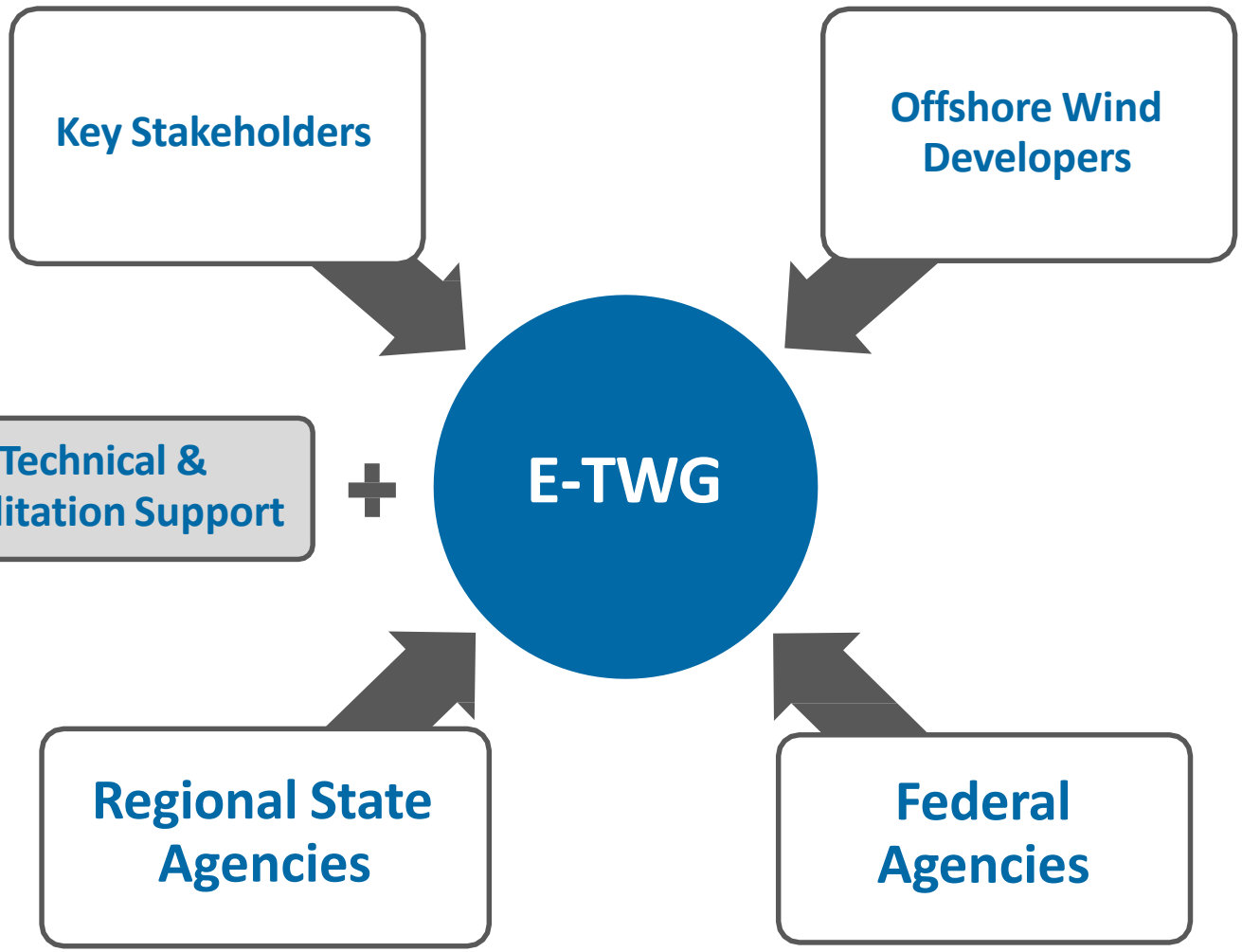
GOALS

- Identification and prioritization of research needs
- Regional coordination
- Development of wildlife best management practices (BMPs)

Led by NYSERDA

E-TWG Website: **www.briloon.org/offshorewindny**

NEW YORK STATE OF OPPORTUNITY. | NYSERDA



Audubon New York
National Wildlife Federation
Natural Resources Defense Council
The Nature Conservancy
NY Offshore Wind Alliance
Wildlife Conservation Society

EDF Renewables
Equinor
Ørsted (Deepwater Wind)
Shell New Energies
US Wind
Vineyard Wind

New York DEC, DOS, DPS
NYSERDA
Delaware DNR & Env. Control
Maryland DNR
Massachusetts DOS
Connecticut DEEP
Rhode Island CRMC
New Jersey DEP
New Jersey Board of Public Utilities
Virginia DEQ

BOEM
NOAA
USFWS

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

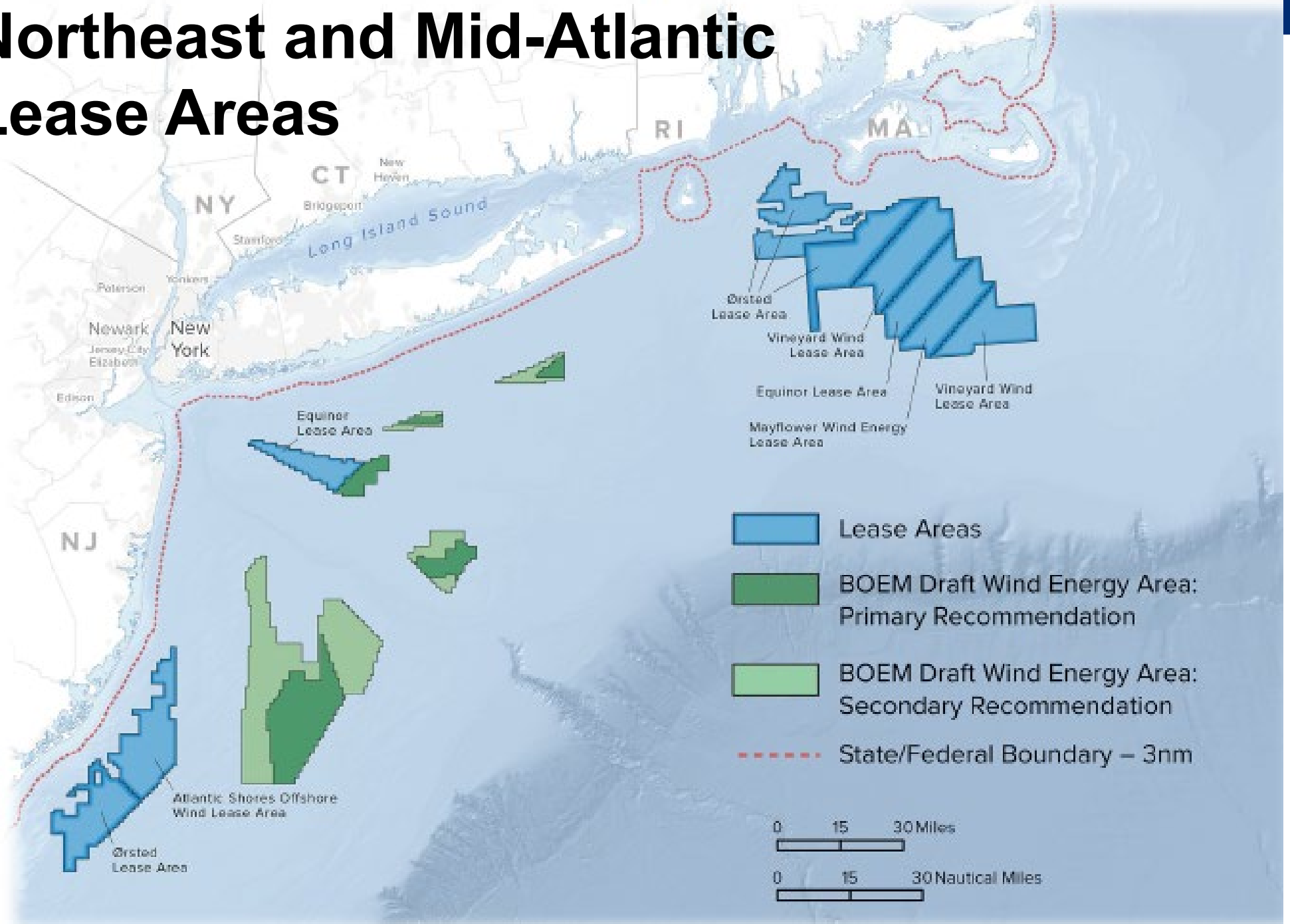
Highlights

- State of the Science Workshop: Wildlife and Offshore Wind, November 2018
- Synthesis of monitoring and mitigation practices (MMPs) and creation of a public interactive tool for use in discussions around environmental mitigation plans
- Gathering stakeholder feedback to instigate development of an environmental research related regional funding entity
- Stakeholder feedback on environmental research needs
- Initiating discussions around development of BMPs at the project level and regional level for consideration in New York State procurements

Next Steps

- Second State of the Science Workshop: Cumulative Impacts, Spring 2020
- Continue working towards establishment of a regional funding entity for environmental research with a workshop, Fall 2019
- Specialist Committees working towards BMPs for marine mammals and sea turtles and birds and bats for inclusion in future procurements
- Work with developers to implement Environmental Mitigation Plans
- Establish Project Advisory Committees for selected environmental research projects

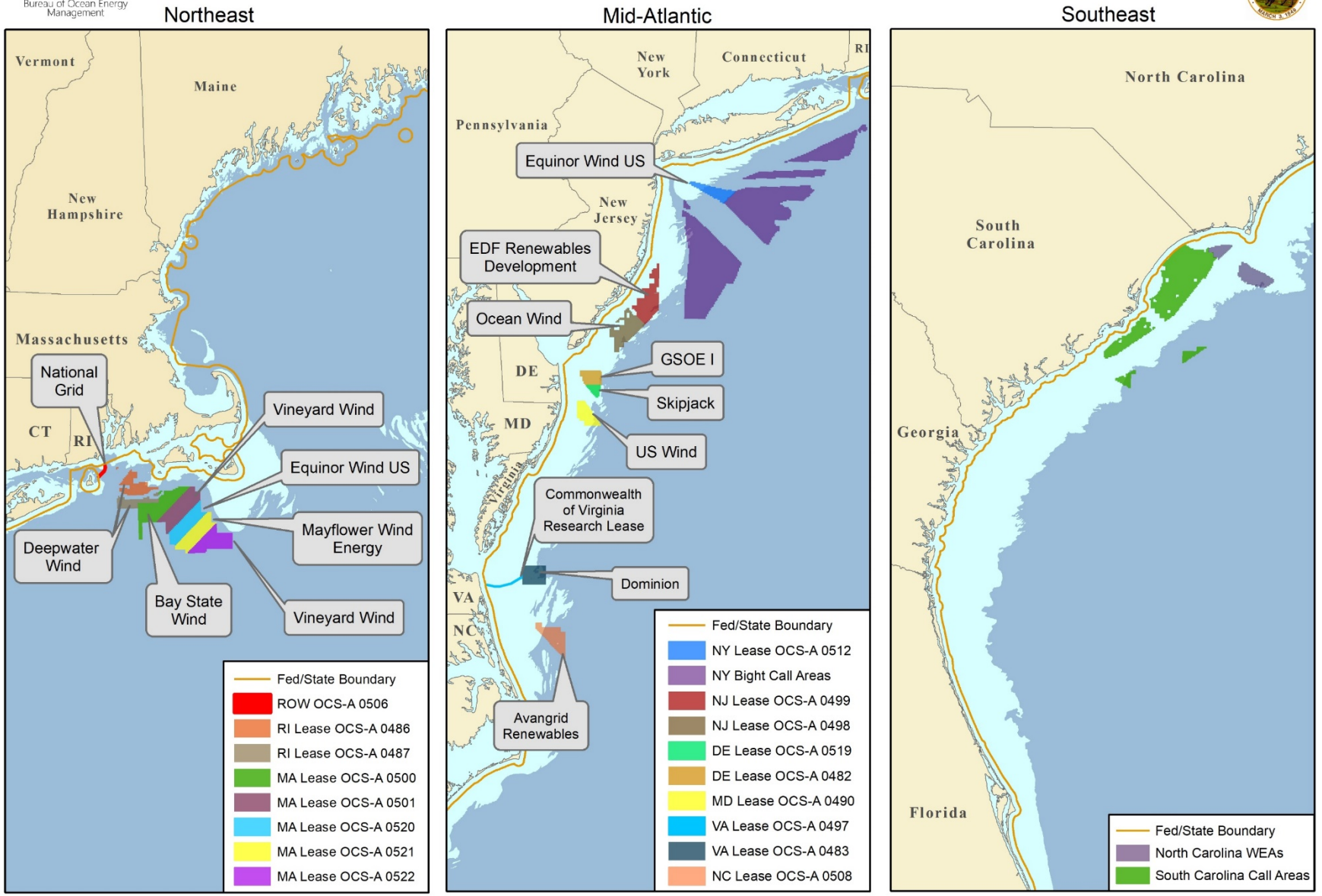
Northeast and Mid-Atlantic Lease Areas



NEW YORK STATE OF OPPORTUNITY. | NYSERDA

BOEM
Bureau of Ocean Energy Management

Atlantic OCS Renewable Energy - Massachusetts to South Carolina



Bathymetry

Up to 30 meters

More than 30 meters

0 50 100 150 200 250

Nautical Miles

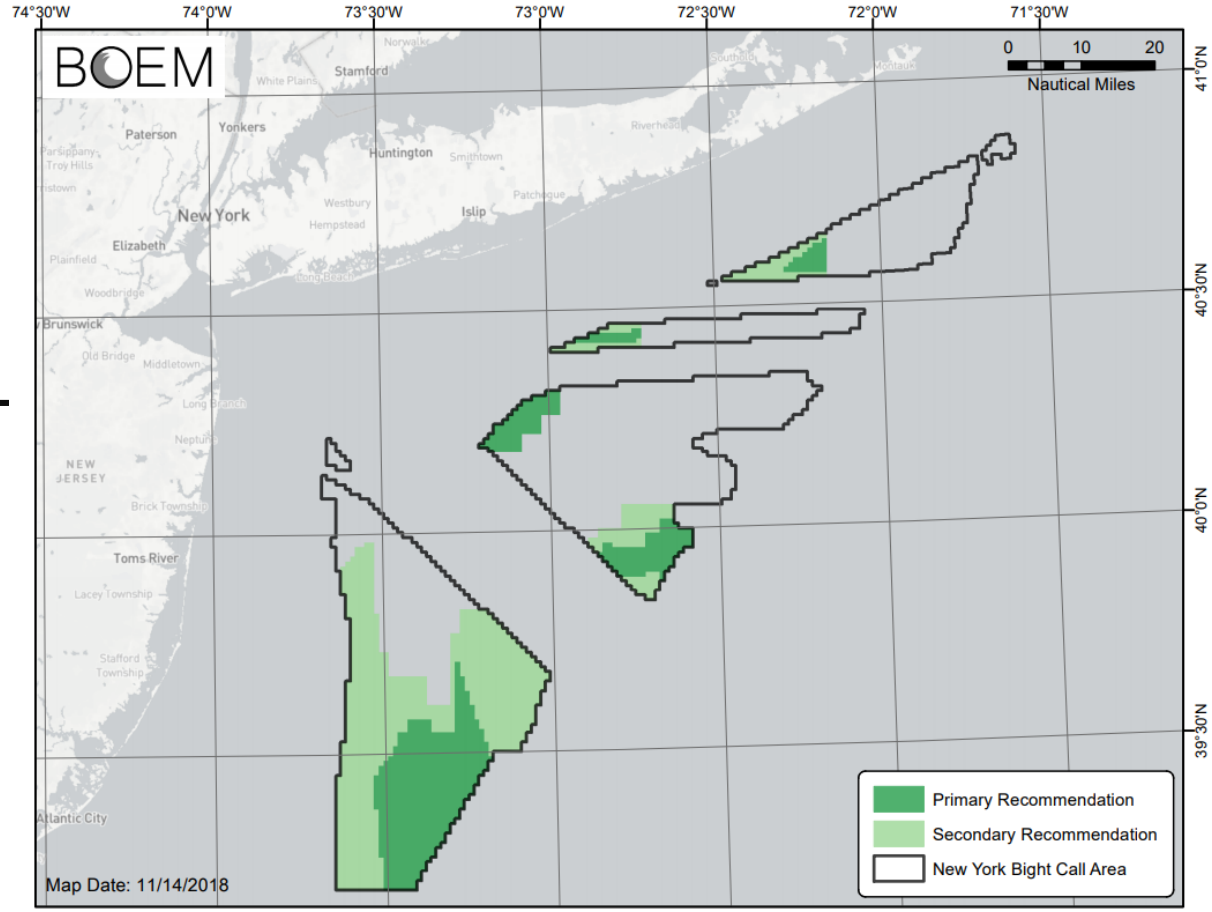
Map Date: 3/11/2019

Map ID: ERB-2017-1004

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Offshore Wind in NJ

- Executive Order, 8 January 2018
- Board of Public Utilities and Department of Environmental Protection shall take all necessary actions to promote and realize offshore wind energy off the coast of New Jersey.
- Goal of 3.5 GW by 2030



The BPU is the lead agency for

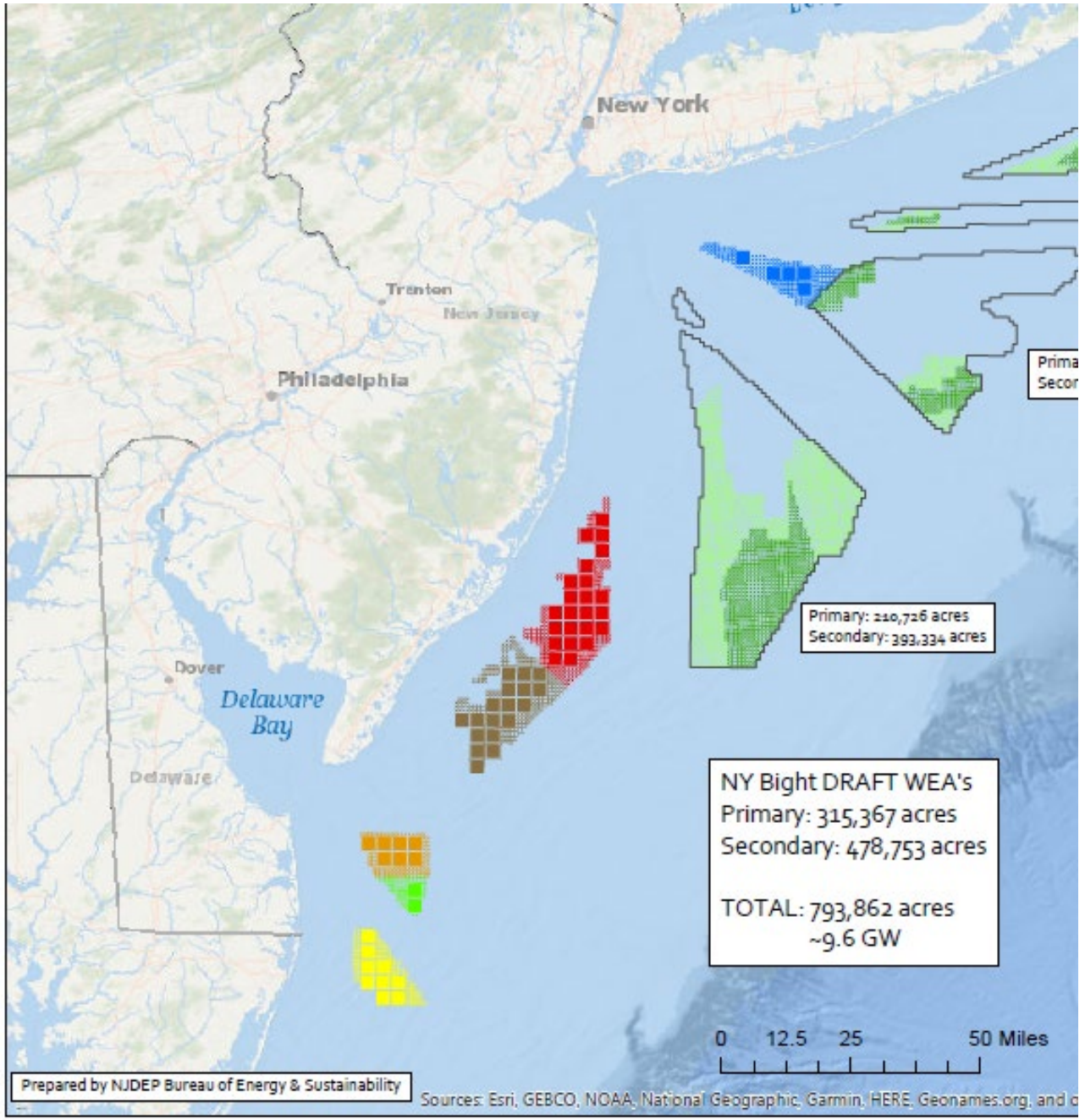
- *Strategic Plan*
- *Environmental Modeling Analysis*
- *Stakeholder Plan*
- *ORECs*

DEP Programs Involved in OSW

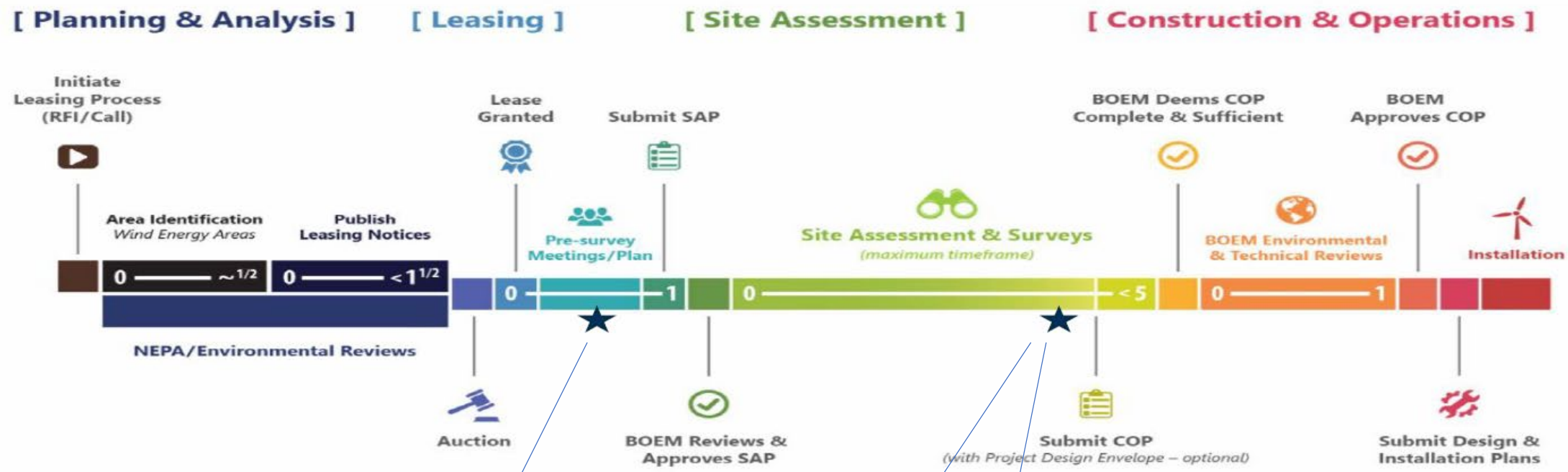
- Office of Permit Coordination and Environmental Review (lead)
- Division of Land Use Regulation
- Division of Science and Research
- Office of Coastal and Land Use Planning
- Division of Fish and Wildlife
  - Marine Fisheries Administration
  - Endangered and Nongame Species Program
- Green Acres
- State Historic Preservation Office
- Bureau of Energy and Sustainability
- Division of Air Quality

NJ DEP Role in Offshore Wind

- Collaborate with BPU and advise on environmental and permitting issues
- Review (NEPA, NJ BPU Strategic Plan, Environmental Modeling Analysis, OREC applications)
- Federal consistency and state water issues
- Outreach/stakeholdering
- Working groups:
  - New Jersey Intergovernmental Task Force on Offshore Wind
  - The Multi-State Offshore Wind Team
  - BOEM NJ/NY Bight Task Force
  - Regional Science Entity



FEDERAL OFFSHORE WIND COMMERCIAL LEASING PROCESS



Atlantic Shores
EDF/Shell
SAP Expected Q4 2019

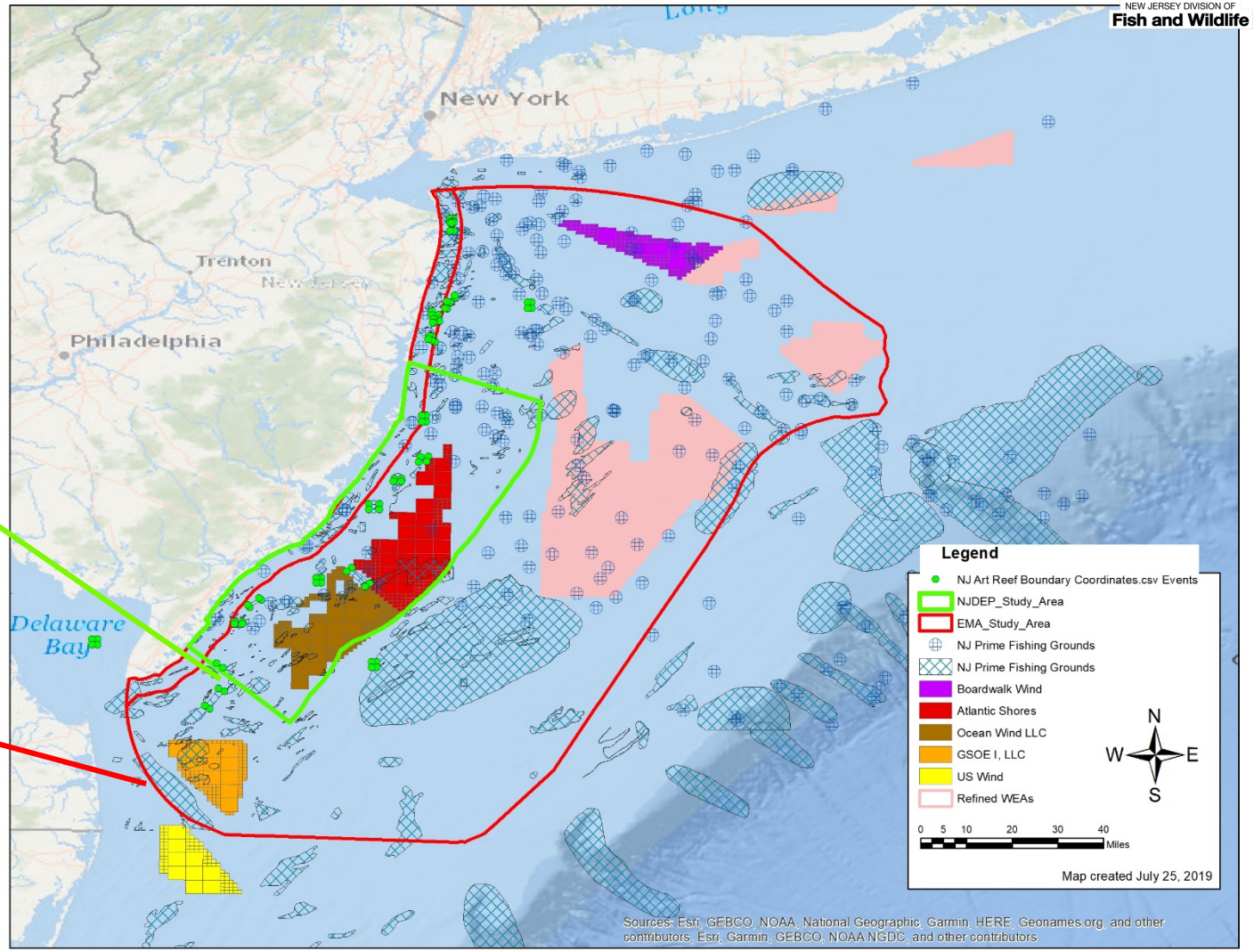
Ocean Wind
Orsted
COP Expected Sept 2019

Boardwalk Wind
Equinor
COP Expected Sept 2019

NEPA timetable suggests construction off of NJ could begin as early as Q4 2021.

NJ Offshore Wind Research

- 2010 Baseline Studies
- 2019 Environmental Modeling Analysis



Research Needs / Questions

- Cable burial depth
- Turbine layout / inter-turbine distance
- Sediment transport
- Effects on Cold Pool (summertime thermal refuge)
- Cumulative impacts
- How can impacts be detected?
- How can State and Federal survey data inform desktop studies?

FISHING INDUSTRY ENGAGEMENT IN RESEARCH AND DEVELOPMENT

Annie Hawkins

Executive Director of RODA &

Interim COO of ROSA

Responsible Offshore Development Alliance

Membership – Enthusiastic and growing!

- North Carolina to Maine
- ~30 Federal and State-permitted fisheries
- Atlantic fishing associations, dealers, processors, and over **125 vessels**
- West Coast interest; exploring RODA expansion

Memorandum of Understanding with NOAA/NMFS & BOEM

Signed March 2019

- Identifies **areas of mutual interest** between agencies and RODA
- Promotes **engagement of commercial fishing industry** in offshore wind development process
- Commits to **incorporate fishing expertise** in planning and development
- Support development of **regional research and monitoring** efforts

RODA's Joint Industry Task Force

Provide a forum for commercial fishermen and offshore renewable energy developers to **identify areas of cooperation and solutions** to areas of conflict.

Committed participation from 5 largest leaseholding developers and RODA members for quarterly meetings and information exchange

Inaugural meeting June 2019

- Identified Task Force Principles, Terms of Reference and next steps

Responsible Offshore Science Alliance

- RODA is a proud founding partner
  - Crucial to have participation and credibility from fishery participants and science experts

- Independent organization dedicated to advancing regional research and monitoring to:
  - Increase salient and credible data on fisheries and wind development;
  - Increase understanding of the effects of wind energy development on fisheries and their coastal and ocean ecosystems

- Collaboration between RODA members and offshore developers

- Supported by NMFS and BOEM

ROSA

Responsible Offshore Science Alliance

- Strong focus on cooperative research

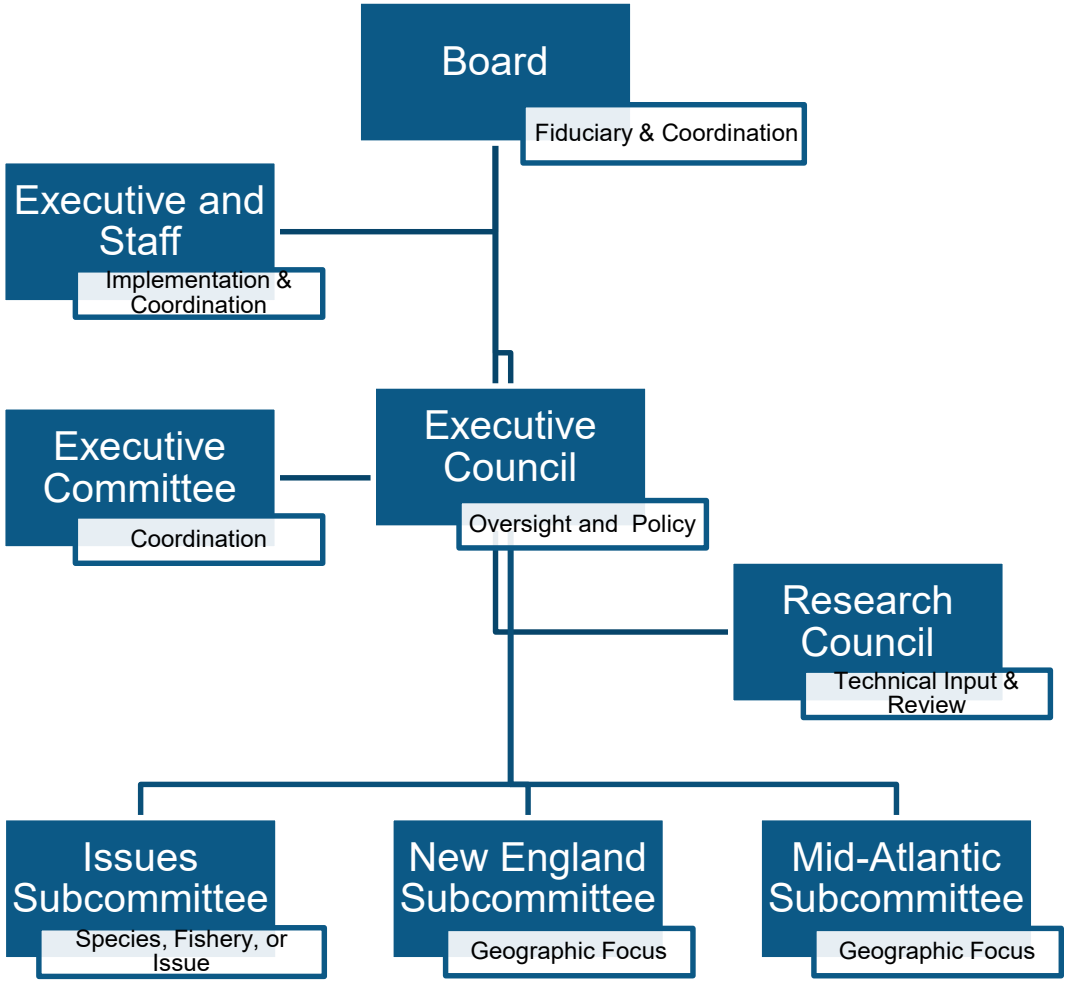
- Modeled after public-private science consortia such as:
  - Councils' Scientific and Statistical Committees
  - North Pacific Research Board
  - Gulf of Mexico Alliance

- Core abilities:
  - Identify priority research projects
  - Reduce duplication in study efforts
  - Maximize utility of data collected for various management purposes

- Funding approach
  - Mix of unrestricted and restricted (project-specific) funds

ROSA

Draft Organizational Structure



Responsible Offshore Science Alliance

First ROSA meeting held in Philadelphia, PA July 2019

- Over 50 participants from fishing industry, renewable energy developers, state energy and fisheries representatives, fisheries management councils and Commission, NMFS, and BOEM
- General positive feedback
- Need to finalize organizational structure and level of participation from all entities
- Moving forward in the coming weeks

States' Roles in RODA & ROSA Efforts

- Task Force aims to provide level of coordination between state fisheries/offshore wind working groups
  - State- and project-specific issues remain; one forum for "big picture" issues will reduce time and resource demands on fishermen, developers, and regulators

- ROSA will allow for better regional coordination in order to greatly reduce scientific uncertainty

- Interstate coordination on best practices and research agenda currently largely informal
  - What are best methods to increase state cooperation on overlapping issues, while ensuring each meets its unique needs?
  - How can we design more predictable ways of collaborating to maximize collective value?