



MAYFLOWER WIND

Project Update

Presented to

MA EEA Habitat Working Group

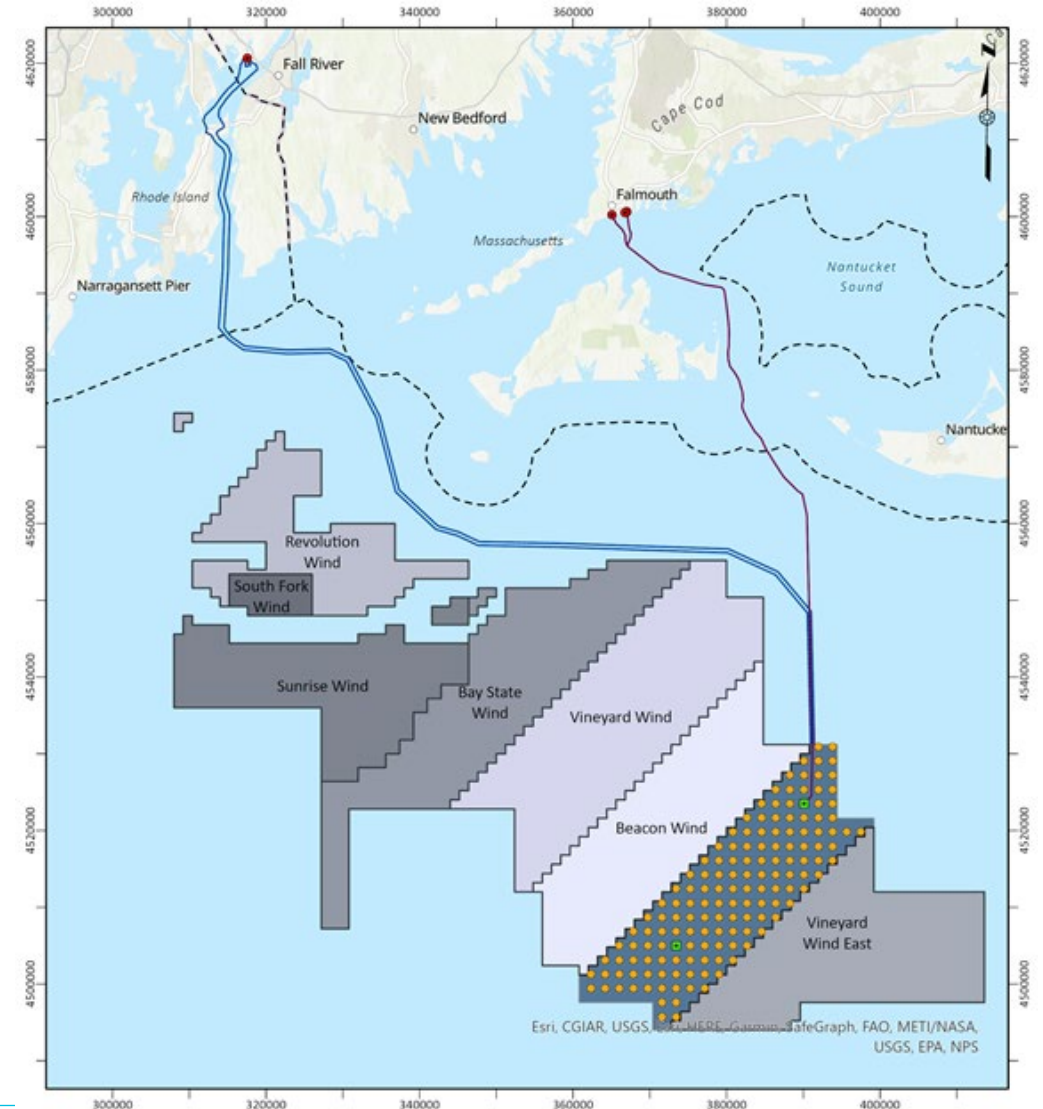
Presented by

Erin Healy, Marine Science Permitting Manager, Mayflower Wind

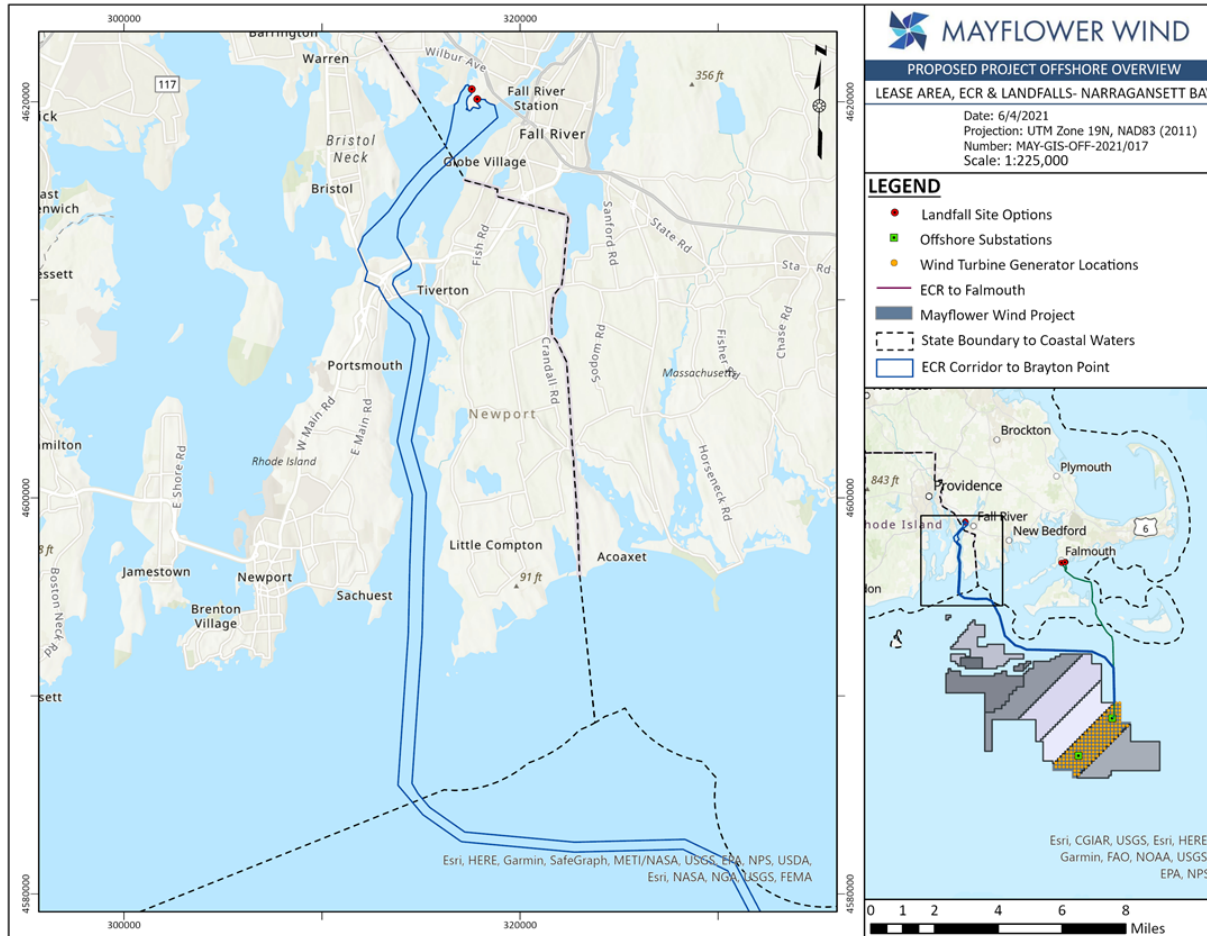
April 28, 2022

Mayflower Wind Project

- Lease Area OCS-A 0521
- Two export cable routes
 - Falmouth, MA
 - Brayton Point, Somerset, MA
- Spring 2022 Benthic Survey focused on Brayton Point export cable corridor (ECC)
 - Brayton Point ECC in Federal Waters:
 - ~145 km
 - Brayton Point ECC in State Waters:
 - ~32.5 km in RI state waters
 - ~3.5 km in MA state waters



Spring 2022 Benthic Survey



Sixth benthic survey conducted by Mayflower Wind between 2020 and 2022

Sediment Grab Samples

- Biotic community lab analysis
- Grain size analysis
- Total organic carbon analysis
- GrabCam video

SPI/PV Images

- Benthic surface
- Shallow sediment
- Including transects across the export cable corridor

Video transects

Shallow Water Benthic Survey Vessel - *Galatea*



- Length: 46 feet
- Operational Water Depth: >10 feet

Deep Water Benthic Survey Vessel – *Warren Junior*



- Length: 150 feet
- Operational water depths: >20 feet

Marine Mammal Protection

Strike Avoidance Measures (All Vessels)

- Vessels greater than 65 feet in length operate at speeds below 10 knots between November 1 and July 31
- Monitor for DMAs and operate at 10 knots or less in DMA areas
- Maintain separation distance of at least 500m with observed North Atlantic Right Whale (NARW) and 100m for other large whales

Incidental Harassment Authorization from NMFS for geophysical surveys

- Protected Species Observers (PSOs) on geophysical survey vessels
- Implement IHA procedures
- Monitor during surveys
- Implement mitigation measures if protected species enter "exclusion zone" set by NMFS

Gray Seal



Humpback Whale



Common Dolphin



Thank You

Questions and Comments?

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MAYFLOWER WIND

English

PROJECT OVERVIEW ▾ ABOUT US OUR COMMITMENT ▾ NEWS & EVENTS ▾ WORK WITH US ▾

SIGN UP FOR UPDATES



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Ørsted Offshore North America

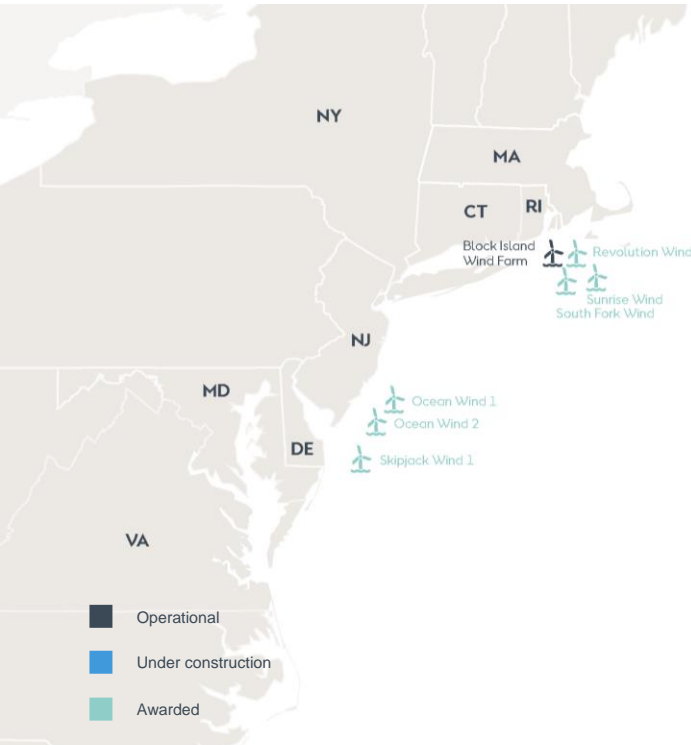
Northeast Program Update



MA EEA Habitat Working Group
Meeting on Offshore Wind
April 2022

Ørsted Offshore North America portfolio

Awarded over 4,000 MW of offshore capacity on the East coast



In Operation

Block Island Wind Farm (BIWF): 30MW

Awarded

Revolution Wind (REV): 50/50 JV w/ Eversource, 704MW (400MW to RI, 304MW to CT)

South Fork Wind (SFW): 50/50 JV w/ Eversource, 132MW

Sunrise Wind (SRW): 50/50 JV w/ Eversource, approximately 924MW

Ocean Wind 1 (OCW1): 75/25 JV with PSEG, 1,100MW

Ocean Wind 2 (OCW2): 1,148MW

Skipjack Wind 1 (SJW1): 120MW

Skipjack Wind 2 (SJW2): 846MW

Orsted Northeast Program 50/50 JV with Eversource

South Fork

- Lease Area OCS-A 0517
- Deliver power to the East Hampton, NY
- NY Article VII approved March 2021
- COP Approval expected January 18, 2022

Revolution

- Lease Area OCS-A 0486
- Interconnect to the existing Davisville Substation, RI
- RI EFSB Hearings underway
- RI CRMC and RI DEM permit applications under review
- DEIS July 2022, FEIS March 2023

Sunrise

- Lease Area OCS-A 0487
- Proposed interconnection at Holbrook Substation, NY
- NY Article VII Settlement meetings underway
- DEIS October 2022, FEIS July 2023



Northeast Program Update

FISHERIES SURVEYS

- **SFW (underway)**
 - Beam Trawl
 - Gillnet Survey
 - Fish Pot Survey
 - Ventless Trap Survey
- **REV/SRW (delayed by permitting)**
 - Bottom Trawl Survey
- **REV (delayed by permitting)**
 - Ventless Trap Survey

ACOUSTIC TELEMETRY SURVEYS

- Highly Migratory Species (SFW/REV/SRW- receivers will be deployed this spring)
- Export Cable (SFW-underway/SRW-planned for this summer)

BENTHIC SURVEYS (planned)

- Soft and Hard Bottom Habitats (SFW/REV)
- Soft Bottom Habitats (SRW)



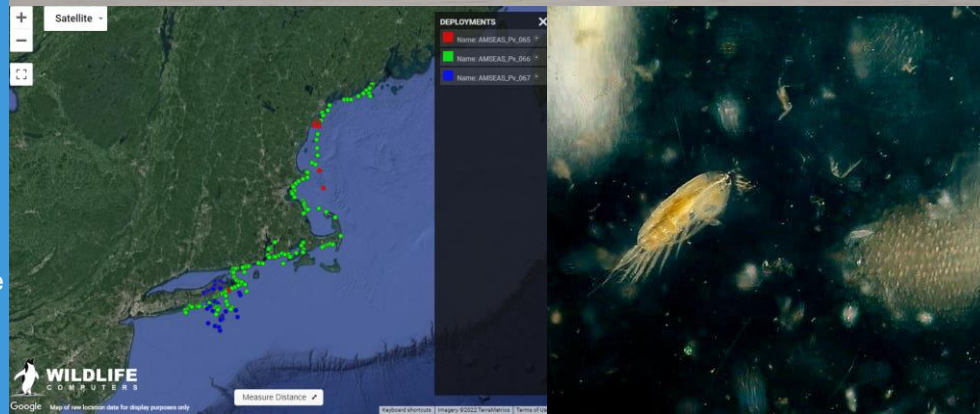
Northeast Program Update

MARINE MAMMAL LONG TERM PAM

- **SFW:** 2 Long Term archival recorder's deployed in fall
- **REV:** Long Term recorder deployments anticipated in 2023
- **SRW:** Long Term recorder deployments anticipated in 2023

MARINE MAMMAL & SEA TURTLE VOLUNTARY STUDIES

- **Ocean Wind ECO-PAM (WHOI/Mark Baumgartner):** buoy deployed thru mid –summer south of Martha's Vineyard
- **REV**
 - **Mystic Aquarium/Dr. Tracy Romano:** studies commencing include laboratory e-DNA and stress studies and seal and ST tagging
- **SRW**
 - **PINNI-POD (AMSEAS/Rob DiGiovanni):** 3 tags deployed to date on harbor seals
 - **Syracuse U/Susan Parks:** acoustic density estimation study using Cape Cod data and Opportunistic Focal data collection of large whales
 - **ECO-POD (Stony Brook U/Joe Warren and Lesley Thorne):** Desktop zooplankton studies underway, field surveys commence ~ June 2022



Northeast Program Update – Monitoring for Birds and Bats

SOUTH FORK WIND POST-CONSTRUCTION MONITORING FRAMEWORK

- MOTUS receiving stations & funding Roseate Tern movement study
- Ship-based avian point count behavioral surveys
- Acoustic monitoring for nocturnal migratory birds and bats
- Worker Incidental Reporting System for dead/injured birds & bats
- Adaptive monitoring
- Reporting



NORTHEAST PROGRAM CONSIDERATIONS (REVOLUTION & SUNRISE)

- Tailored to project “risk profile”
- Focus on filling priority data gaps
- Monitor across projects where feasible
- Build upon South Fork; may include address different monitoring questions using different technologies
- Work within offshore logistical and health & safety constraints

Thank you

Melanie Gearon

Head of Northeast Permitting

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 Orsted



**VINEYARD
OFFSHORE**

28 April 2022

MA Habitat Working Group Update

www.vineyardoffshore.com

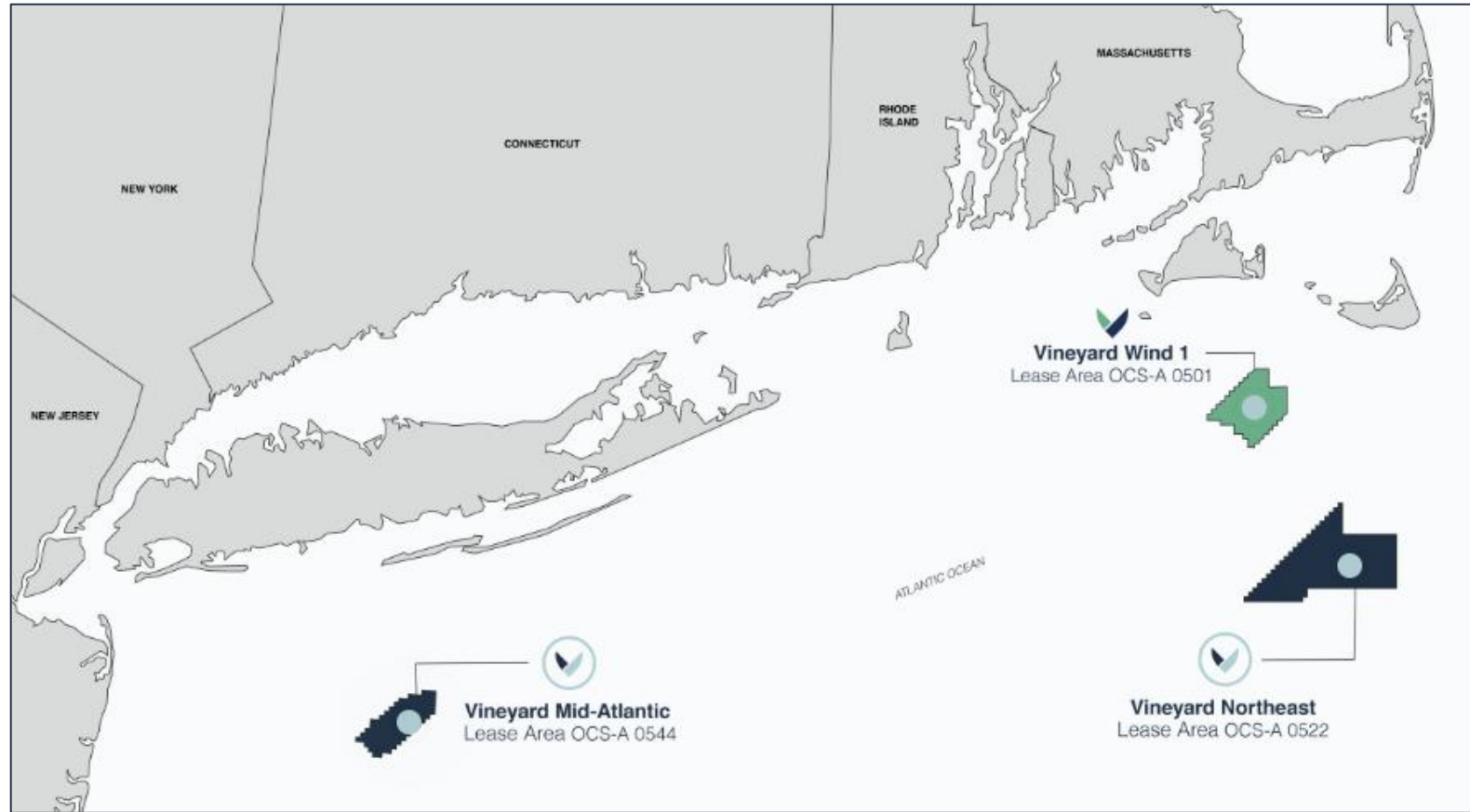
TEAM BEHIND VINEYARD WIND LAUNCHES
VINEYARD OFFSHORE

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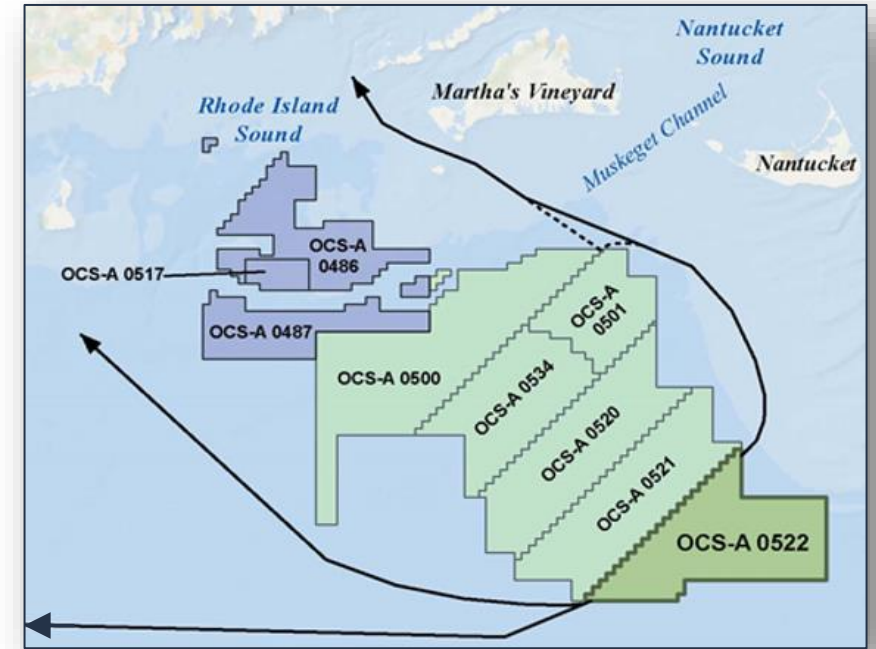
Lease Holdings



Current Activities

Lease & Cable Corridor Surveys

- High Resolution Geophysical
 - Started in March 2022 and ongoing
 - Seabed mapping for various purposes and permit applications
- Geotechnical
 - Core sampling
- Benthic
 - Baseline seabed mapping, underwater video and grab samples

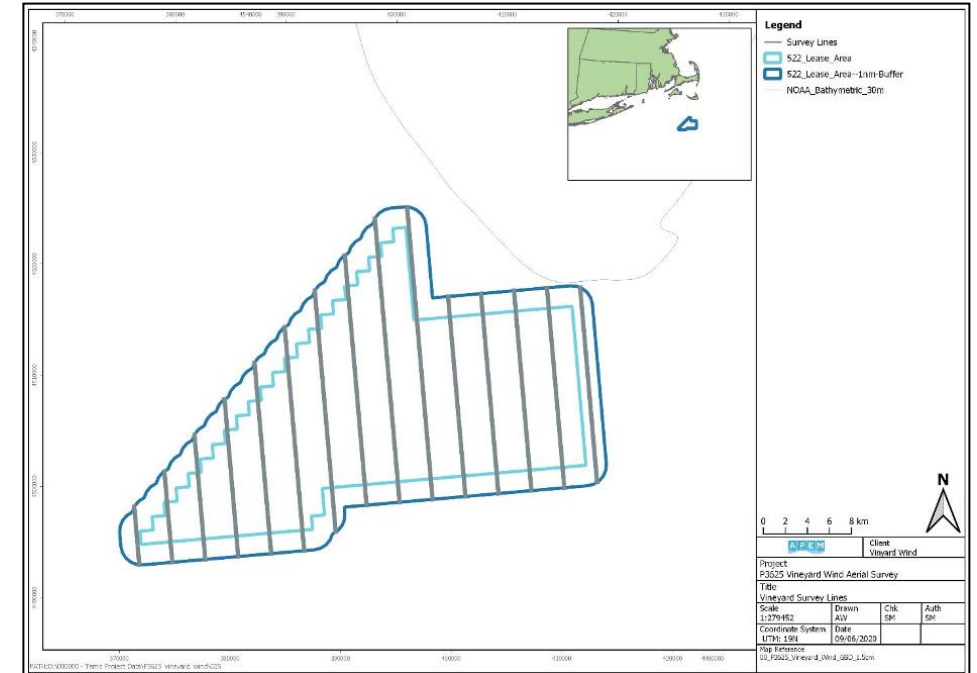


Photos courtesy of RPS

Environmental Studies

Vineyard Offshore Aerial Surveys

- **Objective:** collected 2-years of aerial data on marine fauna
- **Frequency:** 1-2 flights per month
 - June 2019 – May 2020
- **Methods:** aerial photography
- **Current Status:** analyzing data for inclusion in the Construction and Operation Plan for Lease OCS-A 0522

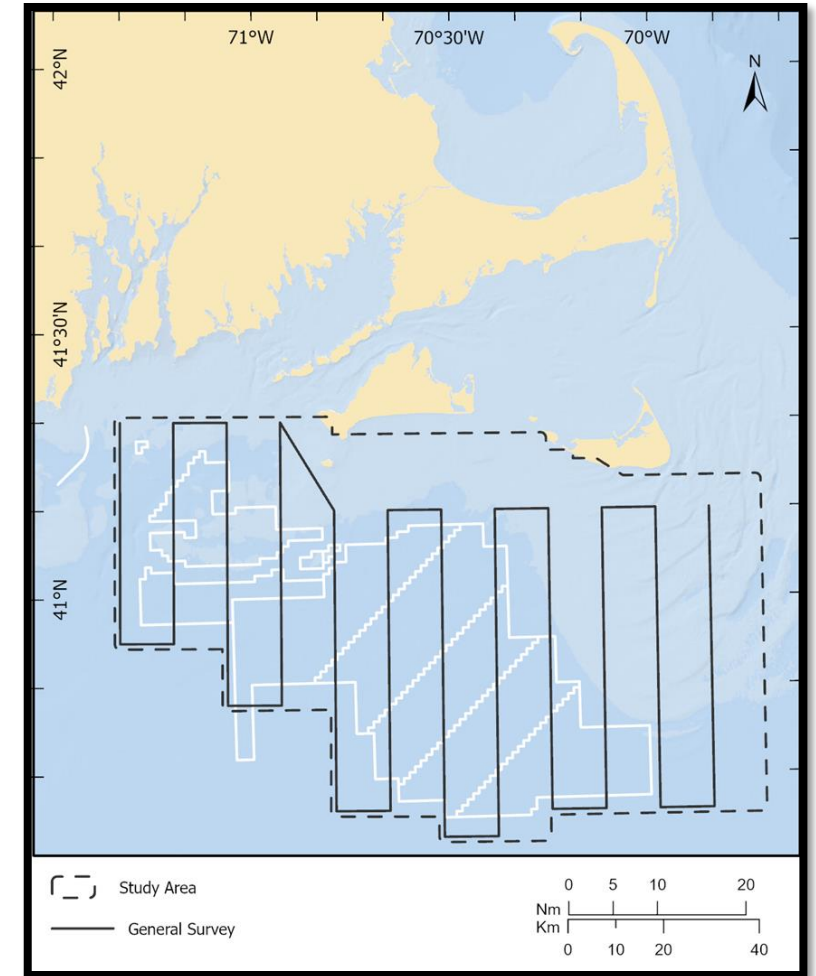


APEM aerial transects

Environmental Studies

New England Aquarium Aerial Surveys

- **Objective:** collect aerial data on marine mammals and sea turtles
- **Frequency:** 1-2 flights per month
 - Campaigns 1-3: October 2011 - June 2015
 - Campaign 4: February 2017 – July 2018
 - Campaign 5: October 2018 – August 2019
 - Campaign 6A: March – October 2020
 - Campaign 6B: November 2020 – October 2021
- **Methods:** aerial photography
- **Current Status:** ongoing. Results of surveys will be incorporated into the Construction and Operation Plan for Lease OCS-A 0522



NEAq Campaign Report Survey Map

Environmental Studies

Fisheries Surveys

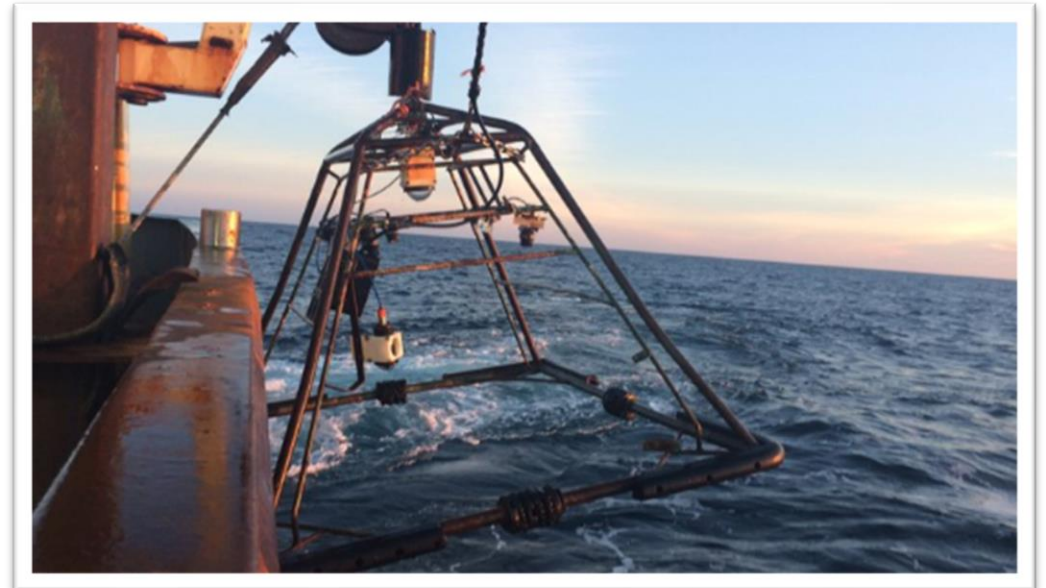
UMass School for Marine Science and Technology (SMAST)

- **Methods:** drop camera and trawl data
- **Current Status:**
 - Trawl data collected 2019, 2020, 2021
 - Drop camera data collected 2019, 2020, 2021, and ongoing

New England Aquarium Highly Migratory Species

- **Methods:** fisheries tags and acoustic receivers
- **Current Status:** ongoing and for multiple developers

Results of surveys will be incorporated into the Construction and Operation Plan for Lease OCS-A 0522



VINEYARD



OFFSHORE



VINEYARD WIND

Project Update
April 28, 2022

Vineyard Wind 1



Overview

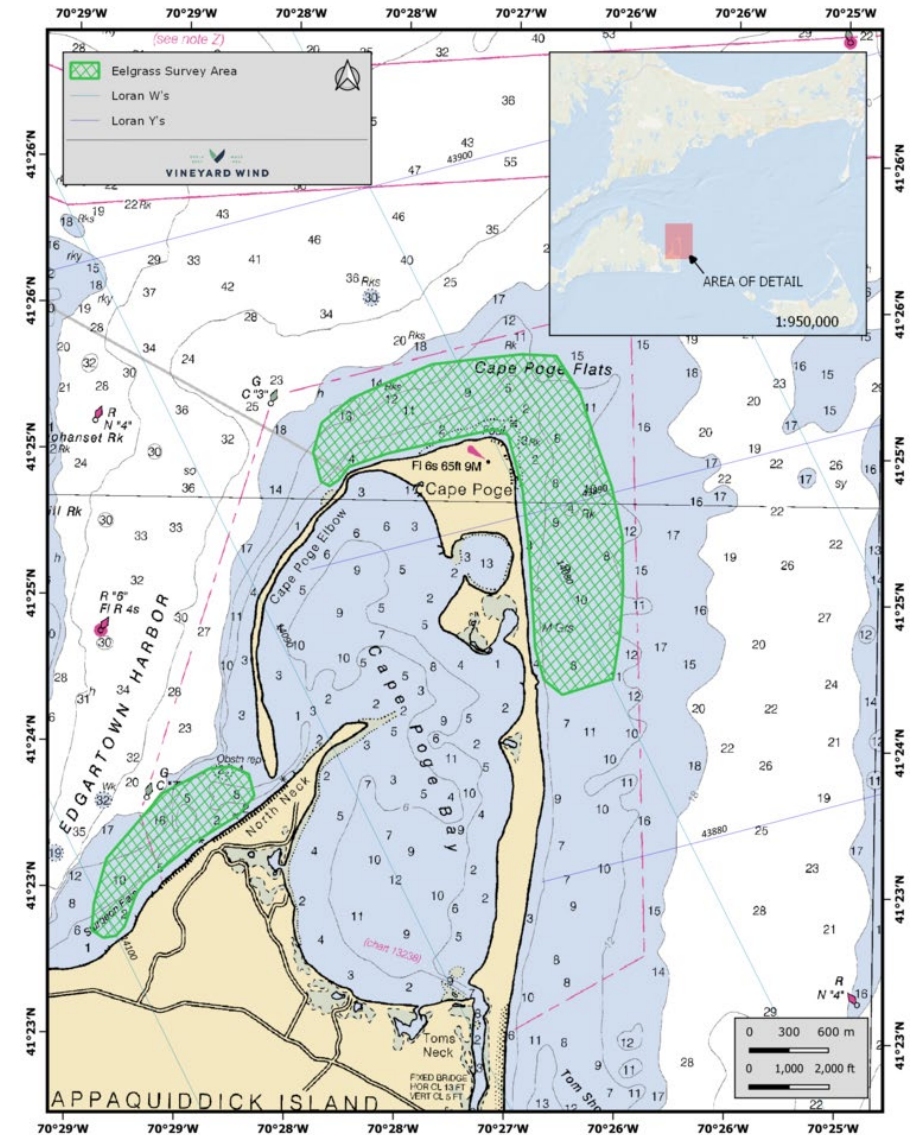
- **Capacity:** 800 MW
- **Lease Area:** OCS-A 0501
- **Federal Permitting:** Complete
- **State Permitting:** Complete
- **Point of Interconnection:** Barnstable Substation (MA)
- **Power Purchase Agreements:** 20-year PPAs with Massachusetts utilities (approved)
- **COD:** 2024



Environmental Studies

Eelgrass Study

- **Objective:** Map extent of eelgrass beds surrounding Cape Poge before and after export cable installation for Vineyard Wind 1
- **Frequency:** Baseline, year one and three post-construction
- **Methods:** Visual observation, echograms, underwater video and still images, and snorkelers

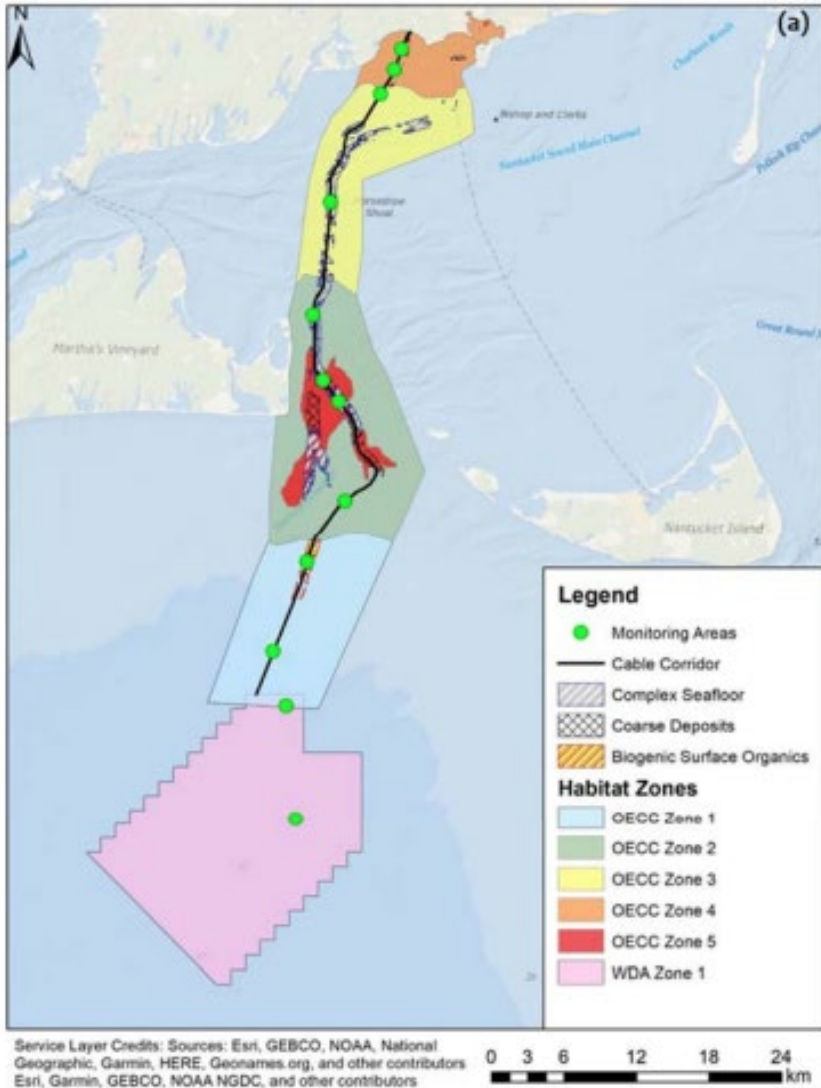


Base map: NOAA Chart 13233 | NAD83 UTM Zone 18N (2011) | 2021-AUG-13



VINEYARD WIND

Environmental Studies

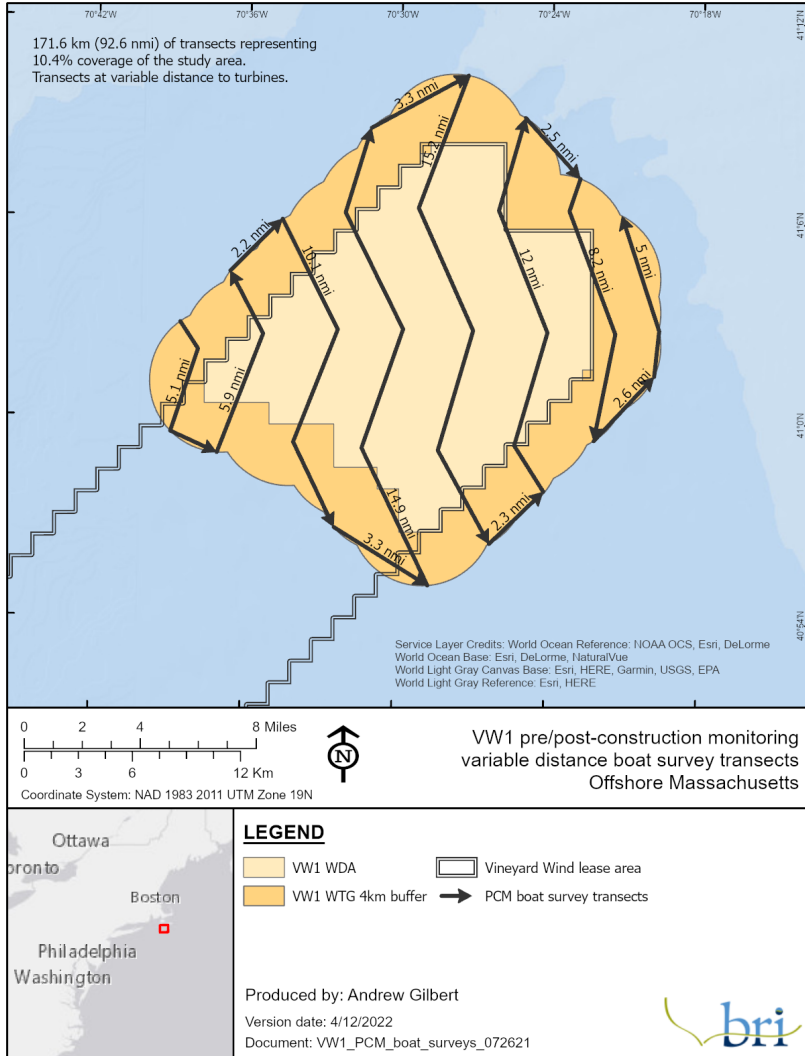


Benthic Habitat Monitoring

- **Objective:** Document benthic habitat, benthic communities, and sand lance along export cable route and within wind development area before and after construction and installation of Vineyard Wind 1
- **Frequency:** Baseline survey, year one and three post-construction
- **Methods:** Multibeam depth sounder, underwater video, grab samples



Environmental Studies



Pre-Construction Avian Surveys

- **Objective:** Monitor occurrence and assess behavior of birds/wildlife within the Vineyard Wind 1 Wind Development Area
- **Frequency:** One survey per month for one year prior to construction
- **Methods:** Boat-based avian surveys following BOEM's Avian Survey Guidelines

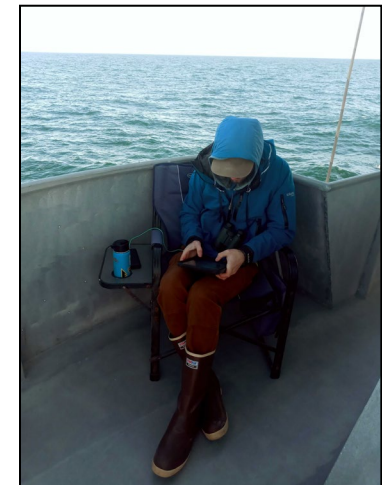
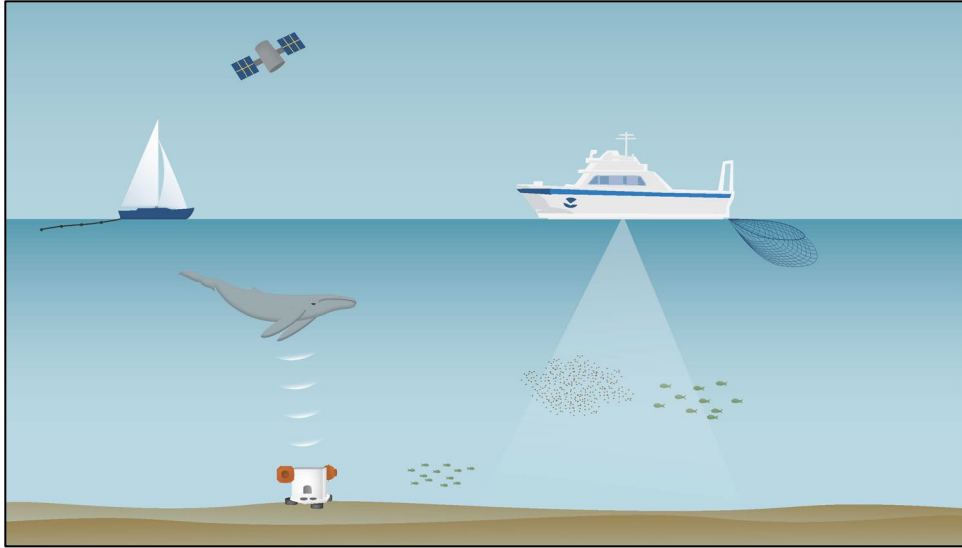


Photo credit: BRI



VINEYARD WIND

Environmental Studies



Archival Passive Acoustic Monitoring

- **Objective:** Record biological and anthropogenic sounds in the Lease area
- **Frequency:** Pre- (30 days), during-, and post-construction (three years) periods
- **Methods:** Multi-channel PAM system capable of continuous monitoring; deployed on lander

Press Release: <https://www.vineyardwind.com/press-releases/2022/4/20/vineyard-wind-and-the-university-of-new-hampshire-partner-on-acoustic-monitoring-for-marine-mammals>

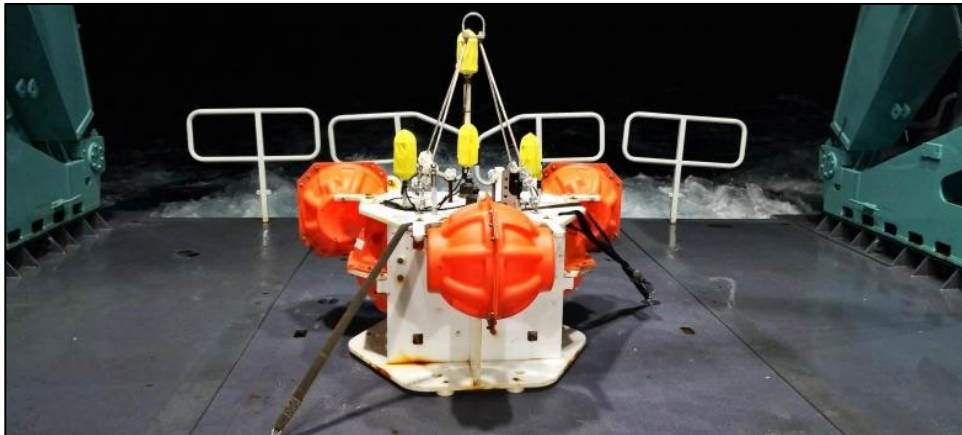


Photo credit: <https://adeon.unh.edu/>



University of
New Hampshire



VINEYARD WIND

Questions?

Thank you

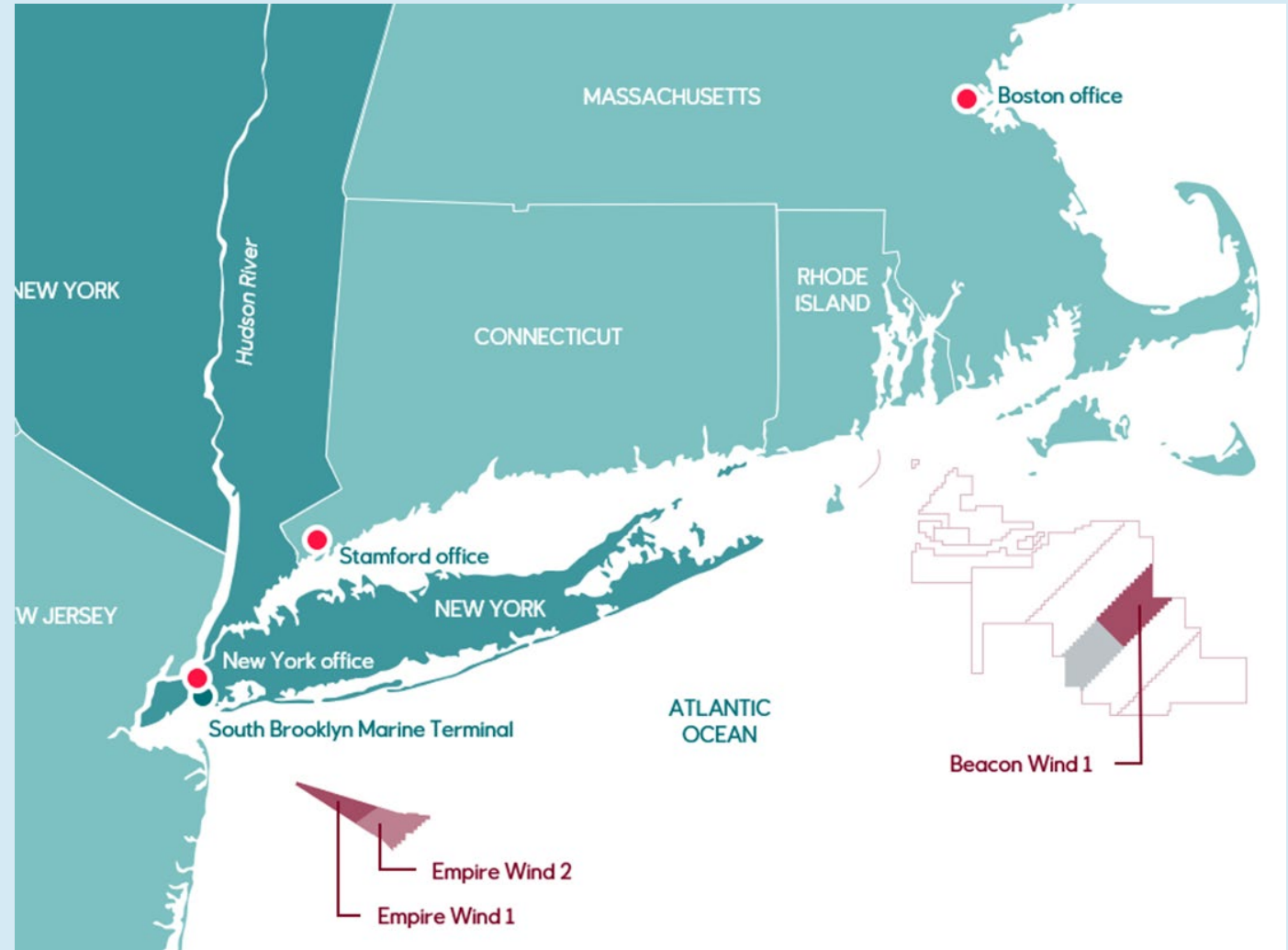
Beacon Wind

EEA Habitat Working Group
April 28, 2022



Beacon Wind | Agenda

- **Beacon Wind Timeline**
- **Status update on Survey Program**
- **Status update on Monitoring Program**
- **NYSERDA PSA Monitoring of Fish and Wildlife**
- **Questions?**



Beacon Wind | Time line

2019 – Lease Acquired

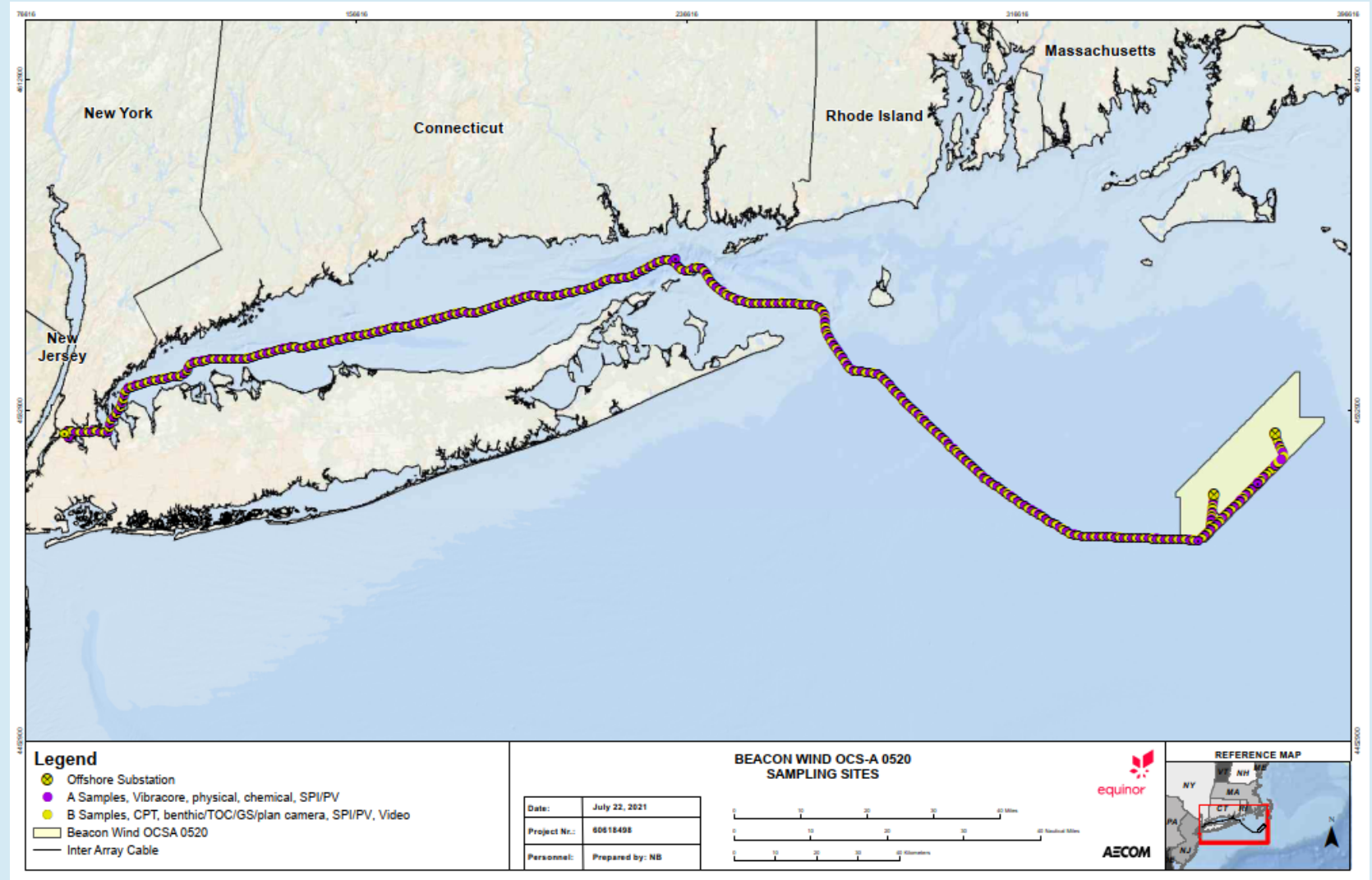
2020 – Aerial Wildlife and Marine Survey Commencement

2021 – Deployment of Metocean Buoys

2022 – Federal & State Permit Submission

2024 – Permits Approved

2025 – Construction and Fabrication



Beacon Wind | Survey Program Update



Beacon Wind Lease Area geotechnical sampling

Projected Completion – May 2022

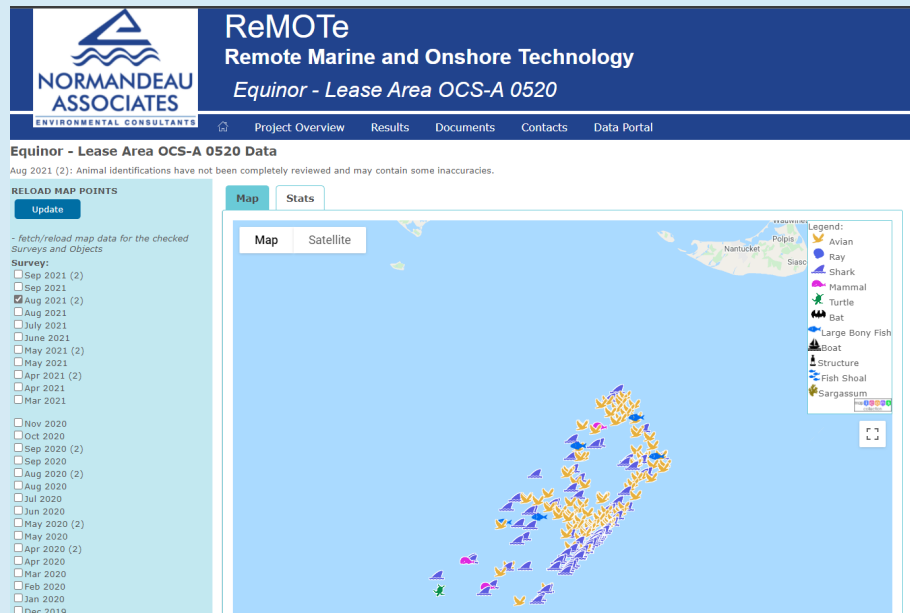


Dina Polaris

Beacon Wind | Monitoring Program Update



High-resolution aerial surveys



Data is currently available at https://remote.normandeau.com/eqn22_overview.php

and is in the process of being prepared for posting on Duke University's OBIS-SEAMAP
<https://seamap.env.duke.edu>

Highly Migratory Species (HMS) Passive Acoustic Telemetry

- HMS are sharks, tunas, billfishes
- In partnership with Dr. Jeff Kneebone at the New England Aquarium to build on existing work with MassCEC and other developers
- Array of seabed-mounted acoustic receivers deployed in the Lease Area
 - May to December 2021
 - May to December 2022 (planned)
- Acoustic transmitter tags deployed on HMS in the Beacon Wind Lease Area in summers 2021, 2022 (planned)

Beacon Wind | Monitoring Program Update

Metocean Buoys and Moorings

Deployed November 2021

In addition to metocean instruments:

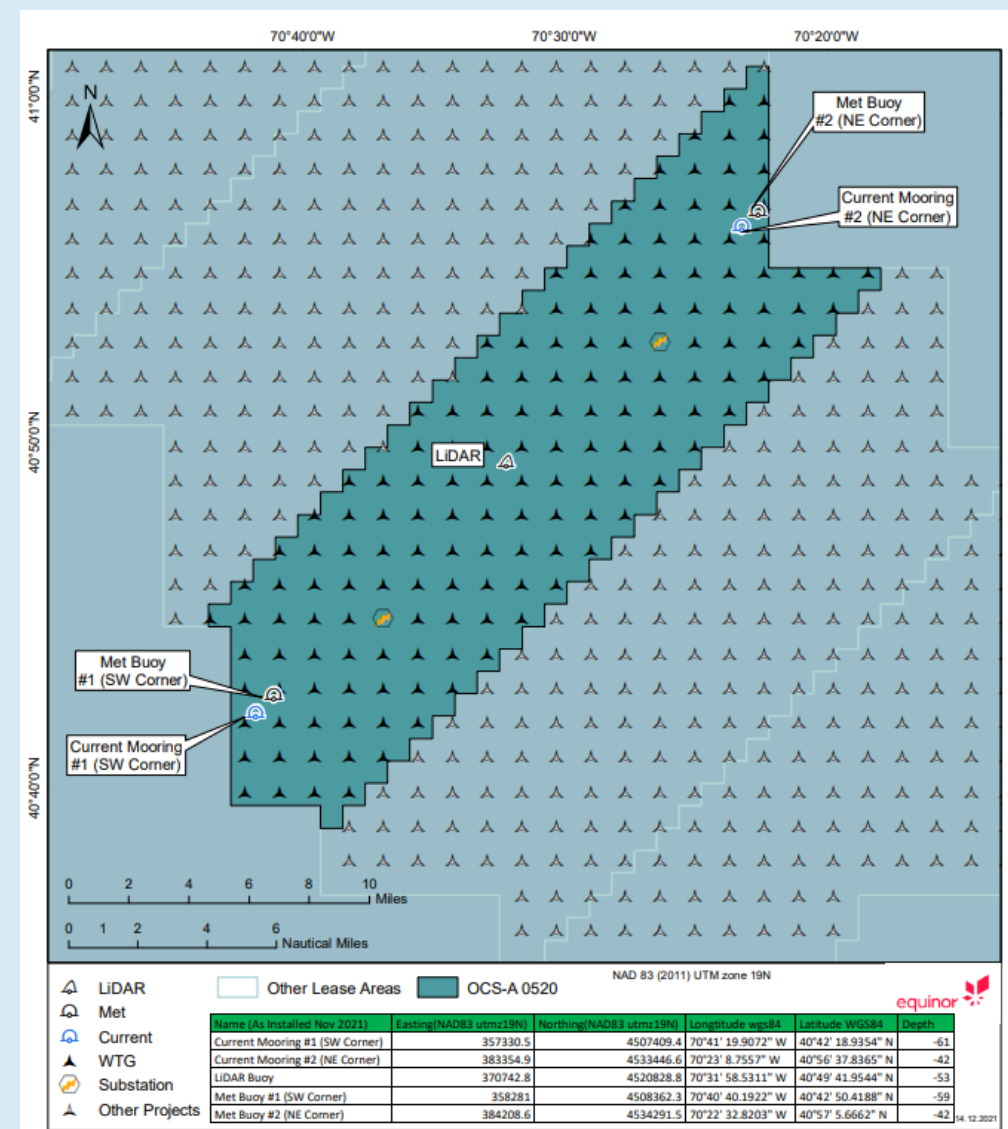
434 MHz bird tag receiver

- LiDAR
- Met Buoy #2

Vemco fish tag receiver

- LiDAR
- Current Mooring #1
- Current Mooring #2

Upcoming May 2022 service visit



Support for Monitoring of Key Commercial Fish Stocks and Wildlife of Conservation Concern

- To support regional monitoring of key regional commercial fish stocks to better understand how offshore wind energy development is potentially altering the biomass and/or distribution of these stocks;
- To support regional monitoring of wildlife of conservation concern to better understand how offshore wind energy development effects distribution and abundance of sensitive species;
- To advance the responsible development of the offshore wind energy industry

Currently in the planning stages. Stay tuned for more information!



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SHAPING THE FUTURE OF ENERGY

Thank you for your attention. Questions?

Michelle Fogarty
MFOG@equinor.com

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