Empire Wind and Beacon Wind Project Updates

NYSERDA E-TWG and F-TWG Meeting
September 20, 2022

Agenda and Equinor Team Members

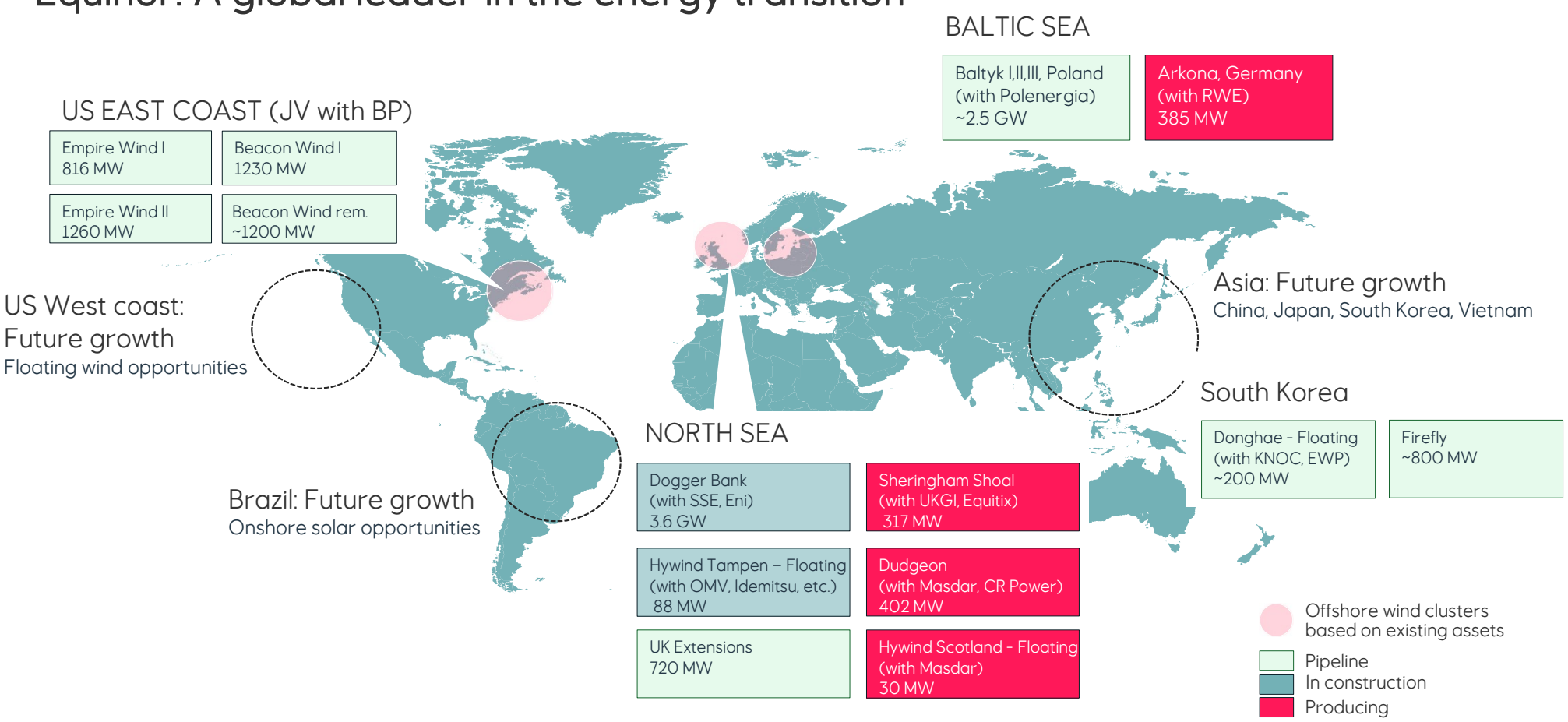
Topic	Time	Presenter	Position
Empire Wind Project Update	30 min	Joshua Verleun	Empire Wind Permitting Director
Beacon Wind Project update	30 min	Julia Lewis	Beacon Wind Permitting Director
LOA and Noise Mitigation Measures	15 min	Jordan Carduner	Beacon Federal Permitting Manager/NMFS Lead
Avian/Bat, Fish, and Benthic Monitoring Frameworks	15 min	Darrell Oakley EJ Marohn	Onshore Permitting Manager Marine Affairs Manager
EW 2/BW1 PSA Monitoring Plan Update	10 min	Jennifer Dupont	Strategic Permitting Manager
NYSERDA Breakout Session	20 min		

Other team members in the meeting:
Michelle Fogarty – Environmental Survey Manager
Sue Davis – Onshore/State Permitting Manager
Elizabeth Marchetti – Fishery Liaison Officer

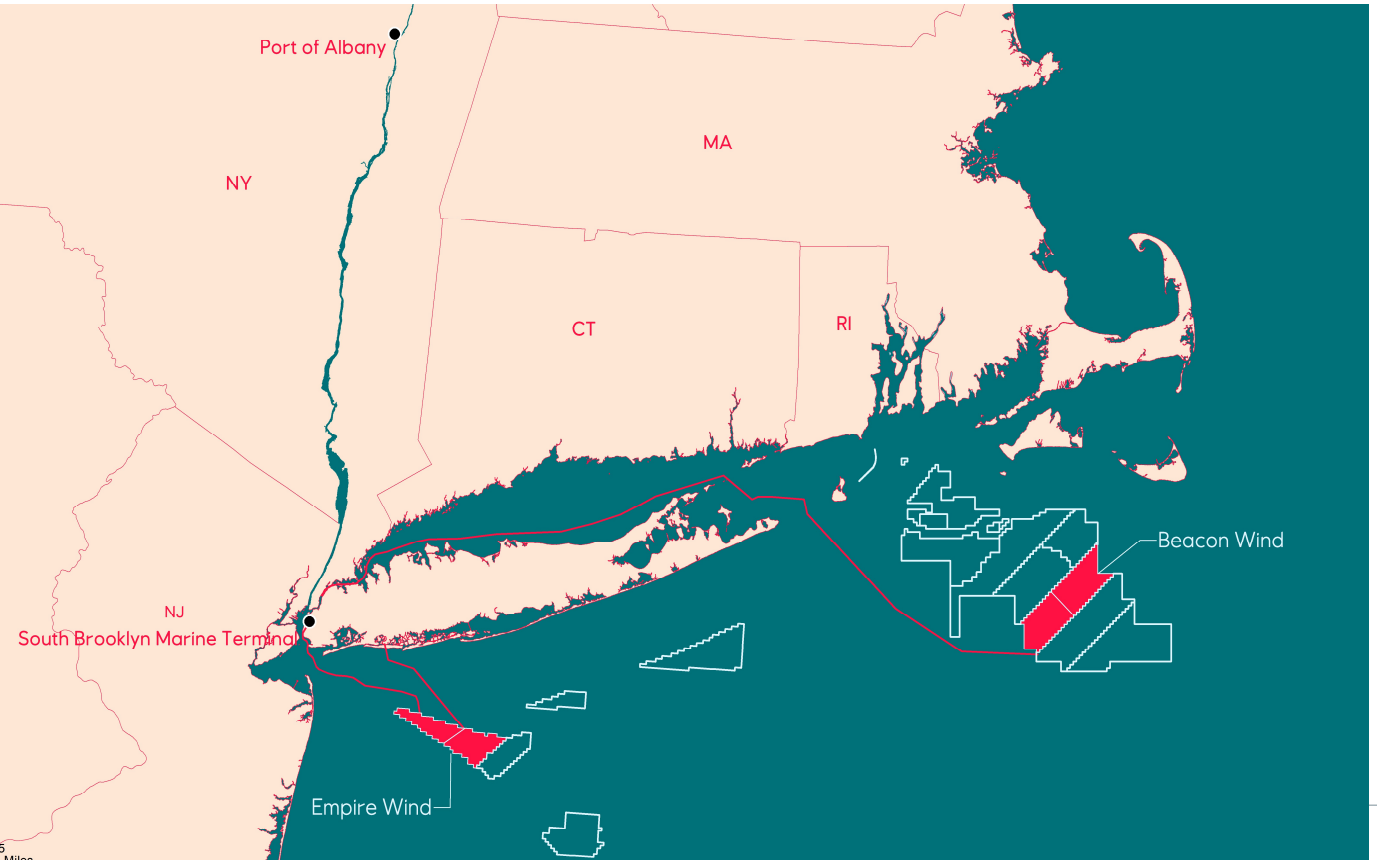
Empire Wind Project Update
Joshua Verleun


equinor
Let's power New York
TOGETHER!

Equinor: A global leader in the energy transition



Equinor is Helping Offshore Wind Grow in New York



50-50 Joint Venture with bp

Empire Wind 1 & 2, and Beacon Wind 1, will supply 3.3 GW of clean energy to New York = 2 million homes

$47 million in workforce development, innovation and community benefits across New York State

$25 million to support regional monitoring of wildlife and key commercial fish stocks

Empire Wind 1 & 2: Key Facts

Approximately 15-30 miles southeast of Long Island

Operations and Maintenance (O&M) base in South Brooklyn

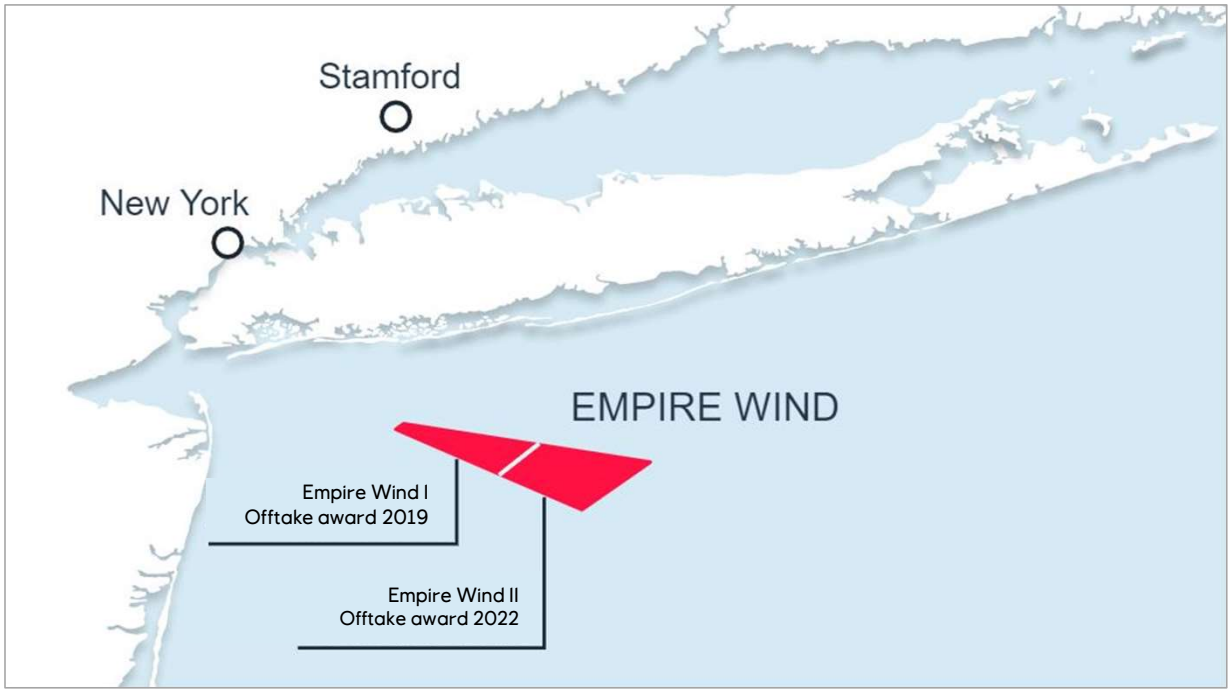
First power: mid-2020s

Empire Wind I

- Awarded by NYSERDA in 2019
- 816 MW
- Proposed point of interconnection Gowanus Substation

Empire Wind II

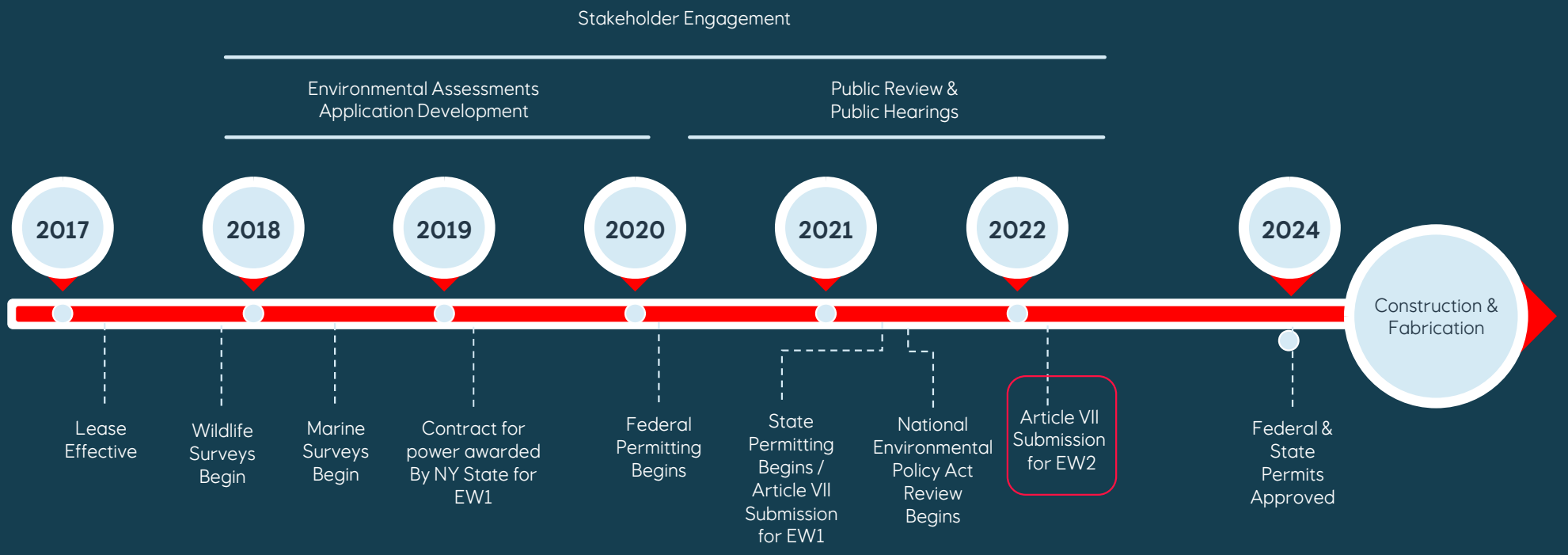
- Awarded by NYSERDA in 2022
- 1,260 MW
- Proposed point of interconnection: Oceanside



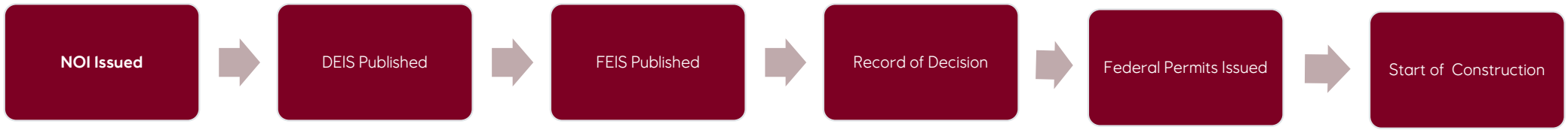
equinor

Permitting Update

Empire Wind | Project Schedule



BOEM Fast-41 Timeline



July 26, 2021 | November 18, 2022 | September 8, 2023 | October 23, 2023 | January 22, 2024 | 2024

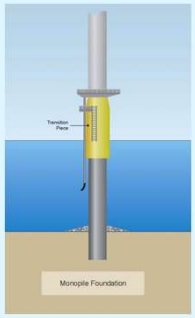
USACE Feb 20, 2024
120 after ROD

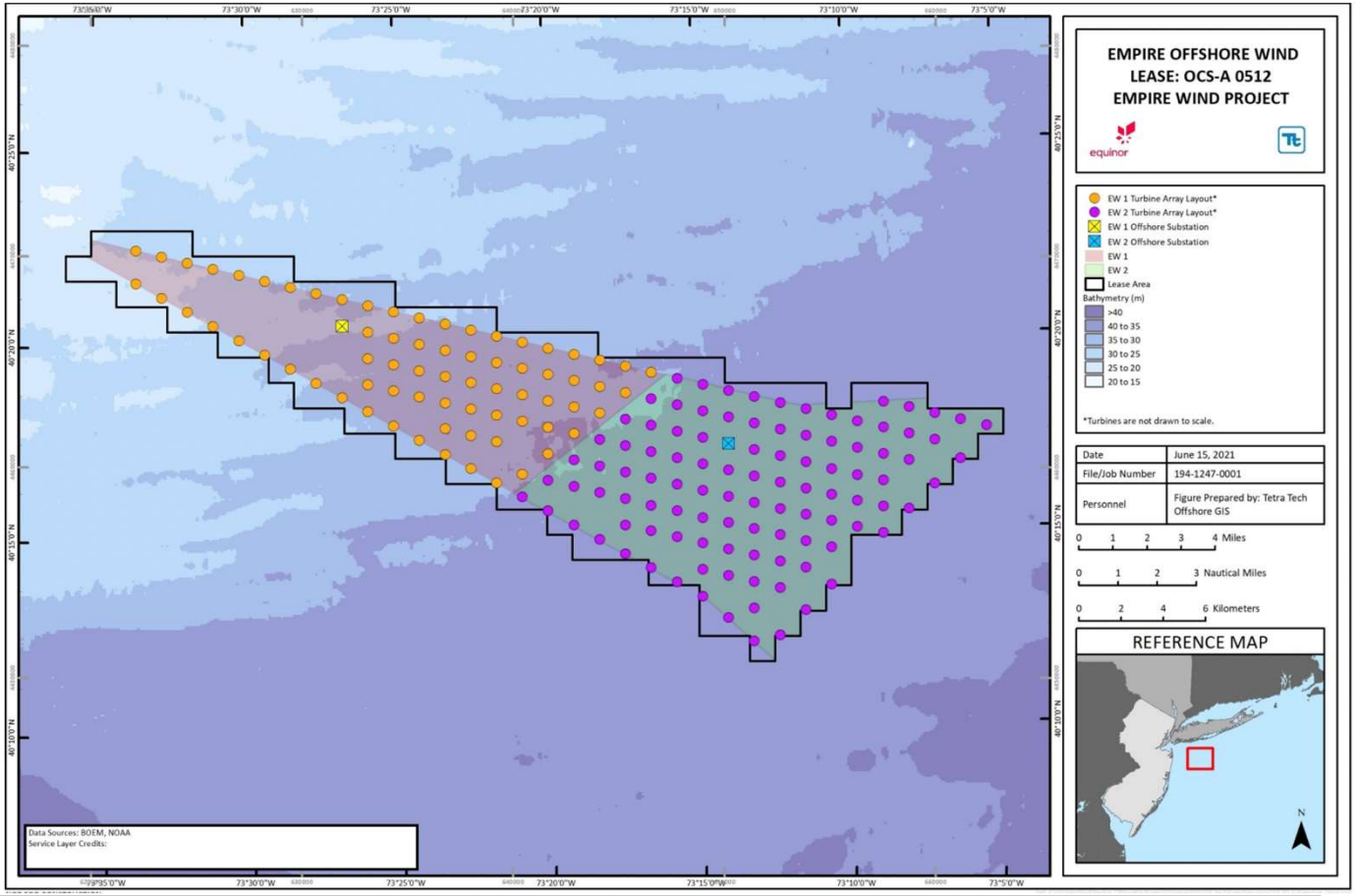
Project Overview EW1 & EW2

Empire Wind: Key Facts 2

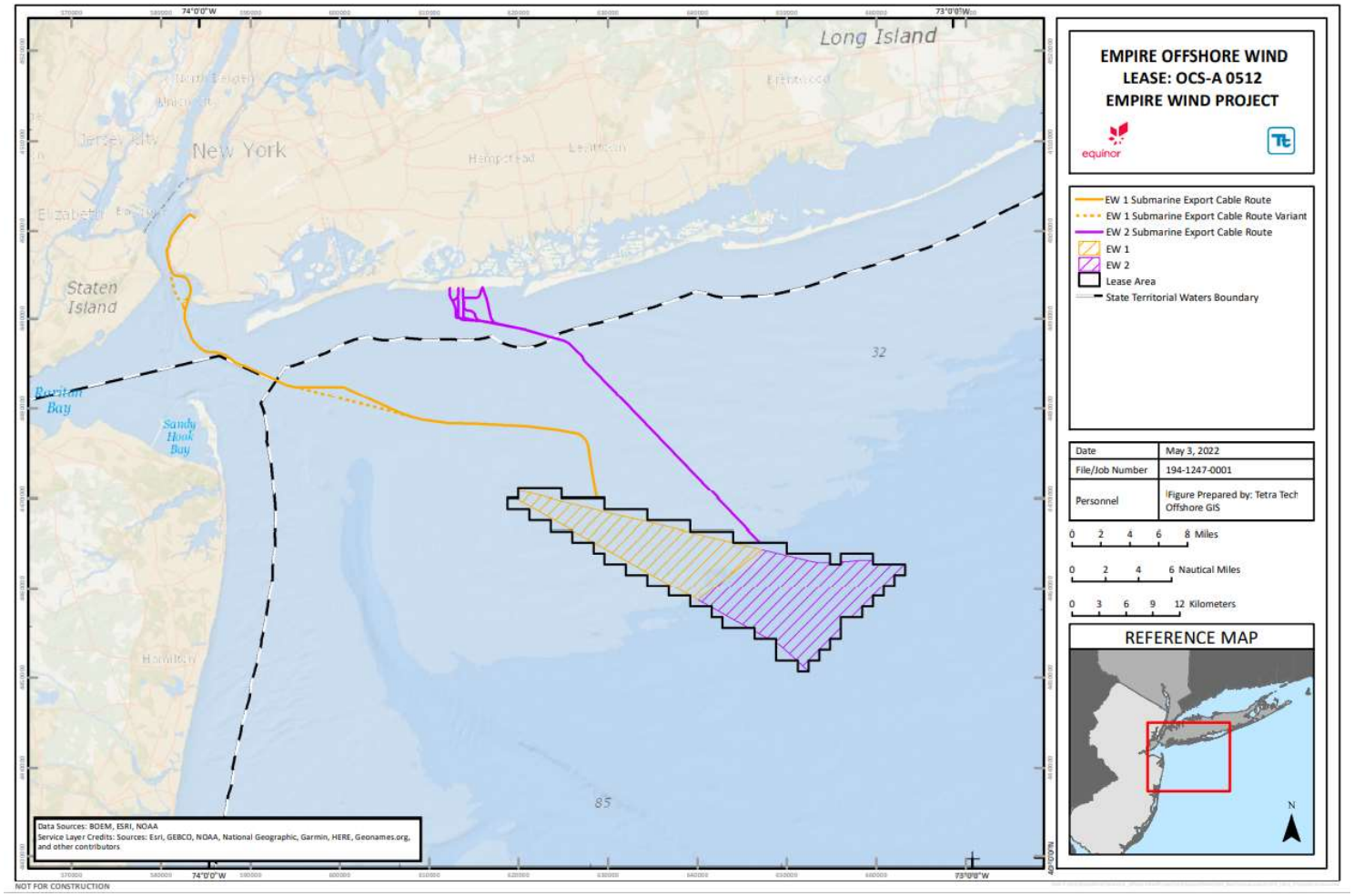
Layout for Full Lease Area

- Max 174 turbines
- Two offshore substations
- Upper blade tip height 951 ft
- Turbine Wattage: 15 Megawatt
- Each rotation of the blades powers typical NY home for 1.5 days





Empire Wind Export Cables

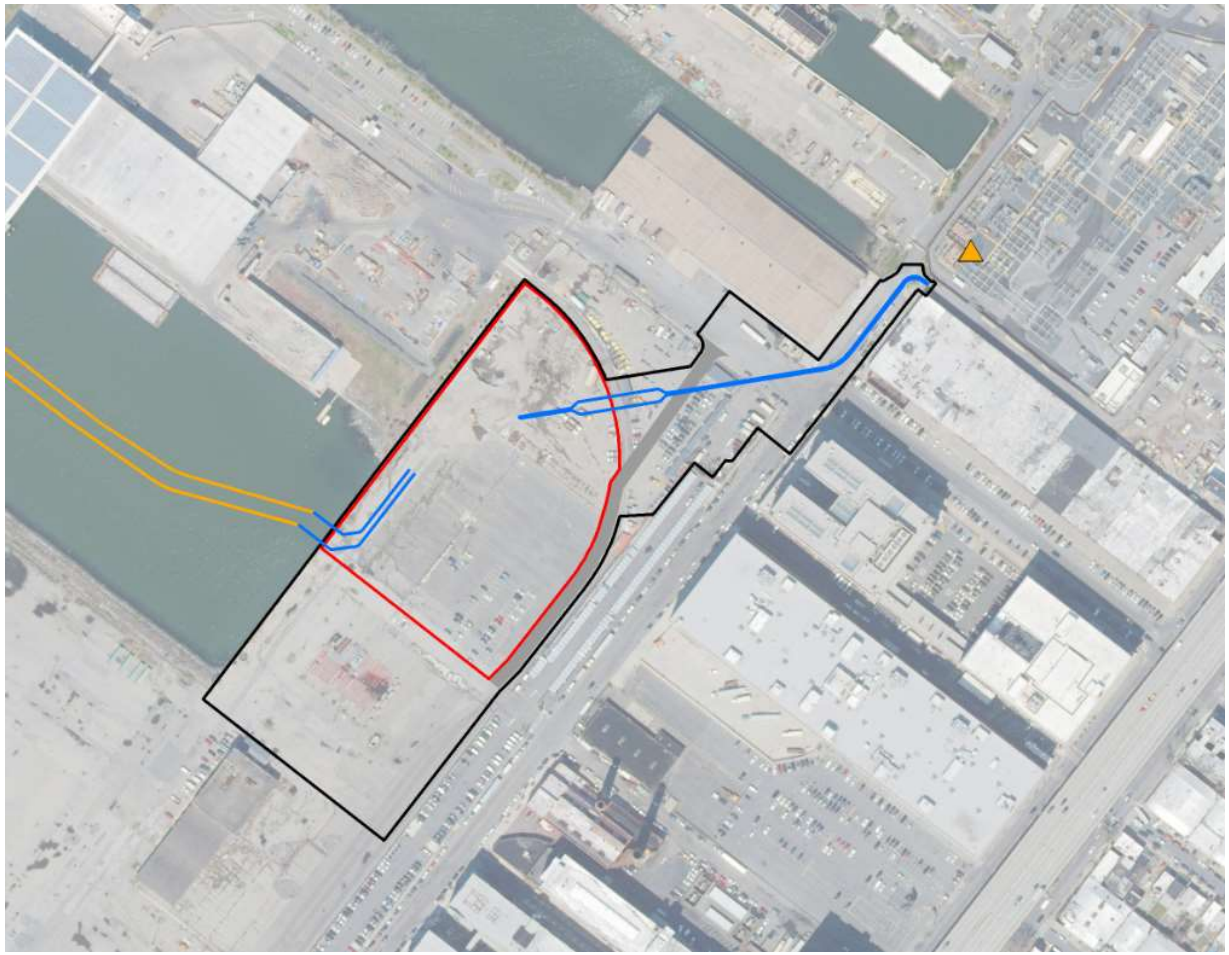


Empire Wind 1 NY Proposed Transmission Route Overview

- Two 230-kilovolt (kV) submarine export cables for 17.4 miles in New York waters
- Cable landfall at SBMT (0.3 miles from interconnection)
- 230-kV submarine export cables directly enter the onshore substation
- New onshore substation at SBMT, steps up to 345-kV
- 345-kV interconnection cables to the point of interconnection (0.2 miles)
- Point of interconnection at existing ConEdison 345-kV Gowanus Substation

EW1 Proposed Cable Landfall and Onshore Substation

- Submarine export cables pulled directly through the bulkhead to vault or termination in the onshore substation
- 4.8-acre fenced substation facility during operations
- 9-acre total workspace
- Gas-insulated substation (GIS) design
- Buildings for GIS and control, reactive compensation and harmonic filter

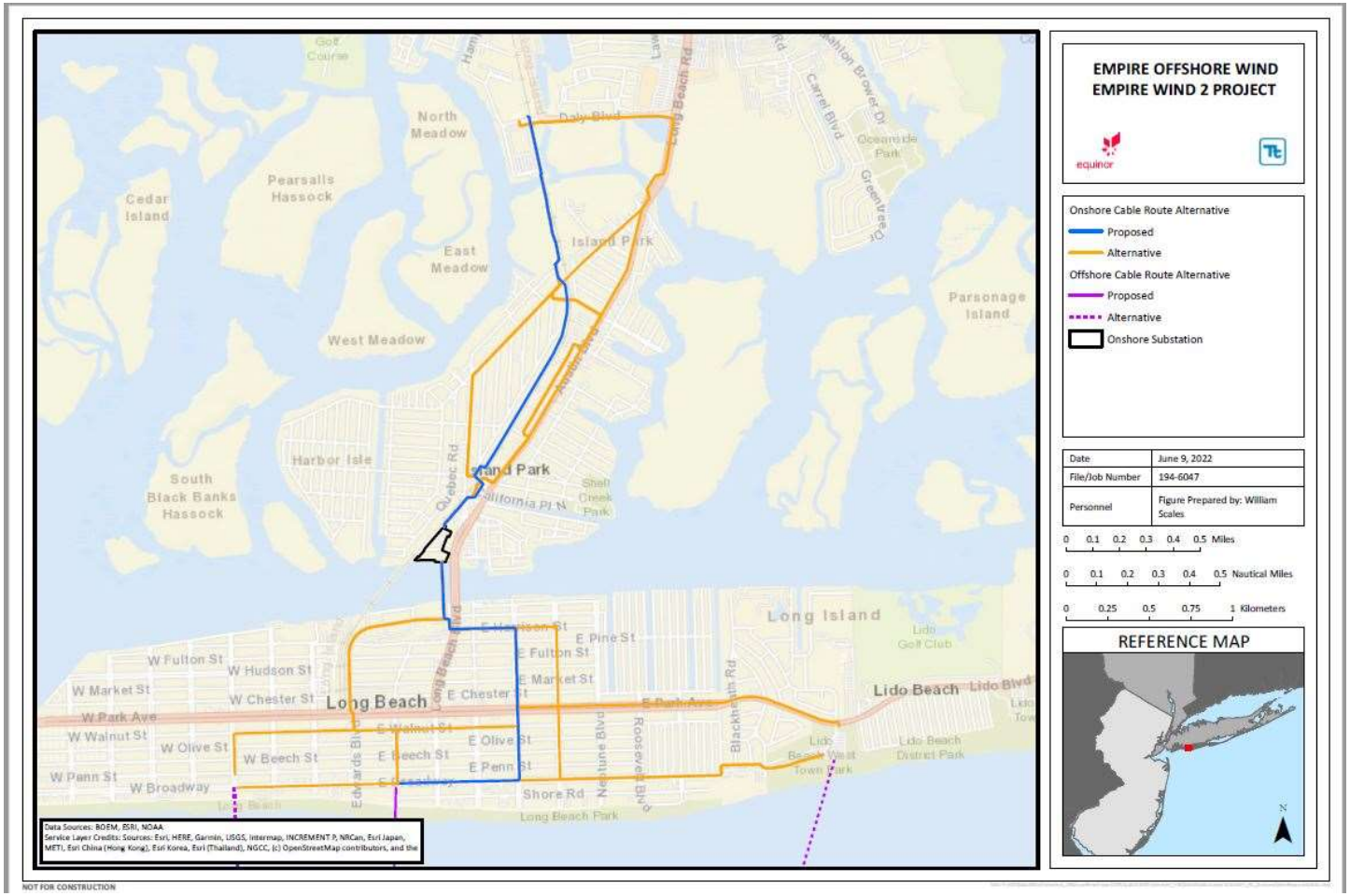


Empire Wind 2 Proposed Submarine Export Cable Route

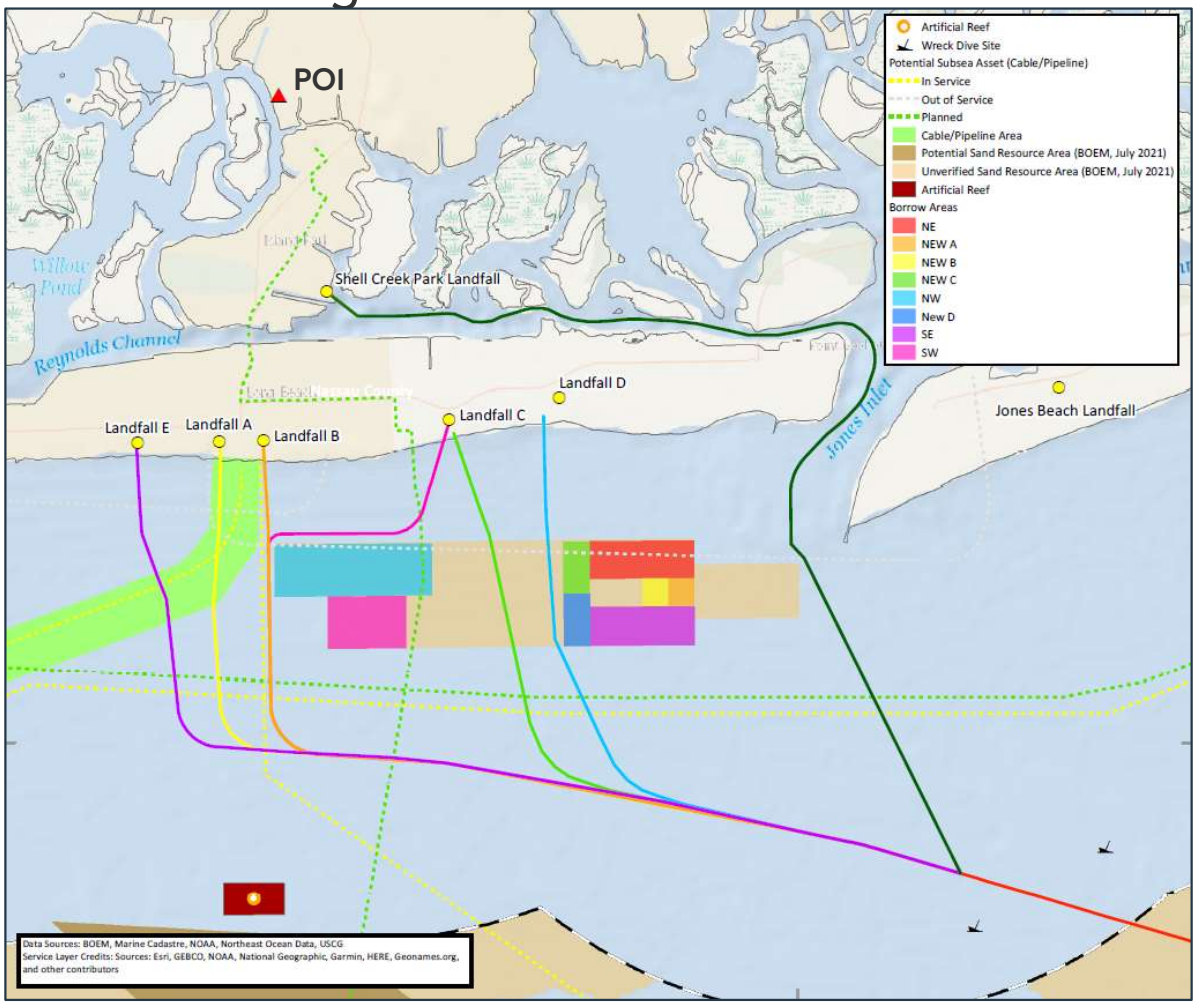
- Three 230-kilovolt (kV) submarine export cables for 9.2 miles (8 nm) in New York waters
- Up to 900 ft (274 m) cable siting corridor for micro-siting flexibility
- Three cable circuits spaced a minimum of 33 ft apart, up to 300 ft apart, within the cable siting corridor.
- Up to 1,250 ft (381 m) on both sides of the siting corridor assessed for anchoring during construction
- Landfall in City of Long Beach

EW2 Onshore Proposed Cable Route

- Onshore transmission cables will run from Long Beach to a point of interconnection (POI) in Oceanside
- Most cables will be buried underground
- 2.6 miles of 230-kV onshore export cables from landfall to the new onshore substation
- Onshore substation in the Village of Island Park steps power up to 345-kV
- 1.9 miles of 345-kV interconnection cables to the point of interconnection (Barrett 138-kV Substation)



Cable Routing and Landfall Alternatives

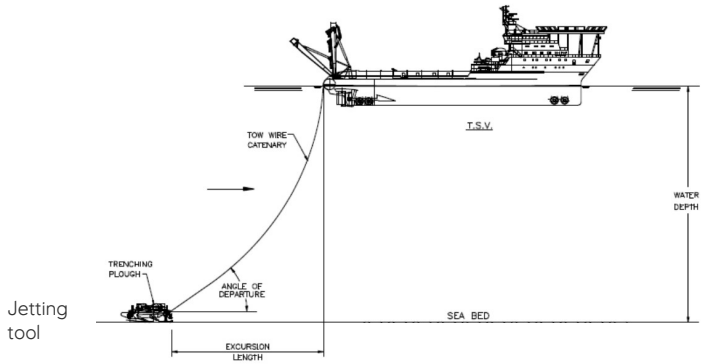


- **Onshore considerations:**
  - Space requirements for (3) landfall installations
  - Commercial availability
  - Proximity to sensitive receptors
  - Associated onshore routing
  - Submarine export cable landfall alignment
  - G&G data availability
- **Offshore considerations:**
  - Trenchless installation approach
  - Existing asset crossing solutions/shoaling
  - USACE sand borrow area
  - Anchorages
  - Shipwrecks
  - Water depths
  - Designated fishing areas
  - Vessel activity
- **Landfall locations evaluated (west to east):**
  - Western Long Beach Island
  - City of Long Beach: E, A, B
  - Town of Hempstead: C1, C3, D
  - Submarine installation to Barnum Island
  - Jones Beach

Construction Methods

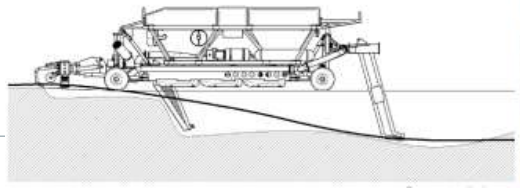
Summary of Offshore Installation Methods

Offshore installation method and vessel type

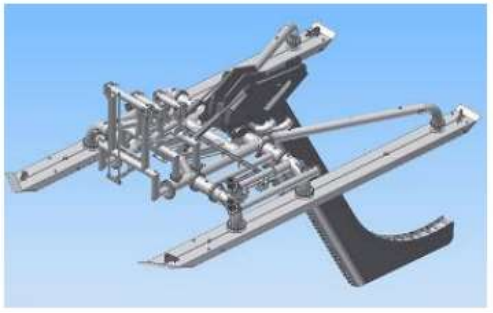


Jetting tool

Simultaneous lay and burial or post-burial



Jet tool types



Shallow water installation methods

Use shallow water vessel/barge

Use float over – vessel stays in deeper waters

Submarine Export Cable Installation Methods

Target Burial

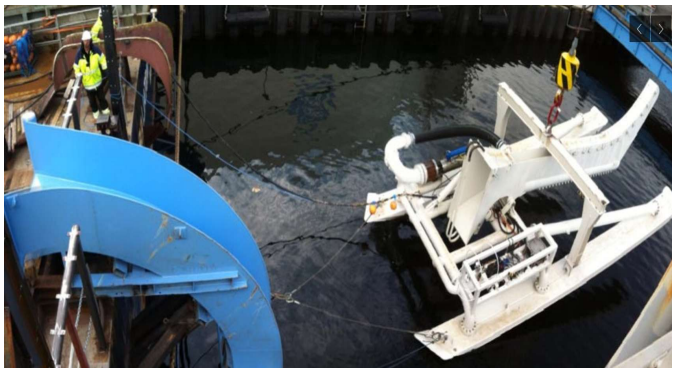
- Minimum target burial 6 ft
- Final target burial depths will be based on cable burial risk assessment

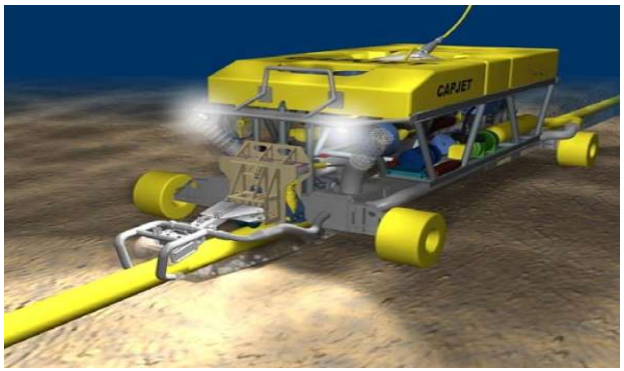
Pre-lay

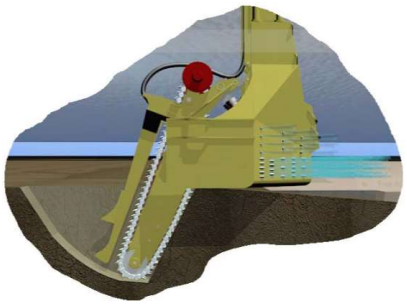
- Pre-sweeping (suction hopper dredge and/or mass flow excavator)
- Pre-trenching
- Grapnel (debris removal)

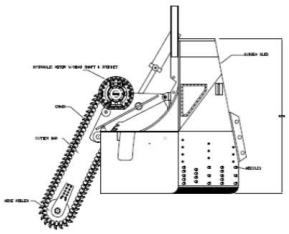
Cable Lay & Burial

- Jetting
- Plowing
- Trenching (cutting)
- Dredging



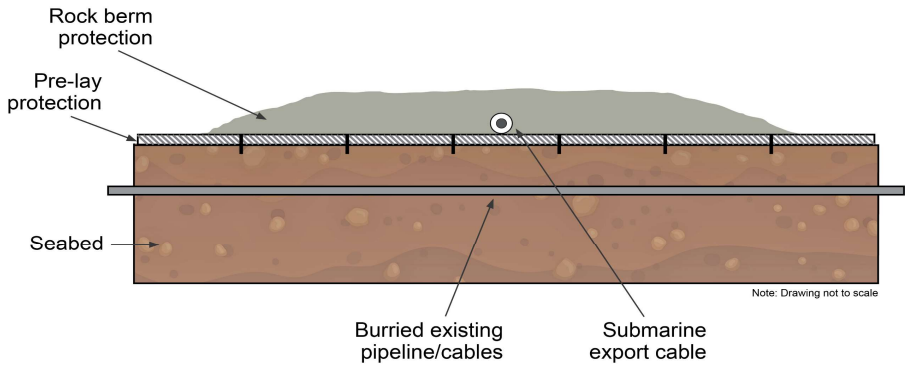


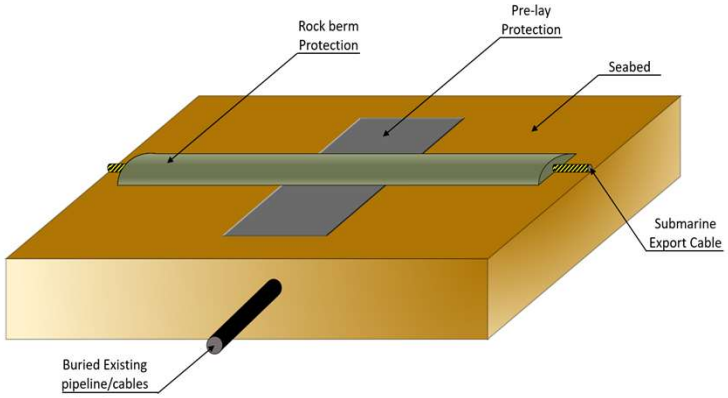




Cable Protection Measures

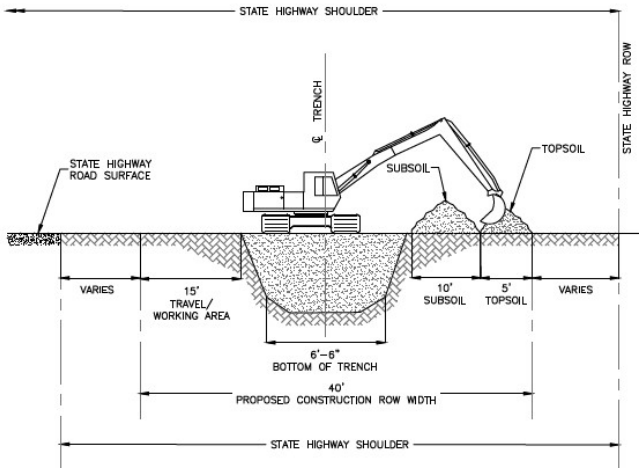
- Where target burial depth cannot be achieved
- At asset crossing locations
- Alternative measures to burial may include:
  - Rock: the installation of crushed rock or boulders over a cable;
  - Rock Bags: the placement of pre-filled bags containing crushed rock over a cable; and/or
  - Concrete or Rock-filled Mattresses: the placement of concrete blocks, or mats, made of connected segments over a cable.
- Identified asset crossings include: Neptune HVDC cable, out-of-service and proposed assets



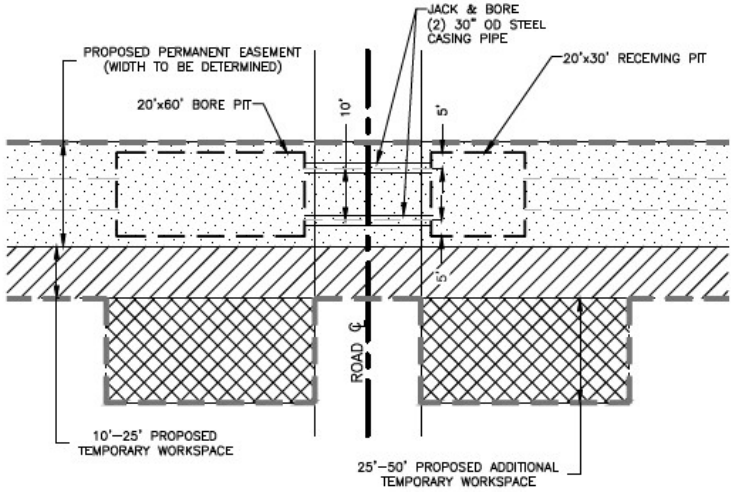


Onshore Cable Installation and Utility Crossing

- Open cut
- Jack-and-bore
    - Auger machine jacks a casing pipe and removes spoil
    - Export cable pulled through steel pipe or casing
    - To be used for road and railroad crossings



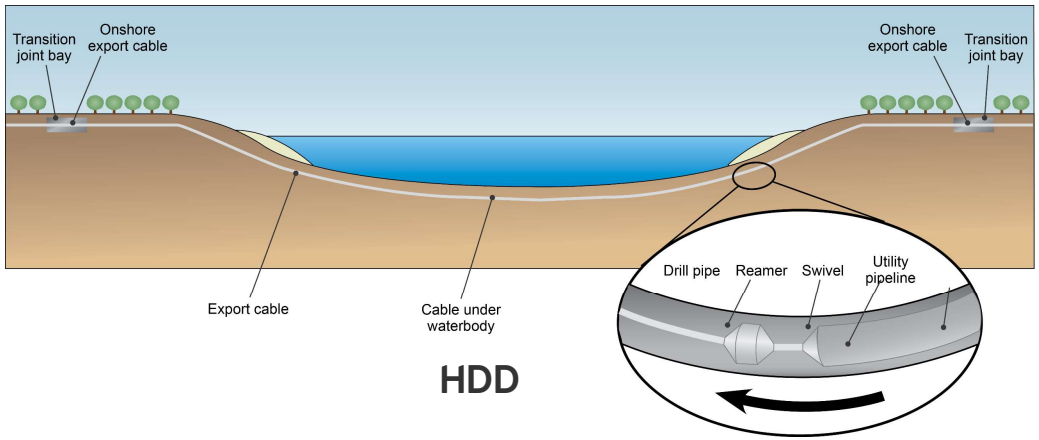
Open Cut



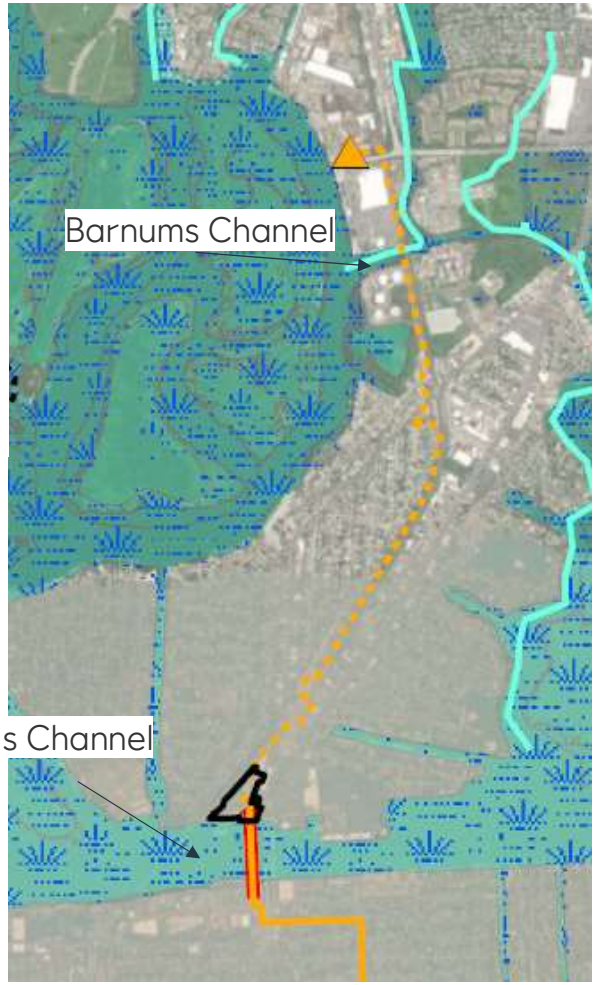
Jack-and-bore

Reynolds Channel and Barnums Channel

- Routing designed to minimize impacts to wetland/tidal channels
- Reynolds Channel crossing
  - Land-to-land HDD proposed
- Barnum's Channel
  - HDD considered but not feasible
  - Aboveground cable bridge, if feasible, or open cut



HDD



Let's Power New York. Together.

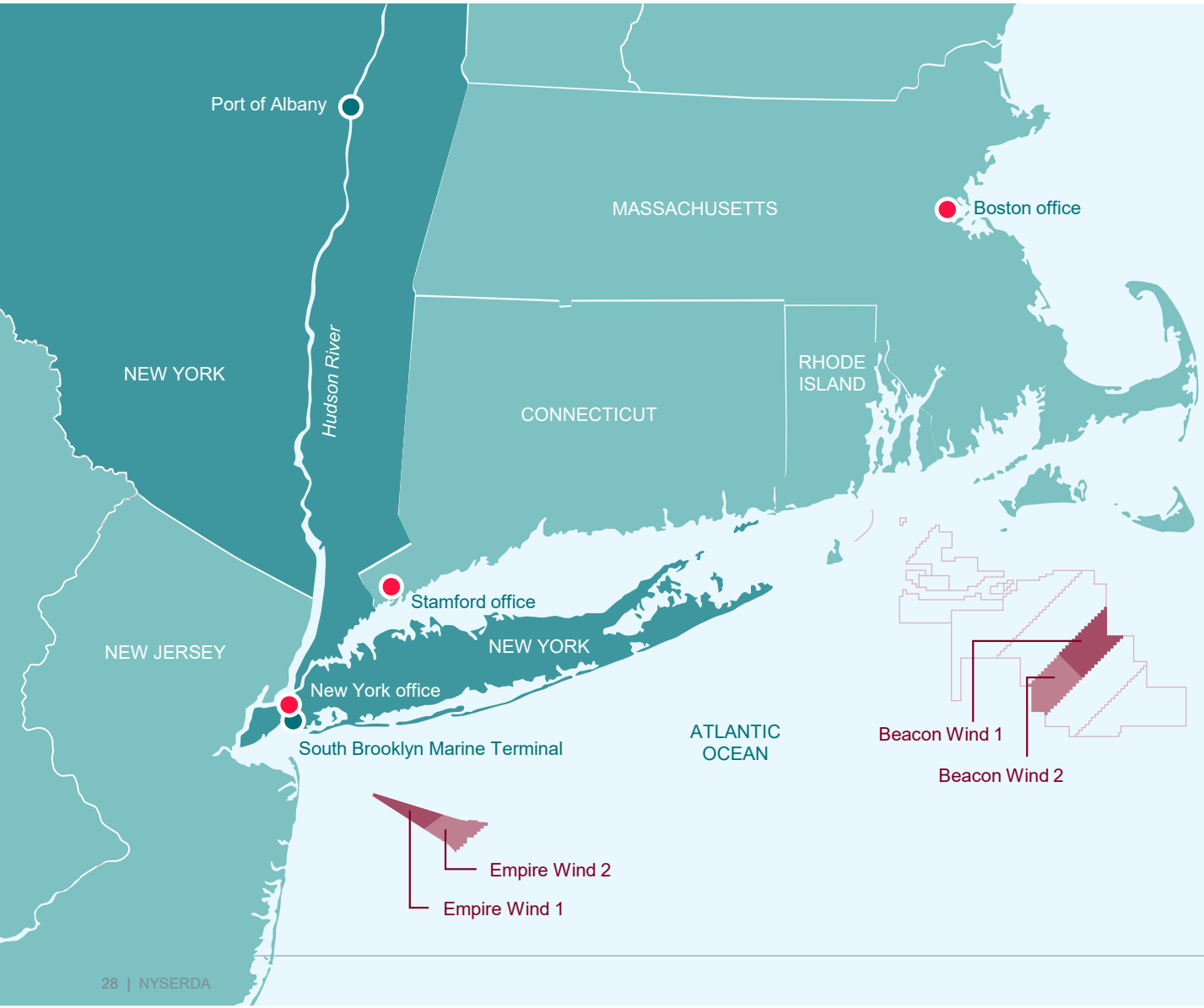
Josh Verleun
Permitting Director- Empire Wind
JVER@equinor.com

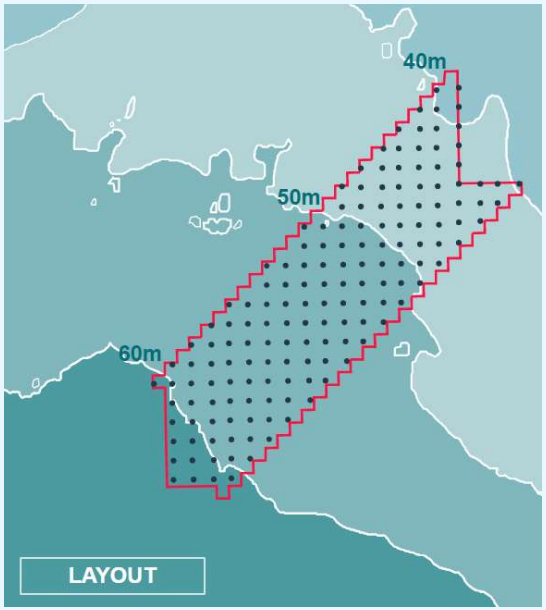
www.empirewind.com
Twitter: @EquinorWindUS

Beacon Wind Project Update
Julia Lewis


Beacon Wind
NYSERDA TWG Meeting
September 20, 2022
equinor
To Get There.
TOGETHER

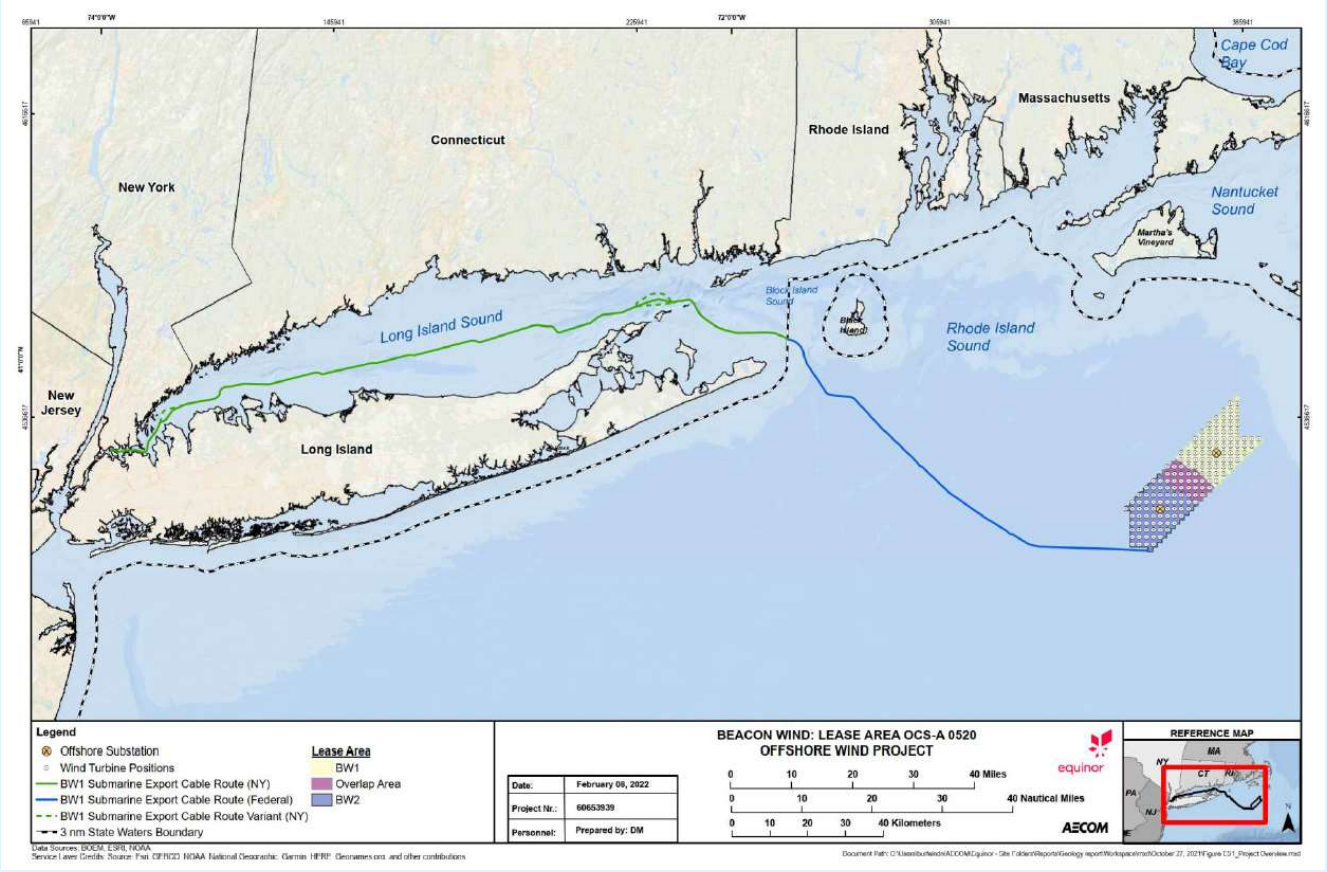
Equinor is Helping Grow Offshore Wind Along the East Coast





Project Overview

Beacon Wind - Key Facts



20 miles south of Nantucket, 60 miles east of Montauk

Operations and Maintenance (O&M) base in South Brooklyn

Commercial Operations Date: late 2020s

Beacon Wind 1 (BW1) power purchase agreement awarded by NYSERDA in 2021 for 1,230 MW

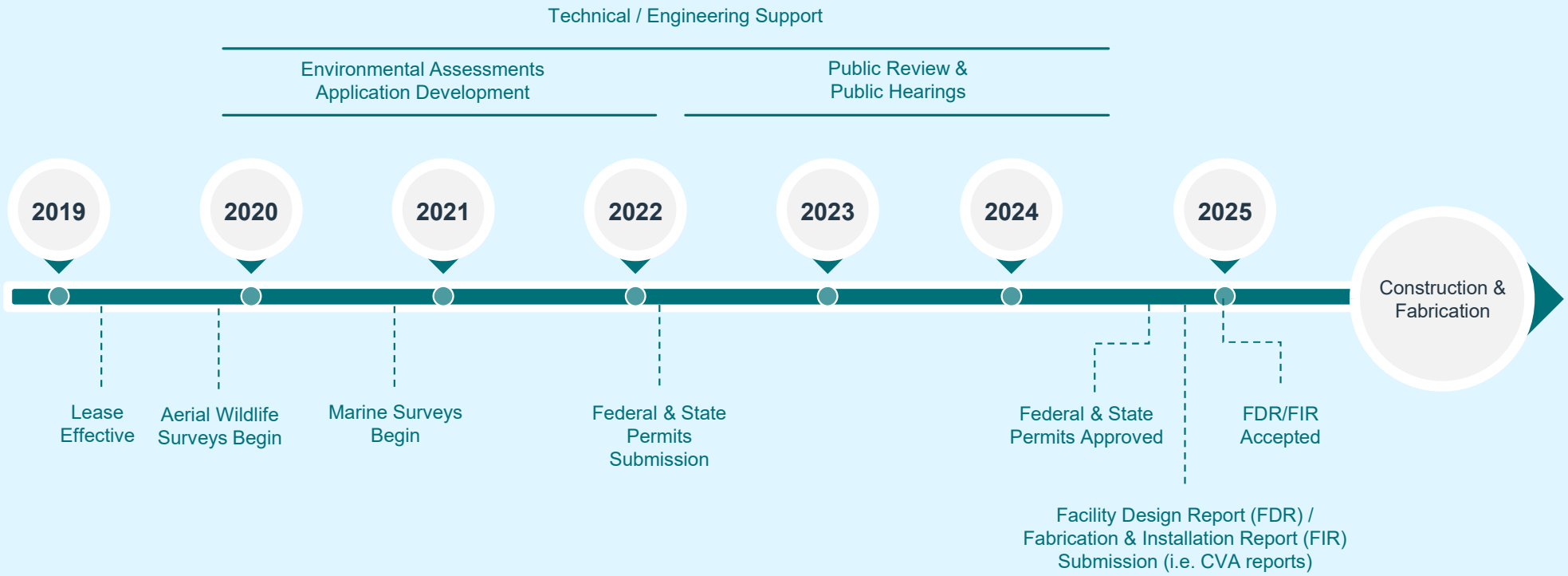
BW1 point of interconnection in Astoria, Queens, NY

BW2 point of interconnection designed to serve northeast markets utilizing existing cable backbone

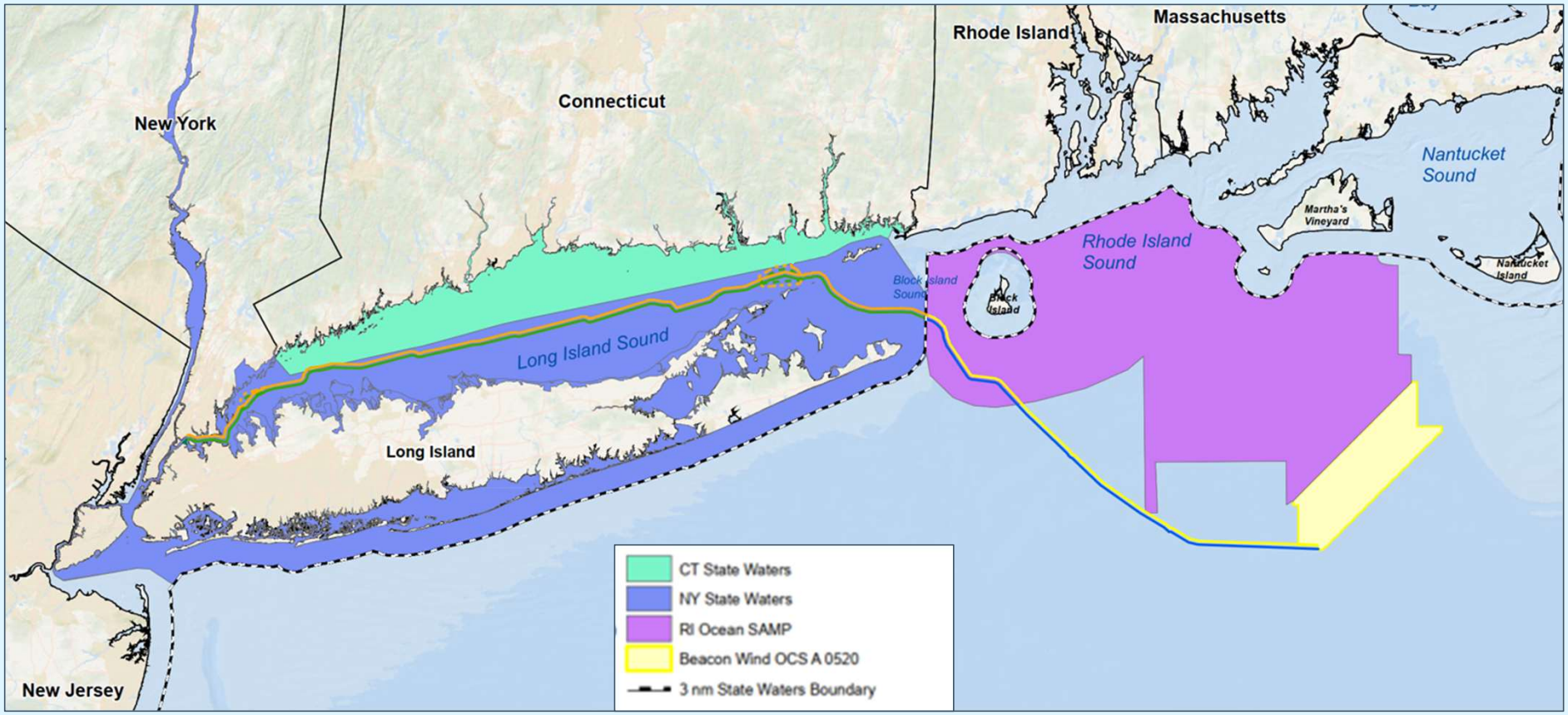
Upcoming RFP rounds for NY and New England as opportunities for BW2

HVDC technology for the cable

Beacon Wind - Project Schedule

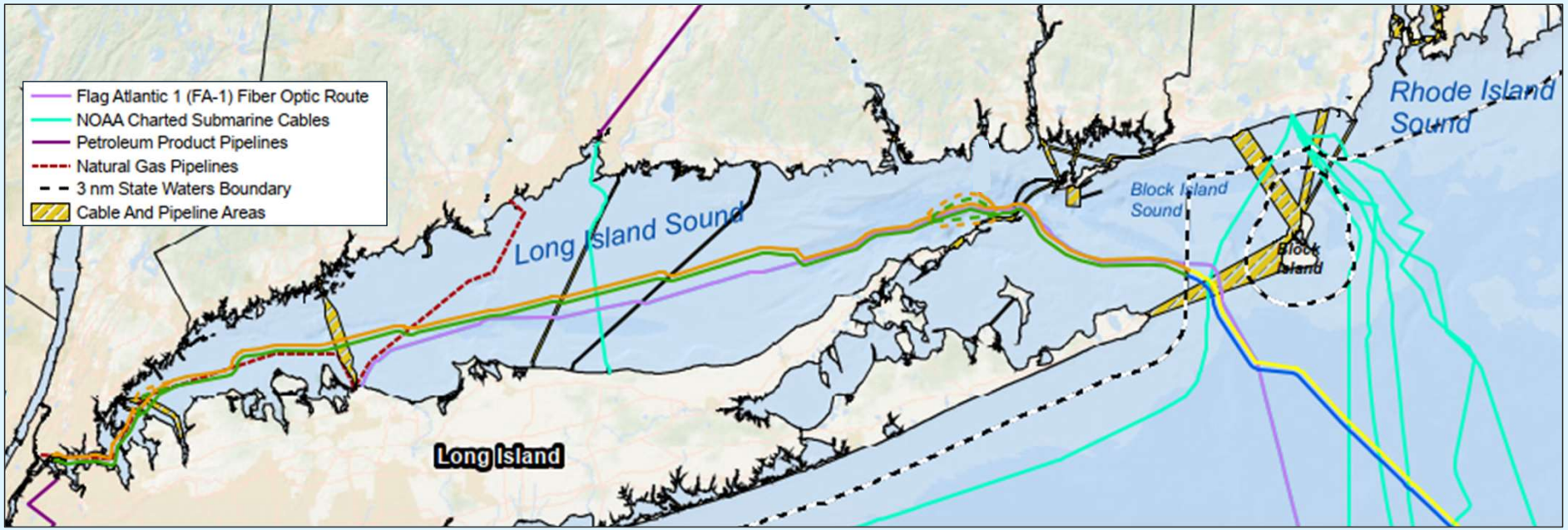


State Jurisdictions



Existing Cables and Pipelines

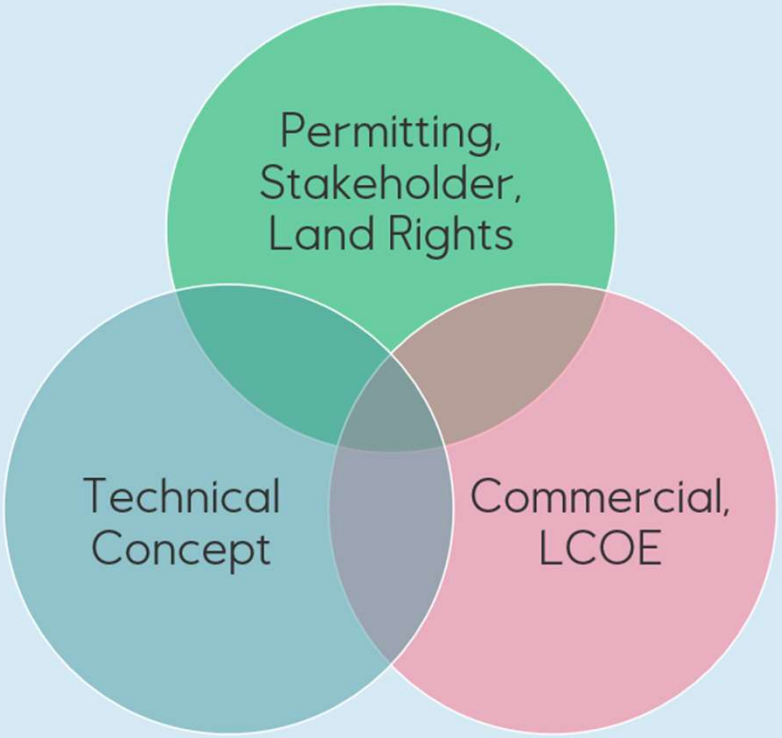
· Long Island Sound already has numerous cables and pipelines crossing it.

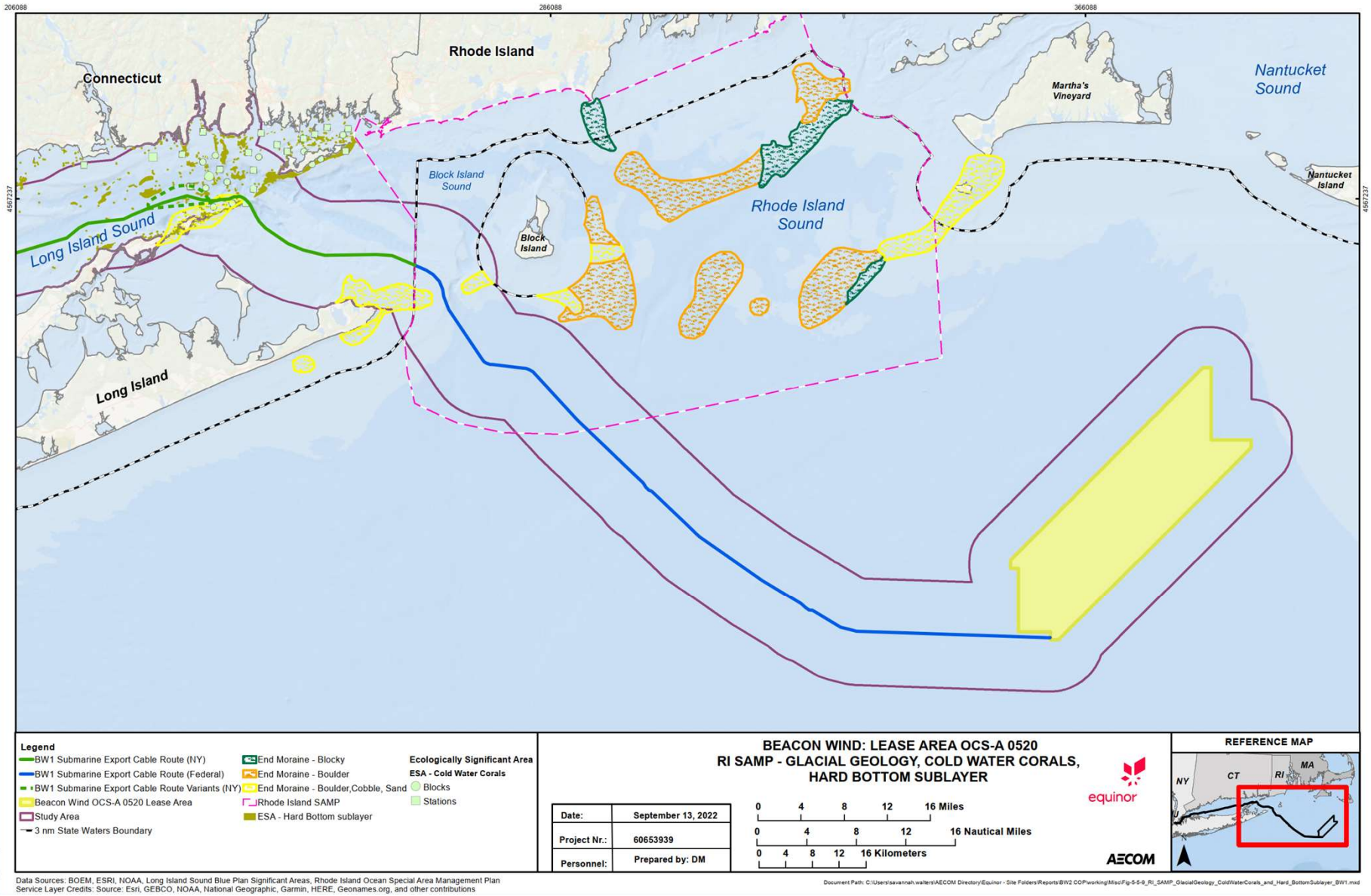


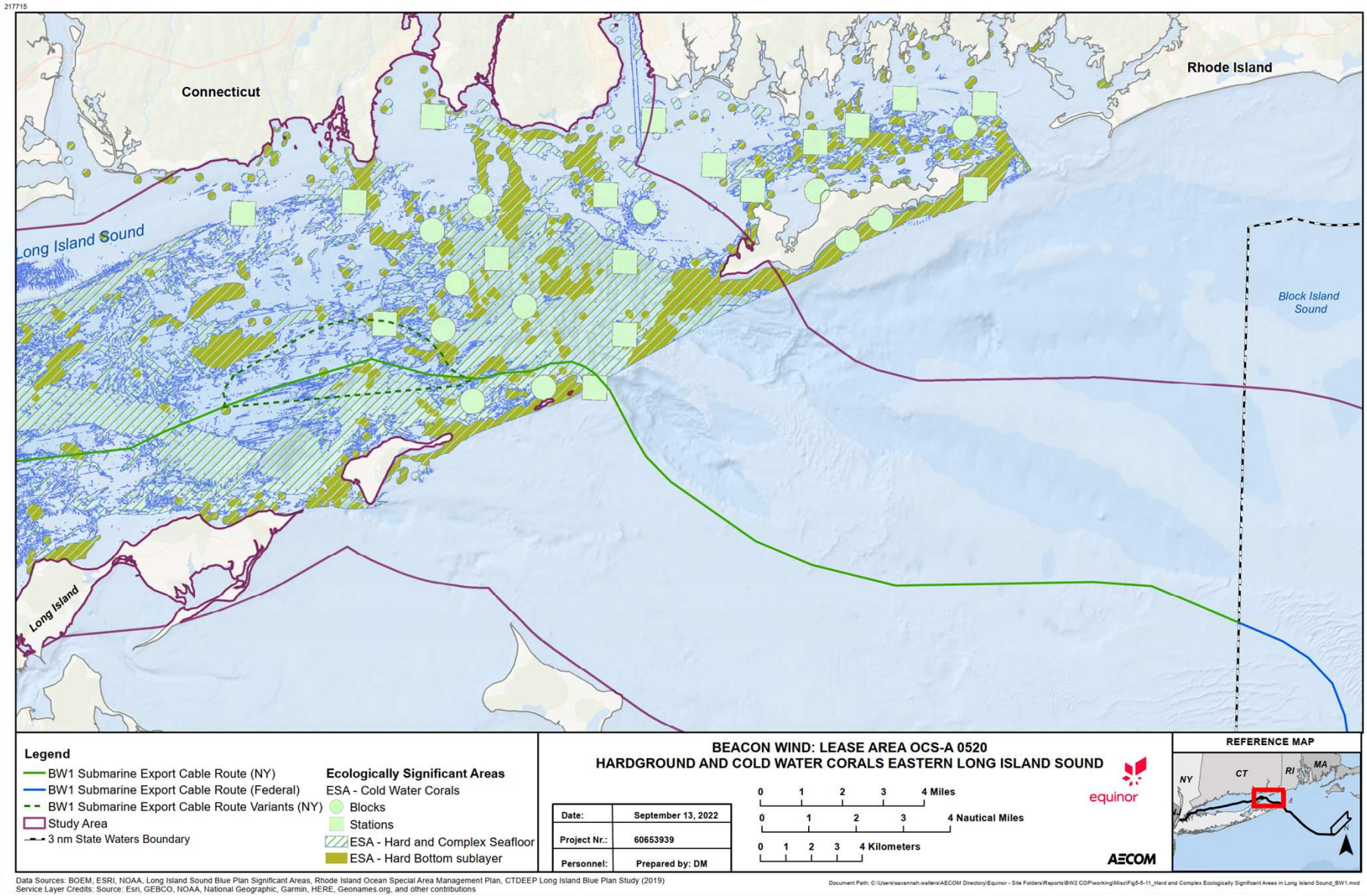
Long Island Sound Cable Route

Cable Route Development Strategy: Finding the Right Balance

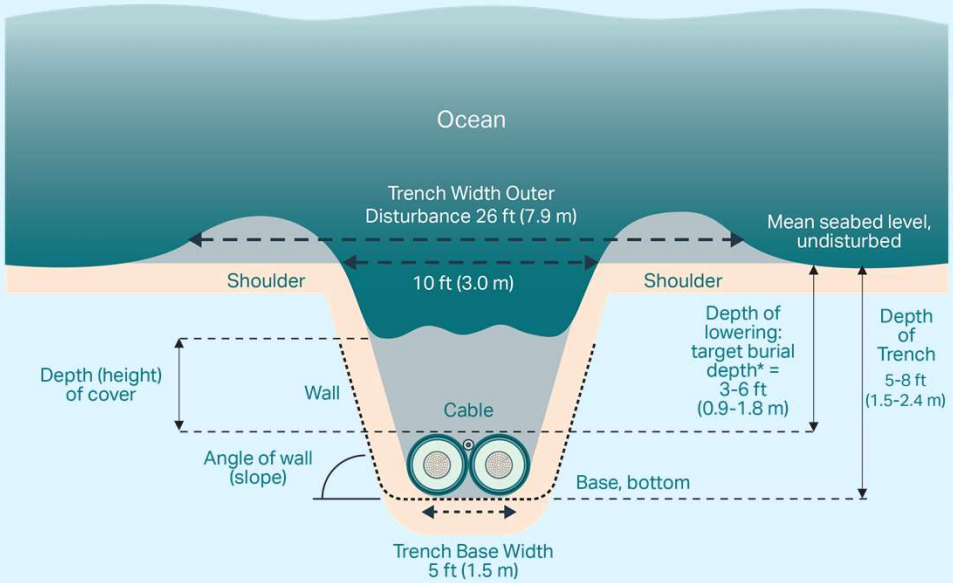
- Collaboration between technical, permitting, commercial, stakeholder, and more
- Safe to construct and operate
- Safe for other users
- Lowest environmental impacts and use conflicts
- Lowest technical challenges
- Acceptable economics and LCOE (Levelized Cost of Energy)
- Grid connection (access and related costs)
- Power offtake opportunities



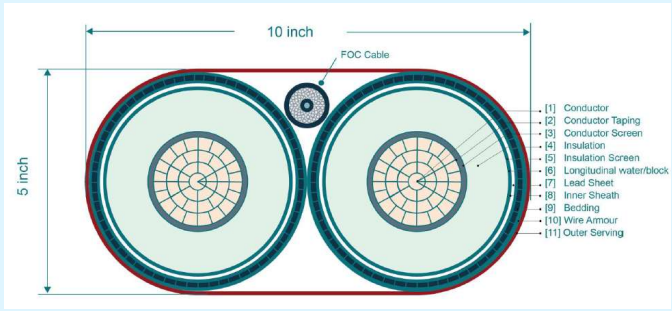

206088
286088
366088
4567237
Connecticut
Rhode Island
Martha's Vineyard
Nantucket Sound
Nantucket Island
Block Island Sound
Block Island
Rhode Island Sound
Long Island Sound
Long Island
Legend
BW1 Submarine Export Cable Route (NY)
BW1 Submarine Export Cable Route (Federal)
BW1 Submarine Export Cable Route Variants (NY)
Beacon Wind OCS-A 0520 Lease Area
Study Area
3 nm State Waters Boundary
End Moraine - Blocky
End Moraine - Boulder
End Moraine - Boulder,Cobble, Sand
Rhode Island SAMP
ESA - Hard Bottom sublayer
Ecologically Significant Area
ESA - Cold Water Corals
Blocks
Stations
BEACON WIND: LEASE AREA OCS-A 0520
RI SAMP - GLACIAL GEOLOGY, COLD WATER CORALS,
HARD BOTTOM SUBLAYER
Date: September 13, 2022
Project Nr.: 60653939
Personnel: Prepared by: DM
0 4 8 12 16 Miles
0 4 8 12 16 Nautical Miles
0 4 8 12 16 Kilometers
equinor
AECOM
REFERENCE MAP
NY
CT
RI
MA
Data Sources: BOEM, ESRI, NOAA, Long Island Sound Blue Plan Significant Areas, Rhode Island Ocean Special Area Management Plan
Service Layer Credits: Source: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributions
Document Path: C:\Users\savannah.walters\AECOM Directory\Equinor - Site Folders\Reports\BW2 COP\working\Misc\Fig-5-5-9_RI_SAMP_GlacialGeology_ColdWaterCorals_and_Hard_BottomSublayer_BW1.mxd

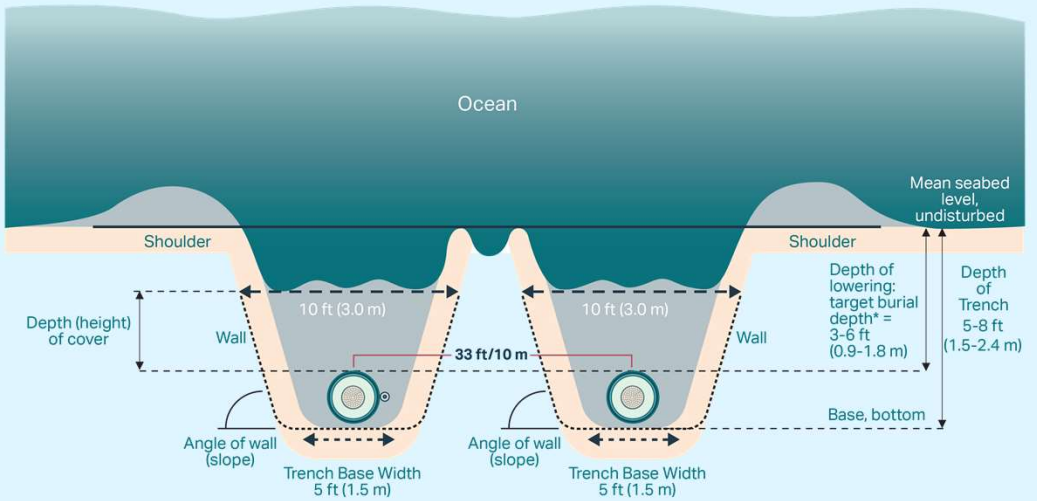

217715
Connecticut
Rhode Island
Long Island Sound
Block Island Sound
Long Island
Legend
BW1 Submarine Export Cable Route (NY)
BW1 Submarine Export Cable Route (Federal)
BW1 Submarine Export Cable Route Variants (NY)
Study Area
3 nm State Waters Boundary
Ecologically Significant Areas
ESA - Cold Water Corals
Blocks
Stations
ESA - Hard and Complex Seafloor
ESA - Hard Bottom sublayer
BEACON WIND: LEASE AREA OCS-A 0520
HARDGROUND AND COLD WATER CORALS EASTERN LONG ISLAND SOUND
Date: September 13, 2022
Project Nr.: 60653939
Personnel: Prepared by: DM
0 1 2 3 4 Miles
0 1 2 3 4 Nautical Miles
0 1 2 3 4 Kilometers
equinor
AECOM
REFERENCE MAP
NY
CT
RI
MA
Data Sources: BOEM, ESRI, NOAA, Long Island Sound Blue Plan Significant Areas, Rhode Island Ocean Special Area Management Plan, CTDEEP Long Island Blue Plan Study (2019)
Service Layer Credits: Source: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributions
Document Path: C:\Users\savannah.walters\AECOM Directory\Equinor - Site Folders\Reports\BW2 COP\working\Misc\Fig5-5-11_Hard and Complex Ecologically Significant Areas in Long Island Sound_BW1.mxd

Submarine Cable Installation

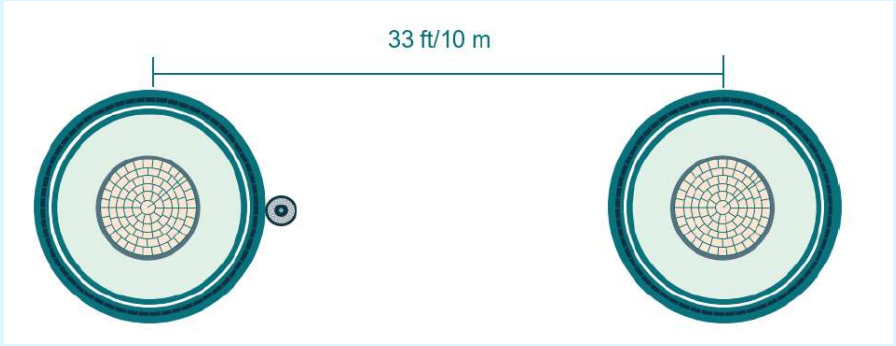


*Note: Target burial depth will be 15ft (4.7m) below the current (and future) authorized depth or depth of existing seabed (whichever is deeper) in federally maintained navigation features (e.g., anchorages and shipping channels).





*Note: Target burial depth will be 15ft (4.7m) below the current (and future) authorized depth or depth of existing seabed (whichever is deeper) in federally maintained navigation features (e.g., anchorages and shipping channels).



Environmental Stewardship

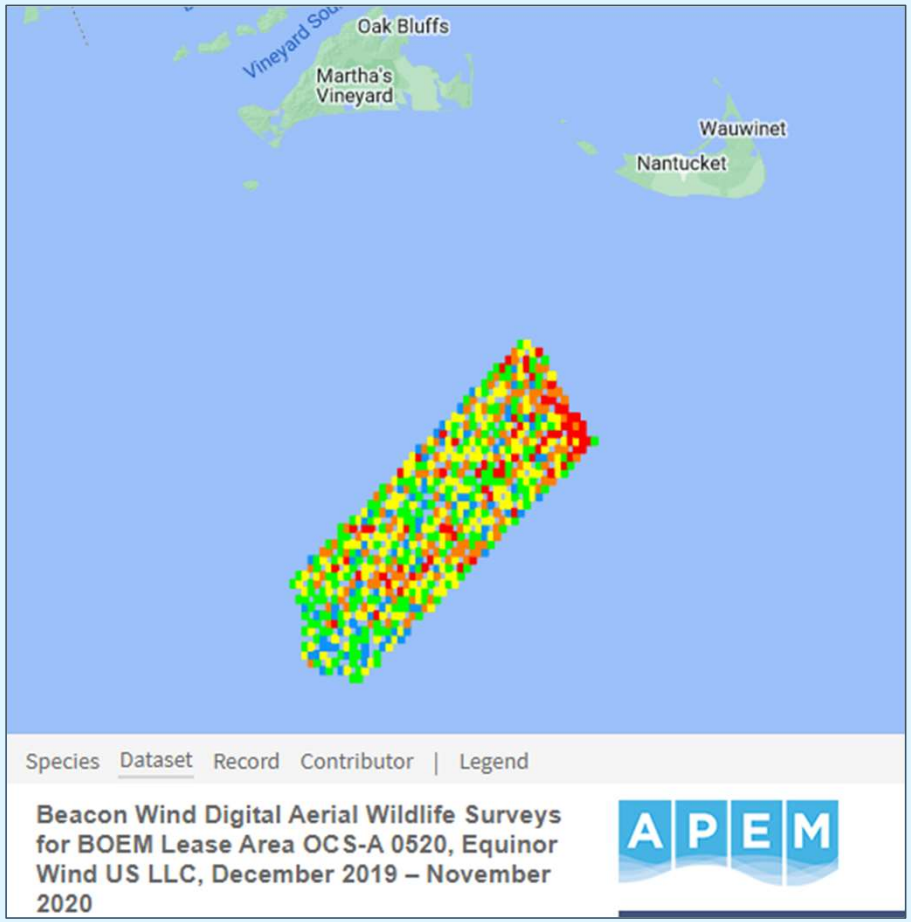
Surveys Conducted – Benthic, Geotechnical, and High Resolution Geophysical

- High-resolution Geophysical
  - Multibeam echosounder
  - Sub-bottom profiler
  - Side-scan sonar
  - Magnetometer
- Geotechnical
  - Cone penetration tests
  - Vibracores
- Benthic
  - Grab samples
  - Sediment profile image/plan view
  - Video transects

Surveys Conducted – Aerial Surveys

- High-Resolution aerial surveys have been conducted in the Lease Area.
- This data has been made public on OBIS-SEAMAP
  - Year 1 data is available at: https://seamap.env.duke.edu/dataset/2192
  - Year 2 data is available at: https://seamap.env.duke.edu/dataset/2187

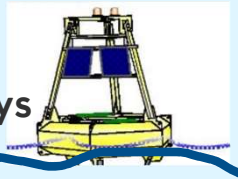
OBIS-SEAMAP | Ocean Biodiversity Information System
Spatial Ecological Analysis of Megavertebrate Populations



Surveys Conducted – Metocean Buoys

equinor

Wave/met buoys



- Wind speed
- Wind direction
- Air temperature
- Relative humidity
- Barometric pressure
- Directional waves

LiDAR buoys

- Vertical profile of wind velocity to ~ 200 m above water
- Wind speed and direction at ~ 3 m above water
- Directional waves

Current moorings

- Water current velocity + water temperature at 3 heights above bottom
- Salinity, temperature, depth at 3 heights above bottom
- Depth sensor at additional height above bottom

What data are collected?

Surveys Conducted – Metocean Buoys

The Lease Area includes metocean buoys and LiDAR, which Beacon Wind has used to gather wildlife data in addition to meteorological and ocean data.

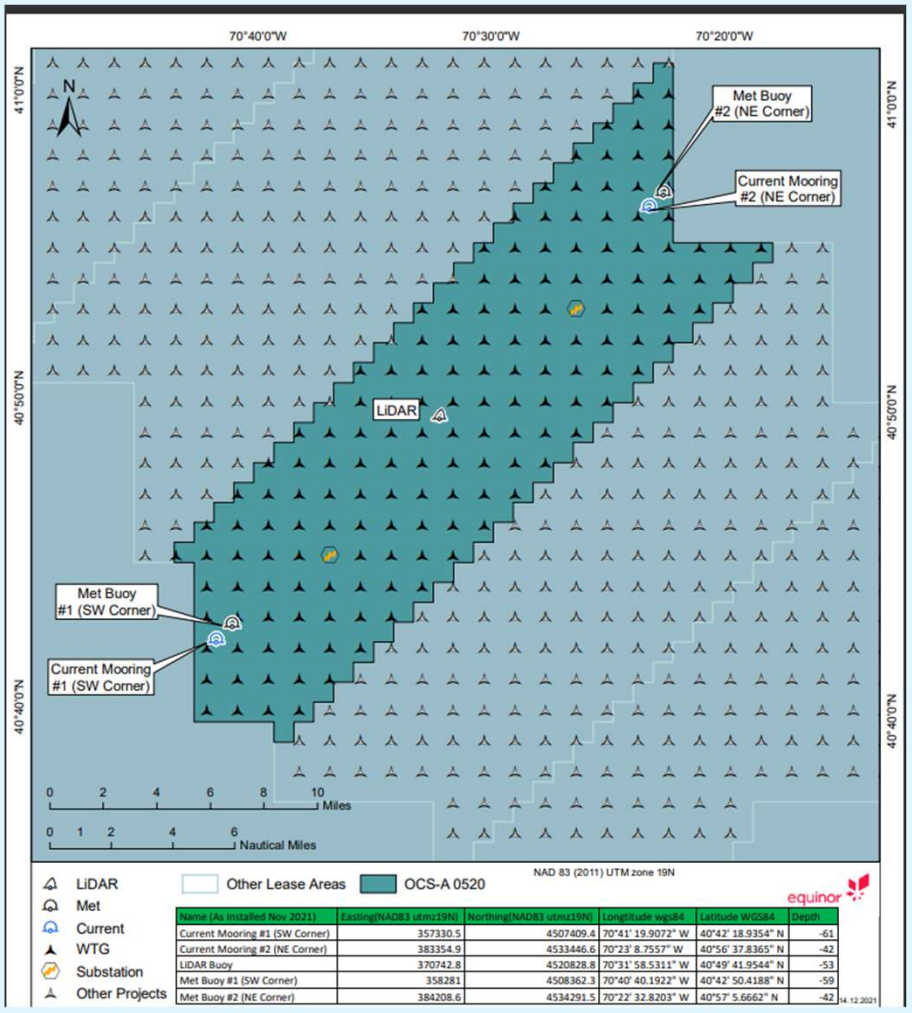
434 MHz bird tag receivers deployed November 2021:

- LiDAR
- Met Buoy #2

These receivers have been registered on the Motus Wildlife Tracking System, and data will be uploaded once fully processed.
https://motus.org/data/project?id=538

Vemco fish tag receivers have also been deployed in collaboration with the New England Aquarium:

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



Name (As Installed Nov 2021)	Easting(NAD83 utmz19N)	Northing(NAD83 utmz19N)	Longitude wgs84	Latitude WGS84	Depth
Current Mooring #1 (SW Corner)	357330.5	4507409.4	70°41' 19.9072" W	40°42' 18.9354" N	-61
Current Mooring #2 (NE Corner)	383354.9	4533446.6	70°23' 8.7557" W	40°56' 37.8365" N	-42
LiDAR Buoy	370742.8	4520828.8	70°31' 58.5311" W	40°49' 41.9544" N	-53
Met Buoy #1 (SW Corner)	358281	4508362.3	70°40' 40.1922" W	40°42' 50.4188" N	-59
Met Buoy #2 (NE Corner)	384208.6	4534291.5	70°22' 32.8203" W	40°57' 5.6662" N	-42

equinor

Getting Involved in

Public Processes

Sign up for Project Updates:

www.beaconwind.com

Twitter: @EquinorWindUS

Beacon Wind hotline: 833-901-3915

Beacon Wind email:
beaconwind@equinor.com

Follow Permitting Processes:

Article VII BW1

www.dps.ny.gov
search case number: 22-T-0294

Meetings & Recordings:

- https://www.beaconwind.com/community/events/


equinor
To get there
Together.
Thank you for your attention.

To get there. Together.

Julia Lewis
Permitting Director- Beacon Wind
JULEW@equinor.com

www.beaconwind.com
Twitter: @EquinorWindUS

LOA and Noise Mitigation Measures Update
Jordan Carduner

Marine Mammal Protection Act (MMPA)
Empire Wind Letter of Authorization (LOA)

Background

- All marine mammals protected under MMPA
- MMPA prohibits "take" of marine mammals
  - "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal"
- Applicant must request authorization from NMFS for "incidental take" of marine mammals
- LOA is a 5-year authorization
  - Requires rulemaking by NMFS
  - Includes 2 public comment periods: Notice of Receipt of application (NOR) and Notice of Proposed Authorization
  - Authorizes only incidental take of marine mammals (not the activity itself)

Empire Wind Letter of Authorization (LOA)

LOA application

- Final application submitted to NMFS July 2022
- Application deemed adequate and complete by NMFS – now available for public review
- Requests authorization for take by Level A (auditory injury) and Level B (behavioral harassment) harassment of 15 species
    - Minimal Level A take requested
    - No mortality or serious injury expected or requested for authorization
- Requests authorization from 2024 through 2028

Empire Wind Letter of Authorization (LOA)

Empire Wind LOA – activities analyzed

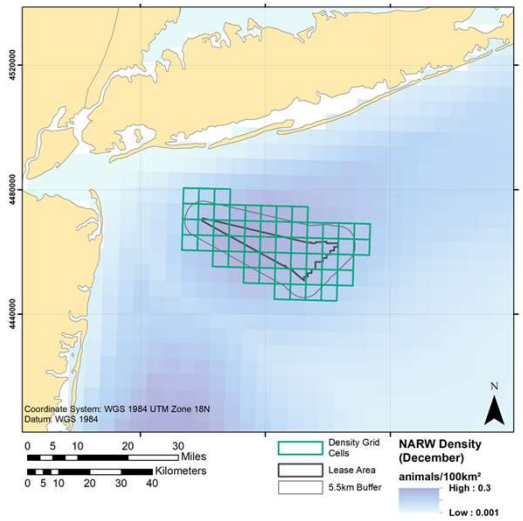
- All activities that may occur between 2024-2028 analyzed for potential for take
- NMFS and applicant agree on activities that may result in take of marine mammals
- All anticipated take from acoustic impacts
- Empire's take request based on:
  - Foundation installation (impact pile driving)
  - Landfall activities (vibratory driving for cofferdam installation)
  - Geophysical surveys

Empire Wind Letter of Authorization (LOA)

Empire Wind LOA – take request

- Take analysis includes:
  - Acoustic modeling of activity including modeled distances to marine mammal harassment thresholds (JASCO)
  - Extent of the activity (e.g., number of days, number of foundations)
  - Marine mammal density in project area
  - Animal movement modeling (JASCO)

- Take request based on maximum extent of potential activities as described in COP
  - Max. potential number of foundations (up to 147 WTGs + 2 offshore substations)
  - Multiple foundation diameters modeled
  - Multiple construction scenarios modeled
  - "Worst case" take modeling results from all scenarios assumed for take estimate



Empire Wind Letter of Authorization (LOA)

Empire Wind LOA – take request

Species	Requested Take	
	Level B Harassment	Level A Harassment
North Atlantic Right Whale	44	0
Humpback Whale	93	0
Fin Whale	34	3
Sei Whale	1	0
Sperm Whale	5	0
Minke Whale	20	0
Pilot Whale	12	0
Bottlenose Dolphin	2,393	0
Atlantic White-sided Dolphin	383	0
Short-Beaked Common Dolphin	3,427	0
Atlantic Spotted Dolphin	14	0
Risso's Dolphin	2	0
Harbor Porpoise	1,222	2
Harbor Seal	1,372	0
Gray Seal	1,387	0
Harp Seal	20	0

Empire Wind Letter of Authorization (LOA)

Empire Wind LOA – mitigation and monitoring

- All applications must include mitigation and monitoring measures
- Designed to minimize / avoid incidental take
- Application proposes mitigation and monitoring for all activities with potential to result in take:
    - Foundation installation
    - Cofferdam installation / vibratory pile driving
    - Geophysical surveys
    - Vessel strike avoidance

Empire Wind Letter of Authorization (LOA)

Empire Wind LOA – mitigation and monitoring

- Mitigation and monitoring proposed for foundation installation:
  - Seasonal restriction (January-April) to minimize impacts to right whales
  - Time of day restrictions (no nighttime pile driving)
  - Passive acoustic monitoring (PAM)
  - Protected species observers (PSOs)
  - Noise attenuation
    - Bubble curtains, hydro-sound damper, etc.
  - "Soft start" of pile driving at low energy to provide a warning prior to ramping up
  - "Pre-clearance" and shutdown zones – ensure no marine mammals present before/during pile driving
  - Shutdown of pile driving (not always feasible – depends on stability of pile)

Empire Wind Letter of Authorization (LOA)

Empire Wind LOA – mitigation and monitoring

- "Pre-clearance" and shutdown zones
  - Significantly larger than modeled distances to Level A harassment thresholds – designed to avoid Level A harassment

Species	Pre-clearance / shutdown zone (m)
North Atlantic right whale – PAM	5,000
North Atlantic right whale – visual detection	1,500
All other large whales	1,500
Harbor porpoise	400
Dolphins, pilot whales, seals	200

Empire Wind Letter of Authorization (LOA)

Empire Wind LOA – next steps

- Application now available on NMFS web site for review
- Public comment period on Notice of Receipt of application open through Oct 11
  - Accessed via NMFS web site
- After public comment period on Notice of Receipt, NMFS prepares Notice of Proposed Authorization
- Notice of Proposed Authorization expected April 2023 – followed by public comment period
- Final rulemaking expected Dec 2023
- LOA issued Jan 2024

Additional Measures Being Considered Above and Beyond the LOA

Panel of Experts

- Panel of experts convened by Equinor in Feb 2022 to analyze and recommend best technology for marine mammal detection
- Goal: minimize sound impacts from pile driving activities in support of environmentally-responsible construction of Empire Wind
- Experts include acousticians, biologists and modelers from academia, research institutions and NGOs
- Expert panel is providing:
  - Technical evaluation, guidance and recommendations on mitigation and monitoring technologies
  - Insights into cutting-edge/emerging technological developments including efficacy and cost effectiveness
  - Insight on feasibility, readiness, limitations and effectiveness of emerging and potential marine mammal detection technologies
- Measures recommended by expert panel will go above and beyond mitigation/monitoring in Empire LOA application
- Panel recommendations expected this Fall

Fish and Benthic and Avian/Bat Monitoring Frameworks

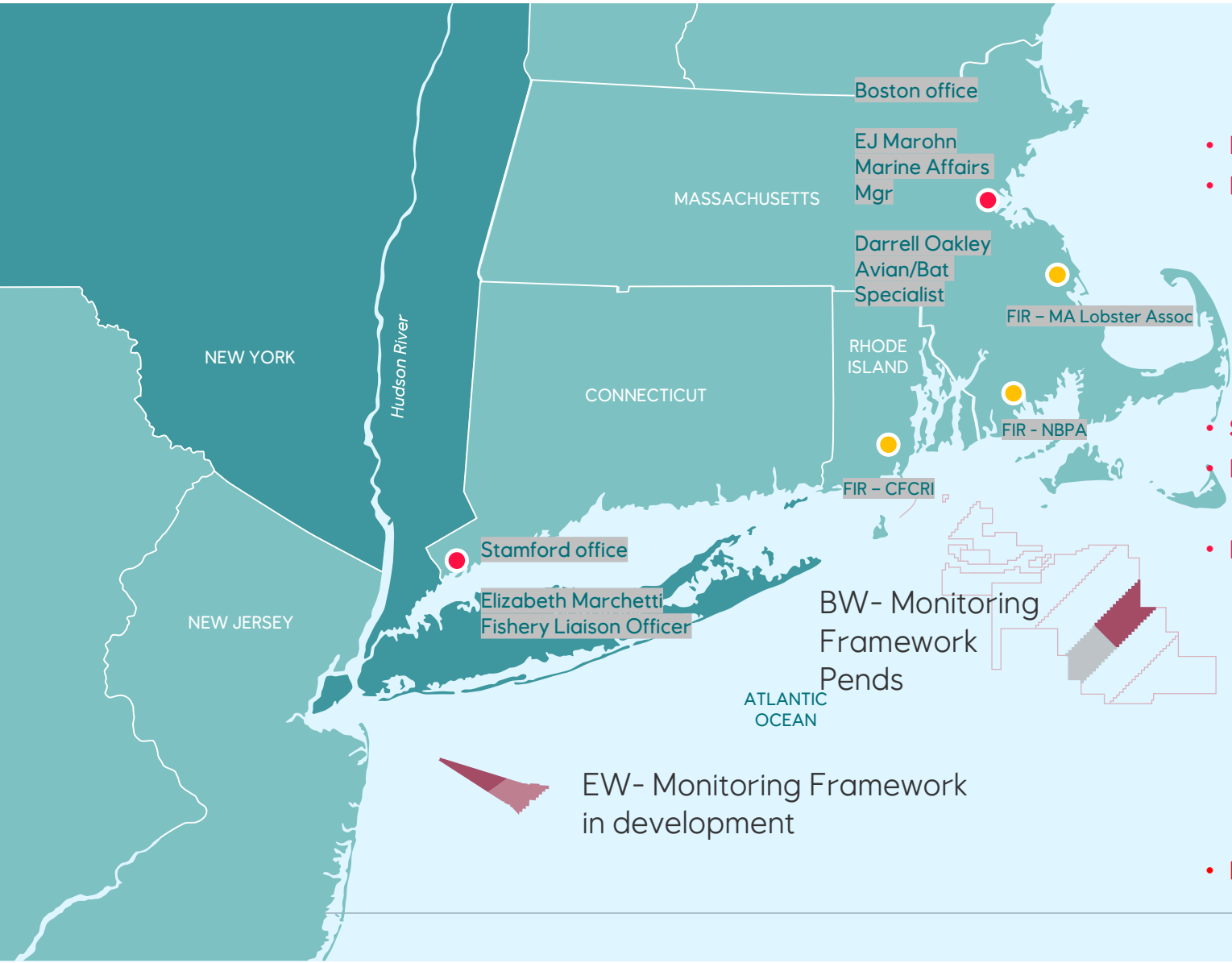
Darrell Oakley and EJ Marohn

Monitoring Framework Update

(Benthic, Fisheries & Avian/Bat)

EJ Marohn & Darrell Oakley

20 Sep 2022



equinor

CURRENT/PAST EFFORT

- **Equinor Team**
- **Engagement**
  - Fishing Industry Reps
  - Port Hours
  - Fish Mgmt Council
  - NOAA
  - Research Institutes/Universities
- **Surveys**
- **NEAQ HMS Telemetry**

UPCOMING

- **EW Fishery Monitoring Framework**
  - July 2022 Inspire Contract
    - Encourage Alternative/Non-Extractive Survey Methods
    - Engagement and Outreach in 2022
    - Monitoring in early 2023
- **Beacon Wind next**

Fisheries and Benthic Monitoring Framework - Empire Wind

Survey	Gear/Equipment	Survey Design	Objectives	Timing
Bottom trawl targeting Longfin squid	Bottom Otter Trawl with TED	Before-After, Control-Impact (BACI)	Monitor for changes in CPUE of longfin squid and bycatch species between the impact and reference area before, during, and after construction	Fall (September-October)
Baited Remote Underwater Video (BRUV)	Benthic BRUV with twin cameras	Before-After Gradient (BAG)	Monitor for changes in species abundance and diversity along a distance gradient from turbine foundations before, during, and after construction	Seasonally (Winter, Spring, Summer, Fall)
eDNA	Water samples	Paired with trawl and BRUV surveys	Monitor for changes in fish community composition, including those species not encountered in the trawl and BRUV surveys, before, during, and after construction	Fall; Seasonally
Acoustic Telemetry	Vemco VR2AR receivers and transmitters	Even distribution of receivers within lease area to maximize detection range	Monitor for changes in the presence, persistence, and movements of key species within the lease area before, during, and after construction	Year-Round
Atlantic Sea Scallop Imagery	Plan View Imaging	Before-After, Control-Impact (BACI)	Monitor for changes in average abundance and spatial distribution of sea scallops between impact and reference area before, during, and after construction	Late Summer/Early Fall (Y0, Y1, Y2, Y3, Y5)
Epifaunal Growth on Novel Hard Bottom Structures	ROV video imagery, photogrammetry	Stratified random selection of structures (WTG foundations, protected cable segments), stratified by water depth	Monitor changes in epifaunal biomass, community composition, with depth and time since construction	Late Summer/Early Fall (Y0, Y1, Y2, Y3, Y5)
Benthic function on seafloor surrounding WTG foundations	SPI/PV	Before-After Gradient (BAG) (same turbines as above)	Monitor changes in benthic function (aRPD depth, organic matter content, infaunal successional stage) with distance from foundation and time since construction	Late Summer/Early Fall (Y0, Y1, Y2, Y3, Y5)

Example of a Proposed Reference and Impact Areas -Empire Wind

Similar Habitat and Depth

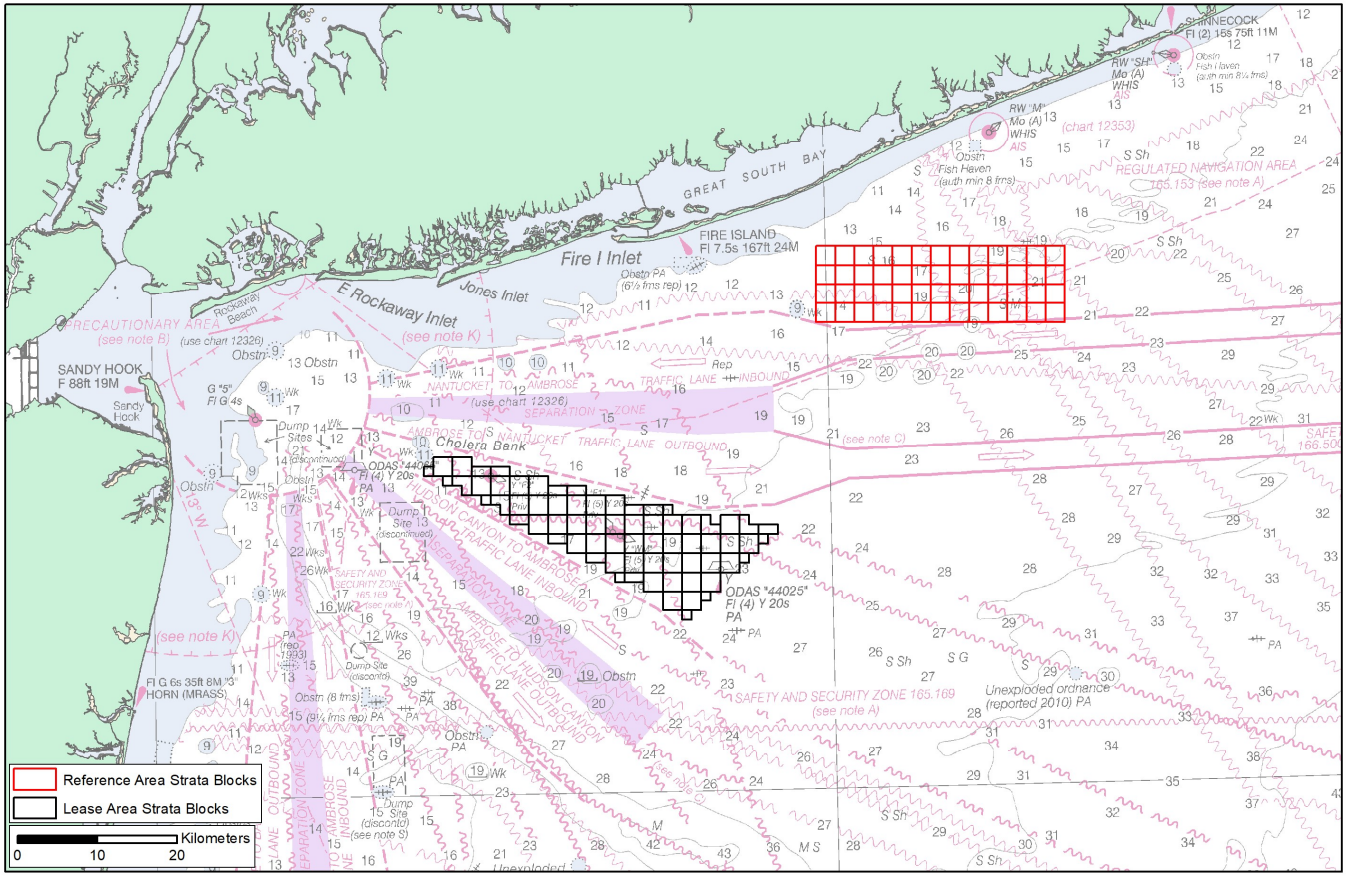
Sufficient distance away from:

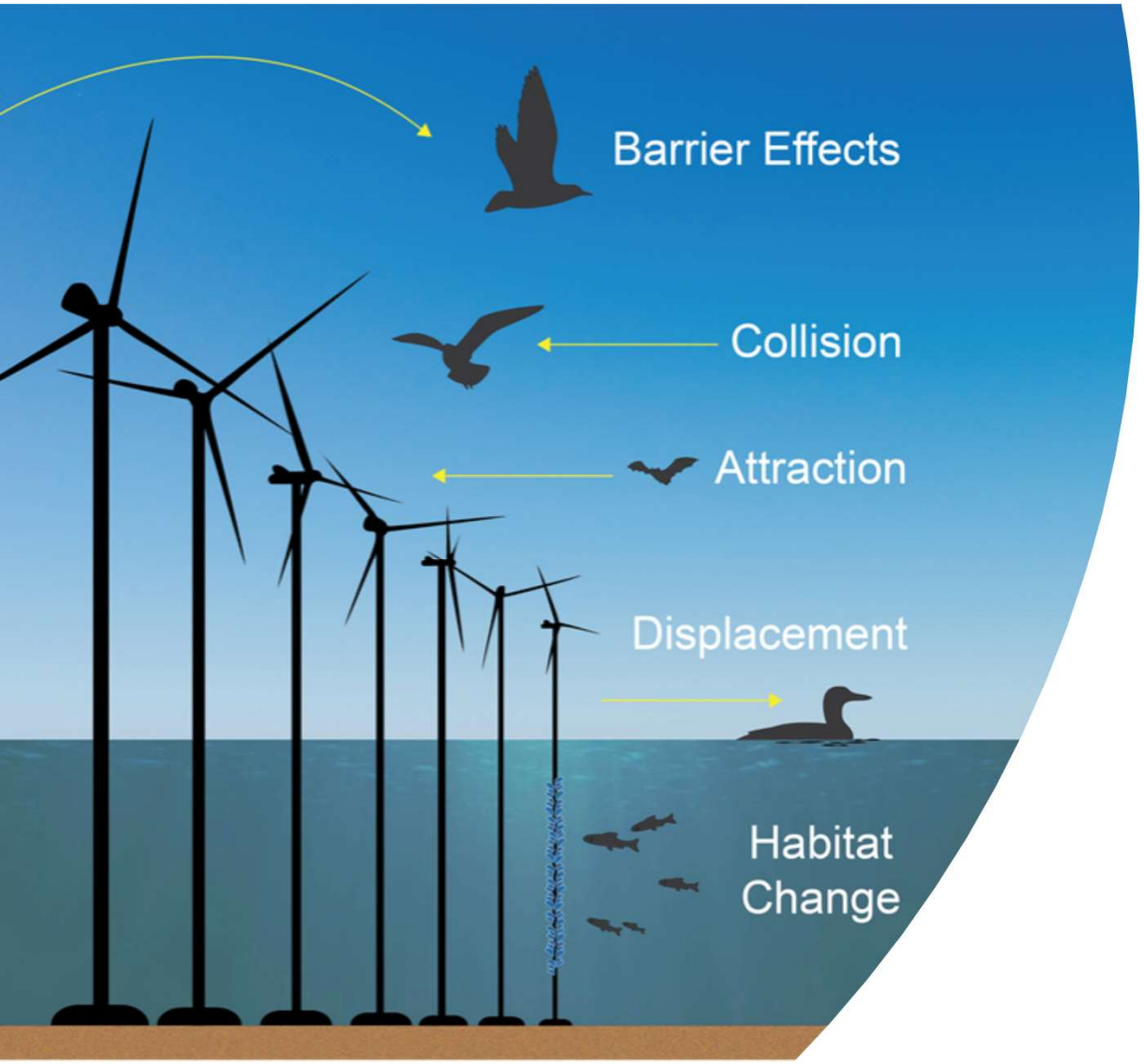
- OSW Construction area (30nm)
- Vessel Traffic Schemes

Historic fishing trends

Two depth strata in each sample area (<35 and >35)

Soliciting Feedback





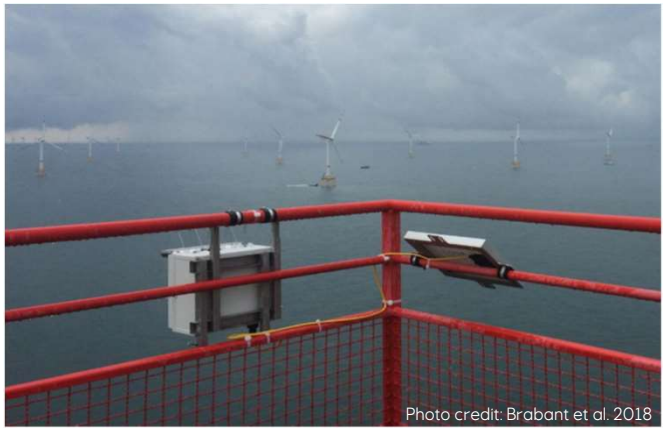
equinor

Avian and Bat Post-Construction Monitoring Framework

GOAL – support the understanding of bird and bat interactions for the EW1 and EW2 projects

Avian and Bat Post-Construction Monitoring

Acoustics

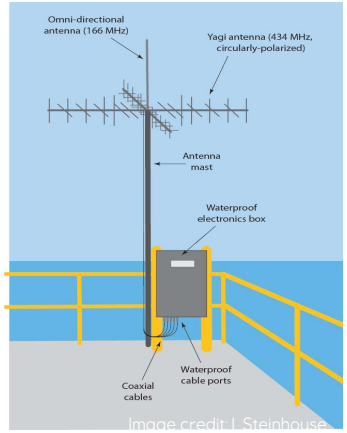


Bats/Nocturnal Migratory Birds

Acoustic detectors

Up to 6 WTGs (bats),
2 substations (birds)

Tracking

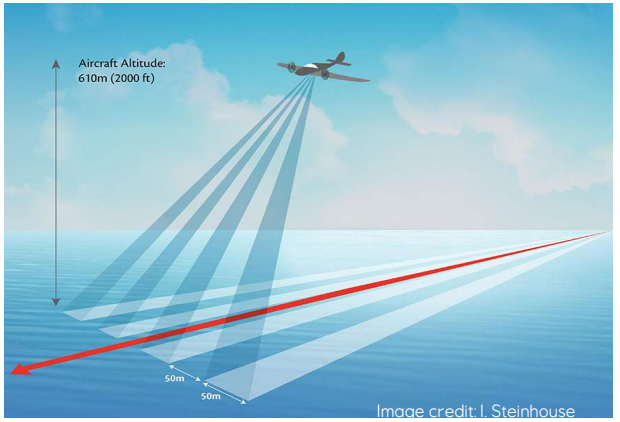


ESA-listed birds/other tagged birds, and bats

Motus receivers and tags

2 to 4 coastal stations,
300 tags/year

Visual

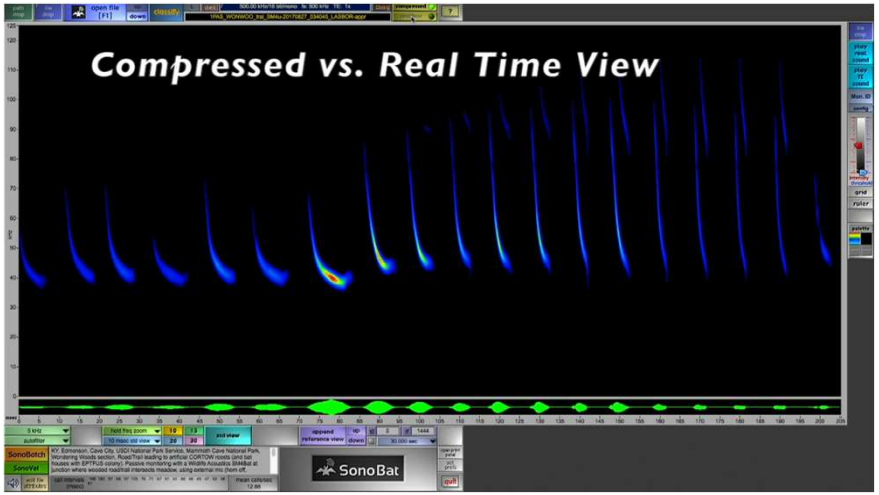


Birds/Bats

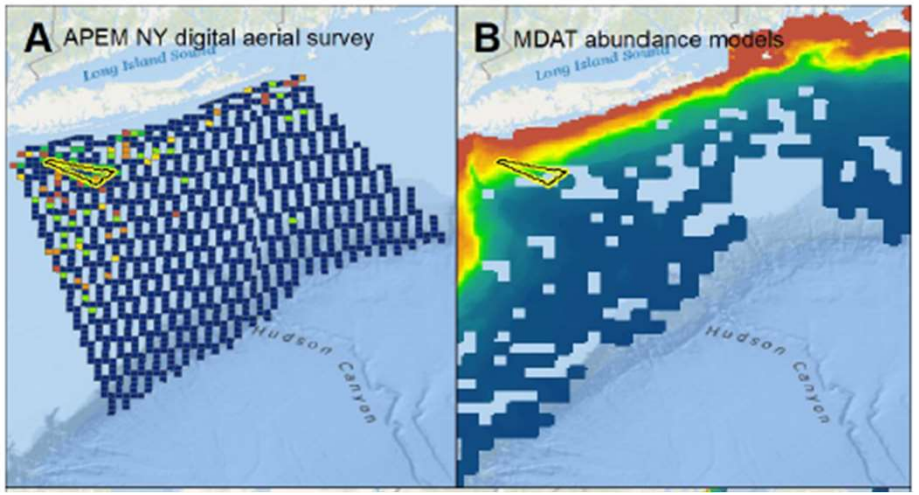
Digital aerial surveys and incidental observations

10% coverage with 4 km buffer (aerial surveys)

Avian and Bat Post-Construction Monitoring



Full Spectrum Bat Acoustics Analysis



Pre-construction Common Loon Abundance for Post-Construction Analysis

EW2 and BW1 PSA Monitoring Plan Update
Jennifer Dupont

Background

- EW2 (1,260 MW) and BW1 (1,230 MW) Offshore Wind Renewable Energy Certificate Purchase and Sale Agreement with NYSERDA signed January 14, 2022
  - Section 12.10: Support for Monitoring of Key Commercial Fish Stocks and Wildlife of Conservation Concern
    - $5,000/MW of offer capacity allocated 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
    - $5,000/MW of offer capacity allocated to support reginal monitoring of wildlife of conservation concern to better understand how offshore wind energy development affects distribution and abundance of sensitive species.
    - Funding shall be directed to advance the responsible development of the offshore wind energy industry, and not limited exclusively to the Selected Project.
    - Final plan for commitment of funding due to NYSERDA by Jan 14, 2023
      - 50% of funding committed by January 14, 2024
      - 50% of funding committed by January 14, 2025

Current Status

- Lead case: Disbursement of funds by Equinor to not-for-profit regional research organizations, with some involvement by company in selection, project management, and communications components.
  - Principles:
    - Align with regional research prioritization efforts for fish and wildlife
    - Leverage existing regional organizations/structures/working groups/data sharing networks (e.g., E-TWG, F-TWG, RWSC, ROSA)
    - Streamline contracting models to effectively disburse funds
- Timeline:
  - 3Q/4Q2022 – Equinor finalizing draft Monitoring Plan proposal and submit to NYSERDA
  - January 14, 2023 – NYSERDA approval of Monitoring Plan
  - 1Q/2Q 2023 – Contracting with regional organizations
  - 2Q 2023 – Develop slate of projects, proposal scoring framework
  - 3Q/4Q 2023 – Issue first round of RFPs

Thank you!