Offshore Wind in North Carolina: Updates on the Kitty Hawk Wind and Carolina Long Bay Projects

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Presentation Overview

1) Offshore wind energy areas in North Carolina

2) Overview of Kitty Hawk Wind

3) Overview of Carolina Long Bay

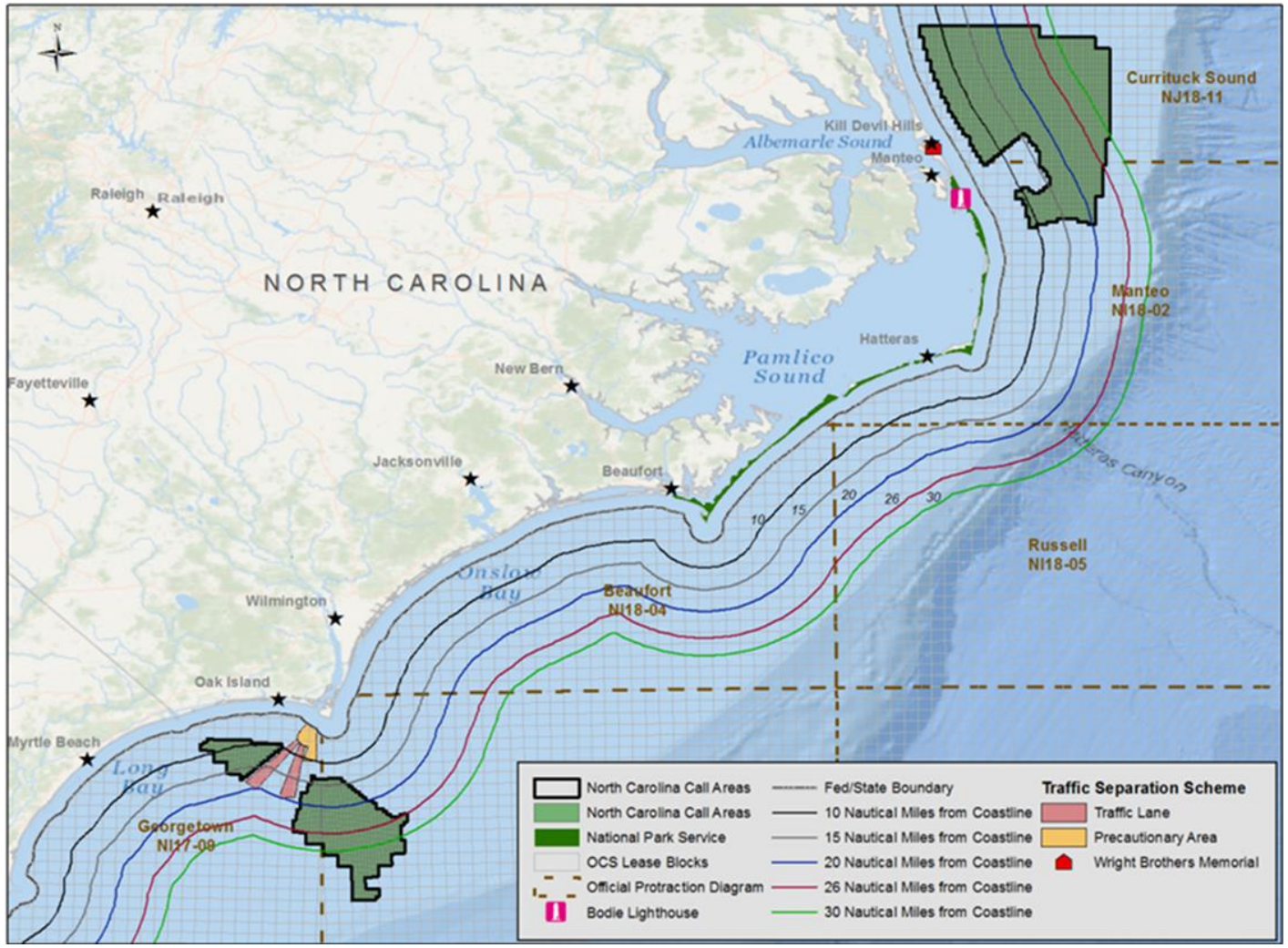
4) FAQ: Marine mammals and offshore wind: Dr. Doug Nowacek (Duke University)

5) Time for Questions

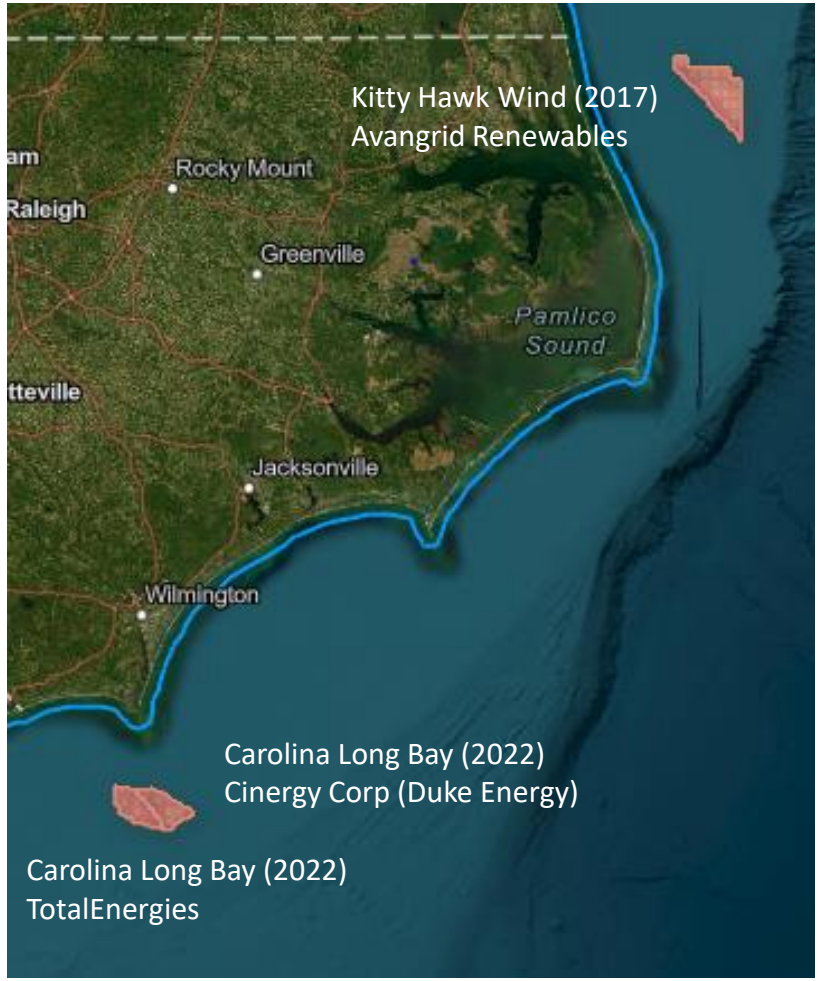
Internal Use

Evolution of NC Lease Areas

Wind Energy Call Areas



Wind Energy Call Areas



Internal Use

Kitty Hawk Wind

AVANGRID

Kitty Hawk Wind Lease Area

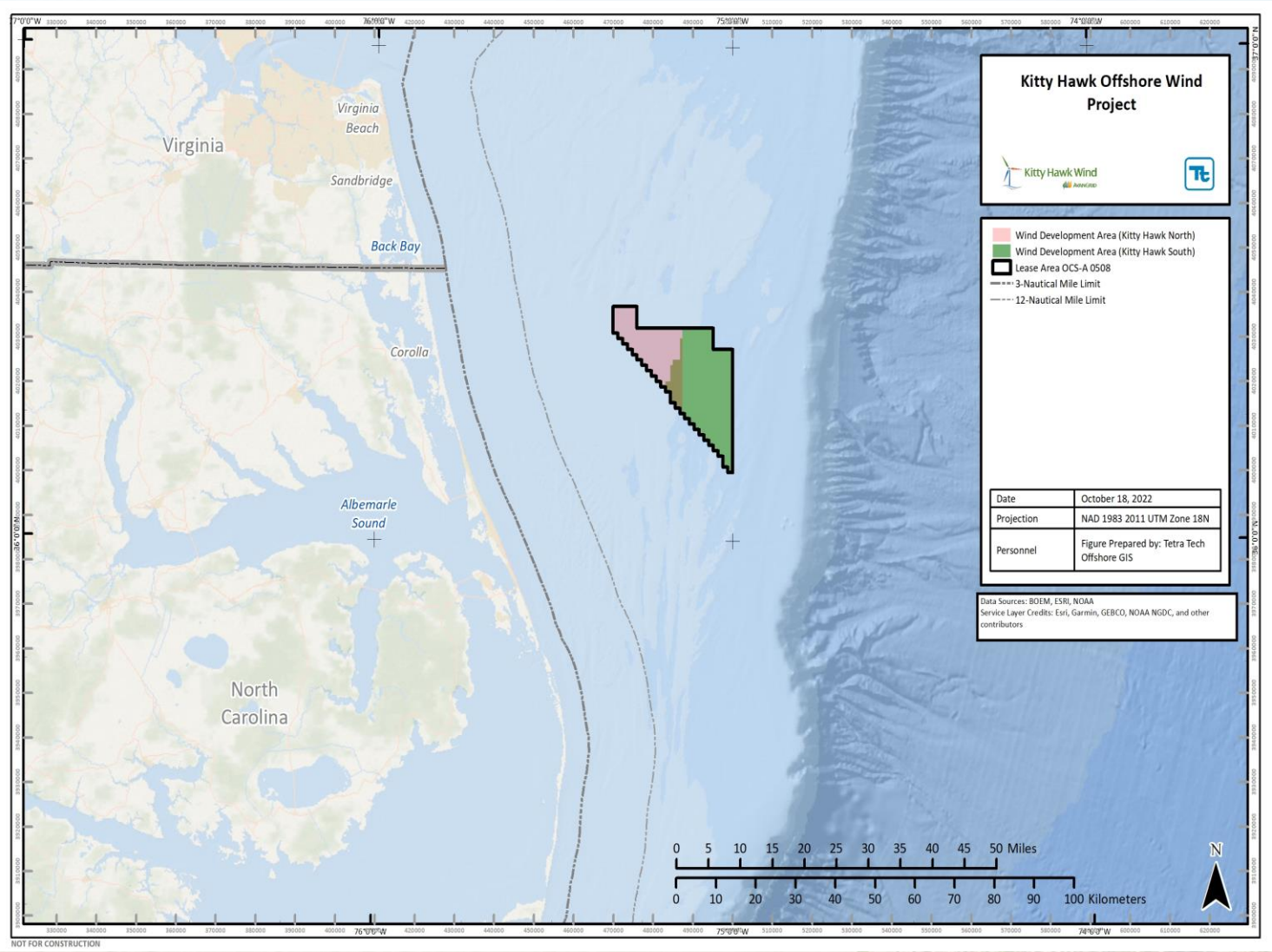
Location: 27 miles offshore of Corolla, NC

Lease Area: 122,405 acres

Capacity: ~3500 megawatts (MW)

Site Characteristics:
Wind speed: 8-9 m/s
Water depth: 30-50 meters

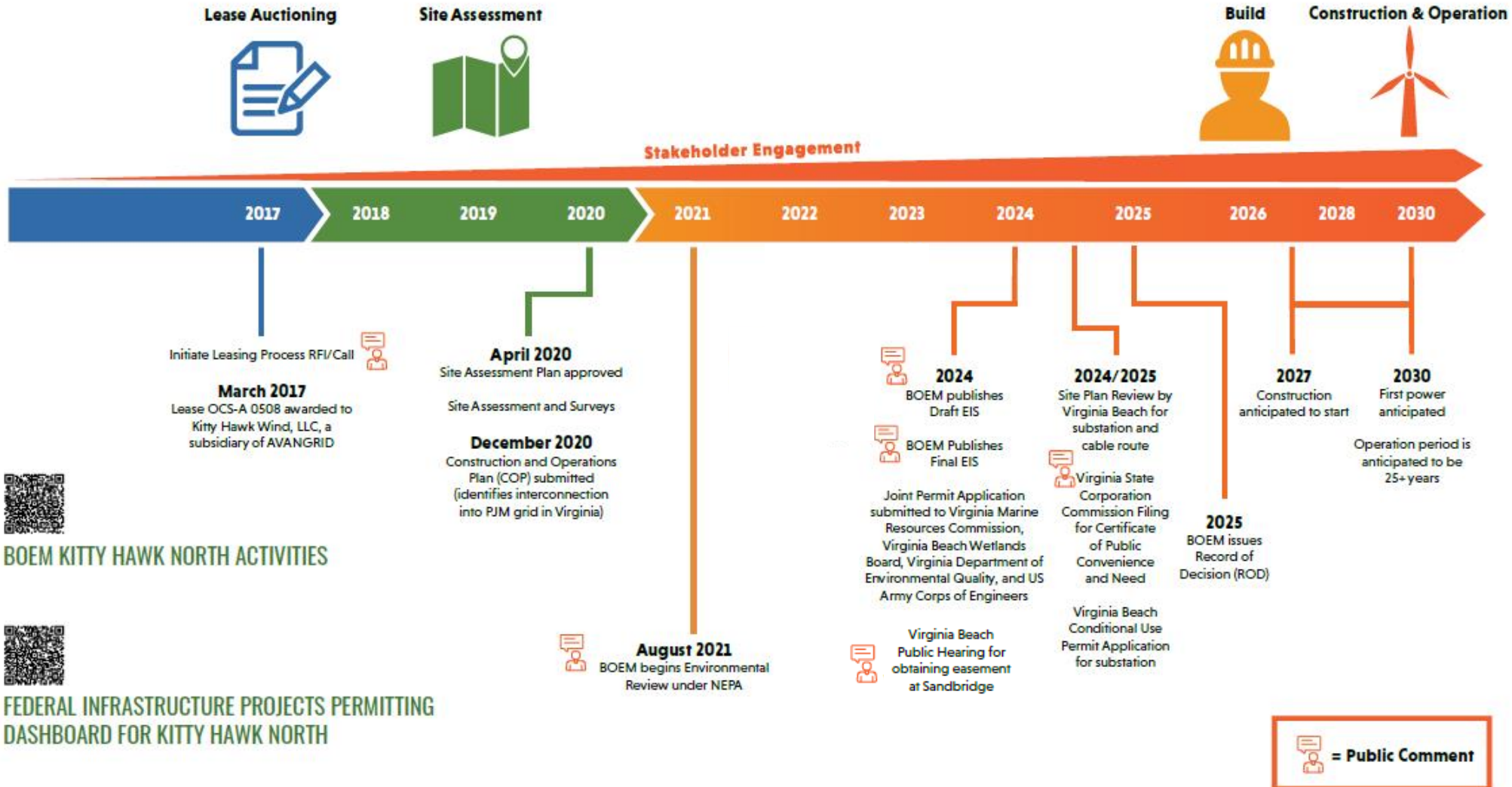
Projects w/in Lease:
Kitty Hawk North- ~ 40% of lease
Kitty Hawk South- ~ 60% of lease



Kitty Hawk Wind
AVANGRID

KITTY HAWK NORTH

ANTICIPATED PERMITTING & CONSTRUCTION SCHEDULE



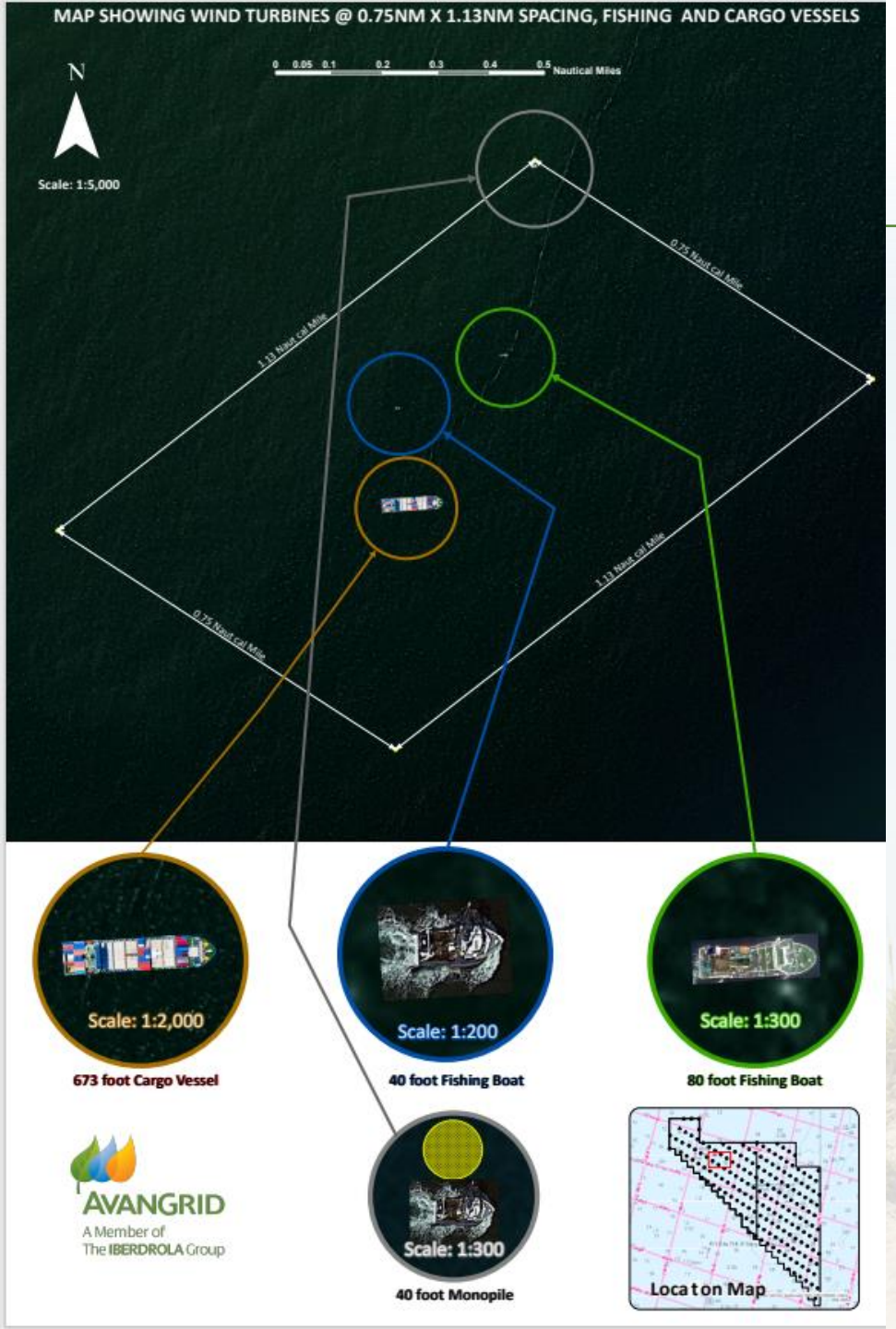
BOEM KITTY HAWK NORTH ACTIVITIES

FEDERAL INFRASTRUCTURE PROJECTS PERMITTING DASHBOARD FOR KITTY HAWK NORTH

Fisheries Considerations

Utilizing Historical Fisheries Knowledge and Experience

- Spacing to accommodate vessels (0.75 x 1.13 nm spacing of turbines)
- Cables buried 5-8ft in the **stable sea floor**
- Commercial and recreational fishing will not be restricted within the lease area except for construction/maintenance
- Turbines will act as artificial reefs



Fisheries Engagement

Fisheries Outreach

- Sponsored 5 fishing tournaments in 2023:
  - Big Rock, VB Tuna, Alice Kelley, Pirates Cove, VB Billfish

Fisheries Representatives

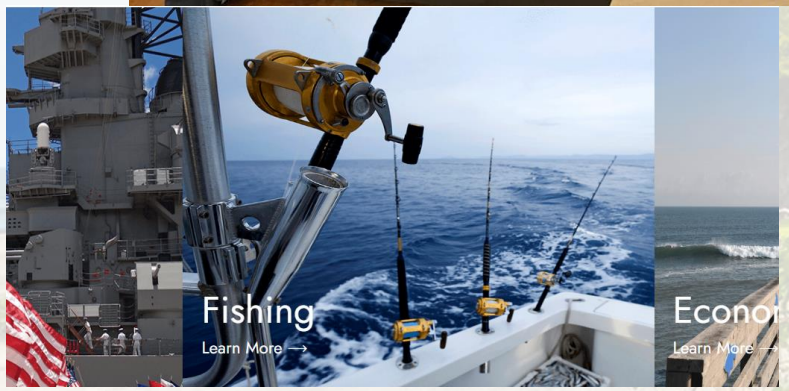
- 2 NC: Dewey Hemilright (Commercial) and Hank Beasley (Rec Charter/Commercial)
- VA: Daniel LeGrande (Rec Charter)

Future Collaboration

- Scout and contractors- survey & safety
- Community outreach events
- Joint developer initiatives

Kitty Hawk Website

- Notice to mariners, fisheries notices, FAQs



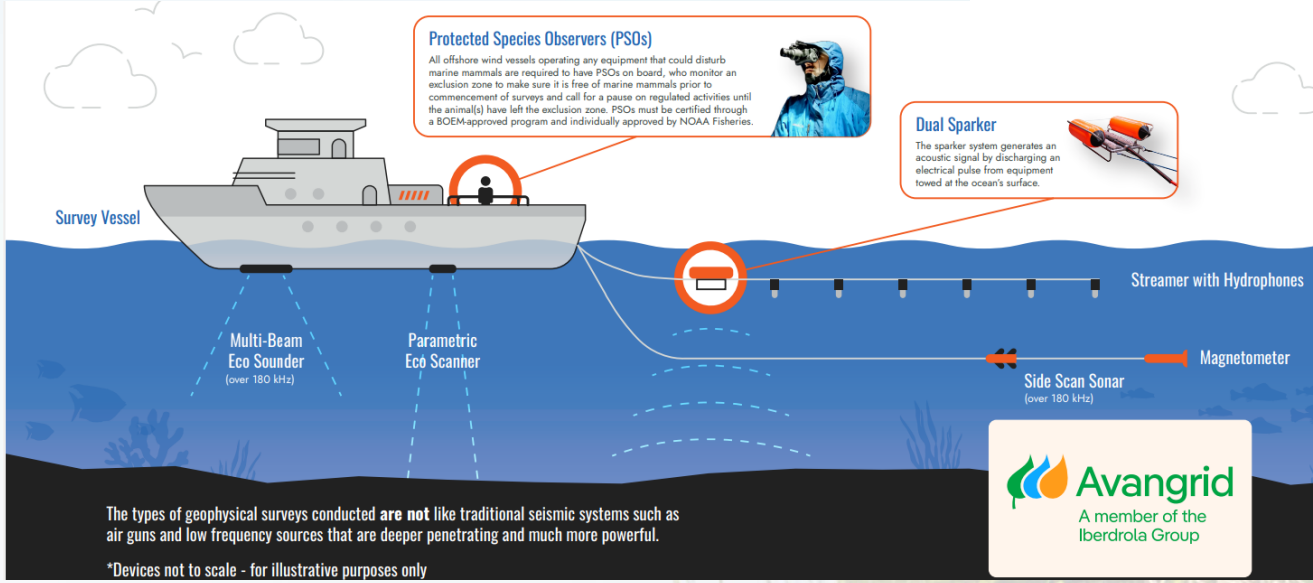
Completed and Upcoming Research

Completed Research

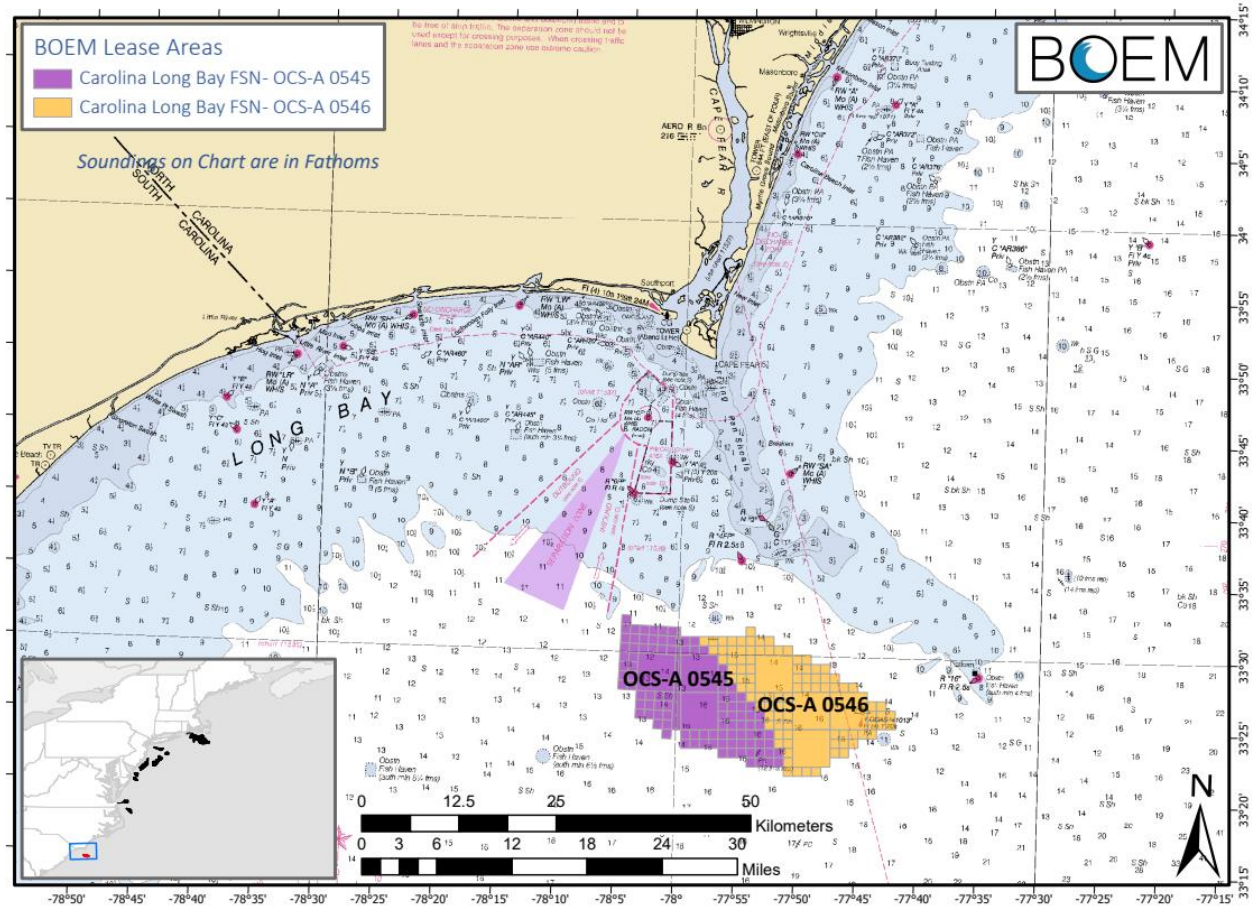
- Wind, current, and wave data gathered from meteorological buoys
- Geophysical surveys (sonar to map sea floor)
- Geotechnical surveys (sediment cores)

Upcoming Research

- Currently planning fisheries monitoring plan in collaboration with academic researchers at local research institutes, local fishermen, and management agencies
- Fisheries monitoring research will be 6-8-year research commitments



Carolina Long Bay
2023 Offshore Wind Activities



Lease Area OCS-A 0545
TotalEnergies Renewables USA, LLC

Lease Area OCS-A 0546
Cinergy Corp., a direct non-regulated subsidiary of Duke Energy

SAP survey to assess buoy locations:
August 15, 2023 – August 24, 2023

Survey Contractor:
Geodynamics, an NV5 Company

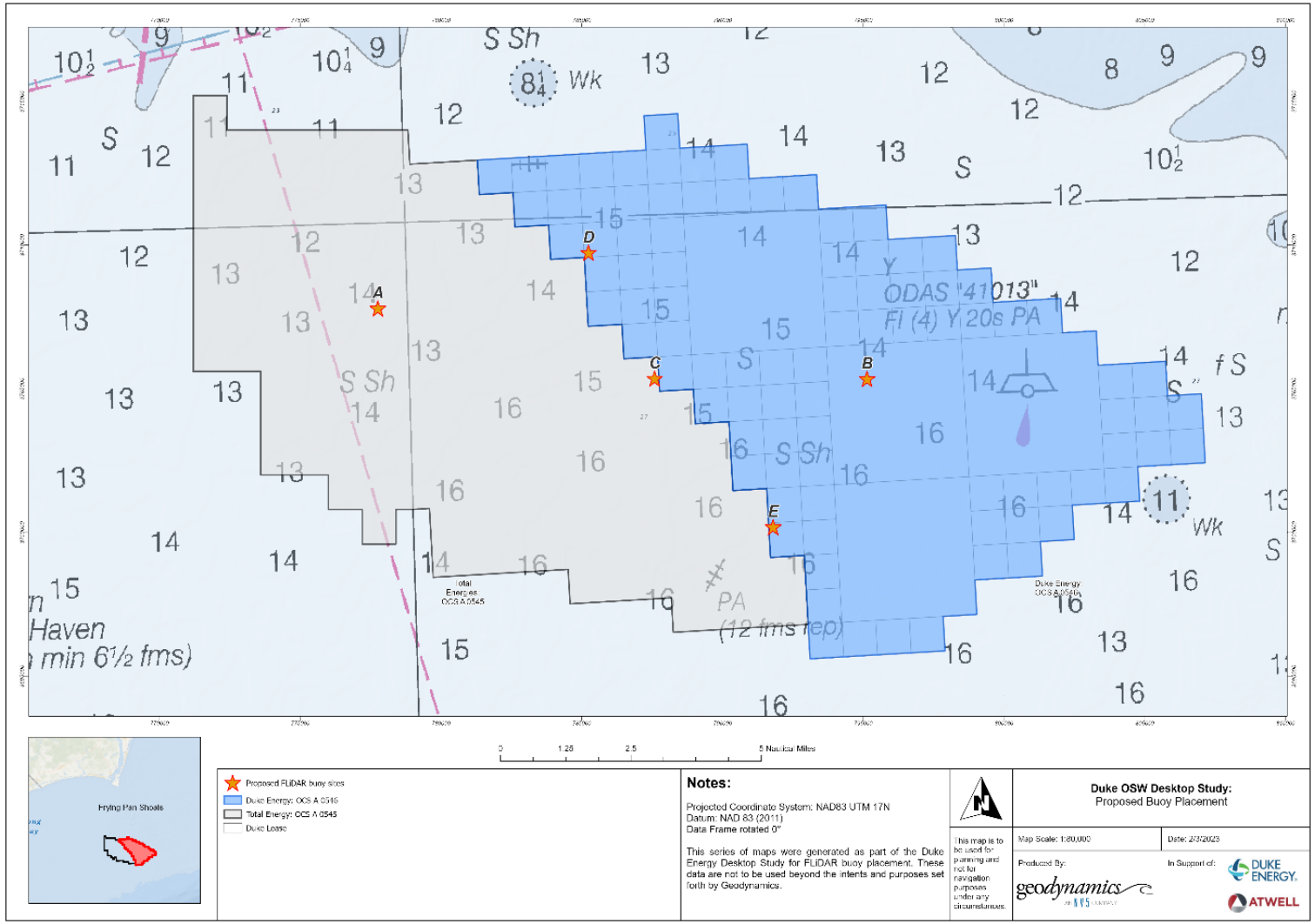
Protected Species Observer Contractor:
RPS

Offshore Fisheries Liaison Contractor:
RPS

Vessel: R/V Shackleford

Survey Locations

(locations being considered for deployment of buoys)



Plan for Buoys

Meteorological Buoys: Two buoys (one within each lease area) equipped with floating light detection and ranging (LiDaR) and other sensors

Environmental Buoy: Wildlife monitoring; triangulation for locating whale and other marine mammal activity

*No more than 3 buoys are planned

Survey Locations

Survey Location	Latitude	Longitude
Location A	33.477819N	78.0119996W
Location B	33.447271N	77.830528W
Location C	33.442476N	77.913567W

Survey Stats

Buoy Sites

- 300m x 300m square at Sites A, B & C

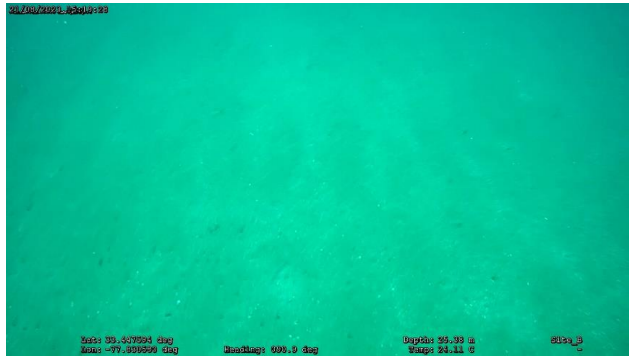
Equipment

- Sidescan Sonar (SSS)
- Multibeam Echosounder (MBES)
- Magnetometer in Transverse Gradiometer configuration (TVG)
- Sub-bottom Profiler (SBP)
- Young-Modified Van Veen Grab (0.04m2)
- Video transects

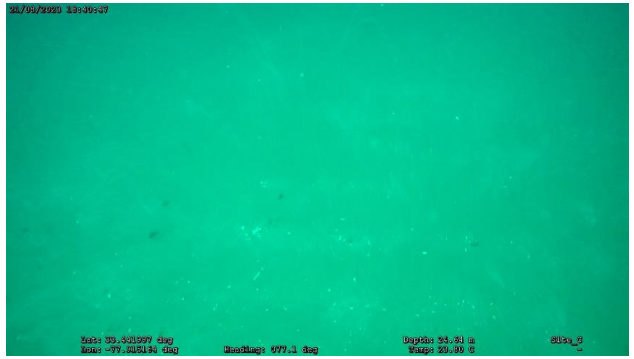
Agency/SAFMC Feedback

- Positive feedback on combined permitting
- HRG review ahead of benthic grabs
- Real-time review of video transects to ensure visibility
- Use of Modified Van Veen for grab samples

Still-shot from Site A



Still-shot from Site B



Still-shot from Site C

Internal Use

Protected Species Observers (PSOs)

Vessel Strike Avoidance Procedures

- One PSO on watch from the time that the vessel leaves the dock until when the vessel returns to the dock
- Speed Restrictions
  - 10 knots or less inside SMAs and DMAs.
  - 4 knots or less through areas of visible jellyfish aggregations or floating vegetation
  - 4 knots or less in areas with less than 4 ft of clearance between vessel and bottom

Mitigation Distances:

Species / Species Group	Separation Distance (m)
North Atlantic right whale (NARW)	500
ESA-listed or Unidentified whales	500
Other whales	200
Dolphins, porpoises, seals	N/A
Sea turtles	Forward path (any distance)**
Giant manta rays	Forward path (any distance)**

Total visual monitoring effort: 58:51 hours

TotalEnergies and Duke Energy voluntarily committed to a 10-knot speed restriction during surveys

The efforts by The Companies to protect right whales while advancing these initial surveys shows that we do not need to choose between clean energy development and wildlife protection.

- Natural Resources Defense Council blog
(https://www.nrdc.org/bio/francine-kershaw/nc-offshore-wind-surveys-advance-protections-right-whales)

Internal Use

Preliminary Plan – Buoys

Floating LiDAR Buoy Data Collection Equipment (subject to change)

Floating LiDaR

- Meteorological data (wind speed & direction, relative humidity, air temperature, atmospheric pressure, precipitation)
- Wave sensor / buoy
- Current sensor
- Tide / Water Levels

MOTUS Station

Passive Acoustic Monitoring (PAM) System

- Monitoring of North Atlantic Right Whale
- C-POD Click Detector (toothed whales, dolphins and porpoises)

Fish Tag Acoustic Receivers (passive)

- InnovaSea – Underwater Receiver

Water Quality Sensors

- Dissolved oxygen, water temperature and pressure, conductivity, salinity, pH, turbidity, and chlorophyll-a

Environmental Buoy Data Collection Equipment (subject to change)

Bird Acoustic Sensor

- Record diurnal and nocturnal bird calls for species identification

Bat Ultrasonic Sensor

- Record migrating bat calls for species identification

Passive Acoustic Monitoring (PAM) System

- Monitoring of North Atlantic Right Whale
- C-POD Click Detector (toothed whales, dolphins and porpoises)

Fish Tag Acoustic Receivers (passive)

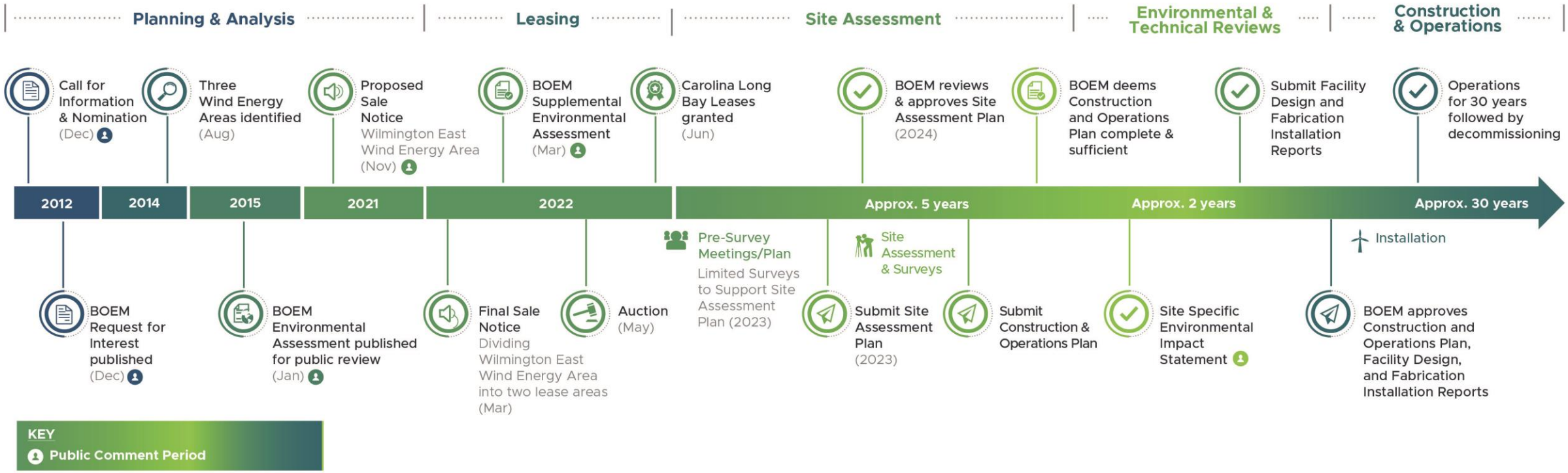
- InnovaSea – Underwater Receiver

Wave Sensor, if warranted

Internal Use

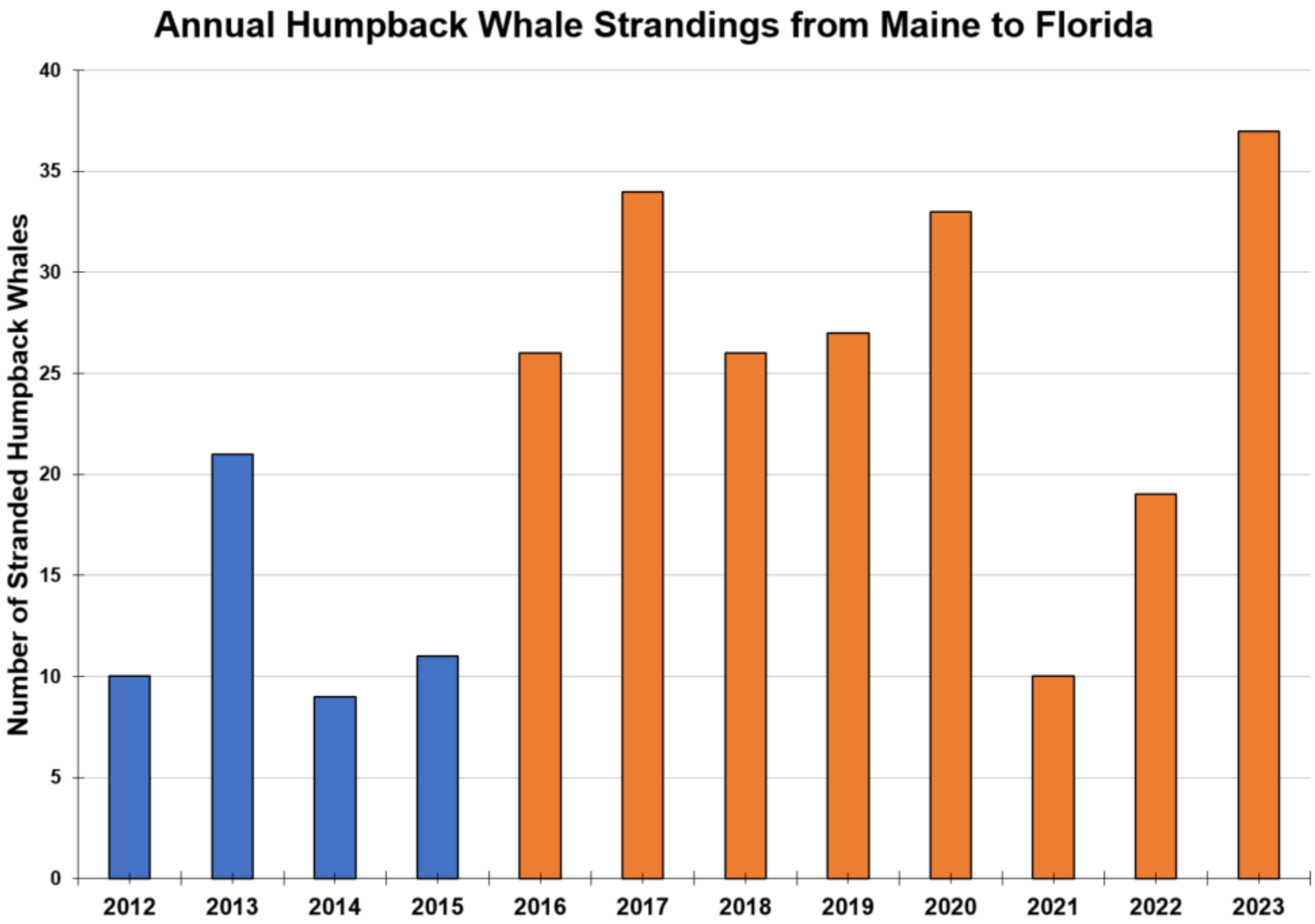
CAROLINA LONG BAY

MAJOR PROJECT MILESTONES*



* This timeline indicates BOEM project milestones for the Carolina Long Bay Project

FAQ: Marine Mammals and Offshore Wind, Dr. Doug Nowacek, Duke University



Internal Use

Thank you!

Questions?

Carolina Long Bay

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Dominion CVOW

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Internal Use

Whales and Offshore Wind

National Oceanic and Atmospheric Administration:

"We work with our partners to analyze and understand the causes of death when we are able, following the science and data. At this point, there is no scientific evidence that noise resulting from offshore wind site characterization surveys could potentially cause mortality of whales. There are no known links between recent large whale mortalities and ongoing offshore wind surveys."

- Frequent Questions—Offshore Wind and Whales | NOAA Fisheries

(https://www.fisheries.noaa.gov/new-england-mid-atlantic/marine-life-distress/frequent-questions-offshore-wind-and-whales)

Additional Resources

- University of Rhode Island: Offshore wind turbines not cause of whale strandings, deaths, says URI ocean engineering professor - Graduate School of Oceanography
  - https://web.uri.edu/gso/news/offshore-wind-turbines-not-cause-of-whale-strandings-deaths-says-uri-ocean-engineering-professor/#:~:text=News%20%26%20Events-,Offshore%20wind%20turbines%20not%20cause%20of%20whale%20strandings%2C%20deaths,says%20URI%20ocean%20engineering%20professor&text=URI%20expert%20James%20Miller%20says,to%20no%20impact%20on%20whales

- Department of Energy: Addressing Misinformation on Offshore Wind Farms and Recent Whale Deaths
  - https://www.energy.gov/articles/addressing-misinformation-offshore-wind-farms-and-recent-whale-mortalities

- Project Wildlife and Offshore Wind (Duke University): Offshore Wind Energy Development and its Potential Threats to Marine Mammals
  - https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Offshore-Wind/NYSERDA-webinar-82323-Marine-Mammals-Duke-NOAA-Fisheries.pdf
  - *"What do we know about the strandings of humpback or other whales along the mid-Atlantic coast…*
    - *…there is no evidence that any activities associated with offshore wind cause nor have any connection to whale strandings*
    - *We are actively working to better understand the potential response*(s) and any associated consequences"

- RWSC – The Regional Wildlife Science Collaborative for Offshore Wind supports research and monitoring on wildlife and offshore wind
  - rwsc.org

Does NOAA Fisheries authorize the death of whales as it relates to offshore wind development?

"NOAA Fisheries does not anticipate and has not authorized—or proposed to authorize—mortality or serious injury of whales for any wind-related action. Offshore wind developers have not applied for, and NOAA Fisheries has not approved, authorization to kill any marine mammals incidental to offshore wind site characterization surveys or construction activities. Marine mammals may respond to exposure to these surveys, for example, by avoiding the immediate area. (see Frequent Questions—Offshore Wind and Whales | NOAA Fisheries)"

Internal Use

BOEM Environmental Assessments of Lease Areas

Evaluations

- Demographics and Employment & Environmental Justice
- Air Quality
- Benthic Resources
- Finfish and Essential Fish Habitat
- BOEM Standard Operating Conditions
- Visual Resources
- Birds and Bats
- Water Quality
- Commercial and Recreational Fisheries
- Cultural, Historical and Archaeological Resources
- Land Use and Coastal Infrastructure
- Tourism and Recreation
- Navigation and Vessel Traffic
- Threatened and Endangered Species, Marine Mammals and Sea Turtles

Consultations

- Magnuson-Stevens Fishery Conservation and Management Act
- Endangered Species Act
- Coastal Zone Management Act

Internal Use