VIMS Industry Partnership
Offshore Wind
Friday, February 15th 2013

Virginia Offshore Wind Technology Advancement Project
VOWTAP

- DOE selected 7 projects for initial engineering and environmental surveys
  - $4 million per project
- In 2014, DOE will select 3 projects for final design and construction
  - $47 million per project
  - Project operations date by 2017
- Goals of the Advanced Technology Demonstration Project
  - Install innovative offshore wind systems in U.S. waters in the most rapid and responsible manner possible.
  - Expedite deployment of innovative offshore wind energy systems with a credible potential for lowering the levelized cost of energy (LCOE) below the local "hurdle" price.

Innovative Project
Pathway to Commercial Development

- Two 6 MW Haliade 150 Alstom turbines on innovative foundations
- Located in federal waters, close to the Wind Energy Area
  - Will inform commercial development
- Comprehensive testing and data collection plan to lower future costs and deployment timelines

Dominion

ALSTOM

Virginia Department of Mines Minerals and Energy

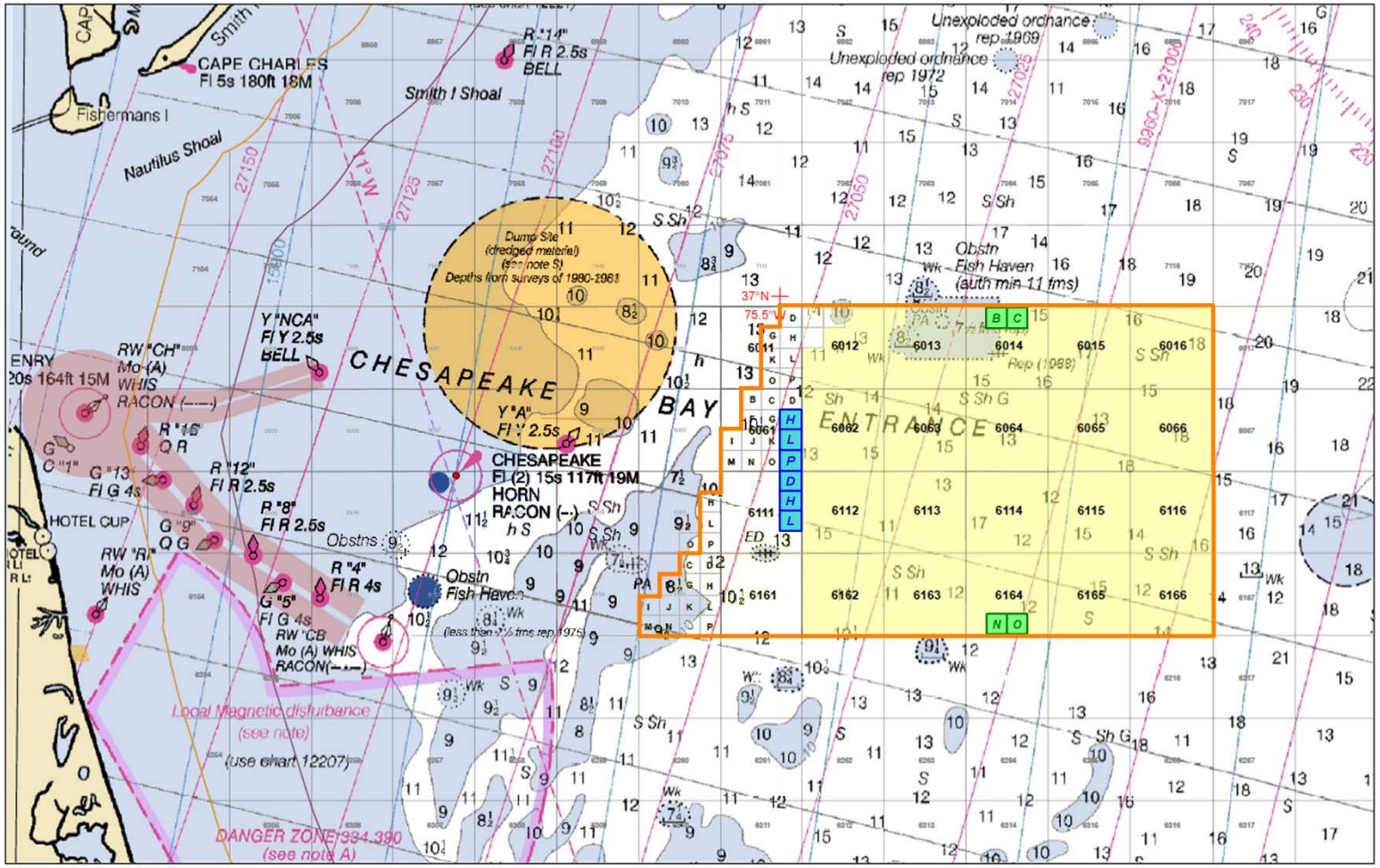
KBR

Virginia Coastal Energy Research Consortium
VCERC

Newport News Shipbuilding
A Division of Huntington Ingalls Industries

NREL
NATIONAL RENEWABLE ENERGY LABORATORY

Research Lease Site



8g Line
Fed/State Boundary
Chesapeake Light
Fish Haven
Dredge Disposal Area
Traffic Separation Scheme
Virginia RFI with Exclusions
OCS Lease Blocks
Alternative A for which BOEM Mid-Atlantic Final EA has a Finding of No Significant Impact for lease issuance and site characterization
Virginia DMME Section 238 Research Lease Number 1
Virginia DMME Section 238 Research Lease Number 2

0 2 4 6 8 10 12 Nautical Miles

0 5 10 15 20 25 30 Kilometers

Turbine Key for lowering Cost of Energy

<u>Alstom HALIADE™: new paradigm for offshore</u>

- LM 73.5-m GloBlade one of the largest in world.
- Optimum Energy Production to Nacelle Weight Ratio.

Advanced Turbine Controls

- Individual blade pitch control strategies.
- Platform to test feed-forward controls, LIDAR.

Alstom PureTorque™ and Permanent Magnet Direct Drive (PMDD) system

- Bending loads transmitted safely to tower.
- Robust drivetrain improves availability and reduces cost

Innovative Foundation Installation Experience

Innovative substructures derived from offshore oil & gas experience have emerged from Carbon Trust Offshore Wind Accelerator and been successfully installed as offshore wind met masts in Europe

Twisted Jacket
Keystone Engineering, Louisiana

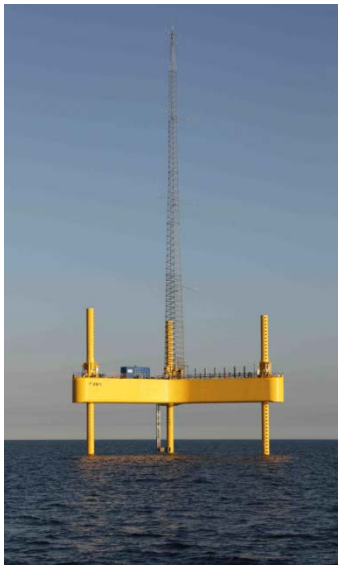
Gulf of Mexico
Oil & Gas Platform

UK Round 3
North Sea Met Mast

Installed 19-Sep-2011

Titan Jack-Up
Offshore Wind Power Systems of Texas

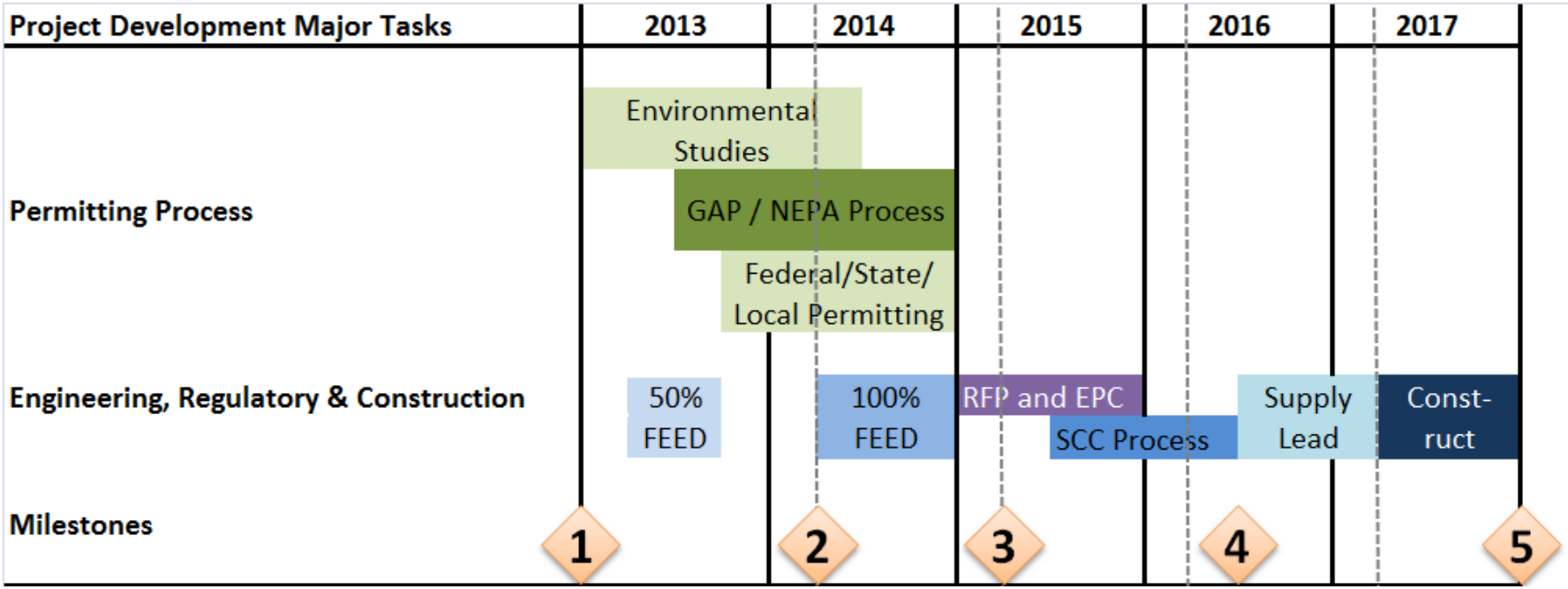
Cantilevered Jack-Up
Oil & Gas Drilling Rig



E.ON Baltic Sea
Met Mast *"Emma"*

Installed 28-Mar-2012

Schedule & Key Milestones



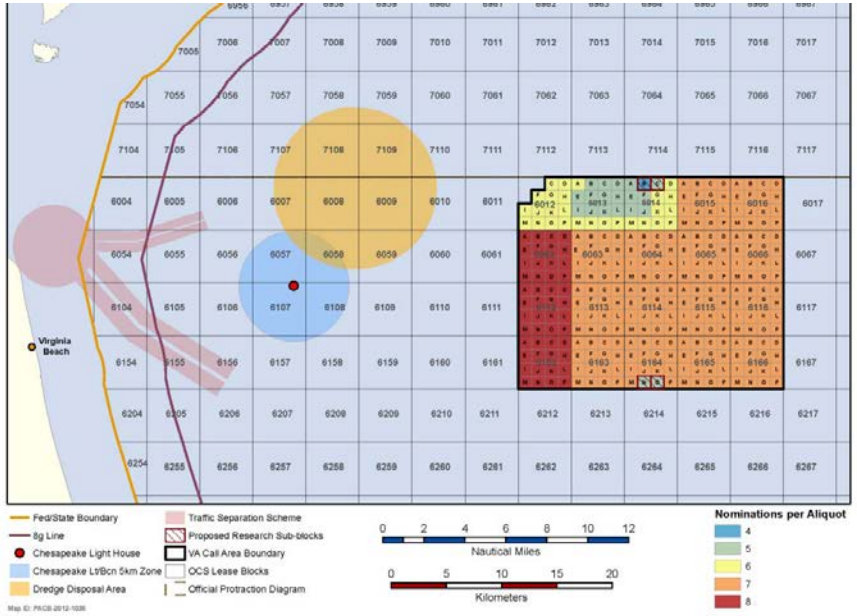
Milestones

1. DOE Selection of VOWTAP for 50% Front-End Engineering & Design (FEED)
2. DOE Down-Selection of 3 Projects Nationwide to Proceed with 100% FEED and Construction
3. Budget Period 2
4. SCC Approval of Cost Recovery
5. Commissioning

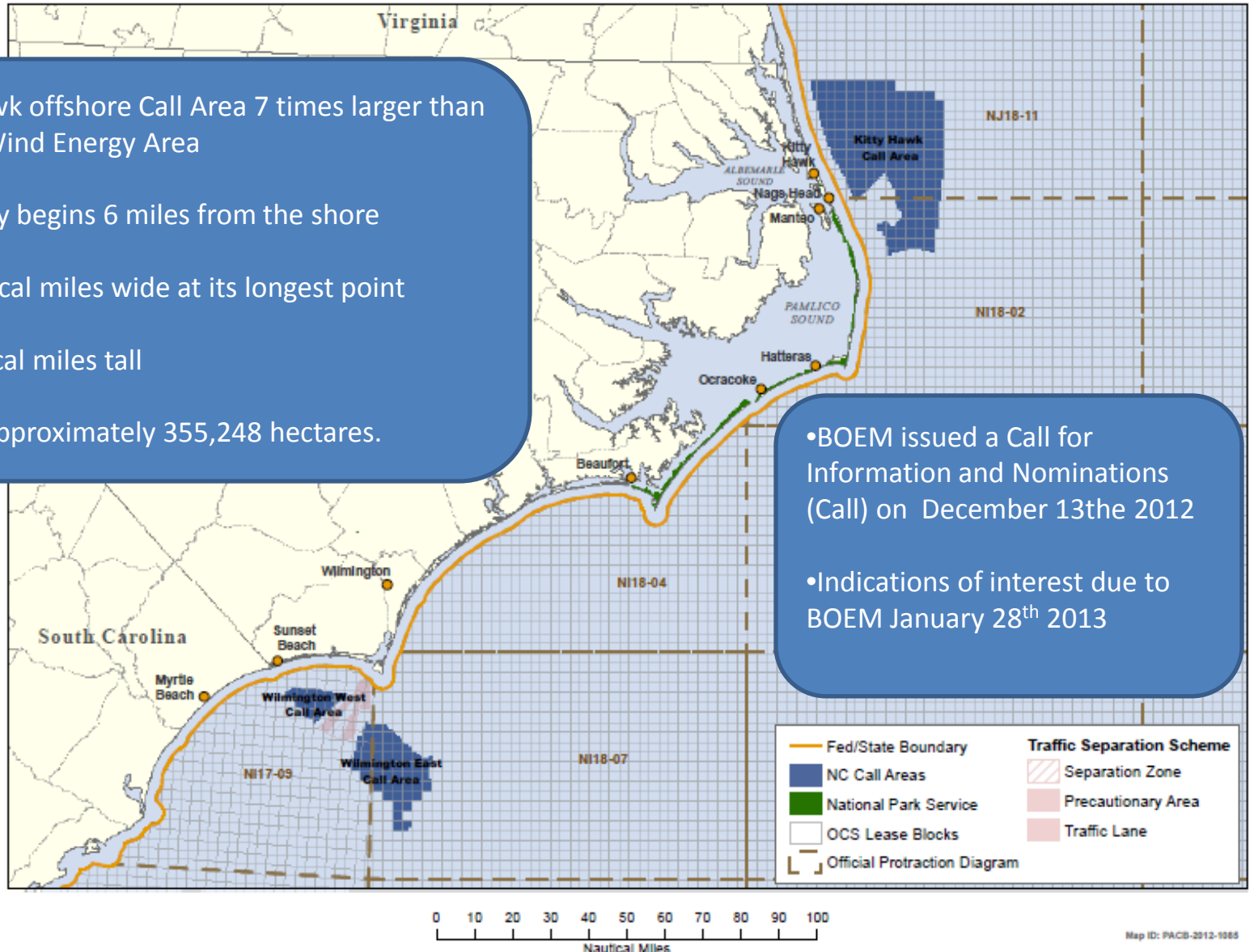
Virginia Commercial Leasing Process

- BOEM moving forward with commercial leasing process.
- Eight companies expressed interest in response to the Call for Information and Nominations.
- BOEM published Proposed Sale Notice on Dec. 3, 2012. Comments due Feb. 1, 2013.
- Dominion expects the auction will occur in Q2/Q3 2013.
- BOEM planning to lease entire Wind Energy Area to one bidder using an ascending clock auction.

Bureau of Ocean Energy Management Virginia Call for Information and Nominations Area – Nomination Density



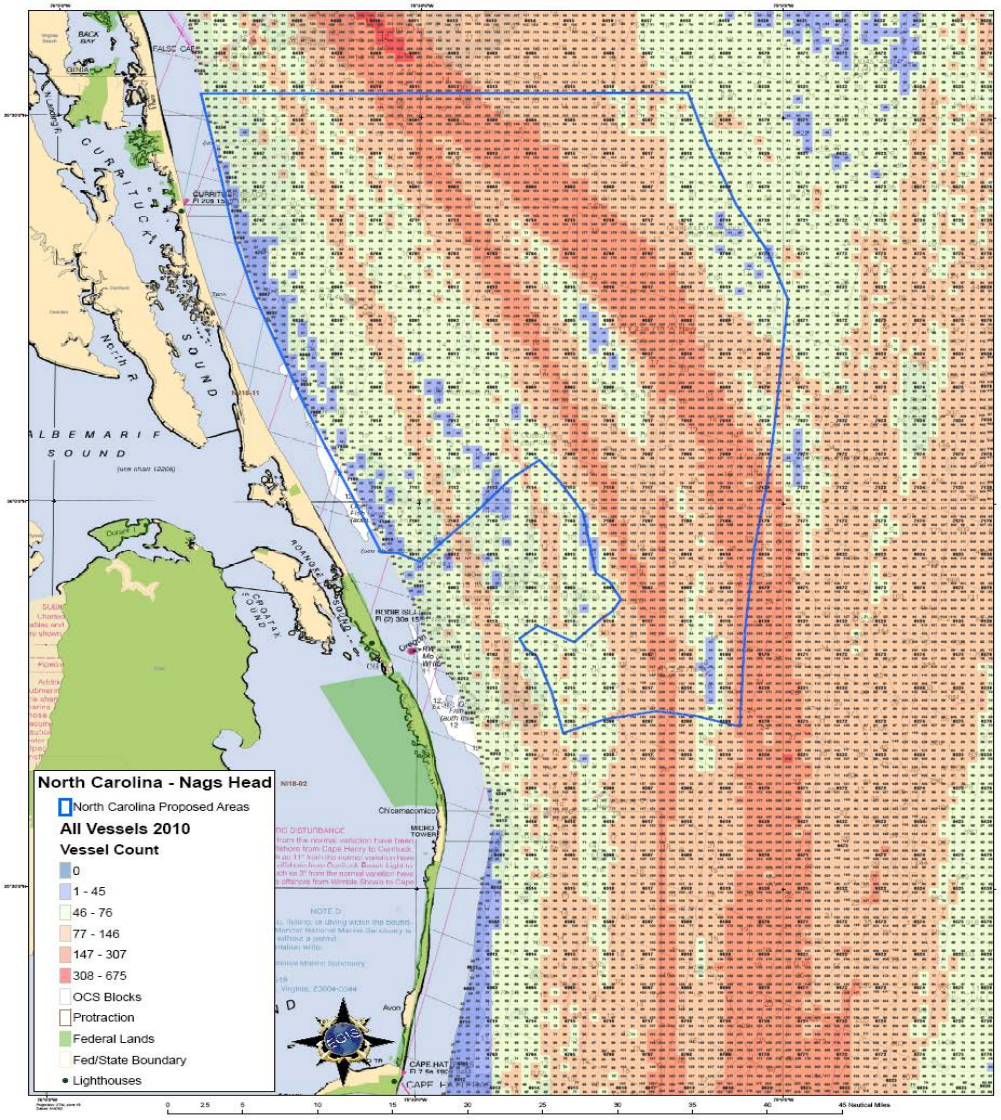
North Carolina Offshore Wind



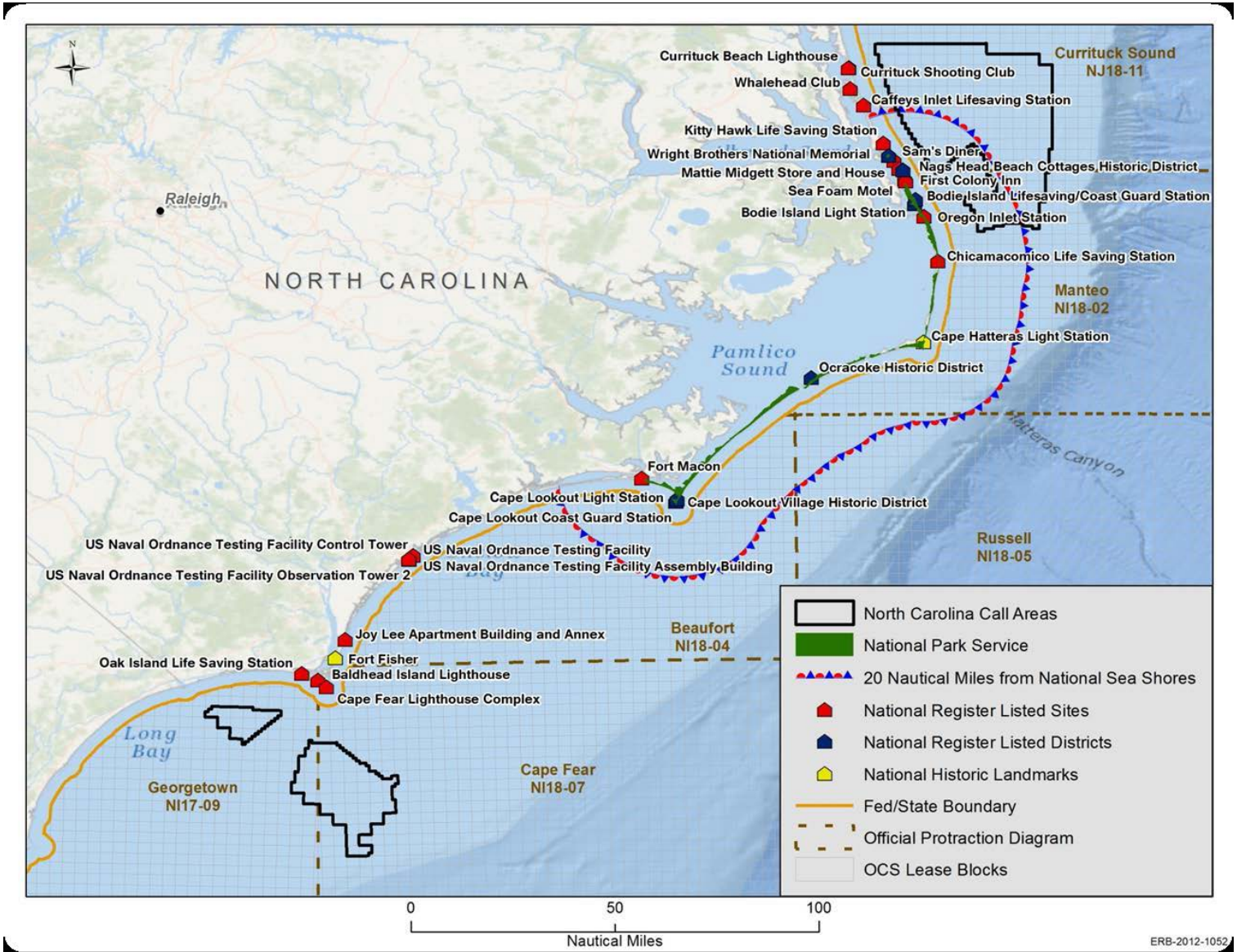
- Kitty Hawk offshore Call Area 7 times larger than Virginia Wind Energy Area
- Boundary begins 6 miles from the shore
- 34 nautical miles wide at its longest point
-
- 45 nautical miles tall
- Area is approximately 355,248 hectares.

- BOEM issued a Call for Information and Nominations (Call) on December 13the 2012
- Indications of interest due to BOEM January 28th 2013

Vessel Traffic



National Park 20 Mile Line



Virginia Offshore Wind Technology Advancement Project
Proven Team & Innovative Concept

Dominion

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