

Background for NC Offshore Wind Foundation for BOEM

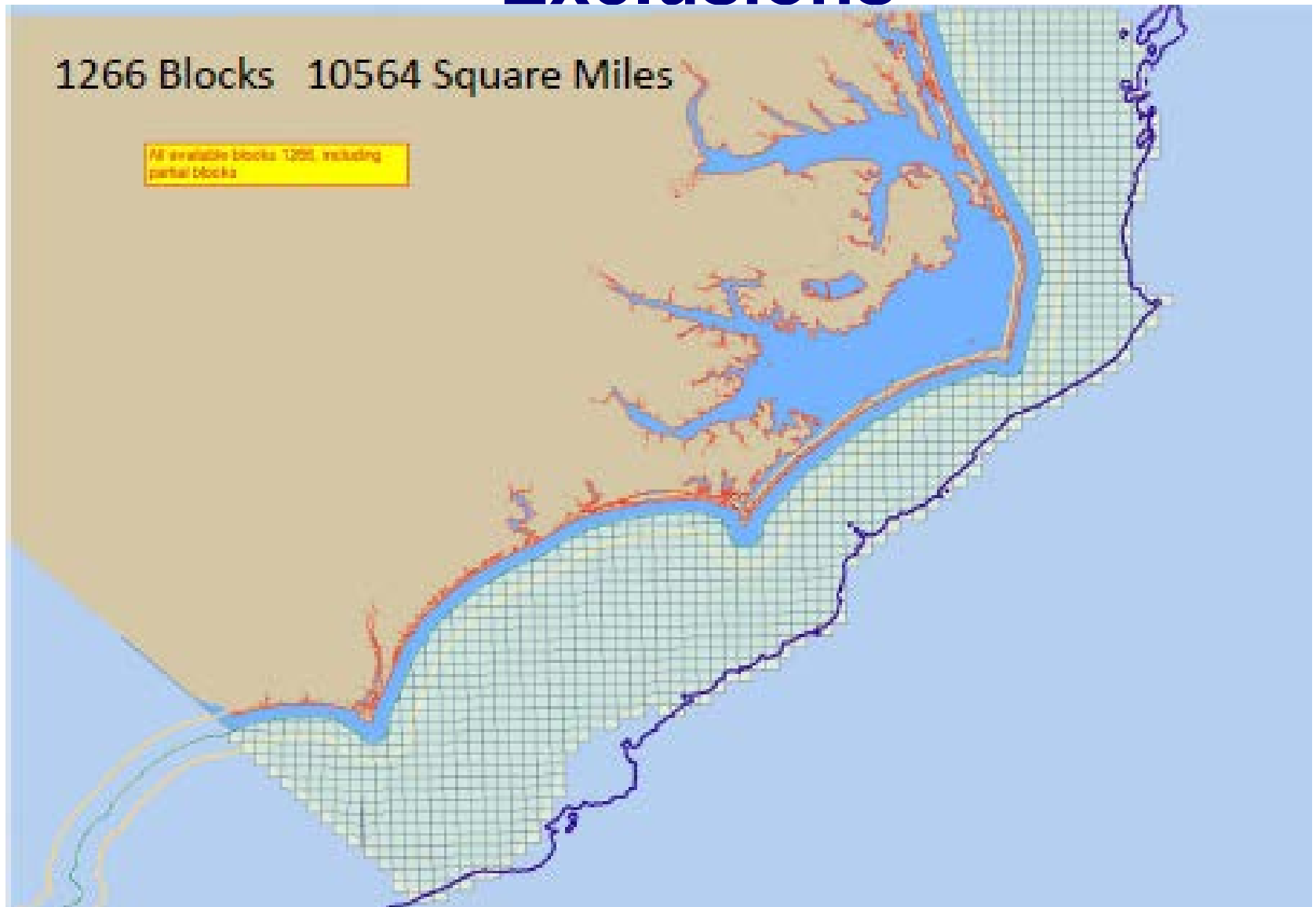
BOEM Public Meetings - January 7 & 9, 2013

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State Energy Office, NC Commerce Dept

All NC Lease Blocks Before Exclusions



Source: NC Dept of Commerce PRSP

UNC CH Coastal Wind Study

- ▶ Released 2009
- ▶ Covered waters less than 50m deep and within 50 nautical miles from shore
 - » Considered the following constraints - very conservative
 - › Wildlife, Fishing, Navigation, Transmission, Military, Cultural
- ▶ 55,000 MW potential
 - » Average output = 130% of 2007 NC electricity use

Site Limitations and MMS Lease Blocks

- NC Wind Stations**

Power Capacity %

 - < 30.0 %
 - 30.0 - 35.0
 - 35.0 - 40.0
 - > 40.0 %

* < 2 years of data

Wind Power Capacity

Capacity %

 - < 30.0 %
 - 30.0 - 35.0
 - 35.0 - 40.0
 - > 40.0 %

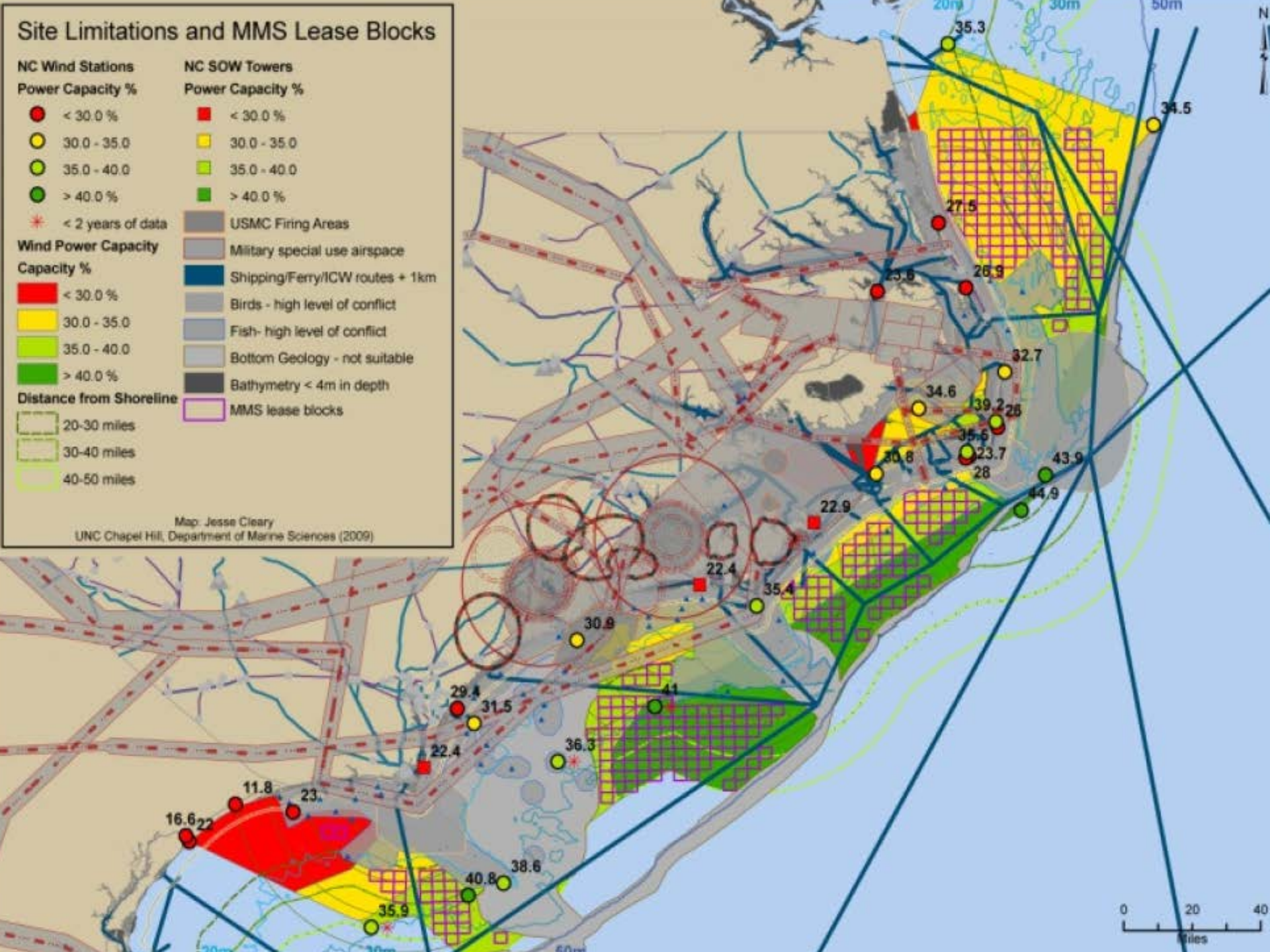
Distance from Shoreline

 - 20-30 miles
 - 30-40 miles
 - 40-50 miles
- NC SOW Towers**

Power Capacity %

 - < 30.0 %
 - 30.0 - 35.0
 - 35.0 - 40.0
 - > 40.0 %
 - USMC Firing Areas
 - Military special use airspace
 - Shipping/Ferry/ICW routes + 1km
 - Birds - high level of conflict
 - Fish- high level of conflict
 - Bottom Geology - not suitable
 - Bathymetry < 4m in depth
 - MMS lease blocks

Map: Jesse Cleary
UNC Chapel Hill, Department of Marine Sciences (2009)



Available Wind Resources

— Federal / State waters boundary

■ MMS Lease Blocks

Wind Power Capacity

Capacity %

■ 30.0 - 35.0

■ 35.0 - 40.0

■ > 40.0 %

Distance from Shoreline

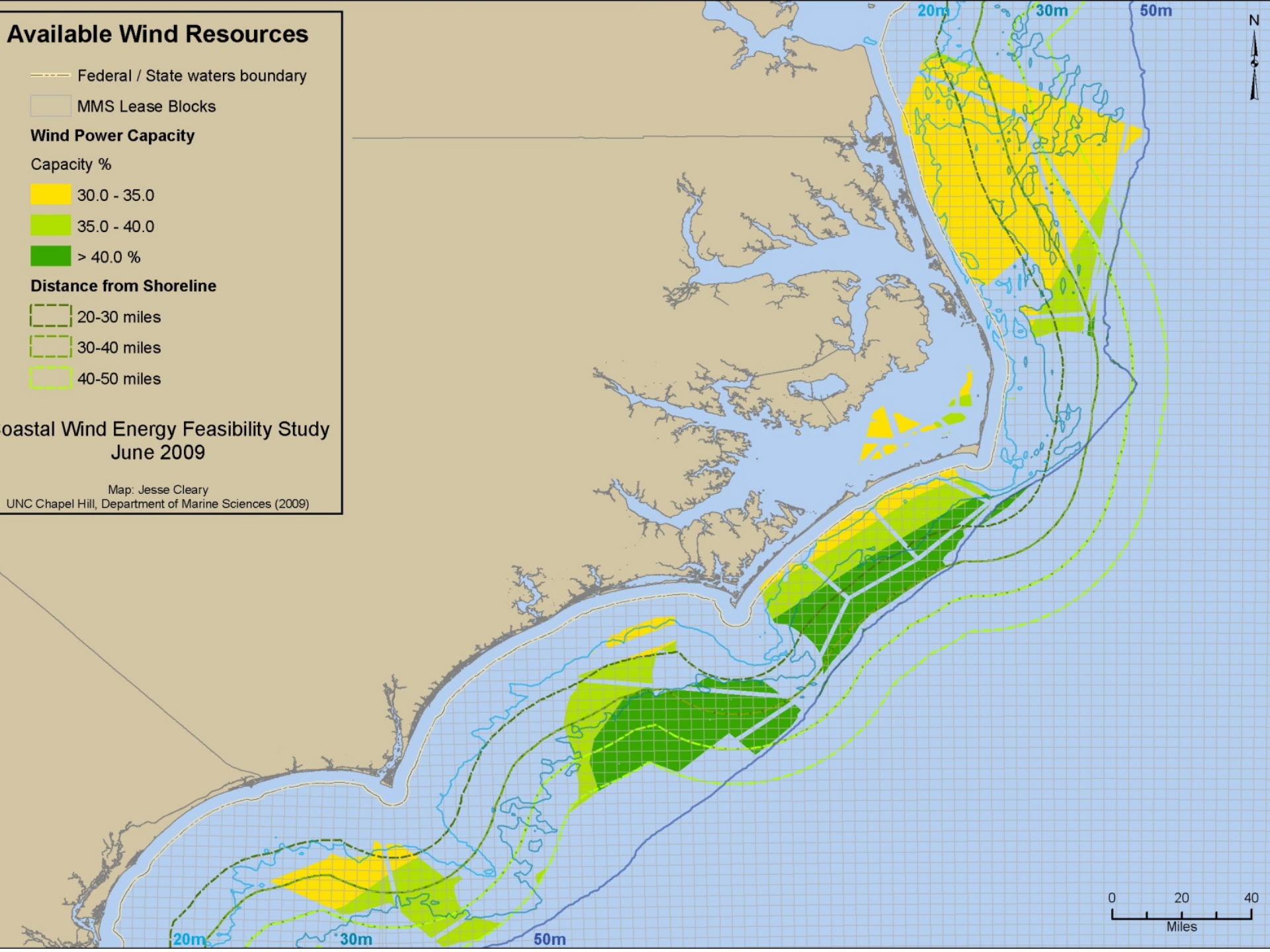
■ 20-30 miles

■ 30-40 miles

■ 40-50 miles

Coastal Wind Energy Feasibility Study
June 2009

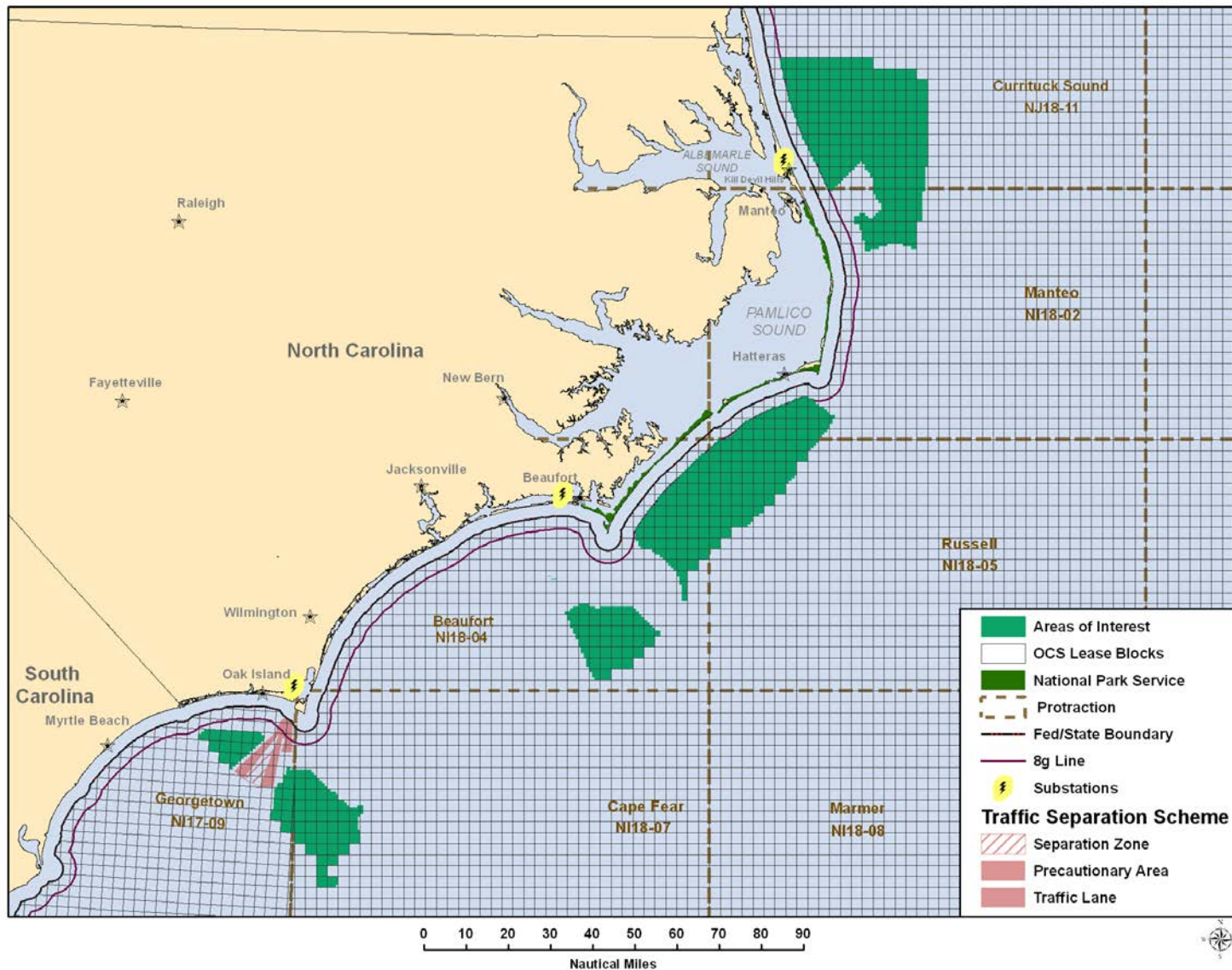
Map: Jesse Cleary
UNC Chapel Hill, Department of Marine Sciences (2009)



Bureau of Ocean Energy Management NC Task Force

- ▶ BOEM determines lease areas on Outer Continental Shelf with input from NC Task Force
- ▶ Recent efforts:
 - » Analyzing feedback from NOAA, NPS, USCG
 - » Completed a Visual Simulation – summer 2012
 - » Call for Information for 3 NC wind areas

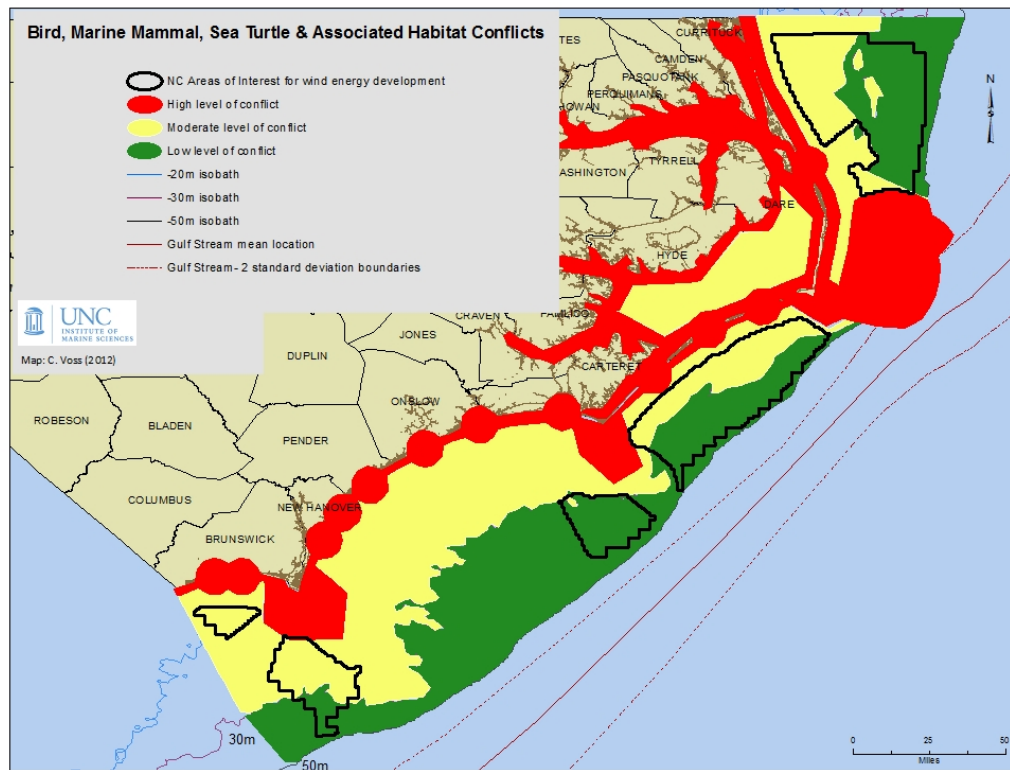
Current Lease Blocks Under Consideration



NC Dept of Commerce - Offshore Wind – additional study efforts

- Builds on 2009 UNC Coastal Wind Study
- Major efforts included:
 - Environmental concerns (UNC CH – Institute of Marine Sciences)
 - Ports capabilities (NCSU Dept of Civil, Const., Env. Eng.)
 - Wind resource analysis (UNC CH – Marine Sciences Dept)
 - Educational outreach (NC Solar Center & NC Commerce)

Wildlife habitats offshore NC

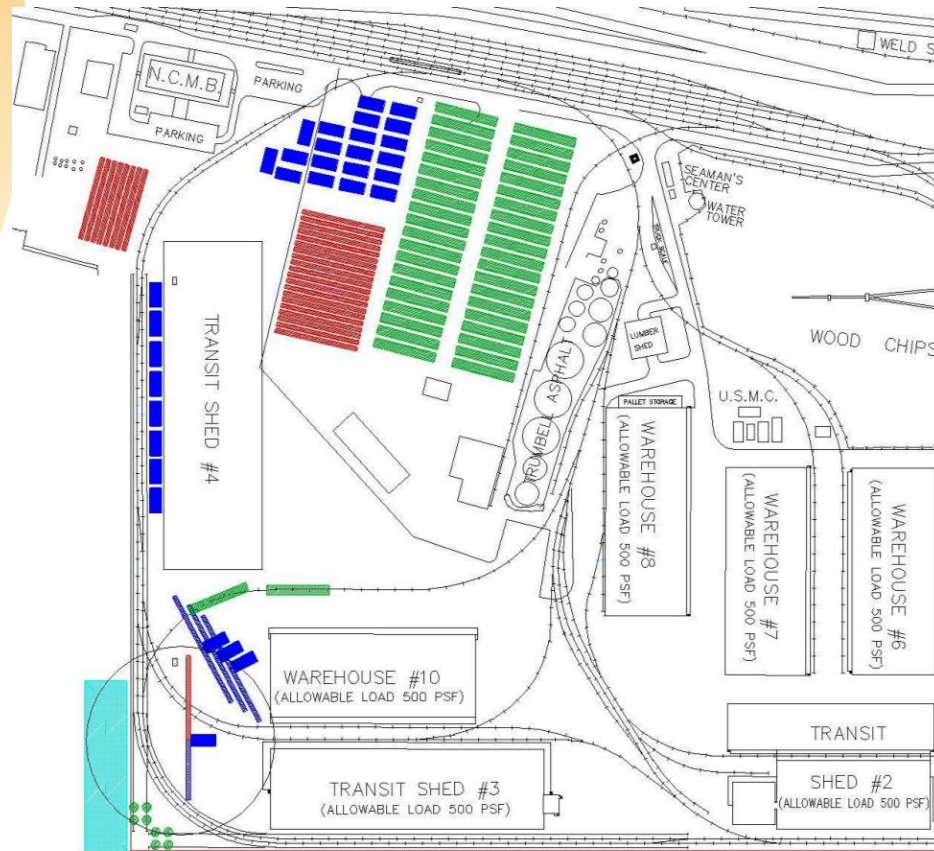


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ENERGY

Morehead Port – case study

600 MW using a 5 MW turbine



Green – tower sections
Red – blades
Blue - nacelles

Wind Resource Analysis

- ▶ Two buoys were deployed in the Atlantic
- ▶ A wind profiler (SODAR) was also used
- ▶ Results confirm significant winds for power production and that complex low level flows change estimated wind speeds in different areas offshore

Outreach to Stakeholders

- ▶ Coastal NC Cities & Counties
- ▶ Coastal Associations, NGOs, fishery groups, NC Ports Authority, Wind Developers
- ▶ Participation in national and regional conferences
- ▶ NC Solar Center also completed a summary of EU offshore policies

NC Transmission Planning Collaborative

Created by NC Utilities - Duke Energy, ElectriCities of NC, NC Electric Membership Corporation, Progress Energy Carolinas – looks at NC upgrades to transmission grid

- ▶ 2010 Study - impacts of 3000 MW of offshore wind in NC grid
- ▶ 2011 Study - Impacts of 5000 MW of offshore wind in NC grid
- ▶ 2012 Study – Impacts of 10,000 MW of offshore wind injected in Virginia and NC

NC Advantages

- ▶ Largest offshore wind resource on east coast in shallow water
- ▶ Strategically located Ports that could support offshore windfarm development and operation
- ▶ Renewable energy manufacturing tax credit (25%) & low cost of manufacturing



Thank You

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