

Agenda
State of North Carolina
Bureau of Ocean Energy Management (BOEM)
Offshore Wind Development - Stakeholder Meeting
Thursday August 20, 2010

- Overview Jennifer Bumgarner and Larry Shirley
- NC Department of Commerce
- Offshore Wind Technology Bob Leker - NC Department of Commerce
- BOEM Introduction Al Pless - BOEM
- Regulatory Framework, Offshore Renewable Energy Development
Jessica Bradley – BOEM
- Environmental Review Process Jennifer Kilanski – BOEM
- BOEM – North Carolina Renewable Energy Task Force
Al Pless
- Panel Discussion Bob Leker

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Renewable Energy Overview

North Carolina Offshore Wind

Jessica Bradley
Jennifer Kilanski
Al Pless

Office of Renewable Energy Programs

U.S. Department of the Interior
Bureau of Ocean Energy

Philosophy

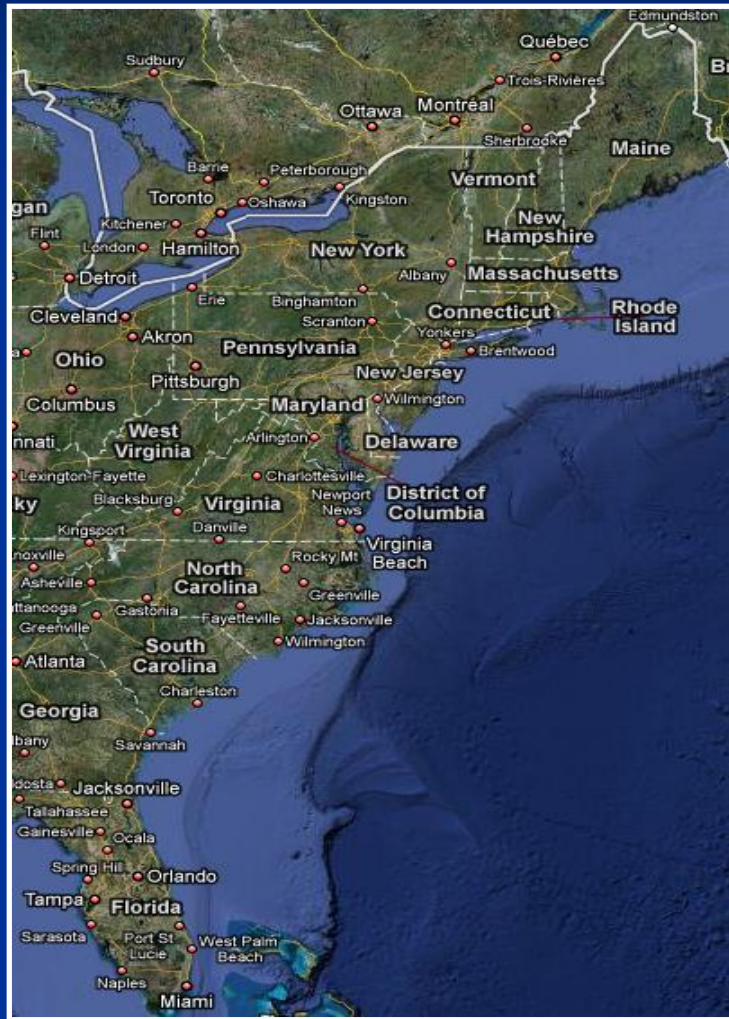
- BOEM is committed to work together with States to determine when and where to undertake OCS leasing
- This team approach will insure efficient, safe, & environmentally sound ocean energy development
- Coordinate with all stakeholders
- Apply our renewable energy regulatory framework in conjunction with interagency-led planning activities
- Encourage compatible **multiple-use**

Consultation and Coordination

Task Forces

- Established at Governor's request
- Include state, local, and tribal governments, and Federal agencies
- Facilitate efficient review process for renewable energy planning and leasing activities
- Inform the BOEM OCS Renewable Energy Program (e.g., environmental/technical studies)

Intergovernmental Task Forces



- **Task Force States:** Massachusetts, New Jersey, Rhode Island, Delaware, Virginia, Maryland, and Maine
- **On the Horizon:** North Carolina, New York, South Carolina, Florida

Massachusetts

- Renewable Energy Portfolio Standard
- Renewable Energy Task Force
- Cape Wind
 - On April 28th Secretary Salazar signed a record of decision
 - Cleared the way to offer a commercial lease to the developer.
 - 130 – 3.6 MW turbines – 468 MW.
- Ocean Management Plan

Rhode Island

- Renewable Portfolio Standard
- Renewable Energy Task Force
- Special Area Management Plan (SAMP)
 - Insure compatibility between offshore wind and sustainability of the offshore resource
- Potential Area for wind Farm Development Identified

New Jersey

- Renewable Portfolio Standard
 - Energy Master Plan
- Renewable Energy Task Force
- Baseline Environmental Study
- Three Interim Policy Leases
- Met Tower Reimbursement
- Offshore Renewable Energy Credit for Offshore Wind

Delaware

- Renewable Portfolio Standard
- Renewable Energy Task Force
- One IP Lease issued in November 2009
- Developer and Delmarva Power PPA
- Cooperative Research and Development Agreement with DOE
- Request For Interest Published this past Spring
 - Received 2 Expressions of Interest

Maryland

- Renewable Portfolio Standard
- Renewable Energy Task Force
- Coastal Community Stakeholder Outreach
- Potential RFI Area

Virginia

- Renewable Energy Portfolio Goal
- Renewable Energy Task Force
- Triple Credit for Offshore Wind
- Virginia Offshore Wind Development Authority
- Virginia Offshore Wind Coalition
- Multi-University Collaborative Research

Chesapeake Bay

VA
NC

Legend

75° 45' 25.2"

75° 29' 13.2"

37° 10' 4.8"

36° 59' 42"

36° 33' 43.2"

75° 45' 3.6"

75° 28' 58.8"

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8750	8751	8752	8753	8754	8755	8756	8757	8758	8759	8760	8761	8762	8763	8764	8765	8766	8767

VACAPES/VCERC WIND FARM PROPOSAL – FLEET ASSESSMENT

APR 2010
Lease Block Extension Consideration

CATEGORY 2:
Surface Ship, Helicopter Transit

- Possible tower spacing stipulations
- Possible tower height restrictions
- Possible radar tracking interference with FACSFAC radar

CATEGORY 3:
Air-air / Surface-surface Live Fire
Air-surface Live Ordnance

- Mk80 series bombs, Hellfire, Maverick
- Live fire training against towed banners

CATEGORY 2:
Air Intercept Control Training
Helicopter Transit

- Possible radar tracking interference
- Possible tower spacing limitations
- Possible tower height restrictions

Drone Target Events

- Dam Neck launch site (one-of-a-kind facility)
- Remotely operated surface and aerial targets
- Transits W-50 for targeting in W-72 (1A/1B)
- Returns via transit corridor
- Lands in W-50 / W-72(13) for retrieval

CATEGORY 3:
Aerial/Surface Target Live Fire Ops

- Surface-to-air / Surface-to-surface target training

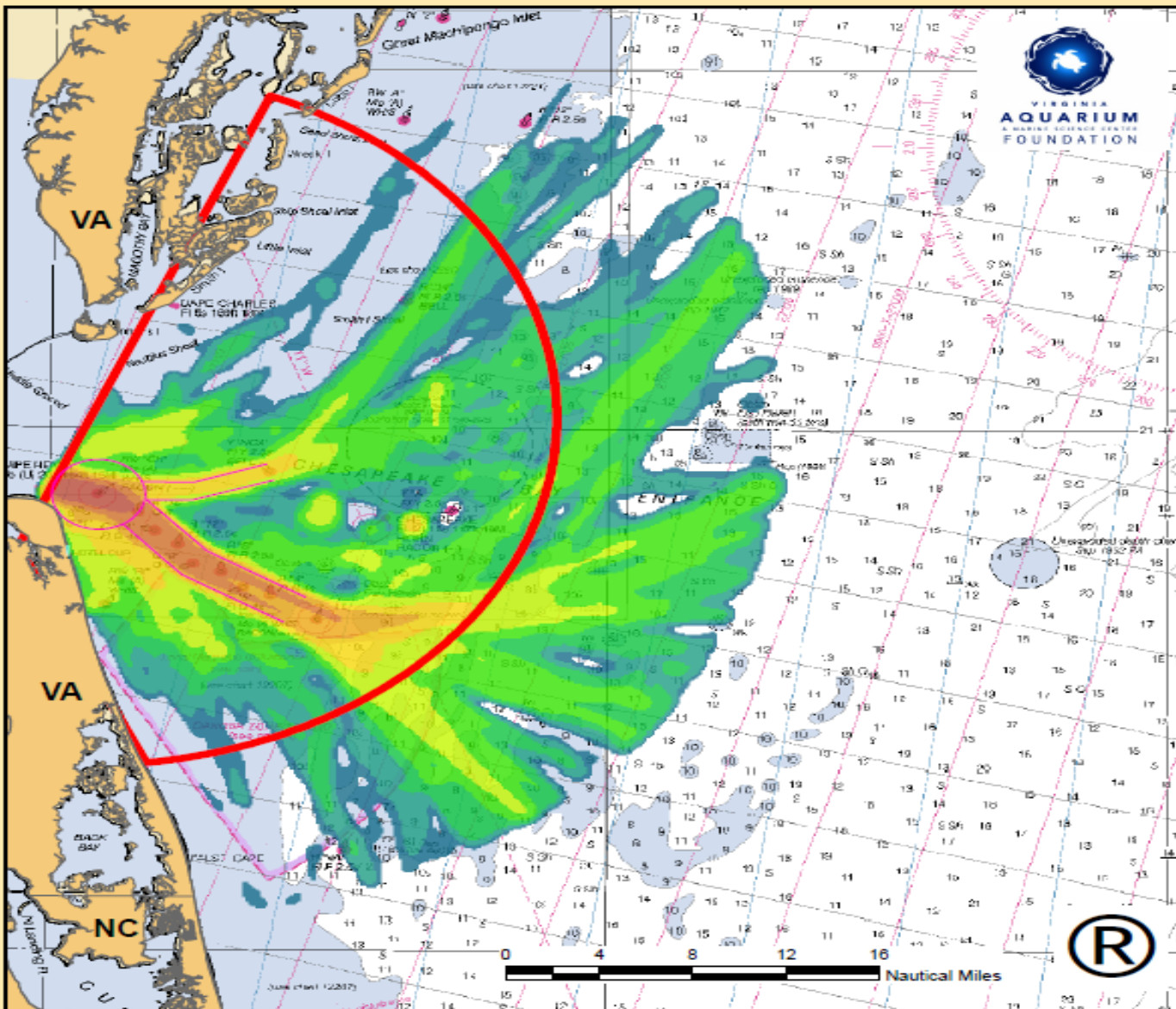
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D4	7007	'08	'09	'10	'11	A2	B2	C2
D5	7057	'58	'59	'60	'61	A3	B3	C3
D6	7107	'08	'09	'10	'11	A4	B4	C4
D7	6007	'08	'09	'10	'11	A5	B5	C5
D8	6057	'58	'59	'60	'61	A6	B6	C6
	6107	'08	'09	'10	'11	A7	B7	C7
	6157	'58	'59	'60	'61	A8	B8	C8
	6207	'08	'09	'10	'11	A9	B9	C9
	6257	'58	'59	'60	'61	A10	B10	C10
	6307	'08	'09	'10	'11	A11	B11	C11
	6357	'58	'59	'60	'61	A12	B12	C12
	6407	'08	'09	'10	'11	A13	B13	C13
	6457	'58	'59	'60	'61	A14	B14	C14
						A15	B15	C15
						A16	B16	C16
						A17	B17	C17

Drone Transit Corridor

Wind Energy Compatibility Classification

- Site Specific Conditions and Stipulations (CAT 2)
- Wind Energy Exclusion Area (CAT 3)
- VACAPES OPAREA
- DoD Special Use Airspace/Warning Area

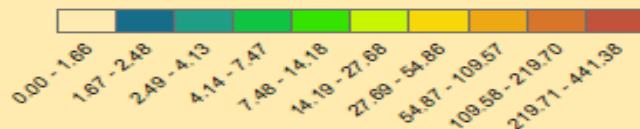
0 2.5 5 10 NM



Legend

- Shipping Lanes
- Pilot Area
- ⬮ Ground Station
- ⬮ Seasonal Management Area

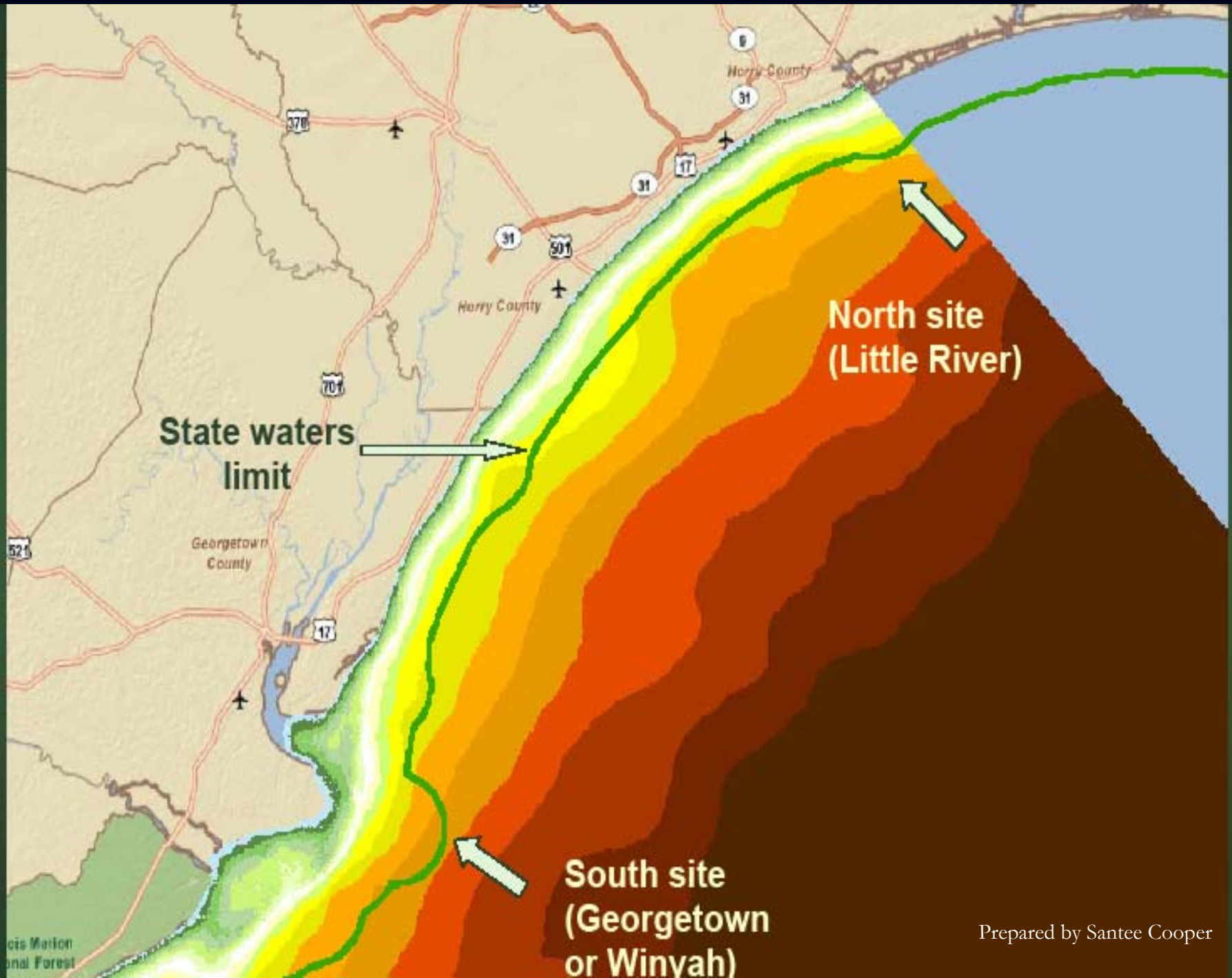
Km of Trackline per Sq. Km



Density of AIS and RADAR Vessels (13:30-21:30 GMT) (April 2008 - March 2009)

South Carolina

- SE Regional Wind Symposium
- Coastal Wind For Schools
- Palmetto Winds Research - Wind Mapping
 - DOE Grant Supplemented by Santee Cooper
 - Six buoys and two Observation Stations
- Identification of Exclusion Zones

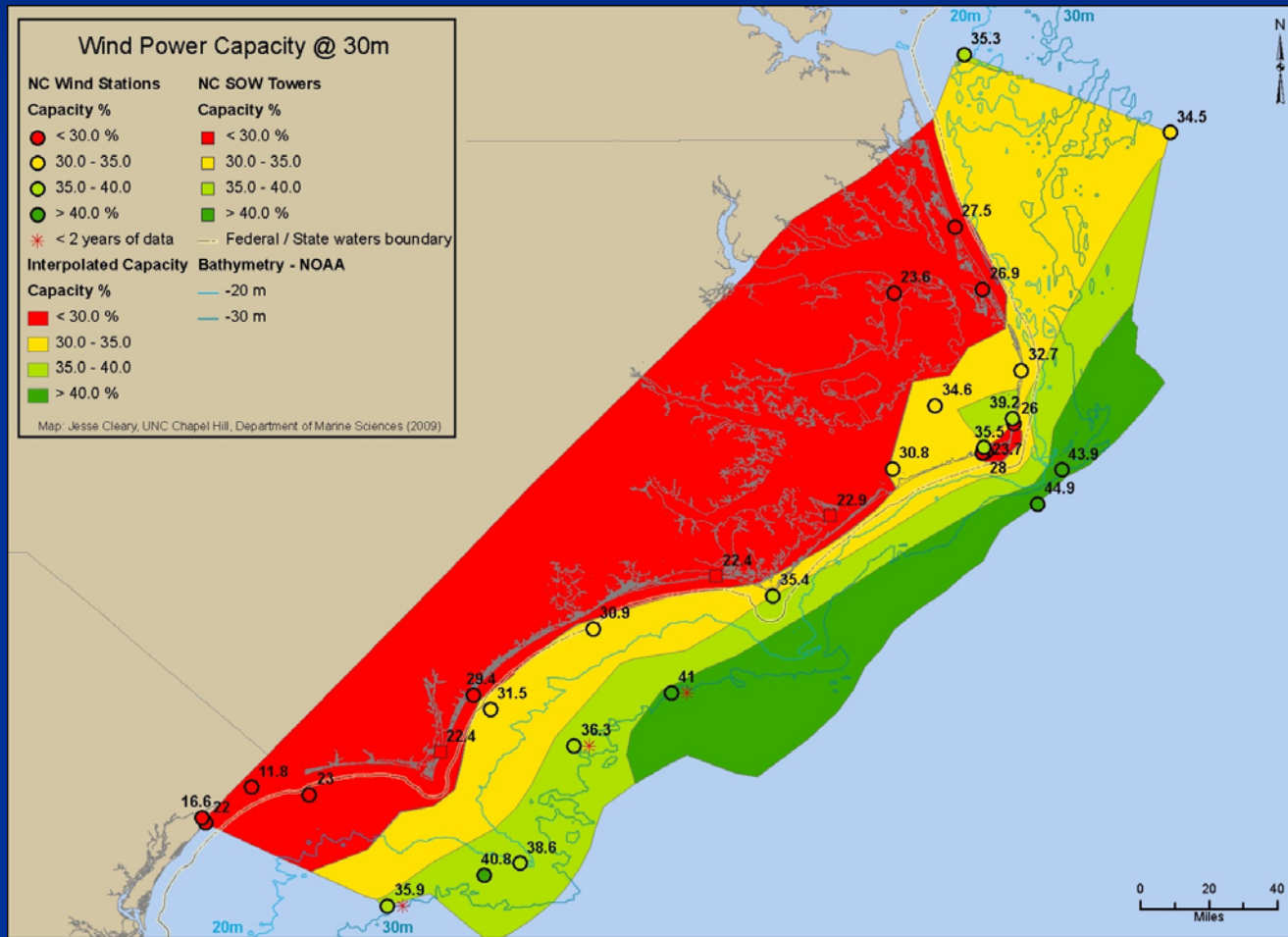


**State waters
limit**

**North site
(Little River)**

**South site
(Georgetown
or Winyah)**

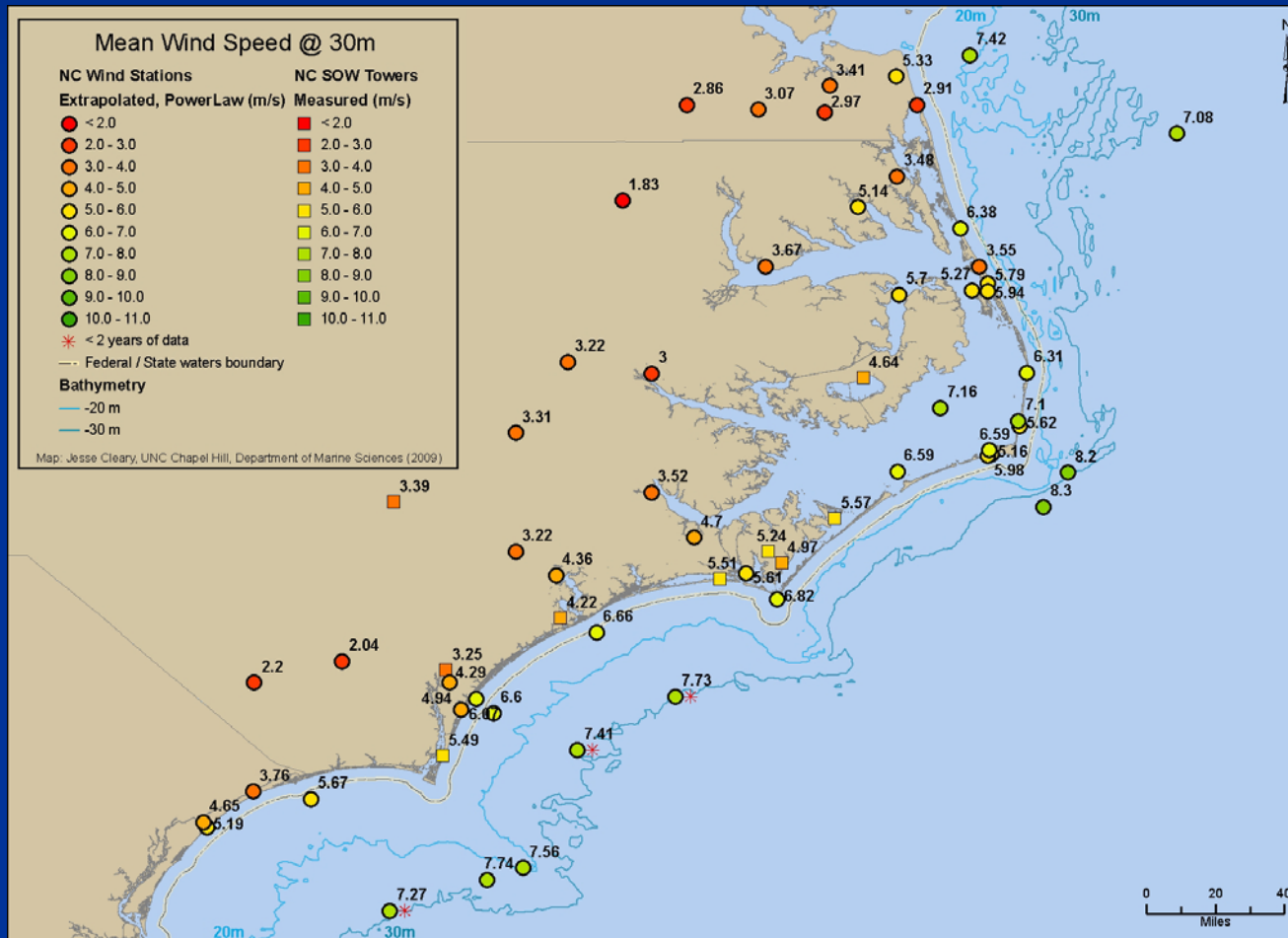
North Carolina Capacity Factor Map



North Carolina

Power Law Data Estimates

Higher Offshore Wind



Foundation Suitability Based on Geology and Geologic Dynamics

----- Federal / State waters boundary

Bathymetry - NOAA

— -20 m

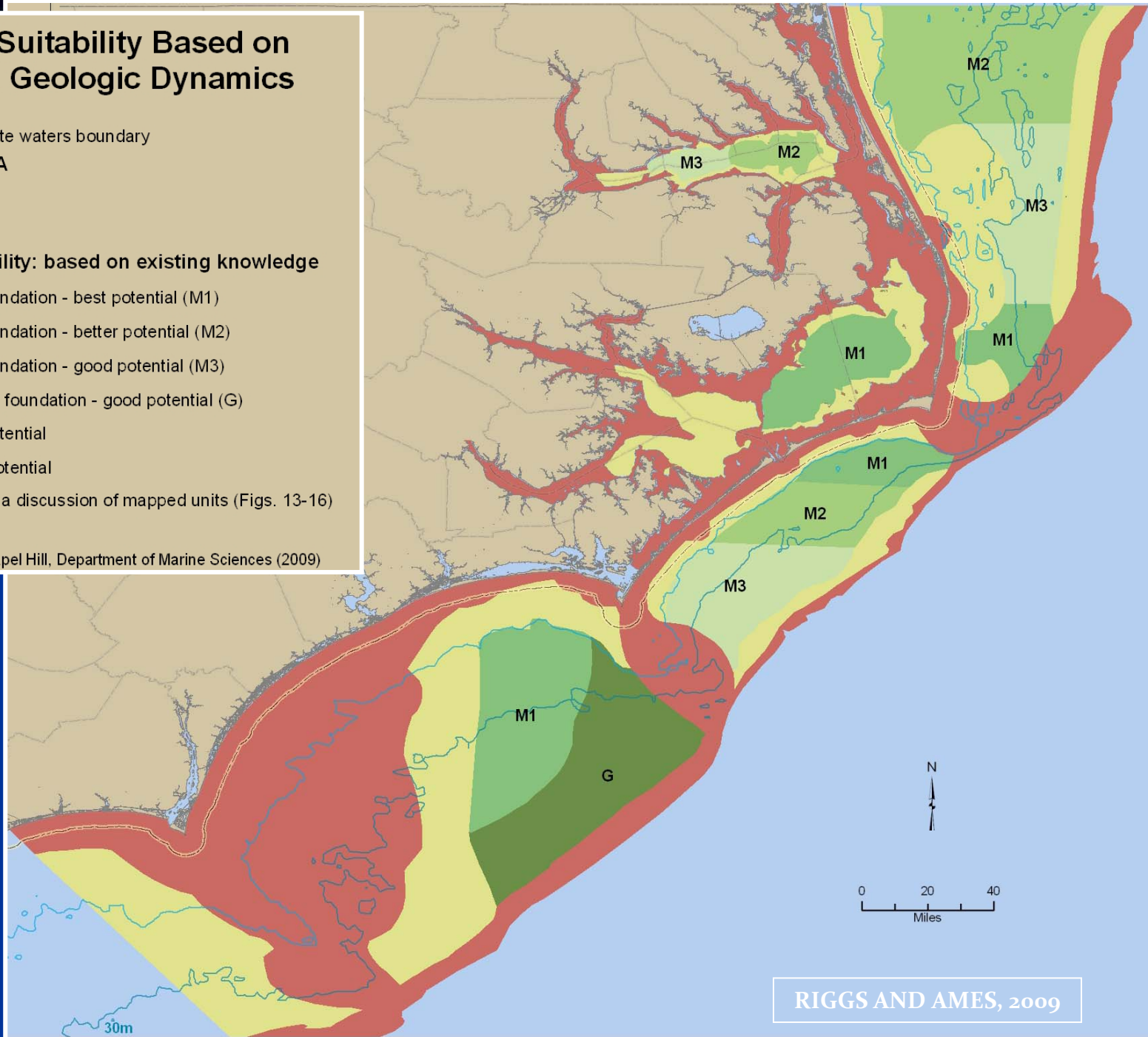
— -30 m

Foundation Suitability: based on existing knowledge

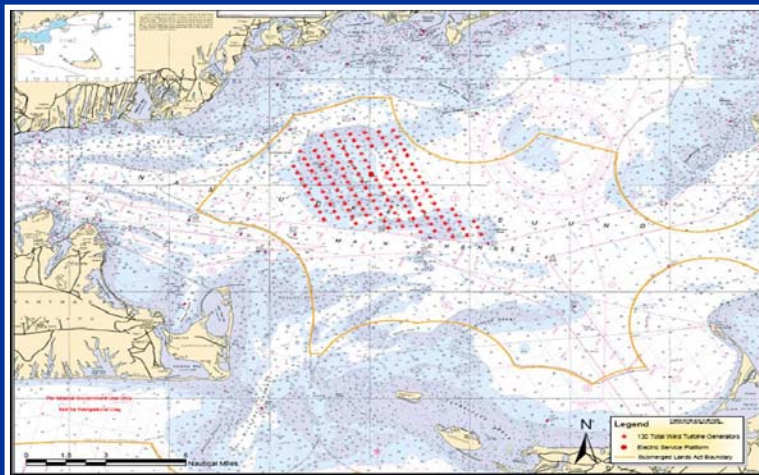
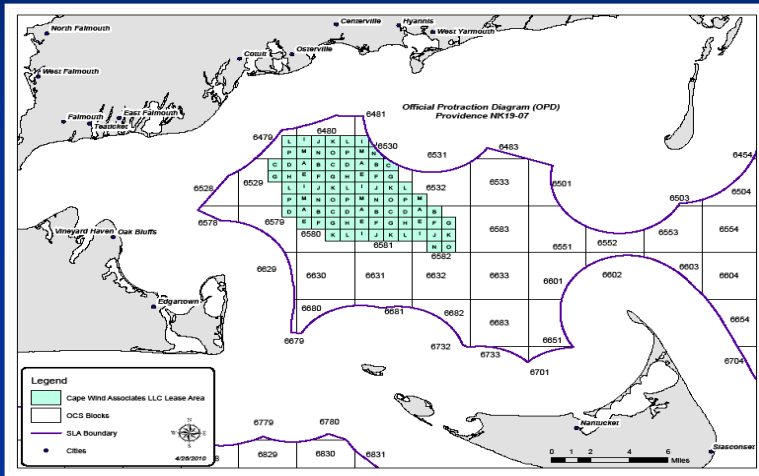
- M1** Monopile foundation - best potential (M1)
- M2** Monopile foundation - better potential (M2)
- M3** Monopile foundation - good potential (M3)
- G** Gravity Base foundation - good potential (G)
- Moderate Potential
- No to Low Potential

See Chapter 4 text for a discussion of mapped units (Figs. 13-16)

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

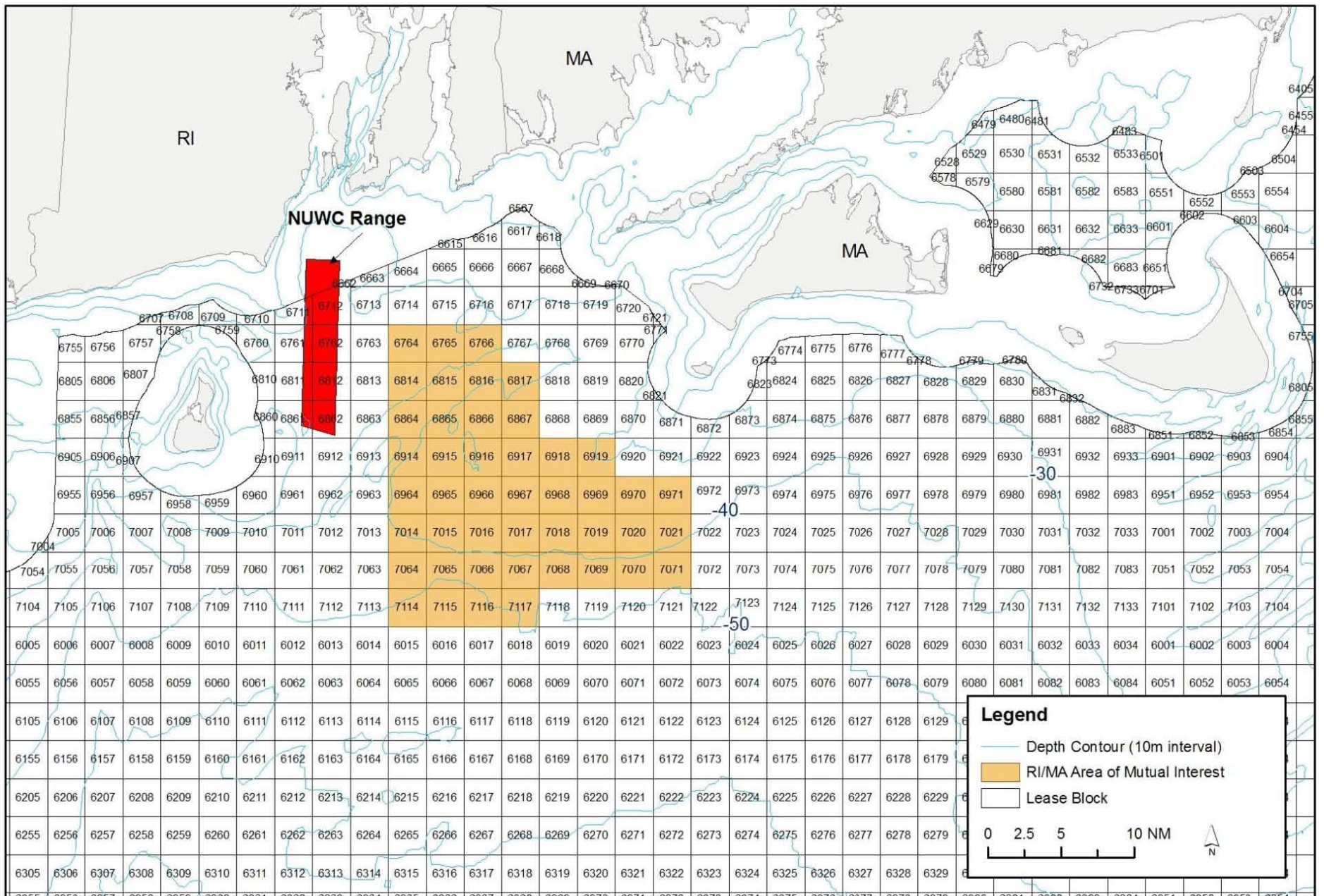


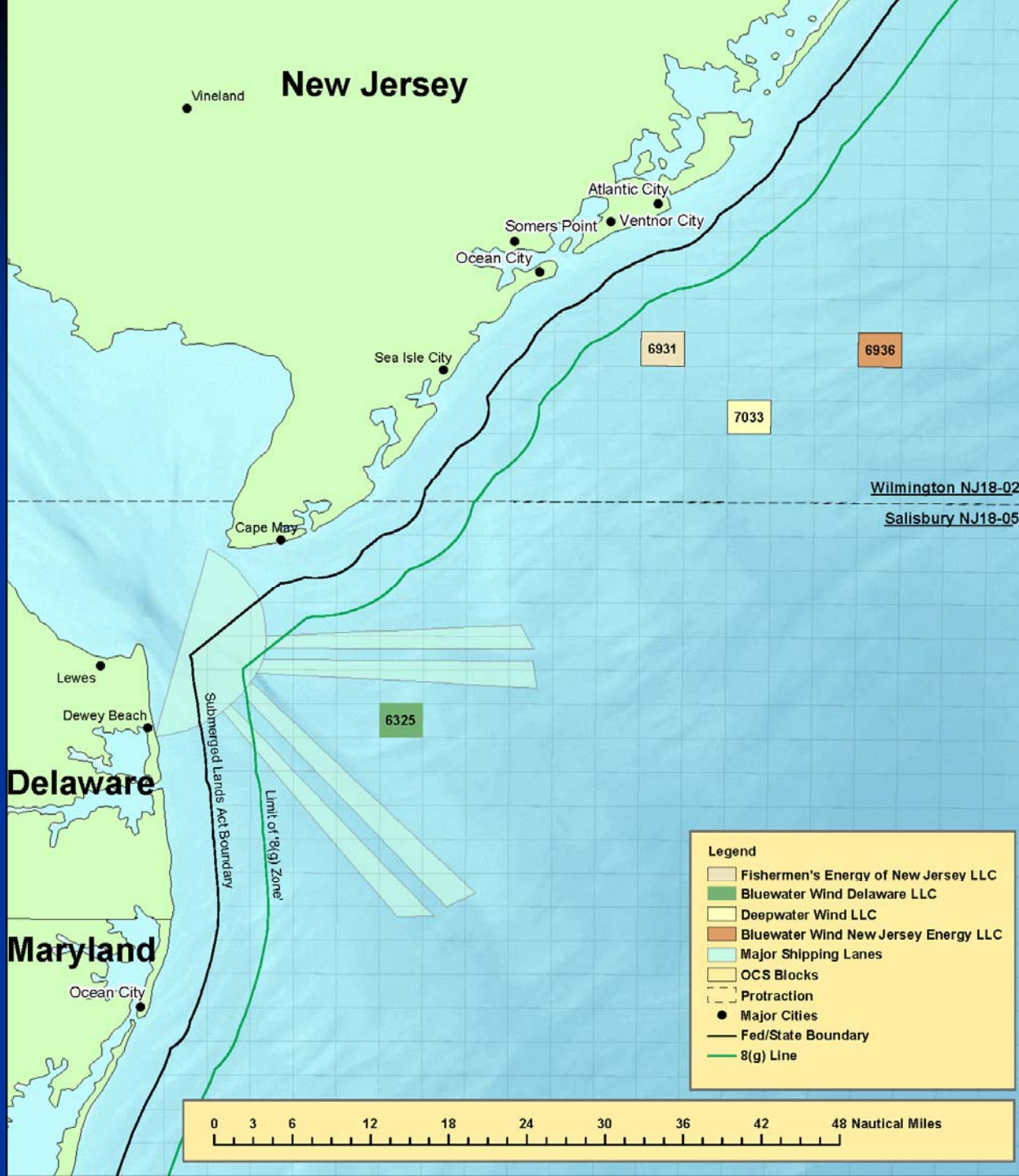
Cape Wind Energy Project

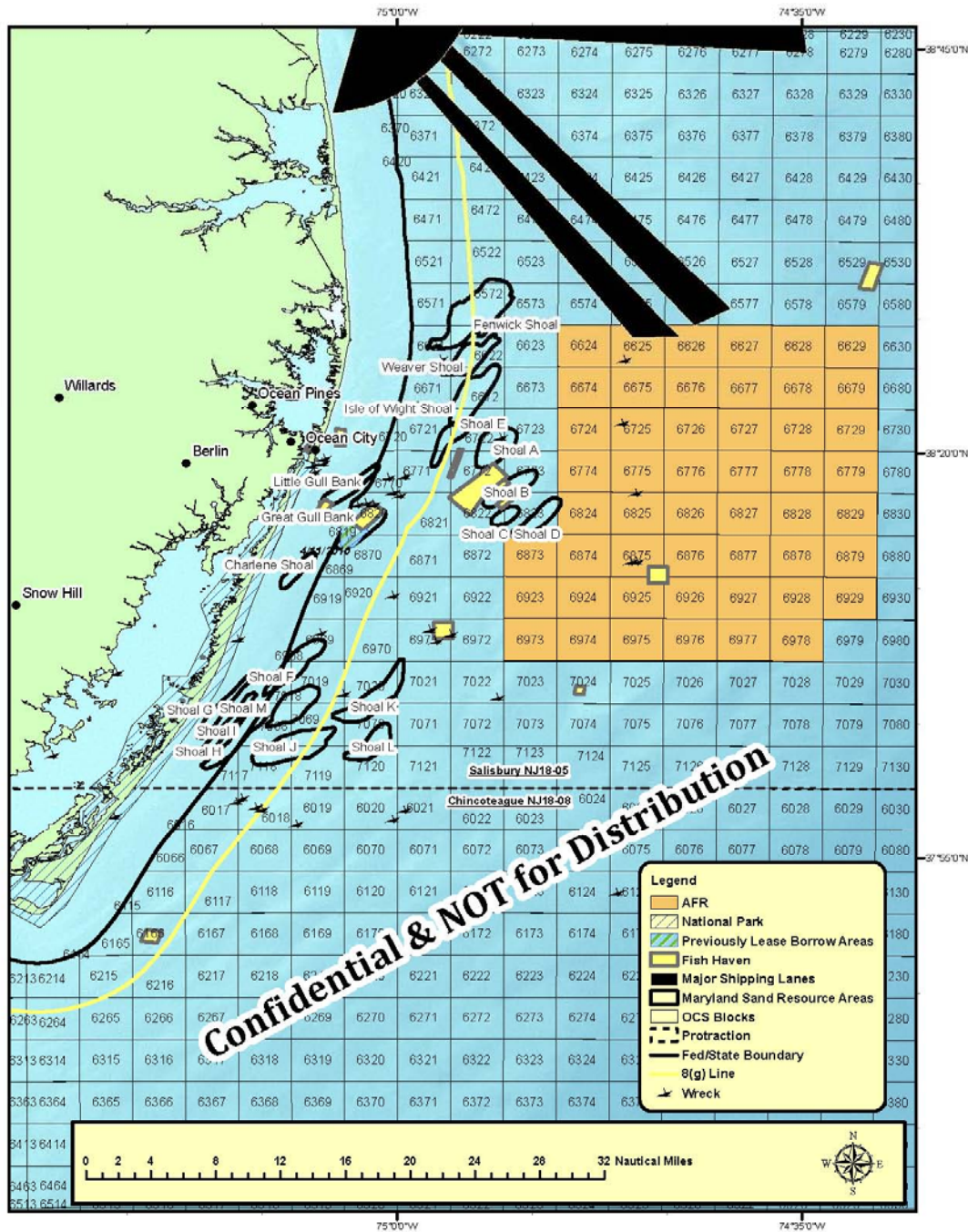


- Propose to construct 130, 3.6 MW wind turbine generators offshore Massachusetts
- Final Environmental Impact Statement (FEIS) published in **January 2009**
- Record of Decision issued in **April 2010**

Potential Offshore Wind RFI: MA & RI and the Narragansett Bay Shallow Water Test Facility

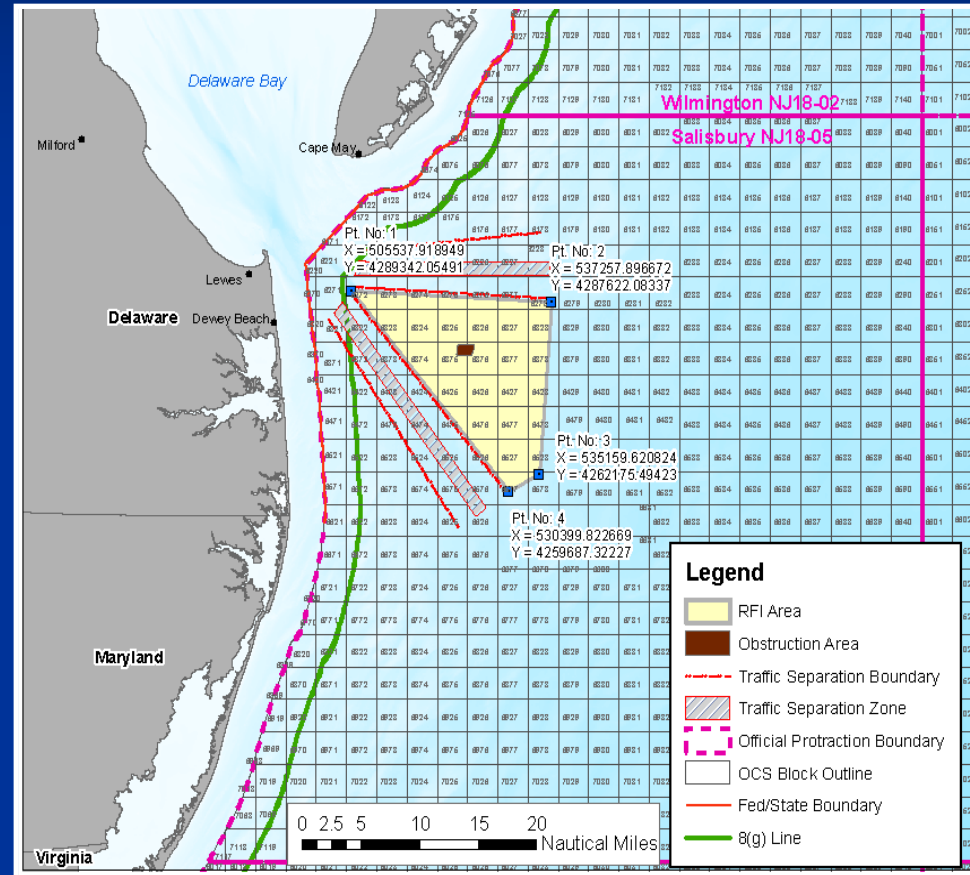






Potential Commercial Projects

- **Delaware**
- Published an RFI to determine interest in commercial wind development in an area offshore
 - 8 responses received
 - 2 commercial nominations



Wind Study Work

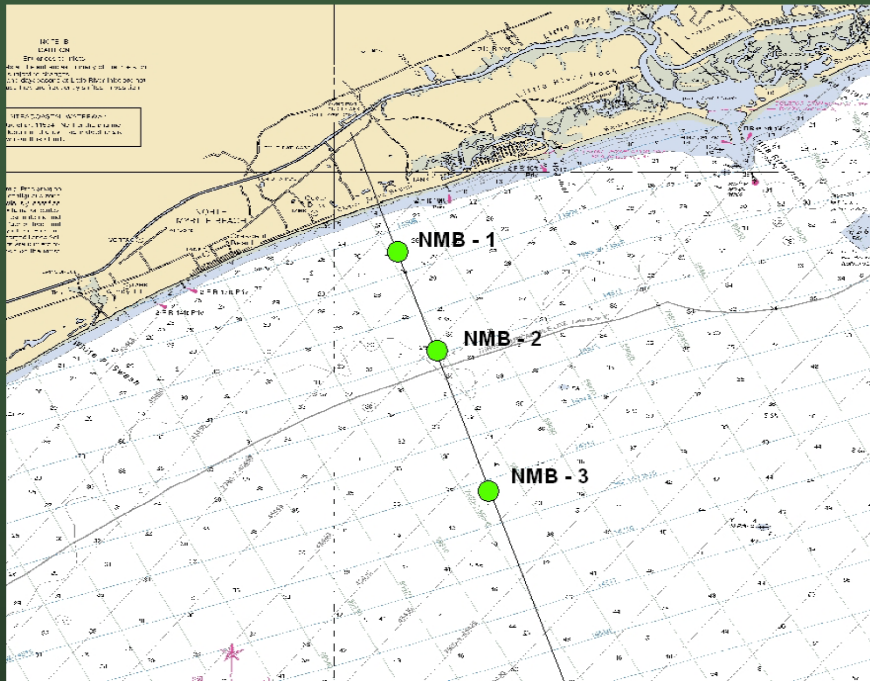
- Wind Mapping
- SE Regional Off-shore Wind Symposium
- 50 meter Anemometer Stations
- SODAR development for offshore use
- Coastal Wind for Schools Program
 - 4 educational sites in progress
- Extensive Study of Offshore Wind Feasibility
 - Two Grants from DOE
 - Exclusion Zones



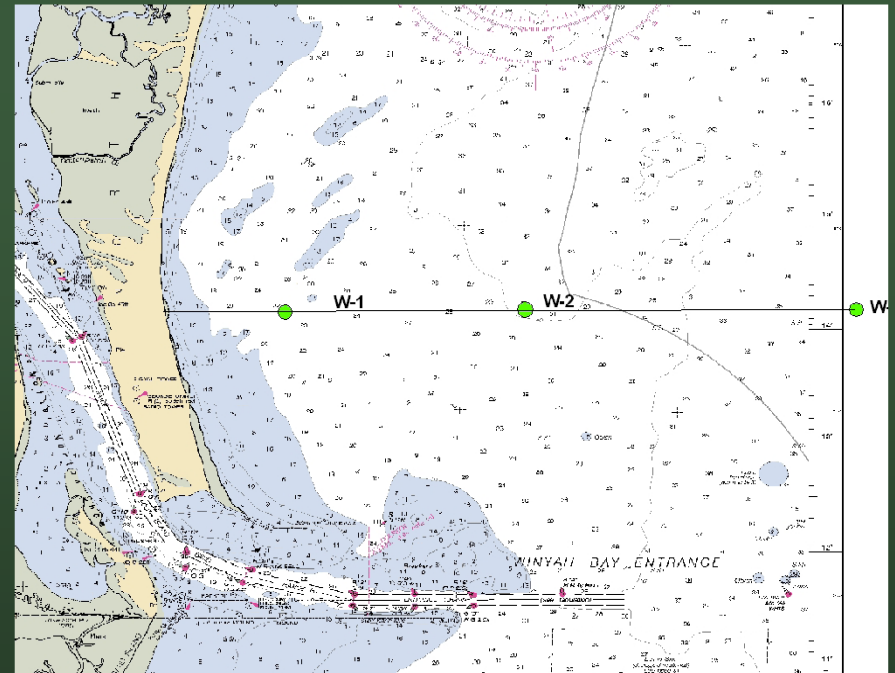
Palmetto Winds Research Project



- DOE Grant provides partial funding, Santee Cooper provided funding to extend study to one year
- 6 instrumentation buoys, 2 shore-based observation stations



North Myrtle Beach



Winyah