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FISHERY MANAGEMENT COUNCIL

Wind Energy and Fisheries:

A Mid-Atlantic Perspective

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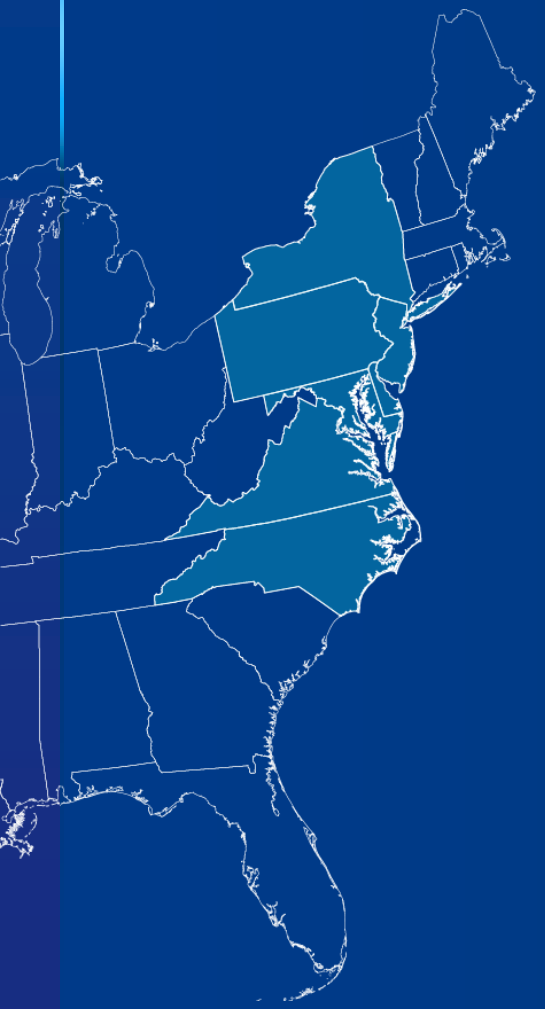
Mid-Atlantic Fisheries



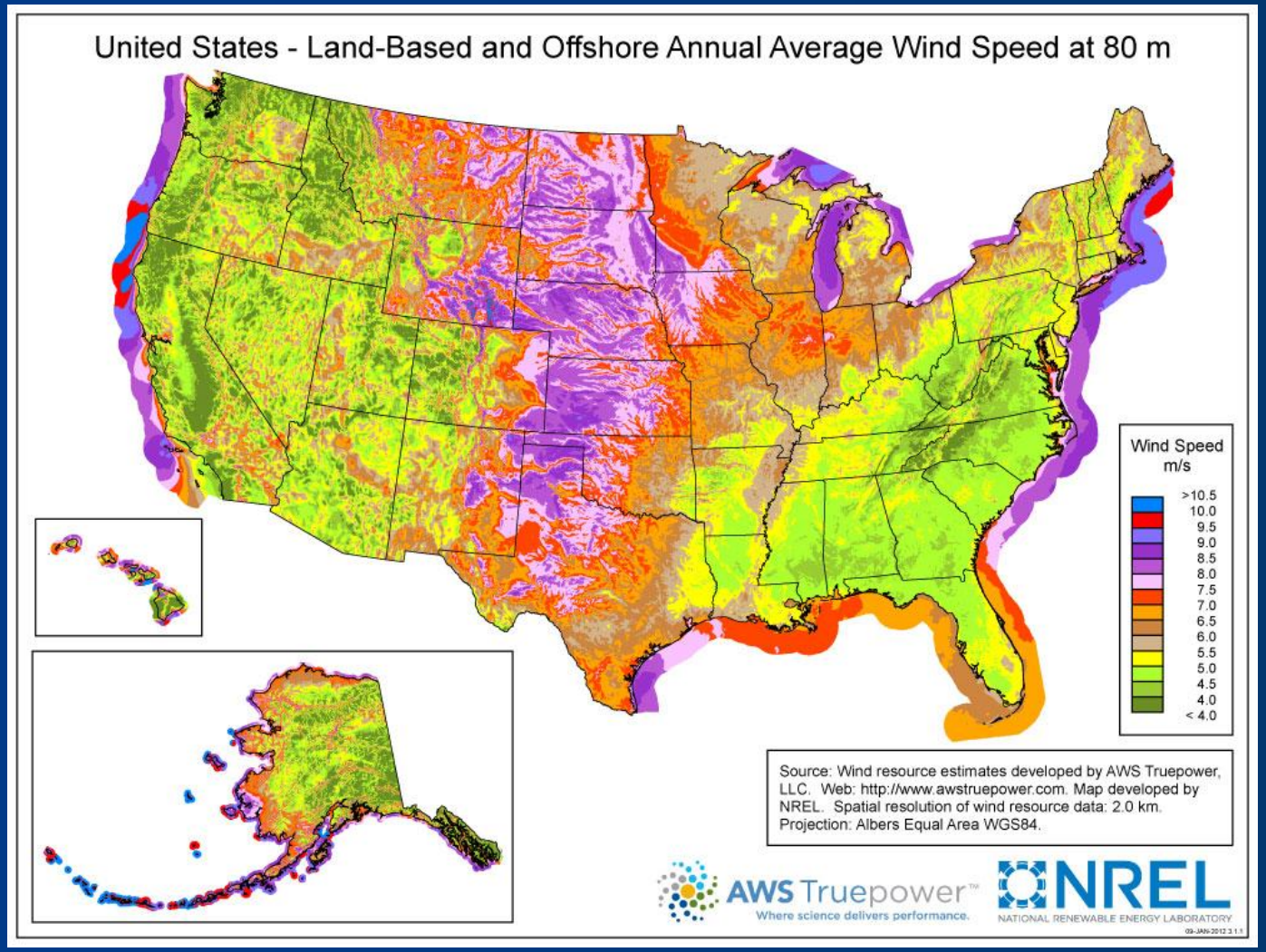
Commercial (2011)

- 780 million pounds
- $527 million (54% increase from 2002)
- 37,000 jobs

Recreational (2011)

- 2.4 million anglers
- 16 million fishing trips
- 25,000 jobs

Why is the Mid-Atlantic a target for offshore wind development?



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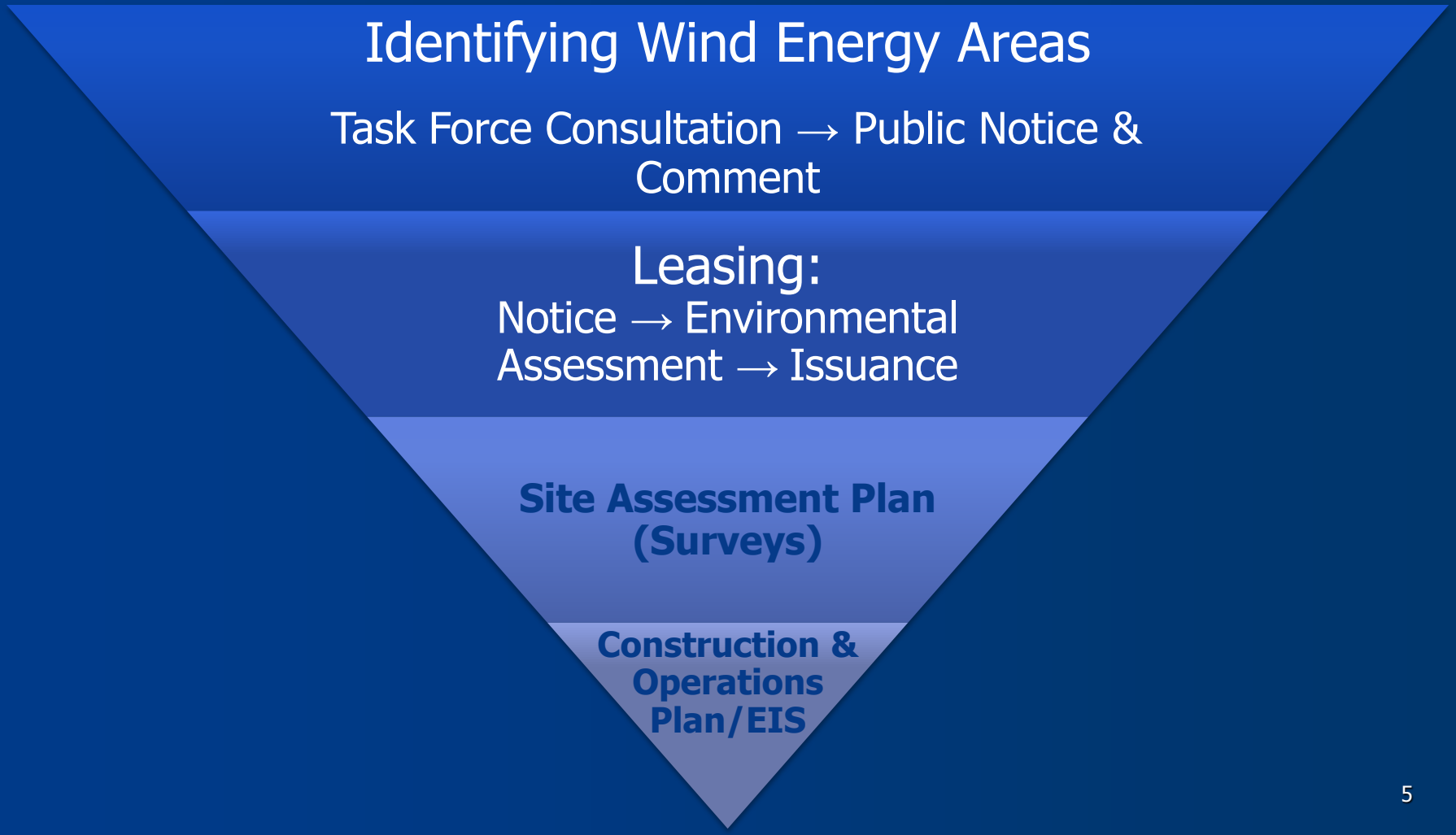
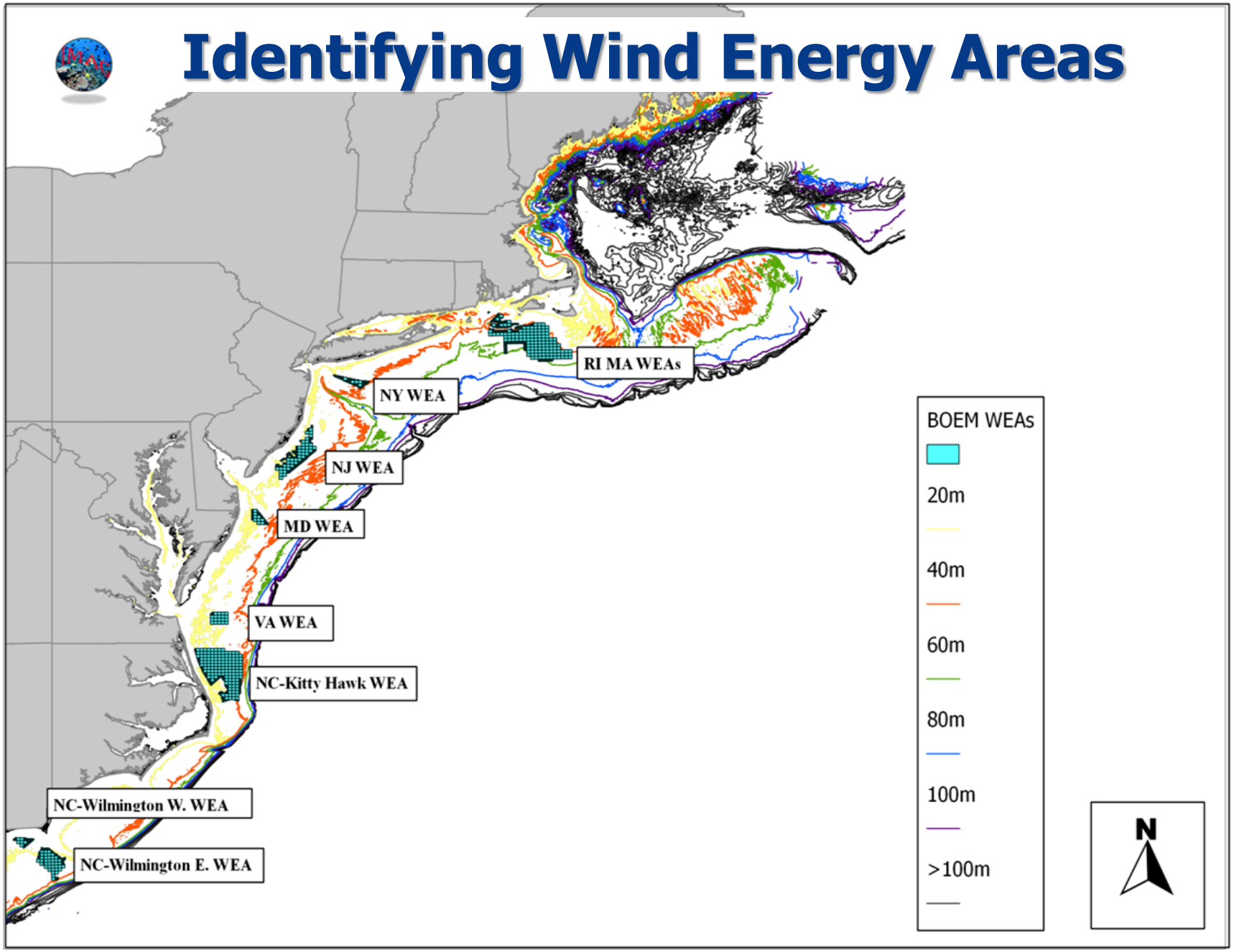
Key Players

Department of Interior **Bureau of Ocean Energy Management (BOEM)**	• Oversees all leasing, siting, construction, and operations, aspects of offshore wind energy development
National Oceanic and Atmospheric Administration **National Marine Fisheries Service (NOAA/NMFS)**	• Provides science-based information and recommendations • Identifies potential conflicts between proposed wind projects and the marine ecosystem
Mid-Atlantic Fishery Management Council	• Facilitates the transfer of fishery information, including industry input, into the siting and construction process • Assists with analysis of habitat and fishing data
Department of Energy **Office of Energy Efficiency and Renewable**	• Promotes the development of innovative renewable energy technology

Stages of Development



Identifying Wind Energy Areas



Leasing

- **Oct. 6, 2010:** First commercial lease off Cape Cod
- **Oct. 23, 2012:** Entire Delaware WEA leased
- **Dec. 3, 2012:** Entire Virginia WEA leased
- **July 31, 2013:** Two lease areas auctioned off the coast of Rhode Island/Massachusetts
- **2014:** Planned lease sales of New Jersey and Maryland

Site Assessment:
Environmental Impacts

Benthic Habitat

- Habitat Loss
- Habitat changes
- Scour/ Sedimentation

Marine Mammals

- Noise/ Vibration
- Collisions/ Entanglement
- Electromagnetic Fields (EMF)
- Hazardous spills/releases

Fish

- Electromagnetic Fields
- Habitat loss/ change
- Noise/ Vibration
- Hazardous spills/ releases

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Site Assessment:

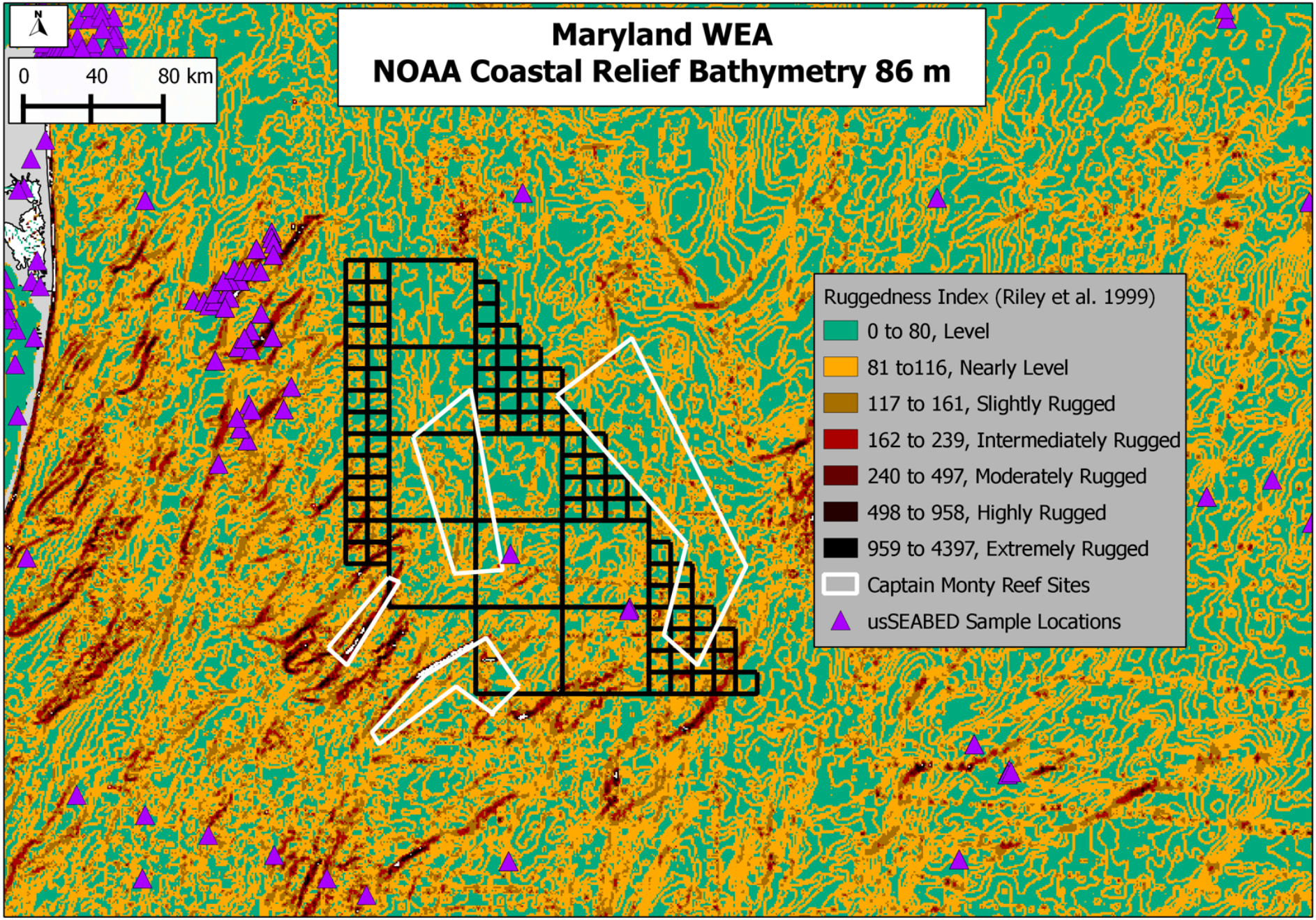
Habitat Mapping and Assessment in Atlantic OCS WEAs

NEFSC/BOEM Project:

- Collection, compilation and update of region-wide baseline data, maps and decision tools
- Integrative information about character and composition of sea floor
- Location of important offshore Fisheries Habitats
- Presence/Absence of Biotic/Abiotic Resources
- Impacts of Offshore Wind Development on Habitat

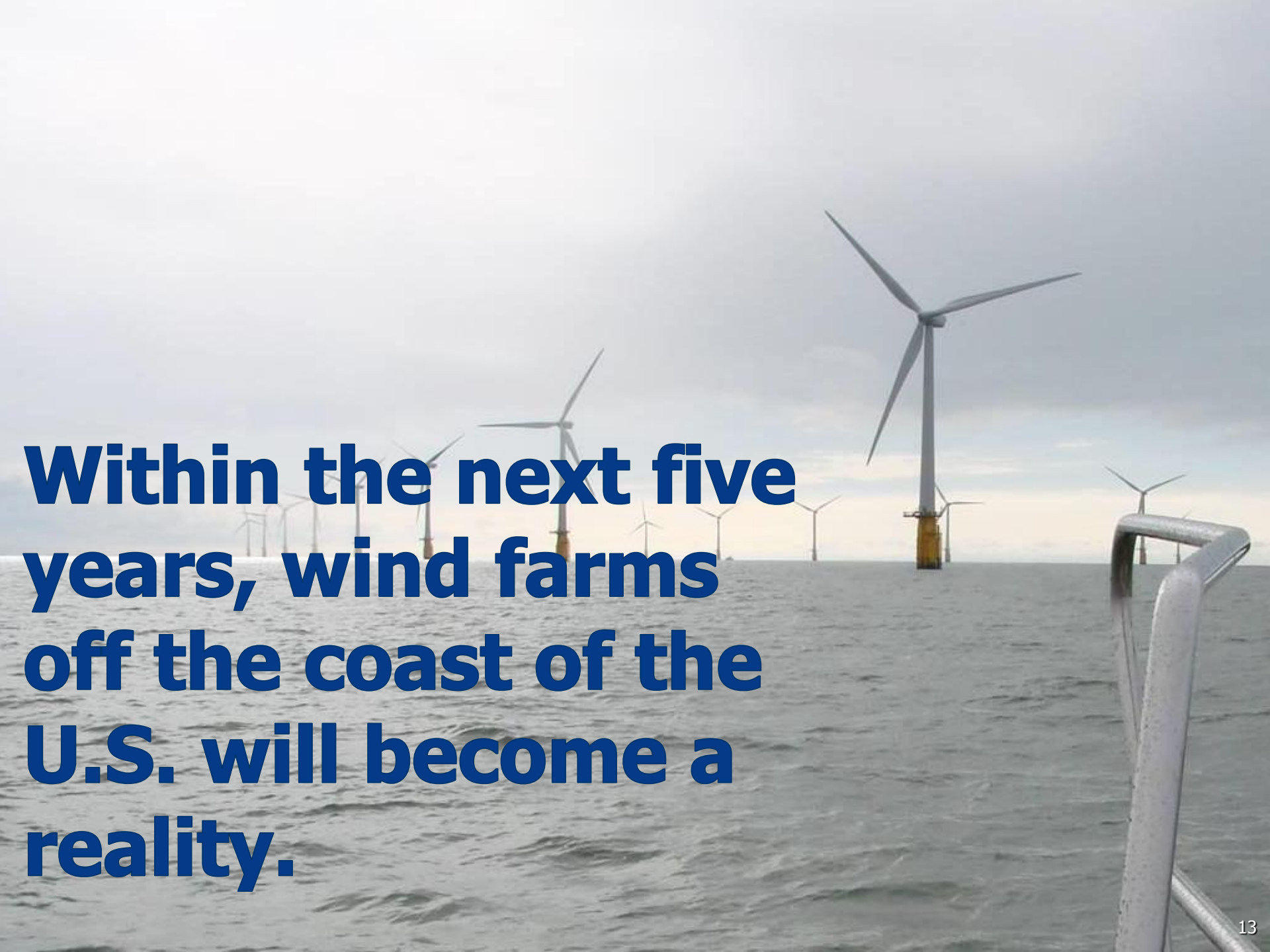
Multiple-scale Habitat Characterization/ Monitoring of Atlantic OCS WEAs

- Phase 1 – Characterizing the abiotic component of the benthic environment
- Phase 2 - Characterizing the biotic component of the benthic environment
- Phase 3 – Utilize physical, biological and chemical data to conduct ecosystem-level assessments


Maryland WEA
NOAA Coastal Relief Bathymetry 86 m
N
0
40
80 km
Ruggedness Index (Riley et al. 1999)
0 to 80, Level
81 to116, Nearly Level
117 to 161, Slightly Rugged
162 to 239, Intermediately Rugged
240 to 497, Moderately Rugged
498 to 958, Highly Rugged
959 to 4397, Extremely Rugged
Captain Monty Reef Sites
usSEABED Sample Locations

Site Assessment:
Best Management Practices

- BMPs: Planning measures, construction techniques, and operational procedures to reduce adverse impacts
- Lessee's must demonstrate use of BMPs
- 2012-2013: BOEM held a series of BMP Workshops
  - Opportunity for stakeholders comment on construction and operation
  - Input was used to update fishing-related BMPs
- January 2014: Mid-Atlantic Council will hold a workshop to solicit additional industry input on draft BMPs



Within the next five years, wind farms off the coast of the U.S. will become a reality.

QUESTIONS?

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