



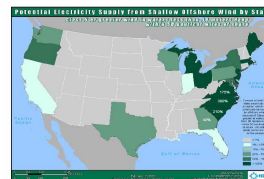
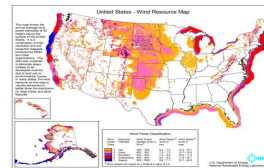
# NC Coastal Wind Demonstration Project EXPLORING WIND'S POSSIBILITIES

NC State Energy Office – Sustainable Energy Conference  
April 20, 2010



## Offshore Wind Resources in NC

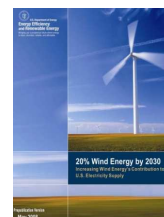
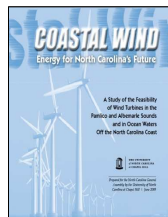
- 20% Wind by 2030 Report projects 50 GWs of offshore wind on East Coast—10 GWs in NC).
- 2008 – NC General Assembly requested UNC to study the coastal and offshore wind resources.
- June 2009 – UNC’s Coastal Wind Report
  - Identified Eastern Pamlico Sound for 3-10 MW demonstration pilot
  - 497 MWs of potential for development in Pamlico Sound.
  - 55 GWs of Offshore Wind Potential Beyond Outer Banks.



UNC Study: Total Estimated Offshore Wind Resources Beyond the Outer Banks of NC

Offshore Wind Resource	Capacity Factor	Potential Installed Capacity (MWs)	Est. Range of Energy Output (GWh) (Low - High)
Marginal	30% - 35%	22,403	58,875 - 68,688
Favorable	35% - 40%	15,700	48,136 - 55,013
Most Favorable	42.50%	17,816	66,329 - 66,329
		<b>55,919</b>	<b>173,340 - 190,029</b>

Source: UNC Coastal Wind Study, p. 359 (July 2009)





## NC Coastal Wind Demonstration Project

- 1-3 turbine offshore wind demonstration project planned in eastern Pamlico Sound
- Supply electricity for estimated 500 - 2,500 homes;



### Permitting (Federal, State and Local)

- National Environmental Policy Act—Environmental Impact Statement Process being led by US Army Corps of Engineers with other Federal and State resource agencies.
- Continue to work with resource agencies on project.



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## Public Private Partnerships

- University of North Carolina—Chapel Hill, East Carolina Univ., NCSU, others.
- DOE/NREL National Wind Technology Center
- Wind Turbine Generator OEM (TBD)
- Foundation Fabricator (TBD)
- ARCADIS - environmental permitting
- Garrad Hassan, Noble Denton, Germanischer Lloyd—wind resource assessment, development, certification expert with global wind presence
- Federal and State Agencies—USFWS, DOE, EPA, NC Dept of Commerce
- Community



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## Potential Research Opportunities of Demonstration

- **Hurricane Resilience Research Study**  
Evaluate structural integrity of foundations, tower, wind turbine generators and blades in region with high tropical storm and hurricane incidence.  
Opportunity to study impacts on Atlantic Coast.
- **Wind Research in Marine Environment**  
Collect and evaluate wind data that will inform our understanding of the marine environment including use of remote sensing techniques.  
Opportunity to utilize existing NAVY platforms to conduct further wind resource assessments.
- **Baseline Environmental/Ecological Studies**  
Develop Methodologies for creating baseline and post-construction environmental studies that will inform responsible offshore wind development in US.
- **Economic Analysis of Demonstration Project**  
Identify capital and O&M costs for the demonstration project and potential costs for utility scale project.

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## Appendix



NC Coastal Wind Demonstration Project Website  
<http://www.duke-energy.com/north-carolina/renewable-energy/nc-coastal-wind.asp>

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