

Offshore Wind for North Carolina

Information for State Leaders and Task Force Members

Presented to North Carolina State Leadership

5 Nov 2010



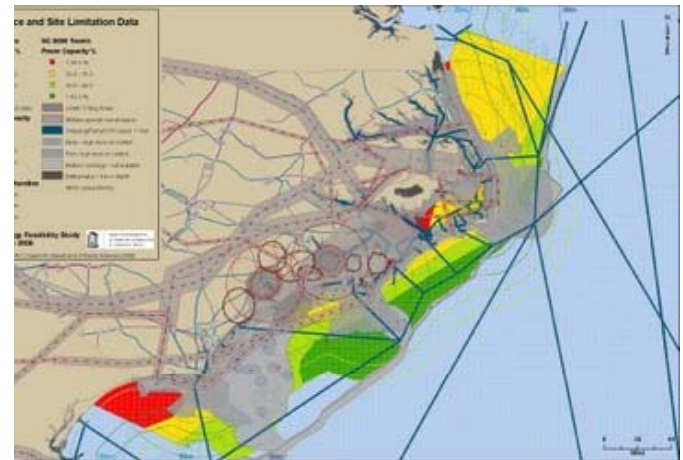
Outer Banks Wind Overview

- Formed in 2009
- North Carolina Focused, Based in Raleigh, NC
- Experienced in:
 - Offshore Operations, former Oil & Gas
 - Project Development and Finance
 - Permitting and Environmental Studies
- Active participant in NC policy design and technical planning



What We Will Cover Today

- I. Why Offshore Wind?
- II. Offshore Wind Policy
- III. Federal Leasing Process & Lessons Learned
- IV. Detailed Siting Criteria
- V. Strategies for Selecting an RFI Area



NRG Bluewater Wind Overview

- Leading National Offshore Wind Developer
 - 200 MW PPA in DE, first in the U.S.
 - 350 MW project in NJ, one of three preferred developers
 - Over 3,300 MW of development, active in 7+ states
- Wholly owned subsidiary of NRG Energy
 - Fortune 500– Ranked 12th Fastest Growing Company (2009)
 - Member of S&P 500
 - ~4,500 employees, over \$5 billion market cap
 - Over 24,000 MW of generating assets

I. Offshore Wind Works

- Offshore wind parks: 42 in 9 countries
- Operational: Since 1991
- Current installed capacity: 2,396 MW

- Wind Parks under construction 1st half of 2010: 16 Parks totaling 3,972 MW
- Order book of Turbines, December 2009: 5,900 MW

- UK Round 3: 34,000 MW Awarded
- Received permits in Europe: 52 Wind Parks with 16,000 MW

- Global wind total: 157,900 MW generates 340 TWh/ year, eliminating 204 million tons of CO₂.
- U.S. = over 35,600 MW on land, or equivalent of 100% of electricity of more than 9.7 million households in the US, with 39% average annual growth rate, 2005-9
- In the U.S. today, wind energy generates enough electricity to power all households in New Jersey, Pennsylvania, Delaware and Maryland.



NORTH AMERICAN ANNOUNCED PROJECTS

Project	State	MW
Cape Wind	MA	420
Hull Municipal	MA	15
Buzzards Bay	MA	300
New England	RI, MA	400-850
NYPA Great Lakes	NY	500
NYPA, LIPA, Con Ed, EDC, MTA	NY	700
NJBPU	NJ	1,050
Bluewater Wind	DE	293-450
Southern Company	GA	10
W.E.S.T.	TX	150-300
Deepwater	RI	+/- 400
Canada, Ontario	ON	500+
Cuyahoga County	OH	20+
TOTAL MW		4,258 – 5,015

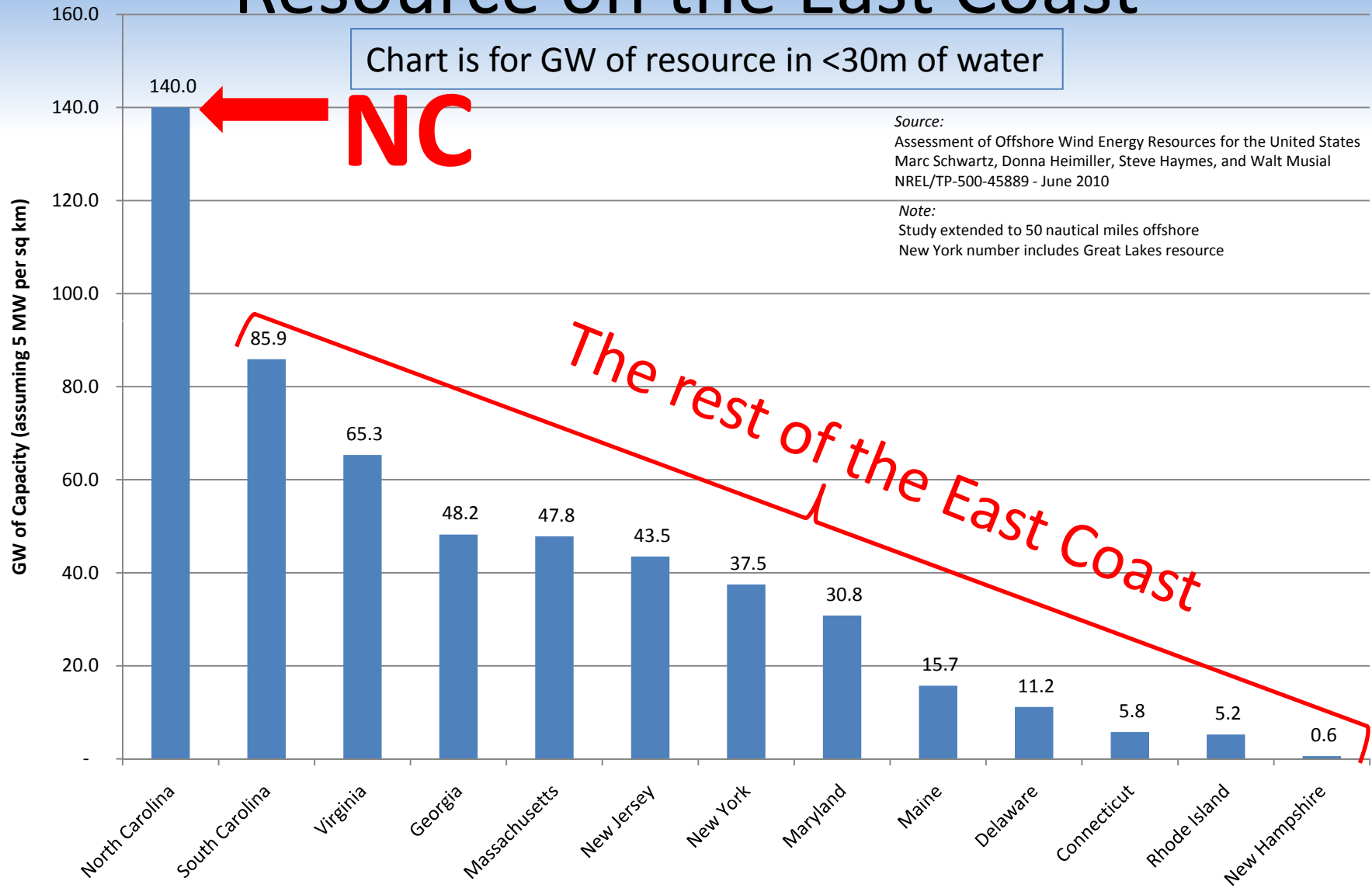


Offshore Wind Benefits

- Clean energy with near zero emissions
- Provides well-paying local jobs
- Proven technology, operating since 1991
- Stable priced energy, no fuel price volatility
- Wind is stronger and steadier offshore
- Can be sited with minimal visual impact
- Conserves water used in conventional power plants
- And for North Carolina...the biggest offshore wind resource on the East Coast

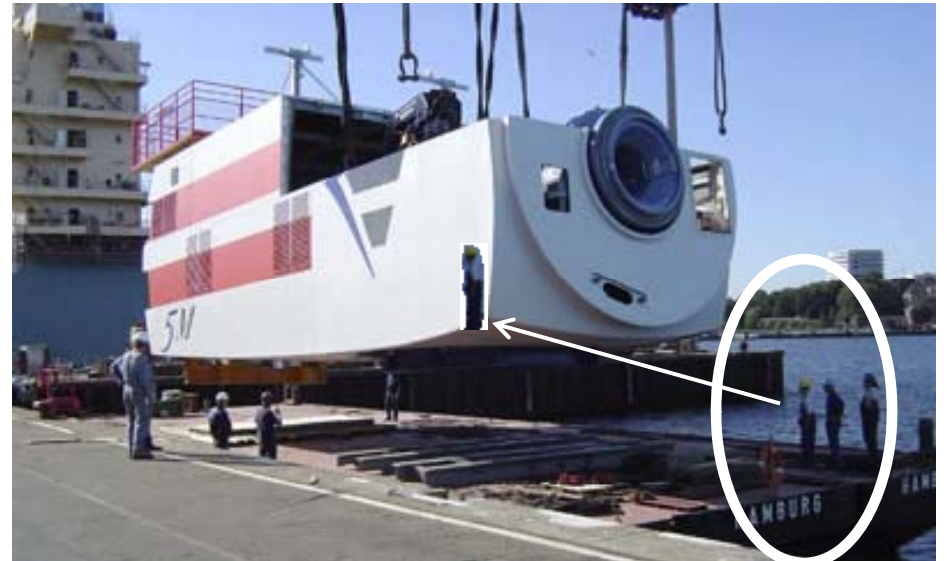


North Carolina has the Largest Resource on the East Coast

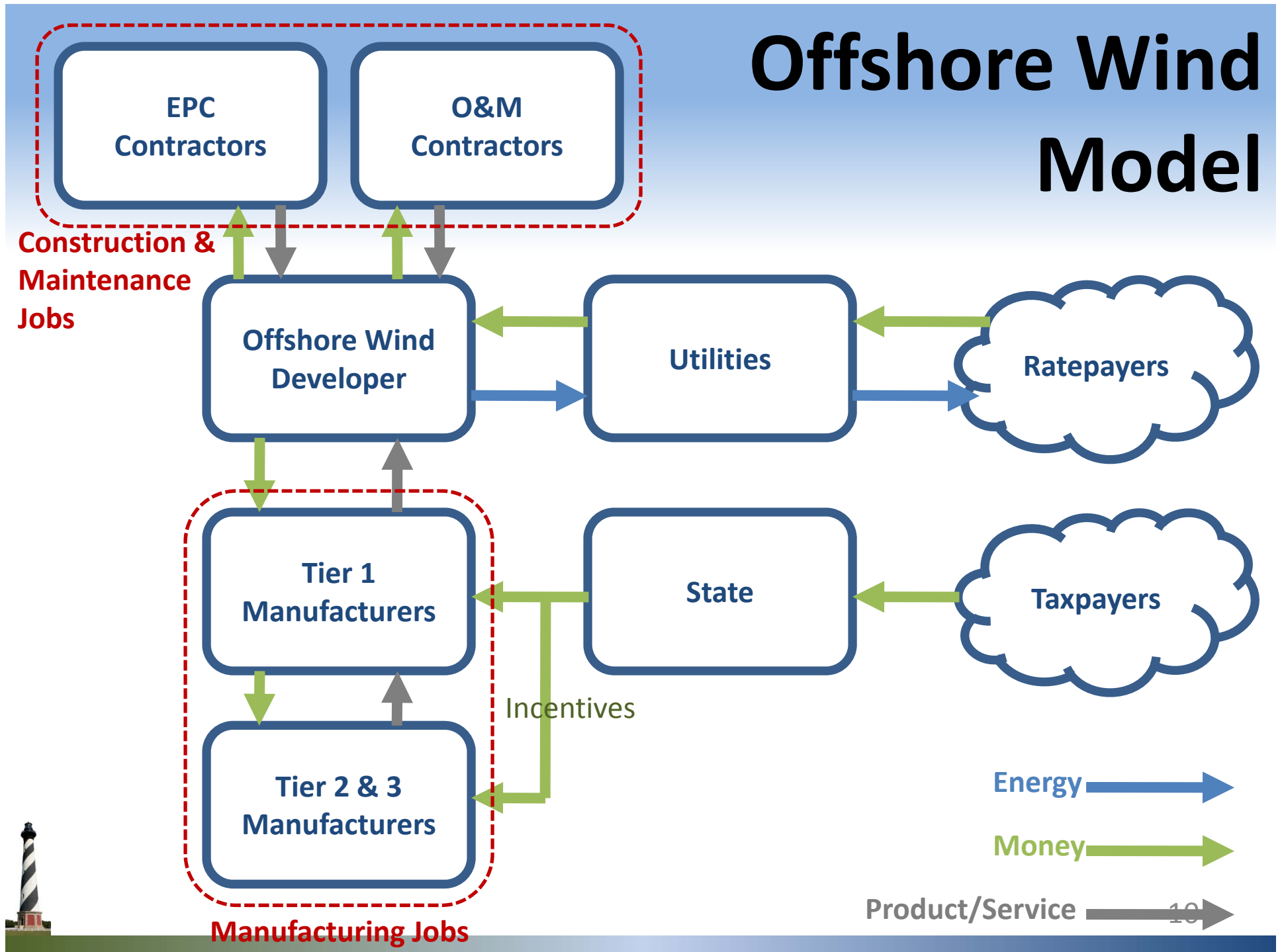


Local Supply Chain Creates NC Jobs

- Components are large, expensive to ship
- In wind, **supply chain follows the projects**
 - EU onshore, US onshore, EU offshore...



Offshore Wind Model



II. Why is Policy Required?

- Policy accelerates development, creates local demand
- Supply chain follows the projects
- Keeping NC in first wave of projects
- Current NC energy policy favors short-term, volatile priced fossil fuel generation with no local supply chain. (sending billions of \$ out of state)

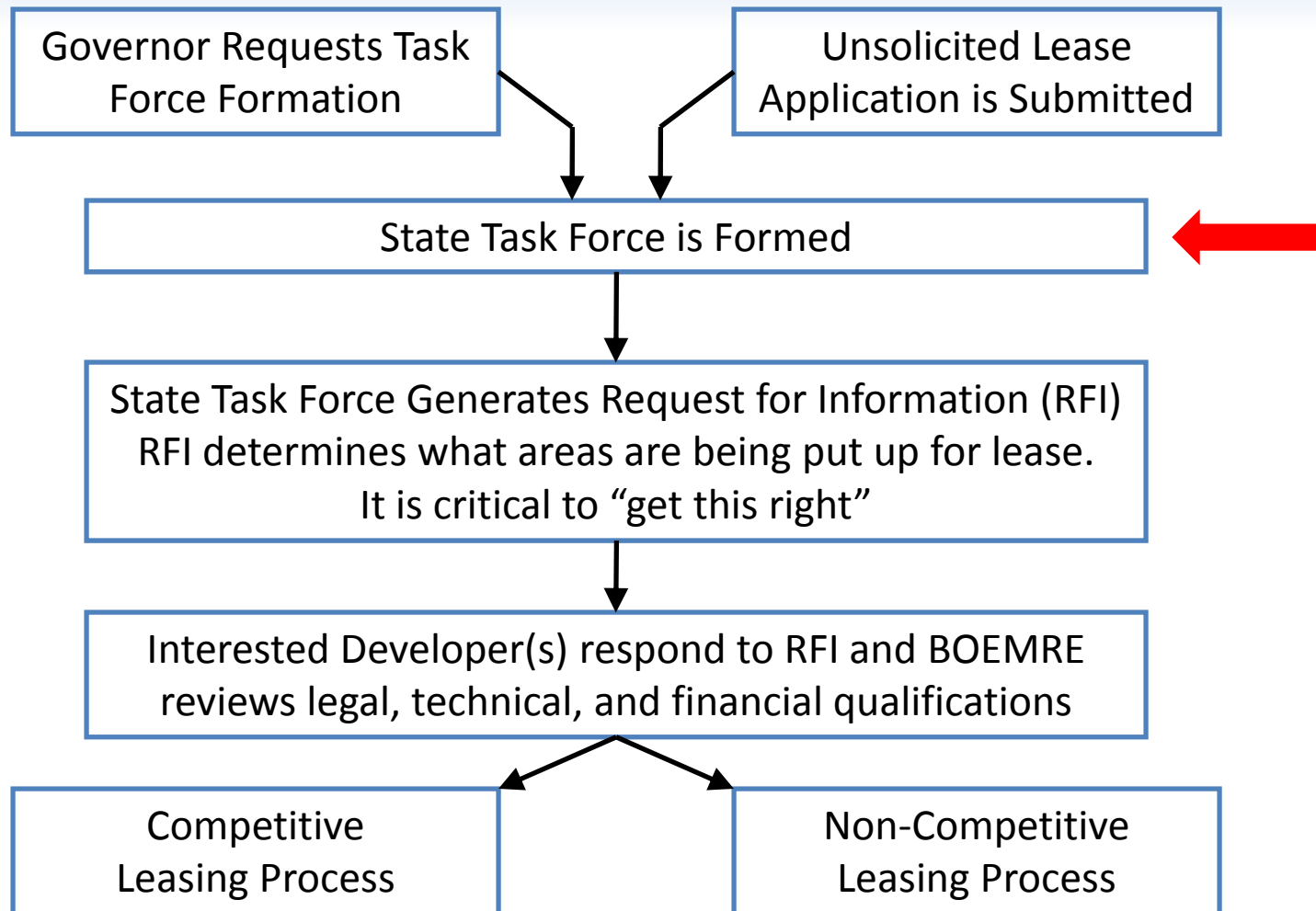


Vital Policy Factors

- Two key elements to successful policy:
 1. Revenue certainty with credit-worthy buyer
 2. Regulatory certainty over the life of the project
- Manufacturers are looking for long-term, stable demand before investing.
- Make sure policy design will survive a change of administration
- Clearly define how costs will be spread
- Involve utilities (IOUs) early in the process



III. BOEMRE Leasing Process



Who Is Part of the Task Force?

- Relevant Federal agencies with explicit or inherent governmental responsibility
- State government officials, designated by the Governor
- Local elected government officials
- Tribal elected government officials



Task Force Input

- Task Force members will be able to provide input throughout the leasing process, for example:
 - Preparing the required BOEMRE notices and announcements such as a Request for Interest (RFI)
 - Identifying environmental data needs
 - Reviewing legal, technical, and financial qualifications of interested developers
- The federal leasing process is defined by statute, but Task Force can direct implementation.



III. Lessons Learned

1. State Can and Should Drive the RFI Process
2. State Support From All Levels Is Critical
3. Public-Private Partnership Model and/or State Engages All Stakeholders
4. Baseline Environmental Studies



State Can Be Empowered

- Although it is a Federal leasing process, the State is in the driver's seat (via Task Force)
- Getting the right areas included in your RFI is vital
- BOEMRE and State as Co-Chairs of Task Force



State Support is Critical

- Leasing process is new, complicated, and an administrative challenge
- Can include stakeholders from all levels of State Government
 - Governor, State Agencies, Legislature, County & Local Governments
- Delaware example
 - Only state with an RFI issued
 - Leaders often asked “How can we do this more efficiently?”
- More Public Outreach = More Success
 - State involvement in public education is crucial
- Federal, State, Local agencies must cooperate



Public-Private Partnership Model

- Establish a partnership framework (e.g. State Task Force)
- Can give feedback and insight into policy, market, and technical issues.
- State and private developers bring supply chain companies to NC

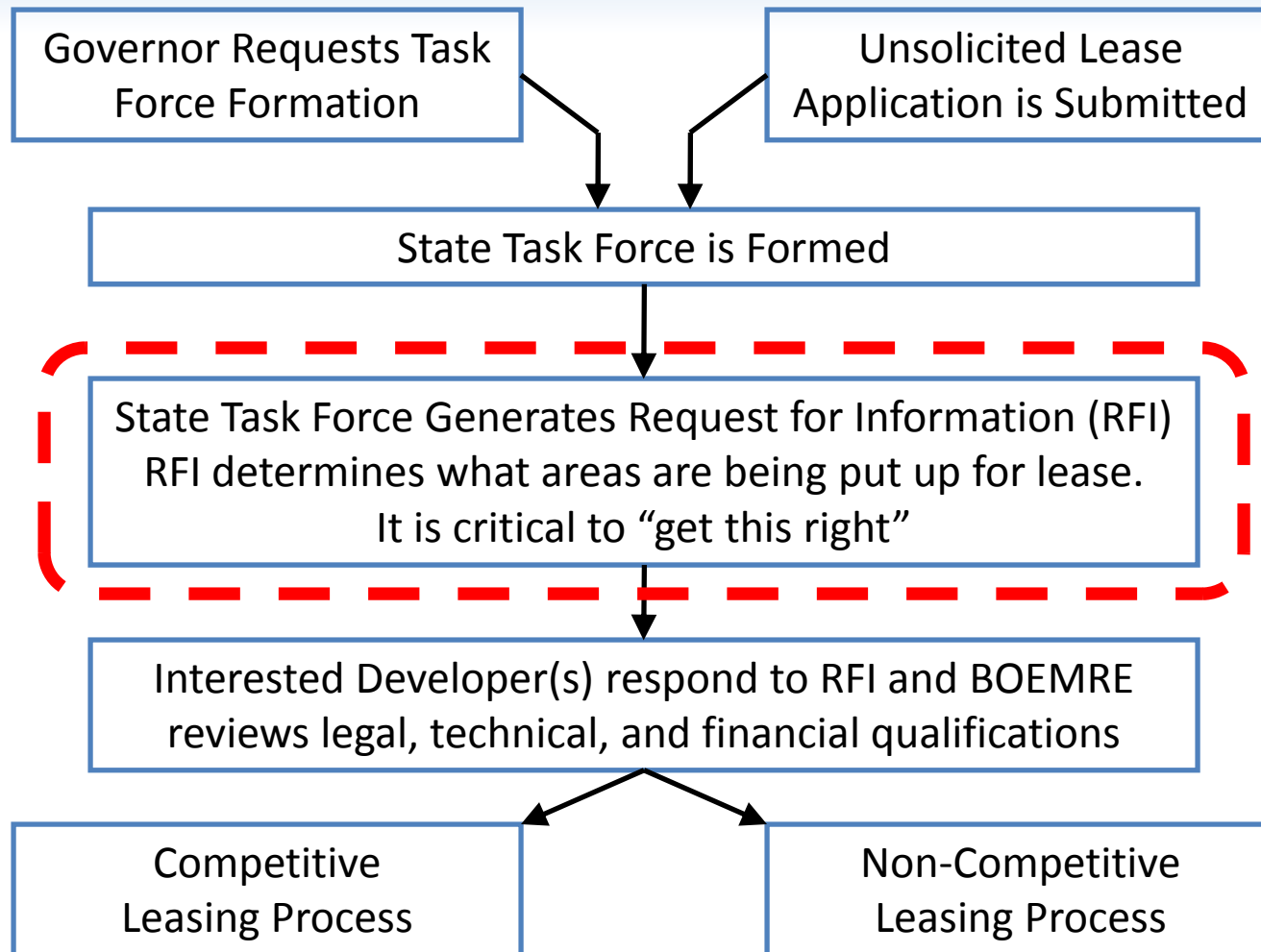


Baseline Environmental Studies

- Potential for state and/or federal funding for baseline environmental study
- Benefits include:
 - Saves permitting time and allows NC to “catch up”
 - Real science from an objective, trusted source
 - Reduce redundancy, improve cost efficiency
 - Helps facilitate competitive bidding on development



Determining RFI Area



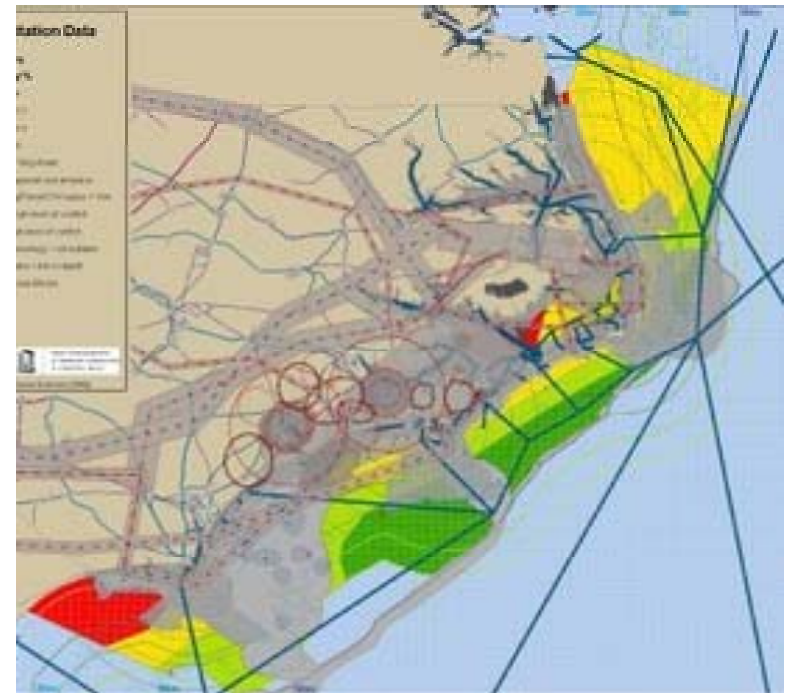
IV. Siting Criteria

For a developer, the right site is one where...

- site control can be acquired
- the wind potential is high
- cost effective interconnection
- electrical headroom at node
- permits can be obtained and
- construction take place

All while minimizing...

- use conflicts and
- potential environmental impacts.



Siting Criteria from the Experts



V. Strategies for RFI Areas

- Key considerations for a successful RFI:
 - Ongoing federal effort to improve efficiencies in the permitting process
 - Developers must start construction within 5 years of executing a lease, so no squatters
 - And, projects will not get financed without a long-term power contract with a credit-worthy buyer such as Duke or Progress.
- UNC Study looked at many typical constraints and provides a roadmap for determining RFI areas.



Strategies for RFI Areas (cont.)

- Make sure RFI area is large enough to:
 - Allow the desired number of projects with sufficient economies of scale, and
 - Accommodate adjustments when new constraints are uncovered
- Two philosophies:
 - Very large areas allow the market to decide the most economical locations
 - Limited areas focus development locations
- Overlap in lease applications or low MW bid capacity may add up to 2 years to the process by triggering BOEMRE competitive auction. Be deliberate about what is in the State's best interest.



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)

