

Mid-Atlantic Wind Powering America Peer Exchange Meeting December 4, 2003



Bonnie Ram

Energetics, Inc.

Overview

- Resource Potential
- Regulatory Analysis and Permitting
- Environmental Effects
- Highlights from Workshops
- What We Have Learned
- Current Projects

Wind Turbine EVOLUTION



**Inland
Wind Turbine**

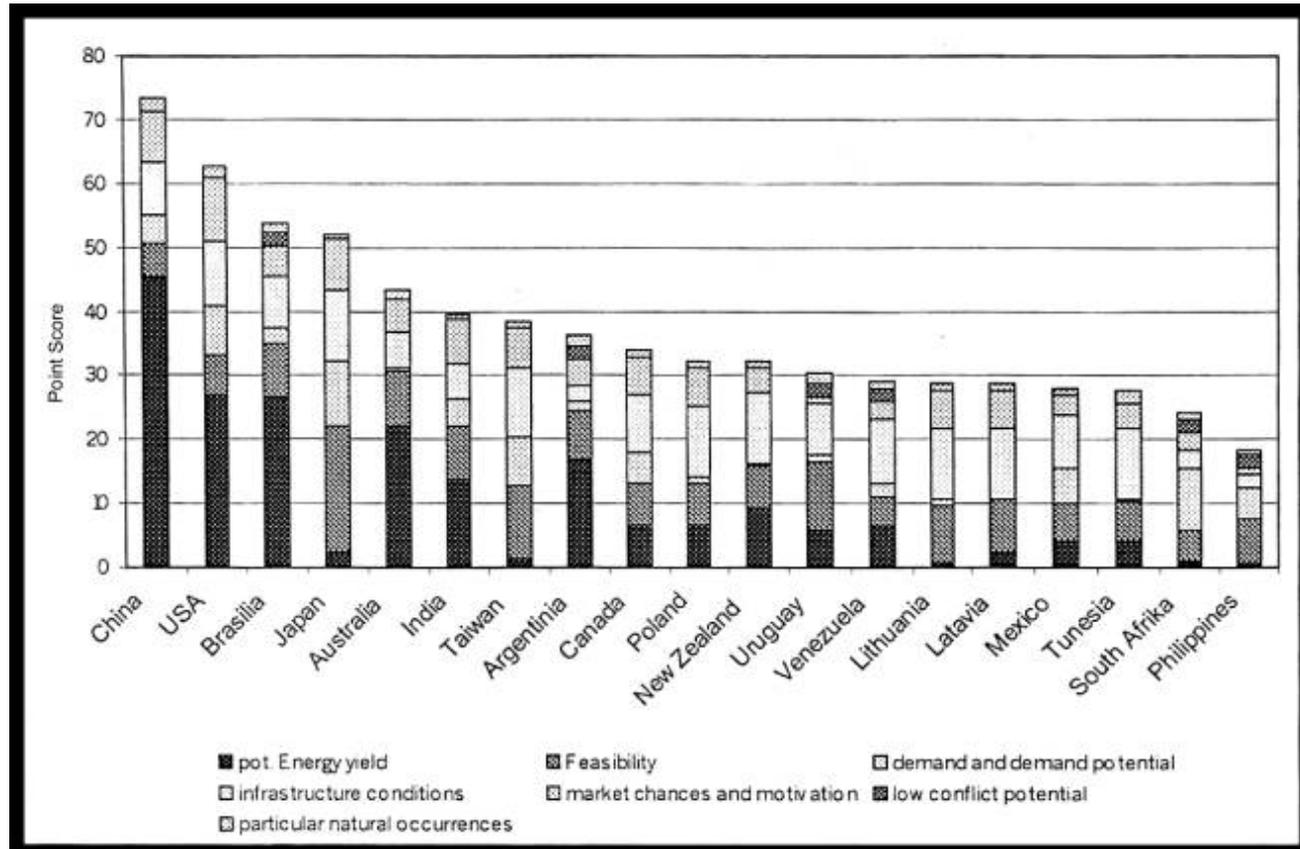


**Offshore
Wind Turbine**



**Deep Water
Wind Platform**

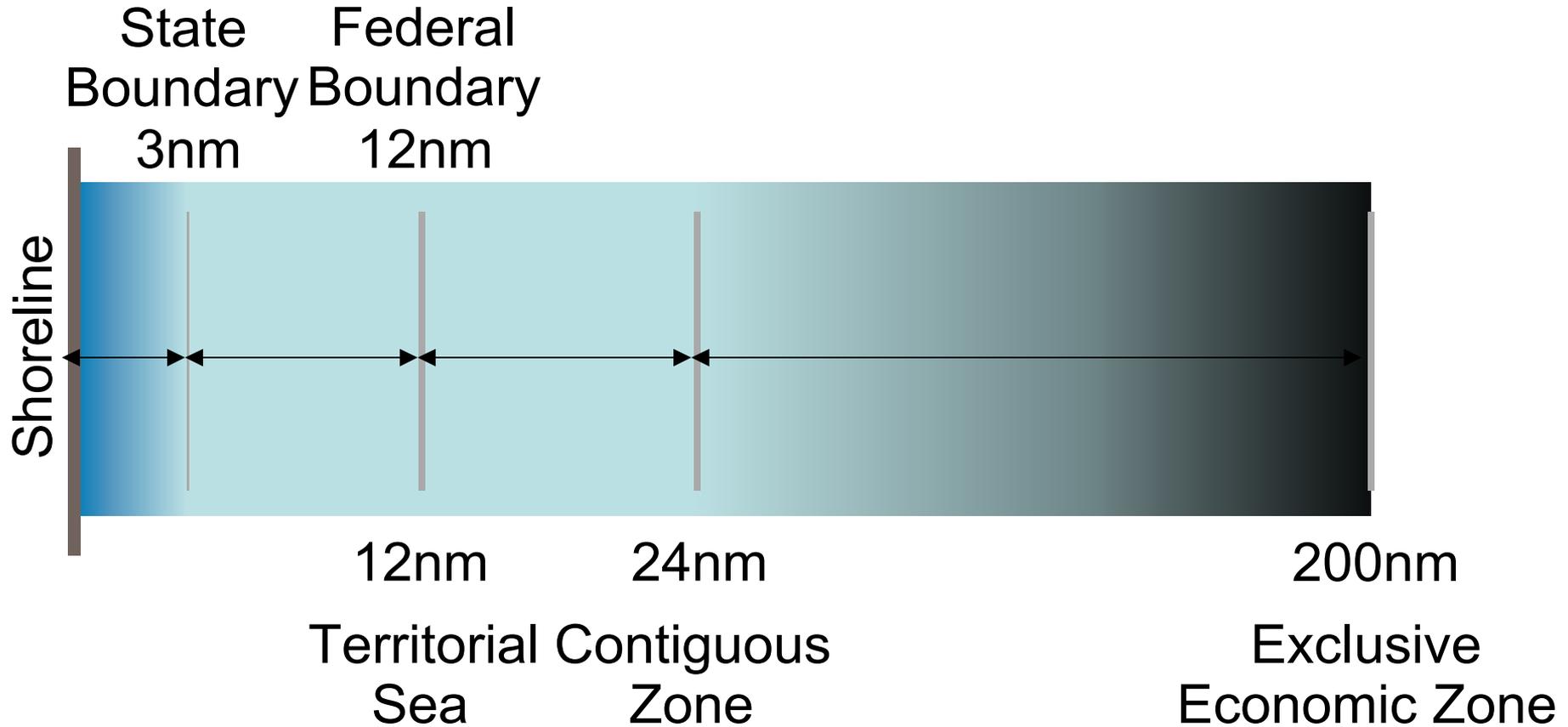
Offshore Wind Energy Potential Outside the European Union



Source: Siegfriedsen, Lehnhoff, & Prehn
aerodyn Engineering, GmbH

Conference: Offshore Wind Energy in the Mediterranean and other European Seas
April 10-12, 2003 - Naples, Italy

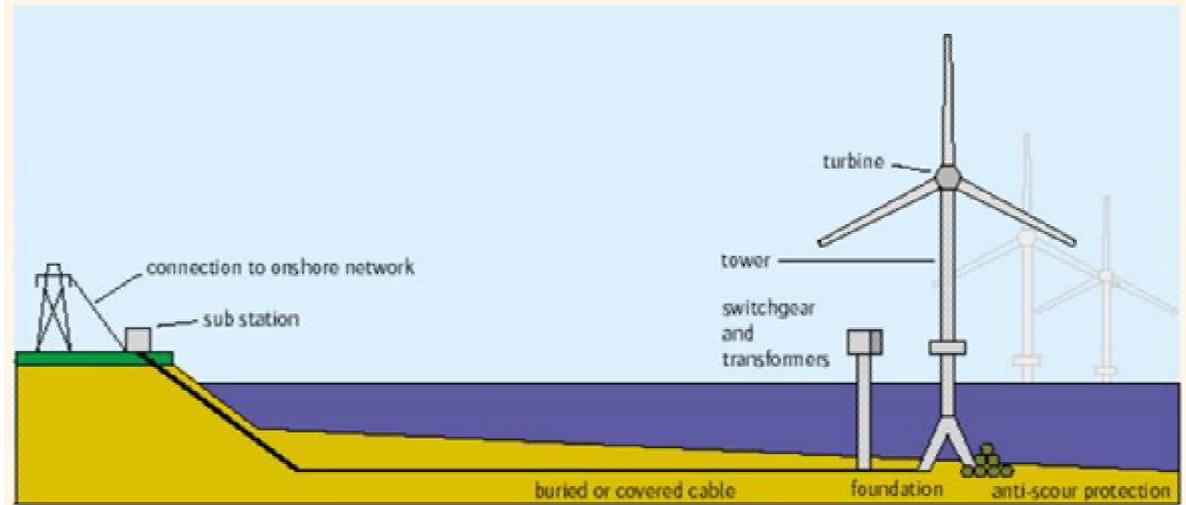
Ocean Jurisdictions



Not to Scale

Factors Determining Applicable Regulations

- Project Size, Location and Construction
- State/Federal Ocean Boundaries
- Landfall Grid Connection
- Sensitive Marine/Land Areas
- Avian and Marine Species
- Activities and Uses of Project Area



Selected Federal Regulations

Legislative Authority	Major Program/Permit	Lead Agencies
Rivers And Harbors Act - Section 10	Prohibits the obstruction or alteration of navigable water of the U.S without a permit	U.S. Army Corps of Engineers (District Office)
National Environmental Policy Act (NEPA)	Requires submission of an environmental review for all major federal actions that may significantly affect the quality of the human environment	U.S. Army Corps of Engineers (District) Council on Environmental Quality
Coastal Zone Management Act	Consistency determination with the coastal program of the affected state	NOAA State Coastal Zone Management Agencies
Navigation and Navigable Waters	Navigation aid permit (markings and lighting)	U.S. Coast Guard
Navigational Hazard to Air Traffic	Determination of the safe use of airspace from construction start (lighting)	U.S Federal Aviation Administration (Regional Administrator)

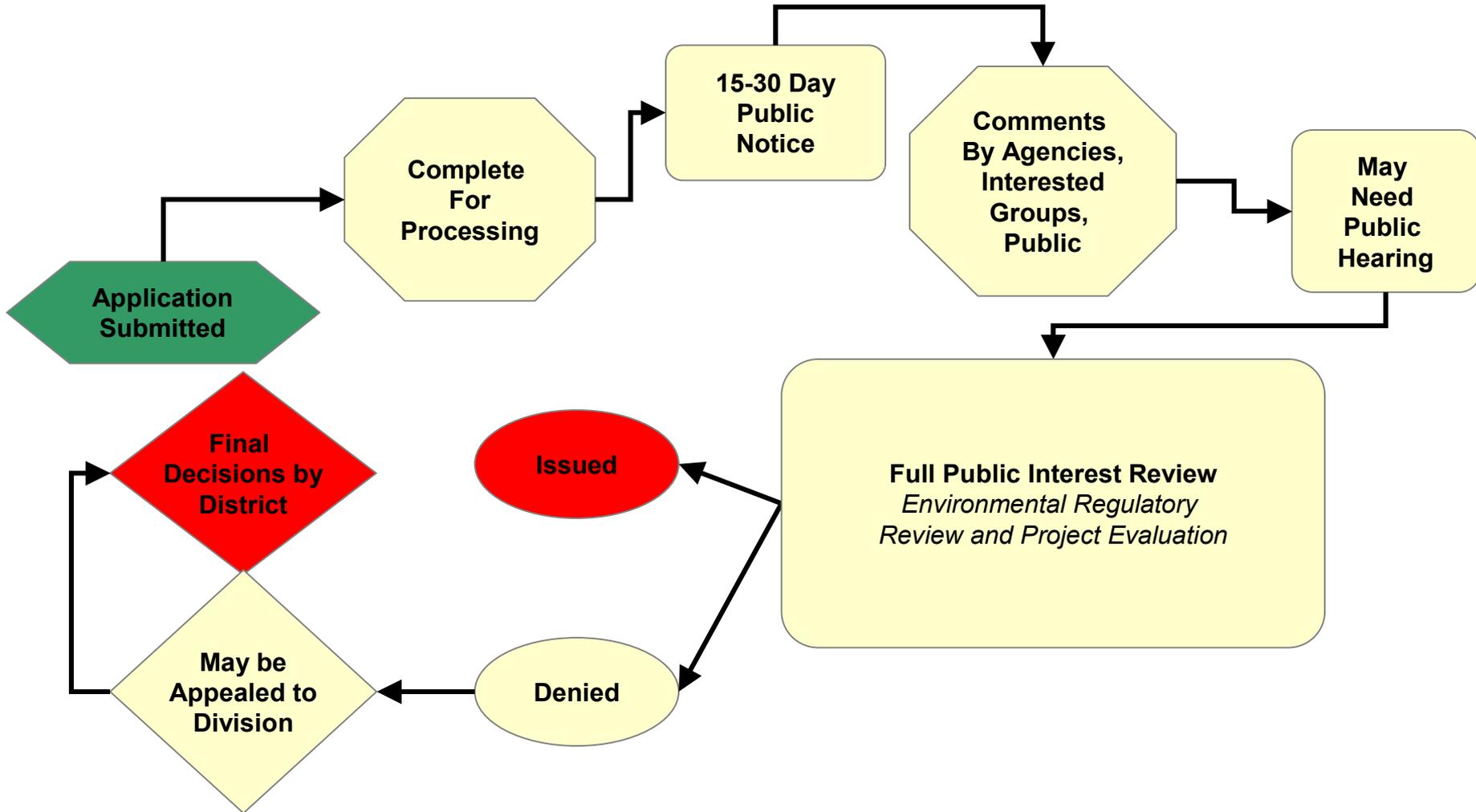
Selected Federal Regulations

Legislative Authority	Major Program/Permit	Lead Agencies
Migratory Bird Treaty Act	No “taking” or harming of birds determination	Fish and Wildlife Service Migratory Bird Conservation Commission
National Historic Preservation Act	Consultation on the protection of historic resources — places, properties, shipwrecks	Department of the Interior State Historic Preservation Offices
Magnuson-Stevens Fishery Conservation & Management Act	Conserves & manages fish stocks to a 200-mile fishery conservation zone & designates essential fish habitat	National Marine Fisheries Service
National Marine Sanctuary Act (Title III)	Designates marine protected areas	National Ocean Service (NOAA)
Endangered Species Act	Consultation on action that may jeopardize threatened & endangered (listed) species or adversely modify critical habitat	Fish & Wildlife Service National Marine Fisheries Service

Selected Federal Regulations

Legislative Authority	Major Program/Permit	Lead Agency
Marine Mammal Protection Act	Prohibits or strictly limits the direct or indirect taking or harassment (Permits may be sought for “incidental take”)	Fish & Wildlife National Marine Fisheries Service
Submerged Lands Act	Whether federal or state lands, granting a lease for public lands held in trust by the government	Minerals Management Service
Outer Continental Shelf Lands Act	Manages the OCS with leasing rights for minerals production. Also covers artificial islands, installations, and other devices located on the seabed	Minerals Management Service US Army Corps of Engineers
Clean Water Act	Establishes the basic structure for regulating discharges of pollutants into the waters of the United States	U.S. Environmental Protection Agency
Estuary Protection Act	Conserves estuarine areas	Fish and Wildlife Service

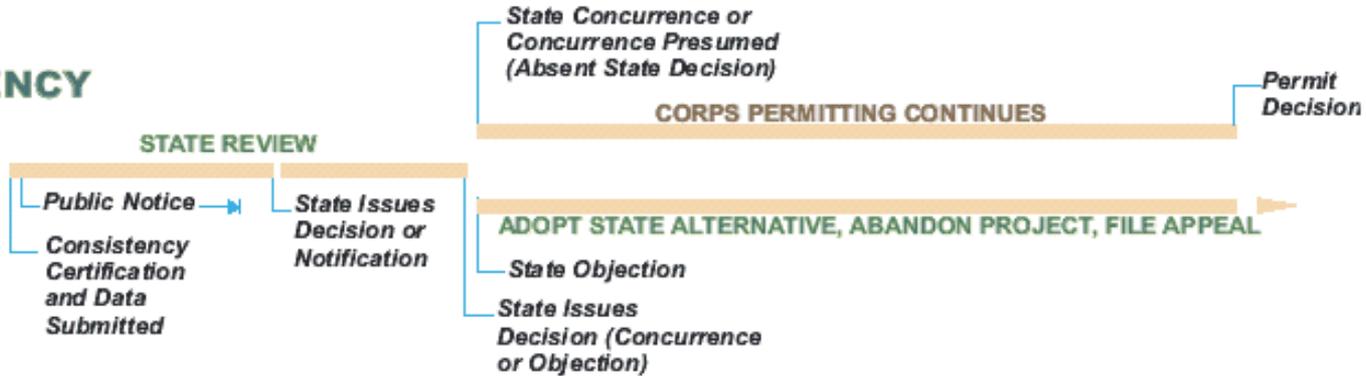
U.S. Army Corps of Engineers Individual Permit Process



Reference: Adapted from USACE presentation, Christine Godfrey

U.S. Army Corp of Engineers Permit and NEPA Process

CZMA CONSISTENCY PROCESS



CORPS PERMIT PROCESS



NEPA EIS PROCESS



Reference: Adapted from USACE presentation, Karen Adams

Stakeholder Involvement

- Primary Objective of the Permit is Public Involvement
 - Section 10 provides for permit authority
 - Public hearings on application(s)
 - NEPA process
 - Public scoping (not required for an environmental assessment)
 - Citizen lawsuits

Potential Environmental Concerns/Benefits

- Marine Ecosystems/Seabed
- Sea mammals
- Fisheries
- Avian
- Hydrography
- Sediment Structure & Coastal Effects
- Viewshed
- Noise/Vibrations
- Radar/Radio Disturbances
- Socioeconomics
- Logistics/Maintenance
- Transmission Line Installation/Landfall Grid Connections
- Subsea Cables/Electromagnetic Fields
- Navigation/Air Traffic Safety
- Marine Archaeology
- Cumulative Effects (e.g., air quality)



Evaluating Potential Effects

- Field Investigations
- Cause and Effect Methodologies
- Establishing Ecological Thresholds
 - Establishing context and intensity
- Quantifying Benefits
- Mitigation Strategies



NWCC Dialogue Meeting On Offshore Wind - July 2003

- Over 100 stakeholders
- Prepared first draft concept and meeting goals
- Presentation: “Offshore Wind Developments in the U.S.: Regulations and Jurisdictions”
- Discussion identified universe of potential environmental and socio-economic issues
- Information available on NWCC website
 - <http://www.nationalwind.org/events/offshore/030701/default.htm>

NREL Boston Technical Tutorial

— September 29-30, 2003

- Follow-up from NWCC meeting in July
- Prepared first draft concept and meeting goals
- Expanded list of federal and state stakeholders
- Over 65 attendees
- Focus on wind engineering principles, technology status, and operational details
- Overview of US Coast Guard and Federal Aviation Administration compliance strategies
- Briefing on the Boston Harbor Islands and prospects for wind projects
- Field trip to Hull's municipal wind turbine project

NREL Boston Technical Tutorial

— September 29-30, 2003

- A workshop proceedings website is under development
- Follow-up with local and national working groups
 - Fisheries data needed for permitting
 - Priorities for the Department of the Interior

NREL Deep Water Technologies Workshop — October 15-16, 2003

- Network of over 40 U.S. and European wind & oil & gas engineers and scientists
- Discussed cutting-edge research and technologies
- Lessons learned from the oil and gas industry
- Consensus that economical, floating offshore applications are achievable
- Next steps:
 - Identify R&D directions for DOE
 - Obtain environmental data needed to characterize operating conditions
 - Develop integrated models to understand system dynamics
 - Consider integrated workshop between engineers and marine scientists

What Have We Learned

- Regulations not originally intended for offshore wind systems
- Section 10 provides for permit authority to the U.S. Army Corp of Engineers and NEPA provides for the environmental review process
- Multiple agencies have authority for the same marine resource
 - Significant state role
 - Jurisdictional gaps not yet identified
- Timeframe for federal permitting and approvals is a minimum of 3 years

What Have We Learned

- Workshops demonstrate there is a breadth of stakeholder concerns
 - Need to share information and standards
 - Uncertainties with best available data
 - Benefits are not well established or communicated
- Offshore wind is a nascent industry without statutory interpretation, case law or administrative guidance
- Cubin Bill would change jurisdictional control of the OCS and national licensing policy offshore
 - Institutional issues are dynamic
 - <http://thomas.loc.gov/cgi-bin/query/z?c108:H.R.793>:

Current Project Events

- Corps of Engineers applications and public notices
 - MA
 - NY
 - VA
 - Buffalo

Cape Wind Nantucket Sound

- First project in the nation – 468 MW
- 130 - 3.6 MW GE turbines
- About 24 square miles
- Draft environmental impacts statement (EIS) schedule delayed – 3 year NEPA process
- 2 lawsuits
 - Ten Taxpayers Citizen Group vs. Cape Wind Associates (8/03)
 - Alliance vs. US Army Corp of Engineers (9/03)
- Extensive stakeholder involvement
<http://www.mtpc.org/offshore/index.htm>

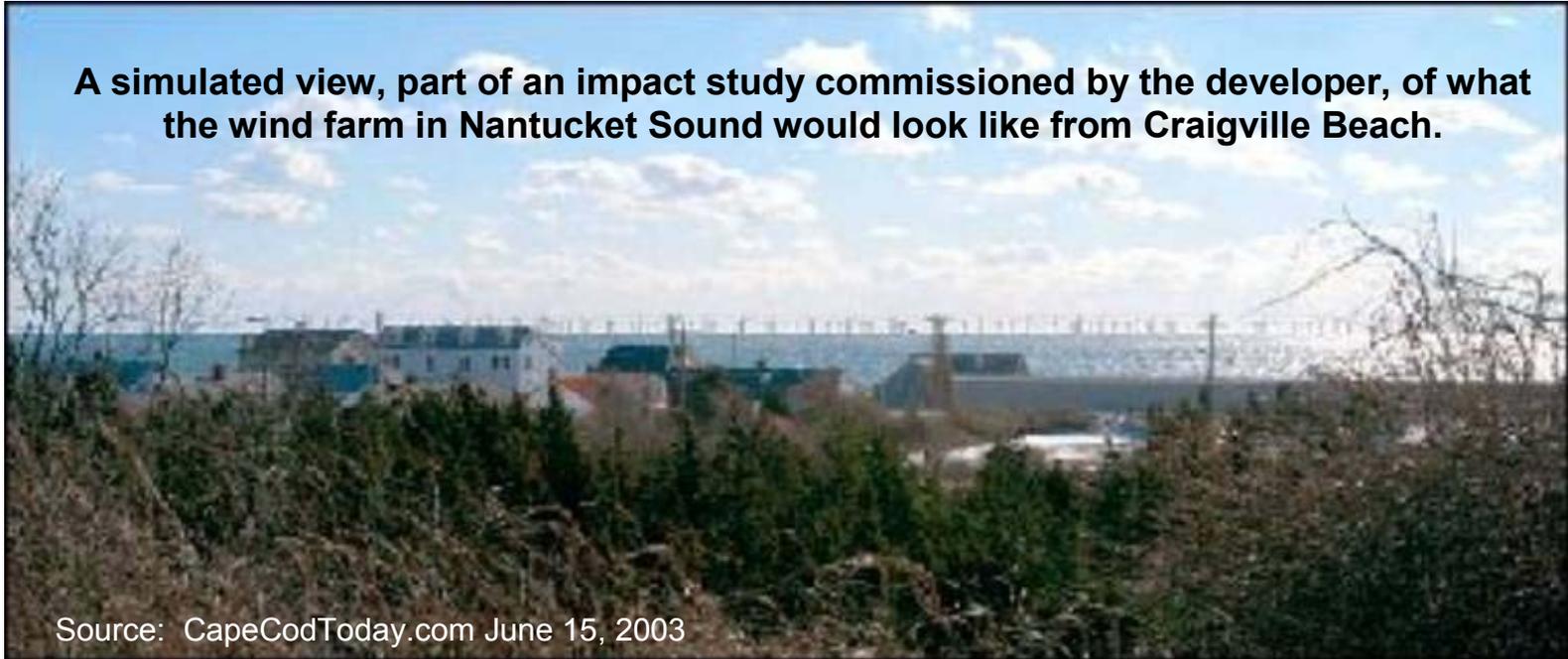


Long Island Power Authority – Jones Beach

- Feb. 2003 LIPA issued competitive RFP
- Decision expected by end of 2003
- 100-150 MW
- LIPA, a municipal utility, is guaranteeing purchase power agreement
- Substation construction
- Public involvement process
- State political support
- See <http://lioffshorewindenergy.org/>

Cape Wind & LIPA View Simulations

A simulated view, part of an impact study commissioned by the developer, of what the wind farm in Nantucket Sound would look like from Craigville Beach.



Source: CapeCodToday.com June 15, 2003



**7.5 miles
from shore**

**3 miles
from shore**



1 mile off Jones Beach

Source: LIPA website www.lipower.org

Thank you for your attention

