

## Wind Energy: Politics, Law and Property Rights

John Wargo  
Professor, Yale University  
Lecture 23  
Environmental Politics and Law  
April 20, 2010

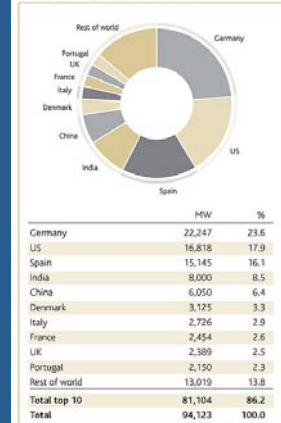
## On the Horns of a Quadlemma



## The Potential of Wind/Solar (NAS)

- Solar and wind renewable resources offer significantly larger total energy potential than do other domestic renewable resources.
- Solar intensity varies across the nation, the land-based solar resource exceeds, by several thousand-fold, present annual U.S. electrical energy demand.
- Wind is capable of providing at least 10 percent to 20 percent, and in some regions potentially higher percentages, of current electrical energy demand.

TOP 10 TOTAL INSTALLED CAPACITY



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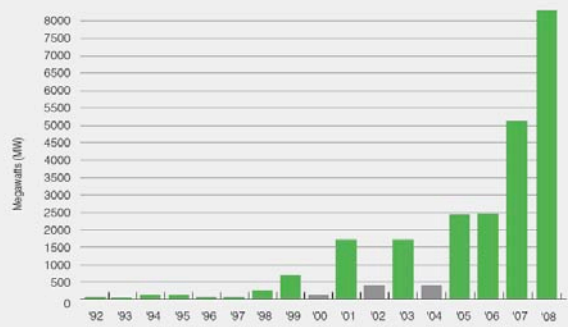
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### Taxes to Encourage Renewables? Energy Tax Incentives Act of 2005

- Income from the activity may be excluded from gross income—and not taxed.
- Income may be taxed at a lower rate.
- The expense from the activity may be deducted more quickly (Sec 179 vs. auto)
- The expenses may be eligible for a tax credit.

### Production Tax Credits

Annual Installed U.S. Wind Power Capacity



### Business Solar Tax Credit

- Offer a 30% tax credit for purchase of equipment that produces solar electricity.

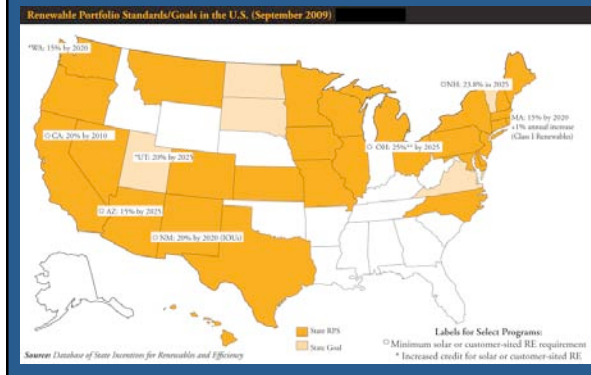
### Business Fuel Cell Credit

- Fuel cells produce energy by electrochemical means and do not produce GHG emissions—although fuels used by cells may be created by using fossil fuels.

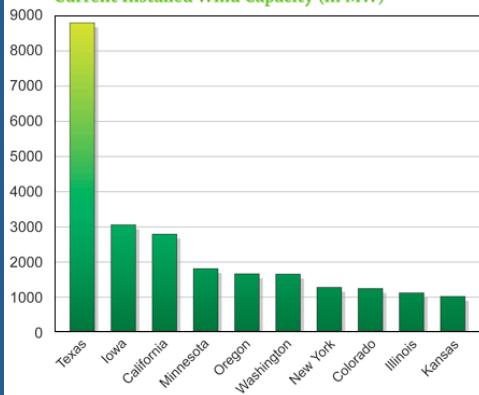
## Residential Energy Efficient Property Credit

- Personal Tax Credit for Eligible Efficient Technologies:
  - Water Heaters, Furnaces, Boilers, Heat pumps, Central Air conditioners, Building Insulation, Windows, Doors, Roofs,
- Credit Amount: 30%

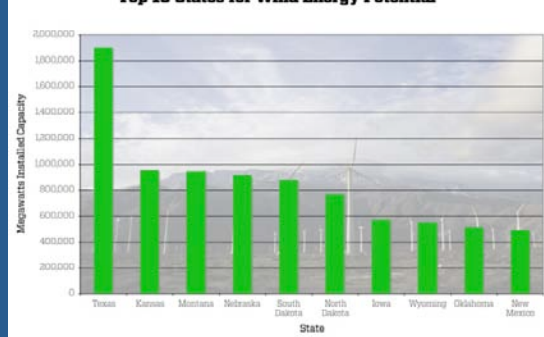
## State Renewable Energy Portfolio Standards



Current Installed Wind Capacity (in MW)

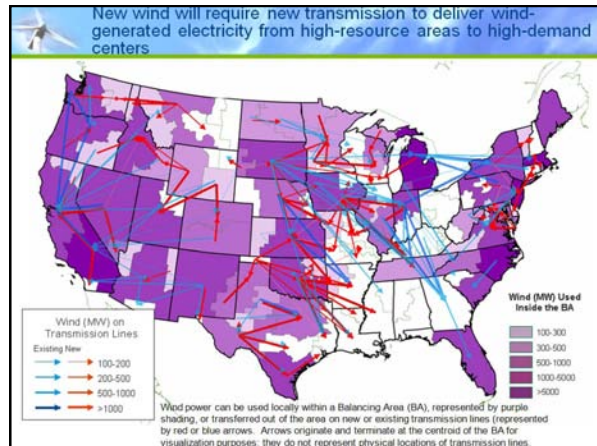
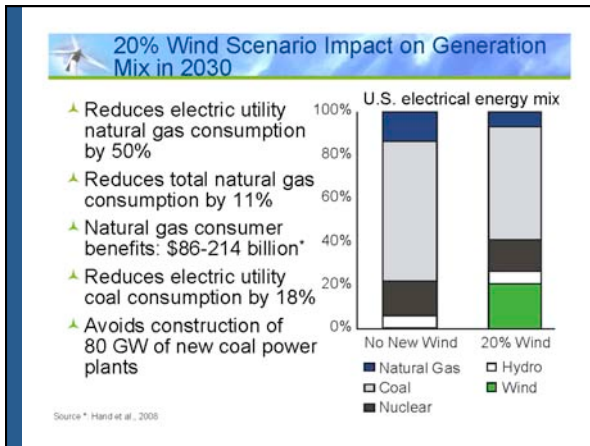
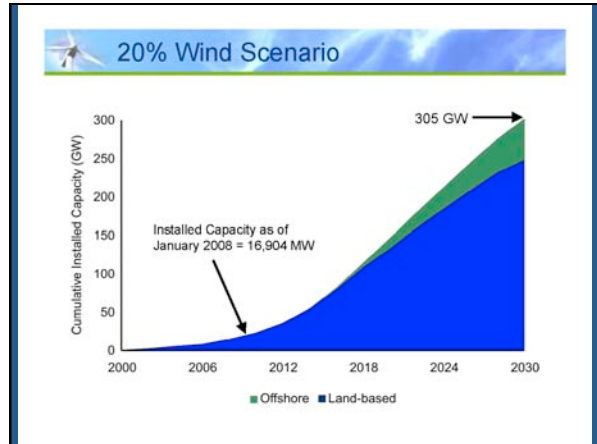
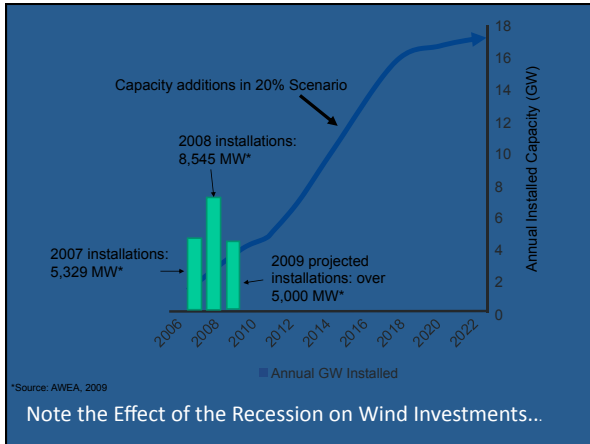


Top 10 States for Wind Energy Potential



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### Transmission

- Enhancement of electrical transmission system required in all electricity-growth scenarios
- Transmission is needed to:
  - Relieve congestion in existing system
  - Improve system reliability for all customers
  - Increase access to lower-cost energy
  - Access new and remote generation resources
- Wind requires more transmission than some other options as best winds are often in remote locations


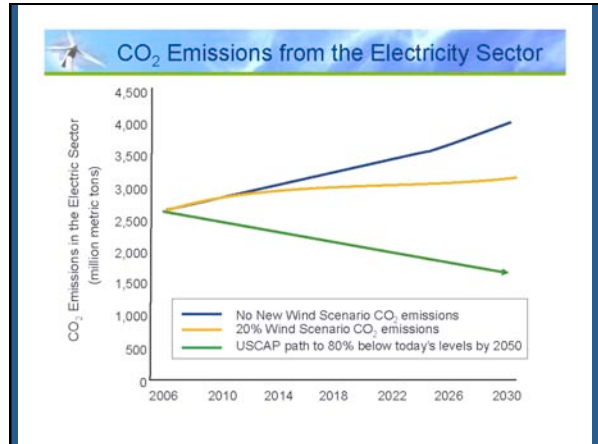




Photo courtesy: NREL



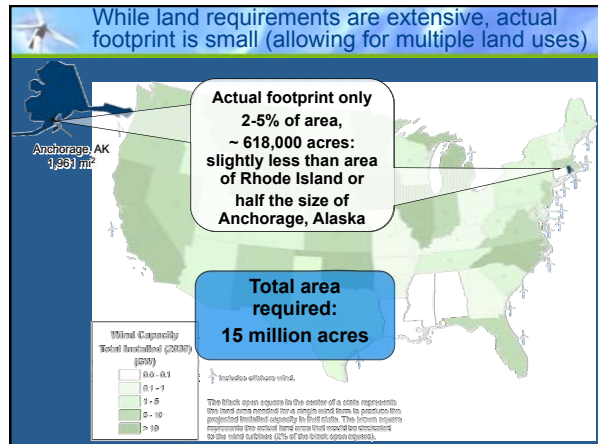
### Site Selection Concerns

- Visual impacts
- Property value impacts
- Fish and Wildlife Habitat
- Turbine or rotor noise
- Land use

Wind generation is responsible for 0.003% of human-caused avian mortality (National Research Council, 2007)

Bat mortality has been higher than expected

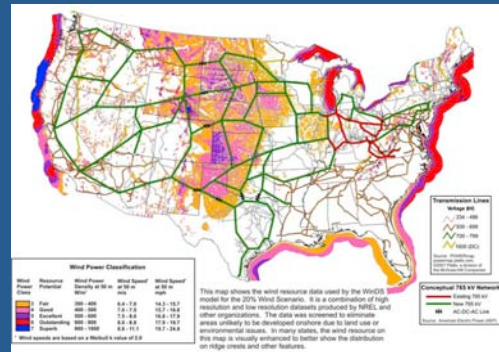


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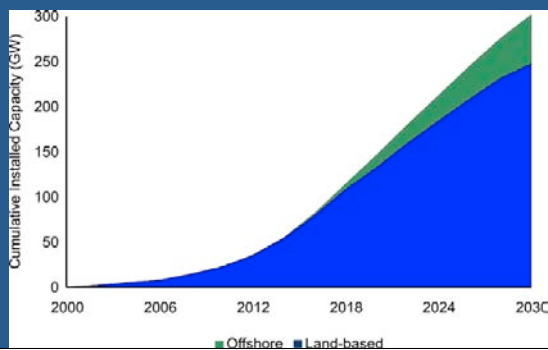
### Common Law Access to Wind & Solar?

- Does a developer have the right to block access to a resource such as wind, solar radiation, water, or sand along the shoreline?
- Common law is unclear, unless there is malicious intent.
- Unlike underground minerals, no one can extract wind or solar radiation from your property without your consent.

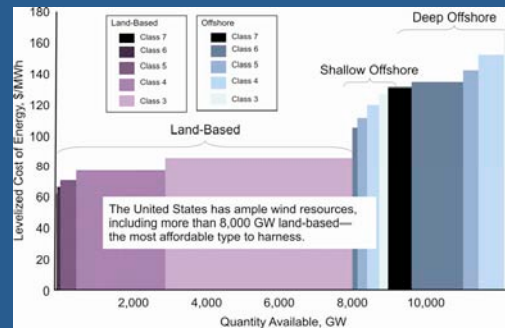
### U.S. Wind Capacity



### 20% Wind by 2030

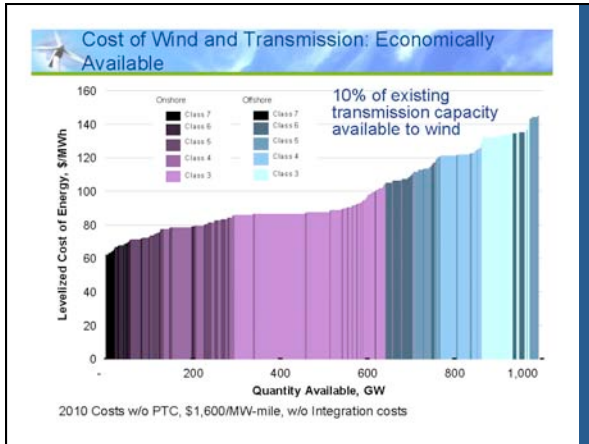


### Cost/MWhr: Land v. Sea

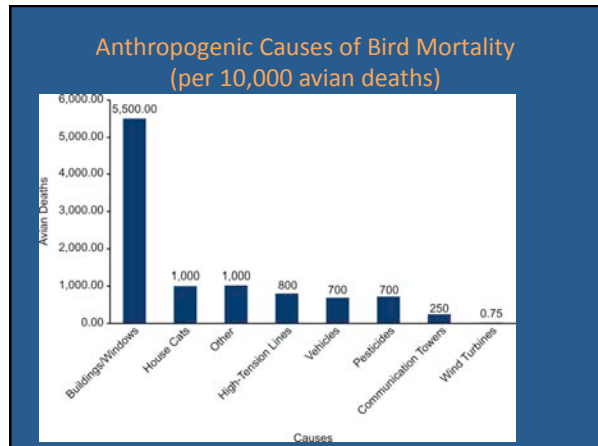
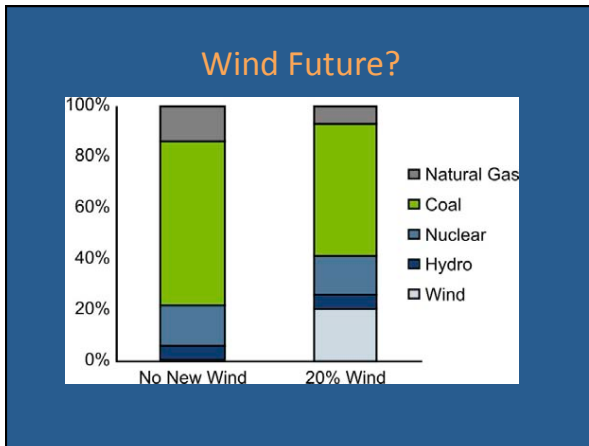


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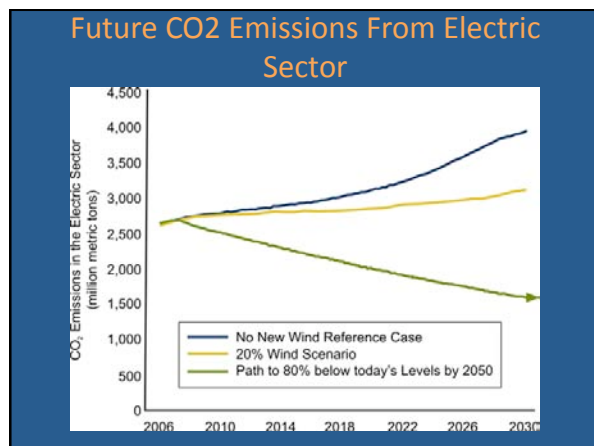
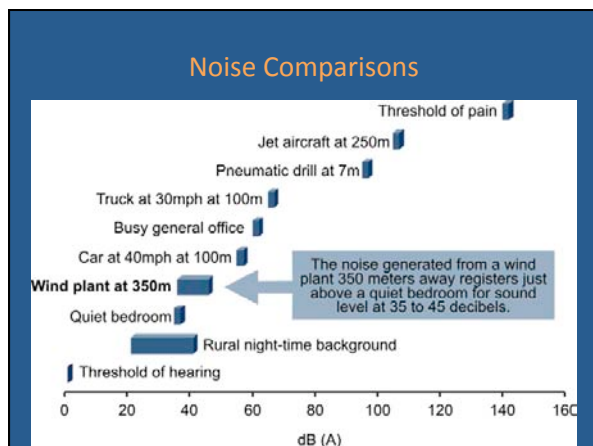


- ### Benefits?
1. Environment: Avoids Significant Air Pollution from Fossil Fuels
  2. Climate: Reduces Electric Sector CO2 Emissions by 825 million metric tons / year
  3. Water: Reduces Electric Sector Water Use by 4 trillion gallons / year (8%)
  4. Reduced Coal Use: Nuclear, Hydro likely to remain stable.
  5. Reduced Cost / KW Hour
  6. Tax Revenues for Local Communities in Development Areas



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## State Renewable Portfolio Standards

25 states plus the District of Columbia have established renewable portfolio standards (RPS) requirements, which proscribe the amount of renewable energy that must be produced within the state.

These compliance markets have been growing rapidly in recent years and hold the potential to substantially expand wind energy capacity.

Current state RPS policies call for about 55 GW of new renewable energy capacity by 2020, and a number of states are considering increasing their targets.

## US Utility Industry

200 investor-owned utilities (IOUs),

70 large municipal and federal or state systems,

50 rural generation and transmission cooperatives

3,000 local distribution companies.

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## Federal Energy Consumption

The federal government is the largest single consumer of electricity in the world.

Federal agency electricity consumption in 2005 was more than 55,000 gigawatt-hours (GWh), which would equate to approximately 18 gigawatts (GW) of wind capacity.

Federal agencies were encouraged to meet an executive order goal of 2.5% of site electricity from new renewable energy sources by the end of 2005.

Agencies exceeded the goal with a final tally of about 3,800 GWh (6.9%) of electricity consumed coming from renewable sources (DOE 2006).

There was a dramatic increase in 2004 and 2005, largely because of renewable energy certificate (REC) purchases by the Air Force, the General Services Administration, and the Environmental Protection Agency (EPA).

## Renewable Energy Credits

aka: Green Tags or Tradable Renewable Certificates

Renewable Energy Certificates: are tradable, non-tangible energy commodities in the United States that represent proof that 1 megawatt-hour (MWh) of electricity was generated from an eligible renewable energy resource (solar, wind, geothermal, hydro, biomass, hydrogen fuel cell derived).

## 500 Sq Miles of Nantucket Sound

- Mashpee Wampanoag of Cape Cod and Aquinnah Wampanoag of Martha's Vineyard

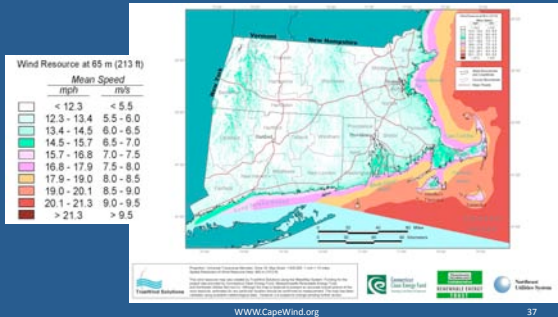


## Rhode Island Takes a Different Path

- \$200 million eight-turbine project off Block Island,
- \$1.5 billion farm in the eastern Rhode Island Sound — and has selected a preferred developer, [Deepwater Wind](#).

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### Locating Commercial Grade Wind: Offshore



### Cape Wind Park Proposal Cape Cod, Massachusetts

- 130 WTGs (3.6MW)
- Electric Service Platform
- Two 115 kv circuits to shore – two cables each
- 468 MW Generating Capacity
- On Average, 75% entire electrical requirements of the Cape & Islands.
- On-peak and high capacity factor production.

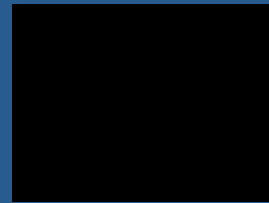
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### Imagine Sailing Through a Farm



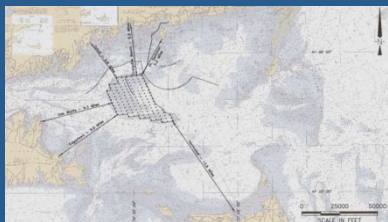
### Environmental Opinions?



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## Site Locus



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## Completed Six Years of Environmental Study

- Surface and Subsurface Geological Conditions
- Wind, Tide and Wave Conditions
- Sediment Transport Patterns
- Benthic Infauna and Shellfish Resources
- Essential Fish Habitat Assessment
- Commercial and Recreational Fisheries
- Marine Mammals and Threatened & Endangered Species

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## Completed Six Years of Environmental Study - continued

- Avian Autecology and Risk Assessment
- Visual Impact Assessments
- Navigational Transit and Vessel Type Assessment
- Marine Archaeological/Cultural Resources
- Aviation Flight Patterns and Conditions
- Shoreline Landfall Conditions Assessments

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## Successful Federal Court Litigation

- Alliance to Protect Nantucket Sound v. ACOE, 228 F. Supp. 2d 24 (D. Mass 2003), aff'd 398 F.3d 105 (1<sup>st</sup> Cir. 2005);
- Ten Taxpayers v. Cape Wind Associates, 278 F. Supp. 2d 98 (D. Mass 2003), aff'd 373 F.3d 183 (1<sup>st</sup> Cir. 2004), cert. denied, 160 L. Ed. 2d 1069 (U.S. 2005).
- Courts upheld ACOE's well-established authority over permitting of non-extractive structures on the Outer Continental Shelf ("OCS")
- ACOE role now supplemented by MMS Leasing Role per Energy Policy Act of 2008

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## State Permitting Status

- Petition for transmission facilities filed with Massachusetts Energy Facilities Siting Board ("EFSB") on September 17, 2002.
- Twenty-one days of hearings, Fifty Thousand page evidentiary record.
- EFSB Approved petition on May 11, 2005.
- Massachusetts Supreme Judicial Court UPHELD Approval on December 18, 2006, Alliance to Protect Nantucket Sound v. EFSB, SJC-09689.
- Petition for Comprehensive Override Certificate pending; Final Decision due in Fall 2008.

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## Key Adjudicatory Findings of the EFSB on behalf of Massachusetts

- **Need:** There is a need for capacity provided by this wind farm beginning in 2007 for reliability purposes" (EFSB 02-2 at 152); "There will be a need for the renewable resources produced by the wind farm to meet regional RPS requirements in 2006" (Id. at 156);
- **Air Quality:** "Overall, the Siting Board finds that the air quality benefits of the wind farm are significant, and important for Massachusetts and New England" (Id. at 189);
- **Reliability:** "The variability or the unpredictability of the energy generated by the wind farm is unlikely to adversely affect the reliability of the electric system" (Id.);
- **Cost Savings:** "The record shows that the wind farm will tend to reduce market clearing prices for electricity because it typically will be bid into that market at its marginal operating costs, which are close to zero, and displace power plants with higher marginal costs. The savings resulting from this displacement would accrue to electric customers, and are estimated to be \$25 million per year for New England customers...." (Id. at 162.)

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## Federal Permitting Status

- NEPA process, lead by MMS, with 17 participating agencies.
- Favorable Draft Environmental Impact Statement issued by ACOE in November 2004.
- MMS released favorable DEIS on January 15, 2008
- Final EIS and MMS Lease scheduled for Fall of 2008

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## Favorable Comments on DEISs

- **NRDC:** "[Cape Wind] is, to our knowledge, the largest single source of supply-side reductions in CO<sub>2</sub> currently proposed in the United States and perhaps the world."
- **USDOE Asst. Secretary Garmon:** "As the first shallow water offshore project under review in the United States, utility-scale projects like Cape Wind are important to our national interest and a crucial first step to building a domestic, globally competitive wind industry."
- **Former USDOE Asst. Secretary and Massachusetts Secretary of Environmental Officers Susan Tierney:** "[The Cape Wind DEIS] is thorough. It is detailed. It identifies, analyzes and describes a wide array of impacts with great care, detail and comprehensiveness. Indeed, it is one of the most thorough that I have ever seen."

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2010: NPS- Nantucket Sound is Eligible for Listing on National Registry of Historic Places.

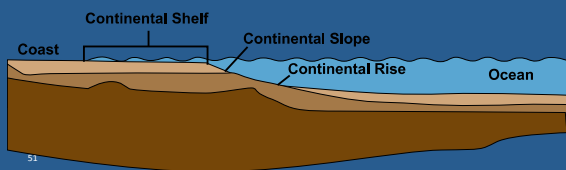
## Secretary of Interior, Ken Salazar...

<http://www.youtube.com/watch?v=inuWTwTisE4>

## Siting Authority – Federal Waters

Outer Continental Shelf (OCS) under the jurisdiction of:

- Minerals Management Service (MMS)
- Federal Energy Regulatory Commission (FERC)



## Siting Authority – State Waters

- Great Lakes
  - each state out to center of lake
- Atlantic/Pacific coasts
  - up to 3 nautical miles offshore
- Gulf of Mexico (Texas, Florida)
  - 9 nautical miles offshore

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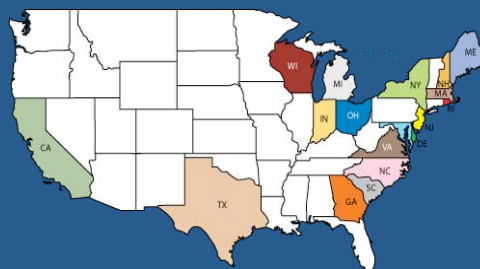
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## Outer Continental Shelf Permitting/ Siting of Offshore Wind

- Minerals Management Service (MMS) lead federal permitting agency under NEPA
- Requires consultation with numerous other federal agencies, including U.S. Coast Guard, Fish & Wildlife Service, FERC, Federal Aviation Administration, *PLUS* state agencies.

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## States Active in Offshore Wind



Source: U.S. Offshore Wind Collaborative, [www.usowc.org](http://www.usowc.org)

## Rhode Island

- Ocean Zoning Special Area Management Plan
- Selected Preferred Developer
- June 2009: Legislation signed into law that requires state's largest electricity supplier to purchase energy from offshore wind farm.

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## Conclusions: Credits & Subsidies

- Compare to Public Subsidies of Oil Industry
- Compare to Auto Industry and Banks in 2009

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## Conclusions: Land Use Regulation

- *Zone for Wind Farms*
- Offer Development Credits to Adjacent Landowners to Increase Density Elsewhere
- Require Minimum Acreage
- Regulate Lot Dimensions
- Zone for Transmission Lines: Existing Corridors

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## Conclusions: Property Issues

- *Onshore vs. Offshore Rights*
- Coal Bed Methane (Subsurface) vs. Wind
- Right to Block Wind?
- Right to Block Solar Radiation?
- Basis for Civil Action as a Nuisance?

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## Damages? Magnitude and Distribution?

- Wildlife and Fish
- Noise
- Aesthetics
- Vibration
- Shadow & Flicker Effects
- Property Values
- Recreational Access



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## Reversibility of Decision



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