

# Ocean Energy: The Power to End the Fossil Fuel Age

New England Wind Energy  
Education Conference

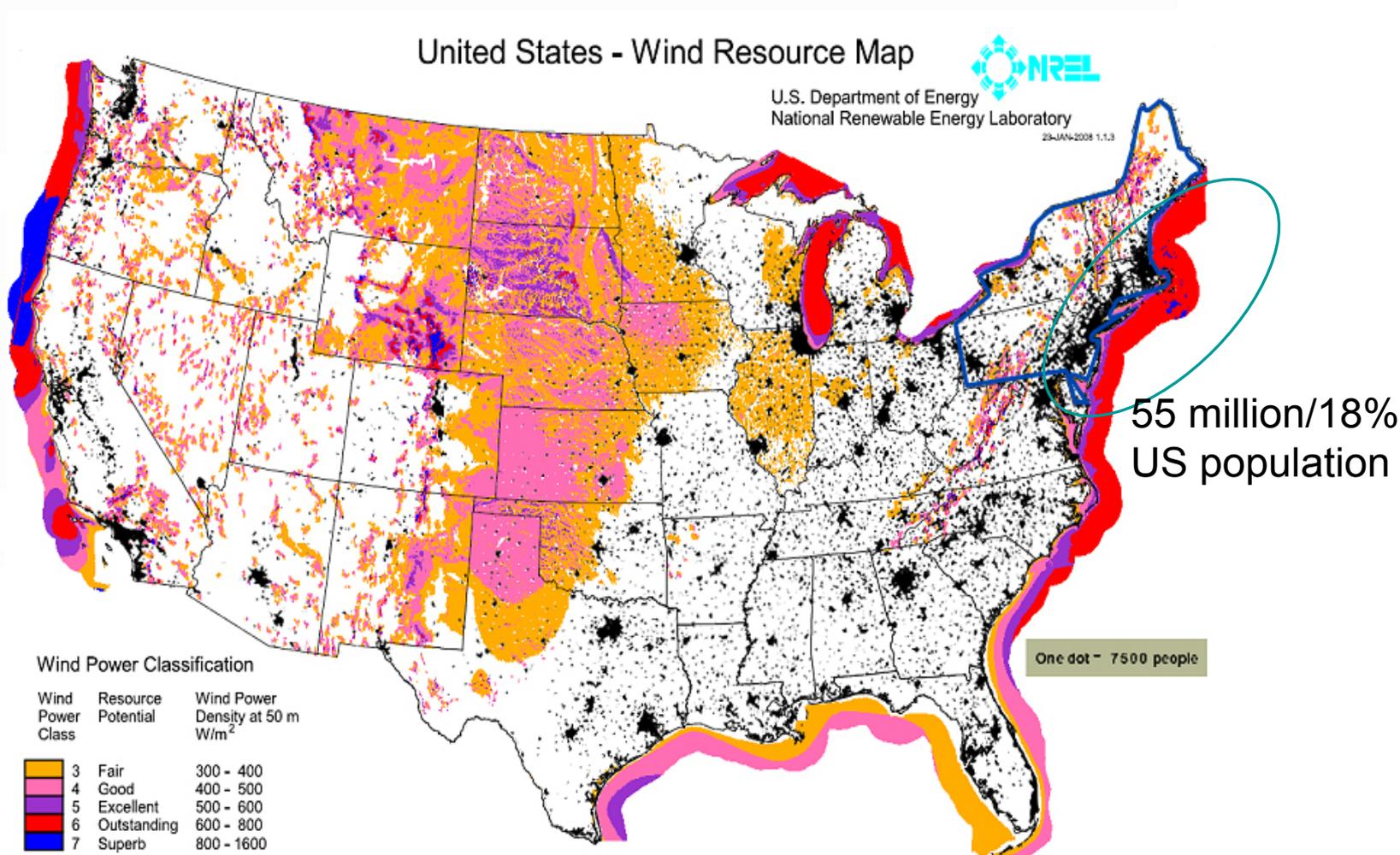
June 7, 2011

Beth Nagusky  
Maine Office Director  
ENE (Environment Northeast)





# Oceans: A Source of Green Energy for the Northeast U.S.



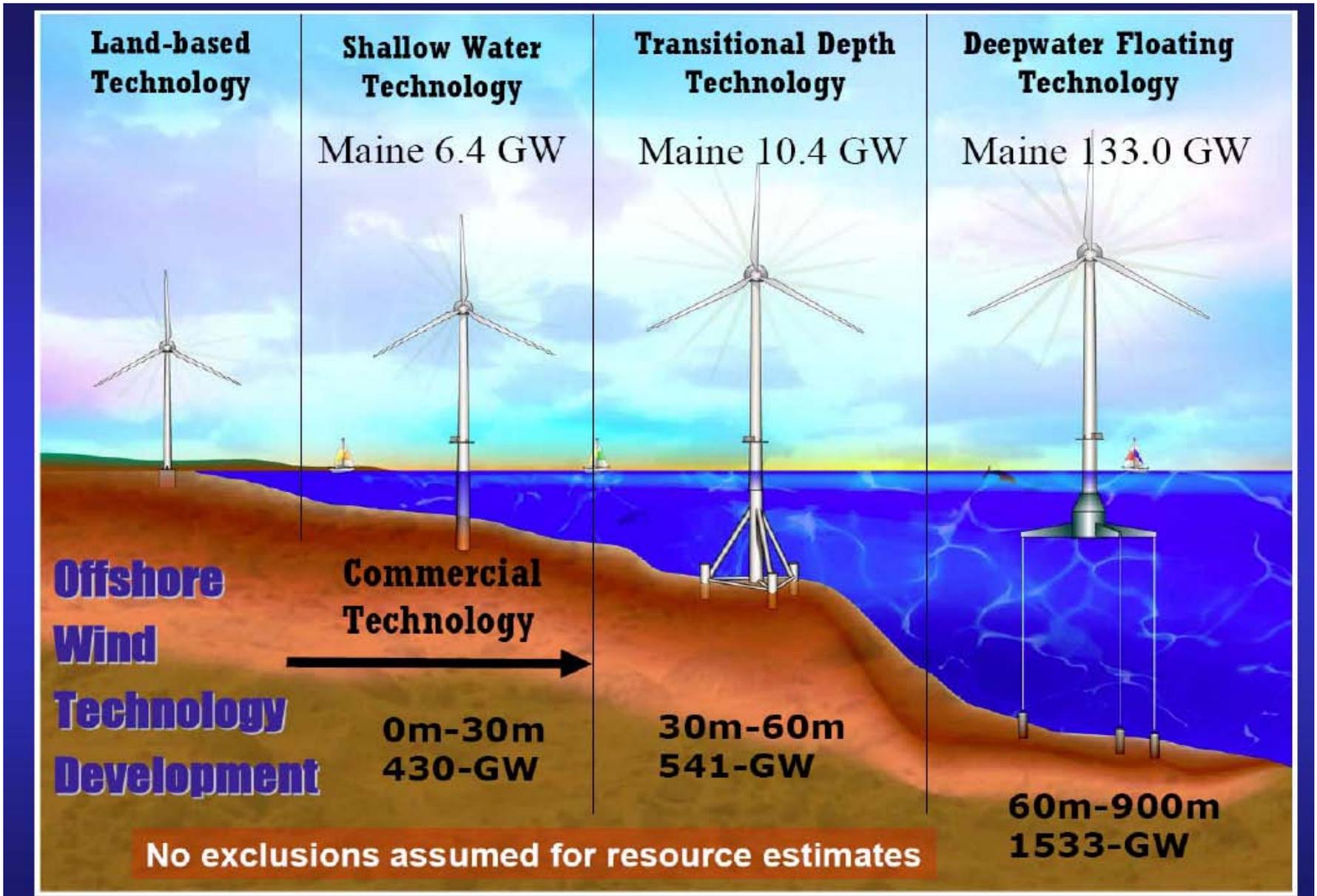
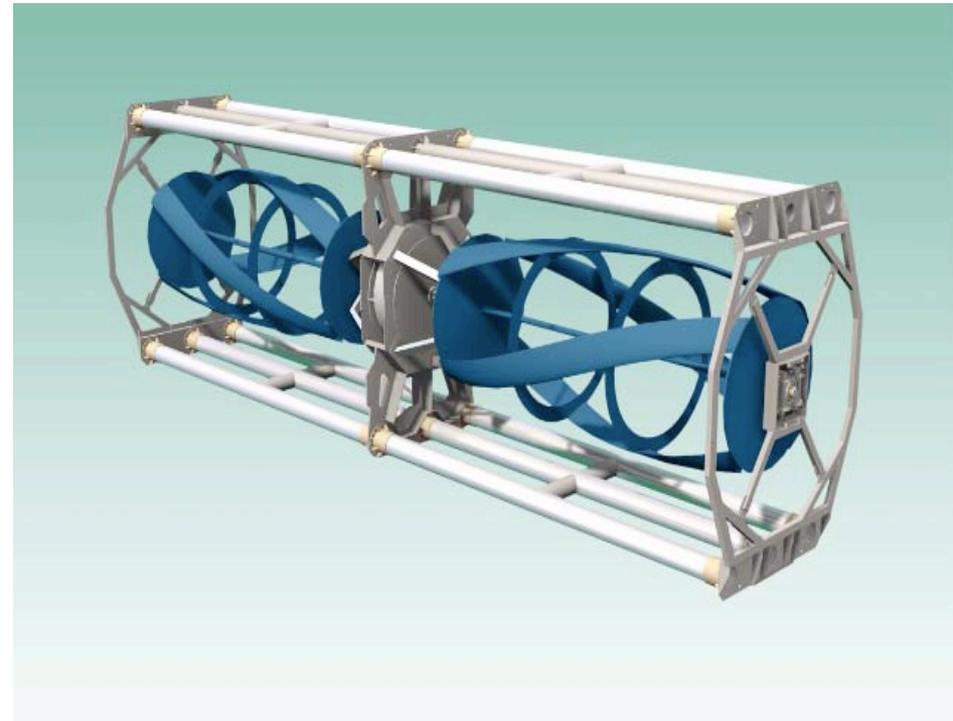


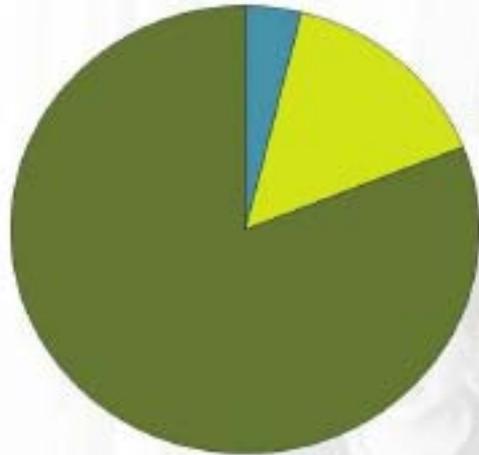
Diagram Courtesy of MIT

# Reduced Visual Impacts and User Conflicts



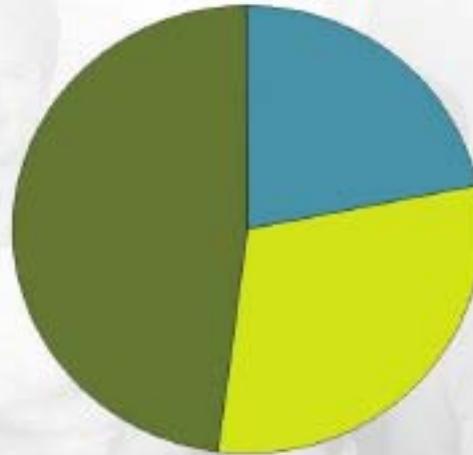
# Maine Family Budget

Energy ~5%



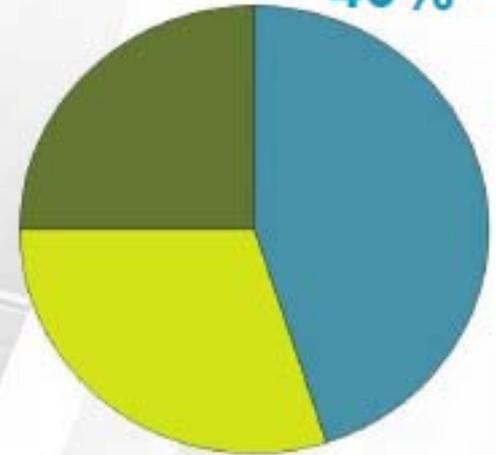
1998

Energy ~20%<sup>2</sup>



2008

Energy ~40%<sup>3</sup>



2018

“Family Energy”<sup>1,2</sup> = 50% Transportation  
40% Heating  
10% Electric Power

<sup>1</sup> Source: Gov. King, George Hart

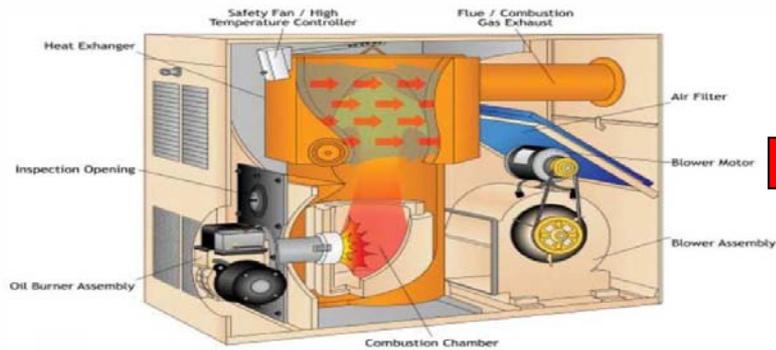
<sup>2</sup> Based July '08 energy costs

<sup>3</sup> Assumes that health care costs do not grow past 30% of the average family budget in 2008-2018

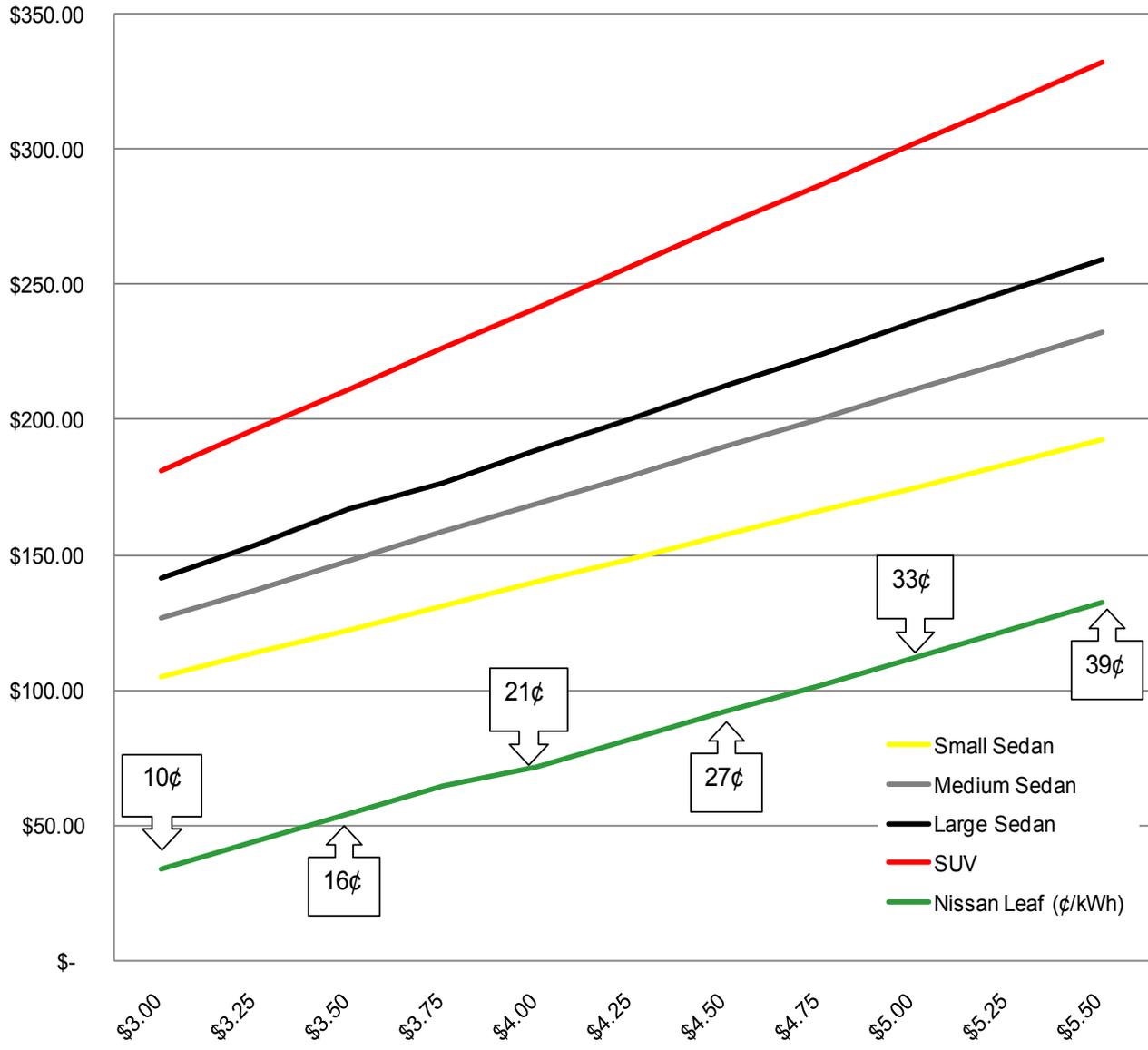
# The Past : The Future



OIL  
FURNACE



Monthly Commuting Cost Daily Round-Trip Commute of 50 mile

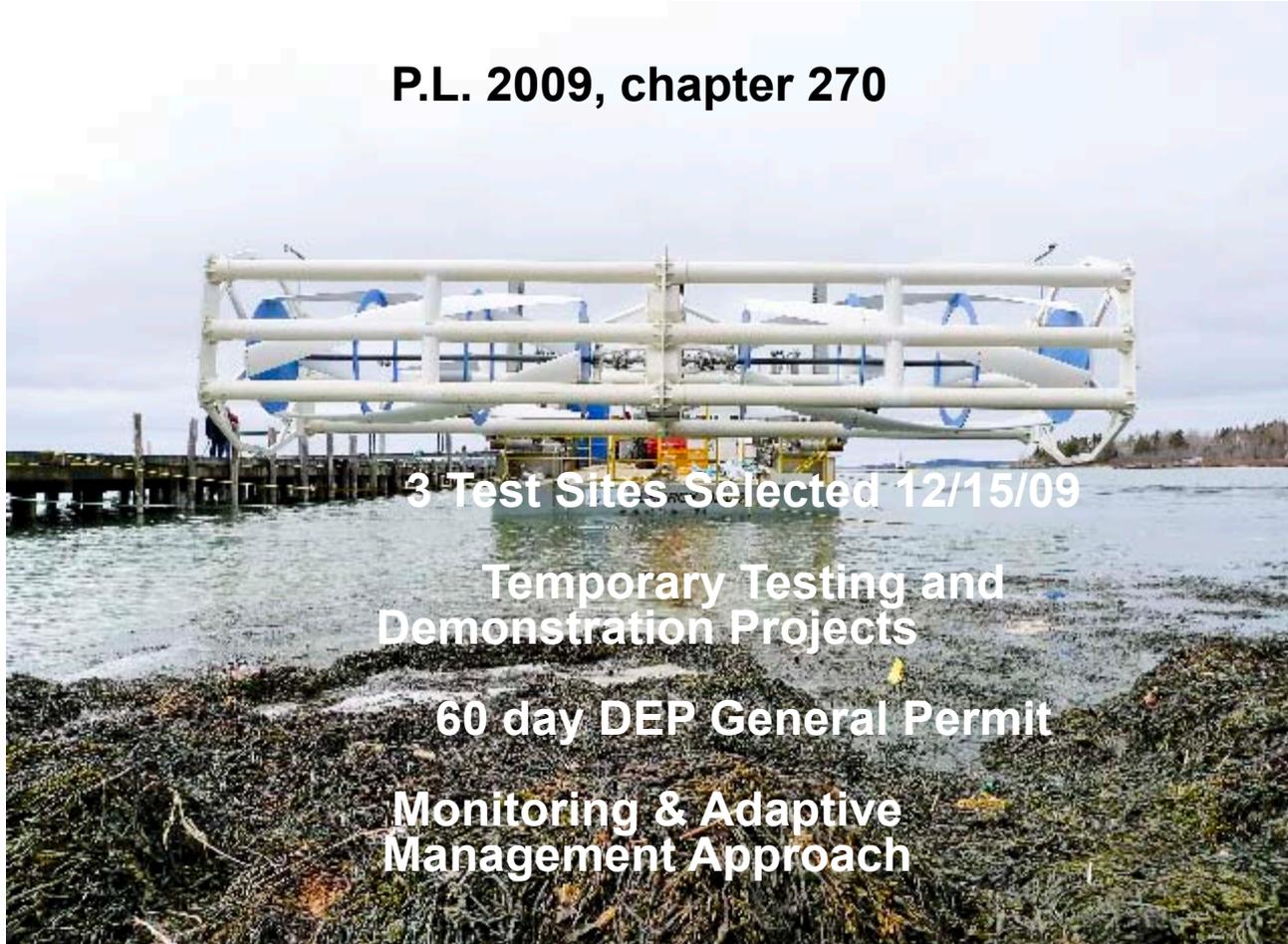


Price per Gallon of Gasoline

- Small Sedan
- Medium Sedan
- Large Sedan
- SUV
- Nissan Leaf (¢/kWh)

# **An Act To Facilitate Testing and Demonstration of Renewable Ocean Energy Technology**

**P.L. 2009, chapter 270**



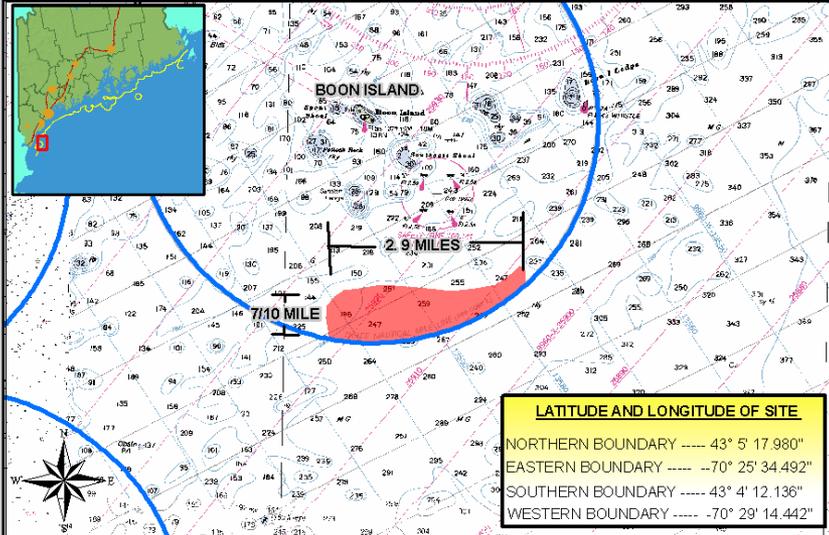
**3 Test Sites Selected 12/15/09**

**Temporary Testing and  
Demonstration Projects**

**60 day DEP General Permit**

**Monitoring & Adaptive  
Management Approach**

MAP A



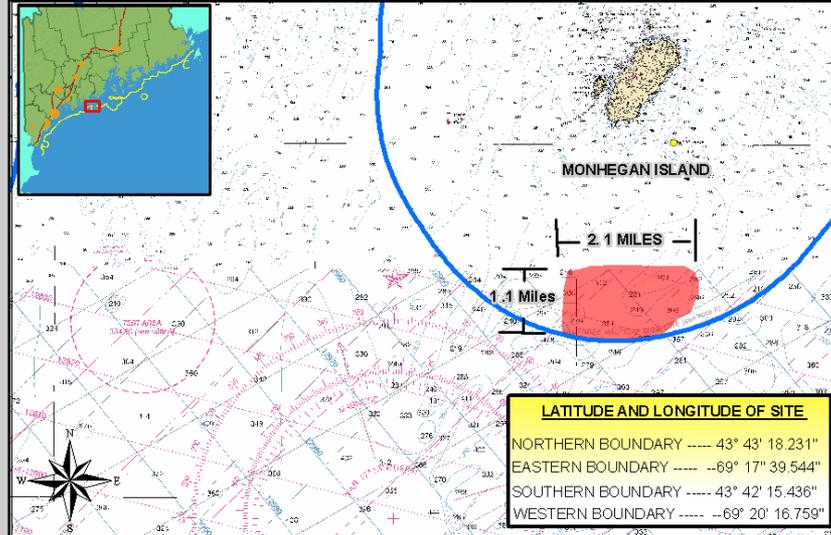
State Marine Boundary  
 Test Site

**BOON ISLAND OCEAN ENERGY TEST SITE**

0 0.3 0.6 1.2 1.8 2.4 Miles

Map by Matthew Nixon  
 NOAA's State Planning Office  
 SAKEP, ME SPO, ME DMR,  
 ME DEPME IPW, ME DCR,  
 NOAA, US FWS, BMS

MAP C



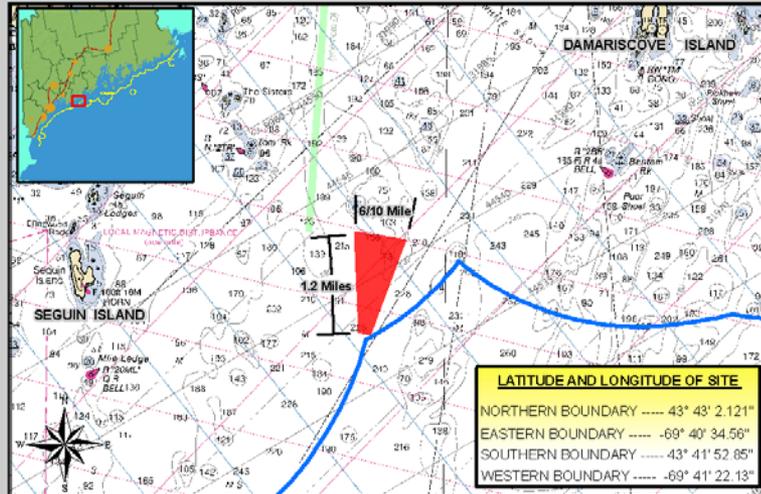
State Marine Boundary  
 Demonstration Site

**MONHEGAN ISLAND OCEAN ENERGY DEMONSTRATION SITE**

0 0.3 0.6 1.2 1.8 2.4 Miles

Map by Matthew Nixon  
 NOAA's State Planning Office  
 SAKEP, ME SPO, ME DMR,  
 ME DEPME IPW, ME DCR,  
 NOAA, US FWS, BMS

MAP B



State Marine Boundary  
 Test Site

**DAMARISCOVE OCEAN ENERGY TEST SITE**

0 0.2 0.4 0.8 1.2 1.6 Miles

Map by Matthew Nixon  
 NOAA's State Planning Office  
 SAKEP, ME SPO, ME DMR,  
 ME DEPME IPW, ME DCR,  
 NOAA, US FWS, BMS

# **An Act To Implement the Recommendations of the Governor's Ocean Energy Task Force**

**P.L. 2009, chapter 615**



**Offshore wind goal: 5 GW by 2030  
RFP for 25 MW deepwater wind &  
<5 MW tidal w/price cap  
Encourage adequate T&D infrastructure  
Environmental permitting  
Submerged Lands Leasing**

# Offshore Wind Job Estimates

An aerial photograph of an offshore wind turbine in the ocean. The turbine is a three-bladed design with a white nacelle and tower. The blades are white with red and black tips. The tower is supported by a steel jacket structure. The ocean is dark blue with whitecaps. In the background, other wind turbines are visible on the horizon.

- OEI Estimate: 1 GW deep-water wind =
    - $\leq 2,691$  mfg. jobs
    - 3,893 construction and installation jobs
    - 135-271 O&M jobs
    - 620 indirect/induced jobs
  - NOEP study (Colgan): 53.9 GW offshore wind by 2030
    - 113,079 (7,000-404,000) mfg. jobs
    - 50,118 construction jobs
    - 12,804 operating jobs
    - 47,395 R&D jobs
- Mean est. of total jobs: 250,000

# ORPC Statewide Economic Impact

Maine Partners, Contractors, Service Providers and Vendors

## Androscoggin, Kennebec & Oxford Counties

Affordable Office Solutions  
Connectivity Point  
Northland Industrial Truck Co.  
Second Street Consulting  
Small Hydro East  
The Barn

## Penobscot, Somerset & Hancock Counties

Aerohydro Inc.  
Alexander's Welding and Machine  
Blue Hill Hydraulics  
Burton G. Fisheries  
CES, Inc.  
Downtown Marine Resources  
G. Drake Masonry

Land-Air Express of New England  
Maine Maritime Academy  
MariSources  
NES Rentals  
SGC Engineering  
Stillwater Metalworks  
University of Maine

## Washington County

### ORPC Eastport Office

AD Pottle Trucking  
Archi-CHECK, LLC  
Brayden's Future  
Brewster Construction  
Cobscook Bay Resource Center  
Cooke Aquaculture  
D&B Marine Salvage  
DiCenzo Crane Diving Services  
Eastern Plumbing  
City of Eastport  
Eastport Port Authority  
ECR Refrigeration  
Federal Marine Terminals  
Captain Butch Harris  
H&H Marine  
Jamieson Diving  
Jason Leighton

Kilby House  
Town of Lubec  
Maine Marine Technology Center, *The Boat School*  
Milliken House  
Moose Island Marine  
Morrison Manufacturing  
The Motel East  
Murphy's Electric  
Newell Construction  
Perry Marine & Construction  
Preston's Septic & Portables  
Ricker Electric  
Stanhopes Trucking  
Dennis Turner  
Turner Signs  
Weston House B&B  
Woodland Machine Works

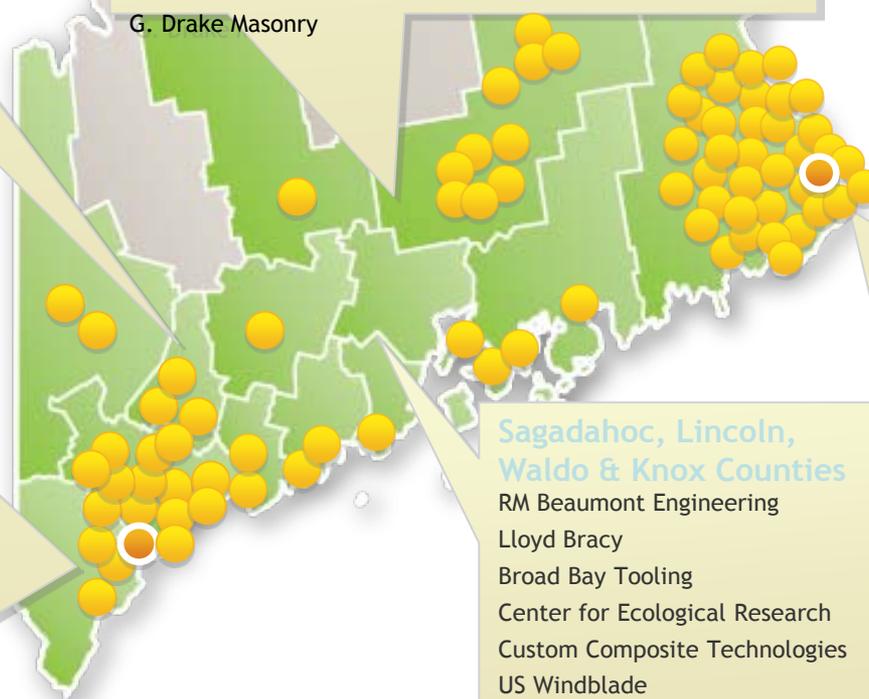
## Cumberland & York Counties

### ORPC Corporate Headquarters

Bonney Staffing Center  
Casco Bay Frames  
Edison Press  
Exhibit Source  
Flotation Technologies  
Writer, Camryn Hansen  
Harbor Technologies  
HDR/DTA Engineering  
La Capra Associates  
LMGi  
MER Assessment  
George Monaco  
Nelson & Wright  
Pierce Atwood  
W.B. Mason  
Winter People

## Sagadahoc, Lincoln, Waldo & Knox Counties

RM Beaumont Engineering  
Lloyd Bracy  
Broad Bay Tooling  
Center for Ecological Research  
Custom Composite Technologies  
US Windblade



# ORPC Statewide Economic Impact Job Creation and Investment

## *From 2007 to 2011, ORPC has:*

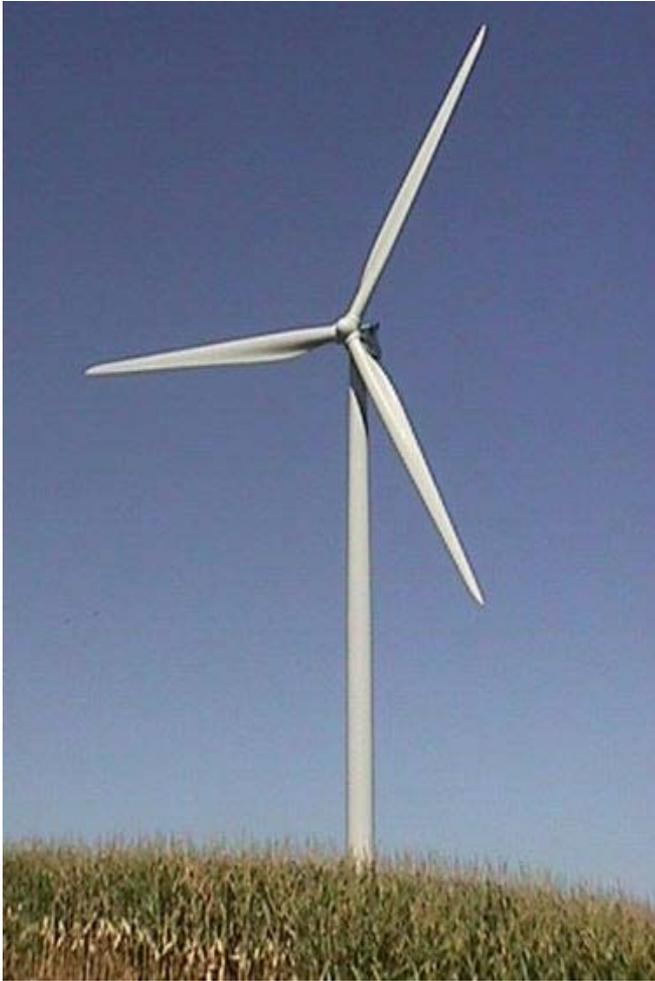
- Created or helped retain more than 100 jobs statewide
- Grown from 0 to 21 fulltime employees in Maine
- Spent over \$8 million on goods and services in thirteen of Maine's sixteen counties
- Created new R&D and other professional opportunities for young Mainers
- Jump started the ocean energy industry in Maine, setting the standard for coastal community relations

## *In the Next 7–10 Years, the Tidal Energy Industry in Maine will:*

- Create 400 to 500 direct jobs, including new working waterfront jobs
- Attract investment of up to \$1 billion in Maine
- Create new, sustainable markets for Maine's world class composites industry



# Electrification: Powering the End of Oil Dependence



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