

# Renewable Energy Opportunities

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MMA

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# AGENDA

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- MassCEC Overview
- Energy Context
- Renewable Energy Generation Opportunities
  - Organics
  - Hydro
  - Solar
  - Solar Hot Water
  - Wind

# A Brief History of MassCEC

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1997

- Electric Restructuring Act signed into law
- System benefit charge assessed by utilities
- Renewable Energy Trust Fund created, administered by MTC

2008

- Green Jobs Act → Creates MassCEC
- MassCEC to be central clearinghouse for clean energy community

2009

- Act Relative to Clean Energy → MassCEC assumes control of RET
- Clean energy economic development housed under a single roof

TODAY

- Renewable Energy Generation
- Investments in Clean Technology
- Market Development and Support

# Broad Statutory Mandate

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Advance Clean Energy Technology



Create Jobs



Develop a Trained Workforce



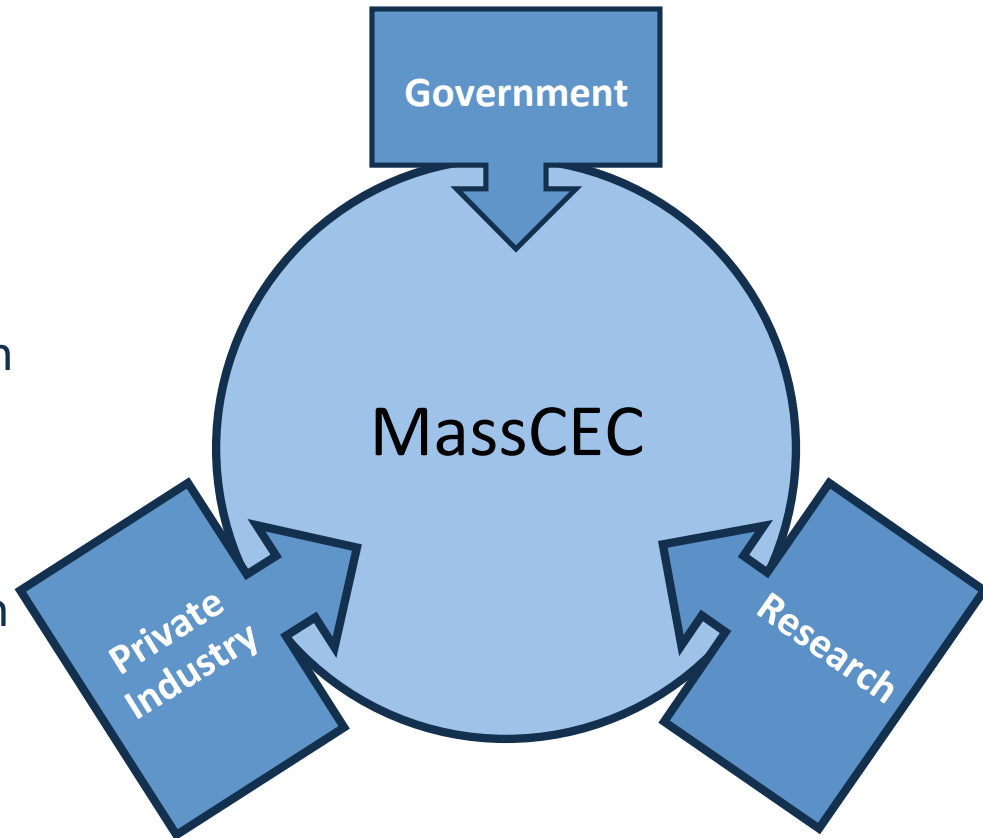
Accelerate Deployment of Clean Energy

# Our Role: Industry Connector & Convener

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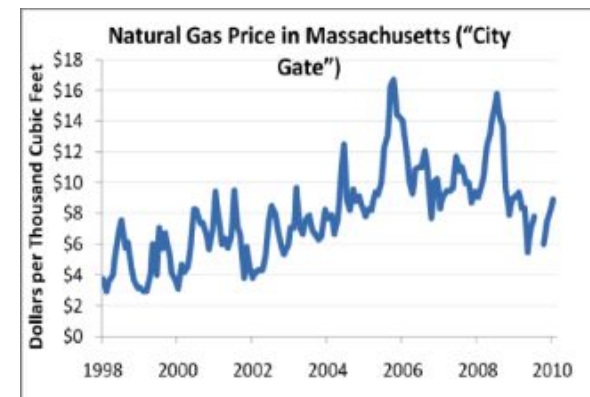
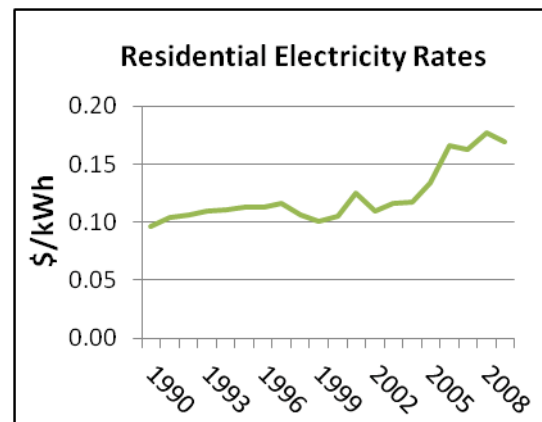
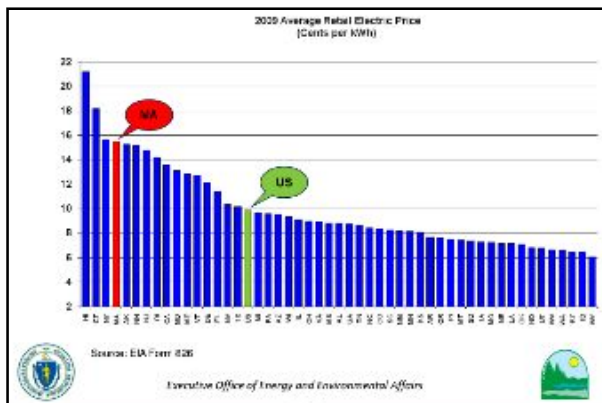
MassCEC drives growth by:

- Creating dialogue among government, industry and R&D
- Facilitating synergies and new partnerships within and between industry participants
- Implementing market-focused initiatives that accelerate growth and complement policy and regulation

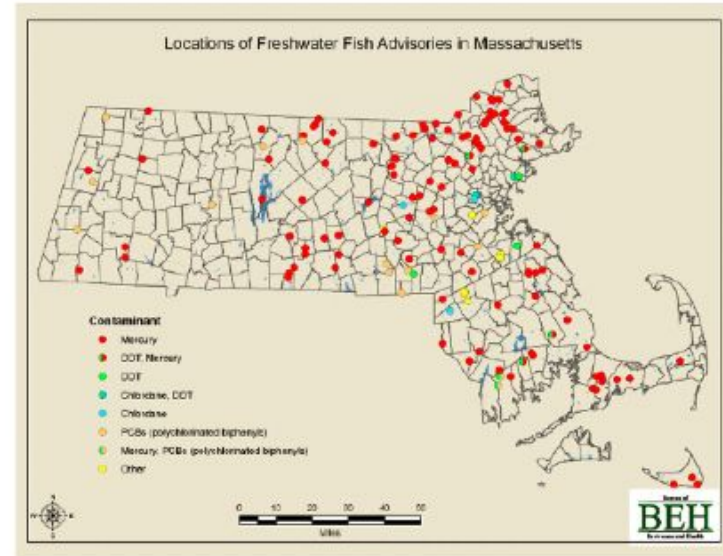
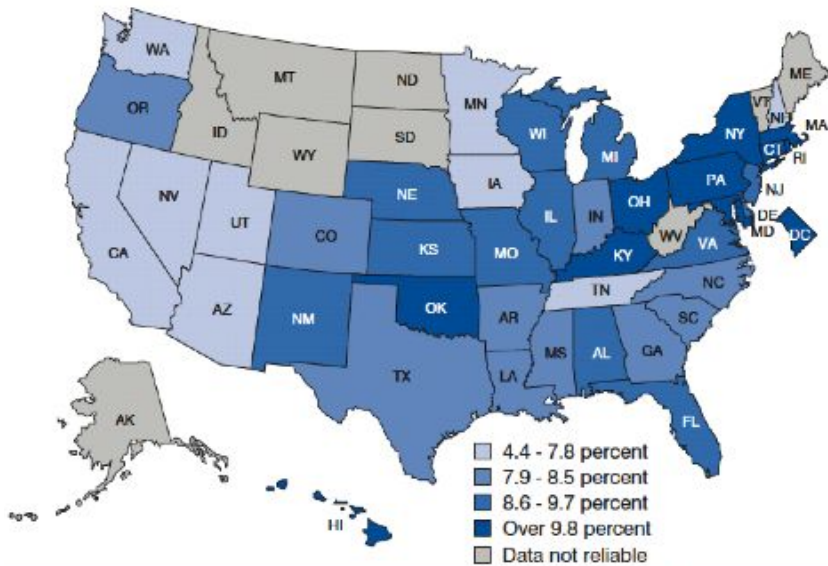


# Energy Issues in New England

- End of pipeline for traditional energy resources
  - Export ~\$20b in energy value annually
- Price volatility



# Energy Impacts in Massachusetts



**Asthma:** From 1990 to 2006, Massachusetts averaged 100 deaths per year from asthma

Source: MA DPH

**Mercury:** Pregnant women, women who may become pregnant, nursing mothers and children under 12 years old:

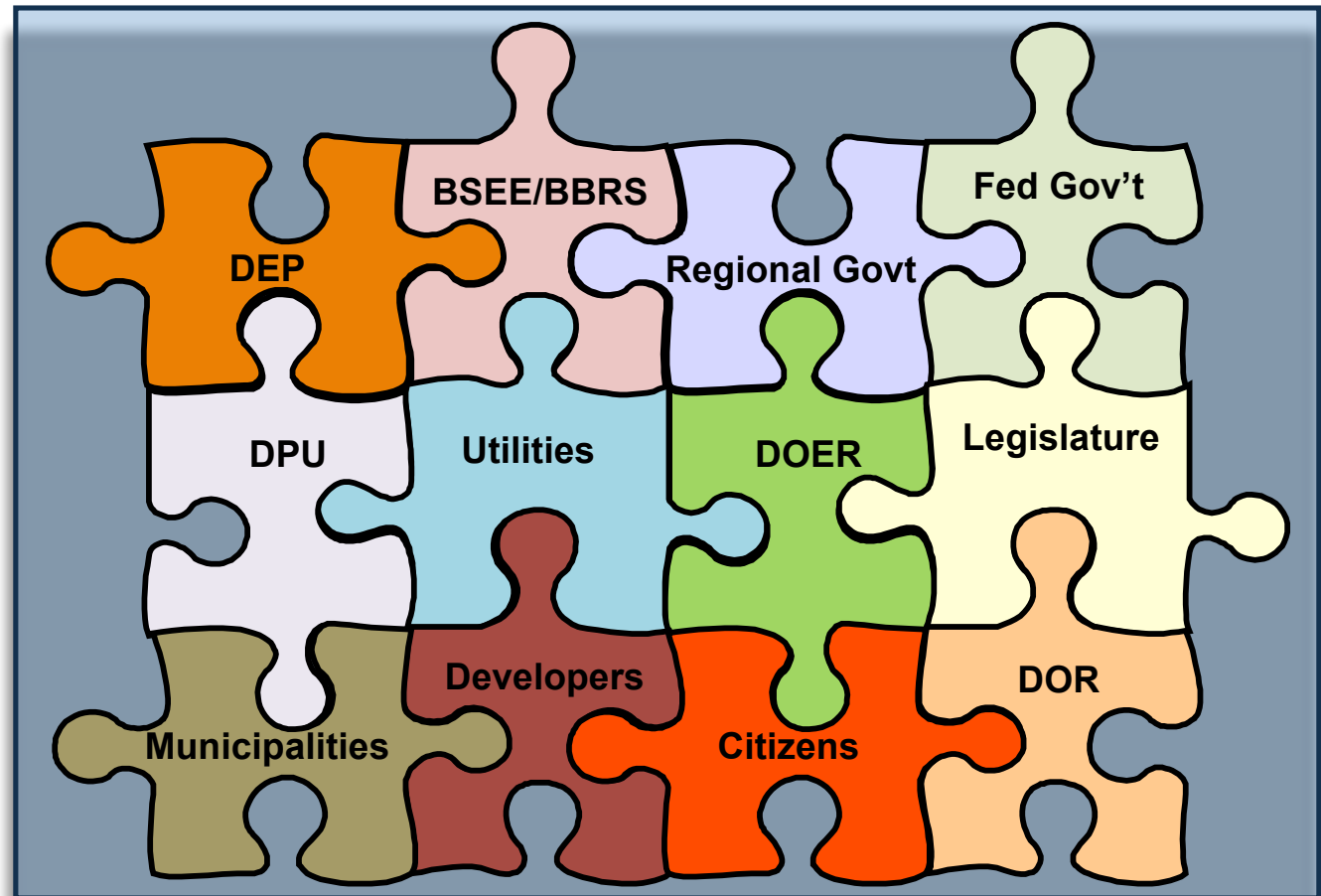
Do Not Eat: Freshwater fish caught in streams, rivers, lakes, and ponds in MA

Source: MA DEP



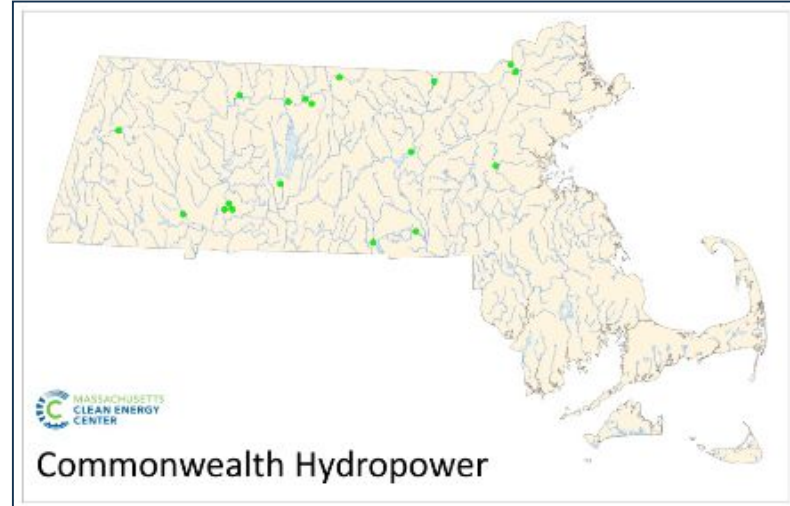
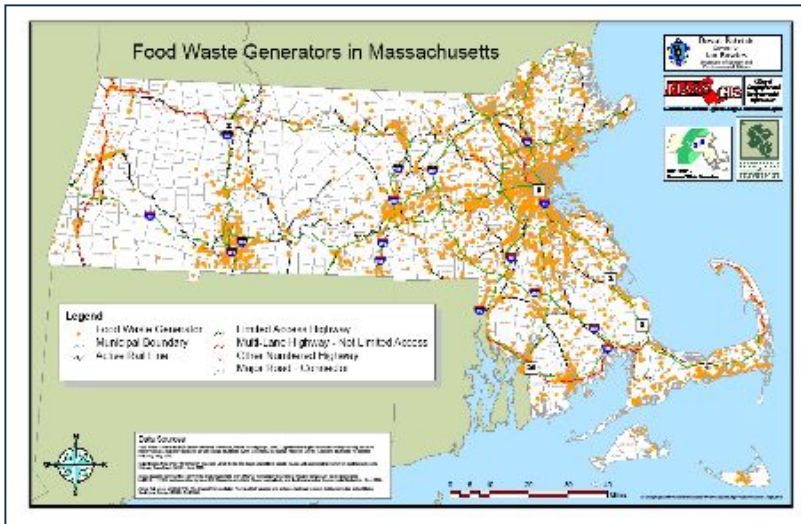
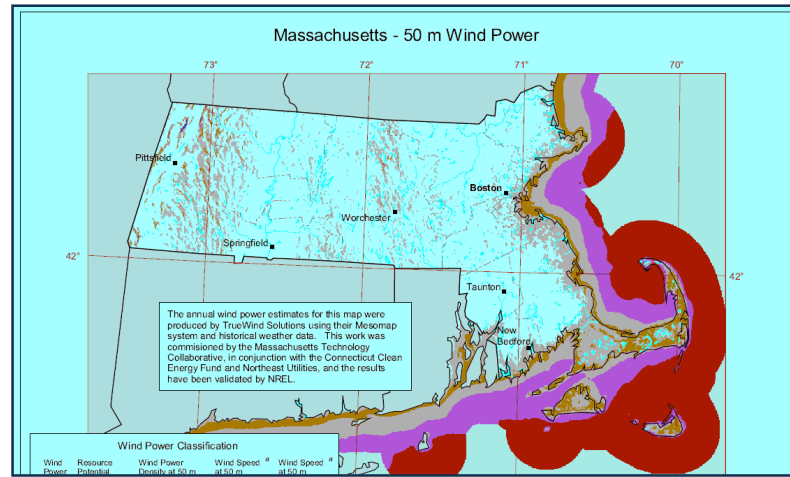
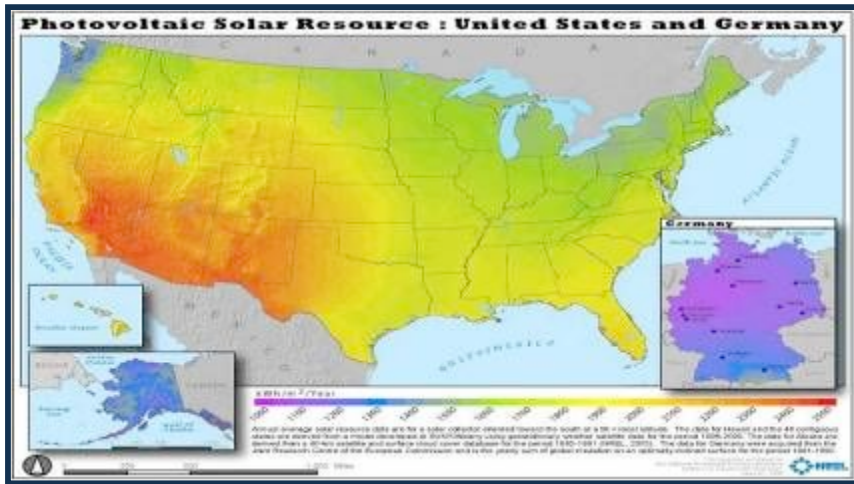
# The Renewable Energy Landscape

MassCEC initiatives drive growth in a complex market that is shaped by many stakeholders and rulemakers

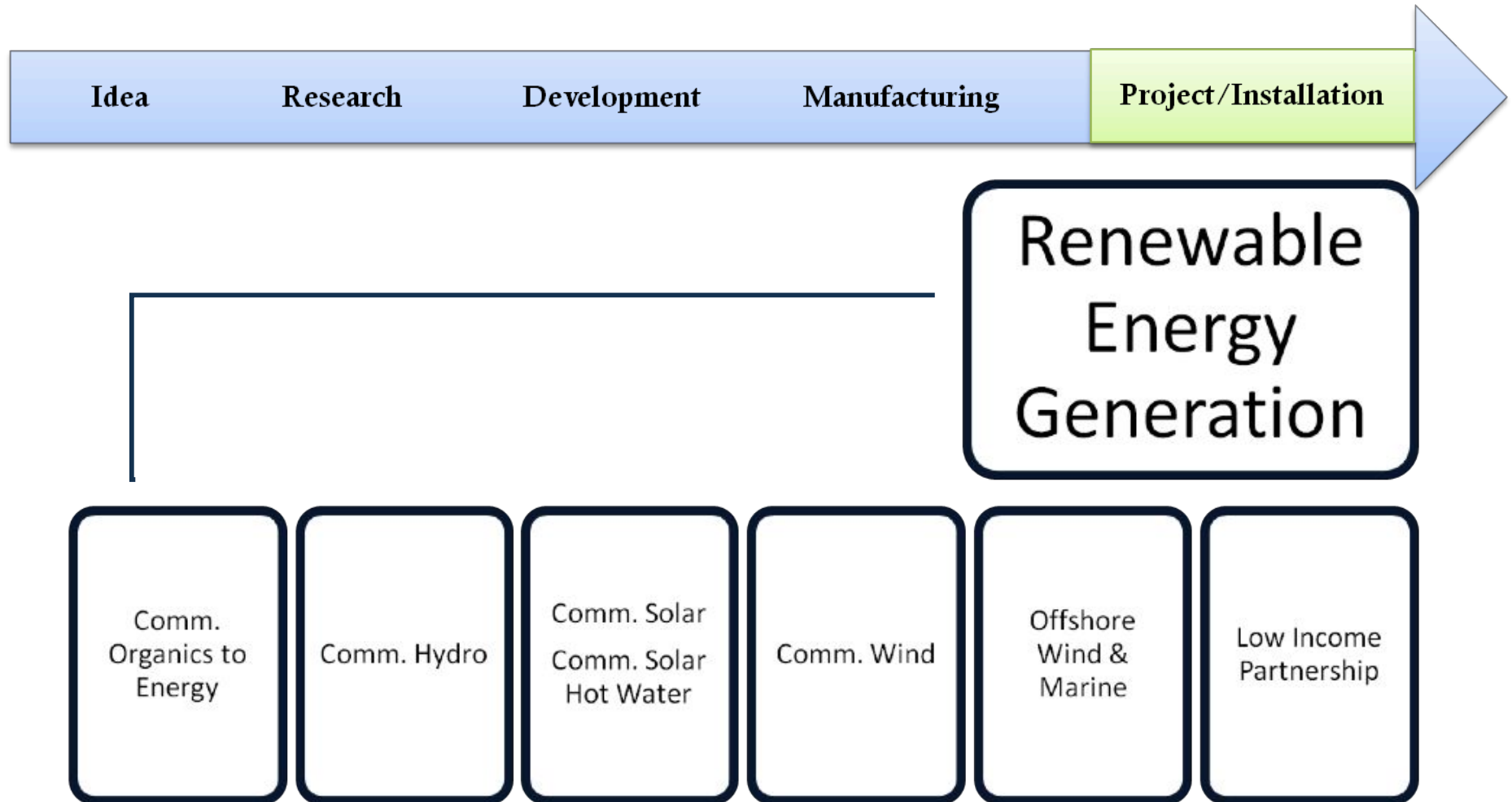




# Renewable Resources



# Renewable Energy Generation



# Organics-to-Energy: Program Objectives

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- Move ready-to-go projects into construction
- Identify and facilitate additional organics-to-energy projects that support the Commonwealth's goal of diverting organic wastes from the solid waste stream
- Provide municipalities with the resources to evaluate proposals, shape projects to prevent public nuisances, and issue permits
- Educate the public about organics processing technologies and measures that protect host community concerns
- Evaluate market potential beyond DEP's 2014 goal of capacity to support a partial ban on landfilling of commercial organic waste

# Commonwealth Hydro

Results 2007 – 2011\*

	Feasibility Studies	Design and Construction
<b>Funds awarded</b>	\$637,437	\$5,783,150
<b>Projects (complete or in process)</b>	18	19
<b>Average grant</b>	\$35,414	\$304,376
<b>Total expected incremental generation (kWh/year)</b>	N/A	18 million kWh/year
<b>Average expected incremental generation per project (kWh/year)</b>	N/A	948,000 kWh/year
<b>Average grant per kWh**</b>	N/A	0.011 \$/kWh



\*Includes data on projects started under predecessor programs

\*\* Assumes 30 year project life

# Solar: Stacked Incentives

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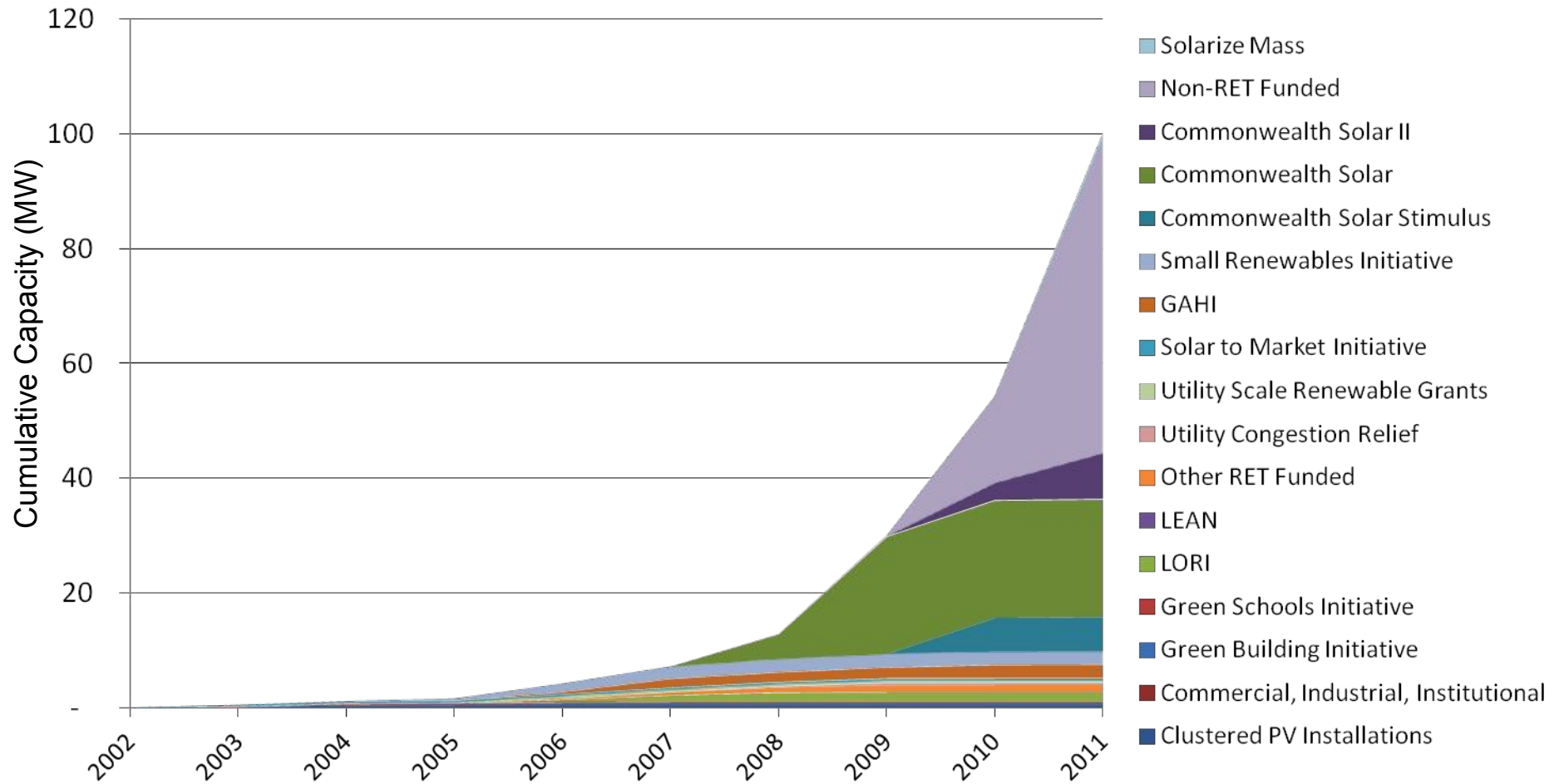
High electricity prices + Reduced Solar PV Costs +  
Numerous Incentives = Economic solar projects for consumers

Incentives
State and Federal Tax Incentives
Rebates from MassCEC
Net Metering
SREC Sales
Low/No money down options

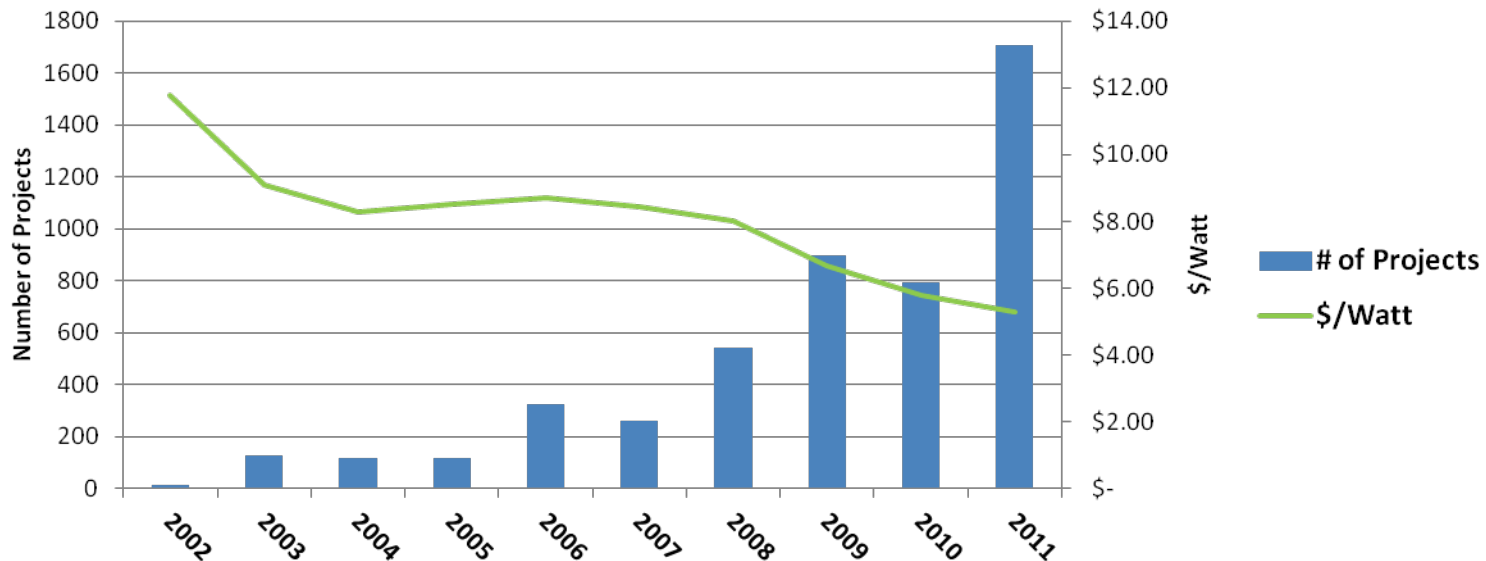


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# Solar PV in MA (through Sept, 2011)



# Solar PV: Costs ↓ Demand ↑

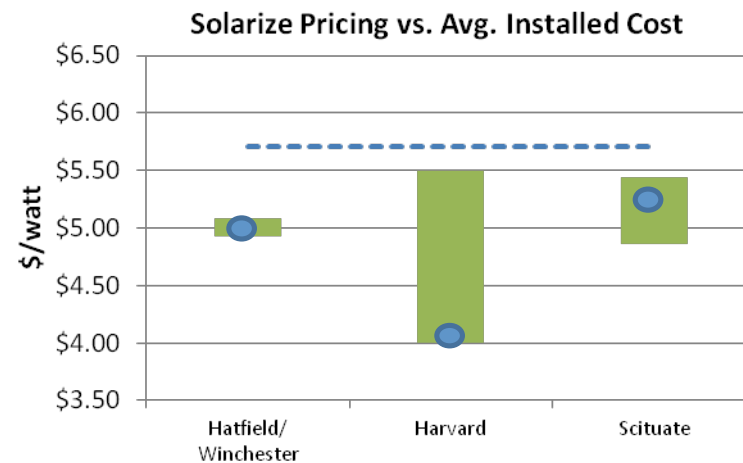


- 45 New Installers since Jan 2011
- PPA model now accounts for 20-100 applications per block



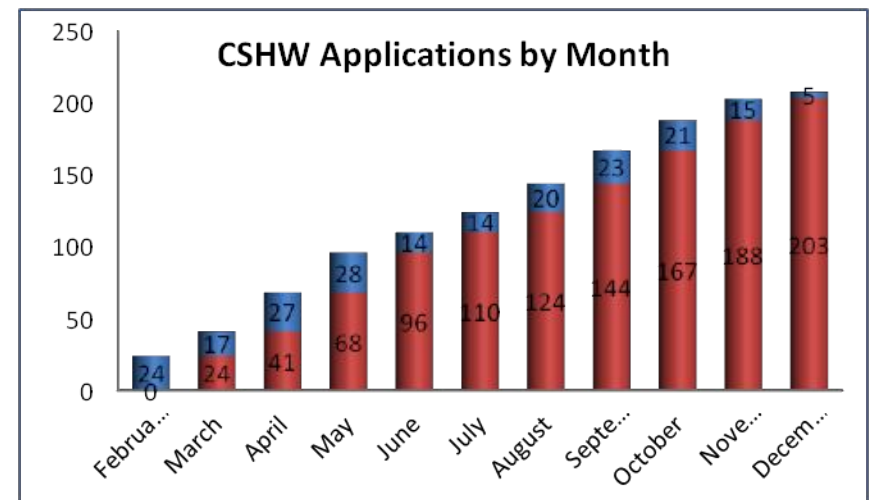
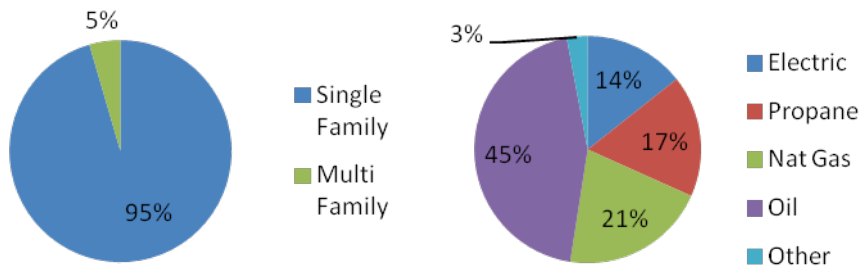
# Solar Strategy

- Significantly expand penetration through replicable models
  - Solarize
  - Community Solar Gardens
  - SunShot



# Commonwealth Solar Hot Water

- Received 200+ applications
- 36 primary installers
- 17,000+ square feet of collectors
- Leveraged >\$2.5 million in total \$ w/ 14% avg rebate
- Equivalent to almost 1.1 MW of installed capacity (average system efficiency of about 56%)



# Wind Strategies – Land-Based

- Financial support to project sponsors/developers (2004-present)
  - Early-stage financial assistance to project proponents
  - Require and support rigorous analysis
  - Subsidy for small turbines and community-scale projects

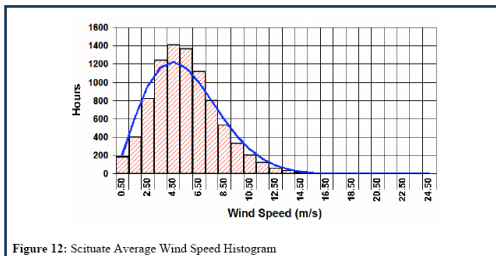


Figure 12: Scituate Average Wind Speed Histogram

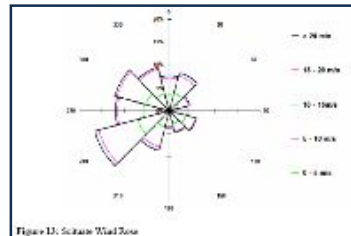
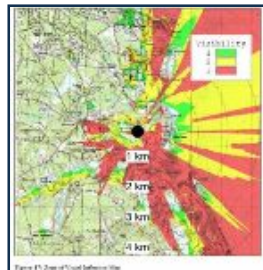
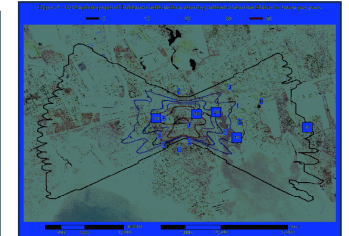
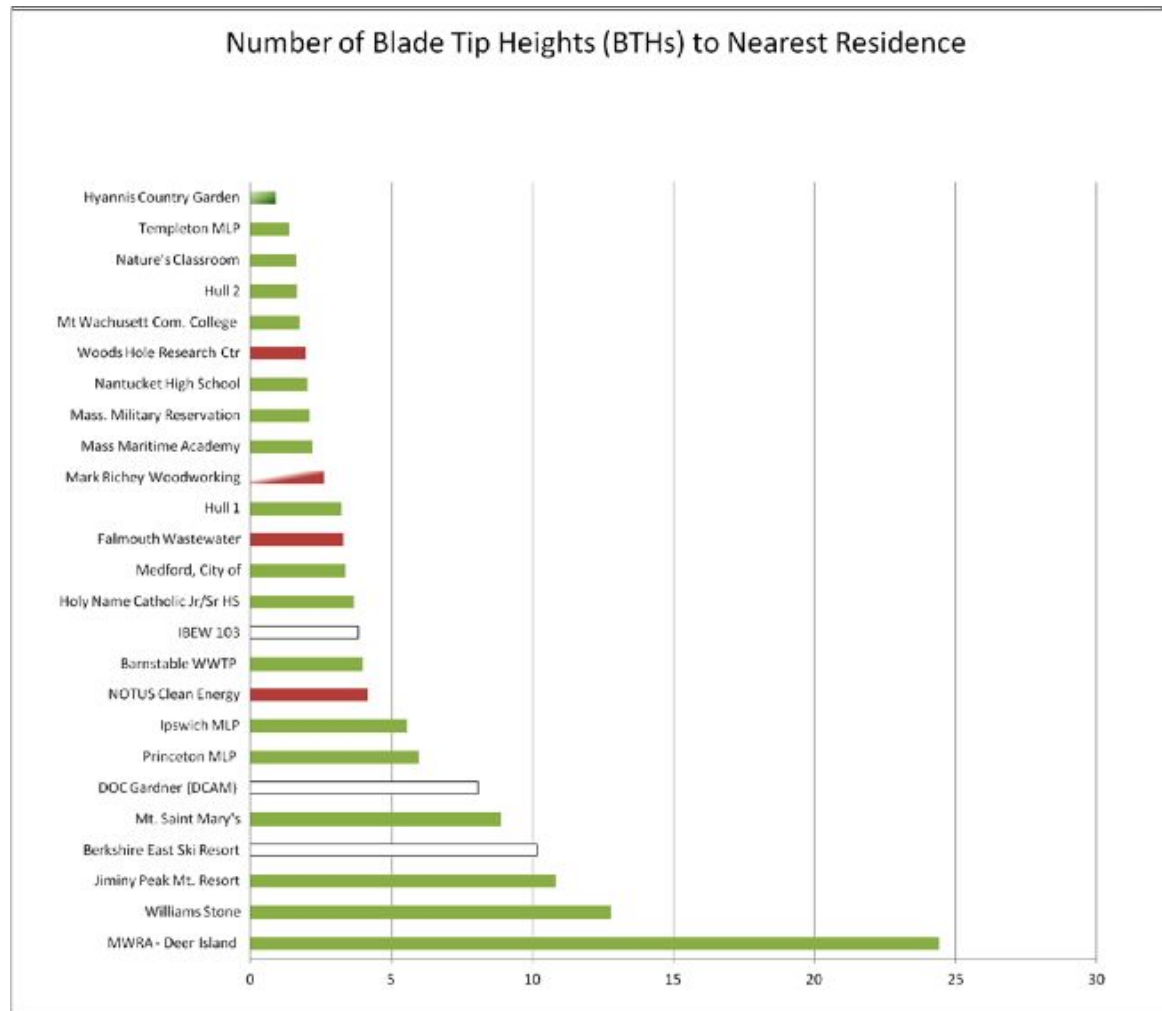


Figure 13: Scituate Wind Rose



- Develop and promote standard methodologies
  - Wind monitoring
  - Feasibility Study scope
  - Acoustic study methodology

# Wind Siting Survey



# Wind: Public Acceptance is Top Issue

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- Most projects have been well received
- Need to provide objective information
  - Education (CLFV Guide)
  - Acoustic methodology
  - New England Wind Forum / NE Wind Energy Education Project
- Assist the community as well as the project sponsor
  - Early stakeholder engagement
  - Provide technical support for application or bylaw review

# Thank You!

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