# **Massachusetts PV Case Study**

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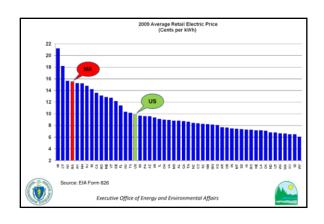
## Agenda

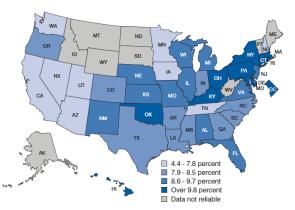
- MassCEC background and policy framework
- Evolution of solar incentives
  - Different Approaches for different markets
  - Impact of early programs
  - >Transition to SRECs
  - ➤ New delivery models

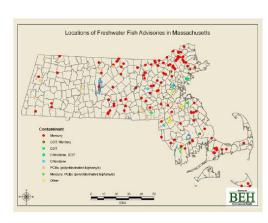


## **Energy Issues in New England**

- End of pipeline for traditional resources
  - MA exported \$22b in energy value in 2008
- High and volatile energy prices
- Impacts from traditional forms of generation









## MassCEC

#### Goals

- Develop technologies
- Reduce Barriers
- Create Jobs
- Install Megawatts

#### Assets

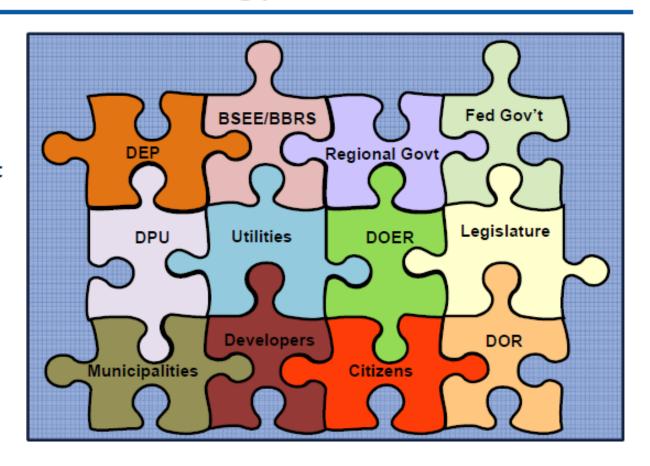
- Supportive policy and active government leaders
- Engaged private equity and venture capital community
- Companies that span the development curve
- Highly skilled workforce that is value driven





## The Renewable Energy Context

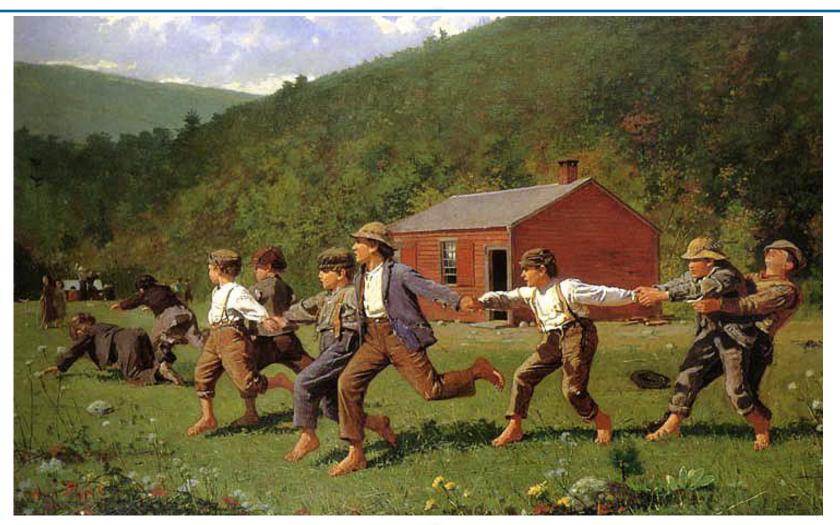
MassCEC initiatives must drive growth in a complex market that is shaped by multiple stakeholders and rulemakers





# Policy Challenge Analogy: "Snap The Whip"

Winslow Homer, 1872





## Policy Framework has Evolved

- Pre-2008
  - > RPS (4% by 2009)
  - Net metering (60 kW limit)
- 2007: Patrick-Murray Administration
  - > Aggressive Goals
    - 250 MW Solar; 2,000 MW wind
  - > RGGI (2007)
  - > 2008 Global Warming Solutions Act
    - GHG 25% below 1990 levels by 2020
  - > 2008 Green Communities Act
    - Expanded net metering: 2 MW limit, value increased, virtual net metering
    - Expanded RPS: 1% growth per year (currently 7%), created SRECs



# Variety of Solar PV Incentive Approaches 2002-2012

- Solar as demonstration projects
  - LEAN, GAHI, Utility Congestion Relief Pilot
- Partnerships
  - > Solar to Market Initiative, Clustered PV Initiative, SolarizeMA
- Solar as "carrot" for energy efficiency/sustainability
  - > Green Schools Initiative, Green Buildings Initiative
- Competitive Rebates
  - > CI3, Large On-Site Renewables Initiative
- Rebates for Mid-Large scale systems
  - > Utility Scale Renewables, Commonwealth Solar, Comm. Solar Stimulus
- Rebates for Small-scale Systems
  - Small Renewables Initiative, Comm. Solar, Comm. Solar II



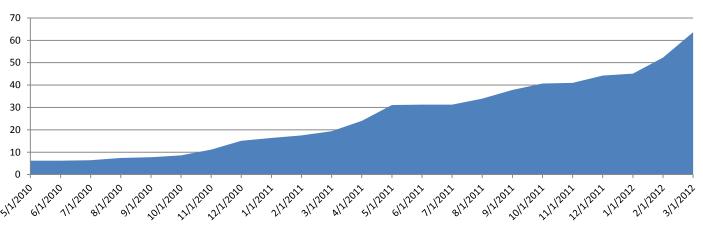
## Impacts of Incentive Programs

- Active installation companies grown from 30 to ~300
- Average system size increased
- Decreases in costs
- Wide geographic penetration
- Dramatic recent rise in 3<sup>rd</sup> party ownership



## Transition to SRECs

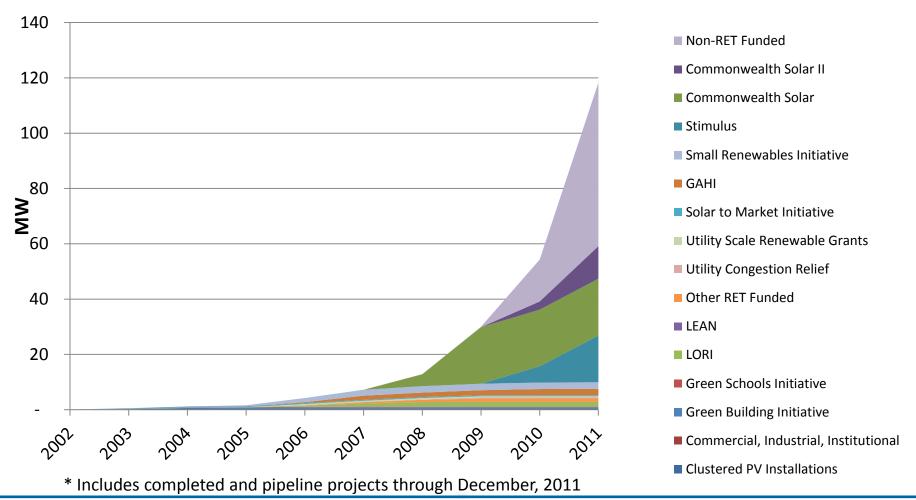
#### **Capacity Qualified (MW DC)**



	Number of Systems	Capacity (MW DC)	Installed Cost \$/Watt	% of Applications	% of Capacity
< 10 kW	1,429	7,497.293	\$6.25	79%	9%
10 - 100 kW	242	9,908.761	\$5.75	13%	12%
100 - 500 kW	101	19,598.147	\$5.23	6%	25%
> 500 kW	29	42,472.124	\$5.03	2%	53%

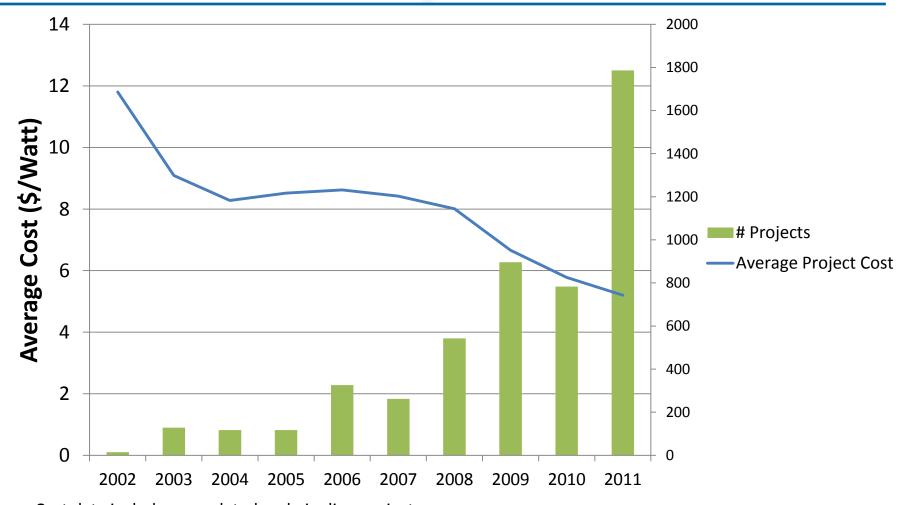


## Growth of Solar PV, by program





## Demand Growth mirrors Price Declines







## New Delivery Model: Solarize Mass

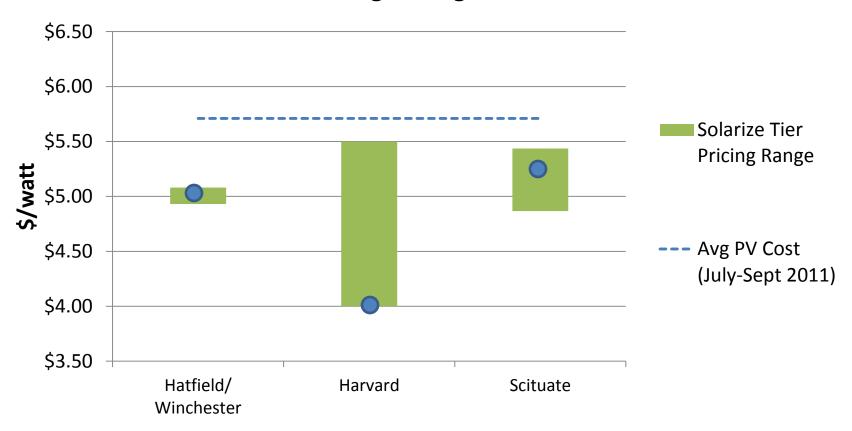






# Solarize Mass Results: Pricing

#### **Solarize Pricing vs. Avg. Installed Cost**

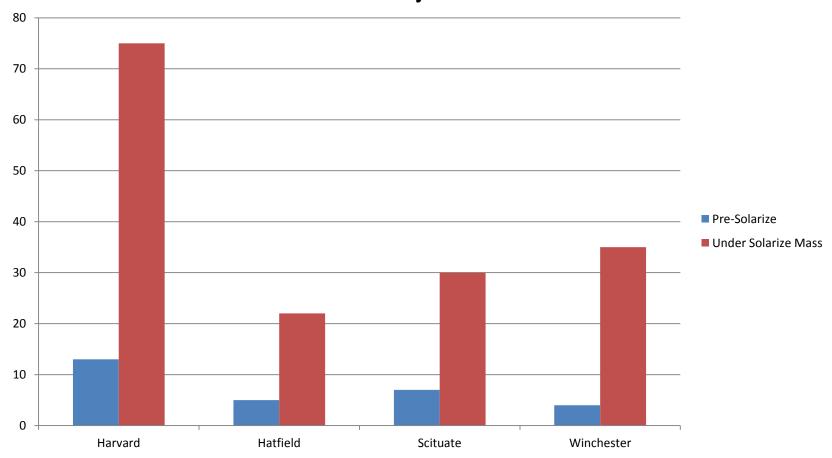






# Solarize Mass: Town Specific Results

#### **Number of Solar PV Projects Contracted**





## Thank You!

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