

# Evolution of Massachusetts Solar Programs and Policies: “Join the Innovation Revolution”

Presented by:  
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Massachusetts Clean Energy Center

May 26, 2011

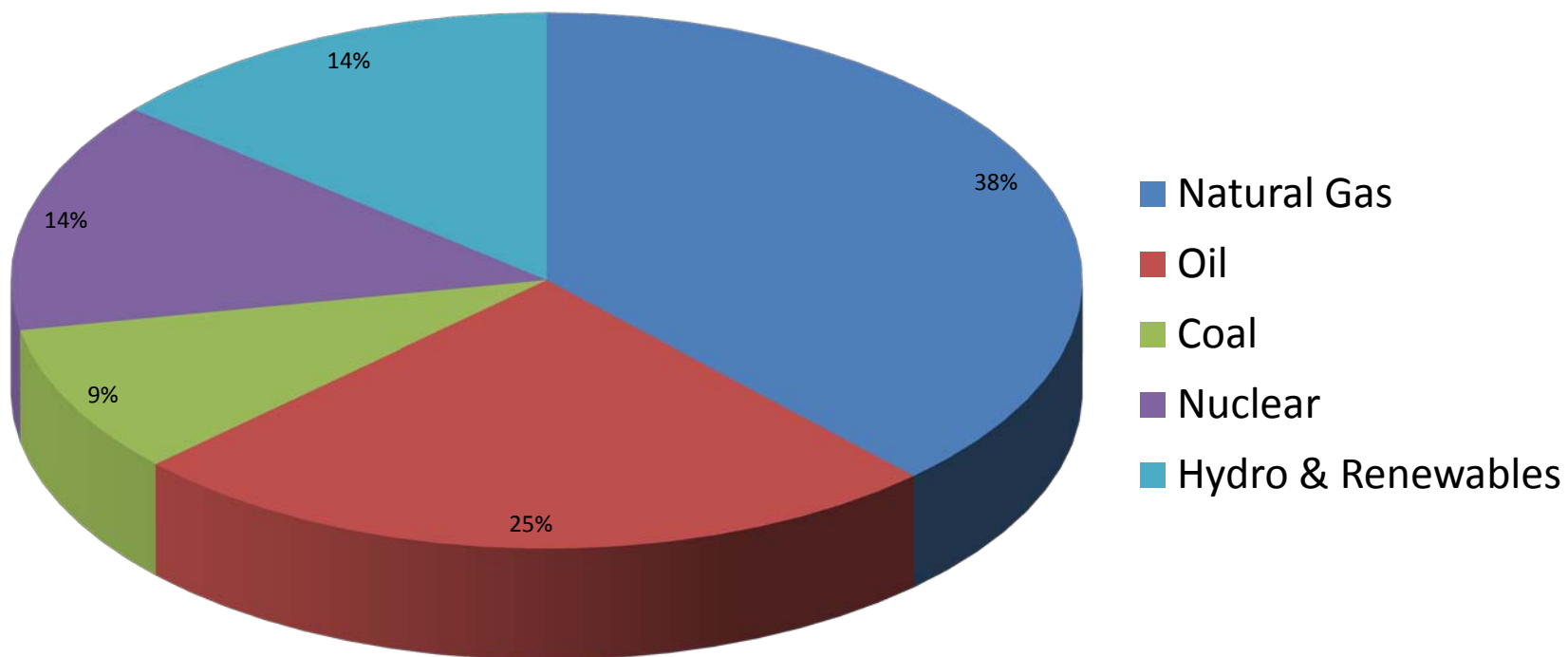
# Agenda

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- MassCEC background and context
- Policy framework
- Evolution of solar incentives
  - Different Approaches for different markets
  - Impact of early programs
  - Transition to SRECs
- New models for increased solar growth

# New England Generation Capacity

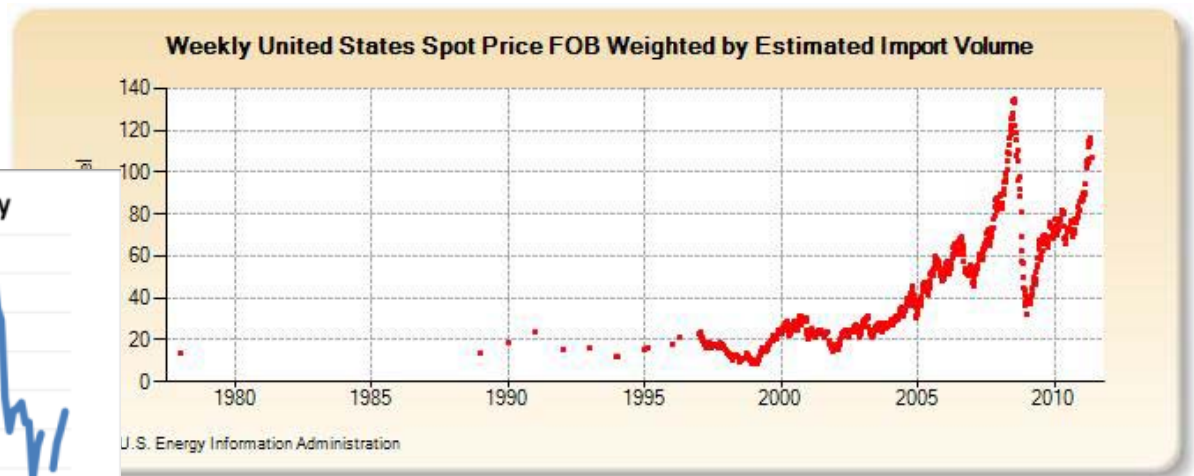
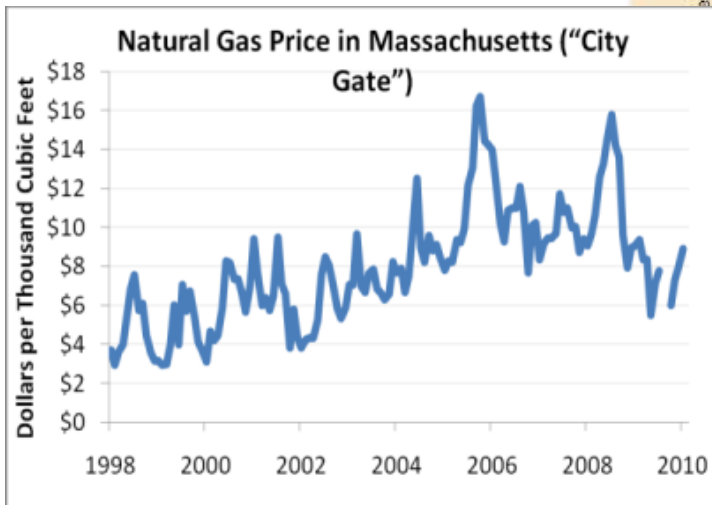
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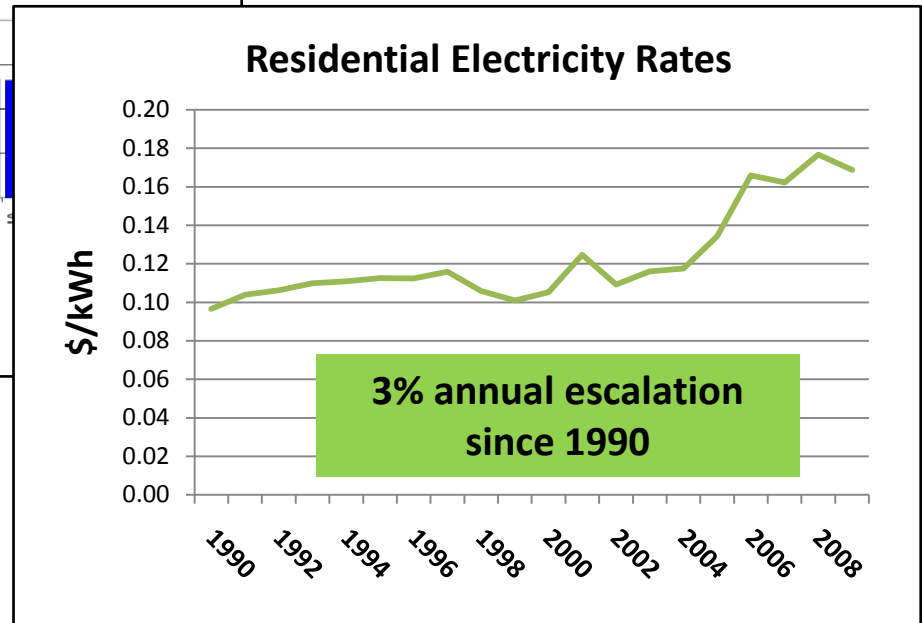
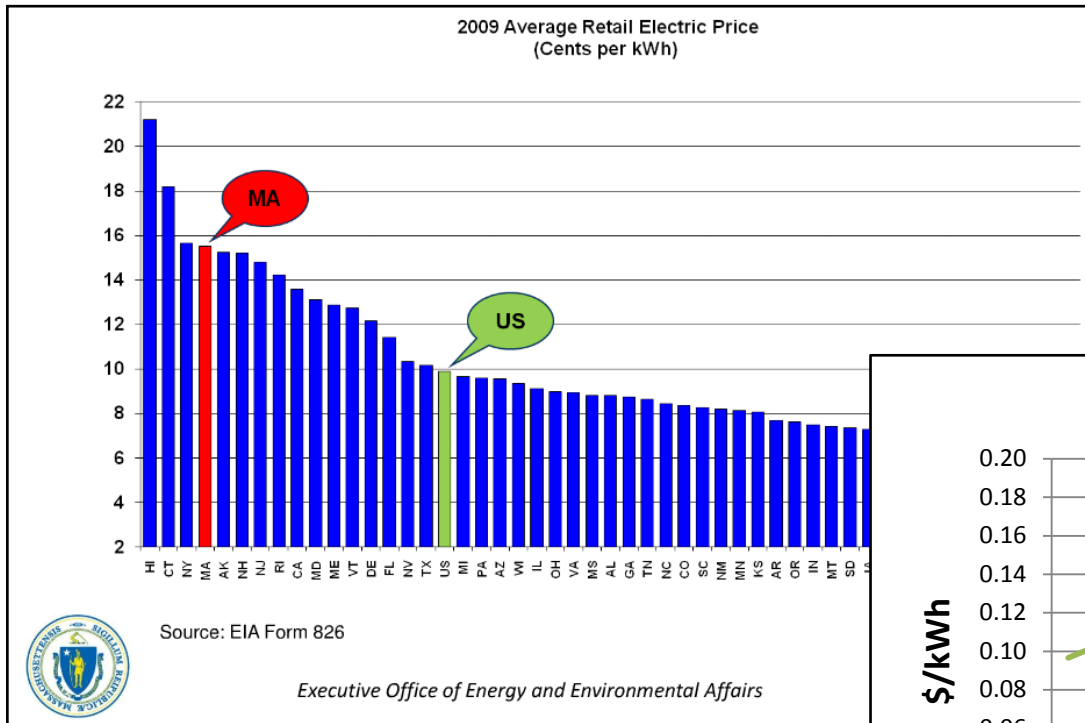
Source: ISO-NE

# Energy Issues in New England

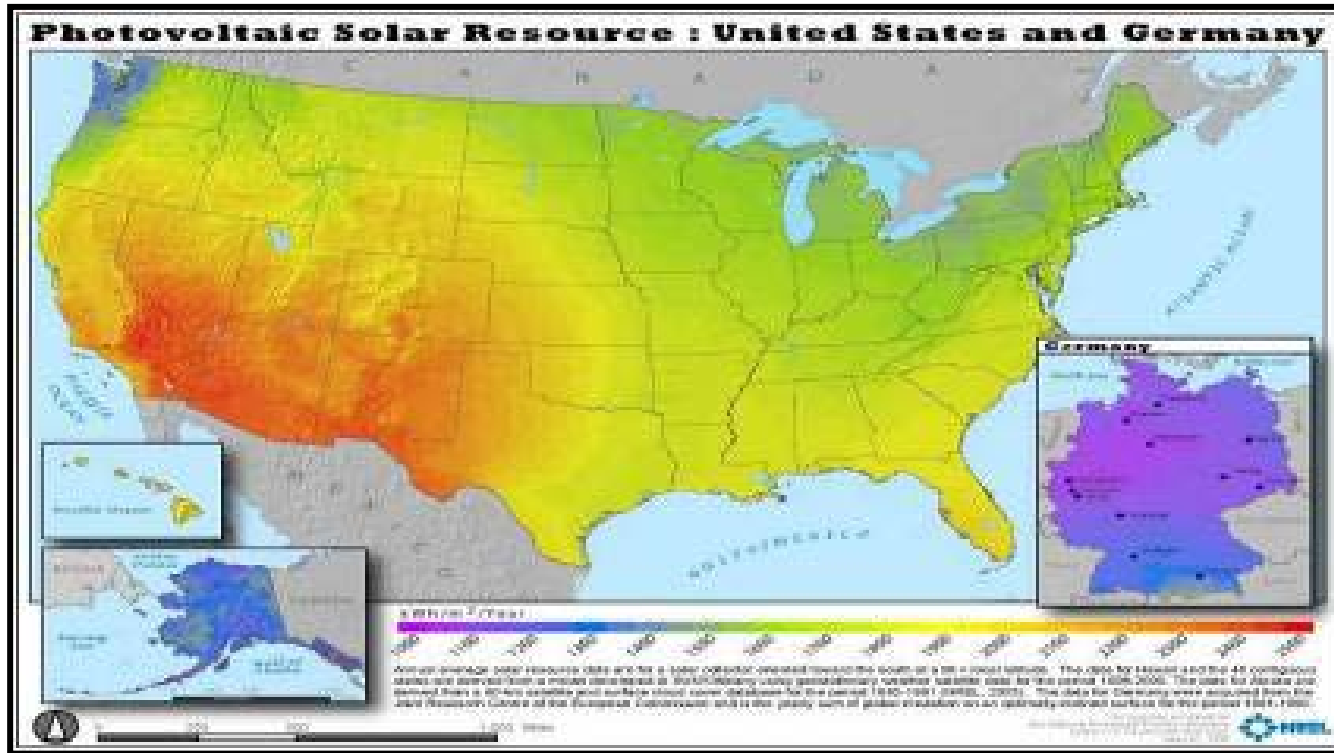
- End of pipeline for traditional resources
  - MA exported \$22b in energy value in 2008
- Price volatility



# Massachusetts Retail Electric Prices

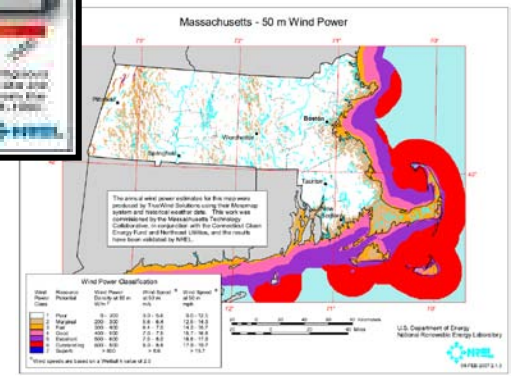


# Massachusetts Renewable Energy Assets



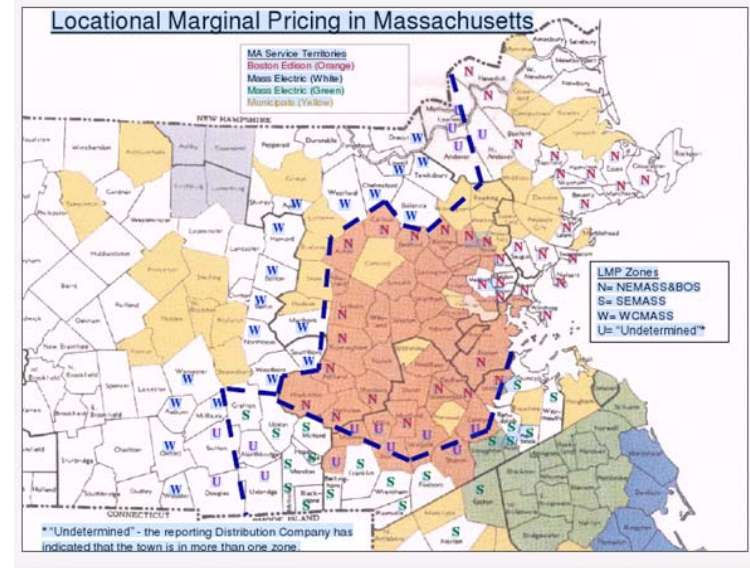
Solar

Wind



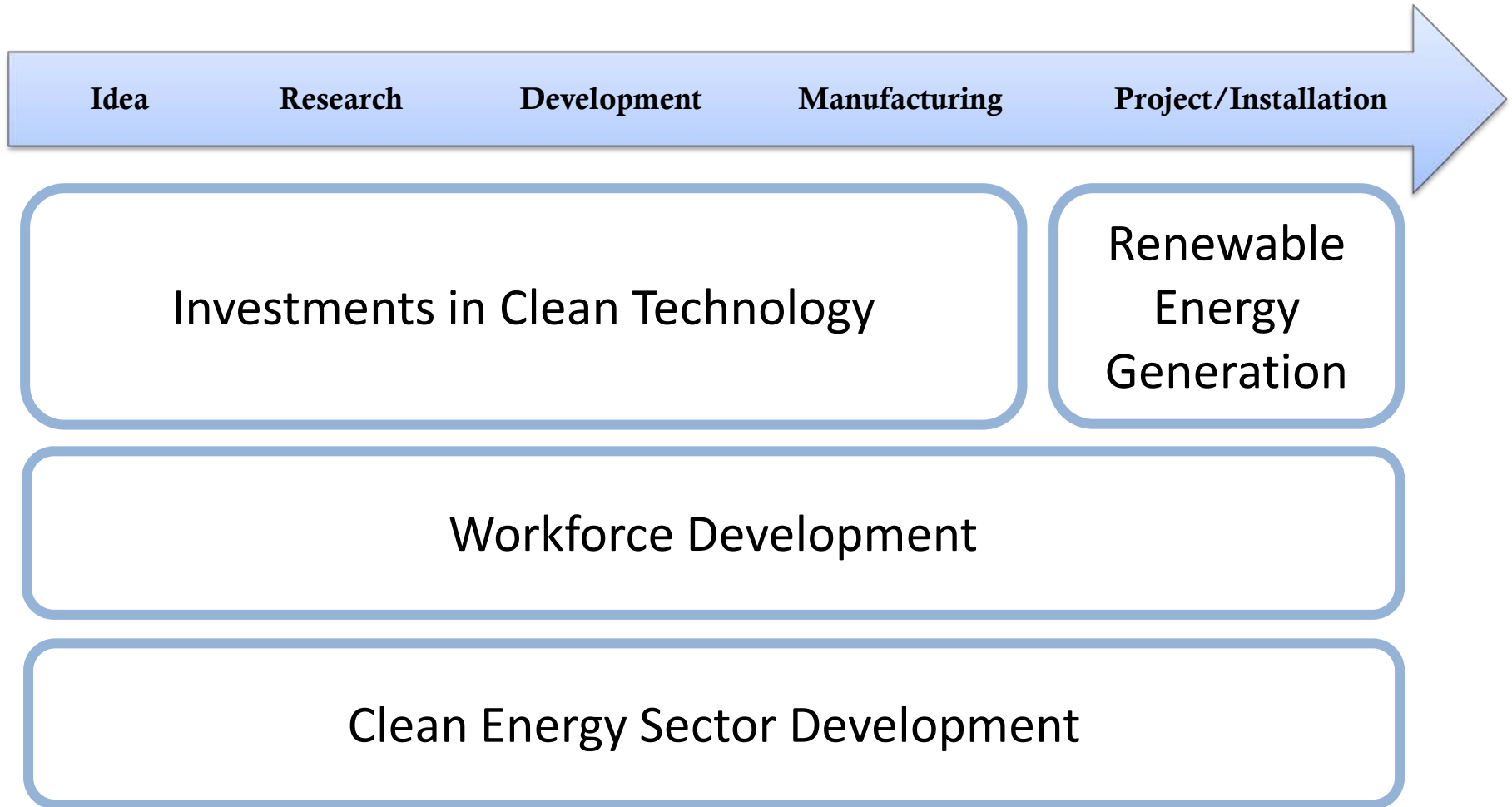
# Policy Framework has Evolved

- Pre-2008
  - RPS (4% by 2009)
  - RGGI (2007)
  - Net metering (60 kW limit)
- 2008: Patrick-Murray Administration
  - Aggressive Goals
    - 250 MW Solar; 2,000 MW wind
  - 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 6%), created Solar Carve-Out



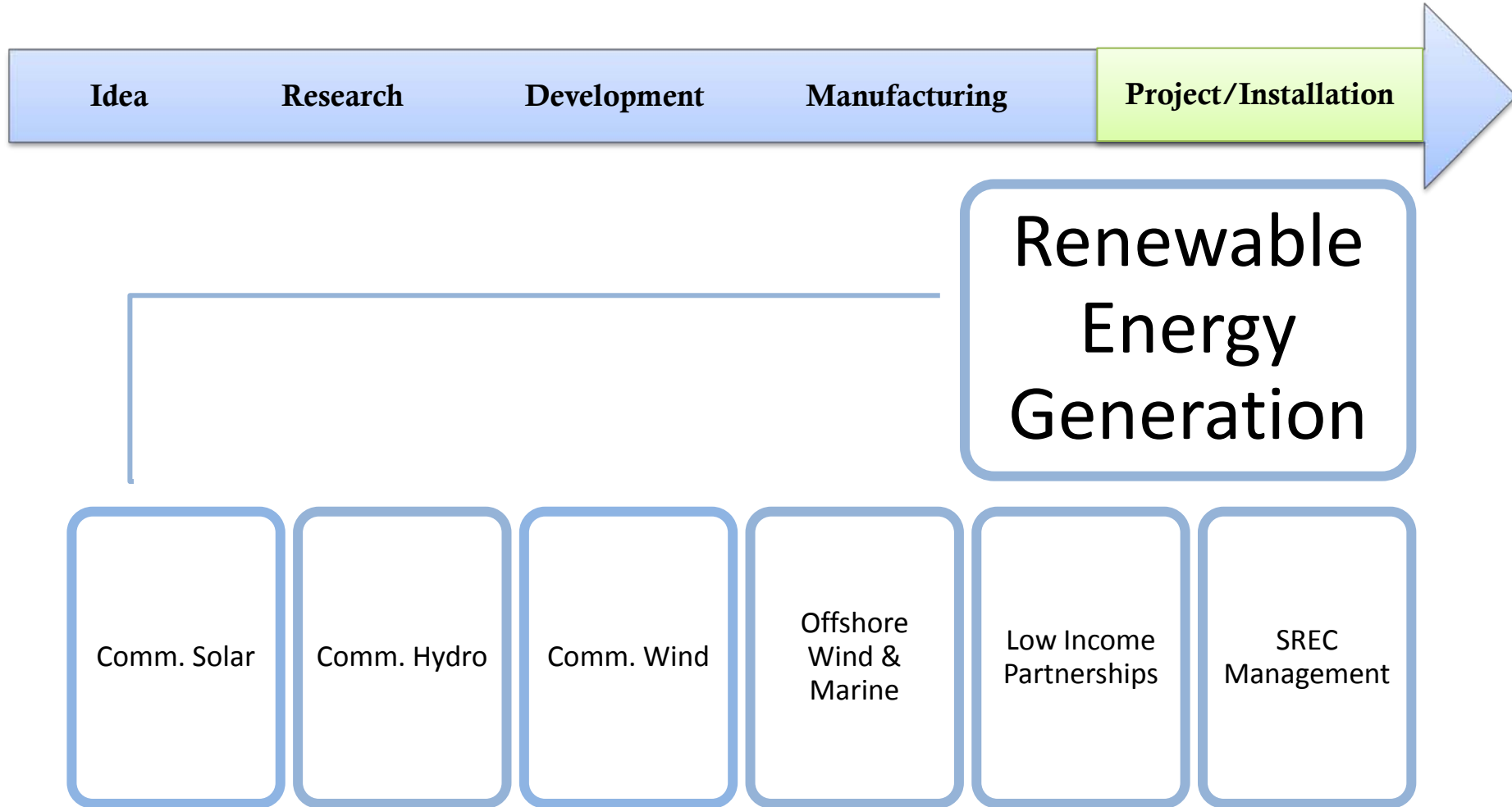
# MassCEC Areas of Focus

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# Renewable Energy Generation Division



# Program Overview

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## Commonwealth Solar

Commonwealth  
Solar I

Commonwealth  
Solar II

Commonwealth  
Solar Stimulus

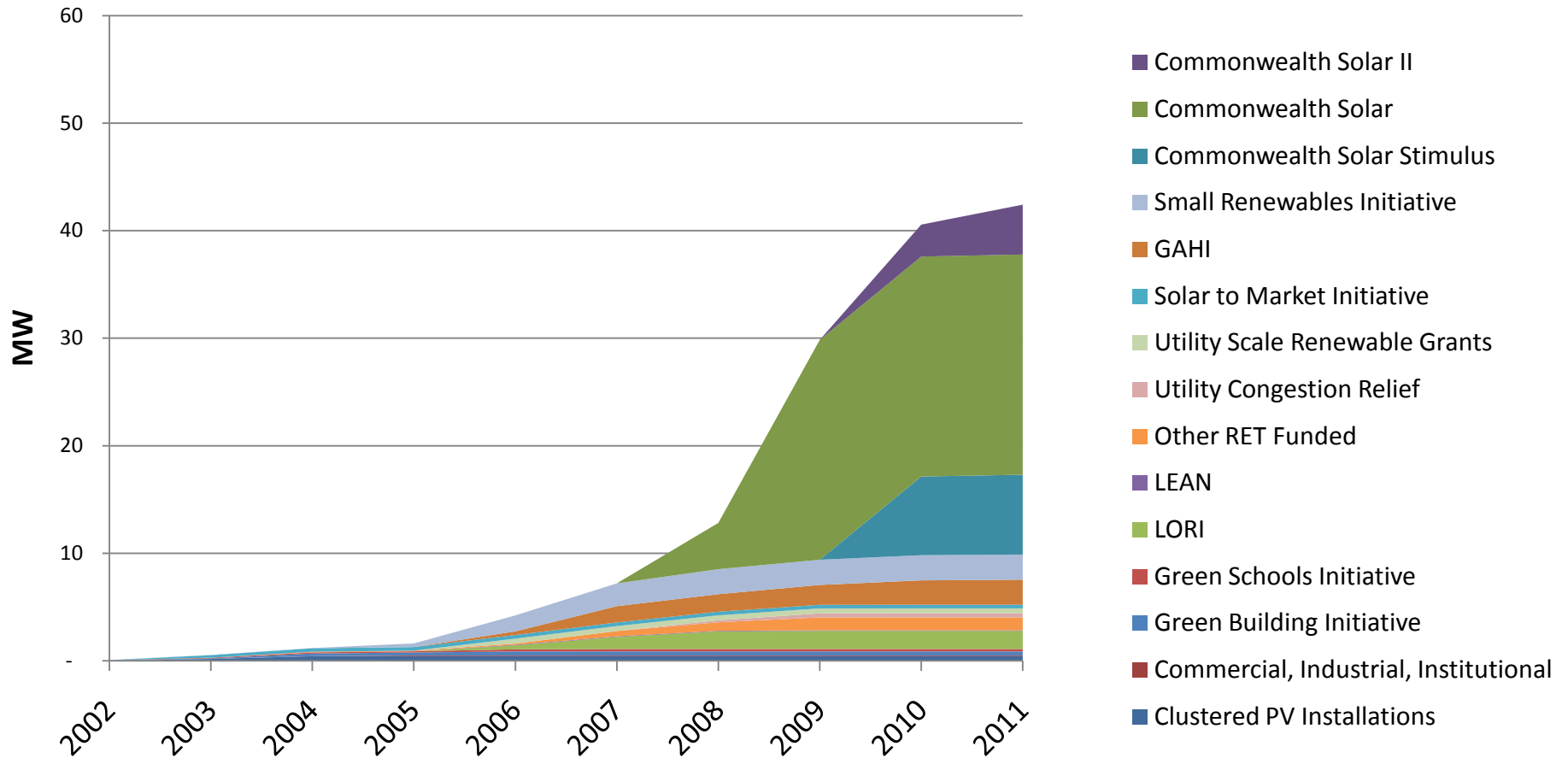
Commonwealth  
Solar Hot Water

# Variety of Incentive Approaches

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- **Solar as demonstration projects**
  - LEAN, GAHI, Utility Congestion Relief Pilot
- **Partnerships**
  - Solar to Market Initiative, Clustered PV Initiative, Solarize
- **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

# Growth of Solar PV

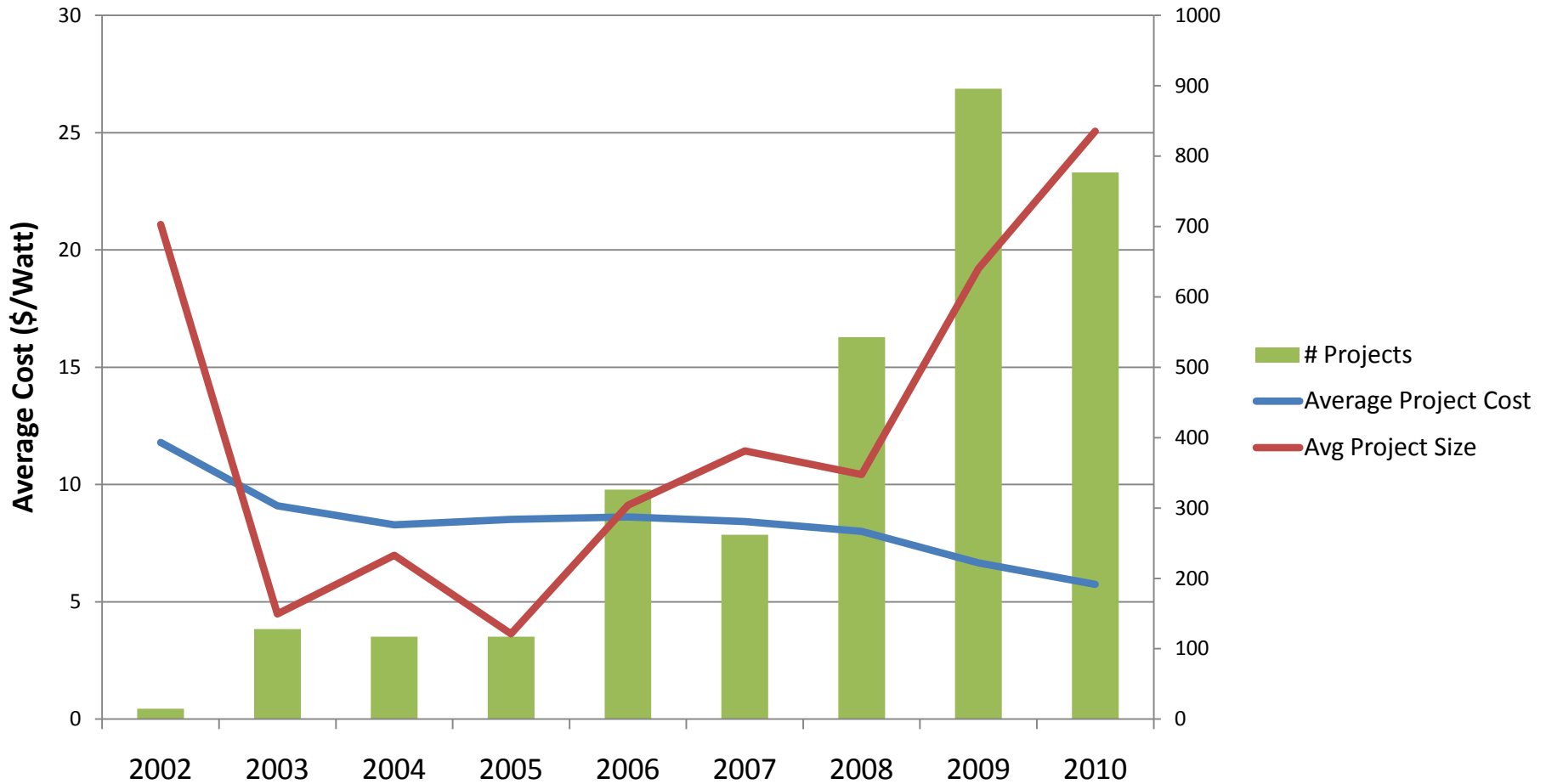


# Impact of Early Incentive Programs

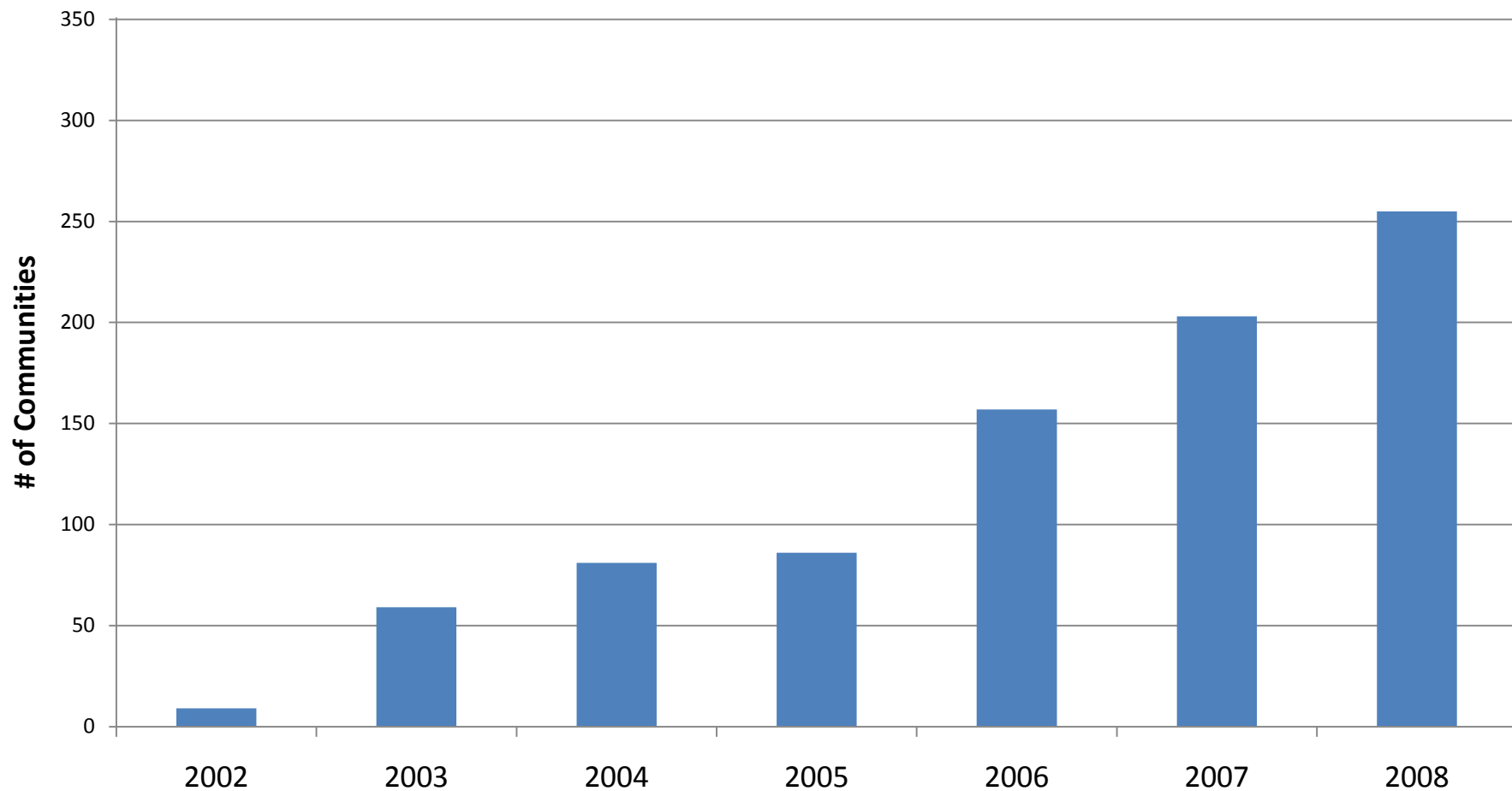
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- Active installation companies grew from 30 to 200+
- Average system size increased
- Decreases in costs
- Wide geographic penetration
- Rise in 3<sup>rd</sup> party ownership

# Changes in System Demographics

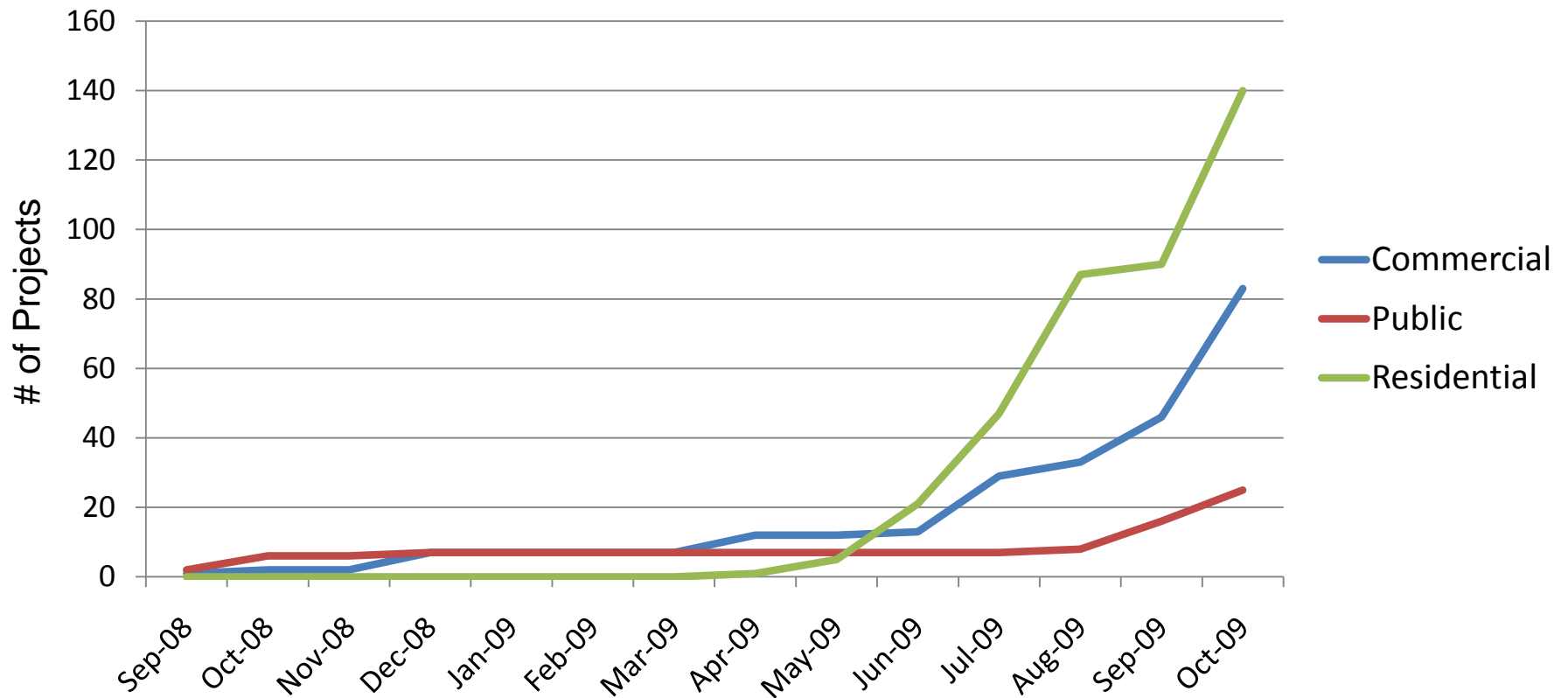


# Cumulative Number of Communities Served



# Growth in 3<sup>rd</sup> Party Ownership

Commonwealth Solar 3<sup>rd</sup> Party Ownership Projects





# Solar Renewable Energy Certificates (SRECs)

## Electricity Pathway

- Electrons from all generation sources are physically the same
- Cannot be tracked independently on the grid
- Difficult to know what source produced your electricity
- SRECs address this challenge

Electricity and RECs can be, and often are, sold separately



## SRECs Pathway

- SRECs represent the right to claim the attributes of the renewable generation source
- 1 SREC = 1,000 kWh
- Certified and verified SRECs ensure that only one buyer can claim each SREC
- Utilities are required to purchase SRECs every year

# SRECs As a Revenue Stream

## ■ Value

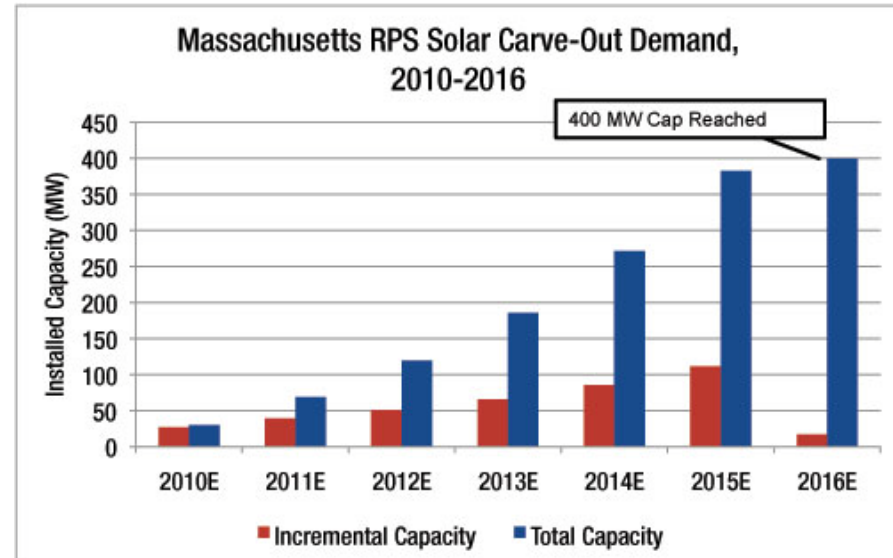
- Clearinghouse price of \$285/SREC... (NPV ~\$1.60/Watt)
- Ceiling price of \$550/SREC... (NPV ~\$3.10/Watt)

## ■ Reporting

- Report production data to Production Tracking System (PTS) at MassCEC, which serves as the Independent Verifier

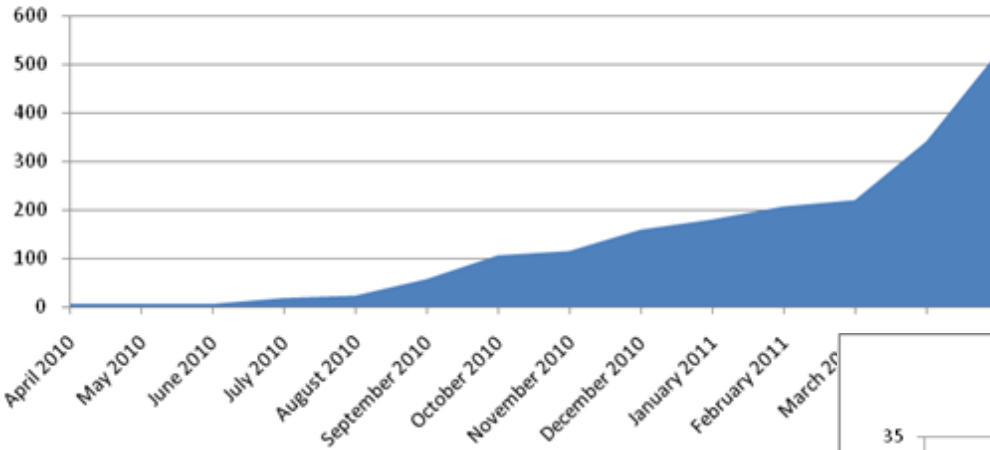
## ■ Selling

- SRECs typically aggregated
- Buyers include IOUs and competitive load serving entities, brokers, and other parties
- Trading is done on NEPOOL-GIS platform



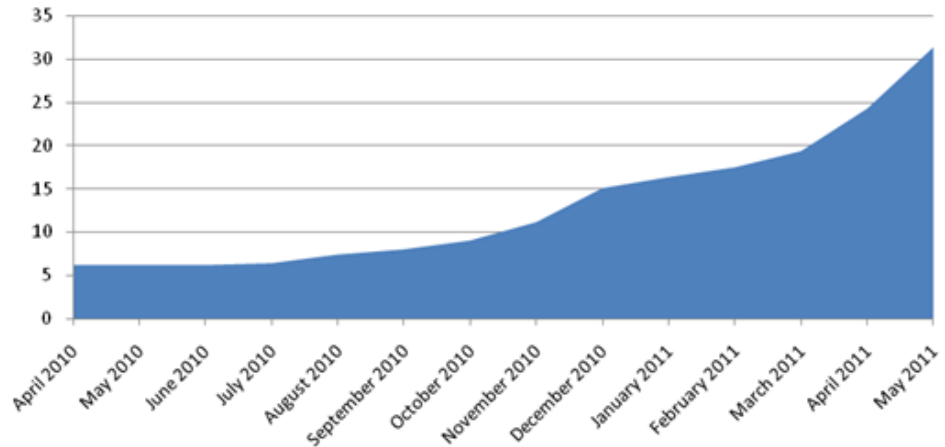
# SREC Progress

## Number of Units Qualified



Size	#	MW
< 10 kW	477	2
10 - 100 kW	83	3
100 - 500 kW	50	9
> 500 kW	18	24

## Capacity of Units Qualified (MW DC)

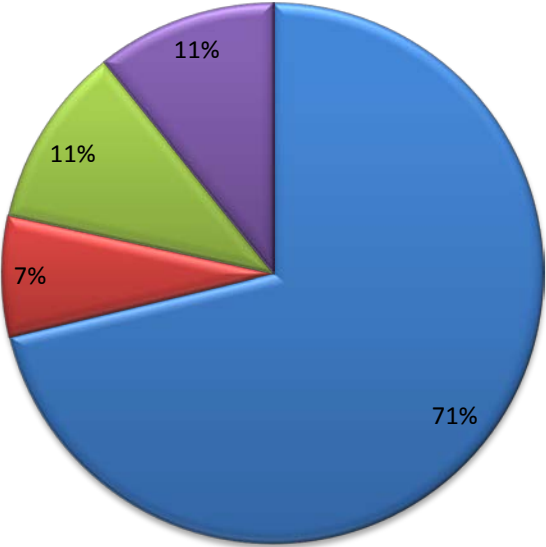


- 20 Active Aggregators
  - 13 Aggregations w/ Residential systems
  - 8 Aggregators open to any Residential project

# Solar Installed in MA (through May 1, 2011)

### PV Installed Base

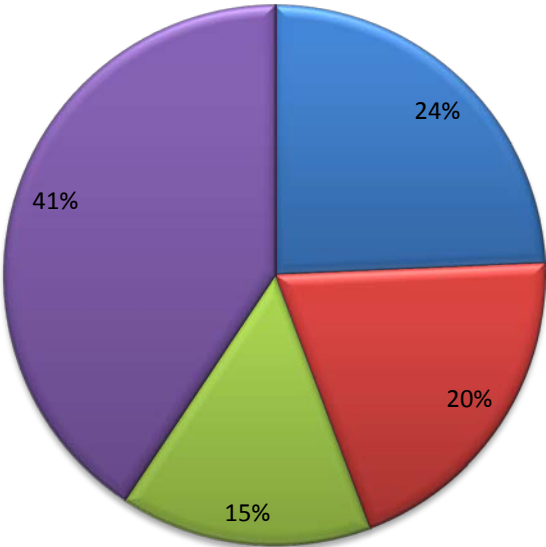
■ MassCEC ■ Non-MassCEC ■ Utilities ■ SREC Only



49 MW

### PV Pipeline

■ MassCEC ■ Non-MassCEC ■ Utilities ■ SREC Only



37 MW

# Thank You!

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