Massachusetts Solar Carve-Out Program

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MA RPS Class I Program

• Established in 1997, first year of compliance in 2003
• Eligible technologies include solar PV, solar thermal electric, wind, ocean thermal, wave or tidal energy, fuel cells, landfill methane gas, small hydro, low-emission biomass, marine or hydrokinetic energy, and geothermal electric
• Generation Units from New England and adjacent control areas (i.e. New York and maritime Canadian provinces) may qualify
• Minimum Standard of 7% in 2012
• Set to increase by 1% each year going forward
MA RPS/APS Programs

• In 2008, 3 new classes were added to the RPS
  – Class II Renewable Energy for facilities in operation prior to 1998 (mostly small hydro and LFG)
  – Class II Waste-to-Energy for waste-to-energy facilities located in MA
  – Alternative Portfolio Standard (primarily CHP projects)
• In 2010, a Solar Carve-Out was added to Class I
• Obligation is part of the Class I total, but has different market parameters and qualification process
Summary of MA Renewable Energy Portfolio Standard (RPS) Programs

<table>
<thead>
<tr>
<th>RPS Class</th>
<th>Sub Class</th>
<th>Technology</th>
<th>Minimum Standard</th>
<th>2012 ACP Rate, $/MWh</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class I</strong></td>
<td>Wind, LFG, Biomass, Solar, Small Hydro, AD, etc.</td>
<td>7% in 2012, increases 1%/year</td>
<td>$64.02; increases with CPI</td>
<td></td>
</tr>
<tr>
<td>Solar Carve-Out</td>
<td>Solar PV; 6 MW or less, in MA</td>
<td>set by formula to grow installed capacity to 400 MW</td>
<td>$550; reduced annually according to 10-year schedule</td>
<td></td>
</tr>
<tr>
<td><strong>Class II</strong></td>
<td>Renewable</td>
<td>same as Class I</td>
<td>3.6%, stays constant</td>
<td>$26.28; increases with CPI</td>
</tr>
<tr>
<td>Waste Energy</td>
<td>Waste to Energy Plants, in MA</td>
<td>3.5%, stays constant</td>
<td>$10.51; increases with CPI</td>
<td></td>
</tr>
<tr>
<td><strong>APS</strong></td>
<td>CHP in MA, flywheels, storage, etc.</td>
<td>2.5% in 2012; increases to 5% in 2020</td>
<td>$21.02; increases with CPI</td>
<td></td>
</tr>
</tbody>
</table>
Massachusetts Solar Development Strategies (Pre Solar Carve-out)

• Governor Patrick’s goal – 250 MW by 2017
• Commonwealth Solar (Rebates) – initiated Dec. 2007
  – Rebate Program: $68 million, 27 MW
  – Successfully achieved and completed Oct. 2009
  – Created robust PV development sector in MA
• Commonwealth Solar II managed by the MassCEC for small (<15kW) systems has maintained residential PV market
• Federal Stimulus/ARRA funds used by DOER to support over 10 MW of PV at state/municipal facilities
• Green Communities Act allowed for limited Distribution Utility ownership of PV Generation (approximately 9 MW installed under this provision)
SREC Program Design Features

Program design features help ensure market stability and balance

- Adjustable Minimum Standard
  maintains SREC supply/demand in reasonable balance

- Solar Credit Clearinghouse Auction Account
  essential price support mechanism to assure SREC floor price

- Opt-In Term
  provides right to use Auction, adjusted to throttle installation growth rate

- Forward ACP Rate Schedule
  provides investor certainty

- Program Cap of 400 MW
  Enables sufficient market growth opportunity (exceeds Governor’s goal of 250 MW by 2017)

• These features work together to ensure the market will remain in balance as more PV is built
2012 Rulemaking Process

- DOER announced intention to begin formal rulemaking process on August 30, 2012
- Primary reason for rulemaking is to make two changes to RPS Class I Regulation:
  - Insert 10-year forward ACP Rate schedule into regulation
  - Remove the subtraction of ACP Volume from Minimum Standard formula
- DOER plans to retroactively apply change to 2013 Minimum Standard, thereby increasing the demand in 2013
- Rulemaking expected to begin in December

<table>
<thead>
<tr>
<th>Example Calculation – CY 2013</th>
<th>Current Formula</th>
<th>Proposed Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Compliance Obligation</strong></td>
<td>135,495 MWh</td>
<td>189,297 MWh</td>
</tr>
<tr>
<td></td>
<td>= 81,559 MWh +</td>
<td>= 81,559 MWh +</td>
</tr>
<tr>
<td></td>
<td>[109,465 - 26,598] x 1.3 -</td>
<td>[109,465 - 26,598] x 1.3 +</td>
</tr>
<tr>
<td></td>
<td>53,802 + 11 + 0</td>
<td>11 + 0</td>
</tr>
<tr>
<td><strong>Minimum Standard</strong></td>
<td>0.2744%</td>
<td>0.3833%</td>
</tr>
<tr>
<td></td>
<td>= 135,495 MWh /</td>
<td>= 189,297 MWh /</td>
</tr>
<tr>
<td></td>
<td>49,386,169 MWh x 100</td>
<td>49,386,169 MWh x 100</td>
</tr>
</tbody>
</table>
Current SREC Program Statistics – 12/1/12

- Over 4,000 applications received
- Over 3,700 qualified units
- 155 MW qualified
- Nearly 138 MW of qualified projects installed
- 2,741 SRECs created in 2010
- 26,598 SRECs created in 2011
- More than 100,000 SRECs expected to be created in 2012

<table>
<thead>
<tr>
<th>Number of Systems</th>
<th>Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications Received</td>
<td>4,086</td>
</tr>
<tr>
<td>Applications under Review</td>
<td>299</td>
</tr>
<tr>
<td>Applications Qualified</td>
<td>3,787</td>
</tr>
<tr>
<td>Qualified but Installation Incomplete</td>
<td>19</td>
</tr>
<tr>
<td>Qualified and Installed</td>
<td>3,768</td>
</tr>
</tbody>
</table>
Current SREC Program Statistics – 12/1/12
Activity by System Size
Key Highlights

• MA ranks 3\textsuperscript{rd} in commercial installations and 5\textsuperscript{th} in residential installations in 2012 through Q2
• 2\textsuperscript{nd} lowest weighted average commercial installation costs
• Ranked 2\textsuperscript{nd} in inverter manufacturing
• 340 of 351 MA cities & towns have at least one state supported solar installation
• More capacity has already been installed in 2012 than was installed in all years prior to 2012
• Solar generation as a percentage of the RPS increased by more than 1000\% from 2010 to 2011

Installed Solar Capacity in Massachusetts (as of 12/1/12)

- Annual Installed Capacity (MW)
- Cumulative Installed Capacity (MW)

Installed Solar Capacity in Massachusetts as of 12/1/12:
- 176 MW

Cumulative installed solar capacity increased significantly from 2002 to 2012.