Massachusetts *Global Warming Solutions Act* and *Clean Energy and Climate Plan for 2020*

Nancy Seidman - Sharon Weber  
Massachusetts Department of Environmental Protection  

MA Energy Efficiency Advisory Council (EEAC) Meeting  
November 12, 2013
Global Warming Solutions Act (GWSA) Requirements

• Collaborate across agencies to reduce greenhouse gas (GHG) emissions to the limits established in the law
• Adopt a statewide GHG emission reduction limit of 10-25% below 1990 baseline level by 2020 and at least 80% by 2050
• Create economy-wide Clean Energy and Climate Plan for 2020 no later than Jan 1, 2011 to reduce GHG emissions
• Establish GHG emissions registry and reporting system
• Publish an inventory with estimates of GHG emissions no later than Dec 31, 2010 and every 3 years thereafter
• Publish 5-year report on GWSA implementation no later than Jan 1, 2014
• Update Clean Energy and Climate Plan for 2020 by Jan 1, 2016
Massachusetts Clean Energy and Climate Plan for 2020 (CECP)

• In December 2010, the Massachusetts Executive Office of Energy and Environmental Affairs:
  – Set the 2020 emissions reduction requirement at 25% below 1990 levels; maximum amount authorized by law
  – Issued the CECP that lays out 28 programs and policies to reduce GHG emissions from 4 sectors to achieve 25% reduction goal by 2020
CECP Approach

Clean Energy and Climate Portfolio Impacts vs. Business as Usual

Million tons GHG

- Business as Usual
- Buildings (-9.8%)
- Electricity Supply (-7.7%)
- Transportation (-7.6%)
- Non-Energy (-2.0%)

25% below 1990
Massachusetts GHG Emissions

Million Metric Tons of CO₂ equivalent

Massachusetts EE Policy Drivers

- Massachusetts *Global Warming Solutions Act (2008)* requires greenhouse gas (GHG) reductions of 25% by 2020 and 80% by 2050 (compared to 1990 baseline)
- *Green Communities Act (2008)* requires “acquisition of all available energy efficiency and demand reduction resources that are cost effective or less expensive than supply” and uses RGGI auction proceeds for EE
- *Massachusetts Clean Energy and Climate Plan for 2020* relies on EE for largest segment of reductions (nearly one third of 25% reduction)
Massachusetts Clean Energy and Climate Plan for 2020 (MMTCO$_2$E and % of total reductions)

- Transportation: 7.2 MMTCO$_2$E (28%)
- Electricity: 7.3 MMTCO$_2$E (29%)
- Non-energy: 1.9 MMTCO$_2$E (8%)
- Buildings: 9.1 MMTCO$_2$E (35%)
- EE+DER: 6.9 MMTCO$_2$E (27%)

- Building codes: 1.5 MMTCO$_2$E (6%)
- Trees reduce heating load: 0.04 MMTCO$_2$E (0.2%)
- Solar thermal: 0.1 MMTCO$_2$E (0.4%)
- C/I heating oil: 0.1 MMTCO$_2$E (0.4%)
- Fed appliance stds: 0.5 MMTCO$_2$E (2%)

MassDEP
Annual vs. Lifetime vs. Cumulative Annual EE Savings

this year's report
## CECP Energy Savings

<table>
<thead>
<tr>
<th>Year</th>
<th>Electric</th>
<th>Gas</th>
<th>Annual Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>1.3%</td>
<td>0.6%</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>1.9%</td>
<td>0.9%</td>
<td>2010-2012 TYP</td>
</tr>
<tr>
<td>2012</td>
<td>2.2%</td>
<td>1.15%</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>2.4%</td>
<td>1.3%</td>
<td>5%</td>
</tr>
<tr>
<td>2014</td>
<td>2.5%</td>
<td>1.45%</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>2.6%</td>
<td>1.6%</td>
<td>5%</td>
</tr>
<tr>
<td>2016</td>
<td>2.7%</td>
<td>1.75%</td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>2.8%</td>
<td>1.9%</td>
<td>5%</td>
</tr>
<tr>
<td>2018</td>
<td>2.9%</td>
<td>1.9%</td>
<td>5%</td>
</tr>
<tr>
<td>2019</td>
<td>2.9%</td>
<td>1.9%</td>
<td>5%</td>
</tr>
<tr>
<td>2020</td>
<td>2.9%</td>
<td>1.9%</td>
<td>5%</td>
</tr>
</tbody>
</table>
Next Steps

• Estimate EE GHG benefits for tracking purposes in:
  – GWSA-required 5-Year Report
  – forthcoming GWSA Dashboard
Questions/Comments?

Thank you!
Massachusetts Clean Energy and Climate Plan for 2020:
EE+DER Strategies (MMTCO₂E and % of EE+DER reductions)

- EE electricity: 4.7 (69%)
- EE gas: 1.4 (21%)
- EE oil: 0.5 (7%)
- DER gas: 0.08 (1%)
- DER oil: 0.04 (0.5%)
- DER electricity: 0.006 (0.1%)
- DER propane: 0.006 (0.1%)
CECP Emission Factors

- 1030 pounds carbon dioxide per megawatt hour (lb CO₂/MWh) saved
- 0.00585 short ton CO₂/therm gas saved
- 161.386 lb CO₂/million British Thermal units (mmBtu) oil saved
- 139.178 lb CO₂/mmBtu propane saved