CONSULTANT TEAM
PRESENTATION ON PA 2019 REPORT

June 17, 2020

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INTRODUCTION

► Purpose of this presentation is to:
  - Provide a deeper dive on 2019 results across sectors, initiatives, and PAs
  - Highlight and address most important Council priorities
  - Discuss conclusions drawn from KPI results
  - Identify areas of focus for 2020

► MMBtu savings presented based on agreed-upon framework included in 2019-2021 Plan and Term Sheet, in the Plan the EEAC reviewed and approved:
  - Site energy savings for all measures (based on energy impacts at customer site), except used source energy savings for CHP (consistent with CHP approach used in program)
  - “Adjusted MMBtus” = Site energy savings + CHP source energy savings
### Electric

*Potential overstatement error in PA fuel oil data may impact MMBtu and Benefits values below*

<table>
<thead>
<tr>
<th></th>
<th>Evaluated Amount</th>
<th>% of Plan (Evaluated)</th>
<th>% of Plan (Q4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Savings (MWh)</td>
<td>1,189,367</td>
<td>105%</td>
<td>101%</td>
</tr>
<tr>
<td>Annual Savings No Fuel Switching (MWh)</td>
<td>1,199,409</td>
<td>105%</td>
<td>101%</td>
</tr>
<tr>
<td>Lifetime Savings (MWh)</td>
<td>10,101,565</td>
<td>94%</td>
<td>97%</td>
</tr>
<tr>
<td>Lifetime Savings No Fuel Switching (MWh)</td>
<td>10,279,191</td>
<td>95%</td>
<td>98%</td>
</tr>
<tr>
<td>Total Adjusted Lifetime MMBtu – site + CHP*</td>
<td>82,487,154</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Summer Capacity Savings (MW)** – EE</td>
<td>180</td>
<td>107%</td>
<td>110%</td>
</tr>
<tr>
<td>Summer Capacity Savings (MW) – Active/ADR</td>
<td>87</td>
<td>85%</td>
<td></td>
</tr>
<tr>
<td>Winter Capacity Savings (MW)** – EE</td>
<td>197</td>
<td>109%</td>
<td>114%</td>
</tr>
<tr>
<td>Winter Capacity Savings (MW) – Active/ADR</td>
<td>0</td>
<td>-100%</td>
<td></td>
</tr>
<tr>
<td>Benefits ($ Millions)</td>
<td>$2,237</td>
<td>101%</td>
<td>97%</td>
</tr>
<tr>
<td>Expenditures ($ Millions)</td>
<td>$620</td>
<td>98%</td>
<td>98%</td>
</tr>
</tbody>
</table>

*For CHP only, evaluated results were calculated using PA refined methodology for calculating source energy savings

**Does not include active demand savings
<table>
<thead>
<tr>
<th>Gas</th>
<th>Amount</th>
<th>Percent of Plan (Evaluated)</th>
<th>Percent of Plan (Q4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Savings (Therms)</td>
<td>29,634,148</td>
<td>94%</td>
<td>88%</td>
</tr>
<tr>
<td>Lifetime Savings (Therms)</td>
<td>400,538,600</td>
<td>97%</td>
<td>97%</td>
</tr>
<tr>
<td>Lifetime Savings (MMBtu)</td>
<td>40,547,048</td>
<td>98%</td>
<td>N/A</td>
</tr>
<tr>
<td>Benefits ($ Millions)</td>
<td>$759</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Expenditures ($ Millions)</td>
<td>$280</td>
<td>108%</td>
<td>108%</td>
</tr>
</tbody>
</table>
$ Millions

<table>
<thead>
<tr>
<th>Total</th>
<th>Electric Energy</th>
<th>Electric Capacity</th>
<th>Non-Resource</th>
<th>Gas</th>
<th>Other Resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>$3,500</td>
<td>$3,000</td>
<td>$2,500</td>
<td>$2,000</td>
<td>$1,500</td>
<td>$1,000</td>
</tr>
</tbody>
</table>

2019 Electric and Gas Program Benefits

2019 Total Benefits = 101% of goal*

*Potential overstatement error in PA fuel oil data may impact Benefits and MMBtu values in this slide, subsequent slides, and in PAs’ presentation.
RESIDENTIAL AND INCOME ELIGIBLE
RESIDENTIAL STATEWIDE GOAL ACHIEVEMENT 2019

Residential Statewide Goal Achievement - Gas and Electric

- Annual Savings: 131%
- Lifetime Savings: 122%
- Spending: 115%
- Benefits: 136%

Bar chart showing the percentage of planned goal achieved for Annual Savings, Lifetime Savings, Spending, and Benefits for Gas and Electric.
KEY FACTORS IN RES SECTOR OVERACHIEVEMENT

Strong retail lighting activity:
- Boosted annual electric savings
- Reductions in measure lives and hours of use depressed lifetime savings

High activity levels in the Residential Coordinated Delivery Initiative:
Results show up in:
- Electric annual savings
- Electric and gas sector total energy benefits
- Gas annual and lifetime savings
Higher than planned participation, esp. major measures

Higher than planned spending:
- Linked to larger than planned volume in Participant Incentives
INCOME ELIGIBLE STATEWIDE GOAL ACHIEVEMENT 2019

Income Eligible Statewide Goal Achievement - Gas and Electric

- Annual Savings: 103% (Electric), 106% (Gas)
- Lifetime Savings: 89% (Electric), 105% (Gas)
- Spending: 99% (Electric), 99% (Gas)
- Benefits: 88% (Electric), 100% (Gas)
KEY FACTORS IN LOWER THAN PLANNED ELECTRIC INCOME ELIGIBLE RESULTS

► Gas savings and benefits goals achieved in 2019
► Statewide annual savings goal achieved, but lower than planned electric lifetime savings and benefits achievements primarily a result of National Grid
  - Fewer than planned opportunities to replace electric resistance heat with air source heat pumps in multifamily properties
  - Lower savings per job as a result of greater proportion of smaller multifamily jobs
  - Cape Light Compact also failed to meet its lifetime savings goal
  - All PAs failed to meet Income Eligible electric benefits goals
EVERSOURCE RESIDENTIAL LIFETIME SAVINGS BY INITIATIVE 2019

Eversource Residential Electric Lifetime Savings (MWh)

- New Homes & Renovations: 6%
- Coordinated Delivery: 10%
- Retail: 26%
- Behavior: 58%

Eversource Residential Gas Lifetime Savings (Therms)

- New Homes & Renovations: 3%
- Coordinated Delivery: 26%
- Retail: 12%
- Behavior: 59%

Eversource Residential Total Lifetime Savings (Site MMBtu)

- New Homes & Renovations: 2%
- Coordinated Delivery: 10%
- Retail: 28%
- Behavior: 60%
2019 EVERSOURCE LIFETIME SAVINGS BY END USE (ALL FUELS)

Eversource Res Lifetime Savings by End Use (Total Site MMBtu)

- 2019:
  - Total 10,458,671
  - 42% Envelope
  - 41% HVAC
  - 8% Lighting
  - 2% Hot Water
  - 2% Energy Star Homes
  - 1% Behavior
  - 1% Process

- 2018:
  - Total 12,128,237
  - 37% Envelope
  - 35% HVAC
  - 18% Lighting
  - 3% Hot Water
  - 2% Energy Star Homes
  - 1% Behavior
  - 3% Process

Eversource Income Eligible Lifetime Savings by End Use (Total Site MMBtu)

- 2019:
  - Total 2,019,016
  - 35% Envelope
  - 42% HVAC
  - 8% Lighting
  - 6% Hot Water
  - 1% Energy Star Homes

- 2018:
  - Total 2,076,137
  - 36% Envelope
  - 32% HVAC
  - 18% Lighting
  - 7% Hot Water
  - 6% Energy Star Homes

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FOCUS ON OIL: LARGE ELEMENT OF MMBTU SUCCESS IN 2019

2019 Residential Savings by Fuel (Site MMBtu)

- Propane: 8%
- Gas: 34%
- Oil: 34%
- Electric: 24%

Lifetime Oil Savings by End Use

- HVAC: 37%
- Envelope: 55%
- Hot Water: 3%
- Lighting: -5%
- Other: 0%

Lifetime Oil HVAC Savings by Measure

- Thermostats: 48%
- Fuel Switching: 39%
- Heating equipment: 11%
- Boiler controls: 1%
- Duct insulation: 0%
- Duct sealing: 1%

All data are for Eversource only
RESIDENTIAL LIFETIME ELECTRIC SAVINGS AND RETAIL LIGHTING UNITS

Residential Lifetime Electric Savings and Retail Lighting Units

Evaluated Res Electric Savings (Lighting)
Evaluated Res Electric Savings
Planned Res Electric Savings (Lighting)
Planned Res Electric Savings
Evaluated Res Retail Lighting Units
Planned Res Retail Lighting Units
RESIDENTIAL AND INCOME ELIGIBLE:
Data Reported for the First Time for 2019
Support Assessment of PA Progress in Achieving EEAC Priorities
RESIDENTIAL CONVERSION RATES ARE GENERALLY GOOD

Statewide, combined electric and gas

<table>
<thead>
<tr>
<th>Measures</th>
<th># of Recommendations</th>
<th>Total # of Conversions (Cumulative)</th>
<th>Conversion Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation</td>
<td>20,348</td>
<td>9,001</td>
<td>44%</td>
</tr>
<tr>
<td>Air Sealing</td>
<td>18,555</td>
<td>9,342</td>
<td>50%</td>
</tr>
<tr>
<td>Duct Sealing</td>
<td>2,172</td>
<td>856</td>
<td>39%</td>
</tr>
<tr>
<td>Duct Insulation</td>
<td>339</td>
<td>128</td>
<td>38%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>41,414</td>
<td>19,327</td>
<td>47%</td>
</tr>
</tbody>
</table>

Conversions shown through end of Q1 2020, which provides a full year of data
ENERGY OPTIMIZATION IS STILL A WORK IN PROGRESS

Appears that Energy Specialist and HPC training in Energy Optimization framework in late 2019 hasn’t yet increased heat pump recommendation numbers—Statewide results to date minus Eversource

<table>
<thead>
<tr>
<th>Quarterly KPI#3</th>
<th>Ductless Minisplit Heat Pump</th>
<th>Central HP</th>
<th>HEA Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomass</td>
<td>1</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Electric resistance</td>
<td>452</td>
<td>407</td>
<td>431</td>
</tr>
<tr>
<td>Gas boiler</td>
<td>560</td>
<td>326</td>
<td>202</td>
</tr>
<tr>
<td>Gas furnace</td>
<td>105</td>
<td>63</td>
<td>43</td>
</tr>
<tr>
<td>Heat pump</td>
<td>13</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Oil boiler</td>
<td>936</td>
<td>671</td>
<td>711</td>
</tr>
<tr>
<td>Oil furnace</td>
<td>144</td>
<td>69</td>
<td>95</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Propane boiler</td>
<td>47</td>
<td>25</td>
<td>36</td>
</tr>
<tr>
<td>Propane furnace</td>
<td>45</td>
<td>-18</td>
<td>72</td>
</tr>
<tr>
<td>Grand Total</td>
<td>2303</td>
<td>1559</td>
<td>1615</td>
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</tbody>
</table>

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RENTER REPORTING SHOWS
PLANNED STRATEGIES TO SERVE
RENTERS ARE NOT FULLY REALIZED

<table>
<thead>
<tr>
<th>Reporting Category</th>
<th>National Grid</th>
<th>Eversource</th>
<th>Unitil</th>
<th>CLC</th>
<th>Berkshire</th>
<th>CMA</th>
<th>Liberty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Electric</td>
<td>Gas</td>
<td>Electric</td>
<td>Gas</td>
<td>Electric</td>
<td>Gas</td>
<td>Gas</td>
</tr>
<tr>
<td>Residential Coordinated Delivery</td>
<td>6,655</td>
<td>3,500</td>
<td>1,222</td>
<td>616</td>
<td>46</td>
<td>42</td>
<td>254</td>
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<tr>
<td></td>
<td>175</td>
<td>795</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy Savings Packages</td>
<td>5</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income Eligible Coordinated Delivery</td>
<td>4,601</td>
<td>2,419</td>
<td>9,151</td>
<td>2,675</td>
<td>287</td>
<td>214</td>
<td>1,202</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>2,967</td>
<td>203</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C&amp;I - Res End Use - Rental Units</td>
<td>4,607</td>
<td>3,563</td>
<td>Not Available</td>
<td>652</td>
<td>6</td>
<td>288</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>126</td>
<td>1,224</td>
<td>410</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C&amp;I - Res End Use - C&amp;I Accounts</td>
<td>140</td>
<td>46</td>
<td>104</td>
<td>16</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>69</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

► This is the first year the PAs have reported renter participation in this form, pursuant to DPU order.

► Data points to assist with placing these numbers in context:
  - The PAs provided over 80,000 Home Energy Assessments in 2019
  - In 2019 the U.S. Census Bureau estimated 1.1 million housing units in Massachusetts were occupied by renters—38% of total units
**LANGUAGE REPORTING PROVIDES A LIMITED LINE OF SIGHT**

<table>
<thead>
<tr>
<th>Language</th>
<th>Mass Save Phone Hotline Language Selection</th>
<th>MassSave.com Page views</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
</tr>
<tr>
<td>English</td>
<td>137,156</td>
<td>97%</td>
</tr>
<tr>
<td>Mandarin</td>
<td>158</td>
<td>0.1%</td>
</tr>
<tr>
<td>Portuguese</td>
<td>313</td>
<td>0.2%</td>
</tr>
<tr>
<td>Russian</td>
<td>212</td>
<td>0.15%</td>
</tr>
<tr>
<td>Spanish</td>
<td>2,900</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>140,739</strong></td>
<td><strong>2%</strong></td>
</tr>
</tbody>
</table>
RES AND INCOME ELIGIBLE 2019
TAKEAWAYS

► All 2019 gas savings and benefits goals were achieved in both sectors

► In the electric residential sector, lighting continues to contribute roughly $\frac{3}{4}$ of kWh lifetime savings, but claimable lighting savings continue to decrease due to reductions in measure lives and other key parameters

► Higher than planned participation in Residential Coordinated Delivery Initiative was a big factor in 2019 results
  - The impacts of COVID-19 on future results will likely be mostly strongly felt here
  - Oil savings played a major role—results reflected in Benefits and MMBtu savings

► Income Eligible lifetime electric savings shortfall reflects challenges for NGrid, especially heat pump opportunities
COMMERCIAL & INDUSTRIAL
C&I STATEWIDE GOAL ACHIEVEMENT 2019

C&I Statewide Goal Achievement - Gas and Electric

<table>
<thead>
<tr>
<th>Category</th>
<th>Electric</th>
<th>Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Savings</td>
<td>90%</td>
<td>68%</td>
</tr>
<tr>
<td>Lifetime Savings</td>
<td>92%</td>
<td>72%</td>
</tr>
<tr>
<td>Spending</td>
<td>83%</td>
<td>86%</td>
</tr>
<tr>
<td>Benefits</td>
<td>87%</td>
<td>72%</td>
</tr>
</tbody>
</table>
C&I ACHIEVEMENT BY PA - ELECTRIC

C&I Lifetime Electric Savings Goal Achievement

% of Planned Goal

<table>
<thead>
<tr>
<th>Utility</th>
<th>% of Planned Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLC</td>
<td>68%</td>
</tr>
<tr>
<td>Eversource</td>
<td>82%</td>
</tr>
<tr>
<td>National Grid</td>
<td>106%</td>
</tr>
<tr>
<td>Unitil</td>
<td>100%</td>
</tr>
</tbody>
</table>
C&I ACHIEVEMENT BY PA - GAS

C&I Lifetime Gas Savings Goal Achievement

Custom Heat Recovery = 60% total savings

<table>
<thead>
<tr>
<th>Utility</th>
<th>% of Planned Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berkshire</td>
<td>89%</td>
</tr>
<tr>
<td>CMA</td>
<td>37%</td>
</tr>
<tr>
<td>Eversource</td>
<td>57%</td>
</tr>
<tr>
<td>Liberty</td>
<td>236%</td>
</tr>
<tr>
<td>National Grid</td>
<td>97%</td>
</tr>
<tr>
<td>Unitil</td>
<td>100%</td>
</tr>
</tbody>
</table>
C&I ELECTRIC – STILL MOSTLY LIGHTING

C&I Net Lifetime Electric Savings (MWh) by End Use

Net MWh


Evaluated  Planned

62% Lighting in 2019
C&I GAS – BIG DIP IN SAVINGS FROM 2018 TO 2019

Lifetime C&I Gas Savings (MMBTU) by End Use

- Evaluated
- Planned

- All Other
- Food Service
- Custom Measures
- Envelope
- Process
- Hot Water
- HVAC

Envelope & Food Service
Hot Water & Process
SLIGHT DECLINE IN LIGHTING SAVINGS

Lifetime C&I Lighting Savings

Dotted line = Plan

Evaluated

MWh

UPSTREAM LIGHTING – LINEAR MARKET SAVINGS DECLINING BUT GREATER EMPHASIS ON FIXTURES 😊

C&I Upstream Lighting Savings

<table>
<thead>
<tr>
<th>Lifetime MWh</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LED Screw In</td>
<td>Exterior</td>
<td>Fluorescent</td>
<td>LED Stairwell</td>
</tr>
<tr>
<td>2016</td>
<td>1,800,000</td>
<td>1,200,000</td>
<td>1,400,000</td>
<td>1,600,000</td>
</tr>
<tr>
<td>2017</td>
<td>1,400,000</td>
<td>800,000</td>
<td>1,200,000</td>
<td>1,400,000</td>
</tr>
<tr>
<td>2018</td>
<td>1,200,000</td>
<td>600,000</td>
<td>1,000,000</td>
<td>1,200,000</td>
</tr>
<tr>
<td>2019</td>
<td>1,000,000</td>
<td>400,000</td>
<td>800,000</td>
<td>1,000,000</td>
</tr>
</tbody>
</table>

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SMALL BUSINESS VERY LOW % LIGHTING CONTROLS

2019-2021 Planned Turnkey Lighting Savings

- **2019 Planned**: 0.34%
- **2019 Actual**: 0.15%
- **2020 Planned**: 0.44%
- **2021 Planned**: 0.59%

*All Other Lighting* | *Lighting Controls*
PLANNED REBOUND IN HVAC SAVINGS HAS NOT HAPPENED YET

Lifetime Electric C&I HVAC Savings

- Dotted line = Plan
- Evaluated
DECLINE IN AIR SOURCE HEAT PUMPS BUT VRF INCREASE

Upstream HVAC Lifetime Savings (MWh)

- Unitary Air Conditioners
- Heat Pump Systems
- VRF Systems

Dotted line = Plan

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## C&I ENERGY OPTIMIZATION – BI-ANNUAL REPORTING (Q4 2019)

<table>
<thead>
<tr>
<th>Measure Name</th>
<th>Quantity Definition</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mini Split HP - Upstream</td>
<td>Compressor</td>
<td>92</td>
</tr>
<tr>
<td>Central HP - Upstream</td>
<td>Compressor</td>
<td>1,179</td>
</tr>
<tr>
<td>Fuel Switching - Retrofit</td>
<td>Projects</td>
<td>4</td>
</tr>
<tr>
<td><strong>Reported Statewide Total</strong></td>
<td></td>
<td>1,275</td>
</tr>
</tbody>
</table>

**Target = 17,980 C&I units in 2019-2021 plan period**
- Only **7%** progress toward 3-year C&I target
- Under reporting or under achieving or both?

**Only 4 C&I fuel switching projects statewide**
- Under reporting or under achieving or both?
C&I 2019 TAKEAWAYS

► Electric
  - 92% of savings goal; 83% of budget spent
  - Net lighting savings decline; low controls penetration
  - Other important end-uses like HVAC not picking up yet
  - ASHP declining, but VRF systems increasing

► Gas
  - 72% of savings goal; 86% of budget spent
  - HVAC savings steady
  - Process and hot water declining
  - Building envelope and food service show potential
THANK YOU

Questions?

June 17, 2020