WHAT’S HOT – RESIDENTIAL HEATING COSTS IN MAINE

Island Institute’s Fifth Annual Island Energy Conference

November 7, 2014

Lisa Smith
Governor’s Energy Office
Maine's Residential Energy Challenges

Residential Energy Costs

- Maine experiences some of the highest residential energy costs in the country.
- Most oil consumption per capita in the region.

Exposure to Oil

- Total Petroleum Consumption per Capita

<table>
<thead>
<tr>
<th>Year</th>
<th>Electricity Cost</th>
<th>Heating Oil Cost</th>
<th>Motor Gasoline Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>$80.70</td>
<td>$205.62</td>
<td>$184.94</td>
</tr>
<tr>
<td>2010</td>
<td>$79.27</td>
<td>$234.35</td>
<td>$210.97</td>
</tr>
<tr>
<td>2011</td>
<td>$78.35</td>
<td>$281.12</td>
<td>$261.15</td>
</tr>
<tr>
<td>2012</td>
<td>$75.69</td>
<td>$282.76</td>
<td>$262.44</td>
</tr>
</tbody>
</table>
MAINE’S PRIMARY RESIDENTIAL HEATING SYSTEMS

- Heating Oil
- Wood
- Utility Gas
- Other Fuel
- No Fuel
- Propane
- Electricity
- Coal
- Solar
- Heating Oil Minimum Price ($)
- Heating Oil Maximum Price ($)
- Heating Oil Average Price ($)

### Graph Details
- **Y-axis**: Percent of Homes with Fuel Source
- **X-axis**: Year (2005 to 2012)
- **Price Ranges**: Heating Oil Minimum Price ($0.00) to Heating Oil Maximum Price ($4.50)
- **Legend**:
  - Heating Oil
  - Wood
  - Utility Gas
  - Other Fuel
  - No Fuel
  - Propane
  - Electricity
  - Coal
  - Solar
  - Heating Oil Minimum Price
  - Heating Oil Maximum Price
  - Heating Oil Average Price

The graph illustrates the percentage of homes using different fuel sources for heating over the years 2005 to 2012, along with the price ranges for heating oil.
MAINE’S EXISTING INEFFICIENT HEATING SYSTEMS

OIL FURNACES IN THE UNITED STATES - AFUE RATINGS

DATA FROM BROOKHAVEN NATIONAL LABORATORY
INEFFICIENT HOUSING STOCK

AGE OF HOMES IN MAINE AND THE UNITED STATES

Data from Government Accountability Office and American Community Survey
OPPORTUNITIES IN HEATING CHOICES

- Significant opportunities among a diverse group of heating options.
## THE FINANCIAL CHALLENGE OF THE UPGRADE

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Installed Equipment Cost ($)</th>
<th>Annual Fuel Cost</th>
<th>Payback Period (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas Conversion Burner</td>
<td>$2,500 - $4,500</td>
<td>$897</td>
<td>1.0 – 1.8</td>
</tr>
<tr>
<td>Air Sealing</td>
<td>$600</td>
<td>N/A</td>
<td>2</td>
</tr>
<tr>
<td>New Natural Gas Furnace</td>
<td>$5,000 - $10,000</td>
<td>$803</td>
<td>2.0 – 3.9</td>
</tr>
<tr>
<td>Wood Stove - Supplemental</td>
<td>$3,500 - $6,500</td>
<td>$1,960</td>
<td>2.5 – 4.6</td>
</tr>
<tr>
<td>Solar Hot Water - Supplemental</td>
<td>$8,300 - $12,900</td>
<td>$329</td>
<td>2.7 – 4.3</td>
</tr>
<tr>
<td>Wood Pellet Furnace</td>
<td>$10,000 - $22,000</td>
<td>$1,618</td>
<td>5.7 – 12.6</td>
</tr>
<tr>
<td>Insulation (Attic or Basement)</td>
<td>$4,000</td>
<td>N/A</td>
<td>5.3</td>
</tr>
<tr>
<td>Geothermal Heat Pump</td>
<td>$11,000 - $45,000</td>
<td>$1,292</td>
<td>5.3 – 21.8</td>
</tr>
<tr>
<td>Air Source Electric Heat Pump</td>
<td>$5,000 - $12,000</td>
<td>$2,423</td>
<td>5.3 – 12.8</td>
</tr>
<tr>
<td>Air Source Heat Pump – Supplemental</td>
<td>$3,000 - $4,000</td>
<td>$1,645</td>
<td>3.6</td>
</tr>
<tr>
<td>Solar Photovoltaic - Supplemental</td>
<td>$18,000 - $30,000</td>
<td>n/a</td>
<td>5.4 -8.9</td>
</tr>
<tr>
<td>Propane Oil Furnace</td>
<td>$1,000 - $5,000</td>
<td>$3,279</td>
<td>12.7-63.1</td>
</tr>
<tr>
<td>More Efficient Oil Furnace</td>
<td>$2,000 - $5,000</td>
<td>$3,081</td>
<td>7.2 -18.1</td>
</tr>
</tbody>
</table>

- Paybacks Attractive, but Mainers do not have the upfront capital.
2011 State Law:
• 30 Percent Reduction of Oil Usage by 2030 over 2007 Baseline.
• 50 Percent Reduction by 2050

Oil Reduction Report:
“Programs are not focused on reducing residential heating costs where there is significant oil usage.”
GOVERNOR’S HEAT PUMP INITIATIVE

• PILOT PROJECT LAUNCHED OCTOBER 2012.
  ➢ The entire program (1,000 customers) was subscribed by spring 2013.
  ➢ Final evaluation of the pilot just issued by Emera Maine; report indicates pilot’s ratings rival those of a successful national campaign for a new product.
DEVOTED FUNDING FOCUSED ON MAINE’S HEATING CHALLENGES

• Redirected Efficiency Maine Trust funding to develop new program to reduce heating demand and reduce greenhouse gas emissions.

• FY2014 – $7 Million.
• FY2015 - $7.1 Million.
Home Energy Savings Program (HESP)

- Launched October 2013

- Rebates and Low interest Financing for:
  - Weatherization measures (insulation, air sealing)
  - Efficient heating system upgrades
    - supplemental – heat pumps, pellet & wood stoves
    - primary heating system, all fuels; generous rebate for pellet boilers and geothermal systems

- First year results – over 5,000 homes installed at least one measure

- Go to: http://www.efficiencymaine.com/at-home/ to get started
Ductless Heat Pumps

- 4,200 sold in past 12 months
- $3,500 typical installed cost
- Supplemental heat
  - Can reduce central system use 20%-50%
- The more you use it for heating, the more you save
HEATING SOLUTIONS FOR ISLANDERS

• Probably won’t be identical to homeowners on the mainland
• Weatherization measures will save $$ for everyone
• Efficient electric technologies, such as air source heat pumps and heat pump water heaters, may still be part of the equation; highly dependent on electric rates and cost of fuel it is displacing
Questions?

Lisa Smith
Maine Governor’s Energy Office
lisa.j.smith@maine.gov
(207) 624-7445