Residential HVAC Programs in the Northeast

Chris Neme, Vermont Energy Investment Corp.

On behalf of
Northeast Energy Efficiency Partnerships

ENERGY STAR® HVAC Partner Meeting
Chicago, IL
October 6, 2004
Introduction

Who is NEEP?

– Regional non-profit
– Helps coordinate regional efforts

• Presentation Focus
  – New England, Long Island & New Jersey
  – Central A/Cs and Gas Furnaces
    • Programs also address heat pumps, boilers, oil/propane equipment
  – 2004 Program Features
    • Most will be unchanged in 2005
    • Will flag some possible changes for 2005
Northeast HVAC Market

- **~225,000 new central A/C installations per year**
  - Saturations high in new homes (~80%)
  - Saturations growing in existing homes

- **~135,000 new furnace installations per year**

- **No data on new gas boilers or oil/propane equipment, but non-trivial**
  - Gas boilers as common as gas furnaces (roughly)
  - ~40% existing homes have oil heat
## Regional Program Overview

<table>
<thead>
<tr>
<th>State/Territory</th>
<th>Central A/C Equipment Incentives</th>
<th>Central A/C Sizing &amp; Installation Focus</th>
<th>Gas Furnace Equipment Incentives</th>
<th>Gas Furnace Fan Efficiency Incentives</th>
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<tbody>
<tr>
<td>Connecticut</td>
<td>✓</td>
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<tr>
<td>Long Island, NY</td>
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<tr>
<td>Maine</td>
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<td>maybe in 2005</td>
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<tr>
<td>Massachusetts</td>
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<td>New Hampshire</td>
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<tr>
<td>Rhode Island</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td>Vermont</td>
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<td>maybe in 2005</td>
<td>✓</td>
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</tbody>
</table>
## Central A/C Rebates

<table>
<thead>
<tr>
<th>State/Territory</th>
<th>Customer Incentives</th>
<th>Extra Contractor Incentives</th>
<th>Other requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SEER 13   EER 11</td>
<td>SEER 14   EER 12</td>
<td>SEER 15   EER 13</td>
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<tr>
<td>Connecticut</td>
<td>$350</td>
<td>same</td>
<td>same</td>
</tr>
<tr>
<td>Long Island, NY</td>
<td>$300</td>
<td>$400</td>
<td>$500</td>
</tr>
<tr>
<td>Maine</td>
<td>$300</td>
<td>$450</td>
<td>same</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>$300</td>
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</tr>
<tr>
<td>New Jersey</td>
<td>$300</td>
<td>$550</td>
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<tr>
<td>Rhode Island</td>
<td>$370</td>
<td>$550</td>
<td>same</td>
</tr>
<tr>
<td>Vermont</td>
<td>$200</td>
<td>same</td>
<td>same</td>
</tr>
</tbody>
</table>
Central A/C Installation Focus

• **Connecticut**
  – Promoting use of Honeywell Service Assistant
  – $50 - $100 for diagnostic & improvements w/tool

• **Long Island**
  – Requires proper size/chg/flow for equipment rebate
  – Training technicians on Manual J, charge/airflow
  – Future integration w/Home Performance w/Energy Star
  – Future use of in-field verification tools likely

• **Massachusetts**
  – Extra $100 for installation by NATE certified tech
Central A/C Installation Focus (2)

- **New Jersey**
  - Requires proper size/chg/flow for equipment rebate
  - Training technicians on Manual J, charge/airflow
  - Aggressive promotion of NATE certification
  - Significant customer education efforts

- **Rhode Island**
  - Requires proper size/chg/flow for equipment rebate
  - Uses Proctor Check Me tool for verification
## Gas Furnace Rebates

<table>
<thead>
<tr>
<th>State/Territory</th>
<th>AFUE Incentives</th>
<th>ECM Fan Incentives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>90% AFUE</td>
<td>92% AFUE</td>
</tr>
<tr>
<td>Connecticut</td>
<td></td>
<td>$400 if ECM</td>
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<tr>
<td>Long Island, NY</td>
<td>$150</td>
<td>$400 if ECM</td>
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<tr>
<td>Maine</td>
<td></td>
<td>same</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>$150</td>
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</tr>
<tr>
<td>New Hampshire</td>
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<td>$300</td>
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</table>
Market & Field Research (STAC)

- Characterization of northeast HVAC market
- Impact of NATE certification on central A/C installation quality
  - Field tests of actual operating efficiency
  - Two samples: NATE installs, non-NATE installs
- Variable speed system efficiency during peak
  - Extensive field metering and monitoring of 5 systems
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More Detail in Following Slides
GasNetworks

- Bay State Gas
- Berkshire Gas
- New England Gas Company
- NSTAR Gas
- KeySpan Energy Delivery
- Unitil
- Northern Utilities of New Hampshire

Providing rebates for high efficiency heating equipment since 1997
GasNetworks

Continued Adjustment of Rebates to Reflect Market Response

**Furnace Rebates** - 90% and 92% AFUE with ECM
  - $150/unit and $400/unit

**Hot Water Boiler Rebates** - 85% AFUE
  - $500/unit

**Steam Boiler Rebates** - 82% AFUE
  - $200/unit
Total Residential HE Rebates

- 1998: $3422
- 1999: $6476
- 2000: $9557
- 2001: $12060
- 2002: $12877
- 2003: $15182
GasNetworks

Distribution of Rebates by Equipment Type 2003

- Boiler: 4119
- Furnace: 274
- ECM Furnace: 7868
- Steam Boiler: 2921
GasNetworks

- **Joint Utility promotion of Furnaces with High Efficiency Blower Fans**
  - Utilities split $400 rebate for gas furnaces (≥92% AFUE) with high efficiency blower fans (ECM or equivalent)

- **Partnering Utilities:**
  - Massachusetts Electric
  - NSTAR Electric
  - Western Massachusetts Electric
  - Unitil
  - Cape Light Compact
Massachusetts Cool Smart

April 2004 - Program launched
• Provides consumer rebates
• Offers special training and incentives for contractors
• Goals:
  – Provide 2,000 rebates
  – Provide 200 NATE Certifications

Program Sponsors:
Cape Light Compact, NSTAR Electric, Nantucket Electric, Massachusetts Electric, Unitil, and WMECo
Massachusetts Cool Smart

Rebate for Qualified ENERGY STAR Equipment

Central A/C – SEER 13 and SEER 13 with ECM
$300 and $350/unit

SEER 14 and SEER 14 with ECM
$450 and $500

Heat Pumps – SEER 13, HSPF 8 (with ECM)
$300 ($500)

SEER 14, HSPF 8.5 (with ECM)
$450 ($650)

$100 Incentive for NATE certified contractor
New Jersey - CoolAdvantage and WarmAdvantage Programs

Electric HVAC - CAC and HP
- SEER 13, EER 11 - $300 and $400 (8.0 HSPF)
- SEER 14, EER 12 - $500 and $650 (8.5 HSPF)

Furnaces and Boilers
- Furnaces - 90% AFUE - $300/unit
- Boilers - 85% AFUE - $300/unit
- Ground Source HP ➔ EER 13 - $500/ton

Rebate availability:
- Existing Homes – Statewide
- New Construction – Limited to specified ‘Smart Growth’ areas
New Jersey - CoolAdvantage and WarmAdvantage Programs

Year 2003 Program Activity:
- 16,009 Rebates -- CAC/HP
- 8,777 Rebates -- Furnaces/Boilers

HVAC Trainees:
- 1,244 (mix of Manual J, charge/airflow, sales training, prep for NATE certification test)
- NATE certified technicians: 427 new certifications in CAC or HP
- 172 ENERGY STAR sales training

Inspections ensure that program sizing, airflow and charging specifications are met.
Rhode Island – Cool Change Program

Electric HVAC - CAC and HP

SEER 13, EER 11 - $370 and $370 (8.0 HSPF)
SEER 14, EER 12 - $550 and $550 (8.5 HSPF)

• $100 Spiff to the HVAC Contractors for filling out rebate forms, passing CheckMe test, completing inspections to ensure that program sizing, airflow and charging specifications are met.

• 35 Technicians trained on program requirements and quality installations in 2003.
New York - LIPA Cool Homes

Electric HVAC - CAC and HP

SEER 13, EER 11 - $300 and $400 (8.0 HSPF)
SEER 14, EER 12 - $400 and $600 (8.5 HSPF)
SEER 15, EER 13 - $500

Contractor receives $120 for (mandatory) completion of Manual J calculation.
Inspections ensure that program sizing, airflow, and charging specifications are met.
New inspections process more in-depth, verify airflow & Manual J calculations in addition to visual inspections.
New York - LIPA Cool Homes

Program Activities

- 5,527 applications for rebates processed in 2003
- 84 contractors trained to date on Manual J, airflow, and/or charging
- Consumer marketing in 2003 included Yellow Pages, updated website, consumer brochure, website and bill stuffers
Connecticut - High Efficiency Heating/Cooling Program

Electric HVAC - CAC
SEER 13, EER 11 - $350

Electric HVAC - HP
SEER 13, EER 11, 8.0 HSPF - $350

Ground Source Heat Pumps
EER 13.4, COP 3.1 - $350

2,237 Qualified Rebates - CAC and HP combined in 2003.

Program disruption in 2003
Connecticut – Southwest Tune-up Program

After the Program suspension in 2003, Southwest CT is now offering a comprehensive set of services:

- $50 Contractor incentive for quality installations
- Program Focused in Southwest CT
- Partnered with Honeywell Services to provide HVAC Diagnostic system tools to HVAC contractors
- 30 participating contractors and 100 Honeywell Service Assistant tools in use at this time
Vermont HVAC Program

Vermont Gas Program Activities for 2003:

- 189 rebates for furnaces (AFUE 90% or higher - $350/unit)
- 137 rebates for boilers (AFUE 87% or higher - $450/unit)

Efficiency Vermont

- CAC and Furnace Program launched in May/April 2004.
- $50 Incentive to Contractors/Sales person
- 35 CAC rebates and 10 furnace fan rebates through the end of July.
New Construction Programs

Varying approaches to high efficiency HVAC:

- Included in HERS calculations for ENERGY STAR Homes compliance
- System commissioning services offered in some programs (MA)
- Rebates for high efficiency equipment (NJ)
Strategies to Increase Residential HVAC Efficiency in the Northeast

Budget: $596,104
Schedule: July 2004 – 2005
Funders: US DOE, NJ BPU, NYSERDA

Tasks:
- Regional HVAC Market Characterization (Northeast)
- Assess Emerging Technologies & Practices
- Estimate HVAC Efficiency Potential in Northeast
- On-site survey comparing installations in NY & NJ by trained/certified and other contractors
- On-site monitoring of High SEER equipment in NY and NJ
- Draft program design to transform/develop market for duct sealing

NEEP's role is project admin and management as well and technical expertise, as in kind contributions.
Northeast HVAC Program
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