The Consortium for Energy Efficiency

Water Heater Efficiency Program Dynamics in the United States and Canada

ENERGY STAR® 2012 Partners Meeting
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Agenda

- Overview of CEE; CEE *Water Heating Initiative*
- Key dynamics for residential water heating programs
- Other CEE-led efforts in support of high efficiency water heater programs
Background
The Consortium for Energy Efficiency: Working Together to Advance Efficiency

- > 130 members serve all or part of 45 states and 8 provinces
- 86% of $9.1B* total efficiency budgets are managed by members
- 2009 EPA Climate Protection Award recognized CEE members approach
- CEE is a member-driven nonprofit, governed by a Board of Directors from member organizations

* Source: CEE Annual Industry Report 2011
CEE Initiatives and the CEE High Efficiency Residential Gas Water Heating Initiative

CEE Initiatives are a means to advance efficiency through collaboration and alignment of efficiency programs.

- Approved by CEE's Board after an open and objective process
- Typically take the form of a program template
- Voluntarily adopted by efficiency programs
- Influence binational markets using the leverage of consistent programs
- Information and comment is sought from many sources, but specs are determined without influence from economic interests

| Storage Water Heaters (≤75,000 Btu/h) |
|-----------------|-----------------|
| Tier 0          | ≥0.62 EF        |
| Tier 1          | ≥0.67 EF        |
| Tier 2          | ≥0.80 EF        |

| Tankless Water Heaters (>50,000 and <200,000 Btu/h) |
|-----------------|-----------------|
| Tier 1          | ≥0.82 EF (w/ electronic ignition) |
Water Heating Efficiency Programs: Dynamics and Trends
Program cost-effectiveness challenges are paramount

- Programs are subject to different cost-effectiveness tests (utility, societal, total resource cost)

- Water heater program cost-effectiveness factors
  - Low natural gas prices
  - High incremental equipment and installation costs
  - Minimum standards increases lead to baseline increase which reduce savings and thus cost-effectiveness

- Result: some gas programs are retiring their water heater measures or reducing incentives
Availability limited in some areas
Programs moving beyond the widget for more systems-based approaches

- Whole homes programs and “bundled” incentives for simultaneous replacement of heating and water heating equipment
  - Drivers: achieving deeper savings, safety,

- System elements included or under consideration by some programs
  - Low-flow showerheads
  - System design
  - Pipe insulation
  - Drain heat recovery
  - Demand recirculation pumps
Programs’ perspective on tankless water heaters

- Significant growth in popularity
- Consumer advantages and disadvantages
  - Endless hot water
  - Higher installation costs, complexity
- Some studies indicate savings less than originally expected
  - Test method and draw patterns
  - Design matters
Water heaters remain a priority for CEE and its members

Technologies of recent interest to programs

- Gas hybrid water heaters
- Heat pump water heaters
- Light duty EPACT covered gas storage

Common inclusion criteria for programs

- Validated, measurable energy savings
- Cost effective (according to utility test)
- Proven technology
- Reliable
- Equal or improved amenity
Water heater program opportunities

Programs that remain committed to water heater measures are (generally)

- Evaluating for cost-effectiveness at the portfolio level*
- Seeing a broader / different purpose in running water heater programs (e.g. safety, customer engagement)

To better promote ENERGY STAR water heaters, efficiency programs seek

- Greater engagement from manufacturers on lab and in-field testing
- Less expensive high-efficiency products
- Greater engagement with distribution channel participants in promoting high efficiency water heaters

* Cost-effectiveness at the “portfolio level” describes regulation that permits programs to test cost effectiveness of numerous measures together (e.g. water heater + furnace), as opposed to requiring each measure to pass
Other CEE-led efforts in support of water heater efficiency programs
Expansion of the CEE AHRI Directory of Energy Efficient Equipment

- Allows program administrators, contractors, and consumers to search for, filter, and identify ENERGY STAR qualified equipment suitable for residential and small commercial applications.
  - Currently focused on residential HVAC equipment.
  - Plans underway to include gas furnaces and water heating equipment.
The Coalition for ENERGY STAR Water Heaters: promoting high efficiency water heating since 2009

Phase 1 Accomplishments

- 20 sponsors and partners
- Launched rebate finder website with promotional tools: www.eswaterheaters.org
- Published 10 articles
- YouTube videos and radio PSA
- Facebook site w/ articles and news
- 3 media tours & 3 trade shows
- Media kit, press releases and “e­blast” informational e­mails
- Brochure, banners, tote bag
- Flyers and utility bill stuffers
- Identity including brand and logo:
Coalition Phase 2 is focused on member–manufacturer collaboration & engaging installers

Key benefits

- **ENLIST:** website, articles, videos, and social media **promote installer and customer participation in efficiency programs**
- **INFORM:** product directory provides unique, user-friendly resource to identify qualifying water heater models by CEE Tier
- **FORTIFY:** sponsor messaging with branded and unbranded content
- **FACILITATE:** dialog, alignment, and collaborative problem-solving between members, trade associations, government agencies, and manufacturers

Approach

- **Narrower focus** supports efforts which most benefit CEE members in areas of significant need (credibility, communication, information)
- **Addresses dynamic environment and CEE Initiative revision** with a 15-month project from October 2012* to December 2013
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Appendix: Further information
By working together binationally, CEE members capture greater savings locally

- Develop approaches to overcome market barriers and reduce the cost of capturing greater energy efficiency savings

- Achieve greater consistency on program offerings
  - Share best practices
  - Seek consensus on high efficiency specifications (for program eligibility)
  - Partner with industries and trade associations
  - Ensure that ENERGY STAR® serves the collective needs of programs

- Create consistent binational programs required to move markets, members
  - Adopt (voluntarily) approaches into programs
  - Work with industry and other partners on efficiency
  - Increase the availability of high efficiency products
CEE members work together and with stakeholders to achieve higher savings

**Members**
- Efficiency Program Administrators—utilities and nonutilities with ratepayer funded programs
- National Program Sponsors —
  - DOE national labs
  - Government energy research agencies
  - National efficiency organizations
  - State and provincial energy offices

**Nonmembers**
- Partners
  - DOE, EPA, EPRI, GTI, AGA, IEE
  - Trade associations
    - AHRI, HARDI, ACCA
- Manufacturers and others are consulted about aspects for programs
US Gas Program Budgets by Customer Class
2011

- Residential $511 (43%)
- Commercial and Industrial $313 (26%)
- Low Income $223 (19%)
- Other $142 (12%)

Total: $1,399 millions USD
Example: Approach to the Residential HVAC market before CEE
With CEE: more efficient products made available and installed correctly

Efficiency Program
Efficiency Program
Efficiency Program
Efficiency Program
Efficiency Program
Initiative Tiers
ENERGY STAR®

Results
Product Availability
Water Heater Directory
Quality Installation Spec
Verification Protocols
ENERGY STAR® Quality Installation Program

Manufacturers (AHRI)
Distributors (HARDI)
Contractors (ACCA)
Technician Certification Bodies (NATE & BPI)
Voluntary Initiative Participation Requirements

- Incorporate the CEE efficiency specifications for water heaters in an incentive-based program at Tier 0, Tier 1, or Tier 2;

  and

- Undertake the awareness-building aspects of the initiative, making use of communication messages developed by CEE committee
My role

I am responsible for leading

🔹 CEE’s residential gas efforts and Initiatives, including
  - High Efficiency Residential Gas Water Heating Initiative
  - High Efficiency Residential Gas Heating Initiative

🔹 The Coalition for ENERGY STAR Water Heaters

🔹 CEE’s exploration of the efficiency opportunity of incorporating condensing gas furnaces in packaged air-conditioning rooftop units (RTUs)
Goals of CEE℠ High Efficiency Residential Gas Water Heater Initiative

To save natural gas by promoting installation of highly efficient equipment

To achieve this, CEE members can

• Offer incentives

• Educate consumers and installers on the benefits of high efficiency
Stakeholders work together at CEE
## Estimated Annual Gas Energy Savings for 2010 (MDth)*

<table>
<thead>
<tr>
<th></th>
<th>Residential</th>
<th>Low Income</th>
<th>C &amp; I</th>
<th>Other</th>
<th>Total</th>
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<tbody>
<tr>
<td><strong>US</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>North East</td>
<td>14,356</td>
<td>2,131</td>
<td>11,841</td>
<td>428</td>
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<td>Midwest</td>
<td>8,739</td>
<td>1,472</td>
<td>8,505</td>
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<td>South</td>
<td>385</td>
<td>45</td>
<td>141</td>
<td>0</td>
<td>571</td>
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<tr>
<td>West</td>
<td>8,454</td>
<td>1,181</td>
<td>19,525</td>
<td>1,924</td>
<td>31,084</td>
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<td><strong>Subtotal US</strong></td>
<td>32,924</td>
<td>4,829</td>
<td>40,013</td>
<td>4,054</td>
<td>80,820</td>
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<tr>
<td><strong>Canada</strong></td>
<td>11,249</td>
<td>12,262</td>
<td>30,146</td>
<td>127</td>
<td>53,784</td>
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<tr>
<td><strong>Binational Gas Total</strong></td>
<td>43,173</td>
<td>17,091</td>
<td>70,159</td>
<td>4,181</td>
<td><strong>134,604</strong></td>
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</tbody>
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* Based on estimated 2010 savings from measures installed in 2010 as well as from measures installed as early as 1992 that were still generating savings as of 2010 (i.e. “annual effects”)
Major dynamics

- Cost-effectiveness and availability challenges are paramount
- Buy-in from the distribution channel is critical
- Programs are moving beyond the widget for more systems-based approaches
- Program experiences with tankless WH
- Technologies of more recent interest to programs