ENERGY STAR®
Water Heaters Update

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Overview

• Residential Water Heaters
  – Version 2.0 Specification
  – On the Horizon
  – Sales and Marketing Outreach

• Commercial Water Heaters
  – Version 1.0 Specification Roll Out
  – Sales and Marketing Perspective
  – Future Plans
Certified Water Heaters

- Electric Heat Pump (HPWH)
- Gas storage
- Gas instantaneous (Tankless)
- Solar
# Savings, Pay Back, & Incentives

<table>
<thead>
<tr>
<th>Type</th>
<th>Specification</th>
<th>Typical Installed Cost</th>
<th>Annual Savings</th>
<th>Pay Back</th>
<th># of States with Incentives</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPWH</td>
<td>EF &gt;= 2.0</td>
<td>$1,000 - $2,000 (May be higher in some markets)</td>
<td>$220</td>
<td>4 years</td>
<td>16 states</td>
</tr>
<tr>
<td>Gas Storage</td>
<td>EF&gt;= 0.67</td>
<td>$1,265 (Maybe higher depending on ductwork)</td>
<td>$41</td>
<td>10 years</td>
<td>22 states</td>
</tr>
<tr>
<td>Gas Tankless</td>
<td>EF&gt;= 0.82</td>
<td>$1,470 - $2,500 (Some sites installation can cost up to $5,000)</td>
<td>$86</td>
<td>7 – 19 years</td>
<td>28 states</td>
</tr>
<tr>
<td>Solar</td>
<td>SEF &gt;= 1.8 for electric backup SEF &gt;= 1.2 for gas backup</td>
<td>$3,200 - $6,000</td>
<td>$259</td>
<td>9.5 – 20 years</td>
<td>18 states</td>
</tr>
</tbody>
</table>
Version 2.0 Specification

• Effective July 2013

• Key changes:
  – Includes “Light duty EPACT”
    • $75 \text{ kBtu/hr} \leq \text{ input} \leq 100 \text{ kBtu/hr}$,
    • $2 < \text{ Storage volume between} < 100 \text{ gallons}$
    • $\text{TE} \geq 0.90$ (condensing),
    • $\text{Standby loss} \leq 2374 \text{ btu/hr} \times (\text{TE} – 0.74)$
  – Solar WH: Solar Energy Factor replaces Solar Fraction metric, equivalent performance requirement
Exciting Developments!

- First storage units above 0.70 EF
  - Rheem PRO+G29-60N RH70
  - Rheem Prestige condensing storage WH
- Additional condensing units in light duty EPACT category
  - A.O. Smith, American, State, Reliance
- New web site expands EPA role in consumer advice
On the Horizon

• Upcoming DOE activity will require a revision:
  – Test method finalized Summer 2014
  – Crosswalk finalized December 2014
  – Test method and new standards effective April 2015

• EPA anticipates acting in response:
  – Version 3 developed with stakeholders in 2014
  – Goal of April 2015 effective date
  – To meet, will need to develop spec in terms of EF, use December 2014 crosswalk as DOE will
  – Maintains relevance of ENERGY STAR label in 2015
New Test Method for Uniform Descriptor of Efficiency

- Now in development through DOE process
  - New test method for all water heaters used in residential applications
  - Supersedes current test method
  - Also includes some gas storage units > 75 kBtu/hr input rate
  - Fills test method holes, including units with 2-20 gallons of storage

- Crosswalk will be used to compare results of new test with already finalized Federal standards
April 2015 DOE standards

• April 2015 DOE standards
  – At or near ENERGY STAR levels for all gas WH and for large electric storage WH
  – Will also include electric backup tanks used with solar water heaters
  – NOPR references waiver for grid-connected

• Look for launch of Version 3.0 ENERGY STAR Residential Water Heater development
## Sales and Marketing Outreach

- Working closely with retail partners
  - Increased ENERGY STAR Messaging
  - Provided employee training materials
  - Consumer education materials
- Conducting outreach to contracting groups and distributors
- Coordinating with industry groups and advocates on messaging
- Developing blog posts and social media content
- Implementing a new, more consumer friendly website
Available Outreach Materials

- Brochures – HPWH, Gas
- Fact Sheet – HPWH
- Plumber Toolkit
  - Hang tag
  - Direct Mailer
  - Bill Stuffer
- Sales Training
- Social Media content

Materials are available on www.energystar.gov.
ENERGY STAR®
Commercial Water Heaters

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Now in business!

- Specification went into effect March 2013
  - Thermal efficiency 0.94 (or EF 0.93)
  - Standby loss (storage only) 16% below DOE standard
  - Excludes storage WH greater than 140 gallons
- Currently 204 products from 12 brands certified
- ENERGY STAR Commercial Kitchens marketing now includes water heater information
- FEMP has discontinued their list, referring to the ENERGY STAR list instead
115 ES certified commercial gas storage water heaters

- Meet following criteria:
  - $TE \geq 0.04$ or $EF \geq 0.03$, Condensing technology required
  - Standby loss $\leq 0.84 \times \left[\frac{\text{Input Rate}}{800} + 110 \times (\text{Volume}_{r})^{1/2}\right]$ (Btu/hr)

- Made by all the major manufacturers
  - AO Smith
  - Bradford White
  - Larrs
  - Rheem

- Range of sizes
  - Storage volume ranges from 50 to 140 gallons
  - Input rate from less than 140 to over 200 kBTU/hr
Sales and Marketing: Commercial WH Market

- 2010 US shipments: 79,000 gas; 58,000 electric
- 10% sold are tankless
- 18% sold are gas condensing
- Market structure: makers sell to
- Property manager key in replacement scenarios;
Barriers to ES Commercial Water Heaters Market Entry

• Emergency replacement an issue – not regularly stocked
• Costs and paybacks
  – Capital costs for gas storage unit 30% more
  – Install costs can be higher due to special PVC venting for condensing units
  – Need for quick paybacks due to lower lifetime of heavily used units – warranties only 3 years
• Building owners, building managers, and design engineers unaware -- driven by low cost bid quotes
• Utilities are not incenting ES CWHs specifically
  – Centerpoint incents WHS with only \( \geq 88\% \) efficiency
  – PG&E incents residential water heaters EF >0.67
ES Commercial Gas Storage WH
Savings Encouraging

• Energy savings depend on water

• Payback less than 2 years – full service restaurant saves $1550 per year at an incremental cost of $2400*

• Condensing units have been around for 15 years -- incremental install costs not always present

* Extra cost of 2 ES gas storage WHs
ES Efforts in Next Few Months

- Partner with gas utilities (tie to ES EEPs efforts) to incentivize commercial gas storage specifications.
- Target restaurants (tie to ES CFS efforts) whose usage profiles lead to excellent paybacks.
- Conduct trade press outreach.
Outreach Materials

- Developing materials targeting food service industry
  - Less than 2-year payback in a full-service restaurant
  - Case Study with Food Service Technology Center and Yum!

Source: Food Service Technology Center
On the Horizon

• Partner with food service and gas utility programs to

  – Develop blog posts and a webinar highlighting

• Add commercial heat pump water heaters into scope, once DOE completes test method

• Revise specification to resolve whether new uniform descriptor can be used
Contact Information

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