Program Opportunities for ENERGY STAR® Clothes Dryers

2014 ENERGY STAR Partner Meeting
October 27th, 2014
Purpose

Advance the North American Market for Super Efficient Clothes Dryers

SEDI Organizers:
A Call to Action on Dryers

Figure 1. Annual energy consumption of electric clothes dryers vs. other major home appliances, 1981 and 2012

Source: Data for refrigerators, dishwashers, and clothes washers from the Association of Home Appliance Manufacturers on new purchases. Data for dryers estimated from a collection of field studies conducted over the past four years by Ecova and others.
On the Path Forward

- **Full Heat Pump**
- **Hybrid Heat Pump**
  - Spec: 2013
  - Products: Q4 2014
- **Better Termination**
  - Spec: Jan 2015
  - Products: Now!

*ENERGY STAR 2014*
Emerging Technology Award
“There is not an ENERGY STAR label for clothes dryers because most dryers use similar amounts of energy.”

<table>
<thead>
<tr>
<th>Specifications</th>
<th>CEF (lbs/ kWh)</th>
<th>Dry Time (min)</th>
<th>Annual Energy (kWh)</th>
<th>Annual Electric Savings (kWh)</th>
<th>Gas Savings (MMBtu)</th>
<th>% Savings over Federal Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Baseline</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric</td>
<td>3.11</td>
<td>50</td>
<td>769</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas</td>
<td>2.84</td>
<td>50</td>
<td>842</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENERGY STAR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric</td>
<td>3.93</td>
<td>67</td>
<td>608</td>
<td>160</td>
<td>0.43</td>
<td>21%</td>
</tr>
<tr>
<td>Gas</td>
<td>3.48</td>
<td>57</td>
<td>687</td>
<td>30</td>
<td>0.43</td>
<td>18%</td>
</tr>
<tr>
<td>2014 Emerging Technology Award</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>4.3</td>
<td>67</td>
<td>556</td>
<td>213</td>
<td>0.43</td>
<td>28%</td>
</tr>
<tr>
<td>Highest Efficiency</td>
<td>5.3</td>
<td>80</td>
<td>451</td>
<td>318</td>
<td></td>
<td>41%</td>
</tr>
</tbody>
</table>
HE Laundry = Paired Savings

Dryers driving purchase of HE Front Load washers?

- Paired washers with ENERGY STAR dryers are all front load
  - Higher performing washers improve drying performance of new high efficiency clothes dryers
  - Increase in both energy and water savings for efficiency programs
Advancing Test Procedures

- Field testing supports a 20-60% higher baseline than represented in DOE Test Procedure (D1)
- Recent lab and field testing supports programs attributing additional savings for ENERGY STAR dryers
- CA & NEEA led development of Supplemental Test Procedure for dryers (2014)

<table>
<thead>
<tr>
<th></th>
<th>DOE 2005 Test Procedure, Standard</th>
<th>DOE 2013 Procedure, Lab Tests</th>
<th>NEEA Field Study Averages</th>
<th>NEEA “Real World” Test Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moisture</td>
<td>66.5%-73.5%</td>
<td>57.5% +/- 0.3%</td>
<td>62%</td>
<td>62% +/- 0.3%</td>
</tr>
<tr>
<td>Termination</td>
<td>Manual</td>
<td>Auto</td>
<td>Auto</td>
<td>Auto</td>
</tr>
<tr>
<td>Load Composition</td>
<td>2-Dim</td>
<td>2-Dim</td>
<td>3-Dim</td>
<td>3-Dimy 3D</td>
</tr>
<tr>
<td>Drying Time</td>
<td>23 min</td>
<td>47</td>
<td>58</td>
<td>47</td>
</tr>
<tr>
<td>Field Use Factor</td>
<td>1.04</td>
<td>0.8</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Adj. Use/Load</td>
<td>2.3 kWh</td>
<td>1.7 kWh</td>
<td>3.1 kWh</td>
<td>2.5 kWh</td>
</tr>
<tr>
<td>Washer Loads Dried</td>
<td>107%</td>
<td>91%</td>
<td>124%</td>
<td>124%</td>
</tr>
<tr>
<td>Loads/year</td>
<td>416</td>
<td>283</td>
<td>337</td>
<td>337</td>
</tr>
<tr>
<td>kWh/year</td>
<td>967</td>
<td>570</td>
<td>920</td>
<td>840</td>
</tr>
<tr>
<td>CEF</td>
<td>3.01</td>
<td>4.2</td>
<td>2.4</td>
<td>3.0</td>
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</tbody>
</table>
Multiple Program Opportunities

Products / Retail

Existing & New Home Programs

Multifamily Programs
Early Promotions

- Paired High Efficiency Laundry Promotions
- Two-tier Incentive Programs
  - ENERGY STAR
  - 2014 Emerging Technology Award
- Addressing program cost-effectiveness
  - National Retail Products Program
New Construction

- Opportunity to add ENERGY STAR dryers as a prescriptive requirement within New Construction programs
- Particularly important in super-efficient homes
  - Electric dryers are 3rd largest load in high performance homes (Efficiency Vermont)

### Average Energy Consumption by End Use

<table>
<thead>
<tr>
<th>Description</th>
<th>Heating</th>
<th>Cooling</th>
<th>Hot Water</th>
<th>Lights &amp; Appliances</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIA RECS 2009, New England</td>
<td>24%</td>
<td>15%</td>
<td>1%</td>
<td>60%</td>
</tr>
<tr>
<td>Vermont ENERGY STAR Homes 2012</td>
<td>25%</td>
<td>17%</td>
<td>0.4%</td>
<td>58%</td>
</tr>
<tr>
<td>Vermont High Performance Homes</td>
<td>32%</td>
<td>17%</td>
<td>17%</td>
<td>51%</td>
</tr>
</tbody>
</table>

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113 Annual MMbtu  
94 Annual MMbtu  
34 Annual MMbtu

*End use 'Heating' for High Performance Homes is Heating and Cooling combined
Low Income Programs

- Some low income programs already upgrade clothes washers
- High Performance Manufactured Homes
  - Venting Not an Option

![Graph showing monthly cost by housing type]

- Traditional Mobile Home: $701/month
- High Performance Home: $688/month
- High Performance Home with Solar: $627/month

*Energy Costs based on energy modeling.
Multifamily Programs

- Multifamily properties including apartments, condos & senior living all offer significant opportunities for high efficiency in-unit laundry

- Upstream options for builders

“Space saving ventless washer and dryers...allow architects to design installations virtually anywhere in the residence, while saving important dollars in construction costs.”

“The construction savings in simply rerouting electrical and plumbing lines rather than installing new vents and plumbing stacks throughout a building can be anywhere from $700-$2000 per unit.”
SEDI in 2015

SEDI Sponsor Activity in 2014/2015

- New Rebate programs for ENERGY STAR and 2014 Emerging Technology Award dryers
- Lab & Field Evaluations to support improved test procedures, advanced performance specifications and increased energy savings
- Developing new opportunities for ventless, heat pump dryers in high performance buildings

Join us!
If it was easy....

Your plan

Reality
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