ENERGY STAR® Emerging Technology Award: Heat Pump Clothes Dryers

Rebecca Duff, ICF International
ENERGY STAR Partner Meeting
Charlotte, NC
November 10, 2011
Emerging Technology Award

- Recognizes innovative technologies that:
  - Significantly reduce GHG emissions
  - Don’t yet meet ENERGY STAR principles
  - Face significant barriers to U.S. market entry or acceptance

- Given annually to products that meet rigorous performance criteria
  - 1-2 categories/year
Award Selection Process

• Criteria for selecting award categories:
  – Commercially available, but not widely adopted
  – Offered by more than one supplier
  – Demonstrated performance through testing
  – GHG reductions at competitive costs
  – Environmentally acceptable
  – Supported by capable partners, adequately financed
  – Well-matched to EPA/ENERGY STAR competencies and roles
2012 Award Category Announcement

- Call for nominations released late March 2011
  - More than 20 techs submitted to EPA
- Heat pump clothes dryers offer the best fit
  - First cost significant barrier
  - Performance verified by DOE test procedure
  - Designs available, selling overseas
  - CO₂ reductions of > 30%
  - Significant utility, DOE interest
Draft Specification: HPCD

Released on Sept 13, 2011 for stakeholder comment:

<table>
<thead>
<tr>
<th>Performance Characteristic</th>
<th>Requirements</th>
<th>Required Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Efficiency(^1)</td>
<td>EF $\geq$ 4.1, achievable in at least one temperature setting(^2)</td>
<td>Manufacturer documentation of test results consistent with DOE Test Procedure found in 10 CFR part 430, subpart B, appendix D</td>
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<tr>
<td></td>
<td>EF $\geq$ 3.6, achievable in maximum temperature setting</td>
<td></td>
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<tr>
<td></td>
<td>$\leq$ 75 minutes to finish one complete cycle in temperature setting that achieves EF $\geq$ 4.1(^3)</td>
<td></td>
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</table>
Dryer Analysis

Electric Standard

Drum Capacity (cubic feet)

Energy Factor

DOE Max Tech - 4.52 EF

Award Level: Any
Temperature Setting – 4.1 EF

Award Level: Max
Temperature Setting – 3.6 EF

DOE Maximum
Available - 3.40 EF

DOE Fed Standard - 3.01 EF

Electric Standard
Linear (Electric Standard)
## Draft Specification: HPCD

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<td>Sensors</td>
<td>Temperature and moisture sensing controls, at a minimum</td>
<td>Manufacturer documentation based on definitions found in 10 CFR part 430, subpart B, appendix D. Must include an engineering diagram showing the existence and location of sensing controls</td>
</tr>
</tbody>
</table>
Estimated Savings

- Reduce electricity use and CO₂ emissions by **32-34%**

- Save **332 kWh/yr** and **5,313 kWh** over lifetime

- Save **$36/yr** and **$579** over lifetime

- Save **511 lbs of CO₂/yr** and **8,182 lbs of CO₂** over lifetime

Annual Per Unit Savings ($)

- National
- Massachusetts
- California
- Indiana
Next Steps: 2012 Award

- Oct. 10, 2011: Comments Due
- Nov. 2011: Finalize Criteria
- Dec. 2011: Applications Due
- Early 2012: Winners Announced

ENERGY STAR Partner Meeting, NC
Nov 9 – 10, 2011
Emerging Technology Award
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