ENERGY STAR Commercial Refrigerators & Freezers

Draft 1 Version 4.0 Stakeholder Webinar
April 21, 2016
Agenda

• Welcome and Introductions
• Overview of the Specification Development Process
• Activities to Date
• Draft 1 Proposal
  • Comments
• General Discussion & Questions
• Timeline & Next Steps
Introductions

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Guiding Principles that may impact timing of Specification Revisions

- Significant increase in ENERGY STAR market penetration
- Change in Federal minimum efficiency standards
- Technological advancements
- Concern about consumers not realizing expected energy savings
- Product performance or quality concerns
- New or improved test procedure
Specification Development

• When developing or revising a specification, EPA balances:
  – The need to keep pace with evolution among leading products and continue to effectively differentiate the most efficient products
  – Timing & impact of new Federal standards

• Key elements of the stakeholder process:
  – Consistency
  – Transparency
  – Inclusiveness
  – Responsiveness
  – Clarity
Federal Minimum Efficiency Standard

• Effective March 27, 2017
• Impacts ENERGY STAR commercial refrigeration equipment in all categories
• Meets or exceeds several Version 3.0 ENERGY STAR levels for products

EPA’s Objectives for Version 4.0

• Reduce the maximum daily energy consumption (MDEC) criteria levels
• Align terms and definitions with DOE’s Final Rule
Activities to Date

- Draft 1 Release: March 24, 2016
- Draft 1 Stakeholder Webinar: April 21, 2016
Terms & Definitions (Aligning with DOE)

- Commercial Hybrid: amended
- Solid Door Cabinet; Solid Door; Transparent Door Cabinet; and Transparent Door: removed and replaced
- Self-Contained Condensing Unit: added
- Drawer Cabinet: removed
- Chef Base/Griddle Stand: added
- Semi-Vertical Open: added
- Service Over Counter: added
- Basic Model: amended
### Table 1: ENERGY STAR Requirements for Commercial Refrigerators, Freezers, and Refrigerator-Freezer

<table>
<thead>
<tr>
<th>Product Volume (in cubic feet)</th>
<th>Refrigerator</th>
<th>Freezer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vertical Closed</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid</td>
<td>VCS.SC.M</td>
<td>VCS.SC.L</td>
</tr>
<tr>
<td>0 &lt; V &lt; 15</td>
<td>0.03V+0.85</td>
<td>0.13V+0.85</td>
</tr>
<tr>
<td>15 ≤ V &lt; 30</td>
<td>0.066V+0.31</td>
<td>0.22V-0.5</td>
</tr>
<tr>
<td>30 ≤ V &lt; 50</td>
<td>0.037V+1.18</td>
<td>0.25V-1.402</td>
</tr>
<tr>
<td>50 ≤ V</td>
<td>0.015V+2.28</td>
<td>0.1V+6.096</td>
</tr>
<tr>
<td><strong>Transparent</strong></td>
<td>VCT.SC.M</td>
<td>VCT.SC.L</td>
</tr>
<tr>
<td>0 &lt; V &lt; 15</td>
<td>0.10V+0.37</td>
<td>0.24V+0.7</td>
</tr>
<tr>
<td>15 ≤ V &lt; 30</td>
<td>0.05V+1.12</td>
<td>0.22V+1.0</td>
</tr>
<tr>
<td>30 ≤ V &lt; 50</td>
<td>0.07V+0.52</td>
<td>0.21V+1.298</td>
</tr>
<tr>
<td>50 ≤ V</td>
<td>0.105V-1.231</td>
<td>0.2V+1.796</td>
</tr>
<tr>
<td><strong>Horizontal Closed</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid or Transparent</td>
<td>HCT.SC.M, HCS.SC.M</td>
<td>HCT.SC.L, HCS.SC.L</td>
</tr>
<tr>
<td>All Volumes</td>
<td>0.05V+0.28</td>
<td>0.057V+0.55</td>
</tr>
</tbody>
</table>
Determining Proposed Levels

- Products manufactured on or after March 27, 2017, (e.g., do not meet DOE 2017 levels) removed from this analysis
- Removed duplicative models
- Energy savings compares proposed ENERGY STAR V4.0 level to DOE 2017 level, not the current DOE levels
- Received stakeholder support to evaluate individual sizes (within product categories) independently versus taking a “% better” approach
  - EPA proceeded with the binned approach for vertical models to ensure product availability of various product sizes
  - EPA decided a “% better” approach was more practical for horizontal models due to limited data sets
VCS.SC.M, Levels

![Graph showing daily energy consumption vs. volume (CuFt)]

- **Performance Data**
- **Linear (DOE 2017 Level)**
- **Linear (ES Level, 0-15)**
- **Linear (ES Level, 15-30)**
- **Linear (ES Level, 30-50)**
- **Linear (ES Level, 50+)**

Performance Data Non-Compliant
VCS.SC.M, Levels

Daily Energy Consumption (kWh) vs. Volume (CuFt)

- Performance Data
- Linear (DOE 2017 Level)
- Linear (ES Level, 0-15)
- Linear (ES Level, 15-30)
- Linear (ES Level, 30-50)
- Linear (ES Level, 50+)

EPA
VCT.SC.M, Levels

![Graph showing the relationship between Volume (CuFt) and Daily Energy Consumption (kWh). The graph includes data points and linear trend lines for different performance levels.](image-url)
HCS/T.SC.M, Level

Daily Energy Consumption (kWh) vs Volume (CuFt)

- HCS.SC.M Performance Data
- HCT.SC.M Performance Data
- Linear (DOE 2017 HCS.SC.M Level)
- Linear (DOE 2017 HCT.SC.M Level)
- Linear (ENERGY STAR Draft 1 Version 4.0 Level)
HCS/T.SC.L, Level

Daily Energy Consumption (kWh) vs. Volume (CuFt)

- HCS.SC.L Performance Data
- HCT.SC.L Performance Data
- Linear (DOE 2017 HCS.SC.L Level)
- Linear (DOE 2017 HCT.SC.L Level)
- Linear (ENERGY STAR Draft 1 Version 4.0 Level)
Progress in Underway

• In anticipation of DOE 2017 and SNAP Rules, manufacturers are taking the initiative to make changes to existing products
• Draft 1 Version 4.0 levels continue to allow recognition of energy efficient products
• Average unit energy savings range depending on product class:
  – VCS.SC.M: 20-38%
  – VCT.SC.M: 19-57%
  – VCS.SC.L: 10-40%
  – VCT.SC.L: 32-76%
  – HCS.SC.M/HCT.SC.M: 24-69%
  – HCS.SC.L/HCT.SC.L: 21-51%
• There was some a suggestion from some stakeholders to suspend the CRE specification
Component Change and Re-design

- LED lighting
- Insulation
- Efficient compressors
- Light sensors
- Efficient fan motors
General Discussion & Questions?
Specification Development Timeline: Target Dates

- Draft 1 Comments Due: April 21, 2016
- Draft 2: May 4, 2016
- Draft 2 Comments Due: June 2, 2016
- Final Draft: June 13, 2016
- Final Draft Comments Due: June 27, 2016
- Final: July 8, 2016
- Effective: **March 27, 2017**
Thank you!

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