ENERGY STAR®
Dedicated Purpose Pool Pumps
Draft 1 Versions 2.0 and 3.0

Stakeholder Webinar and Discussion

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October 11, 2017
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Agenda

1. Introduction
2. Definitions and Scope
3. Certification Criteria
4. Next Steps
5. Discussion
ENERGY STAR’s Focus

Manufacturer, Retailer Interests

Environmental Protection

Consumer Preferences

Utility Program Sponsor Interests

Cost-effective
No sacrifice in performance
Government-backed

Consumer is Key
Specification Development Cycle

1. Stakeholder Notification
2. Energy & Environmental Analysis
3. Market, Industry & Design Research
4. Test Methodology Development (as necessary)
5. Release Draft Specification
6. Stakeholder Meetings
7. Release Subsequent Drafts with Interim Decision Memos (as necessary)
8. Post Drafts and Stakeholder Comments to Web Site
9. Finalize Specification
10. Final Decision Memorandum
11. Specification Takes Effect
12. Manufacturers Join Program as Partners and Begin Labeling Products
13. Officially Launch Specification with Industry and Stakeholders
14. Monitor Market Penetration
15. Open Specification for Revisions (as necessary)
Important Process Elements

• Consistency
• Transparency
• Inclusiveness
• Responsiveness
• Clarity
Guiding Principles for Specification Development

1. Significant energy savings can be realized on a national scale
2. Product performance can be maintained or enhanced with increased energy efficiency
3. Purchasers recover their investment in increased energy efficiency within a reasonable period of time
4. Energy efficiency can be achieved through several technologies
5. Product energy consumption and performance can be measured and verified with testing
6. Labeling would effectively differentiate products and be visible for purchasers
Drivers for Revision

• New DOE Test Method and Standards
  – Compliance with standards required on and after July 19, 2021

• Changing market shows clear trend of single-speed and two-speed sales dropping and variable-speed sales increasing

• Opportunity to capture additional energy savings
  – Broadening scope to include Aboveground pumps and booster pumps
  – Setting stringent levels prior to July 19, 2021
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Definitions

- Add from DOE’s Energy Conservation Standards for Dedicated Purpose Pool Pumps (82 FR 5650)
  - Pressure Cleaner Booster Pumps
  - Self-Priming
  - Non-Self-Priming
  - Hydraulic Horsepower (hhp)
  - Weighted Energy Factor (WEF)
  - High Flow Measurement Point
  - Low Flow Measurement Point
- Change terminology from: Inground Pumps to Self-Priming Pumps, and Aboveground Pumps to Non-Self-Priming Pumps
- Add definition for Pool Pump Replacement Motor
Scope

- **Included Products**
  - Self-priming (Inground) pumps with >0 hhp and ≤2.5 hhp
  - Non-self-priming (Aboveground) pool pumps
  - Pressure cleaner booster pumps
  - Replacement motors

- **Excluded Products**
  - Waterfall pumps
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Versions 2.0 and 3.0 Requirements

• Rely on DOE WEF and new DOE test method
• Require efficiency levels varying with hhp, as DOE does
• Adjust connected criteria
  – Faster response to DR requests (lab testing shows products achieve proposed response time)
  – Over ride requirements adjusted for improved balance of utility and consumer interests
• Eliminate reporting requirements for Curves A and B
## Version 2.0 and Version 3.0 Energy Efficiency Levels

<table>
<thead>
<tr>
<th>Pump Sub-Type</th>
<th>Size Class</th>
<th>Version 2.0 Energy Efficiency Level</th>
<th>Version 3.0 Energy Efficiency Level (Effective July 19, 2021)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Priming (Inground) Pool Pumps</td>
<td>Small (hhp ≤ 0.13)</td>
<td>WEF ≥ 7.60</td>
<td>WEF ≥ 13.40</td>
</tr>
<tr>
<td></td>
<td>Small (0.13 &lt; hhp &lt; 0.711)</td>
<td>WEF ≥ -1.30 x ln (hhp) + 4.95</td>
<td>WEF ≥ -2.45 x ln (hhp) + 8.40</td>
</tr>
<tr>
<td></td>
<td>Large (hhp ≥ 0.711)</td>
<td>WEF ≥ 0.9 x [-2.30 x ln (hhp) + 6.59]</td>
<td>WEF ≥ -2.45 x ln (hhp) + 8.40</td>
</tr>
<tr>
<td>Non-Self-Priming (Aboveground) Pool Pump</td>
<td>Extra Small (hhp ≤ 0.13)</td>
<td>WEF ≥ 4.92</td>
<td>WEF ≥ 4.92</td>
</tr>
<tr>
<td></td>
<td>Standard Size (hhp &gt; 0.13)</td>
<td>WEF ≥ -1.00 x ln (hhp) + 3.85</td>
<td>WEF ≥ -1.00 x ln (hhp) + 3.85</td>
</tr>
<tr>
<td>Pressure Cleaner Booster Pumps</td>
<td>All</td>
<td>WEF ≥ 0.45</td>
<td>WEF ≥ 0.51</td>
</tr>
<tr>
<td>Pool Pump Replacement Motors</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
</tbody>
</table>
Self-priming (Inground) pumps

- Not enough products for large Inground pumps at DOE levels to move straight to those levels now
- However, products meet proposed Version 2.0 level across a range of sizes, with excellent savings and payback of less than 4 years
- Deciding Version 3.0 level now provides certainty to market, reduces overhead of multiple revision processes
  - Pay back less than 3 years, for estimated cost difference
Version 2.0 Inground Pumps

- Large pumps - % of 2021 DOE level
- Small pumps - EL5
Version 3.0 Inground Pumps (2021 All Sizes)

- EL7 for small and large pumps

2021 ENERGY STAR Requirements, Inground Pumps
Note: Future ENERGY STAR V2 Requirements Small Pumps: EL7, Large Pumps: EL7
Expand Scope to Additional Pump Types

• Above-ground pumps
  – No clear market distinction from Inground pumps, excellent consumer payback and national savings
  – Base spec on DOE TSD

• Pressure Cleaner Booster Pumps
  – Save significant energy, particularly using variable speed motors (vs. single speed) in Version 3.0, significant national savings, and consumer payback
Non-self-priming (Above ground) pumps

- DOE TSD shows
  - 33% of extra small pumps sales meet Version 2.0
  - 2% of standard pumps (90% of market) meet Version 2.0
  - Consumer payback 2 years or less for Version 2.0
- Relatively stringent requirement, in terms of market share, justifies holding level for Version 3.0
Pressure cleaner booster pumps

- DOE TSD shows variation in efficiency of existing pumps, providing an opportunity for cost-effective savings through Version 2.0
  - 10% market share of products meeting proposed spec
  - Less than 2 year payback
- Very few variable speed pumps in this category at this time, however EPA believes trend is to go to variable speed
- Set Version 3.0 at variable speed efficiency level (according to DOE TSD) to capture savings by avoiding use of a flow restrictor plate
Replacement Motors

- Common to replace motor instead of entire pump
- Replacement motors come in single speed, multi-speed and variable speed
- Opportunity to capture significant energy savings by including efficient replacement motors
- If insufficient data now, will be able to add with minor revision later
Replacement Motors, cont’d

• DOE TSD shows variation in efficiency of existing pumps, providing an opportunity for cost-effective savings through Version 2.0

• Contemplating basing replacement motor spec on optional DOE Test Procedure

• Questions:
  – What is the current status of replacement motor test procedure development?
  – When are data expected to be available? What data exist now on motor performance?
  – We are aware of the CEC policy – are there others we should be aware of?
  – Other issues?
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Next Steps

• Written comments are due **Oct. 26, 2017**
• EPA hopes to finalize Versions 2.0 and 3.0 in December 2017
• Once finalized, products may be certified to Version 2.0 immediately
• Approximately 9 months from finalization, the product finder will *only* include products certified to Version 2.0
• Starting on July 19, 2021, the product finder will *only* include products certified to Version 3.0
Discussion

• Open to comments and questions

• Please raise your hand in the webinar control panel or write in a question

• The slides will be posted online
  – Slides, draft specifications, and all other related materials can be found on EPA’s Pool Pumps product development webpage
Written Comments

• In addition to making verbal comments during today’s meeting, stakeholders are strongly encouraged to submit written comments and data
  – *Comments will be displayed for public viewing unless otherwise specified by the commenter*

• Please send all comments to: poolpumps@energystar.gov

Comment Deadline

October 26, 2017
Contact Information

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EPA vs. DOE Timelines (wait to develop V3)

- V2 final
- V2 effective
- V3 launch
- V3 final
- V3 effective

- Now
- Jan
- Jul
- Jan
- Jul
- Jan
- Jul
- Jan
- Jul
- Jan

- 2018
- 2019
- 2020
- 2021

- WEF method compliance
- DOE standards compliance
EPA vs. DOE Timelines (V3 finalized now)

- V2, V3 final
- V2 effective
- V3 effective

2018-2021:
- Now Jan Jul Jan Jul Jan Jul Jan Jan
- WEF method compliance
- DOE standards compliance