ENERGY STAR®
Appliance Specification Updates

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Part of the
2013 ENERGY STAR Products Partner Meeting
Webinar Series

Agenda

- Overview
- Product Updates
  - Residential Refrigerators and Freezers
  - Clothes Washers, Clothes Dryers (new!)
  - Room Air Conditioners
  - Residential Dishwashers
- What's New?
- Discussion

Overview

- Product Updates
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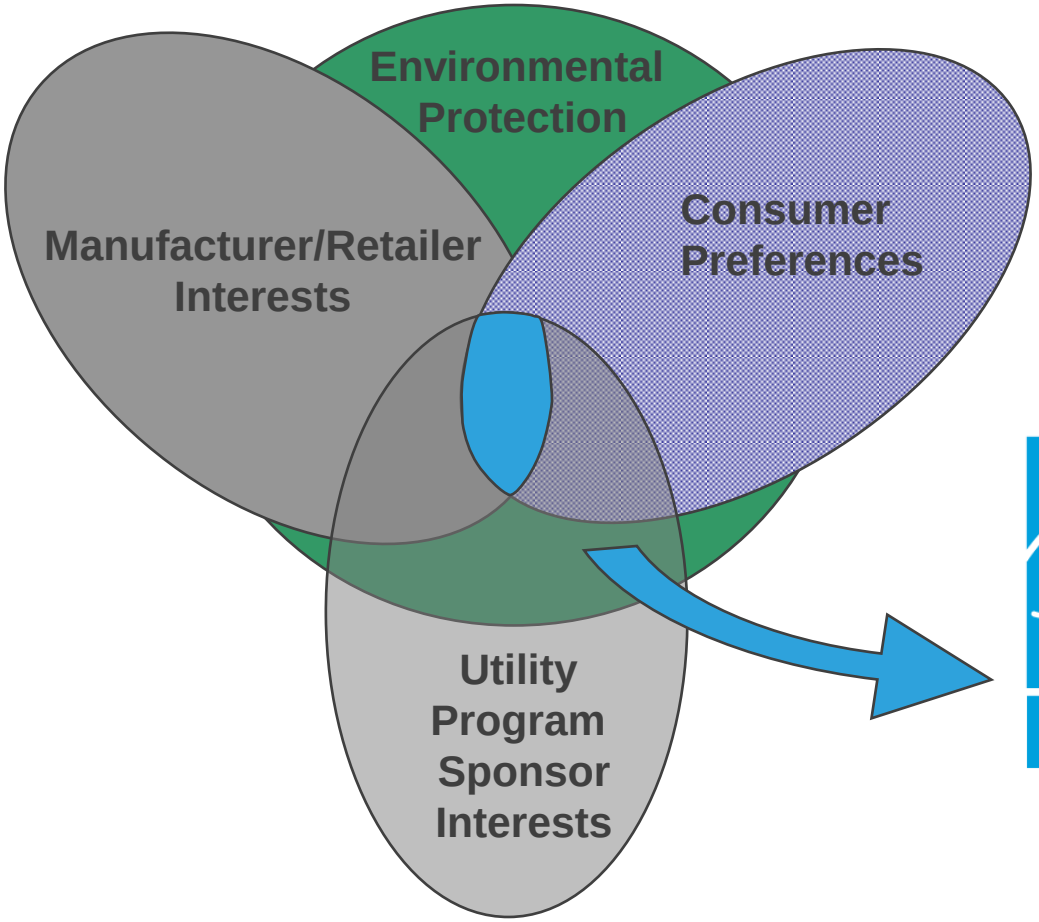
ENERGY STAR's Focus



- Cost-effective
- No Sacrifice in Performance
- Government backed

Consumer is Key

Specification Development

- Appliance specifications are reviewed every 3 years or when market share exceeds 35%
- When developing or revising a specification, EPA balances:
  - The need to keep pace with evolution among leading products and continue to effectively differentiate for consumers
  - Timing of new Federal standards
  - Production cycles and other factors important to the industry

ENERGY STAR Guiding Principles

1. Significant energy savings
2. Product performance maintained or enhanced
3. Purchasers can recover investment in increased efficiency within a reasonable time period
4. Efficiency achieved through one or more technologies; products can be broadly available
5. Energy consumption can be measured and verified with testing
6. Label provides meaningful differentiation

New description of spec process is also now available on ENERGY STAR web site.

Specification Transitions

- EPA shares its partners' desire for a smooth transition from one ENERGY STAR specification to the next
- EPA provides partners with 9 months between the completion of a specification and its implementation date to allow for transition of collateral material
- EPA also intends for this period to allow models that will not meet the new requirements to transition off the shelves
  - Consumers purchase ENERGY STAR labeled products, expecting that they meet the latest requirements

Specification Transitions (con't)

- With this in mind, EPA has established the following timeline:
  - Effective immediately after a spec is final, manufacturers can elect to have CB certify eligible products to the new version
  - Typically, approximately 4-5 months before the new specification becomes effective, CBs are instructed to no longer certify product submittals to older specification. (Reminders shared with CBs and manufacturers.)
  - EPA will share with retail partners a list of products that meet new specification in advance of the effective date

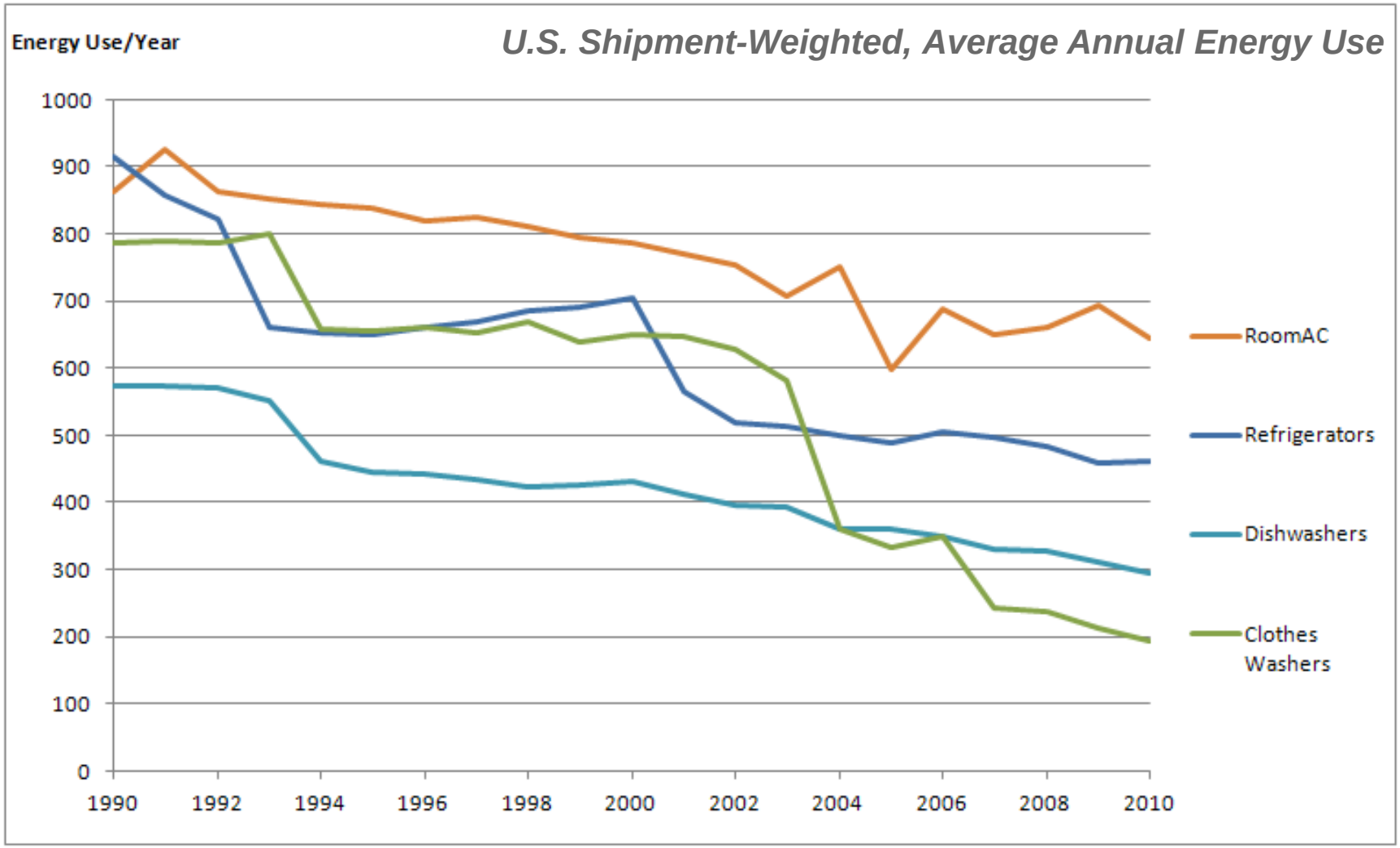
ENERGY STAR Appliances: Market Share & Revision Status

	2008	2009	2010	2011	2012	Status of Recent/Next Spec
Refrigerators	31%	35%	50%	56%	76%	V5.0 Effective Sept 2014
Freezers			25%	21%	44%	V5.0 Effective Sept 2014
Room ACs	43%	36%	33%	62%	58%	V3.0 effective Oct. 2013; V4.0 launched
Clothes Washers	24%	48%	64%	60%	66%	V6.1** effective Feb. 2013 V7.0 planned for March 2015
Dishwashers	67%	68%	100%	96%	89%	V6.0 launched

***V6.1 contains revised levels for commercial washers, only.*
Note: 2012 Unit Shipment Data available: www.energystar.gov/usd

EPA

Historical Efficiency Gains



New ENERGY STAR Appliance Opportunities

- New program opportunity clothes dryers:
  - EPA launched first ENERGY STAR clothes dryer spec development in 2012.
  - Recently awarded the EPA Emerging Technology Award to the 1st dryer in 2013.
  - Announced the development of new Emerging Technology Award Clothes Dryer Criteria for 2014.
- First optional criteria for ENERGY STAR products with "Connected" features
- ENERGY STAR Most Efficient program

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Refrigerator & Freezer Update: Version 5.0 effective in 2014

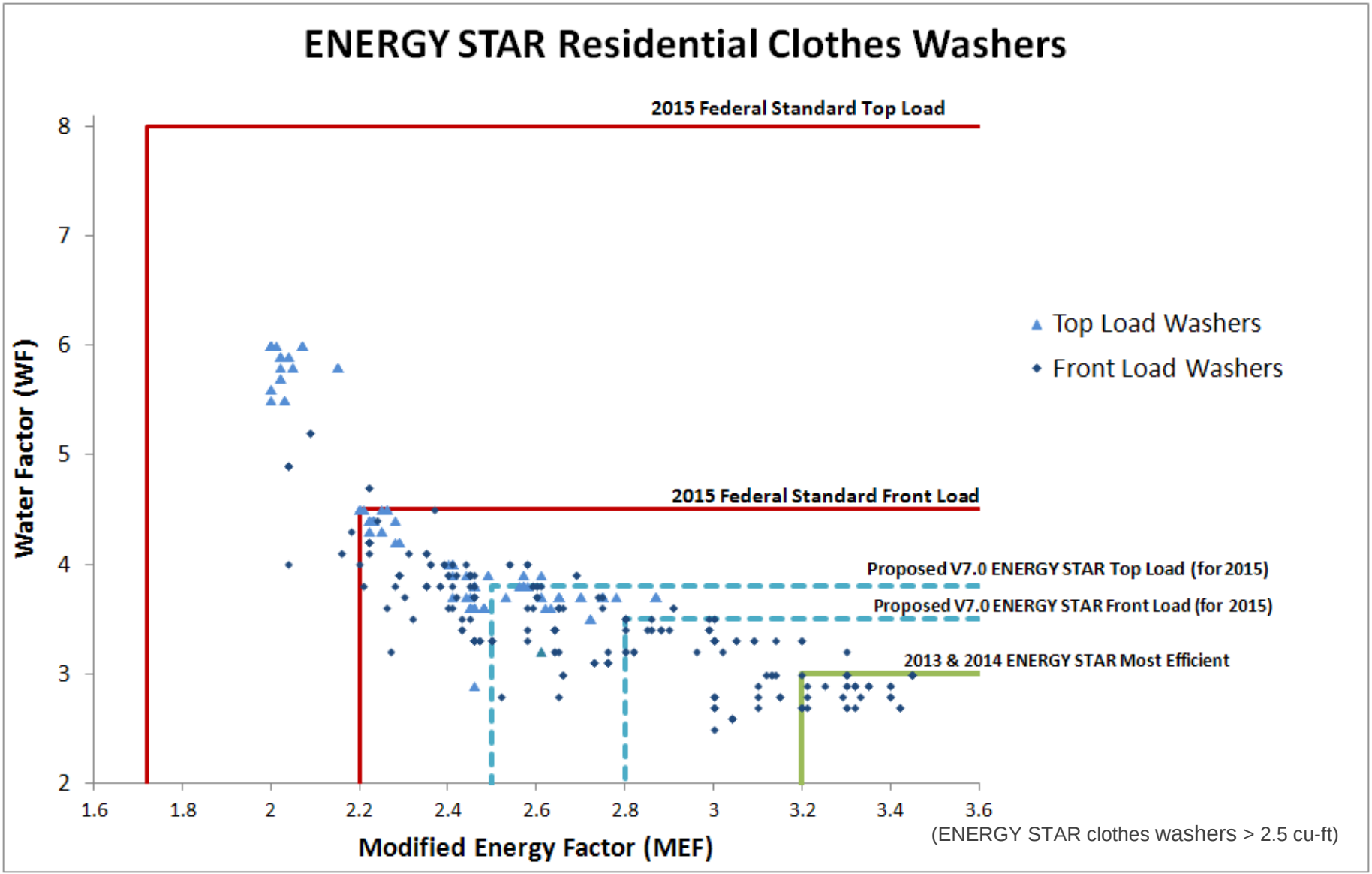
	Final Refrigerators & Freezers Version 5.0
Opportunity	• Approximately three-fourths of units shipped in 2012 were ENERGY STAR • Refrigerators exceed the current ENERGY STAR requirements by as much as 18% – many of which are recognized as ENERGY STAR Most Efficient. • New Federal standards and ENERGY STAR requirements in 2014 reduce energy use 30-40% relative to current conventional models.
Savings	Approximately 10% less energy than models meeting the 2014 DOE standards ($4.5-10/year – varies by type/size)
"Connected" Criteria	Included (*optional for ENERGY STAR*)
Effective Date	September 15, 2014
Metric, Test Methods	Annual Energy Use, DOE Appendix A and Appendix B New test for demand response capabilities

Clothes Washer Update: Version 7.0 effective in 2015

	Clothes Washers V7.0 Revision
Opportunity	• ENERGY STAR clothes washers accounted for > 60% of industry shipments in recent years • Good selection/ product availability at efficiencies exceeding current criteria
Savings	20-30% energy, 20-50% water savings (Approx. $40/year, on average)
Other	reporting: clean/ rinse performance
"Connected" Criteria	Proposed (Optional)
Effective Date	March 2015 (proposed)
Metrics[1], Test Method	IMEF, IWF DOE Appendix J2 In development: cleaning/rinse test, demand response test

[1] Integrated Modified Energy Factor (IMEF) and Integrated Water Factor (IWF)

Clothes Washer Efficiency



(ENERGY STAR clothes washers > 2.5 cu-ft)

Clothes Dryer Update: Version 1.0 in development

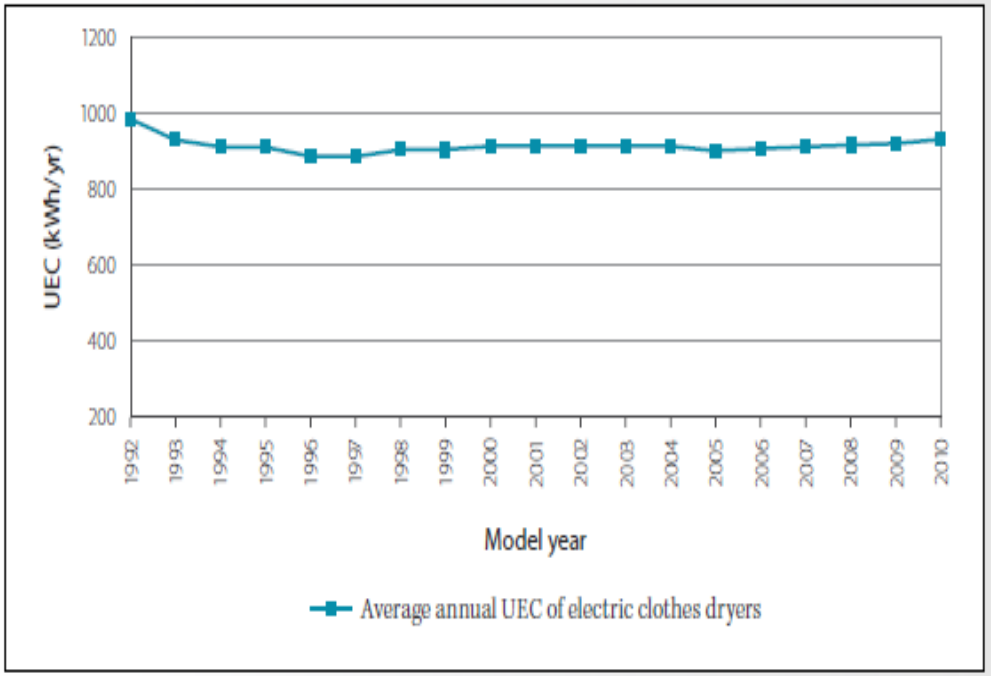
	Clothes Dryers V1.0 New Spec!
Opportunity	Significant savings opportunity, in particular, with more effective automatic cycle termination
Savings	Approximately 20% energy savings ($9-18 /year)
Other	Proposed: maximum drying cycle time (80 minutes); and report energy use/time on highest heat setting (if not already tested)
"Connected" Criteria	Proposed (Optional)
Effective Date	January 2015 (proposed)
Metric[1], Test Method	CEF DOE Appendix D2 In development: demand response test

[1] Combined Energy Factor (CEF)

Clothes Dryer Opportunities

- **Largest residential end-use load** for which there are no voluntary or mandatory labeling programs.
  - **Largely untapped opportunity for major energy and GHG emission reductions.**
- The first clothes dryer was awarded the **ENERGY STAR Emerging Technology Award** in June 2013.
- Most recent draft ENERGY STAR Version 1.0 specification targets **a 20% efficiency gain**.
  - **Significant near-term opportunity through use of improved automatic termination controls.**

Average Annual UEC of Electric Clothes Dryers, 1992-2010



Source: Energy Consumption of Major Household Appliances Shipped in Canada 2012

Note: data reflects shipment-weighted efficiency in Canada is expected to be comparable to trends in the U.S.

Room Air Conditioner Update: New Specification in Oct 2013

	Room Air Conditioners V3.0
Opportunity	• ENERGY STAR room A/Cs accounted for over 50% of the market in recent years • Over 7 million room A/Cs sold in 2012
Efficiency Criteria	15% less energy use than conventional model
Other	3.0 certified models will have new "intelligent" features: reminder to check/clean filter; energy saver mode (as default mode)
Savings	90 kWh/yr, on average ($10/yr)
"Connected"	No (will be considered in future spec)
Effective Date	October 1, 2013
Metric, Test Method	EER, DOE Appendix F

- Amended DOE standards have promoted further assessment of additional energy savings opportunities. EPA shared a Framework document in Fall 2013 to gather stakeholder input.
  - Potential opportunities: Reducing air-recirculation on evaporator, better installation, efficiency gains with new refrigerants, future coverage of portable air conditioners, and connected functionality

Residential Dishwashers: Update

- Current landscape:
  - ENERGY STAR residential dishwasher market share has remained high (89% in 2012) despite recent specification change
  - Amended Federal standards were effective May 30, 2013
- EPA launched the Version 6.0 specification development effort in late 2013 and plans to share a Draft 1 with stakeholders in early 2014:
  - Revisions to the energy/water performance criteria for both standard and compact dishwashers
  - Integrating cleaning performance (reporting requirement)
  - Optional connected criteria

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ENERGY STAR Most Efficient

- New program is in the early stages; but important advances this year:
  - 11 utility program sponsors featured ENERGY STAR Most Efficient 2013 in program offerings; a doubling from the year prior.
  - Each category experienced some growth in available models during 2013; most notably, about 25 new clothes washers.
- For home appliances (refrigerators, washers), EPA has maintained 2013 criteria through 2014.

“Connected” Product Features

- EPA continues to seek ways to further advance products with intelligent features in ways that deliver immediate consumer benefit and support a low-carbon electricity grid over the long term.

- Optional “Connected” criteria are designed to enable:
  - Energy savings
  - Convenience
  - Smart grid interconnection with the option to override when necessary

“Connected” Functionality Status

New Opportunities

- ✓ Demand responsive; today clothes dryers draw about 6kW:
  - Delay start cycle
  - Reduce power draw during cycle by 80%, temporarily
- ✓ Alerts: filter blocked, using the “eco” cycle is saving you 20 percent on your energy.
- ✓ Start the wash cycle an hour before you’re home so it can go into the dryer immediately.
- ✓ New possibilities for increasing the efficiencies of paired communicating washer and dryer.

Product Category	Status of Consideration in ENERGY STAR Specification	
	Finalized	In Dev’l
Climate Controls		X
Refrigerators, Freezers	X	
Clothes Dryers		X
Clothes Washers		X
Pool Pumps		X
Room ACs		X
Dishwashers		X

“Connected” - Thoughts for 2014

- The first refrigerators with “connected” features have been certified.
  - EPA will flag models with this functionality on the Product Finder / list of certified products
  - The Agency is planning to work with stakeholders to develop messaging around “connected”
- Areas for discussion:
  - Need to better understand how new features save energy and/or provide other benefits.
  - Utility findings from pilots/studies?
  - Demand response opportunities – when will certain products (e.g., pool pumps, refrigerators, dryers), look to be leveraged? How many products that are demand response ready are needed before they are practical to leverage?

Discussion & Questions

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