



ENERGY

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# Non-Energy Features Driving Market Transformations in High-Efficiency Home Appliances

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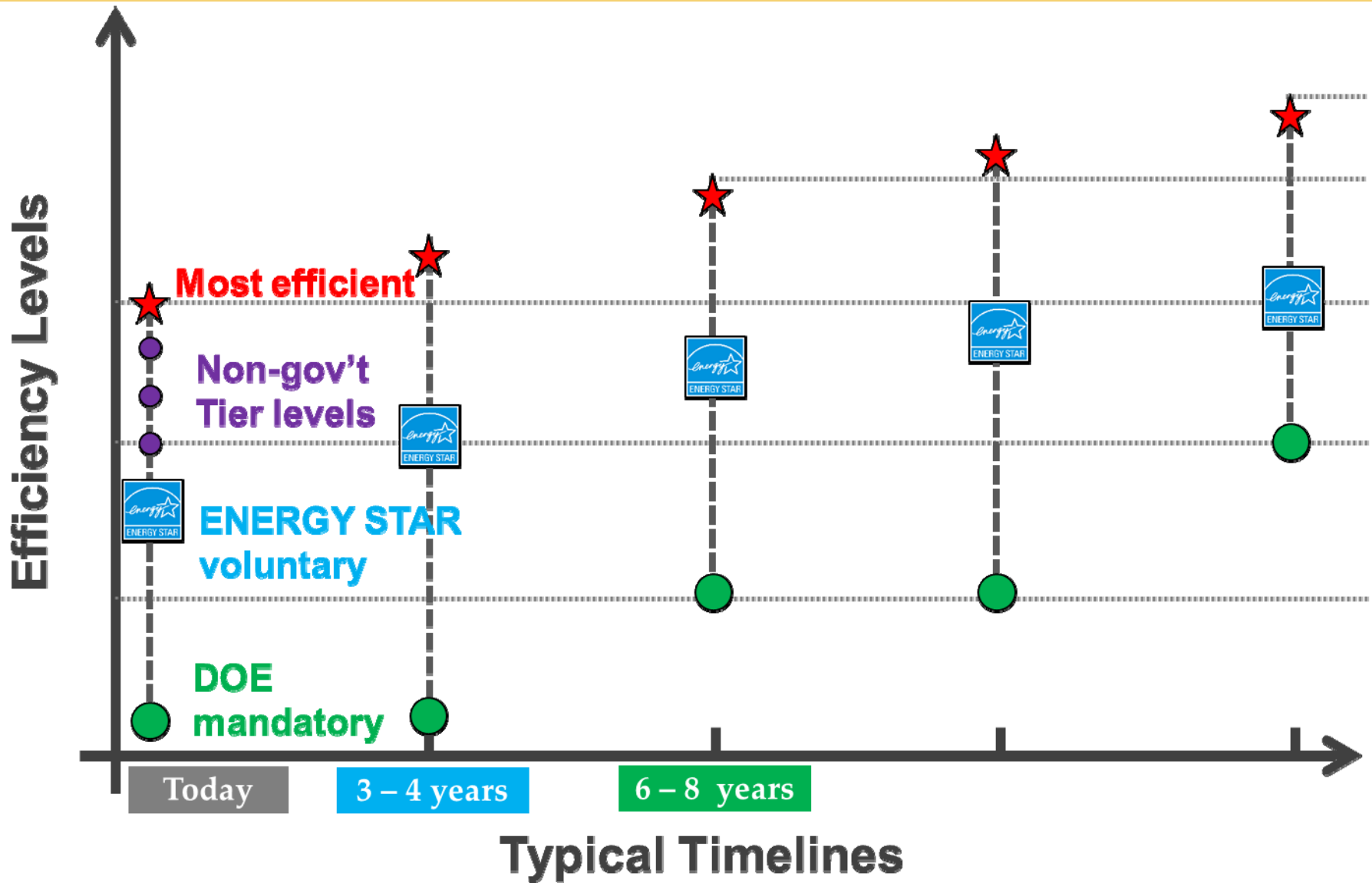


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# Agenda

- 1 » Standards Timelines**
- 2 » Recent MT Success Story**
- 3 » New MT Opportunities**

# Standards Timelines (Illustrative)



# Market Transformation

**Compelling non-energy-related features** can play a major role in driving transformative demand for high-efficiency appliances.

**Recent Example:**  
HE top-loading clothes washers



Image: homedepot.com

**Promising New Opportunities:**  
Hybrid (heat pump)  
clothes dryers



Images: smartelectricaloutlet.com.au (left)  
mysmartappliances.com (right)

**Connected  
appliances**



## Successful MT Case Study – Top-Loading Clothes Washer Standards

### **New top-loading clothes washer standards for 2015 and 2018 represent a market transformation success.**

- » By 2018, the minimum DOE standard will be equivalent to the ENERGY STAR level during 2012-2015
- » All new top-loading clothes washers in 2018 will be “HE”

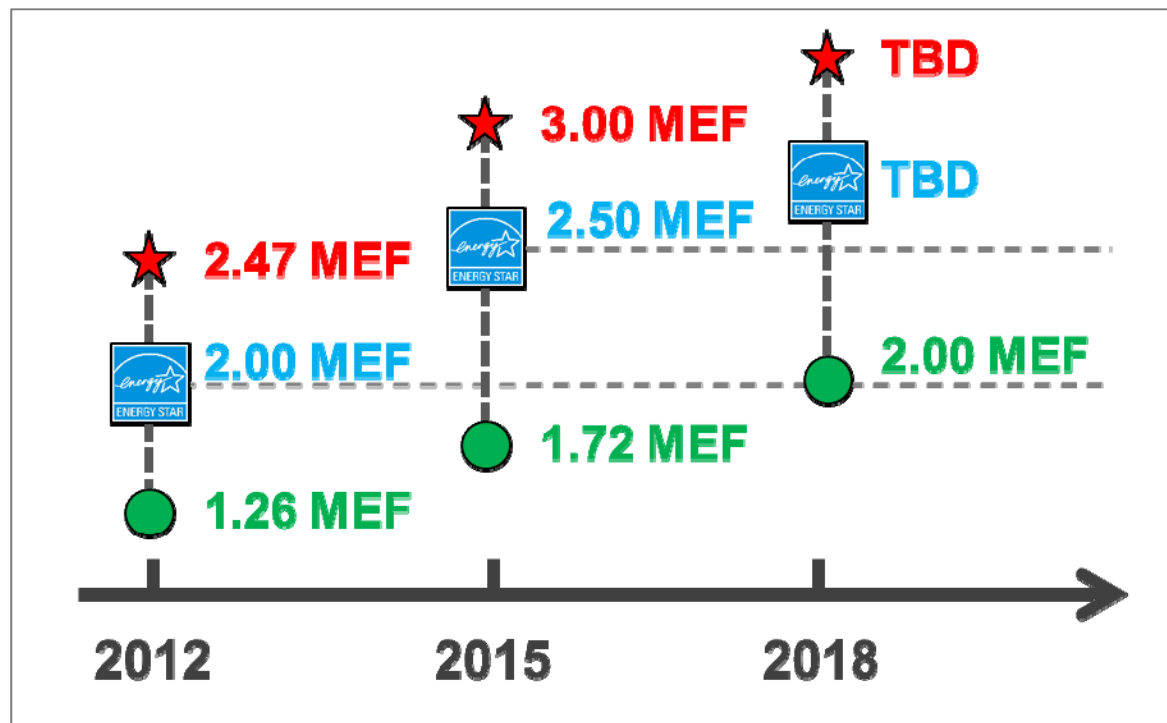


Images: homedepot.com

**What are the key features and benefits that helped drive this significant market transformation?**

## Successful MT Case Study – Top-Loading Clothes Washer Standards


The new top-loading efficiency standards offer significant energy-saving benefits...



- MEF: Modified Energy Factor (cu.ft./kWh)
- 2015 and 2018 standards are codified as Integrated MEF (IMEF) values; equivalent MEF values are shown here for comparison to 2012 standards.

## Successful MT Case Study – Top-Loading Clothes Washer Standards

..but perhaps equally importantly, they also offer **compelling non-energy-related benefits**:

Efficiency-Enabling Technology Features*	 Consumer Experience
Larger tub capacity	<i>Wash king-size blankets!</i>
No agitator	<i>No more twisted clothing!</i>
Faster spin speed	<i>Shorter dryer times!</i>
Stainless steel tub	<i>No more grime buildup!</i>
Anti-vibration balancing	<i>Installable on the 2<sup>nd</sup> floor!</i>
Electronic controls	<i>Lots of cycle options!</i>


\*DOE Direct Final Rule Technical Support Document, Chapter 5 Engineering Analysis, 2012


**These non-energy benefits play a major role in driving transformative demand for high-efficiency top-loading clothes washers.**


# Successful MT Case Study – Top-Loading Clothes Washer Standards


## What consumers are saying...



 [Redacted] : - 9h  
@LGUS not sure model but it's 5.2 cu ft. Finally a **washer** that can fit a king size **comforter**!!  
8:45 AM - 9 Apr 2015 - Details

 [Redacted] - Apr 7  
My new washer and dryer play cute little tunes when they finish their cycles. I kinda love it! 😊

 [Redacted] - 4 Feb 2014  
Have you ever noticed how **fast** your **washer** spins? I mean I've seen things **spin fast**, but those things really **spin**. #Impressed

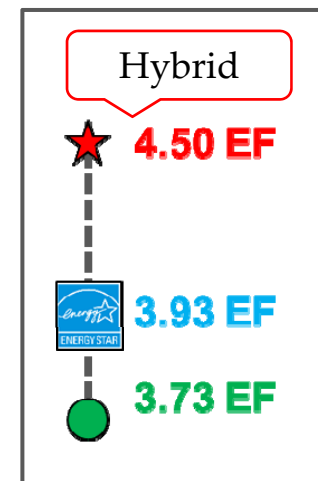
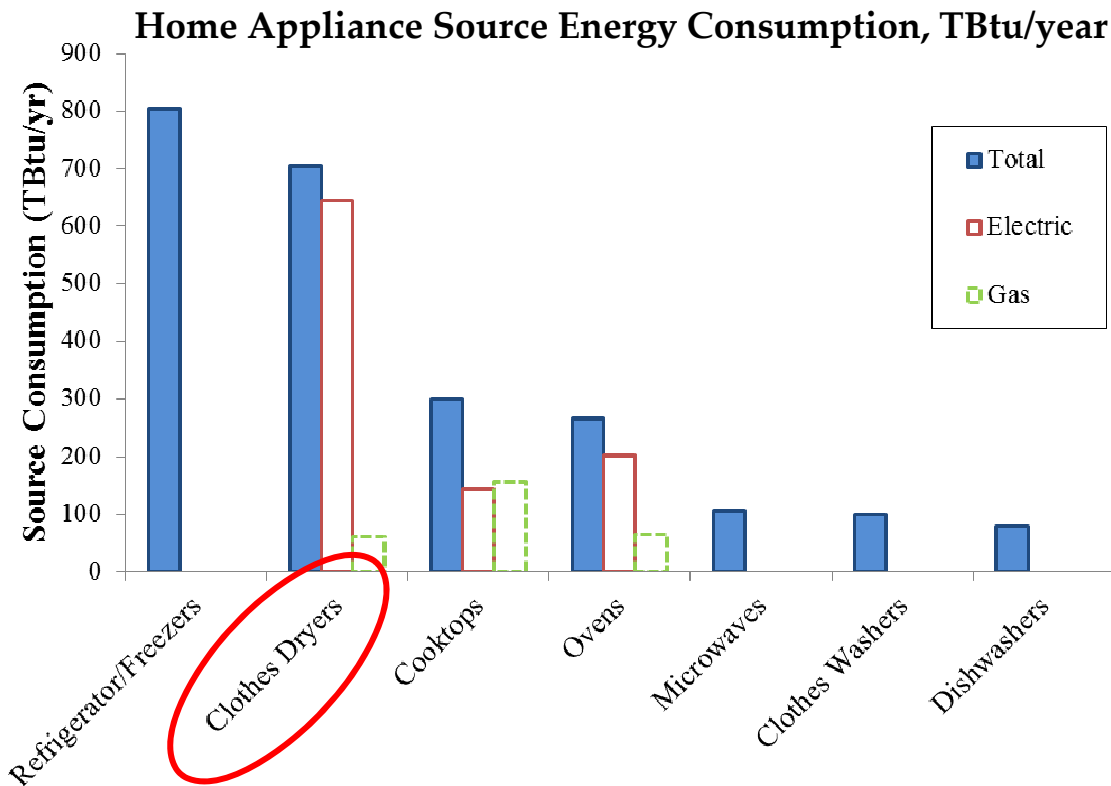
 [Redacted] 6 Jan 2013  
@LovePhyEd np! ;) [reviews.bestbuy.com/answers/3545/p...](https://reviews.bestbuy.com/answers/3545/p...) I **love** how it can do really large blankets and large loads. :)

View conversation



# Looking Ahead for New MT Opportunities


**New hybrid (heat-pump) clothes dryers offer significant energy-savings potential...**



Source: Goetzler, Sutherland et. al., *Research & Development Roadmap for Next-Generation Appliances*, Sept. 2014

# Looking Ahead for New MT Opportunities

...and compelling non-energy-related features:

Efficiency-Enabling Features	 <b>Consumer Experience</b>
Full-size capacity	<i>Fits that king-size blanket!</i>
Lower internal temperature	<i>Gentler on my clothing!</i>
Electronic controls	<i>Lots of cycles!</i>
<b>Ventless design*</b> <small>*Whirlpool model WED99HED</small>	<i>No more clogged vents!</i> <i>Install almost anywhere!</i>

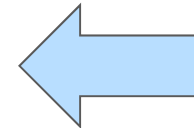



Image: safedryer.com



Image: Timothy's crushed dryer vent at home

## Looking Ahead for New MT Opportunities

**Connected (“smart-grid”) appliances have recently been introduced to the market and offer a variety of features.**

Technical Features	Non-Energy Features	 Consumer Experience
Peak load shifting	Web-connected	<i>Control from my smartphone!</i>
Transactional grid	Remote scheduling	<i>Pre-cool the house before I get home!</i>
Temporary load reduction	Status updates	<i>Notifies me when cycle is done!</i>
Compatibility with time-of-day pricing	Consumable status	<i>Reminds me to refill the detergent bin!</i>
	Error alerts	<i>Alerts me when the kids leave the refrigerator door open!</i>
	etc.	

**Compelling non-energy features will help drive adoption of connected appliances and create a sustainable transformation in the market.**

# Looking Ahead for New MT Opportunities

The following example smartphone app provides numerous non-energy features to the consumer:

APPLIANCES ENERGY smart SETTINGS SIGN OUT

Casual  
14  
Minutes  
Drying - Wet

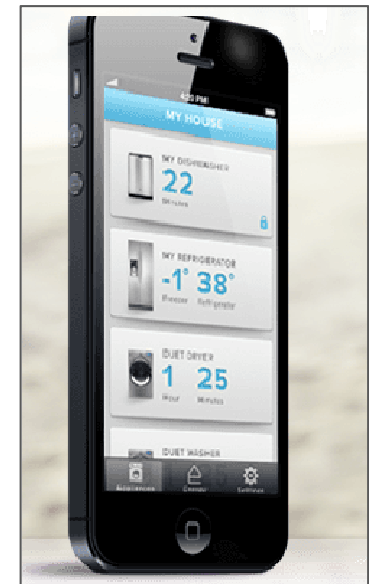
Air Flow Status  
● Poor

Wrinkle Shield OFF Remote Control Pause

Power Usage 214w Total Cycles 1222

Non-energy features

Energy-related information



Non-energy features

Credit: Whirlpool app at MySmartAppliances.com

# Key CONTACTS



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