Retail Products Platform: Product Analysis
Updated: July 13, 2015

The information below provides key data for products associated with the ENERGY STAR Retail Products Platform. Additional information about each product, including the sources for product lifetime and methodology used in the energy consumption calculations, can be found in the individual product tabs of this worksheet.

	Sound Bars (ENERGY STAR +50%)	Freezers	Electric Clothes Dryers	Gas Clothes Dryers	Room Air Cleaners	Room Air Conditioners
Energy Consumption	A standard sound bar uses approximately 91 kWh/year. An ENERGY STAR + 50% sound bar use about 25 kWh/year	A standard freezer uses approximately 313 kWh/year. ENERGY STAR freezers use about 281 kWh/year	A standard electric clothes dryer uses approximately 768 kWh/year. ENERGY STAR electric clothes dryers use about 608 kWh/year	A standard gas clothes dryer uses approximately 42 kWh/year and 2.7 MMBTU. ENERGY STAR gas clothes dryers use about 34 kWh/year and 2.2 MMBTU	A standard room air cleaner uses approximately 531 kWh/year. ENERGY STAR room air cleaners use about 317 kWh/year	A standard room air conditioner uses approximately 610 kWh per year. ENERGY STAR room air conditioners use about 553 kWh/year
Product Lifetime	7 years	11 years	12 years	12 years	9 years	9 years
Annual Shipments (Total)	2014: 3,383,750 *Source: U.S. EPA*	2014: 1,878,000 *Source: U.S. EPA*	2014: 5,490,000 *Source: Appliance Magazine*	2014: 1,278,000 *Source: Appliance Magazine*	2014: 5,100,000 *Source: U.S. EPA*	2014: 6,013,000 *Source: U.S. EPA*
Annual ENERGY STAR Shipments	2014: 1,198,814 *Source: U.S. EPA*	2014: 535,633 *Source: U.S. EPA*	2014: 823,500	2014: 63,900	2014: 1,104,679 *Source: U.S. EPA*	2014: 2,980,167 *Source: U.S. EPA*
Market Share of ENERGY STAR	35% in 2014 *Source: U.S. EPA*	29% in 2014 *Source: U.S. EPA*	15% in 2015 *Source: U.S. EPA*	5% in 2015 *Source: U.S. EPA*	22% in 2014 *Source: U.S. EPA*	50% in 2014. 30% in 2016 (new specification) *Source: U.S. EPA*
Incremental Cost	No incremental cost, but additional market barriers for this product are being investigated.	Incremental cost estimate is under development.	$225 *Source: U.S. EPA*	$270 *Source: U.S. EPA*	$56 *Source: U.S. EPA*	$114 *Source: U.S. EPA*
Specification Status	Effective May 1, 2013 Not planning to revise in 2015	Effective Sept 15, 2014 Not planning to revise in 2015	Effective Jan 1, 2015 Not planning to revise in 2015	Effective Jan 1, 2015 Not planning to revise in 2015	Effective July 1, 2004 - EPA plans to review this specification for potential revision in the next 6-7 months	Effective October 26, 2015
Federal Standard?	No	Yes	Yes	Yes	No	Yes
Buying Patterns for Products	Unknown - may coincide with TVs	Rolling basis	Rolling basis	Rolling basis	Late winter and early spring time	Spring and Summer
Timing for Retailer Orders/Shipments	Unknown - may coincide with TVs	Rolling basis	Rolling basis	Rolling basis	Rolling basis	End of Summer/Early Fall

Notes:
Sales estimates, total and by participating retailer, and estimated consumption in mWh for RPP products are available through the "2015 ESRPP Product Portfolio Market Sizing" spreadsheet. The sources for the information contained in that spreadsheet are as follows:

Estimated consumption: UEC from EEPS databases, DOE, EPA. All UEC are US average except space conditioning, which is regionally dependent.

Sales estimates: Industry sources (Electronics CEA 2015 forecast; Appliances AHAM, AHRI, EPA, DOE) and Navitas analysis. State level estimates are created by adjusting national sales data by Census household data.

Per Unit/Per Year

Soundbars		kWh	MMBtu
Baseline Description	Standard Soundbar		
Measure Description	ENERGY STAR+50% Soundbar		
Baseline Unit Energy Consumption		91.00	
Measure Unit Energy Consumption		25.00	
Unit Energy Savings		66.00	
Energy Consumption	The baseline unit energy consumption is based on information provided from a Fraunhofer Center for Sustainable Energy System study titled Energy Consumption of Consumer Electronics in US Households, 2010[1]. Performance requirements for ENERGY STAR certified soundbars can be found in the ENERGY STAR specification (V 3.0)[2] The measure used in RPP assumes a more stringent requirement than ENERGY STAR Version 3.0. The more stringent requirement was developed by decreasing the power requirements and increasing the efficiency requirement by 50%. Please see Calculations Assumptions and Power Requirements tables to the right for usage assumptions and power requirements used in calculation.		
Product Lifetime	ENERGY STAR assumes a 7 year useful life. Please note that this was based on an assumption and not any data. Further research since that time has found the following estimates: • 4.4 years for video and compact audio products (Ecos. "Market Analysis for Standby Power." Report to Natural Resources Canada, 2008.) • 4–6 year lifetime for clock radios and 4 years for portable DVD players (U.S. Department of Energy. "Market Assessment and Markup Spreadsheet." Energy Conservation Standards Rulemaking - Battery Chargers and External Power Supplies Preliminary Analysis . March 15, 2012). • 6 year expectation of lifetime for DVD and Blu-ray players (Ely, Chris. The Life Expectancy of Electronics . September 16, 2014. http://www.ce.org/Blog/Articles/2014/September/The-Life-Expectancy-of-Electronics.aspx (accessed October 22, 2014).		
Incremental Cost	No incremental cost, but additional market barriers for this product are being investigated.		

Footnotes

1. http://www.ce.org/CorporateSite/media/Government-Media/Green/Energy-Consumption-of-CE-in-U-S-Homes-in-2010.pdf
2. http://www.energystar.gov/sites/default/files/Final%20Version%203.0%20AV%20Program%20Requirements%20%28Rev%20Dec-2014%29.pdf

Freezers		Per Unit kWh	Per Unit MMBtu
Baseline Description	Upright Freezer (PC 9)		
	Chest Freezer (PC 10)		
Measure Description	ENERGY STAR Upright Freezer (PC 9)		
	ENERGY STAR Chest Freezer (PC 10)		
Baseline Unit Energy Consumption	Upright Freezer	439	
	Chest Freezer	239	
	Weighted Average	313	
Measure Unit Energy Consumption	Upright Freezer	395	
	Chest Freezer	215	
	Weighted Average	281	
Unit Energy Savings	Chest Freezer	43.78	
	Upright Freezer	23.97	
	Weighted Average	31.25	
Energy Consumption	Baseline energy consumption is based on the Federal Standard effective September 15, 2014[1]. Performance requirements for ENERGY STAR certified freezers can be found in the ENERGY STAR specification (V 5.0)[2]. For both baseline and ENERGY STAR unit energy consumption, the calculations assume a certain volume and adjusted volume. These values can be found in the table under Calculation Assumptions. The weighted average unit energy savings is calculated using the market share of upright and chest freezers. The assumed market share and source for the data is provided under Calculation Assumptions.		
Product Lifetime	ENERGY STAR assumes 11 years based on Appliance Magazine U.S. Appliance Industry: Market Value, Life Expectancy & Replacement Picture for 2005-2012, 2011.		
Incremental Cost	Chest Freezer: $6.62 Upright Freezer: $12.14 Incremental costs are based on the Freezer TSD Life-Cycle Cost and Payback Analysis "EERE-2008-BT-STD-0012-0128.pdf" found in Table 8.2.7 Standard-Size Freezers: Average Consumer Cost in 2014.[3]		

Footnotes

1. http://www1.eere.energy.gov/buildings/appliance_standards/product.aspx/productid/43
2. http://www.energystar.gov/ia/partners/product_specs/program_reqs/Refrigerators_and_Freezers_Program_Requirements_V5.0.pdf
3. http://www.regulations.gov/contentStreamer?documentId=EERE-2008-BT-STD-0012-0128&disposition=attachment&contentType=pd

Clothes Dryers		Per Unit kWh	Per Unit MMBtu
Baseline Description	Vented Gas Dryer - 2015 Federal Standard - 2.84 CEF		
	Ventless or Vented Electric, Standard ≥ 4.4 ft3 - 2015 Federal Standard Clothes Dryer - 3.11 CEF		
Measure Description	Vented Gas Dryer - ENERGY STAR - 3.48 CEF		
	Ventless or Vented Electric, Standard Clothes Dryer ≥ 4.4 ft3 - ENERGY STAR - 3.93 CEF		
Baseline Unit Energy Consumption	Vented Gas Dryer	42.10	2.72
	Ventless or Vented Electric, Standard ≥ 4.4 ft3	768.92	N/A
Measure Unit Energy Consumption	Vented Gas Dryer	34.36	2.22
	Ventless or Vented Electric, Standard ≥ 4.4 ft3	608.49	N/A
Unit Energy Savings	Vented Gas Dryer	7.74	0.50
	Ventless or Vented Electric, Standard ≥ 4.4 ft3	160.44	N/A
Energy Consumption	Baseline energy consumption is based on a modified 2015 Federal Standard[1]. The goal of the translation is to account for the use of the amended DOE test procedure 10 CFR 430, Subpart B, Appendix D2 which assesses energy efficiency as a result of clothes dryer automatic cycle termination controls. The DOE 2015 standard CEF values are based on the DOE Appendix D1 test. ENERGY STAR is requiring an updated DOE test, published in Appendix D2. On average, clothes dryers use more energy when tested under Appendix D2, and so the translation adjusts the D1 Federal standard to reflect the estimated average energy efficiency performance of minimally-compliant 2015 models under D2. The following translation values, based on DOE testing published in their NOPR test procedure in Jan 2013, were used Electric Standard: -16.6% Gas Dryers : -13.9% Performance requirements for ENERGY STAR certified clothes dryers can be found in the ENERGY STAR specification (V 1.0)[2]. Calculations assume 283 cycles per year and an 8.45 lb load for standard sized dryers (≥4.4 cu-ft capacity).		
Product Lifetime	ENERGY STAR assumes 12 years based on Appliances Magazine (Appliance Magazine. U.S Appliance Industry: Market Value, Life Expectancy & Replacement Picture) Please note that the report provides slightly different average life expectancies for gas and electric. To minimize confusion, ENERGY STAR uses 12 years for both product types.		
Incremental Cost	Vented Gas Dryer - $270.16 Ventless or Vented Electric, Standard Clothes Dryer - $224.91 Based on the Dryer TSD Life-Cycle Cost and Payback Analysis "2011-04-18_TSD_Chapter_8_Life-Cycle_Cost_and_Payback_Period_Analyses.pdf" Table 8.2.12 Vented Dryer, Gas and Table 8.2.9 Vented Dryer, Electric, Standard: Consumer Product Costs, Installation Costs, and Total Installed Costs in 2014[3].		

Footnotes

1. http://www1.eere.energy.gov/buildings/appliance_standards/product.aspx/productid/36
2. http://www.energystar.gov/sites/default/files/specs//ENERGY%20STAR%20Final%20Version%201%200%20Clothes%20Dryers%20Program%20Requirements.pdf
3. http://www.regulations.gov/contentStreamer?documentId=EERE-2007-BT-STD-0010-0053&attachmentNumber=9&disposition=attachment&contentType=pd

Air Cleaners		Per Unit kWh	MMBtu
Baseline Description	Standard Air Cleaner		
Measure Description	ENERGY STAR Air Cleaner		
Baseline Unit Energy Consumption		530.98	
Measure Unit Energy Consumption		317.10	
Unit Energy Savings		213.88	
Energy Consumption	Baseline and ENERGY STAR energy consumption are calculated by taking a weighted average of five product category sub types: 51-100 CADR, 101-150 CADR, 151-200 CADR, 201-250 CADR, and >250 CADR. Wattages for all five product sub types are derived from AHAM data. Duty cycle assumes 16 hours per day, 365 days per year based on filter replacement instructions. Performance requirements for ENERGY STAR certified air cleaners can be found in the ENERGY STAR specification (V 1.2)[1].		
Product Lifetime	ENERGY STAR assumes 9 years based on the following LBNL report - http://enduse.lbl.gov/Info/LBNL-56380(2008).pdf		
Incremental Cost	EPA assumes an incremental cost of $56.		

Footnotes

1. http://www.energystar.gov/sites/default/files/specs//private/Room_Air_Cleaners_Final_V1.2_Specification.pdf

Per Unit

Room Air Conditioners

		kWh	MMBtu
Baseline Description	Standard Room Air Conditioner		
Measure Description	ENERGY STAR Room Air Conditioner		
Baseline Unit Energy Consumption		628	
Measure Unit Energy Consumption		579	
Unit Energy Savings		48.74	
Energy Consumption	Please note that ENERGY STAR savings are based on the V4 specification and are therefore preliminary, as this specification has not been finalized. Baseline energy consumption is based on the federal standard for room air conditioners[1]. Performance requirements for ENERGY STAR certified room air conditioners can be found in the ENERGY STAR specification (V 4.0)[2]. The unit energy savings are calculated by taking a market share weighted average of the unit energy consumption of all product subtypes listed in the ENERGY STAR specification. It is assumed that the room air conditioner is in operation for 750 hours per year. The capacity of the air conditioner depends on the product subtype. Please see the Product Subtype Details table for assumed capacities and CEER values per subtype. Unit savings per region are available starting in Column S of this worksheet.		
Product Lifetime	ENERGY STAR assumes an average of 9 years per Appliance Magazine - Market Research The U.S. Appliance Industry: Market Value, Life Expectancy & Replacement Picture 2013 (Dec. 2013).		
Incremental Cost	ENERGY STAR Room Air Conditioner: $114.45 Incremental costs are based on the Room Air Conditioner TSD Life-Cycle Cost and Payback Analysis "2011-04-18_TSD_Chapter_8_Life-Cycle_Cost_and_Payback_Period_Analyses.pdf".[3] To calculate an average incremental cost, a weighted average was created based on the market share of each product subtype.		

Footnotes

1. http://www1.eere.energy.gov/buildings/appliance_standards/product.aspx/productid/41
2. http://www.energystar.gov/sites/default/files/ENERGY%20STAR%20Version%204.0%20Room%20Air%20Conditioners%20Program%20Requirements.pdf

3. http://www.regulations.gov/#!documentDetail;D=EERE-2007-BT-STD-0010-0053