



**Appliance Standards Program
Buildings Technology Office**

Appliance Standards Program Overview
ATMOsphere America 2013
June 19, 2013

- Over 60 products are covered by DOE's appliance standards program. These are known as "covered products."
- Covered products are responsible for 90% of residential building energy consumption, 60% of commercial building energy consumption, and approximately 29% of industrial energy consumption.
 - In 2009, the Nation's 113 million households and 5.4 million commercial buildings consumed approximately 39.2 quadrillion Btu (quads) of energy annually, about 41 percent of the U.S. total.
 - Residential buildings use 22 percent of the U.S. total and commercial buildings use 19 percent. Industrial equipment and processes comprises 29 percent of the national total.
 - Energy use in buildings costs \$413.3 Billion (\$2009).

- Establishes test procedures for measuring the energy efficiency of covered products.
 - Energy efficiency is often difficult to define, and requires different metrics for different products.*
 - Test procedures must be carefully developed, so they can't be gamed.*
- Establishes the mandatory standard levels for the energy efficiency of covered products.
 - The standard is defined in terms of the test procedures established by the Program.*
 - Manufacturers must test their products using the DOE test procedure, and it must meet the standard level to be sold in the U.S.*

(c) *Dishwashers.* (1) The Estimated Annual Operating Cost (EAOC) for dishwashers must be rounded to the nearest dollar per year and is defined as follows:

(i) When cold water (50 °F) is used,
 (A) For dishwashers having a truncated normal cycle as defined in section 1.15 of appendix C to this subpart,
 $EAOC = (D_e \times S) + (D_e \times N \times (M - (E_D/2)))$.
 (B) For dishwashers not having a truncated normal cycle,
 $EAOC = (D_e \times S) + (D_e \times N \times M)$
 Where,
 D_e = the representative average unit cost of electrical energy, in dollars per kilowatt-hour, as provided by the Secretary,

See the Federal Register, August 29, 2003.

Product class	Standard level	
Residential water heaters*		
Gas-fired Storage	For tanks with a Rated Storage Volume at or below 55 gallons: $EF = 0.675 - (0.0015 \times \text{Rated Storage Volume in gallons})$.	For tanks with a Rated Storage Volume above 55 gallons: $EF = 0.8012 - (0.00078 \times \text{Rated Storage Volume in gallons})$.
Electric Storage	For tanks with a Rated Storage Volume at or below 55 gallons: $EF = 0.960 - (0.0003 \times \text{Rated Storage Volume in gallons})$.	For tanks with a Rated Storage Volume above 55 gallons: $EF = 2.057 - (0.00113 \times \text{Rated Storage Volume in gallons})$.
Oil-fired Storage	$EF = 0.68 - (0.0019 \times \text{Rated Storage Volume in gallons})$.	
Gas-fired Instantaneous	$EF = 0.82 - (0.0019 \times \text{Rated Storage Volume in gallons})$.	

See the Federal Register, April 16, 2010.

- Enforces the standards.
 - *DOE can order manufacturers to take corrective action if their products do not meet the standard levels.*
 - *This can include ordering them not to sell the products in the United States and the imposition of civil penalties.*

**BEFORE THE
U.S. DEPARTMENT OF ENERGY
Washington, D.C. 20585**

In the Matter of:)
)
Sears, Roebuck & Co.) Case Number: 2011-SE-1418
(freezers))
)

Issued: June 26, 2012

NOTICE OF NONCOMPLIANCE DETERMINATION

Manufacturers and private labelers are prohibited from distributing covered products that do not comply with applicable federal energy conservation standards. 10 C.F.R. § 429.102; 42 U.S.C. § 6302.

On September 22, 2011, DOE completed testing of one compact chest freezer, Kenmore-brand model number 255.19702010 ("19702"), privately labeled and distributed in commerce in the U.S. by Sears, Roebuck & Co. ("Sears") and manufactured in China. In December 2011 and January 2012, DOE completed testing of three additional units of 19702. DOE's testing was conducted in accordance with the relevant DOE test procedure (10 C.F.R. Part 430, Subpart B, Appendix B1).

DOE's testing demonstrated that Kenmore-brand chest freezer model number 19702 is not in compliance with federal law. Given the tested units' measured volumes, their respective maximum permissible rates of energy consumption were 261, 262, 263, and 262 kilowatt-hours per year (kWh/yr).¹ Based on their performance during testing, the four units that DOE tested consumed energy at the rates of 374, 413, 388, and 449 kWh/yr, an average of more than 50 percent over the federal limit.

(November 28, 2012)

Midea Agrees to Pay \$4.5M for Four Models that Fail to Meet Federal Energy Standards

Midea America Corp., Hefei Hualing Co., Ltd., and China Refrigeration Industry Co., Ltd. ("Midea")—all subsidiaries or affiliates of GD Midea Holding Co., Ltd.—agreed to pay \$4,562,838 after admitting in a compromise agreement that one refrigerator-freezer basic model and three freezer basic models fail to meet the relevant federal energy conservation standards. Specifically, Midea admitted that the DOE-tested units of the offending basic models consumed energy at approximately the following rates:

UL-WD195-D: 55% over the standard
UL-WD145-D: 28% over the standard
HS-390C: 8% over the standard
HD-146F: 8% over the standard

- **Certifications to Date**
 - Close to 2 million products have been certified to DOE since January 1, 2010
 - 100-percent of certifications are reviewed by DOE
- **Enforcement Activity**
 - Approximately 250 open enforcement actions
 - Emphasis on testing and standards violations
 - Expanding to commercial equipment
 - Collected over \$5,400,000 in civil penalties for violations
 - Enforcement news: <http://energy.gov/gc/enforcement-news>
- **Online, Public, Searchable Certification Database**
 - Launched at end of 2011
 - Version 2.0 release upcoming
- **Guidance Database**
 - DOE released a guidance database in September 2011, which houses responses to questions DOE has received regarding scope of coverage, definitions, test procedures, standards applicability, certification, and enforcement.

What Does the Program Do?

- Working with EPA, leads test procedure development, testing/verification, and **MOST EFFICIENT** for ENERGY STAR.
 - *DOE generally uses the same test procedure for appliance standards and ENERGY STAR.*
 - *DOE conducts testing in support of the ENERGY STAR program to verify the required efficiency levels.*
 - *DOE has tested over 400 products since 2010 to ensure that products bearing the ENERGY STAR logo deliver the energy savings consumers expect.*
 - ***ENERGY STAR MOST EFFICIENT** targets ~top 5% of market for several home appliances.*



Department of Energy

Washington, DC 20585

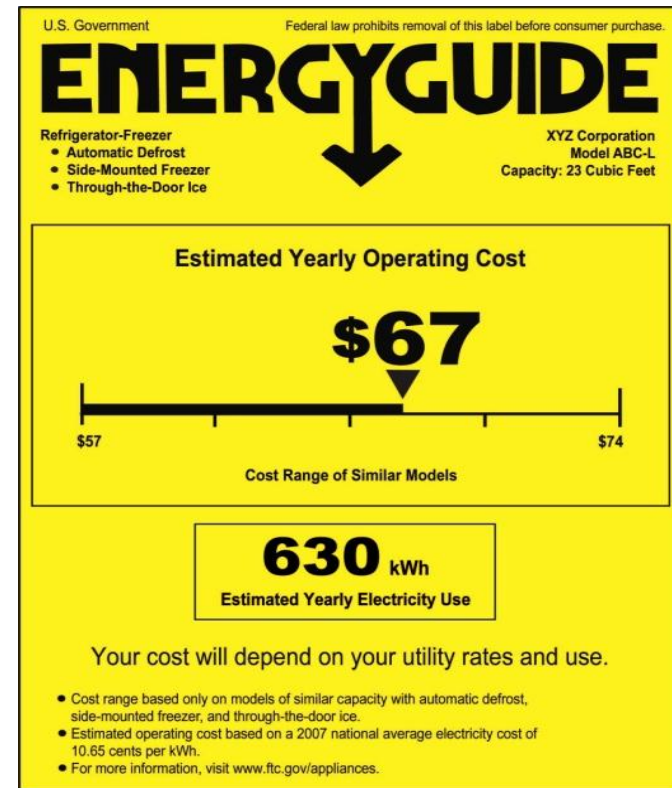
December 9, 2010

Ms. Leslie Jones
ENERGY STAR Program
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Room 62023
Washington, DC 20460

Dear Ms. Jones:

On October 20, 2010, the United States Department of Energy (DOE) notified Electrolux Major Appliance (Electrolux) that DOE had tested the Frigidaire brand chest freezer model FFN09M5HW* manufactured by Electrolux as part of the ENERGY STAR Testing Pilot Program, and that, according to Stage I testing, this model exceeded allowable ENERGY STAR energy-efficiency requirements by 20 percent. DOE gave Electrolux until November 1, 2010, to request additional testing or have this matter referred to the United States Environmental Protection Agency (EPA) for disqualification from the ENERGY STAR program.

- Working with FTC, DOE creates a methodology to calculate energy-usage values for Energy Guide labels on appliances.
- *Generally the results on the FTC label are based on calculations resulting from DOE test procedures.*
- *Manufacturers must file data reports with FTC and must contain the ratings for the appliances. FTC is allowing manufacturers to submit reports to DOE via CCMS.*



The Program is highly effective, achieving high bang-for-the-buck in energy savings.

- The national energy efficiency standards promulgated to date are expected to save 70 quads of energy by 2020 and 121 quads by 2030.
- The cumulative utility bill savings to consumers of these standards are estimated to be over \$950 billion by 2020 and over \$1.7 trillion through 2030.
- Annual carbon dioxide savings will reach nearly 260 million tons by 2020 and the cumulative savings by 2030 is estimated to be 6.6 billion tons.

Federal energy efficiency standards benefit manufacturers as well.

- They reduce the regulatory burden on appliance and equipment manufacturers by pre-empting a potential patchwork of state standards with a single Federal standard.
- Regulatory streamlining enhances industry competitiveness, profitability and its ability to protect and create jobs.
- Efficiency standards can help lower the costs of innovative energy efficient technology by facilitating their entry into the market and providing economies of scale.
- Test procedures that underlay standards enhance the ability to test the performance of newer technologies. The result is higher efficiency products that are more widely available and more affordable to own.

Standard Rulemakings are ongoing for approximately 30 products in 2013.

Standards	Stage
Commercial Packaged Boilers	Framework
Refrigerated Beverage Vending Machines	Framework
Commercial Compressors	Framework
Residential Boilers	Preliminary Analysis
Packaged Terminal Air Conditioners and Heat Pumps	Preliminary Analysis
Ceiling Fans and Ceiling Fan Light Kits	Preliminary Analysis
GSFL and Incandescent Reflector Lamps	Preliminary Analysis
High Intensity Discharge	Preliminary Analysis
Commercial and Industrial Pumps	Preliminary Analysis
Commercial and Industrial Fans and Blowers	Preliminary Analysis
Miscellaneous Residential Refrigeration	Preliminary Analysis
Dehumidifiers	Preliminary Analysis
Furnace Fans	NOPR
Walk-in Coolers and Freezers	NOPR
Commercial Refrigeration Equipment	NOPR
Electric Motors	NOPR
Set Top Boxes	NOPR
Metal Halide Lamp Fixtures	NOPR
Automatic Commercial Ice Makers	NOPR
Commercial Clothes Washers	NOPR
Single Package Vertical Air Conditioners and Heat Pumps	NOPR
Residential Water Heaters	NOPR
Commercial Packaged Air Conditioners and Heat Pumps	NOPR/Determination
Commercial Warm-Air Furnaces	NOPR/Determination
Commercial Water Heaters	NOPR/Determination
Battery Chargers and EPSs	Final Rule

Test Procedure Rulemakings are ongoing for approximately 30 products in 2013.

Test Procedures	Stage
Alternative Efficiency Determination Methods	SNOPR
Set Top Boxes	NOPR
Electric Motors	NOPR
High-Intensity Discharge Lamps	SNOPR
Television Sets	SNOPR
Central Air Conditioners and Heat Pumps	SNOPR
Induction Cooking Products (Active-Mode)	NOPR
Clothes Dryers (Automatic Termination Sensors)	NOPR
Furnace Fans	SNOPR
Residential and Commercial Water Heaters	NOPR
Miscellaneous Residential Refrigeration	NOPR
Commercial and Industrial Pumps	NOPR
Commercial and Industrial Fans and Blowers	NOPR
Beverage Vending Machines	Framework
Ceiling Fans and Ceiling Fan Light Kits	NOPR

Test Procedures	Stage
Compact Fluorescent Lamps	NOPR
Direct Heating Equipment and Pool Heaters (Active Mode)	NOPR
Illuminated Exit Signs	NOPR
Light Emitting Diodes	SNOPR
Microwave Ovens (Active Mode)	NOPR
Packaged Terminal Air Conditioners and Heat Pumps	Framework
Plumbing Products	SNOPR
Residential Furnaces & Boilers (Active Mode)	NOPR
Traffic Signal Modules and Pedestrian Modules	NOPR
Commercial Clothes Washers	NOPR
Residential Refrigerators - Ice Making	NOPR
Dehumidifiers (Active)	NOPR
Luminaires Lighting Systems	RFI

ENERGY STAR test methods are ongoing for approximately 12 products in 2013.

Test Methods	Stage
Clothes Washer Performance (Rinsing ability/Cleaning ability)	Preliminary
Commercial Heat Pump Water Heaters	Draft 1
Computers	Draft 3
Connected Refrigerator/Freezer	Draft Final
Dishwasher Performance (Cleaning ability)	Final
Game Consoles	Final
Laboratory Grade Refrigerator/Freezer and Ultra-Low Temperature Freezers	Draft 1
Large Network Equipment	Draft 1
Pool Pumps	Final
Servers	Final
Small Network Equipment	Draft Final
Telephony	Draft 2

Note: Additional test procedures ongoing for products covered by DOE standards and ENERGY STAR (example: boilers)

- Rulemaking officially commenced June 4, 2013 with publishing of Framework Document
 - Provides overview of rulemaking stages, analysis to be conducted, and other changes that may be considered
 - Product classes: DOE may develop separate standards for combination vending machines and products designed for non-perishable products
 - Definitions: DOE is considering a definition for “fully-cooled beverage vending machine” and for defining perishable vs. non-perishable spaces
 - DOE may also consider changes to the current test method
 - Public meeting on rulemaking framework scheduled for June 20, 2013
- Alternative refrigerants:
 - DOE has identified BVM products in the U.S. market that use alternatives to R-134a
 - Additional information is requested on the prevalence of these products, their relative costs, and their energy consumption

DOE Appliance and Equipment Standards WebPages and DOE Contacts

- **DOE Appliance Standards**
 - http://www1.eere.energy.gov/buildings/appliance_standards/
- **Beverage Vending Machine Rulemaking**
 - http://www1.eere.energy.gov/buildings/appliance_standards/rulemaking.aspx/ruleid/73
- **Contact Lucas Adin, Project Manager:**
 - Lucas.Adin@ee.doe.gov
 - 202. 287.1317