

State EE/RE Technical Forum
Call #9: State Appliance Energy Efficiency Standards
June 9, 2005, 2:00 – 3:30 PM EDT

A. Background

In addition to efforts by the federal government, several states have established minimum energy efficiency standards for many major commercial and residential appliances and other energy-consuming products. These standards are designed to reduce energy use by prohibiting the manufacture, sale or installation of less efficient models. Reduced demand for electricity also reduces pollution associated with power generation, and can help improve electric system reliability and reduce consumer and business energy (electricity and natural gas) and water bills.

Federal Standards

Federal appliance standards are found in Part B of Title III of the Energy Policy and Conservation Act (EPCA), Public Law 94-163, as amended by the National Energy Conservation Policy Act, Public Law 95-619, by the National Appliance Energy Conservation Act, Public Law 100-12, by the National Appliance Energy Conservation Amendments of 1988, Public Law 100-357, and by the Energy Policy Act of 1992, Public Law 102-486.

Federal appliance efficiency standards cover:

- central air conditioners and heat pumps,
- clothes washers,
- clothes dryers,
- commercial furnaces and boilers,
- commercial packaged air conditioners and heat pumps,
- commercial water heaters,
- direct-fired space heaters,
- dishwashers,
- electric motors (1-200 hp),
- faucets and aerators,
- fluorescent lamps,
- furnaces and boilers,
- incandescent reflector lamps,
- pool heaters,
- ranges and ovens,
- refrigerator-freezers,
- room air conditioners,
- showerheads,
- toilets, and,
- water heaters .

Several other products, including: distribution transformers, high intensity discharge lamps, small electric motors (<1 hp), and televisions, are under study for potential DOE standards.

An estimated 2.5% savings on U.S. electricity use is attributed to current federal appliance standards. These benefits are expected to triple by 2020 and could go significantly higher if standards are adopted for additional appliances.

B. State Experience

Arizona, California, Connecticut, Maryland, New Jersey, and Washington have recently adopted appliance standards for additional products, beyond those covered under federal statutes (states are pre-empted from setting their own standards for the products covered by federal standards, but may apply for waivers under certain circumstances). Several other states, including Massachusetts, Maine, New Hampshire, Rhode Island, Pennsylvania, Vermont, and New York, are considering adopting standards for additional appliances. Links to statutes covering appliance standards are provided in the Resources section of this background paper. One state governor recently vetoed legislative efforts to set appliance standards, stating a concern that projected savings might not materialize and that higher up-front purchase costs for new or replacement appliances and equipment could be a burden to businesses and consumers.

Arizona HB 2390 Appliances and Equipment Energy Efficiency Standards (Became law April 2005.)

Arizona sets minimum energy efficiency standards for 12 products not currently covered by federal standards, including: torchiere light fixtures, exit signs, traffic signals, commercial refrigerators and freezers, commercial clothes washers, and external power supplies. Standards become effective in 2008. Non-compliant appliances will no longer be sold.

California 2005 Appliance Efficiency Regulations (Newest regulations passed in April 2005.)

California has regulated appliance efficiency since the mid 1970s and has standards covering an extensive array of commercial and residential products. Standards apply to: refrigerators, refrigerator-freezers, and freezers; room air conditioners and heat pumps; central air conditioners and heat pumps, spot air conditioners, coolers, and fans; space heaters; water heaters; pool heaters; plumbing fittings; plumbing fixtures; fluorescent lamp ballasts; lamps; emergency lighting, illuminated exit signs; traffic signal modules and traffic signal lamps; luminaires; dishwashers; clothes washers; clothes dryers; cooking products; food service equipment; electric motors; low voltage dry-type distribution transformers; and power supplies of many kinds. Many of the subsequent efforts by other states draw upon the California effort.

Connecticut SB 145 An Act Concerning Energy Efficiency Standards (Became law in May 2004.)

The Connecticut law covers: torchiere lighting fixtures; building transformers; commercial refrigerators and freezers; traffic signals; exit signs; large packaged air conditioning equipment; unit heaters; and commercial clothes washers.

Maryland HB 1030 (SB 464) Energy Efficiency Standards (Became law in May 2005.)

Maryland law covers testing, certification, and enforcement of efficiency standards for: torchiere lighting fixtures; unit heaters; low-voltage, dry-type distribution transformers; ceiling fans and ceiling fan light kits; red and green traffic signal modules; illuminated exit signs; commercial refrigeration cabinets; large packaged air conditioning equipment; and commercial clothes washers. Efficiency standards are currently effective for certain products and become effective in future years for others.

New Jersey AB 516 (SB 332) An Act Concerning Energy Efficiency and Supplementing Title 48 of the Revised Statutes (Became law in March 2005.)

New Jersey law covers testing, certification and enforcement of efficiency standards for the following types of new products sold, offered for sale or installed in the State: ceiling fans and ceiling fan light kits; commercial clothes washers; commercial refrigerators and freezers; illuminated exit signs; large packaged air conditioning equipment; air-cooled, very large commercial package air conditioning and heating equipment; low-voltage, dry-type distribution transformers; set-top boxes; torchiere lighting fixtures; traffic signal modules; and unit heaters

Washington HB 1062 (SB 5098) An Act Relating to Energy Efficiency (Became law in May 2005.)

Washington law establishes minimum energy efficiency standards for 12 commercial products, including: automatic commercial ice cube machines; commercial clothes washers; commercial pre-rinse spray valves; commercial refrigerators and freezers; illuminated exit signs; low-voltage dry-type distribution transformers; metal halide lamp fixtures; single-voltage external AC to DC power supplies; state-regulated incandescent reflector lamps; torchieres; traffic signal modules; and unit heaters.

C. Environmental Outcomes

The environmental benefits of reduced power generation include lower air emissions that are linked to human health and ecological impacts. These emissions include particulate matter (PM), a key source of respiratory illnesses, oxides of nitrogen (NO_x) that contribute to ground-level ozone, and sulfur dioxide (SO₂) that causes acid precipitation; as well as toxic air pollutants, including mercury, and greenhouse gases, such as carbon dioxide (CO₂) that contribute to global climate change.

Techniques are widely accepted for estimating energy savings associated with appliance standards. Translation of those energy savings into pollution reduction estimates is considerably more complicated because it is dependent on many variables, primarily related to the source(s) of avoided energy generation. Techniques for measuring and verifying pollution reduction that may be attributed to reduced fossil fuel combustion are being developed by state and federal agencies and academic and private sector organizations. (Measurement and verification for EE and RE was the subject of the

December 16, 2004 State EE/RE Forum call; see the Keystone Center website www.keystone.org for background information.

D. Discussion Questions

1. Has your state implemented or is it considering appliance efficiency standards?
2. What are the primary policy drivers for adopting appliance efficiency standards?
3. What design factors do states need to consider when implementing appliance efficiency standards?
4. What additional resources are needed to implement these policies? What sort of implementation timeframe is realistic?
5. How will the program be evaluated and what metric will measure success? What mechanism allows for mid-stream corrections to targets, procedures, and administrative functions if evaluations show a need for change?
6. What assistance or information do states need when considering appliance efficiency standards?
7. Have you attempted to estimate the environmental benefits of the policy/program? If so, what method did you use?

E. Resources

National Appliance Energy Conservation Act of 1987

<http://thomas.loc.gov/cgi-bin/bdquery/z?d100:SN00083:@@L&summ2=m&>

Energy Policy Act of 1992

https://energy.navy.mil/publications/law_us/92epact/hr776toc.htm

United States Code, Title 42, Chapter 77, Subchapter III, Part A - Energy Conservation Program for Consumer Products Other Than Automobiles and Part A-1 - Certain Industrial Equipment.

http://www.access.gpo.gov/uscode/title42/chapter77_subchapteriii_parta_.html

http://www.access.gpo.gov/uscode/title42/chapter77_subchapteriii_parta-1_.html

Code of Federal Regulations, Title 10, Chapter II, Part 430 - Energy Conservation Program for Consumer Products and Title 10, Chapter II, Part 431 - Energy Efficiency Program for Certain Commercial and Industrial Equipment.

http://www.access.gpo.gov/nara/cfr/waisidx_04/10cfr430_04.html

http://www.access.gpo.gov/nara/cfr/waisidx_04/10cfr431_04.html

ENERGY STAR

ENERGY STAR is a government/industry partnership that was created in 1992 by the US EPA. This voluntary labeling program identifies and promotes energy-efficient products to reduce greenhouse gas emissions and covers numerous office, residential, and commercial electronic equipment, appliances, heating, cooling, and lighting equipment, and building products.

http://www.energystar.gov/index.cfm?c=appliances.pr_appliances

Arizona - Appliances and Equipment Energy Efficiency Standards.

<http://www.swenergy.org/legislative/arizona/HB%202390%20Engrossed%20Bill%20Language.pdf>

California - 2005 California Appliance Efficiency Regulations

Publication Number: CEC-400-2005-012

<http://www.energy.ca.gov/2005publications/CEC-400-2005-012/CEC-400-2005-012.PDF>

Connecticut – An Act Concerning Energy Efficiency Standards, SB 145

http://www.cga.ct.gov/asp/cgabillstatus/cgabillstatus.asp?selBillType=Bill&bill_num=145&which_year=2004&SUBMIT.x=7&SUBMIT.y=7

Maryland - State Government - Energy Efficiency Standards, HB 1030.

<http://mlis.state.md.us/2005rs/billfile/HB1030.htm>

New Jersey – An Act Concerning Energy Efficiency and Supplementing Title 48 of the Revised Statutes

http://www.njleg.state.nj.us/2004/Bills/AL05/42_.PDF

Washington - An Act Relating to Energy Efficiency, SB 5098.

<http://www.leg.wa.gov/pub/billinfo/2005-06/Htm/Bill%20Reports/Senate/5098-S.SBR.htm>

Leading the Way: Continued Opportunities for New State Appliance and Equipment Efficiency Standards, Steven Nadel, Andrew deLaski, Jim Kleisch, and Toru Kubo, January 2005, Report Number ASAP-5/ACEEE-A051,

<http://www.aceee.org/pubs/a051.pdf>

Type of Appliance or Equipment	Covered by Federal Standards	Under Federal Study	Covered by State Law
< 1 hp Electric Motors		x	
Air Cooled, very large commercial package air conditioning and heating equipment			NJ
Automatic Commercial Ice Cube Machines			WA
Building Transformers			CT
Ceiling Fans and Fan Light kits			MD,NJ
Central Air Conditioners and Heat Pumps			CA
Clothes Dryers	x		CA,CT
Clothes Washers	x		CA
Commercial Clothes Washers			AZ,CT,NJ,WA,MD
Commercial Furnaces and Boilers	x		
Commercial Packaged Air Conditioners and Heat Pumps	x		
Commercial Pre-Rinse Spray Valves			WA
Commercial Refrigeration Cabinets			MD
Commercial Refrigerators/Freezers			AZ,CT,NJ,WA
Commercial Water Heaters	x		CA
Cooking Products			CA
Coolers			CA

Type of Appliance or Equipment	Covered by Federal Standards	Under Federal Study	Covered by State Law
Direct-fired Space Heaters	x		
Dishwashers	x		CA
Distribution Transformers		x	
Electric Motors			CA
Emergency Lighting			CA
Exit Signs			AZ,CA,CT,NJ,WA,MD
External Power Supplies			AZ
Fans			CA
Fluorescent Lamps	x		CA
Food Service Equipment			CA
Freezers	x		CA
High Intensity Discharge Lamps		x	
Incandescent Reflector Lamps	x		
Lamps			CA
Large Packaged Air Cond. Equip.			CT,NJ, MD
Low Voltage Dry-type Dist. Transformers			CA,MD,NJ,WA
Lumnaires			CA
Metal Halide Lamp Fixtures			WA
Plumbing Fittings and Fixtures			CA
Pool Heaters	x		CA
Power Supplies			CA
Ranges and Ovens	x		

Type of Appliance or Equipment	Covered by Federal Standards	Under Federal Study	Covered by State Law
Refrigerators			CA
Refrigerator/Freezers	x		CT, NJ,WA
Room Air Conditioners and Heat Pumps	x		CA
Set-Top Boxes			NJ
Showerheads	x		
Single-Voltage External AC to DC power Supplies			WA
Space Heaters			CA
Spot Air Conditioners, Coolers and Fans			CA
State-Regulated Incandescent Reflector Lamps			WA
Televisions		x	
Toilets	x		
Torchiere Light Fixtures			AZ,CT,MD,NJ, WA
Traffic Signals			AZ, CA,CT,MD,WA,NJ
Unit Heaters			CT, MD,NJ, WA
Water Heaters			CA