Comparative Review and Assessment of the Arizona Appliance Efficiency Standards statute ARS 44-1375 to 44-1375.03 and Standards Adopted in Other States

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Section 1. Background

Energy efficiency appliance standards are designed to save energy while reducing pollution and other environmental impacts associated with the production, distribution and use of electricity. In accordance with A.R.S. § 44-1375.02 the Department of Commerce Energy Office is submitting this comparative review and assessment of the energy efficiency standards of the statute and energy efficiency standards adopted in other states.

Section 2. Introduction

Appliance efficiency standards can make electricity systems more reliable by reducing the strain on the electricity grid during peak demand periods. Additionally, improved energy efficiency can reduce or delay the need for new power plants, power transmission lines, and power distribution system upgrades. Appliance standards can also contribute to the economy of the state by helping to better balance energy supply and demand, thus reducing pressure for higher natural gas and electricity prices. By saving consumers and businesses money on utility bills, appliance standards contribute to the local economy.

Section 3. Current Efficiency Standards

In April 2005 the Arizona legislature approved an appliance standards bill which became law on January 1, 2008. Joining the states of California, Connecticut, Maryland and New Jersey, Arizona implemented minimum energy efficiency requirements for 12 products not covered by federal standards. Eight of the standards are for commercial and/or industrial equipment, and four are general use appliances. In 2005, Arizona industrial and commercial energy users consumed nearly 1.5 times the amount of energy that residential consumers used.[1] Industry experts calculated that the 2005 standards will save Arizona consumers and business an estimated $680 million on energy bills by 2030, reduce water consumption by 15 billion gallons by 2020, save 1.8 billion cubic feet of natural gas per year by 2020, and reduce peak electricity demand by 286 megawatts by 2020.[2] (See Table 1 for products adopted in the 2005 statute.)

[1] Information provided by the Energy Information Administration, EIA (see reference)
[2] Industry refers to Southwest Energy Efficiency Project (SWEEP) and Appliance Standards Awareness Project (ASAP).

Effective Since January 01, 2008
Automatic commercial ice makers
Commercial clothes washers
Commercial pre-rinse spray valves
Exit Signs
Low-voltage dry-type transformers
Metal halide lamp fixtures
Single-voltage external power supplies
Torchieres
Traffic signals
Unit heaters
Effective January 1, 2010
Commercial refrigerators, freezers and refrigerator freezers
Large packaged air conditioning

Table 1. Products that Arizona adopted efficiency standards for in 2005 with ARS 44-1375 statute[3]

Section 4. State-by-State Appliance and Equipment Efficiency Standards Summaries

California has proven to be a leader in efficiency standards for many years, and in fact, four of the Arizona standards adopted in 2005 directly reference California's Code of Regulation, Title 20, Sections 1601 through1608. Several others were adopted with the same or very similar wording to California's standard. As can be seen in Table 2, all of the standards that Arizona implemented in 2005 are also covered in the California Code of Regulation, as well as Rhode Island's appliance standards. Washington and Oregon also have standards regulating the same products Arizona adopted standards for except large packaged air conditioners.

Products that Arizona adopted in 2005 / **States that have adopted like standards**	Automatic commercial ice makers	Commercial clothes washers	Commercial pre-rinse spray valves	Exit Signs	Low-voltage dry-type transformers	Metal halide lamp fixtures	Single-voltage external power supplies	Torchieres	Traffic signals	Unit heaters	Commercial refrigerators, freezers and refrigerator freezers	Large packaged air conditioning
California	X	X	X	X	X	X	X	X	X	X	X	X
Connecticut		X		X	X	X	X	X	X	X	X	X
DC						X	X					
Maryland		X		X	X	X	X	X	X	X	X	X
Massachusetts					X	X	X					
New Jersey		X		X	X			X	X	X	X	X
New York	X		X	X	X	X		X	X	X	X	X
Oregon	X	X	X	X	X	X	X	X	X	X	X	
Rhode Island	X	X	X	X	X	X	X	X	X	X	X	X
Vermont						X	X					
Washington	X	X	X	X	X	X	X	X	X	X	X	
Federal Standard*	2010	2007	2006	2007	2006	2009	7/2008	2006	2006	8/2008	2010	2010

Table 2. Other states which have adopted similar efficiency standards for the same products that Arizona adopted in 2005 (* - Begin in January of the year stated unless otherwise noted.)

[3] This table along with other information about Arizona's appliance efficiency standards can be found at the Arizona Dept of Commerce Energy Office's website (see references).

Table 2 also shows which standards will be preempted by Federal Standards and in which year. Currently, all standards which were adopted by Arizona in 2005 will be preempted by a Federal standard in the year 2010 or sooner, only 18 months from the time of this report.

The following are summaries of appliance efficiency standards in other states.[4]

California, California Code of Regulations, Title 20, Sections 1601 through1608

California's 2006 Appliance Efficiency Regulations (California Code of Regulations, Title 20, Sections 1601 through1608) were adopted by the California Energy Commission (CEC) on October 19, 2005, and approved by the California Office of Administrative Law on December 30, 2005, replacing all previous versions of the regulations. The Regulations created standards for 21 categories of appliances, including standards for both federally-regulated and non-federally-regulated appliances. Of these products, the standards now apply to the following types of new products sold, offered for sale in California, except those sold wholesale in California for final retail sale outside the state and those designed and sold exclusively for use in recreational vehicles or other mobile equipment:

1. Automatic commercial ice makers* (2008)
2. Commercial clothes washers* (2005/2007)
3. Commercial refrigerators and freezers* (2003/2006)
4. Consumer audio and video products (2006/2007)
5. Digital television adapters (2007)
6. Large packaged AC >20 tons* (2006/2010)
7. Metal halide lamp fixtures (2006/2008)
8. Pool pumps (2006/2008)
9. Single-voltage external power supplies (2007/2008)
10. State regulated incandescent reflector lamps (BRs, ERs and R20s) (2008)
11. Unit heaters* (2006)
12. General service incandescent lamps (2006)
13. Water dispensers (3/2003)
14. Walk-in refrigerators and freezers (2006)
15. Hot tubs (portable electric spas) (2006)
16. Commercial hot food holding cabinets (2006)
17. Under cabinet fluorescent lamps (2006)
18. Vending machines (2006)

* will be implemented for some time until federal standards take place.

[4] Database of State Incentives for Renewables and Efficiency, DSIRE (see references)

Dates listed above in parenthesis signify the standard's effective date. Where two dates are shown, the standard has two levels or components which become effective on different dates. Product-specific testing, certification, and labeling requirements are outlined in the regulations.

Additionally, legislation passed in 2007, amends Title 20 and requires the CEC to adopt minimum efficiency standards for all general purpose lights by December 31, 2008. The standards must be designed to reduce the average statewide energy consumption of indoor residential lighting by 50 percent of 2007 levels, and 25 percent of 2007 levels for indoor commercial and outdoor lighting by 2018. The bill includes an extensive list of special lights and lighting applications which will not be subjected to this efficiency requirement.

California was the first state to initiate appliance efficiency standards in 1974 with the adoption of the Warren-Alquist Act, which instructed the CEC to promulgate efficiency standards. California has continued to upgrade its standards to remain consistent with new technologies. Most state standards programs have used California's covered products, or a subset of these products, and its technical procedures as the basis for their efforts.

Connecticut, Conn. Gen. Stat. § 16a-48

Connecticut enacted appliance efficiency standards legislation in 2004. This law (Conn. Gen. Stat. § 16a-48) covers the following products not currently preempted by federal standards: (Dates listed in parenthesis signify the year the standard takes effect.)

1. Commercial refrigerators and freezers* (2008)
2. Large packaged air conditioning equipment* (2009)
3. Unit heaters* (2006)

* will be implemented for some time until federal standards take place.

The standards do not apply to products manufactured in Connecticut and sold outside the state, products manufactured outside Connecticut and sold at wholesale inside the state for final retail sale and installation outside the state, products installed in mobile manufactured homes at the time of construction, or products designed exclusively for installation and use in recreational vehicles. Testing procedures must be adopted or developed if such procedures are not provided for in Connecticut's Building Code. Manufacturers must certify to the Secretary of the Office of Policy Management that products comply with the regulations.

Beginning July 1, 2007, and biennially thereafter, statute requires the standards must be reviewed and increased if it is determined that increased efficiency standards would serve to promote energy conservation and would be cost-effective for consumers who purchase and use new products. Standards for additional products may be established upon determination that they would serve to promote energy conservation in the state, would be cost-effective for consumers who purchase and use such new products, and that multiple products are available which meet such standards.

Maryland, Md. Code: State Government § 9-2006

In 2004 the Energy Efficiency Standards Act (EESA of 2004) became law in the State of Maryland. The General Assembly passed the EESA to establish minimum energy efficiency standards on nine separate products. While six of the nine appliances covered by the EESA were preempted by the Federal Energy Policy Act of 2005 the EESA currently remains in effect for three products sold or installed in the state. Dates listed in parenthesis signify the year the standard takes effect and when federal standards will supercede state regulations.

1. Unit heaters (2005, federal preemption in August 2008)
2. Commercial refrigeration cabinets (2005, federal preemption in January 2010)
3. Large packaged air-conditioning equipment (2005, federal preemption in January 2010)

In 2007 the Md. Code: State Government § 9-2006 was amended to establish standards for seven additional types of appliances. The appliances listed below are covered under this amendment. Dates listed in parentheses signify the year when the standard takes effect. Unless otherwise noted the standards take effect at the beginning of the calendar year.

1. Bottle-type water dispensers (2009)
2. Commercial hot food holding cabinets (2009)
3. Metal halide lamp fixtures (2009)
4. Residential furnaces (2009, subject to analysis of possible federal preemption)
5. AC to DC power supplies (March 1, 2012 for new products and January 1, 2013 for parts made available directly by the manufacturer as a service or spare part)
6. State-regulated incandescent reflector lamps (2009)
7. Walk-in refrigerators and freezers (2009)

The 2007 amendments required the Maryland Energy Administration to officially adopt regulations establishing the new standards by January 1, 2008. However, as of May 2008 this task had not been completed. Statute allows the MEA to delay the effective date of any standard by up to one year if it determines that products conforming to the standard will not be widely available in Maryland by that date.

Maryland also requires manufacturers test products consistent with the testing standards established by the federal government in the Energy Policy Act of 2005. Manufacturers must certify to the MEA that the product is in compliance with the minimum efficiency standards. Certification, proof of testing, and labeling requirements are outlined in the EESA. Every two years the MEA is directed to consider and propose standards to the General Assembly for products not already subject to efficiency standards and revised, more stringent amendments to existing standards.

Massachusetts, M.G.L. Chapter 25B, § 1, et seq.

Massachusetts' original appliance standards legislation was enacted in 1986. In November 2005, the standards were expanded and now apply to the following products: (Dates listed in parenthesis signify the effective date.)

1. Medium-voltage dry-type transformers (2008)
2. Metal halide lamp fixtures (2009)
3. Residential furnaces and boilers (TBD)
4. Residential furnace fans (TBD)
5. State-regulated incandescent reflector lamps (BRs, ERs, and R20s) (2008)
6. Single voltage external power supplies (2008)

Because of the existing federal standards covering residential furnaces, boilers, and furnace fans, Massachusetts is seeking a waiver of federal preemption from the warm-state standard. That waiver would allow Massachusetts' cold-state standard to go into effect at a date that is yet to be determined. State standards became effective January 1, 2008.

Statute required the Commissioner of the Massachusetts Division of Energy Resources to develop testing procedures if such procedures are not provided for in the state plumbing code. The Commissioner must use the United States Department of Energy approved test methods and manufacturers must certify that products are in compliance with the standards.

The standards state that the Commissioner must file a biannual report on appliance efficiency standards with the Clerk of the House of Representatives including, but not limited to, an evaluation of the effectiveness of the standards on energy efficiency and energy conservation in Massachusetts.

Nevada, NRS § 701.260

In June 2007 Nevada established efficacy* standards for general purpose lights sold in the state. The bill set the required efficacy at 25 lumens per watt (lm/W) of electricity, and that standard will be in effect between January 1, 2012 and December 31, 2015. According to the statute, the Director of the Office of Energy must adopt regulations to establish a new minimum standard to take effect on January 1, 2016, which must exceed the provisional standard of 25 lm/W. As provided in statute, general purpose lights include "lamps, bulbs, tubes or other devices that provide functional illumination for indoor and outdoor use. The term does not include specialty lighting or lighting necessary to provide illumination for persons with special needs."

**Efficacy refers to the overall energy efficiency of light and is measured in lumens (measure of light output) per watt (measure of power input). The efficacy of a typical incandescent light bulb ranges between 12 lm/W and 18 lm/W. The efficacy of a typical compact fluorescent bulb is between 45 lm/W and 60 lm/W.*

New Jersey, N.J. Stat. § 48:3-99 et seq.

New Jersey Energy Efficiency Product Standards, enacted in March 2005, include minimum standards for eight products, seven of which have since been preempted by the 2005 federal energy law. The standards now apply to unit heaters and became effective in March 2007 but will be preempted when new federal regulation becomes effective in August 2008. The standards do not apply to products manufactured in the State and sold outside the State, new products manufactured outside the State and sold at wholesale inside the State for final retail sale and installation outside the State, products installed in mobile manufactured homes at the time of construction, or products designed expressly for installation and use in recreational vehicles.

The Board of Public Utilities is required to consult with the Commissioner of Environmental Protection in adopting testing procedures if procedures are not provided for in the standard building code of New Jersey. Statute also requires the board to use United States Department of Energy approved test methods, or other appropriate nationally-recognized test methods. Finally, manufacturers must certify to the board that products are in compliance with the standards.

New York, NY CLS Energy, Article 16 § 102 et seq.

New York appliance efficiency standards were enacted in 2005 and cover the following products offered for sale in New York not currently covered by federal standards: (Dates listed in parenthesis signify the effective date.)

1. Metal halide lamp fixtures (2008)
2. State-regulated incandescent reflector lamps (BRs, ERs, and R20s) (TBD)

For state regulated reflector lamps, the agency must first determine the advisability of a standard, and, if advisable, set a standard effective no sooner than July 1, 2008. New York law also allows the Secretary of State, in consultation with NYSERDA, to add additional products to the list. Any new product added to the list must be commercially available, cost-effective on a life-cycle basis, and not covered under existing federal standards.

Oregon, ORS 469.229 et seq.

In June 2005, Oregon adopted minimum energy efficiency standards for 11 appliances. Those products regulated by Oregon law and not currently covered by federal standards include: (Dates listed in parenthesis signify the effective year.)

1. Automatic commercial icemakers* (2008)
2. Metal halide lamp fixtures (2008)
3. Single-voltage external power supplies (2007)
4. State-regulated incandescent reflector lamps (BRs, ERs, and R20s) (2007)

* will be implemented until federal standards take effect.

Testing requirements and minimum efficiency standards are outlined in the regulations. The standards do not apply to products installed in a mobile or manufactured home at the time of construction or designed expressly for installation and use in recreational vehicles. The law stipulates that the State Department of Energy must periodically review the minimum energy efficiency standards and report to the Legislative Assembly when the standards need to be updated, due to federal action or to the outcome of collaborative consultations with manufacturers and the energy departments of other states.

The standards became effective in progressive stages, beginning January 1, 2007 and becoming fully operative January 1, 2009.

Rhode Island, R.I. Gen. Laws § 39-27-1, et seq.

Rhode Island's Energy and Consumer Savings Act of 2005 established minimum energy efficiency standards for 12 commercial and residential products, nine of which have since been preempted by federal law. The standards now apply to: (Dates listed in parenthesis signify the effective year.)

1. High intensity discharge lamp ballasts* (2007)
2. Single-voltage external power supplies (2008)
3. Unit heaters* (2007)
4. Metal halide lamp fixtures (2008)

 * will be implemented for some time until federal standards take place.

Rhode Island statue allows that testing procedures for energy efficiency not provided for in the Act, or in the State Building Code may be adopted from the U.S. Department of Energy approved test methods, or in the absence of such test methods, other appropriate nationally recognized test methods. The statue also provides for a method of updating test methods when new versions of test procedures become available.

The Act allows for the efficiency of existing standards to be increased. In considering amending the standards, the Chief of Energy and Community Services must determine that increased efficiency standards would serve to promote energy conservation in Rhode Island and would be cost-effective for consumers who purchase and use such products.

The Act became law on June 23, 2006, and required the PUC to establish new energy efficiency standards for:

1. Residential boilers and furnaces (TBD)
2. Incandescent spot lights, also called "reflector lamps" (2008)
3. Bottled water dispensers (2008)
4. Commercial hot food holding cabinets (2008)
5. Walk-in refrigerators and freezers (2008)

Vermont, 9 V.S.A. § 2791, et seq.

In February 2006 Vermont enacted appliance efficiency standards through the Act Relating to Establishing Energy Efficiency Standards For Certain Appliances. The Act created minimum efficiency standards for the following products sold or installed in Vermont: (Dates listed in parenthesis signify the effective year.)

1. Medium-voltage dry-type transformers (2008)
2. Metal halide lamp fixtures (2009)
3. Residential furnaces & boilers (TBD)
4. Residential furnace fans (TBD)
5. Single-voltage external power supplies (2008)
6. State regulated incandescent reflector lamps (BRs, ERs, and R20s) (2008)

The Act states that the Commissioner of the Department of Public Service must determine if standards for residential furnaces and boilers require a waiver from federal preemption and if so, must apply for a waiver.

Washington, RCW § 19.260.010, et seq.

Washington enacted appliance efficiency standards in 2005, creating minimum efficiency standards for 12 products, six of which have since been preempted by federal law. The standards now apply to the following products sold or installed in Washington: (Dates listed in parenthesis signify the effective date.)

1. Automatic commercial ice makers* (2008)
2. Commercial refrigerators and freezers* (2007)
3. Metal halide lamp fixtures (2008)
4. Single-voltage external power supplies (2008)
5. State-regulated incandescent reflector lamps (BRs, ERs, and R20s) (2007)
6. Unit heaters* (2007)

 * will be implemented for some time until federal standards take place.

Standards do not apply to new products manufactured in Washington and sold outside the State, new products manufactured outside Washington and sold at wholesale inside Washington for final retail sale and installation outside the State, products installed in mobile manufactured homes at the time of construction, or products designed expressly for installation and use in recreational vehicles.

The law stipulates that existing standards and test methods may be increased and updated. Any recommendations shall be transmitted to the appropriate committees of the legislature 60 days before the start of any regular legislative session.

Section 5. Current Status

California has several examples of non-federally regulated appliances that are not covered by Arizona statute. A list of these products and other states which have adopted the same or like standards can be found in Table 4. Estimated savings in kWh and emission reduction values can be seen for these products in Table 5.[5]

Products adopted in California / **States which have adopted like standards**	Bottle – type Water Dispensers	Consumer Audio Visual	Commercial Hot Food Holding Cabinets	Pool Pumps	Portable Electric Spas
Connecticut	X		X	X	X
Washington, D.C.	X		X		
Maryland	X		X		
New York		X			
Oregon	X	X	X		X
Rhode Island	X		X		
Federal Standard	Not Covered	Not Covered	Not Covered	Not Covered	Not Covered

Table 4. Non-federally regulated products for which California has adopted appliance efficiency standards

Appliance Type	**Annual Savings per Unit (kWh)**	**Incremental Cost per Unit**	**Simple Payback per unit (years)**	**Annual Energy Savings from One year's sales (kWh)**	**Emissions Reductions by 2020 (Metric Tons)**		
					SO_2	**NO_X**	**Carbon**
					Metric Tons	**Metric Tons**	**Metric Tons**
Bottle-type Water Dispensers	266	$12	0.6	600,000	5.9	0.2	700
Consumer Audio Visual							
Compact Audio	53	$1	0.2	5,900,000	36.0	1.2	4,500
DVD Players/Recorders	11	$1	1.0	900,000	5.2	0.2	600
Hot Food Holding Cabinets	1815	$453	3.3	500,000	8.3	0.3	1000
Portable Electric Spas	250	$100	4.4	300,000	3.6	0.1	500
Pool Pumps	1260	$664	6.9	29,300,000	699.6	267.1	60,300
TOTALS				**37,500,000**	**758.6**	**269.1**	**67,600**

Table 5. Savings for appliances recommended to be added to the appliance efficiency standard statute

[5] Appliance Standards Awareness Project, ASAP (see references)

Several other standards exist in California's Code of Regulations for which Federal regulation was just recently approved and therefore will automatically take effect in Arizona upon the date specified.[6] These items include (with Federal standard effective date in parentheses): walk-in refrigerators and freezers (2009), pool heaters (updated DOE standard due 2010), beverage vending machines (2012), boilers (2012), gas space heaters (2013), and computer room air conditioning (2014).

Section 6. Recommendations

The Arizona Department of Commerce Energy Office fully supports continuing implementation of national appliance efficiency standards. The Energy Office also favors the adoption of appliance efficiency standards not covered by federal standards or where higher than federal standard efficiency requirements already exist. Specifically, the Energy Office recommends Arizona pursue standards adopted by California that are not covered by current of future federal regulations.

It is the Energy Office's contention that consensus in appliance standards in the southwest region will have a positive influence on the region's environment as well as the Arizona consumer. Furthermore, the Energy Office views appliance standards as having additional benefits that include:

- Appliance efficiency standards are a key part of the nation's policy for protecting human health through reduced pollution emissions;
- Reduced on-peak energy demand in Arizona and therefore less need to import energy;
- Reduced growth in generation, transmission and distribution needs;
- Appliance efficiency standards are a major component of an economically justified climate protection strategy and moves Arizona closer to achieving climate change reduction goals;
- Appliance efficiency standards also make American business more competitive and profitable.

Appliance Efficiency Standards may be the most economical approach to energy efficiency that a State can adopt. The cost to consumers will be offset by the life-cycle cost effectiveness of the appliance. In advocating for stronger appliance efficiency standards, the Energy Office emphasizes that implementation of additional Standards will require no administrative costs. Finally, the benefits derived are accomplished without the need for government incentives or other costs to non-participants.

[6] Federal standards refers to Federal Appliance Efficiency Standards 2007 Update: Energy Independence and Security Act of 2007, Public Law 110–140 (see references)

References

For more information, the following websites can be accessed via the internet.

Government:

Arizona Dept of Commerce Energy Office – Appliance Efficiency Standards Information
http://www.azcommerce.com/Energy/Efficiency/AZ+Appliance+Efficiency+Program.htm

Arizona Revised Statute 44-1375, 44-1375.01, 44-1375.02, 44-1375.03, Appliance Efficiency Standards
http://www.azleg.gov/SearchResults.asp?SearchedFrom=%2FArizonaRevisedStatutes.asp&SearchPhrase=44-1375&Scope=%2Fars

Energy Information Administration, EIA
http://www.eia.doe.gov/

Federal Appliance Efficiency Information
http://www.eere.energy.gov/buildings/appliance_standards/

Federal Appliance Efficiency Standards: Energy Policy Act 2005, Public Law 109–58
http://www.eere.energy.gov/buildings/appliance_standards/pdfs/epact2005_appliance_stds.pdf

Federal Appliance Efficiency Standards 2007 Update: Energy Independence and Security Act of 2007, Public Law 110–140
http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=110_cong_public_laws&docid=f:publ140.110

California Appliance Efficiency Standards Information
http://www.energy.ca.gov/appliances/index.html

Industry:

Appliance Standards Awareness Project, ASAP
http://www.standardsasap.org/

Database of State Incentives for Renewables and Efficiency, DSIRE
http://www.dsireusa.org/

American Council for an Energy Efficient Economy, ACEEE
http://aceee.org/

Southwest Energy Efficiency Project, SWEEP
http://www.swenergy.org/