

4.4 State Appliance Efficiency Standards

Policy Description and Objective

Summary

State appliance efficiency standards establish minimum energy efficiency levels for appliances and other energy-consuming products. These standards typically prohibit the sale of less efficient models within a state. Many states are implementing appliance and equipment efficiency standards, where cost-effective, for products that are not already covered by federal government standards.³⁶ States are finding that appliance standards offer a cost-effective strategy for improving energy efficiency and lowering energy costs for businesses and consumers.

Appliance standards save energy and generate net benefits for homes, businesses, and industry by reducing the cost of operating equipment and appliances.

As of February 2014, 12 states (Arizona, California, Connecticut, Georgia, Maryland, Nevada, New Hampshire, New York, Oregon, Rhode Island, Texas, Washington, and the District of Columbia) have adopted one or more appliance efficiency standards for products not covered by federal standards (ASAP 2014).

Appliance efficiency standards have been an effective tool for improving energy efficiency. At the federal level, the U.S. Department of Energy (DOE) has been responsible for setting minimum appliance standards and test procedures for an array of residential and commercial appliances and equipment since 1987. As of 2000, federal appliance efficiency standards had reduced U.S. electricity use by 2.5 percent and carbon emissions by nearly 2 percent (ACEEE 2001). Due to new standards contained in the Energy Policy Act of 2005 (or EPAct 2005), the Energy Independence and Security Act of 2007 (or EISA 2007), and additional DOE rules, total electricity savings from already adopted federal standards are projected to increase 682 billion kilowatt-hours (kWh) per year or 14 percent of the projected total U.S. electricity use in 2025 (ASAP 2012).

Efficiency standards can play a significant role in helping states meet energy savings goals. California's standards program has saved consumers over \$75 billion on electricity bills since its inception (CEC 2013).

Objective

The key objectives of appliance efficiency standards are to:

- Raise the efficiency of a range of residential and commercial energy-consuming products, where cost-effective.
- Overcome market barriers, such as split incentives between homebuilders and homebuyers and between landlords and tenants, and panic-purchase situations in which appliances break and must be replaced on an emergency basis. In a panic purchase, customers usually do not have the time to consider a range of models, features, and efficiency levels, and the full range may not be available from all suppliers.
- Reduce energy use to lower criteria air pollution and greenhouse emissions, improve electric system reliability, and cut consumer energy bills.

³⁶ Under certain conditions, a state may exceed a federal standard for a federally covered product; overall, however, federal law is preemptive. For example, in the case of building codes, a state can create a building code compliance path in which a furnace is at a higher efficiency than the federal standard. However, the state must also provide a compliance path under which the higher efficiency furnace is not required. Thus, the option to exceed federal standards is indirect and is typically only possible in the case of building codes. In addition, states may not ban lower efficiency products.

Benefits

In addition to saving energy, appliance and equipment standards help reduce greenhouse gas (GHG) emissions and other air pollution, improve electric system reliability, and save consumers and businesses significant amounts of money over the life of the equipment. Federal standards completed through 2014 are expected to have reduced U.S. energy use by a cumulative 70 quadrillion British thermal units (quads) by 2020 and result in energy bill savings of \$960 billion (DOE 2015a). In 2012, an analysis showing 34 new or updated standards that could be pursued in the near future had potential annual savings of 212 terawatt-hours (TWh)³⁷ of electricity, 126 trillion British thermal units (Tbtu) of natural gas, and 42,000 megawatts (MW) of peak demand savings in 2025 if implemented nationally. These standards are also cost-effective, with purchases of these appliances through 2035 expecting to result in net present value savings of over \$167 billion if the standards are implemented (ASAP 2012).

In addition to appliance standards that set minimum energy efficiency performance levels that all equipment must meet, states can go further by adopting ENERGY STAR specifications that set higher efficiency levels. ENERGY STAR identifies the top performers in the marketplace, and supports even greater levels of energy savings.

The direct economic and environmental benefits of state standards are also substantial. California draft regulations for 15 new appliance standards are expected to save 50 billion gallons of water, 1,400 MW of peak electricity, 9,800 gigawatt-hours (GWh) of electricity, and 162 million therms of natural gas per year. This is expected to result in annual savings of \$2 billion (CEC 2014).

While federal appliance standards have been expanding in recent years, there is still great potential for states to move into product areas not yet covered by federal standards. Table 4.4.1 looks at energy savings from some of the products with the largest potential for savings in each sector, then gives a total for each sector for all 34 products considered by an Appliance Standards Awareness Project (ASAP) study into future appliance standards.

³⁷ One TWh is a billion kWh.

Table 4.4.1: Estimated Energy Savings of Appliance Standards Not Covered by Federal Law

Products	Annual Savings in 2025			Annual Savings in 2035		
	Electricity Savings (TWh)	Peak Demand (GW)	Natural Gas (Tbtu)	Electricity Savings (TWh)	Peak Demand (GW)	Natural Gas (Tbtu)
Residential Standards						
Water heaters	18.2	2.5	—	43.0	5.9	—
Set top boxes and digital communication equipment	14.7	2.0	—	14.7	2.0	—
Air handlers	13.7	5.6	—	29.1	11.9	—
Total (14 products)	98.5	16.8	51.6	142.3	27.0	51.6
Commercial And Industrial Standards						
Walk-in coolers and freezers	14.7	3.4	—	14.7	3.4	—
Distribution transformers	10.9	1.5	—	22.4	3.1	—
Electric motors	9.0	1.4	—	18.6	2.9	—
Total (13 products)	62.4	15.5	74.2	98.5	24.5	139.9
Lighting Standards						
Incandescent reflector lamps	20.2	5.0	—	20.2	5.0	—
Outdoor lighting fixtures	10.3	0.7	—	26.1	1.8	—
General service fluorescent lamps	6.9	1.7	—	6.9	1.7	—
Total (7 products)	50.8	9.3	—	65.6	15.6	—
ALL PRODUCTS	212	42	126	306	67	235

Source: ASAP 2012

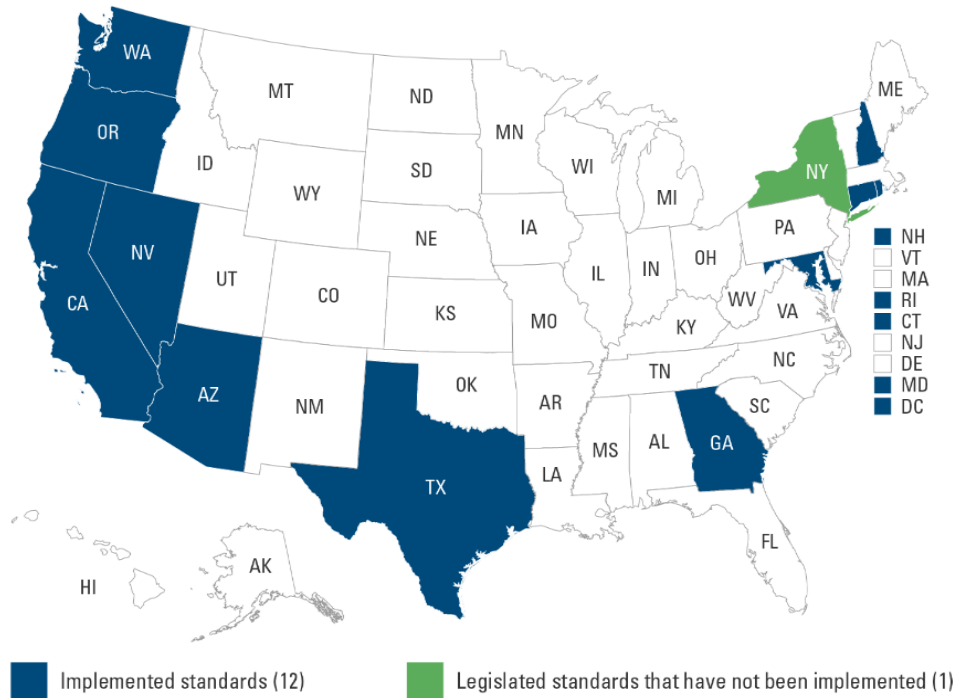
States with Appliance Efficiency Standards

Many states either have implemented appliance standards or are considering implementing them, as shown in Figure 4.4.1. California’s appliance standards program dates to the 1970s, when the state began to pursue standards before the enactment of federal legislation. When the federal government opted not to issue standards under its legislative mandate in 1982, other states joined California and developed state standards. These state initiatives helped create the consensus for new federal legislation in 1987 (the National Appliance Energy Conservation Act or NAECA), the EPAacts of 1992 and 2005, and EISA 2007. While the NAECA preempted state action on federally covered consumer products (with limited exceptions as discussed later), California has continued to develop efficiency standards for other products and technologies. California’s standards program has contributed to substantial improvements in energy efficiency. Since its inception, the program has saved consumers over \$75 billion on electricity bills alone (CEC 2013).

Additional states have recently enacted legislation supporting efficiency standards. These include Arizona, Connecticut, Georgia, Maryland, Nevada, New Hampshire, New York, Oregon, Rhode Island, Texas, Washington, and the District of Columbia. Table 4.4.2 lists adopted and pending efficiency standards by state.

In 2013, Oregon passed Senate Bill 692, which added standards for televisions and battery chargers effective in 2014 as well as double-ended quartz halogen lamps effective in 2016 (ODOE 2014). These new standards are expected to save 244 GWh and \$22 million annually in utilities by 2020 (OSL 2013).

Figure 4.4.1: States with or Considering Appliance Standards



Source: Compiled by ICF International based on ASAP 2014.

Table 4.4.2: States with Adopted or Pending Appliance Efficiency Standards

Product	AZ	CA	CT	DC	GA	MD	NH	NV	NY	OR	RI	TX	WA
Battery chargers		X								X			
Bottle-type water dispensers		X	X	X		X	X		O	X	X		X
Commercial hot-food holding cabinets		X	X	X		X	X		O	X	X		X
Consumer audio and video products			X						O	X			
Digital television adapters									O				
Double-ended quartz halogen lamps										X			
External power supplies										Y			
Faucets		X			X								
General service incandescent lamps		Y						X					
Metal halide lamp fixtures		Y											
Pool pumps	X	X	X						O				X
Portable electric spas	X	X	X						O	X			X
Portable light fixtures		X							O				
Televisions		X	X						O	X			
Toilets		X			X							X	
Urinals		X			X							X	

Key: X = adopted, Y = state is implementing until national standards take effect, O = standard has been legislated but has not yet been implemented.

Source: Compiled from ASAP 2014.

Designing an Effective Appliance Standards Policy

States have substantial experience with appliance efficiency standards. Key issues they have addressed include identifying participants, design issues, and linkages with federal and state policies.

Participants

- *State legislatures.* Establishing efficiency standards in a state typically requires enabling legislation. However, once legislation is enacted, it may allow an executive agency to set further standards administratively. Because several states have established standards for administration procedures, these implementation processes can also be largely replicated from other states' experiences.
- *State energy offices.* State energy offices, which typically administer the federal state energy program funds, have generally acted as the administrative lead for standards implementation.
- *Customers.* It is important to consider the people who use the affected products during the standards development and implementation processes. Consideration includes assessing benefits and costs to consumers and impacts on product features or market choices.
- *Product manufacturers.* Companies that make affected products clearly have a stake in standards development. Proactive consultations with manufacturers can increase the speed and effectiveness of the development and implementation process. Their expertise can help refine efficiency levels and labeling and certification procedures.
- *Product distributors, installers, and retailers.* Wholesale distributors, installation contractors, and retail vendors are key players since they must know the technical requirements and labeling and certification rules to be able to participate effectively in standards implementation and enforcement.
- *Utilities.* Utilities may provide technical assistance for developing standards and support for implementation. Their relationships with customers and trade allies can also be helpful in educating markets about the effects of new standards. Utilities that operate voluntary efficiency programs may want to coordinate their incentive and education programs, gearing voluntary incentive targets to the standards.
- *Public interest organizations.* Groups representing consumers, environmental interests, and other public interests can offer technical expertise and important public perspectives in developing and implementing standards as baselines.

Key Design Issues

- *Defining the covered products and their energy efficiency, applicability, and cost-effectiveness.* States have adopted appliance standards not currently preempted by federal standards covering from one to 12 products. Some products may not be appropriate candidates for standards if, for example, they have recently been covered by federal law, or they are not appropriate for the state's climate or markets. States target certain products for standards based on their total energy savings potential, technical feasibility, and economic attractiveness. Because technologies suitable for appliance standards are typically already being used in well-known, consistent applications, estimating their energy savings has been relatively straightforward.
- *Assessing overall benefits and costs.* In addition to the economic assessment of individual technologies, states have conducted overall assessments of benefits and costs. Benefits can include energy savings, energy bill reductions, electric reliability benefits, reduction in future energy market prices, and criteria air

pollutant reductions and GHG emission prevention. Costs can include product buyer costs, product manufacturer costs, and program administration costs.

- *Availability of test methods.* Test methods are necessary to set efficiency levels for the state appliance standards. Test methods may have been established by federal agencies such as DOE and the U.S. Environmental Protection Agency (EPA), by other states that have already set standards, or by industry associations representing companies that make the products of interest.
- *Defining certification and labeling requirements.* Like test methods, product certification and labeling procedures may have already been established by federal or state agencies or by industry associations. In some cases, it may be necessary for appliance standards regulations to define a labeling or certification method beyond those already established. On the other hand, and in rare instances, technical or market issues may warrant certification or labeling exemptions for certain products. For example, if a standard calls for a simple, prescriptive design change, that feature may be so visible on the product that certification and labeling may not be needed.
- *Establishing inspection and enforcement procedures.* Inspection and enforcement of state appliance standards regulations has typically involved self-policing. Industry competition is usually such that competitive manufacturers report violations. Federal standards and voluntary programs are starting to move toward more stringent inspection and enforcement schemes, with the voluntary ENERGY STAR program and some federal lighting and motor standards requiring third-party certification. Making product performance data publically available (e.g., by listing compliant products on the state website) could encourage fair participation and reporting, as well as invite self-policing by industry stakeholders. While states may want to reserve the legal right to inspect individual products or installations, it is rare that state agencies have had to institute regular inspection or sustained enforcement actions.

Interaction with Federal Policies

Federal laws such as NAECA, EPCRA 1992, EPCRA 2005, and EISA 2007 have established appliance efficiency standards for more than 50 products (see Table 4.4.3), representing about 90 percent of home energy use, 60 percent of commercial building energy use, and about 30 percent of industrial energy use (DOE 2015a). States can actively promote efficient models of these products by increasing consumer awareness and developing other programs.

States are preempted from setting their own standards for the products covered by federal standards. State efficiency standards that were established before a product was covered under NAECA are pre-empted as of the effective date of the federal standard (i.e., the date that manufacturers must comply with that standard). Nevertheless, some states are enacting standards for products that are not yet covered by federal law, for which DOE rulemakings will take place (as directed by EPCRA or EISA), and/or that are being considered for coverage under NAECA, expecting to gain several years of savings in the interim. States can apply for waivers of preemption for products that are covered by federal law. If they face special conditions, for example, states can cite those circumstances as the basis for a waiver. California for instance was granted a waiver for metal halide lamp fixtures; this means its two tier standards, the second of which will take effect in 2015, will not be preempted by federal standards (ASAP 2014). Meanwhile, Oregon's standards for external power supplies will be allowed to remain in effect until 2016, when the federal standards broaden their scope to catch up with Oregon (ASAP 2014).

Table 4.4.3: Products with Existing Federal Appliance Efficiency Standards or Active Rulemakings

Consumer Products	
<ul style="list-style-type: none"> o Battery chargers o Ceiling fans o Central air conditioners and heat pumps o Clothes dryers o Clothes washers o Computer/battery backup o External power supplies o Dehumidifiers o Direct heating equipment o Dishwashers 	<ul style="list-style-type: none"> o Furnace fans o Furnaces and boilers o Hearth products o Ranges and ovens o Microwave ovens o Pool heaters o Portable air conditioners o Refrigerators and freezers o Room air conditioners o Water heaters
Commercial and Industrial Products	
<ul style="list-style-type: none"> o Commercial ice makers o Clothes washers o Commercial package air conditioners and heat pumps o Commercial packaged boilers o Compressors o Computer room air conditioners o Distribution transformers o Electric motors o Fans and blowers o Packaged terminal air conditioners and heat pumps 	<ul style="list-style-type: none"> o Pumps o Refrigerated beverage vending machines o Refrigeration equipment o Single package vertical air conditioners and heat pumps o Small electric motors o Unit heaters o Walk-in coolers and freezers o Warm air furnaces o Water heating equipment
Lighting Products	
<ul style="list-style-type: none"> o Ceiling fan light kits o Fluorescent lamp ballasts o General service fluorescent lamps o General service incandescent lamps o General service lamps o High-intensity discharge lamps o Illuminated exit signs 	<ul style="list-style-type: none"> o Incandescent reflector lamps o Light-emitting diode lamps o Luminaires o Medium-base compact fluorescent lamps o Metal halide lamp fixtures o Torchieres o Traffic signal modules and pedestrian modules
Plumbing Products	
<ul style="list-style-type: none"> o Commercial spray valves o Faucets o Showerheads 	<ul style="list-style-type: none"> o Urinals o Water closets (flush toilets)

Source: DOE 2015b

Interaction with State Policies

It is important for states to recognize that their appliance efficiency standards are different from ENERGY STAR efficiency specifications. The former set minimum energy efficiency performance levels that all appliances must meet; the latter are set at higher energy efficiency levels to help identify the top performers in the marketplace (typically the top 25 percent). As the market share of these products grows over time, EPA revisits ENERGY STAR specifications to ensure continued relevance in the marketplace and savings for the consumer above and beyond standard appliance offerings. It is also important to note that the scope of products covered by ENERGY STAR may be narrower and application-specific, and performance requirements may be climate-dependent. Because of these differences, ENERGY STAR specifications may not be an appropriate basis for market-wide appliance efficiency standards.

Program Implementation and Evaluation

Many states have learned that they do not need to start from scratch when developing and implementing appliance efficiency standards; in many cases, they can refer to the work already conducted by states with established appliance efficiency standards. States have made minor adaptations to existing legislation based on the product lists and analyses conducted by other states. States have also consulted national and regional organizations with expertise and technical support capability. (For more information about states' activities, see "State Examples" later in this section.)

While a state agency can initiate an inquiry into efficiency standards, legislation is typically needed to enable executive agencies to regulate in this area. Once legislatively authorized, states have followed these steps toward successful implementation of appliance efficiency standards:

- *Establish a stakeholder process.* Notify affected manufacturers, consumers, utilities, state agencies, and public interest organizations about the initiative. Develop information materials and hold workshops to inform stakeholders and solicit feedback.
- *Define covered products.* Develop a specific list of product and equipment types to be covered by the program. States have obtained lists of eligible products from other states that have recently enacted standards and from national organizations.
- *Conduct benefit-cost analysis and related studies.* (See "Key Design Issues" described earlier in this section.)
- *Conduct rulemaking.* The rule typically defines covered products, effective dates, efficiency standards, test methods, certification and labeling procedures, inspection and enforcement procedures, penalties for noncompliance, procedures for appeals, waivers and other exceptions, and contact information for the agencies involved. A rulemaking also provides formal notice, review, and comment procedures. When enabling legislation authorizes the executive branch to add new products or update standards on covered products, the regulatory process may be reopened after a few years.
- *Monitor, review, and modify the program as needed.* Based on stakeholder response and market trends, some states have made specific program modifications, including revisions to covered products, efficiency levels, and effective dates, as well as process improvements such as more frequent stakeholder input cycles and more transparent public information processes.

Best Practices for Standards Design and Implementation

- *Learn from others.* There are many lessons to be learned from states that have adopted appliance standards.
- *Consult with stakeholders.* Identify key groups early, including product manufacturers, affected retailers and customer groups, advocates, and utilities. Keep stakeholders informed and seek their input regularly.
- *Conduct a benefit-cost analysis* of the proposed standards.
- *Address key issues*, such as covered products, efficiency levels, effective dates, test methods, product certification, labeling requirements, and enforcement.
- *Review and adjust covered product lists* to be sure they are technically and legally up to date.

Typical implementation considerations include:

- *Effective dates.* A single date is typically established after which noncomplying products may not be sold or installed in the state. In some cases, where warranted by product-specific considerations, extra time is allowed for manufacturers or retailers to prepare for the new standards.
- *Test methods.* A specific method must be defined for testing the efficiency of a given product type. DOE, ENERGY STAR, industry associations, and/or technical societies such as ASTM International (formerly the

American Society for Testing and Materials), the American Society of Mechanical Engineers, the Illuminating Engineering Society of North America, and ASHRAE (formerly the American Society of Heating, Refrigerating, and Air Conditioning Engineers) are typical sources of appliance test methods.

- *Product certification.* The federal standards program is essentially self-certifying; that is, manufacturers use DOE-approved test procedures and submit certification reports to attest that affected products comply with standards. Some states, notably California, maintain databases of covered products to identify which models are in compliance with their state standards.
- *Labeling requirements.* To date, state standards programs have relied primarily on national labeling and other information programs to address the need to label covered products. For example, federal law requires the Federal Trade Commission to operate an appliance labeling program for defined product types, and the EPA ENERGY STAR program includes certain labeling guidelines. In some cases, industry associations that maintain their own certification programs set labeling guidelines for certain products. Labeling issues vary by product type and are resolved on a case-by-case basis.
- *Enforcement.* The California program is largely self-policing. Manufacturers are expected to provide complying products and competitive forces are expected to prevent violations. Enforcement actions typically depend on market participants to bring violation claims.

Historically, the federal standards and ENERGY STAR programs were largely self-policing. In 2011, EPA launched new ENERGY STAR third-party certification and verification program requirements; more recently, DOE has ramped up verification and enforcement efforts. Under ENERGY STAR, products are chosen and tested on an annual basis, and both DOE and EPA continue to provide a vehicle for product complaints and challenges.

Evaluation

Appliance efficiency standards programs have achieved defined results with minimal expenditure of public funds. Evaluating the benefits and costs of the standards is important during the standards setting process. Once enacted, little field evaluation is typically performed.

Depending on the state enabling law, the implementing agency may be authorized to increase standards for affected products and/or to set standards for other product types. These actions are likely to involve detailed technical and economic evaluation. Improvements in the standards setting process itself can also be considered at such times.

Best Practices for Standards Evaluation

- Conduct technical and economic evaluation of opportunities to increase appliance standards and/or set standards for new products.
- Review markets and product applications periodically (e.g., every 3 to 5 years) to determine whether new or adjusted regulations are needed to avoid degradation of savings.

Once a state has operated a standards program for several years, it is helpful to conduct a program review to improve procedures and implement other enhancements.

A key consideration for assessment is degradation of savings. Standards are established for a typical assumed application; over time the use of the product or device may change so that the original intent of the standard is not being served, or technology may change to the point that the device is used differently. Consequently, it can be valuable to review the markets and applications in which standards-covered devices are used, to ensure that the standards are having the intended effect. If the market or application context changes sufficiently for a product, the applicable standard may need to be reevaluated.

Other opportunities for evaluation include assessments of energy, demand, emissions, and other impacts over time, both for evaluating effectiveness and for quantifying emissions impacts for air quality or climate policy purposes. A periodic process evaluation of the standards program can also be helpful to ensure that stakeholder participation is appropriate, technical methods are up-to-date and effective, and rulemaking procedures are as transparent and streamlined as possible.

State Examples

California

California was the first state to initiate an appliance efficiency standards program (in 1977) and maintains the most active and well-funded standards program of any state. California law now covers over 50 products, 17 of which have not been replaced by federal standards (ASAP 2014). Most recently, in 2010 California approved efficiency standards for televisions, and in 2012 California created standards for battery chargers and external power supplies (ACEEE 2013). Most state standards programs in recent years have used California's covered products (or a subset of these products) and technical procedures as the basis for their efforts.

The California Energy Commission operates the standards programs for the state. It develops technical and economic assessments of products recommended for rulemakings, develops draft regulations, holds public participation processes, issues final rules, monitors compliance, and maintains a database of covered products. Recently, California's investor-owned utilities have increased their role in the program, providing technical advice and recommending and advocating for new appliances to be covered. Since the 2006–2008 program cycle, these utilities have also been able to claim credit for program savings in their energy efficiency targets through the California Public Utilities Commission (Cadmus 2012).

California's standards program has contributed to substantial improvements in energy efficiency. Since California's appliance standards program was first established, it has saved consumers over \$75 billion on electricity bills alone (CEC 2013). The building code and appliance standards currently in place contribute a combined gross energy savings of 3,229 GWh and electricity demand savings by 446,000 kW annually (CPUC 2013).

In order to go beyond federal standards, California must obtain a federal waiver. The state requested and was allowed to implement national standards for general service incandescent bulbs earlier than mandated. California has also been granted a waiver to avoid federal preemption of its metal halide lamp fixture standards.

Over the course of 2014 and 2015, California is releasing draft regulations on a variety of new standards for appliances including faucets, toilets, urinals, air filters, dimming ballasts, LED lamps, MR lamps, pool pump motors, portable electric spas, computers, monitors, displays, network equipment, game consoles, and commercial clothes dryers. These proposals have the potential to bring annual savings of 50 billion gallons of water, 1,400 MW of peak electricity, 9,800 GWh of electricity, and 162 million therms of natural gas. The standards are expected to result in natural resource savings of \$2 billion annually (CEC 2014).

Websites: <http://www.energy.ca.gov/appliances/>
http://www.energy.ca.gov/appliances/database/historical_excel_files/
(contains California appliance data)



Connecticut

Connecticut enacted efficiency standards legislation in 2004, 2007, and most recently in 2014 through Senate Bill 1243. Through this legislation, Connecticut has drawn or is drawing up plans to implement nine appliance standards that are not currently covered by federal standards. These appliances include bottle-type water dispensers, commercial hot food holding cabinets, hot tubs, swimming pool pumps, compact audio equipment, DVD players and recorders, and televisions (DSIRE 2014).

Website: <http://www.ct.gov/deep/cwp/view.asp?a=4120&Q=481608>

Oregon

In 2005 and 2008, Oregon passed legislation setting minimum energy efficiency standards for appliances. The standards that have not been preempted by federal standards cover bottle-type water dispensers, hot food holding cabinets, compact audio devices, DVD players and recorders, and portable electric spas. In addition, Oregon's standards for external power supplies will be allowed to remain in effect until 2016, when the federal standards broaden their scope to catch up with Oregon (ASAP 2014).

In 2013, Oregon passed Senate Bill 692. This bill added standards for televisions and battery chargers effective in 2014, as well as standards for double-ended quartz halogen lamps effective in 2016 (ODOE 2014). These new standards are expected to save 244 GWh and \$22 million annually in utilities by 2020 (OSL 2013).

Website: <http://www.oregon.gov/ENERGY/CONS/Pages/StateRegulatedApplianceStandards.aspx>

What States Can Do

Depending on whether authority for efficiency standards already exists, states interested in exploring appliance efficiency standards can begin a new standards initiative, upgrade standards for products currently covered by state law, or expand coverage to new products.

Action Steps for States

States that have adopted appliance efficiency standards can conduct the following action steps:

- Assess whether the state has authority to upgrade current standards or set standards for other products. If it has authority, determine appropriate increases in efficiency levels for current standards or appropriate new products and efficiency levels. If it does not have authority, work with policy-makers to assess the benefits of allowing the implementing agency to upgrade standards and set standards for other products.
- Develop a list of products for which standards could be established and conduct an initial assessment of efficiency levels and potential savings. Conduct a rulemaking process to determine the final products to cover and the associated efficiency levels. Encourage active stakeholder participation and use transparent analysis and decision-making procedures.
- Periodically report on program impacts and operations.
- Assess stakeholder communication and participation and revise these processes, if needed.
- Actively promote consumer awareness of appliances for which EISA 2007 directs DOE to set standards.

States that are considering adopting appliance efficiency standards can:

- Review sample legislation, product lists, and analyses available from other states.
- Consult with stakeholders, national and regional associations, and other key parties to conduct preliminary cost/benefit and feasibility analyses.
- Work with policy-makers to determine whether appliance efficiency standards are an appropriate option.
- Actively promote consumer awareness about the energy cost savings and environmental benefits of appliance standards.

Information Resources

Information about States

Title/Description	URL Address
Appliance Efficiency Program . This website provides information and resources on California's appliance efficiency programs, including current regulations, rulemakings, a database of energy efficiency appliances, and background information.	http://www.energy.ca.gov/appliances/
2014 Appliance Efficiency Regulations . This document provides California's appliance efficiency regulations, and related public comments, hearing transcripts, and other information.	http://www.energy.ca.gov/2014publications/CEC-400-2014-009/CEC-400-2014-009-CMF.pdf
California's Appliance Standards: A Historical Review, Analysis and Recommendations, Staff Report . This 1983 report by the California Energy Commission reviews the history of California's appliance standards.	URL not available.
Energy Efficiency Standards: A Low-Cost, High-Leverage Policy for Northeast States . The analysis conducted for this project showed that efficiency standards have very large and highly cost-effective economic, energy, and environmental benefits for states in the Northeast.	http://www.eswaterheater.org/sites/default/files/library/1147/313.pdf
State-Regulated Appliance and Equipment Standards . Overview of the current and federally preempted appliance standards in Oregon.	http://www.oregon.gov/ENERGY/CONS/Pages/StateRegulatedApplianceStandards.aspx
Product Efficiency Standards . Overview of standards from the Connecticut Department of Energy and Environmental Protection.	http://www.ct.gov/deep/cwp/view.asp?a=4405&Q=481608&deepNav_GID=2121#ProductEfficiency
Multi-State Appliance Collaborative . This website has information by state on each state's appliance standards program and information by appliance on relevant state standards.	http://appliancestandards.org/

General Information about Appliance Efficiency Standards

Title/Description	URL Address
The American Council for an Energy-Efficient Economy (ACEEE) . The ACEEE website contains many publications and resources on all aspects of energy efficiency, economic development, and environmental concerns.	http://www.aceee.org
ASAP . This group provides information and resources on federal and states appliance standards.	http://www.standardsasap.org

Title/Description	URL Address
<p>Codes and Standards White Paper on Methods for Estimating Savings. This 2005 paper addresses California building and appliance energy efficiency standards, and the role of codes and standards programs as part of utility portfolios of energy efficiency programs.</p>	<p>http://www.cpuc.ca.gov/NR/rdonlyres/6E783BC7-3467-484E-AD2A-29EF4A50432B/0/Mahone_2005_CS_White_Paper_SavingsEstimatingSavings.pdf</p>
<p>Collaborative Labeling and Appliance Standards Program. This program's website provides information and resources on developing countries that are pursuing energy efficiency and labeling programs.</p>	<p>http://www.clasponline.org/</p>
<p>Appliance and Commercial Equipment Standards. This DOE website provides information on state and federal appliance standards.</p>	<p>http://energy.gov/eere/buildings/appliance-and-equipment-standards-program</p>
<p>Leading the Way: Continued Opportunities for New State Appliance and Equipment Efficiency Standards. This 2006 report describes opportunities for state governments to set minimum-efficiency standards for 18 appliances and other types of equipment currently not covered by federal standards.</p>	<p>http://www.aceee.org/sites/default/files/publications/researchreports/a062.pdf</p>
<p>Northeast Energy Efficiency Partnerships (NEEP). NEEP's website provides information on promoting energy efficiency in the Northeastern United States.</p>	<p>http://www.neep.org</p>
<p>Energy Efficiency Standards: A Low-Cost, High-Leverage Policy for Northeast States. This report provides information about energy efficiency standards in the Northeastern states.</p>	<p>http://www.eswaterheater.org/sites/default/files/library/1147/313.pdf</p>
<p>Realized and Prospective Impacts of U.S. Energy Efficiency Standards for Residential Appliances. 2002 report on a Lawrence Berkeley National Laboratory project that involved developing an analytical framework to estimate energy, environmental, and consumer economic impacts of federal residential energy efficiency standards.</p>	<p>http://eetd.lbl.gov/sites/all/files/realized_and_prospective_impacts_of_us_energy_efficiency_standards_for_residential_appliances_lbnl-49504.pdf</p>
<p>Smart Energy Policies: Saving Money and Reducing Pollutant Emissions Through Greater Energy Efficiency. The report details nine specific policy recommendations that could have a substantial impact on the demand for energy in the United States while also providing positive economic returns to American consumers and businesses.</p>	<p>http://www.aceee.org/sites/default/files/publications/researchreports/E012.pdf</p>
<p>DOE State Energy Program This DOE website provides information and resources on state energy programs.</p>	<p>http://energy.gov/eere/wipo/state-energy-program</p>
<p>Rules, Regulations & Policies for Energy Efficiency. This table, part of the Database of State Incentives for Renewables and Efficiency (DSIRE), summarizes details on federal and individual state appliance standard programs.</p>	<p>http://programs.dsireusa.org/system/program?type=62&</p>

Examples of Legislation

State	Title/Description	URL Address
Arizona	House Bill 2332. This bill sets minimum efficiency standards for 15 products.	http://www.azleg.gov/legtext/49leg/1r/bills/hb2332s.pdf
California	2014 Appliance Efficiency Regulations. This document provides California's appliance efficiency regulations, and related public comments, hearing transcripts, and other information.	http://www.energy.ca.gov/2014publications/CEC-400-2014-009/CEC-400-2014-009-CMF.pdf
Colorado	A Bill for an Act Concerning Energy Efficiency Standards for Specified Devices (House Bill 04-1183). This bill sets minimum energy efficiency standards for 14 products.	http://www.swenergy.org/policy/legislation/2004/colorado/HB-1183.pdf http://www.swenergy.org/policy/legislation/2004/colorado/HB-1183_FactSheet.pdf
Connecticut	An Act Concerning the Establishment of the Department of Energy and Environmental Protection and Planning for Connecticut's Energy Future (Senate Bill 1243). Establishes the Department of Energy and Environmental Protection and sets minimum performance standards for appliances.	http://www.cga.ct.gov/2011/ACT/PA/2011PA-00080-R00SB-01243-PA.htm
Maryland	State Government—Energy Efficiency Standards (House Bill 1030). This bill, which was enacted in January 2004, provides legislative language for Energy Efficiency Standards for 10 products.	http://mlis.state.md.us/2005rs/billfile/HB1030.htm
Massachusetts	An Act Establishing Minimum Energy-Efficiency Standards for Certain Products (Chapter 139 of the Acts of 2005). This act requires establishment of minimum efficiency standards for five products.	http://www.mass.gov/legis/laws/seslaw05/sl050139.htm
Oregon	An Act Relating to Minimum Energy Efficiency Standards; Creating New Provisions; and Amending ORS 469.229, 469.223, 469.238 and 469.239 (Senate Bill 692). Establishes minimum energy efficiency standards for certain products. Prohibits sale or installation of products that do not meet standards.	https://olis.leg.state.or.us/LIZ/2013R1/Measures/Text/SB0692/Enrolled
Pennsylvania	An Act Providing for Minimum Energy Efficiency Standards for Certain Appliances and Equipment; and Providing for the Powers and Duties of the Pennsylvania Public Utility Commission and of the Attorney General (House Bill 2035). Pennsylvania bill introduced in 2003.	http://www.legis.state.pa.us/CFDOCS/Legis/PN/Public/btCheck.cfm?txtType=PDF&sessYr=2003&sessInd=0&billBody=H&billTyp=B&billNbr=2035&pn=4640
Rhode Island	Energy and Consumer Savings Act of 2005 (S 0540). Rhode Island's appliance standards legislation, signed July 1, 2005.	http://webserver.rilin.state.ri.us/BillText05/SenateText05/S0540.htm
Vermont	Senate Bill 52. An Act Relating to Renewable Energy Portfolio Standards, Appliance Efficiency Standards, and Distributed Electricity (Senate Bill 52). Vermont bill introduced in 2005.	http://www.leg.state.vt.us/docs/legdoc.cfm?URL=/docs/2006/bills/house/S-052.HTM
Washington	An Act Relating to Energy Efficiency (Senate Bill 5098). Washington bill establishing minimum standards and testing procedures for 13 electrical products that are not covered by federal law.	http://apps.leg.wa.gov/documents/billdocs/2005-06/Pdf/Bill%20Reports/Senate/5098.SBR.pdf
United States	Energy Policy Act of 2005.	http://energy.gov/sites/prod/files/2013/10/f3/epact_2005.pdf

State	Title/Description	URL Address
United States	Energy Independence and Security Act of 2007.	http://www.gpo.gov/fdsys/pkg/BILLS-110hr6enr/pdf/BILLS-110hr6enr.pdf

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Title/Description	URL Address
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DSIRE. 2014. Connecticut: Incentives/Policies for Energy Efficiency. Database of State Incentives for Renewables and Efficiency. Accessed March 26, 2015.	http://programs.dsireusa.org/system/program/detail/1563
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