



American Council for an Energy-Efficient Economy

**Testimony of Steven Nadel,
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Before the Senate Energy Committee

**Hearing on:
Appliance Standards Improvement Act of 2009**

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Summary

Federal appliance efficiency standards were first adopted in 1987 and were augmented by Congress in 1988, 1992, 2005 and 2007. The program has a long history of bipartisan support. My organization, the American Council for an Energy-Efficient Economy (ACEEE), estimates that without these standards and subsequent DOE rulemakings, U.S. 2010 electricity use and peak electric demand would be about 10% higher and U.S. total energy use about 5% higher. Net savings to consumers from standards already adopted will exceed \$400 billion by 2030 (2008 \$).

The majority of these standards have been set by Congress, based on consensus agreements between manufacturers and energy efficiency advocates. But where there is not consensus agreement, Congress has often delegated decisions to DOE, allowing each side to make their arguments and having DOE make the decision.

The proposed Appliance Standards Improvement Act of 2009 (ASIA) builds on these solid foundations and we support this bill. We thank Senators Bingaman and Murkowski for introducing this bill and moving the discussion forward on how best to improve the appliance standards program.

The heart of ASIA is new efficiency standards on portable lighting fixtures, such as floor and table lamps. The proposed standard was developed by the American Lighting Association and ACEEE and builds largely on a standard adopted by California last year. The standard provides a range of compliance options and will save substantial energy – by 2020 this standard alone will save enough electricity to power 350,000 average American homes.

ASIA also contains several useful reforms to the appliance standards and ENERGY STAR programs.

While ASIA is a solid bill, we believe it can be improved by incorporating:

- Several technical amendments to the portable lighting fixture standard as described in my testimony;
- Technical amendments to the standards adopted in EISA that are needed to correct drafting errors;
- Adding new standards on outdoor lighting fixtures, based on a proposal now being developed by Philips Lighting, ACEEE, and other lighting manufacturers and energy efficiency groups;
- Adding new standards on drinking water dispensers (water coolers) and hot food holding cabinets that are based on ENERGY STAR specifications and have been adopted in California, Connecticut, Maryland, New Hampshire, Oregon, Rhode Island, and the District of Columbia;
- Adding new standards on portable electric spas (hot tubs) adopted in California, Connecticut, and Oregon;

- Adopting several improvements to the appliance standards program proposed by Senator Menendez that:
 - Direct DOE to consider standards on several types of reflector lamps;
 - Allow states to help enforce federal standards in federal courts using federal procedures;
 - Allow DOE to consider multiple standard metrics for products;
 - Provide states more flexibility to develop performance-based building codes;
 - Simplify the process for states to obtain waivers from federal preemption while keeping the main decision-criteria in place; and
 - Direct DOE to undertake a rulemaking to establish regular reporting of data needed to support the standards, ENERGY STAR and related programs.

These provisions would more than quadruple the energy savings resulting from ASIA and would improve program implementation and decision-making going forward. We are open to discussing all of these suggestions with Committee members and their staff, and with manufacturers and other interested parties, so that hopefully consensus can be reached on modified versions of all of these provisions.

Introduction

My name is Steven Nadel and I am the Executive Director of the American Council for an Energy-Efficient Economy (ACEEE), a nonprofit organization dedicated to increasing energy efficiency to promote both economic prosperity and environmental protection. I have worked actively on appliance standards issues for more than 20 years at the federal and state levels and participated actively in discussions that led to enactment of federal standards legislation in 1987 (NAECA), 1988 (NAECA amendments), 1992 (EPAAct), 2005 (EPAAct), and 2007 (EISA).

Without these laws, plus subsequent DOE rulemakings updating some of these standards, ACEEE estimates that U.S. 2010 electricity use and peak electric demand would be about 10% higher and U.S. total energy use about 5% higher. Net savings to consumers from standards already adopted will exceed \$400 billion by 2030 (2008 \$).¹

However, much more savings are possible through a combination of further updates to existing standards, plus adding new products to the federal standards program. ACEEE estimates that U.S. energy use in 2030 can be reduced by about 2.5 quadrillion Btu's (about a 2.2% reduction from projected levels) and carbon dioxide emissions can be reduced by about 165 million metric tons, a 2.6% reduction from projected levels.²

Fortunately, the federal standards program has a long history of bipartisan support, at the Committee level, on the House and Senate floors, and from Presidents of both major parties: standards laws have been signed by Presidents Ford, Carter, Reagan (two laws), George H.W. Bush, and George W. Bush (two laws).

The foundation of these laws was adoption of consensus standards negotiated between appliance manufacturers and energy efficiency advocates. ACEEE has been involved in all of these negotiations. Most federal standards build on previous state standards: after several states adopt standards on a product, manufacturers generally prefer uniform national standards to a patchwork of state standards. But where manufacturers and efficiency advocates disagree, Congress has commonly delegated decisions to DOE, allowing each side to make its best case and then having the Secretary of Energy decide.

The proposed Appliance Standards Improvement Act of 2009 (ASIA) builds on these solid foundations. We thank Senators Bingaman and Murkowski for introducing this bill and moving the discussion forward on how best to improve the appliance standards program. In the sections below I comment on the provisions in ASIA, and also on some additional provisions that we recommend be added to increase the energy savings achieved and improve the appliance standards program's processes.

¹ Calculations from a forthcoming ACEEE report to be published spring 2009.

² Preliminary estimate of savings can be found at: http://www.standardsasap.org/documents/DOE_schedule.pdf. Percentage reductions are relative to reference case in EIA's 2009 *Annual Energy Outlook*.

Provisions in ASIA

The heart of ASIA establishes new efficiency standards on portable lighting fixtures, such as the floor and table lamps most of us use in our homes. Other significant provisions in ASIA relate to appliance test procedures, a schedule for DOE to rule on petitions, compliance with federal standards, and ENERGY STAR. We discuss each in turn.

Standards for Portable Lighting Fixtures and GU-24 Lamps (Sections 5 and 6)

Standards for portable lighting fixtures and GU-24 lamps were established in California in 2008 and this provision makes this standard a national one (section 5). This standard transitions new fixtures away from use of inefficient screw-in incandescent lamps, and towards an array of more efficient choices including compact fluorescent lamps, LED lighting, or low/medium wattage halogen lamps. A variety of options are provided to manufacturers and consumers, so an appropriate choice can be found for all applications. For example, under the provision, there are two main compact fluorescent options – a dedicated ENERGY STAR compact fluorescent fixture or including ENERGY STAR screw-in compact fluorescent lamps in the box with the fixture. Consumers who truly dislike compact fluorescent lamps can use the included lamps in other sockets or give them to friends. The provision also builds upon current DOE and EPA ENERGY STAR standards for LED fixtures, providing guidance for an important emerging type of light.

In addition, the GU-24 provision follows California rules to prevent a new type of universal compact fluorescent base (GU-24) from being used with incandescent lamps. Unlike present bases, the GU-24 base can be used with many types of compact fluorescent lamps. Industry, utilities, and ENERGY STAR staff are planning to widely promote its use as a way to guarantee lighting energy savings. However, these efforts would be undermined if GU-24 incandescent lamps are introduced because no energy is saved if incandescent lamps are used in GU-24 fixtures. Section 6 would prevent this from happening.

In the process of negotiating these federal provisions, a few refinements to the California regulations were negotiated between ACEEE and the American Lighting Association (the industry trade association for these products) to strengthen some of the requirements, gradually phase in the requirement for testing for whole system efficacy, and exclude purely decorative fixtures from the whole system efficacy requirements. For example, for LED fixtures over the 2012-2016 period, the bill permits these fixtures to either meet the current DOE ENERGY STAR LED fixture specification, or provides an option for a higher “light engine” efficacy (“efficacy” is a lighting industry term for efficiency), without requiring testing of whole system efficacy. As of 2016, new standards will apply, to be developed by DOE by 2014. Given California’s pioneering role, this provision also allows California to revise its current standard, but this authority expires in 2014. Similar provisions were included in EISA and EPLA 2005, when California standards were adopted as federal standards. These changes represent

thoughtful compromises on these issues, compromises that have the support of both ACEEE and ALA.

ACEEE estimates that this provision will reduce U.S. electricity use in 2020 by about 3.9 billion kWh, enough to serve about 350,000 average U.S. residential customers for a year.³ These standards will reduce peak electric demand in 2020 by about 570 MW, equivalent to a typical new coal-fired power plant or two typical natural gas-fired power plants. Net present value financial savings to consumers will exceed \$600 million from purchases through 2030, accounting for both the value of the energy saved and the modestly higher purchase cost for complying fixtures. By 2020, this standard will reduce carbon dioxide emissions by about 2.62 million metric tons, helping to make a significant dent in greenhouse gas emissions. This is equivalent to taking 485,000 cars off the road for a year.⁴

While we support this provision, we think it can be improved in four respects:

1. The bill references a specific Illuminating Engineering Society (IES) specification for testing portable lighting fixtures for overall efficiency. Since the bill also sets standards for "light engine efficacy," it should also reference a pending IES specification for testing light engine efficacy.
2. The bill permits GU-24 fixtures as a compliance path, but establishes no standards for these fixtures. We recommend that the bill reference the same ENERGY STAR specification for GU-24 fixtures as it references for dedicated compact fluorescent lamp fixtures. Since some GU-24 LED lamps are in development, the legislation should make clear that LED fixtures with GU-24 sockets must meet the LED requirements in the bill.
3. Change the maximum LED color temperature to 4000 K from 4200 K. 4000 K is a specific color category in the consensus industry specification developed by the Illuminating Engineering Society (IES). For this reason, there are no 4200 K LED lamps. The IES specification allows some testing leeway, so products do not need to be exactly 4000 K and still qualify.
4. The bill also permits halogen fixtures up to 100 Watts, but provides no efficiency standards for these products. We recommend that halogen lamps be required to meet efficiency levels similar to those Congress adopted for general service incandescent lamps as part of EISA. We are now trying to develop a specific proposal in discussions with ALA.

Specific language changes for the first three of these recommendations are attached to my testimony. We will forward our suggested language on the final recommendation when discussions are completed.

³ At 11,000 kWh/year per household, per EIA data.

⁴ Based on 12,000 miles/vehicle each year, a fuel economy of 20 MPG, and 20 pounds of CO₂ emitted per gallon. There are 2,204.6 pounds per metric ton. With these assumptions each car emits about 5.44 metric tons of carbon dioxide equivalent annually.

Appliance Test Procedures

In 2007, EISA directed DOE to review and revise appliance test procedure changes over a seven-year period. But seven years is a long time and some revisions cannot wait. This provision allows interested parties to petition DOE to adopt changes to specific DOE test procedures. DOE reviews the proposal in line with established procedures and criteria and is given a deadline for making decisions. Direct final rules are permitted for consensus recommendations, per a provision added to the law in EISA. This provision thereby encourages consensus agreements that can accelerate updates and ease DOE's workload. It also requires timely responses from DOE to petitions, something that is a problem. As an egregious example, a petition submitted by the California Energy Commission in May 2008 to repeal a useless television test procedure from 1977 has not even been acknowledged, let alone acted upon.

Schedule for DOE to Rule on Petitions (Section 4)

Current law has a provision permitting interested parties to petition DOE to revise a specific standard. However, no deadlines are provided. This section gives DOE 180 days to respond to the petition, and if the petition is granted, three more years to publish a final rule on the standard.

Studying Compliance with Federal Standards (Section 7)

More than 40 products are now regulated and to our knowledge no one has ever conducted a systematic review on whether manufacturers are complying with the standard. Enforcement is important in order to ensure that energy savings are real, and to protect the vast majority of law-abiding companies from unscrupulous competitors. We have heard informal reports that some standards are not being fully followed. Some Congressional offices have expressed interest in improving standard enforcement. The first step in such efforts is to conduct a study to see what the problems are and where they lie. This provision would have DOE conduct such a study. We envision that DOE would hire one or more contractors to survey products on the market for each regulated product category, ascertaining as best as possible from available data which products are in compliance with standards and which are not. Such surveys would be made using the Web (manufacturer, wholesaler, and retailer sites), and by visiting a sample of retail stores. Some products on the market would be purchased and independently tested to see if they were in compliance or not.

ENERGY STAR (Section 3)

ENERGY STAR has been a valuable and very successful program to promote the sale of high efficiency products. The program was started by EPA, but for many years DOE has taken the lead on some products, under the terms of an interagency MOU. In October 2008, *Consumer Reports* published a report on ENERGY STAR, finding a few problems. Specifically, they found that a few manufacturers were distorting refrigerator test results, and since the program relied only on manufacturer testing, there was no

mechanism to catch this problem. The article also noted that some appliance specifications needed updating, as indicated by the fact that a majority of products on the market earned the ENERGY STAR rating, although DOE and EPA generally target the top 25% of products for the label. Our understanding is that the agencies have been working to address these problems, but Section 3 requires them to take action. Specifically, it requires some type of independent certification or review of product testing for each product, while giving the agencies and each industry flexibility as to what type of certification/review most makes sense for a product. This provision also requires DOE and EPA to review the ENERGY STAR specification when the market share for a product category reaches 35%. If a review begins when market share reaches 35%, market share can grow considerably in the year or more it takes to complete the review, set a new specification, and put the new specification into effect. While 35% is a good review threshold for most products, there are exceptions (e.g., compact fluorescent lamps where ENERGY STAR is a quality mark and not just for the best products). Therefore, the provision permits the agencies to revise this percentage on a product-specific basis as part of their first review. We believe these provisions will improve the ENERGY STAR program, while giving the agencies needed flexibility.

Recommended Additions

We recommend several additions to ASIA including technical corrections to EISA, adding several new product standards, and adopting some amendments to appliance standard processes and procedures as recently suggested by Senator Menendez.

Technical Corrections

When the EISA conference negotiations were completed, a number of errors were made in compiling the final bill. We have worked with industry and Committee staff to identify these problems and develop suggested edits. We recommend that these technical corrections be added to the bill.

Additional Standards

In addition to portable lighting fixtures, a number of other products are ripe for adding to the appliance standards program. Below we recommend four specific products. We are talking to industry about all of these products. We anticipate reaching consensus on all or most of these in the next month. Placeholder language for three of these products is provided as an attachment to my testimony. We will provide recommended legislative language for outdoor lighting fixtures shortly.

Outdoor Lighting Fixtures

Outdoor lighting fixtures are generally fairly high wattage products and are on for many hours each night. Outdoor lighting accounts for about 8% of U.S. lighting energy use and 2% of U.S. total electricity use. The largest outdoor lighting uses are roadways

(streets and highways) and parking lots.⁵ Current systems use a variety of lamp types, including incandescent, mercury vapor, low and high pressure sodium (yellowish light), and metal halide lamps. In the past few years, rapid technical strides have been made and a new generation of more efficient types is emerging including LED lighting and advanced metal halide and high pressure sodium lamps. In addition, efficiency can be improved with electronic ballasts, use of lighting controls, and improved fixture designs. Substantial energy can be saved by standards that steadily eliminate the least efficient fixtures from the market in favor of more efficient products.

Early this year Philips Lighting approached ACEEE and other efficiency groups⁶ to explore the possibility of new mandatory standards for outdoor lighting. Proposals have been prepared and legislative language is being drafted. Recently, this coalition has begun reaching out to other major lighting manufacturers to seek their input and support. This is the same process that was used to develop the standards on general service incandescent lamps in EISA.

In its current form, the proposed standard would regulate the whole system efficiency of *new* outdoor lighting fixtures with an initial requirement of 50 lumens per watt, effective 2011, rising to 70 lumens per watt in 2013 and 80 lumens per watt in 2015 (existing fixtures would not be affected). Additional provisions would require 2-level or dimming controls and good lumen maintenance (maintenance of light levels over time). Advanced LED, metal halide, and high pressure sodium systems would all comply, but old technologies would not. The proposed standards would also outlaw the ongoing sale of the least efficient high light output outdoor lamps. New, more efficient replacements are readily available.



LED Lighting on I-35W Bridge, Minneapolis.
Source: DOE.

Philips Lighting has analyzed the likely savings from this standard and estimates that this standard would eventually save about 30,500 million kWh per year from fixture efficiency improvements alone, once existing fixtures are fully replaced. The bi-level controls would add additional savings. They estimate annual carbon dioxide emissions reductions of more than 16 million metric tons and annual energy bill reductions of about \$3.6 billion once all fixtures are replaced.⁷

⁵ Navigant Consulting. 2002. *U.S. Lighting Market Characterization*. Washington, D.C.: Buildings Technologies Program, U.S. Department of Energy.

⁶ Alliance to Save Energy, Appliance Standards Awareness Project, and Natural Resources Defense Council

⁷ Cook, Keith. 2008. "Proposed Outdoor Lighting Efficiency Standards". Washington, DC: Philips Lighting.

Bottle-Type Water Dispensers

Bottled water dispensers are commonly used in both homes and offices to store and dispense drinking water. Designs include those that provide both hot and cold water and those that provide cold water only. In 2000, the EPA issued a voluntary ENERGY STAR performance specification for standby energy of 1.2 kWh per day and 0.16 kWh per day for “hot and cold” dispensers and “cold only” dispensers, respectively. “Hot and cold” water dispensers tend to be much less efficient than “cold only” because they must maintain water tanks at two temperatures in a small space. The greatest factor



determining energy efficiency is insulation of the water reservoirs. Older models of “hot and cold” dispensers often do not have insulated hot water tanks, which increases heat dissipation and standby energy waste. Adding insulation between the tanks and increasing existing insulation levels can reduce standby energy waste. A Pacific Gas & Electric Co. report found that a reduction from the baseline “hot and cold” dispenser daily energy consumption of 1.93 kWh to the proposed 1.2 kWh would save nearly 38% of annual energy consumption. The slight cost (about \$12) to improve a basic unit to meet the proposed standard would be earned back in lower energy costs within about 6 months at national average energy prices. EPA data indicate that just over 40% of water dispensers sold meet the ENERGY STAR specification.⁸

In December 2004, the California Energy Commission adopted the ENERGY STAR standard for “hot and cold” dispensers as a mandatory standard, affecting units sold after January 1, 2006. Subsequently the same standard has been adopted in Connecticut, Maryland, New Hampshire, Oregon, Rhode Island, and the District of Columbia. We recommend that this same standard be adopted as a federal standard and that DOE be directed to develop a revised standard by 2013, effective three years later.

I provide estimates of energy and economic savings for this proposal later in this testimony.

Commercial Hot Food Holding Cabinets

Hot food holding cabinets are used in hospitals, schools and other applications for storing and transporting food at a safe serving temperature. They are freestanding metal cabinets with internal pan supports for trays. Most are made of stainless steel and are insulated; however, there are some models that are non-insulated and are often made of aluminum. The main energy-using components include the heating element and the fan motor.

⁸ Nadel, S., A. deLaski, M. Eldridge, and J. Kliesch. 2006. *Leading the Way: Continued Opportunities for New State Appliance and Equipment Efficiency Standards*. Washington, DC: American Council for an Energy-Efficient Economy.

The ENERGY STAR specification sets a maximum idle energy rate issued for hot food holding cabinets of 40 Watts per cubic foot of measured interior volume. Appropriate



Source: Carter-Hoffmann

insulation in hot food holding cabinets is the key mechanism to meet this specification. Insulated cabinets also have the advantage of quick preheat times, less susceptibility to ambient air temperatures, and a more uniform cabinet temperature. The recommended maximum idle energy rate translates to a 78% annual energy savings of 1,856 kWh relative to a basic, inefficient model. These energy savings cover the estimated additional cost of more efficient units within 3 years. Data is uncertain, but it appears that about 40% of hot food holding cabinet sales meet this specification.⁹

In December 2004, the California Energy Commission adopted this level as a statewide minimum standard, effective January 2006. Subsequently the same standard has been adopted in Connecticut, Maryland, New Hampshire, Oregon, Rhode Island, and the District of Columbia. We recommend that this same standard be adopted as a federal standard and that DOE be directed to develop a revised standard by 2013, effective three years later.

I provide estimates of energy and economic savings for this proposal later in this testimony.

Portable Electric Spas (Hot Tubs)

Portable electric spas are self-contained hot tubs. They are electrically heated and are popularly used in homes for relaxation and therapeutic effects. The most popular portable spas hold between 210 and 380 gallons of water; however, some models can hold as much as 500 gallons. “In-ground” spas are not included in this category.



Source: Sundance

Over half the energy consumed by a typical electric spa is used for its heating system. Heat is lost directly during use and through the cover and shell during standby mode. Improved covers and increased insulation levels are key measures to improving efficiency and can decrease standby energy use by up to 30% for a spa of average-to-low efficiency. Another measure is the addition of a low-wattage circulation pump or improvements to pump efficiency that would generally save 15% of standby energy consumption of an average-efficiency spa. Automated programmable controls, which would allow users to customize settings based on predicted usage patterns, are a third measure to improve efficiency and could save roughly 5% of a spa’s standby energy consumption.¹⁰

⁹ *Ibid.*

¹⁰ *Ibid.*

In December 2004, the California Energy Commission (CEC) adopted a maximum standby energy consumption standard of $5 (V^{2/3})$ Watts for portable electric spas where V = the total spa volume in gallons and $2/3$ means to the two-thirds power. Standby energy consumption represents the majority (75%) of the energy used by electric spas and refers to consumption after the unit has been initially brought up to a stable temperature at the start of the season and when it is not being operated by the user. The energy consumption calculation ($V^{2/3}$) used by CEC approximates total spa surface area, which is directly related to standby energy use. A maximum standby energy requirement indexed to total spa surface area thus requires spas of all sizes to be equally efficient.

The California standard is a modest initial effort and is probably met by the majority of spas now being sold. CEC estimates that the products meeting the standard cost \$100 more than basic models. At national average energy prices, this additional cost is covered within 4.3 years.¹¹

Connecticut and Oregon have subsequently adopted the California standard. We recommend that the same standard be adopted as a federal standard and that DOE be directed to develop a revised standard by 2013, effective three years later.

Estimates of Energy Savings

The table below summarizes estimates of energy savings from the proposed new standards:

Product	2020 kWh Saved (millions)	2020 Peak Demand Reduction (MW)	2020 CO ₂ Emissions Reductions (MMT)	Net Discounted Consumer Benefits (million \$)
Portable lighting fixtures	3,856	573	2.62	662
Outdoor lighting fixtures	12,570	Small, on off-peak	8.54	Not calculated
Water dispensers	250	35	0.17	229
Hot food holding cabinets	314	103	0.21	291
Portable electric spas	185	43	0.13	104
Total	17,175	754	11.67	1,286

Notes: Net Discounted Consumer Benefits are for purchases through 2030. 2020 kWh savings for outdoor lighting fixtures adapted by ACEEE from Philips estimates cited above, based on a 20 year average fixture life. CO₂ savings are prorated based on ratio of kWh to CO₂ savings for other products.

Process Improvements

Senator Menendez on March 16, 2009 provided witnesses at this hearing with some potential amendments to ASIA and asked for comments. We support Senator Menendez's amendments and provide specific comments below. In general these amendments free DOE and states from restrictions that have hampered implementation of the standards and related programs. None of these amendments would set new standards directly, so to the extent particular manufacturers have concerns, they will be

¹¹ *Ibid.*

able to make these concerns known as part of formal DOE and state rulemaking proceedings. We are also open to discussing possible edits to these amendments based on suggestions from industry and others. We urge this Committee to encourage all parties to discuss these amendments and seek to reach consensus on them. Below we discuss each of these provisions and why they are needed.

Reflector Lamp Loophole

EISA extended existing reflector lamp standards to some previously exempted lamps. DOE under the previous administration interpreted the EISA language to permanently bar DOE from addressing any other exempted reflector lamps, which was not the intent we agreed to when we helped negotiate the EISA language. The new administration is now reviewing this interpretation, but if there are legal doubts, Congress should correct the law.

Due to this interpretation, final standards for incandescent reflector lamps due in June 2009 may include a huge loophole (about 30% of total sales) which will only grow bigger because these exempted lamps are lower cost than regulated products. The proposed amendment closes the loophole by requiring DOE to do a quick rulemaking to consider standards for the exempted products. The rulemaking is quick because it can build on the three-year rulemaking for related products that is now nearing completion. If manufacturers believe that standards for these products are not technically feasible and economically justified, they can make these arguments during the rulemaking. If DOE fails to complete the rulemaking on time, the standard DOE establishes this June for other reflector lamps would apply. Further, the amendment requires that DOE conduct a future rulemaking (completed by 2015) for reflectors which considers all technology on an equal basis rather than just incandescent technology.

Traditionally, among incandescent lamps, reflector lamps have led in efficiency innovations. With EISA, general service incandescent lamps (the pear-shaped lightbulb) are moving towards advanced incandescent technology. The reflector lamp loophole is protecting some common reflector lamps from having to make this transition, even though the advanced technology can be applied -- in fact, advanced incandescent products are presently available in retail stores for the main exempted category.

State Authority to Seek Injunctive Enforcement

Compliance with federal standards is essential for achieving the expected energy savings. Under present law, only the federal government may bring enforcement actions, but since there is no federal budget for this, no significant enforcement is taking place. This amendment would allow states to bring their expertise and resources to bear on compliance by enabling them to seek injunctive enforcement of federal standards in federal court on an equal basis to the Federal government. All provisions of federal law apply. Such a provision was included in EISA for general service incandescent lamps. It should be extended to other regulated products.

Multiple Metrics

The past two administrations have disagreed on whether DOE may set more than one standard for a product. For quite a few products Congress has imposed more than one standard for a product. Some examples are listed below.

Product	Metrics
Heat pumps	Cooling efficiency and heating efficiency
Clothes washers	Energy Factor and Water Factor
Dishwashers	Energy Factor and Water Factor
Residential boilers	AFUE, restrictions on pilot lights and a control requirement
General service incandescent lamps	Maximum Watts, minimum life
Fluorescent lamps	Efficacy and color rendering
External power supplies	Active mode efficiency and no-load mode watts
Compact fluorescent lamps	Initial efficacy, lumen maintenance, lamp life, rapid cycle test
Ceiling fans	Efficient light kits, several control requirements
Walk-in coolers and freezers	Insulation, glass, motor, control, lighting, and door requirements
Ice-makers	Energy use and water use

The list above includes two very different groups. Most combine two *performance* parameters, such as cooling efficiency and heating efficiency, where the product combines multiple energy-using functions. Some combine a performance standard with one or more *prescriptive* requirements, such as boiler controls and minimum life for lamps. This situation is critical for obtaining savings where energy-saving technology options have developed more quickly than rating methods have been revised, as in the case of boiler controls.

Uncertainty about DOE's authority has caused several problems in recent years. In the current rulemaking for general service fluorescent lamps, DOE decided it was prohibited from revising the now outdated requirements for color rendering, even though both advocates and industry recommended that this part of the standard be updated. In 2007 DOE turned down a consensus agreement on new residential boiler standards, requiring the parties to go to Congress to successfully ask that this provision be included in EISA. Similarly, just this past week, DOE declined to adopt new multi-metric standards for commercial warm air furnaces developed by the American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE).¹² Another potential application of this authority is to require that some products have two-way communication interfaces, so they can communicate with the "Smart Grid". For example, some electric industry representatives have suggested that DOE consider such a requirement for electric water heaters.

¹² See pp 38 to 40 of the Proposed Rule made available on March 12, 2009 by DOE at http://www1.eere.energy.gov/buildings/appliance_standards/commercial/ashrae_products_docs_meeting.html but not yet published in the *Federal Register*. This proposed rule confirms an initial determination issued on July 16, 2008 (73 Fed. Reg. 40770). DOE asserts it lacks authority to adopt the ASHRAE requirements which, for commercial furnaces, would eliminate standing pilot lights, set a limit on jacket losses and require power venting or automatic flue dampers.

The question is whether DOE, in revising standards, can also use more than one metric if such a standard is technically feasible and economically justified. The Clinton administration ruled that DOE has this authority; the Bush administration took the contrary view. If the law is this unclear, it should be clarified, as this amendment would do. This amendment *does not* require DOE to set any standards with multiple metrics; it just gives DOE the option. Even with this amendment, DOE cannot set a multiple metric standard if such a standard is not technically feasible or economically justified. Some manufacturers argue that multiple standards on particular products are costly or onerous. This is an argument they should make to DOE. Concerns some manufacturers have about some products should not affect DOE's ability to set appropriate standards for all products.

This provision passed both the House and Senate in 2007 but was left out of EISA at the last minute. It should be adopted this year.

State Performance-Based Building Codes

Under present law, states with performance-based building codes must use minimum-efficiency equipment when developing code requirements. Performance-based codes provide an overall level of performance and permit many paths for reaching these goals (e.g. more insulation, better windows, reduced air infiltration, or improved equipment). But if equipment is limited to only federal minimums, some states are finding they can't set strong enough codes to meet their energy and climate goals. Also, this part of federal law creates a loophole in performance based codes, as builders exceeding federal minimums can install less insulation, even though insulation lasts for the life of the building while equipment lasts for only one to two decades.

The goal of these changes is to allow greater flexibility in performance-based codes to address equipment that is covered under federal appliance standards. This provision would allow states to use covered products with above-federal-minimum efficiency levels in formulating their building codes, while keeping the framework of preemptive federal standards. The proposed amendment includes two changes:

1. The first change allows the use of above-federal-minimum products in codes at an efficiency level set in the IECC or in ASHRAE model code. Federal law already allows states to adopt many *commercial* product standards in their codes at levels above federal minimums if contained in an ASHRAE model code. Creating a similar structure for *residential* products would enable states to require the use of more efficient products in construction covered by their prescriptive building codes at levels set in a national standard-setting process. This is most necessary for products for which a different efficiency makes sense for new construction than for replacement. For some products such as furnaces, it is often much less expensive to install efficient products in new construction than in existing homes.¹³

¹³ Indeed, some builders find installing higher efficiency (condensing) furnaces (and power-vent water heaters) to be *less* expensive than using lower efficiency products, since it avoids the need for a

2. The second change allows states to offer options for meeting their codes using above-federal-minimum covered products as long as at least one option assumes covered products at the level of federal standards, and that this option is “reasonably achievable using commercially available technologies”. In other words, if a state set performance requirements that were based in part on high efficiency furnaces, they would have to provide an explicit pathway for installing a minimum efficiency furnace, making up the lost savings with other measures such as more insulation or improved windows. This would enable states to establish a performance standard that meets the needs of the state as long as they provide a clear path for code compliance using covered products that do not exceed federal-minimum efficiency standards.

Removing the Catch-22 from the State Waiver Petition Process

Under current law, federal standards preempt state standards, unless a state submits and DOE approves an application for exemption from preemption. Such application must demonstrate that “such state regulation is needed to meet unusual and compelling State or local energy or water interests” and that such regulation “will not significantly burden the manufacturing, marketing, distribution, sale or servicing of the covered product on a national basis.” The detailed requirements for states to get waivers from federal preemption include submittal of information that may be obtainable only from manufacturers, who may oppose the waiver. The amendment would prevent DOE from denying a state a waiver from preemption for failing to provide information which manufacturers refuse to make available to the state. The amendment would also limit DOE from denying waivers to states for failing to explore every conceivable energy saving alternative to standards or for not having a formal state energy plan. States would still have to demonstrate that they meet the primary determination factors, as summarized above, but the provision would remove some secondary requirements that impose needless roadblocks on state action. Even with these amendments, states would still have a difficult case to make, but these amendments at least make it possible to make the case.

DOE Collection of Key Data for Making Standards Decisions

The distribution of efficiency levels among products sold is a key piece of information for establishing new standards; however, DOE has sometimes failed to obtain such data in developing new rules. DOE usually asks for such information, but manufacturers sometimes decline to provide it. The amendment would require DOE to conduct a rulemaking to determine what data manufacturers must submit, inclusive of efficiency performance data, to enhance DOE decision making. Existing law includes provisions to protect confidential data. Improved data will help DOE’s decision-making process for standards, and will also aid other programs such as ENERGY STAR. For example, in the past few weeks DOE posted data on ENERGY STAR product market share in 2007, but noted: “The validity of the clothes washer data for quarter one and quarter three is

conventional chimney.

questionable. It is expected that the incorrect coding of previously qualified units for these two quarters resulted in a higher than actual market share projection. The drop in refrigerator market share in the fourth quarter is also due to data from one retailer.”¹⁴
This data provision would help DOE to get accurate data.

Conclusion

The proposed Appliance Standards Improvement Act of 2009 (ASIA) builds on past bipartisan appliance standards bills and we support it. The proposed portable lighting fixture standards will save enough electricity to power 350,000 average American homes while providing substantial flexibility to manufacturers and consumers. ASIA also contains several useful reforms to the appliance standards and ENERGY STAR programs.

While ASIA is a solid bill, we believe it can be improved by incorporating:

- Several technical amendments to the portable lighting fixture standard as described in my testimony;
- Technical amendments to the standards adopted in EISA that are needed to correct drafting errors;
- Adding new standards on outdoor lighting fixtures, based on a proposal now being developed by Philips Lighting, ACEEE, and other lighting manufacturers and energy efficiency groups;
- Adding new standards on drinking water dispensers (water coolers) and hot food holding cabinets that are based on ENERGY STAR specifications and have been adopted in California, Connecticut, Maryland, New Hampshire, Oregon, Rhode Island, and the District of Columbia;
- Adding new standards on portable electric spas (hot tubs) adopted in California, Connecticut, and Oregon; and
- Adopting several improvements to the appliance standards program proposed by Senator Menendez that:
 - Direct DOE to consider standards on several types of reflector lamps;
 - Allow states to help enforce federal standards in federal courts using federal procedures;
 - Allow DOE to consider multiple standard metrics for products;
 - Provide states more flexibility to develop performance-based building codes;
 - Simplify the process for states to obtain waivers from federal preemption while keeping the main decision-criteria in place; and
 - Direct DOE to undertake a rulemaking to establish regular reporting of data needed to support the standards, ENERGY STAR and related programs.

These provisions would more than quadruple the energy savings resulting from ASIA and would improve program implementation and decision-making going forward. We

¹⁴ “2007 Sales Data – National, State and Regional” available at: http://www.energystar.gov/index.cfm?c=manuf_res.pt_appliances.

are open to discussing all of these suggestions with Committee members and their staff, and with manufacturers and other interested parties, so that hopefully consensus can be reached on modified versions of all of these provisions.

This concludes my testimony. Thank you for the opportunity to present these views.

Appendix: Specific Legislative Changes

Suggested Edits to Portable Lighting Fixture Standards in ASIA

p. 16, line 2: At the end, add: “and an approved IES test procedure for testing LED light engines.”

Explanation: LM-79 doesn’t cover light engines. IES is now developing a test procedure for light engines and this should be used once finalized and approved.

p. 16, lines 16-18, reword to read as follows (edits underlined):

“(B) Be equipped with only 1 or more GU–24 line-voltage sockets, not be rated for use with incandescent lamps of any type, as defined in ANSI standards, and meet the requirements of the ENERGY STAR program for Residential Light Fixtures, Version 4.2.

EXCEPTION: GU-24 fixtures for LED lamps shall meet the requirements of paragraph (C). in lieu of meeting the requirements of the ENERGY STAR program for Residential Light Fixtures, Version 4.2.

Explanation: GU-24 should meet the applicable ENERGY STAR requirements, thereby keeping poor quality, inefficient lamps and fixtures from U.S. market. To prevent confusion, fixtures for LED lamps are covered by paragraph (C) and not by the more limited LED requirements in the Residential Light Fixture spec.

p. 17, line 17: Change 4200K to 4000K.

Explanation: 4000K is a standard temperature to LEDs and the IES test procedure provides enough flexibility that it doesn’t have to be exactly 4000K to pass. This change conforms to classes in the IES standard.

Legislative Language for Water Dispensers, Hot Food Holding Cabinets and Portable Electric Spas

Sec. 321 is amended by adding at the end the following:

(67) The term “Water dispenser” means a factory-made assembly that mechanically cools and heats potable water and that dispenses the cooled or heated water by integral or remote means.

(68) The term “Bottle-type water dispenser” means a water dispenser that uses a bottle or reservoir as the source of potable water.

(69) The term “Point of use water dispenser” means a water dispenser that uses a building’s water pipes as the source of potable water.

(70) The term “Commercial hot food holding cabinet” means a heated, fully-enclosed compartment with one or more solid or glass doors that is designed to maintain the temperature of hot food that has been cooked in a separate appliance. “Commercial hot food holding cabinet” does not include heated glass merchandizing cabinets, drawer warmers, or cook-and-hold appliances.

(71) The term “Portable electric spa” means a factory-built electric spa or hot tub, supplied with equipment for heating and circulating water.

Sec. 323 is amended by adding at the end the following:

(19) BOTTLE TYPE WATER DISPENSERS AND POINT OF USE WATER DISPENSERS.—Test procedures for bottle type water dispenser and point of use water dispensers shall be based on “Energy Star Program Requirements for Bottled Water Coolers version 1” published by the U.S. Environmental Protection Agency. Units with an integral, automatic timer shall not be tested using Section D, “Timer Usage,” of the test criteria.

(20) COMMERCIAL HOT FOOD HOLDING CABINETS.—Test procedures for commercial hot food holding cabinets shall be based on the test procedures described in ANSI/ASTM F2140-01 (Test for idle energy rate-dry test). Interior volume shall be based on the method shown in the U.S. Environmental Protection Agency’s “Energy Star Program Requirements for Commercial Hot Food Holding Cabinets” as in effect on August 15, 2003.

(21) PORTABLE ELECTRIC SPAS.—Test procedures for portable electric spas shall be based on the test method for portable electric spas contained in section 1604, title 20, California Code of Regulations as amended on December 3, 2008.

Sec. 325 is amended by adding after subsection (hh) the following:

(ii) BOTTLE TYPE WATER DISPENSERS AND POINT OF USE WATER DISPENSERS.—

(1) STANDARDS.— Effective January 1, 2012, bottle-type water dispensers and point of use water dispensers designed for dispensing both hot and cold water shall not have standby energy consumption greater than 1.2 kilowatt-hours per day.

(jj) COMMERCIAL HOT FOOD HOLDING CABINETS.—

(1) STANDARDS.— Effective January 1, 2012, commercial hot food holding cabinets with interior volumes of 5 cubic feet or greater shall have a maximum idle energy rate of 40 watts per cubic foot of interior volume. Commercial hot food holding cabinets with interior volumes of less than 5 [tentative] cubic feet or less shall have a maximum idle energy rate of x Watts [value still being discussed].

(kk) PORTABLE ELECTRIC SPAS.—

(1) STANDARDS.— Effective January 1, 2012, portable electric spas shall not have a normalized standby power greater than $5(V^{2/3})$ Watts where V=the fill volume in gallons.

(ll) The Department of Energy shall consider revisions to the standards in subsections (ii), (jj) and (kk) in accordance with subsection (o) and publish a final rule no later than January 1, 2013 establishing such revised standards, or finding that no revisions are technically feasible and economically justified. The revised standards shall take effect January 1, 2016.

Sec. 327 subsection (c) is amended by adding at the end the following:

(10) is a regulation concerning standards for hot food holding cabinets, drinking water dispensers and portable electric spas adopted by the California Energy Commission on or before Jan. 1, 2013.