

**Testimony of Steven Nadel,  
Executive Director,  
American Council for an Energy-Efficient Economy (ACEEE)**

**Before the Senate Energy and Natural Resources Committee**

**Hearing on:  
Appliance Standards Legislation**

**March 10, 2011**

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## Summary

The federal standards program has a long history of bipartisan support. The original law establishing an appliance standards program was enacted under President Ford in response to the 1970's energy crisis. The first federal standards were established in the National Appliance Energy Conservation Act of 1987, signed by President Reagan. Additional standards were added in bills signed by Presidents Reagan, George H.W. Bush, and George W. Bush (two laws).

Minimum efficiency standards have been adopted in order to address market failures and barriers, replace a patchwork of state standards, save consumers money, and reduce energy use and peak electrical demand. Standards remove inefficient products from the market but still leave consumers with a full range of products and features to choose among. Standards commonly increase consumer choice by increasing availability of efficient, moderate-cost products.

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 have been about 7% higher and U.S. total energy use about 3% higher. Net savings to consumers from standards already adopted will exceed \$300 billion by 2030.<sup>1</sup> As a result of these savings, we estimate that in 2010 the appliance standards program generated 340,000 net jobs in the U.S.<sup>2</sup> The majority of these standards have been set by Congress, based on consensus agreements between manufacturers and energy efficiency advocates.

S. 398, the Implementation of Consensus Appliance Standards Agreement Act (INCAAA), contains a variety of consensus proposals negotiated between product manufacturers, ACEEE, and other efficiency supporters, including consumer and environmental groups. These negotiations have resulted in some creative solutions that provide substantial benefits to consumers while keeping impacts on manufacturers to modest levels. The provisions in INCAAA update some existing standards and add standards for a few new products based on standards already enacted by several states. Most of these provisions were reported out by this Committee in the 111<sup>th</sup> Congress. We strongly support this bill.

We estimate that INCAAA will reduce save the nation nearly 850 trillion Btus of energy each year by 2030— enough energy to meet the needs of 4.6 million typical American households. INCAA will result in net economic savings (benefits minus costs) to consumers of more than \$43 billion annually by 2030 and will reduce peak electric demand in 2030 by about 20,500 MW, equivalent to the output of 68 typical 300 MW

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<sup>1</sup> Max Neubauer, Andrew Delaski, Marianne Dimascio, and Steve Nadel. 2009. *Ka-BOOM! The Power of Appliance Standards: Opportunities for New Federal Appliance and Equipment Standards*. Washington, DC: American Council for an Energy-Efficient Economy.

<sup>2</sup> Gold, R., S. Nadel and S. Laitner. 2011. *Appliance and Equipment Efficiency Standards: A Money Maker and Job Creator*. Washington, DC: American Council for an Energy-Efficient Economy.

power plants. In addition, these standards will save nearly 5 trillion gallons of water, roughly the amount needed to meet the current needs of every customer in Los Angeles for 25 years.

S. 395, the Better Use of Light Bulbs Act (BULB), would repeal Subtitle III B of the Energy Independence and Security Act of 2007 (EISA). *ACEEE urges that this bill be rejected.*

Many proponents of BULB claim that under EISA, incandescent lamps are banned, and therefore consumers would be forced to purchase compact fluorescent lamps (CFLs). The BULB bill aims to end this reputed ban on incandescent lamps. These claims are based on a faulty understanding of the lighting market—in fact, the lamp performance standards in the 2007 law are already being met by four types of bulbs now on the market, including two types of incandescent bulbs.

Also, the BULB bill would repeal a variety of other sections in EISA, including provisions on reflector lamps (closing a loophole in the 1992 law that established reflector lamp standards), metal halide lamps (primarily used in factories, large commercial spaces, and outdoors), consumer information labels for televisions and other electronic products, and a program to improve lighting efficiency in federal facilities. We have not seen or heard any criticisms of these other provisions, but still the BULB bill would repeal them.

In 2007 when EISA was passed, ACEEE estimated that the provisions in Subtitle III B would by 2020 reduce annual electricity use by 72 billion kWh (enough to serve the annual electricity needs of 6.6 million average American households); reduce peak electric demand by more than 10,000 MW (equivalent to the output of more than 30 power plants (300 MW each); and reduce consumer energy bills by more than \$7 billion (about \$50 per American household annually).<sup>3</sup> These benefits would be lost if the BULB bill is enacted.

According to a recent survey by USA Today of 1,016 adults on the lamp standards, despite all the recent publicity about an incandescent lamp “ban,” “61% of Americans call the 2007 legislation a ‘good’ law while 31% say it’s ‘bad’.”<sup>4</sup>

The federal appliance and equipment efficiency standards program is a great energy efficiency success story, with Congress adopting new standards in each of the last three decades on a bipartisan basis. This Committee can add to this success by supporting S. 398 (INCAAA) and opposing S. 395 (BULB).

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<sup>3</sup> ACEEE. 2007. “Energy Bill Savings Estimates as Passed by the Senate.” <http://www.aceee.org/files/pdf/fact-sheet/EnergyBillSavings12-14.pdf>. Washington, DC: American Council for an Energy-Efficient Economy.

<sup>4</sup> Koch, Wendy. Feb. 17, 2011. “Poll: Americans OK with Newer Light Bulbs.” *USA Today*. <http://content.usatoday.com/communities/greenhouse/post/2011/02/poll-americans-ok-newer-light-bulbs/1>

## 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. We were formed in 1980 by energy researchers and celebrated our 30<sup>th</sup> anniversary last year. Personally, I have worked actively on appliance and equipment standards issues for more than 20 years at the federal and state levels and participated in discussions that led to the enactment of federal standards legislation in 1987 (NAECA), 1988 (NAECA amendments), 1992 (EPAAct), 2005 (EPAAct), and 2007 (EISA). I also worked on the appliance standards provisions incorporated into the ACELA bill that this Committee reported out last Congress.

The federal standards program has a long history of bipartisan support. The original law establishing an appliance standards program was enacted under President Ford in response to the 1970's energy crisis. The first federal standards were established in the National Appliance Energy Conservation Act of 1987, signed by President Reagan. Additional standards were added in bills signed by Presidents Reagan, George H.W. Bush, and George W. Bush (two laws). For example, the *National Energy Policy* developed by President Bush and Vice President Cheney in 2001 notes that these "standards will stimulate energy savings that benefit the consumer, and reduce fossil fuel consumption, thus reducing air emissions."

Minimum efficiency standards have been adopted in order to address market failures and barriers, replace a patchwork of state standards, save consumers money, and reduce energy use and peak electrical demand.

Among the market failures and barriers addressed by standards are:

- Rush purchases when an existing appliance breaks down, providing no time to comparison shop;
- Limited stocking and availability of efficient products for some product types;
- Purchases by builders and landlords who do not pay appliance operating costs and hence have no financial incentive to value efficiency; and
- Frequent bundling of efficient features with other "bells and whistles," which raise the price of efficient products and dissuade many purchasers.

Standards remove inefficient products from the market but still leave consumers with a full range of products and features to choose among. Commonly, standards can even increase consumer choice by making efficient, moderate-cost products available. For example, later in my testimony I will discuss how the general service lamp standard has resulted in the establishment of two new classes of improved-efficiency incandescent light bulbs.

The foundation of prior appliance and equipment standards laws was the adoption of consensus standards negotiated between product manufacturers and energy efficiency supporters. ACEEE has been involved in all of these negotiations. Most federal standards build on previous state standards. After several states adopt standards for a

product, manufacturers generally prefer uniform national standards to a patchwork of state standards, particularly if the state standards are not identical to each other. When a federal standard is established, it preempts state standards. Typically, manufacturers, represented by their trade association, and efficiency supporters, generally represented by ACEEE, have gotten together to work out specific standards proposals. These negotiations allow creative solutions to problems, resulting in win-win agreements. Once agreement is reached, the parties go to members of Congress seeking legislation putting each agreement into law. All of the specific standards adopted by Congress have had the support of manufacturers and energy efficiency organizations. Consumer organizations and states have also supported federal standards. In a few instances where manufacturers and efficiency advocates cannot agree, Congress has delegated decisions to DOE, allowing each side to make its best case and then having the Secretary of Energy decide what, if any, standard to set based on the criteria of “maximum improvement in energy efficiency... which... is technologically feasible and economically justified.”

Appliance and equipment efficiency standards have been one of the United State’s most effective energy efficiency policies. ACEEE has estimated that without these standards and subsequent DOE rulemakings, U.S. 2010 electricity use and peak electric demand would have been about 7% higher and U.S. total energy use about 3% higher. Net savings to consumers from standards already adopted will exceed \$300 billion by 2030.<sup>5</sup>

In January 2011, ACEEE published a paper estimating the impact of appliance efficiency standards enacted to date.<sup>6</sup> We found that:

- Standards already in place make a big contribution to U.S. efforts to reduce energy use, with savings growing to 5.8 quads a year in 2020, or more than enough to meet the total annual energy needs of one-quarter of all U.S. households.
- These standards and the resulting energy bill savings generated about 340,000 jobs in 2010, or 0.2% of the nation’s jobs. The energy and related utility bill savings from standards will continue to contribute to a healthy economy over time, and in 2030, the number of jobs generated will increase to about 380,000 jobs—an amount about equal to the number of jobs in Delaware today.

In the balance of my testimony I will address the two bills that are the subject of today’s hearing.

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<sup>5</sup> Max Neubauer, Andrew Delaski, Marianne Dimascio, and Steve Nadel. 2009. *Ka-BOOM! The Power of Appliance Standards: Opportunities for New Federal Appliance and Equipment Standards*. Washington, DC: American Council for an Energy-Efficient Economy.

<sup>6</sup> Gold, R., S. Nadel and S. Laitner. 2011. *Appliance and Equipment Efficiency Standards: A Money Maker and Job Creator*. Washington, DC: American Council for an Energy-Efficient Economy.

## **S. 398—IMPLEMENTATION OF CONSENSUS APPLIANCE AGREEMENTS ACT (INCAAA)**

INCAAA contains a variety of consensus standard agreements that have been negotiated among product manufacturers, efficiency supporters, and other interested parties over the past two years. ACEEE strongly supports this bill. We thank Senators Bingaman and Murkowski for introducing this bill and also thank Senator Lugar who played a key role in advancing last year's version of this bill.

INCAAA includes provisions to:

- Update existing standards for residential furnaces, central air conditioners, and heat pumps.
- Update existing standards for residential refrigerators, freezers, clothes washers, clothes dryers, dishwashers, and room air conditioners.
- Establish new standards, based on existing state standards, for bottle-type water dispensers, portable electric spas, and commercial hot food holding cabinets.
- Establish new standards based on ASHRAE/ANSI consensus standards for commercial furnaces and heat pump pool heaters.
- Establish standards for the most inefficient types of outdoor lighting.
- Study video game console energy use.
- Make technical corrections to standards established in EPA Act 2005 and EISA 2007.

Overall, ACEEE estimates that this bill will:

- Save the nation nearly 850 trillion Btus of energy each year by 2030— enough energy to meet the needs of 4.6 million typical American households;
- Result in net economic savings (benefits minus costs) to consumers of more than \$43 billion cumulatively by 2030;
- Reduce peak electric demand in 2030 by about 20,500 MW, equivalent to the output of 68 typical 300 MW power plants; and
- Save nearly 5 trillion gallons of water cumulatively, roughly the amount needed to meet the current needs of every customer in Los Angeles for 25 years.

<b>Savings from Consensus Efficiency Standards in H.R. 5470</b>
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<i>Annual Energy Savings</i>	2020		2030	
	TWh	TBtu	TWh	TBtu
Central Air Conditioners	4.6	47.9	12.9	130.1
Furnaces (Commercial)	-	1.0	-	2.3
Heat Pumps (heating)	3.0	31.7	8.6	86.1
Drinking Water Dispensers	0.3	2.6	0.3	2.7
Hot food holding cabinets	0.1	0.2	0.2	1.6
Portable electric spas	0.1	1.4	0.2	1.9
Building Codes for AC & furnaces	2.4	31.0	6.6	81.0
Refrigerators and Freezers	10.7	113.9	27.2	282.1
Clothes Washers	3.0	46.0	9.1	137.9
Clothes Dryers	1.7	19.2	4.8	50.9
Room AC	2.9	30.7	4.7	48.5
Dishwashers	1.2	14.9	1.9	23.4
<b>Total</b>	<b>30.0</b>	<b>340.4</b>	<b>76.3</b>	<b>848.3</b>

In the next portion of my testimony I will briefly summarize the rationale behind the key provisions in INCAA.

*Definitions (Sec. 2):* This section clarifies the definition of standards so that more than one efficiency metric may be used for a product if needed and justified. The past two administrations have disagreed on whether DOE may set more than one standard for a product. There have been numerous times in the past where consensus agreements have been reached with more than one metric but DOE did not adopt them because it argued that the current definition permits only one metric. It would be useful to let DOE establish these standards, either based on its own analysis or on consensus agreements, without always having to go to Congress. This is not a requirement to set more than one efficiency metric but just permission to do so. Under existing law, each efficiency requirement will need to be economically feasible and economically justified.

This section also contains new efficiency standards for residential furnaces, central air conditioners, and heat pumps, and makes it easier for states to include a specific set of efficiency levels that are higher than the minimum standard in their state building codes. For these products, regional standards are established, generally dividing the country into North and South regions. In the North, the current air conditioner standard is left unchanged and a process is established for DOE to set a northern furnace standard. In the South, the current furnace standard is unchanged but the air conditioner is raised by one efficiency point from SEER 13 to SEER 14. The building code provision allows states to include specific higher efficiency levels in state building codes for new construction (e.g., SEER 15 in the South) provided they also provide a pathway for use of minimum efficiency equipment (e.g., this pathway might require SEER 14 and use of improved windows to make up for the lost energy savings). The building code provision requires Congressional action as DOE probably does not have the authority to establish these standards on their own.



*Heat pump pool heaters (Sec. 3):* There have been federal standards for gas-fired pool heaters for many years. These will be the first standards for efficient electric pool heaters. The specific standard levels come from ASHRAE Standard 90.1-2010.

*GU-24 base lamps (Sec. 4):* These are a new type of lamp base that was developed in response to an ENERGY STAR program solicitation. GU-24 lamps are compact fluorescent lamps that can all operate on the same type of base, regardless of lamp wattage. With a common base, it is easier for consumers to purchase replacement tubes, making these lamps attractive for utility rebate programs. This provision prevents sale of inefficient lamps that could be used in GU-24 sockets and defeat the energy-saving purpose of these sockets. Presently inefficient GU-24 lamps are not produced and this provision would prevent their introduction (some foreign companies who did not win the ENERGY STAR solicitation have threatened to introduce such lamps in order to stymie the GU-24 initiative).

*Bottle-type water dispensers, portable electric spas, and commercial hot food holding cabinets (Sec. 5):* These are products that are currently regulated in California, Connecticut, and Oregon (all three products) and Maryland, New Hampshire, Rhode Island, and the District of Columbia (for water dispensers and hot food holding cabinets). This provision would extend these state standards to apply nationally. Bottle-type water dispensers are used in many offices. Efficient products have insulation to help keep hot water hot and cold water cold. Portable electric spas, also called hot tubs, are used in some residences. Efficient products typically have insulated covers to keep heat in when the unit is not in use. Commercial and in-ground spas are not included. Hot food holding cabinets are typically used in hospitals to keep food warm while it is being transported to patient rooms. Efficient products are insulated. These standards were developed in association with the trade association for each product – the Association of Pool and Spa Professionals, the International Bottled Water Association, and the North American Food Equipment Manufacturers. Pictures of these products are as follows:



Bottle-type water dispenser



Source: Sundance

Portable electric spa



Source: Carter-Hoffmann

Hot food holding cabinet

*Test procedures (Sec. 6):* Provides for expedited consideration of consensus test procedure proposals, mimicking a provision in EISA on consensus standards proposals. Clarifies current law on petitions for amendments to test procedures and establishes deadlines for responding to petitions (currently, there are no deadlines).

*Smart Appliances (Sec. 8):* Directs EPA to consider establishing a credit in the ENERGY STAR program for appliances that are “smart.” This was a provision in our consensus agreement with appliance manufacturers. The parties have filed a petition with EPA. This provision sets a deadline for EPA to respond.

*Video game consoles (Sec. 9):* These are products such as the Sony PlayStation 3, Microsoft Xbox, and Nintendo Wii. If left on, these products can use more energy than a typical new refrigerator. This provision would have DOE study these products and decide whether minimum efficiency standards should be considered.

*New appliance standards (Sec. 10, 11, 13, 14, and 15):* Establishes specific new standards negotiated with manufacturers for residential refrigerators, freezers, room air conditioners, clothes dryers, clothes washers, and dishwashers. For the most part the new standards are based on efficiency levels now promoted by ENERGY STAR and by federal tax credits for efficient appliances established in 2005 and updated in 2008. The AHAM witness at this hearing will describe these standards in more detail.

*Uniform efficiency descriptor for covered water heaters (Sec. 12):* Directs DOE to develop a new single efficiency descriptor for both residential and commercial water heaters. Currently there are separate residential and commercial descriptors, which creates difficulties for products that can be used in both sectors (e.g., large homes and small businesses). This provision would also correct differences in test procedures for storage-tank and tankless water heaters, allowing consumers to fairly compare these systems (under the current test procedure, the rating for tankless water heaters is misleadingly high). This provision was originally introduced by Senators Kohl and Corker in the 111<sup>th</sup> Congress.

*Petition for amended standards (Sec. 16):* Sets a deadline for DOE to act on standards petitions. Currently there is no deadline.

*Prohibited acts (Sec. 17):* Improves enforcement of standards by extending coverage from just manufacturers to also include distributors, retailers, and private labelers. State standards are generally enforced at the distributor and retailer level.

*Outdoor lighting (Sec. 18):* Establishes standards for the least-efficient types of outdoor lighting—mercury vapor and quartz lamps. Sale of mercury vapor ballasts were curtailed in EAct 2005 and this provision would complete the process to phase-out these inefficient lamps. The quartz lamp provision would require use of more efficient quartz products that have an infrared reflective coating.

*Commercial furnaces (Sec. 19):* Makes the standard established in ASHRAE standard 90.1-1999 a national standard. Most products already meet this standard but this provision would bring all products into compliance.



*Service over counter commercial refrigerators (Sec. 20):* Establishes a separate product class for these products, allowing a less stringent standard than the one set in EAct 2005. The 2005 standard has proven difficult to meet for these products and manufacturers and efficiency supporters have developed a more feasible standard.

*Technical corrections (Sec. 24):* Makes a variety of technical corrections to EAct 2005 and EISA, correcting drafting, typographical, and other errors. These include non-conforming amendments to underlying law and language that was not adequately clear. Many of these mistakes were made in the process of codifying the conference agreement. Congress needs to act to correct these errors because some of the affected standards are scheduled to take effect soon. We have worked together with the affected trade associations to reach consensus on these technical amendments.

In addition to the sections now in INCAAA, we hope that some additional sections can be added, as follows:

*Reflector lamps:* NEMA and ACEEE have been discussing language to clarify what DOE should consider when it next revises the incandescent reflector lamp standard originally established by Congress in 1992. For this next rulemaking, we have agreed that DOE should consider both incandescent and non-incandescent products, and possible alternative energy metrics to the lumens per Watt metric that is now in use. Specific language is contained in the appendix to my testimony. This language would require DOE to consider these issues, but based on this consideration, DOE could decide to not make changes. This language gives DOE more options, but decisions on these options will depend on DOE analysis made during the next DOE rulemaking.

*Outdoor lighting:* Last year's version of INCAAA contained standards for outdoor lighting fixtures that we negotiated with NEMA. That proposal rests on a fixture classification system developed by the Illuminating Engineering Society (IES). The IES standard is now being revised and once this is revised, some modifications to our original consensus agreement will likely be needed. Once this process is completed, we will provide updated legislative language.

*Electric motors:* We are also discussing with NEMA revisions to the current federal standard for electric motors. These revisions will likely include additional product classes to be covered by the standards established in EISA. Assuming these discussions are successful, we will provide specific suggested language.

## S. 395—Better Use of Light Bulbs Act (BULB)

The BULB bill would repeal Subtitle III B of the Energy Independence and Security Act of 2007 (EISA). *ACEEE urges that this bill be rejected.*

Many proponents of BULB claim that under EISA, incandescent lamps are banned, and therefore consumers would be forced to purchase compact fluorescent lamps (CFLs). The BULB bill aims to end this reputed ban on incandescent lamps. These claims are based on a faulty understanding of the lighting market—in fact, efficient incandescent light bulbs that meet the EISA standards are already on sale well in advance of the national standards taking effect.

Also, the BULB bill would repeal a variety of other sections in EISA, including provisions on reflector lamps (closing a loophole in the 1992 law that established reflector lamp standards), metal halide lamps (primarily used in factories, large commercial spaces, and outdoors), consumer information labels for televisions and other electronic products, and a program to improve lighting efficiency in federal facilities. We have not seen or heard any criticisms of these other provisions, but still the BULB bill would repeal them.

In 2007 when EISA was passed, ACEEE estimated that the provisions in Subtitle III B would by 2020:<sup>7</sup>

- Reduce annual electricity use by 73 billion kWh (enough to serve the annual electricity needs of 6.6 million average American households);
- Reduce peak electric demand by more than 10,000 MW (equivalent to the output of more than 30 power plants (300 MW each); and
- Reduce consumer energy bills by more than \$6 billion (about \$50 per American household annually).

These benefits would be lost if the BULB bill is enacted.

According to a recent survey by USA Today, despite all the recent publicity about an incandescent lamp ban, a recent survey of 1,016 adults on the lamp standard found that “61% of Americans call the 2007 legislation a ‘good’ law while 31% say it’s ‘bad’.”<sup>8</sup>

I would also note that the U.S. is not alone in passing this type of legislation. Similar legislation has been passed in Canada, Australia, the European Union, Brazil, Argentina, Russia, and Malaysia. And China is now developing standards. The Australian, European, and South American standards have already taken effect.

<sup>7</sup> ACEEE. 2007. “Energy Bill Savings Estimates as Passed by the Senate.” <http://www.aceee.org/files/pdf/fact-sheet/EnergyBillSavings12-14.pdf>. Washington, DC: American Council for an Energy-Efficient Economy.

<sup>8</sup> Koch, Wendy. Feb. 17, 2011. “Poll: Americans OK with Newer Light Bulbs.” *USA Today*. <http://content.usatoday.com/communities/greenhouse/post/2011/02/poll-americans-ok-newer-light-bulbs/1>

In the following sections I address a few of the key issues in this debate.

### **Does EISA ban incandescent lamps and only permit use of compact fluorescent lamps?**

EISA sets lamp performance standards in terms of lumens of light output per Watt of power input. The standards are higher for high-lumen bulbs since efficiency generally increases as bulb size increases. Any lamp technology that can meet the performance standard can be sold. *Presently, there are four types of lamps on the market that meet the EISA standard, two of which are incandescent.* The four complying lamp types are:

1. High-efficiency halogen bulbs. All three major manufacturers (GE, Osram Sylvania, and Philips) have incandescent products that place the filament in a capsule containing halogen gas. The filament burns more efficiently than in a conventional incandescent lamp. These halogen products have been used for more than a decade in automobile headlamps and most commercial reflector lamps. With halogen lamps, a 72 W halogen replaces a conventional 100 W lamp and a 43 W halogen replaces a conventional 60 W lamp. Their rated life is the same as conventional lamps—1,000 hours. These lamps have a suggested list price of \$1.49, although as production increases the price is likely to drop.
2. Halogen IR lamps. These are similar to the lamps above but with a special coating on the capsule that reduces the amount of infrared energy leaving the capsule, increasing lamp efficiency still further. Presently, Philips markets halogen IR lamps. The higher efficiency permits manufacturers to design longer life lamps and still meet the performance standard. For example, the Philips lamp has a rated life of 3,000 hours, three times that of a conventional incandescent bulb. Presently these lamps sell for about \$4, but as production increases, costs will come down.
3. Compact fluorescent lamps (CFLs). These lamps are now widely available and come in a variety of light colors and shapes such that lamps are available to fit most existing fixtures. Prices have come down enormously. This past weekend I was at Home Depot and they had a variety of 4-packs for under \$3, an average of 75 cents per bulb.
4. LED lamps (light emitting diodes). These lamps use multiple LEDs to provide light. Only recently have general service lamps made it to the market. They have long life (e.g., 25,000 hours or more). At Home Depot this past weekend these bulbs were selling for \$18–40. These are brand-new products and prices are likely to drop dramatically in coming years.

### **Do the EISA standards reduce consumer choice?**

The standards have resulted in some important new choices while eliminating the least efficient option in the market. On the one hand, the conventional incandescent lamp

developed by Thomas Edison more than a century ago will no longer be available. On the other hand, the standard has spurred innovation in the lighting industry, resulting in the development of both general service halogen and general service halogen IR lamps. Without the 2007 lamp standards, it is unlikely these products would have been brought to market. And the impending standard is also helping to spur development of general service LED lamps.

There has also been some recent publicity about how Easy Bake ovens for children use a 100 W light bulb as their heating element. Easy Bake has announced that they will soon be coming out with a new oven that does not need a light bulb.<sup>9</sup> Instead it will have a small electric element that is a more efficient heater than a light bulb.

### **Why not leave the choice to consumers and let them purchase inefficient bulbs if they want to?**

The bulbs someone purchases affects not only their own energy bills, but also all other consumers as well. Power demand is growing, meaning that new power plants are needed. New power plants cost more per kWh than existing power plants,<sup>10</sup> so new power plants raise rates. The lamp efficiency standards reduce growth in electricity use and thereby moderate these rate increases for all consumers.

In addition, more efficient bulbs reduce emissions from power plants, affecting the air we all breathe. In the next section I discuss emissions of mercury, but more efficient bulbs also reduce emissions of criteria pollutants (sulfur and nitrogen oxides) and greenhouse gases, benefiting all Americans.

### **Is mercury a major problem with CFLs?**

CFLs contain a small amount of mercury, typically about 4 mg per bulb. Manufacturers have significantly reduced the amount of mercury in bulbs relative to products from earlier years. By comparison, the old mercury thermometers we all grew up with used about 500 mg of mercury—125 times more. Most of this mercury becomes bound to the inside of the bulb as the bulb is used. The amount of mercury in the bulb needs to be balanced against the amount of mercury released into the air when power is generated. According to EPA: “More than half of [total mercury emissions in the U.S.] come from coal-fired electrical power. Mercury released into the air is the main way that mercury gets into water and bio-accumulates in fish. (Eating fish contaminated with mercury is the main way for humans to be exposed).” Again according to EPA, a typical incandescent lamp releases 5.5 mg into the environment, all from power generation. A

<sup>9</sup> Karp, Gregory. Feb. 24, 2011. “Light Bulb Goes Off for Easy-Bake Oven’s New Idea.” *Chicago Tribune*. [http://articles.chicagotribune.com/2011-02-24/news/ct-talk-0224-easy-bake-oven-20110224\\_1\\_bulb-100-watt-incandescent-light-easy-bake-ovens](http://articles.chicagotribune.com/2011-02-24/news/ct-talk-0224-easy-bake-oven-20110224_1_bulb-100-watt-incandescent-light-easy-bake-ovens) .

<sup>10</sup> For information on the cost of new power plants see Lazard. 2009. “Levelized Cost of Energy Analysis, version 3.0.” <http://efile.mpsc.state.mi.us/efile/docs/15996/0145.pdf> . These costs are only for the generating station and thereby account for only about half of retail electricity prices since transmission, distribution and other costs are not included.

typical CFL releases only 1.6 mg, including 1.2 mg from power generation and 0.4 mg from landfilling CFLs.<sup>11</sup>

**Aren't halogen lamps the type of lamp that was linked to household fires a few years ago?**

Yes, there were fires associated with halogen torchiere luminaries. But these had exposed tubes and were generally high-wattage—e.g., 300 W per tube. The general service halogen lamps on the market today have the tube enclosed within an outer bulb and they are lower wattage—the highest are 72 W. The higher the Watts, the more heat that is given off. Also, the general service halogen lamps on the market today contain a safety fuse that will shut the lamp off should it fall over and break.



Halogen tubes for old torchiere fixtures



General service halogen lamps

**Conclusion**

The federal appliance and equipment efficiency standards program is a great energy efficiency success story, reducing U.S. energy use by about 7% in 2010, reducing consumer and business energy bills by about \$34 billion in 2010, and generating more than 300,000 jobs. This program has a long history of bipartisan support.

The INCAAA bill will add to these benefits. By 2030, we estimate that INCAAA will save nearly 850 trillion Btus of energy annually in 2030 and result in net economic savings (benefits minus costs) to consumers of more than \$43 billion by 2030. This bill has consensus support from product manufacturers, energy efficiency and consumer

<sup>11</sup> EPA. Nov. 2010. "Frequently Asked Questions, Information on Compact Fluorescent Light Bulbs (CFLs) and Mercury." [http://www.energystar.gov/ia/partners/promotions/change\\_light/downloads/Fact\\_Sheet\\_Mercury.pdf](http://www.energystar.gov/ia/partners/promotions/change_light/downloads/Fact_Sheet_Mercury.pdf)

organizations, and a variety of other affected parties. *We urge this Committee to favorably report out INCAAA.*

On the other hand, the BULB bill will result in higher energy use and costs—an average of about \$50 annually in higher energy bills per household. Contrary to some reports in the media, this bill will not ban incandescent lamps and require use of CFLs. The general service lighting standards enacted by Congress in 2007 have spurred product innovation and now in addition to CFLs, two types of incandescent lamps are now being sold that will meet the new standards. We urge this Committee to *not* support the BULB bill.

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



## **Appendix: Recommended New Language on Reflector Lamps**

### **STANDARDS FOR CERTAIN REFLECTOR LAMPS.**

Section 325(i) of the Energy Policy and Conservation Act (42 U.S.C. 6295(i)) is amended by adding at the end the following:

“(9) REFLECTOR LAMPS.—

(A) In conducting rulemakings for reflector lamps after January 1, 2014, the Secretary shall consider:

“(i) incandescent and nonincandescent technologies; and

“(ii) a new energy-related measure, other than lumens per watt, that is based on the photometric distribution of those lamps.