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Environmental Resources & Energy
Pennsylvania State House of Representatives

Re: Support for HB 2035, “Energy Efficiency Standards Act”

Thank you Mr. Chairman, for this opportunity to testify in support of HB 2035 to establish minimum energy efficiency standards for commercial and residential products sold in Pennsylvania. PennEnvironment commends Representative McIlhinney for his efforts to bring this important issue before the Committee, and I would like to thank the current co-sponsors of this legislation. My name is Nathan Willcox, and I am the energy and clean air advocate for PennEnvironment. PennEnvironment is a statewide environmental advocacy organization with more than 13,000 members across the state.

Summary: PennEnvironment strongly supports House Bill 2035, the Energy Efficiency Standards Act. House Bill 2035 sets minimum energy efficiency standards for 10 commercial and residential products sold in Pennsylvania beginning in 2005 or installed in Pennsylvania beginning 2006. These standards save residential and commercial customers money; reduce pollution in our environment; and reduce strain on our electricity systems.

Background. Like most other states, Pennsylvania is facing some tough times right now. Budget deficits are forcing many state programs to tighten their belts, while a lagging economy is forcing businesses and families to do the same. To make matters worse, fluctuating energy prices further strain our collective budgets. In addition, Pennsylvania has joined the entire country in searching for ways to increase our energy independence. Over the next few years, we will all need to pull together and be smart about how we address these challenges.

Fortunately, energy efficiency standards present us with some win-win opportunities to “tighten our belts” while saving money, providing economic stimuli, and even reducing pollution.

Why energy efficiency standards for Pennsylvania?

Pennsylvania uses too much energy. Electricity used in Pennsylvania increased eight times as fast as our population between 1980 and 1999.¹ To make matters worse, we waste energy by ignoring technologies that could reduce energy consumption and lower energy costs. In 1998, the American Council for an Energy-Efficient Economy (ACEEE) ranked Pennsylvania 5th *worst* in the country for energy efficiency efforts. While the state has certainly focused more on energy issues in recent years, missed opportunities in the area of energy efficiency mean that Pennsylvanians are still spending more than they should on energy.

Efficiency standards, however, are a well-recognized tool for reducing energy costs. When the upfront costs of energy efficient technologies are offset by the resulting economic and energy savings, everybody wins – the manufacturer, the consumer and the environment. Energy efficiency was even cited two weeks ago as a way to help reduce natural gas prices, in a report released by the American Council for an Energy Efficient Economy (ACEEE) entitled “Natural Gas Price Effects of Energy Efficiency and Renewable Energy Practices and Policies.” This report documents how the implementation of energy efficiency and renewable energy programs could immediately reduce natural gas prices, as a result of decreased demand for natural gas, specifically through reduced “peak period” energy use².

In addition, Pennsylvania’s energy sources have severe public health impacts. The Commonwealth currently derives well over 90% of its electricity from coal and nuclear fuels. Coal-fired power plants release air pollutants, such as mercury, sulfur dioxide, and nitrogen oxides, into the air. These pollutants cause learning disabilities in children, trigger over 350,000 asthma attacks, and cut short the lives of more than 2,200 Pennsylvanians every year. Anything that can be done to reduce the demand on coal-fired power plants will in turn reduce emissions from these facilities, creating benefits for the public health and environment of the Commonwealth. Energy efficiency is the cleanest, quickest and cheapest way to get smart about energy use and cut down on the waste, saving money and the environment in the process.

The federal government already has energy efficiency standards for several products, but states are free to set standards for other products not covered by national standards. This is an important role for states, as it is the states, rather than the federal government, that have led the way in energy efficiency efforts since 1970. After the energy crisis in the late 1970s, many states including California, Massachusetts, Minnesota, and New York adopted energy efficiency standards, which ultimately led to the adoption of federal standards for many products. New Jersey, Maryland, Connecticut, Illinois, Massachusetts, North Carolina, Maine, New Hampshire and Rhode Island currently have pending state legislation to establish minimum energy efficiency standards.

¹ <http://www.eia.doe.gov/pub/state.data/html/tcpa.htm> access 12.8.03

² American Council for an Energy Efficient Economy, “Natural Gas Price Effects of Energy Efficiency and Renewable Energy Practices and Policies,” 2003.

What are the economic and environmental benefits of energy efficiency standards?

Pennsylvania and neighboring Mid-Atlantic States could save energy, reduce peak summer energy demands, and cut pollution by adopting efficiency standards for several household and commercial products, for which energy-saving models are available.

The Energy Efficiency Standards Act, HB 2035, would establish minimum energy efficiency standards for 10 types of new household and commercial products sold in Pennsylvania after January 1, 2005³. In my written testimony, you will find a brief analysis of each product covered by this legislation. If enacted, the electricity saved annually by 2010 would be enough to meet the annual electricity demand of over 325,000 typical Pennsylvania households. The bill is estimated to reduce peak summer electricity use in Pennsylvania by 450 megawatts in 2010, equivalent to a medium-sized power plant. The peak summer savings grow to 740 megawatts in 2020. By 2020, these energy savings will reduce annual emissions of harmful sulfur dioxide by over 2,100 tons, and nitrogen oxides by over 475 tons, while making significant reductions in emissions of gasses that contribute to global warming.⁴

Minimum energy efficiency standards for these products could also save Pennsylvania consumers and businesses nearly \$2 billion by 2020.⁵

We have been fortunate enough to work with some of the top experts in the country on energy efficiency in formulating these standards. The Northeast Energy Efficiency Partnerships, a nonprofit regional organization whose mission is to increase energy efficiency in the region, convened an advisory committee of top experts and officials from nine states, including Pennsylvania, to write a report on proposed efficiency standards. This committee included members of state public utilities commissions, governors' associations, energy administrations, environmental organizations, and economic development corporations. This group of experts analyzed the need for energy efficiency in Northeast states, and determined which products and which standards made the most sense for the region.

What are the costs?

HB 2035 would enable consumers to purchase energy efficient products that meet their needs at very little price premium. Based on today's energy costs, which, based on current projections for oil and gas prices are likely to remain high, the extra cost of products meeting the standards in the bill will be more than repaid by energy savings

³ The ten specific products covered by the bill are (1) torchiere lighting fixtures; (2) ceiling fans and ceiling fan light kits; (3) low-voltage dry-type transformers; (4) commercial refrigerators and freezers; (5) traffic signal modules; (6) illuminated exit signs; (7) large packaged air-conditioning equipment; (8) unit heaters; (9) set-top boxes – only applying to digital cable boxes, satellite boxes, and digital TV converter boxes; and (10) commercial clothes washers.

⁴ Northeast Energy Efficiency Partnership, "Energy Efficiency Standards: A Low-Cost, High Leverage Policy for Northeast States," 2002.

⁵ Ibid

over the life of the product. The payback period for all covered products falls between 6 months and 4.5 years.⁶ Also, because the proposed legislation is a program of standards rather than incentives, the costs incurred by the state through this program are significantly less than would be the case with an incentives program.

The standards and testing procedures for these ten products already exist in other states; therefore, the option to “piggyback” on other states’ efforts means that little additional effort will be required of the Pennsylvania Department of Environmental Protection. We are pleased to have the support of the Pennsylvania Department of Environmental Protection for the key parts of this legislation. Given Secretary Kathleen McGinty’s concerns involving the timeline for the implementation of this legislation, we would be supportive of a slightly delayed timeline for implementation, making it easier for the Department to establish and implement this program.

What are the arguments against HB 2035?

Today, you may hear concerns about HB 2035. They will include that any state effort on energy efficiency must be a regional effort involving a number of states, that other stakeholders were excluded from formulating the proposed standards, and that these standards are best handled by the federal government rather than the states. In response to the first concern, PennEnvironment wholeheartedly agrees that this effort must be regional, and that is why we have been actively working with our coalition partners in neighboring states to introduce and pass the exact same standards as those in HB 2035. PennEnvironment would potentially support a “trigger mechanism” amendment to the legislation, establishing standards in Pennsylvania only after a certain number of neighboring states adopted the same standards, depending on the language of such an amendment.

Next, I’d like to address the concern that some stakeholders were excluded from formulating the proposed standards. Clearly, all interested stakeholders must be involved in the process. For that reason, for months we have been talking with businesses that would be affected—such as manufacturers and retailers of cable set-top boxes, ceiling fans, and torchiere lamps—as well as members of the environmental, public health, and consumer communities. It is clear that a wide array of stakeholders have been involved in this process from the beginning. The best evidence of this is that sections of HB 2035 have already been modified, based on input from other stakeholders. For example, the proposed standards in the bill covering cable set-top boxes and digital converter boxes were changed after input from manufacturers’ representatives.

Lastly, I wanted to respond to the concern that this type of a standard is best handled by the federal government rather than the states. Unfortunately, the political climate in Washington, DC makes it highly unlikely that energy efficiency standards will be passed through Congress and supported by the Bush administration. The current federal energy bill does not have the required votes in the U.S. Senate to pass. This is due to conflicts over the MTBE provision, and it is doubtful that the required votes will materialize in the

⁶ Ibid

near future. Even if this legislation did somehow pass, it does not contain standards for all of the products covered by HB 2035, and the neglected products make up a significant portion of the potential energy savings in HB 2035.

Thank you for the opportunity to testify in **support of HB 2035** this morning. We believe that this bill is an important step that Pennsylvania officials can take to save consumers money and promote Pennsylvania's energy independence while reducing the environmental impacts of our current energy sources. PennEnvironment respectfully requests a committee vote on HB 2035, the Energy Efficiency Standards Act, and we look forward to working further with the Committee to answer any questions or address any concerns.

The Products

Torchiere Lighting Fixtures

What are Torchiere Lighting Fixtures?

- Portable electric lighting fixtures using a reflector bowl to project light upwards, providing indirect illumination.

What's the problem?

- Across the United States, an estimated 50 million torchiere-style halogen floor lamps are in use today. Today, halogen torchieres are widely available at prices as low as \$10–15.⁷
- Ninety percent of power consumed by a halogen torchiere lamp converts to instant heat and only 10% into visible light. They get as hot as 1,100°F, and can burn paper, cloth, wood, and even plastic. Halogen torchieres have caused at least 435 fires, 32 deaths, 114 injuries, and millions of dollars in property damage.⁸
- When halogen lamps fail, their bulbs can explode, increasing the risk of fire or damage to the lamp, even if a “shatter shield” is present.⁹
- Dimming reduces efficiency even further. A halogen lamp dimmed to 50% of light output still requires 73% of its maximum wattage. When active power is reduced to 50%, the lamp produces only about 20% of its maximum light output.¹⁰

Why should we change?

- Efficient torchieres based on high-output compact fluorescent designs are available and use less than 100 W (1/3 of the power) to provide equivalent light output.¹¹
- Efficient torchieres cost much less than Halogen torchieres to operate. Current torchieres can cost as much as \$100/yr.¹²

⁷ Kubo, Toru, with Sachs, Harvey and Nadel, Steven “Opportunities for New Appliance and Equipment Energy Standards,” <http://aceee.org/pubs/a016full.pdf>, p.V, access 5.14.03

⁸ Ibid

⁹ Ibid p.34

¹⁰ Ibid p.31

¹¹ Ibid p.9

¹² Ibid p.33

- Fluorescent or even incandescent replacements do not pose the same safety risks as high-wattage torchieres.

What does it cost?

Total savings by 2020: \$731.3 million

Payback: 1.8 years

Commercial Clothes Washers

What are Commercial Clothes Washers?

- A washing machine used to service multifamily housing areas such as apartment complexes or other commercial washers generally smaller than 4 cubic feet. Most are just like residential washers, but are coin or card operated.

What's the problem?

- Federal regulations cover residential washing machines but do not cover nearly identical machines used for commercial purposes.
- Water-heating accounts for about 90% of the energy use of clothes washers.¹³

Why should we change?

- Compliant washers use 50% less energy than standard washers.¹⁴
- Compliant washers use 18-25 gallons of water per load, much less than the 40 gallons standard ones use.¹⁵

What does it cost?

Total savings by 2020: \$51.4 million

Payback: 1.9 years

Commercial Refrigerators and Freezers

What are Commercial Refrigerators and Freezers?

- Reach-in and roll-in refrigerators that are neither more than 85 cubic feet nor walk-in models, or products already regulated under federal law.

What's the problem?

- Residential refrigerators are already covered by federal regulation, but some types of commercial systems are left exposed.

Why should we change?

- Compliant refrigeration systems provide savings of up to 46%.¹⁶

What does it cost?

Total savings by 2020: \$13.8 million

Payback: 0.6 years

¹³ Ibid p.62

¹⁴ http://www.energystar.gov/index.cfm?c=clotheswash.pr_clothes_washers, access 5.14.03

¹⁵ Ibid

¹⁶ http://www.energystar.gov/index.cfm?c=commer_refrig.pr_commercial_refrigerators, access 5.14.03

Illuminated Exit Signs

What are Illuminated Exit Signs?

- The signs used to identify exits by backlighting letters from within. These are found in every government building, private office, and indoor public place.

What's the problem?

- Currently, most exit signs employ two 20-watt incandescent bulbs. Unfortunately, most of the light produced by such a lamp is wasted as heat.¹⁷

Why should we change?

- While conventional signs use 40 watts, Energy Star compliant signs avoid heat loss and use only 5 watts per illuminated face.¹⁸ Exit signs are illuminated 24 hours per day, 365 days per year and therefore offer an incredible opportunity for savings.
- Qualifying signs can last 25 years without replacing the lamp, as opposed to less than one year for conventional lamps.¹⁹ This keeps maintenance costs down and simplifies inventory control because there is no need to keep a large volume of parts in stock.
- Qualifying signs have been tested for visibility, and the lamps are every bit as bright as current signs.²⁰

What does it cost?

Total savings by 2020: \$38.1 million

Payback: 1.2 years

Large Packaged Air-Conditioning Equipment

What is Large Packaged Air-Conditioning Equipment?

- Air-conditioning equipment that is built and shipped as a package, and that has more than 240,000 Btu/h of cooling capacity.

What's the problem?

- The EPA air-conditioning standards cover only packaged equipment with under 20 tons of cooling capacity. Large packaged units over 20 tons account for over 20% of commercial cooling capacity.²¹

Why should we change?

- The standard proposed by the Consortium for Energy Efficiency would save an estimated 15% of the electricity consumption of current models.²²

What does it cost?

Total savings by 2020: \$10.6 million

Payback: 4.4 years

¹⁷ Kubo p.57

¹⁸ http://www.energystar.gov/index.cfm?c=exit_signs.pr_exit_signs, access 5.14.03

¹⁹ Ibid

²⁰ Ibid

²¹ Kubo p.12

²² Ibid

Low Voltage Dry-Type Transformers

What are Low Voltage Dry-Type Transformers??

- Distribution transformers are used in commercial and industrial buildings to reduce the voltage coming off of the power line to the voltage used by building systems. Most dry (non oil-using) transformers are installed in buildings as part of the building's electrical system.²³

What's the problem?

- The voltage transfer is accompanied by a large loss of power.

Why should we change?

- The National Electrical Manufacturers Association standard provides for more efficient transformers that reduce the energy losses associated with this equipment by approximately 40%.²⁴

What does it cost?

Total savings by 2020: \$62.6 million

Payback: 2.3 years

Set-Top Boxes

What are Set-Top Boxes?

- Set-top boxes include digital cable and satellite television boxes. These products translate the signal from the cable company into an image on your television.

What's the problem?

- Set-top boxes consume a significant amount of "stand-by power" (23 watts) while "off." This is what led President Bush to call them "energy vampires."

Why should we change?

- Because set-top boxes are always on, the potential for energy savings are huge.
- The cable companies merely provide customers with the box, it is the cable customer who pays the bill. Because the cable company does not pay for the electricity used by the box, it has no incentive to provide one that is energy efficient.

What does it cost?

Total savings by 2020: \$352.3 million

Payback: 0.6 years

Digital Converter Boxes

What are Digital Converter Boxes?

- Digital converter boxes are devices that will be needed starting in 2007. In 2007, cable companies will begin transmitting signals digitally for use by digital

²³ Ibid p.10

²⁴ Ibid

television sets. Many cable customers will still have non-digital televisions and will need this device in order to convert the digital signals into analog signals.

What's the problem?

- There will be a need for millions of these devices and if they are designed without energy efficiency in mind, there is the potential to waste large amounts of electricity.

Why should we change?

- In this case, we do not need to change. These products will not be needed until 2007. However, there is an opportunity to have energy efficient devices from the beginning.

What does it cost?

Total savings by 2020: \$478.6 million

Payback: 0.6 years

Traffic Signal Modules

What are Traffic Signal Modules?

- The standard light source and lens that are part of every traffic light, from red to amber to green, including traffic arrows.

What's the problem?

- The current incandescent lights use an inordinate amount of power, and also burn out quickly and relatively unpredictably.

Why should we change?

- Energy Star compliant use 80-90% less energy than conventional signals.²⁵ Large (12-inch) LED signals use 11-17 watts, and comparable incandescent lamps use 135-150 watts.²⁶
- LEDs rarely fail, lowering the risk of accidents.²⁷
- Compliant lights can last up to 10 years, while conventional lights have a lifespan of less than 1-2 years.²⁸ This keeps maintenance costs down and simplifies inventory control because there is no need to keep a large volume of parts in stock.
- LEDs provide brighter light than incandescent lamps, increasing visibility.²⁹

What does it cost?

Total savings by 2020: \$38.5 million

Payback: 2.6 years

²⁵ http://www.energystar.gov/index.cfm?c=traffic.pr_traffic_signals, access 5.14.03

²⁶ Moore, Taylor, "LEDs Give Traffic Signals a Green Light for Efficiency," <http://www.epri.com/journal/details.asp?doctype=features&id=213>, access 5.14.03

²⁷ http://www.energystar.gov/index.cfm?c=traffic.pr_traffic_signals, access 5.14.03

²⁸ Ibid

²⁹ Moore, [access 5.14.03](#)

Unit Heaters

What are Unit Heaters?

- A gas, propane or fuel oil heater that supplies heat and uses a fan to spread the heat over a given area.

What's the problem?

- The federal Department of Energy has considered acting to raise efficiency standards for unit heaters, but will not do so until at least 2010.

Why should we change?

- Reducing off-cycle losses could reduce energy use by an average of 26%.³⁰

What does it cost?

Total savings by 2020: \$39.2 million

Payback: 2.3 years

Ceiling Fans and Ceiling Fan Light Kits

What are Ceiling Fans and Ceiling Fan Light Kits?

- The air circulation devices fixed to the ceiling in residences and public buildings.
- The lights attached to the bottom of such fans or the kits sold to be attached.

What's the problem?

- Conventional ceiling fans have two major problems: poor motors and inefficient blades. The motors used in most ceiling fans are of the "shaded pole" design, which is the least efficient on the market. The blades used in ceiling fans are flat, and therefore aerodynamically inefficient. From box fans to airplane propellers, most similar mechanisms use curved blades that generate more air movement and use the same amount of power.³¹

Why should we change?

- Compliant ceiling fans that are 10% more efficient can cost an amazing \$13-24 less annually to operate.³²

What does it cost?

Total savings by 2020: \$229.7 million

Payback: 3.1 years

PennEnvironment is a statewide environmental advocacy organization with over 13,000 citizen members across the state.

³⁰ Kubo p.38

³¹ MaryPIRG Fact Sheet: *S.B. 394/HB 747 -- The Maryland Energy Efficiency Standards Act* p.27

³² http://www.energystar.gov/index.cfm?c=ceiling_fans.pr_ceiling_fans, access 5.14.03

Benefits from Energy Efficiency Standards in Pennsylvania

Energy and Economic Savings							
Summary of Benefits by Product	2010			2020			
Products	Annual Energy Savings (2010)	Cumulative Net Retail Energy Bill Savings (2005-2010) (1)	2010 Summer Peak Capacity Reduction	Annual Energy Savings (2020)	Cumulative Net Retail Energy Bill Savings (1) (2005-2020)	2020 Summer Peak Capacity Reduction	Pay Back Period
	GWh	\$Million	MW	GWh	\$Million	MW	Years
Torchiere Lamps	636.7	72.0	203.9	1157.6	731.3	370.7	1.8
Digital Cable and Satellite TV Boxes	390.0	86.2	52.6	390.0	352.3	52.6	0.6
Digital Converter Boxes	529.8	117.2	71.6	529.8	478.6	71.6	0.6
Ceiling Fans	262.9	4.1	99.3	478.0	229.7	180.6	3.1
Unit Heaters	388.3 (2)	2.3	N/A	1094.2 (2)	39.2	N/A	2.3
Dry-type transformers	48.8	3.5	6.6	137.5	62.6	18.6	2.3
Traffic Signals	39.1	2.1	5.3	71.1	38.5	9.6	2.6
Exit Signs	24.7	4.0	3.3	69.7	38.1	9.4	1.2
Large Packaged AC <20 Tons	12.3	-0.9	8.9	33.4	10.6	24.3	4.4
Commercial Refrigerators/ Freezers	11.0	1.6	2.5	17.8	13.8	4.1	0.6
Commercial Clothes Washers	11.7	5.7(3)	3.7	16.9	51.1(3)	5.4	1.9
Total	1967.0	297.8	457.7	2901.8	2045.8	746.9	

- (1) Net Savings is computed by taking the total savings (Energy Savings) (Cost of electricity) – (Incremental Cost of each unit)(# of units sold). This value is not discounted.
- (2) Unit Heaters use natural gas and not electricity. Therefore energy savings are measured in Billion BTUs and not added to total GWH saved.
- (3) Savings for Commercial Clothes Washers include electricity savings, natural gas savings and water savings.

Benefits From Energy Efficiency Standards in Pennsylvania

<i>Environmental Savings</i>			
Summary of Product Benefits	2020		
Products	Carbon Reduction	NOx Reduction	SO2 Reduction
	1000MT	Metric Tons	Metric Tons
Torchiere Lamps	157.3	166.7	849.0
Digital Cable and Satellite TV Boxes	53.0	56.2	286.1
Digital Converter Boxes	72.0	76.3	388.5
Ceiling Fans	65.0	68.8	350.6
Unit Heaters	16.2	45.7	0.3
Dry-type transformers	18.7	19.8	100.8
Traffic Signals	9.7	10.2	52.1
Exit Signs	9.5	10.0	51.1
Large Packaged AC >20 Tons	4.5	4.8	24.5
Commercial Refrigerators/ Freezers	2.4	2.6	13.1
Commercial Clothes Washers	6.3	14.2	12.5
Total	414.6	475.3	2128.6