

Illinois Climate Change Advisory Group

5/18/07

Subgroup: Power/Energy

Policy Name: # 33 Phase-in of Energy Efficiency Standards for Light Bulbs

Policy Type: Regulatory technology standard

Estimated 2020 Reductions Compared to BAU: 6.8 million metric tons CO2

Affected sectors, subsectors or entities

Sector: All

Subsector: Buildings

Entities: Manufacturers, retailers, consumers

Description

This is a Zero Net cost to consumers policy proposal.

By establishing energy efficiency standards for lighting, the state could significantly reduce greenhouse gas emissions from electricity generation. Recommended language would be similar that proposed by Representative Jane Harman of California. Regulations would be established that prohibit the sale of lamps that fail to meet the following efficacy standards:

- 60 lumens/Watt by 2012
- 90 lumens/Watt by 2016
- 120 lumens/Watt by 2020

Efficacy is a measure of lamp efficiency expressed in lumens per watt and lumens are a measure of light output.

In addition, because of concerns with mercury in certain types of lamps, it is recommended that the following mercury standards be adopted as well:

- 5 mg/bulb - 2010
- 3 mg/bulb - 2015
- 1.5 mg/bulb – 2020

The ICCAG may also want to encourage state recycling and pollution prevention offices to work with manufacturers, retailers, local governments and recyclers to expand the recycling infrastructure for CFLs and develop an outreach program to encourage consumer participation in CFL recycling programs.

According to U.S. EPA, the estimated average mercury content for CFLs is 5 milligrams (mg). This average will decrease over the next several years with the adoption of the following programs:

- European Union's RoHS (Restrictions on Hazardous Waste Substances) has established a 5 mg limit per bulb.

- The National Electronics Manufacturers Association has committed to a voluntary standard of 5 mg (<25W), with a 6 mg for higher wattages; effective April 15, 2007. The association has launched a website (www.cfl-mercury.org) where CFL manufacturers conforming to the voluntary commitment on mercury will be listed.

Several manufacturers make low mercury content bulbs:

- Fiet Ecobulb - 2.5 mg - 3.5 mg
- Philips Alto technology - 1.4 mg - 2.3 mg
- Litetronics Neolite - 1 mg

In general, because of the standards, households, businesses, and governments would be replacing incandescent lights upon their failure with fluorescent lamps, compact fluorescent lamps (CFLs), or developing lighting technologies such as LED lamps or ultra high-efficiency incandescents.

The standards would apply to the sale of most general service lamps, but a process would be established to ensure that appropriate exemptions are allowed. For example, exclusions may be needed for the following special lamp types and uses: appliance, black light, bug, colored, enhanced spectrum, infrared, left-hand tread, marine, marine signal service, mine service, plant light, reflector, rough service, shatter resistant, sign service, silver bowl, and showcase.

Finally, to address affordability the state may need to offer subsidies or rebates, in particular for low income households. While efficient lighting will make their electric bills more affordable, low income households may not be in a position to afford the initial cost of switching to CFLs or other efficient lamps. Such subsidies or rebates could be provided when low income households apply for energy assistance.

Rough estimate of reductions from BAU in 2020

This initiative will prevent annual emissions of approximately **6.8 million tons** of carbon dioxide, once fully implemented. (Estimate based on Illinois' share of national reductions from incandescent phase out from ACEEE study.) Note that some of these emission reductions may occur out of state, depending on where electric generation is displaced by the electricity savings.

Timetables, duration and stringency

The standard would apply starting in 2012, which should allow sufficient time for manufacturers to ramp up supply and for residential and commercial consumers to begin changing over. The stricter standards in 2016 and 2020 would encourage continuous improvement in lighting technology in the future.

Barriers to implementation

Compact fluorescent lamps (CFLs) and some LEDs are simple replacements for many incandescent applications and can reduce the energy consumption and corresponding

GHG by 75 percent and last up to ten times longer than incandescent lamps. The alternatives to incandescents have some drawbacks. CFLs contain mercury and should be recycled rather than disposed. At this time, CFL technology does not provide many models for dimming or infrared motion sensor controls, nor do all CFLs work at cold temperature, requiring a warm-up period to achieve equivalent levels of light output. Also, CFLs should not be used in non-vented enclosed fixtures where electronic circuitry will overheat, causing premature failure. Finally, as mentioned above, the affordability for lower income households is a potential barrier to phasing out inefficient, but inexpensive, incandescent lamps.

Interstate Cooperation

States that are considering a phase-out for inefficient incandescent lamps include California, Rhode Island and Connecticut. States that have proposed legislation prohibiting the use of incandescent lamps in state buildings include Illinois, New Jersey, South Carolina and Hawaii. Minnesota has legislation proposed that would establish a wholesaler tax of \$0.25 per incandescent lamp. Wisconsin has a very active program to encourage recycling of mercury-containing bulbs. Under Wisconsin state law, businesses and institutions are responsible for properly storing and recycling used bulbs that are considered hazardous waste, including tube-style fluorescents and CFLs.