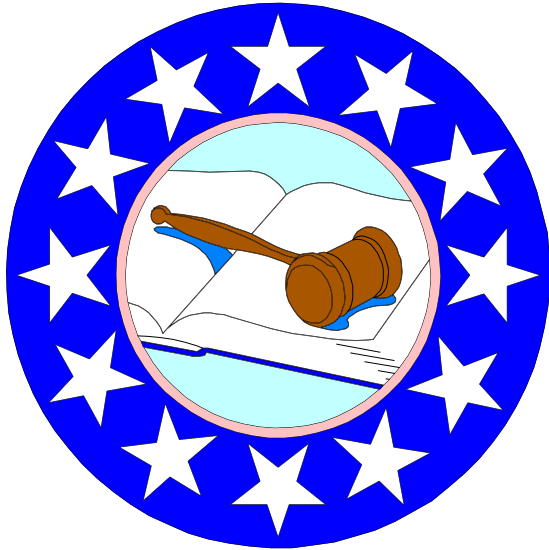


Energy Conservation Overview

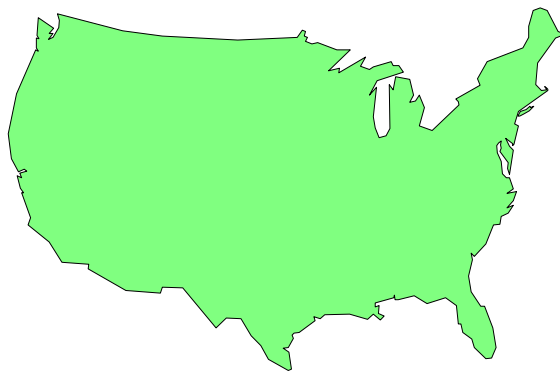
By Michael McCormick

Energy Policy Act of 1992



EPACT

The Energy Policy Act (EPACT) was signed into law On October 24, 1992, with only a small portion of this 440 page document "provides for improved energy efficiency" deals with lighting, but implementation of the legislation will have an enormous impact on lamp and fixture manufacturers and users of lighting products. Many of the industry's most commonly used lamp types fail to meet EPACT's requirements and will no longer be manufactured. Anyone manufacturing *or importing* lamps which fail to comply with the new standards will be subject to stiff penalties



USA Problem

America is wasting energy in spite of the fact that new technologies in almost every industry make it possible to use energy more and more efficiently-cars

can get better gas mileage, buildings can be better insulated and electric lamps can produce more light from less electricity. The problem is that older, less efficient technologies are still available and are usually less expensive to purchase. So with each year, the demand for energy increases and the cost of producing energy gets higher and higher. Worse still, we are forced to burn more fossil fuels, import more foreign oil and further deplete precious natural resources to meet the increased demand.

Greenhouse in America

Energy conservation offers many benefits. Each step that America takes towards using less electricity reduces our consumption of nonrenewable resources, lessens our dependence on foreign oil and prevents emissions of carbon dioxide, sulfur dioxide and nitrogen oxide-greenhouse gases which can harm the ozone layer.



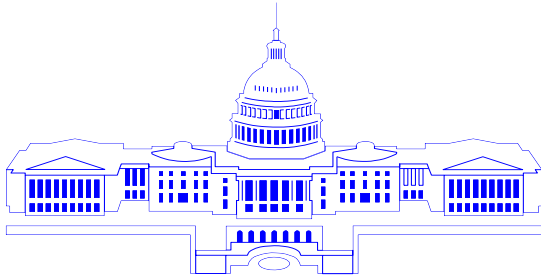
Making a Difference

The Department of Energy states that 20 percent of all electricity consumed in the United States is used for lighting. The commercial buildings in particular, the figure can be as high as 40 to 50 percent, when lighting's impact on air conditioning load is considered. If all American businesses made profitable upgrades to energy efficient lighting, it is estimated that national electricity demand could be reduced by a full 10 percent. This reduction would lower carbon dioxide emissions by 232 million tons, equivalent to taking 42 million cars off the road. This tremendous potential for savings makes lighting an ideal choice for demand side management if commercial users of electricity simply install energy efficient lighting products.

Energy Conservation Overview

By Michael McCormick

Energy Legislation



Comprehensive Energy Bill

EPACT is an attempt to promote energy efficiency and in addition to lamps, the bill regulates luminaires (light fixtures), office equipment, windows, electric motors, appliances, and plumbing products. EPACT also calls for electric utilities to promote energy efficient products and requires state governments to incorporate efficiency standards into building codes.

For lamps in particular, EPACT mandates performance standards and labeling requirements. These measure are intended to help users "select the most energy efficient lamps that meet their requirements



Fluorescent Technology

The EPACT legislation contains complex performance requirements for general service fluorescent lamps, setting standards both for lumens per watt and color rendering. The requirements apply to 4-foot medium bi-pin lamps, 2-foot U-shaped lamps, 8-foot slimline lamps and 8-foot high output lamps. In general, full wattage (40W, 75W, 110W) lamps will be eliminated in order to

encourage the use of energy saving (34W, 60W, 95W) types. As of **May 1, 1994**, manufacturers have already ceased production of many full wattage 8-foot slimline and full wattage 8-foot high output T12 fluorescent lamps. Restrictions on other types of general service fluorescent lamps take effect **November 1, 1995**.

The EPACT standards for color rendering allows the cheaper halophosphor colors-such as warm white and cool white-only in reduced wattage or energy saver types. The full wattage types will only be available in rare earth (**triphosphor**) colors which offer both higher efficacy and superior color rendering. The T8 fluorescent lamps of any wattage are in full compliance with EPACT. When used with electronic ballasts, a system using T8 lamps offers tremendous flexibility and provides the best combination of energy savings and color quality.

Additionally, general service fluorescent lamps will also have to comply with new labeling standards. By May 1, 1995, some combination of catalog information and product labeling is likely to require lumen output, color rendering, lamp life and an estimate of lumens per watt (LPW) efficacy.



PAR Lamps

As of November 1, 1995, it will be illegal to manufacture or import incandescent reflector lamps that do not produce required lumens per watt. The standards encourage the use of halogen PAR lamps instead of conventional incandescent reflector and PAR lamps-most R30, R40 and incandescent PAR30 and PAR38 lamps will be eliminated. The more efficient halogen PARs will provide lower energy costs and a longer service life. The efficiency standards in the bill apply to all medium base R and PAR shaped lamps of 40 watts and above. The incandescent reflector lamps must be relabeled according, to EPACT's guidelines by May 1, 1995.

Energy Conservation Overview

By Michael McCormick

Legislation Impact



Fluorescent Lamps

The only mandate on (medium base) incandescent and compact fluorescent lamps is the prescription of labeling requirements as of May 1, 1995. The object is to make consumers more aware of the cost benefits of using energy efficient technologies. EPACT's exact details are still pending, but it is likely that the lumen output of a lamp, its efficacy (in lumens per watt) and the annual energy cost may be specified through a combination of packaging, catalogs and point-of purchase materials.



Future HID Lamps

The EPACT currently does not set any requirements for high intensity discharge lamps. The legislation does, however, call for the Department of Energy to develop "economically justified and technically feasible" standards for HID lamps to be implemented in 1999. Regulations will probably restrict the use of mercury lamps and thereby promote the more efficient metal halide and high pressure sodium types.



Federal Regulations

EPACT's legislation will affect the lighting industry through changing building codes for new construction and major renovation projects. By November 1994, State governments must amend existing laws to incorporate ASHRAE/IES lighting standards for commercial buildings, and CABO Model Energy Code standards for residential buildings. By restricting the power available for lighting, these codes effectively mandate the use of the "Most Efficient".

Future Opportunities

EPACT does not currently cover all of the thousands of different kinds of lamps in widespread use. For example, the low voltage reflector lamps are so efficient that they are automatically in compliance and therefore not affected. Many other lamp types are exempt because they are designed for some special purpose or application where the function of the lamp is deemed to be more important than the need for energy efficiency.

EPACT's Revisions

The existing performance standards and labeling requirements were signed into law in October of 1992. However, EPACT contains provisions which mandate that these standards will be revised in the future. The bill sets deadlines for "rulemaking procedures" to determine if the standards in the existing bill should be amended... and goes on to set further deadlines for amending the amended standards! The rules are expected to continue to change until at least 2005.

EPACT Reference Guide

General Service Fluorescent Lamps

Products Covered

4-foot medium bi-pin fluorescent lamps (T8, T10 or T12)
2-foot U-shaped fluorescent lamps (T12 or T8)
8-foot high output fluorescent lamps (T12)
8-foot slimline fluorescent lamps (T12)

Products Exempted

Lamps with a color rendering index of 82 or greater, lamps designed for cold temperature applications, plant growth, rephotographic and UV radiation, as well as colored, impact resistant and reflectodized types.

Performance Standards

EPACT prescribes minimum standards both for efficiency and color rendering. All 4-foot types must produce at least 75 LPW, all 8-foot lamps must produce at least 80 LPW, U-shaped lamps of 35W or less must produce at least 64 LPW and U-shaped lamps greater than 35W must produce at least 68 LPW. The higher wattage versions of all lamps must have a color rendering index of at least 69. Lower wattage lamps must achieve a CRI of 45. In general, these standards will eliminate less expensive full wattage (40W, 75W, 110W) lamps in favor of energy saving (34W, 60W, 95W) types.

Labeling Requirements

FFC labeling standards are likely to require lumen output, CRI and efficacy when used with appropriate ballast.

Implementation Dates

All 8-foot lamps manufactured or imported after April 30, 1994 must be in compliance with EPACT standards. All other lamps must be in compliance as of October 31, 1995. Labeling requirements take effect no later than April 30, 1995.

Incandescent Reflector Lamps

Products Covered

All R and PAR shaped medium base 115-130V incandescent reflector lamps of at least 40W which are greater than 2.75 inches in diameter.

Products Exempted

Low voltage or R20 and smaller lamps. Colored lamps, ER and BR shaped lamps and special purpose lamps designed for rough/vibration service.

Performance Standards

EPACT prescribes minimum efficacy standards ranging from 10.5 LPW for 40-50W lamps to 15 LPW for 155-205W lamps. In general, these standards will eliminate most current R30, R40 and incandescent PAR30 and PAR38 lamps, pushing users to select more efficient halogen PARS.

Labeling Requirements

FFC labeling standards are likely to require beam angle, maximum intensity (candlepower), and efficacy.

Implementation Dates

Labeling requirements take effect no later than April 30, 1995. All lamps manufactured or imported after October 31, 1995 must meet EPACT efficiency standards.