The U.S. effort to achieve energy independence depends in no small part on increasing the energy efficiency of products that use electricity. A particular focus of this effort in the last 15 years has been directed toward improving the energy efficiency of lighting products, since conventional incandescent lighting technology wastes as much as 90% of the electricity consumed as heat. New federally mandated lighting standards are now in place that will gradually replace inefficient lighting products over the next few years with more efficient technologies. According to the Natural Energy Resource Council, this transition is expected to produce energy savings equivalent to 30 large power plants while also reducing annual carbon dioxide production by about 100 million tons (the equivalent of 17 million cars).

In addition to new federal lighting standards, there are a number of other energy efficiency programs and standards applicable to manufacturers of lighting products. These programs support the broader goals of mandatory energy efficiency efforts by providing buyers with objective data that can facilitate comparisons between similar lighting products. Armed with this information, buyers can then select the most energy-efficient lighting products compatible with an intended application. Therefore, meeting the requirements of these voluntary efficiency programs can provide manufacturers with important advantages in a competitive marketplace.
Here is a brief summary of some of the important energy efficiency programs generally applicable to lighting products sold in the U.S. and, in some cases, Canada.

**ENERGY STAR®**
Easily the best known of all energy efficiency programs, the U.S. ENERGY STAR initiative is a voluntary testing and labeling program jointly operated by the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DoE). Over the past 20 years, products bearing the ENERGY STAR label have reduced energy demand by over 270 kilowatt hours and have saved more than $20 billion in energy costs.

Manufacturers seeking ENERGY STAR recognition of their lighting products must have samples of each product tested to the requirements of the applicable ENERGY STAR product specification by an EPA-recognized testing laboratory. The results of product testing are then reviewed and verified by an EPA-recognized Certification Body, which authorizes a manufacturer to apply the ENERGY STAR label to approved products. Many ENERGY STAR-recognized products are also subject to verification testing after approval.

The primary lighting specifications for ENERGY STAR are:

- Compact Fluorescent Lamps (under revision)
- Decorative Light Strings
- Integral LED Lamps (under revision)
- Lamps (in development)
- Luminaires

A new product specification for lamps is currently being developed and will replace the product specifications for compact fluorescent lamps and integral LED lamps.

Additional information about the ENERGY STAR program is available at [www.energystar.gov](http://www.energystar.gov).

**LED Lighting Facts**
Sponsored by the U.S. Department of Energy, the LED Lighting Facts program is designed to provide buyers with detailed information about the photometric performance characteristics of the solid-state lighting products they buy, including lamps and lamp systems incorporating light-emitting diode (LED) technology. The program’s LED Lighting Facts label provides buyers with data on the following performance characteristics:

- Luminaire light output
- Efficacy (i.e., lumens per watt)
- Measured power (watts)
- Correlated color temperature (CCT)
- Color rendering index (CRI)

In addition to the above characteristics, manufacturers can optionally list information on two additional metrics, warranty and LED lumen maintenance.

Manufacturers who participate in the LED Lighting Facts program generally provide an integrating sphere report using LM-79 test methods. As of June 1, 2012, the program will only accept test reports from testing laboratories listed on the program’s approved testing laboratories list. However, the Lighting Facts program will soon allow manufacturers to group related LED lighting products into “families” and limit testing to a single product within a family. The LED Lighting Facts program is also expected to implement market surveillance efforts and random verification testing to confirm the compliance of listed products.
More information about the LED Lighting Facts program is available at [www.lightingfacts.com](http://www.lightingfacts.com).

**DesignLights Consortium**

The DesignLights Consortium is a private collaboration of utility companies and energy efficiency organizations located throughout the U.S. The Consortium's qualified product list (QPL) is intended to provide Consortium members with information and guidance about solid-state lighting products used in commercial applications that are not covered by current ENERGY STAR product specifications but which are sufficiently energy-efficient to reduce energy consumption and contribute to energy savings. Based on specific requests from customers and suppliers, Consortium members can consult the QPL, and can confidently offer rebates and other financial incentives for the use of listed products.

The decision to include a specific lighting product on the Consortium's QPL is based on a product's conformity with QPL product category specifications. Product category specifications are developed by the QPL steering committee, and new product category specifications are developed based on market demand and on their potential for energy savings. The Consortium's steering committee also regularly reviews the development of new ENERGY STAR specifications for commercial lighting products, and can phase out its own specifications when a suitable ENERGY STAR specification becomes available.

Manufacturers seeking listing on the DesignLights Consortium QPL generally need to provide an LM-79 report with ISTM along with their chip suppliers' LM-80 report, a 5-year warranty, and the LED Lighting Facts label. The QPL application process is managed through the DesignLights website.

Additional information about the DesignLights Consortium and the DesignLights QPL can be found at [www.designlights.org](http://www.designlights.org).

**Lighting Design Lab**

The Lighting Design Lab is an education facility operated by Seattle City Light and funded by the Northwest Energy Efficiency Alliance and utility companies located in the northwestern section of the U.S. The Lighting Design Lab maintains an LED Qualifying Products List for LED lamps, fixtures, and tubes that meet its LED list specifications. Northwest utility companies can consult the Lighting Design Lab's Qualifying Product List, and can offer rebates and other financial incentives for the use of products that appear on the list.

It is important to note that lighting products already recognized by the ENERGY STAR program or which appear on the DesignLights QPL are automatically eligible for energy efficiency rebates offered by Northwest utility companies, and will not be accepted for inclusion on the Lighting Design Lab's LED Qualifying Product List. Therefore, manufacturers seeking a Lighting Design Lab listing should apply to Lighting Design Lab prior to seeking ENERGY STAR recognition or listing on the DesignLights Consortium QPL.

Additional details about Lighting Design Lab approval is available at [http://lightingdesignlab.com/](http://lightingdesignlab.com/)

**California Appliance Energy Efficiency Program**

One of the oldest energy efficiency programs in effect in the U.S. is the Appliance Energy Efficiency Program operated by the California Energy Commission (CEC). Based on state-wide energy efficiency regulations dating back to the 1970s, the California Energy Efficiency Program currently covers more than 50 types of appliances, including commercial and residential lighting products and fixtures. The CEC reports that the Program has saved residents of California more than $76 billion in reduced energy bills since 1975.

Lighting products covered under California's Appliance Energy Efficiency Program include:

- Ceiling fan light kits
- Fluorescent lamp ballasts
• General service fluorescent lamps
• General service incandescent lamps
• High-intensity discharge lamps
• Illuminated exit signs
• Incandescent reflector lamps
• Light-emitting diode lamps
• Luminaires
• Medium-base compact fluorescent lamps
• Metal halide lamp fixtures
• Torchières
• Traffic signal modules and pedestrian modules

Under the Program, manufacturers seeking approval for their products must certify that the energy use and performance of their products meet California’s standards, and submit testing data that demonstrates compliance. Product testing must be conducted by a laboratory approved by the CEC.

The sheer size of the California market for lighting products makes compliance with the requirements of the Appliance Energy Efficiency Program essential for manufacturers seeking to broaden the distribution of their products. More information about California’s Appliance Energy Efficiency Program is available at http://www.energy.ca.gov/appliances/.

**U.S. Department of Energy**

In addition to the voluntary ENERGY STAR program, the U.S. DoE is also authorized to enforce compliance with federal energy and water conservation standards applicable to certain consumer products and commercial and industrial equipment. Lighting products and equipment covered by DoE regulations include general service lighting, reflector and decorative lamps, fluorescent lamps (including compact fluorescent lamps), ballasts light kits, and torchières.

The Department’s certification, compliance and enforcement regulations are addressed in the Code of Federal Regulations, 10 CFR Part 429. These regulations cover required test procedures, record maintenance requirements, and the submission of annual certification reports. The DoE also maintains an online Compliance Certification Management System (CCMS) that enables manufacturers, importers, and third-party testing laboratories to create, submit, and track certification reports.


**Federal Trade Commission Light Bulb Labeling Requirements**

Finally, under U.S. Federal Trade Commission regulations, lamps and light bulb packaging must now include information regarding a bulb’s energy efficiency and performance. The new Lighting Facts label requirements include:

• A label on the front of product packaging showing brightness (lumen output) and estimated annual energy costs;

• A label on the back of product packaging showing information about the bulb’s brightness, energy cost, life expectancy, appearance, and wattage, as well as whether the bulb contains mercury; and

• An imprint on the bulb itself showing the bulb’s lumen output; bulbs containing mercury must also disclose this information directly on the bulb.
In the past, buyers of incandescent lighting products typically relied on a bulb’s wattage in determining the correct bulb for a given application. As incandescent lighting is gradually withdrawn from the marketplace, the FTC’s light bulb packaging requirements will assist consumers in identifying lighting products that are appropriate to their needs.


TÜV SÜD America is an EPA-recognized Testing Laboratory and Certification Body for the ENERGY STAR program, and an approved testing laboratory under the U.S. Department of Energy's LED Lighting Facts program. We are also a National Recognized Testing Laboratory (NRTL) under the U.S. Occupational Safety and Health Administration (OSHA), and recognized as a National Certification Body (NCB) and a Certification Body Testing Laboratory (CBTL) under the IECEE CB Scheme.

For more information about TÜV SÜD America’s energy efficiency services for lighting products, contact Jason Chesley, Sales Manager, Energy Efficiency, at 404-396-9402, or by e-mail at [chesley@tuvam.com](mailto:chesley@tuvam.com).

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