New Lighting Standards

Welcome! We will begin momentarily.

The webinar audio is provided via phone line.

Dial: 877-594-8353  Passcode: 63757295#
Today's Sponsors

Premier Sponsor

LUTRON

Executive Sponsor

Snohomish County PUD
Seattle City Light
Efficiency Vermont
BETTERBRICKS

©2011

nationalgrid
The power of action

nyserda
Energy, Innovation, Solutions.

PUDGTE SOUND ENERGY

The Gas Company

PSE

Southern California Edison

Pacific Gas and Electric Company

Efficiency Maine

A Sempra Energy utility

Leading the Way to a Brighter Future
Program of the Maine Public Utilities Commission
New Lighting Standards

Presented by: Andrew Pultorak, LC, MIES
Lighting Design Lab, Seattle, WA
New Lighting Standards

Presented By:
Andrew Pultorak, LC, MIES
Lighting Specialist
Why Lighting Legislation?

Energy Legislation
- EPACT
- CBTD
- EISA and GSL
- DOE GSFL and DOE IRL Lamp Rule Making
- EISA and Metal Halide Fixtures

What’s Next
- ACESA
- DOE Labeling
- FTC Labeling

Resources

Questions
To know and love
Why change?

Improve Lighting
  Safety, productivity, aesthetics, fairly easy

Save Money
  Energy costs, maintenance costs, payback under 3 years

Save Energy
  Pollution, better Public Relations
Average Commercial Buildings Electric Usage

According to US DOE


DOE IRL: US Department of Energy standard for Incandescent Reflector Lamps

DOE GSFL: US Department of Energy standard for General Service Fluorescent Lamps

ACESA: American Clean Energy and Security Act of 2009
EPACT History

Energy Policy Act 1992

Lighting Element:
- Labeling incandescent A-line and screw-based CFLs with energy cost info (buy lumens not watts)
- Minimum efficacies for incandescent R30 & R40, plus incandescent PAR lamps, effective 10/31/95
- Minimum efficacies and color rendering standards (CRI) for straight and U-bend fluorescent, effective for 4-ft and 8-ft lamps

Intent:
- Encourage use of more energy-efficient screw-based lamps
- Encourage use of more energy efficient halogen reflector lamps
- Eliminate availability of full wattage T12 “halo” fluorescent lamps and encourage use of reduced wattage ES types or use of more efficient rare earth types, like T8s
First Lighting Products to be Affected

Must meet Energy Star 2.0
(ES label NOT required)

Max 190W

Became Effective January 1, 2006
Mercury Vapor Lamp Ballasts

Mercury Vapor Lamp Ballasts OR Luminaires Containing such Ballasts for for general illumination * applications may not be manufactured, marketed, sold or imported into the United States.

Intended replacement: MH (Metal Halide)

*2007 EISA legislation provides for continued use in specialty applications provided the ballast is marked "Not for general illumination" and identifies the specialty application.

Became Effective January 1, 2008
Ballasts Operating Energy Saver T12 Fluorescent Lamps

Federal Ballast Rule in 2000 aimed at replacing the standard T12 MAGNETIC ballasts and lamps, set minimum BEFs (ballast efficiency factors) that only electronic ballasts could meet. Only included full wattage lamps were covered.

Now, new efficiency standards for ballasts operating ES lamps go into effect.

By 2010, ballast manufacturers cannot manufacture replacement ballasts that do not pass the new Ballast Efficacy Factors (BEF) requirements.*

*Exceptions
- Dimming ballasts that dim to 50% or less
- T12-HO ballasts capable of starting down to -20° F
- Low power factor ballasts (<.90) labeled for use in residential applications only

Became Effective July 1, 2009
## EPACT 2005

### Ballast Regulations added to 2000 Federal Ballast Rule

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ballast manufacturers can no longer make ballasts that do not pass the new requirements for use in new fixtures.</td>
<td>April 1, 2005</td>
<td>July 1, 2009</td>
</tr>
<tr>
<td>Ballast manufacturers cannot sell ballasts that do not pass the new requirements to U.S. fixture manufacturers.</td>
<td>July 1, 2005</td>
<td>October 1, 2009</td>
</tr>
<tr>
<td>Fixture manufacturers cannot sell fixtures that include ballasts that do not pass the new requirements.</td>
<td>April 1, 2006</td>
<td>July 1, 2010</td>
</tr>
<tr>
<td>Ballast manufacturers cannot manufacture replacement ballasts that do not pass the new requirements.</td>
<td>July 1, 2010</td>
<td>July 1, 2010</td>
</tr>
</tbody>
</table>
EPACT 2005

How It May Impact You

Replace the magnetic ballasts with higher-efficiency ballasts as they fail

and as a building owner there’s local AND federal help…
The Energy Efficient Commercial Buildings Tax Deduction

New Construction or Renovation
AND
Building Owners or Tenants are eligible

- Lighting
- HVAC
- Building Envelope
CBTD

Reduces the initial cost of investing in energy-efficient lighting and other building systems.

Tax incentives up to $1.80 per square foot!**

Bill introduced recently to increase the allowance to $3.00 per square foot!!!

Allows a larger portion of the capital investment to be depreciated in the first year.

Can be claimed in a single tax year instead of amortized over a period of years.

AND…

* building must be completed by December 31, 2013

** for all three systems, otherwise cap is .60 per square foot
Just SOME of the fine print

**All Systems:** project must be certified to reduce total annual energy and power costs to at least **50% less** than a Reference Building satisfying the requirements of ASHRAE/IESNA 90.1-2001 solely through changes to the building’s lighting, HVAC/hot water and building envelope.

<table>
<thead>
<tr>
<th>Indoor lighting systems</th>
<th>HVAC/hot water systems</th>
<th>Building envelope features</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-2/3%</td>
<td>16-2/3%</td>
<td>16-2/3%</td>
</tr>
</tbody>
</table>

**Partial Systems:** project must be certified to reduce total annual energy and power costs to at least **10-20% less** than a Reference Building satisfying the requirements of ASHRAE/IESNA 90.1-2001. These savings must be achieved solely through changes to one of the three qualifying building systems or features.

<table>
<thead>
<tr>
<th>Indoor lighting systems</th>
<th>HVAC/hot water systems</th>
<th>Building envelope features</th>
</tr>
</thead>
<tbody>
<tr>
<td>20%</td>
<td>20%</td>
<td>10%</td>
</tr>
</tbody>
</table>

‘Interim Lighting Rule’: The total amount that can be deducted is capped at between $0.30 and $0.60/sq.ft on the below sliding scale based on a 25-40% reduction below the maximum allowable lighting power density (W/sq/ft.) in ASHRAE/IESNA 90.1-2001*

* unless space is a warehouse, then indoor lighting must achieve 50% reduction in LPD to achieve .60/sq. ft.

signed into law December 19, 2007

“To create clean energy jobs, achieve energy independence, reduce global warming pollution and transition to a clean energy economy.”
Lighting Sections

Section 321: Energy Efficiency Standards for General Service Incandescent lamps

Section 322: Incandescent Reflector Lamp Efficiency Standard

Section 322: Standards for Fluorescent Lamps

Section 324: Metal Halide lamp FIXTURES
Is the Incandescent being banned?

The Boston Globe
Bill would ban incandescent bulbs

U.S. News & World Report
FAQ: The End of the Light Bulb as We Know It
By MARIANNE LAVELLE

The New York Times
Kissing Edison’s Light Bulb Goodbye
By JAMES KANTER

WorldNetDaily
YOUR GOVERNMENT AT WORK
Congress bans incandescent bulbs
Massive energy bill phases out Edison’s invention by 2014

The Seattle Times
Incandescent lights out?
Hoarder buys 3,000 bulbs
Is the Incandescent being banned?

É not EXACTLY

EISA 2007 is NOT banning the incandescent lamp but has established ‘efficiency standards’ for all light bulbs sold in or imported into the United States.

EISA 2007 will require that manufacturers improve the performance of the following lamps over a TWO YEAR phase in period, STARTING JANUARY 1, 2012.
What is considered an INCANDESCENT

According to EISA: Section 321

A standard incandescent or halogen type lamp that:

• Is intended for general service applications,
• Has a medium screw bases,
• Has a lumen range of 310-2600 (40 - 100W in today’s wattages), and
• Is capable of operating at least partially in the range of 110-130 volts.

either a standard or "modified spectrum" lamp (technically defined by the law).

* (i) is not a colored incandescent lamp; and
(ii) when operated at the rated voltage and wattage of the incandescent lamp:
   (I) has a color point with \((x,y)\) chromaticity coordinates on the Commission Internationale de l'Éclairage (C.I.E.) 1931 chromaticity diagram that lies below the black-body locus;
   and
   (II) has a color point with \((x,y)\) chromaticity coordinates on the C.I.E. 1931 chromaticity diagram that lies at least 4 MacAdam steps (as referenced in IESNA LM16) distant from the color point of a clear lamp with the same filament and bulb shape, operated at the same rated voltage and wattage.
EISA Schedule for General Service Incandescent

**Beginning on Jan. 1, 2012:** ALL general service lamps, CFL, LED, incandescent OR halogen light source AND lamps used to satisfy lighting applications traditionally served by general service incandescent lamps must have a minimum color rendering index (CRI) rating of:

- 80 if *not* a modified spectrum lamp; or
- 75 if a modified spectrum lamp

**Beginning on Jan. 1, 2012:** bulbs with a rated lighting output of 1,490 to 2,600 lumens (current 100-watt bulbs) may consume a maximum of 72 watts

**Beginning on Jan. 1, 2013:** bulbs with a rated lighting output of 1,050 to 1,489 lumens (current 75-watt bulbs) may consume a maximum of 53 watts

**Beginning on Jan. 1, 2014:** bulbs with a rated lighting output of 750 to 1,049 lumens (current 60-watt bulbs) may consume a maximum of 43 watts, and bulbs with a rated lighting output of 310 to 749 lumens (current 40-watt bulbs) may consume a maximum of 29 watts

NOTE: The lumen ranges for modified spectrum lamps lumen ranges are 25% lower but with the same maximum wattages.

By 2020 all bulbs will have to be at least 70% more efficient than today's incandescent bulbs.
<table>
<thead>
<tr>
<th>Current Wattage</th>
<th>Rated Lumen Ranges</th>
<th>Maximum Rated Wattage</th>
<th>Minimum Rated Lifetime</th>
<th>Effective Date (Manufactured on or after)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>1490-2600</td>
<td>72</td>
<td>1,000 hours</td>
<td>1/1/2012 (CA ONLY: 1/1/2011)</td>
</tr>
<tr>
<td>75</td>
<td>1050-1489</td>
<td>53</td>
<td>1,000 hours</td>
<td>1/1/2013 (CA ONLY: 1/1/2012)</td>
</tr>
<tr>
<td>60</td>
<td>750-1049</td>
<td>43</td>
<td>1,000 hours</td>
<td>1/1/2014 (CA ONLY: 1/1/2013)</td>
</tr>
<tr>
<td>40</td>
<td>310-749</td>
<td>29</td>
<td>1,000 hours</td>
<td>1/1/2014 (CA ONLY: 1/1/2013)</td>
</tr>
</tbody>
</table>
Replace with:

750 ÷ 1049 lumens (60W)
The GSIL exemptions

- Appliance lamp
- black light
- bug
- colored
- Infrared
- left-hand thread
- marine
- marine signal
- mine service
- plant light
- reflector
- rough service
- shatter-resistant
- sign service
- silver bowl
- showcase
- 3-way
- traffic signal
- vibration service
- G shape with >5-inch diameter
- T shape of <40W and >10-inch length
- B, BA, CA, F, G16-1/2, G25, G30, S and M14 lamps of <40W
- Candelabra incandescent and other lights not having a medium Edison screw base
The Act includes a provision whereby sales of certain exempted lamps will be monitored by the US DOE between 2010 and 2025:

- rough service
- vibration service
- 2601-3300 lumen general service (150W)
- 3-way and
- shatter-resistant lamps

For each of these lamp types, if sales double above the increase modeled for a given year—signaling that consumers are shifting from standard incandescent to these incandescents and thereby not saving energy—the lamp type will lose its exemption.
The Energy Policy and Conservation Act states that any new or amended energy conservation standard that the DOE prescribes for covered consumer and/or commercial products, including general service fluorescent lamps (GSFL) and incandescent reflector lamps (IRL), must be designed to “achieve the maximum improvement in energy efficiency . . . which the Secretary determines is technologically feasible and economically justified.” Furthermore, the new or amended standard must “result in significant conservation of energy.”
The Energy Policy and Conservation Act requires that any new or amended energy conservation standard the DOE prescribes for covered consumer and/or commercial products, including general service fluorescent lamps (GSFL) and incandescent reflector lamps (IRL), must be designed to "achieve the maximum improvement in energy efficiency . . . which the Secretary determines is technologically feasible and economically justified." Furthermore, the new or amended standard must "result in significant conservation of energy."
Covers the same lamp families covered by EPACT 1992:
    Incandescent (& Halogen) Reflector Lamps (IRL)
    General Service Fluorescent Lamps (GSFL)

Declared that the R20, BR30, ER30, BR40 and ER40 lamps exempted by EISA 2007 continue to be exempt

Adds 4-ft. T5 standard and HO fluorescent lamps with miniature bi-pin bases

Becomes Effective July 14, 2012
What is considered a FLUORESCENT

According to EPCA

General Service Fluorescent Lamps are:

Fluorescent lamps which can be used to satisfy the majority of fluorescent applications *

* See "The GSFL exemptions" slide
Current DOE GSFL standards

<table>
<thead>
<tr>
<th>Lamp Type</th>
<th>Nominal Lamp Wattage</th>
<th>Minimum CRI</th>
<th>Minimum Average Lamp Efficacy (LPW)</th>
<th>Effective Date (Period of Months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-foot medium bi-pin ....</td>
<td>&gt;35 W</td>
<td>69</td>
<td>75.0</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>&lt;35 W</td>
<td>45</td>
<td>75.0</td>
<td>36</td>
</tr>
<tr>
<td>2-foot U-shaped ...........</td>
<td>&gt;35 W</td>
<td>69</td>
<td>68.0</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>≤35 W</td>
<td>45</td>
<td>64.0</td>
<td>36</td>
</tr>
<tr>
<td>8-foot slimline ............</td>
<td>65 W</td>
<td>69</td>
<td>80.0</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>≤65 W</td>
<td>45</td>
<td>80.0</td>
<td>18</td>
</tr>
<tr>
<td>8-foot high output .......</td>
<td>&gt;100 W</td>
<td>69</td>
<td>80.0</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>≤100 W</td>
<td>45</td>
<td>80.0</td>
<td>18</td>
</tr>
</tbody>
</table>

These CRI minimum ratings have not changed
## Future DOE GSFL standards

<table>
<thead>
<tr>
<th>Lamp Type</th>
<th>Correlated Color Temperature</th>
<th>Energy Conservation Standard lm/W</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-Foot (T8-T12) Medium Bi-pin Ø25W</td>
<td>≥4,500K</td>
<td>89</td>
</tr>
<tr>
<td></td>
<td>&gt; 4,500K and Œ7,000K</td>
<td>88</td>
</tr>
<tr>
<td>2-Foot (T8-T12) U-Shaped Ø25W</td>
<td>≥4,500K</td>
<td>84</td>
</tr>
<tr>
<td></td>
<td>&gt; 4,500K and Œ7,000K</td>
<td>81</td>
</tr>
<tr>
<td>8-Foot (T8-T12) Slimline Ø52W</td>
<td>≥4,500K</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>&gt; 4,500K and Œ7,000K</td>
<td>93</td>
</tr>
<tr>
<td>8-Foot (T8-T12) High Output</td>
<td>≥4,500K</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>&gt; 4,500K and Œ7,000K</td>
<td>88</td>
</tr>
<tr>
<td>4-Foot (T5) Miniature Bi-pin Standard Output Ø26W</td>
<td>≥4,500K</td>
<td>86</td>
</tr>
<tr>
<td></td>
<td>&gt; 4,500K and Œ7,000K</td>
<td>81</td>
</tr>
<tr>
<td>4-Foot (T5) Miniature Bi-pin High Output Ø49W</td>
<td>≥4,500K</td>
<td>76</td>
</tr>
<tr>
<td></td>
<td>&gt; 4,500K and Œ7,000K</td>
<td>72</td>
</tr>
</tbody>
</table>

Becomes Effective July 14, 2012
The GSFL exemptions

- Fluorescent lamps designed to promote *plant growth*
- Fluorescent lamps specifically designed for cold temperature installations
  - Colored fluorescent lamps
  - Impact-resistant fluorescent lamps
  - Reflectorized or aperture lamps
- Fluorescent lamps designed for use in reprographic equipment
- Lamps primarily designed to produce radiation in the ultra-violet region of the spectrum
  - Lamps with a CRI (color rendering index) of 87 or greater

* emphasis added
Which GSFLs will go away?

T12 4-ft. & 2-ft U-lamps with Medium Bi-pin Bases
   All 4-ft. T8 basic 700 Series lamps at 2800 lumens fail
   Some 700 Series 2 ft. U-lamps pass; all 2-ft. 800 Series U-lamps pass

T12 8-ft. Slimline with Single Pin Bases
   All 75W F96T12 lamps fail
   Most 60W F96T12/ES fail

T12 8-ft. 800mA HO with RDC Bases
   All 110W F96T12 HO lamps fail
   All 95W F96T12/ES/HO fail

* very few very high lumen rare earth phosphor lamps will pass
Which GSFLs will go away?

**T8 4-ft. & 2-ft. U-lamps with Medium Bi-Pin Bases**
- All 4-ft. T8 basic 700 Series lamps at 2800 lumens fail
- Some 700 Series 2 ft. U-lamps pass; all 2-ft. 800 Series U-lamps pass

**T8 8-ft. Slimline with Single Pin Bases**
- All pass except some 700/SP Series

**T8 8-ft. HO with RDC Bases**
- All pass except some 700/SP Series
- All 95W F96T12/ES/HO fail

**T5 4-ft. with Miniature Bi-Pin Bases**
- All pass
Future DOE IRL standards

Incandescent Reflector Lamps

<table>
<thead>
<tr>
<th>Lamp watts</th>
<th>Lamp type</th>
<th>Diameter</th>
<th>Volts</th>
<th>Minimum efficacy (lumens/W), expressed as range for 40-205W</th>
</tr>
</thead>
<tbody>
<tr>
<td>40-205</td>
<td>Standard spectrum</td>
<td>&gt;2.5 in. (PAR30, PAR38, BR30, ER30, BR40, R40)</td>
<td>&gt;125 (130V)</td>
<td>18.4-31.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&lt;125 (120V)</td>
<td>16.0-27.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;2.5 in. (R20, PAR20)</td>
<td>&gt;125 (130V)</td>
<td>15.4-26.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&lt;125 (120V)</td>
<td>13.5-23.4</td>
</tr>
<tr>
<td>40-205</td>
<td>Modified spectrum</td>
<td>Standards approximately 17% less stringent as standard spectrum lamps.</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

* BR30, BR40 & ER40 lamps rated at 65W

Effective July 14, 2012
R, PAR, ER, BR, PBR or similar shape

with wattages less than 40 watts

with diameters less than or equal to 2.25 inches

with voltages less than 115V or greater than 130V

that are colored lamps

that are rough or vibration service lamps
All of today’s *current* standard PAR halogen lamps will be eliminated* and likely that all 130V PAR halogen lamps will be eliminated.

**THE BAD**
- Need a substitute
- Substitutes cost more
- Change is difficult

**THE GOOD**
- Manufacturers fighting to be leader
- Forces better technology
- Saves energy
- Saves money in long run
- Better technology gets cheaper over time

* few of today’s halogen reflector lamp (PAR20, PAR30 and PAR38) can meet the standards.
Likely IRL replacements

Advanced incandescent with special coatings including halogen bulbs
  ie: Infrared-coated halogen reflector lamps: IRC (Philips), IR (Sylvania) or HIR (GE)

Compact Fluorescent Lamps (CFLs)

Light-Emitting Diodes (LEDs)

A FEW OPTIONS
  Been using a 50W R20 lamp?
    Use 45W R20 or any halogen PAR20

  Been using a BR40 lamps > 65W and < 205W lamps?
    Use 65W BR40 or halogen PAR38
DOE estimated savings

30 Year period (2012-2042)

.2 to 1.1 gigawatts

1.8 to 6.2 gigawatts

gigawatt = 1 billion watts
Metal Halide Ballasts Defined by EISA

**PROBE-START METAL HALIDE BALLAST**

A ballast that:

(A) starts a probe-start metal halide lamp that contains a third starting electrode (probe) in the arc tube

AND

(B) does not generally contain an igniter but instead starts lamps with high ballast open circuit voltage. Lamps shall be started by first providing a high voltage pulse for ionization of the gas to produce a glow discharge.

**PULSE-START METAL HALIDE BALLAST**

An electronic or electromagnetic ballast that starts a pulse-start metal halide lamp with high voltage pulses.
### EISA Section 324

**Metal Halide Fixtures**

Prohibits the sale of a metal halide fixture ranging from 150W to 500W unless the ballast in the fixture is greater than 88% efficient.

<table>
<thead>
<tr>
<th>Ballast Type</th>
<th>Wattage</th>
<th>Ballast Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnetic Probe Start</td>
<td>150W–500W</td>
<td>94%</td>
</tr>
<tr>
<td>Pulse Start</td>
<td>150W–500W</td>
<td>88%</td>
</tr>
<tr>
<td>Non Pulse Start Electronic</td>
<td>150W–250W</td>
<td>90%</td>
</tr>
<tr>
<td>Non Pulse Start Electronic</td>
<td>251W–500W</td>
<td>92%</td>
</tr>
</tbody>
</table>

Applies to FIXTURES manufactured on or after January 1, 2009

(additional reviews in 2012 to be effective 2015 and another review in 2015 to be effective 2022)
The MH Fixture Exemptions

Fixtures with regulated lag ballasts

Fixtures with electronic ballasts to operate at 480V

Fixtures that meet all the following criteria:
Are only rated for 150W lamps
and
Are rated for use in wet locations
and
Contain a ballast that is rated to operate at ambient air temperatures above 50°C
Virtually eliminates the manufacturing of current 150W ÷ 500W probe-start MH magnetic ballasted fixtures

Only impacts the sale of metal halide fixtures in the U.S. and U.S. territories

Sale of metal halide fixtures for markets outside of the United States does not need to comply

* Does not affect replacement ballasts
Benefits of Pulse-Start MH

• more energy efficient
• up to 16% improvement in lumen maintenance
• up to 50% greater system efficacy (l/w)
• up to 50% longer lamp life
• better CRI (85+)
• quicker start from cold (2 mins) / quicker re-strike time (4 mins)
Metal Halide Fixture Labeling

All new metal halide ballasts AND the metal halide fixture cartons

**MUST**

include a circle \( \text{E} \) label as prescribed by the Federal Trade Commission *

(required by EISA 2007)

\[ \text{E} \]

* The encircled capital letter \( \text{E} \) on metal halide ballasts must appear conspicuously, in color-contrasting ink (i.e., in a color that contrasts with the background on which the encircled capital letter \( \text{E} \) is placed) on the surface that is normally labeled. It may be printed on the label that normally appears on the metal halide ballast, printed on a separate label, or stamped indelibly on the surface of the metal halide ballast. (SIMILAR LANGUAGE FOR PACKAGING, PRINTED MATERIAL AND ADVERTISING)
DOE will initiate TWO rulemakings to consider whether lamp standards should be made more stringent

January 1, 2014: (when the last efficiency standards go into effect) DOE must initiate a process to determine if any exempted lamp types should stop being exempted.

January 1, 2020: MINIMUM 45 lumens per watt (l/w) BY 2020! If rulemaking cannot produce savings greater than or equal to 45 lumens/watt then the Secretary shall prohibit the sale of ANY "general service lamp" (incandescent, compact fluorescent, light emitting diode) and “any other lamps the Secretary determines are used to satisfy lighting applications traditionally served by general service incandescent lamps” that does not meet a minimum efficacy standard of 45 lumens per watt (Referred to as “backstop requirement” which is an outright ban on certain general service lamps (last resort).
LED Integral Lamp Specs*

* Energy Star criteria for LED lamps applies only to “integral” LED lamps, i.e., lamps that are intended as replacements for conventional light bulbs.

Manufacturer must sign up to be an Energy Star partner.

Manufacturers must participate in DOE’s Quality Advocates program and use the Lighting Facts label that is part of that program.

Lamp must be at least as energy efficient as comparable CFLs, with light output, color, and distribution equivalent to that of incandescent or halogen bulbs.

Manufacturer required to test 10 samples for at least 6,000 hours continuously, with an LM-79 test performed at the outset and end, to determine the lumen maintenance.

Different criteria are given depending on whether the lamp is omni-directional, decorative or directional.

A warranty must be provided for lamps covering material repair or replacement for a min of 3 years (DOP).

Updated March 22, 2010...Effective August 31, 2010
But waité thereâ€™s MORE!

ACESA 2009
American Clean Energy and Security Act of 2009
To create clean energy jobs, achieve energy independence, reduce global warming pollution and transition to a clean energy economy.”

Section 161: Technical corrections to EISA 2007
Section 162: Technical corrections to EPACT 2005
Section 201: greater efficiency in building codes
Section 211: lighting efficiency standards

exemptions to current EISA standards are slated to expire in July 2013, per ACESA 2009 pending energy legislation
DOE labeling for SSL*

*voluntary
FTC labeling for all lamps*

**Lighting Facts**
Per Bulb

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brightness</td>
<td>820 lumens</td>
</tr>
<tr>
<td>Estimated Yearly Energy Cost</td>
<td>$7.49 per year</td>
</tr>
<tr>
<td>Based on 3 hrs/day and 11.4 ¢/kWh. Your cost will depend on your rates and use.</td>
<td></td>
</tr>
<tr>
<td>Life in Years</td>
<td>1.4 yrs</td>
</tr>
<tr>
<td>Based on 3 hrs/day.</td>
<td></td>
</tr>
<tr>
<td>Color Appearance</td>
<td>Warm - Cool</td>
</tr>
<tr>
<td>Energy Used</td>
<td>60 watts</td>
</tr>
</tbody>
</table>

*mandatory
Effective mid-2011
# FTC labeling for lamps with Hg*

**Effective mid-2011**

### Proposed Back Label for Bulbs Containing Mercury

<table>
<thead>
<tr>
<th><strong>Lighting Facts</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Per Bulb</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Brightness</strong></td>
<td>870 lumens</td>
</tr>
<tr>
<td><strong>Estimated Yearly Energy Cost</strong></td>
<td>$1.62</td>
</tr>
<tr>
<td>Based on 3 hrs/day and 11.4 $/kWh. Your cost will depend on your rates and use.</td>
<td></td>
</tr>
<tr>
<td><strong>Life in Years</strong></td>
<td>5.5 yrs</td>
</tr>
<tr>
<td>Based on 3 hrs/day.</td>
<td></td>
</tr>
<tr>
<td><strong>Color Appearance</strong></td>
<td></td>
</tr>
<tr>
<td>- Warm</td>
<td>Cool</td>
</tr>
<tr>
<td><img src="image" alt="2700 K" /></td>
<td></td>
</tr>
<tr>
<td><strong>Energy Used</strong></td>
<td>13 watts</td>
</tr>
<tr>
<td><strong>Contains Mercury</strong></td>
<td></td>
</tr>
<tr>
<td>Manage according to local, state, and federal disposal laws. For information: <a href="http://epa.gov/bulbreycling">epa.gov/bulbreycling</a> or 1-800-XXX-XXXX.</td>
<td></td>
</tr>
</tbody>
</table>

*mandatory*
(1) Energy Policy Act of 2005:

(2) Commercial Lighting Tax deduction:
www.lightingtaxdeduction.org

(3) EISA 2007 Legislation:
http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=110_cong_bills&docid=f:h6enr.txt.pdf
(4) Energy Star (LED integral lamp standards):
http://www.energystar.gov/ia/partners/manuf_res/
downloads/IntegralLampsFINAL.pdf

(5) ACESA 2009 (only a bill):
http://frwebgate.access.gpo.gov/cgi-in/getdoc.cgi?
dbname=111_cong_bills&docid=f:h2454ih.txt.pdf

(6) Lighting Facts Label: www.lightingfacts.com

and....

For everything you could possibly ever want to know about lighting and more, visit the Illuminating Engineering Society at: www.ies.org
QUESTIONS?
For more information

BOC Information
Phone: 206-292-4793 x2
Web: www.theBOC.info
Email: BOCinfo@theBOC.info
Earn BOC Continuing Education Hours

Webinars provide continuing education hours towards renewal of the BOC credential:
1.0 hour for webinar attendance, and
0.5 hour for completion of the webinar quiz
Join Us for the Next Webinar

Wednesday, March 16, 2011
Lighting Controls for IEQ and Cost Savings

Thursday, July 21, 2011
New Lighting Technology: A Showcase of Products and Applications

Thursday, September 8, 2011
Low Cost/No Cost Lighting Strategies for Cost Savings

To register: www.theBOC.info