ENERGY STAR®
Luminaires Specification
Training for EPA Recognized CBs & Labs

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Agenda

• ENERGY STAR Luminaires Overview
  – Specification Scope
  – Determining Directional/Non-directional Products
  – Laboratory Recognition & Using the Certified Subcomponent Database (CSD)

• Third Party Certification Process
  – Eligibility
  – Laboratory Test Reports
  – Reviewing Applications: Common Problems
  – Certification
  – Data Submission Forms
  – Qualified Product List
  – Verification Testing

• Timeline
• Questions
• Other Helpful Information (Appendix)
ENERGY STAR Luminaires

Overview
Overview:
ENERGY STAR Luminaires

Residential Light Fixtures (RLF)  Luminaires V1.0
• finalized February 16, 2011
Solid State Lighting Luminaires (SSL)  • effective October 1, 2011

• Goal: A technology-neutral specification
• Residential focus with a few directional commercial fixtures
• Efficiency levels & testing depend on product classification
• Substantial savings, e.g. products will be about 4-5 times more efficient than conventional lighting
• 3 year warranty covering fixture & bulbs
Specification Scope:
Which fixtures can be qualified?
Overview: Technologies In the Scope of the Specification

- Fluorescent
- LED
- HID
- Halogen (outdoor with photo sensor only)
Overview: Base types

- Bi-Pin: e.g., Fluorescent
- GU24: Compact Fluorescent LED Integrated Lamp
- Non-ANSI base: LED Light Engine
- E26 e.g., HID or Halogen (outdoor only)
What is NOT covered?

- Commercial Linear Forms
- Hi-Bays or Garage Lights
- Troffers
Quiz:
ENERGY STAR Luminaire or not?

A. Chandelier – CFL
B. Linear Fluorescent Pendant
C. Under Cabinet: Fluorescent
D. Recessed downlight – LED
E. Pendant – LED
F. Outdoor Pole Mount
Quiz:
ENERGY STAR Luminaire or not?

A. Chandelier – CFL
B. Linear Fluorescent Pendant
C. Under Cabinet: Fluorescent
D. Recessed downlight – LED
E. Pendant – LED
F. Outdoor Pole Mount
Quiz:
ENERGY STAR Luminaire or not?

A. Ceiling fan – CFL
B. Ceiling Fan – LED Light Engine
C. Vent Fan – CFL
D. Vent Fan – Halogen
Quiz:
ENERGY STAR Luminaire or not?

A. Ceiling fan – CFL
B. Ceiling Fan – LED Light Engine
C. Vent Fan – CFL
D. Vent Fan – Halogen
Determining Directional/Non-Directional
Fixture Categorization: Industry Background

NEMA / ALA white paper: classified products as Decorative (D) or Functional (F), but many classified as Both (B).

Subjective classification is ineffective for ENERGY STAR

NEMA/ALA Roundtable: came to consensus on testing

- **Visible source**: test with luminaire photometry
- **Obscured source**: test with source photometry
Quiz: How Would You Categorize This Fixture?

- It is the only light in the hallway
- It is highly decorative
- Does it provide functional illumination?
Luminaire Categorization

ENERGY STAR Luminaires V1.0 spec adopts **directional** & **non-directional** categories.

- **Directional**: test the fixture with luminaire photometry, measuring lumens emitted from the fixture per input watt
- **Non-directional**: test the “bulb” with source photometry, measuring lumens emitted from the bulb per input watt
1. Determine if the fixture is within the specific directional scope (minimum light output & distribution requirements are applied).

2. If a product does not fall into the directional scope it defaults to non-directional categorization

   **Exception**: if an SSL source in a non-directional fixture is not replaceable/upgradeable, it must meet the “inseparable SSL luminaire” requirements detailed in directional requirements.
Directional Luminaires

Residential Grade Indoor:
- accent lights (includes line-voltage directional track lights & directional ceiling fan light kits)
- cove mounts
- downlights: recessed, pendant, surface mount (includes retrofits, IC, type Non-IC, AT and non-AT recessed downlights)
- outdoor post-mounted luminaires
- under cabinet luminaires
- inseparable SSL luminaires not included above

Commercial Grade
- Commercial accent lights including line-voltage directional track lights
- Commercial downlights: recessed, pendant, surface mount (includes SSL downlight retrofits & excludes troffers or linear forms)
- Commercial under cabinet shelf mounted task lighting
- Commercial portable desk task lights
Non-directional Examples

Residential Grade Indoor:
- bath vanity
- ceiling and close-to-ceiling mount
  --non-directional ceiling fan light kits
- chandeliers
- decorative pendants
- linear strips
- wall sconces
- wrapped lens
- ventilation fan lights
- portable luminaires
  --portable desk task lights
  --portable floor task lights
  --“table lamps” and “floor lamps”
  --torchieres

Residential Grade Outdoor
- ceiling and close-to-ceiling mount
- porch (wall-mounted)
- pendant
- security
Directional vs. Non Directional Fan Kits

- Directional Light kits: Light is constrained and creates defined beams of light.
- Non-Directional Fan kits: light goes everywhere
Vent Fans with Lighting

- Vent fans are typically considered Non-directional luminaires because the light distribution is very wide. Therefore, test the light source (bulb) not the delivered light.
Quiz: Directional or Non-Directional?

A. CFL chandelier

B. LED under cabinet

C. LED recessed downlight
Quiz:
Directional or Non-Directional?

A. CFL chandelier
B. LED under cabinet
C. LED recessed downlight
Quiz: Directional or Non-Directional?

A. Vent Fan
B. Ceiling fan 1
C. Ceiling Fan 2
D. Ceiling Fan 3
Quiz: Directional or Non-Directional?

A. Vent Fan
B. Ceiling fan 1
C. Ceiling Fan 2
D. Ceiling Fan 3
Measurement: Two Approaches

- **Source efficacy**: Measure the light source in an integrating sphere & compare total light output of the source against the total input wattage.

- **Luminaire efficacy**: Measure the entire fixture & compare total delivered lumens of the fixture against the total input wattage. Use Goniophotometer to measure angles of light distribution.
Luminaire vs. Source Measurement: One Size Does Not Fit All

Luminaire efficacy:
- Suitable for measuring white light fixtures
- Necessary for measuring fixtures where the light source cannot be removed to be measured separately
- Not very useful for measuring fixtures with highly decorative optics or finishes
- Popular decorative glass fixtures with high-quality, efficient light sources would have odd test results

Source efficacy:
- Suitable for measuring fixtures with removal light sources (bulbs & LED light engines)
- Establishes clear efficiency and color performance of the source regardless of the fixture style
- Useful when the entire light source can be tested on its own
Luminaire Photometry on Decorative Fixtures

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Input Power (W)</th>
<th>Luminous Flux (lm)</th>
<th>Luminous Efficacy (lm/W)</th>
<th>CCT</th>
<th>CRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>White shade</td>
<td>4.48</td>
<td>165.0</td>
<td>36.83</td>
<td>3761</td>
<td>73.6</td>
</tr>
<tr>
<td>Blue shade</td>
<td>4.48</td>
<td>129.9</td>
<td>28.99</td>
<td>4998</td>
<td>72.0</td>
</tr>
<tr>
<td>Amber Shade</td>
<td>4.48</td>
<td>82.6</td>
<td>18.44</td>
<td>2851</td>
<td>69.0</td>
</tr>
<tr>
<td>Decorated glass</td>
<td>4.48</td>
<td>34.9</td>
<td>7.78</td>
<td>2711</td>
<td>78.1</td>
</tr>
</tbody>
</table>

- Luminaire photometry conducted
- All have the same exact efficient light source
- Only difference is the shade
- Very different results
Quiz: Luminaire or Source photometry?

A. Chandelier
B. Under cabinet
C. Recessed downlight
D. Pendant
E. Outdoor porch
Quiz: Luminaire or Source photometry?

A. Chandelier
B. Under cabinet
C. Recessed downlight
D. Pendant
E. Outdoor porch
Quiz: Luminaire or Source Photometry?

A. Vent Fan
B. Ceiling fan 1
C. Ceiling Fan 2
D. Ceiling Fan 3
Quiz: Luminaire or Source Photometry?

A. Vent Fan
B. Ceiling fan 1
C. Ceiling Fan 2
D. Ceiling Fan 3
Specifcation Summary: ENERGY STAR Luminaires V1.0

- **Directional** fixtures and fixtures with inseparable light sources will be tested using luminaire photometry (already required in SSL spec)
- **Non-directional** fixtures with replaceable light sources will be tested using source photometry (already required in RLF spec)
- Provisions for high intensity discharge luminaires (HID) were added
- Outdoor halogen luminaires have photo/motion sensor requirements
- Efficacy levels were raised for most products
- 3 year warranty applies to fixture and bulbs
- Minimum light output requirements
Specification: Directional Luminaires

- Designed to put light on a specific surface or area
- Evaluated with luminaire photometry: delivered lumens per input watt
- Includes zonal lumen density (light distribution) requirements
- Includes minimum light output requirements
- Specific scope detailed in spec, includes limited number of commercial lighting products
- Tested per IES LM-79 (SSL); LM-10 or LM-41 (fluorescent) and LM-31 or LM-46 (HID)

Luminaires not classified as directional default to non-directional classification.
Specification: Non-Directional Luminaires

- Evaluated with source photometry: source lumens/input watt and do not include measurement of luminaire optical losses
  - 65 lm/W in 2011
  - Increases to 70 lm/W beginning September 1, 2013

- Non-directional fixtures are not intended to illuminate specific surfaces

- Includes minimum source light output requirements
  - 800 lumens or 450 lumens per head

- The lamp & ballast platform, GU24 self-ballasted lamp, GU24 integral LED lamp, or LED light engine sources can also be listed in the Certified Lighting Subcomponent Database and can be used in many different fixtures
Specification: LED Light Engines

**LED Light Engine:**
- An integrated assembly comprised of LED packages (components) or LED arrays (modules), LED driver, and other optical, thermal, mechanical and electrical components.
- The device is intended to connect directly to the branch circuit through a custom connector compatible with the LED luminaire for which it was designed, and does not use an ANSI standard base. (IES RP-16-10)

Definition is identical to an Integrated LED Lamp (LED light bulb), except for the ANSI base.
 Specification: LED Light Engines

- Two ways to consider LED light engines:
  - As an **object**: a mechanically integrated unit
  - As a **concept**: a combination of LED driver + array

- Both testable using IES LM-82

- GU24 based integrated LED lamps should also be testable per IES LM-82
Specification: New Test Procedure

- IES LM-82-11: Approved Method for the Characterization of LED Light Engines and Integrated LED Lamps for Electrical and Photometric Properties as a Function of Temperature

- IES LM-82 is not yet final but is required to test and certify non-directional fixtures using LED light engines or GU24 integrated LED lamps
LED Light Engine Testing: IES LM-82-11

• Test procedure for evaluation of white LED light engines
• References IES LM-79 for all photometric and electrical measurements
• Essentially: “LM-79 as a function of temperature”
• Tests photometric, electrical performance at elevated temperatures:
  – Luminous flux (lm)
  – Luminous efficacy (lm/W)
  – Correlated color temperature (K)
  – General color rendering index ($R_a$)
  – Active power (W)
  – Power factor

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LED Light Engine Testing

- LM-82 generates performance curves for the LED light engine, example:
  - X axis is temperature
  - Y axis is performance
- As temperature goes up, performance declines
- LM-82 test report captures this performance degradation
LED Light Engine Testing

- With an LM-82 test report, performance of the LED light engine in a fixture can be determined with a temperature measurement.
- Example: in this fixture, the LED light engine’s temperature is 63°C.
- The LM-82 test report for the LED light engine shows us flux, efficacy, and color performance at 63°C.
IES TM-21-11

- IES TM-21-11: Projecting Long-Term Lumen Maintenance of LED Light Sources, currently in draft, should be complete by June.

- Covers LED packages, arrays, modules.

- Statistically significant sample size of 20 units recommendation adopted in Luminaires specification requirements.

- IES TM-21 is necessary for calculation of LED lumen maintenance using IES LM-80 data (Option 1).
IES TM-21 and Lumen Maintenance

• Option 1: Requires both IES LM-80 data of LEDs and IES TM-21 extrapolation to predict lumen maintenance.
  
  – No solid state luminaires can be qualified under Option 1 until IES TM-21 is published.

• Option 2: IES LM-79 testing of the fixture at 0h and 6000h with continuous interim operation in accordance with ANSI/UL 1598/1574 or 153.
Luminaires: Solid State

• EPA will not be recognizing laboratories for solid state non-directional until LM-82 is published.

• EPA will be recognizing laboratories for directional SSL (using LM-79), but products can only be qualified using lumen maintenance option 2 (6000h luminaire testing) until TM-21 is published.
Luminaires Laboratory Recognition

Luminaire Category

- Fluorescent Non-Directional
- Fluorescent Directional
- HID Non-Directional
- HID Directional
- SSL Non-Directional
- SSL Directional
- Halogen Non-Directional
- Halogen Directional

Components (CSD)

- LEDs (Package, Module or Array) IES LM-80-2008
- Fluorescent Ballasts
- Fluorescent Lamps
- HID Ballasts
- HID Lamps
- LED Light Engines
- GU24-based Integrated LED Lamps
Certified Lighting Subcomponent Database (CSD)

- CSD: online tool to make qualifying Luminaires faster, less expensive
- Non-directional Luminaires use the photometric data from the light source or platform.
- The CSD lists test data of Light sources and platforms and Luminaire applications can reference products that are listed on the CSD.

www.energystar.gov/lightingsubcomponents
Certified Lighting Subcomponent Database (CSD)

- CSD currently available at www.energystar.gov/lightingsubcomponents
- CSD Data submission forms are available at CB tools
- Includes third-party certified performance data:
  - Lamps: fluorescent, HID
  - Fluorescent, HID ballasts
  - Lamp & ballast platforms (system performance)
  - GU24 self-ballasted lamps: fluorescent, HID
  - GU24 based integral LED lamps (when IES LM-82 is finalized)
  - LED light engines (when IES LM-82 is finalized)
- In consideration: LED package/array/module lumen maintenance data based on IES LM-80 tests and IES TM-21 projections.
Certified Lighting Subcomponent Database (CSD)

The NEMA/ALA Matrix and EPA Approved Platform Database has been replaced by the Certified Lighting Subcomponent Database.

[Click to visit the website](www.energystar.gov/lightingsubcomponents)
Third Party Certification Process for CBs

1. **Determine eligibility:** CB determines manufacturer eligibility, that product is within scope, and helps manufacturer choose test labs that are recognized for the appropriate tests/product type.

2. **Receive Lab Reports:** CB receives test results directly from the laboratory.

3. **Review:** CB reviews all submission materials, determines product eligibility and certifies the product(s).

4. **Certification:** CB provides certification in writing that the product meets the ENERGY STAR specification.

5. **Certified Product Data:** CB completes data submission forms.

6. **EPA Listing:** CB transmits data to EPA for qualified product list.

7. **Verification testing:** CB performs off-the-shelf verification testing.
Step 1: Determine Eligibility

- Standard Operating Procedure for Product Evaluation
  [www.energystar.gov/cbresources](http://www.energystar.gov/cbresources)

In addition:
- Do an Initial review: Information provided about the Luminaire from the manufacturer suggests that a product won’t meet specification levels. (Efficacy too low, Color temperature too high etc)
- Product is not within the scope of the specification
- Product is marketed commercially but only covered under the residential scope
Step 2: Receive Lab Reports

www.energystar.gov/lightinglabs
Step 2: Receive Lab Reports

- Specific requirements for recognition can be found in the updated Guideline for Laboratory Recognition, online at: www.energystar.gov/3rdpartycert

- EPA recognizes lighting laboratories for photometric tests only, and test reports must come directly from a Laboratory recognized for a specific technology: Fluorescent, HID, SSL, Halogen

- Electrical safety testing must be carried out by an OSHA NRTL.

- EMI testing must be carried out by an FCC-recognized lab: https://fjallfoss.fcc.gov/oetcf/eas/reports/TestFirmSearch.cfm
Step 3: Application Review

Common Problems

- Application is missing materials (CBs should develop checklists of required materials based on specification)
- Test reports must come directly from the laboratory, not from the manufacturer.
- Incomplete or unacceptable test reports: call the lab directly and sort out the problem.
- Warranty information is incomplete or does not meet the requirements
- Product packaging does not include all required information for product type
- Submission does not include a photo, diagram or sufficient information to verify proper eligibility
- Model number(s) on test report(s) do not match other submission materials
- Report shows product failures that were identified
Step 3: Application Review: Common Problems with SSL

- Power supply warranty doesn’t include the maximum operating temperature under which the product is covered
- Inappropriate and/or incomplete LM-80 reports
Step 3: Application Review: Common Problems with Fluorescent/HID

- Outdoor fixtures do not contain integrated photosensors or motion sensors
- Fixture does not have a replaceable ballast or has incomplete information regarding the replacement of the ballast
- Packaging claims do not follow labeling requirements
- Packaging is missing model number or Correlated Color Temperature
- Packaging compares reflector or decorative wattage but does not provide side-by-side lumen comparison
Step 3: Application Review: Ceiling & Vent Fans

- Product is evaluated in two parts and must be certified by both a CF/VF CB and a Lighting CB or a CB recognized to certify both Fans and Luminaires.
- Data submission forms will be provided for:
  1. Ceiling fans with no lighting
  2. Ceiling fan light kits (Luminaires form)
  3. Ceiling fans with inseparable lighting
  4. Vent fans with no lighting
  5. Vent fans with lighting
Step 3: Application Review: Using the CSD

- Find a light source or platform on the CSD
- Use CSD data to fill in the Luminaires data submission form
- Even though a product is on the CSD, a CB is still required to review data as a whole and make sure that a given CSD component in a fixture will meet the specification requirements.
Step 4: Certification

- CB provides written confirmation of certification to the manufacturer
- Manufacturer may label product after receiving this written confirmation
Step 5: Certified Product Data Submission Forms

- All data submission forms can be found on the CB resources page www.energystar.gov/cbresources.
- CB is responsible for the quality and formatting of these forms per the instructions included in the forms.
- Manufacturers may not fill out the forms for submission to the CB.
- All fields must be completed, including conditionally required fields where they apply to the product. If not applicable, “N/A” is an acceptable entry.
- Data entered into the data submission forms must come from the tested values and should reflect an average of the tested samples.
- Allowances for reported values to differ slightly from tested values; however all information must be based on test data.
- Packaging must reflect tested/reported values.
Step 6: EPA Listing
Luminaires Qualified Product List

• Qualified product list available at www.energystar.gov/lightfixtures
Step 7: Verification Testing

• Verification testing may start as soon as the Luminaires specification is effective (10/1/11)
• CBs should work with EPA to determine appropriate test cycles
• EPA will be issuing additional guidance regarding verification testing for luminaires.
Step 7: Verification Testing

- 10% minimum of all product qualified per CB.
  - Products derived from representative models are subject to verification testing, but no more than one product per family would be tested per year.

10% of 10 unique model numbers = minimum of 1 fixture to be tested for verification.

35 total fixtures qualified by CB

10 unique model numbers
Timeline

January 1, 2011:
Third Party Certification goes into effect for all products

March 31, 2011:
Certified Lighting Subcomponent Database live

February 16, 2011:
Luminaires v1.0 Final

June 15, 2011:
Products may only be certified to Luminaires V1.0
GU24 lamps no longer qualified

October 1, 2011:
Luminaires v1.0 Effective date
SSL & RLF qualified product lists discontinued (including GU24 lamps)
Timeline

- CBs may begin certifying products to the Luminaires specification and will be able to submit information on certified products to EPA when forms are available.
- Products can be qualified to the existing SSL Luminaires V1.3 (SSL) or Residential Light Fixtures V4.2 (RLF) specifications until June 15, 2011.
- GU24 lamps are currently qualified under RLF 4.2, and GU24 lamps can no longer be qualified after June 15, 2011.
- The RLF or SSL qualified product lists will be archived after October 1, 2011.
- Products qualified under the old specifications will NOT be grandfathered into the new program, and partners must cease ENERGY STAR labeling of these products manufactured by October 1, 2011.
What’s Next? Lamps!

• ENERGY STAR Lamps Specification Framework distributed March 22, 2011

• Will replace the existing CFL & LED specs

• Questions for discussion, requests for data

• 6 week comment period – please participate!

www.energystar.gov/lamps
Thank You! Questions?

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www.energystar.gov/luminaires  
www.energystar.gov/3rdpartycert  
www.energystar.gov/lightingsubcomponents  
www.energystar.gov/lightinglabs
Appendix

- ENERGY STAR Logos
- Directional efficiency & minimum light output requirements
- Main changes for Fluorescent products
- Main changes for SSL products
Only the certification mark indicates qualified product

- Manufacturers like many partners have access to ENERGY STAR logos

- Types of logos:
  - Partnership mark
  - Certification mark
  - Promotional mark

Visit energystar.gov/logos for logo use guidelines

Always ensure model numbers appear on energystar.gov. Please report any logo violations to logomisuse@energystar.gov.
## Directional Efficacy & Light Output Requirements

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Luminaire Efficacy (lm/W)</th>
<th>Light Output (lm/ft) or (per head)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cove Mount</td>
<td>45</td>
<td>200</td>
</tr>
<tr>
<td>Downlights</td>
<td>42</td>
<td>345 or 575 (based on aperture ≥4.5&quot;)</td>
</tr>
<tr>
<td>Accent lights</td>
<td>35</td>
<td>200 per head</td>
</tr>
<tr>
<td>Under cabinet</td>
<td>29</td>
<td>125</td>
</tr>
<tr>
<td>Outdoor Post-Mount</td>
<td>35</td>
<td>300</td>
</tr>
<tr>
<td>Commercial Portable Desk</td>
<td>29</td>
<td>200</td>
</tr>
</tbody>
</table>
## Main Changes for Fluorescent Products – Performance Criteria

<table>
<thead>
<tr>
<th>Performance Criteria</th>
<th>RLF</th>
<th>Luminaires</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficacy (non-directional)</td>
<td>≥50 lm/W (below 30W) and ≥60 lm/W (above 30W)</td>
<td>≥65 lm/W until Sept. 2, 2013 and ≥70 lm/W after</td>
</tr>
<tr>
<td>Efficacy (directional)</td>
<td></td>
<td>Varies by product type ranging from 29 – 45 lm/W</td>
</tr>
<tr>
<td>CCT</td>
<td>2700K, 3000K, 3500K, 4100K, 5000K or 6500K</td>
<td>2700K, 3000K, 3500K, 4100K, 5000K (commercial only)</td>
</tr>
<tr>
<td>Lamp Shipment</td>
<td>Required for all indoor except: linear and recessed downlights</td>
<td>Required for all luminaires except: linear, halogen outdoor and downlights with multi-wattage ballasts</td>
</tr>
<tr>
<td>Photosensor</td>
<td>Required for all outdoor fixtures</td>
<td>Not required</td>
</tr>
<tr>
<td>Warranty</td>
<td>2 years</td>
<td>3 years</td>
</tr>
<tr>
<td>Light output</td>
<td>None</td>
<td>800 lumens/fixture or 450 lumens/head (3 or more heads)</td>
</tr>
</tbody>
</table>
## Main changes for SSL products

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Eligible for SSL V1.3 (Luminaire efficacy only)</th>
<th>Eligible for Luminaires</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cove mount</td>
<td>Residential only 45 lm/w luminaire efficacy</td>
<td>No change</td>
</tr>
<tr>
<td>Under cabinet</td>
<td>24 lm/w Residential 29 lm/w Commercial luminaire efficacy</td>
<td>Residential &amp; Commercial 29 Lm/W luminaire efficacy</td>
</tr>
<tr>
<td>Down lights (retrofits, recessed, surface &amp; pendant-mounted)</td>
<td>Residential &amp; Commercial 35 lm/w luminaire efficacy</td>
<td>Residential &amp; Commercial 42 lm/w luminaire efficacy</td>
</tr>
<tr>
<td>Accent lights a.k.a. Surface mount with directional heads, Track heads etc.</td>
<td>Residential only 35 lm/w luminaire efficacy</td>
<td>Residential &amp; Commercial 35 lm/w luminaire efficacy</td>
</tr>
<tr>
<td>Outdoor wall mounted porch lights, Ceiling-mounted luminaires with diffusers, Bollards and indoor wall wash luminaires</td>
<td>Various luminaire efficacy requirements from 24 – 35 lm/w</td>
<td>Inseparable light sources 70 lm/w luminaire efficacy, LED light engines 65 lm/w source efficacy</td>
</tr>
<tr>
<td>Portable desk lights</td>
<td>Residential &amp; Commercial 29 lm/w luminaire efficacy</td>
<td>Residential &amp; Commercial 29 lm/w luminaire efficacy</td>
</tr>
<tr>
<td>Outdoor pole/arm-mounted decorative luminaires</td>
<td>Residential only 35 lm/w luminaire efficacy</td>
<td>Residential only 35 lm/w luminaire efficacy</td>
</tr>
<tr>
<td>Misc product types covered under the scope</td>
<td>Proposed for 2011 at 70 lm/w luminaire efficacy</td>
<td>70 lm/w luminaire efficacy for inseparable luminaires 65 lm/w source efficacy for LED light engines</td>
</tr>
</tbody>
</table>
### Main changes for SSL products

#### Product Types Eligible for SSL V1.3
(Luminaire efficacy only)

<table>
<thead>
<tr>
<th>Product Types eligibility for SSL V1.3</th>
<th>Eligible for Luminaires</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor wall mounted porch lights</td>
<td>Considered non-directional, must have a replaceable light source 65 lm/w light source efficacy (Inseparable light sources 70 lm/w luminaire efficacy)</td>
</tr>
<tr>
<td>Ceiling-mounted luminaires with diffusers</td>
<td>Considered non-directional, must have a replaceable light source 65 lm/w light source efficacy. (Inseparable light sources 70 lm/w luminaire efficacy)</td>
</tr>
<tr>
<td>Bollards</td>
<td>Not eligible</td>
</tr>
<tr>
<td>indoor wall wash luminaires</td>
<td>Not eligible</td>
</tr>
<tr>
<td>Outdoor Path Lights</td>
<td>Not eligible</td>
</tr>
<tr>
<td>Outdoor step lights</td>
<td>Not eligible</td>
</tr>
</tbody>
</table>