

## Evaluating LED Products: Questions to Ask



Voices for SSL Efficiency 2010  
DOE SSL Market Introduction Workshop

**Jason Tuenge**  
Pacific Northwest National Laboratory

- What do I need?
- Will it really work?
- Do I need help?



Photo Credit: Smithsonian Institution

- What do I need?
  - How much light do I need, and where?
  - What quality of light do I need?
  - How much energy will I save?
  - How long should it last, and how do I replace it?
  - Will it be compatible with other hardware?
- Will it really work?
  - Are performance claims backed by trustworthy test data?
  - Are performance claims explicitly backed by warranty?
  - Will it operate safely?
- Do I need help?

# What do I need?

- How much light do I need, and where?



- What quality of light do I need?
  - What's the CCT and Duv?
  - What's the CRI or CQS?
  - How is glare controlled?
  - Is there any perceptible or imperceptible flicker?
  - Can I obtain a sample for visual evaluation?
    - Would it be possible to install the product for a mock-up or long-term pilot?

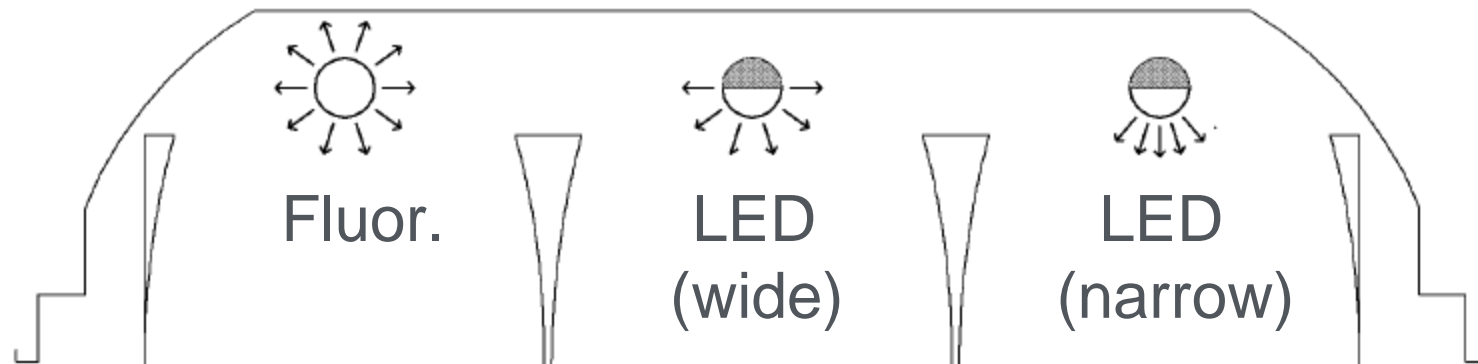
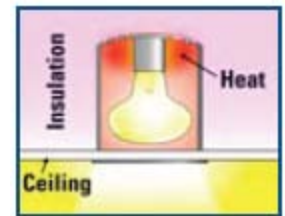


- How much energy will I save?
  - What's the power factor?
  - Is there any power consumption in the “off” state?
  - Are there any other environmental benefits?
    - Is the product RoHS compliant?

- How long should it last, and how do I replace it?
  - Will the driver or other components fail before the LEDs themselves?
  - Do I replace the whole unit or just part of it?
  - Will it stay clean or will it need to be cleaned periodically?



- Will it be compatible with other hardware?
  - Will it fit?
    - Form factor, e.g. replacements for MR16 lamps
  - Will it cook?
    - e.g. for PAR or R-lamps in recessed cans
  - Will light be misdirected?
    - e.g. T8 replacements in parabolic troffers

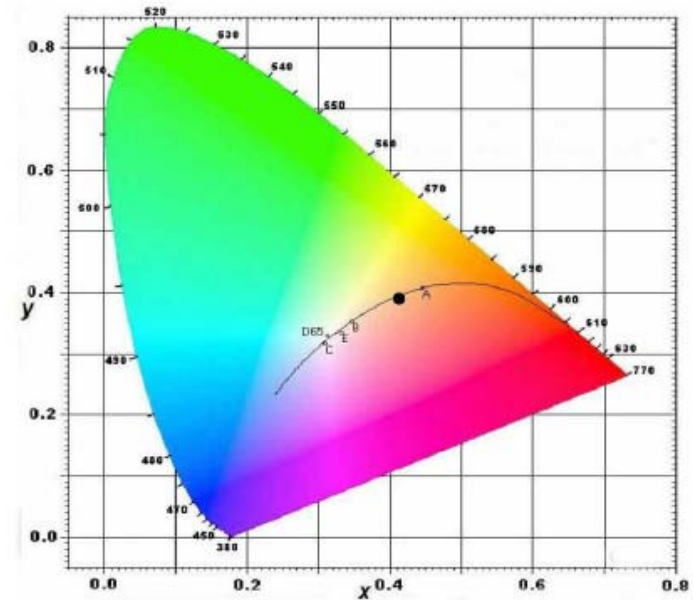
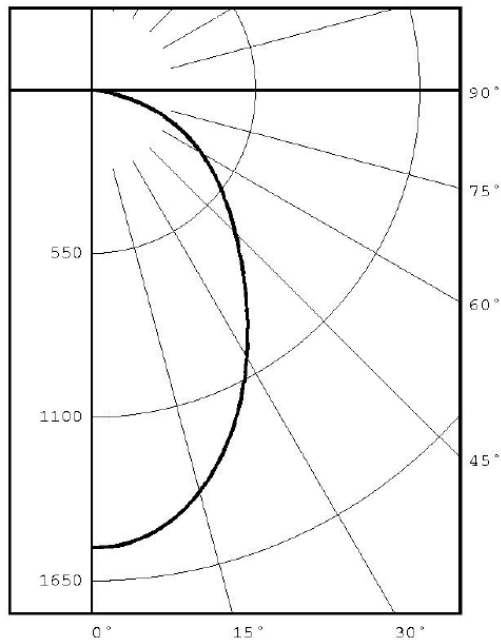




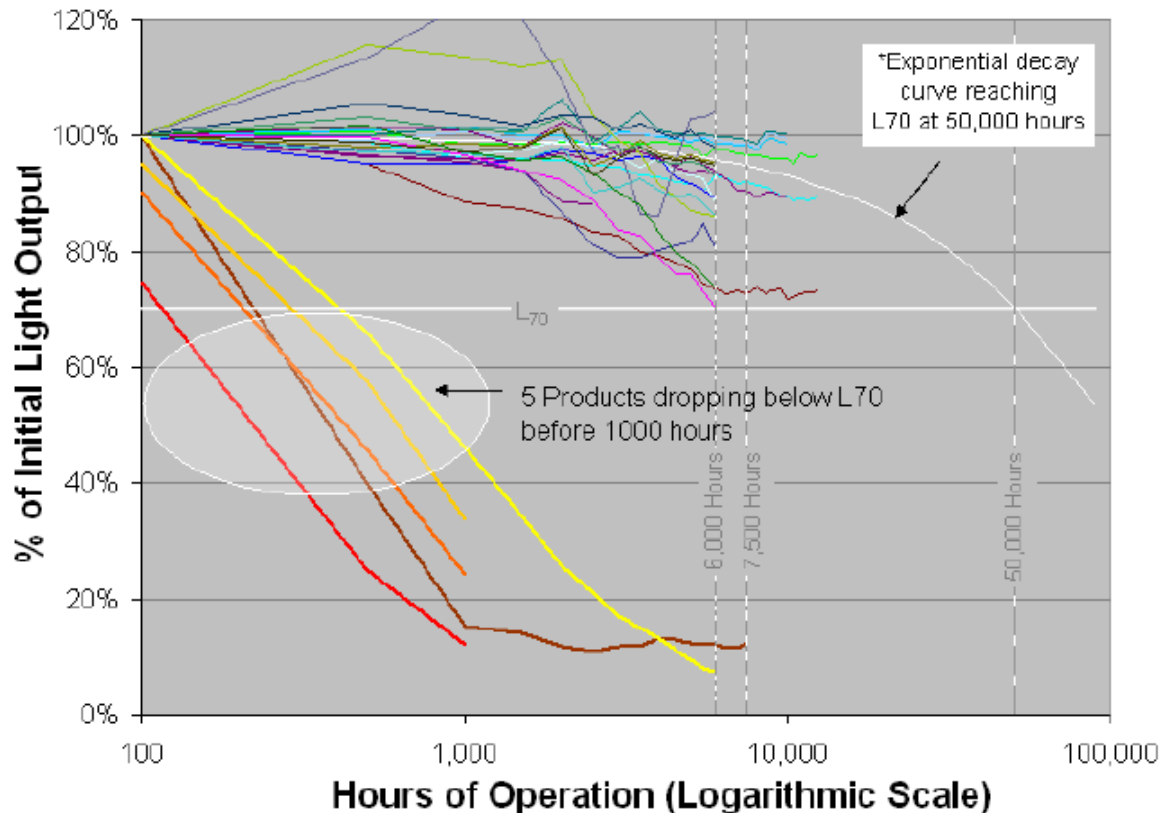
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    - e.g. for PAR or R-lamps in recessed cans
  - Will light be misdirected?
    - e.g. T8 replacements in parabolic troffers
  - Will it be used on a dimmer?
    - How do I know if it will be compatible?
    - What's the dimming range?
    - Will it flicker?
    - Will color shift?

- Are performance claims backed by trustworthy test data?
  - Do you have an LM-79 report from a qualified independent test lab, covering both spatial and spectral characteristics of light output?

[www1.eere.energy.gov/buildings/ssl/test\\_labs.html](http://www1.eere.energy.gov/buildings/ssl/test_labs.html)



- Are performance claims backed by trustworthy test data?
  - Will it last more than a couple weeks?



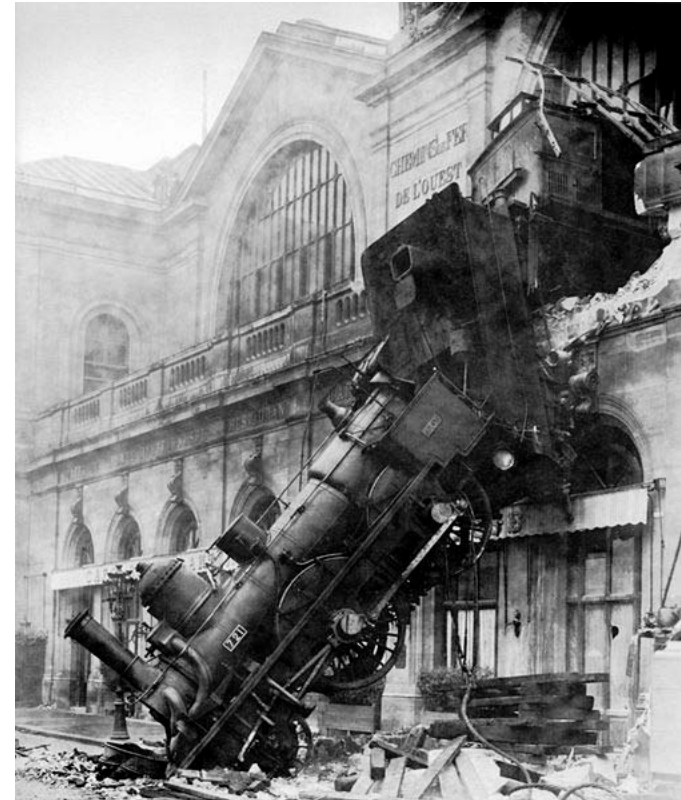
- Are performance claims backed by trustworthy test data?
  - Will it last more than a couple weeks?
  - How was rated useful lifetime determined?
    - Is an LM-80 report available?
    - What were the results of the in situ temperature measurements?
    - What's the drive current?

- Are performance claims explicitly backed by warranty?
  - Will the manufacturer still be around in a year or two to honor the warranty?
  - Is lumen maintenance covered?
  - Is color maintenance covered?



- Will it operate safely?
  - Does the product bear the appropriate safety label from a Nationally Recognized Testing Lab, such as Underwriters Laboratories (UL)?

- Consider hiring a qualified lighting professional
  - Objective advice
  - Risk management and return on investment
    - Large purchases
    - Critical applications



- Consider hiring a qualified lighting professional
  - Objective advice
  - Risk management and return on investment
    - Large purchases
    - Critical applications
  - Where to look
    - IALD  
[www.iald.org/membership/find.asp](http://www.iald.org/membership/find.asp)
    - NCQLP (LC)  
[www.ncqlp.org/registry](http://www.ncqlp.org/registry)
    - And ask for references!



- Track trends and accuracy of performance claims:  
[www1.eere.energy.gov/buildings/ssl/caliper.html](http://www1.eere.energy.gov/buildings/ssl/caliper.html)
- Compare product performance:  
[www.lightingfacts.com](http://www.lightingfacts.com)  
[www1.eere.energy.gov/buildings/ssl/gatewaydemos.html](http://www1.eere.energy.gov/buildings/ssl/gatewaydemos.html)
- Peruse award-winning products:  
[www.nglhc.org](http://www.nglhc.org)  
[www.lightingfortomorrow.com](http://www.lightingfortomorrow.com)
- Find additional guidance and standards:  
[www1.eere.energy.gov/buildings/ssl/factsheets.html](http://www1.eere.energy.gov/buildings/ssl/factsheets.html)  
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