

Solid-State Solutions for Indoor Lighting

Identifying Sensible Applications and Quality Products



Chad Bulman
Midwest Energy Efficiency Alliance
Sustainable Government Symposium
December 14, 2010

The Source On Energy Efficiency



What's the story with MEEEA?

“The Midwest Energy Efficiency Alliance (MEEEA) is a collaborative network advancing energy efficiency in the Midwest to support sustainable economic development and environmental preservation.”

- Role of the organization in the region/with members
 - Policy efforts to advance EE
 - Disseminate key info and create networking opportunities
 - Implement and administrate EE programs
- Lighting plays a big role in our work

The Source On Energy Efficiency



Why Lighting Matters to Sustainability

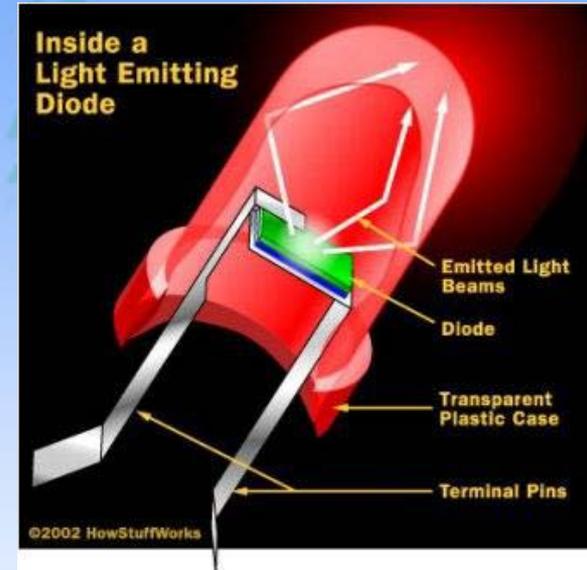
- Lighting a large part of our energy consumption
- Incumbent technology can be very inefficient
- Improvement is simple and cost effective
- Utilities understand lighting's importance
 - Energy Independence and Security Act of 2007
 - Illinois' Energy Efficiency Portfolio Standard
- We don't have a choice!

The Source On Energy Efficiency



Solid-State Lighting 101

- Most SSL based on light-emitting diodes (LEDs)
- Not a new technology
- LED brightness, color, and lifetime have been improving over the years
- Key benefit: energy savings
- In recent years, cost-effective general illumination with LEDs has become feasible



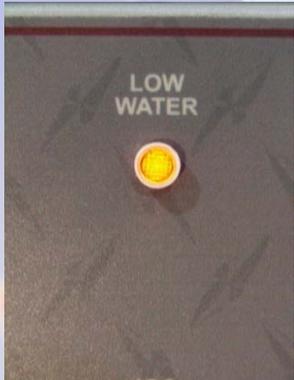
The Source On Energy Efficiency



MEEA
Midwest Energy Efficiency Alliance

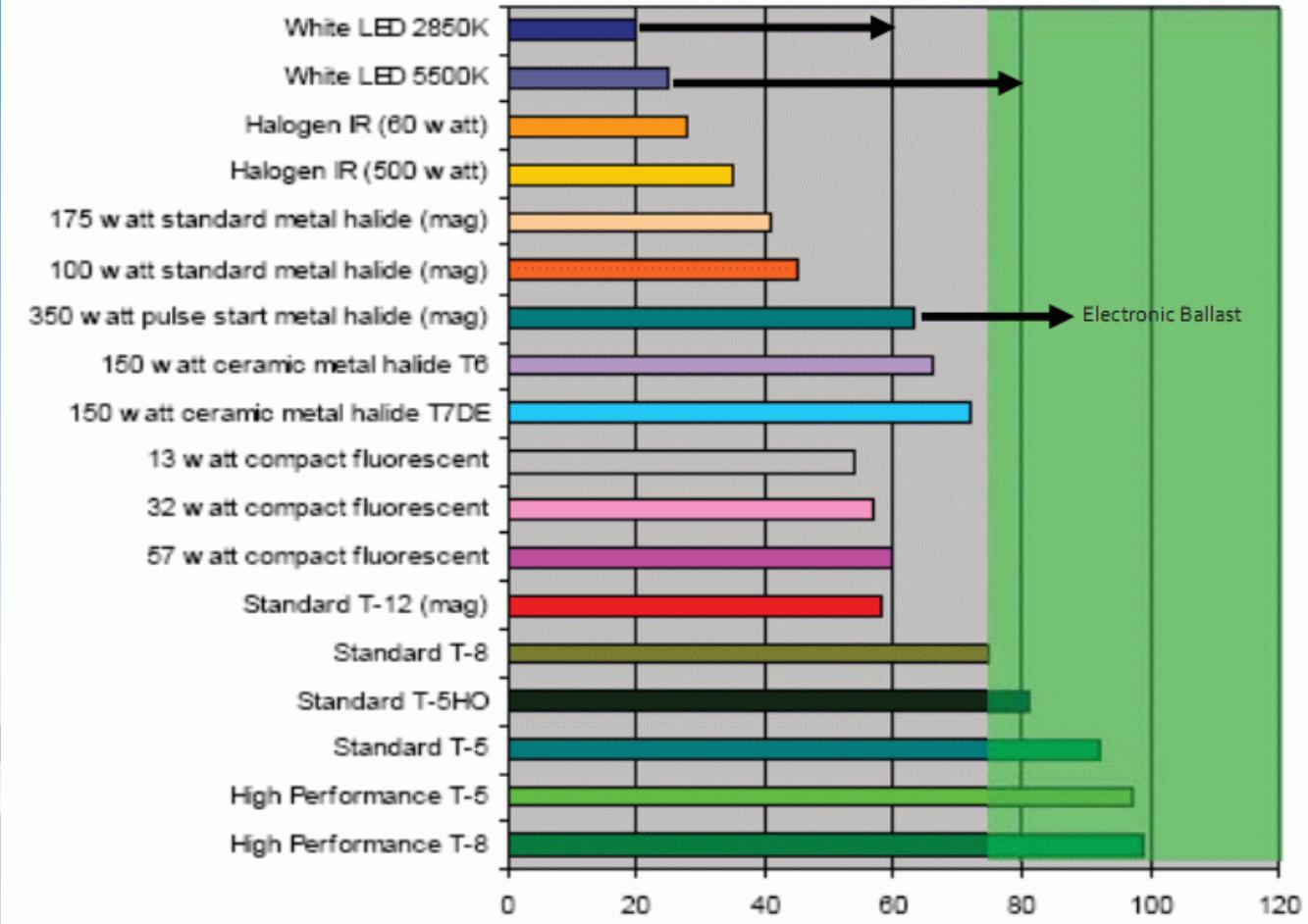
Solid-State Lighting 101

- Technology has been evolving over time...
 - Initially: Indicator lights
 - Then: niche lighting (effect lighting, holiday lights, traffic signals)
 - Now: General Illumination
 - Tomorrow: Better general illumination, residential market, OLEDs



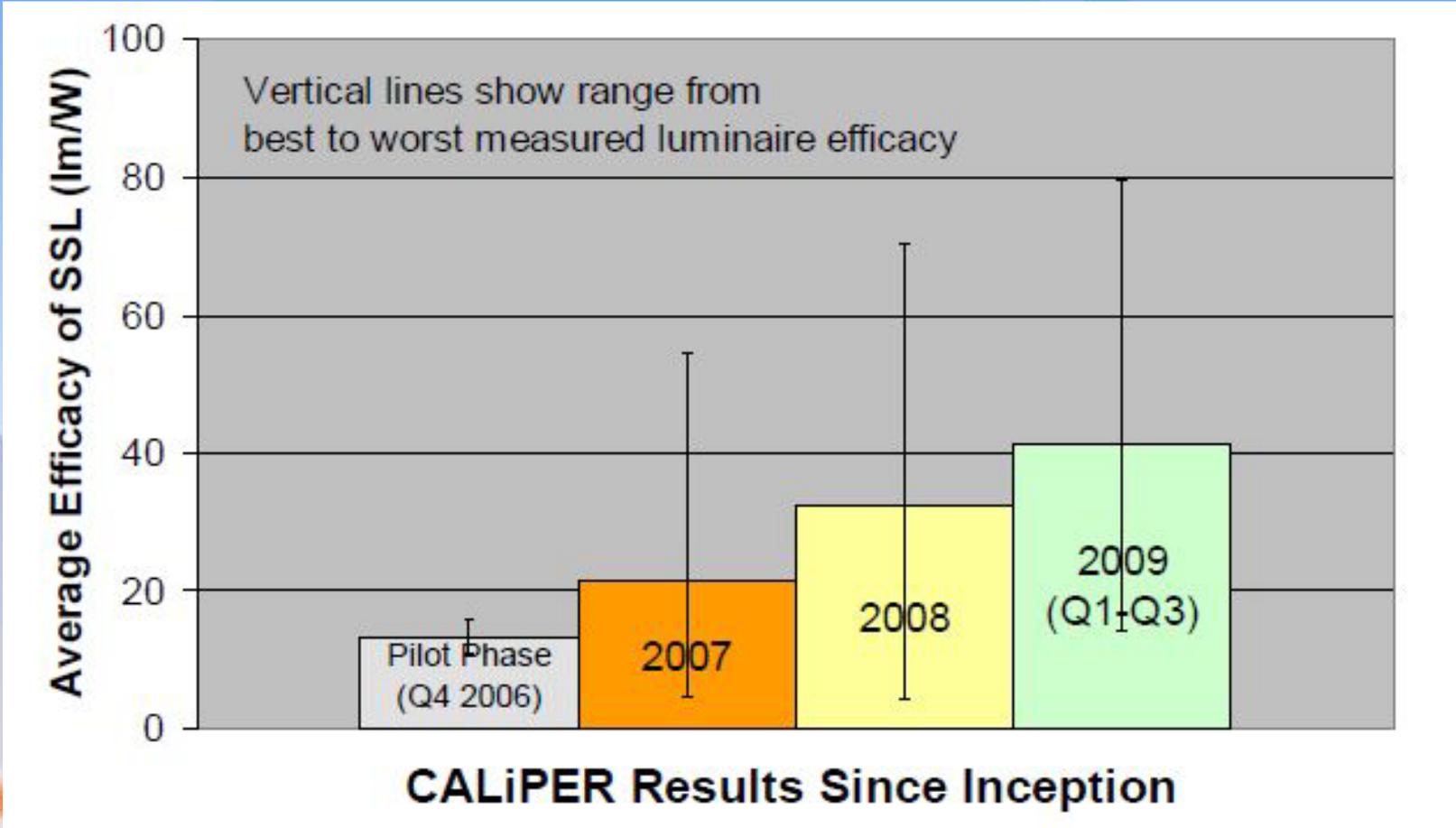
Benefits of LED Technology

SSL still making strides to compete with incumbent lighting technologies...



Benefits of LED Technology

SSL Performance is improving day by day
(Product cycle is around six months)



Benefits of LED Technology

- Other benefits
 - Uniformity
 - Controls integration
 - Color rendering and security
 - Night vision
 - Less light pollution
 - Very long life / reduced maintenance
 - Instant on/off, rapid restrike

The Source On Energy Efficiency



FDR Expressway, NYC

Photo: Ryan Pyle



TJ Maxx Parking Lot, NH

Photo: BetaLED

Midwest Energy Efficiency Alliance

Drawbacks of LED Technology

- Costs are Substantial
 - Paying double for an LED installation is not uncommon
 - Look at LED lighting as an investment (What's your ROI?)
 - Higher cost, Higher risk
 - This concern will diminish over time



Return on Investment

- Payback Period answers, “How long will it take me to make up the additional cost of an SSL fixture through energy savings?”
- Need to consider all costs, not just price tag
- Fixture price, Maintenance, Incentives, Annual Usage, Product Life
- Payback Period
 - 0-2 years, no brainer
 - 3-7 years, sound investment
 - 8-10 years, think on it
 - 10+ years, let’s hold off

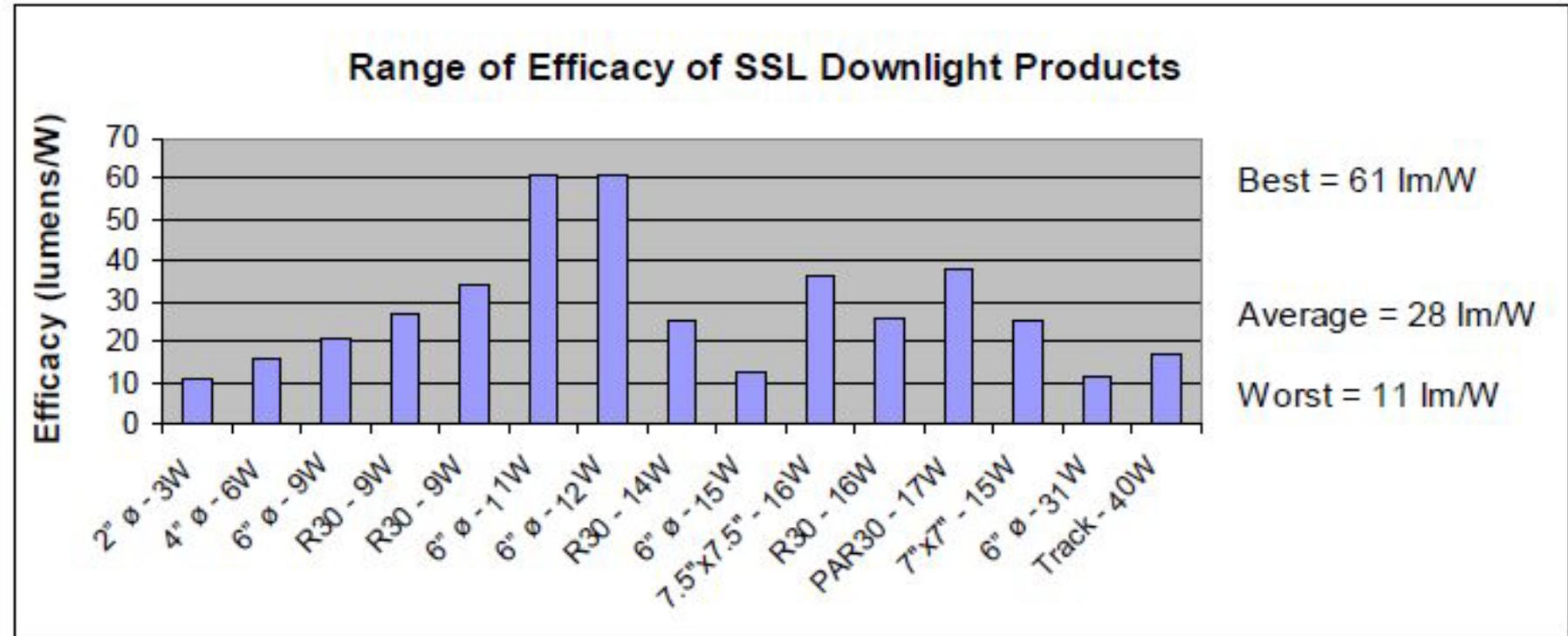


The Source On Energy Efficiency



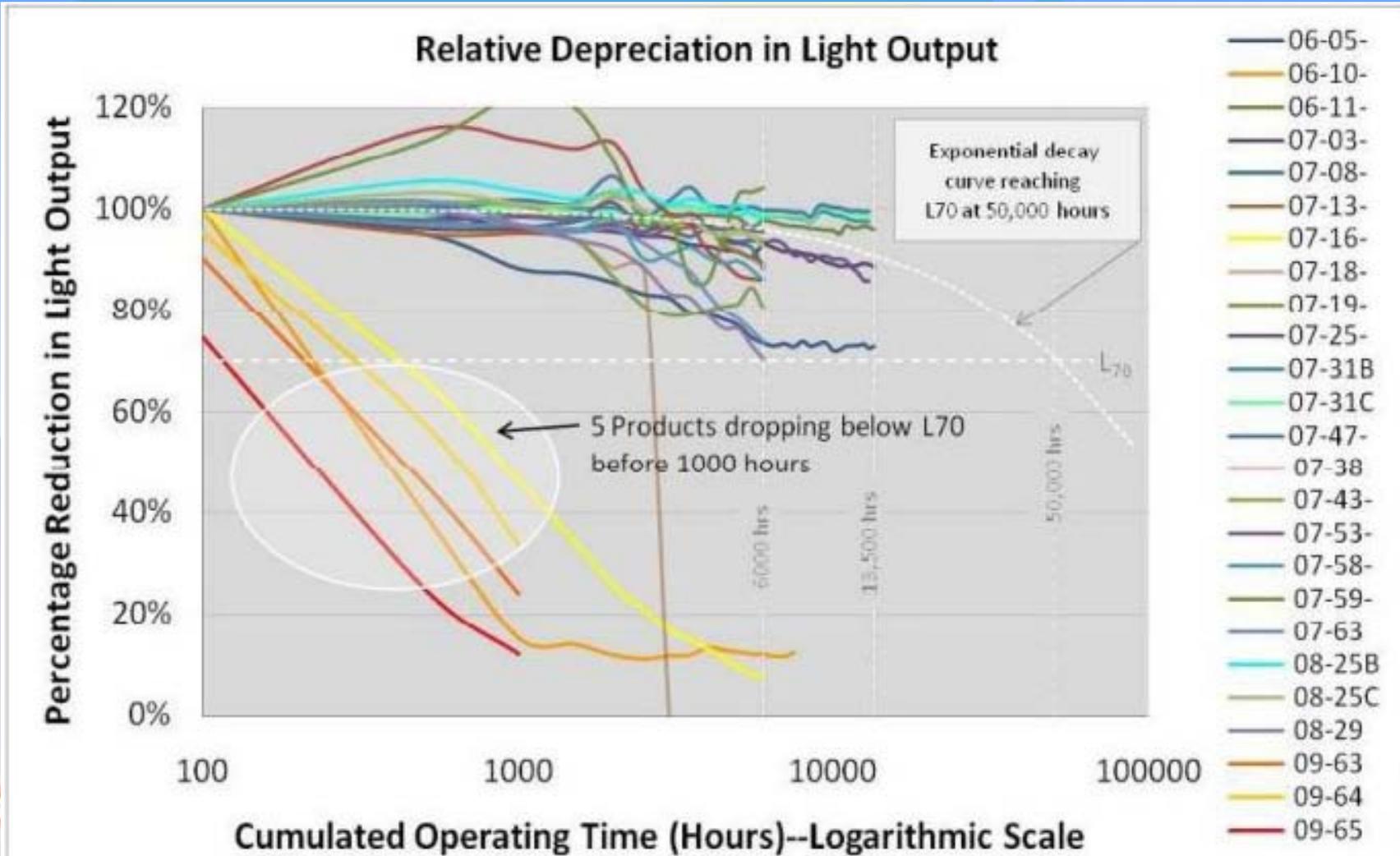
Drawbacks of LED Technology

Product performance with SSL not a known quantity as with traditional lighting



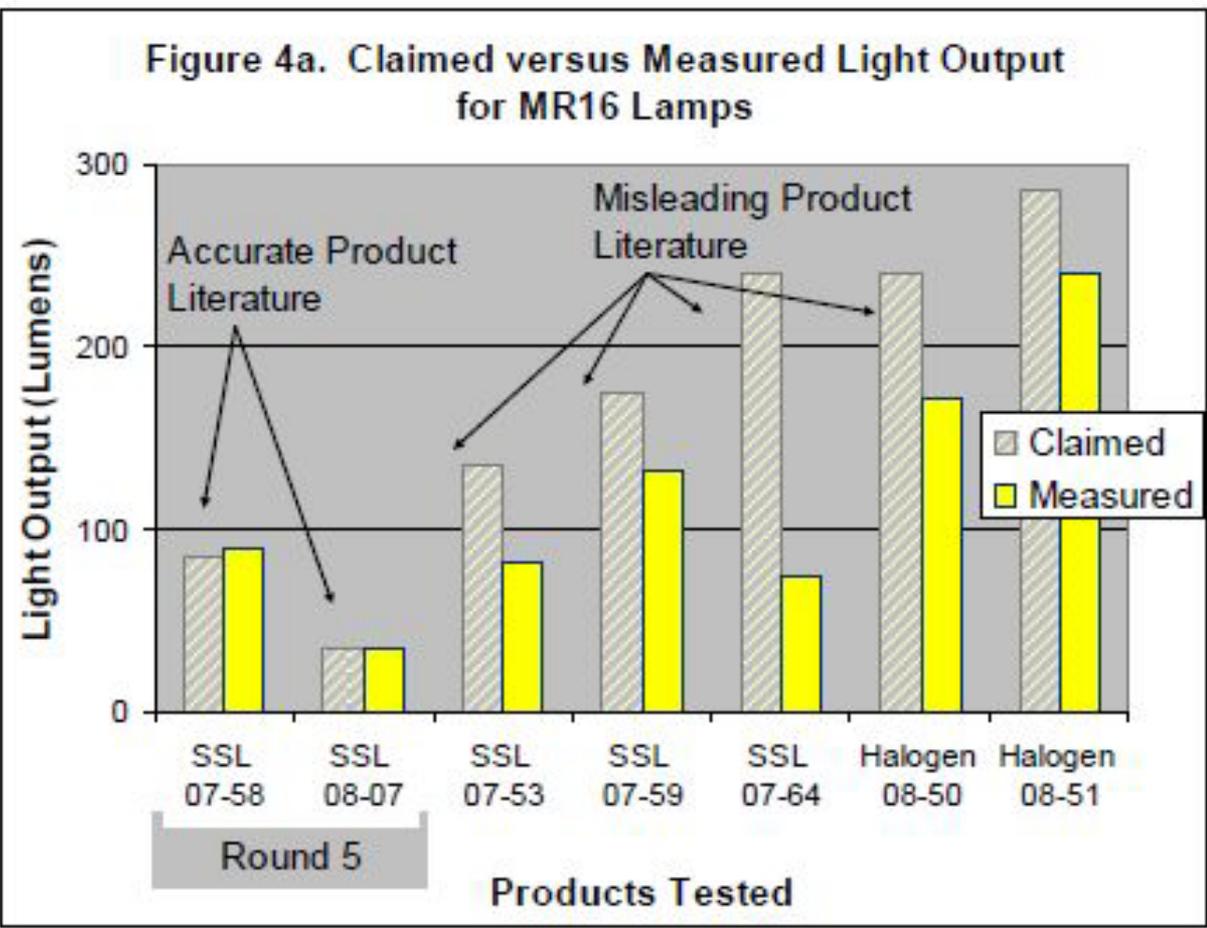
Drawbacks of LED Technology

Long life not always guaranteed...



Drawbacks of LED Technology

Beware overstated performance claims
(SSL not only tech facing this issue)



Sensible Residential Applications

- Residential Applications are Still Limited
 - No maintenance benefit
 - Price point a greater concern for consumers
 - Lack of understanding
- Niche applications: night lights and holiday strands
- Movement toward gen'l. illumination
 - Task lighting, recessed downlights
- Tomorrow has great promise
 - L Prize a good omen

The Source On Energy Efficiency



MEEEA
Midwest Energy Efficiency Alliance

The L Prize Competition

- US DOE Competition - \$10 million prize
- 60W Incandescent, PAR38, 21st Century Lamp
- Philips first and only entrant, MEEEA field testing

Light Output	945 lumens typical
Power Consumption	9.95 watts maximum
Efficacy	93.4 lm/watt minimum
CRI	93.7 average
Color Temp	2716K
Lifetime	Over 25,000 hours (L70)
Dimmable	Yes



The Source On Energy Efficiency



Sensible Commercial Applications

- Here and Now
 - LED exit signs
 - Refrigerated cases
 - Cove lighting
 - Down lights
 - Decorative/effect



The Source On Energy Efficiency



MEEEA
Midwest Energy Efficiency Alliance

Sensible Commercial Applications

- Just Around the Corner...
 - Reflector lamps approaching parity
 - Recessed troffers and flat panels getting better and better
 - Avoid linear tube replacements!
 - Low UV requirements? Consider LED lamps



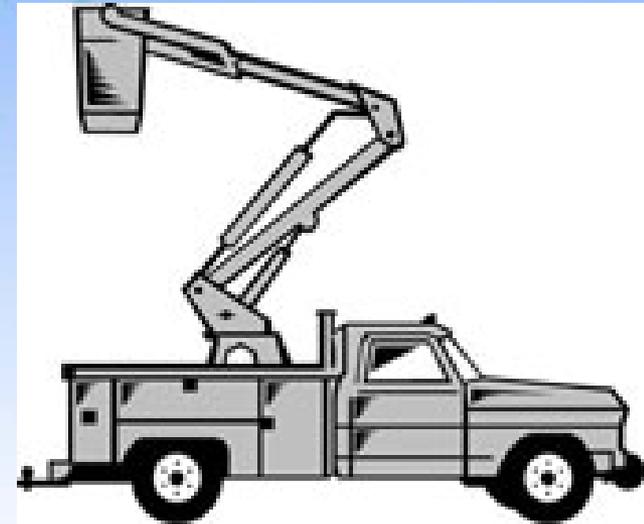
The Source On Energy Efficiency



MEEA
Midwest Energy Efficiency Alliance

Sensible Municipal Applications

- Long life = Reduced maintenance schedule = cost effectiveness
 - Traffic/Pedestrian Signals
 - Street Lighting
 - Parking Lots
 - Parking Structures
 - Security Lighting



The Source On Energy Efficiency



Takeaways

- Find the Right Opportunities
 - Is this a smart project, or just a talking point?
- Minimize Your Risk
 - Lab data (3rd party), trusted vendors, warranties, references, illuminance modeling
- Return on Investment
 - What's my payback period?
- Don't Start from Scratch
 - US DOE, TAP, MSSLC, CALiPER, GATEWAY



The Source On Energy Efficiency



Questions?

CONTACT INFO

Chad Bulman

Program Manager

Midwest Energy Efficiency Alliance

cbulman@mwalliance.org

(312)-784-7275

The Source On Energy Efficiency



MEEEA

Midwest Energy Efficiency Alliance