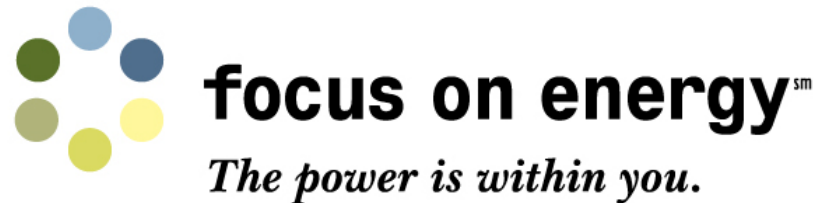


CEE Industry Partners SSL Workshop

Liesel Whitney-Schulte, LC



LED Lighting for Utility Programs

Living Architecture, Power Station, Brussels 2005



Magic Monkey 2005 Power Station project for Electrabel GDF Suez in Brussels, Belgium
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Focus on Energy Program structure

- Wisconsin's statewide energy efficiency and renewable energy program
- Legislature created the program in 1999, expanded in 2005
- Aimed at increasing Wisconsin's energy independence by helping residents and businesses implement efficiency and renewable energy projects that would not occur otherwise

Focus on Energy overview

- Residential, Business and Renewable Energy Programs
 - Single and multifamily homes
 - Commercial, Industrial, Agricultural and School/Government buildings programs
- Serves over 1,000,000 customers of 89 utilities throughout Wisconsin.
 - Saved 1.2 billion kWh & more than 63 million therms since 2001

Why include SSL products?

- Potential for:
 - Energy Savings
 - Long life
 - Environmental benefits
- Indications from international manufacturers that this is where they are making research investments

Where we stand on LED

- Excited about the possibilities but cautious:
 - Don't want to jump into the market with relatively immature technologies
 - Product needs to be market ready
 - Product must be high quality and reliable before we implement incentives
 - Don't want to relive the CFL programs of the 90's

Which products are market ready?

- Wide variety of product available, but not all products are ready
- Focus does not have a formal testing program, review products case by case
- Relying on the work of DOE/PNNL to help us determine what products to support in the marketplace

Which products are market ready?

- Complete luminaire products with efficacy close to (or better than) incumbent
- DOE SSL Category A product specs
 - Warranty, minimum light output and distribution requirements
 - Color Quality, power factor

What we are asking for

- Industry standards for performance
 - Independent lab test reports for
 - Photometrics for Luminaire - LM79
 - Rated life - LM80
 - Evidence of adequate thermal management

Applications

Exterior

Roadway/street

Area, site, pedestrian

Petroleum canopy

Parking structure

Tunnel

Bridge

Interior

Cove

Downlight

Task light

Wall wash

Spot lighting

Retail display case

Refrigerated case

Dock lights

Promotion of LED technology to date

- Residential holiday light incentives
 - Retailer coupon
- Custom incentives white LED
 - Parking Lots
 - Garage
 - Refrigerated Case

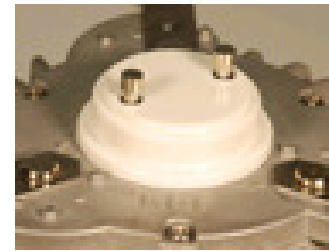


EDGE -Beta LED

Phasing in Prescriptive Incentives

Business and Residential

Downlights that meet DOE SSL specs



LR6 from Cree LED Lighting Solutions 12W

Considerations for developing prescriptive incentives

Cost/Benefit analysis

- Research team evaluates product and application using TRC test
- TRC test must include maintenance cost savings over life of the product
 - Include other benefits if possible

We are not ready to include

- Most indoor general lighting products
- Products that do not have thermal management built in
 - Screw in replacement lamps
 - “Tube” style T8 replacement lamps
 - Fixtures that appear to have been retrofitted with a panel of LEDs and little optical control

Partnering with L*Prize

- Important way to promote the development of quality LED products
- Ensure we stay up to speed on new and emerging offerings in the LED category
- Offer our program sponsors the opportunity to be leading edge when it comes to promoting LEDs
- Risk free!

L*Prize

- L Prize standards for quality raise the bar for the very common lamp types (60W incandescent lamps and PAR 38 halogen lamps)
 - Efficacy: 90 lumens/W, 123 lumens/W
 - Lumen output: 900, 1350
 - Quality: 90 CRI, 2700-3000K CCT,
 - Performance: dimmable, -20 degree C start, over 25,000 hour rated life
- Quality product means little risk to partners

Additions to programs 2009?

- Products that meet the DOE specifications for Residential
- Category A additions for Exterior
 - Parking structures, Parking lot
 - Wall pack, pedestrian, bollard
 - Pole/arm mounted roadway
- Dock lights
- Retail display
- Cove, Wall Wash
- Undercabinet (kitchen and shelf mounted)

Demonstration Projects

Recently issued RFP

- Customer/Vendor joint proposal
- Parking garage and Parking lot (Area)
- 8 projects approved
- Will create case studies on implemented projects

M&V report on the Prairie School in Racine

- Early project (2007)
- Results were consistent with manufacturer claims
- Good example of uniformity



Beta LED

In Summary

Our plan is to structure programs around products that:

- Have documentation of performance
 - Independent lab testing
 - Track record of successful installations
- Meet DOE SSL ENERGY STAR criteria

Contact information

Liesel Whitney-Schulte, LC

Focus on Energy

liesels@weccusa.org