Beta LED

Integration of High Brightness White LEDs for General Outdoor Illumination

Eric Haugaard – Director of Technology
Kevin Orth – Director of Sales

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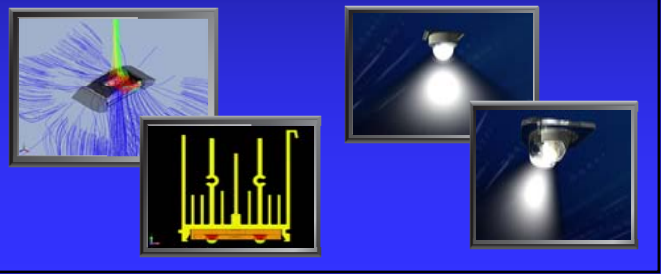
Optimizing Integration for Fixture Design and Applications

Thermal Management

Optical Control



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What are the Possibilities???

- Dramatically Improved Uniformity
- Comparably Maintained or Improved Minimum Illumination Levels on the Grid
  - Averages Will Be Lower
- 30% - 60% Energy Savings
- Chromaticity Advantages Over HPS and MH

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The Prairie School

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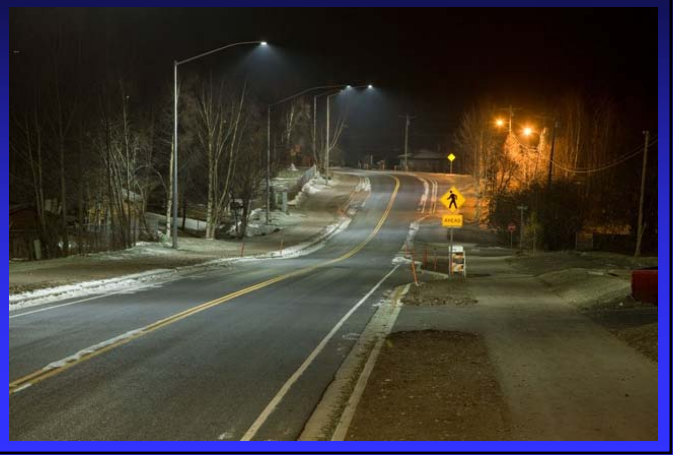
Anchorage Alaska



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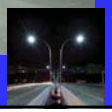
I-35 West
St. Anthony Falls Bridge
Minneapolis, MN



DETAILS

- **THE EDGE luminaires deliver more than 5 times the life of traditional 250-Watt high-pressure sodium (HPS) lamps supporting the sustainability goals of the bridge design.**
- **16 257-Watt THE EDGE™ area luminaires mounted back to back on 8 40' poles with 150' spacing.**
- **By eliminating maintenance associated with relamping or replacement, costs are significantly reduced.**
- **15% energy savings VS. HPS**
- **Improved color rendition and uniformity**

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Duke Energy Headquarters
Charlotte, NC

Beta LED

Raleigh Convention Center

What is Needed for a Fair Comparison?

1. Side-by-Side Performance Evaluation
   - At the Application Level !!!
2. Certified Photometric Report From an Independent Testing Agency
   - LED System (per IESNA LM-79)
   - Competing Systems (per appropriate IESNA Standards)
3. Life Data (Lumen Depreciation Value) for the LED System
   - per IESNA LM-80 and DOE ENERGY STAR Criteria (if available)
   - Based On the Life of the Application
     - L_{70} = end of life limit
4. Appropriate Maintenance Factors/Light Loss Factors for the Competing Systems
5. Cost/Value Analysis
   - Lighting Performance, Total Power Consumption, etc.

❖ Best-in-Class to Best-in-Class Comparisons (Where Possible)

Other Factors of Comparison

- Complete System Life
- Reliability
- Warranty
- Serviceability and Maintenance
- Chromaticity Selection
- Chromaticity Variation
- Environmental Impact Factors
  - Disposal / Recyclability / etc.
- Etc.

Thank You

www.BetaLED.com

USA Average Nighttime Temperatures