Continuing Developments in INDOT Standards for Highway Lighting

David Boruff
Manager, Office of Traffic Administration, INDOT

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Revised Standards

- Updates to Design Procedure & Luminaire Specifications
- Adopted last month
- Effective Jan 2016
- Input from:
  - FHWA’s Lighting Workshop
  - Other agencies specifications (e.g. CALTRANS, IDOT, Calgary)
  - Manufacturers
Design Procedure

- **Service Cost Calculation**
  - Used to decide the light source technology
  - Expected life used rather than luminaire warranty period
  - Replacement cost of power drivers, LEDs, plasma emitters to be considered
  - Cost of energy bumped from $0.08 kw-hr to $0.10 kw-hr
Design Procedure (cont)

- Additional guidance for local projects added:
  - Glare (veiling luminance)
  - Light Trespass
  - Adaptive lighting (late night dimming)

- Luminaire Model referral list
  - Available through INDOT project manager or Traffic Administration
Luminaire Specification

- Additional industry based testing requirements:
  - Total Harmonic Distortion - all light source technologies
  - Power Driver Reliability
  - Post Top and Underpass Luminaires - Salt Spray Test

- Testing Labs to be accredited:
Warranty - more fully described

- Non-prorated
- Performance falls outside of the spec limits
  - Lumen output
  - Non-operative LEDs
  - Color degrades
Luminaire Specification (cont)

- **Color of Emitted Light**
  - Acceptable range narrowed - towards natural light
  - Minimum Color Rendering Index added - signifies light that allows the true color of an object to be seen.
Advancements on the Horizon?

- **Luminaires**
  - LED Efficiency
    - 50% increase soon, 200% later on
  - Improved Heat Sinking - affects long term performance
  - Longer Lasting Power Drivers

- **Lighting Design Parameters**
  - AASHTO Guidance for solid state lighting
Contact Info

David Boruff
Manager, Office of Traffic Administration
Office: 317-234-7975
e-mail: dboruff@indot.in.gov