Recent Updates to INDOT’s Highway Lighting Design Practice

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Transition to Solid State

- **Research & Testing**
  - Started in 2011
  - 2 JTRP projects
  - 8 test bed locations
  - 20 manufacturers/24 models
    - LED, plasma, metal halide, induction

- **Specifications/Design Procedure**
  - First revisions 2013
  - Second set effective as of Jan. 2016
Test Sites

INDOT TEST PROJECT 1-70 EB
AERIAL VIEW ON OCTOBER 9TH, 2013

1000 Watt HPS
6 Luminaires Per Pole

Holophane LED
550 Watts Per Luminaire
6 Luminaires

Bright Lights BLP1000
540 Watts Per Luminaire
6 Luminaires

Lightefficient Plasma
280W per Luminaire
3 Luminaires

Holophane LED
280W per Luminaire
3 Luminaires

I-70 Hancock County Rest Area
Recent Design Changes

- **Service Cost Calculation**
  - Used to select the most economical light source
  - Now based on service life rather than warranty
  - Cost of electricity updated

- **Electric Services**
  - Flat rate tariffs are not yet available
  - Should be metered
Recent Design Changes (cont)

- **Adaptive Lighting (Curfews)**
  - Strictly voluntary practice
  - Guidance available: FHWA-HRT-14-050
    - Lighting reduced when volumes drop off

- **Pedestrian/ Bicycle Facilities**
  - Light levels per AASHTO Roadway Guide:
    - Ave maintained illuminance: 1.4 to 2.0 fc
    - Uniformity Ratio 3:1
Recent Design Changes (cont)

- **Lighting at Roundabouts**
  - Circular roadway, approaches, splitter islands, pedestrian crosswalks should be lighted
Future Developments

- **Criteria for Alternative Intersections**
  - Potentially needed regardless of B/C analysis
    - Where wrong way movements are possible
    - Abrupt changes in alignment
    - At crossovers, U-turn movements
    - Pedestrian Islands

- References:
  - FHWA publications
  - AAHSTO/TRB Research
  - Experiences at our intersections
Future Developments

- Luminaire Approved Materials List
  - Separate lists for:
    - Roadway
    - High mast
    - Underpass
  - Will require light output matching HPS, much lower energy consumption
  - Still under consideration:
    - Limiting the number of models (maintenance)
    - How to capture sustainability of manufacturer
  - Next step: industry review
Contact Info

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