BPA Non-Residential Lighting

- Lighting Program Manager is Responsible for
  - Implementing & supporting lighting programs for public power utilities across the region
  - Integrating new lighting technology when it’s ready
  - Works Directly with
    - E3T (New Technology)
    - BPA Planning (Number Crunchers)
      - Savings claimed
      - Incentives paid
BPA History on LEDs

- **2000 – 2005**  No incentives for LEDs

- **2005 -2010**
  - Hesitant to rapidly adopt
  - Majority of LED’s were not cost effective
  - Overall performance was lacking
  - Abundance of proven low cost / high alternatives

- **2010 – Present**
  - Top performing LEDs integrated into Program Offerings
  - All LED products available for case by case review

How BPA Groups LEDs

- Ranks LED products into 3 tiers:
  - Varsity
  - Junior Varsity
  - Freshman Team
How BPA Groups LEDs

• Varsity
  – Already in BPA Lighting Calculator
  – Proven cost effective
  – Plenty of data available (more is always better)
  – Incentives offered through BPA shift the market

• Screw in Reflectors
• Down Lights
• LED Traffic Signals
• LED Exit Signs

How BPA Groups LEDs

• Junior Varsity
  – Already in BPA Lighting Calculator
  – Available data lacking / BPA Needs more data
  – Incentives typically pretty minimal / not shifting market

• Troffer Fixtures
• Canopy Fixtures
• Wall Packs
• Yard / Area Lights
How BPA Groups LEDs

• Freshman Team
  – Not in BPA Lighting Program / Calculator
  – All available indicators point to not cost effective
    ▪ Always could use more data
  – System efficacy much less than ‘go to’ option

• Street Lights
• Highway Lights
• Flood Fixtures

How BPA Judges LEDs

• Cost Effectiveness
  – Benefit Cost Ratio $\geq 1$ (BC Ratio)
  – BC Ratio = Total Savings / Total Cost
    ▪ 50,000 rated life
    ▪ 12 hours / 7 days a week use = ~4,300 hours / year
    ▪ 12 year measure life

Present Value of 12 years energy savings + O&M Savings

Total installed cost (material + labor)
Cost Effectiveness

- **Performance (System Efficacy)**
  - Proposed LEDs must be comparable or exceed ‘most common practice’ EE technology

- **Example: (High Bay Application)**
  - HP T8 / HO T5 = ~ 70 design lumens / watt
  - LED product would have to be within 10-15%

- BPA doesn’t spend rate payer dollars on expensive LEDs when something more efficient is available for much less

In Summary

- ‘Junior Varsity’ LED applications will benefit the most from TAG research

- All LEDs are subject to the same qualifying metrics

- LEDs (and everything else) must be ‘Cost Effective’ as a measure
BPA’s Priority Picks

- **401**: LED Linear Commercial Office Lighting (including troffers and pendants)
- **402**: LED Interior High Bay and Low Bay Luminaires
- **413**: LED High and Low Bay Retrofit Lamps
- **417**: LED Area and Parking Lot Lighting
- **78**: LED Street Lighting
- **414**: LED Outdoor Commercial Flood Lighting
- **398**: LED Parking Garage Lighting
- **411**: LED Outdoor Residential Lighting
- **214**: LED A-Lamp Replacement
- **395**: LED Outdoor Wall Packs