



## *Lighting & Electrical Technology Solutions*

Troffer Specification (Session 1)

Lighting Energy Efficiency in Parking (LEEP) Campaign (Session 1)

Wall Pack Specification and Guidance (new!) (Session 2)

Exterior Lighting Controls Guidance (new!) (Session 2)

New Ideas and Discussion Questions for Industry (Session 2)

BBA All Member Efficiency Forum, May 29, 2013

# Introductions

- ▶ Name
- ▶ Affiliation
- ▶ What is the **biggest challenge** when it comes to implementing high efficiency lighting at your facilities?

# Troffer Specification (Background)



## ▶ Huge savings potential!

- 50% of all commercial fluorescent lighting fixtures
- Operate more than 10 hours per day
- Estimated to use 87 TWh of electricity annually

## ▶ BBA Specification updated 4/15/13

- Potential savings from applying the specification range from 15–45% on a one-for-one basis and up to 75% with the use of controls.

## ▶ Prices

- Prices are coming down on LED products
- Good time for field study (see next slide)



# Troffer Specification (Field Study)

- ▶ Opportunity for BBA members to receive technical assistance in field testing LED troffers that meet the BBA specification
  - PNNL will assist with site identification, applying BBA specification, measuring performance (energy savings, light quality, etc.).
  - Results will be documented in a Case Study.
- ▶ Best candidates for a field test:
  - New construction or major renovation
  - Office, hospital, fast food, higher ed., retail.
  - High energy prices
  - Utility incentives
- ▶ Webinar: *LED Troffers, Retrofit Kits, and Replacement Tubes*, Naomi Miller, PNNL. June 20. 1 PM ET

# Troffer Specification (Questions)



## ▶ Application:

- Do you have experience with high efficiency troffers?
  - If so, please share those experiences.
- What barriers are keeping you from adopting high efficiency troffers in your facilities?



## ▶ Field Study:

- Would you be interested in pursuing a field test?
  - Why or why not?

## ▶ What questions should we pose to industry on Day 2 of the Efficiency Forum?

## Lighting Energy Efficiency in Parking Campaign



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# LEEP Campaign (Background)



- ▶ BBA specs for parking lots or structures should deliver energy savings of 40% or more (when using controls), compared to incumbent technology.
- ▶ If all lots/structures switched to levels consistent with LEEP, savings of *at least* 17 TWh per year could be achieved, and likely much more.
- ▶ Technical Assistance is available through PNNL.

# LEEP Campaign (Participation)

## ▶ 67 Registered LEEP Participants as of May 1, 2013

ABM Facility Services	Georgia Building Authority	Shelor Motor Mile
AGC Banquet & Event Center	Groupe Pacific	SNC Lavalin Inc.
Alexandria Real Estate Equities, Inc.	Grubb Ventures	Standard Parking
AllBright Management Professionals	Hines (3)	State of Missouri
Allentown Parking Authority	Horizon Solutions LLC	Stream Realty Partners, L.P
American Realty Advisors	Jones Lang LaSalle	Sumner School District
AT&T (2)	Julin Realty Services, LLC	Supervalu, Inc. (3)
Blue Hill Partners	M C Realty Group LLC	TES Engineering
Bradford Exchange	MDAnderson Cancer Center	Tetra Tech Inc./Oregon National Guard
Brookfield Office Properties	MGM Resorts International	The Hermitage Centre
Brookshire Brothers	Midwest Moving & Storing	Tower Companies
CC Frost Properties, LTD	Miller-Valentine Group	Town of Amherst
CentraCare Health System	Morlin Asset Management	U.S. Army Reserve Parks Reserve Forces Training Area
City of Melrose	Newmark Grubb Knight Frank	U.S. Army - Army Test and Evaluation Command Sain Engineering Associates/Dugway Proving Ground
City of San Jose, Department of Transportation	Parmenter Realty Partners	US Air Force Lackland, AFB
Compass Properties, LLC	Perry CSD	Village of Great Neck Plaza
Crescent Real Estate Equities	Point Park University	Von Braun Center
Department of Defense Joint Base San Antonio	Prologis L.P.	Walmart
Dept. of Veterans Affairs (Perry Point, MD)	Providence Health & Services	Wells Fargo Insurance USA
Downtown DC Business Improvement District	Prudential Real Estate	Wyndham
Ford Motor Company	PTP Management, Inc.	
Franklin Resources Inc.	Santa Barbara County	



Chris Magee, Director of Sustainable Facility Development  
MGM Resorts International



## Parking Lot Pole Lighting & Garage Deck Retrofit

- MGM Resorts International issued a detailed technology neutral RFP to seven contractors for its Las Vegas properties:
  - Bellagio
  - Circus Circus
  - Excalibur
  - Luxor
  - MGM Grand
  - The Mirage
  - Monte Carlo
  - New York, New York
  - Call Center
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  - Mandalay Bay
- 1700 fixtures (preliminary area estimates are in the 160 acre range or nearly 155 football fields).
- MGM selected induction for these sites.
- MGM is finalizing a bid award for 2.65 MSF of parking garage space at MGM Grand Detroit. This space will use LED's (3,117 existing fixtures).
- MGM is also taking advantage of other DOE BBA resources on interior / exterior spaces.



## Current Project Details

- The lamps, generators and complete fixtures are rated / warrantied at 100,000 hours. In a dusk to dawn application (4,380 hour or 12 hours a day x 365 days), the lamp is expected to last 22.5 years.
- Lumens per watt is improved, and wattage is generally cut in half.
- 3.4M annual kWh will be saved resulting in a 1.6 year simple payback
- Additional maintenance cost savings (current lamps replaced every 1-3 years).
- Significant impact to our waste stream will be achieved
  - 1000's of former end of life lamps will be eliminated from our waste stream along with related packaging.
  - Transportation related emissions from the shipping of shorter life lamps will be reduced.
- In most installations, light output (foot candles) will be improved.
  - At the Monte Carlo and Corporate campus south, it has been shown to nearly triple the original lamps improving overall look and security concerns.

# LEEP Campaign (Questions)



- ▶ Do you have experience with high efficiency parking facility lighting?
  - If so, please share those experiences.
- ▶ What barriers are keeping you from adopting high efficiency parking lighting in your facilities?
- ▶ Are you interested in joining the LEEP Campaign?
  - Why or why not?
- ▶ What questions should we pose to industry on Day 2 of the Efficiency Forum?



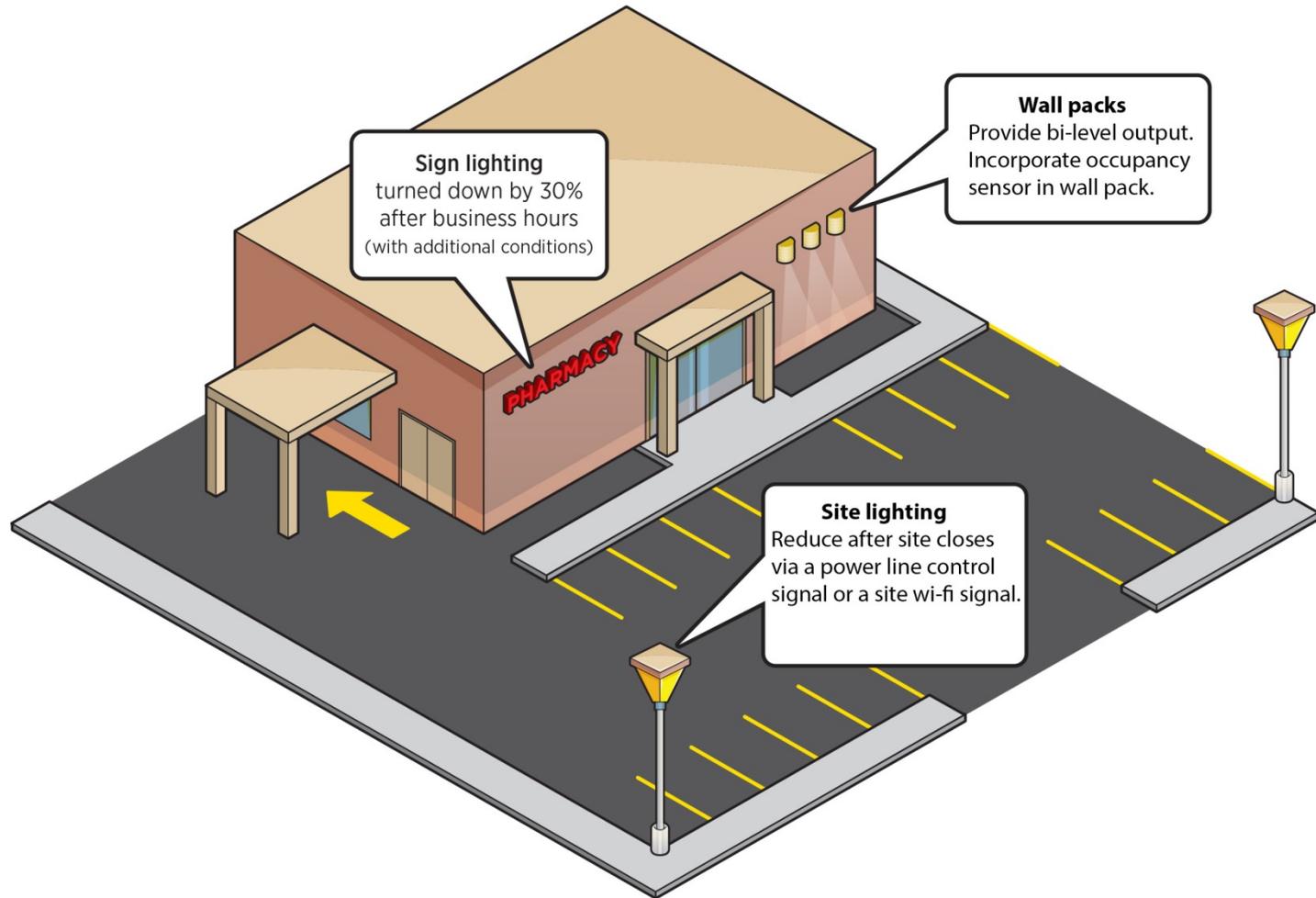
- ▶ Wall packs are wall-mounted area lights
  - Operate dusk-to-dawn
  - Approx. 20% of site lighting energy
  - Estimated usage 7.67 TWh (site)
- ▶ Specification
  - Device efficiency of 60 LPW (matches other programs)
  - Recommended LPDs
  - Color qualities
  - Allows for a direct comparison to a product data sheet
- ▶ Guidance
  - Where to and **NOT** to light
  - Quantity and quality of light needed
  - How to find products, things to consider when buying...

## Wall Pack Specification and Guidance (Questions)



- ▶ Current draft
  - A draft is complete and ready for review
  - We need your input
- ▶ Application
  - How will you use the specification & guidance?
- ▶ Finding products
  - How do you currently find products?
- ▶ What questions should we pose to industry on Day 2 of the Efficiency Forum?

# Exterior Lighting Controls Guidance



- ▶ Exterior Lighting
  - Operate dusk-to-dawn
  - Estimated annual lighting energy usage 60 TWh (site)
  - New sources and control technologies could save 30 – 50% of the energy usage
- ▶ Specification
  - Not market ready – still many products being developed
- ▶ Guidance
  - Questions to ask when deploying a controls system
  - Discussion of the different control types and things to consider
  - Basic one-line diagrams
  - Sample coverage diagrams

# Exterior Lighting Controls Guidance (Questions)



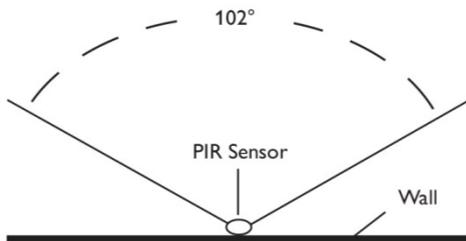
## ▶ Current Draft

- A draft is complete and ready for review
- We need your input!

## ▶ Next Steps

- What control technologies and/or luminaire applications are desired?
- Is a specification desired?

## ▶ What questions should we pose to industry on Day 2 of the Efficiency Forum?

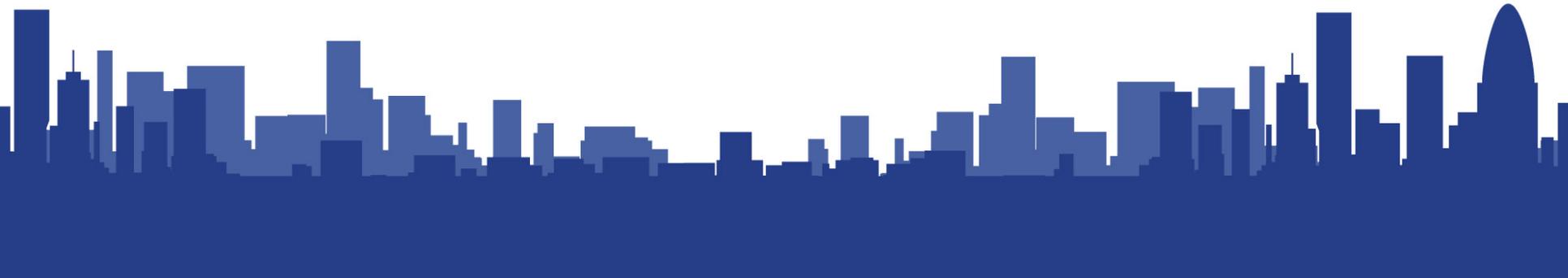




# Open Discussion

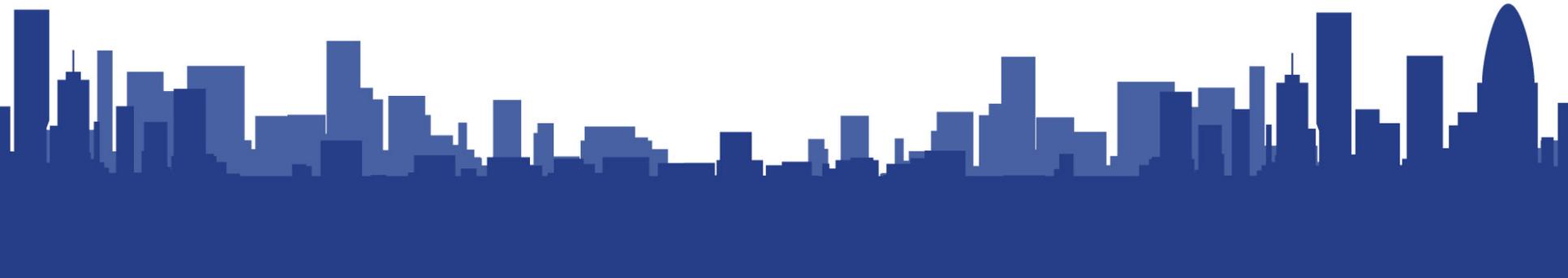
## New Lighting & Electrical Project Ideas

### Questions for Industry





# Accelerating Deployment of Adaptive Exterior Lighting Technologies



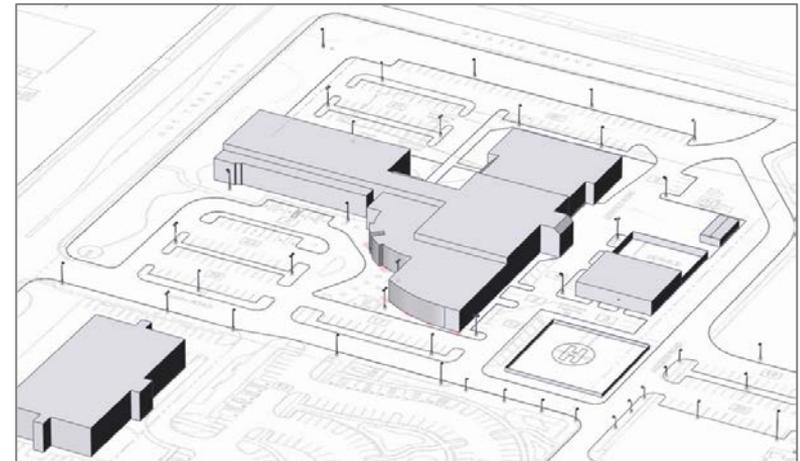


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- Cooperation between LBNL & CLTC (UC Davis)
- Adaptive Exterior Lighting in Healthcare
- Hospital as key sector for adoption in other fields
- Efforts to include and capture ESCO process to promote similar projects

- Market survey & Project planning
  - Detailed research in healthcare market
  - Review of case studies & best practices
  - Locate a fitting demonstration site
- Technical Specification & Pre-Install Audit
  - Luminaire, Sensor & RF research
  - Site CAD mockup: light levels & sensor coverage
  - Pre-Install Audit, light & energy
  - Order / customization / pre-commissioning
  - Installation & Post – Install Audit
- Outreach & Technology transfer
- Project promotion
- User survey, Stakeholders perceptions





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Troffer Specification

Lighting Energy Efficiency in Parking (LEEP) Campaign

Wall Pack Specification and Guidance (new!)

Exterior Lighting Controls Guidance (new!)

Open Discussion of New Ideas

Executive Exchange with Commercial Building Stakeholders, May 30, 2013

# Troffer Specification (Background)



## ▶ Huge savings potential!

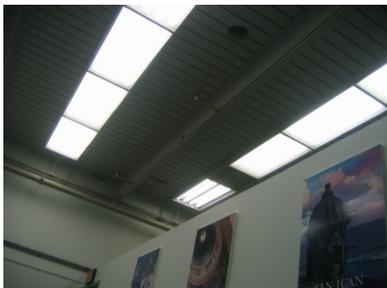
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# Troffer Specification (Questions)



- ▶ If you offer LED troffers, are sales meeting your expectations?
  - What do you see as the main barriers to increased sales?
- ▶ Do you have customers that may be interested in pursuing a field test in coordination with the BBA?
- ▶ What questions do you have for BBA members?

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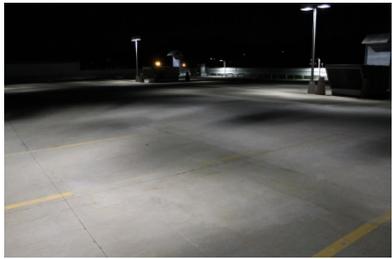
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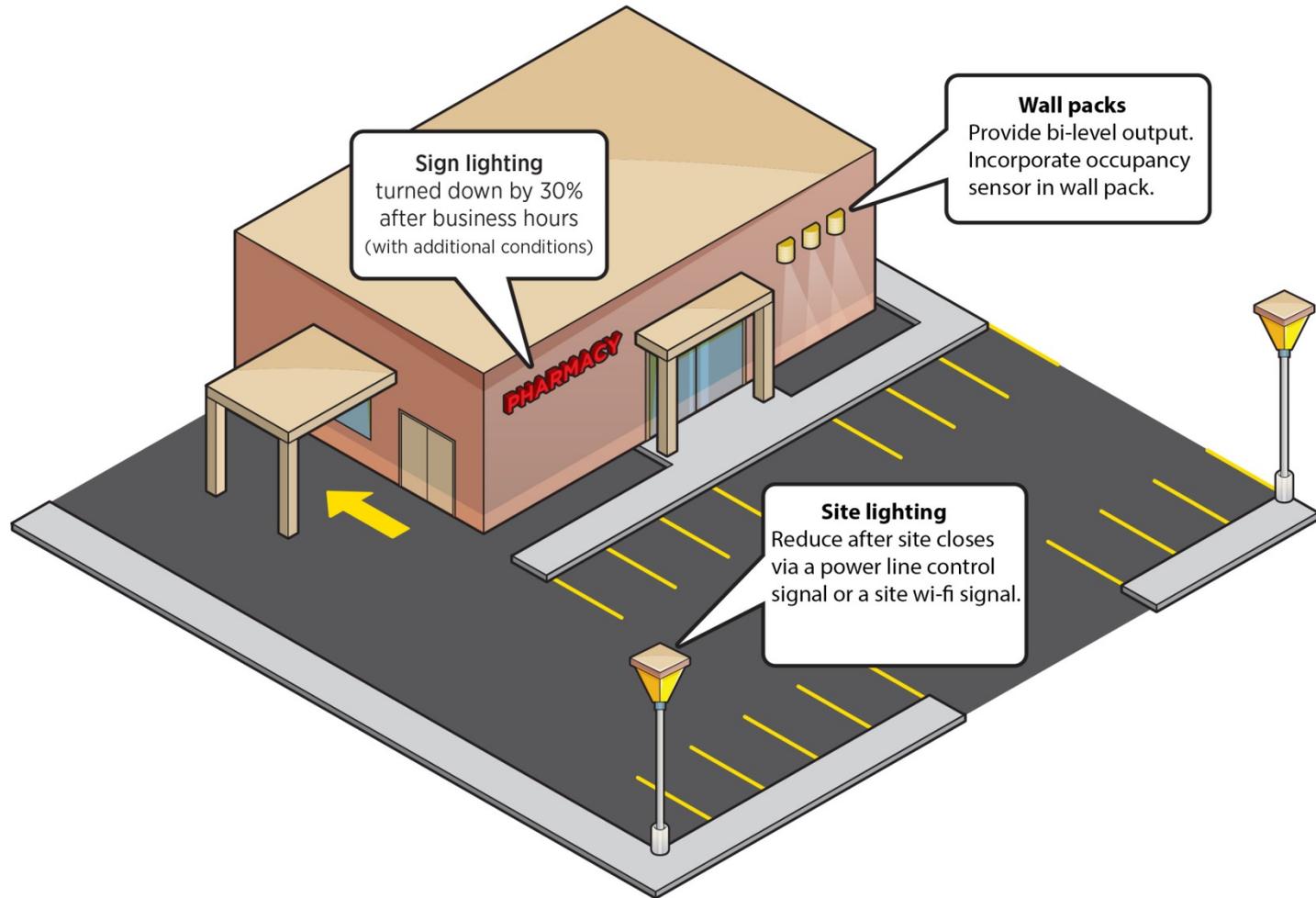
- ▶ What do you see as the main barriers to increased sales of high efficiency site lighting?
- ▶ How might the LEEP Campaign better coordinate with industry?
  - *We'll also discuss this at lunch – look for the LEEP Campaign table.*
- ▶ What questions do you have for BBA members?

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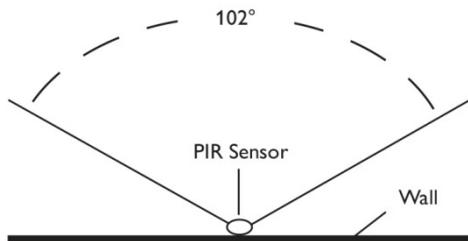
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# Exterior Lighting Controls Guidance

(Questions)



- ▶ Are you incorporating more controllability into your luminaires?
- ▶ Can you make control schemes at a lower cost?
- ▶ Do you have and can you share controls materials/guidance with BBA members?



# Additional Questions

- ▶ What are the cost projections for LED products over the next few years?
- ▶ Why do full cutoff luminaires cost so much more than partial cutoff (more than double)?
- ▶ Do you plan to offer improved warranties given the lifetime claims of LED products (claimed longer life)?
- ▶ What is your strategy for incumbent technologies?
  - Can you share what technologies you'll move away from (e.g. where will HID be in 5 years)?

## New Project Ideas

- ▶ If the BBA pursued a project to increase the uptake of efficient lighting in a particular application, what application do you believe would be the best candidate?
  - What could BBA do to best support this?
- ▶ Other ideas?