

# Commercial Building Demonstration and Deployment

2014 Building Technologies Office Peer Review



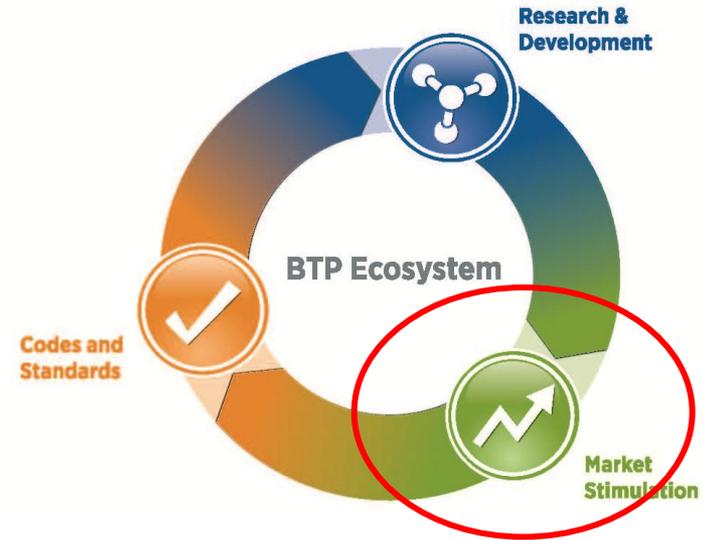
# Commercial Buildings Integration (CBI) Program

## Vision

Commercial buildings are constructed, operated, renovated and transacted with energy performance in mind and net zero ready commercial buildings are common and cost-effective.

## Mission

Accelerate voluntary uptake of significant energy performance improvements in existing and new commercial buildings by providing the tools, solutions and resources the market needs and demonstrating the cost-effective low-risk benefits of energy efficiency.



# Today's Agenda

## Wednesday April 23<sup>rd</sup>

11:15-11:30	Commercial Demonstration/Deployment Overview	Kristen Taddonio, DOE
11:30-12:00	Better Buildings Alliance Tech Team Impact Framework	Amy Jiron, DOE
12:00-12:30	Energy Management and Information Systems Study (Better Buildings Alliance)	Jessica Granderson, LBNL
1:30-2:00	Lighting & Electrical Team Leadership and Project Delivery (Better Buildings Alliance)	Linda Sandahl, PNNL
2:00-2:30	DOE Technology Performance Exchange	Bill Livingood, NREL
4:00-4:30	Green Leasing deployment portfolio (Better Buildings Alliance)	Deb Cloutier, JDM Associates
4:30-5:00	Better Buildings Case Competition	Elena Alschuler, DOE

# What do these projects have in common?

- **Demonstration.** All of these project involve demonstration of technologies, tools, and solutions designed to help improve commercial building energy efficiency.
- **Deployment.** Several of these projects focus on deploying tools and resources that have proven successful during the demonstration phase.
- **Partnerships.** Most of these projects were conducted in partnership with the Better Buildings Alliance.

## Develop

Via partners, or in house where there is a federal role

## Demonstrate & Deploy

Work with market partners to test, measure, refine, & move beyond DOE

# What is the Better Buildings Alliance?

The Better Buildings Alliance is a critical component of the DOE Better Buildings strategy to develop and deploy innovative, replicable solutions with market leaders and a core piece of BTO's commercial market stimulation efforts.

*“Developing Innovative, Replicable Solutions with Market Leaders”:*

- *Better Buildings Challenge*
- ***Better Buildings Alliance***
- *Better Buildings, Better Plants*
- *Better Buildings Case Competition*



# What does the Better Buildings Alliance do?

Through the Better Buildings Alliance, members in different market sectors identify specific barriers and work with the U.S. Department of Energy's (DOE) to develop and deploy innovative, cost-effective, energy-saving solutions that lead to better technologies, more profitable businesses, and better buildings in which we work, shop, eat, stay, and learn.



## **Installation of night curtains**

Whole Foods Market, a BBA member, installed night curtains to cover the refrigerated produce cases when stores are closed. This strategy lowers the cooling load on the refrigeration case by about 40% during unoccupied periods.

# What do we ask of members? What do we provide in return?

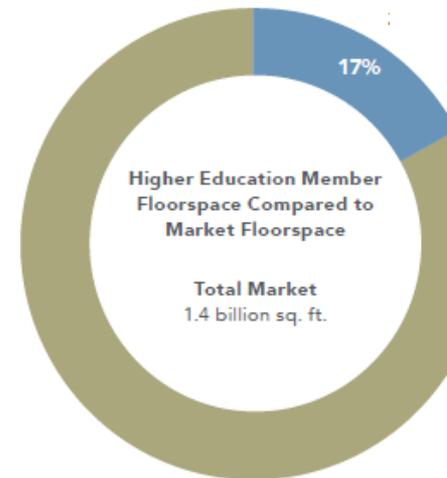
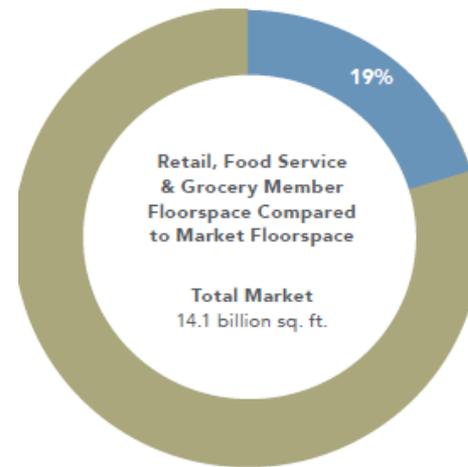
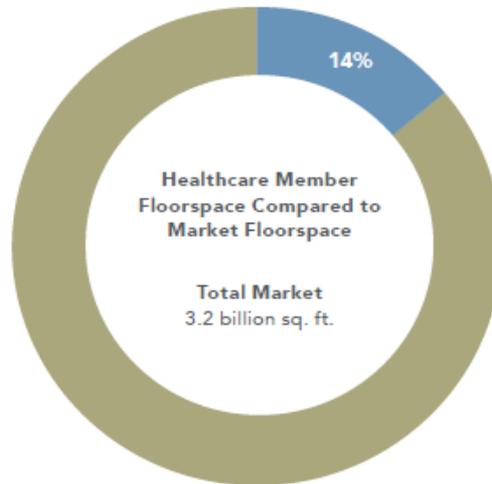
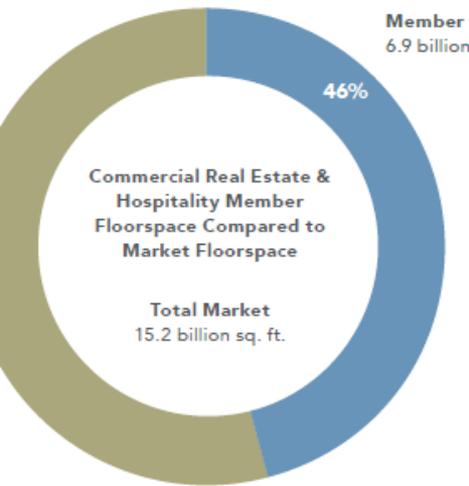


Commitment	Recognition	Support
<ul style="list-style-type: none"> <li>✓ 2% annual encouraged</li> <li>✓ Participate in at least 1 activity per year</li> </ul>	<p>Available to organizations that join Better Buildings Challenge</p>	<ul style="list-style-type: none"> <li>✓ Eligible to participate in pre-defined working groups</li> <li>✓ Information</li> <li>✓ Webinars &amp; Events</li> <li>✓ Peer-to-peer exchange</li> </ul>
<ul style="list-style-type: none"> <li>✓ 20% by 2020</li> <li>✓ Transparency</li> <li>✓ Facility level reporting</li> </ul>	<ul style="list-style-type: none"> <li>✓ Highest level DOE can confer</li> </ul>	<ul style="list-style-type: none"> <li>✓ Data</li> <li>✓ Financing (via financial allies)</li> <li>✓ Idea exchange</li> <li>✓ Account management</li> <li>✓ Plus all Better Buildings Alliance offerings</li> </ul>



# Who is Involved?

>200 member organizations | >500 individual participants | > 10 billion sq ft



**Commercial Real Estate & Hospitality**  
6.9 billion sq ft  
46% of sector

**Healthcare**  
450 million sq ft  
14% of sector

**Retail, Food Service & Grocery**  
2.6 billion sq ft  
19% of sector

**Higher Ed**  
242 million sq ft  
17% of sector

# Example Participants



## Sectors

Commercial Real Estate & Hospitality

Healthcare

Retail

Food Service & Grocery

Higher Education

State and Local

## Market Solutions

Leasing & Occupant Engagement 

Making the Financial Case

Data Access 

Workforce Development and Training 

Data (State & Local)

Finance (State & Local)

ESPC (State & Local)

## Technology Solutions

Lighting 

HVAC 

Process & Plug Loads

Labs

Refrigeration 

Food Service 

NEW Renewables Integration

Energy Management & Information Systems 



# Example activities: Specifications & Demonstrations

## ▶ Lighting and Electrical



- [High-efficiency troffer lighting](#)
- [LED site lighting \(parking lot\)](#)
- [High-efficiency parking structure lighting](#)
- [LED refrigerated display case lighting](#)



## ▶ Plug and Process Loads

- [Low voltage distribution transformers](#)
- [Commercial heat pump water heaters](#)



## ▶ Space Conditioning



- [Gas heaters](#)
- [Rooftop air conditioning units](#)

## ▶ Refrigeration



- [Ultra-low temperature freezers](#)

## Laboratories

- [Laboratory fume hoods](#)



# Affiliates: Key partners in deployment campaigns

Lighting Energy Efficiency  
in Parking Campaign



= Reviewed today

Advanced RTU Campaign

# Example Activities: Deployment Campaigns = Reviewed today

DOE provides tools and technical assistance to Participants in helping to maximize participation. Implementation resources to support technology adoption include:

## Case Studies

## Specifications

## Technical Assistance (limited)

## M&V guidance



**Cleveland Clinic Goes LED in**

**CBEA LED Site (Parking Lot) Lighting Specification**

The U.S. Department of Energy (DOE), its national laboratories, and Commercial Building Energy Alliance (CBEA) members are working to support the market introduction of light-emitting diode (LED) parking lot lighting. A CBEA Project Team is focused on making reliable, energy-efficient, and competitively priced outdoor



**DOE High-Efficiency Parking Structure Lighting Specification**  
Version 1.1, Released 1/17/2012

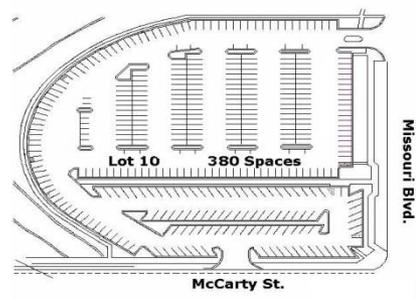
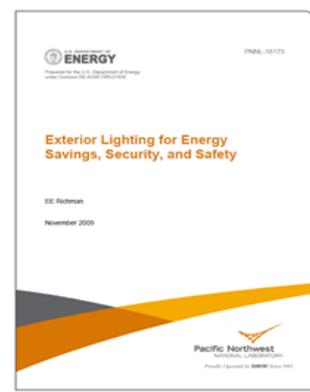
**PARKING STRUCTURE LIGHTING PERFORMANCE SPECIFICATION**

Part 1 - GENERAL

1.1 SUMMARY

1.2 REFERENCES

1.3 EXECUTION

**Exterior Lighting for Energy Savings, Security, and Safety**

EE Webinar  
November 2009

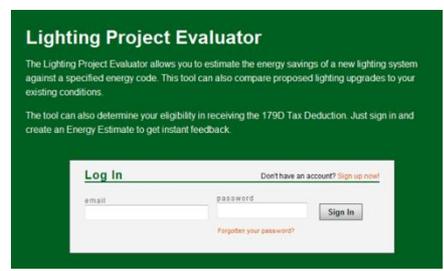
Pacific Northwest  
Lighting, Inc.

## List of utility incentives

## Energy Estimator to compare against code

## Organizer-hosted Webinars

Parking Garage	Utility	State	Technology	Product	Rebate Amount
Alliant Energy	IA	LED	Fixture	\$30	
Alliant Energy	IA	Controls	Occupancy Sensor	\$20	



**Lighting Project Evaluator**

The Lighting Project Evaluator allows you to estimate the energy savings of a new lighting system against a specified energy code. This tool can also compare proposed lighting upgrades to your existing conditions.

The tool can also determine your eligibility in receiving the 179D Tax Deduction. Just sign in and create an Energy Estimate to get instant feedback.

Log In | Don't have an account? Sign up now!

email:  password:

Sign In

Forgot your password?

### LEEP Campaign

Take the LEEP - An Introduction to the Lighting Energy Efficiency in Parking Campaign



# Example Activities: High-Performance Leasing

- BBA worked with GSA, NYU, RMI, BOMA, NRDC, IMT, and others to help launch content and resources in the [Green Lease Library](#)
- Successfully published case studies focused on overcoming barriers to green leasing
  - [Brandywine Realty Trust](#)
  - [Pyramid Companies](#)
- Now encouraging greater adoption through **Green Lease Leaders**

★ = Reviewed today



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Industry  
Associations

Building Trade  
Groups

**What is CBI doing to deploy resources  
beyond Better Buildings members?**

Regional Efficiency  
Organizations

Efficiency Non-  
profits and NGOs

**\*NEW\***

## Affiliates: Helping deploy energy-saving resources

### Affiliates agree to:

**Commit** to helping your membership take advantage of energy efficiency opportunities.

**Promote** Better Buildings program materials and resources to your membership and encourage them to join.

**Participate** in at least one Better Buildings [activity](#) per year. You may join an existing activity or suggest a new activity that leverages DOE resources and aligns to your organization's goals.

**Share** the results of your energy efficiency activities with DOE annually so we can track our collective impact.

### DOE Agrees to:

**Support** your organization's efforts to help its members or constituents save energy.

**Recognize** your organization on the DOE's Better Buildings Alliance Website and program materials.

**Connect** your organization with technical experts at the DOE and its National Laboratories, as well as with other Better Buildings program partners and affiliates.

**Invite** your organization to participate in Better Buildings activities and events, such as the annual Better Buildings partner meeting.

# Example Affiliates

- American Hotel & Lodging Association
- American Institute of Architects (AIA)
- American Society for Healthcare Engineering (ASHE)
- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
- BOMA International
- Penn State Consortium for Building Energy Innovation
- Green Parking Council
- Green Sports Alliance
- Health Care Without Harm
- Illuminating Engineering Society of North America (IES)
- International Council of Shopping Centers
- International Facility Management Association (IFMA)
- NAIOP (Commercial Real Estate Development Association)
- National Association of Convenience Stores
- National Association of Real Estate Investment Trusts (NAREIT)
- National Multi Housing Council
- Professional Retail Store Maintenance Association
- Retail Industry Leaders Association
- Second Nature
- Sustainability Roundtable Inc.
- The Bullitt Foundation
- The Real Estate Roundtable
- Unified Foodservice Purchasing Co-op
- VHA (formerly Voluntary Hospitals of America)



## Active engagement with the commercial market:

- >200 organizations and over 500 individual members representing over 10 billion square feet
- Better Building Alliance members made significant progress saving energy in their portfolios. **On average, members reported savings of 2% over the previous year's energy use.**

*“These have been two of the most relevant, useful days I have spent this year.”*

- Noah Shlaes

Senior Managing Director, Global Client Services Newmark Grubb Knight Frank, on last year's Alliance Efficiency Forum

# Results



## Advancing innovative technology, overcoming market barriers:

- To date, our partners have worked with us to issue **two technology challenges, two technology adoption campaigns, and ten procurement specifications** to help companies select efficient heating, cooling, lighting, refrigeration, and water heating technologies.
- If everyone switched today to technologies that meet these specifications, commercial building owners and managers would save over **2.0 quads** of source energy every year, equal to about **12% of commercial sector energy use!**
- Nationwide, if everyone switched to technologies that meet these specs, we could save over **\$5 billion annually**
- Green Lease Library and Leaders demonstrating successful examples of organizations **overcoming split incentives**

# Contact Information

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