**BTO Goals:**
BTO supports the development and deployment of technologies and systems to reduce building energy use by 50 percent, saving ~$2.2 trillion in energy-related costs.

**CBI Program Goals:**
New Buildings
- Demonstrate 50% cost-effective savings at a convincing scale by 2020 (EISA 2007)
- Demonstrate 100% cost-effective savings at a convincing scale by 2030 (EISA 2007)
Existing Buildings
- Demonstrate upgrades with 20% cost-effective savings by 2020 (Better Buildings)
- Demonstrate 100% cost-effective savings at a convincing scale by 2050 (EISA 2007)

**Better Buildings Goal:**
Demonstrate upgrades with 20% cost-effective savings by 2020 (Better Buildings) – Better Buildings Alliance is key part of the strategy
Barriers

U.S. commercial building retrofit investment opportunity is over $70B with the potential to realize up to 848 trillion Btu in savings over 10 years.

The technologies are there... The payback is there...

Persistent barriers
= Lack of demand
= Underinvestment

2012 Study by the Rockefeller Foundation and Deutsche Bank
Strategy

Leaders

Leadership & transparency

Followers

Better Buildings Challenge

Better Buildings Alliance

Laggards

Codes & Standards
Better Buildings Challenge Overview

Objective:
- Buildings 20% more efficient by 2020
- Save more than $40 billion annually
- Create jobs in the USA

How:
- Leadership
- Results
- Transparency
- Best Practice Models
- Recognition
- Catalyzing Action
Better Buildings Challenge Overview

DOE facilitates and highlights partners’ results....

... and these serve as cornerstone of comprehensive solution center.
But how do we work with the market to encourage others to replicate those solutions, leading to greater energy savings?
Better Buildings Alliance

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.

Join the Better Buildings Alliance
Commercial buildings—our offices, schools, hospitals, restaurants, hotels and stores—consume nearly 20 percent of all energy used in the United States. We spend more than $200 billion each year to power our country’s commercial buildings. Unfortunately, much of this energy and money is wasted: a typical commercial building could save 20 percent on its energy bills simply by commissioning existing systems so they operate as intended. Energy efficiency is a cost effective way to save money, support job growth, reduce pollution, and improve competitiveness.

Through the Better Buildings Alliance, members in different market sectors identify specific barriers and work with the U.S. Department of Energy’s (DOE) exceptional network of research and technical experts 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.

Better Buildings Alliance Sign-up Form
Building owners and operators can join the Better Buildings Alliance (BBA) by completing the sign-up form.

Sign-up Form
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?

<table>
<thead>
<tr>
<th>Commitment</th>
<th>Recognition</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ 20% by 2020</td>
<td>✓ Highest level DOE can confer</td>
<td>✓ Data</td>
</tr>
<tr>
<td>✓ Transparency</td>
<td></td>
<td>✓ Financing (via financial allies)</td>
</tr>
<tr>
<td>✓ Facility level reporting</td>
<td></td>
<td>✓ Idea exchange</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓ Account management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓ Plus all Better Buildings Alliance offerings</td>
</tr>
<tr>
<td>✓ 2% annual encouraged</td>
<td>Available to organizations that join Better Buildings Challenge</td>
<td>✓ Eligible to participate in pre-defined working groups</td>
</tr>
<tr>
<td>✓ Participate in at least 1 activity per year</td>
<td></td>
<td>✓ Information</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓ Webinars &amp; Events</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓ Peer-to-peer exchange</td>
</tr>
</tbody>
</table>
Who is Involved?

>200 member organizations | >500 individual participants | > 9 billion sq ft

- **Commercial Real Estate & Hospitality**
  - 81 members
  - 6.1 billion sq ft
  - 21%

- **Healthcare**
  - 57 members
  - 0.5 billion sq ft
  - 27%

- **Retail**
  - 58 members
  - 2.4 billion sq ft
  - 16%

- **Higher Ed**
  - 22 members, 100 million + sq ft
Example Participants
## Better Buildings Alliance Structure

<table>
<thead>
<tr>
<th>Technology Solutions</th>
<th>Market Solutions</th>
<th>Public Sector Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lighting</td>
<td>Financing Strategies</td>
<td>Financing Strategies</td>
</tr>
<tr>
<td>Space Conditioning</td>
<td>Leasing and Tenant Engagement</td>
<td>Data Management</td>
</tr>
<tr>
<td>Plug &amp; Process Loads</td>
<td>Training / Workforce</td>
<td>Strategic Energy Planning</td>
</tr>
<tr>
<td>Laboratories</td>
<td>Appraisals and Valuation</td>
<td>Energy Savings Performance Contracts</td>
</tr>
<tr>
<td>Refrigeration</td>
<td>Data Access</td>
<td></td>
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<tr>
<td>Food Service Tech</td>
<td></td>
<td></td>
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<tr>
<td>Energy Information Systems</td>
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</tbody>
</table>

### Commercial Real Estate
- Food Service
- Grocery
- Healthcare
- Hospitality
- Higher Education
- Retail
- Public Buildings

- Lighting
- Space Conditioning
- Plug & Process Loads
- Laboratories
- Refrigeration
- Food Service Tech
- Energy Information Systems
Project Examples
Sample participants and collaborators:
Technology Solutions Specifications & Demonstrations

- **Lighting and Electrical**
  - High-efficiency troffer lighting
  - LED site lighting (parking lot)
  - High-efficiency parking structure lighting
  - LED refrigerated display case lighting

- **Space Conditioning**
  - Gas heaters
  - Rooftop air conditioning units

- **Refrigeration**
  - Ultra-low temperature freezers

- **Plug and Process Loads**
  - Low voltage distribution transformer
  - Commercial heat pump water heaters

- **Laboratories**
  - Laboratory fume hoods

commercialbuildings.energy.gov/technologies
Helping You Make the Business Case: Commercial Heat Pump Water Heater Example

✓ An older, electric resistance water heater operated in a building with a hot water demand of 500 gallons a day, 365 days a year can cost over $3,500 each year in electricity costs.

✓ A new heat pump water heater that meets the specification would use 70% less energy and could save $12,500 over 5 years.

✓ If all commercial electric storage water heaters in the U.S. were replaced with heat pump water heaters per the CBEA specification, businesses would save 15 TWh of energy, or about $1.5 billion in energy costs per year.
Lighting Energy Efficiency in Parking (LEEP) Campaign

It's easy to take the LEEP

Join the team
Save electricity and money
Get recognized for success

Join
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**
- **List of utility incentives**
- **Energy Estimator to compare against code**
- **Organizer-hosted Webinars**
Sample participants & stakeholders:

- BOMA International
- GSA (U.S. General Services Administration)
- CB Richard Ellis
- IMT (Institute for Market Transformation)
- Colliers International
- LIBERTY Property Trust
- McKinstry
- Glenborough
- Prudential
- Rocky Mountain Institute
- UC Davis Energy Efficiency Center
• BBA worked with GSA, NYU, RMI, BOMA, NRDC, IMT, and others to help launch content and resources in the Green Lease Library

• Successfully published two case studies focused on overcoming barriers to green leasing
  – Brandywine Realty Trust
  – Pyramid Companies
Target participants:

- K-12
- Local government
- State government
Public Sector Solutions
New Project Teams

- Four new Project Teams designed to equip public sector organizations with technical assistance, support materials, and peer networks.
  - **Energy Savings Performance Contracts (ESPC)**
    Meeting Dates: March 2013 - December 2013
    Outcome: Develop an energy services agreement framework along with recommended task list for high performing contracts.
  - **Community Strategic Energy Planning**
    Meeting Dates: April 2013 - December 2013
    Outcome: Fully developed strategic energy plan framework
  - **Finance Strategies**
    Meeting Dates: April 2013 - December 2013
    Outcome: Strategy for financing a portfolio of public projects
  - **Data Management Approaches**
    Meeting Dates: March 2013 - December 2013
    Outcome: Harness building energy data for greater energy efficiency impact

- Organized to help public entities design and produce tangible, deployable resources tailored to their communities.

- Second annual Better Buildings Summit for State and Local Communities, May 30-31, in Washington, DC.
Results

Active engagement with the commercial market:

- 220 organizations and over 500 individual members representing over 9 billion sq feet; up from 164 members same time last year

- On track to meet targets of Increase membership to over 250 members representing over 9.5 billion sq. feet by end of FY 13

- Key progress and member milestones will be recognized at 2013 Efficiency Forum May 29-30 in Golden Colorado; opportunity for engagement

“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 2012 Alliance Efficiency Forum
Results

Advancing innovative technology:

• Five manufacturers participating in RTU challenge, a $1b savings opportunity
• Released five new specifications this past fall, doubling the number of Alliance specifications
• Nationwide, if everyone switched to technologies that meet these specs, we could save over $5.5 billion annually
• On track to launch new campaigns driving greater adoption of technologies meeting specifications
  – Highly efficient lighting (LEEP)
  – High efficiency space conditioning (RTU)
• Lighting specifications alone represent a 100 TWh savings opportunity, specs are becoming standard used by market leaders (Walmart, DoD)
Results

Leveraging private sector funds-examples:

- **~$250k** investment in outdoor lighting specification development has led to manufacturer improvements and energy savings of over **$60 million** per year in member sites alone.

- **~$400k** investment in RTU specification development and demonstrations have led to multiple **millions of private sector investment** in development of better technology.

WalMart is using lighting specifications in their parking lots to save significant energy.
Results

Overcoming market and technical barriers:

- Inability to benchmark restaurants due to lack of data
  - Working collaboratively with Energy Star and food service members to address
- Hesitancy to try energy-aligned leases due to lack of information/examples
  - Green Lease Library and case studies
- Improper refrigeration system installation & commissioning and lack of doors on conditioned display cases
  - Providing guidance to help move the market; participating in guide development with ASHRAE
- Inexperienced operators, workforce
  - Members testing out “retuning training” and were fundamental to Job Task Analysis development that are at the core of DOE’s training certification efforts

The BBA doors on cases guide is being used by contractors to reduce refrigeration energy consumption by over 50% per case.
Program Budget

Budget Categories | FY '13 Budget
--- | ---
Coordination and Logistics | $ 750,000
Project Teams | $ 3,343,000
Lighting | $ 629,000
Space Conditioning | $ 385,000
Plug and Process Loads | $ 170,000
Laboratories | $ 159,000
Refrigeration | $ 475,000
Food Service Technologies | $ 200,000
Energy Information Systems | $ 277,000
Market Solutions | $ 353,000
Cross-cutting | $ 695,000
Total: | $ 4,093,000

Project Team Break Down

- Lighting: 21%
- Space Conditioning: 19%
- Plug and Process Loads: 11%
- Laboratories: 14%
- Refrigeration: 6%
- Food Service Technologies: 8%
- Total: 100%

Budget History

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Budget Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2011</td>
<td>$5 million</td>
</tr>
<tr>
<td>FY2012</td>
<td>$2.5 million</td>
</tr>
<tr>
<td>FY2013</td>
<td>$4 million</td>
</tr>
</tbody>
</table>
Next Steps and Future Plans

FY 2013
200 partners
9 billion sq. ft.

FY 2014
300 partners
10 billion sq. ft.

FY 2015 +
500 partners
15 billion sq. ft.

- Announce BBA
- Rebrand CBEA
- Scope role for utility, service provider and supplier contact groups
- Scope multifamily addition to BBA
- Add 3 technical or market solutions such as:
  - Data centers
  - EMIS
  - Leasing
- Add multifamily to BBA
- Formalize role of utility, service and supplier contact groups
- Scope expansions to AE&C
- Add 2-3 technical or market solutions teams, at least one of which focuses on multifamily
- W/partners, expand benchmarking for at least one new sector (restaurants)
- Formalize AE&C deployment role
- Add 2-3 technical or market solutions projects, at least one of which focuses on AE&C
- W/partners, expand benchmarking for at least one new sector (e.g. malls)
- Continue working with market leaders to drive change while codes and standards encourage laggards to act
<table>
<thead>
<tr>
<th>Technical Session Topics</th>
</tr>
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<tbody>
<tr>
<td><strong>Retrofitting Doors on Refrigerated Display Cases</strong> -- BBA Technology Solutions/Refrigeration</td>
</tr>
<tr>
<td><strong>Lighting Energy Efficiency in Parking Campaign</strong> -- BBA Technology Solutions/Lighting</td>
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<tr>
<td><strong>RTU Campaign</strong> -- BBA Technology Solutions/Space Conditioning</td>
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<tr>
<td><strong>Technology Specification Deployment</strong> -- BBA Technology Solutions</td>
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Join us

BetterBuildings.energy.gov
Questions?