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Real World Examples of Driving Organizational Behavior Change: Better Buildings Challenge Partners' Successful Solutions

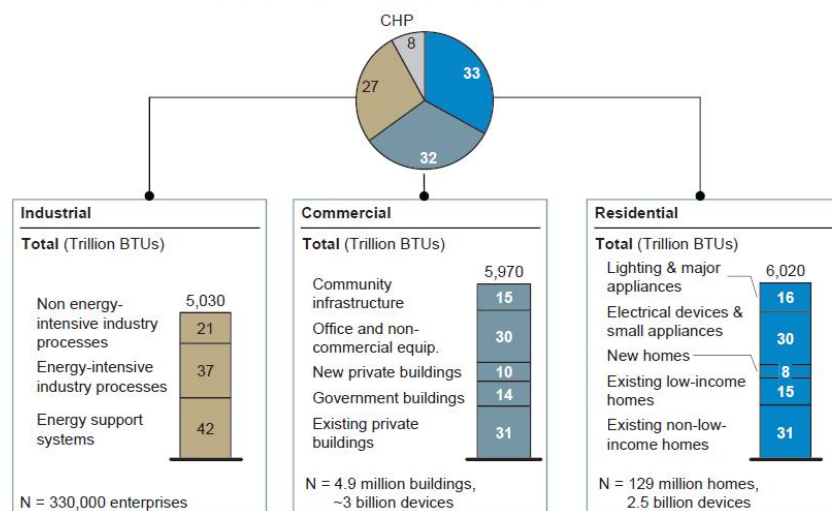
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December 2014

Today

- Better Buildings and Better Buildings Challenge
- Success to Date
- Partner Solutions
- Energy Leadership Habits

Cost effective opportunities for energy efficiency

Percent, 100% = 18,410 trillion BTUs of primary energy



Source: EIA AEO 2008, McKinsey analysis

U.S. spends \$600 billion each year to power homes, plants, & buildings

- Great opportunities in residential, commercial and industrial sectors
- 20% + savings is average
- Other benefits: Jobs, Environment, Competitiveness

BUT persistent barriers exist...

- Efficiency not included as corporate decision making; not integrated into business planning
- Lack of senior management buy-in
- Lack of information; need unbiased information
- High hurdle rates
- No ability to engage in ESCO financing
- Split incentives /tenant-employee behaviors at odds with efficiency goals
- Not enough/qualified workforce

What is Better Buildings?

In February 2011, President Obama announced the **Better Buildings Initiative** to:

- make buildings 20% more energy efficient over the next 10 years
- accelerate private sector investment in energy efficiency.



What are the major program elements?

- Partnerships
 - Better Buildings Alliance
 - Better Buildings Challenge
- Accelerators
 - Energy Data Access
 - Also ESPCs, Outdoor Lighting, Industrial
- Workforce
- Information



Better Buildings Challenge

Launched December 2011

Goals:

- Make commercial, industrial buildings & multifamily housing 20%+ more efficient in 10 years
- Save more than \$80B+ for US organizations
- Create American jobs; improve energy security
- Mitigate impacts of climate change

How:

- ✓ Leadership
- ✓ Results
- ✓ Transparency
- ✓ Best Practice Models
- ✓ Recognition
- ✓ Catalyzing Action



Launched 2011, Now 200+ Partners
Commercial, Industrial, Public, Private
Represent:

3+ Billion Square Feet
\$2 Billion Private Financing
600+ Manufacturing plants
\$2 B Federal Commitment

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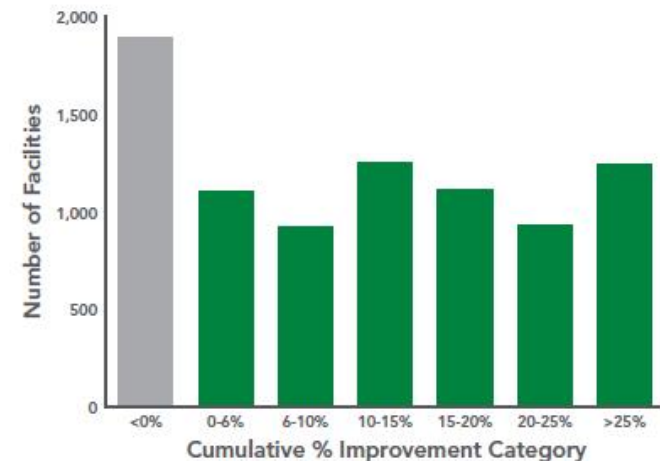
Partners represent diverse sectors and portfolio sizes

Smallest	Sector	Largest
5 million sq. ft.	Commercial Real Estate	100 million sq. ft.
13 million sq. ft.	Retail and Food Service	850 million sq. ft.
8 million sq. ft.	Healthcare	35 million sq. ft.
10 million sq. ft.	Hospitality	79 million sq. ft.
1.3 million sq. ft.	Higher Education	20 million sq. ft.
704,000 sq. ft.	K-12 School	24 million sq. ft.
120,000 sq. ft.	State and Local	123 million sq. ft.
22,000 sq. ft.	Multifamily	50 million sq. ft.
1 plant	Industrial	159 plants

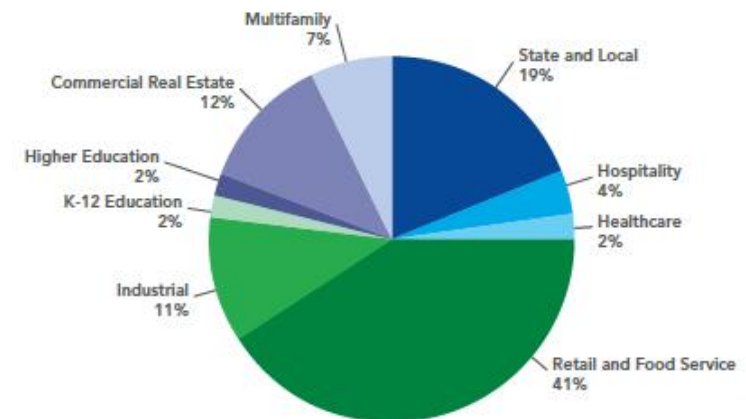
Results to Date: Better Buildings Challenge

- **Partners on track to meet goals**
 - 2.5% average annual improvement in energy intensity
 - \$300 million, 36 trillion Btus in savings since 2011
 - Goal achievers: Partners & Allies
- **130 New Partners in 2013-14:**
Walmart, Hilton, San Diego, General Mills, General Motors, Penn State, Jonathan Rose
- **Water Saving Pilot, Data Centers**
- **New Better Buildings Accelerators**
- **More than 130 solutions** (80 showcase projects, 50+ implementation models)

Facility-level Percent Improvements
(Figure 2)



Percent of Floor Area by Market Sector
(Figure 4)



Partner Solutions

U.S. DEPARTMENT OF
ENERGY

Showcase Projects



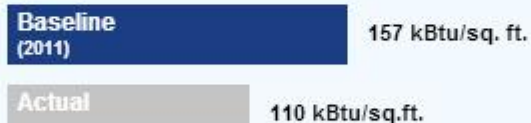
METRO CENTER Showcase Project: Macy's

LOCATION
Washington, D.C.

PROJECT SIZE
272,000 Square Feet

FINANCIAL OVERVIEW
Project Cost \$210,000

Annual Energy Use (Source EUI)



Energy Savings:

30%

Annual Energy Cost



Cost Savings:

\$223,450

Implementation Models



12

Partner Implementation Models

✓ **FINANCE**

- Facilities Infrastructure Pool
- Update Internal Purchasing Systems To Facilitate A Portfolio-Wide Energy Upgrade With Maintenance Funds
- Energy Finance Strategy
- Building Upgrade Value Calculator
- On-Balance Sheet, Off-Debt Capacity Performance Contracting
- Internal Green Revolving Fund
- Capital Set Aside Fund
- Green Initiatives Trust Fund
- Utility Savings Initiative
- ESA in BAE Facilities Nationwide
- Commercial PACE Financing at Pier 1
- On-Bill Financing

✓ **DATA/ENERGY MANAGEMENT**

- Energy Looking Glass Dashboard
- Real-Time Energy Monitoring And Weekly Engagement With Field Staff
- Accessing Tenant Utility Data in Triple-Net Leased Buildings
- Data Update and Certification Scorecard
- Centralized Energy Management And Capital Set-Aside Fund
- Submetering Initiative and Energy Dashboards
- Uniform Methodology To Measure Energy Efficiency Improvement
- Inventory and Tracking Process
- Designing A Comprehensive Energy Plan
- Mass Benchmarking
- Energy Benchmarking Program

✓ **EMPLOYEE /CUSTOMER ENGAGEMENT**

- Engaging Clinicians To Reduce Resource Use In Operating Rooms
- Chasing Quarters With Energy Set-Points
- Innovation Hotel
- Student Fellowships To Kickstart In-House Energy Programs
- Eco-Treasure Hunts at Fulfillment Centers
- Leveraging Green Leases To Reduce Energy And Water Use
- Wyndham Vacation Ownership Green Certification Program
- Leverage Student-Faculty Research
- Linking Energy Efficiency to Performance-based Compensation
- Energy Champion Program
- Operations Management Leadership Program
- Energy Champions at All Plants
- Rethink Energy
- Public-Private Partnership
- Community Engagement
- Employee Behavioral Change
- Community Outreach
- County V. County Energy Challenge
- Public-Private Partnership
- Energy Leader Partnership

✓ **OVERCOMING ORGANIZATIONAL HURDLES**

- Enterprise-wide Coordination
- Good, Better...BEST Standards of Sustainability
- Developing an Integrated "Smart Lab" Program
- Integrated Model For Long Term Campus Energy Planning
- Creating a Culture of Energy Efficiency
- Streamlined Tri-resource Efficiency Programs

Replicable Solutions

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Implementation Model: Kohl's

Energy Finance Strategy

Kohl's embedded members of the Finance Department into the Energy team to expedite communication of financial benefits & approval of energy efficiency projects.

The Kohl's logo is displayed in a bold, dark red, sans-serif font.

BARRIER

Getting and defending sustained corporate funding for energy efficiency projects

SOLUTION

Create a partnership between the Finance and the Energy teams

By integrating Finance Associates within the energy department to prioritize projects and investments Kohl's can test and validate results and provide the momentum and with financial savings history roll out the project at additional locations.

OUTCOME

Today, Kohl's has more than 700 ENERGY STAR labeled stores. Since 2008, Kohl's has improved the energy performance of more than 1,100 buildings by 12%.

Kohl's has extended this model to other departments.

RILA included in Retail Energy Management Program.

Implementation Model: TIAA-CREF

Data Update and Certification Scorecard

Introduced sustainability metrics to its existing property governance scorecard motivating third-party property managers to do more.



Financial Services

BARRIER

A lack of visibility into the energy and water usage of the third-party-managed assets.

SOLUTION

Adding sustainability metrics to the existing property governance scorecard, part of a formal performance assessment of third-party property managers.

Policy that all Energy Star eligible buildings must apply.

OUTCOME

TIAA-CREF can better understand resource costs, estimate savings associated with improvement projects, and verify that projected results.

60% of portfolio is Energy Star.

The percentage of properties maintaining an up-to-date Portfolio Manager account has risen from 55% in compliance (green rating) to nearly 90% for energy and water metrics.

Implementation Model: New York-Presbyterian Hospital

Gallery Walks

Improving patient care and managing energy use through a retro-commissioning program that engages all hospital staff as caregivers.



BARRIER

Improving patient care and managing energy use are not always perceived as being linked; by explaining how energy use impacts Patient Outcomes, Patient Safety and Patient Experience, NYP engages caregivers towards achieving both.

SOLUTION

A retro-commissioning program engaging all hospital staff as caregivers, through “Gallery Walks” and associated feedback channels.

OUTCOME

Energy conservation is a reality when all caregivers focus on improving the environment of care holistically.

Steam pipe insulation resulted in total savings of 585,000 kBtu and \$8,000 annually.

Motion sensor installation projects saving 226,026 kWh and approximately \$40,000 annually.

Implementation Model: Alcoa

Linking Energy Efficiency to Performance-Based Compensation

Energy efficiency is one of the metrics influencing variable compensation of the company's business leaders.



BARRIER

Energy performance improvement crowded out by other business priorities

SOLUTION

Business units determine how much energy efficiency performance contributes to incentive pay of employees within that business.

For example, Alcoa Recycling may choose to make energy efficiency count towards 3% of employee incentive pay, whereas Alcoa Building and Construction Systems may make it 5%.

OUTCOME

Alcoa businesses are increasing their focus on energy efficiency to meet long-term sustainability goals

Up to 20% of Alcoa's variable compensation was tied to sustainability targets, including safety, workforce diversity, and reductions in carbon dioxide emissions due to process improvements and improved energy efficiency.

Energy Leader Habits

U.S. DEPARTMENT OF
ENERGY

Lessons from Better Buildings Challenge Partners

Know the goal.

Data matters.

Look beyond
technology.

It takes and
energy champion
(and a team).

Learn, teach,
evolve.

Looking forward...

- Key focus areas in the next year
 - Real-time data + strategy for analysis and action
 - Apps and mobile access
 - Management styles promoting innovation
- Behavior change – not just technology -- continues to be a key strategy for energy reduction among leaders in BBC.



Thank you!

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