

Building Technologies Office Program Peer Review

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy



Commercial Buildings Integration Program

Arah Schuur

Program Manager

arah.schuur@ee.doe.gov

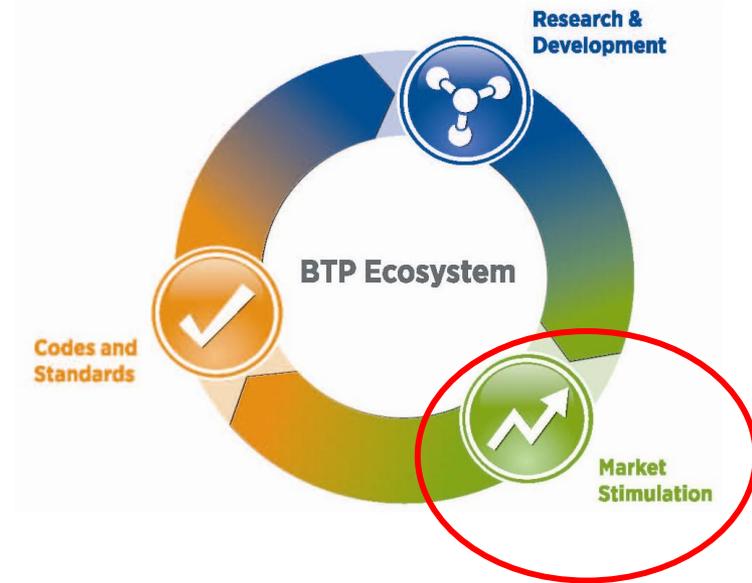
April 2, 2013

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.



BTO Goals:

BTO supports the development and deployment of technologies and systems to reduce building energy use by 50% (compared to a 2010 baseline).



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)



CBI Activity Goals:

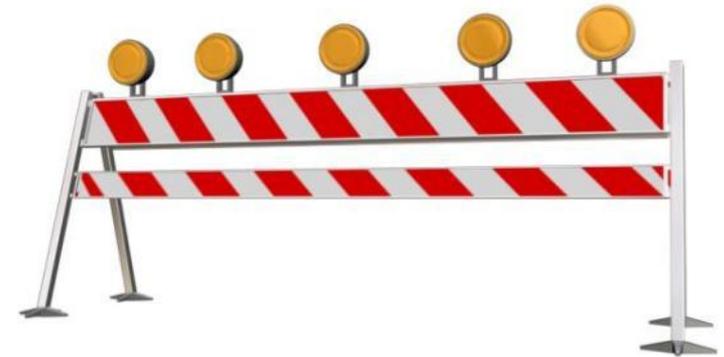
Activity goals tie into CBI's goals and are determined by project managers

Why deployment?

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...

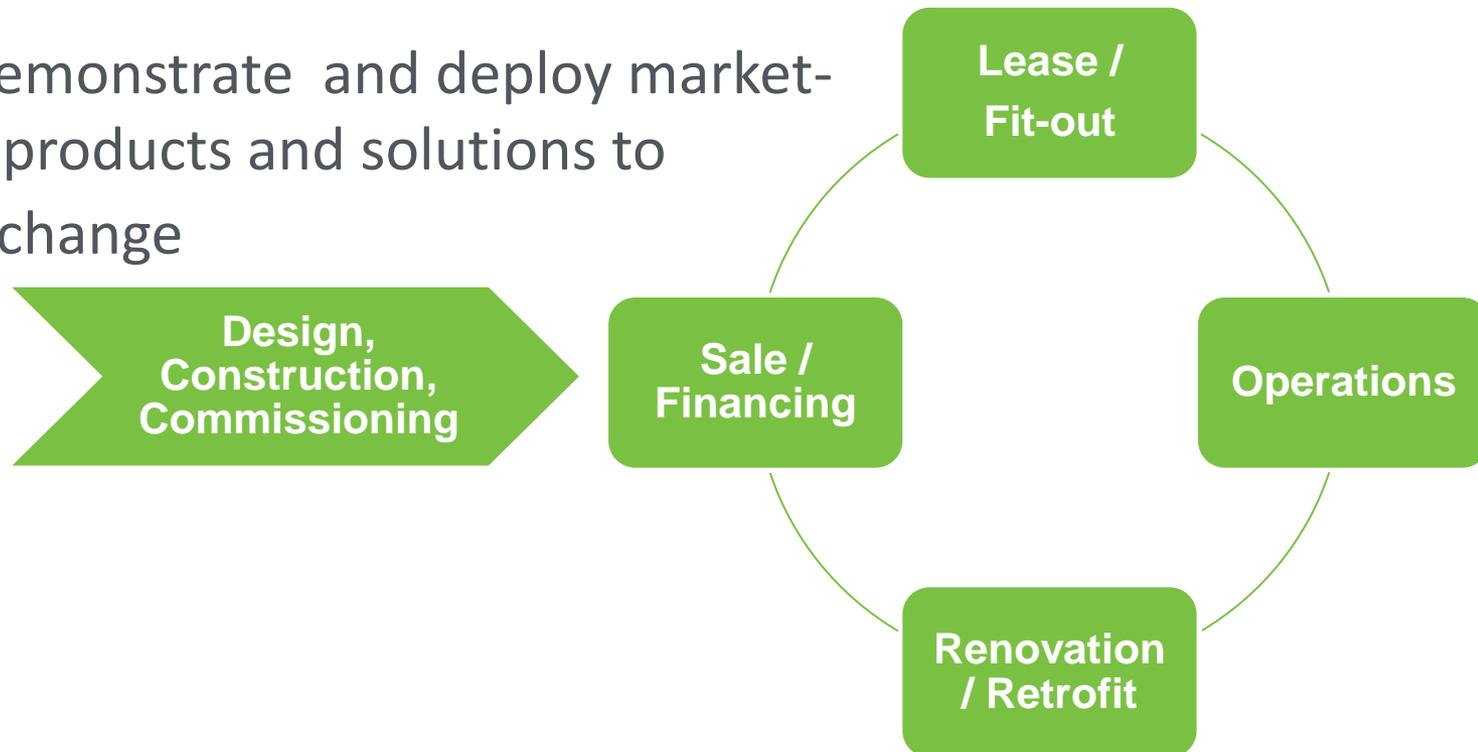
Persistent barriers result in...
= **Lack of demand**
= **Underinvestment**



Barriers
Informational
Financial
Market
Institutional

How does CBI address deployment?

1. Identify key decision points in building lifecycle
2. Identify stakeholders who can make the decision for better energy performance
3. Determine barriers that prevent different decisions
4. Develop, demonstrate and deploy market-contextual products and solutions to accelerate change



We will accomplish our energy savings goals by:

1. Developing **tools and solutions** to remove barriers to investment and increase understanding of efficiency measures
2. Demonstrating and deploying actionable products through **market partnerships** to drive technologies into the commercial buildings marketplace

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

Data, Metrics and Tools

Technology Demonstration

New Construction/Major Renovation /Codes

Small Commercial

Workforce: Training and Certification

Energy Management

Better Buildings Challenge

Better Buildings Alliance

Deployment Channel Partners

Intergovernmental

Market needs

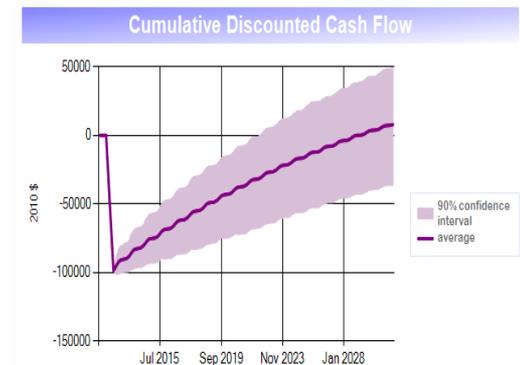
- Infrastructure that facilitates consistent measurement and analysis of energy performance in buildings

Current project areas

- Building Energy Data Exchange Specification (BEDES)
- Standard Energy Efficiency Data (SEED) platform
- Building Performance Database (BPD)

On the horizon

- Work with the Commercial Building Energy Consumption Survey (CBECS)
- Support for “EM&V 2.0”



Project Reviews

- Buildings Performance Database
- SEED

Market needs

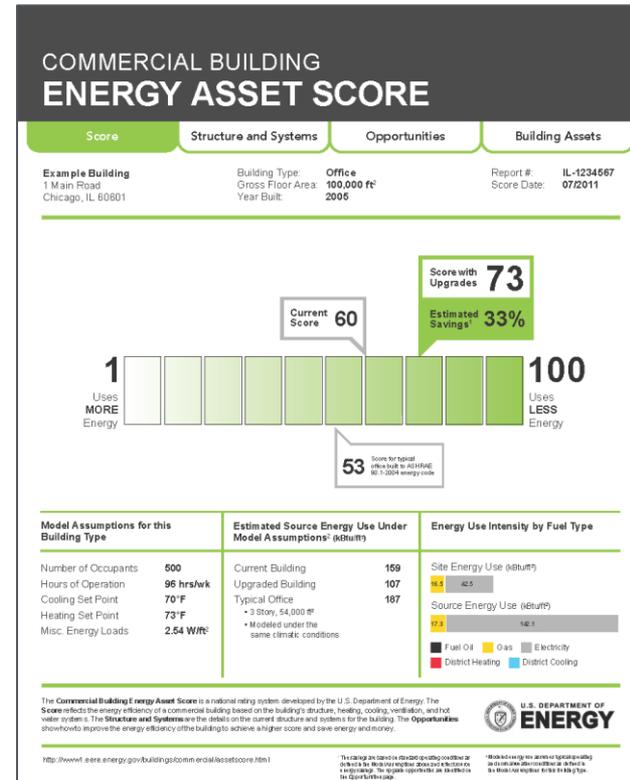
- A low-cost, easy to use integrated tool set to measure and assess whole building energy performance that can support performance-based design, policies, and markets

Current project areas

- Commercial Building Asset Score
- Open Studio software tools for Energy Plus
- Advanced Energy Design / Retrofit Guides

On the Horizon

- Operational and audit tools
- Performance-based design and codes



Project Reviews

- Open Studio

Market needs

- Objective, third-party information about technology performance and risks
- Case studies that “look like them”



Current project areas

- Emerging technology demonstration and deployment
- Performance Specifications and Challenges
- Technology Performance Exchange
- Commercial Resource and Case Study Databases



On the Horizon

- Intergovernmental alignment of technology demonstration programs
- Cross-BTO combined RD&D programs

Project Reviews

- Tech Performance Exchange
- Window Daylighting Demo
- Submeter Challenge
- Commercial Building
- Partnerships
- Retrofitting Doors on Open Refrigerated Cases
- RTU Suite

Market needs

- Robust infrastructure that supports high-efficiency building technology, including culture of energy management, financing and business models and qualified workforce

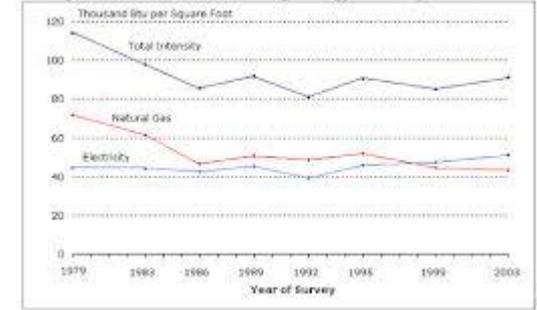
Current project areas

- Organizational Energy Management
- Training the high performance buildings workforce

On the Horizon

- Small Buildings, Small Portfolios
- New construction / codes integration
- Commercial workforce certification

Figure 1. Commercial Building Energy Intensity Over Time

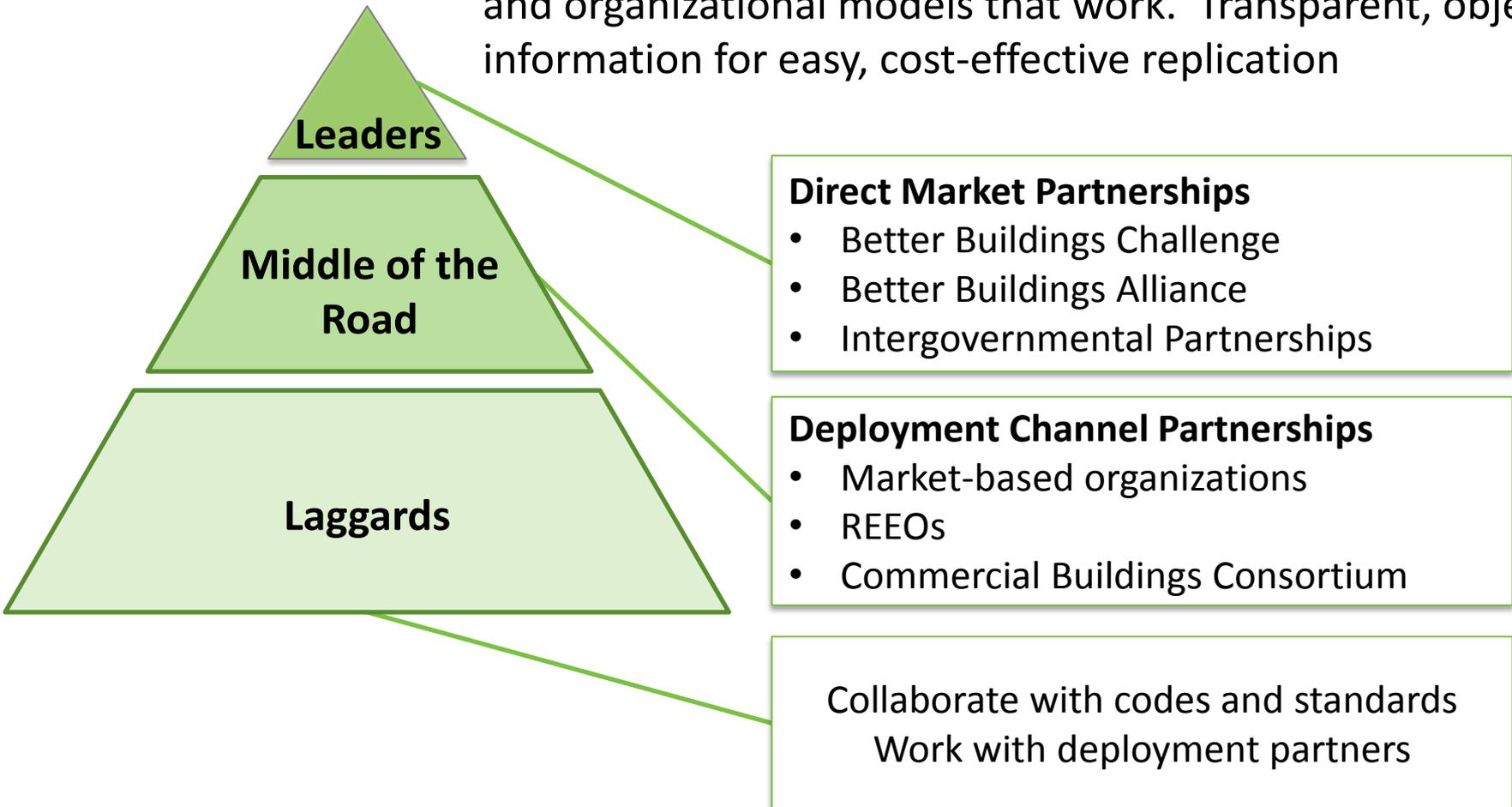


Project Reviews

- ISO 50001: Conformant Energy Management Systems
- Small Building Energy Management
- BEM Library
- Financing Turnkey Energy Efficiency Solutions
- Whole Building Energy Performance Training
- Transforming Commercial Buildings Operations

Market needs

Leaders demonstrating and sharing technologies, business and organizational models that work. Transparent, objective information for easy, cost-effective replication



Current project areas

- Better Buildings Challenge
- Better Buildings Alliance
- SEE Action
- Intergovernmental collaboration
- Deployment campaigns with channel partners



On the Horizon

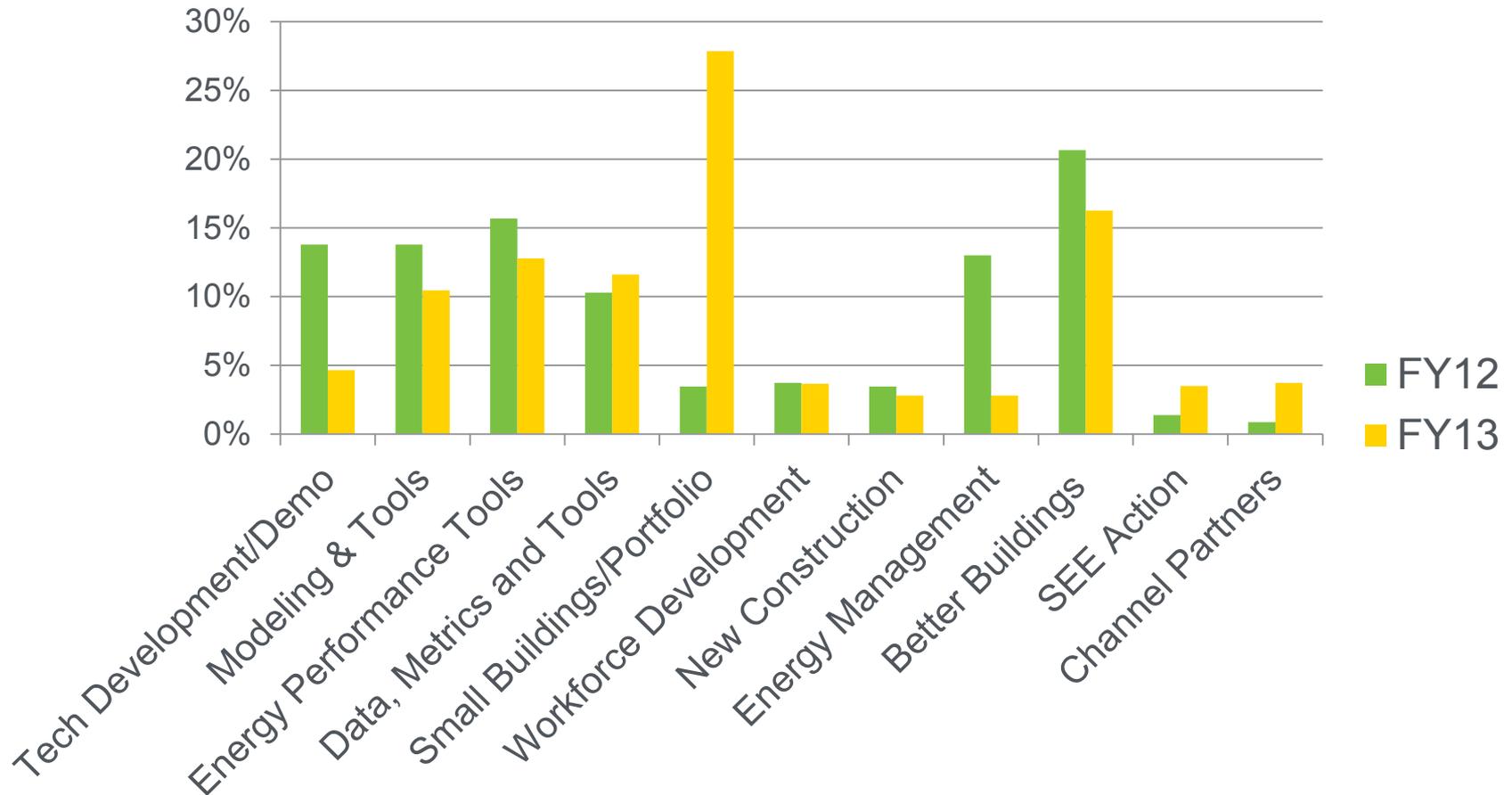
- Expand Alliance
- Expand channel partner programs

Project Reviews

- Better Buildings Alliance
- Lighting Energy Efficiency in Parking (LEEP) Campaign
- RTU Campaign
- Commercial Buildings Consortium



CBI Budget History (\$ thousands)		
FY2011	FY2012	FY2013
\$37,308	\$31,913	\$34,019

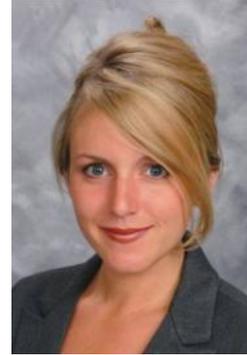


Accomplishments

- Great team!
- Rationalizing our development and deployment work
- Focusing on deployment and market orientation
- Initiating collaboration across EERE and federal government

Challenges and Focus Areas

- Align all of our projects with deployment focus
- Clearer measurement of impact of work
- Several new program areas to develop



Glenn Schatz | Benjamin Goldstein* | Amir Roth *



Cody Taylor
Elena Alschuler
Jason Koman
Amy Jiron

**Commercial
Buildings
Integration
Program Team**

Kristen Taddonio
Holly Jamesen Carr
Shalon Brown
Paul Torcellini *



Jeremy Williams* | Sonia Punjabi | Alan Schroeder | Joan Glickman*

