# Existing Commercial Buildings Working Group Blueprint Executive Summary

Janet Streff and Jim Gallagher

Executive Group Meeting

March 25, 2011
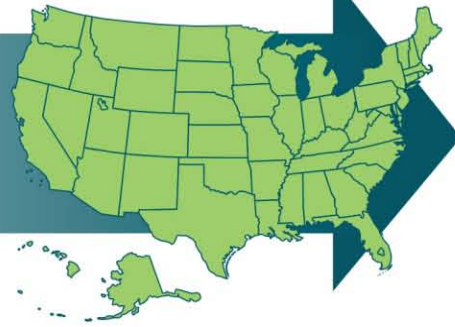
The Existing Commercial Buildings Working Group of the State Energy Efficiency Action Network is committed to taking action to increase investment in cost-effective energy efficiency. This Blueprint was developed under the guidance of and with input from the Working Group. The document does not necessarily represent an endorsement by the organizations of Existing Commercial Buildings Working Group members.

The Existing Commercial Buildings Working Group Blueprint is a product of the State Energy Efficiency Action Network and does not reflect the views, policies, or otherwise of the federal government.

If this document is referenced, it should be cited as: State Energy Efficiency Action Network (2011). Existing Commercial Buildings Working Group Blueprint. www.seeaction.energy.gov

# Commercial Working Group Goals

- **SEE Action Goal:** Capture all cost-effective energy efficiency by 2020.
- **Commercial Working Group Goal:**
  - Reduce energy use <u>20 percent or more</u> in <u>3 billion </u>square feet of commercial space each year by 2015 through whole-building approaches
  - Within one year 10 state and 30 local governments adopt one or more of the ten SEE Action Solutions described in this document
- **Background**
  - Rough estimate of current rate of deep retrofits at ~1 billion square feet per year (PNNL, NREL).
  - The 3 billion ft$^2$/year goal calls for a sustainable retrofit industry; and striking a balance between rapidly capturing existing EE opportunity, the limits to industry scale-up, and sustained effort over 10 years.

# Impact of Goals and Scope

**Where We Are Today:**

Existing commercial and government buildings would use 9.2 quads of primary energy in 2020 (with "frozen" technology)

**Working Group Goals:**

Increase commercial building deep retrofit market from ~1 billion ft²/year in 2010 to 3 billion ft²/year in 2015 to 5 billion ft²/year in 2020

**Scope:**

Reaching goals would capture 28% of the potential energy efficiency in existing commercial and government buildings, leaving 2.2 quads to address through other activities

**Resulting 2020 energy use if all potential is addressed**

**Energy, quadrillion primary Btu**

9.2

0.8

2.2

6.2

0    5    10
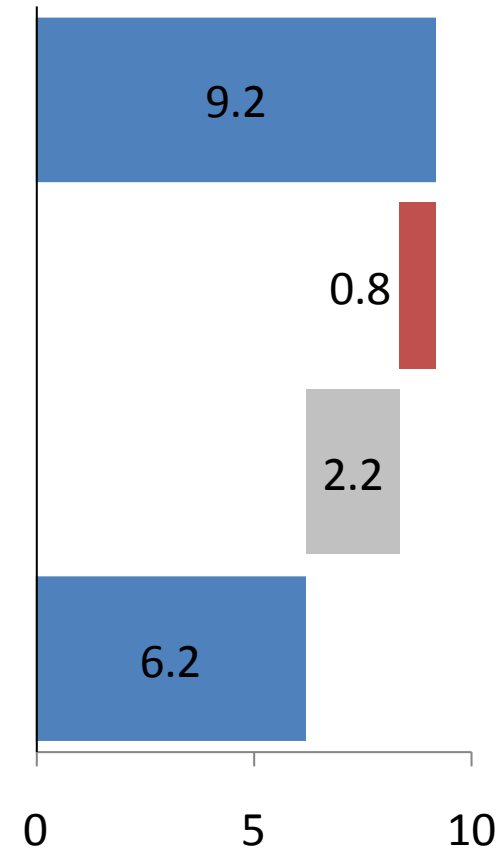
Note: Excludes office equipment, miscellaneous electric loads, and community infrastructure.

Potential estimate based on McKinsey 2009.

# Approach to Goals and Scope

## Big Picture Questions

**Where do we want to be?**

**Where are we now?**

**How do we get there?**

## Blueprint Components

1. Set broad goals
2. Define scope and key terms (i.e., what level of "retrofit")
3. Outline what meeting the goals looks like (key factors, level of activity)

4. Assess current baseline of activity
5. Review market barriers we face
6. Review how current programs and policies are/are not overcoming barriers; identify gaps

7. Identify work and recommendations to address gaps and meet goals and roles for key organizations
8. Show how we will measure progress

SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

# Meeting the Goal: Key Elements

- **Break sector into key market segments:**
  - Small/large
  - Owner-occupied/leased
  - Public/private

- **Key elements to examine for each segment:**
  - Investment levels and mechanisms:  current & goal-consistent levels
  - Workforce needs: current & goal-consistent levels
  - Programs and policies
  - Demand creation
  - Tools and resources

| Goals for progress | 2010 Baseline | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|
| Billion square feet per year retrofit with 20% performance improvement | 1.0 | 1.4 | 1.8 | 2.2 | 2.6 | 3.0 |
| Annual investment on whole-building energy efficiency | 2.3 | 3.2 | 4.2 | 5.1 | 6.0 | 6.9 |
| Cumulative square feet Retrofit (beginning 1/1/2011) | 1.0 | 1.4 | 3.2 | 5.4 | 8.0 | 11.0 |
| Annual energy saved, primary quads | 0.03 | 0.04 | 0.08 | 0.14 | 0.21 | 0.29 |

**SEE Action**
STATE ENERGY EFFICIENCY ACTION NETWORK

# Priority Solutions and Actions to Achieve the Goal

## Mid-term Goal

By 2015, reduce energy use by at least 20% in 3 billion square feet of commercial space each year through whole-building retrofits and/or operational improvements

## Four Pillars

| Drive Demand for Energy Efficiency | Enable Efficient Operations and Investment | Build the Workforce | Move the Market |
|---|---|---|---|

## Priority Solutions Areas

**1. Benchmarking**
Improve information through benchmarking/disclosure

**2. Retro-commissioning (RCx)**
RCx and retrofit requirements

**3. Ratepayer-funded Programs**
Target whole-building programs

**4. Public-private Partnerships**
Energy challenges, recognition programs, etc.

**5. Organizational Energy Management Programs**
Adopt comprehensive energy management programs

**6. Green Leasing**
Integrate efficiency and green practices in leasing practices

**7. Financing Innovation**
Credit enhancement, revolving loans, etc.

**8.1.Education & Training**
Build training capacity

**8.2. Materials**
Develop standardized training materials

**8.3. Certification**
Standardize around meaningful and nationally-recognized professional certifications

**9. Procurement Reform**
Bulk purchasing, specifications, life cycle costing, and streamlined Energy Savings Performance Contracts (ESPC)

**10. Emerging Technology Demonstration**
Through public-private partnerships, competitions, etc.

SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

# Mapping Solutions to Stakeholders: Drive Demand for Energy Efficiency

| Solution | | Stakeholder | | | | |
|---|---|---|---|---|---|---|
| | | Local Gov't. | State Gov't. | Program Administrators* and Utility Commissions | National, Regional NGOs | Industry Groups |
| | | Drive Demand for Energy Efficiency | | | | |
| | Solution 1: Benchmarking | Adopt benchmarking policies for public/private buildings | Adopt benchmarking policies for public/private buildings | Provide customer usage data | Develop/update case studies | Create voluntary programs; Educate members; Provide technical assistance |
| | Solution 2: Retro-commissioning | Adopt RCx policies for public/private buildings | Adopt RCx policies for public/private buildings | Provide customer usage data | Develop/update case studies | Create voluntary programs; Educate members; Provide technical assistance |
| | Solution 3: Ratepayer-funded Programs | | Collaborate with other stakeholders on program design/ development; Support cost recovery mechanisms and incentives | Implement whole-building , multi-measure programs; Utility commissions should support cost recovery mechanisms and incentives; Link EE and DR programs to take advantage of cross-marketing, co-delivery, and other complementarities | Develop/update case studies; Collaborate with other stakeholders on program design/ development | Collaborate with other stakeholders on program design/development; Partner with utilities to educate and recruit members for program participation |
| | Solution 4: Public-private Partnerships | Host energy challenges | Host energy challenges | Provide customer usage data | Develop/update case studies; Host energy challenges | Educate members; Provide technical assistance; Host energy challenges |

*Including IOUs, munis, co-ops, states, and others

SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.energy.gov

# Mapping Solutions to Stakeholders: Enable Efficient Operations and Financing

| | | Stakeholder | | | | |
|---|---|---|---|---|---|---|
| | | Local Gov't. | State Gov't. | Program Administrators* and Utility Commissions | National, Regional NGOs | Industry Groups |
| Solutions | | Enable Efficient Operations and Financing | | | | |
| | Solution 5: Energy Management Programs | Adopt organization-wide energy management programs | Adopt organization-wide energy management programs | Support state/local energy management programs | Develop materials; Provide technical assistance | Promote participation; Develop materials; Provide technical assistance |
| | Solution 6: Green Leasing | Adopt green leasing practices; Educate building industry stakeholders; Provide incentives; Provide recognition | Adopt green leasing practices; Educate building industry stakeholders; Provide incentives; Provide recognition | | Develop materials; Provide technical assistance | Develop materials; Provide technical assistance |
| | Solution 7: Financing Innovation | Establish reserve or revolving loan funds; Establish loan guarantee programs; | Establish or provide funding to establish reserve or revolving loan funds; Establish loan guarantee programs; Adopt requirements for utilities to facilitate (not necessarily provide) financing | Adopt targeted financing programs to complement incentive programs | Provide implementation support to state and local governments; Develop materials; Provide technical assistance | Convene stakeholders to identify key financing needs and create programs that meet these needs. |

**\*Including IOUs, munis, co-ops, states, and others**

SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

# Mapping Solutions to Stakeholders: Build the Workforce

| | | Stakeholder | | | | |
|---|---|---|---|---|---|---|
| | | Local Gov't. | State Gov't. | Program Administrators* and Utility Commissions | National, Regional NGOs | Industry Groups |
| **Solutions** | | Build the Workforce | | | | |
| | Solution 8: Workforce Development | Collaborate with other stakeholders to support/ implement workforce development programs;<br><br>Tie RCx programs to national certification programs;<br><br>Tie code enforcement and education about code requirements into workforce development programs | Collaborate with other stakeholders to support/ implement workforce development programs;<br><br>Tie RCx programs to national certification programs;<br><br>Define energy efficiency career ladders, key occupations involved in maximizing the efficiency of commercial buildings and preferred certification programs | Collaborate with other stakeholders to support/ implement workforce development programs | Collaborate with other stakeholders to support/ implement workforce development programs;<br><br>Develop/update case studies;<br><br>Define energy efficiency career ladders, key occupations involved in maximizing the efficiency of commercial buildings and preferred certification programs | Collaborate with other stakeholders to support/ implement workforce development programs;<br><br>Educate members about code requirements;<br><br>Define energy efficiency career ladders, key occupations involved in maximizing the efficiency of commercial buildings and preferred certification programs |

**SEE Action**
STATE ENERGY EFFICIENCY ACTION NETWORK

*Including IOUs, munis, co-ops, states, and others
www.seeaction.energy.gov

# Mapping Solutions to Stakeholders:
# Move the Market

| | Stakeholder | | | | |
|---|---|---|---|---|---|
| | Local Gov't. | State Gov't. | Program Administrators* and Utility Commissions | National, Regional NGOs | Industry Groups |
| **Solutions** | | | Move the Market | | |
| Solution 9: Procurement Reform | Adopt procurement reform policies | Adopt procurement reform policies | | Develop materials; Provide technical assistance | |
| Solution 10: Emerging Technology Demonstration | Provide test-bed environment for emerging technologies; Document and share results and performance data | Provide test-bed environment for emerging technologies; Document and share results and performance data | Partner with state and local governments and related stakeholders to test emerging technologies; Document and share results and performance data | Develop materials; Provide technical assistance | Partner with state and local governments and utilities to test emerging technologies |

*Including IOUs, munis, co-ops, states, and others

# Targeted Work Plan
## Drive Demand for Energy Efficiency

| Sub-group | Resource to be Developed | Outreach Strategy/Goal | Key Issues to be Addressed | Target Stakeholder Group* | | | | | | Schedule |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | State | Local | Utilities | Regional EE Groups | Building Owners/mgrs | PUCs | |
| Solution #1: Benchmarking | • Stakeholder-specific fact sheets on benchmarking | • Engage 10 interested PUCs about PUC role in supporting benchmarking laws<br>• Engage 10 new state and local govts about passing benchmarking /disclosure laws | • Data privacy<br>• Automated benchmarking technology<br>• Use for internal energy planning vs. public disclosure<br>• Link with RCx and org. energy mgt. | **X** | **X** | X | X | X | **X** | • 5/13 – Draft fact sheets due<br>• 6/15 – Final fact sheets due<br>• 6/15 – ID PUCs to target |
| Solution #2: Retro-commissioning | • Stakeholder-specific fact sheets on RCx<br>• Standardized state and local RCx law templates | • Engage 10 new state and local govts about passing RCx requirements<br>• Engage building owners/managers about value of RCx<br>• Engage Utilities and PUCs about value of RCx programs | • Link with benchmarking and org. energy mgt. | **X** | **X** | X | X | X | X | • 5/13 – Draft fact sheets due<br>• 6/15 – Final fact sheets and templates due<br>• 6/15 – ID govts. to target |
| Solution #4: Public-private Partnerships | • Compile existing case studies<br>• Templates/models for national/regional/ local energy challenges | • Engage 10 new state and local govts. about energy challenges<br>• Coordinate with national presidential challenge | • Lessons learned from existing energy challenges | **X** | **X** | X | X | X | | • 5/13 – Draft template due<br>• 6/15 – Final template due<br>• 6/15– ID govts. to target |

* Primary targets indicated with large, bold X.
Secondary targets indicated with non-bold X.

SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.energy.gov 12

# Targeted Work Plan
## Enable Efficient Operations and Investment

| Sub-group | Resource to be Developed | Outreach Strategy/Goal | Key Issues to be Addressed | Target Stakeholder Group* | | | | | | Schedule |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | State | Local | Utilities | Regional EE Groups | Building Owners/mgrs | PUCs | |
| Solution #5: Organizational Energy Management Systems | • Stakeholder-specific fact sheets on org. energy mgt. | • Engage 10 new utilities about BPwES or similar organizational energy management programs | • Need case studies and results from BPwES pilot and Superior Energy Performance | | | **X** | X | | X | • 5/13 – Draft fact sheets due<br>• 7/1– Final fact sheets due<br>•6/15 – ID utilities to target |
| Solution #6: Green Leasing | • Stakeholder-specific fact sheets on green leasing<br>• Standardized green leasing template | • Engage 10 new state and local govts. about the value of green leasing and ways to encourage it<br>• Engage building owners/managers about value of green leasing | • Split incentives<br>• Governments leading by example | **X** | **X** | | X | **X** | | • 5/13 – Draft fact sheets due<br>• 5/15– Final fact sheets due<br>• 6/15 – ID govts. to target |
| Solution #7: Financing Innovation | • 5 case studies of exemplary financing programs | • N/A | • How to continue investment post-ARRA | **X** | **X** | X | X | X | | • 7/1– Draft case studies due<br>• 8/15 – Final case studies due<br>• 7/15 – ID govts. to target |

\* Primary targets indicated with large, bold X.
Secondary targets indicated with non-bold X.

SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

# Targeted Work Plan
# Move the Market

| Sub-group | Resource to be Developed | Outreach Strategy/Goal | Key Issues to be Addressed | Target Stakeholder Group* | | | | | | Schedule |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | State | Local | Utilities | Regional EE Groups | Building Owners/mgrs | PUCs | |
| Solution #9: Procurement Reform | • Model policy focusing on lifecycle cost and bulk purchasing | • Engage 10 state and local govts. on adopting a purchasing reform package | • Lifecycle benefits/costs<br>• Bulk purchasing | **X** | **X** | | | X | | • 5/13 – Draft policy due<br>• 6/1 – Final policy due<br>• 4/15 – ID govts. to target |
| Solution #10: Emerging Technology Demonstration | • 3 Case studies for successful emerging technology demonstration programs | • Engage 10 state and local govts. about adopting new emerging technology demonstration programs | • Value to state/local govts. of emerging technology demonstration: economic development, energy efficiency<br>• Tie-in with public-private partnerships | **X** | **X** | | | | | • 5/13 – Draft case studies due<br>• 6/15 – Final case studies due<br>• 6/15 – ID govts. to target |
| Cross-solution (#3, 4, 5, 6, 7, 9, 10): Case Study Database Linking | • List of key databases and other sources of resources / case studies that should be included in a centralized clearinghouse | | • Mechanism for ensuring resource is kept up-to-date<br>• Use of key terms for searchability purposes | **X** | **X** | X | X | X | | • 5/13 – Draft list of resources due<br>• 6/15 – Beta release of website<br>• 10/28 – Final release of website |

\* Primary targets indicated with large, bold X.
Secondary targets indicated with non-bold X.