Codes and Standards: Opportunities, Benefits, and Issues for Energy Efficiency Program Administrators

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Codes and Standards, in brief...

- Codes and Standards (C&S) establish minimum efficiency levels for covered buildings and products, respectively.
- C&S can deliver cost-effective energy savings.
- Fair compensation for utility efforts is needed to get utilities engaged.
- ARRA required states to commit to energy code adoption:
  - 90% compliance by 2017 (ASHRAE 90.1-2007, IECC 2009)
  - All states made commitment.
What does a C&S program do?

- Prepare market actors involved in the design and development of energy efficient buildings and appliances
- Enable market transformation
- Deliver energy efficiency at low cost
- Decrease potential savings of traditional DSM/EE programs
Codes and standards are difference makers--major savings potential

Savings: 367 TWh

Savings: 698 TWh

Codes account for ~125 TWh of savings

Source: Assessment of Electricity Savings in the U.S. Achievable through New Appliance/Equipment Standards and Building Efficiency Codes (2010-2015), Institute for Electric Efficiency (Forthcoming)
2025 Savings by end use, by sector

Savings potential are dominated by commercial lighting, residential electronics, and industrial machine drives.

Source: Assessment of Electricity Savings in the U.S. Achievable through New Appliance/Equipment Standards and Building Efficiency Codes (2010-2015), Institute for Electric Efficiency (Forthcoming)
Baseline shift reflect federal and state C&S activity + economy, etc.

Source: Assessment of Electricity Savings in the U.S. Achievable through New Appliance/Equipment Standards and Building Efficiency Codes (2010-2015), Institute for Electric Efficiency (Forthcoming)
Potential C&S activities for a PA

- Active engagement during code development and local adoption
- Prepare technical analysis of net benefits related to proposed codes and standards
- Develop test methods for new standards
- Train and educate officials and industry
- Compliance enhancement (compliance working groups, fund third party evaluators)
- Participate in EM&V protocol development
- Develop appliance/equipment standards when not covered by US DOE
DOE BECP recommended steps to building energy code compliance

Several Opportunities for Utility Involvement

1. Establish Compliance Working Group
2. Perform Self-Assessments
3. Evaluate Results
4. Train and Educate
5. Third Party Compliance Verification

Source: “Measuring State Energy Code Compliance”, DOE BECP, March 2010
A great start! DOE BECP compliance pilots

Working with the 5 regional energy efficiency partnerships

Results include:
- Current compliance
- Usefulness of recommended procedures and tools
- Barriers analysis
- Variation in compliance findings by rater type and format (e.g. building officials v. builder self-certify)

Source: DOE BECP
Success in California

- C&S programs deliver big savings

<table>
<thead>
<tr>
<th>California EE Program Years 2006-2009</th>
<th>Total</th>
<th>C&amp;S Share of Savings</th>
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<tbody>
<tr>
<td>Savings Goals (cumulative, GWh)</td>
<td>8,944</td>
<td>7.7%</td>
</tr>
<tr>
<td>EE Portfolio Savings, Evaluated</td>
<td>7,387</td>
<td>9.3%</td>
</tr>
<tr>
<td>C&amp;S Savings, Evaluated (cumulative, GWh)</td>
<td>687</td>
<td>100%</td>
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</tbody>
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- C&S programs are cost-effective
  - program cost is ~0.5% of total portfolio

- 2 of 3 IOUs plan to increase C&S program funding

Pacific Northwest annual energy efficiency savings, cumulative

Source: Northwest Power and Conservation Council

Savings: 692 aMW

Source: Northwest Power and Conservation Council
Promising Massachusetts stretch code

67 communities have adopted stretch code

Stretch code is 20% more energy efficient than base code (IECC 2009, ASHRAE 90.1 2007)

Connecticut is pursuing stretch code via Raised Bill 6544 based on Energy Star

It ain’t all sunshine and lollipops

- Attribution is important to utilities
  - Need a method to distinguish program effects from other influences
  - High quality EM&V work is neither easy nor inexpensive
  - Time lag between action and impacts; need policy stability to encourage investments

- Assessing compliance is difficult.
  - Definitions and metrics vary
  - Typically measured by local code officials
Establish a **stable** regulatory structure to support C&S efforts by utilities

- **Three Prevailing Models**
  - **Prove it and claim it (CA, MA, MN)**
    - Heavy emphasis on EM&V
    - Renewed focus on compliance
  - **Support it and get partial credit (AZ)**
    - Simplifies the attribution issue
    - Utilities can count up to 1/3 of savings from building energy codes towards AZ EE goals
    - Savings based on EM&V (most effort spent here)

*Yikes! Legislature may repeal Next Generation Act*
Establish a stable regulatory structure to support C&S efforts by utilities, cont…

- Include it in projections and work together to make it real (Pacific Northwest)
  - Northwest Power & Conservation Council develops Power Plan that includes expected C&S effects
  - NEEA conducts regional and national activities to promote C&S
  - Forecast is adjusted given changes to and effect of C&S
  - Utility goals are adjusted given forecast adjustments
Codes and standards contribute to overall EE savings

93 TWh represented about 2% of total usage in 2009.

Source: CEE, EPRI, IEE
Halfway there…but miles to go…utilities can help

Adoption Activity: Commercial
States that are expected to have commercial energy codes meeting or exceeding 90.1-2007 or the 2009 IECC by June 2013 as of December 20, 2010

Source: DOE BECP
Halfway there…but miles to go…utilities can help

Adoption Activity: Residential
States that are expected to have residential energy codes meeting or exceeding the 2009 IECC by June 2013
as of December 20, 2010

Source: DOE BECP
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