Value of code compliance and its cost-effectiveness

2011 National Symposium on Market Transformation

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Current Shortfalls in Energy Code Compliance

Funding:
- Building departments vastly understaffed and underfunded
- Needs depend on volatile construction volumes; difficult to rebuild capacity after construction rebounds.
- Revenue collected for plan reviews and building permits siphoned off and used for other activities.

Education / Outreach
- Uneven enforcement by code officials
- Code officials, building professionals and building operations and maintenance staff inadequately trained through the state building energy code administrator

Political willingness:
- Energy codes are often downplayed
- Lack of political priority as compared to fire or safety codes
Energy Code Compliance Task Force

- Task force of over 40 experts, with participation broad range of other local, regional, and national stakeholder groups.
- Convened from May to August 2010 with the goal of providing perspective on the level of funding needed to improve compliance levels across the U.S. and build support for increased federal and utility support for state/local enforcement and compliance efforts.
- The group set out to quantify:
  1. the cost to achieve 90% energy code compliance and
  2. the cost-effectiveness of such spending.
An additional $610 million in annual funding is needed to achieve 90% compliance with building energy codes.

<table>
<thead>
<tr>
<th>Plan Review &amp; Inspection</th>
<th>Implementation &amp; Training</th>
<th>National-Level Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>$660 Million</td>
<td>$125 Million</td>
<td>$25 Million</td>
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</tbody>
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(1) **Model Jurisdiction:**

*Austin, Texas*

- Determined Austin's level of funding for energy code compliance as a percent of construction volumes in the city and applied these to the U.S. new construction, renovation volumes.

(2) **Based on BCAP’s budgeting recommendations to states for allocating their ARRA budget. Activities include:**

- Baseline compliance evaluation study
- Training and outreach
- Compliance materials development/distribution
- Pilot Compliance methodologies
- SEO or SBO staff requirements

(3) **Maintain current annual funding level:**

- $10 million: DOE’s building energy code program
- $10 million: national-level building energy code funding from ARRA
- $5 million: public outreach campaign

**Total Need ($810M) - Current Spending ($200M) = Funding Gap ($610M)**
Cost Effectiveness of Code Compliance

- Funding code compliance to achieve 90% compliance would yield average annual energy savings ramping up to $10 billion in 2040 and create 26,000 jobs per year, $800 million in wages and salaries.

- Energy savings produce a benefit-cost ratio of 6:1.
  - Including incremental costs to the private sector of constructing to code and all public sector costs, every $1 spent on code compliance efforts yields $6 in energy savings.
Building Energy Code Compliance: Value and Cost Effectiveness

**Annual Energy Cost Savings**
resulting from $610M in additional code compliance and enforcement spending

- **All Buildings**
- **Commercial**
- **Residential**

<table>
<thead>
<tr>
<th>Year</th>
<th>All Buildings</th>
<th>Commercial</th>
<th>Residential</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>2015</td>
<td>$2</td>
<td>$2</td>
<td>$2</td>
</tr>
<tr>
<td>2020</td>
<td>$4</td>
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<tr>
<td>2025</td>
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<td>2035</td>
<td>$10</td>
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</tr>
<tr>
<td>2040</td>
<td>$12</td>
<td>$12</td>
<td>$12</td>
</tr>
</tbody>
</table>

**Annual Energy Savings and Avoided CO₂**
resulting from $610M in additional code compliance and enforcement spending

<table>
<thead>
<tr>
<th>Year</th>
<th>Energy Savings (tBtu)</th>
<th>CO₂ Emissions (Metric Tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2015</td>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td>2020</td>
<td>100</td>
<td>10</td>
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<td>2035</td>
<td>250</td>
<td>25</td>
</tr>
<tr>
<td>2040</td>
<td>300</td>
<td>30</td>
</tr>
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Potential Sources for New Funding:

Local building permit fees currently provide most of the funding for enforcement. Potential sources of additional funding:

1. Increased permit fees and/or improved collection

2. Federal Government (comprehensive climate change bill, appropriations, DOE)

3. Utilities: system benefit charges, integrated resource planning and other ratepayer funds
Utility Involvement in Energy Code Compliance

- Cost-effective relative to other conservation and generation options.
- Potential Activities:
  - Training for builders, architects, code officials
  - Support for third party inspection
  - Baseline compliance studies
  - Communication with stakeholders on code provisions, incentives
- Opportunity to claim savings from building energy codes

Figure 2: Average Resource Cost

|                  | Value | Capacity
|------------------|-------|-----------
| Codes & Standards| 1.1   | 2.0       |
| Residential EE   | 3.5   | 4.0       |
| Retail Electricity-Residential | 11.5 | 12.0      |
Building Energy Code Compliance Factsheets:

Available at www.imt.org/codecompliance