$810 Million Funding Needed to Achieve 90% Compliance with Building Energy Codes

Every dollar spent yields $6 in energy savings

Strong building energy codes are one of the most fundamental, affordable and effective mechanisms for increasing the long-term energy efficiency of the nation's buildings. Economic analysis indicates that every dollar spent on energy code compliance and enforcement initiatives yields $6 dollars in energy savings. This ratio includes the incremental costs to the private sector of constructing to code. Nevertheless, throughout most of the United States, building code development, implementation, training and enforcement have long been severely underfunded, with energy codes the most severely underfunded. As a result, many new and renovated homes and buildings do not comply with codes and consume far more energy and money to operate than they should.

In response to the Recovery Act (ARRA), every state has committed to achieve 90% energy code compliance.[1] There is abundant evidence that compliance rates in most jurisdictions are far below 90%.[2] An analysis by a task force of experts revealed an annual spending need of $810 million for energy code training, outreach, implementation, and enforcement efforts. The task force estimates this necessary funding level, which includes the current local, state, and federal effort and spending on code compliance and enforcement, will increase local and state capacities and expertise to the level required to achieve 90% compliance rates.

WHAT ARE ENERGY CODES?

Building energy codes are minimum local and state energy efficiency requirements for newly constructed or renovated buildings. Along with other building and safety codes, energy codes are intended to ensure sound design and construction practices to conserve energy use. Typically, permitted construction projects must demonstrate compliance with energy and other codes through a plan review and several site inspections during the construction process.

WHY ENERGY CODES?

To reach our economic, climate and energy independence goals, it is critical that our built environment become more efficient. Building energy codes are the most basic and cost-effective tools to address the energy efficiency of buildings. Funding the implementation and enforcement of energy codes to reach 90% compliance will help maximize the energy efficiency of our building stock, save Americans billions of dollars annually in energy costs, and reduce the need for costly infrastructure to meet growing peak energy demands.

CODE COMPLIANCE

Achieving code compliance is essential to effective building codes. Energy codes can deliver their potential energy savings only when projects actually comply with the code, yet statewide reports indicate significant and widespread lack of compliance. A dramatic increase in resources for compliance initiatives at all levels of government and increased enforcement at the local level are necessary to achieve high compliance rates.

RAMP UP TO $10 BILLION IN ANNUAL ENERGY SAVINGS

Building operations consumed $406 billion worth of energy in 2009 – 38% of total U.S. energy spending. Buildings that comply with energy codes are more efficient and use less energy across their lifetimes of 30 to 50 years or more. The task force economic model predicts that the additional spending[3] needed to achieve 90% compliance would yield average annual energy savings ramping up to $2.7 billion in 2020 and over $10.2 billion in 2040 and each year thereafter. Including all public and private sector costs associated with code compliance, the energy savings produce a benefit-cost ratio of 6:1.[4]

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[1] By accepting State Energy Program funding under the American Recovery and Reinvestment Act (Recovery Act), states are required to submit and implement plans to achieve 90 percent compliance with building energy codes by 2017.

[2] Yang, Brian, "Residential Energy Code Evaluations," Building Codes Assistance Project; 2005. More study is needed on current compliance rates and current spending on enforcement and compliance initiatives. DOE and the Pacific Northwest National Labs are developing a methodology to measure compliance rates.

[3] Our model assumes an additional annual investment of $610 million, based on the task force estimate that under $200 million is currently being spent on compliance efforts.

[4] Estimates use as a starting point the reference case of EIA's Annual Energy Outlook 2010, including projected construction levels, energy consumption, and fuel prices. The task force conservatively assumed a 4-year payback period from energy savings, declining to 1.5-year payback by 2020, for the incremental cost of code compliance (including design and construction costs); a 30-year average measure life; and that code-compliant buildings use 25% less energy than non-compliant buildings. The savings estimate is further understated because it does not fully include many billions of dollars in averted energy infrastructure costs. Looking only at the $810 million and not including other spending, every dollar spent yields $18 in energy savings. A real discount rate of 2% was used to calculate net present values. To assess the sensitivity of our results to the discount rate assumption, we also tested rates of 0%, 5% and 7%, and found that the benefit cost ratio was well over 3:1 in every case.

[5] Enforcement spending is not tracked at the state or national level. Survey and other data indicate that most jurisdictions spend only a fraction of what is needed. *See* BCAP "Residential Building Energy Codes—Enforcement and Compliance Study." October 2008.

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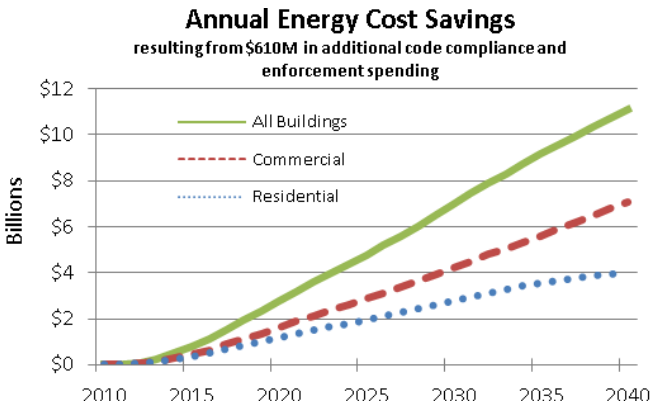

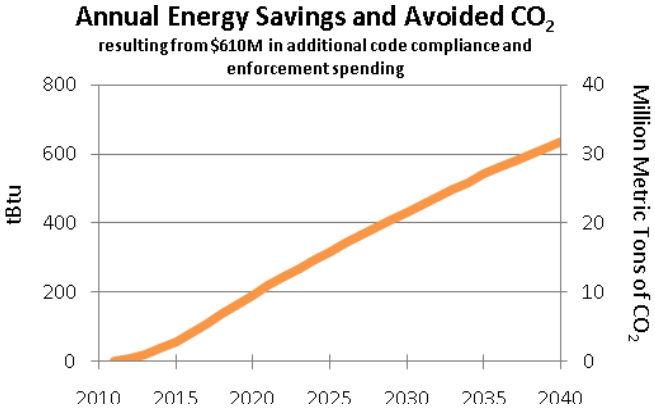

FUNDING NEED

The task force analysis identified a total funding need of $810 million annually for the following activities:

- **Plan Review and Inspection - $660 Million**
  Currently, most jurisdictions lack the resources to adequately conduct on-site inspections, plan reviews, and otherwise assure code compliance. This level of funding would support an appropriate number of code officials and support staff for the amount of construction needing to be reviewed, permitted, inspected and approved for occupancy. The analysis identified a best-practice level of enforcement (exemplified by Austin, Texas) and calculated the cost to replicate this enforcement nationally using 8-year average construction data from the US Census Bureau, McGraw Hill, and the Bureau of Labor Statistics.

- **Implementation and Training - $125 Million**
  This funding would support measures targeted at improved energy code implementation, including training of building code inspectors, builders, subcontractors, and design professionals; outreach to stakeholders; distribution of code books and compliance manuals; compliance evaluation; and development of alternative/pilot compliance methodologies. Costs were extrapolated from best practices in multiple jurisdictions.

- **Support at the National Level - $25 Million**
  In addition to the funding required at the state and local level, there are many code support activities that could be most effectively and efficiently completed by DOE and other national-level bodies. This scale of funding would support code adoption and code development assistance; development of training tools and manuals; and a public awareness campaign regarding the importance and benefits of building energy code compliance.

State and local governments are typically responsible for code adoption, compliance, enforcement and training. Currently, most funding for energy code enforcement comes from permit fees collected by local or state building departments. Training costs are often borne at the state level and overwhelmingly funded by U.S. Department of Energy grants. Energy codes are almost always severely underfunded and in some cases virtually ignored. There is a funding gap between current spending and the $810 million per year that is needed. The size of the gap is unknown – and additional research to better quantify the funding gap should be a high priority. Our best estimate is that the additional resources needed are greater than $610 million per year.[3,5]

With state and local governments facing the deepest fiscal crisis since the Great Depression and budget cuts across the board, they are not in the position to bridge this funding gap. The three best hopes for meeting this need are:

(1) Increased permit fees and/or improved collection
(2) System benefit charges, integrated resource planning and other ratepayer funds
(3) The Federal Government

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