

Overview

Building energy codes have a more than 20-year history in cost effectively improving the energy efficiency of American homes and businesses, as well as providing regional and national energy, economic, and environmental benefits. Today's energy codes are providing savings of more than 30% compared to codes of less than one decade ago. Energy cost savings to consumers from building energy codes are estimated at about \$5 billion annually as of 2012, and total about 4 quads cumulatively, with more than \$44 billion dollars in cost savings since 1992.¹ Annual carbon savings reached 36 million tons in 2012 with about 300 million tons cumulatively since 1992.

Building energy codes set minimum efficiency requirements for newly constructed and renovated buildings, providing energy savings and emissions reductions over the lengthy life spans of buildings. Building energy codes overcome market barriers, such as the builder typically not paying the energy bill for the building or not having an incentive to include cost-effective measures that have a higher upfront cost. Buildings built to code are more comfortable and cost effective to operate. The U.S. Department of Energy (DOE) participates in code development, adoption, and implementation processes; it contributes to new model energy codes by creating proposals based on publicly



Building energy codes are projected to save 46 quads cumulatively by 2040, more energy than the U.S. buildings use in an entire year.

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reviewed cost and technical analyses and then contributes to code adoption and implementation by providing technical assistance to states and localities, which includes the development and distribution of tools, materials, and analyses.²

States and localities are responsible for building energy code adoption and implementation. A total of 27 states have adopted the 2009 version of the residential building energy code or better, while 22 states have adopted the 2007 version of the commercial building energy code or better. As of March 2015, 21 states have certified to DOE that they have adopted the most up-to-date commercial building energy code—ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) 90.1 2010—as required by law, and 13 states have certified that they have met their obligations for the most recent residential building energy code—2012 International Energy Conservation Code (IECC).³

The Next Building Energy Code Cycle

Additional cost savings and other benefits will be achieved with ongoing and future code cycles. DOE has released a

final determination for ASHRAE 90.1 2013—the commercial national model energy code—which estimates savings of 8.5% greater than the prior version. DOE has also released a draft determination for the 2015 IECC—the residential national model energy code—which estimates savings of 1% greater than the prior version. With these determinations, states will begin another cycle of code review and adoption. DOE plans to provide detailed analysis of the costs and benefits of these model codes at the state level in 2015.

Long-term Energy, Cost, and Carbon Savings

The benefits resulting from building energy codes are expected to grow substantially in the coming years. Projected energy savings attributed to building energy codes total nearly 46 quads of full-fuel-cycle energy cumulatively by 2040, which is equivalent to more than an entire year's worth of primary energy consumption from the U.S. residential and commercial sectors at current consumption rates. Consumer savings on utility bills total up to \$230 billion cumulatively by 2040.⁴ In addition, substantial environmental

¹ Building Energy Codes Program: National Benefits Assessment, 1992–2040. Pacific Northwest National Laboratory, prepared for the U.S. Department of Energy. March 2014. http://www.energycodes.gov/sites/default/files/documents/BenefitsReport_Final_March20142.pdf. These savings are additive to energy savings estimated from DOE's appliance standards program.

² DOE provides technical assistance as outlined in the statute.

³ States must also certify to DOE that they have reviewed and updated their building energy codes, as appropriate, once the Department has determined that an updated model building energy codesaves energy relative to the prior code.

⁴ Building Energy Codes Program: National Benefits Assessment, 1992–2040

