

Residential State Energy Code Status AS OF APRIL 1, 2010

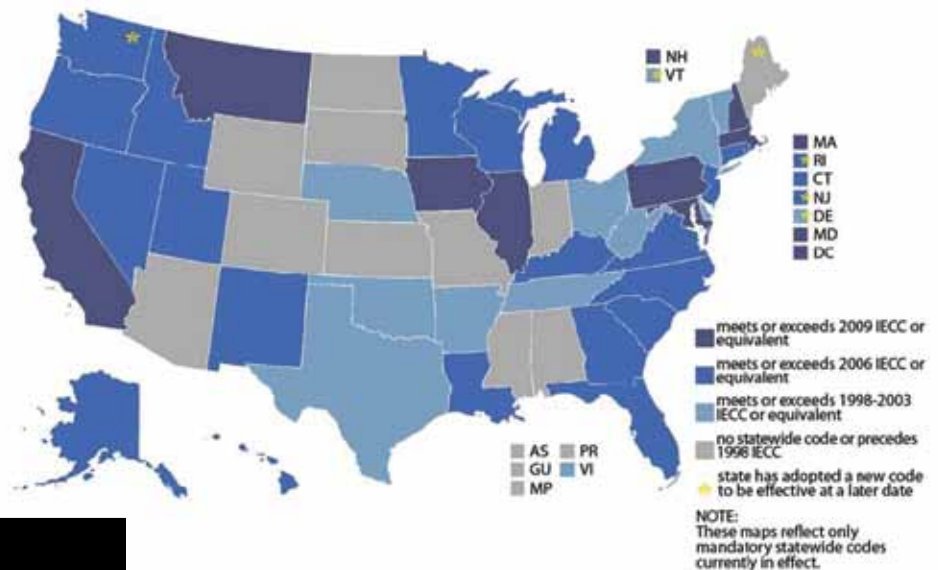


Figure 1: DOE summary for residential state energy code adoptions.

Model Energy Code Development

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This article is adapted from a similar article appearing in the Spring 2011 issue of Wood Design Focus and is reprinted with permission.

Not since the oil crisis of the 1970s has there been so much attention paid to finding ways to reduce US dependence on foreign oil. In particular, reducing energy to make buildings comfortable and functional has been the target of the US Department of Energy (DOE). It was Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, signed by President Bush on January 24, 2007, that sparked DOE's latest push into energy code development. This article discusses the development of model energy codes and the legislative mandate for DOE to assure their implementation.

Department of Energy Authority

DOE's role in facilitating enactment of energy codes is established by the Energy Conservation and Production Act of 1976 as amended by the Energy Policy Act of 1992 (EPACT). EPACT, among other things, requires DOE to support adoption and enforcement of energy codes in the states.

Historically, DOE did not have many "hooks" to insist that states maintain a current model energy code. However, with passage of the American Recovery and Reinvestment Act of 2009 (ARRA), DOE has funding available for implementation of state codes, but only when states pledge to update to current standards.

EPACT also created the Building Codes Assistance Project (BCAP) as a non-profit organization that advocates on behalf of DOE for adoption, implementation, and advancement of energy codes. BCAP also works with DOE, state energy offices, regional energy efficiency alliances, and various shareholders to educate states, municipalities, and the building community about the benefits of code adoption and enforcement.

Two National Model Energy Codes

There are two national consensus standards that are regularly enacted for implementation of energy efficiency criteria in both new construction and renovation of existing buildings.

- *International Energy Conservation Code (IECC)*, which is developed by the International Code Council (ICC), addresses all buildings, including low-rise residential.
- *ASHRAE 90.1, Energy Standard for Buildings Except Low-Rise Residential Buildings*, is developed by the American Society of Heating, Refrigeration, and Air-Conditioning Engineers. It addresses energy-efficient design in all but residences three stories or less in height. Regardless of its official scope, 90.1 is considered to be a commercial building-specific document.

Both are developed and amended in open public forums through somewhat different consensus processes.

DOE Influence in the Process

DOE has used Executive Order 13423, which was intended for government-owned buildings, as the basis for seeking improvement in the energy codes. DOE's goals for low-rise residential structures are based on the 2006 edition of the IECC. DOE's intent for the 2009 code was buildings that would be 17% more energy efficient than those designed under the 2006, and for buildings under the 2012 IECC to be 30% more efficient than the 2006. DOE's plans for the 2015 edition call for a result that is 50% more efficient.

Similar increases in efficiency for ASHRAE 90.1 are envisioned and are contained in a 2007 Memorandum of Understanding (MOU) between DOE and ASHRAE. DOE's goal is to increase the efficiency of 90.1-2010 by 30% over that of 90.1-2004. An increase of 50% for the 2013 edition is planned.

As explained in a 2010 document on their website, *Multi-Year Program Plan – Building Regulatory Programs*, one of DOE's ultimate goals for codes is for "... net-zero energy buildings (NZEB) to be cost-effective alternatives to traditional construction by 2025 which means that NZEB should be required in codes by about the same time."

Two other pieces of rulemaking have increased DOE's influence in the energy codes arena: the States Energy Program (SEP) and the American Recovery and Reinvestment Act of 2009 (ARRA). SEP provides federal assistance to states to share the costs of improved energy efficiency and establish renewable energy programs. SEP funds are applicable across a very broad range of construction, making DOE influential in energy-related decisions to be made by state and local policy makers. SEP's funding in energy efficiency and renewable energy projects within a state generates jobs in local energy, manufacturing, retail, and home services industries. This increases the tax base in the state and indirectly supports other jobs. SEP also funds preparations for natural disasters and recovery from those disasters. The flexibility of SEP allows states to also use the funding to develop new energy infrastructures that are resistant to damage from natural disasters.

ARRA provides financial benefits to improve energy efficiency as part of the Obama administrations' \$787 billion program intended to stimulate the U.S. economy. This act provides SEP with \$3.1 billion that can be used by states in the form of grants, and can be provided as direct funding not requiring matching funds from the states. Additionally, a DOE energy-related grant program was provided with \$3.2 billion. States and local governments can obtain block grants to improve energy efficiency and install renewal energy systems. Nonprofits and governmental agencies may also use these grants.

BCAP, which receives funding from DOE, provides states with energy code advocacy assistance on behalf of DOE and coordinates DOE technical assistance to the states.

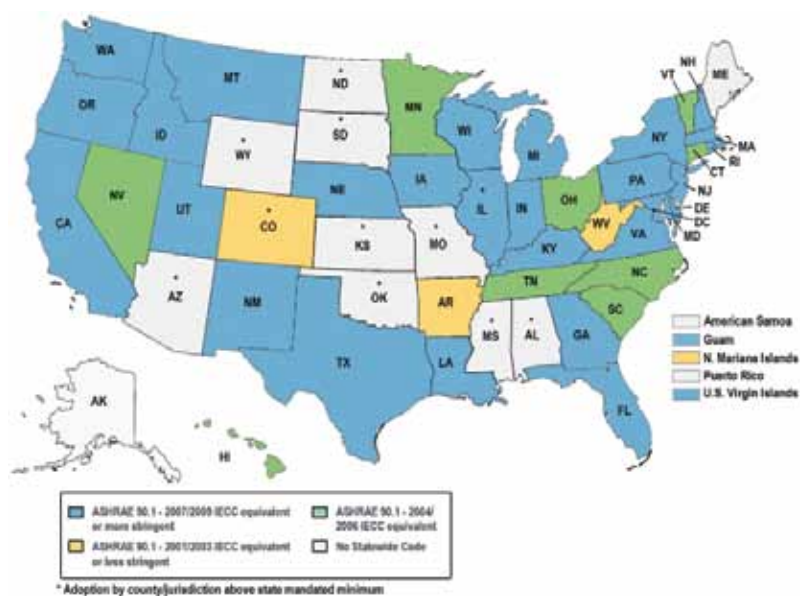


Figure 2: DOE summary for commercial energy code adoptions.

Given the amount of money available through DOE for funding of local and state energy-related projects, it's not surprising that within the last several years DOE has become a major player in the field of energy codes and standards.

Statewide Energy Code Adoption

It is fairly common knowledge, even within DOE, that codes are not being adopted or enforced in a consistent manner. Across the United States many jurisdictions, both state and local, are just now adopting the 2009 IECC. A few states, with laws that make updating to the current edition of the IECC mandatory, will soon start the adoption process for the 2012 IECC. Otherwise, it is expected that states with no mandatory process will enforce the 2009 or an earlier edition of the IECC for the foreseeable future.

DOE's website summarizes the status of code adoption within the United States. For residential code adoption, *Figure 1* provides the DOE overview as of April 2011.

The DOE summary for commercial energy codes, as of April of 2011, shows somewhat similar adoption trends for ASHAE 90.1 (*Figure 2*).

Conclusion

Given the current awareness of energy conservation due to world geopolitical situations and the relatively new field of sustainable building design, it's not surprising that there is a greater interest in energy codes now than in the past. Important to designers is the change in players involved in code writing and adoption. Currently, there is a movement to ratchet up code requirements to such an extent that practicality and cost benefits appear to be ignored. Additionally, DOE's influence in the code arena steadily increases due to federal funding available to states and local jurisdictions. DOE's goals for future editions of the energy codes and standards promise even greater difficulty in complying with the codes using traditional materials and methods of design and construction. ■