

Comparison of States' Energy Codes - Commentary

ROUGH DRAFT – Sandy Vitzthum, 8/8/23

Background. Early building codes were established by cities to prevent fires from spreading; in 1630, Boston outlawed wood chimneys and thatched roofs. Larger cities in the United States began regulating building size and setbacks by the early 1800s. In 1865, New Orleans was the first city to enact a law requiring inspections of public places. The National Board of Fire Underwriters published its Recommended National Building Code in 1905. In 1915, the world's first model code organization was established to provide a forum for exchange of ideas regarding building safety and construction regulations. In 1973, the American Institute of Architects called for one code to be used throughout the United States.¹

The International Code Council (ICC) was formed in 1994 by three regional code development organizations in the U.S. – the Building Officials and Code Administrators International, Inc. (BOCA), the International Conference of Building Officials (ICBO), and the Southern Building Code Congress International, Inc. (SBCCI).² ICC publishes a coordinated family of code books focusing on all aspects of construction in a carefully amended process every three years. Since 1995 almost all states in the union adopt some or all of ICC's codes, usually with amendments.

Energy efficiency codes are now considered to be a subset of building codes, but they began as performance goals to meet efficiency goals. The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) developed early standards, as did the National Association of State Energy Officials (NASEO), formed 1986, which grew out of State Energy Conservation Programs dating from the 1970s oil crisis. The International Code Council integrated efficiency standards into its code family by issuing the first International Energy Efficiency Code (IECC) in 2000. It references ASHRAE and other industry standards.

The concept of rating an appliance's energy usage compared to a norm, or even the usage of an entire building, has also developed since the 1970's oil crisis. For buildings, the generic term is an Energy Rating Index (ERI). ERI analysis, design, testing, and certification has grown into a national industry led by RESNET (Residential Energy Services Network) based in California. ICC has incorporated energy rating into the IECC as an alternate path to compliance.

State Energy Code Comparison. We gathered information on all 50 states from individual state websites and staff, from ICC, and from some national energy code sites. One such site, DOE's Building Energy Codes Program, rates states for effectiveness of their energy. However it rates potential energy savings without taking into account actual compliance. For instance, Vermont ranks high on the DOE BECP, but our compliance is low.

We then compared code details for several states – ones near Vermont and others with highest DOE ratings.

Findings: Commercial Buildings

1. 47/50 states have at least a suggested building code at the state level. 40/50 states adopt a statewide code. Most of the states who do not adopt a statewide code cannot; they are home-rule states.³
2. **All states** who have a standalone statewide energy code – except Vermont and California – have no statewide building code. Most of these offices of energy exist to advise code-making jurisdictions and/or to encourage/establish voluntary measures.
3. All states that have statewide building codes - except Vermont and California - integrate their energy code into building code with one authority. Even in California the building official collects energy code compliance documents.
4. The majority of states allow local jurisdictions to adapt more restrictive codes. Some states do not allow this in order to adopt new codes faster and for more uniform building standards.

¹ Fire Marshalls Association of Minnesota, "Short History of Codes."

² International Code Council.

³ "Home rule" is when a the state's constitution grants municipalities and/or counties broad authority to pass laws and govern themselves as they see fit (so long as they obey the state and federal constitutions).

5. In the detailed comparison:
 - a. Inspections including blower door tests are required in all jurisdictions having authority; every state *except Vermont* integrates energy efficiency testing with other building inspections, and the results are part of one building permit.
 - b. Performance-based paths of compliance are optional in all compared states, except in California many systems must be inspected (ducts, air filters, cooling systems, ventilation and exhaust systems).

Findings: Residential Buildings

1. Nearly all jurisdictions in the United States adopt some level of residential building code. Only Vermont and Indiana specifically exempt small-scale residential construction. Even if it's not enforced, this is important because the state or local government establishes a uniform standard of care⁴ for their jurisdiction.
2. All jurisdictions except Vermont and California integrate their energy code into building code with one authority. Even in California the building official collects energy code compliance documents. In other words, if any jurisdiction in most of the U.S. is administering a building code, they are also administering the energy code.
3. Two states close to Vermont, New Hampshire and Maine, have a statewide building code (including energy) but do not require towns to enforce the code. This means that even if a building is not inspected or certified, it is still required to meet all standards. This is important for training builders and for common understanding between owners and in court. In New Hampshire, the State Fire Marshall has jurisdiction over all buildings not enforced at a local level.
4. In the detailed comparison:
 - a. Performance-based paths of compliance are optional in all states compared, except in California some systems must be inspected (ducts, air filters, cooling systems, ventilation and exhaust systems).
 - b. In all other compared states, certification of energy code details is done by the building inspector or by a certified inspector whose certification becomes part of the certificate of occupancy.

Summary and Recommendations. Nearly all jurisdictions in the United States adopt a standard of care for single family homes, whether it's enforced or not. All jurisdictions except Vermont administer energy code standards within their building code administration. Performance-based paths of compliance for buildings are optional in all states, except in California where a hybrid of prescriptive and performance-based compliance is mandated.

⁴ "Standard of care" is the ordinary and reasonable care usually exercised by one in that profession, on the same type of project, at the same time and in the same place, under similar circumstances and conditions.