

Energy and Building Code Perspectives



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INTRODUCTION

Building codes are the various sets of regulations related to the construction, alteration, maintenance and use of buildings and structures. The codes offer a common and familiar guide for adoption by governmental agencies to approve building plans and inspect construction. There are 15 separate International Codes® (I-Codes®), covering topics including structural design for earthquake, hurricane and tornado forces; provisions for fire and life safety; provisions for energy conservation; guidelines on systems for heating, cooling, plumbing and electrical utilities and guidelines on efficient material, land and resource use (Figure 1-1). These codes serve primarily to protect the safety and welfare on building occupants and the public, and to reduce the negative impact of the built environment. The *International Energy Conservation Code*® (IECC®) provides design guidelines for the effective use and conservation of energy in commercial and residential buildings. The IECC regulates building components in exterior walls such as insulation, windows and doors; the efficiencies of electrical equipment such as lighting, motors and transformers and the performance of heating, cooling and

service water heating equipment. The IECC references companion I-Codes for elements of construction outside the scope of the IECC, such as mechanical, plumbing and electrical system installations. This section briefly discusses the history of energy codes and the scope and influence of some of the companion codes and their relationship to the IECC.

HISTORY OF ENERGY CODES

The development of energy codes and standards began in an orderly fashion that continues to be used today. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) was founded in 1894 and published Standard 90 in 1975. This standard, titled *Energy Conservation in New Building Design*, was developed in 3 years in accordance with the new National Bureau of Standards (NBS) *Design and Evaluation Criteria for Energy Conservation in New Buildings*. Standard 90, now ANSI/ASHRAE/IESNA 90.1-2013 (Figure 1-2), is recognized in the 2018 IECC Section C401.2 as a path to compliance for commercial energy efficiency.

Model code organizations followed much the same path developing the *Model Code for Energy Conservation* in 1981, and then the *Model Energy Code* (MEC) in 1983. The MEC (Figure 1-3) was prepared and maintained by the Council of American Building Officials (CABO). This is a significant collaboration in that the MEC brought the then three national code groups—the International Conference of Building Officials (ICBO), the Southern Building Code Congress International (SBCCI) and the Building Officials and Code Administrators International (BOCA), along with the National Conference of States on Building Codes and Standards—together for a common cause: to write an energy code for building officials and the building industry. The U.S. Department of Energy (DOE) provided the contract to create the 1983 MEC with content based on ASHRAE Standard 90-1980. The document was organized in the common code format and still exists in the structure and organization of the 2018 IECC.



FIGURE 1-1 The 2018 *International Codes*.®



FIGURE 1-2 *International Energy Conservation Code*, 2018 Edition, including ASHRAE 90.1, 2016 Edition.

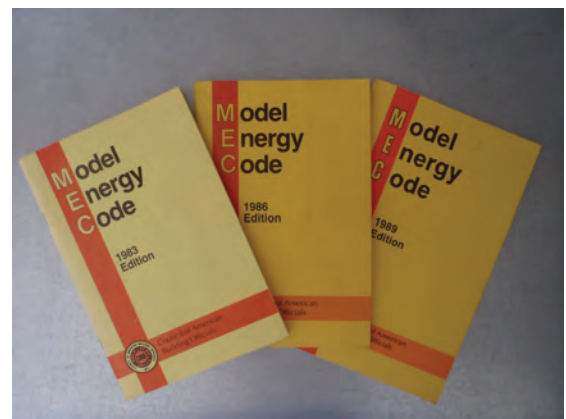


FIGURE 1-3 The Model Energy Codes by the Council of American Building Officials.

You Should Know

cdpACCESS™

- cdpACCESS is ICC's new cloud-based system for the code development process (cdp).
- It was developed to increase participation in the code development process.
- cdpACCESS allows users to create, collaborate, review, submit and vote (if eligible) on code change proposals and public comments.
- After the Committee Action Hearings, ICC members can view and vote on motions for those code changes that received an assembly motion.
- After the Public Comment Hearings, ICC will post the Online Governmental Consensus Vote. The proposals and hearing testimony are available to be viewed by everyone; ICC Governmental Member Voting Representatives and Honorary Members will be able to vote. ●

THE CASE FOR BUILDING AND ENERGY CODES

Modern construction codes are continually developed and improved to help make our built environment safe, healthy and energy efficient. Code history reaches back more than 3,500 years to Hammurabi, whose code created the intent of building regulation based on fairness; construction is to be sound and buildings are to last—consumers should get what they pay for. Fire-resistant construction and improved sanitation principles were implemented as Rome rebuilt after its AD 64 fire. This marked a shift in focus from protecting the building owner and builder to primarily risk reduction.

Perhaps as a result of recalling European tragedies, building codes first appeared in the United States in 1625. These early codes were concerned with fire safety and roof coverings. For example, in 1630, Boston prohibited chimneys made from wood. Thatch roofs were outlawed at about the same time. George Washington suggested height and area limitations on wood-frame buildings in the District of Columbia. In 1788, the first formal building code in the United States was written in Old Salem, now Winston-Salem, North Carolina.

The cost of nonregulated construction is an issue of national importance. In the summer of 2011, the U.S. Congress considered the Safe Building Code Incentive Act (H.R. 2069). Testimony during the hearings stated “Adopting and enforcing newer codes can reduce losses (from natural disasters) by 40 percent or more.”

The cost of energy-inefficient buildings is also a matter of national importance. The DOE's *Building Energy Codes Resource Guide*, published in June 2011, states “Building energy codes are estimated to produce a financial benefit to owners of nearly 2 billion dollars annually by 2015, rising to over 15 billion dollars annually by 2030.” In this context, energy costs are a slow-moving disaster. The realized savings are risk reduction and lower utility costs for building owners and occupants.

CODE DEVELOPMENT

Construction technology, methods, materials, equipment and processes are constantly evolving. Accordingly, the International Code Council (ICC) model codes (I-Codes) are systematically revised at periodic intervals to keep up with technical changes and to address the improved understanding of hazards. The I-Codes are revised and updated through an open process that invites participation by all stakeholders and affected parties. This code development process can involve exhaustive research, review, discussion and debate of the potential changes.

A code change begins with the submittal of a proposal to add, revise or delete a code provision. Any interested individual or group (other than ICC staff) may submit a code change proposal and participate in the proceedings in which it and all other proposals are considered.