



# CODES & STANDARDS

## WHAT'S NEW IN THE 2000 INTERNATIONAL ENERGY CONSERVATION CODE™ (IECC)?

### Buildings for the 21st Century

Buildings that are more energy-efficient, comfortable, and affordable...that's the goal of DOE's Office of Building Technology, State and Community Programs (BTS). To accelerate the development and wide application of energy efficiency measures, BTS:

- Conducts R&D on technologies and concepts for energy efficiency, working closely with the building industry and with manufacturers of materials, equipment, and appliances
- Promotes energy/money saving opportunities to both builders and buyers of homes and commercial buildings
- Works with State and local regulatory groups to improve building codes, appliance standards, and guidelines for efficient energy use
- Provides support and grants to States and communities for deployment of energy-efficient technologies and practices



The 2000 edition of the International Energy Conservation Code™ (IECC) was recently issued by the International Code Council (ICC). The IECC, previously known as the Council for American Building Code Officials (CAB)) Model Energy Code (MEC) addresses energy efficiency in buildings. The following has changed from the 1998 IECC to the 2000 IECC.

### Commercial Buildings

Substantial changes were made to the commercial building section of the 2000 IECC. However, it has not been updated to incorporate the provisions of ASHRAE/IESNA Standard 90.1-1999, except in the area of lighting. The changes are all in Chapter 8, *Design by Acceptable Practice for Commercial Buildings* (formerly Chapter 7 of the 1998 IECC). These changes increase the usability of the IECC because the scope of Chapter 8 has been expanded to cover virtually all commercial buildings.

Chief among the scope changes for 2000 is the addition of materials that address complex mechanical systems. The IECC previously addressed only single-zone HVAC systems. Chapter 8 now covers multiple-zone HVAC systems and contains HVAC system requirements equivalent to those in the ASHRAE/IESNA Standard 90.1-1989

(not the 1999 edition), but presented in simpler, more enforceable language.

Similar expansions in scope can be found in the building envelope section of Chapter 8. Previously, the envelope requirements applied only to low-rise commercial buildings (buildings three stories or fewer in height). For 2000, the envelope requirements were adjusted and can be used with buildings of any height. In addition, a new set of requirements was added for buildings with larger window areas. The chapter on design by acceptable practice now permits glazing areas up to 50% of the area of above-grade walls, replacing the 40% limit in the 1998 IECC.

In the lighting systems section, interior lighting power allowances have been updated to be equivalent to values found in the recently published ASHRAE/IESNA Standard 90.1-1999. In addition, several new usage categories were added to provide better coverage of the full range and variety of commercial buildings.

Finally, an entirely new section was added to Chapter 8 to provide greater design flexibility and to encourage innovative design and construction techniques. Section 806, *Total Building Performance*, similar to the IECC's Chapter 4 for residential buildings, permits compliance based on annual energy analysis of the entire building.

**For more information about the DOE Office of Building Technology, State and Community Programs, contact:**

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Printed with renewable – source ink on paper containing at least 50% wastepaper, including 20% post consumer waste.

December 2000  
DOE/GO-????

Together, these changes make Chapter 8 of the 2000 IECC a complete, concise, and self-contained energy code for commercial buildings.

Chapter 7, *Building Design For All Commercial Buildings*, was updated in the 2000 code cycle to incorporate the 1999 edition of ASHRAE/IESNA Standard 90.1. This will be reflected in the 2003 IECC.

## **Residential Buildings**

The most notable change in the residential buildings portion of the 2000 IECC is a new Chapter 6 containing a four-page optional and standalone prescriptive compliance approach. This approach can be used only if the glazing area is less than or equal to 15% of the wall area for single-family buildings, and less than or equal to 25% of the wall area for multifamily buildings. Because this chapter is based on other requirements in the IECC, it is not intended to create any new or different requirements, only a simpler prescriptive approach to requirements already in other IECC chapters. IECC Chapter 6 contains essentially the same requirements as the International Residential Code's energy chapter (Chapter 11).

Other significant changes include:

✓ The scope has been expanded to include additions, alterations, and repairs. Note that model building codes already apply to additions, alterations, and repairs, so these may already have been covered by reference.

✓ The maximum 0.4 solar heat gain coefficient in southern climates now applies not only to new structures, but also to window replacements and additions. Skylight replacements must have a U-factor of 0.50 or less in all but the mildest climates.

✓ Exposed foundation insulation is required to have a protective coating.

✓ Identification of hot and humid climates not required to have vapor retarders is simplified. These climates are now identified on the maps in Chapter 3. Text has been added clarifying that the vapor retarder can be exempted in any climate if "other approved means to avoid condensation and leakage of moisture are provided."

✓ In the prescriptive envelope compliance path (Section 502.2.4), simple tables have been added for determining steel-framed wall and high-mass wall insulation requirements.

✓ Duct sealing requirements are rewritten in section 603.8 of the 2000 International Mechanical Code® and reference the 2000 IECC.

✓ The definition of "glazing area" as applied to doors is clarified. If the glazed area of the door is less than 50% of the door area, the "glazing area" for compliance calculations is simply the transparent area. If the glazed area is 50% or more of the door area, the "glazing area" is the rough opening of the door, including the frame.