PART II

Regulation of Green Practices

Chapter 3: Scope and Limitations

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Chapter 5: Jurisdictional Requirements and Life-Cycle Assessment

CHAPTER

3

Scope and Limitations

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Building codes, fire codes, electrical codes, and related companion codes are typically sets of regulations that are adopted by governmental agencies, such as cities, counties, and states, intended to ensure that buildings are constructed in a certain manner, will function as designed, and will be safe for future occupants. These regulations primarily address structural integrity; fire and life safety; energy, mechanical, plumbing, and electrical systems; and accessibility, to name a few. In addition, the IgCC, working as an overlay code, contains minimum mandatory requirements intended to reduce the negative potential impacts and increase the positive potential impacts of buildings on the environment by addressing conservation of natural resources, building materials and energy, the use of renewable energy technology, indoor and outdoor air quality, and building operations and maintenance.

BUILDING CODES AND GREEN CODES: SCOPE

The IgCC contains a number of features common to all of the I-Codes of the ICC. Each code begins by stating its scope of application. The scope establishes the type of buildings, building uses, construction, equipment, and systems to which a particular code applies, and is generally followed by the intent of the code as it relates to buildings. The general intent of construction codes is to protect the health, safety, and welfare of the people who occupy and use buildings. Each I-Code typically references other I-Codes and related standards for use under specific circumstances. For example, the IgCC references the *International Mechanical Code* (IMC) for requirements related to building mechanical systems; the IECC for requirements related to building envelope systems, such as insulation and air sealing, along with requirements for energy compliance paths; the IBC for requirements related to lighting in means-of-egress systems and other criteria; and other related I-Codes and applicable building standards. What follows is a general description of some of the other I-Codes referenced within the IgCC. Typically, the appendices of each code are not in effect unless they are specifically adopted by the jurisdiction having authority. **[Ref. 101 and 102]**

International Building Code

The provisions of the IBC apply to the construction, alteration, maintenance, use, and occupancy of all buildings and structures except detached one- and two-family dwellings and townhouses and their accessory structures, which are scoped under the provisions of the IRC. The IgCC contains specific references to the IBC, which is the basis for many provisions within the IgCC. In addition to structural components and systems, the IBC provides regulations intended to provide for a safe means of egress, accessibility for persons with disabilities, fire resistance, fire-protection systems, weather resistance, finishes, and interior environments. The regulations contained in the IBC are typically related to the use and occupancy of the building—the risk or hazards based on the functions within the building, the need to protect the occupants within the structure, and the need to provide a means for those occupants to leave the structure in the event of an emergency. This level of risk will regulate the building's area, height, means of egress, fire-resistive elements, and fire-protection systems depending upon if the building is a school, office, hospital, or other occupancy regulated by the code. The code also intends to provide for the safety of firefighters and emergency responders during emergency operations (Figure 3-1).

FIGURE 3-1 Corporate office building under construction

International Energy Conservation Code

The IECC regulates the design and construction of buildings for the effective use of energy. The IgCC contains specific references to the IECC, which is the basis for many provisions within the IgCC. The IECC provides minimum requirements for insulation levels in the building envelope, air sealing of required air barriers, and glazing efficiencies. It also provides options for both prescriptive- and performance-based energy design of buildings. The IECC is intended to provide flexibility to permit the use of innovative approaches and techniques to achieve the effective use of energy. In general, the requirements of the code address the design of all building systems that affect the visual and thermal comfort of the occupants, including lighting systems, insulation, cooling and heating equipment, service-water-heating systems, and permanent electric motors such as those used in elevators and escalators. It does not address the energy used by office equipment such as personal computers and others, nor does it address kitchen equipment used in restaurants, commercial kitchens, and cafeterias (Figure 3-2).

FIGURE 3-2 Energy conservation components of an apartment building

International Mechanical Code

The provisions of the IMC apply to the installation, alteration, use, and maintenance of permanent mechanical systems utilized for comfort heating, cooling, and ventilation (HVAC), and other mechanical processes within buildings (Figure 3-3). The IMC references the IRC for detached one- and two-family dwellings and townhouses and their accessory structures.

FIGURE 3-3 Energy-efficient HVAC system

International Residential Code

The provisions of the IRC apply to the construction, alteration, use, and occupancy of detached one- and two-family dwellings and townhouses, which are specifically referenced in ICC-700, the *National Green Building Standard*, which is also noted in Table 302.1, "Requirements Determined by the Jurisdiction," of the IgCC. A townhouse, by definition, is a single-family dwelling unit constructed in a group of three or more attached units not exceeding three stories in height and having at least two sides open to a public way or yard. The IRC is a comprehensive, standalone residential code that includes provisions for structural integrity, fire and life safety, energy conservation, and mechanical, fuel gas, plumbing, and electrical systems. It incorporates both prescriptive criteria

for conventional light-frame construction as well as performance criteria that allow the use of new materials and systems with approval by the building official (Figure 3-4).

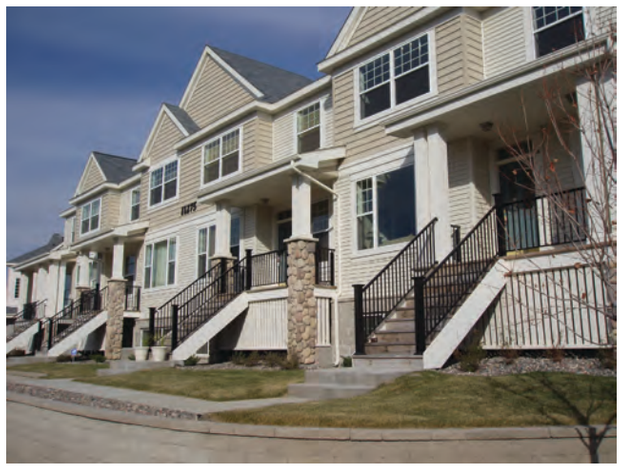

FIGURE 3-4 Townhouse comprised of multiple-unit residential dwellings attached side-by-side

INTERNATIONAL GREEN CONSTRUCTION CODE

The provisions of the IgCC apply to the design, construction, and addition and alteration of buildings regulated by the IBC and the sites on which these structures are located. The IgCC is a comprehensive set of requirements intended to reduce the negative impact of buildings on the environment, unlike building codes, which generally have requirements intended to protect the building from the effects of the environment on the building itself, such as forces from wind, rain, snow, and earthquakes. Although most green building programs are voluntary and contain rating systems whereby certain levels of certification are achieved through higher levels of building design, the IgCC is not a rating system and is intended as a mandatory code when adopted. It does contain jurisdictional requirements that are formatted to afford jurisdictions the flexibility to adapt the code in a manner that is best suited to meet the jurisdiction's environmental and regional goals. The provisions of the appendices are also designed to offer conservation practices that achieve greater benefit than the minimum requirements of the IgCC when specifically adopted by a jurisdiction. For example, if Appendix A is adopted, project electives can be chosen by the design professional for a particular project. Project electives are intended to drive the performance level of the building higher than the base standards in the body of the code. **[Ref. 101.3 and 101.4]**

You Should Know

Building codes are minimum requirements intended to safeguard the public health, safety, and welfare. Green codes are minimum requirements intended to reduce the negative impact of a building on the environment while making the environment within the building healthier for the occupants. ●

You Should Know

Prescriptive building codes typically refer to a set of rules that spell out how something is to be constructed, somewhat like a cake recipe tells you exactly which ingredients are needed and in precisely what amounts. An example of a prescriptive code provision would be the use of a lumber span table for solid-sawn lumber joists based on the grade, species, and design load that indicate how far a joist can span. Performance building codes allow the end user to reach a required level of performance using the design parameters within the code, such as those for live and dead loads, and then provide data that verify compliance with those loading provisions. An example would be the design of an engineered wood truss that relies on a series of wood members and gussets to achieve the minimum required design loads. Performance-based codes are generally used more often for products that result from new technology that may not be referenced in the prescriptive provisions within the body of the code. ●