**BSESC—National Codes and Standards**

## Proficiency Level 3: Apply

### Learning Objective 3.1

* Demonstrate an understanding of how a model code is developed and adopted, using a model energy code as an example.

### Lecture Notes 3.1

The International Code Council (ICC) publishes and maintains the International Residential Code (IRC), which applies to new and existing one- and two-family dwellings and townhouses of not more than three stories in height, and the International Building Code (IBC), which applies to new and existing buildings, except those residential buildings covered under the IRC.

The ICC publishes and maintains a variety of model codes, to which the IRC and IBC can be applied. These model codes make allowances for different climate zones and local issues that may impact buildings. The model codes are adopted by state and local governments that enforce the codes for their jurisdictions. This code enforcement is usually the responsibility of local government building officials who review design plans, inspect construction work and issue building and occupancy permits.

Examples of model codes published by the ICC include the International Energy Conservation Code (IECC), International Mechanical Code, International Plumbing Code, International Fire Code, International Electrical Code, International Fuel Gas Code, International Private Sewage Code, International Property Maintenance Code, and International Zoning Code.

The most recent model energy code is the 2015 International Energy Conservation Code (IECC). These are developed and published by the International Code Council through an open public-hearing process. Prior to 1998, the IECC was known as the Council of American Building Officials Model Energy Code (MEC).

The IECC Code Development Committee typically comprises of seven to 11 individuals appointed by the ICC. Most, but not all, committee members are code officials. They may or may not be members of the ICC.

**How does the process work?**

Anyone may suggest a revision to the IECC by requesting a code change proposal from the committee and preparing a recommended change and substantiation. The committee publishes proposed changes and distributes them for review. This occurs about six weeks prior to an open public hearing.

At the public hearing, the committee receives testimony and then votes to approve, deny, or revise each change. The committee publishes its results.

Those wishing to have a proposed change reconsidered may submit a challenge to the committee’s recommended action. Proponents and opponents present additional information at a second public hearing, followed by a vote by the full ICC membership. This outcome may be appealed to the ICC Board of Directors.

The IECC is revised on an annual cycle. However, full publication of the document occurs every third year, with supplements issued in the interim years.

When developing and adopting their own energy codes, states and local governments typically adopt the full-published IECC. By specifically adopting the supplements as well, state and local governments ensure that their energy codes include important additions and clarifications to the IECC.

Before adopting or revising an energy code, states and local governments often assemble an advisory body comprised of representatives of the design, building construction, and enforcement communities. This body determines which (if any) energy standards and model energy codes should be adopted. The group also considers the need to modify energy standards and model energy codes to account for local preferences and construction practices. The body also may serve as a source of information during the adoption process.

**Overview of the Adoption Process**

The adoption process generally includes the following steps:

* Change is initiated by a legislative or regulatory agency with authority to promulgate energy codes. Interested or affected parties also may initiate change. An advisory body typically is convened. The proposed energy code is developed.
* The proposal undergoes a legislative or public review process. Public review options include publishing a notice in key publications, filing notices of intent, and holding public hearings. Interested and affected parties are invited to submit written or oral comments.
* The results of the review process are incorporated into the proposal, and the final legislation or regulation is prepared for approval.
* The approving authority reviews the legislation or regulation. Revisions may be submitted to the designated authority for final approval or for filing.
* After being filed or approved, the code is put into effect, usually on some specified future date. This grace period allows those regulated to become familiar with any new requirements. The period between adoption and effective date typically varies from 30 days to six months.

Details of the adoption process vary depending on whether the energy code is adopted by legislation, regulation, or a local government.

### Learning Objective 3.2

* Demonstrate your understanding of how an industry standard is developed, using an energy standard as an example.

### Lecture Notes 3.2

Industry organizations publish and maintain industry standards. These standards describe how a building should be constructed. They are published by organizations such as the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE). They are not mandatory, but serve as national recommendations, with some variation for regional climate. States and local governments frequently use standards as the technical basis for developing their energy codes. Some standards are written in mandatory, enforceable language, making it easy for jurisdictions to incorporate the provisions of the energy standards directly into their laws or regulations.

**How an energy standard is developed and revised**

The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE); Illuminating Engineering Society of North America (IES); and American National Standards Institute (ANSI) work together to sponsor energy Standard 90.1: Energy-Efficient Design of New Buildings Except Low-Rise Residential Buildings, which applies to all buildings except residential buildings with three stories or less.

ASHRAE also sponsors energy standard 90.2: Energy-Efficient Design of New Low-Rise Residential Buildings, which applies to residential buildings with three stories or less.

Standards 90.1 and 90.2 are developed and revised through voluntary consensus and public hearing processes that are critical to widespread support for their adoption.

ASHRAE works with other standards organizations, such as the IESNA, ANSI, American Society of Testing and Materials (ASTM), Air-Conditioning, Heating and Refrigeration Institute (AHRI), and Underwriters Laboratories (UL). The voluntary consensus process also includes representation from:

* The design community, including architects, lighting, and mechanical designers;
* Members of the enforcement community, including building code officials, representatives of code organizations, and state regulatory agencies;
* Building owners and operators;
* Industry and manufacturers;
* Utility companies; and
* Representatives from the Department of Energy, Pacific Northwest National Lab, energy advocacy groups, and the academic community.

**How Does the Process Work?**

Standards 90.1 and 90.2 are both on continuous maintenance and are maintained by separate Standing Standards Project Committees. Committee membership varies from 10 to 60 voting members. Committee membership includes representatives from the list above to ensure balance among all interest categories.

After the committee proposes revisions to the standard, it undergoes public review and comment. The committee usually incorporates non-substantive changes into the standard without another review. Substantive changes require additional public review. Occasionally, mediation is necessary to resolve differing views.

When a majority of the parties substantially agree (this is known as consensus), the revised standard is submitted for approval to the ASHRAE Board of Directors. Those not in agreement with the decision may appeal to the Board. If an appeal is upheld, further revision, public comment, and resolution occur. If the Board denies the appeal, publication of the revised standard would then proceed.

The entire process can take as little as two years or up to 10 years.

Standards 90.1 and 90.2 are automatically revised and published every three years. However, anyone may propose a revision at any time. Approved interim revisions (called addenda) are posted on the ASHRAE website and are included in the next published version.

Key activities relating to revisions, including responding to public comments, typically occur during one of ASHRAE’s annual (June) or mid-winter (January) meetings. Public review of standards commonly occurs two to four months after one of these meetings.

## References

Bartlett, R., M.A. Halverson, and D.L. Shankle. 2003*. Understanding Building Energy Codes and Standards*. PNNL-14235. Prepared for the U.S. Department of Energy by Pacific Northwest National Laboratory, Richland, WA.