

# Status of State and Local Adoption of Energy Standards for New Commercial Buildings

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## Introduction

Numerous public and private sector agencies and organizations develop energy standards and codes for commercial buildings. These documents serve, among others, state and local legislators and regulators who are interested in requiring their use to reduce the energy consumption of new commercial buildings. Through adoption or adaptation of these documents by state or local governments, minimum acceptable design and construction criteria for new commercial buildings are established in law.

The energy standard or code adopted, or used as a basis for a state developed standard, may be any one of a number of documents. The authority of the state to regulate construction may apply throughout the entire state, only to a few types of buildings, or may be absent, in which case local government has regulatory authority. The means of adoption may be by legislation, regulation, municipal code, or other legal vehicle. At the present time there are widespread differences in the energy standards adopted by state and local government and the application of these standards to new commercial buildings.

## Methodology

The effort concentrated on gathering information and identifying the status of state and local adoption of energy standards for new commercial buildings. This included identifying national level codes and standards that address commercial building energy conservation, obtaining copies of state and local legislation, regulations, and municipal codes, and talking with state and local officials about their adopted standards. Even with this information there is often confusion as to what standard has been officially adopted, its' applicability to new commercial buildings, and the date it became effective.

## Results

The majority of states, and local governments in the absence of state action, apply energy standards to new commercial buildings through codes adopted through regulation. The majority of energy standards adopted are

the MEC, the NECC, or those developed by the state. The majority of these energy standards apply to all buildings in a state, although some states limit their standard to state-owned and funded construction. Where no state standards apply, local government will generally adopt the MEC or NECC.

## Available Energy Codes and Standards

The American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) and the Illuminating Engineering Society (IES) jointly sponsor the development and updating of Standard 90, which covers energy in new building design. This standard was first published in 1975, hence the designation 90-75, and has undergone numerous revisions over the past 17 years. The versions of this standard which are available for adoption are 90A-80 and 90B-75, 90Aa-87 (an addenda to 90A-80), 90.1-89, and addenda to 90.1-89 to be designated as a, b, c, etc.

The Council of American Building Officials (CABO) develops the Model Energy Code (MEC). This was first developed in 1983 and finds its roots in the Model Code for Energy Conservation (MCEC) developed in 1977 with U.S. Department of Energy (DOE) support. The MCEC is a code version of ASHRAE/IES 90-75. Further editions of the MEC included criteria from ASHRAE/IES 90A-80. The MEC and other similar codes have yet to incorporate criteria from ASHRAE/IES 90.1-89 into their documents in place of that from previous editions of the standard. The Southern Building Code Congress International (SBCCI) develops the Standard Building Code (SBC), which references ASHRAE/IES Standard 90.1-89 as an alternate to the 1989 MEC.

The Building Officials and Code Administrators (BOCA) develop the National Energy Conservation Code (NECC). This was first developed in 1978 and, like the MEC finds its roots in the ASHRAE/IES standards. For commercial buildings the NECC is essentially the same as the MEC, although the NECC is less stringent for some equipment efficiencies and has no lighting power provisions.

The DOE has also published a voluntary commercial building energy standard that is based on ASHRAE/IES Standard 90.1-89.

### What States Have Adopted

Figure 1 shows the number of states that have adopted a particular energy code or standard. Note that some states develop their own energy codes and standards, which can be a completely unique standard or an adaptation of one of the above documents. Of the nine (9) states which are considered to have completely unique standards, only those in Alabama and North Carolina are uniquely different. The other seven (7) states utilize, in varying degrees, some provisions from available energy codes and standards.

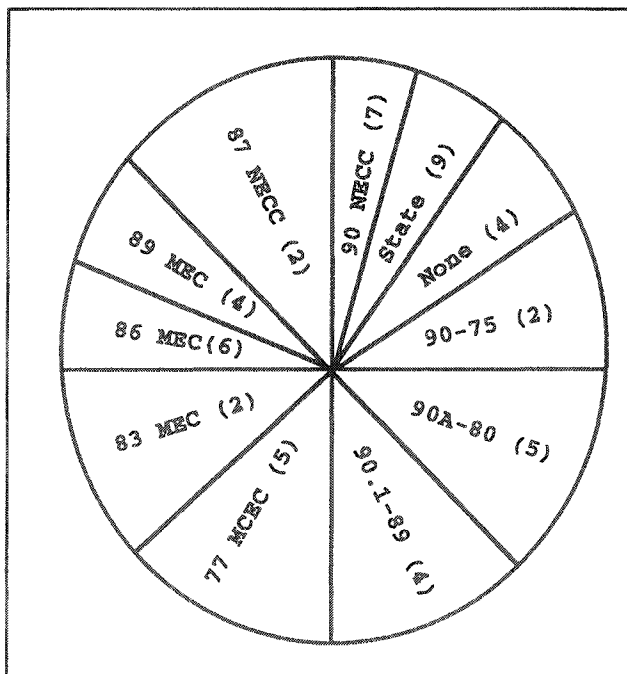


Figure 1. State Adoption of Energy Codes and Standards

Figure 2 shows the number of states as they apply the standard or code adopted to a specific building ownership situation. In most cases all new commercial buildings must comply. In others only new state-owned or funded commercial buildings must comply. One state, Vermont, adopts one energy code or standard for public construction and is included in the presented results, and another for private construction.

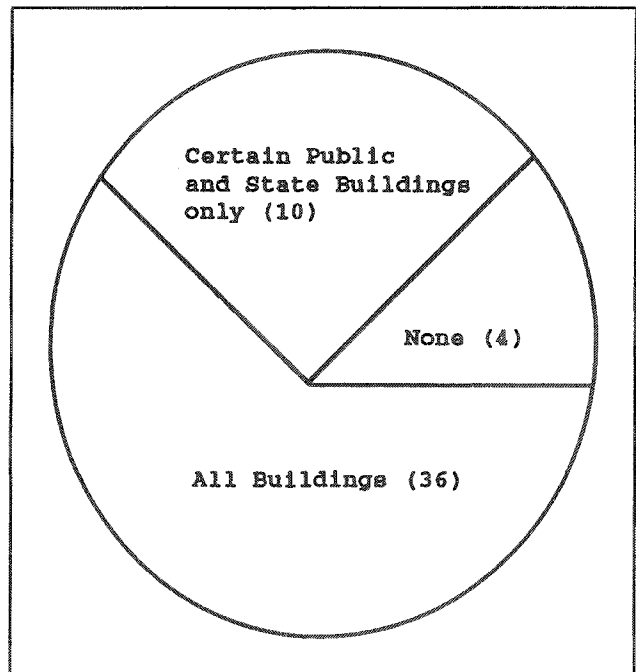


Figure 2. Applicability of Energy Codes and Standards to New Commercial Buildings

Figure 3 shows in more detail the information on the energy standard or code adopted and the buildings to which it applies. Various codes and standards adopted are listed and identified by number. The buildings to which the adopted code or standard applies are also identified. For instance the legend and map information indicate that Virginia has adopted the energy provisions of the 1990 BOCA codes and applies them to all commercial buildings.

### How States Have Adopted Energy Standards

State and local governments can adopt energy standards by reference or directly within the text of legislation or regulations. Energy criteria can also be contained in stand alone documents or be components of a larger set of requirements, such as a building code. Where there is no state legislation or regulation then local government becomes the prime mover in adoption, typically through a local ordinance. The requirements are typically contained in a particular title of the Municipal Code, usually the title addressing building construction. Figure 4 shows the means of adoption of energy codes and standards by the states.

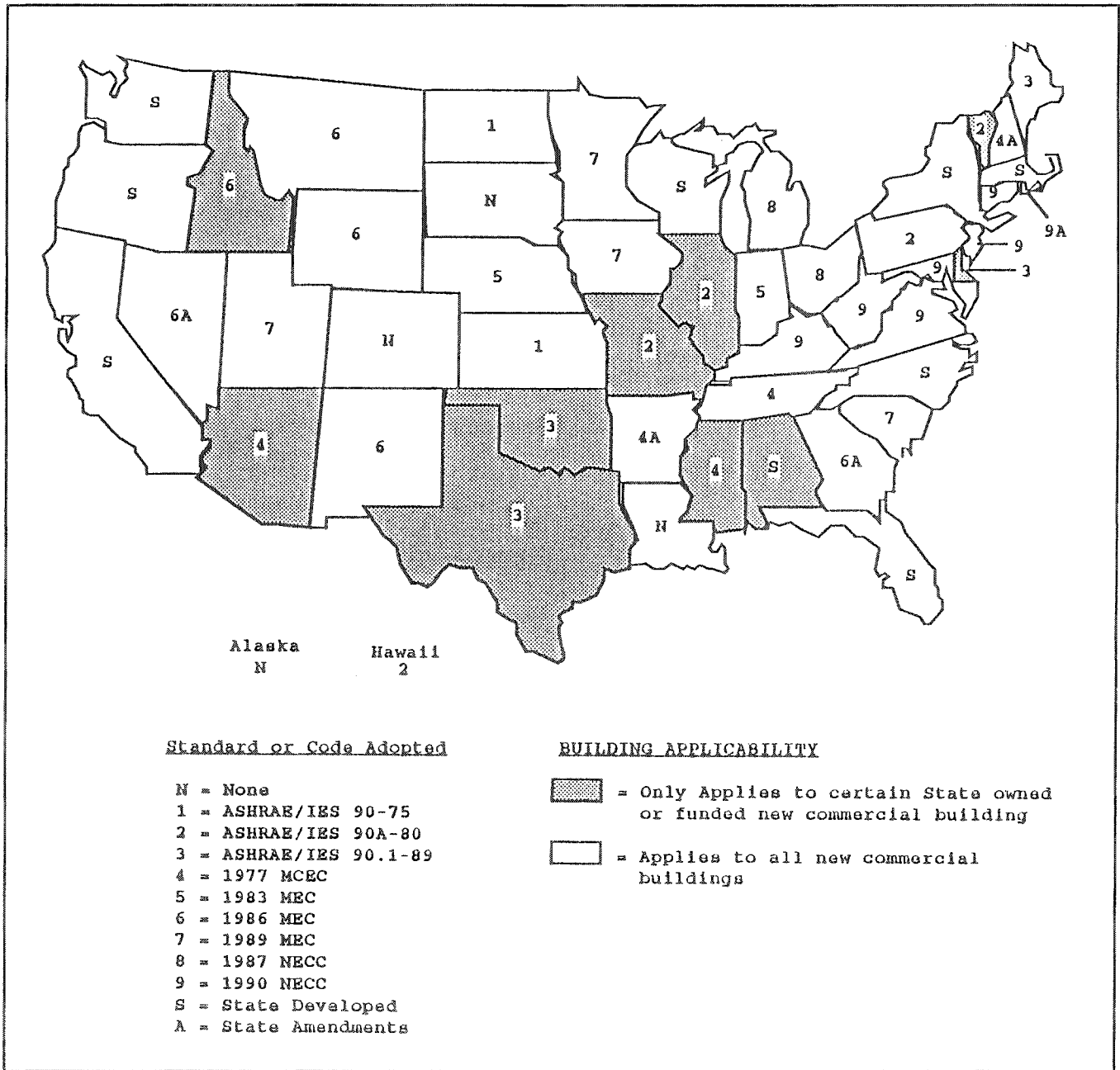


Figure 3. State-by-State Adoption and Application of Energy Standards for New Commercial Buildings

### Special Considerations

Some states have special circumstances not readily apparent in the above figures and which need elaboration. In Connecticut legislation calls for the adoption of ASHRAE/IES 90.1-89. Only the lighting provisions of ASHRAE/IES 90.1-89 apply in Delaware. The new Georgia Energy Code is based, in part on ASHRAE/IES

90.1-89 and is due to become effective in August of 1992. A new code based on ASHRAE/IES 90.1-89 is under development in Hawaii. The adoption of the 1992 MEC is underway in Indiana. In Kansas the lighting standards apply to public buildings. Massachusetts used the provisions of ASHRAE/IES 90.1-89 in the development of their energy code. Compliance based on the 1989 MEC or ASHRAE/IES 90A-80 is allowed in Maryland. The

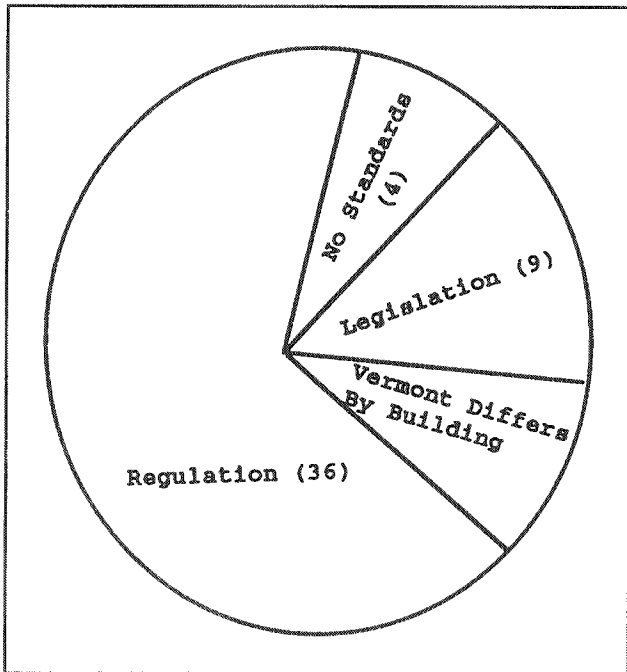


Figure 4. Means of Adoption of Energy Codes and Standards

energy code in Vermont applies to publicly funded commercial buildings. Vermont Act 250 applies to private construction and requires a life-cycle cost analysis for new buildings.

## Acknowledgments

This paper was prepared with the assistance and support of the states, who provided copies of their energy standards requirements.

## Endnotes

1. There is a subtle distinction between standards and codes that cannot be addressed within the scope of this paper. The terms standard and code have been used interchangeably throughout the text.
2. The information in the paper is based on energy standards in effect as of May 1992. The development and adoption of energy standards is an ever changing picture, and everything possible has been done to ensure the information for each state is as accurate and current as possible. Ongoing activities are covered under special considerations where warranted.
3. Reference materials listed are the first edition, all of which have been updated and republished since initial publication. In the case of ASHRAE/IES standard 90, this has also included a redesignation as 90.1-89.

## References

- American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE). 1975. *Energy Conservation in New Building Design*. ASHRAE, Atlanta, GA.
- Council of American Building Officials (CABO). 1983. *Model Energy Code*. CABO, Falls Church, VA.
- Building Officials and Code Administrators International (BOCA). 1978. *National Energy Conservation Code*. BOCA, Country Club Hills, IL.
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