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STATUS OF STATE AND LOCAL ADOPTION  
OF ENERGY STANDARDS FOR NEW  
COMMERCIAL BUILDINGS

J. J. Boulin  
D. R. Conover

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

Jean J. Boulin, U.S. Department of Energy  
David R. Conover, Pacific Northwest Laboratory

## H:1. SYNOPSIS

This paper presents a summary of building energy standards adoption by state and major local governments and how the standards apply to new commercial buildings.

## H:2. 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.

## H:3. 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.

## H:4. 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.

#### H:4.1. 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.

#### H:4.2. 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 goes here]

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 goes here]

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.

[Figure 3 goes here]

#### H:4.3 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 4 goes here]

#### H:4.4 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 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.

#### H:5 ACKNOWLEDGEMENTS

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

H:6 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.

H:7 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.

Southern Building Code Congress International (SBCCI). 1991. Standard Building Code. SBCCI, Birmingham, AL.

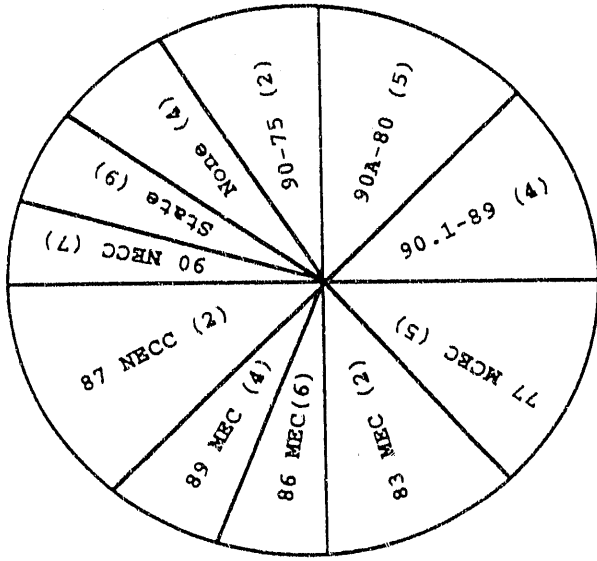
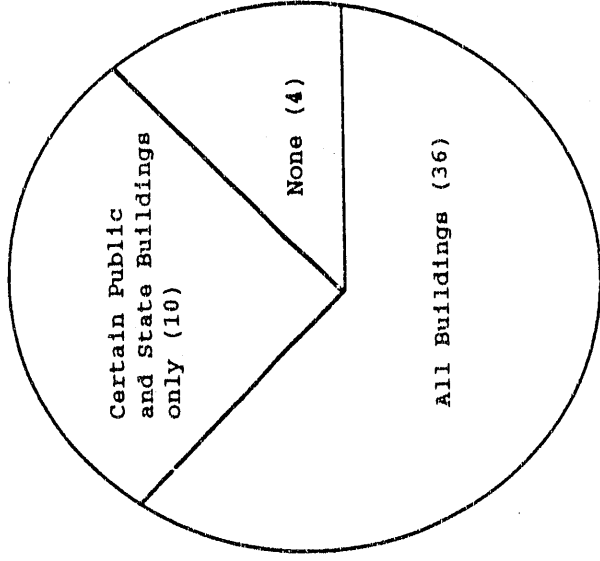
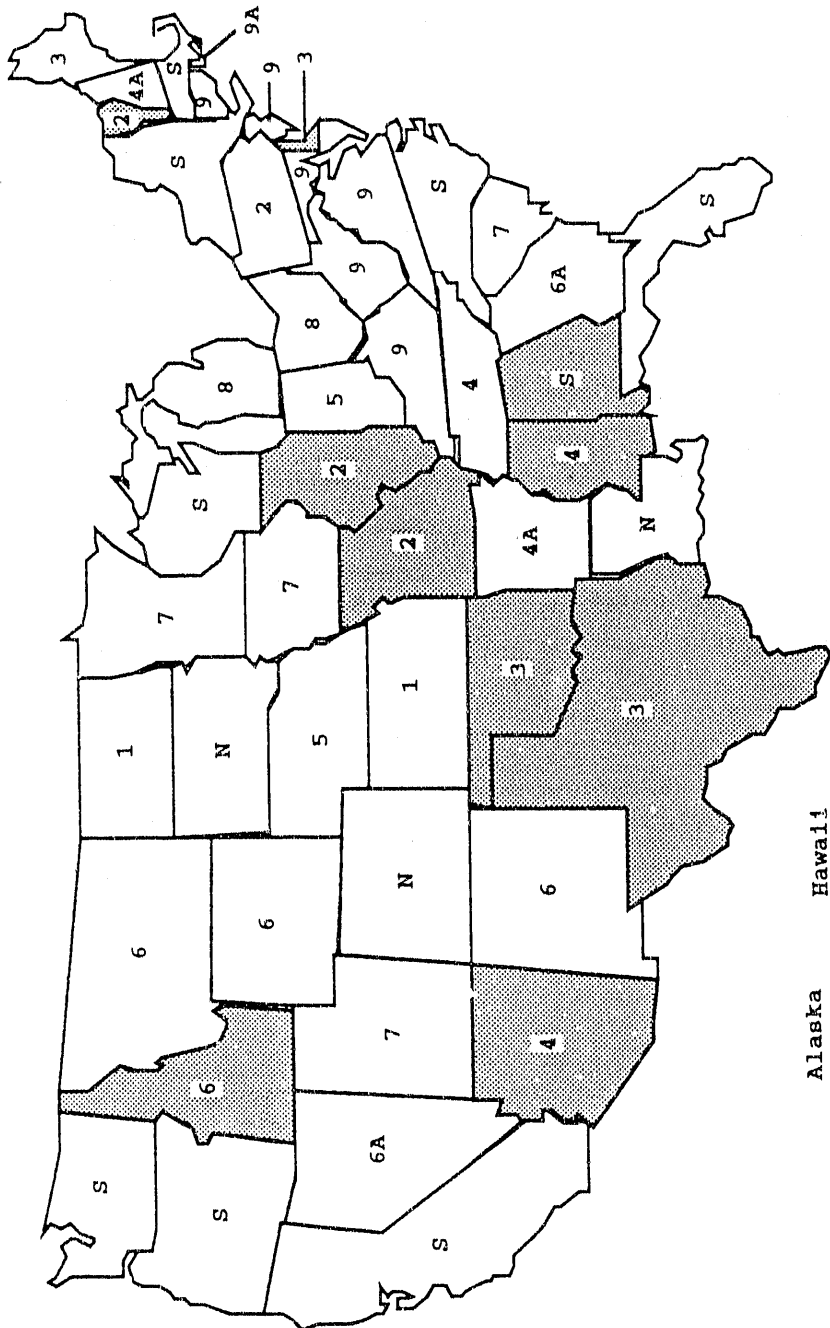


Figure 1. State Adoption of Energy Codes and Standards



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



**Standard of Code Adopted**

- N = None
- 1 = ASHRAE/IES 90-75
- 2 = ASHRAE/IES 90A-80
- 3 = ASHRAE/IES 90.1-89
- 4 = 1977 MCEC
- 5 = 1983 MEC
- 6 = 1986 MEC
- 7 = 1989 MEC
- 8 = 1987 NECC
- 9 = 1990 NECC
- S = State Developed
- A = State Amendments

**BUILDING APPLICABILITY**

- = Only Applies to certain State Owned or funded new commercial building
- = Applies to all new commercial buildings

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



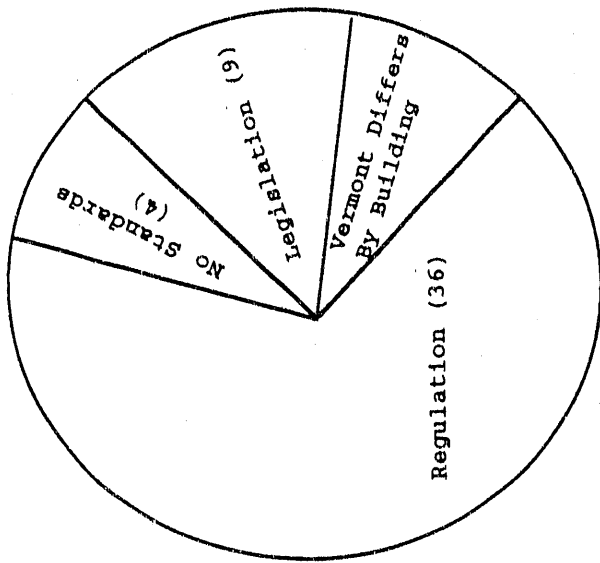


Figure 4. Means of Adoption of Energy Codes and Standards

PROPOSED POSTER LAYOUT ID NO. 161

STATUS OF STATE AND LOCAL BUILDING ENERGY CODES AND STANDARDS ADOPTION

Energy Codes and Standards Available at The National Level For Commerical Buildings

PHOTO OF CODES AND STANDARDS

**STANDARDS**

- ASHRAE/IES 90-75
- ASHRAE/IES 90A-1980
- ASHRAE/IES 90B-1975
- ASHRAE/IES 90Aa-1987
- ASHRAE/IES 901-1989
- ASHRAE/IES 901a (et. al.) (Proposed Addenda)
- DOE COMMERCIAL STANDARDS

**CODES**

- 1977 MCEC
- 1983 MEC1
- 1985 MEC1
- 1989 MEC1
- 1992 MEC
- 1984 NECC 1,2
- 1987 NECC 1,2
- 1990 NECC 1,2

**FOOTNOTES**

1. Supplements also produced annually between editions

2. Some provisions also distributed throughout NBC, NMC, and NPC.

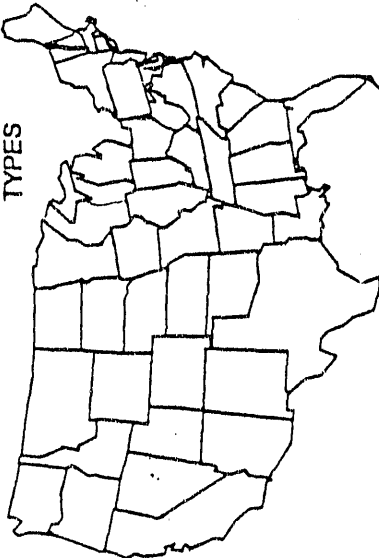
**ENERGY CODES AND STANDARDS ADOPTED WITHIN THE UNITED STATES**

PIE CHART

PIE CHART

PIE CHART SHOWING NUMBER OF STATES USING A PARTICULAR CODE OR STANDARD

PIE CHART SHOWING NUMBER OF STATES HAVING THE CODE OR STANDARD APPLICABLE TO PARTICULAR BUILDING TYPES



ONLY APPLIES TO CERTAIN STATE OWNED OR FUNDED COMMERCIAL BUILDINGS

APPLIES TO ALL COMMERCIAL BUILDINGS

**PLACEMENT OF THE ENERGY CODE AND STANDARD**

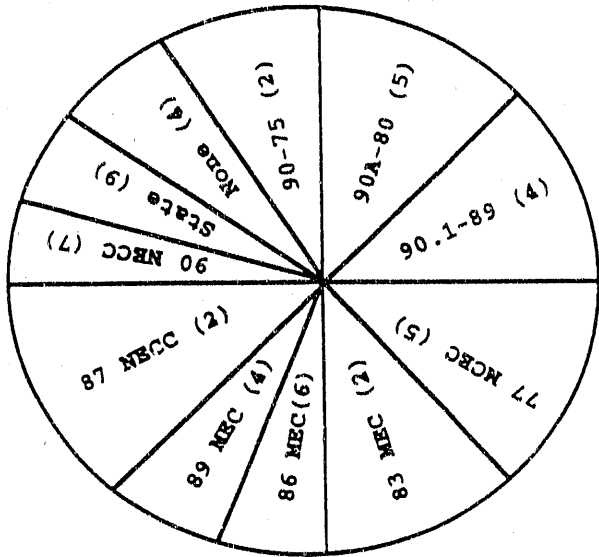
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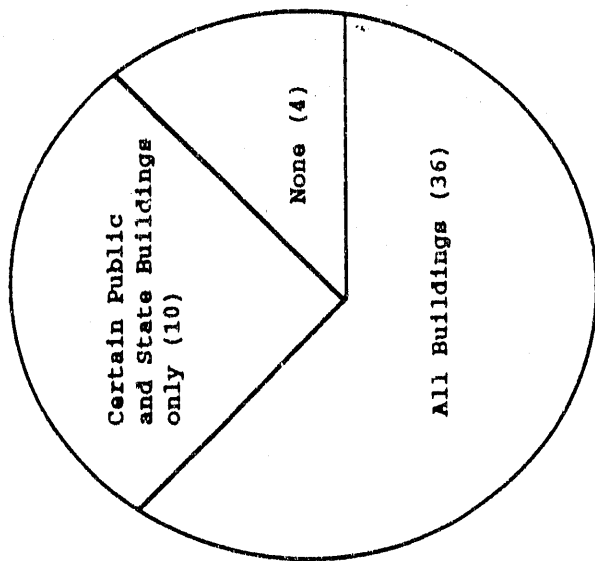
PIE CHART SHOWING THE MEANS OF ADOPTION AND LOCATION OF THE ENERGY CODE OR STANDARD AND HOW MANY STATES USE EACH

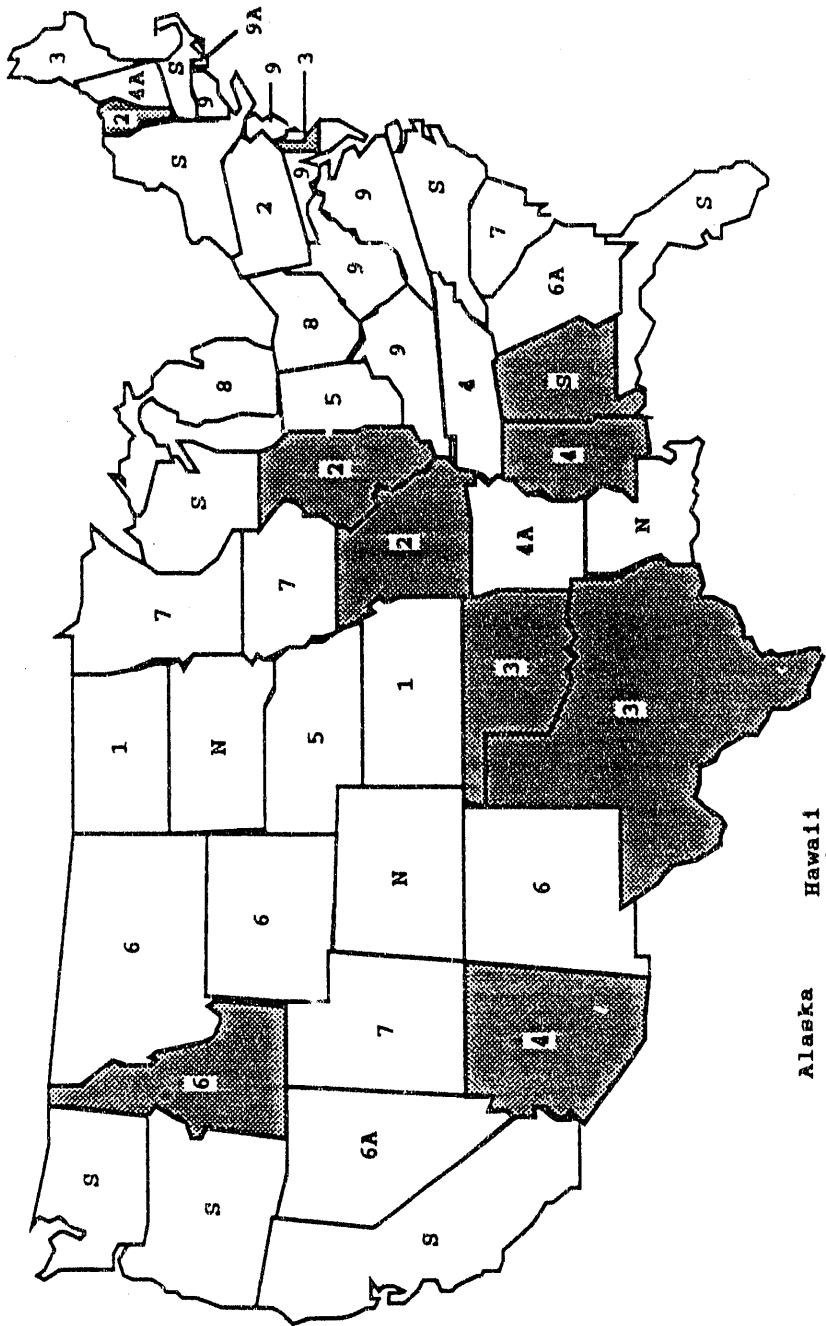
ENERGY CODES AND STANDARDS UNIQUE STATE INFORMATION

CA FL GA MA PA SC TX VA WI

NOTES TO BE INCLUDED HIGHLIGHTING UNIQUE SITUATIONS IN SELECTED STATES







**Standard or Code Adopted**

- N = None
- 1 = ASHRAE/IES 90-75
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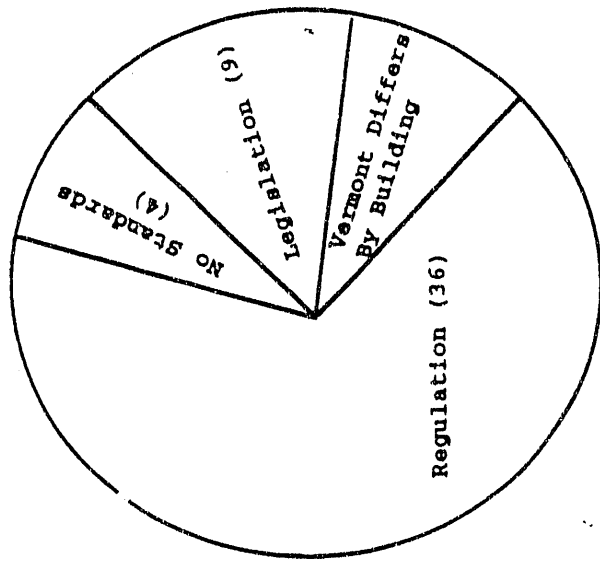


Figure 1. State Adoption of Energy Codes and Standards

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

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

Figure 4. Means of Adoption of Energy Codes and Standards

**END**

**DATE  
FILMED**

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