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Pacific Northwest National Laboratory

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U.S. Department of Energy

State Building Energy Codes Status

September 1996

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PACIFIC NORTHWEST NATIONAL LABORATORY
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Some of the information featured in the first version of this document was obtained during 1994 by the Council of American Building Officials (CABO) under contract to PNNL. During the first 6 months of 1995, PNNL updated the information for over 40 of the states. Subsequently, a January 1996 Edition was released.

PNNL staff involved in the effort to develop the original document include Jane Carlson, Richard Fowler, Mark Halverson, Laurie Klevgard, Eric Makela, Dave Conover, and Mark Hattrup.

Beginning in 1996 the information in this document was targeted for update and maintenance. Through efforts of PNNL staff who have contact with interested and affected parties in the states, the Building Codes Assistance Program (BCAP), and the DOE Regional Support Office's (RSO's) activities within the states during the first half of 1996 have been identified and are covered herein.

A special thanks goes to all the various contacts in the states who reviewed and commented on the existing information in the database and provided new information for their respective states.

Disclaimer

Changes in the status of energy codes in each of the states and territories of the United States makes it difficult to maintain the accuracy of the status of each state's building energy code(s). Significant effort has gone into producing as accurate a picture of the building energy codes as is possible, given their changing nature.

The reader of this document should be aware that, as time passes, this document is likely to become less accurate as states adopt new building energy codes and revise or modify existing energy codes. There will be an ongoing effort to update this document on a semi-annual basis with release of special updates for specific states as warranted.

State Building Energy Codes Status

The U.S. Department of Energy's Office of Codes and Standards has developed this document to provide an information resource for individuals interested in energy efficiency of buildings and the relevant building energy codes in each state and U.S. territory.

The State Energy Codes Status is considered to be an evolving document and will be updated twice a year. In addition special state updates will be issued as warranted. Readers are requested to submit additional data (e.g., more current, widely accepted, and/or documented data) and suggested changes to the address listed below. Please provide sources for all data provided.

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Common Acronyms Appearing in the State Building Energy Codes Status

ASHRAE: American Society of Heating, Refrigerating and Air Conditioning Engineers

ASHRAE/IES 90-1975: An energy standard published in 1975, the first to comprehensively address the design and construction of new buildings.

ANSI/ASHRAE/IES 90A-1980, ASHRAE/IES 90B-75: An update to chapters 1-9 of 90-75 and republication of chapters 10 and 11 of 90-75.

ASHRAE/IES 90.1-1989: A complete revision of previous ASHRAE 90 standards for buildings, excluding low-rise residential buildings.

BOCA: Building Officials and Code Administrators International

CABO: Council of American Building Officials

DCA: Department of Community Affairs

DFPES: Department of Fire Prevention and Electrical Safety

DOE: Department of Energy

EMNRD: Energy, Minerals and Natural Resources Department

HVAC: Heating, Ventilation and Air Conditioning

ICBO: International Conference of Building Officials

ICC: International Code Council

IES: Illuminating Engineering Society of North America

MEC or CABO MEC: Model Energy Code (various years). The MEC was produced by CABO up to 1995. In late 1995 responsibility for the MEC was transferred to the ICC.

MCEC: Model Code for Energy Conservation in New Building Construction developed in 1977 by BOCA, ICBO, SBCCI, and the National Conference of States on Building Codes and Standards (NCSBCS).

NBC or BOCA NBC: BOCA's National Building Code (various years)

NMC or BOCA NMC: BOCA's National Mechanical Code (various years)

NPC or BOCA NPC: BOCA's National Plumbing Code (various years)

NECC or BOCA NECC: BOCA's National Energy Conservation Code, this is a compilation of energy related requirements out of the NBC, NMC, and NPC.

OTFDC or CABO OTFDC: CABO's One- and Two-Family Dwelling Code

PNNL: Pacific Northwest National Laboratory

PUC: Public Utilities Commission

SBC or SBCCI SBC: SBCCI's Standard Building Code (various years)

SBCCI: Southern Building Code Congress, International

UBC or ICBO UBC: ICBO's Uniform Building Code (various years)

STATE BUILDING ENERGY CODES STATUS

Alabama

PRIMARY TECHNICAL CONTACT:

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BACKGROUND:

With the exception of state-owned or -funded buildings, Alabama has not adopted a residential or commercial energy code, nor does it have preemptive authority over units of local government for the establishment of a state energy code. State-owned or -funded buildings are covered by the Alabama Building Energy Conservation Code (ABECC), which is prescriptive and appears to be loosely based on the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)/Illuminating Engineering Society of North America (IES) 90A-1980. In an EPAct certification letter dated September 8, 1994, the state informed DOE that the ABECC had been revised to meet ASHRAE/IES 90.1-1989.

Prior to July 31, 1995, cities and counties in Alabama were free to adopt energy codes as they deemed appropriate. Most that did adopt an energy code adopted Appendix E of the 1994 Standard Building Code (SBC), or a prior SBC edition. Chapter 13 of the 1994 SBC references Appendix E of the 1994 SBC, which in turn references the 1993 Council of American Building Officials (CABO) Model Energy Code (MEC), but allows ASHRAE/IES Standard 90B-1975 for residential buildings that are three stories or less, (it also allows 90A-80 as an alternative.)

On July 31, 1995, House Bill (HB) 616 was signed by the Governor. HB 616 requires cities and counties that choose to adopt a residential building energy code to adopt the 1993 CABO MEC or its successors.

HB 616 created the "Alabama Residential Energy Code Board" whose duty it is to promote the use and implementation of the MEC in the state. The Board will advise the Alabama Department of Economic and Community Affairs (ADECA) on implementation activities and provide for the mandatory implementation of and adherence to the Model Energy Code if a unit of local government so chooses to adopt it in whole or in part.HB 616 defines the Model Energy Code as follows: "The 1993 Edition of the Model Energy Code as prepared and maintained by the Council of American Building Officials, or any subsequent editions, changes, or recompilations thereof, or any other energy code, which the board has officially adopted."

The Alabama Department of Economic and Community Affairs (ADECA) reported passage of the bill to DOE as part of their residential energy code certification under EPAct in a second certification letter dated August 8, 1995.

STATUS:

State-owned or -funded buildings currently are covered by the ABECC. The ABECC is prescriptive and appears to be loosely based on 90A-1980. According to the state, the ABECC was modified in 1993 to meet ASHRAE Standard 90.1-89.

On July 31, 1995, HB 616 was signed thereby creating the Alabama Residential Energy Code Board. The Board's duties include the mandatory implementation of and adherence to the MEC if a unit of local government chooses to adopt it in whole or in part. In practical terms, it appears that if a city or county chooses to adopt a residential energy code it must be more stringent than or equal to the 1993 MEC.

SCOPE:

The code applies to state-owned or -funded buildings that exceed 4000 square feet in floor area. At this time, it appears that residential buildings must comply with the 1993 MEC if they are located in a city or county that has decided to adopt a building code.

OVERVIEW:

The ABECC contains prescriptive minimum insulation standards for ceilings, walls, slab floor perimeters, and raised floors. It sets minimum requirements for glazing R-value and contains minimum requirements for pipe insulation and duct insulation. Heating, cooling, and heat pump efficiencies are also regulated. The ABECC also includes an energy-budget-level program called "ABC-4" that calculates monthly and annual energy usage in Btu per square foot per year. This energy budget is compared with allowable budgets in the ABECC to determine compliance. The allowable budget is a function of geographic location and building type. The list of building types includes residences and apartments.

For cities or counties that have adopted a residential building energy code, the requirements should be those of the 1993 MEC.

ADOPTION:

For other than state-owned or -funded buildings, the code needs to be adopted by local government to be implemented. Adoption is normally achieved through a vote of the city council or county commission. Depending on the form of government, the mayor may be required to sign the law. For state-funded buildings, revisions to the code must be adopted by the Alabama Building Commission (ABC).

COMPLIANCE:

For state-owned or-funded buildings, the ABC reviews plans and specifications to ensure compliance. For other buildings in localities that adopt an energy code, the compliance is gained through the normal permit process. Typically during construction, plans are submitted and reviewed and inspections are made. After successful completion of this process, the building department issues a certificate of occupancy.

ENFORCEMENT:

For state-owned or -funded buildings, the design professional works with the ABC to establish compliance. For other buildings, enforcement is accomplished through units of local government. If a local government adopts the 1993 MEC, enforcement is accomplished through the permit/inspection process for new construction and additions. Depending on the size of the local government unit, the same individual may be responsible for performing plan reviews and inspections.

PRIMARY TECHNICAL CONTACT:

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OTHER CONTACT(S):

BACKGROUND:

The first energy standard in Alaska was introduced in 1985. However, court action by affected organizations stopped its implementation. A new process was started at that time. The energy standards for residential buildings became effective on January 1, 1992. Residential buildings are now required to comply with the Building Energy Efficiency Standards (BEES). The local jurisdictions are permitted to adopt standards that meet or exceed the BEES requirements.

STATUS:

The BEES are a mandatory minimum for all residential buildings. There are no statewide energy requirements for commercial buildings. The Alaska energy code is geared exclusively towards residential buildings. Alaska has submitted its EPAct certification stating that its code meets the 1992 MEC. Alaska did not submit EPAct certification for the commercial sector.

SCOPE:

The BEES apply to all residential buildings built after January 1, 1992.

OVERVIEW:

The BEES provide the minimum requirements for the building envelope, air leakage, moisture controls, heating system efficiency, and duct/piping insulation. There are also requirements for supplying a minimum amount of outside air. For envelope requirements, the state is divided into five climate zones with differing envelope insulation requirements for each zone, based on climate and fuel cost. Compliance with the present standards for residential buildings may be by one of four envelope compliance pathways: 1) prescriptive, 2) performance, or 3) building budget, 4) state-approved home energy rating methods.

ADOPTION:

Proposed changes to the standards for residential buildings can be submitted to the Alaska Housing Finance Corporation, which reviews and acts on the proposals. Public hearings are required before changes are adopted. Changes to the energy requirements for state-owned office buildings can be submitted to the Department of Public Safety, Division of Fire Prevention. The proposals are processed through the appropriate committees and public hearings as is required for changes to the building code.

COMPLIANCE:

Compliance is enforced by local building officials, banks, or the Alaska Housing Finance Corporation. A standardized compliance form is required to be furnished with mortgage packages for mortgage-financed

residences. Certification may also be made by the architect, engineer, an International Conference of Building Officials (ICBO) certified building inspector, or a local building code official.

ENFORCEMENT:

Builders are required to certify compliance with the BEES requirements by completing a standardized compliance form that must be furnished with the mortgage package. The builder may choose one of the following methods to indicate compliance with the BEES requirements: 1) inspection and certification by a registered architect or engineer or by an ICBO certified building inspector, 2) state-approved home energy rating methods, 3) certification by the local building code official when the local energy code is at least as stringent as the BEES requirements, or 4) certification by a builder who has taken the appropriate Building Science Training.

PRIMARY TECHNICAL CONTACT:

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BACKGROUND:

Except for state-owned, commercial buildings, there are no mandatory statewide energy requirements for either residential or commercial buildings in Arizona. All energy codes that do exist (in larger cities and counties) are adopted and enforced at the local level.

State-owned, nonresidential buildings are required to comply with the Arizona Guidelines for Energy Conservation in New Building Construction, which is based on the 1977 Model Code for Energy Conservation (MCEC). However, while ASHRAE/IES 90.1-1989 is not formally adopted, state departments and agencies are being urged to require ASHRAE/IES 90.1-1989 for new commercial buildings. For one- and two-family dwellings, a voluntary Home Energy Rating System is used. The local utilities classify buildings for overall energy usage. This home energy rating can then be used to obtain home energy efficiency mortgages at reduced rates.

The Arizona Energy Office is also working with many builders to try and reduce the amount of duct leakage in heating and cooling systems.

STATUS:

The Arizona Guidelines for Energy Conservation in New Building Construction is a mandatory minimum for all state-owned commercial buildings that are heated and/or cooled. However, neither plan review nor inspection is required at the state level. The state energy office is working with the Department of Administration to adopt ASHRAE/IES 90.1-1989 as the standard for all state-owned buildings.

Pima County, which encompasses the Tucson Metropolitan area, and Tucson have adopted the 1993 MEC.

SCOPE:

The statewide energy guidelines apply only to state-owned commercial buildings.

OVERVIEW:

The Guidelines for Energy conservation use the requirements of the 1977 MCEC with only minor state amendments. This code is based on the requirements from ANSI\ASHRAE\IES 90-1975.

ADOPTION:

There is no set procedure for modifying the energy guidelines at the state level. It is unlikely that a statewide code will be passed due to the independence of the local governments. However, changes to the Arizona Fire Code (the only statewide mandatory code) are on a three-year code cycle corresponding with the publication of the ICBO Uniform Codes.

COMPLIANCE:

Commercial: For state-owned buildings, plans may be submitted to the Energy Office for review and comment. However, this is not a mandatory requirement. There are no set requirements for plan review or required inspections.

Residential: A home energy rating system is used for residential buildings. This is a market-driven program and is completely voluntary in its application. The local utility provides the compliance review and rating based on a points system.

ENFORCEMENT:

At the state level there are no mandatory energy inspection procedures for any building construction. The Arizona Energy Office may review energy code requirements for state-owned commercial buildings if requested to do so by the responsible governmental agency. There are no mandatory field inspections for state-owned commercial buildings. Enforcement of local energy codes is the responsibility of the local enforcement agency. Note that some jurisdictions may adopt the ICBO Uniform Building Code and enforce energy requirements for non-state-owned buildings. For one- and two-family dwellings, the local utility provides the inspections required to ensure compliance with the Home Energy Rating.

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BACKGROUND:

The first Arkansas energy code was enacted in 1979 and was based on the 1977 MCEC, which references ASHRAE/IES 90-1975. This energy code was updated as of October 1, 1994, to a new code based on the 1992 MEC. The code was again editorially revised on May 3, 1995 through the code adoption process. This revision made no substantive changes to the energy code.

STATUS:

Legislation approved in January 1993 gives the Arkansas Energy Office (AEO) the authority to adopt new standards through a rulemaking process. The AEO adopted a new code that references ASHRAE/IES 90.1-1989 for commercial buildings. The residential requirements are based on the 1992 MEC.

SCOPE:

The code is a statewide mandatory minimum code that applies to all new buildings. Residential buildings (one- and two-family dwellings, multi-family three stories high or less) and commercial, which includes residential higher than three stories, are covered under the code.

OVERVIEW:

The residential portion of the code is based on the 1992 MEC. The commercial portion of the code is ASHRAE/IES 90.1-1989.

ADOPTION:

State Level: Both the adoption of new codes and changes made to the existing code are accomplished through a rule making process. When a proposed code change is initiated by the AEO, it is first reviewed by the affected parties. They evaluate the proposed changes and work with the AEO to refine the changes to the satisfaction of all parties, if possible. Changes are then submitted to a public hearing process. After successfully passing the public hearing, the proposal is acted upon by the AEO and by two legislative committees before it is included in the next edition of the code.

Local Level: The code may be adopted and implemented by local government. Such adoption is normally achieved through a vote of the city council or county commission. Depending on the form of government, the mayor may be required to sign the law.

COMPLIANCE:

Proof and verification of compliance is required statewide by the responsible party (e.g., builder) signing a self-certification seal. In those jurisdictions that adopt the energy code, compliance must be demonstrated, verified by local inspection, and the self-certification seal signed. The certification seal must be placed in the building for visible inspection. A state Board of Appeals (BOA) has been established in the regulations to resolve different interpretations of the standards. The code requires local jurisdictions that adopt the code to establish a board of appeals also.

The AEO is working with multi-state builder supply houses and distributing MECcheckTM materials to them. A code compliance survey is under way and will focus on 100 new homes. Completion is expected by September 1996. (As an aside, over 1100 ARKcheckTM materials have been distributed.)

ENFORCEMENT:

Where codes are adopted, enforcement is accomplished by units of local government through the established inspection process. Depending on the size of the local government, the same individual may be responsible for performing plan reviews and inspections. In localities that have not adopted codes, state enforcement or their agents, uses spot inspections and consumer notifications.

Because the compliance system is based upon self-certification by the builder and because enforcement can depend upon involvement of the homeowner, the AEO has spent considerable effort on education and communication.

An ad campaign partially funded by utilities began in June 1996 to inform consumers about the code and builder self-certification.

PRIMARY TECHNICAL CONTACT:

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BACKGROUND:

The first energy requirements in California were established in 1976 by the Department of Housing and Community Development for all low-rise (less than or equal to three stories high) residential buildings, which include one-and two family dwellings and multi-family units. In 1977, the legislature passed the Warren/Alquist Act establishing the California Energy Commission and authorizing the Commission to establish and regulate energy requirements for both residential and nonresidential buildings (nonresidential buildings are those that are a Group A, B, E, F, H, M or S occupancy building, a multi-family building four stories or higher, or hotel/motel.) The first statewide mandatory code for all buildings became effective in 1978. The code is upgraded on a three-year code cycle corresponding to the publication of the ICBO Uniform Codes. The Commission has authority to periodically update standards, making cost-effective changes. The most recent version of the ASHRAE/IES Standard is used as a basis for the changes for nonresidential buildings.

STATUS:

The state energy code is a statewide mandatory minimum code that the enforcement agency must enforce. The enforcement agency may modify the code requirements to be more stringent with the approvel of the California Energy Commission. California has provided EPAct certification that Title 24 exceeds the requirements of the 1992 MEC and ASHRAE/IES 90.1-1989.

SCOPE:

The energy code applies to all new residential and nonresidential buildings (except registered historical, hospital and prison buildings), including state-owned buildings and factory-built structures (excluding mobile/manufacturered homes or commercial coaches) built in the state that are heated and/or mechanically cooled. New construction in existing residential and non-residential buildings also falls under scope of the energy code.

OVERVIEW:

The California Energy Code is contained in Parts 1 and 6 of the State of California Title 24. The code is applicable to all occupancies except I occupancies (hospitals and prisons). Mandatory requirements for all

applicable occupancies include the following:

a) appliance efficiency standards
b) space-conditioning equipment efficiencies
c) service water-heating systems and equipment
d) pool and spa heating systems and equipment
e) fenestration products and doors
f) joint sealing
g) installation of insulation
h) lighting control devices
i) space conditioning control devices

Other building requirements are separated into two categories:

Category 1: Nonresidential (occupancy type A, B, E, F, H, M and S) high-rise residential (occupancy type R-1 greater than three stories), and hotel/motel buildings.

Category 2: Low-rise (all occupancy type R-3, type R-1 less than or equal to three stories high) residential, including single and multi-family dwellings.

For both categories 1 and 2, the state is divided into 16 different climate zones for application of the exterior envelope requirements.

Category 1: The envelope requirements for nonresidential buildings are based on the same body of buildings research that is embodied in ASHRAE/IES 90.1-1989.

Mandatory requirements are provided for ventilation with minimum outdoor air quantities and service water heating, Heating, Ventilation and Air Conditioning (HVAC) controls, piping/duct insulation, and lighting controls and lighting power allotments.

Compliance is separated into three components -- envelope, mechanical, and lighting -- with prescriptive and performance options for each.

1. Performance Approach/Energy Budgets: This method provides a set energy budget based on permitted envelope, lighting, and mechanical/service water heating features. Non-permitted features are defaulted to prescriptive requirements to eliminate trade-offs for future or past construction.

2. Prescriptive Envelope Component: This method provides different "menus" for each of 16 climate zones. A single envelope component pathway is provided within each category, with one table provided for high-rise residential and hotel/motel guest rooms. Another table is provided for all other nonresidential buildings. The glazing area is limited to the greater of 40% of the gross exterior wall area or 6 ft multiplied by the display perimeter.

3. Prescriptive Overall Envelope: This method allows trade-offs of the exterior envelope by comparing a standard and proposed building. The standard building uses the envelope criteria specified for the envelope component method. The comparison is required for both the heating (heat loss) and cooling (heat gain) effects of the envelope.

4. Prescriptive mechanical requirements include sizing, controls, economizers, and fan power limits.

5. Prescriptive lighting requirements offer three approaches to compliance with lighting budgets that parallel those of ASHRAE/IES 90.1-1989. The least complex method is the complete building method,

followed by the area category method,which requires documenting room functions, and the tailored approach which requires documenting each task and involves the most complexity.

Alterations must comply with mandatory measures affected by the alteration. Additions must comply with either prescriptive requirements or the performance method. The performance method allows the option of receiving credit for upgrading existing building features to compensate for features of the addition.

Category 2: Mandatory requirements are provided for insulation, HVAC controls, piping/duct insulation, and minimal kitchen and bathroom lighting requirements. Two methods can be used for the building compliance.

1. Performance standards: This method provides a set energy budget based on space-conditioning and service water-heating. Compliance may be demonstrated by either a point system or by using a certified computer program.

2. Alternative Component Package: This method provides five different prescriptive envelope, HVAC, and water heating packages (A-E) for each of the 16 climate zones. The building must comply with all of the requirements of the selected package.

Additions must comply with either the prescriptive requirements or the performance method. Credit for upgrading the existing envelope is permitted. Alterations must comply with mandatory measures affected by the alteration. Repairs are not within the scope of the energy code.

ADOPTION:

Changes to the code can be submitted to the California Energy Commission at any time. Changes are reviewed by Commission staff to decide if the proposal warrants further consideration. If the Commission accepts the changes, rulemaking is begun with proposed changes receiving appropriate review by the public, staff, and a committee made up of two Energy Commission commissioners. Following public hearings, the full Commission (five commissioners) votes to approve or disapprove proposed changes.

Changes approved by the Energy Commission are submitted to the Building Standards Commission on predetermined forms. The proposed changes are reviewed by an advisory committee comprised of members with varying expertise. After review, the committee submits its recommendations to the Building Standards Commission, which then makes the final determination as to whether or not to accept the proposal. The effective date is generally 180 days after publication of the Building Code.

Changes are made on a three-year cycle corresponding with the ICBO Uniform Code cycle. Enforcement by the enforcement agency is mandatory.

COMPLIANCE:

Computer programs for compliance must be certified. Manuals for both residential and non-residential construction are available.

Non-residential, High-Rise Residential, and Hotel/Motel: All nonresidential, high-rise residential, and hotel/motel buildings must comply with the statewide nonresidential energy code. Standard documents required with each building permit application include the following:

1) Certificate of Compliance on the plans indicating features and performance specifications needed for compliance. This form must be signed by the person responsible for the preparation of the plans (including a licensed engineer, architect, or contractor) and the person responsible for preparing the documentation.

2) Plans and specifications showing pertinent energy-related features of the construction.

3) Designation of the compliance approach used for the building.

Residential: All residential structures must comply with the statewide residential energy code. Residential requirements for compliance include items 1, 2, and 3 above.

ENFORCEMENT:

Plans and specifications are submitted to and reviewed by the enforcement agency (city, county, and state agency) responsible for issuing the building permit. Some of the state agencies serving as an enforcement agency for specific building types and the applicable building type are:

1) Building Codes Commission, state-owned buildings

2) Department of Housing, manufactured homes, commercial coaches (meet a set of federal energy requirements)

3) General Services, state-funded schools

4) Division of State Architect, schools

5) OSHPD, hospitals and care facilities (not required to comply with the energy code).

6) Department of Corrections, prisons (not required to comply with the energy code).

Field inspections are required by the enforcement agency prior to the issuance of a certificate of occupancy or final approval. In addition, the following information must be provided:

1) Installation certificates for all equipment and manufactured devices required to comply with the efficiency requirements must be posted onsite or made available to the inspector and provided to the first building owner at time of occupancy.

2) An insulation certificate is required indicating that installed R-values are consistent with the plans, specifications, and the manufacturer's recommendations.

3) Operation and maintenance information for the mechanical equipment and devices must be provided to the person responsible for operating and maintaining the building such as the owner upon occupancy.

No building permit can be issued by the enforcement agency until it has been determined that the building complies with the code requirements. Official written interpretations are issued only by the full Energy Commission. Code application advice is provided by staff (verbal or written).

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BACKGROUND:

In 1978, the Colorado legislature passed a law requiring all localities where building codes are adopted to include energy requirements for both residential and commercial buildings. The energy requirement at that time was based on Chapter 53 of the 1979 Uniform Building Code ((UBC) - a codified version of ASHRAE/IES 90-1975). A sunset provision was included for the commercial buildings requiring the legislature to specifically extend the nonresidential provisions. The legislature failed to act and the commercial requirements were terminated in 1980. Currently, there is no state-adopted energy code for buildings other than one- and two-family dwellings and multi-family buildings three stories or less in height, although local jurisdictions can and do adopt their own energy requirements.

STATUS:

The code for residential buildings less than or equal to three stories in height is a mandatory minimum code that is required to be adopted and enforced by local jurisdictions that adopt building codes. It may only be amended to be more stringent with approval by the state legislature.

There is no statewide energy code for commercial buildings and residential buildings greater than three stories in height, including state-owned and -funded buildings. ASHRAE/IES 90.1-1989 is only recommended for state-owned buildings. A life-cycle cost analysis is required for all state-owned and -funded buildings, but there is no enforcement mechanism. A commercial advisory group is developing a commercial energy standard that will be available if local governements want to adopt a commercial energy code.

The Governor's Office of Energy Conservation (OEC) has conducted a survey of all 330 Colorado jurisdictions to determine which jurisdictions have locally adopted building or energy codes. The OEC is committed to assisting jurisdictions in establishing energy codes and to establishing voluntary programs that encourage construction of homes to meet the four-star level of a home energy rating system used in the state (four stars is equivalent to the MEC 1993). The OEC's goal is to have 20% of all new homes built to the four-star level in the next four years.

A technical advisory group (for commercial construction) has been formed to study the applicability of ASHRAE/IES 90.1-1989 in Colorado and to make a recommendation for a voluntary statewide standard. The OEC will then work with representatives of the commercial building industry to have them consider

incorporation of the standard. Colorado's EPAct certification indicates that the Colorado residential standard does not meet the 1992 MEC and there is no statewide commercial code.

Ft. Collins adopted a modified 1995 MEC and ASHRAE/IES 90.1-1989 effective July 1, 1996.

SCOPE:

The 1979 energy code is a mandatory minimum for all low-rise residential buildings that are heated and/or cooled. The code may be made more stringent only with state approval. There is no code covering state-owned buildings; however, the OEC does recommend ASHRAE/IES 90.1-1989.

OVERVIEW:

The energy code is based on Chapter 53 of the 1979 Uniform Building Code which is based on ASHRAE/IES 90-1975.

ADOPTION:

Proposed changes to the current energy code must first be processed through the state legislature. There is no set time cycle for upgrading the energy code. The requirements for submittal to the legislature are outlined in the state administrative code. The Governor has issued an Executive Order requiring that all state agencies work with local governments before adopting/considering unfunded federal mandates. Similarly, the Colorado legislature does not favor making unfunded mandates to the local jurisdictions. Voluntary, local adoption of codes is preferred to a mandatory statewide code. Therefore, all state efforts are directed toward informing local jurisdictions of the benefits of energy standards so they can make informed decisions.

COMPLIANCE:

For commercial buildings, compliance is based on the requirements of the individual local jurisdiction. All low-rise residential buildings are required to comply with the statewide residential energy code in jurisdictions that have adopted a building code. The compliance pathways and requirements for plan submittal are determined by the local jurisdictions.

ENFORCEMENT:

Energy codes are not enforced at the state level. The local enforcement agencies in jurisdictions that adopt energy codes are required to enforce the provisions of the residential energy code, but may adopt their own requirements without state approval. Inspections are required as a part of the established building inspection process.

The local jurisdiction is responsible for enforcing the provisions of their adopted code at the local level. There are no special inspection requirements for state-owned and -funded buildings. These are handled by the local enforcement agency as well.

PRIMARY TECHNICAL CONTACT:

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STATE AGENCY\OFFICE HEAD:

Ramon A Serbia, State Building Inspector, Bureau of State Building Inspector, (203) 685-8310

OTHER CONTACT(S):

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BACKGROUND:

In 1979, legislation was passed which provided that the state building code would promote and ensure design and construction of energy-conserving buildings and the use of renewable resources. In 1988 provisions were included in the enabling legislation which required revision of the state building code no later than July 1989 in order to incorporate necessary 1988 BOCA revisions into the Uniform Building Code. Furthermore, future revisions were limited to occurring not more than every four years thereafter.

STATUS:

Compliance with the requirements of ASHRAE/IES 90.1-1989 is required pursuant to Public Act 90-219, Section 3 for all commercial buildings (all but R-3 and R-2 not higher than three stories in height) with the exception of buildings less than 5,000 square feet (which have separate alternative requirements). The Act was effective as of the publication of the new State Building Code. All of the residential building (R-3 and R-2 three stories high or less) energy provisions listed in the Connecticut Building Code are based on the 1990 BOCA National Building Code. The state is reviewing the 1996 BOCA Codes (1995 MEC), which may be adopted to update the existing codes by summer 1997.

SCOPE:

The Connecticut Energy Code applies to all buildings and additions to existing buildings that are heated and/or cooled including state-owned and funded buildings.

OVERVIEW:

ASHRAE/IES 90.1-1989 is applicable to all new commercial buildings and to those portions of existing commercial buildings that are renovated in accordance with the Connecticut State Building Code (CSBC). Buildings with less than 5,000 square feet of floor area may alternatively comply with state-developed requirements.

The residential requirements are based on the 1990 BOCA NBC. Prescriptive requirements are given for the ceilings, walls, slab-on-grade floors, and floors over unheated spaces. High-rise residential buildings may comply with either the residential code or with ASHRAE/IES 90.1-1989.

If the structure is under renovation, the requirements of the code are applicable to the construction that is new or to the renovation, but they do not affect the existing structure, as is required in the BOCA National Building Code.

ADOPTION:

The state building code, including any amendments to the code adopted by the state building inspector and codes and standards committee, shall be the building code for all towns, cities, and boroughs. Any town, city, borough, or interested person may propose amendments to the state building code.

COMPLIANCE:

Compliance is determined by submission of construction documents that show sufficient detail for all pertinent data and features of the building and the equipment systems that are governed under the code to the local building official for acceptance. Variances and interpretations of the code are granted through the Department of Public Safety. State statutes require signature and seal of a licensed registered professional for all buildings of any use group (other than single family residential (R-3) or agricultural) greater than 5,000 square feet in floor area or of any use group A, E, or I of any size.

ENFORCEMENT:

Enforcement for all but state-owned buildings is the responsibility of the local code official. Enforcement for state-owned buildings is the responsibility of the State Building Inspector.

PRIMARY TECHNICAL CONTACT:

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STATE AGENCY\OFFICE HEAD:

Charlie Smisson, Energy Program Administrator, Division of Facilities Management

OTHER CONTACT(S):

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BACKGROUND:

In 1979, the Delaware Legislature passed Senate Bill 321, which established a minimum code for energy conservation. The legislation states that no county or municipality may adopt a building or plumbing code that contradicts the energy requirements of the Model Code for Energy Conservation in New Building Construction (a model code based on ASHRAE/IES 90-1975). This established the minimum provisions within the state but it was left up to the counties and municipalities to adopt a code that fits within the guidelines outlined in the bill.

STATUS:

State legislation (Senate Bill 83) adopted the 1993 Model Energy Code statewide in 1995. The code became effective on July 1, 1996. A home energy rating system is also being considered. Workshops continue to help familiarize interested parties with code application.

SCOPE:

The new code applies to all buildings statewide.

OVERVIEW:

The 1993 MEC requires commercial buildings and residential buildings higher than three stories to comply with ASHRAE/IES 90.1-1989. Requirements for low-rise residential buildings are also provided in the MEC.

ADOPTION:

The Delaware General Assembly reviews all changes to legislation in January of each year.

COMPLIANCE:

Compliance with the energy code is determined at the local level and varies depending on the county or locality. SB 454, awaiting signature by the governor, would give local governments the option of using alternative methods to ensure that commercial buildings less than 5,000 ft2 meet ASHRAE/IES 90.1-1989 requirements.

ENFORCEMENT:

Enforcement is at the local level and left to code officials within the county or municipality. Enforcement for state-owned buildings is the responsibility of the Department of Administrative Services.

PRIMARY TECHNICAL CONTACT:

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STATE AGENCY\OFFICE HEAD:

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OTHER CONTACT(S):

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BACKGROUND:

In response to the Energy Policy and Conservation Act (Public Law 94-163), the 1977 Florida Legislature passed two laws that required local adoption of an energy code for certain categories of buildings for which building permits were issued after March 15, 1979. The two laws enacted by the Florida Legislature were the driving force behind the "Florida Thermal Efficiency Code" and the "Florida Lighting Efficiency Code," which were combined in 1980 as the Florida Model Energy Efficiency Code for Building Construction.

Originally, this state law referenced minimum standards for construction to meet or exceed national standards such as those of the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE/IES 90-1975). However, nationally recognized energy codes or standards such as ASHRAE were designed primarily for climates where heating, rather than cooling, is dominant. The Florida Energy Efficiency Code for Building Construction was developed to be climate-specific for Florida.

The Florida Legislature, through Chapter 81-226, Laws of Florida, and Chapter 553, Part VII, Florida Statutes, established the Florida Energy Efficiency Code as the statewide uniform standard for energy efficiency in the thermal design and operation of all buildings in the State of Florida (with certain exemptions covered in the scope below). As such, the Energy Code is uniform throughout the state and may not be made more stringent or lenient by local government. Any changes made by the state to the Code must be made through the Administrative Procedures Act process.

The Florida Department of Community Affairs (DCA) was given the responsibility for administering, modifying, revising, updating, and maintaining this Energy Code. DCA was also made responsible for at least triennially determining cost-effective, energy-saving equipment and techniques available and updating the Code to incorporate such equipment and techniques. The code has been revised, typically on a three-year cycle, following ASHRAE and CABO activities in addition to including criteria deemed appropriate for Florida. A revision to the commercial and high-rise (higher than three stories) residential provisions was completed and became effective January 1, 1994.

Before a building permit can be issued, certification of code compliance, using forms identified within the body of the code, must be presented to the local building official.

STATUS:

The Florida Energy Efficiency Code is the statewide uniform standard for energy efficiency in the thermal design and operation of all buildings in the State of Florida.

Florida's EPAct certifications that both residential and commercial criteria in their code meet or exceed those of the 1993 CABO MEC and ASHRAE/IES 90.1-1989, respectively, were approved by the U.S. Department of Energy in 1995.

SCOPE:

The code is a statewide uniform code and cannot be made more lenient or stringent by local government, i.e., minimize/maximize. It applies to all new buildings; additions to existing buildings and manufactured homes; renovations to existing buildings, both public and private, with certain exceptions (see note below); changes of occupancy type; and the site-installed components and features of manufactured homes at their first setup. All new commercial buildings must comply with the Nonresidential Energy Code, which includes commercial buildings of any size and residential buildings more than three stories high.

Note: This does not include buildings for which federal mandatory standards preempt the state energy code, and state-owned buildings that must conform to the "Florida Energy Conservation Act of 1974" as implemented by the rules of the Department of Management Services, State of Florida, including the use of life-cycle analysis (FLEET).

OVERVIEW:

The last revision to the energy code went into effect on January 1, 1994 and contains commercial code changes based on the ASHRAE/IES 90.1-1989. The code provides for a uniform standard for energy efficiency by setting forth minimum requirements for exterior envelopes; lighting; electrical distribution; and selection of heating, air conditioning, and service water heating systems.

Commercial Energy Code Compliance Methods are as follows:

Method A, the Whole Building Performance Method.

This is a computer-based annual energy performance calculation that uses the ASEAM modified bin procedure to estimate annual energy use. Under this method, energy performance is simultaneously calculated for the entire building based on the envelope and major energy-consuming systems specified in the design for a baseline building of the same configuration. The ratio of the total points for the "as-built" building to the total points calculated for the "baseline" building must be 1.0 or less to comply with the code.

Method B, the Component Performance Method.

This is a computer-based calculation methodology that uses the algorithms contained in ASHRAE/IES 90.1-1989 computer programs, ENVSTD and LTGSTD, to demonstrate compliance for the envelope and lighting components and incorporates prescriptive requirements for equipment from that standard. Under this method, components of building systems must meet minimum performance standards as described in the code.

Method C, the Limited and Special Use Buildings Prescriptive Method.

This method requires that a list of prescriptive requirements specified for a given building type (e.g., detached commercial buildings of less than 100 square feet of floor area, skyboxes or sports stadiums, traffic safety control towers or supermarkets) be met or exceeded to comply with this code.

Residential Energy Code Compliance Methods are as follows:

Method A, the Whole Building Performance Method.

This is a performance-based code compliance method that considers energy use for the whole building (e.g., the building envelope and the building's major energy-consuming systems). Under this method, points are calculated simultaneously for the energy-consuming elements of an as-built house and for a baseline house of the same configuration and orientation. The ratio of the total points calculated for the baseline house multiplied by 100 is the Energy Performance Index (EPI). This rating must be 100.0 or less to comply with the code.

Method B, the Component Prescriptive Method.

This is a prescriptive code compliance method for residences three stories high or less, and additions. Using this method, a residence would meet or exceed all requirements for one of several prepackaged lists of minimum construction requirements.

Method C, Limited Applications Prescriptive Method.

This is a prescriptive code compliance method for residential additions of 600 square feet or less, renovations to existing residential buildings, site-added components for manufactured homes (as defined by the U.S. Department of Housing and Urban Development (HUD)), and manufactured buildings.

A life-cycle costing analysis is required for state-owned buildings; these buildings are not required to comply with the energy code.

ADOPTION:

The Florida Department of Community Affairs is directed to adopt, revise, update, and maintain the Florida Energy Efficiency Code for Building Construction. This must be done in accordance with Chapter 120 of the state statutes. The code is mandatory throughout the state and need not be adopted by the local government to be applicable at the local level.

COMPLIANCE:

To obtain a building permit, the building owner, or his only designated agent, must certify compliance. If design and/or construction modifications are made that would diminish the energy performance of the building, an amended compliance certification must be submitted to the local enforcement agency. All work requiring a permit is subject to inspection by the local building official. Energy Performance Level Display Cards, HVAC Efficiency Cards, and Insulation Certification Cards must be made available by the builder. The building official must also forward owner/agent compliance certification to DCA on a quarterly basis.

ENFORCEMENT:

Enforcement is carried out at the Local Building Department level as part of the building regulatory programs. Technical assistance is provided by DCA, except to state agencies having statutory authority to regulate certain building construction that have not delegated that authority to local government. Other portions of Florida's Building Construction Standards statutes require local governments to adopt minimum building codes. This includes a requirement that each municipality and county within the state and each state agency with statutory authority to regulate building construction enforce the code.

PRIMARY TECHNICAL CONTACT:

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STATE AGENCY\OFFICE HEAD:

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OTHER CONTACT(S):

BACKGROUND:

The initial edition of the Georgia State Energy Code (GEC) for buildings was promulgated by the State Building Administration Board (SBAB) as authorized by Georgia Law 1978, p. 2212, and went into effect on July 16, 1978. Georgia's first energy conservation code was based on both the Model Code for Energy Conservation developed by the National Conference of States on Building Codes and Standards (NCSBCS) and Standard 90-1975 developed by the ASHRAE and IES. Funding to prepare and update this code has been provided under a federal grant received through the Georgia Office of Energy Resources (OER) from the DOE under Public Law 94-163.

Under GA. L. 1980, p. 2859, the General Assembly transferred the functions, personnel, and equipment of the SBAB to the State Department of Community Affairs (DCA), effective July 1, 1980. Since that time, DCA has continued to maintain the Georgia State Energy Code for Buildings in its entirety.

STATUS:

The Georgia State Energy Code for Buildings adopts the 1995 MEC with state amendments, effective April 1, 1996, and is mandatory for all buildings, except those owned or leased in whole by the United States Government. Most recently this code was based on the 1992 MEC and ASHRAE/IES 90.1-1989 with state amendments.

SCOPE:

The GEC sets forth minimum requirements for the design of new buildings and additions to existing buildings that are designed primarily for human occupancy, by regulating their exterior envelopes and the selection of their HVAC, service water heating, electrical distribution, and illuminating systems and equipment for effective use of energy. The GEC applies to all buildings and is mandatory for designers and builders regardless of the status of local adoption.

OVERVIEW:

The 1995 GEC is based on the 1995 CABO MEC. The GEC is consistent with the 1995 MEC for small buildings and adopts by reference the ASHRAE/IES 90.1-1989 code for larger buildings..

ADOPTION:

Both the adoption of new codes and changes made to the existing code are accomplished through a rule-making process. When a proposed code change is forwarded to DCA, it is first reviewed by a task force.

The task force consists of engineers, architects, builders, and contractors. They evaluate the proposal and if they consider it worthy, it goes to the State Codes Advisory Committee. The Advisory Committee also evaluates the proposal and passes it on to a public hearing process. After successfully passing the public hearing process, the proposal is adopted by the Board of Community Affairs for inclusion into the next edition of the code. The DCA is responsible for final rulemaking.

DCA has a goal of revising the GEC on a three-year cycle, but is not required to do so by law. Thus, some revision cycles may be longer. However, enforcement is solely dependent on the adoption of codes by the locality. According to state law, when the local jurisdiction adopts codes, it must also adopt the GEC.

COMPLIANCE:

Proof and verification of compliance is not available where jurisdictions have not adopted codes. In those jurisdictions that adopt codes, compliance can be demonstrated during the plan review stage, and verified by local inspection. Some jurisdictions may accept the registered design professional's seal on a letter stating that the design is in conformance with the code. Acceptance of such a letter is up to the local building official. Disputes between owners, builders, or design professionals and the local building official can be taken to the local board of appeals for a hearing. Decisions on this process are too lengthy to reprint here; they are shown in Chapter One of the Standard Building Code.

ENFORCEMENT:

Where codes are adopted, enforcement is accomplished through local units of government in the normal inspection process. Depending on the size of the local government unit, the same individual may indeed be responsible for performing plan reviews and inspections. If the code is not adopted by the locality, it is not enforced.

Local inspectors are hired by cities and counties. The DCA provides training for inspectors through the University of Georgia. Attendance is not mandatory, and no state certification requirements exist for inspectors. Certification through the SBCCI is voluntary. The state is conducting eight workshops on the 1996 GEC during 1996.

PRIMARY TECHNICAL CONTACT:

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STATE AGENCY\OFFICE HEAD:

Maurice H. Kaya, Energy, Resources & Technology (ERT) Prog. Admin.,

OTHER CONTACT(S):

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BACKGROUND:

The first Hawaii energy code was based on ASHRAE/IES 90-1975. It was mandated by state legislation in 1978 and adopted by three of the four counties in 1978 and 1979. While the law was mandated, there was no penalty provision. This code remained in effect until 1994. In 1989, the Department of Business, Economic Development, and Tourism (DBEDT) hired a consultant to formulate standards for a new "Hawaii Model Energy Code" for commercial and residential structures. The code was finalized in 1993. The model code uses ASHRAE/IES 90.1-1989 with modifications to accommodate Hawaii's climate. Changes include deletion of all space heating requirements and changes in the building envelope and water heating requirements. In 1994, the Legislature enacted Act 168 requiring counties to adopt efficiency requirements based on ASHRAE/IES 90.1 by October 24, 1994, for new and renovated commercial buildings. Act 168 is silent regarding residential structures, i.e., single- and two-family dwellings and multi-family dwelling units of three stories high or less. All building codes are adopted and enforced by county governments. There is no statewide building code.

STATUS:

As of July 1996, three of Hawaii's four counties have adopted the code, based on ASHRAE/IES 90.1-1989, for high-rise residential (higher than three stories) and all commercial buildings. Maui (the fourth) expects to adopt the code by Fall 1996.

SCOPE:

The code is applicable to all new and renovated buildings used for human occupancy with a peak energy demand of greater than 1 watt per square foot, including state-owned buildings. Exempt buildings include agricultural buildings, buildings used for industrial processing, and dwelling units with air conditioning systems totaling less than 12,000 Btu/h capacity.

The code is mandatory where the county has adopted it. The code in its entirety need not be adopted. The counties have chosen to adopt only the commercial portion of the code.

OVERVIEW:

For low-rise (less than or equal to three stories) residential buildings, the MEC envelope requirements are minimal for non-air-conditioned buildings. The majority of residences are not air-conditioned due to the mild climate. Roof insulation is required for comfort purposes. For other buildings, the Hawaii Model

Energy Code is based on ASHRAE/IES 90.1-1989 with the following notable exceptions:

1) All space heating requirements have been deleted.
2) One climate zone, applicable statewide, is specified.
3) Roof insulation requirements give credit for light roof color and radiant barriers.
4) Wall insulation is required for the unshaded walls of mechanically cooled buildings.
5) Water heating requirements have been modified to simplify the application of the code requirements.

ADOPTION:

There is no schedule for making statewide changes to the MEC. Each county reviews its code periodically. If changes are deemed necessary on a statewide basis, DBEDT submits proposed legislation to the state legislature. Following final passage, enforcement begins after an appropriate lead-in time.

Changes to the code, initiated by a county government, will apply only at the local level for that individual county. Once a change is initiated, a public review is required. This process takes approximately six months to complete.

COMPLIANCE:

Low-rise residential buildings (for counties adopting the residential portion of the Hawaii Model Energy Code) may use a single prescriptive envelope path. For other buildings, the three compliance paths used are those contained in ASHRAE/IES 90.1-1089. Plans are submitted when required by the County Public Works Department. The local jurisdiction requires the plans to be reviewed and stamped by a registered architect or engineer and provided with a written statement indicating compliance with the code requirements. However, the local jurisdictions still have the obligation to oversee the actual plans that are submitted during their established plan review functions.

ENFORCEMENT:

For commercial and high-rise residential structures, field inspections by the County Public Works Department (Building Department in the City and County of Honolulu) are conducted during the established inspection process mandated by the building code. There are no special procedures required for the enforcement of the energy requirements.

PRIMARY TECHNICAL CONTACT:

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STATE AGENCY\OFFICE HEAD:

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BACKGROUND:

Idaho has no statewide energy code for commercial and high-rise residential buildings (higher than three stories). At the beginning of 1995, the state Department of Labor and Industrial Services (DLIS) adopted the 92 MEC for all new commercial construction of state-owned buildings. This code change affected construction of state-owned buildings only.

In 1990, the Idaho Residential Energy Standard (IRES; Senate Bill [SB]1591) was enacted. A state-developed residential code, the IRES is the only legislated statewide energy code in Idaho. However, it is a minimum code, and individual jurisdictions throughout the state can and have adopted much more stringent energy codes. A 1994 state-sponsored analysis of new construction by jurisdiction and energy code indicated that approximately 38% of statewide housing starts were built to IRES. As of late 1994, there were five different energy codes in the state: 1) the IRES, the only statewide standard; 2) the Northwest Energy Code (NWEC), which has been adopted by 46 jurisdictions; 3) the Bannock County energy code based on the NWEC; 4) the Boise City and Ada County energy codes, which are based on the NWEC; 5) and the fuel-blind code developed by the Idaho Department of Water Resources (IDWR) several years ago for non-electrically heated homes and adopted by the City of Lewiston.

Under the 1990 IRES, building contractors constructing new single and multi-family residences under three stories in height, where jurisdictional requirements for energy standards do not exceed that of IRES, were obligated to self-certify to the DLIS or participating local jurisdictions that new residences met or exceeded the IRES requirements.

In March 1995, SB 1208 was passed; SB 1208 modified the 1990 IRES to create the 1995 IRES. SB 1208 also eliminated the 1990 IRES requirement for builder certification to the DLIS in cities or counties that had not adopted the IRES or an alternative code.

STATUS:

Idaho has no statewide energy code for commercial or high-rise residential buildings (higher than three stories). As of January 1995, all new state-owned commercial construction was required to comply with the 1992 MEC. A joint effort of agencies and utilities and other interests organized by IDWR is seeking to pass a statewide commercial energy construction standards that meets or exceeds ASHRAE/IES 90.1-1989. The

1995 IRES applies statewide and became effective on January 1, 1996. Incorporated cities and counties may establish alternate codes when those codes have been deemed equivalent using WATTSUN 5.4 and prototypes.

SCOPE:

Both the 1990 and 1995 IRES are a mandatory statewide minimum that local jurisdictions are not required to adopt or enforce. The residential standards apply to all heated residential construction three stories or less in height, (except log homes and HUD-certified manufactured homes within the state,) and to additions, alterations, and repairs to existing buildings.

Idaho has no statewide energy code for commercial or high-rise (greater than three stories) residential buildings. State-owned buildings must meet the requirements of the 1992 MEC.

OVERVIEW:

For residential buildings three stories or less in height the 1995 IRES applies. Application of the exterior envelope insulation requirements for residential occupancies is uniform throughout the state. The maximum window U requirement is 0.50 and additional unique provisions were added to address air leakage control, mechanical ventilation, and duct sealing.

IRES 1995 may be met by any one of the following methods:

1) Using the "WATTSUN 5.4 Program" to establish a "proposed" energy use for residential buildings that is less than or equal to the prescriptive "comparison" energy use target.
2) Directly implementing the CABO 92 MEC.
3) Following a set of prescriptive path measures for building envelope and heating equipment requirements.

ADOPTION:

A review process was added by SB 1208. No more often than every three years, Idaho Building Contractors Association, with advice and consent from the Idaho Public Utilities Commission, name representatives from the utilities and the building industry to a panel "which will also include" representatives from Idaho's cities and counties and IDWR to review the IRES and recommend changes to the legislature. Cities, counties, and IDWR can choose their own representatives to serve on the review panel. The panel makes recommendations to the IPUC who in turn make recommendations to the state legislature.

Cities and counties may, but are not required to, adopt energy standards for nonresidential buildings and may modify the residential standards to be more restrictive without state approval.

COMPLIANCE:

Compliance pathways and requirements for plan submittals for state-owned buildings are those contained in the 1992 MEC. All low-rise residential structures are required to comply with the IRES unless there is a local code that is more stringent. Where the IRES is applicable and the local jurisdiction is enforcing the code, the builder must complete and submit a "Builder Certification of Compliance" form to the local jurisdiction. In jurisdictions that are not enforcing the code, builders must provide a self-certification to the home buyer and to the jurisdiction where requested.

ENFORCEMENT:

Enforcement of the IRES is by self-certification from the building contractor. In jurisdictions that are enforcing the IRES, the builder must complete and submit a Builder Certification of Compliance to the local enforcement agency prior to obtaining a building permit. Local jurisdictions may also require plan review and building inspections during the construction process. Utilities are no longer involved in IRES enforcement, and a utility hookup permit is no longer required.

Enforcement varies depending on whether the jurisdiction has a local, alternative energy code, chooses to enforce IRES, or elects not to enforce an energy code as described here.

Local Alternative Energy Code (meaning any local energy code that has different provisions than IRES such as Boise & Ada County Energy Code with the special electric resistance path, Bannock County Energy Code, Model Energy Code, and Northwest Energy Code):

*Builder must comply with IRES and give IAQ notice to purchaser or occupants
*Builder certification to jurisdiction is required
*Jurisdiction must supply builder certification forms
*Jurisdiction may charge up to $25 for supplying certifications forms
*Jurisdiction must enforce energy code in the manner that it enforces its building code -- means of enforcment is "without limitation" and no fees or fee limits are mentioned.

Local IRES Enforcement (meaning the local jurisdiction enforces the IRES -- with or without a local ordinance that adopts or refers to IRES -- this is not an alternative energy code):

*Builder must comply with IRES and give IAQ notice to purchaser or occupants
*Builder must certify compliance to potential purchasers
*Builder must certify compliance to jurisdiction if requested by the jurisdiction
*Jurisdiction may elect to provide IRES cerification forms
*Jursidiction may charge up to $25 per form for certification forms
*Jurisdiction may elect to provide IRES inspections
*Jurisdiction may charge up to $50 for IRES inspection.

No Local Energy Code Enforcement (meaning the local jurisdiction does not have an alternative energy code and does not enforce IRES locally):

*Builder must comply with IRES and give IAQ notice to purchaser or occupants
*Builder must certify compliance to potential purchasers
*Jurisdiction may elect to provide IRES certification forms
*Jurisdiction may charge up to $25 per form for certification forms.

Certification forms must be substantially the same as stated in 44-2304. The stated form refers to a "U-value Trade Off Graph" listed in box 3, but here is no graph or box 3 in the statute. These are references to items in the old IRES rules and forms. It seems reasonable that a local jurisdiction can customize the form and eliminate the "Alternate Prescriptive" lines if it chooses.

The builders are now included in the release from liability arising from indoor air quality if they "construct ..to the energy-efficient construction standards set forth in this chapter ...", meaning at least the minimum envelope requirements, air leakage control, duct leakage, fireplace and stove measures, and ventilation part of 44-2302(1)(c). Plus, they would probably also be required to prove the required indoor air quality notice was given. The notice that used to be in the rules is now in the statute. It does not refer to carbon monoxide as a type of indoor air pollution.

PRIMARY TECHNICAL CONTACT:

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STATE AGENCY\OFFICE HEAD:

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OTHER CONTACT(S):

BACKGROUND:

The primary energy conservation law in Illinois is the Illinois Public Utilities Act (revised in 1986). This law (Section 8-402) requires Illinois' investor-owned electric utilities to use least-cost energy planning, which requires electric use to utilize economical energy conservation when new resources are required. This requirement is implemented by utilities and monitored by the Illinois Commerce Commission through the least-cost energy planning process. The requirement for utility energy conservation programs was, in part, the result of rate-payer frustration over the untimely and costly construction of several nuclear power plants in the late 1970s and early 1980s. State-owned buildings are required to follow the provisions of the latest version of ASHRAE/IES 90-1975. Plans are sent to the State Capitol Development Board for review and approval.

Factory-built buildings are divided into two categories: mobile and modular. Single-family mobile units are regulated by the federal government (HUD) as required by the National Manufactured Housing Construction and Safety Standards Act of 1974. Other factory-built structures are regulated by the Illinois Department of Public Health.

STATUS:

As noted above, requirements apply only to the state-owned buildings and certain types of factory-built structures. All other private buildings must comply with locally adopted codes, most of which follow the 1990 BOCA National Energy Conservation Code, which requires compliance with either ANSI/ASHRAE/IES 90A-1980, 90B-1975, or the CABO MEC as the applicable standards. Illinois' EPAct certification response states that there are no statewide building or energy codes and requests an extension to try to enact a code.

SCOPE:

Only state-owned commercial buildings must comply with ASHRAE/IES 90.1-1989.

OVERVIEW:

State-owned commercial buildings must show compliance with ASHRAE/IES 90.1-1989.

ADOPTION:

There are no statewide requirements. Changes to requirements require legislative adoption.

There are no state-wide building codes either.

COMPLIANCE:

There are no statewide requirements.

ENFORCEMENT:

Enforcement, if completed at a local level, is through plan review of the building.

PRIMARY TECHNICAL CONTACT:

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STATE AGENCY\OFFICE HEAD:

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OTHER CONTACT(S):

Marlys (Marlie) Pedtke, Director, Division of Technical Services and Research, IN Dept. of Fire & Bldg. Services, (317) 232-1413
Mark Jansen, Indiana Department of Commerce, Office of Energy Policy, (317) 232-8948

BACKGROUND:

Indiana has adopted the 1991 Uniform Building Code (UBC) with amendments. The first statewide energy code was adopted December 1, 1979. The code was based on the 1977 "Model Code for Energy Conservation in New Building Construction." It applied to both residential and commercial structures. Modifications to this code dealt with non-technical administrative issues. On October 1, 1984, a revised "Indiana Energy Conservation Code, 1984 edition" became effective statewide. This code was based on the 1983 CABO MEC with state amendments and applied to all residential and commercial construction. Electrical and lighting requirements were maintained from the previous code (1979 version).

STATUS:

On December 31, 1992, the current edition of the Indiana Energy Conservation Code (1992 edition) became effective. This code is based on the 1992 MEC with state amendments and is applicable to all residential and commercial structures. The HVAC requirements are updated to comply with the National Appliance Energy Conservation Act. The electrical power and lighting requirements of the 1979 code were retained.

The state is in the process of reviewing the 1995 MEC and participating in a multi-state commercial code group that is developing enhancements to ASHRAE/IES 90.1-1989 for adoption by states. Indiana's EPAct certification indicates that the state meets the 1992 MEC requirement for low-rise (less than or equal to three stories high) residential buildings.

SCOPE:

The energy code is a mandatory minimum statewide and may be modified to be more stringent by local government if first approved by the State Fire Prevention and Building Safety Commission. The state energy code is mandatory for all heated and/or mechanically cooled residential and commercial construction (except agricultural), including state-owned and -operated buildings that are constructed, added-to, altered, and repaired within the state.

Residential buildings include one- and two-family dwellings and other residential buildings three stories high or less, other than hotels and motels. All other buildings are classified as nonresidential.

OVERVIEW:

The state energy code is the 1992 MEC with the following revisions:

1) The envelope requirements for all residential buildings must comply with the more stringent one- and two-family dwelling requirements of the 1992 MEC.
2) Modified efficiency requirements have been added for certain types of equipment.
3) Extensive modifications have been made to the lighting requirements for commercial buildings using the 1972 IES Lighting Handbook.

ADOPTION:

Changes to the energy code are first processed through a technical advisory committee that reviews the current model code, considers the changes for adoption, and proposes changes to the code. This process usually takes several months to a year to complete. The proposed model code with amendments is then submitted to the Fire Prevention and Building Safety Commission, for approval to be published in the Indiana Register. Following one month for public comment, a public hearing is held by the Fire Prevention and Building Safety Commission. Changes are incorporated and approved by the Commission and the final rule is sent to the State Attorney General and then the Governor for signature. The maximum time allowed for review is 45 days for the Attorney General and an additional 30 days for the Governor. If the changes are not reviewed in that time frame, it is automatically approved. After final approval, and ruling by the Governor, the rule is filed with the Secretary of State to become effective 30 days later.

COMPLIANCE:

Compliance pathways and plan submittal requirements are those contained in the Indiana General Administrative Rules (GAR). All Class 1 buildings require plans to be filed with the Indiana Department of Fire and Building Services, including an Application for Construction Design Release that requires energy design data. Designs must be stamped by a licensed engineer or architect when required by the GAR. Some local jurisdictions require proof of compliance for Class 2 buildings.

ENFORCEMENT:

The state has established two building classes for energy code enforcement: Class 2 (one- and two-family dwellings) and Class 1 (all other buildings). The local building official is responsible for the enforcement of the requirements for all one- and two-family dwellings (Class 2). Plans and specifications must be submitted when required by the building official. Field inspections are performed prior to the issuance of a certificate of occupancy. The state provides cursory reviews of plans for all new nonresidential buildings and residential buildings other than one- and two-family dwellings (Class 1) and provides field inspections on buildings where no approved local building official exists.

The state building commissioner is responsible for enforcement of the energy requirements for all Class 1 and Class 2 buildings that are industrialized building systems.

PRIMARY TECHNICAL CONTACT:

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Iowa State Building Code Bureau
Department of Public Safety
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STATE AGENCY\OFFICE HEAD:

Roy Marshall, Bldg Commissioner, Iowa State Building Code Bureau, (515) 281-5132

OTHER CONTACT(S):

Sashi Goel, Unit Leader, Department of Natural Resources, (515) 281-5818
Craig Stark, Program Planner, Department of Natural Resources, (515) 281-4739
Craig Swartzbaugh, Building Code Engineer, Iowa State Building Code Bureau, (515) 281-7681
Pat Seuferer, Clerk IV, Iowa State Building Code Bureau, (515) 281-5132

BACKGROUND:

In 1972 the General Assembly of the state of Iowa passed House File 6, an Act to institute an Iowa state building code for the purpose of ensuring the health, safety and welfare of its citizens. House File 6 became known as Iowa Code chapter 103A. The first energy code was established in 1978 using the MCEC. Since that time, the edition of the CABO Model Energy Code (MEC) available at the time has been used as a basis with minor state modifications. The State of Iowa had adopted the 1991 editions of the UBC, UMC and UPC, and the 1990 NEC. At that time the 1989 CABO One- and Two-Family Dwelling Code had been adopted as an option to the UBC, UMC, and UPC and was usable when permitted by a governmental subdivision of the state that has adopted the State Building Code. There are state amendments to each of these codes.

The current residential (R-3 and R-1 less than or equal to three stories in height) code is the 1992 CABO MEC with state amendments.

STATUS:

The energy code is the 1992 CABO MEC for residential buildings and ASHRAE/IES 90.1-1989 code for commercial buildings with minor state amendments and is a mandatory minimum/maximum code applicable throughout the state. It cannot be modified by local government without state approval, and such modification must be adopted and enforced by the state or at the local level.

Iowa's EPAct certification indicates that Iowa meets the 1992 MEC for residential buildings and that the state has adopted ASHRAE/IES 90.1-1989 (1993 codified version) for commercial buildings.

SCOPE:

The energy code applies statewide to 1) all new buildings that are heated and/or cooled and are public-owned (applies to all levels of government in Iowa), 2) all buildings that are over 100,000 cubic feet in volume and are heated or cooled, regardless of location; 3) all other buildings that are located in areas that have adopted the state building code, a local building code, or a compilation of requirements for building

construction; 4) modular structures manufactured for delivery and first-time installation in Iowa. This includes new buildings and additions to existing buildings. Exemptions are those outlined in the MEC or the codified version of ASHRAE/IES 90.1-1989. Other buildings may be exempted if written permission is obtained from the State Building Commissioner.

The residential portion of the code is applicable to detached one- and two-family dwellings, and other residential buildings (R-1) 3 stories or less in height. The commercial portion applies to non-residential buildings and R-1 buildings greater than 3 stories.

OVERVIEW:

The state residential energy code is the 1992 MEC with minor state amendments. The notable amendments are as follows:

1) For one- and two-family detached buildings, the code requires the use of the Home Heating Index (HHI) based upon the building envelope energy loss with a code defined correction factor based on the site heating degree-days, in addition to compliance with the MEC. HHI is defined as "per square foot of floor area."

2) Equipment oversizing is limited to 130% of the design heating load and 115% of the design cooling load.

The state commercial energy code is the codified version of ASHRAE/IES 90.1-1989, with state amendments.

ADOPTION:

The state residential energy code is reviewed on a three-year code cycle corresponding to publication of the CABO MEC. Written requests for changes to the energy code can be submitted to the State Building Code Bureau. All suggested code revisions are processed through the state administrative rulemaking process of publication, public comments, and public hearings.

COMPLIANCE:

Commercial: There are multiple compliance approaches provided. The Energy Cost Budget method allows for considerable trading-off of building components. The System Performance approach provides for trade-offs within the building envelope and within the interior lighting provisions. The Prescriptive Approach allows for very limited trading-off within the fenestration category only. These correspond to the methods outlined in the codified version of ASHRAE/IES 90.1 and apply to the interior lighting and exterior envelope. For buildings over 100,000 cubic feet of heated or cooled space, plans and calculations must be reviewed by a registered engineer or architect. A standardized compliance form supplied by the Building Codes Bureau is completed by the engineer or architect and submitted to the Bureau for approval.

In governmental subdivisions where a local building code, the state Building Code, or a compilation of construction requirements has been adopted, the local jurisdiction is responsible for plan review and field inspection of all buildings subject to the state energy regulations. Local enforcement is according to established plan submittal and review and field inspection practices employed for overall construction of buildings in the jurisdiction. In addition to a local enforcement of the state energy code as noted, certification to the state using the state-furnished compliance form remains a requirement for buildings over 100,000 cubic feet.

Lighting efficiency standards of the State Building Code are applicable to new construction owned by the state, an agency of the state, or a political subdivision of the state, and all new construction of buildings that are open to the general public during normal working hours.

Residential: For one- and two-family dwellings, the local utility company must obtain a written

statement/certification from the builder or homeowner attesting to their compliance with the state energy code.

ENFORCEMENT:

There are no special inspections for energy compliance other than those provided in conjunction with customary local department building inspections.

In areas where a local or state building code has been adopted, the local jurisdiction is responsible for review and inspection of all buildings that have less than or equal to 100,000 cubic feet of conditioned volume. When required by the building official, plans and specifications must be submitted. Where required by the local enforcement agency, plans must be stamped by registered architects and engineers. Field inspections are performed prior to the issuance of a certificate of occupancy.

Before electrical hook-up, for one- and two-family dwellings, the local utility company requires a statement of review based on compliance with HHI, issued by the state or the local enforcement agency.

PRIMARY TECHNICAL CONTACT:

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Energy Programs
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PH: (913) 271-3349 **FX:** (913) 271-3268

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Timothy E. McKee, Chair, Kansas Corporation Commission, (913) 271-3100

OTHER CONTACT(S):

Larry Holoway, Chief Engineer, Kansas Corporation Commission, (913) 271-3222

BACKGROUND:

During the 1975, 1976, and 1977 legislative sessions, both the Kansas Legislative Special Committee on Energy and Natural Resources and the Kansas House Committee on Energy and Natural Resources considered bills that would have enacted statewide building codes addressing energy efficiency. These legislative attempts failed, and in 1977, the House Committee abandoned an attempt to pass a bill in favor of allowing the Kansas Corporation Commission (KCC) to address the issue in the show cause order issued under Docket 110,766-U. The existing thermal treatment standards were adopted by commission order in September 1977 under Docket 110,766-U. The standards required each electric and gas utility under the jurisdiction of the KCC to require a certificate of compliance from the owner of each newly constructed residential or commercial building before the utility can provide permanent service.

The thermal treatment standards adopted at that time presented a problem because not all electric and gas utilities were under the jurisdiction of the KCC. To address that concern, the 1978 legislative session adopted KSA 66-131a, HB 2698, which gave the KCC jurisdiction over municipal electric and natural gas utilities for the purpose of restricting connections to buildings that do not meet the standards for heat loss.

Gas utilities were only required to ensure compliance with the insulation requirements of the order, while electric utilities were required to ensure compliance with both the insulation and air conditioning efficiency requirements of the order. In 1979, the legislature approved the adoption of Kansas Administrative Regulation 27-2-1, establishing maximum lighting efficiency standards for public buildings.

The thermal treatment standards were in effect for all Kansas electric and natural gas utilities until 1992. The 1992 legislative session adopted KSA 66-104d, SB 435, which allowed electric cooperatives the option of deregulation. Since that time, some electric utilities have exercised this option and are no longer under the jurisdiction of the KCC. Other than the jurisdictional modification in 1992, there have been no revisions or updates to the energy standards since 1980. Some of the larger cities and counties did establish and enforce their own energy standards. Kansas' EPAct certification, dated October 1994, requested a one-year extension to consider adoption of the 1993 MEC

STATUS:

The energy standards are a statewide mandatory minimum that the local jurisdictions are not required to adopt or enforce. They are a KCC order that some local jurisdictions (utilities) need not enforce. Local

jurisdictions may amend the state thermal treatment standards to be more stringent without state approval. The standards require a certificate of compliance "from the owner" with "supporting statements from the architect and contractor, if either or both such persons were employed in the design and construction of the new residential dwelling or commercial building. Compliance with such certification is required for permanent utility service." The KCC formally adopted the 1993 MEC and ASHRAE/IES 90.1-1989 code on January 23, 1996. Formal orders were to be issued within 30 to 60 days following this adoption. Utilities under KCC authority were given 12 months to implement the new order. The proposed adoption strategy will include use of the DOE-developed MECcheck materials as one of several options for compliance with the 93 MEC.

House Bill 2707 would have eliminated the authority of the KCC to adopt and enhance energy efficiency standards for residential construction. This was not enacted in 1996.

SCOPE:

The energy standards are mandatory statewide for all newly constructed buildings and additions to existing buildings, including state-owned and -funded buildings that are heated and/or mechanically cooled; however, the standards are not enforced in all locations. Also, because the standards are enforced at the time of initial permanent service connection, they do not, as a practical matter, apply to additions.

OVERVIEW:

The 1993 MEC applies to residential (R-3 and R-2 not over 3 stories in height). The ASHRAE/IES 90.1-1989 code applies to commercial building. Neither document is amended.

ADOPTION:

There is no set method for amending the energy standards on a regular basis. However, proposed code changes should be submitted to the KCC for consideration. The energy standards are adopted by KCC order.

COMPLIANCE:

There is no compliance requirement for the energy standards other than the certificate of compliance mentioned below. The amount of calculations or other justification of compliance is left to the person providing the certificate of compliance.

ENFORCEMENT:

There is no enforcement of the statewide energy standards by the local jurisdictions. A certificate of compliance must be completed by the owner, builder, or architect of record and provided to the local utility, if under KCC jurisdiction, prior to utility hook-up.

PRIMARY TECHNICAL CONTACT:

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Kentucky Dept of Housing, Buildings, & Construction
Division of Building Codes Enforcement
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STATE AGENCY\OFFICE HEAD:

Charles A. Cotton, Commissioner, KY Dept of Housing, Buildings & Construction, (502) 564-8044

OTHER CONTACT(S):

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Rick McNees, State Plans Examiner, Division of Building Codes Enforcement, (502) 564-8090

BACKGROUND:

The Kentucky Building Code (KBC) became a minimum statewide requirement on February 15, 1980 for all buildings over three stories in height, in excess of 20,000 square feet and intended for assembly, educational, institutional, or high hazard occupancy or business or industrial occupancies in excess of 100 occupants. In steps, the KBC became effective for all buildings, and by August 15, 1982 the KBC was applied throughout the entire state of Kentucky.

STATUS:

Effective July 1, 1994, the State of Kentucky mandated compliance with the 1994 KBC, which is based on the 1993 BOCA National Building Code, and therein adopted the 1992 MEC. Currently, staff are working with the 1992 CABO MEC to develop prescriptive compliance options for all occupancies.

At the next code cycle change in 1996, the 1993 or 1995 MEC will be considered with adoption of the 1996 National Building Code (NBC).

SCOPE:

The KBC is adopted as a mandatory statewide requirement and applies to all types of buildings and occupancies. The energy provisions are a mandatory statewide minimum requirement for all building construction, except for farms, manufactured houses, and single-family dwellings. The energy provisions are applicable to all one- and two-family dwellings if the local government passes an ordinance extending the application of the KBC to include homes that are not trade-name or brand-name homes. When the scope of the code is extended to include these homes, compliance with the CABO One- and Two-Family Dwelling Code is allowed.

The code also applies to major renovations or renovations that include the building envelope. The KBC defines residential occupancies as three types of structures as follows:

1) Hotel/Motel - Residence for less than 30 days. Transient in nature.
2) Multi-Family Dwelling - A building containing more than two dwelling units. A dwelling unit contains permanent provisions for living, eating, sleeping and sanitation.
3) One- or Two-Family Dwelling - A building with permanent provisions for living, sleeping, eating, and

sanitation that does not have more than two dwelling units.

OVERVIEW:

The 1994 KBC is based on the 1993 BOCA NBC with some amendments and deletions. Commercial structures, multi-family housing, and one- or two-family dwellings that are not trade-named or brand-named homes must follow Chapter 13 of the 1993 BOCA NBC. The code requires that the structure complies either with the requirements of the 1992 CABO MEC.

Where localities have expanded coverage to include homes that are not trade-name or brand-name homes, these homes may comply with the requirements in the 1992 CABO One- and Two-Family Dwelling Code (which references the 1992 CABO MEC), or with the KBC.

Some of the sections of Chapter 13 have been amended/deleted by the state.

Through the code adoption process, the board elected to delete code language that referred to the electrical, mechanical, and water heating systems. As a result, the KBC has no requirements for lighting in residential or commercial buildings.

ADOPTION:

The code is updated every three years on a cycle one year behind the publication year for the BOCA codes. Any changes to the code by Kentucky are submitted to the Board of Housing for review by the Department of Housing, Buildings and Construction-Division of Building Codes Enforcement. The changes are approved in this forum and are forwarded to the Legislative Research Committee for public comment and further review.

The Board evaluates the KBC every third year. During the three-year cycle, proposed changes to the KBC may be submitted for consideration and voted upon by the board. No scheduled code change process is in force, the process is triggered when proposals are submitted.

The Department of Housing, Buildings, and Construction Division of Building Codes and Enforcement is responsible for complying with the code changes and amendments. Once those amendments and changes are adopted and are entered as a portion of the state requirements, they become state law by the state statute.

Local jurisdictions are mandated to enforce the KBC. Local jurisdictions may expand the scope of the code to include trade-name and brand-name homes.

COMPLIANCE:

Compliance with the KBC is determined by plan review by the Department of Housing, Buildings, and Construction or by plan review by local jurisdictions.

ENFORCEMENT:

Local governments are required to follow the statewide energy provisions and are not allowed to reference or enforce any other standard or code other than the KBC. The exception to this is that jurisdictions may enforce the CABO One- and Two-Family Dwelling Code as an alternative method of compliance when the scope of coverage has been extended to include homes that are not trade-name or brand-name homes.

Compliance with the energy provisions are verified through a plan review and field inspections by the local code officials. Formal Interpretations of the code are made by Mr. Jack Rhody, Chief Building Official with the Division of Building Codes Enforcement.

PRIMARY TECHNICAL CONTACT:

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STATE AGENCY\OFFICE HEAD:

Jack C. Caldwell, Secretary of Louisiana Department of Natural Resources, (504) 342-4500

OTHER CONTACT(S):

Ernest Singleton, Program Manager, Louisiana Department of Natural Resources, (504) 342-3825

BACKGROUND:

There is no state energy code in Louisiana. The state has adopted the 1991 Standard Building Code (SBC) statewide and any future revisions to the SBC. Appendix E of this code (dealing with energy in buildings) was not adopted in the initial legislation, but may be adopted by cities and parishes. Appendix E requires adherence to the 1989 MEC with an option for using ASHRAE/IES Standard 90.1-1989 for buildings other than residential buildings three stories high or less, and ANSI/ASHRAE/IES 90A-1980 for residential buildings three stories high or less.

STATUS:

Public hearings were recently held and a state advisory board met to review the adoption of a residential energy code. It was decided to not propose inclusion of energy provisions in the state building code at this time. Instead efforts are being made to encourage a market-driven interest in energy efficiency through home energy ratings.

SCOPE:

There is no statewide energy code in Louisiana.

OVERVIEW:

There is no state energy code in Louisiana.

ADOPTION:

Changes such as statewide adoption of Appendix E of the 1991 SBC require legislative approval. Cities and parishes may choose to adopt and enforce Appendix E of the 1991 SBC or any code they choose to adopt as long as it as stringent as the SBC.

COMPLIANCE:

Compliance is verified by plan review and local inspection for those jurisdictions that have adopted an energy code (most of whom have adopted Appendix E of the 1992 SBC). Some jurisdictions may accept the registered design professional's seal on a letter stating that the design is in conformance with the code. Acceptance of such a letter is left to the discretion of the local building official. Disputes between owners,

builders, or design professionals and the local building official can be taken to the local Board of Appeals (BOA) for a hearing. Decisions made by the BOA are ethically binding on the participating parties.

ENFORCEMENT:

Enforcement is accomplished through the permit/inspection process. Depending on the size of the local government unit, the same individual may be responsible for performing plan reviews and inspections.

PRIMARY TECHNICAL CONTACT:

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Energy Conservation Division
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STATE AGENCY\OFFICE HEAD:

Brian Dancause, Office of Business Development Dept. of Economic & Community Dev. (207) 287-3149

OTHER CONTACT(S):

BACKGROUND:

In 1977, the state legislature adopted what is now Chapter 57 of the Private and Special Laws, which directed the Office of Energy Resources (OER) to establish the Maine Commission on Energy Efficiency Building Performance Standards (The Commission). The Commission was directed to investigate energy building standards and make recommendations to the next biennial legislature.

In 1979, PL 503, "The Energy Building Performance Standards Act," established 10 MRSA, Chapter 214, which directed the OER to adopt voluntary energy standards for residential and non-residential new construction and substantial renovations. The Act also established the Advisory Council on Energy Efficiency Building Performance Standards, which was empowered to approve all rules promulgated under Chapter 214.

The OER and the Commission recommended standards that were approved as the "Energy Conservation Building Standards." The standards applied to all buildings offered for sale or lease that were promoted as meeting these standards. It was the responsibility of the OER to administer and enforce the standards.

In 1980, the legislature adopted the voluntary standards into law.

In 1985, the legislature required that the OER establish mandatory standards for all publicly funded buildings and maintain voluntary standards for all other buildings. The Advisory Council appointed a Task Force on Energy Efficiency Building Standards to recommend current standards. New standards based on ASHRAE 90A and 90B were approved effective January 1, 1987.

Effective January 1, 1989, a state law established statewide minimum standards for some residential and all commercial and institutional new construction. Residential buildings were required to be insulated to prescribed levels. Commercial and institutional buildings were required to meet ANSI/ASHRAE/IES 90A-1980.

Effective January 1, 1990, the OER was closed and its responsibilities and some of the staff transferred to the Department of Economic and Community Development (DECD).

STATUS:

The Energy Efficiency Building Performance Standards are statewide minimum requirements that all new construction and additions to existing buildings must satisfy. Adminstration and enforcement are the responsibility of the state (Energy Conservation Division, Office of Community Development, Department

of Economic and Community Development). Municipalities may adopt and enforce the code, either directly as written in statute, or after amending the code to make it more stringent.

SCOPE:

The residential requirements are mandatory for all residential new construction, including additions, designed for year-round or winter seasonal use. Exceptions include single-family homes built by an owner-builder (which includes anyone supervising the construction of that person's single-family dwelling or a general contractor hired to supervise the construction) and log homes. As a result, the code only affects about 5% of new residential construction. The commercial requirements apply to all new commercial and institutional construction. Manufacturing facilities are exempt.

OVERVIEW:

Residential buildings must meet state-developed standards for envelope insulation levels. Multi-family dwellings must also meet the current version of the appropriate ASHRAE 90 standards (ANSI/ASHRAE/IES 90.1-1989 or ASHRAE 90.2-1993).

Publicly subsidized multi-family residential buildings are prohibited from installing electric resistance heat unless they are built to state-developed super-insulated standards. Commercial and institutional new construction must comply with the current version of ASHRAE 90 (ASHRAE 90.1-1989).

ADOPTION:

The statewide energy requirements may be modified or changed by legislative action at the state level. Those changes may be proposed whenever the legislature is in session. The DECD may adopt rules to define terms used in the legislation and to clarify the intent of the energy code. In some instances, the legislature has granted specific authority for the DECD to adopt rules within a well-defined scope. The law automatically adopts the current version of the standard ASHRAE 90 for the commercial and institutional energy code.

Local municipalities may adopt either the statewide requirements or another more restrictive standard.

COMPLIANCE:

New commercial and institutional construction must conform to the current ASHRAE-90 standard using any of the ASHRAE compliance paths. There are no state-required plan reviews or permits. All commercial construction is required to be designed by an architect or engineer, and it is suggested that local code officials look for certification of compliance. Prior to the installation of their permanent electrical service, the owner, or the owner's legal agent, of commercial or institutional buildings constructed after October 13, 1993, must certify that the building complies with the energy standards.

The building contractor and owner are encouraged to have a contract but may agree not to have one. Residential building contractors must sign a contract for any work over $1,400. One provision of the contract is to state whether or not the building complies with the minimum energy standards. There are no notifications or compliance documents submitted to the state.

ENFORCEMENT:

The Energy Conservation Division of the Department of Community Development is responsible for administering and enforcing of the energy requirements. If the owner of the building does not comply with these requirements, then a penalty equaling up to 5% of the value of the building may be enforced. The DECD may review plans and inspect for compliance; however, funds and staff limitations have not allowed these activities.

PRIMARY TECHNICAL CONTACT:

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Codes Administration
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Crownsville, MD 21032
PH: (410) 514-7216 **FX:** (410) 987-8902

STATE AGENCY\OFFICE HEAD:

James Hanna, Dir. Codes Admin., MD Dept. of Housing & Community Development, (410) 514-7212

OTHER CONTACT(S):

Kanti Patel, Chief Design Review, Codes Administration, Maryland Dept. of Housing & Community Development, (410) 514-7213
David Cronin, Maryland Energy Administration, (410) 974-5454

BACKGROUND:

In 1981, Maryland passed the Energy Conservation Building Standards Act, which requires statewide conformance to the current edition of the BOCA National Energy Conservation Code (NECC). The Act established a limited role for the Maryland Department of Housing and Community Development (DHCD).

STATUS:

The code is a statewide requirement. In counties that do not have an adopted code, a certification form is required to show compliance. Effective October 1996, the following requirements take effect:

Commercial: In accordance with the 1996 BOCA NBC, commercial buildings (those not classified as residential below) will be required to comply with the 1995 CABO MEC, which adopts the ASHRAE/IES 90.1-1989 code by reference.

Residential: In accordance with the 1996 BOCA NBC, R-3 and R-2 residential buildings three stories high or less will be required to comply with the 1995 CABO MEC.

SCOPE:

All new construction and additions to existing buildings must comply.

OVERVIEW:

The 1995 MEC contains minimum criteria for the thermal envelope, HVAC equipment and systems, and service water heating systems and equipment of residential buildings. It also references the ASHRAE/IES 90.1-1989 code which contains criteria addressing the same items as well as electric power and light.

These requirements are applicable to all new construction, additions, and alterations, public or private.

ADOPTION:

The code is updated every three years, which corresponds to the code change cycle of the BOCA codes. Therefore, when BOCA updates the code, Maryland will automatically adopt the new version for all jurisdictions. Local jurisdictions may alter the code as long as the requirements are more restrictive than the

BOCA code.

COMPLIANCE:

Upon request, the DHCD provides certification forms for the local utility companies, builders, and local code officials.

ENFORCEMENT:

If the code is enforced by local jurisdictions, enforcement is completed by plan review and inspection. In areas with no adopted code, a certification form filled out by the builder is required to show compliance. The local utility must evaluate the building prior to providing electrical service to the building.

PRIMARY TECHNICAL CONTACT:

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BACKGROUND:

By state statute, the uniform Massachusetts State Building Code (MSBC) has been the single, legal building code since January 1, 1975, and it applies to all new construction and building permitable work in existing buildings in the Commonwealth. The energy provisions in the code were developed by a group of consultants working under a federal grant and working with the MSBC and the Division of Energy Resources, which administers utility rebate programs and establishes state energy policy.

The MSBC is unique to Massachusetts, but is based on the BOCA National Building Code with significant Massachusetts amendments, and it includes requirements for energy conservation in all buildings of all uses and may require energy conservation actions in existing buildings that require a building permit.

Mandated code ammendment cycles occur twice a year (by statute) and follow a legal public hearing process. The State Board of Building Regulations and Standards (BBRS), a statutorily defined board, has sole authority to promulgate the building code and may hold additional public hearings as deemed necessary.

STATUS:

The MSBC is a statewide code. No changes are permitted except through action of the BBRS. For commercial buildings, which includes all buildings not covered under the residential provisions (see below) except those where state or federal sovereignty has been declared, the MSBC is very similar to ASHRAE/IES 90.1-1989, having been based on early draft versions of that standard. For residential buildings, including one- and two-family dwellings and hotels and multifamily buildings not more than three stories high, the MSBC contains requirements that are unique to Massachusetts.

Massachusetts's EPAct certification requests an extension to consider adoption of the 1992, 1993, or 1995 Model Energy Code and states that it may update the commercial code to ASHRAE/IES 90.1 by October 1996.

Revisions to the residential energy code as a modified 1995 MEC were submitted to the BBRS in April 1996. Final revised residential standards are expected to be adopted in the Fall 1996. Commercial code revisions are proceeding through a multi-state commercial code project adapting ASHRAE 90.1 1989 for state use.

SCOPE:

The energy code applies to all new construction and additions to existing buildings statewide. Low-rise residential buildings include one- and two-family dwellings and hotels and multifamily buildings not more than three stories high. Commercial building requirements apply to all other buildings. The only buildings that are exempt are buildings where state or federal sovereignty has been declared.

OVERVIEW:

The energy requirements for commercial buildings are based on a draft version of ASHRAE/IES 90.1-1989.

Residential buildings must comply with unique state-developed requirements. A single prescriptive package for the building envelope gives the requirements for above-grade walls, foundation walls, ceilings, windows, doors, and floors, but the building code also allows for a "performance" approach.

Depending on the extent of work being done, renovated buildings may either have to meet the energy requirements for new buildings or less stringent energy requirements, or may not be required to do any energy conservation measures.

ADOPTION:

Code amendment cycles occur twice a year, as required by statute, and include a public hearing process. The BBRS has sole authority to promulgate the building code. Anyone can submit code change proposals to the BBRS. Adopted code changes are typically promulgated the year of adoption.

COMPLIANCE:

Compliance is determined by local building inspectors as part of an application review and inspection process. Compliance is addressed in three distinct ways: 1) registered architects and engineers at the design level are charged by state law and regulations with abiding by design criteria of the code; 2) the construction community is equally charged with abiding by the code; and 3) the building officials review the submitted plans and complete inspections prior to issuing the certificate of compliance. Compliance paths include both prescriptive and performance approaches.

ENFORCEMENT:

Enforcement is through the local building inspectors of the 351 cities and towns of the Commonwealth. Only a Building Code Board of Appeals, which consists of a specified technical make-up, may grant a variance to the code. Plan review and construction inspection, although performed by the local building official, is also required of the engineers/architects of record when buildings exceed 35,000 cubic feet of interior volume.

PRIMARY TECHNICAL CONTACT:

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BACKGROUND:

Prior to June 22, 1977, there were no state requirements concerning energy conservation. After this date, the state adopted ASHRAE/IES 90-1975 as the applicable standard. On July 27, 1985, the state adopted ANSI/ASHRAE/IES 90A-1980 as the energy code.

SB 719, signed in early January 1996, repealed the 1995 adoption of the 1993 MEC. The legislation directed the state construction code commission to, by April 1, 1997, provide standards that are cost-effective and establish a program to provide home buyers with energy rating information. A 10-member ad hoc committee was established to assist with these efforts.

STATUS:

ANSI/ASHRAE/IES 90A-1980 and ASHRAE/IES 90.B-1975 are adopted and effective. The 1993 MEC adoption (July 1995) has been rescinded. Further work on the cost-effectiveness of the code relative to low-rise residential buildings must be undertaken. The effective date of a new code is to take place by mid-1997. Therefore efforts to develop a proposed code and supporting materials must be ready during 1996, so they can enter the regulatory review process.

There was no apparent problem with the commercial criteria in ASHRAE/IES 90.1-1989, but the entire MEC was affected, not just the low-rise residential provisions. The ad hoc committee on energy is using the REM program to evaluate cost-effectiveness of various standards options.

SCOPE:

The energy code applies to all new building construction and to all additions to existing buildings in Michigan.

OVERVIEW:

Overview not provided.

ADOPTION:

The state energy code was adopted at the same time as the state building code. In accordance with Public Act 230 of 1972, the State Energy Code is required to be adopted statewide without exception.

The state energy code is evaluated for revisions or modifications every three years. The new code requirements are adopted at the beginning of each state building code cycle (which corresponds with the three-year cycle of the BOCA NBC).

COMPLIANCE:

Compliance is determined by plan review and inspection by the local or state building official..

ENFORCEMENT:

The local building official is designated to enforce the state energy requirements. This enforcement is completed through plan review and inspections. The Bureau of Construction Codes, Department of Labor, interprets the code and enforces it in those jurisdictions in which they have enforcement responsibilities.

PRIMARY TECHNICAL CONTACT:

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BACKGROUND:

In 1975, a Minnesota state law was enacted to require building design and construction standards consistent with the most efficient use of energy. In response, an energy code became effective on January 30, 1976, as part of the state building code. The energy code was revised in 1977 and 1978 to incorporate the requirements of ASHRAE/IES Standard 90-75. The energy code was revised in 1984 to adopt the 1983 edition of the CABO MEC and the insulation provisions of the HUD minimum property standards for residential construction (including foundation wall insulation for residential buildings). A 1991 revision adopted the 1989 edition of the CABO MEC. In 1991, statutes were enacted setting higher goals for the energy code. One required that the energy code requirements for commercial buildings be at least as stringent as ASHRAE/IES 90.1-1989. Later, another specified that the lighting standards be at least as stringent as the 1993 requirements for new federal buildings (10 CFR Part 435). Still another stated that the energy code must be equal to or exceed the most stringent code adopted by any state.

STATUS:

Effective June 16, 1994, commercial buildings must meet a state amended version of ASHRAE/IES 90.1-1989 and residential buildings the 1992 MEC.

The recently initiated Energy Code Advancement Project involves currently working with stakeholders to improve communication lines, developing energy code summary sheets that describ various code requirements; surveying the housing industry to identify needs; and determining what aspects of the Canadian R-2000 residential standards are reasonable to incorporate into the code (which will be amended effective January 1, 1998 and likely to be proposed by the end of 1996).

SCOPE:

The state energy code is a mandatory statewide minimum. Specific counties (see below) and incorporated cities with a population of over 2500 must adopt and enforce it, but may amend it with state approval. The state energy code is mandatory for all heated and/or cooled residential and commercial construction, including state-owned and -operated buildings which are constructed, altered, and repaired. (Counties outside the Minneapolis/St. Paul area and individual cities below 2500 in population have the option of not enforcing the state building code).

Minnesota's EPAct certification states that the Minnesota Energy Code meets the 1992 MEC and

ASHRAE/IES 90.1-1989.

OVERVIEW:

Commercial and high-rise residential: For all buildings except low-rise residential (R-3 and R-2 not over three stories high) buildings, the state is divided into two climate zones: one for the northern half of the state and one for the southern half (consistent with the State Building Code frost depth map). Different exterior envelope insulation requirements are specified based on each climate zone.

The exterior envelope requirements for commercial and high-rise residential buildings are based on the ASHRAE/IES 90.1-1989. Compliance is achieved with one of three approaches.
1) The Systems Analysis method, which is as outlined in the 1992 MEC.
2) The Prescriptive Criteria, which provide different insulation overall U-Factors for each climate zone. The wall U-value, glazing U-factors, and percent glazing is varied for each option.
3) The Performance Criteria which use the Envelope System Performance Compliance Calculation computer program that is based on ASHRAE/IES 90.1-1989.

HVAC efficiency requirements are based on ASHRAE/IES 90.1-1989 with some categories of equipment (chillers) required to have higher ratings. Lighting power budgets are those required for the construction of new federal buildings (10 CFR Part 435) for 1993, which generally exceed the ASHRAE requirements.

Low-rise residential (not higher than three stories) including hotel and motels (if they have a stove in the hotel motel room) are made to comply using the appropriate compliance method:
1) For one- and two-family dwellings the prescriptive criteria are the same statewide. Wall requirements may be met with one of 10 different options based on the window U-Factor (U-value) or by showing a maximum gross wall U-Factor of 0.110. Maximum allowable U-Factors for ceilings and floors are 0.026 and 0.040, respectively.
2) For low-rise multi-family (R-2) buildings, the U-Factor of the roof/ceiling assembly is limited to 0.026 for both zones. The wall U-Factor is limited to 0.145 for zone 1 and 0.148 for zone 2. A maximum U-value of 0.04 is required for floors over unheated spaces.

ADOPTION:

The Department of Public Service has legislative powers to formulate and make changes to the energy code that are based on a statement of "need and reasonableness." Additional changes to the code may be mandated by the state legislature. Anyone can submit changes to the Energy Division staff for consideration. There is no set cycle for processing the changes; however, recent changes have occurred approximately every two years. The Administrative Code includes rulemaking procedures that indicate requirements for public meetings. Once a proposal is formulated, a series of public meetings are held to get input from the public and other interested groups such as contractor groups, consulting engineers, and architects.

COMPLIANCE:

All commercial structures and high-rise residential buildings in the affected areas (see Enforcement) are required to comply with the statewide nonresidential energy code using one of three compliance paths. Plan submittal and requirements for stamping by a registered engineer or architect are the same as required in the MEC. All residential structures in the affected areas are required to comply with the statewide residential energy code. The compliance pathways and plan submittals are those outlined in the MEC.

ENFORCEMENT:

In 1979, individual counties outside of the seven-county Minneapolis/St. Paul area and incorporated cities with populations of less than 2500 were given the option of enforcing a statewide building/energy code. Many elected to have no enforcement within their area. Incorporated cities with a population of 2500 or

more and specific counties must enforce the provisions of the state energy code. At the present time, enforcement occurs for about 80% of the population base; approximately 20% of the population has no enforced energy code. Buildings located in other areas must meet the state code and are self-certified by the building owner.

Plans and specifications are required to be submitted. Some plans are required to be stamped by a registered design professional as required by the state statute. The code establishes minimum submittal requirements concerning R-values, equipment efficiencies, and lighting components. Field inspections are required prior to the issuance of a certificate of occupancy. Field inspections are performed as part of the normal inspection process.

For buildings not inspected by the State Department of Administration, interpretations are made at the local level. Disagreements may be forwarded to a local appeals board. The Department of Public Service is frequently asked for an opinion, but has no enforcement authority.

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BACKGROUND:

Beginning July 1, 1980, the design, direction, construction, and alteration of any building was required to satisfy chapter 39 of 57-39-21 Energy Efficiency Standards for Buildings. Currently, the state does not allocate money for municipalities to hire inspectors. The utilities have some incentives for insulation and increased efficiency equipment. An attempt to update the code to the 1992 MEC failed to pass the legislature in 1994.

STATUS:

The existing code is based on the 1977 Model Code for Energy Conservation (MCEC). New codes based on ASHRAE/IES 90.1-1989 and the 1992 MEC are being considered. Efforts are continuing with an emphasis on working with builders and other stakeholders.

SCOPE:

The code covers all buildings except for those with peak energy usage less than 3.5 Btu/hour/square foot and those buildings that are not heated or cooled. Local government is not required to adopt and enforce the energy code; however, code compliance is still required even if local government does not so elect.

OVERVIEW:

The 1977 MCEC is a code version of ASHRAE/IES 90-1975. ASHRAE/IES 90-1975 covers all aspects of building thermal, mechanical, service water heater, and lighting design, but is not as stringent as later ASHRAE/IES standards.

ADOPTION:

Mississippi has no set schedule to update their energy code.

State Level: Legislation may be submitted by anyone. It must pass through committee and be voted upon by both chambers of the legislature. Before becoming a law, legislation must also be signed by the governor. The existing law does not mandate enforcement by localities, and any revised code will probably require adoption by local jurisdictions. At the local level, the code needs to be adopted by local government to be implemented. Such adoption is normally achieved through a vote of the city council or county commission. Depending on the form of government, the mayor may be required to sign the law.

COMPLIANCE:

Compliance for state-owned buildings is verified by the Bureau of Building. Other buildings are subject to enforcement by local authorities. For state-owned or -funded buildings, the Bureau of Building reviews plans and specifications to ensure compliance. For other buildings in localities that adopt the code, compliance is gained through the normal permit process. Typically, plans are submitted and reviewed, and inspections are made. After successful completion of this process, the building department issues a certificate of occupancy.

ENFORCEMENT:

For state buildings, the design professional works with the building commission to establish compliance. For other buildings, enforcement is accomplished through local units of government in the normal inspection process. If local government units adopt the energy provisions of the Standard Building Code (Appendix E of the SBC), enforcement is then accomplished through the permit/inspection process for new construction and additions. Depending on the size of the local government unit, the same individual may be responsible for performing plan reviews and inspections.

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BACKGROUND:

Missouri does not have a statewide building or energy code. Each local jurisdiction has the authority to adopt its own code. In most cases, the BOCA National Building Code has been adopted, although the ICBO UBC has been adopted in the western parts of the state and a few localities in the southeast use the SBCCI State Building Code. In 1988, The Energy Division of the Missouri Department of Natural Resources contracted with DiPetrie Associates to conduct a survey that detailed the process by which a community adopts a Municipal Energy Conservation Code. The survey revealed the 1987 BOCA National Building Code as the referenced document for St. Charles, Missouri. The 1987 BOCA National Building Code references ANSI/ASHRAE/IES 90A-1980 and ASHRAE/IES 90B-1975 as the applicable standards for energy conservation requirements. The survey also cited that the adoption of the document was completed through city government. The adoption process began with studies completed by the city attorneys in regard to cost and conformance with the standards.

In 1993, the Missouri General Assembly passed two legislative proposals that address energy efficiency in state facilities. Implementation of the Energy Efficiency in State Facilities Program is currently under way. The legislation mandates establishing minimum energy-efficiency standards for new and substantially renovated buildings to be at least as stringent as ASHRAE/IES 90.1-1989. The Department of Natural Resources was required to complete an energy analysis and provide energy consumption and energy cost data to the State Office of Administration, Division of Design and Construction, to develop a baseline of energy consumption.

The state of Missouri has no authority to adopt or enforce locally preemptive building standards for residential or commercial (non-state) buildings. This authority remains at the local level. The Missouri Department of Natural Resources, Division of Energy is conducting a survey of local units of government. A 1994 survey of these units assisted the Division in determining what percentage of Missouri's population is operating under a building code and if energy efficiency is a part of the code. The survey was administered to local political subdivisions, which included all Missouri counties and municipalities with populations of 500 or more.

Opposition in the Senate was based on maintaining local government control without state mandates. The Missouri Committee for Model Codes is proposing a simplified approach that would only remove the

statutory prohibition for third class counties to adopt a code. It would not specify which code or require a local vote for approval. The committee's focus is primarily to align support for legislation to establish a statewide building code, identify potential sponsors, identify strategies for passage of such a bill, and educate legislators on the benefits of a statewide code.

The Division of Energy distributed a summary of the 1994 building code survey to members of the Missouri Committee for Model Codes and other stakeholders. The summary showed that those cities and counties responding to the survey that had building codes in place represented 47% of the population of the state of Missouri. Approximately 28% of the population is not covered by a building code and the remaining cities and counties representing approximately 25% of the population did not respond to the survey.

In 1994 a legislative proposal that would authorize the state to establish a state building code was introduced. Although the proposal and subsequent versions came to a vote six times, it did not pass. The last version of the bill would have created a State Building Code Advisory Board consisting of 17 members to study the need for a statewide building code and to make recommendations to the Governor and General Assembly. The Board was to have been dissolved in less than a year. No building codes would have been adopted with the passage of this version of the bill.

The legislative initiatives focused primarily on establishing construction codes designed to prevent the structural failure of buildings rather than to ensure energy efficiency. Another consideration was that federal flood relief for reconstruction be withheld from property owners living in localities that did not require building permits.

Similar legislation was introduced during the 1995 legislative session. The Division of Energy coordinated a meeting on August 24, 1994 with Representative Boucher, State Office Administration staff, the Kansas City Regional Office of the Department of Energy, and Pacific Northwest National Laboratory to discuss inclusion of energy efficiency provisions in the 1995 legislative proposal. Several options were presented based on initiatives in other states. The 1995 legislative proposal would have required counties to adopt and enforce a building code: BOCA, UBC, or SBC. The bill did not require energy codes as stringent as those required by EPAct. The bill died in the legislature. Similar legislation failed in the 1996 session.

An interim committee was formed during the summer of 1995 to study the need for state building codes. The Speaker of the Missouri House of Representatives appointed Representative William Boucher (48th Legislative District, Kansas City) to serve as chairman. Other members appointed were State Representatives Tim Green, St. Louis; Craig Hosmer, Springfield; Mark Richardson, Poplar Bluff; and Dan Hegeman, Cosby. To gather public input on the need for statewide building codes, the interim committee scheduled four regional meetings across the state.

STATUS:

In response to legislation signed in 1993 for Energy Efficiency in State Facilities, a rule was finalized and published on January 26, 1996 with an effective date 30 days later that established "state building minimum efficiency standards." The rule covers new state buildings (or portions), additions, substantial renovations, or existing buildings considered for lease (when over 10,000 sq. ft.) or acquisition by the state. ASHRAE/IES 90.1-1989 is adopted by reference for buildings other than single family and multi-family residential buildings not over three stories high. For those single family and multi-family residential buildings the latest editions of the CABO MEC or ASHRAE 90.2 is applicable. New editions/revisions to these adopted standards are automatically adopted by reference and become effective three months after the date of their publication. (10 CSR 140-7, Department of Natural Resources).

For other buildings, there are no statewide requirements; local cities and jurisdictions adopt their own requirements. Missouri's EPAct response states that the state has no authority to adopt or enforce a code for

non-state buildings.

SCOPE:

All new construction, additions, and major renovations of state buildings are required to meet ASHRAE/IES 90.1-1989 or CABO MEC for residential construction. Exemptions are similar to those stated in ASHRAE/IES 90.1-1989. Leased buildings must be evaluated using life-cycle costing techniques.

OVERVIEW:

ASHRAE/IES 90.1-1989 or CABO MEC (residential) is required for state-funded buildings (new construction, additions major revovations, and leased buildings). There are no mandatory statewide requirements for any other buildings.

ADOPTION:

Legislation established the energy requirements for state-funded buildings. Legislation will be required to adopt a mandatory statewide code. Local jurisdictions may adopt their own energy code.

COMPLIANCE:

Compliance for state-funded buildings is demonstrated through plan review and inspections by the Division of Design and Construction. Compliance at the local level (if any) is through plan review and inspection by local building officials.

ENFORCEMENT:

Enforcement of requirements for state-funded buildings is assigned to the Office of Administration, Division of Design and Construction. The local jurisdiction enforces any locally adopted code requirements.

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BACKGROUND:

Montana first adopted a statewide building code in 1978 with the adoption of the ICBO Uniform Codes. Montana then adopted the version of Chapter 53 (Energy) referenced in the 1991 ICBO Uniform Codes, which references the 1989 version of the MEC.

As of February 11, 1994, the state had adopted the 1992 version of the MEC, with minimal changes, as the statewide energy code. Montana had a code hearing on December 1, 1995, regarding adopting the 93 MEC. There were no major comments at the hearing.

STATUS:

Adopts 1994 UBC with Appendix Chapter 13 adopting 1993 MEC.

SCOPE:

The energy provisions of the state building code are a mandatory minimum requirement for all newly constructed buildings and additions which are heated and/or mechanically cooled. This includes state-owned and -operated buildings and all alterations and repairs to existing buildings.

OVERVIEW:

Prescriptive and equivalent insulation only R-Values and glazing U-Values are provided as follows:

Ceiling	R-38	R-42
Walls	R-19	R-21
Floors over unheated space	R-19	R-19
Basement walls	R-10	R-11
Foundation	R-19	R-19
Doors	R-2	R-5
Windows	U-0.4	U-0.5

ADOPTION:

Incorporated cities and counties have 90 days to adopt the state building code once they receive notification of change to the code. If they are not adopted by the city and/or county, the State Building Codes Bureau enforces the applicable codes. Four counties and 55 incorporated cities have adopted the state energy code. The energy codes are reviewed on a three-year cycle corresponding to the adoption of new versions of the

Uniform Codes. Proposed changes are submitted to the Building Codes Bureau.

The building code provisions for buildings containing less than five dwelling units are optional. Adoption of the building code to cover these buildings is not required by localities. If the localities do not extend coverage of the building code to include these building, the energy provisions are still legally binding, but they need not be enforced by the locality. With state approval, localities may also adopt and amend the energy provisions making them more stringent than the state code.

COMPLIANCE:

A labeling sticker is required in some instances by the builder. The cable must be permanent and placed on the interior electrical panel. The R-Values and U-Values provided for building envelope components must be shown on the label. The label must also show equipment efficiency (AFUE, HSPF, SEER, EF, etc.).

ENFORCEMENT:

When required by the Building Official, plans and specifications must be submitted. Except for owner-occupied R-3 buildings, the building official may also require that plans and specifications be prepared by a licensed architect or engineer. All Chapter 4 (MEC) submitters must be prepared by a registered architect or engineer. When the State Building Codes Bureau enforces the code, section 105.2 of the MEC is not applicable.

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BACKGROUND:

The first energy code was in Nebraska adopted in 1980 using the ASHRAE/IES 90-1975 as a basis. This was modified in 1984 to require compliance with the 1983 MEC. Legislation was proposed in the winter of 1994-1995 to adopt the 1992 MEC statewide. The legislation did not pass and the code remains unchanged since 1984. Nebraska's EPAct certification requested a one-year extension.

STATUS:

The state is developing an incentive program to reduce the mortgage interest rate for homes built at or above MEC levels. Pilot testing has occured. The earliest date for a code revision is the Spring 1997.

SCOPE:

The state energy code (1983 MEC) applies statewide to residential and nonresidential buildings that are heated and/or mechanically cooled, as required in the 1983 MEC, including state-owned and -operated buildings. The code applies to all new additions and modifications of existing buildings that exceed 50% of the replacement cost of the structure, except historical buildings and manufactured housing.

Manufactured housing units are regulated by the Department of Health.

OVERVIEW:

The state of Nebraska adopted the 1983 MEC without amendments for both residential and nonresidential buildings. It is a statewide mandatory minimum code.

ADOPTION:

There is no set schedule for modifying the current building and/or energy codes. The present energy code is referenced directly in legislation and can only be changed by the state legislature.

Although the code is mandatory statewide, local jurisdictions are not required to adopt or enforce the code.

COMPLIANCE:

In those localities that have adopted a code, a plan review and inspection is done at the local level only if required by the local code authority.

ENFORCEMENT:

Currently, there is no active enforcement of the energy code at the state level. The city, county, or their designated enforcement agency may (but are not required to) adopt the MEC, or another code that is at least as stringent as the MEC, and provide the necessary enforcement at the local level.

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OTHER CONTACT(S):

BACKGROUND:

Nevada's first energy code, "Energy Conservation Standards for New Building Construction," was adopted on January 1, 1978. This is a state-written code that was formulated by the Nevada Department of Energy and based on the ASHRAE/IES 90-1975. All cities and counties were required to enforce the energy code requirements. The Nevada Department of Energy was disbanded in 1983. Between 1983 and 1986, there was no state support for or enforcement of this energy code.

In 1985, the legislature gave the Nevada Office of Community Services authority to formulate new statewide standards for energy conservation in new buildings. Adopted on July 8, 1988, the "Regulations for the Conservation of Energy in New Building Construction" were formulated based on the 1986 CABO MEC with minor state amendments. This code is applicable only in areas where the local jurisdiction had not previously adopted an energy code. This remains the basis for the statewide energy code. The Nevada Office of Community Service was dissolved in the fall of 1993. Currently, there is no active state support for or enforcement of this energy code.

STATUS:

The "Regulations for the Conservation of Energy in New Building Construction" are a statewide minimum for local jurisdictions that have not adopted a local energy code. Such jurisdictions are required to enforce these regulations, but may adopt less stringent regulations without state approval. In 1995, the State Energy Office (SEO) sought authority to upgrade the state energy codes via legislation submitted to the state legislature, but the Senate Finance Committee effectively killed the bill by failing to act on it. The legislation would have adopted the 1992 MEC for all low-rise residential buildings and the codified version of the ASHRAE/IES 90.1-1989 for all other buildings. The state is pursuing voluntary compliance strategies. There is a two year moratorium on new state regulations.

The SEO is currently working to link the 1992 MEC to a home energy rating system. Nevada's EPAct certification, extended one year, reflects the Nevada legislature's inaction.

SCOPE:

The state energy code is applicable to all newly constructed residential and nonresidential buildings and to new additions as outlined in the 1986 CABO MEC. This includes all state-owned and -funded buildings, factory-built housing, and manufactured buildings whose construction is not regulated by the federal government.

OVERVIEW:

The technical provisions of the energy code are those contained in the 1986 MEC with minor technical amendments. Most larger jurisdictions have adopted modified versions of the MEC to be applicable within their localities.

ADOPTION:

The SEO authority to make changes to the energy code must be processed through the state legislature. Some localities have adopted more recent versions of the MEC. For instance, Clark County enforces the 1992 MEC and is sponsoring training on the MEC.

COMPLIANCE:

The envelope compliance pathways, plan submittal requirements, and requirements for engineer signatures are those contained in the 1986 MEC.

ENFORCEMENT:

The city or county provides the required enforcement of the code requirements except for state-owned and funded buildings which are regulated by the Nevada Public Works Board (NPWB). The NPWB generally requires the plans to be stamped by a registered engineer or architect to indicate compliance with the energy code requirements. The state does not enforce the code for any buildings other than state-owned and - funded buildings. Plans and specifications must be submitted when required by the provisions of the MEC. Field inspections are performed by the local jurisdiction during established construction inspections. Interpretations are the responsibility of the local jurisdiction.

PRIMARY TECHNICAL CONTACT:

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OTHER CONTACT(S):

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John C. Cutting, Energy Planner, New Hampshire Public Utilities Comm., (603) 271-2431

BACKGROUND:

The original energy code for New Hampshire (NH) was enacted in response to PL-94-163. This enabling legislation was RSA 155:D, which applied to both residential and commercial buildings and was based on ASHRAE/IES 90-75 and the NCSBCS Code for Energy Conservation in New Building Construction dated December 1977. RSA 155:C, which related to energy conservation in state-owned buildings, was repealed. The residential standards and administrative sections were revised in 1986. The commercial standards were revised in 1993 to reflect the EPAct requirement for compliance with ASHRAE/IES 90.1-1989. The original code was administered by the Governor's Council on Energy from 1979 to 1982. When that office closed in 1982 administrative responsibility was transferred to the NH Public Utilities Commission (PUC). In 1990, the NHPUC was granted rulemaking authority over the code (i.e., ability to revise the code without an act of the legislature).

STATUS:

The NHPUC administers RSA 155:D. The NHPUC has revised its commercial code to reflect ASHRAE/IES 90.1-1989. The Commission is also in the process of upgrading its residential code, which covers living units of one story, two stories or other low-rise single- and multi-family dwellings, including but not limited to, hotels and motels, not exceeding three stories high. It is anticipated that the upgrade will be based on the 1995 MEC and be adopted in early 1997.

SCOPE:

The code is a statewide requirement that applies to all new, substantially renovated (renovation more than 50% of the current value of the structure), and use-converted structures. Residential structures must comply with the requirements. The only exceptions to these requirements are HUD-certified mobile homes, unheated structures, buildings not designed for human occupancy, and historic structures. The residential requirements are applicable to residential buildings three stories high or less and less than 4,000 square feet in floor area. Commercial structures must comply with the requirements of ASHRAE/IES 90.1-1989.

OVERVIEW:

The energy code uses a state-developed code for residential construction and ASHRAE/IES 90.1-1989 for commercial construction. Definitions of "commercial" and "residential" follow. Those in the ASHRAE standard with "commercial" including high-rise (higher than three stories) residential occupancy buildings.

ADOPTION:

The statewide requirements are changed as needed, no definitive schedule is followed for updates. Local governments may adopt different requirements only if those requirements are more stringent than the state code. The PUC has the rulemaking authority to change the standards within the code. The procedure consists of public meetings with all affected parties, reviews by the state rules committee, and public hearings by the NHPUC. The entire process takes six months to a year to complete.

COMPLIANCE:

All plans must be submitted to the local building code official. If there is no code official for the town or city, then the plans and a certificate of compliance application must be sent to the PUC for review and certification.

ENFORCEMENT:

The local building official enforces the energy requirements. There are two ways in which compliance is shown: a letter of certification for the building from a New Hampshire licensed architect or engineer can be submitted to the town with a copy forwarded to the PUC or an application for certificate of compliance may be processed through the PUC or the local building code official.

PRIMARY TECHNICAL CONTACT:

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STATE AGENCY\OFFICE HEAD:

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BACKGROUND:

The state of New Jersey passed the New Jersey Uniform Construction Code Act on October 7, 1975. The Act became effective on February 3, 1976. All construction codes and their enforcement were controlled by the provisions stated in the act. Uniform Construction Code Regulations (NJAC 5:23-1 et seq.) went into effect on January 1, 1977.

The New Jersey Uniform Construction Code is divided into subcodes (model codes/standards) that are adopted individually by the Commissioner of Community Affairs. The initial adoption of a model code or standard as a subcode constitutes adoption of subsequent edition year publications of the model code or standard organization. The energy subcode contains the energy provisions.

The New Jersey Register dated April 5, 1993, indicates the Division of Housing and Development (now the Division of Codes and Standards) has adopted (as amended) the 1993 BOCA National Energy Conservation Code (NECC) and the IES standard LEM-1 as it's energy subcode. Further amendments modifying the energy subcode were made on March 20, 1995, requiring commercial buildings (other than R-3, and R-4, and R-2 less than or equal to three stories high as defined in the building subcode) to comply with ASHRAE/IES 90.1-1989.

STATUS:

The Department of Community Affairs is preparing the necessary documents to adopt the 1996 versions of the adopted model codes. However, legislation enacted in June 1996 gives the authority to the Commissioner of Community Affairs to forego the adoption of provisions of the model codes that are inconsistent with the intent of the Uniform Construction Code Act. Whether or not the 1995 MEC, referenced in the 1996 BOCA National Codes, is adopted depends on the determination of whether the 1995 MEC is at least as consistent with the intent and purpose of New Jersey Uniform Construction Code Act as was the previously adopted energy subcode.

SCOPE:

The thermal efficiency standards apply to all newly constructed and renovated buildings including casinos and state-owned and -funded buildings. The code applies throughout the state and local jurisdictions cannot

make amendments. Lighting efficiency standards apply to all newly constructed and renovated buildings in use groups A, B, E, F, H, I, M. R, S, and U, as defined in the building subcode.

OVERVIEW:

The code is a statewide mandatory minimum requirement that local jurisdictions may not amend. The energy subcode requires compliance with the 1993 NECC (as amended) or compliance with the applicable provisions of ANSI/ASHRAE/IES 90A-1980 or ASHRAE/IES 90B-1975 along with IES standard LEM-1-1982 for low-rise (three stories high or less) residential buildings (use groups R-2, R-3, and R-4, as defined in the building subcode). All other buildings (commercial buildings and residential buildings higher than three stories) must meet ASHRAE/IES 90.1-1989 requirements.

ADOPTION:

The Uniform Construction Code Act provides that adoption of model code publications shall not occur more frequently than once every three years; however, a revision or amendment may be adopted at any time if the Commissioner of Community Affairs finds that there is an imminent peril to the public's health, safety, or welfare.

An announcement in the New Jersey Register is the legal mechanism that establishes the effective and operative dates of the editions of the model codes and standards. Amendments containing all necessary technical and editorial changes generally occur after this Register announcement. The code is mandatory statewide. Municipalities that establish a construction code enforcing agency by ordinance enforce, in general, the provisions of the energy subcode. In municipalities of the state that have not established a construction code enforcment agency, the New Jersey Department of Community Affairs acts as the enforcement agency.

COMPLIANCE:

Compliance is determined through the construction permit process, plan review, and site inspections.

ENFORCEMENT:

To enforce the requirements of the New Jersey Uniform Construction Code Act, the construction code officials must be licensed by the Licensing Section of the Bureau of Technical Assistance, Construction Code Element. The construction code enforcement agency having jurisdiction enforces the uniform construction code requirements. The Department of Community Affairs enforces the code for municipalities that choose not to enforce it.

In general, an owner applies to the construction code enforcement agency for a construction permit. After a plan review is completed, a release is issued, and inspections are performed. Therefore, compliance with the code is determined during the plan review and inspections performed by the construction code enforcement agency. The following also applies (NJAC 5:23-2):

1) The application for a permit shall be accompanied by not less than two copies of specifications and of plans drawn to scale, with sufficient clarity and detailed dimensions to show the nature and character of the work to be performed.
2) The construction official and appropriate subcode officials shall carry out such periodic inspections during the progress of work as are necessary to ensure that work installed conforms with the approved plans and the requirements of the regulations.

PRIMARY TECHNICAL CONTACT:

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STATE AGENCY\OFFICE HEAD:

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OTHER CONTACT(S):

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BACKGROUND:

The New Mexico Construction Industries Licensing Act of 1978 established requirements for all building trades contractors to be licensed and certified to ensure that compliance with the state codes is, to the maximum extent possible, uniform in application, procedure, and enforcement. This act has been updated periodically since then, most recently by amendments in October 1994. New Mexico has adopted the ICBO UBC for a number of years. Most recently the 1991 UBC had been adopted.

STATUS:

The new revision of the state code, became effective in October 1994 and requires compliance with the 1992 MEC. Chapter 53 of the 1991 UBC references the 1989 CABO MEC. A technical Advisory Committee met beginning in June 1995 to review the possibility of adopting ASHRAE/IES 90.1-1989, but it was disbanned in 1996.

The state is considering adoption of the ASHRAE 90.1-1989 energy code for commercial buildings. This effort may be progressing more slowly because of budget and agency sunset review issues. The Energy, Minerals and Natural Resources Department (EMNRD) is conducting a training program on the 90.1 code.

New Mexico's EPAct certification states that the 1992 MEC was effective in New Mexico in October 1994 and that the state is requesting a 10-month extension to adopt the code version of ASHRAE/IES 90.1-1989.

SCOPE:

The energy code provisions are statewide mandatory minimum requirements that local jurisdictions are required to adopt and enforce. If the local jurisdictions adopt more restrictive amendments, approval must be obtained from the State Construction Industries Commission. All new residential and nonresidential buildings and additions to existing buildings that are heated and/or mechanically cooled are required to comply with the minimum code requirements. Historical buildings are exempt.

OVERVIEW:

The state energy code adopts the 1992 CABO MEC with an amendment allowing an amount equal to 1% of the conditioned floor area to be applied as skylights with no requirements for the skylights. Envelope requirements are based on heating degree days in accordance with the MEC.

ADOPTION:

Traditionally, the state adopts the current version of the ICBO Uniform Building Codes as a basis for all building codes. These are adopted by the state on a three-year code cycle corresponding with the publication of the ICBO Uniform Codes. Amendments, if any, to the current version of the MEC must first be proposed by a trade association or other construction group. These are then reviewed by a technical advisory committee composed of engineers and representatives of the building department and the state. If approved by the committee, the changes are processed through a series of public hearings. Once this cycle is completed, the final version of the amendments is prepared by the staff of the Construction Industries Division and sent to the Construction Industries Commission. If approved by the Commission, the changes are sent to Archives and become effective after a 30-day waiting period.

COMPLIANCE:

All residential and nonresidential structures, as defined in the MEC, are required to comply with the New Mexico Energy Code. Methods of compliance and requirements for plan reviews are those specified in the MEC.

ENFORCEMENT:

Plan review and enforcement is regulated by the local jurisdiction (when they elect to enforce the code) as required in the Model Energy Code. If the local jurisdiction does not elect to or does not have personnel qualified to enforce the code provisions, the Construction Industries Division (CID) provides the necessary reviews and inspections for residential buildings. Technical assistance is provided to CID by EMNRD. The CID also provides all plan review and inspection for all state-owned or -funded buildings.

PRIMARY TECHNICAL CONTACT:

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OTHER CONTACT(S):

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BACKGROUND:

The New York state energy code became effective on January 1, 1979. The New York State Energy Office (SEO) had the responsibility to administer, make amendments, and provide technical support in the form of interpretations and variances. Through legislative authority, the Commissioner of the SEO could, through regulation, amend the code. The amendments were developed and adopted through a formal rule-making process that included a public review period. Interested parties could provide written comments on the amendments prior to the promulgation of the changes.

The state energy code was amended for residential uses in 1989 and substantionally rewritten in March 1991. Amendments are made when energy savings technologies are available.

STATUS:

The New York State Energy Conservation Code is a statewide mandatory minimum that, with state approval, can be modified by the local jurisdiction to be more stringent.

The New York SEO was abolished as of March 31, 1995. Some of the functions of the Energy Office (interpretations of the code, etc.) were transferred to the New York State Uniform Fire Prevention and Building Codes Bureau.

Legislation was introduced (but has not moved) to replace the current state written building code with the 1996 BOCA codes (which adopt by reference the 1995 MEC). New York's EPAct certification requested an extension to the end of December 1994 to hold hearings on their residential code and stated that the commercial code meets the requirements of EPAct.

SCOPE:

The state energy code requires that all new commercial and residential buildings, manufactured housing not required to comply with the requirements of HUD, and buildings undergoing substantial rehabilitation follow the code. Historic buildings and buildings that do not use either electricity or fossil fuel for comfort conditioning are exempt from these requirements.

OVERVIEW:

The 1987 Energy Code amendments primarily affected residential construction (structures three stories or less). A cost-benefit analysis was completed prior to the development of those amendments. The analysis

was based on the typical construction practices in New York, the severity of climate conditions throughout the state, and varying costs of materials. The code was changed to include higher insulation values for areas where the climate is more severe. In addition, electrically heated new homes were required to meet more stringent insulation requirements.

The energy code is state-written, but seems to contain elements of ANSI/ASHRAE/IES 90A-1980 and 90B-1980 and ASHRAE/IES 90.1-1989, as well as significant amounts of independent work. Overall, the commercial requirements seem to be about as stringent as ASHRAE/IES 90.1-1989.

Requirements for commercial/residential buildings vary based on the location of the buildings within the state and the type of fuel used to heat the buildings. For example, residential buildings that are electrically heated are required to have higher insulation values. Residential buildings can also comply with a thermal rating method, which uses a point system to rate thermal efficiency levels.

ADOPTION:

State legislation restricts the amendments to those that meet a 10-year discounted payback to the building owner. Local governments may adopt their own energy conservation requirements after notifying the state but these requirements must be more restrictive than those listed in ASHRAE/IES 90B-1975. At present, none of the municipalities has adopted alternative requirements.

COMPLIANCE:

Compliance is determined by plan review and inspection through the normal building permit process by the government entity responsible for the administration and enforcement of the provisions of the Building Construction Code or the Fire Prevention and Building Construction Code applicable within the municipality.

ENFORCEMENT:

Enforcement of the state energy requirements is the responsibility of the governmental entity responsible for the administration and enforcement of the provisions of the Building Construction Code or the Fire Preventation and Building Construction Code applicable within the municipality. For areas that do not have local municipal enforcement, the SEO must ensure that the minimum requirements of the code were met. The local code official is responsible for the review of all plans and specifications that must be signed and sealed by a registered professional. SEO provids training on the Energy Code for all local officials, architects, engineers, and other individuals interested in the construction industry.

Although, the New York SEO was abolished as of March 31, 1995, some of the functions of the SEO (interpretation of the code, etc) were transferred to the New York State Uniform Fire Prevention and Building Codes Bureau pending approval by the state legislature. Training on the energy code has been discontinued because of lack of funding.

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STATE AGENCY\OFFICE HEAD:

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OTHER CONTACT(S):

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Barry Gupton, PE, Chief Code Consultant, NC Dept. of Insurance, (919) 733-3901
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BACKGROUND:

In December 1973, the North Carolina State Building Code Council adopted the insulating standards of the Standard Building Code of the Southern Building Code Congress as statewide requirements. These standards were found to be too "prescriptive" and did not meet the particular requirements of North Carolina; therefore, an energy subcommittee was appointed to investigate energy conservation and study the ASHRAE standards that were being developed. The committee recommended new energy requirements in March 1977 and the Building Code Council adopted these standards, which went into effect on January 1, 1978.

In June 1991, an ad hoc energy committee was appointed by the Building Code Council to study and update the energy requirements in the state building code. This committee began studying the state's current code as well as the CABO MEC. The Energy Policy Act of 1992 shifted and refocused the committee's study efforts. The committee completed its review of the CABO MEC and the Building Code Council adopted the proposed new standards for one- and two-family dwellings, which became effective on April 15, 1993.

As of December 1995, the North Carolina Code referenced the 1988 Standard Building Code with North Carolina amendments and was known as the 1991 North Carolina Edition.

STATUS:

The 1994 Standard Building Code with North Carolina amendments has been adopted by the Building Code Council and is known as the 1996 North Carolina Edition of the North Carolina State Building Code. The energy requirements are contained in the new edition as Chapter 13. Chapter 13 provides very simple prescriptive requirements for thermal envelope requirements and references the new Volume X (Energy) for other systems.

In March 1995, the Building Code Council adopted Volume X (Energy) as the new energy code for North Carolina. These new energy requirements will become in fall 1996. Volume X is a reprint of ASHRAE 90.1-1989 (codified version) with North Carolina amendments. The code applies to commercial buildings, including those used for assembly, business, education, and storage, as well as institutions and merchants.

High-rise residential and multi-family are also covered under Volume X.

SCOPE:

The North Carolina State Building Code contains energy provisions that are a statewide minimum but that may be amended by local jurisdictions with state approval. Cities and counties must enforce the provisions. Because the energy requirements are in the North Carolina Building Codes, and these codes apply to all buildings, the energy codes apply to all buildings.

The North Carolina State Building Code, Volume X (Energy) is applicable to all buildings except one- and two-family dwellings. Volume X is the codified version of ASHRAE 90.1-1989 with North Carolina amendments.

The North Carolina State Building Code, Volume VII (Residential), Chapter 25, is applicable to all one- and two-family dwellings.

OVERVIEW:

The energy provisions for one- and two-family dwellings are contained in Chapter 25 of Volume VII (Residential). The requirements of the 1992 CABO MEC were evaluated and single prescriptive values for walls (R16), ceilings (R31), and floors (R20) were developed for application statewide. Minimum insulation requirements for cathedral ceilings are lower than for other ceilings (R23), but additional insulation is required elsewhere to make up for the reduction from R31 to R23. Insulation of the crawlspace wall in lieu of the floor is not allowed.

The energy provisions for commercial buildings (buildings other than one- and two-family dwellings) are contained in Chapter 13 of Volume I (General Construction) and Volume X (Energy). The requirements of the 1989 edition of ASHRAE 90.1 (codified version) were evaluated and amended to reflect North Carolina ACP tables prior to adoption.

ADOPTION:

The North Carolina Building Codes Council is responsible for development of all state codes. By statute, the Commissioner of Insurance has general supervision of the administration and enforcement of the North Carolina State Building Code. The Engineering Division serves as the staff for the Building Code Council. Code changes are considered quarterly and anyone may propose a code change. Final authority to adopt criteria rests with the North Carolina Building Code Council. Public hearings are conducted quarterly to consider revisions, with the June meeting ending the year. Approved code changes are then printed as replacement pages that can be incorporated into the code yearly.

COMPLIANCE:

Compliance is determined by plan review and inspections through the normal building permit process. Compliance forms are included in the energy provisions for both residential and commercial buildings.

ENFORCEMENT:

Enforcement is accomplished through local units of government in the normal inspection process. The North Carolina Department of Insurance is responsible for general supervision of the effort statewide. Enforcement is then accomplished through the permit/inspection process for new construction and additions. Depending on the size of the local government unit, the same individual may be responsible for performing plan reviews and inspections.

PRIMARY TECHNICAL CONTACT:

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STATE AGENCY\OFFICE HEAD:

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OTHER CONTACT(S):

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BACKGROUND:

North Dakota's first energy code was adopted in 1977 and was based on ASHRAE/IES 90-1975. This code remained in effect until 1993 when the 1989 MEC was adopted as a statewide minimum/maximum standard for state-funded buildings and a voluntary standard for jurisdictions that choose to adopt an energy code. In October 1995 the code was updated to the 93 MEC.

STATUS:

North Dakota's Office of Intergovernmental Assistance Energy Codes Committee recently adopted the 93 MEC. The new code was effective on October 2, 1995. The 93 MEC references ASHRAE 90.1-1989 so commercial buildings other than one- and two-family dwellings and multi-family dwellings three stories high and less will be covered by ASHRAE 90.1-1989.

SCOPE:

The energy code is applicable statewide to all newly constructed state or local government-owned and -funded buildings. It is not mandatory for other buildings; however, if a local jurisdiction chooses to adopt a local building code, it must adopt the state building codes, which are the Uniform Building Code and Uniform Mechanical Code with supplements, including the energy provisions.

OVERVIEW:

The state energy code is the 1993 MEC, which references ASHRAE/IES 90.1-1989 for commercial buildings.

ADOPTION:

Changes to the state energy code must first be processed through the Office of Intergovernmental Assistance (OIA). After a review by the OIA, changes are processed through an energy codes committee composed of building officials and design professionals and then through a series of public hearings. Rules and regulations associated with a new code are established through the Administrative Practices Act. Code changes are processed on a three-year code cycle corresponding to the publication of the ICBO model codes.

COMPLIANCE:

Compliance at the state level is determined by plan review and inspection by the construction agency. A common compliance path for buildings in the state is compliance by assertion by the designing engineer.

Local compliance procedures will be followed as necessary.

ENFORCEMENT:

There is no required statewide enforcement of the energy code requirements. State or local government-owned and -funded buildings are covered by the code. Many buildings comply by having the plans stamped by a registered engineer indicating compliance with the energy code requirements. There is no enforcement required at the local level. It is estimated that only 80 out of approximately 365 jurisdictions actually have any inspection personnel.

PRIMARY TECHNICAL CONTACT:

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STATE AGENCY\OFFICE HEAD:

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OTHER CONTACT(S):

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BACKGROUND:

Prior to July 1, 1979, the rules of the Ohio Board of Building Standards were compiled in a document known as the Ohio Building Code. On October 20, 1978, the Board adopted a rule, effective July 1, 1979, repealing most of the existing Ohio Building Code and adopting by reference, with special Ohio modifications, the "Ohio Basic Building Code/1978, Seventh Edition" and the "Ohio Basic Mechanical Code/1978, Third Edition." These codes are published by Building Officials and Code Administrators International, Inc. (BOCA), and Banks-Baldwin Law Publishing Company.

The resulting collection of model code sections and superseding Ohio provisions, together with the CABO MEC and the Ohio Plumbing Code (which was retained from the former Ohio Building Code) is known as the "Ohio Basic Building Code."

On April 21, 1995, Ohio adopted the 1993 MEC and the code version of ASHRAE/IES 90.1-1989. These codes went into effect July 1, 1995.

STATUS:

The 1995 Ohio Basic Building Code (OBBO) is a statewide minimum/maximum code, whose energy requirements are mandatory for all buildings. As of July 1, 1995, the 1995 OBBC is based on the 1993 BOCA National Building Code (NBC) and includes an amendment that references the 1993 MEC and the code version of ASHRAE/IES 90.1-1989. This recent update is reflected in Ohio's EPAct certification.

Training of Building Department personnel, sponsored by the Office of Energy Efficiency has started. There appears to be no complaint regarding the ASHRAE standard for commercial buildings. The residential provisions of the MEC, however, are creating more of a problem for builders.

Legislation (SB118 and MB 243) would delete some provisions of the law. It would eliminate the Board of Building Standards directive to adopt new energy standards when technical advances would make the standards obsolete or inadequate. The act does retain a provision to base the residential energy standards on HUD requirements (1993 MEC). It would also eliminate the criminal penalty for builders that do not comply with the energy code. The session recessed in June 1996 without acting on the bill. It may be considered during a brief session in November 1996. Work has started on a two-climate zone prescriptive "deemed to comply" alternative to the CABO MEC.

The paths being considered are as follows: 1) North (>6000 HDD 65 max 12% window area; U< or = to 0.45 windows; R-38 ceilings; R-19 walls; R-19 floors; R-10 basement wall; R-7 slabs; and R-16 crawlspace walls; and 2) South (< or = to 6000 HDD 65), same as above except R-30 ceilings; R-15 walls; R-15 floors; R-9 basement walls; R-4 slabs; and R-14 crawl space walls.

SCOPE:

The Ohio Basic Building Code adopts by reference the 1993 MEC and the codified version of ASHRAE/IES 90.1-1989. The code is a mandatory requirement statewide.

OVERVIEW:

The provisions of ASHRAE/IES 90.1-1989 apply to all commercial structures and all high-rise (higher than three stories) residential buildings. The provisions of the 1993 MEC apply to all low-rise residential buildings and one-, two- and three-family dwellings.

ADOPTION:

Changes to the OBBC are proposed by the Board of Building Standards. The board's powers and duties include adopting rules governing the construction, repair, and rehabilitation of buildings in the state; certifying municipal, township, and county building departments to administer the code; and establishing minimum standards for construction materials. Thus, the Board is the primary state agency authorized to protect the public safety and welfare in building design and construction (other agencies include the Division of State Fire Marshal, also in the Ohio Department of Commerce, which promulgates the fire code, and the Ohio Department of Health, which regulates plumbing inspectors).

Rules proposed by the board are filed with the Secretary of State, the Legislative Service Commission, and a committee of the General Assembly known as the Joint Committee on Agency Rule Review (JCARR) at least 60 days prior to adoption. JCARR reviews the rules to ensure that they do not exceed the scope of the agency's statutory authority, do not conflict with another rule of the same or a different agency, and are consistent with the legislature's intent. If acceptable, the rules go to public hearing at a time and place set by the agency in a public notice, which must be given at least 30 days prior to the hearing and must include a synopsis of the proposed rules. The hearing must be held within the 13th and 50th day after the initial filing with the appropriate state agencies. Sixty-one days after the initial filing, the agency may adopt the rules consistent with the synopsis.

If, as a result of the public hearing, substantive changes are made that are inconsistent with the synopsis of the proposed rules, the rules must be refiled and a new hearing must be scheduled. However, if substantive changes are made that are consistent with the synopsis, the rules must be refiled and then undergo a 30-day review before the board can adopt them.

Following adoption, the board files the adopted rules with the appropriate state agencies. JCARR then has the authority to review the adopted rules under the same criteria as were used with the rules as proposed.

COMPLIANCE:

Compliance is determined through plan review and inspection at the local level.

ENFORCEMENT:

Building officials whose building department has been certified by the Board of Building Standards enforce the provisions of the OBBC for their locality. Plans must be submitted for all buildings within the scope of the code (i.e., one-, two-, and three-family dwellings are outside the scope of the OBBC, except for energy conservation). The jurisdiction is required to review and approve the plans and to perform inspections to determine if the work performed conforms with the approved plans. One-, two-, and three-family dwellings

are reviewed by certified building departments only when they also have responsibility for one-, two-, and three-family dwelling plan review.

If there is no certified building department within a jurisdiction, the Department of Commerce Division of Industrial Compliance reviews and approves plans for commercial construction. One-, two-, and three-family dwelling plans are not reviewed for MEC compliance at the state level.

PRIMARY TECHNICAL CONTACT:

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OTHER CONTACT(S):

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Wayne Cotton, Oklahoma Office of Central Services, Constr. Properties Division, (405) 521-2111

BACKGROUND:

Oklahoma has not formally adopted any building codes for buildings other than state-owned or state-used buildings. The Oklahoma State Health Department has adopted the 1993 BOCA National Plumbing Code and National Mechanical Code. The Oklahoma State Fire Marshal's Office has adopted the 1993 BOCA National Building Code for state-owned buildings. The Oklahoma State Department of Central Services has adopted ASHRAE/IES 90.1-1989 for all state-owned commercial buildings.

STATUS:

The Department of Central Services is trying to adopt the 1993 CABO MEC for all residential buildings that are three stories high or less. The Department of Central Services may propose legislation to adopt ASHRAE/IES Standard 90.1-1989 for all (i.e. non state-owned) commercial buildings in the future. An effort aimed at educating the end consumer about the economic benefits of building more efficient buildings is under way. At the present time, a series of articles has been made available to the public.

SCOPE:

The requirements in the 1996 BOCA National Codes (refer to 1995 MEC) are required for all state-owned or -funded buildings. For some trades the 1996 BOCA National Codes have been adopted for buildings other than 1- and 2- family dwellings. The state is working on rules to implement this in early 1997.

OVERVIEW:

The 1996 BOCA National Building Code establishes provisions that regulate the design and construction of the exterior envelope and selection of energy-using features in the building. The 1995 CABO MEC is adopted therein by reference.

ADOPTION:

Code changes must go through the state legislature, the governor, and be adopted by the Fire Marshal Commission.

Each jurisdiction in the state has the authority to adopt one of the nationally recognized model codes. These jurisdictions have full authority to adopt and amend any energy conservation requirements for other than state-owned buildings.

COMPLIANCE:

For state-owned buildings, the Oklahoma Office of Central Services, Construction Properties Division, monitors the construction process for compliance with the relevant construction codes.

ENFORCEMENT:

Local jurisdictions are responsible for enforcement of any locally adopted codes. The Oklahoma State Department of Central Services administers construction and maintenance programs for state-owned and state-leased buildings.

PRIMARY TECHNICAL CONTACT:

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Building Codes Division
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STATE AGENCY\OFFICE HEAD:

Joseph A. Brewer III, Administrator, Oregon Building Codes Division, (503) 378-4133

OTHER CONTACT(S):

John Perry, Oregon Office of Energy, (503) 373-7803
Alan Boner, Oregon Office of Energy, (503) 378-6893

BACKGROUND:

Oregon's first energy conservation requirements were developed in 1975 and were limited to Group R occupancies, three stories high or less (low-rise residential buildings). This code was upgraded in 1978 and again in 1980 to reflect the new editions of the ASHRAE standards. Since 1980, the residential energy conservation requirements have been amended on a three-year cycle in sequence with the One- and Two-Family Dwelling Specialty Code. Previous energy conservation requirements were put into effect January 1, 1993. New energy conservation requirements for residential buildings became effective April 1, 1996.

The energy conservation requirements for all buildings except Group R, three stories high or less (nonresidential) were developed in 1978 and upgraded in 1980. Since 1980, the nonresidential energy conservation requirements have been upgraded in sequence with the Oregon Structural Specialty Code. Previous nonresidential energy conservation requirements became effective on January 1, 1993. New energy conservation requirements for nonresidential buildings have been adopted and became effective on April 1, 1996.

STATUS:

The Oregon Structural Specialty Code, Chapter 13, contains energy conservation requirements for all buildings except one- and two-family dwellings. The Oregon One and Two Family Dwelling Specialty Code contains energy conservation requirements for one- and two-family dwellings in Appendix E. Local jurisdictions may amend the code with state approval, but this is rare, and never occurred in the energy conservation provisions.

Oregon's EPAct certification indicates that the state's residential energy conservation requirements meet or exceed the 1992 MEC and that the state's nonresidential energy conservation requirements meet ASHRAE/IES 90.1-1989.

SCOPE:

The state energy code provisions are mandatory for all heated and/or cooled residential and nonresidential construction, including state-owned and -operated buildings that are constructed, altered, and repaired within the state. The energy conservation requirements are a mandatory statewide minimumthat cannot be modified by local government without state approval. The local enforcement agencies have the option of adopting and enforcing the code provisions or having the Building Codes Division provide implementation.

OVERVIEW:

The envelope prescriptive path for one- and two-family dwellings, as located in Appendix E of the State of Oregon One and Two Family Dwelling Specialty Code, sets standards for the exterior components of the building: opaque walls, windows, roofs, etc. The code has separate standards for seven above-grade wall types, e.g., masonry, integral loose fill; masonry, integral rigid fill. Where appropriate, the standard is stated as both R-values and U-factors. The prescriptive path has two levels: one for the milder climates (generally under 5,500 HDD65) and a higher level for colder climates.

The energy conservation requirements for all buildings except one- and two-family residential buildings, are contained in Chapter 13 of the State of Oregon Structural Specialty Code and are based on ASHRAE/IES 90.1-1989.

The prescriptive path forms the basis for the envelope stringency requirements for all other buildings (except one- and two-family residential dwellings). The applicant can use the Simplified Trade-Off Approach (STA) to trade off between envelope components. The STA is a computer approach that uses ASHRAE's TC 4.7 (modified bin) procedure for predicting annual heating and cooling loads. A building passes the STA if its heating and cooling loads do not exceed those of a similar building built to prescriptive path standards. Oregon distributes the STA through CodeComp, Oregon's computer compliance tool.

The STA can be used for trade-offs of the exterior envelope components only. All other items, including HVAC, lighting, and service water heating must meet code minimums in their respective areas.

The code permits trade-offs between the building envelope and the prescriptive path requirements in the other sections if applicants use the Whole Building Approach. Under this procedure, the applicant computes the annual energy cost for the proposed building and compares it with the cost for a base-case building built to all of the code's prescriptive path standards.

Requirements for HVAC equipment generally follow ASHRAE/IES 90.1-1989. The new code separates requirements for simple and complex HVAC systems. Most buildings use packaged units and comply with the code by using a simple prescriptive approach. Economizers are required for unitary systems five tons or greater.

Large buildings with complex engineered HVAC systems must meet more stringent standards. These requirements affect only a few large buildings, but account for a large percentage of floor space and energy use. For the first time, the new code sets maximum horsepower of fans to deliver air throughout the building. A variable speed drive will be required on fan and pump motors with 25 or more horsepower and variable loads. This reduces the motors energy use when load is reduced, rather than operating at full speed all the time.

Oregon's new lighting standards regulate interior lighting power, interior controls, and exterior building lighting. Oregon does not regulate site lighting energy use.

There are two approaches to interior lighting power: the Occupancy Approach and the Space-by-Space Approach. The occupancy approach sets Lighting Power Densities (watts/square feet) based on the occupancy of the building. The overall building budget can then be used anywhere within the building. The Space-by-Space Approach sets a budget for each space. This is a "use-it-or-lose-it" budget. If the budget is not used within the space it can not be transferred to another space.

ADOPTION:

Changes to the energy conservation requirements are submitted on code change forms to the State Building Codes Division. The Building Codes Structures Board (BCSB) reviews the proposed change to determine if

the proposal warrants further consideration. If accepted by the Board, the proposed changes are sent to the Energy Committee for review. The Energy Committee is composed of members with varying expertise in the energy field related to the proposed change. After review by the Energy Committee, in a public meetings, the Committee submits its recommendations back to the Board. The BCSB then makes a final recommendation about the acceptance of the proposal. The administrator of the Building Codes Division, under delegated authority from the Director of the Department of Consumer and Business Services, makes a final determination about the acceptance of the proposal.

Once the administrator accepts a proposal, rulemaking begins, and a public hearing is held to get input from other groups. After the public hearing, the hearings officer makes a recommendation to the Board. The board provides a recommendation to the administrator of the Building Codes Division for final approval.

The Oregon Revised Statues (law) provides Building Codes Division (BCD) authority to write rules that affect energy conservation in all regulated buildings. The BCD, through the rulemaking process, writes rules to implement statutes. These rules allow BCD to adopt and amend model codes such as the ICBO Uniform Building Code and CABO One- and Two-Family Dwelling Code. Anyone can submit code changes, which are basically changing rules, to BCD at any time. The Oregon Structural Specialty and One- and Two-Family Dwelling Codes are revised on a three-year cycle following the code change cycle of the relevant model code organization. Emergency rules are incorporated into code as necessary.

COMPLIANCE:

Plans and specifications of sufficient detail to show all pertinent data including U/R values of materials, equipment sizes, and controls must be submitted to the enforcement agency (local or state).

For all buildings, except those housing Group R occupancies, three stories high or less, must submit documentation on standardized forms available from the Oregon Department of Energy (ODOE) [(503) 378-4040] or BCD. One of several compliance paths may be used for compliance.

All buildings that house Group R occupancies, three stories high or less must comply with the statewide residential energy requirements outlined in the Overview section.

ENFORCEMENT:

Plans and specifications must be submitted unless exempted by the building official. If required by the building official, the plans must be stamped by registered design professionals. The codes establish minimum submittal requirements concerning R-values, equipment efficiencies, and lighting components. Field inspections are required prior to the issuance of a certificate of occupancy.

For all buildings, the city, county, or the designated enforcement agency may either enforce the code or have the BCD provide the required enforcement. Currently, the BCD has four district offices throughout the state that provide enforcement for approximately 75% of the state's land area, but only about 10% of the population base. The BCD also provides plan review and inspection enforcement for all prefabricated structures located within the state and inspection of all manufactured housing. Interpretations are issued by the local jurisdiction enforcing the code. A jurisdiction can request an advisory from the Division. A request for an interpretive ruling can be made to the Division, approved or disapproved by BCSB, then approved or disapproved by the BCD administrator. An interpretive ruling is mandatory throughout the state.

PRIMARY TECHNICAL CONTACT:

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STATE AGENCY\OFFICE HEAD:

Charles Sludden, Director, Occupational & Industrial Safety, Dept. of Labor & Industry, (717) 787-3323

OTHER CONTACT(S):

Mark Fortney, Sustainable Dev., Tech Services (717) 783-9981

BACKGROUND:

The Pennsylvania legislature passed the Building Energy Conservation Act (BECA:Act 222) in 1980 to regulate the energy-related aspects of new construction, additions, and major renovations. In 1986 the act was legislatively updated with regard to requirements for residential buildings (one- and two-family dwelling units, row houses, townhouses and garden apartment construction, not exceeding three stories in height with their own individual and self-supporting HVAC system). The residential standards have been revised three times since BECA was enacted, the last time in 1986. The commercial standards were updated once in 1983. The Pennsylvania Energy Office, which was given certain support responsibilities in Act 222, was dissolved as of June 30, 1995.

STATUS:

State legislation that was being considered in committee would adopt the 1993 BOCA National Building Code as the state building code with the energy provisions being those given in Act 222. A revised building code bill was presented to the house local government committee in May 1996. The bill calls for the adoption of the 1996 BOCA Codes, including the 1995 MEC referenced therein, and the repeal of Act 222. The legislation (HB 1128) passed the house and is being considered by the senate in Fall 1996.

SCOPE:

The BECA is applicable to all new residential and commercial/industrial buildings and to additions to existing construction.

OVERVIEW:

BECA is a mandatory minimum code for all buildings. BECA contains requirements for commercial buildings based on ANSI/ASHRAE/IES 90A-1980 and contains state-developed requirements for residential buildings (see description of residential buildings in the Background section).

Local jurisdictions may not adopt more stringent requirements.

ADOPTION:

The Department of Labor and Industry (DLI) and the Department of Community Affairs (DCA) have the authority to promulgate and upgrade commercial and residential energy standards, respectively, when appropriate, through the regulatory process. The modification process involves public meetings and

hearings prior to finalization. There is no regular updating of the code.

COMPLIANCE:

Compliance is determined by builder or designer certification to DCA or DLI. For residential construction, the DCA has the authority to conduct energy inspections of residential properties within two years of construction completion. The homeowner may use the inspection report to proceed against the builder to achieve compliance. For nonresidential construction, an architect or engineer must sign a compliance statement stating that the building complies with the energy code. No follow-up inspections are conducted for energy.

ENFORCEMENT:

BECA divides the responsibility for administering Act 222 between the DLI for commercial construction and the DCA for residential construction.

Local governments can enforce the residential regulations if they choose. Currently, 141 of 2,600 local governments elect to enforce the BECA requirements.

PRIMARY TECHNICAL CONTACT:

Kurt A. Stenberg
Supervising Mechanical Engineer
State Building Commission
Administration
1 Capitol Hill, 2nd Floor
State House,Suite 143
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PH: (401) 277-6329 **FX:** (401) 277-2599

STATE AGENCY\OFFICE HEAD:

Joseph A. Cirillo, Commissioner/Architect, Rhode Island State Building Commission, (401) 277-3529

OTHER CONTACT(S):

Daniel DeDentro, Commissioner, Rhode Island State Building Commission, (401) 277-3529

BACKGROUND:

The Rhode Island Building Code Commission began its formation process in 1974. By 1977, the state of Rhode Island had adopted a statewide building code. Later, energy provisions were made a part of the state building code. These were modeled after the BOCA Basic Energy Conservation Code. In 1988, the state of Rhode Island amended the energy conservation requirements in the 1987 BOCA National Building Code to modify the thermal requirements for residential and commercial buildings. In January 1992, the 1990 BOCA National Building Code was adopted as the Rhode Island State Building Code, also with state amendments.

STATUS:

The state building code is currently based on the 1990 BOCA NBC and the 1990 NMC with state amendments. The 93 MEC was expected to go into effect during the second half of 1995, but the state's governor placed a moratorium on rulemaking. Thus, the new code (the 93 MEC) was not supposed to take effect (become law) until January 31, 1996. The effective date for the 1993 MEC has been postponed until later in 1996 to coincide with the effective date of the new state building code package.

SCOPE:

The Rhode Island State Building Code is adopted as a mandatory statewide requirement. No amendments are permitted by local governments. The Rhode Island State Building Code applies to all new construction and to additions to existing buildings and to existing buildings leased by the state. Residential buildings are defined as one- and two-family dwellings and multi-family three stories high or less. Commercial buildings exclude residential buildings and include four-story and higher multi-family buildings.

OVERVIEW:

The technical requirements of the Rhode Island building code are those of the 1990 BOCA NBC and NMC with state amendments.

ADOPTION:

The code is updated every three years. The Building Code Standards Committee adopts, promulgates, and administers the state building code.

COMPLIANCE:

Compliance is determined through the building permit and inspection process by local building code officials and the State Building Commission.

ENFORCEMENT:

Enforcement of the Rhode Island State Building Code is the responsibility of the code official in local jurisdictions. The State Building Commissioner is responsible for enforcing the code for all state buildings and buildings built on state-owned property.

PRIMARY TECHNICAL CONTACT:

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South Carolina Bldg. Code & Related Serv.
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Columbia, SC 29211
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STATE AGENCY\OFFICE HEAD:

Gary Wiggins, Asst. Dir., South Carolina Bldg. Code & Related Serv., (803) 734-4182

OTHER CONTACT(S):

Howard Coogler, Analyst, South Carolina State Energy Office, (803) 737-8037

BACKGROUND:

The South Carolina Building Energy Efficiency Standard Act is the energy code of South Carolina and has been a statewide law since 1979. The Act references Appendix E of the Standard Building Code, which in turn references the CABO MEC and ASHRAE/IES 90.1-1989.

The 1993 Building Energy Efficiency Standard Act, enacted by SB 1273, adopts Appendix E of the current version of the Standard Building Code (SBC). The 1994 edition of the SBC requires compliance with the 1993 MEC or ANSI/ASHRAE/IES 90A or 90B. Alternative compliance criteria using a list of thermal envelope requirements is provided for one- and two-family dwellings, thus the code is characterized as a "state developed" code. Commercial requirements are those of ASHRAE/IES 90.1-1989, which is adopted by reference in the adopted CABO MEC.

STATUS:

A bill (S.66), filed in 1994 to require all municipalities and counties to adopt the most current building codes passed the South Carolina State Senate in February 1996, was sent to the Real Estate Subcommittee of the House Labor, Commerce and Industry Committee, where it was rejected. The bill calls for the adoption and enforcement of the latest editions of the Standard Codes (published by the Southern Building Code Congress International) and the MEC (published by the Council of American Building Officials). Forty-two percent of South Carolina counties have not yet adopted the state codes; current law only authorizes but does not require, the adoption of codes. Opposition was based on the need for local governments to raise taxes or fees to implement the codes. The state hopes to reintroduce the same bill after the November elections.

SCOPE:

The code is mandatory for all new construction and additions to existing buildings.

OVERVIEW:

The residential requirements are based on the 1992 MEC, except that one- and two-family dwellings may comply using a less stringent series of envelope requirements specified in the 1993 Building Energy Efficiency Standard Act to accomodate affordability. Commercial requirements are those of ASHRAE/IES 90.1-1989.

ADOPTION:

Adoption of changes is achieved by state legislation.

COMPLIANCE:

Compliance is determined by plan review and inspection by local building officials. Where local government has no building official, the engineer or director of public works or chief fire inspector may be called upon to act as the enforcement agency. Some jurisdictions may accept a registered design professional's seal on a letter stating that the design conforms with the code. Acceptance of such a letter is totally up to the local building official. Disputes between owners, builders, or design professionals and the local building official can be taken to the local Board of Appeals (BOA) for a hearing. Decisions made by the BOA are ethically binding on the participating parties. Details of this process are too lengthy to reprint here and are shown in Chapter One of the SBC.

ENFORCEMENT:

Enforcement is accomplished through local units of government in the normal inspection process. Depending on the size of the local government unit, the same individual may be responsible for performing plan reviews and inspections.

PRIMARY TECHNICAL CONTACT:

Dale Knapp
Energy Program Coordinator
SD Governor's Office of Economic Development
711 East Wells Avenue
Pierre, SD 57501
PH: (605) 773-5032 **FX:** (605) 773-3256

STATE AGENCY\OFFICE HEAD:

Same as above

OTHER CONTACT(S):

BACKGROUND:

In 1978, when the South Dakota building code was first enacted, an energy code was part of Chapter 53 of the State Building Code. However, only three jurisdictions adopted the energy code portion of the state building code. As of 1994, no jurisdictions actively enforced the energy code portion of the state building code.

STATUS:

South Dakota's EPAct response requests a two-year extension to consider updating its codes and is requesting an additional year to complete an economic impact study.

Future plans include attempts to adopt the 1992 MEC as the statewide residential standard and the ASHRAE/IES 90.1 standards for nonresidential buildings. These proposals must first be processed through the state legislature.

SCOPE:

The 1978 energy code is mandatory for all but state-owned buildings.

OVERVIEW:

The Model Code for Thermal and Lighting Efficiency in Building Construction for the state of South Dakota was adopted in 1978 and is based on the 1977 Model Code for Energy Conservation (MCEC). The last revision was in 1986. However, it did not have force of law, so the 1978 version is the legal code.

ADOPTION:

Changes must first be processed through the state legislature. Changes to the State Building Code are processed on a three-year code cycle corresponding with the publication of the Uniform Codes. Local jurisdictions may adopt energy requirements without state approval. Only larger jurisdictions have elected to do so at this time.

COMPLIANCE:

Compliance with local codes is decided by local jurisdictions..

ENFORCEMENT:

There is no enforcement of the energy code at the state level. If a local energy code is adopted, it is enforced

at the local level.

PRIMARY TECHNICAL CONTACT:

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Energy Division
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Nashville, TN 37243-0405
PH: (615) 741-2994 **FX:** (615) 741-5070

STATE AGENCY\OFFICE HEAD:

Cynthia Oliphant, Director, Tennessee Dept. of Econ. & Com. Development, (615) 741-2994

OTHER CONTACT(S):

Fred Stratton, Local Gov. Lender, Tennessee Dept. of Econ. & Com. Development, (615) 741-2994

BACKGROUND:

Tennessee's first energy code, the 1977 Model Code for Energy Conservation (MCEC), was adopted by the legislature in 1978. This code was in effect until July 1, 1994, at which point the 1992 CABO MEC was adopted pursuant to Public Chapter 193, House Bill 641.

STATUS:

As of July 1, 1994, Tennessee adopted the 1992 CABO MEC statewide for all residential buildings unless excluded by the MEC. There are no initiatives to update to the 1995 MEC, nor have there been any initiations to repeal the 1992 MEC.

SCOPE:

The 1992 Model Energy Code applies to all buildings except non-residential farm buildings and those exempted in Section 101 of the MEC.

OVERVIEW:

The code is the 1992 CABO MEC.

ADOPTION:

State codes are passed through the legislature and apply to all construction. They must be adopted locally before they are enforced.

COMPLIANCE:

In the jurisdictions that adopt codes, compliance can be demonstrated during the plan review stage and verified by local inspection. Some jurisdictions may accept the registered design professional's seal on a letter stating that the design conforms with the code. Acceptance of such a letter is completely up to the local building official.

ENFORCEMENT:

Where codes are adopted, enforcement is accomplished through local units of government in the normal inspection process for new construction and additions. Depending on the size of the local government unit,

the same individual may be responsible for performing plan reviews and inspections. The state provides no enforcement. Therefore, if the code is not locally adopted, there is no enforcement.

PRIMARY TECHNICAL CONTACT:

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Texas State Energy Conservation Office
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Austin, TX 78711
PH: (512) 463-1080 **FX:** (512) 475-2569

STATE AGENCY\OFFICE HEAD:

Tobin Harvey, Director, Texas State Energy Conservation Office, (512) 463-1931

OTHER CONTACT(S):

Blanche Saldivar, Texas State Energy Conservation Office, (512) 463-1959

BACKGROUND:

Except for state-owned buildings, Texas has no mandatory statewide energy code for either residential or non-residential. Texas is a home rule state; hence, state law cannot override local law. For state-owned non-residential buildings, Texas has adapted ASHRAE/IES 90.1-1989 for mandatory use. This standard, which originally went into effect in June 1989, was most recently updated in May 1993.

For state-owned or -funded residential buildings, the 1992 CABO MEC has been adopted for mandatory use. For residential buildings not owned by the state, Texas is pursuing a program to increase the voluntary adoption of the CABO MEC by local code jurisdictions.

User-friendly compliance tools have been developed under the sponsorship of DOE and the State Energy Conservation Office, and are being used in a series of training workshops. These workshops are based on either the 1992, 1993, or 1995 CABO MEC, depending on which has been locally adopted.

STATUS:

Except for state-owned or -funded buildings, Texas has no mandatory statewide energy code for either residential or non-residential buildings. Texas is a home rule state. Local governments can establish energy codes by adopting provisions as part of their locally adopted building codes. For residential buildings not owned by the state, Texas is pursuing a program to increase the voluntary adoption of the CABO MEC by local code jurisdictions. User-friendly compliance tools, developed by Texas, are being used in a series of training workshops.

For state-owned or -funded, low-rise residential buildings, their design must be in compliance with the 1992 CABO MEC.

For state-owned or -funded non-residential buildings, their design must be in compliance with the state's Building Energy Conservation Design Standard, which is a Texas adaptation of ASHRAE/IES 90.1-1989. An updated version of this standard, which will include elements of ASHRAE Standard 90.1P (Public Review Draft dated March 1996), will be issued for public comment in Texas in Fall 1996, and in final form in December 1996.

For non-residential buildings not owned by the state, local code jurisdictions may voluntarily adopt ASHRAE/IES 90.1-1989, the Texas Building Energy Conservation Design Standard, or revised versions of these, or other standards.

SCOPE:

The Texas Building Energy Conservation Design Standard is applicable to all state-owned nonresidential (or high-rise residential) buildings. The 1992 CABO MEC is applicable to all state-owned, low-rise residential buildings.

OVERVIEW:

The code is a Texas adaptation of ASHRAE/IES 90.1-1989 for state-owned commercial buildings including high-rise residential buildings and state-supported institutions of higher learning. The code is the 1992 CABO MEC for state-owned low-rise residential buildings.

ADOPTION:

For buildings other than state-owned buildings, the code needs to be adopted by local code jurisdictions to be implemented. Such adoption is normally achieved through a vote of the city council or county commission. Depending on the form of government, the mayor may be required to sign the law. Most local jurisdictions adopt either the Standard or Uniform Building Codes, but a few adopt the National Building Codes. The energy codes or standards are normally adopted by reference in the applicable building code.

For state-owned or -funded buildings, the non-residential standard and the residential MEC are adopted through the state's administrative process of publication, public comment, and hearings.

COMPLIANCE:

For state-owned or -funded buildings, the design professional submits to the cognizant state agency a completed Compliance Checklist and certification that the design is in compliance with the non-residential standard or the residential MEC.

For all other buildings in localities that adopt a nonresidential standard of the MEC, compliance is determined through the permit process. Typically, plans are submitted and reviewed and then inspections are made. After successful completion of this process, the building department issues a certificate of occupancy.

ENFORCEMENT:

For state-owned or -funded buildings, enforcement is the responsibility of the cognizant state agency.

For all other buildings, enforcement is accomplished through the cognizant local government jurisdiction. If a jurisdiction adopts an energy code, enforcement is accomplished through the permit/inspection process for new construction and additions. Depending on the size of the jurisdiction, the same individual may be responsible for performing plan reviews and inspections.

PRIMARY TECHNICAL CONTACT:

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STATE AGENCY\OFFICE HEAD:

Michael L. Glenn, Utah Office of Energy Services, (801) 538-8654 [(801) 538-8660 FAX]

OTHER CONTACT(S):

Jim Wingerden, Office of Energy and Resource Planning, (801) 538-5428
Jerry Zenger (Commercial Only), (801) 581-6348

BACKGROUND:

A Utah Uniform Building Standards Act was passed in 1953. In January 1976 a bill was passed that provided for the adoption of an energy conservation code for state buildings, suggested voluntary compliance by the state's political subdivisions, and recommended voluntary compliance by the building industry of the state. In March 1977, legislation was passed requiring the Building Board to promulgate an energy conservation code and providing political subdivisions and the State Board of Education authority to adopt their own code or a modified version of the state code. Effective January 1978, a code based on the Model Code for Energy Conservation (MCEC) went into effect.

More recently in July 1993, the Uniform Building Standards Act was amended to provide that the Division of Professional Licensing, along with the Building Code Commission, shall adopt by rule the specific edition of the National Electrical Code (NEC), Uniform Building Code (UBC), Uniform Mechanical Code (UMC), and Uniform Plumbing Code (UPC) to be used as the state standard. Power was also given to adopt successor editions of the adopted code.

On February 14, 1995, amendments issued adopted Appendix Chapter 13 of the 1994 Uniform Building Code (UBC) with a sole reference to the 1993 MEC for low-rise residential buildings and a sole reference to ASHRAE/IES 90.1-1989 for high-rise residential and commercial buildings.

STATUS:

On February 14, 1995, the 1993 MEC and by reference therein ASHRAE/IES 90.1-1989, was adopted and became effective that date.

SCOPE:

The energy code is a statewide mandatory minimum that the local jurisdictions are required to adopt and enforce. The local jurisdiction may amend the code to be more stringent with prior approval from the Division of Occupational and Professional Licensing (DOPL) of the Department of Commerce.

The state energy code is mandatory for all heated and/or mechanically cooled residential and nonresidential construction, including state-owned and -operated buildings and for new additions as outlined in the 1993 CABO MEC and ASHRAE/IES 90.1-1989.

OVERVIEW:

The low-rise residential energy provisions are those given in the 1993 MEC. High-rise residential and all commercial buildings must comply with ASHRAE/IES 90.1-1989.

ADOPTION:

Changes to the energy code are submitted to the Uniform Building Code Commission. The proposed change is reviewed by the Commission at their monthly meetings to decide if the proposal warrants further consideration. If accepted, the Commission then determines if the enforcement will be enacted as a statewide amendment or restricted to a specific locality.

Currently, changes can be submitted to the Commission at any time. Changes are published on March 1 and September 1 of each year. Approved changes are incorporated into the code on a three-year cycle corresponding with the ICBO Uniform Code cycle. Enforcement by the local enforcement agency is mandatory once changes are approved.

COMPLIANCE:

All residential buildings (one- and two-family dwellings, and multi-family dwellings three stories high and less) comply with the 1993 MEC using the compliance pathways, plan submittal, and plan review as specified within that code. Nonresidential and high-rise residential buildings (all those that are not classified as residential) that must comply with ASHRAE/IES 90.1-1989 follow the compliance pathways in that code and go through a similar plan submittal and plan review process.

Plans and specifications must be submitted when required by the local jurisdiction. Field inspections, as part of the normal building inspection process, are required prior to the issuance of a certificate of occupancy.

ENFORCEMENT:

Enforcement of the Energy Code is part of the enforcement of the State Building Code, which is mandatory statewide. However, actual enforcement of the energy code provisions by the local enforcement agency is sporadic. Educational programs that begun in September/October 1994 and are expected to improve the actual compliance to the energy code requirements.

DOPL provides the required enforcement for all state-owned or -funded buildings.

PRIMARY TECHNICAL CONTACT:

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Energy Efficiency Division
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STATE AGENCY\OFFICE HEAD:

Richard Sedano, Commissioner, Vermont Dept. of Public Service, (802) 828-2321

OTHER CONTACT(S):

Scudder Parker, Vermont Dept. of Public Service, Director of Energy Efficiency, (802) 828-4009
Jeff Forward, Vermont Dept. of Public Service, Residential Codes, (802) 828-4072
Randall Lloyd, Vermont Dept. of Public Service, Commercial Codes (802) 828-4020

BACKGROUND:

The State of Vermont does not have a statewide energy code. However, Vermont does have Act 250, a land use and development control law. Act 250 was first adopted in 1970 with the energy criteria added in 1973. Act 250 requires that certain developments incorporate energy conservation measures that employ the best available technology based on life-cycle cost analysis. The Vermont Department of Public Service (DPS) reviews and provides comments on Act 250 applications to nine District Environmental Commissions which issue land use permits. In addition, all state-funded new construction begun after June 30, 1993, must meet the State Buildings Energy Conservation Standard, E/1991, which is a modified version of ASHRAE/IES 90.1-1989. In 1991, the city of Burlington adopted an Energy Efficiency Ordinance for all new residential and commercial construction, based on ASHRAE/IES 90.1-1989.

A state task force was convened in 1995 to study energy standards and make a recomendation to the governor and legislature.

STATUS:

There is no mandatory statewide energy code. State-funded new commercial construction must comply with a modified version of ASHRAE/IES 90.1-1989, under the jurisdiction of the Vermont Department of Labor and Industry. The city of Burlington Energy Efficiency Ordinance is under the jurisdiction of the Burlington Department of Public Works.

The state task force recommended adoption of the 1995 MEC, with some modifications for new residential construction. The legislation failed and may be reintroduced in 1997. The state is part of the multi-state commercial code effort.

SCOPE:

State-funded new construction falls under a modified version of ASHRAE/IES 90.1-1989. Act 250 covers other buildings, both residential and commercial, as does the city of Burlington Energy Efficiency Ordinance. The fraction of residential buildings evaluated under Act 250 is 33% of single family residential, 66% of multi-family, and over 50% of all commercial/industrial buildings. The determining factor is the type of land use and the local zoning laws. The city of Burlington Ordinance covers all new

residential and commercial construction in Burlington.

OVERVIEW:

State buildings must follow the requirements of a modified version of ASHRAE/IES 90.1-1989. Act 250 requires that building designs incorporate life-cycle cost-effective conservation measures. The Department of Public Service publishes recommendations for residential new construction to assist Act 250 applicants in satisfying the energy criteria. The DPS has worked with the state's utilities to develop a list of typical energy efficiency measures for commercial projects.

ADOPTION:

State code revisions go through a process specified in the State Administrative Procedures Act, including public notification, public hearing, testimony, and comments. Act 250 issues are addressed by the District Environmental Commissions or the appellate Environmental Board. The Burlington City Council oversees the city ordinance.

COMPLIANCE:

Act 250 compliance is determined by the nine quasi-judicial District Environmental Commissions. The Vermont Department of Labor and Industry determines compliance for state-funded new commercial construction. The City of Burlington Department of Public Works determines compliance with the city ordinance

ENFORCEMENT:

The Vermont Twenty Year Electric Plan (December 1994) states that while Act 250 has undoubtedly saved energy, there is no effective enforcement of the energy requirements. The same is true for the standard for state-funded new commercial construction projects. The DPS and several utilities have agreed to develop an enforcement capability for Act 250 commercial projects. The City of Burlington Department of Public Works enforces the Burlington city ordinance.

PRIMARY TECHNICAL CONTACT:

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STATE AGENCY\OFFICE HEAD:

Jack A. Proctor, Department Deputy Director, State Building Codes Office, (804) 371-7150

OTHER CONTACT(S):

Roxanna Rickman, Associate Director, Training & Certification Office, VA Dept. of Housing and Community Development, (804) 371-7180
William Beachy, Training & Certification, Virginia Dept. of Housing, (804) 371-7183

BACKGROUND:

Virginia adopted a statewide building code in 1973 based on the BOCA Basic Codes. The statewide requirements cannot be modified by the local jurisdictions. Prior to 1973, local government was free to adopt codes. The current building code adopts the 1993 CABO MEC by reference.

STATUS:

The energy provisions are those given in the 1993 CABO MEC via adoption by reference in the 1993 BOCA NBC, as amended by Virginia in the Virginia Uniform Statewide Building Code (VUSBC). The Board of Housing and Community Development is beginning the process of adopting the 1996 BOCA Codes. They are likely to be adopted in early 1997. It is not clear if they will also update by adopting the 1995 MEC at that time.

SCOPE:

The code is a statewide minimum standard that local jurisdictions may not amend. The code is applicable to all new buildings in the commonwealth. The VUSBC requires that any new construction on existing buildings comply with the requirements of the current code; unaltered portions of the building are not required to comply with the current code. If an addition to the building is constructed the new portion of the building must follow the requirements of the CABO MEC for energy conservation criteria, without requiring the existing building to comply.

OVERVIEW:

The State of Virginia adopted the 1993 BOCA National Building Code (NBC) with amendments as the Virginia Uniform Statewide Building Code or VUSBC, effective April 1, 1994. Under Chapter 13, the 1993 NBC allows for compliance using either ANSI/ASHRAE/IES 90A-1980 and 90B-1975 or the CABO MEC. The Commonwealth of Virginia has amended Chapter 13 to adopt only the 1993 MEC, which includes ASHRAE/IES 90.1-1989.

ADOPTION:

Virginia adopts the BOCA National Building Code a year after the publication year every three years. The Board of Housing and Community Development, (a Governor-appointed board) has the authority to adopt

changes to the VUSBC. The process is very similar to the federal regulatory process. The Board of Housing and Community Development may adopt whatever provision it deems necessary. The adoption process for modifications may take nine months. Publications include the new provisions and modifications of the code. Public hearings are also involved in the process.

COMPLIANCE:

Compliance is demonstrated through plan review and inspection.

ENFORCEMENT:

The local building department is responsible for enforcing the requirements of the VUSBC through plan review and inspections. An appeal to the code official's decision is also accomplished on the local level.

PRIMARY TECHNICAL CONTACT:

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Energy Committee Staff
Washington State Dept. of Community Trade and
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STATE AGENCY\OFFICE HEAD:

Jim Beaver, Chairman, Washington State Building Code Council, (206) 586-2251

OTHER CONTACT(S):

John Devine, Energy Code Specialist, Washington State University Cooperative Extension Energy Program, (360) 956-2095

BACKGROUND:

Washington's first energy code, adopted in 1977 by statute, was a voluntary requirement. The State Building Code Act (SBCA) and State Energy Code Act (SECA) were passed by the legislature in 1985. The SBCA led to the formation of the State Building Code Council, which oversees all building and energy codes within the state.

The first statewide energy code, which was adopted in 1986, was applicable to all new buildings, and was based on ANSI/ASHRAE/IES 90A-1980.

In 1990 the Revised Code of Washington (RCW) was amended by House Bill 2198. HB2198 amended RCW19.27A (Energy Related Building Standards) and increased the insulation requirements for residential buildings based upon the cost of the energy source. Different insulation requirements were established based upon climate zone and fuel type. The State Ventilation and Indoor Air Quality Code was also established at that time.

In 1991 another amendment to RCW 19.27A resulted in a modification of the nonresidential energy standards that were contained in the 1986 energy code. The modifications included more restrictive exterior envelope insulation requirements, increased equipment efficiencies, more restrictive controls on the HVAC equipment, minimum motor efficiencies, and reduced allowable lighting power allowances. The updated code is based on the ASHRAE/IES 90.1-1989 and became effective April 1, 1994.

The entire energy code is contained in the State of Washington Administrative Code (WAC), Chapter 11 (Chapter 51-11 WAC). Chapters 1-10 contain the requirements for R-occupancy buildings (1991 UBC), which include single-family dwellings, apartments, and residential portions of hotels and motels. Chapters 11-20, Nonresidential Energy Code, contain the requirements for all other building occupancies.

STATUS:

The nonresidential energy requirements were updated in April 1994.

Washington's EPAct certification indicates that both residential and nonresidential codes meet the 1992

MEC and ASHRAE/IES 90.1-1989, respectively.

The State Energy Office was terminated on July 1, 1996 and its functions were assumed by other agencies.

SCOPE:

The state energy code is mandatory for all construction covered by the UBC, including state-owned and -operated buildings that are constructed, altered, and repaired within the state. The energy code requirements are a statewide minimum/maximum (i.e., they cannot be modified by local jurisdiction) for residential construction and a minimum requirement (i.e., they may be modified if approved) for other construction.

All non-residential structures are required to comply with the statewide Nonresidential Energy Code using one of three compliance paths.

All residential structures are required to comply with the statewide Residential Energy Code.

OVERVIEW:

For both residential and nonresidential buildings, the state is divided into two climate zones: one west of the Cascade mountain range and one east of the range. Different exterior envelope thermal requirements are specified for the two zones with other requirements unchanged between zones.

The present exterior envelope requirements for the residential code are based on Bonneville Power Administration (BPA) Model Conservation Standards (MCS). The MCS was established by BPA for use by the utilities to reduce electric energy usage through the Super Good-Cents program. This standard was formulated into code format by ICBO with the institution of the Northwest Energy Code (NWEC). The present residential energy code uses the envelope requirements of the NWEC for electrical resistance heating. Reduced insulation values for other fuels are used based on the cost of providing the specific fuel type.

The Nonresidential Energy Code is based on ASHRAE/IES 90.1-1989 and subsequent ASHRAE research.

For both residential and non-residential buildings, the building envelope is regulated based on fuel type. The first category, Buildings Using Electric Resistance Heating, is required to meet more stringent envelope insulation requirements. The second category, Other Fuels, which includes heat pumps with or without electrical resistance supplemental heating, variable air volume systems with or without electrical resistance heating, and all other fuel types, has reduced insulation requirements.

HVAC efficiency and control requirements parallel those of ASHRAE/IES 90.1-1989.

Lighting power allowances are more stringent than ASHRAE/IES 90.1-1989. The code does not allow increases for automatic controls.

ADOPTION:

Changes to the energy code are submitted to the State Building Code Council on standardized forms. Within 60 days of receipt of the proposed change, the Council decides if the proposal warrants further consideration. If the change is accepted by the Council, rulemaking begins and the proposed changes are sent to a Technical Advisory Group (TAG) for review. The TAG is composed of members with varying expertise in the construction field related to the proposed change. After it has completed its review, the TAG, by way of a series of meetings, submits its recommendations back to the Council. The Council then makes the final determination about the acceptance of the proposal. Legislative oversight is provided because the State Building Code Council (SBCC) has two senators and two representatives as ex-officio nonvoting council members.

Changes are instituted on a three-year cycle corresponding with the ICBO Uniform Building Code cycle. Once final approval is granted by the SBCC, the rule is filed with the Washington State Code Reviser and then published in the Washington State Register. The final rule becomes effective after the next legislative session.

COMPLIANCE:

Compliance is determined by plan review and inspection by the local building official.

Plans and specifications must be submitted unless otherwise required by the building official.

The building official may also require the plans to be stamped by a registered design professional for more complicated designs. The residential code establishes minimum/maximum requirements concerning R-values, and equipment efficiencies. Field inspections are required before the issuance of a certificate of occupancy. The nonresidential energy code sets minimum inspection requirements for the building envelope, mechanical systems, and lighting installations. The building official has the power to interpret both the residential and the nonresidential energy code. The building official also may request the SBCC to render written interpretations of both the residential and nonresidential energy codes.

ENFORCEMENT:

For nonresidential buildings, the city, county, or their designated enforcement agency has the option of enforcing the code or requiring the building owner to hire a certified nonresidential energy special inspector to perform the plan review and/or field inspection. The Energy Plan Review and Special Inspectors are certified through a program regulated by the Washington Association of Building Officials (WABO). The certification involves a comprehensive testing program and credential requirements, with re-certification when changes are made to the code.

Residential enforcement is regulated by the city, county, or their designated enforcement agency. Technical assistance is offered through the Washington State University Cooperative Extension Energy Program and through the Utility Code Group. Washington State University also serves as a technical advisor to the SBCC for energy-related items and assists the TAG.

PRIMARY TECHNICAL CONTACT:

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STATE AGENCY\OFFICE HEAD:

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OTHER CONTACT(S):

Rich Corcovilos, Office of the State Fire Marshal, (304) 558-2191

BACKGROUND:

The West Virginia legislature passed laws dealing with energy conservation in response to the energy crisis. The state requirements consist of three separate laws. In 1977, legislators passed the West Virginia Energy Conservation Revolving Loan Fund, and in 1980 they passed the Energy Cost Reduction Guidelines.

The State Building Code was authorized by the Legislature in 1988. The State Fire Marshal had requested this legislation in 1987. The State Fire Commission approved the request and worked with the legislature to successfully pass legislation authorizing the State Fire Commission to promulgate a State Building Code.

The legislature has since adopted the 1990 BOCA National Energy Conservation Code.

STATUS:

Legislation was introduced in the last legislative session that would have adopted the 1993 BOCA National Building Code (NBC). Through a clerical oversight, the legislature did not include the adoption of the 1993 BOCA NBC in the final legislation. The State Fire Marshal requested an emergency rule from the Secretary of State enacting the 1993 BOCA NBC. The request was approved. The legislature is expected to pass a law formally adopting the 1993 BOCA NBC in the fall. Currently, the emergency rule is in effect, so, the 1993 BOCA NBC is the mandatory statewide building code.

It is reported that the 1993 MEC was adopted in May 1996, but this has not been confirmed.

SCOPE:

The energy code applies to all new construction and to new additions to existing construction. The energy conservation requirements passed by the state are statewide requirements. Local governments can make the law more stringent, but cannot amend the rules to be less stringent. Local jurisdictions that adopt codes must adopt the state codes.

OVERVIEW:

West Virginia has adopted the 1993 BOCA National Energy Conservation Code (NECC), which allows compliance with ANSI/ASHRAE/IES 90.1-1989, ANSI/ASHRAE/IES 90A-1980 and ASHRAE/IES 90B-1975, or the requirements of the 1993 CABO MEC to meet the provisions of the code. The BOCA Energy

Conservation Code contains requirements for the exterior envelope of a building and regulates the selection of the HVAC, service water heating, and electrical distribution system. These requirements are applicable to all new buildings. These requirements do not apply to buildings that are exempted by the local jurisdiction, mobile homes, structures neither heated or cooled, structures not designed for human occupancy, historic buildings exempted by the local government, and buildings that meet one of the exemptions listed in the code. State-owned buildings must comply with the State Fire Code. There are no energy provisions included in this code. Alternative designs are permitted.

ADOPTION:

The state requirements must be adopted by local jurisdictions for local enforcement. However, if local jurisdictions do not adopt the energy code, it is the responsibility of the contractors, builders, and architects to comply with the provisions of the code. The West Virginia State Fire Commission adopts the BOCA National Energy Conservation Code and is responsible for its promulgation, which is revised every three years by BOCA.

The Administrative Procedures Act requires public hearings on the adoption of all codes by the State Fire Commission. The State Fire Commission promulgates the State Fire Code and the State Building Code. The State Fire Commission has the authority to modify the code.

When the State Fire Commission proposes to adopt a code or requirement pertaining to a specific problem under its jurisdiction, the code is filed with the Secretary of State. The Commission conducts a public hearing and can modify the rule with the Secretary of State as an agency-approved rule. The rule is then filed with the Legislative Rule-Making Review Committee. Once the rule is approved or modified by the Legislative Rule-Making Review Committee, the rule is introduced as a separate bill during the legislative session. The rule as a proposed bill must be passed by the legislature and signed into law by the Governor.

Legislation need not be initiated by the State Fire Commission; the legislature can modify the code by proposing legislation at any time during the regular session.

COMPLIANCE:

In jurisdictions that adopt the energy code, compliance is determined by plan review and inspection by local building officials. In jurisdictions that do not adopt the energy code, compliance is the responsibility of the contractors, builders, and architects.

ENFORCEMENT:

The local jurisdiction that adopts the State Building Code is the enforcing authority. The local code official reviews the plans and completes an inspection of the building. In the case of local jurisdictions that do not adopt the energy code, enforcement of the code is the responsibility of the State Fire Marshal.

PRIMARY TECHNICAL CONTACT:

Ergun Somersan
Wisconsin Dept. of Commerce
Building Energy Codes
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STATE AGENCY\OFFICE HEAD:

Marv Roshell, Administrator, Wisconsin Dept. of Commerce, (608) 266-1816

OTHER CONTACT(S):

Jay Jorgensen, Wisconsin Dept. of Commerce, (608) 267-7113

BACKGROUND:

The first state building code in Wisconsin was established in 1914. All of the referenced codes listed below were adopted in the mid to late seventies. The state was looking for ways to reduce its dependence on foreign (other states as well as other countries) energy sources. The state was also attempting to reduce the need for future power plant construction by reducing or controlling the amount of electricity used for heating purposes.

"Industry Labor and Human Relations," Chapter 63 ([ILHR] 63), which regulates energy conservation in multi-family (other than one- and two-family dwellings) residential and other commercial buildings, was created in May 1978 and became effective July 1, 1978. ILHR Chapter 22, which regulates energy conservation measures in one- and two-family dwellings, was created in May 1978 and became effective December 1, 1978. ILHR Chapter 67, which regulates energy conservation measures in existing residential rental properties, was created February 1, 1983, and became effective January 1, 1985.

STATUS:

Among numerous other criteria applicable to building design and construction, the State of Wisconsin enforces the Uniform Dwelling Code, ILHR Chapter 22 (new one- and two-family dwelling units); the Building and Heating, Ventilation, and Air Conditioning Code, ILHR Chapter 63 (three or more units for residential and commercial buildings); and the Rental Unit Energy Efficiencies Standards Code, ILHR Chapter 67-68 (existing residential rental properties). These documents were promulgated previously by the Department of Labor, Industry, and Human Relations (DILMR). Those responsibilities have were to the Department of Commerce on July 1, 1996.

On April 1, 1997 new requirements for commercial and high-rise residential buildings will go into effect. These new comprehensive requirements are modeled after ASHRAE/IES 90.1-1989.

SCOPE:

The code applies to all new construction except Chapter 67 requirements.

OVERVIEW:

Wisconsin's ILHR 63 envelope requirements are modeled after ASHRAE/IES 90.1-1989.

The provisions in ILHR 22 for one- and two-family dwellings include a prescriptive list of requirements for the thermal envelope. The requirements differ depending on whether the home is electrically heated. The ILHR 67 code (for existing residential rental properties) may require up to R-11 insulation values in side walls, R-38 insulation values in attics, and R-19 in floors over vented spaces. These values are dependent on the heating degree days of the area.

ADOPTION:

The energy codes are updated every three to five years. The code is adopted by the Department of Commerce after a code development and public hearing process. The following program describes the process while it was under DILMHR, because it is not clear how the recent (July 1, 1996) transfer of these responsibilities to the Department of Commerce will be implemented.

The state code provisions are developed within the Office of Codes and Applications, which is part of the Safety and Buildings Division of the DILHR. Any modifications to the code (suggested by builders, property owners, material suppliers, architects, engineers, staff, or other state agencies) are developed in accordance with Chapter 227 of the Wisconsin Statutes. This procedure involves the Safety and Building Division drafting proposed administrative rules. These rules are based on user suggestions, which are then reviewed by an outside committee of industry representatives. The code language is then presented to the Secretary of DILHR. Once approved by the Secretary of DILHR, the code proposals are submitted for the public hearing comments. Following any changes after the public hearings, the code is transferred to the legislative committee for approval. If approved, the department decides on an effective date based on printing, distribution, and other concerns.

ILHR Chapter 63 may be changed by the local governments or agencies, as long as the alternative method is as restrictive as the referenced code.

COMPLIANCE:

Compliance is determined through plan review and inspection by local or state building officials for ILHR 22 and 63.

Under Chapter ILHR 68, the Department licenses 750 private individuals who conduct energy audits when residential rental properties are sold. The energy audits for compliance are commissioned by the owner of the property within one year of transfer. The owner and the Department are given a copy of the compliance certificate.

ENFORCEMENT:

After plan review by state or certified municipality, ILHR 63 requirements are enforced in the field by the local municipal building inspectors for communities that have local inspection. In communities that do not have a local inspector, the state DILHR's field inspectors are responsible.

Chapter ILHR 22 is enforced by the local municipal building inspector after the municipality adopts the code. If the jurisdiction chooses not to adopt and enforce the code, DILHR provides for the administration and enforcement of the code. Enforcement is mandatory for municipalities with populations over 2500.

Chapter ILHR 67-68 inspections are conducted by private sector inspectors who are licensed by the DILHR. All enforcement is done by DILHR-certified inspectors and plan examiners.

PRIMARY TECHNICAL CONTACT:

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STATE AGENCY\OFFICE HEAD:

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OTHER CONTACT(S):

BACKGROUND:

The 1976 edition of the Uniform Codes was adopted in 1977. Prior to 1977, the State Fire Marshal's Office adopted and enforced the NFPA standards. Since 1977, the state has adopted the current version of the Uniform Building Code consistent with the three-year cycle that is published. The current energy provisions are contained in Appendix Chapter 53 of the 1991 Uniform Building Code, which references the 1989 MEC.

STATUS:

The energy provisions contained in Appendix Chapter 53 of the Uniform Building Code are recommended statewide minimums that local jurisdictions may, but are not required to, adopt and enforce. Code provisions may be modified by the "local enforcement" community without state approval to be more restrictive than requirements in Chapter 53. The state recommends compliance with the energy codes for all buildings.

SCOPE:

The state energy code is recommended, not required, for all residential and nonresidential buildings that are heated and/or mechanically cooled and for new additions as specified in the 1989 MEC.

OVERVIEW:

The state of Wyoming uses Chapter 53 of the 1991 Uniform Building Code which, in turn, references the 1989 MEC published by the CABO, with no state amendments.

ADOPTION:

Changes to the energy code may be submitted to the Department of Fire Prevention and Electrical Safety (DFPES). This is reviewed by DFPES and recommendations are submitted to the Governor-appointed Building Codes Council. If the changes are approved by the council, then they are adopted at the September meeting and are placed in effect in January of the following year.

Local adoption is required before the energy provisions have the force of law.

COMPLIANCE:

Compliance is determined by plan review and inspection by local code officials in jurisdictions that have adopted energy provisions as a part of their building code.

ENFORCEMENT:

Towns and counties that are established as "local enforcement" may (but are not required to) enforce an energy code at the local level. Currently, 20 towns and counties are established as "local enforcement." As part of their normal building inspection process, the enforcement agency performs field inspections in these towns and counties.

DFPES has the authority to issue written interpretations.

PRIMARY TECHNICAL CONTACT:

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Building Permits & Inspection Office
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STATE AGENCY\OFFICE HEAD:

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OTHER CONTACT(S):

Carol Baker, Program Coordinator, Guam Energy Office, 011 (671) 477-0564/0538/0557

BACKGROUND:

The Uniform Building Code was first adopted in 1979 by the 14th Guam Legislature. Public Law 14-112 adopted Parts II through XII and appendices of the latest edition of the UBC and added these sections to the Guam Building Law. The Guam Building Law was enacted in 1952 but only incorporated administrative provisions of the building code. In 1980, Public Law 17-76 revised the building law and stated that whenever the UBC is updated the Department of Public Works (DPW) will automatically recognize the latest edition as the standard for design and construction.

STATUS:

The UBC is a minimum requirement for the island of Guam. The 1994 edition of the UBC is currently being enforced by the DPW. Through adoption of appendices to the UBC, the 1993 MEC would therefore be applicable.

SCOPE:

The UBC applies to all new building projects on Guam as well as certain additions, alterations, and repairs to existing buildings. The UBC is used as the standard for design and construction for commercial buildings and multi-family and single-family dwellings.

OVERVIEW:

The UBC establishes the technical requirements and minimum standards that regulate building planning, fire protection, occupant needs, building envelope, structural systems, structural materials, and building services. Building services include electrical systems, mechanical systems, plumbing systems, and elevators, dumbwaiters, escalators, and moving walks. The provisions of the 1993 MEC would apply as well.

ADOPTION:

The UBC was adopted with provisions that allow for DPW to administer the latest edition of the code. Buildings under construction have to comply with major safety issues if practical.

When the UBC is updated, the DPW must notify all affected parties that an updated UBC is in use. Where there are Guam amendments to the UBC, such amendments must be published.

COMPLIANCE:

The DPW requires that plans for concrete structures be designed by professional architects and engineers. Plans for all commercial and multi-family buildings must be stamped and signed by a registered architect or engineer. Building plans are submitted to the permitting office for review by all the government agencies for clearances. DPW conducts plan review for all plans submitted for building permit.

ENFORCEMENT:

The DPW is the agency that enforces the UBC on private and public buildings. All plan reviews are conducted by engineers and architects. Field inspections are conducted by trained and experienced building inspectors. Appeals to DPW decisions are heard by the Contractors Licensing Board. Other appeals (not on DPW decisions) are heard by the Territorial Planning Commission.

PRIMARY TECHNICAL CONTACT:

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STATE AGENCY\OFFICE HEAD:

Mr. Edward M. DeLeon Guerrero, Secretary, Office of the Secrectary, Dept. of Public Works,

OTHER CONTACT(S):

Ms. Jocelyn Guerrero, Energy Director, Dept. of Public Works, 011(670) 322-9229

BACKGROUND:

The first Building Safety Code of the Commonwealth of the Northern Mariana Islands (CNMI) was enacted by the 6th Northern Marianas Commonwealth Legislature and was signed into Public Law on February 2, 1990. The Codc adopts the 1991 Uniform Building Code including Chapter 53 (for commercial and all multi-family buildings) and the 1989 CABO One- and Two-Family Dwelling Code (OTFDC) for all one- and two-family dwellings. It was only on January 2, 1992, that the Building Safety Code was first enforced with the establishment of the Building Safety Code Division in the Department of Public Works (DPW).

The Building Safety Code Division processes an average of 250 building permit applications for multi-family residential and commercial buildings per year and an average of 150 building permit applications for single-family dwellings per year.

STATUS:

The code is a mandatory minimum in the entire CNMI. It adopts the 1991 UBC for all multi-family residential and commercial buildings and the 1989 CABO OTFDC for one- and two-family dwellings.

SCOPE:

The code is a mandatory minimum in the entire CNMI for all multi-family and commercial buildings and single-family dwellings.

The code is applicable to all new and renovated buildings used for human occupancy, including government-owned buildings. All multi-family residential and commercial structures (other than Use Group R-3) are covered by the Uniform Building Code and all single-family dwellings (Use Group R-3) are covered by the CABO OTFDC.

OVERVIEW:

The code sets forth the technical procedures, requirements, and minimum standards that regulate and control the design, construction, enlargement, quality of materials, use and occupancy, location, removal and maintenance of all buildings and structures as well as electrical, plumbing, mechanical and boiler installations within the CNMI and certain specifically regulated equipment..

Water Conservation System Required: The Building Safety Official shall require the construction of water

catchment facilities in all buildings to which the code applies. To the greatest extent feasible such catchments shall be sized to provide adequate water to flushing all toilets in the building. The Building Safety Official is encouraged to approve alternative systems of sewage disposal that result in the conservation of potable water and meet all applicable standards of public health.

ADOPTION:

The Building Safety Code was developed through legislative action. The rules and regulations governing the administrative procedures of the Building Safety Code were formulated by the DPW and were put up for Public Notice. Changes in the code can only be made through legislative action.

COMPLIANCE:

The Building Safety Code Division requires the submission of plans duly signed/stamped by an architect/engineer registered in the CNMI, together with the application for a building permit. These plans are reviewed by the Plans Examiner for code compliance.

ENFORCEMENT:

The Building Safety Code Division in the DPW is the enforcing agency. Field inspections are regularly conducted by certified building inspectors of the Building Safety Code Division to ensure that code requirements are followed in the field.

PRIMARY TECHNICAL CONTACT:

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STATE AGENCY\OFFICE HEAD:

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OTHER CONTACT(S):

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Charlie MacDonald, Energy Affairs Administration, (809) 723-3636

BACKGROUND:

In 1979, the Code for Energy Conservation in Puerto Rico was adopted as part of the Building Codes administered by the Permits and Regulations Adminstration. Legislation has been enacted that assigns the Energy Affairs Administration responsibility for updating the Energy Code. Permits and Regulations Administration will continue its administration.

STATUS:

The energy code is still in force and applies to all new buildings and to all remodeling that has to comply with Permits and Regulations Administration.

SCOPE:

All buildings, residential, commercial, and industrial are covered.

OVERVIEW:

The code is based on ASHRAE/IES 90.1-1989 with the exception of space heating.

ADOPTION:

Implementation of the code is the responsibility of the state. There is no schedule for revisions; all revisions apply to all the island.

COMPLIANCE:

All designs and plans must be submitted and signed by a professional engineer or architect.

ENFORCEMENT:

A certification by the professional who signs the plans is required. No field inspections are made unless requested for special reasons.

PRIMARY TECHNICAL CONTACT:

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STATE AGENCY\OFFICE HEAD:

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OTHER CONTACT(S):

Raina Savali, SEP Program Manager, ASPA Energy Center

BACKGROUND:

There is no building energy code. The legislatively approved building code is the 1964 UBC; however, the 1994 UBC is currently being implemented.

STATUS:

Local Department of Public Works is in the process of getting UBC 1994 approved by the local legislature. The American Samoa Energy Office (i.e., ASPA Energy Center) in join cooperation with the Guam Energy Office has obtained a federal grant under EPAct. The purpose of this grant is to seek technical assistance to develop a tropical island specific model energy code.

This code would be developed so that it can be easily be applied and modified to meet not only Guam and American Samoa requirements, but the requirements of other tropical island territories and nations. This specific code would adopt cost-effective building energy technologies that meet or exceed the MEC and ASHRAE/IES 00.1-1989.

SCOPE:

There is no building energy code. The code under development will focus on commercial and industrial buildings with only minimal requirements for residential buildings.

The first stages of code development have been completed: technical assistance has been contracted for and data necessary to conduct local energy/economic evaluation have been collected. The remaining steps include: assessment of energy saving opportunities, development of code requirements, drafting of the code passage by local legislature, and training of local building inspectors and local designers.

OVERVIEW:

There are two current options under discussion: simple prescriptive requirements or the use of tariffs on imported sub-standard appliances or energy-using equipment. Final code may include some or all of both options. In either case, the code will be based on a building requirement that requires construction of the lowest cost building over the some term of economic analysis (e.g., 20 years).

ADOPTION:

Adoption of standards is achieved through legislation.

COMPLIANCE:

Not finalized.

ENFORCEMENT:

Not finalized

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BACKGROUND:

Presently, the Virgin Islands building code does not address energy conservation in new building construction and/or major renovations.

In 1990, the Virgin Islands Energy Office (VIEO) initiated the review of the Virgin Islands Code for Energy Conservation in New Building Construction. This proposed code partially adopted ASHRAE/IES 90.1-1989 (new buildings except low-rise residential buildings) and ASHRAE/IES 90.2P (new low-rise residential buildings) and eliminated the heating standards of the ASHRAE codes.

STATUS:

In 1995, the VIEO requested technical and financial assistance from the U.S. Department of Energy for the purpose of reviewing the 1990 edition of the above mentioned draft code. A Pacific Northwest National Laboratory technical team reviewed the draft code and determined that it was lengthy, confusing, and not user-friendly. The team then composed a more user-friendly residential and commecial code based on the CABO MEC and ASHRAE/IES 90.1-89. This current draft, the Virgin Island Energy Building Code (herein referred to as the "code"), addresses mainly ventilation, shading, and cooling in residential homes. The commerical provisions address cooling, lighting, insulation, and water heating.

The code relies on materials already developed for ASHRAE/IES 90.1-1989, and therefore, makes compliance easier. ASHRAE 90.1-1989 will also be adopted in its entirety to cover any special cases that may arise and do not conform to the typical building practices of the Virgin Islands. Although the residential provisions of the code do not follow the CABO MEC, many aspects of the MEC were deleted due to the climate and construction practices of the Virgin Islands. As such, the residential portion of the code consists of mostly comfort provisions.

SCOPE:

Once implemented, the code will incorporate the CABO MEC for residential dwellings and the ASHRAE/IES 90.1-1989 standards for commercial buildings. As a mandatory minimum for the Virgin Islands, the code applies to all new construction as well as renovated buildings used for human occupancy.

OVERVIEW:

The code sets the mandatory minimum requirements for water and energy conservation in buildings of all sizes and types (non-mechanically cooled), and encourages the use of design techniques, energy systems,

and building materials that are particularly effective in reducing energy use in the Virgin Islands climate.

Sufficient administrative provisions allow for the the integration of the code into presently adopted codes in the Virgin Islands (traditional building, mechanical, electrical, and plumbing codes). Alternately, the code could serve on its own once approved through the legislative process.

ADOPTION:

Sufficient administrative provisions allow the Code to be integrated into current codes in the Virgin Islands (traditional building, mechanical, electrical, and plumbing codes). Alternately, the Code could serve on its own once it is approved through the legislative process.

COMPLIANCE:

Applicants requiring building permits for new structures will first submit a completed Energy Conservation Code Guideline Form to the VIEO for approval before permits can be issued from the Department of Planning and Natural Resources.

All construction or work (including plans and other required documents) for which a permit is required are subject to inspection by the Virgin Islands government building or energy inspector.

ENFORCEMENT:

Final inspection and approval on all buildings, when completed and ready for occupancy, shall be completed by the Virgin Islands government building or energy inspector within 10 working days of the formal request made by the applicant.

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BACKGROUND:

No Information

STATUS:

The District of Columbia (D.C.) Energy Conservation Code is based on the 1990 edition of the BOCA National Energy Conservation Code. The D.C. Building Code Advisory Committee, along with the D.C. Energy Office, has approved several amendments to the BOCA Energy Code, particularly in the areas of interior and exterior lighting load, power factor requirements, and energy efficient motors. These amendments were included in the district's requirements November 27, 1992. It is expected that the 1996 BOCA National Energy Conservation Code will be adopted in the near future (the 1996 BOCA will reference only the 1995 MEC).

SCOPE:

The D.C. Energy Conservation Code, which forms part of the Building Code, regulates the design and construction of the exterior envelope of buildings to ensure proper thermal performance and design and selection of mechanical, electrical, hot water, and lighting systems and equipment. The provisions of ANSI/ASHRAE/IES 90A-1980 or ASHRAE/IES 90B-1975 are applicable to either residential or commercial buildings.

OVERVIEW:

The 1990 BOCA National Energy Conservation Code references the 1989 CABO Model Energy Code and ANSI/ASHRAE/IES 90A-1980 as alternatives to the provisions in the code that are based on those in ANSI/ASHRAE/IES 90A-1980. The District of Columbia has added requirements for interior and exterior lighting, power factor, and energy-efficient motors. The D.C. Building Code Advisory Committee with the assistance of D.C. Energy Office staff has approved several amendments to the BOCA energy code, particularly in the areas of interior and exterior lighting loads, power factor requirements, and energy efficient motors.

ADOPTION:

The D.C. Energy Conservation Code is updated regularly as the BOCA code is revised or if there is a change proposed by the local code enforcement officials, industry, design professionals, or other interested parties. Proposals are initiated by the D.C. Building Code Advisory Committee. Proposals are published

and public hearings are held. The D.C. council has final approval of all proposed code changes.

COMPLIANCE:

Compliance is determined by plan review and inspection.

ENFORCEMENT:

Enforcement (all plan reviews, interpretations, and appeals) is the responsibility of the Building and Land Regulation Administration, which is a part of the D.C. Department of Consumer and Regulatory Affairs.