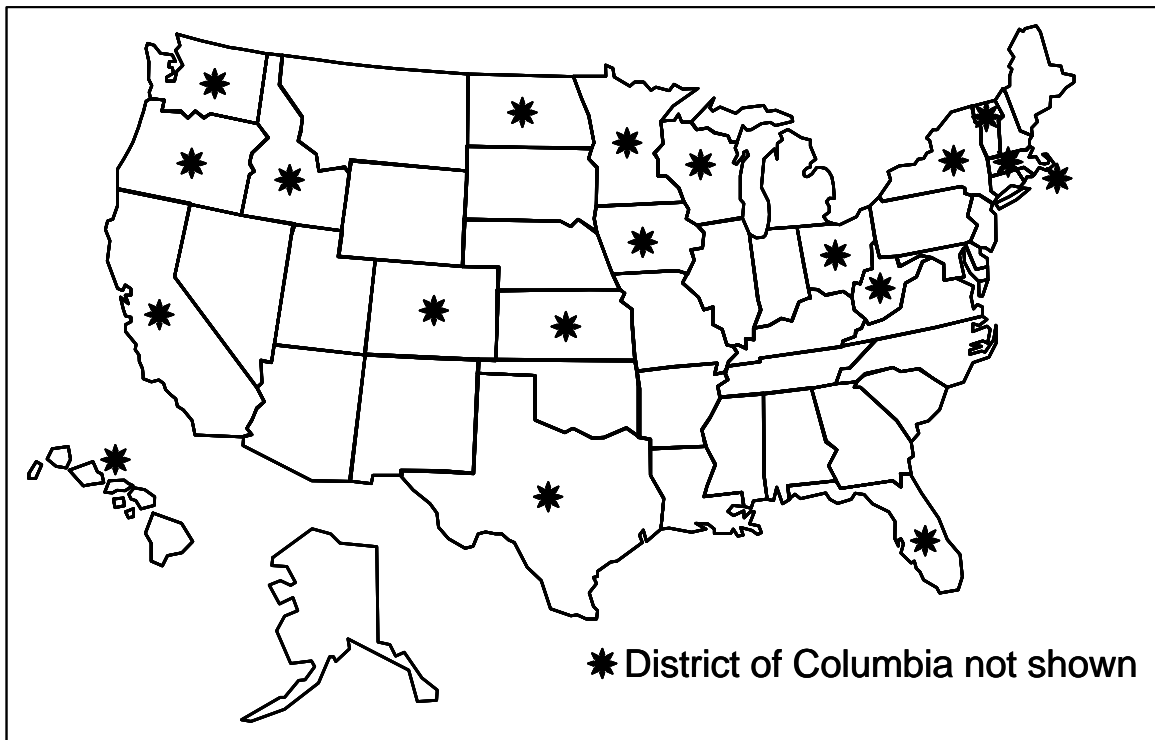




US DEPARTMENT OF ENERGY
OFFICE OF CODES AND STANDARDS

Building Standards and Guidelines Program

1999 *State Grant Summaries*



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Table of Contents

Foreword iii

Summary iv

California (*Builder Training on Energy Codes Progressive Program*) 1

California (*Nonresidential Building Quality Assurance*) 3

Colorado 5

District of Columbia 6

Florida 7

Hawaii 8

Idaho 9

Iowa 10

Kansas 11

Massachusetts 12

Minnesota 13

New York 14

North Dakota 15

Ohio 16

Oregon 17

Rhode Island 19

Texas 20

Vermont (*Residential Buildings Energy Standards*) 21

Vermont (*Northeast States Multi-State Project*) 22

Washington (*Leveraging Trends in Codes and Information Technology*) 23

Washington (*Review and Adoption of the 2000 WA State Energy and Ventilation Codes*) 24

West Virginia 25

Wisconsin 26

1999 Incentive Grant Matrix 27

Foreword

This report is one in a series of documents describing activities in support of the U.S. Department of Energy (DOE) Building Standards and Guidelines Program (the Program.) The Pacific Northwest National Laboratory (PNNL) provides technical support for the Program.

The primary issue addressed by the Program (and other programs at DOE) is that new commercial and residential buildings being designed, built, and occupied do not use currently available, technically feasible, and economically justified technologies and practices to eliminate wasteful use of energy. The Program seeks to advance the energy-conserving design and construction of buildings by promoting and assisting in the development and implementation of energy-efficient codes and standards that are technically feasible, economically justified, and environmentally beneficial. These activities are required of DOE by Title III of the Energy Conservation and Production Act as amended by the Energy Policy Act of 1992 (EPAct).

The Program's long-term goal is to make sustainable, energy-efficient building design and construction commonplace. The Program's approach to meeting this goal is to initiate and manage individual research in this area, standards and guidelines development efforts that are planned and conducted in cooperation with representatives from throughout the buildings community. Current projects involve practicing architects and engineers, professional societies and code organizations, industry representatives, and researchers from the private sector and national laboratories. Research results and the technical justification for standards criteria are provided to standards development and model code organizations and to Federal, state, and local jurisdictions as a basis to update their codes and standards. This approach helps ensure that the standards incorporate the latest research results to achieve maximum energy savings in new buildings, yet remain responsive to the needs of the affected professions, organizations and jurisdictions. It also assists in the implementation, deployment and use of the codes and standards.

The Program works in cooperation with DOE's "Energy Partnerships for a Strong Economy," which is an innovative approach to environmental quality and economic growth designed to leverage Federal dollars through partnerships with private industry. This program does not duplicate, but rather complements, existing Federal and State programs and accelerates their benefits. Located under the umbrella of "Energy Partnerships for a Strong Economy," Action 10 of the Climate Change Action Plan, Update State Building Codes, builds on Section 101 of EPAct to further address the use and enforcement of building energy codes. Under Section 101, states are required to update their commercial building energy codes to meet or exceed the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc./Illuminating Engineers Society of North America (ASHRAE) Standard 90.1-1989 and to consider whether to update their residential codes to meet or exceed the 1993 Model Energy Code. DOE is required to provide technical assistance and incentive funding to states to respond to the legislative requirements of EPAct.

Summary

During FY 1999, 20 states and territories received grants totaling approximately \$4 million to update and implement the energy efficiency provision of their state building code. The grants were awarded on a competitive, cost-shared basis. Some of the states have existing energy codes but need additional support to expand or enhance their code to equal or exceed the 1993 Model Energy Code (MEC) and ASHRAE/IES Standard 90.1-1989 (Standard 90.1-1989).

The MEC is an energy performance standard for low-rise residential buildings and the Standard 90.1-1989 is an energy performance standard for commercial and multi-family high-rise buildings. The MEC and Standard 90.1-1989 are benchmark residential and commercial standards under the Energy Policy Act of 1992 (EPAct).

This document contains summaries of Building Standards and Guidelines Program (the Program) FY 1999 incentive grants for the 20 states. The summaries provide background information on the status of the state code, outline state project descriptions, cost data, partners, transferability to other states, and the value of incentive grants to the Building Standards and Guidelines Program. The funding will help develop codes where they do not exist and strengthen existing building codes. In addition, the assistance will help builders, states, and consumers to make buildings more energy-efficient and cost-effective.

Background

This proposal continues and expands the builder energy codes training program that has been provided to builders in California and Nevada through the California Energy Commission (CEC) and the Building Industry Institute (BII) public-private partnership funded through a DOE grant. This program continues to focus on the largest, most influential builders in the major markets. In the past three years, training has affected nearly 70,000 homes annually, providing consumers over \$1,000,000 in energy savings from improved code compliance.

Purpose

This project is designed to improve the energy efficiency and the quality of homes in California and Nevada through a partnership with the California Building Industry that provides training to production builders. The CEC and the BII propose to continue builder training using DOE funding to improve code compliance, to help with the adoption of new codes, and to continue to develop new methods for implementing new codes. The training program proposes to raise the level of compliance with the state energy code, to evaluate the implementation of new field performance-based codes in California, to enhance adoption of new field-performance-based codes, and to continue the partnerships that were developed in this program.

Project Description

This training consists of four parts:

- Examine and critique compliance calculations and documentation; classroom training to construction, purchasing, and contracts personnel; provide on-site training to builder superintendents; provide on-site measurements and evaluations.
- Determine the value of training to the insurance industry.
- Provide training to builders. In the first part of training, each builder is asked to provide plans and documentation for two master plans (two model homes, preferably from two different subdivisions). Trainers review and critique plans.
- The builders VP of construction, purchasing agents, and contract personnel then attend four hours of classroom training. Builders are given a detailed manual as an aid.
- A half day of on-site training at each builder's construction site follows the classroom session. Subcontractors, purchasing agents, construction superintendents, etc. are encouraged to attend. Framed, insulated homes are examined. Instructors also perform diagnostics on completed homes while on-site.
- Provide follow-up training six months later to measure and evaluate the effectiveness of the training. Data collected during on-site and follow-up sessions will include base-line data and data from homes that should have improved quality installations. The data will provide relevant information on how homes are built and how they can be further improved.

Cost Data

Federal	\$200,000
Applicant	\$ 61,491
Other	\$115,800
Total	\$377,291

Partner

California Building Industry Association
Southern California Edison
San Diego Gas and Electric

Transferability

This training program was developed for both Nevada and California, and it is quickly exportable to other states. Northern Nevada uses the 1995 MEC and Southern Nevada uses the 1992 MEC. In addition, supporting materials are directly applicable to all residential construction.

Background

California has a history of using its nonresidential building energy efficiency standards to reduce wasteful, uneconomic, and unnecessary uses of energy. In 1977 California mandated building efficiency standards to reduce the growth of rate of energy consumption, conserve energy resources, and ensure statewide environmental, land use and public safety goals were met. California's recently revised Title 24 Standard went into effect July 1, 1999. Title 24 meets or exceeds ASHRAE/IES 90.1.

Purpose

The project seeks to improve the construction quality of new nonresidential buildings through building acceptance testing, diagnostics, and third-party verification. Project objectives include developing the technical background for future changes to the standards; identifying specific approaches to providing reliable energy savings to building owners; and developing alternative approaches to ensuring effective nonresidential building performance through the standards. The overall project goal is to improve the energy performance of state and national nonresidential buildings through building efficiency standards. The DOE-funded portion of the project will identify opportunities to use implementation alternatives to the traditional building code enforcement process embodied in existing standards. These alternatives will focus on using market mechanisms to ensure effective field verification of performance and proper system installation and start-up.

In addition, the California Energy Commission (CEC) and the Pacific Gas & Electric (PG&E) Company will each fund project-related analyses that will complement the DOE-funded activities. The CEC proposes to develop test methods (including metrics and diagnostic techniques) for determining the efficiencies of commercial thermal distribution systems. PG&E proposes to develop six case studies to evaluate whether selected candidate technologies should be considered for inclusion in California's nonresidential building energy efficiency standards.

Project Description

California proposes to do the following:

- Develop alternative approaches to implement the standards to deliver reliable energy savings.
- Evaluate the performance of the following technologies and design practices covered by the standards: 1) rooftop package air conditioners, 2) housing, ventilating, and air-conditioning (HVAC) controls, 3) lighting controls, and 4) HVAC equipment sizing
- Evaluate whether selected new technologies should be incorporated into the standards. Examples of such technologies include dry-type transformers, light-emitting diode(LED) exit signs, high-albedo roofs, and high-efficiency commercial HVAC distribution systems.

Cost Data

Federal	\$200,000
Applicant	\$347,768
Other	\$350,000
Total	\$897,768

Partners

Pacific Gas & Electric Company
New Buildings Institute

Transferability

California will request that member states of the New Buildings Institute review work products, exchange information and research results, and help identify implementation alternatives that use acceptance testing, diagnostics, and third-party verification.

Background

Given that Colorado is a home rule state, mandatory codes or voluntary performance programs must be promoted at the local level. Voluntary programs will be promoted to code officials and builders as a cost-effective way to check for compliance and as a compliance option where political opposition to any codes exists.

Purpose

This proposal to increase the energy efficiency of residential and commercial buildings by consolidating efforts to promote the 1995 MEC and Standard 90.1-1989 and promoting voluntary energy efficiency building programs.

Project Description

Colorado proposes to do the following:

- Promote and support adoption of the MEC or more stringent codes higher for residential buildings. This effort includes providing model code language, training on compliance tools, and ongoing technical assistance.
- Promote and aide in the adoption of Standard 90.1-1989 or more stringent codes for commercial buildings. This effort includes providing model code language, training on compliance tools, and ongoing technical assistance.
- Establish resources for on-going technical assistance on residential and commercial energy codes and voluntary programs.

Cost Data

Federal	\$140,000
Other	\$ 35,000
Total	\$175,000

Partners

Governor's Office of Energy Conservation
Colorado Chapter of the International
Conference of Building Officials
Enermodal Engineering
State and Local Home Builders Associations

Transferability

This project will help Colorado jurisdictions integrate the effort to promote codes. For other home-rule states, the lessons learned during this effort will be valuable.

District of Columbia

Background

The proposed rule to adopt the 1996 Building Officials and Code Administrators International, Inc. (BOCA) codes (including the 1995 MEC and Standard 90.1-1989) was published in the District of Columbia (D.C.) Register on April 2, 1999. Outcome of the final rule should be decided in the fall of 1999.

Purpose

The goal of this project is to improve awareness and compliance with the D.C. Building and Model Energy Codes and to initiate adoption of the 1999 BOCA National Building Code and the 1998 International Code Council (ICC) International Energy Conservation Code (IECC).

Project Description

The District of Columbia proposes to do the following:

- Conduct a city-wide Building Standards Conference workshop.
- Provide Staff Development Training.
- Initiate adoption of the 1999 BOCA National Building Codes and the 1998 IECC by the District of Columbia.

Cost Data

Federal	\$20,000
Applicant	\$ 8,499
Total	\$28,499

Partner

Northeast Energy Efficiency Partnerships, Inc.

Background

In Florida, the residential energy code is a state-developed code that exceeds the 1995 MEC and is mandatory statewide. The commercial energy code is a state-developed code that meets or exceeds ASHRAE/IES 90.1 and is mandatory statewide. The State Building Commission is updating a statewide uniform code to send to the legislature in 2000. The energy code will be the 1997 Florida Energy Efficiency Code for Building Construction (FEECBC) with 1998 versions. A commercial code software program is also being developed.

Purpose

Florida would like to extend its residential code software to use an enhanced version of DOE 2.1E as the energy analysis platform for residential energy code compliance tools. Florida would also like to prepare itself to use DOE's new Energy Plus software (when available) as the "engine" for its commercial building code compliance software tools. Energy Plus is a new generation simulation program that builds on the best features and capabilities of BLAST and DOE 2). Both tools will allow code compliance determination and documentation through the performance analysis pathway and will be applicable nationally (and internationally where weather data are available).

Project Description

Florida proposes to do the following:

Energy Gauge USA Software Implementation:

- Add the capability to simulate photovoltaic electric generation systems and hourly solar water heating system performance.
- Assemble, test, and debug the software.
- Develop necessary documentation and provide assistance for the program.

Energy Plus Implementation:

- Develop general framework.
- Adapt already developed and existing modules.
- Adopt Energy Plus Engine to current platform.

Cost Data

Federal	\$150,000
State	\$ 96,407
Total	\$245,407

Transferability

Florida maintains an alliance with other southern states through the Southern States Energy Board. This alliance gains support for changes to MEC that resolve differences between southern states and CABO regarding the importance of window solar gains in the southern region. This alliance may be equally productive in efforts to transfer commercial code capabilities among the southern states would be affected by emerging cooling and dehumidification technologies.

Background

Hawaii has adopted ASHRAE/IES 90.1-1989 with modifications as a mandatory statewide code for commercial construction. Three of Hawaii's four counties have adopted the code. The fourth is expected to introduce code legislation shortly. A December 1998 evaluation of commercial code compliance found an 87% compliance rate. This project will expand and enhance present code compliance in commercial buildings.

Purpose

Hawaii will expand and enhance its present commercial building code to work toward the adoption of the next generation building code. The state plans to develop building guidelines for advanced materials and techniques, identify a potential environmental rating system, and develop amendments to enhance the existing code.

Project Description

Hawaii proposes to do the following:

- Establish partnerships with professional organizations.
- Establish an Advisory Task Force to recommend guidelines for advanced and new energy-efficient techniques and technologies.
- Develop Energy Efficient Commercial Building Guidelines. The guidelines will be integrated with Hawaiian Electric Company's demand-site management rebate and awards programs. The state will evaluate adapting the Leadership in Energy and Environmental Design (LEED) or a similar environmental rating program into the guidelines.
- Identify and evaluate guidelines suitable for adoption as amendments to the Hawaii commercial energy code.
- Develop a website and list server to provide information on the project.

- Provide information to other entities and evaluate the project.

Cost data

Federal	\$200,000
Other	\$140,000
Total	\$340,000

Partners

Hawaiian Electric Company
American Institute of Architects, Honolulu Chapter
Consulting Engineers Council of Hawaii
American Society of Mechanical Engineers, Hawaii Section

Transferability

An electronic and hard copy version of all material will be available to interested entities. Guidelines will be particularly suited to similar climates such as the Pacific and Caribbean island territories and southern states.

Background

In Idaho, the residential energy code is a state-developed code, which is less stringent than the 1992 MEC and it is mandatory statewide. The state supports adoption of the 1995 MEC or the Northwest 1992 Model Conservation Standard, which exceeds the 1995 MEC by 30%. Twelve cities and counties have adopted these codes to date. The commercial energy code for state-owned buildings is ASHRAE 90A-80 and 90B-1975. The Idaho Commercial Building Energy Code (ICBEC) is available for adoption by local jurisdictions. ICBEC is promoted simultaneously with the Rebuild Idaho project.

Purpose

This proposal will continue to support implementation of the ICBEC and the 1995 MEC by local jurisdictions. This proposal will provide technical assistance to Idaho's building industry, continue information transfer, and continue the relationship with the Northwest regional states, DOE, and others to sponsor and deliver energy code training to Idaho constituents.

Project Description

Idaho proposes to do the following:

- Establish support for energy codes through one-on-one contact with building officials, community leaders, builders, architects, and engineers.
- Deliver value-added services to communities through networks of contacts.
- Continue to participate in regional/national meetings and share products, services, and processes.
- Maintain the Energy Division's website.
- Provide technical assistance to the building industry through phone assistance, site visits, development of code adoption ordinances, public presentations of code benefits, and assistance to local jurisdictions with code adoption.

- Provide training on building commissioning; life-cycle cost analysis methods; and commercial and residential energy code design, inspection, and implementation procedures.

Cost Data

Federal	\$232,000
State	\$ 94,665
Total	\$326,665

Transferability

The Idaho Energy Division will provide the ICBEC Guide through its website and by CD-Rom. The Idaho Energy Division will also work with the Northwest Code Collaborative to establish a process for sharing code information and resources that can be replicated and used at the national level.

Background

In Iowa, the residential energy code is the 1992 MEC, which is mandatory statewide. The commercial energy code is ASHRAE/IES 90.1, which is mandatory statewide.

Purpose

The goal of the project is to educate the insurance industry on how building energy code compliance may lead to reduced health and property risks, claims, and losses and to encourage premium reduction incentives for clients that comply with building energy codes.

Project Description

The project will:

- Establish an Advisory Committee to provide guidance and direction on the project.
- Develop educational materials specifically tailored for the insurance industry.
- Conduct a minimum of three small group meetings, including one regional meeting with key representatives of the insurance industry to discuss the benefits of the building energy codes.
- Conduct a greenhouse gas (GHG) focus group meeting for the insurance industry to discuss and deliberate on the strategies, incentives, and barriers to reduce GHG emissions.

Cost Data

Federal	\$50,000
State	\$16,750
Total	\$66,750

Partners

Lawrence Berkeley National Laboratory
New Buildings Institute
University of Iowa Center for Global and
Regional Environmental Research
Iowa Department of Commerce Insurance
Division

Transferability

Because this project will include participation of state, regional, and national insurers whose clients are located throughout the United States, transferring project information will be far-reaching.

Background

In the past three years, the Kansas program has focused on informing the building community about the energy standards requirements under state law and economic benefits of energy efficient buildings. The activities for the following year attempt to build greater market pull for code compliance and energy efficiency. Tasks include educating home buyers, builders, architects, and engineers on the cost-effectiveness of residential energy efficiency and providing information to local code officials who will play a major role in deciding whether or not to include model building code appendices incorporating energy standards into local building codes.

Purpose

This program will ensure the actual energy performance of new commercial and residential buildings in Kansas is equal to or greater than that resulting from compliance with Standard 90.1-1989 or the 1993 MEC, respectively.

Project Description

The project will:

- Inform the public and the building and construction community about building energy standards requirements in Kansas and the many benefits from demonstrating compliance.
- Provide training to the building design and construction community on how to comply with the Kansas building energy standards requirements and energy-efficient design and construction methods.
- Raise building performance expectations by commercial and residential building owners.
- Develop an understanding of the real energy performance expectations by commercial and residential buildings being built in Kansas to permit better, more cost-effective program design.

Cost Data

Federal	\$249,400
KCC	\$ 86,503
Total	\$335,903

Partners

Kansas Cooperative Commission
Kansas State University Engineering Extension
Coriolis
Kansas Building Science Institute

Background

The Massachusetts residential energy code is the 1995 MEC with amendments, which is mandatory statewide. Massachusetts developed a commercial energy code more energy-efficient than ASHRAE/IESNA 90.1-1989 which will be adopted statewide, effective January 1, 2001.

The revised code generally captures IECC format and ASHRAE/IES 90.1R-stringency, along with some state-specific provisions.

Purpose

The goal of this project is to continue a high awareness of the residential building energy requirements and to achieve a smooth transition to the new commercial building requirements by training engineers, contractors, building owners, architects, and building officials.

Project Description

To meet the project requirements, the following residential and commercial tasks must be accomplished:

- Continue the "Energy Code Hotline," which provides quick answers to code questions the designers, homeowners, building officials, and home builders.
- Continue energy code training by delivering workshops and training sessions.
- Conduct an Impact Evaluation by determining the precode baseline and perform a current-practice evaluation.
- Develop training and support tools by designing a curriculum, developing training graphics, and integrating electronic code documents.
- Implement an outreach and training program by notifying stakeholders about new code and training opportunities, overseeing training sessions delivered to designers and engineers, and training building officials.
- Provide a statewide technical support program.

- Continue participation in regional and national code development and support efforts by attending national and regional energy code conferences, assisting with regional and national commercial code development, and implementation, and assisting in developing a regional technical assistance system.

Cost Data

Federal	\$289,263
Applicant	\$ 54,942
Other	\$226,470
Total	\$570,675

Partners

Board of Building Regulations and Standards
Massachusetts Division of Energy Resources
New Buildings Institute

Transferability

Massachusetts will work with other states in the region and beyond to help promote uniform code structure and coordinate implementation efforts.

Background

This project follows three years of an Energy Code Advancement Project (ECAP) conducted under 1995 and 1996 DOE grants to upgrade and provide training for the Minnesota energy code. This project will use results from ECAP grants to evaluate the new code and the education provided to identify opportunities for improvements in both. Minnesota's new energy codes are more stringent than the 1995 MEC and for the first time include requirements for installing mechanical ventilation in all new housing.

Purpose

The goal of the project is to conduct an 18-month project to evaluate the effectiveness of Minnesota's new 1999 energy code, and to develop and implement a strategy for creating "market pull" for buyers to demand improved buildings.

Project Description

Minnesota proposes to do the following:

- Evaluate new construction and remodeling under the new Minnesota energy code.
- Initiate a pilot project to identify and implement a "market pull" strategy to encourage consumer demand for more reliable, durable, and energy-efficient buildings.

Cost Data

Federal	\$229,766
Applicant	\$ 53,440
Local	\$100,000
Total	\$383,206

Partners

Builders Association of Minnesota
State Building Codes and Standards Division
International Council of Building Officials
Local Chapters of Minnesota Chapter of the International Association of Plumbing and Mechanical Officials
University of Minnesota Sheet Metal and Roofing Contractors Association
Minnegasco
Minnesota Society of Architects
ASHRAE Minnesota Chapter
Consulting Engineers Council
Minnesota Electrical Association
North Central Electrical League

Transferability

Sharing results of this project with other states will hasten the adoption of codes exceeding the 1995 MEC in those states.

Background

New York has a state-developed residential energy code that nominally meets the 1992 MEC, which is mandatory statewide. The commercial energy code is a state-developed code that nominally meets ASHRAE/IESNA 90.1-1989. On July 29, 1999, the newly passed state budget allowed for implementation and training of a new model-based energy code. In tandem with the 1999 DOE grant project, this budget will support the mandatory statewide adoption of an enhanced IECC-based code.

Purpose

The purpose of the project is to develop and implement improvements to the current New York State Energy Conservation Construction Code through the New York State rulemaking process.

Project Description

This project will:

- Develop specific energy code language that addresses New York State concerns while based on the IECC format.
- Submit specific energy code proposals for approval by the New York State Building Codes Council.
- Conduct public hearings to discuss proposed energy code changes.
- Create support for energy code improvements through stakeholder groups.
- Implement specific code changes through promulgation of rules and regulations.
- Develop and deliver training on the revised energy code to 1,600 building code officials in New York State and training on beyond-code practices to builders and designers.

Cost Data

Federal	\$345,000
Applicant	\$105,000
State	\$ 47,000
Other	\$ 25,000
Total	\$522,000

Partners

New York State Energy Research and Development Authority (NYSERDA)
New York State Builders Association
New York State Building Officials Conference
Governor's Office of Regulatory Reform
Northeast Energy Efficiency Partnership

Transferability

Through the Northeast Energy Efficiency Partnerships regional coordination efforts, a trade ally/industry support network will be established. In addition, a strategic regional plan to sustain code implementation and training will be formulated.

Background

The residential energy code is the 1993 MEC, contingent on adoption by local jurisdictions. The commercial energy code is ASHRAE/IESNA 90.1-1989, contingent on adoption by local jurisdictions. Two jurisdictions have adopted the 1993 MEC.

Purpose

This project will allow North Dakota to continue working at the same time, while providing information on the current energy code, to work directly with the homebuilding industry, and to present information and promote construction practices that meet the code standards.

Project Description

North Dakota proposes to do the following:

- Develop and maintain a state capacity to respond to requests for additional information regarding the energy code.
- Develop, produce, and distribute fact sheets relating to the preferential nature of homes meeting the MEC.
- Include a discussion of issues related to energy efficient construction on the state homebuilder's association website.
- Provide financial information to the state home builder's association on the National Energy-Efficient Builders Association annual meeting where members can be trained energy-- saving opportunities in the homebuilding industry.

Cost Data

Federal	\$31,055.00
State	\$10,351.00
Total	\$41,406.00

Transferability

The real benefit of this project involves the relationship with the state homebuilders association. Having the actual homebuilders present the benefits of certain code standards to the public via a website is unique.

Background

Ohio has a progressive state program that has adopted the 1995 MEC and ASHRAE/IESNA 90.1-1989, but needs support to expand its energy code program. This project will allow the Building Performance Group to provide an expanded training and technical assistance on energy codes and construction practices at public events.

Purpose

The goal of this project is to enhance the use and enforcement of energy codes through training and technical assistance. Ohio will accomplish this goal by working with the Building Performance Group to promote the importance of energy codes and quality construction practices at public events such as home and garden shows and parades of homes.

Project Description

Ohio proposes to do the following:

- The Ohio Department of Development will focus on a broader range of training and technical assistance customers to raise the awareness of energy-efficient construction.
- The Ohio Department of Development will help shape the future of construction practice in Ohio through an effort to work with vocational and technical schools that are training several building trade professionals.
- Provide training through coordination with consumer education efforts.
- Illustrate key concepts of good energy-efficient design and application by using building performance diagnostics, pictures and video, and on-site visits to finished houses.

Cost Data

Federal	\$148,793
State	\$ 44,600
Local	\$ 35,400
Total	\$228,793

Transferability

The Building Performance Group will offer code training courses in Michigan, Kentucky, and West Virginia, if obtaining a contract to provide these services is acceptable. The Corporation for Ohio Appalachian Development has strong weatherization training relationships with the state weatherization offices in these states and we will contact state energy offices in those states. Ohio will determine the need for Building Performance Group services there.

Background

Oregon has a mandatory state-developed residential and commercial energy code which exceeds the 1995 MEC and ASHRAE/IESNA 90.1-1989. In a recent Oregon Office of Energy study, duct leakage caused major energy or health problems in 40% of homes with natural gas furnaces and heating systems performed far below design efficiencies in 30% of homes with electric heat pumps. Therefore, duct efficiency is a major thrust of this grant.

Purpose

The following are project goals:

- Incorporate duct efficiency testing and identification of corrective actions into the mortgage process for Oregon homes financed by Fannie Mae and credit unions, laying the foundation for duct efficiency requirements in the state building code.
- Identify and recommend improvements for residential and nonresidential energy codes based on current practice, market readiness, and consensus.
- Improve performance of nonresidential buildings in Oregon and California by sharing research and experience in advancing building commissioning.
- Encourage adoption of standards in the IECC and ASHRAE/IESNA 90.1R that exceed the state's code, and upgrade national/international codes.

Project Description

Oregon proposes to do the following tasks:

- Lay groundwork for duct efficiency requirements in residential code. Deliverables include 1) creating a pilot project report summarizing costs and benefits for lenders for combustion safety and duct leakage tests and identifying corrective measures, 2) developing home selection protocols for mortgage lenders, 3) developing duct testing and remediation protocols for the mortgage lending process that emphasize multiple benefits, and 4) developing a minimum standards and certification process for certifying contractors and heating and cooling air distribution systems.
- Evaluate current practice and recommend code upgrades. Deliverables include: 1) an evaluation of data from current practice study and market survey, identifying areas to be considered for code changes, improved enforcement, and training needs and 2) code change submittals and interpretive rulings, with supporting information, for technologies and practices where change is warranted, and 3) presentation of findings at the annual DOE codes conference.
- Make state and national codes more compatible. Oregon will review and assess major differences between Oregon, Washington, IECC, and ASHRAE codes and standards; present results and obtain feedback on the evaluation from the Oregon Building Codes Division; and participate in national code development processes to make Oregon and national codes more compatible.
- Support building commissioning in the Northwest and share information with California.
- Provide on-going support and training of Oregon's residential and nonresidential energy codes with funding from the Northwest Energy Efficiency Alliance.

Cost Data

Federal	\$300,000
Applicant	\$125,000
Total	\$425,000

Partners

Northwest Energy Efficiency Alliance
Oregon Building Codes Division and Building
Codes Structures Board
Oregon Building Officials Association and code
jurisdictions
Fannie Mae and credit unions

Transferability

Oregon's work on duct efficiency and building commissioning is considered cutting edge. All information will be shared with interested entities. In addition, Oregon will coordinate efforts with California and Washington, and will also participate in the national code development process.

Background

This project was developed as an outgrowth of the MultiState Commercial Code Working Group, which was charged with assisting states to update and improve implementation of residential and commercial energy codes in the Northeast region.

Purpose

The goal of the Northeast Regional Building Energy Codes Project is to increase energy efficiency and emissions reductions in the Northeast region by improving the effectiveness of state energy codes through regional coordination.

Project Description

Rhode Island and its partners propose to do the following:

- Assist commercial energy code development, adoption, and implementation, in collaboration with the New Buildings Institute.
- Coordinate a Northeast States Energy Codes Training Group to guide the activities in Vermont's 1999 SEP Codes and Standards multistate grant proposal, entitled "Northeast States Residential Energy Codes Support Project."
- Establish partnerships with and support from industry trade allies and utilities.
- Develop and expand outreach and communication efforts and materials.
- Assist in the dissemination of energy code support materials through the New Buildings Institute website.

Cost Data

Federal	\$320,477
Applicant	\$106,850
Total	\$427,327

Partners

Northeast Energy Efficiency Partnerships, Inc.
New Buildings Institute

Transferability

The experience gained from developing regional resources and assistance from utilities and industry trade allies to assist in code upgrades, training, and implementation will be used to inform other states in the Northeast region.

Background

Texas remains in an early stage in its efforts to adopt and promote the voluntary adoption of a relevant residential energy code. Adoption of model energy codes remains a voluntary option of home-rule cities in Texas.

Purpose

The overarching goal of the project is to develop a comprehensive approach to improving the energy efficiency of housing in Texas. Specific goals include evaluating and documenting enhancements to the 1998 IECC for Texas climates and advancing Texas building practices that meet or exceed the enhanced 1998 IECC.

Project Description

Texas proposes to do the following:

- Continue statewide consensus building.
- Document a residential energy code for Texas by identifying and reviewing current energy codes and energy efficiency in Texas.
- Promote code in selected jurisdictions by identifying and recruiting 10 Phase I communities and meeting with key local stakeholders to develop local action plan; and by developing and delivering practical tools, education, and training.
- Assess Phase I progress in the 10 Phase I communities.
- Promote code statewide during Phase II by providing statewide outreach on the success of Phase I.
- Prepare a Final Report.

Cost Data

Federal	\$150,000
Other	\$ 60,706
Total	\$210,706

Partners

Ecotecture Solutions, Inc.
University of Texas at Austin
University of Texas at Arlington
Texas A&M University
Texas Energy Coordination Council
Texas Building Energy Institute
City of Austin
Building Codes Assistance Project
American Council for an Energy Efficient Economy

Background

The Residential Building Energy Standards (RBES), a modified version of the 1995 MEC, became mandatory in Vermont statewide on July 1, 1998.

Purpose

The goal of this project is to transform the Vermont new construction market so that builders will include high levels of energy efficiency and adequate mechanical ventilation in all new homes by 1) improving energy code compliance, 2) maximizing consumer investments in energy efficiency, 3) incorporating standard practice levels of energy efficiency into the code update, 4) maintaining a set of code implementation activities that meet the needs of stakeholders, and 5) educating the building community about the ventilation strategies and new code requirements.

Project Description

Vermont proposes to do the following:

- Inform stakeholders of the proposed code update.
- Develop and deliver additional code training tools.
- Increase understanding of the methods and benefits of energy-efficient construction, particularly regarding mechanical ventilation and indoor air quality.
- Increase support for implementation activities from industry trade allies and Vermont's utilities.
- Develop partnerships with building trade education professionals, lenders, and IAQ advocates.
- Assess the benefits and costs of Vermont's residential energy code the value of code support activities, and determine common design and construction practices.

Cost Data

Federal	\$195,000
Applicant	\$120,000
Total	\$315,000

Partners

Vermont Department of Public Service
Richmond Energy Associates
Vermont Energy Investment Corporation

Transferability

Act 20, the Vermont RBES Statute, requires a 1999 code update and specifically mandates that a mechanical ventilation standard be established. Only two other states, Minnesota and Washington, have ventilation standards, which have been difficult to implement. Vermont will endeavor to adopt a ventilation standard that promotes good indoor air quality, is cost-effective, and has the support of major stakeholders. If successful, the ventilation standard may be an excellent model for other states.

Background

The proposal is an effort to export much of the experiences and successes gained in Massachusetts and Vermont to the rest of the Northeast region. Massachusetts and Vermont have had great success by partnering with local building suppliers and/or the Northeast Retail Lumber Association to deliver residential energy code training sessions.

Purpose

The goal of this proposal is to improve residential energy code implementation in the Northeast states through improved outreach and training, which will 1) promote cost-effective building construction in residential buildings, 2) maximize consumer benefits from meeting and exceeding minimum energy standards, 3) inform stakeholders of the required minimum residential energy standard, and 4) increase understanding of advanced design and construction techniques and equipment that exceeds minimum energy codes.

Project Description

This project proposes to do the following:

- Provide project management, outreach ,and coordination.
- Promote industry trade ally support.

Cost Data

Federal	\$150,000
Applicant	\$ 85,700
Total	\$235,700

Partners

The Vermont Department of Public Service
Northeast Energy Efficiency Partnerships, Inc.
Building Codes Assistance Project

Transferability

This project will deliver consistent materials and coordinated training support for residential energy code implementation activities throughout the Northeast region. The experience gained from developing regional resources and aide from industry trade allies, utilities, and ratepayer-funded energy efficiency programs to expand energy code outreach and training is invaluable in promoting results to other states.

Background

In 1991 Washington State implemented an energy program that included cutting edge strategies for training, outreach, tools, and compliance monitoring. During the eight years since code program, the funding mechanisms, political support, state agency responsibilities, and the Washington State Energy Code (WSEC) have changed. The program has left the state with limited statewide energy code support, and increasingly outdated tools. Therefore, it has become more difficult for energy code newcomers to find the training and resources they need.

Purpose

The goal of the project is to foster a highly energy efficient new construction market by ensuring that energy code compliance tools are widely available, user friendly, and cost-efficient to maintain and modify, and that they promote the construction of homes exceeding the requirements of the code.

Project Description

The project proposes to do the following:

- Update the Energy Code Training Program by developing an Energy Code Certification and Continued Energy Education Program.
- Update the WSEC Builders Field Guide to meet the requirements of the 1997 Washington State Energy Code.
- Monitor issues related to technology developments, code implementation, and code simplification. This effort includes continuing participation in the NW regional energy code "collaborative," monitoring the IEC review process through the Washington State Building Code Council, and reviewing results of the Northwest Energy Efficiency Alliance Base Line study.

Cost Data

Federal	\$100,000
Other	\$ 33,333
Total	\$133,333

Partners

Northwest Energy Efficiency Alliance
State of Vermont
Puget Sound Energy

Transferability

Much of the content produced as part of this proposal will be adaptable to national energy codes and the various energy codes developed by other states. Washington will make the content of the work available for other states as needed.

Washington

Review and Adoption of the 2000 WA State Energy and Ventilation Code

Background

The Washington State Energy Code (WSEC) is a mandatory state-developed energy code. The residential code is a dual-fuel code and exceeds the 1995 MEC for electrically heated homes. The commercial code exceeds ASHRAE/IESNA 90.1-1989. The WSEC is open for changes and amendments in 2000.

Purpose

The goal of this project is to conduct an overall code review and adopt the 2000 Energy and Mechanical/Ventilation Codes. The objective of the review is to determine areas of improvement for simplification and clarification. The goal of adopting the new code is increased levels of compliance and enforcement. Another goal is to work towards consistency between states for both code requirements and code enforcement.

Project Description

The project will:

- Work toward the next generation energy code by performing a detailed code comparison of the WSEC and the residential IECC/the nonresidential ASHRAE 90.1. The comparison will be used to submit proposed changes to the Washington 2000 code adoption cycle and national code bodies for the benefit of other states.
- Adopt the 2000 Washington State Energy Code by December 2000.
- Integrate ventilation and indoor air quality code requirements into the Uniform Building Code and the Uniform Mechanical Code by making state amendments.
- Provide technical assistance and interpretation of the energy and ventilation codes.

Cost Data

Federal	\$188,664
Other	\$ 62, 888
Total	\$251,552

Transferability

The 2000 Washington State Energy Code can be used as a model for other states and organizations to propose changes in the national codes.

Background

West Virginia adopted the BOCA 1996 building code during the 1996 legislative session. The adoption in 1996 has been responsible for improvements in the building practices in West Virginia. The West Virginia Development Office (WVDO) has been concerned that it needs to provide the building community with information concerning nationally recognized and adopted energy codes. In 1997 the WVDO sponsored five training workshops on the 1992 MEC and ASHRAE 90.1.

Purpose

West Virginia proposes to conduct training to acquaint code officials with future code modifications, instruct architects and builders on new building practices required in Federally supported projects, and ultimately spur the introduction of new building technologies.

Project Description

West Virginia proposes to conduct two, 2-day training workshops on the commercial section of the IECC. An emphasis will be placed on the energy efficiency requirements in the code. These training sessions are expected to train an audience of 15 engineers, architects, code officials, and builders, providing the participants with continuing education credits.

Cost Data

Federal	\$20,000
Applicant	\$ 6,667
Total	\$26,667

Partners

West Virginia Society of Architects

Background

Wisconsin state-developed code (COMM 22) meets or exceeds the 1995 MEC, which is mandatory statewide. The commercial energy code is ASHRAE/IESNA 90.1-1989 with state modifications (COMM 63), which is mandatory statewide.

Purpose

For the residential code, the primary objectives are to streamline residential code compliance by forming voluntary partnerships with builders and local code enforcement officials through Uniform Dwelling Code (UDC) training. For the commercial code, Wisconsin has the goal of revising all of Wisconsin's building, mechanical, and plumbing codes to be consistent with the ICC by the year 2002. This would include replacing COMM 63 with the IECC and some Wisconsin-specific modification.

Project Description

Wisconsin proposes to:

- Conduct additional residential code training for Wisconsin's Uniform Dwelling Code that becomes effective May 1, 1999.
- Develop and conduct residential building science training that provides greater detail on specific energy efficiency topics.
- Review and revise the Commercial Buildings Code (COMM 63) with the IECC and some Wisconsin-specific modifications.

Cost Data

Federal	\$190,000
State	\$122,000
Total	\$312,000

Partners

Department of Administration, Wisconsin Energy Bureau
Wisconsin Department of Commerce, Division of Safety and Buildings
Energy Center of Wisconsin
Wisconsin Energy Conservation Corporation

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1999 Incentive Grant Matrix
for Building Standards and Guidelines Program

State	State Contact	Telephone	Purpose
California <i>(Builder Training on Energy Codes Progressive Program)</i>	Eurlyne Geiszler California Energy Commission Grants and Loans Office 1516 Ninth Street, MS-25 Sacramento, CA 95814 Administration Contact: Susan Aronhalt	(916) 654-4052 (916) 654-4204	To improve the energy efficiency and the quality of homes in California and Nevada through partnership with the California Building Industry that provides training to production builders.
California <i>(Nonresidential Building Quality Assurance)</i>	Steve Williams California Energy Commission Grants and Loans Office 1516 Ninth Street, MS-256 Sacramento, CA 95814 Administration Contact: Susan Aronhalt	(916) 654-4050 (916) 654-4204	To improve the construction quality of new nonresidential buildings through building acceptance testing, diagnostics, and third-party verification.
Colorado	Ed Lewis Colorado Office of Energy Conservation 1675 Broadway, Suite 1300 Denver, CO 80202-4613	(303) 620-4292	To increase the energy efficiency of residential and commercial buildings by consolidating the efforts promoting the 1995 MEC and ASHRAE/IES Standard 90.1-1989 energy codes and promoting voluntary energy efficiency building programs.
District of Columbia	Sharon Y. Cooke DC Energy Office 2000 14th Street NW, Suite 300 East Washington, DC 20009	(202) 673-6738	To improve awareness and compliance with the District of Columbia Building and Model Energy Codes and initiate the adoption of the 1999 BOCA National Building Code and the 1998 IECC.
Florida	Alexander Mack Community Program Administrator Florida Energy Office, Dept. of Community Affairs 2555 Shumard Oak Boulevard Tallahassee, FL 32399-2100	(850) 488-2475	To extend its residential code software to use an enhanced version of DOE 2.1E as the energy analysis platform for residential energy code compliance tools and to prepare itself to use DOE's new Energy Plus software (when available) as the "engine" for its commercial building code compliance software tools.

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State	State Contact	Telephone	Purpose
Hawaii	Maurice H. Kaya Energy, Resources & Technology Program Administrator State of Hawaii P.O. Box 2359 Honolulu, HI 96804-2359	(808) 587-3812	To expand and enhance its present commercial building code to work toward the adoption of the next generation building code. The state plans to develop building guidelines for advanced materials and techniques, identify a potential environmental rating system, and develop amendments that will enhance the existing code.
Idaho	Pat Gleason Department of Water Resources State of Idaho 1301 North Orchard Boise, Idaho 83706	(208) 327-7898	To support Idaho cities and counties in the implementation of the Idaho Commercial Building Energy Code and the 1995 MEC.
Iowa	Angela Chen Iowa Department of Natural Resources 502 East 9 th Street Des Moines, Iowa 50319	(515) 281-4736	To educate the insurance industry on how building energy code compliance may lead to reduced health and property risks, claims, and losses, and to encourage premium reduction incentives for clients that comply with building energy codes.
Kansas	Jim Ploger SEP Program Manager Kansas Corporation Commission 1500 S.W. Arrowhead Road Topeka, KS 66604-4027	(785) 271-3349	To achieve actual energy performance of new commercial buildings built in Kansas equal to or greater than performance resulting from compliance with ASHRAE/IESNA Standard 90.1-1989 and the 1993 MEC respectively.
Massachusetts	Bruce Ledgerwood Massachusetts Division of Energy Resources 100 Cambridge Street Boston, MA 02202 e-mail: bruce.ledgerwood@state.ma.us	(785) 271-3349	To continue a high awareness of the residential energy requirements and to achieve a smooth transition to the new commercial requirements through training of engineers, contractors, building owners, architects, and building officials.

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1999 Incentive Grant Matrix
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State	State Contact	Telephone	Purpose
Minnesota	Bruce Nelson Building Science Specialist Minnesota Department of Public Service 121 7 th Place East, Suite 200 St. Paul, MN 55101	(651) 297-2313	To conduct an 18 project to evaluate the effectiveness of Minnesota's new 1999 energy code, and to develop and implement a strategy for creating "market pull" for buyers to demand improved buildings.
New York	Mark Eggers New York State Energy Research and Development Authority Corporate Plaza West 286 Washington Avenue Extension Albany, NY 12203-6399	(518) 862-1090 ext.3308	To develop and implement improvements to the current New York State Energy Conservation Construction Code through the New York State rulemaking process.
North Dakota	Kim Christianson Energy Program Manager North Dakota State Energy Office 14 th Floor - State Capitol 600 East Boulevard Avenue Bismarck, ND 58505-0170	(701) 328-4137	To allow the state to work directly with the homebuilding industry to present information and promote construction practices that meet the current energy code standards.
Ohio	Janly Wilkins and Terrence Smith Ohio Department of Development Office of Energy Efficiency 77 South High Street, 26 th Floor Columbus, Ohio 43215	(614) 466-6797	To enhance the use and enforcement of energy codes through training and technical assistance.

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State	State Contact	Telephone	Purpose
Oregon	John Kaufman Oregon Office of Energy Conservation Resources Division 625 Marion Street NE Salem, OR 97301-3742	(503) 378-2856	To incorporate duct efficiency testing and identification of corrective actions into the mortgage process; identify and recommend improvements for residential and nonresidential energy codes; improve performance of nonresidential buildings in Oregon and California; and encourage adoption of standards in the IECC and ASHRAE 90.1R that exceed the state's code.
Rhode Island	Janice McCLanaghan Rhode Island State Energy Office 1 Capitol Hill Providence, RI 02908	(401) 222-3370	To increase energy efficiency and emissions reductions in the Northeast region by improving the effectiveness of state energy codes through regional coordination.
Texas	Tobin K. Harvey State Energy Conservation Office P.O. Box 13047 Austin, Travis County, TX 78711-3047	(512) 463-1931	To develop a comprehensive approach to improving the energy efficiency of the housing stock in Texas.
Vermont (Residential Buildings Energy Standards)	Scudder H. Parker Director of Energy Efficiency Vermont Department of Public Affairs 112 State Street, Drawer 20 Montpelier, VT 05620-2601 e-mail: parker@psd.state.vt.us	(802) 828-4009	To transform the Vermont new construction market so that builders will include high levels of energy efficiency and adequate mechanical ventilation in all new homes.
Vermont (Multi-state)	Scudder H. Parker Director of Energy Efficiency Vermont Department of Public Affairs 112 State Street, Drawer 20 Montpelier, VT 05620-2601 e-mail: parker@psd.state.vt.us	(802) 828-4009	To improve residential energy code implementation in the Northeast states through improved outreach and training.

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State	State Contact	Telephone	Purpose
Washington <i>(Leveraging Trends in Codes and Information Technology)</i>	Cory Plantenberg Washington Department of Community, Trade and Economic Development Energy Division P.O. Box 43173 Thurston County Olympia, WA 98504-3173	(360) 956-2101	To foster a highly energy-efficient new construction market by ensuring that energy code compliance tools are widely available, user friendly, and cost-efficient to maintain and modify, and to promote the construction of homes that exceed the requirements of the code.
Washington <i>(Review and Adoption of the 2000 WA State Energy and Ventilation Codes)</i>	Cory Plantenberg Washington Department of Community, Trade and Economic Development Energy Division P.O. Box 43173 Thurston County Olympia, WA 98504-3173	(360) 956-2101	To conduct an overall code review and adopt the 2000 Energy and Mechanical/Ventilation Codes.
West Virginia	West Virginia Energy Efficiency Program Building 6, Room 645 State Capitol Complex Charleston, WV 25305-0311	(304) 558-0350	Conduct regional building code seminars on the IECC Commercial Standards with specific emphasis on energy provisions.
Wisconsin	Norman Bair Wisconsin Energy Bureau 101 East Wilson Street P.O. Box 7868 Madison, WI 53707-7868	(608) 266-5827	To streamline residential code compliance by forming voluntary partnerships with builders and local code enforcement officials through Uniform Dwelling Code (UDC) training, and to revise all of Wisconsin's commercial building, mechanical, and plumbing codes to be consistent with the International Code Council (ICC) by the year 2002.