

Building Bridges for Energy Code Partnerships



2002 National Workshop on State Building Energy Codes

July 15-18, 2002
Final Program

The U.S. Department of Energy is sponsoring the 2002 National Workshop on State Building Energy Codes, with assistance from the Pacific Northwest National Laboratory. Hosted by the State of Iowa.

2002 National Workshop on State Building Energy Codes

We wish to acknowledge those who have made this workshop possible and have worked hard to make it a success:

Our Sponsors
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Iowa Department of Natural Resources

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The State of Iowa, Department of Natural Resources

2002 National Workshop on State Building Energy Codes

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Tom Fitzpatrick, Texas Building Energy Institute

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Mark Fortney, PA Housing Research Center

Matt Wald, North American Insulation Manufacturers Association

SEATTLE Region

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David Cohan, Northwest Energy Efficiency Alliance

Charles Gohman, Arizona Department of Commerce

John Hogan, Seattle Department of Design, Construction and Land Use

Eric Makela, International Conference of Building Officials (ICBO)

Karen Messmer, Washington State University

Alan Seymour, Oregon Office of Energy

Ingo Stroup, Idaho Department of Water Resources

Pacific Northwest National Laboratory

Terry Shoemaker

Rosemarie Bartlett

Shannan Butler

Jeff McCullough

2002 National Workshop on State Building Energy Codes

Pre-Workshop Sessions: Monday, July 15, 2002

Time	Scheduled Activities
All Day Registration – Embassy Suites Hotel Des Moines on the River	
8:00 a.m. – 12:00 p.m.	Building Tours Meet outside main entrance of Embassy Suites for bus.
12:00 p.m. – 1:00 p.m.	<i>LUNCH – On Your Own</i>
1:00 p.m. – 1:45 p.m.	Codes 101 – Code Basics
1:45 p.m. – 2:45 p.m.	ASHRAE 90.1 Training
2:45 p.m. – 3:00 p.m.	<i>BREAK</i>
3:00 p.m. – 4:30 p.m.	What Will the 2003 International Energy Conservation Code Look Like?
6:30 p.m.	<i>Welcoming Reception — Salons A-D</i>

2002 National Workshop on State Building Energy Codes

Day 1: Tuesday, July 16, 2002

Time	Scheduled Activities	
<i>7:00 a.m. – 8:30 a.m.</i>	<i>Registration</i>	
8:30 a.m. – 9:30 a.m.	Welcome and Agenda Overview Mayor Preston A. Daniels Governor Thomas J. Vilsack Peter Dreyfuss	Sharon Tahtinen, Iowa Department of Natural Resources Des Moines, Iowa State of Iowa U.S. Department of Energy Chicago Regional Office Director
9:30 a.m. – 10:00 a.m.	Keynote Speaker	Mark Ginsberg U.S. Department of Energy Board of Directors
<i>10:00 a.m. – 10:15 a.m.</i>	<i>BREAK</i>	
10:15 a.m. – 11:45 a.m.	Code Jeopardy	
11:45 a.m. – 1:00 p.m.	Box Lunch – Visit Vendor Exhibits	
<i>1:00 p.m. – 1:30 p.m.</i>	<i>NETWORKING BREAK</i>	
1:30 p.m. – 3:00 p.m.	Parade of States	
<i>3:00 p.m. – 3:15 p.m.</i>	<i>BREAK</i>	
3:15 p.m. – 4:45 p.m.	Circuit Rider Programs	
4:45 p.m. – 6:00 p.m.	Vendor Exhibits – Networking	
<i>Dinner/Evening On Your Own</i>		

2002 National Workshop on State Building Energy Codes

Day 2: Wednesday, July 17, 2002

Time	Sessions A	Sessions B
<i>7:00 a.m. – 8:30 a.m.</i>	<i>Registration</i>	
<i>8:30 a.m. – 10:00 a.m.</i>	Ventilation and Moisture Control	Data in Defense of Codes
<i>10:00 a.m. – 10:15 a.m.</i>	<i>BREAK</i>	
<i>10:15 a.m. – 11:45 a.m.</i>	Indoor Air Quality	Voluntary Beyond Codes
<i>11:45 a.m. – 1:00 p.m.</i>	<i>LUNCH</i> – Keynote Speaker Liz Christiansen, Deputy Director, Iowa Department of Natural Resources <i>Plus</i> Margo Appel, U.S. Department of Energy Headquarters, Announcement of the 2002 Best of Show Award Winners	
<i>1:00 p.m. – 1:30 p.m.</i>	<i>NETWORKING BREAK</i>	
<i>1:30 p.m. – 3:00 p.m.</i>	Ducts – How Bad? How Important? And How To!	Code Enforcement
<i>3:00 p.m. – 3:15 p.m.</i>	<i>BREAK</i>	
<i>3:15 p.m. – 4:45 p.m.</i>	Ducts – How Bad? How Important? And How To! (Repeat Session)	Ventilation and Moisture Control (Repeat Session)
<i>5:15 p.m.</i>	Dinner and Tour – Living History Farms Meet outside main entrance of Embassy Suites for bus.	

2002 National Workshop on State Building Energy Codes

Day 3: Thursday, July 18, 2002

Time	Sessions A	Sessions B
8:30 a.m. – 10:00 a.m.	Cracker Barrel	
10:00 a.m. – 10:15 a.m.	<i>BREAK</i>	
10:15 a.m. – 11:45 a.m.	Lighting	Partnering with the Insurance Industry
11:45 a.m. – 12:15 p.m.	Closing Plenary and Wrap-Up Jean Boulin, U.S. Department of Energy Building Energy Codes Program	

Post-Workshop Session: Thursday, July 18, 2002

Time	Scheduled Activities
1:30 p.m. – 4:30 p.m.	Simulation-Based Compliance Methods: What Should DOE be Doing?

Paperless Workshop

In our efforts to conserve resources, the 2002 National Workshop will *not* make copies of individual presentations available to attendees. Presentations will be available after the Workshop at www.energycodes.gov/news/2002_workshop/presentations.stm or on CD by request.

National Workshop on State Building Energy Codes

Sessions

Monday, July 15, 2002

Codes 101-Code Basics

ASHRAE 90.1 Training

What Will the 2003 International Energy Conservation Code Look Like?

Tuesday, July 16, 2002

Code Jeopardy

Parade of States

Circuit Rider Programs

Wednesday, July 17, 2002

Ventilation and Moisture Control

Data in Defense of Codes

Indoor Air Quality

Voluntary Beyond Codes

Ducts-How Bad? How Important? And How To!

Code Enforcement

Thursday, July 18, 2002

Cracker Barrel

Lighting

Partnering with the Insurance Industry

Simulation-Based Compliance Methods: What Should

DOE Be Doing?

Pre-Workshop Sessions/Training

Monday, July 15, 2002

Building Tour to Three Locations

8:00 AM - 12:00 PM

Iowa Association of Municipal Utilities-Training & Office Complex

A state-of-the-art facility that will help municipal utilities meet the challenges of the 21st century. It is an example of innovative, yet proven techniques for saving energy. The complex was designed to use one-half the energy of a typical code-compliant commercial building and is actually exceeding that goal.

The Energy Resource Station (ERS)

A project of the Iowa Energy Center. Its primary purpose is to provide practical information to building owners, architects, engineers, and building operators on cost-effective, energy-efficient technology for commercial and industrial buildings. The ERS program areas include testing, demonstration, education and training.

Employers Mutual Casualty Insurance Companies (EMC)

Headquarters is located in downtown Des Moines. This energy-efficient 20-floor office complex received first place in the Excellence and Quality Craftsmanship/Energy Efficient Design Award – Commercial Building from MidAmerican Energy.

Lunch

On Your Own

12:00 PM - 1:00 PM

Afternoon Sessions

Codes 101-Code Basics

1:00 PM - 1:45 PM

Get a brief overview of the U.S. voluntary sector energy standards and model codes processes in this session for those who are new to codes and standards.

Speaker: Mark Halverson, PNNL

ASHRAE 90.1 Training

1:45 PM - 2:45 PM

An overview of the key provisions in ANSI/ASHRAE/IESNA Standard 90.1 for the commercial building envelope, mechanical, and lighting energy systems. Key differences between Standard 90.1-1989 and Standard 90.1-2001 will be highlighted.

Speaker: Mark Halverson, PNNL

Break

2:45 PM - 3:00 PM

What Will the 2003 International Energy Conservation Code Look Like?

3:00 PM - 4:30 PM

This session will focus on the changes to the 2000 IECC as published in the 2001 and 2002 Supplements to the ICC Codes that will be published in the 2003 IECC. The session will also look at the proposed code changes that were approved during the Spring Code Change Hearings in Pittsburgh, PA. The session will focus on the changes to both the residential and

commercial provisions of the IECC including sunspace additions, switching requirements, and changes to the mechanical requirements for commercial buildings.

Speaker: Eric Makela, International Conference of Building Officials

Welcoming Reception

Salons A-D 6:30 PM

This light hors d'oeuvres reception will include complimentary musical entertainment provided by the Des Moines Metro Arts Alliance. Vocalist, D.J. Horrigan, and pianist, Karen Hutzell, will perform a mix of Broadway hits, light jazz and old-time favorites.

Reception sponsored by Pella Windows



Tuesday, July 16, 2002

Registration

7:00 AM – 8:30 AM

Welcome and Agenda Overview

8:30 AM – 9:30 AM

Sharon Tahtinen, Iowa Department of Natural Resources
Energy Bureau Chief

Mayor Preston A. Daniels, Des Moines, Iowa

Governor Thomas J. Vilsack, State of Iowa

Peter Dreyfuss, U.S. DOE Chicago Regional Office Director

Keynote Speaker

9:30 AM – 10:00 AM

Mark Ginsberg, US DOE Board of Directors

Break

10:00 AM – 10:15 AM

Plenary Sessions

Code Jeopardy

10:15 AM – 11:45 AM

Come learn about these topics in a fun and enjoyable spoof of the famous game show Jeopardy: simplifying the code, adopting energy codes from scratch, successful strategies and case studies, and beyond the code.

Session Leads: Rosemarie Bartlett/Terry Shoemaker, PNNL
Emcee: Diana Shankle, PNNL
Speakers: Ray Andrews, New York State Department of State
Barbara Berlin, Environmental Law and Policy Center
David Weitz, Massachusetts State Board of Building Regulations and Standards
John Hogan, Seattle Department of Design, Construction and Land Use
Tom Fitzpatrick, Energy Systems Laboratory of Texas A&M University

Box Lunch-Visit Vendor Exhibits

11:45 AM – 1:00 PM

Lunch sponsored by Alliant Energy



ALLIANT ENERGY.

We're on for you.

Networking Break

1:00 PM – 1:30 PM

Parade of States 1:30 PM – 3:00 PM

Fast-paced, informative, and whimsical session where each state delegate will give a 2-minute presentation regarding building energy code activities (greatest code-related success or greatest code-related challenge) in their state. Props, costumes, and visuals are welcome!

Session Leads: Rosemarie Bartlett/Terry Shoemaker, PNNL

Break**3:00 PM – 3:15 PM***Break sponsored by Midwest Energy Efficiency Alliance****Circuit Rider Programs*****3:15 PM – 4:45 PM**

Successful circuit rider programs promote the adoption, implementation and compliance of building energy codes. Learn more about the Northeast Energy Efficiency Partnership's (NEEP) efforts in Massachusetts – a successful pilot program working with the architect and engineering community in the field to better understand what the Massachusetts code is asking them to do. Iowa's successful Circuit Rider Program is an education process designed from the beginning to the end. Subcommittees work directly with the public through public hearings, local officials, contractors, and code officials, etc. providing knowledge on how to adopt the national codes, understand them better, and change building techniques. Iowa is also training builders, city management, bankers, realtors, and appraisers in building an energy-efficient community.

Session Leads: Rosemarie Bartlett/Terry Shoemaker, PNNL
Technical Lead: Dave Abrey, Northeast Energy Efficiency Partnerships, Inc.
Speakers: Gary Epstein, Energy & Resources Solutions, Inc.
Craig Swartzbaugh, Iowa Building Code Consultants
Jody Swartzbaugh, Iowa Building Code Consultants

Presentation Descriptions:***Gary Epstein***

Typically, states provide general classroom training on updated commercial energy code requirements for architects, engineers and other members of the construction industry. Although this traditional classroom training is a key component in any state's energy code outreach strategy, a supplemental field training component or Circuit Rider is proving to be a successful strategy as well. In 2001, the state of Massachusetts working with NEEP offered a pilot Circuit Rider training program to bring energy code technical consultation sessions directly to architects' or engineers' offices. The on-site nature of the training sessions allowed for an open dialogue about specific energy code questions and led to discussion on architectural details used on plans for current projects. This presentation will focus on the lessons learned from the Circuit Rider pilot including areas of the code most often misunderstood or code requirements often challenging for the design community to demonstrate compliance.

Craig Swartzbaugh/Jody Swartzbaugh

Iowa's successful Circuit Rider Program is an education process designed from the beginning to the end. Subcommittees work directly with the public through public hearings, local officials, contractors, and code officials, etc. providing knowledge on how to adopt the national codes, understand them better, and change building techniques. Iowa is also training builders, city management, bankers, realtors, and appraisers in building an energy-efficient community.

Vendor Exhibits – Networking**4:45 PM – 6:00 PM*****Dinner/Evening on your own***

Wednesday, July 17, 2002

Registration

7:00 AM – 8:30 AM

Sessions

(choose one)

8:30 AM – 10:00 AM

Session 1A

Ventilation and Moisture Control

This session will examine the effects that mechanical ventilation has on residential buildings and how it can assist in mitigating moisture from the building's interior and envelope, reducing the likelihood of bacterial growth due to moisture. This session will also explore effective ways of providing a mechanical ventilation system while maintaining an energy-efficient building.

Session Lead: Molly Dwyer, US Department of Energy
Technical Lead: Don Sivigny, State of Minnesota
Speakers: Bruce Nelson, Minnesota Department of Commerce, Energy Division
Paul Majka, Shelter Source, Inc.
Don Stevens, Stevens and Associates

Presentation Descriptions:

Bruce Nelson

The Minnesota Energy Office just completed a study on the performance of 43 new homes; approximately half built with mechanical ventilation and half built under an older code without mechanical ventilation. The study evaluated and compared the effectiveness of building envelopes, combustion safety, mechanical systems, indoor air quality, and occupants' satisfaction and understanding of required maintenance. This talk will review the results of this study and discuss recommendations for codes and builder practices.

Paul Majka

Paul will provide information on how to balance energy, moisture and indoor air quality. Discussion will include: energy-efficient HVAC equipment improvements, moisture control strategies for improved durability, and indoor air quality control methods using source control, filtration and ventilation.

Don Stevens

Don Stevens will provide an update on what's happening with ASHRAE and in certain states - Washington, California, and the Northeast. He will also discuss the reliability and testing of various ventilation products, including: bath fans, IAQ general ventilation fans, range hoods, and energy recovery and heat recovery ventilators. Don will cover what products are applicable where, the testing methods used, and how to choose the best products.

Session 1B

Data in Defense of Codes

In the battle to adopt energy codes, one good strategy is to estimate what the energy and economic impacts of the proposed code are going to be. But making this estimate can be time-consuming unless a number of basic decisions can be made. This session will focus on the types of information necessary for a thorough energy and economic analysis, with discussion of where some of this information might be obtained and what the consequences of having (or not having) various pieces of information might be. Examples will be drawn from the Building

Energy Codes Program's (BECF) State Technical Assistance archives, and audience participation will be solicited for additional insight into how analyses of this type might be performed.

Session Lead: Mark Halverson, PNNL
Speakers: Mark Halverson, PNNL
Katie Cort, PNNL

Presentation Descriptions:

Mark Halverson

Mark Halverson will discuss the tools and data needed for estimating the energy impact of proposed energy code changes. He will also discuss potential data sources for both residential and commercial buildings.

Katie Cort

Katie Cort will follow on his presentation with a similar tools/data needs/data source presentation focused on economic evaluations of proposed code changes. Both presentations will focus on the types of questions posed to state energy offices in the course of these analyses.

Break

10:00 AM – 10:15 AM

Sessions

(choose one)

10:15 AM – 11:45 AM

Session 2A

Indoor Air Quality (IAQ)

Are new building techniques and materials making indoor air quality worse? New research on crawl space moisture, wall moisture and other building components provides new insights for the building construction industry. Leading experts in building science research will present findings and suggest alternatives to building practices that pass code, but do not necessarily result in healthy indoor air.

Session Lead: John Devine, US Department of Energy
Technical Lead: John Devine, US Department of Energy
Speakers: Achilles Karagiozis, Oak Ridge National Laboratory
Jim Hanna, Maryland Department of Housing and Community
Development

Presentation Descriptions:

Achilles Karagiozis

Moisture moves in many ways and most of the time is undetected by the inhabitants until it is too late. Building envelopes are subject to a wide range of environmental loads. These loads are dependent on a variety of factors some related to the macroclimate, and others to the microclimates, orientation of the system, building construction, and inhabitant behavior.

Until today, better understanding of the performance of building envelopes has been gained by researching one element at the time. For example, very few investigations examined the interaction of the building to both interior and exterior environmental loads at the same time.

When examining one effect at a time, one may under estimate the response of building to “real” hygrothermal loads.

In this presentation, the combination of interior (IAQ) and exterior loads are examined for the performance of walls in the Northwest and the performance of crawlspaces in hot and humid climates found in the Southeast. Monitored data of the interior conditions in the Northwest show an overestimation of the hygric interior environmental loads when compared to analytical models. In the hot and humid Southeast, the detrimental effect of ventilation of crawlspaces is explicitly shown with monitored and simulated data. The data clearly provide evidence against common code practice, and suggest that it is about time for a change. Our recent advancements of moisture engineering assessment have allowed us better understanding and this translates to designing more energy-efficient and durable envelope systems.

Jim Hanna

Much effort has been exerted to address issues related to the safety of products from which our homes are constructed, such as: glues, resins, carpets, countertops, etc. Indoor air quality studies, regulations, requirements and recommendations cover safety issues such as radon, lead paint and asbestos.

Now there is a need to address issues related to the products we bring into the home that affect indoor air quality. How do we store and use these products? How long do we keep them? Do we inadvertently make indoor air quality worse? The actual operation and maintenance of our homes is critical to indoor air quality.

Session 2B

Voluntary Beyond Codes

This session will take a look at energy codes and voluntary programs that encourage builders to go beyond the minimum requirements. It will also explore the strategies for reducing energy use in buildings through innovation and incentives for better performance, and using cost-effective and readily available technologies and practices. This session will focus on ENERGY STAR related to Chapter 4 of the IECC.

Session Lead	Doug Seiter, US Department of Energy
Technical Lead:	Steve Baden, RESNET
Speakers:	Steve Baden, RESNET Tom Fitzpatrick, Energy Systems Laboratory of Texas A&M University

Presentation Descriptions:

Steve Baden

When buying a home if someone offered you a home that was more comfortable, of higher quality, had lower monthly operating costs, that did not require additional income to qualify for and required no additional money down, would you buy it?

This is the opportunity that energy-efficient mortgages offers. The finance products are available nationally and credit the savings of a home built more efficient than the energy code into the mortgage loan. These programs give a builder a marketing and financing advantage for building energy-efficient homes. Fannie Mae has just introduced a new mortgage product that allows 100% financing of energy improvements, that treats the monthly energy savings dollar-for-dollar as additional income for the homebuyer, and is electronically underwritten. This session will explore the benefits of new financing opportunities that energy-efficient mortgages

offer to builders and consumers. It will also address how these mortgage products and other market-based initiatives can drive code compliance.

Tom Fitzpatrick

The Texas Legislature in 2001 enacted legislation adopting the energy provisions of the International Residential Code and the International Energy Conservation Code (2000 editions with 2001 Supplement) as the state's first energy code. There are provisions that allow cities outside of critical air quality areas to relax the energy code requirements, as well as provisions to seek additional emission reduction (or prevention) credit for above-code amendments and programs. Approximately 75% of the state's new construction occurs in the critical air quality areas where Texas is trying to "grow without growing emissions." Voluntary, above-code efforts are essential to the Texas strategy. This presentation will discuss the leverage of voluntary programs in the adoption process, goals for voluntary efforts, and recent developments with ENERGY STAR. What is happening in Texas has national importance in that it sets a model for adoption of energy codes as a recognized mitigation strategy for Clean Air Act non-attainment, and linking market-driven initiatives such as ENERGY STAR to code compliance.

Lunch

11:45 AM – 1:00 PM

Keynote Speaker

Liz Christiansen, Deputy Director, Iowa Department of Natural Resources

Margo Appel, US Department of Energy
Announcing the 2002 Best of Show Award Winners



Lunch sponsored by MidAmerican Energy

Networking Break

1:00 PM – 1:30 PM

Sessions

(choose one)

1:30 PM – 3:00 PM

Session 3A

Ducts — How Bad? How Important? And How To!

This interactive session will provide updated information on several recent duct leakage studies that examine the energy losses due to duct leakage. In addition, the speakers will describe and present case studies of duct testing and sealing in action, as well as discuss ways to bring ductwork inside in new construction, particularly in affordable homes. They will also open up discussion on how various energy codes specifically address duct leakage problems and look at the potential impact of a statewide duct sealing program to reduce energy use in North Carolina. Finally, the session will demonstrate how energy modeling software rates the importance of duct sealing.

Session Lead: Tim Eastling, US Department of Energy
Technical Lead: Jeff Tiller, Southface Energy Institute
Speakers: Tim Eastling, US Department of Energy
Jeff Tiller, Southface Energy Institute

Presentation Descriptions:

Tim Eastling/Jeff Tiller

Tim Eastling and Jeff Tiller will review the latest research on the cost and energy savings of duct sealing and how to develop a cost-effective approach to the problem. The discussion will examine duct leakage testing protocols used in different duct sealing programs around the country. The presentation will include demonstrations of duct testing equipment. The importance of duct sizing in new construction and the basic steps of duct sizing will be discussed, and how to locate ducts entirely inside the building envelope with short duct runs will be shown.

Session 3B

Code Enforcement

Residential energy code enforcement can be divided into two halves: plan review (to verify, for example, that proper windows and insulation levels are specified), and on-site inspections (to confirm that materials and equipment are properly installed). The plan review discussion will focus on the tension between codes which are stringent and simple, versus those which are flexible but more complex. Attendees will get a better understanding of the different approaches reflected in the model codes and some homegrown alternatives which can help them make regulatory decisions in their local jurisdictions. The challenges of on-site inspection will be discussed from the building official's perspective: what can an inspector really accomplish given limited time? Successful strategies will be discussed, and inspection tools will be presented for attendees to consider.

Session Lead: Dan Strout, US Department of Energy

Technical Lead: David Weitz, Massachusetts Board of Building Regulations and Standards

Speakers: Kevin Shea, Town of Bethlehem
Chuck Murray, Washington State University Energy Program

Presentation Descriptions:

Kevin Shea

Kevin Shea's presentation will include an overall review of the energy code, plan review to inspections and performance, and compliance of the energy code from start to finish.

Discussions will include:

- the understanding by the Code Official between plan review and site inspections
- tools for compliance between plan review and site inspections
- the evaluation of the standard building envelope for compliance
- the most difficult items to determine compliance (i.e., HVAC, lighting and plumbing)
- the number of site inspections for compliance, and
- the common practice between rural, suburban and urban for enforcement of the energy code.

Chuck Murray

Mr. Murray will speak on developing energy code changes that simplify implementation, develop markets for efficient products, and result in increased energy savings. Based on the evaluation of Oregon's simple methods for residential energy code compliance, Washington adopted similar standards. But because Washington has had a history of multiple code compliance options, the transition has not been smooth. Mr. Murray has developed strong opinions on code simplification through this transition.

Break

3:00 PM – 3:15 PM

Sessions

(choose one)

3:15 PM – 4:45 PM

Session 4A

Ducts-How Bad? How Important? And How To! (Repeat Session)

Session 4B

Ventilation and Moisture Control (Repeat Session)

Dinner and Tour

5:15 PM

Living History Farms

Living History Farms tells the amazing story of how lowans combined hard work and technology to transform fertile prairies of the Midwest to the most productive farmland in the world. Dinner will be served outdoors picnic style. Transportation will be provided. **Comfortable attire is suggested.** Transportation will depart from outside the main hotel entrance on Locust street.



Thursday, July 18, 2002

Cracker Barrel

8:30 AM – 10:00 AM

Pick your top three favorite topics from those described below and spend 30 minutes exploring each of them.

Session Lead: Rosemarie Bartlett, PNNL
Technical Lead: Rosemarie Bartlett, PNNL
Speakers: Ruth Taylor, PNNL
Jim Benney, National Fenestration Rating Council
Pam Cole, PNNL
Jean Boulin, U.S. Department of Energy
Howard Wiig, Hawaii State Energy Office
Erik Kolderup, Eley Associates
Bill McAnally, Iowa Central Community College

Presentation Descriptions:

Ruth Taylor-State Resources and Expertise

Ever wish you knew what other states were doing so you could build on their expertise? Ever had a question about a code implementation or compliance issue but were unsure the best person to ask? The Building Energy Codes Program website offers a forum for states to share resources and expertise. Come see what is available at the site now and share your ideas of what you would like to see in the future.

Jim Benney-Windows

The presentation will include a brief review on window and glass performance indices [U-factor, solar heat gain coefficient (SHGC), visible transmittance]; as well as an analysis of the recent changes to NFRC standards and programs.

Pam Cole-BECP

Pam Cole will demonstrate several new BECP compliance tools released in 2002. New MECcheck™ tools include: a Mac version, web-based Package Generator, Prescriptive Package Field Guides, and a new enhanced version of Area Calc. Pam will also discuss future BECP compliance tools.

Jean Boulin-Assistance for States

Jean Boulin will address the following questions: How can states react to reduced grant funding available for codes and standards? What types of free assistance are available to states from other organizations and how can they obtain the assistance? Are there any other ways states can accomplish codes and standards activities, e.g., state partnerships?

Howard Wiig/Erik Kolderup-What's New in Hawaii

Come hear about cool stuff from Hawaii: a cool residential roof code and lessons from first year of implementation; a Field Guide for residential designers and builders (134 pages); a homeowners' guide to keeping cool, energy efficient and green (40 pages); and a commercial energy efficiency design guide covering lighting, day lighting, windows, dehumidification and HVAC (under development).

Bill McAnally-Iowa Central Community College Code Activities

Bill will discuss Iowa Central Community College's new home and residence hall construction methods, the different types of materials, training methods used during class, and partnerships with area utilities, homebuilder associations, schools, the Department of Natural Resources, and other state agencies.

Break

10:00 AM – 10:15 AM

Sessions

(choose one)

10:15 AM – 11:45 AM

Session 5A

Lighting

This session will provide an overview of current lighting technologies, lighting controls and energy code requirements. Attendees will be exposed to basic lighting terminology and current trends in the lighting industry with a glimpse into the future. Energy codes require lighting be controlled to minimize operation when spaces are vacant or to take advantage of natural daylight. Attendees will learn about the type of control technologies available and their best applications. Come to this session if you want to expand your lighting knowledge and learn about new technologies!

Session Lead: Jeff McCullough, PNNL
Technical Lead: Jeff McCullough, PNNL
Speakers: Harold Jepsen, The Watt Stopper
Paul Walitsky, Philips Lighting

Presentation Descriptions:

Harold Jepsen

Harold Jepsen of The Watt Stopper will present lighting control technologies and products available today that provide energy saving strategies and compliance with energy codes such as the IECC, ASHRAE 90.1-1999 and California's Title 24.

Paul Walitsky

Sustainable lighting involves energy efficiency and using the lowest mercury content compatible with performance. We will discuss energy-efficient office lighting and how to reduce energy and maintenance costs for highway sign lighting. The new LEED specification discussion for retrofitting existing buildings will focus on the waste management section and the prerequisite involving mercury content. A description of the relamping of a city block in Berkeley, California and a project to relamp one classroom in Nogales, Arizona will be described.

Session 5B

Partnering with the Insurance Industry

There are many building energy code issues that are related to the insurance industry. Problems with water damage, mold, ice dams, and IAQ, etc. have caused insurance companies to pay the price. This panel session will examine those issues and identify opportunities for developing partnerships with the insurance industry. The end game is to assist in maximizing state adoption and implementation of energy codes and efficiency programs as well as provide a vehicle to help the insurance industry reduce its loss areas.

Session Lead: Darren Stevenson, US Department of Energy
Technical Lead: Mike DeWein, Building Codes Assistance Project
Speakers: Mike DeWein, Building Codes Assistance Project
Susan Beal, LSUS Center for Business and Economic Research
Jeff Sciaudone, Institute for Business & Home Safety (IBHS)

Presentation Descriptions:

Mike DeWein

Mike DeWein will begin the session with an overview and background on bringing insurance and code groups together with the insurance industry and how, through the proper use of energy codes, we can reduce some insurance losses.

Susan Beal

Susan Beal will illustrate some of her experiences with programs in Iowa and Louisiana and what has been learned from those experiences.

Jeff Sciaudone

Jeff Sciaudone will address issues and concerns related to property loss and how IBHS can fit into all this.

Closing Plenary and Wrap-Up

Jean Boulin, US Department of Energy BECP

11:45 AM – 12:15 PM

Post-Workshop
Thursday, July 18, 2002

***Simulation-Based Compliance Methods:
What Should DOE be Doing?***

1:30 PM – 4:30 PM

The BECP is conducting a number of activities involving simulation-based methods for energy code compliance. Among these activities are the development of the **COMcheck-Plus™** software for commercial buildings and a version of **MECcheck™** with a DOE-2 simulation engine for energy-based tradeoffs. This session is intended to allow you – as a participant of your state's energy code program – to become more familiar with these compliance methods and to express your interests and concerns. The latest versions of the simulation-based software tools will be demonstrated and discussed.

Session Lead: Ruth Taylor, PNNL

2002 National Workshop on State Building Energy Codes

Speaker Bios (alphabetical by last name)

**Dave Abrey
Ray Andrews
Steve Baden
Rosemarie Bartlett
Susan Beal
James C. Benney
Barbara C. Berlin
Jean J. Boulin
Liz Christiansen
Pam Cole
Katie Cort
John Devine
Mike DeWein
Molly A. Dwyer
Tim Eastling
Gary Epstein
Tom Fitzpatrick
Mark Ginsberg
Mark Halverson
James C. Hanna
John Hogan
Harold Jepsen
Achilles Karagiozis**

**Erik Kolderup
Paul Majka
Eric Makela
Bill McAnally
Jeff McCullough
Chuck Murray
Bruce Nelson
Jeffrey C. Sciaudone
Doug Seiter
Kevin M. Shea
Terry Shoemaker
Don Sivigny
Don Stevens
Darren Stevenson
Dan Strout
Craig Swartzbaugh
Jody Swartzbaugh
Ruth Taylor
Jeff Tiller
Paul J. Walitsky
David Weitz
Howard Wiig**

Dave Abrey, Northeast Energy Efficiency Partnerships, Inc.

Dave Abrey is the Director of Building Energy Codes and New Construction Programs for Northeast Energy Efficiency Partnerships. The goal of this position is to work with Northeast states to increase the effectiveness of energy codes and new construction programs. Prior to this position, Dave worked for four years as Performance Assurance Manager using energy management systems to optimize large energy-efficiency projects. In addition, from 1992 to 1997, he designed and implemented demand-side management programs for a Northeast utility and, before that, worked for 10 years in the New York State Energy Office's Bureau of Codes and Standards. Lastly, on a part-time basis, Dave worked as a local building code official to better understand the complexities of code enforcement.

Ray Andrews, New York Department of State

Ray Andrews is the Assistant Director for Energy with the Codes Division of the Department of State in New York. Mr. Andrews is a registered architect in New York State and has extensive experience in building design, restoration, construction and governmental administration. He is responsible for technical support for the current New York State Energy Conservation Construction Code. Mr. Andrews has been assigned the project of working towards a new model-based energy code for New York. Prior to joining the New York Codes Division, Mr. Andrews worked in private practice as an architect, with the New York State Office of Parks, Recreation and Historic Preservation and with the New York State Office of General Services, Division of Design and Construction. He currently serves on the New York State Board of Historic Preservation, representing the New York Secretary of State. He earned Bachelor's degrees in history and architecture and a Master's degree in architecture at Syracuse University. Mr. Andrews also studied at the Architectural Association School of Architecture and King's College, London, England. He is a published author and lecturer on the American Revolution.

Steve Baden, Residential Energy Services Network (RESNET)

Steve Baden has worked in the residential energy efficiency field for over 28 years, including 18 years with home energy ratings and energy mortgages on both the state and national levels, and 10 years administering a state energy office. Mr. Baden initiated the "Warm Homes for Alaskans Initiative" which received the "1993 National Award for the Most Outstanding State Housing Program" from the National Council of State Housing Agencies. Steve was also awarded a "Lifetime Achievement Award" from the U.S. Department of Energy.

Rosemarie Bartlett, Pacific Northwest National Laboratory

Rosemarie Bartlett is the Training Manager for the Building Energy Codes Program (BECP) for the Pacific Northwest National Laboratory and has over 11 years experience in building energy efficiency. Rosemarie is responsible for training and outreach efforts for the implementation of national energy codes. She has developed curricula and training programs for the International Energy Conservation Code, ANSI/ASHRAE/IESNA Standard 90.1-1999, and for BECP products. She is responsible for quality assurance testing of the BECP compliance tools and also participates on the development team, providing direction and assistance with the tools' support materials. She also provides technical support in the planning and coordination of the BECP National Workshop. Rosemarie serves as the Laboratory's Executive Ambassador for Junior Achievement (JA), and she consults in second and fifth grade classrooms for JA. She has a B.A. in Business Administration from Eastern Washington University. She is a member of the Association of Energy Engineers and is a Certified Energy Manager.

Susan Beal, LSUS Center for Business and Economic Research

Susan Beal was born and raised in Cincinnati, Ohio. She and her husband moved to Shreveport in 1978 with their three children. Susan earned a B.A. in mathematics from Edgecliff College in 1967, and an MBA from LSU Shreveport in 1991. She joined the LSUS Small Business Development Center in 1987 as the Assistant Director where she had significant managerial experience in small business consulting. In 1992, she became the Director of the LSUS Center for Business and Economic Research, where her duties include managing applied business research activities, maintaining a database of monthly economic indicators for the Shreveport-Bossier City MSA, and organizing conferences relevant to area economic issues.

James C. Benney, National Fenestration Rating Council

Jim Benney is currently the Director of Education for the National Fenestration Rating Council. Prior to this, Jim spent seven years (1993-2000) as the Technical Director for the Primary Glass Manufacturers Council (PGMC) and eight years (1985-1993) as the Manager of Technical Services for the Window and Door Manufacturers Association (formerly the National Wood Window and Door Association). In addition, Jim has worked for the Arkansas Forestry Commission as a field auditor and wood energy specialist; was a full-time vocational teacher and director of a Youth Conservation Corps camp; and worked for Weyerhaeuser Corporation as an independent contractor. Jim has a Bachelor of Science Degree in Forestry from the University of Missouri and completed a six-year Institute for Organization Management program at the University of Notre Dame.

Barbara C. Berlin, Environmental Law and Policy Center

Barbara Berlin is an urban planner working on energy conservation and sound urban development and land conservation issues in the Great Lakes region for the Environmental Law and Policy Center in Chicago. Barbara's experience includes urban design and development projects, including transit-oriented development, long-range regional and city plans, and managing a community development department, where she worked closely with building officials to write ordinances that are readily understood by the public and the inspectors. She frequently lectures on smart growth and sustainable development throughout the Midwest. Ms. Berlin holds a Master's of Urban Planning from the University of Michigan, and a Bachelor of Arts in American Culture from Northwestern University.

Jean J. Boulin, U.S. Department of Energy

Jean J. Boulin is team leader of the Commercial Buildings Team, Office of Building Technology, State and Community Programs, U.S. Department of Energy. He is responsible for commercial building energy codes in the Office of Building Technology Assistance. Jean has managed a number of the Department's research programs, including walls, roofs, and windows and day lighting. Since 1984 he has been responsible for the Department's building energy codes and standards activities. Jean earned his master of architecture degree at the State University of New York at Buffalo.

Liz Christiansen, Iowa Department of Natural Resources

A Cornell College graduate and botanist by training, Liz Christiansen started her professional career with the Southeast Iowa Regional Planning Commission in Burlington in 1985 as a staff planner. She served as the Executive Director of the Commission from 1988-1990, before moving to the Iowa City area.

Iowa's Groundwater Protection Act of 1987 served as a catalyst for environmental action and many planning agencies in Iowa began to offer solid waste planning to assist their local government clients. In 1990, Liz began work for the East Central Iowa Council of Governments

as a solid waste planner. She helped cities and counties plan for and implement recycling, composting and environmental education activities. In the mid 1990's, she was hired by the City of Cedar Rapids and Linn County to help establish a new organization – Bluestem Solid Waste Agency. Liz became the recycling/education coordinator for the Agency and also served as spokesperson during the agency's landfill siting process. Governor Tom Vilsack appointed Liz to the Iowa Environmental Protection Commission in March 1999. In April 2000 she resigned the Commission to become the Division Administrator of the Land Quality and Waste Management Assistance Division of the Iowa Department of Natural Resources. Recently, the Waste Management Assistance Bureau merged with the Energy Bureau to coordinate on key issues. In 2002, Director Jeff Vonk appointed Liz as Deputy Director of the Iowa Department of Natural Resources, the first woman to serve in that capacity.

Pam Cole, Pacific Northwest National Laboratory

Pam Cole is a Science & Engineering Associate in the Energy Technology Division. Pam is responsible for providing technical assistance through the BECP Hotline. She answers technical, software and energy code-related questions, provides state contact information and assists with products and services by phone or email. She manages the BECP Deployment Stakeholder Conferences task and is responsible for the DOE-BECP exhibit booth to attend builder, code official, and other stakeholder conferences to demonstrate, discuss, and distribute MECcheck™ and COMcheck™ compliance materials, plus other program technical products and materials. Pam also manages the BECP *Setting the Standard* newsletter task to deliver important energy code-related information to approximately 13,800 individuals two times a year.

Katie Cort, Pacific Northwest National Laboratory

Katie Cort is a Research Economist in the Energy Science and Technology Division at Pacific Northwest National Laboratory. Katie supports a variety of projects, with most of her experience relating to the assessment of energy-efficiency programs, technologies, and research. She provides technical support for the DOE's Office of Building Technology, State and Community Programs (BTS) Government Performance and Results Act (GPRA) Metrics effort, which estimates BTS program benefits on an annual basis. Katie has recently taken part in developing a model to analyze the potential benefits and costs associated with commercial energy codes and standards. Katie has a Master's Degree in Economics from the University of Washington and a Bachelor of Science Degree in Economics from Southern Methodist University.

John Devine, U.S. Department of Energy, Chicago Regional Office

John Devine is an Energy Technology Specialist with nearly 20 years experience in energy conservation, building codes and renewable energy. Most recently, his field research for Washington State University on residential ventilation systems was published by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and was featured in the December 1999 issue of *Energy Design Update*. At the U.S. Department of Energy's Chicago Regional Office, John provides technical support for Codes and Standards, ENERGY STAR and renewable energy initiatives.

Mike DeWein, Building Codes Assistance Project

Mike DeWein is the technical director of the Building Codes Assistance Project, a collaborative effort of the Alliance to Save Energy, the Natural Resources Defense Council, and the American Council for an Energy-Efficient Economy. He has been in the energy-efficiency business for most of his life, first as a builder and an alternative energy retailer, later joining the New York State Energy Office (NYSEO) to assist with its energy code outreach and implementation

programs. Mike was instrumental in the development of the NYSTAR home energy rating program and was project manager for several NYSEO programs, including State Facilities Energy Efficiency, Renewable Energy and Building Commissioning. He serves on many national code and energy efficiency boards and committees, including the HERS Council Technical Committee, the NY State Energy Code Advisory Committee, and the Board of Directors of the Energy and Environmental Building Association (EEBA).

Molly A. Dwyer, U.S. Department of Energy, Seattle Regional Office

Molly Dwyer has been a member of the Seattle Regional Office for six years. She is the Regional Program Manager for the Building Energy Codes Program. Mrs. Dwyer is also the Administrator for all Special Projects grants in the Seattle Regional Office. Prior to joining the staff in Seattle, she served in the New York Regional Office for 15 years, managing several programs including the Institutional Conservation Program.

Tim Eastling, U.S. Department of Energy, Atlanta Regional Office

Tim Eastling has worked at the Atlanta Regional Office of the Department of Energy for longer than he cares to share. Before stepping on the energy codes whirlwind in July 2001, he worked with industrial programs. (Ask him about electric motors.) Prior to that, he worked with states, schools, hospitals, and local agencies in grant programs to retrofit schools, hospitals, and low income houses for energy efficiency. He also worked with states in their broader energy efficiency programs. He has visited many schools, hospitals, homes, and industries in 10 states to observe the work funded by grants he administered. Advocationally, he is involved in music and travels internationally when he can--48 countries so far. He received a BA in political science from Georgia State University and an MA in international politics from the University of Texas and has taken many courses in energy efficiency, including the Energy Management Course at NC State University. He also took many courses in a variety of disciplines while serving in the Army Reserves.

Gary Epstein, Energy & Resources Solutions, Inc.

Gary Epstein is the President and founder of Energy & Resources Solutions, Inc. He has interdisciplinary skills in the energy engineering and environmental consulting fields. His current work and areas of expertise include: energy technology characterization, research and assessment; engineering modeling and simulation of building system and industrial process energy use; energy code development and consulting; assessment of environmental impacts of energy use and conservation; and development, planning and evaluation of utility and government resource conservation programs. During recent years, Gary has spent considerable time providing consulting services in support of enhanced compliance with new energy codes. His firm has been a leader in developing programs for peer-to-peer, circuit rider energy code technical assistance, having provided approximately 100 support sessions in the past year.

Tom Fitzpatrick, Energy Systems Laboratory of Texas A&M University

Tom Fitzpatrick is a Registered Architect and has been a leader in application of system planning principles to real estate and construction issues for over 25 years. Tom has recently joined the staff of the Energy Systems Laboratory of Texas A&M University as an energy code specialist in the Implementation Team for Senate Bill 5. Tom is a board member of the Texas Solar Energy Society and the Texas Building Energy Institute (TBEI) and until recently served as TBEI's Executive Director and managed its successful energy code promotion and education efforts over the past several years. He has provided support on energy code issues to local governments and legislative staff, provided training for designers, builders and building officials and has hosted numerous consensus-building meetings and events to facilitate understanding,

development and effective implementation of building energy codes. Previously, Tom served as the Director of the Office of Facility Planning for the Texas General Services Commission and as Director of Programming for 3D/International, a large design and management firm based in Houston, Texas.

Mark Ginsberg, US Department of Energy

Mark Ginsberg is Deputy Assistant Secretary for the Office of Building Technology, State and Community Programs (BTS). In that position, Mr. Ginsberg oversees a comprehensive set of programs to make buildings, equipment and appliances more energy efficient; support state, community and low income energy programs; and pave the way for a healthy and prosperous future through high efficiency research and development, building codes and appliance standards. With a staff of 74 and a budget request of \$369 million for Fiscal Year 2002, BTS utilizes partnerships with industry, states, national energy laboratories, universities, the Department's field structure and regional offices to strengthen and leverage its capabilities.

Mark has been nominated by Assistant Secretary Garman to serve on a new EERE Board of Directors, which will direct policy, budget and strategic planning for the Office of Energy Efficiency and Renewable Energy.

From December 1991 until July 1997, Mark directed the Federal Energy Management Program which leads the Federal government's effort to reduce its energy consumption 30%, and which can save American taxpayers \$1 billion every year.

Prior to joining DOE in 1991, Mr. Ginsberg served as Director of the Arizona Energy Office, where he earned a reputation for aggressive energy policy, solar and community energy programs, emergency preparedness and economic development. He helped found and served as a Board Member and officer of the National Association of State Energy Officials. He chaired the Western Interstate Energy Board and served on the Board of the Interstate Solar Coordination Council, forerunner of the Interstate Renewable Energy Council.

Mark Halverson, Pacific Northwest National Laboratory

Mark Halverson is a Senior Research Engineer in the Energy Division at Pacific Northwest National Laboratory. For the past 15 years, Mark has supported building energy code and energy efficiency programs. Recent activities include development of consensus and Federal standards, energy code training, analysis of energy savings associated with codes and standards, facilitation of energy saving performance contracts, and measurement and verification (M&V). He is currently supporting DOE's Building Energy Codes Program and Federal Energy Management Program. He works closely with ASHRAE's SSPC 90.1, is a member of ASHRAE's Code Interaction Subcommittee, and is a member of the FEMP M&V team. Mark has a Master of Science Degree in Chemical Engineering from the University of Washington and a Bachelor of Science Degree in Chemical Engineering from Montana State University. He is a registered Professional Engineer in the state of Washington and a Certified Energy Manager.

James C. Hanna, Maryland Department of Housing and Community Development

James C. Hanna is the director of the Maryland Codes Administration within the Department of Housing and Community Development and is responsible for administering six programs related to building construction in the State of Maryland. The programs include the Energy Conservation Building Standards Act, the Maryland Accessibility Code, the new Maryland Building Performance Standards, the Industrialized Building Program, the Safety Glazing Act, and the Livability Code. He assists the Neighborhood Revitalization Center with the new

Maryland Rehabilitation Code. Mr. Hanna has been appointed to serve as DHCD's representative to the Maryland Emergency Management Agency (MEMA), is a member of the Governor's Emergency Management Advisory Council, and is a delegate to the National Conference of States on Building Codes and Standards where he serves as past president on the board of directors. Mr. Hanna serves on the steering committee of the Council of State Administrative Agencies, is a member of the Steering Committee of the State Hazard Mitigation Team, and is a member of the Green Buildings Council. He is a registered architect in Maryland and Florida.

John Hogan, Seattle Department of Design, Construction and Land Use

John Hogan is the Senior Code Development Analyst for the Seattle Department of Design, Construction, and Land Use. He has provided leadership in Energy Code development and enforcement for over 20 years and his expertise is recognized at the city, state, regional, and national level. Mr. Hogan is a member of the ASHRAE/IESNA Standard 90.1 Committee and the Washington State Energy Code Technical Advisory Group. He has submitted code change proposals and participated in IECC and predecessor Model Energy Code hearings. Mr. Hogan is both a licensed architect and a licensed mechanical engineer.

Harold Jepsen, The Watt Stopper

Harold Jepsen is the Director of Product Marketing at The Watt Stopper, a company which produces energy saving control products for buildings. Since 1988, he has been a product design and applications engineer in the energy, lighting and building automation control industry. He is a specialist in the application of lighting and building controls for energy savings and energy codes. Harold presents and trains the engineering, lighting design and electrical community on lighting control code compliance with ASHRAE 90.1, California's Title 24 and other energy code standards. He is The Watt Stopper's representative to the California Energy Commission in the standards revision process. He is a licensed electrical engineer and electrical contractor in his home state of California and is a member of The Association of Energy Engineers, Illuminating Engineering Society of North America, and the National Fire Protection Association. He presently resides in Northern California with his wife and five children.

Achilles Karagiozis, Oak Ridge National Laboratory

Dr. Achilles Karagiozis is a senior research engineer at the Oak Ridge National Laboratory. He is considered an expert in moisture engineering and has extensive past experience in both modeling complex transport processing and laboratory and field monitoring.

He is a member of ASHRAE Technical Committee T.C. 4.4 , ASHRAE SPC 160P, BETEC, ASTM E06. Currently he is developing guidelines for moisture control for walls, roofs and crawlspaces, models to predict durability, and the bio-hygrothermal modeling of molds species.

Erik Kolderup, Eley Associates

Erik Kolderup is Vice President of Eley Associates, an energy efficiency consulting firm located in San Francisco. His energy code work has included code development and software development for the State of Hawaii, development of Hawaii's first residential code document, fenestration research for the development of ASHRAE Standard 90.1, life-cycle cost studies for California's Title 24, and an analysis of envelope conservation measures for a building energy standard for Hong Kong. He has provided energy code training in Hawaii, New Mexico, Washington DC, Puerto Rico, and the U.S. Virgin Islands. Erik is a licensed electrical engineer in the State of California and holds Bachelors and Masters degrees in electrical engineering and

a Masters degree in industrial engineering, all from Stanford University. He is a member of ASHRAE and the Association of Energy Engineers.

Paul Majka, Shelter Source, Inc.

Paul Majka is a trainer in energy-efficient construction practices and systems approach building. He has delivered workshops for builders associations in Minnesota and Wisconsin, and various utility companies such as Xcel Energy, Crow Wing Power, Otter Tail Power and Wright Hennepin Electric. Paul has provided training for various building material manufacturers, lumberyards, national builders, realtors, appraisers, consumers, as well as at national conferences with the Energy and Environmental Builders Association and Affordable Comfort. Seminars are related to fields of: airtight construction practices and techniques, ventilation and moisture control strategies, indoor air quality problems and solutions, building pressure regimes, building thermodynamics and marketing of high performance homes and buildings.

Eric Makela, International Conference of Building Officials

Eric Makela is a Senior Educational Programs Administrator for the International Conference of Building Officials. As part of his duties he is the liaison to the IECC Code Development Committee and is responsible for developing and delivering energy code training. Prior to ICBO, Eric served as the Training Coordinator for the Building Standards and Guidelines Program for Battelle, Pacific Northwest National Laboratory, responsible for training efforts for the implementation of national energy codes. There he developed curriculum and training programs for the Model Energy Code and ASHRAE/IES 90.1-1989. He also served on the development team for the US DOE MECcheck and COMcheck energy code compliance tools. He has been an energy consultant for the past 17 years. Eric Makela has presented over 90 training sessions in residential and commercial building energy codes. The majority of these have been directed at the enforcement industry teaching local building department personnel how to plan check to ensure compliance. He has a BA degree in Environmental Studies from Sonoma State University and an MA in Education.

Bill McAnally, Iowa Central Community College

Bill McAnally was a building contractor for 15 years specializing in energy-efficient new homes and remodeling. He has utilized that experience as the program coordinator/instructor of the carpentry program at Iowa Central Community College for the past 12 years. The Iowa Central Carpentry Program is very involved in energy-efficient construction and indoor air quality. Besides building some of Iowa's most efficient homes, they have built five of the nine residence halls at the Fort Dodge campus utilizing many different insulation and construction techniques. All of the new residence halls and recent construction projects on campus employ geothermal technology. The Carpentry Program has received numerous awards for its leadership in energy-efficient construction. Bill was recently chosen as the Iowa Community College Faculty of the Year for 2001.

Jeff McCullough, Pacific Northwest National Laboratory

Jeff McCullough is a Senior Research Engineer in the Energy Science and Technology Division. His main area of focus is in building energy technologies and energy codes and standards. He works in the DOE Emerging Technologies Program which accelerates the introduction of new, highly energy-efficient products and technologies into the marketplace. He also works in the BECP which provides states with adoption, implementation and enforcement assistance in support of residential and commercial building codes. He is a Certified Energy Manager (CEM) and Certified Lighting Efficiency Professional (CLEP) with the Association of Energy Engineers. Mr. McCullough holds a B.S. degree in Mechanical Engineering and a B.A. degree in Business Administration from Washington State University.

Chuck Murray, Washington State University Energy Program

Mr. Murray is the Energy and Ventilation Code technical specialist for the WSU Energy Program and serves on the Washington State Building Code Council's technical advisory committees for Energy and Ventilation. Recent activities of interest include authoring and advocating for progressive changes to the Washington State Energy Code and Washington State Ventilation and Indoor Air Quality Code. He is also the primary developer for state energy code residential implementation guides and software. Later this summer, Mr. Murray will establish a new University research station to analyze hygrothermal responses of building assemblies in the wet Pacific Northwest.

Bruce Nelson, Minnesota Department of Commerce, Energy Division

Bruce Nelson is a Senior Engineer with the Minnesota Department of Commerce, State Energy Office. He manages projects to bring about energy-efficient market transformation in Minnesota buildings, equipment, and business practices. He was instrumental in the recent Minnesota Energy Code upgrade, and is now coordinating the state's role as an ENERGY STAR partner. He has been with the Minnesota Energy Office since 1976, and before that was a Research Engineer with Northern States Power Company. Mr. Nelson has a Bachelor of Electrical Engineering from the University of Minnesota and is a registered professional engineer (mechanical) in Minnesota.

Jeffrey C. Sciaudone, Institute for Business & Home Safety

Jeffery Sciaudone is the Director of Engineering for the Institute for Business & Home Safety (IBHS) and has been with IBHS since 1999. IBHS is a national, not-for-profit corporation whose mission is to reduce injuries, deaths, property damage, economic losses and human suffering caused by natural disasters. The Institute is supported by the insurance industry and others committed to accomplishing this mission.

He represents IBHS on various technical and industry committees concerning natural disaster mitigation – such as the ASCE 7 “Minimum Design Loads for Buildings and Other Structures” committee. Jeffrey also provides technical oversight for the Fortified...for safer living program, IBHS’ building code initiatives, the IBHS Catastrophe Paid Loss database and development of products that further public understanding of natural hazard loss mitigation.

From 1996 to 1999, Jeffrey was a Project Technical Leader for Impact Forecasting, L.L.C. (IF), a catastrophe modeling company in Chicago, IL. While with IF, he developed computer models to predict wind and earthquake damage to residential structures and performed catastrophic risk analyses for large insurance portfolios.

Jeffrey holds Bachelor and Master of Science degrees in Civil Engineering from Clemson University where he also served as a Graduate Research Assistant at the Clemson University Wind Load Test Facility. Jeffrey is a registered Professional Engineer (Civil-Structural) in the State of Massachusetts.

Doug Seiter, U.S. Department of Energy, Denver Regional Office

Doug Seiter has been in the business of resource conservation for more than 24 years. Developer and manager of the ENERGY STAR and Green Building Programs for the City of Austin for thirteen years, he promoted resource conservation and sustainable development practices for mainstream building through partnerships with the local homebuilders association and other industry representatives. Doug was recently a consultant in energy and environmental program development and environmental construction, working with the Denver

Home Builders Association to coordinate the state implementation of Built Green Colorado, the largest program of its kind in the country, and the first statewide green builder program. For the past year and a half he has been with the Denver Regional Office of the Department of Energy, where he works with community initiatives and is Program Manager for Codes and Standards.

Doug has been involved in a wide variety of local and national initiatives related to energy efficiency and sustainable development, including the Sustainable Communities Initiative for the City of Austin and the expansion of Built Green Colorado to meet the demand for "green" community design. He is a strong advocate of developing community partnerships to bring sustainable building practices and products to mainstream activities, promoting and maintaining a good working relationship between the local environmental community and the regional building industry.

Kevin M. Shea, Town of Bethlehem

Kevin Shea was Assistant Building Inspector for the Town of Bethlehem, NY from 1986 to 2001 when he became the Head of the Building Department there. He served as an officer of the New York State Building Officials Conference from 1989 to 1999 and is also that organization's immediate Past President. He has been on the Director's Board for the Eastern State Building Official Federation, and is 1st Assistant Chief of the Elsmere Fire Department on which he has served for over 28 years. Kevin also serves on the Governor's Technical Committee on Code Enforcement and Sub-Technical Committee in reviewing the International Code for New York State which will become effective in January 2003.

Terry Shoemaker, Pacific Northwest National Laboratory

Terry Shoemaker is a Program Administrator in the Energy Division at Pacific Northwest National Laboratory. Over the past 11 years, Terry has worked on a variety of energy-and buildings-related programs. Terry is a member of the DOE Emerging Technology Program, promoting brighter, short, and less expensive sub-compact fluorescent lamps. She also coordinates the websites, and assists with program marketing and publicity. Terry's other role at the Laboratory is on the BECP. She works in the Outreach and Distribution area of the program assisting in marketing and the production of communication materials. Terry works closely with the U.S. DOE Regional Offices located in six major cities across the country. Terry provides support in the planning and coordination of the BECP National Workshop that focuses on providing states, industry, code proponents and stakeholder groups with an opportunity to learn about a variety of codes and standards issues.

Don Sivigny, State of Minnesota

Don Sivigny is an Energy Specialist for the State of Minnesota. He is also a Sr. Building Code Representative State of Minnesota, a licensed building official and builder and is HRAI certified in Residential Mechanical Ventilation Installation. He has been married to wife Shelley for 14 years and has three sons who are 11, 9, and 7.

Don Stevens, Stevens and Associates

Don Stevens has worked on state and local energy and ventilation codes in Washington, Oregon, California, Minnesota, Colorado and Idaho. He is a member of the ASHRAE Standard 62.2 committee that has written the national ventilation standard. Don developed the ventilation code training in Minnesota that was funded by the SEP program in 1998. HRAI has had over 1,000 attendees for the ventilation code training workshops in Minnesota over the past two years. He was a principal author of the Washington State Ventilation and Indoor Air Quality Code that has been in effect since 1991.

Darren Stevenson, U.S. Department of Energy, Philadelphia Regional Office

Darren Stevenson currently serves as the Program Manager for the State Energy Program at the U.S. Department of Energy, Philadelphia Regional Office, which covers the Mid-Atlantic Region (DE, DC, MD, NJ, PA, VA, WV). The Building Energy Codes Program serves the building industry by providing financial and technical assistance to states to update, implement and enforce their building energy codes thereby advancing and advocating energy-efficient and environmentally-sound design and construction of buildings. The State Energy Program is a formula and competitive grant program which assists states in promoting and deploying energy efficiency and renewable energy technologies which cross all of the energy sectors including Buildings, Industrial, Utility, Transportation and Education. Darren has been at DOE since 1987 and was formerly the Program Manager for the Institutional Conservation Program and the Weatherization Program. Darren is a graduate of West Chester University with a degree in Liberal Studies.

Dan Strout, U.S. Department of Energy, Boston Regional Office

Dan Strout is a Building Energy Codes Program Manager at the U.S. Department of Energy's Boston Regional Office with over ten years experience in demand side management and energy efficiency. In this role, he also provides the Northeast regional states technical support for the ENERGY STAR buildings program and energy-efficient new construction initiatives. Dan's other energy experiences include financial and engineering feasibility analyses, program design/implementation, and project management of diverse demand-side management projects for multi-class electric and natural gas utility sectors. From a regulatory perspective, Dan has experience in the review and analysis of utility forecast and supply plans, mergers and acquisitions, power supply arrangements, finance projects, and energy-efficiency programs.

Craig Swartzbaugh, Iowa Building Code Consultants

Craig Swartzbaugh has over 30 years of experience in serving Iowa Communities, State Government, and the Iowa Energy Code Programs. He has served for 21 years working as a facilities engineer and building code official for Iowa local, county, and state governments enforcing energy code requirements and providing and receiving ongoing education and training. He served in the capacity of city manager and city clerk for six years working directly with city legal departments in the drafting and adoption of local codes and ordinances. While working for the Iowa State Fire Marshal's Office as a facilities engineer, he was instrumental in the statewide adoption of the residential and commercial energy codes (i.e., 1992 Council of American Building Officials Model Energy Code "MEC" and American Society of Heating, Refrigerating and Air-Conditioning Engineers/IES 90.1-1989 code edition.)

Craig was directly involved in the development and implementation of both Phase I and II of the Iowa Department of Natural Resources Energy Bureau projects. He contributed largely to the development of the Iowa Residential and Commercial Energy Code toolkit that was completed in 1999 and is still being used across Iowa by some building officials. Craig still receives calls on energy code questions and helps to resolve issues without any charge to the caller or state of Iowa DNR Energy Bureau. He provided successful educational training on these documents and additional energy code information.

Craig currently works with architects, engineers, and local, county and state governments across the state in resolving energy code issues and meeting energy code design requirements. He is a member of Iowa Association of Building Officials and works with local, county and state Building Code officials on a daily basis. He is also a member of the Mid-Iowa Construction Code committee where they as facility engineers, architects, engineers, and city, county and state government officials work towards a standardized, uniform, and effective building code

program for Iowa. Craig graduated from Drake University in 1977 with a degree in Public Administration and Environmental Science.

Jody Swartzbaugh, Iowa Building Code Consultants

Jody Swartzbaugh has a background in building construction plan review and building construction inspection. She provides technical assistance for the Iowa International Energy Code training program. Jody has an in-depth knowledge of most current computer technology and the ability to interface with the Iowa Energy Code Training Program.

Ruth Taylor, Pacific Northwest National Laboratory

Ruth Taylor is a Senior Research Engineer in the Energy Technology Division at Pacific Northwest National Laboratory. After receiving her degree in Environmental Design from the Architecture Department of Texas A&M University, Ruth Taylor joined the Laboratory in working to evaluate the economic and environmental impacts of building energy standards. Her work included use of complex building energy simulation tools and analysis in support of whole building performance-based energy standards. Ruth then started her own architectural firm and spent ten years in the field of residential architecture. In 1999, Ruth rejoined the Laboratory, where she manages the Building Energy Codes technical support hotline and website tasks and coordinates the user feedback and software usability activities for the Program. Ruth also participates in the DOE Emerging Technologies Program and other projects related to sustainable buildings.

Jeff Tiller, Southface Energy Institute

Jeff Tiller, PE, Southface Energy Institute, is director of Southface's North Carolina office in Boone, NC, and is former president co-founder of Southface in Atlanta. He has managed dozens of energy code training projects, is primary author of the "Builder's Guide to Energy Efficient Homes" published in seven states, has conducted numerous studies on the impact of energy efficiency on state and national economies, including the recent comprehensive study on how to reduce greenhouse gas emissions in North Carolina, has helped develop demand-side management programs for several utilities, and is now project director for development of a new state energy plan for North Carolina. He also teaches at Appalachian State University between trips.

Paul J. Walitsky CHMM, Philips Lighting Co.

Paul Walitsky is responsible for environmental compliance for all of the Philips Lighting facilities in North America. He is a member of the Board of Directors of the Energy Services Coalition and a Past Chairman of the National Electrical Manufacturers Association Environmental Affairs Committee. He is a Certified Hazardous Materials Manager and a Licensed Industrial Wastewater Treatment Plant Operator. Paul has written and contributed to numerous articles on environmental and energy efficient aspects of lighting with an emphasis on mercury source reduction. Recent lectures have focused on sustainability. Paul has given lectures to Illuminating Engineering Society sectional and national meetings (including Australia and New Zealand), the Electronic Industries Association, and to lighting distributor groups throughout the country. He has Bachelors and Masters Degrees in Metallurgical Engineering and a Masters in Management Engineering.

David Weitz, Massachusetts Board of Building Regulations and Standards

David Weitz is the Energy Code Coordinator for the Massachusetts Board of Building Regulations and Standards. He has 25 years experience in the building trades. For the past five years he has organized the energy code revisions and training programs in the state, working closely with the design, construction, and enforcement sectors of the industry, as well

as with materials suppliers and utilities. This effort has provided training for over 14,000 architects, engineers, builders, inspectors, sub-contractors and related stakeholders. David also serves on the ASHRAE Standard 90.1 committee.

Howard Wiig, Hawaii State Energy Office

Howard Wiig has been with the Hawaii State Energy Office since 1976. He is a contract manager for numerous federal energy programs, including the Institutional Conservation Program, the State Energy Conservation Program, the Clean Hawaii Center, and the Model Energy Code. Howard has successfully lobbied for passage of Hawaii's first residential energy code. Howard has also been a free-lance writer, providing articles to newspapers and magazines while traveling through over 70 countries and territories; Teaching Assistant, University of Hawaii; Research Assistant, International Planned Parenthood Federation, Singapore; and President, Charger Hawaii (electric vehicle distributor). Other positions include past President, Illuminating Engineering Society, Hawaii; Vice-President, Hawaii Bicycling League; President, Board of Trustees, Unity Church of Hawaii; membership in 32 governmental organizations; Landlord; and President, HCW Consulting.

Abbreviations and Acronyms

AEE	Association of Energy Engineers
ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
BCAP	Building Codes Assistance Project
BECP	Building Energy Codes Program
BOCA	Building Officials and Code Administrators International
CEM	Certified Energy Manager
DNR	Department of Natural Resources
DOE	Department of Energy
EEBA	Energy and Environmental Builders Association
EMC	Employers Mutual Casualty
ERS	Energy Resource Station
FEMP	Federal Energy Management Program
GPRA	Government Performance and Results Act
HERS	Home Energy Rating System
HRAI	Heating, Refrigeration and Air Conditioning Institute of Canada
HVAC	Heating, ventilating, and air conditioning
IAQ	Indoor air quality
IABO	Iowa Association of Building Officials
IBHS	Institute for Business & Home Safety
ICBO	International Conference of Building Officials
ICC	International Code Council
IECC	International Energy Conservation Code
IESNA	Illuminating Engineering Society of North America
LEED	Leadership in Energy and Environmental Design
MEC	Model Energy Code
NASEO	National Association of State Energy Officials
NEEP	Northeast Energy Efficiency Partnerships
PNNL	Pacific Northwest National Laboratory
RESNET	Residential Energy Services Network
SEP	State Energy Program
TBEI	Texas Building Energy Institute