

Great Plains Energy Codes Conference

October 16-18, 2012
Omaha, Nebraska



Conference Session Descriptions By Day, Time and Track (Click on presenters name for bio)

Tuesday, October 16

2:30-4:30 PM A Hands-On Workshop: How to Use RESCheck

[Eric Makela](#), Britt Makela Group, Inc.

The US DOE's REScheck is the most widely used energy code compliance software in states. It offers the ability to trade-off insulation levels and glazing efficiency and also provides the ability to document compliance with several different versions of the International Energy Conservation Code including the 2012 IECC. This course will provide an overview of the latest version of the REScheck software and include discussion on how to handle additions and alterations in addition to demonstrating compliance with new construction. The session will also provide a demonstration on the performance alternative that will provide additional flexibility into the tool.

Wednesday, October 17

8:00-8:40 AM KEYNOTE: Energy Codes-Building It Right For The 21st Century

[David Karmol](#), Vice-President, Federal and External Affairs, International Codes Council

David's message will focus on how building energy codes have emerged as the growth area in building codes, providing opportunities across the housing and building sector, with benefits for consumers, realtors, builders and utilities. He will discuss the importance and value of codes: how all of the stakeholders can work together to ensure best practices, code compliance and quality construction and why codes are important to the public and how they impact communities? His presentation will talk about how the IECC, now used in 46 states, with the 2009 or 2012 versions adopted in 43, is changing the efficiency of homes, with strong support from the Department of Energy, and from a host of private sector advocacy groups. He will describe some of the benefits to a wide array of stakeholders, and explain how this new movement in the generally dull area of building codes is transforming the housing market, creating entire new areas of endeavor, and dramatically reducing the cost of home ownership across the nation. He will also describe innovative programs that have been created and continue to evolve, to support the building energy efficiency sector, and how the best programs involve stakeholders who have come together synergistically, to advance building energy efficiency.

8:45-10:15 AM

RESIDENTIAL: Overview of Residential Code Changes: What's New in 2009 and 2012 IECC for Climate Zones in the Region

Speakers: [Amy Musser](#) & [Matt Vande](#), VandeMusser Design, PLLC

Moderator:

This session will identify, discuss, and describe changes in the 2009 and 2012 IECC codes that will affect states in the region. The impact of the changes on energy use will be presented. Also discussed will be impact on construction method and cost, code enforcement, testing, and design. Recommendations for success at every level of the process (design, construction, and code enforcement) will be included. The presenter of this session prepared a detailed report analyzing the energy impact of both of these codes for the state of Nebraska.

COMP/ADV: Engaging Supportive Stakeholders: The Energy Codes Collaborative Process

Speakers: [Maria Ellingson](#), Building Codes Assistance Project & [Danielle Jensen](#), Nebraska Energy Office

Moderator:

Many states have recently updated energy codes, and made a commitment to achieve 90 percent compliance by the year 2017. At the same time, states are constrained by budget cuts and resources that are stretched too thin. The Energy Codes Collaborative describes a Best Practice that can help states achieve compliance with updated energy codes by engaging supportive stakeholders that can help ease the load on state energy offices.

HVAC: Summary of Residential HVAC Design Process & Overview of Existing HVAC Industry Standards

Speaker: [Dave Swett](#), President, Real World HVAC, Inc.

Moderator: Garry Ruliffson, Omaha Public Power District

HVAC equipment options and efficiencies are adding complexity to the residential HVAC design process. This design overview will focus on the importance of, and the interdependencies between the available HVAC standards and guides. Those will include the better known ACCA Manuals J, S and D, but will also include Manuals T (air distribution,) B (testing adjusting and balancing,) Zr (residential zoning) and the ANSI/ACCA 5 QI-2010 Quality Installation Specification.

COMMERCIAL: Significant Changes Between 2009/2012 International Energy Conservation Code for Commercial Occupancy, Part 1

Speaker: [Eric Makela](#), Britt Makela Group, Inc.

Moderator: Jim Harper, P.E., CBO Code Official, Retired

This 3-hour class will cover the significant changes between the 2009 versus 2012 International Energy Conservation Code focusing on the commercial provisions of the code. The session will provide an overview of the IECC with the focus on the following topics: Building envelope for commercial buildings, building mechanical systems and building lighting systems.

10:45-12:15 AM

RESIDENTIAL: Understanding Energy Star v3 and What Other Ways Might Be Available to Market the Energy Performance of Your Home

Speaker: [Robby Schwarz](#), EnergyLogic

Moderator: Garry Ruliffson, Omaha Public Power District

We have reached the time where there are no more transitions. We are full bore ahead with Energy Star's version 3. Still having problems understanding the program – we will explain it. Looking for alternatives to market the performance of your home? We have solutions. Come check them out.

COMP/ADV: Show Me the Costs! Energy Code Adoption Support Using Hard Data

Speakers: [Paul Karrer](#), Building Codes Assistance Project & [Lynn Chamberlin](#), Nebraska Energy Office

Moderator:

Energy codes are the minimum energy efficiency requirements for buildings. Opponents of code adoption often claim it will add \$10,000+ per new home. Advocates counter by pointing to energy savings. But the question remains: how much does it actually cost? The Building Codes Assistance Project and the Nebraska Energy Office will provide data from incremental cost studies already performed.

HVAC: Ventilating Single Family Homes with ASHRAE 62.2

Speaker: [Darren Meyers](#), P.E., CEM, GBE, BPI-BA, International Energy Conservation Consultants, LLC

Moderator: Roger Hunt, Nebraska Public Power District

*Like everything else in building science, there's a lot more to residential ventilation than just opening the window. The 2012 IECC requires homes in Climate Zones 3-8 to have a tested air leakage rate no greater than 3 (ACH50) Air Changes per Hour at a pressure of 50 Pascal. As houses get tighter, the 2012 IRC requires mechanical ventilation in lieu of operable windows and doors to insure indoor environmental quality and increasing the importance of combustion air safety inspections of other air-hungry appliances and combustion equipment. Recognizing these converging issues, building codes are increasing their mandate to require and scrutinize effective, mechanical ventilation systems in both new and existing homes. This course goes from ventilation fundamentals, through design, selection, and operating costs, to a peak at compliance with the ASHRAE 62.2-2010 Standard as required by the 2012 I-Codes. **By attending this session, participants will:** Understand the key aspects of the standard and related provisions of the 2012 IECC and 2012 IRC; Incorporate the 'V' in HVAC ventilation; Discover how to inspect for and deliver residential ventilation in an effective and professional way.*

COMMERCIAL: Significant Changes Between 2009/2012 International Energy Conservation Code for Commercial Occupancy, Part 2

Speaker: [Eric Makela](#), Britt Makela Group, Inc

Moderator: Jim Harper, P.E., CBO Code Official, Retired

Continued – See description from Part 1 session.

1:15-2:45 PM

RESIDENTIAL: New Codes and Green Technologies: Keeping up with the Industry

Speaker: [Matt Belcher](#), Principal/Director-High Performance Building Research Center, Verditek Solutions/Univ. of Mo
Moderator: Mike Rezac, Rezac Construction

With changing dynamics of the market; Building codes, while necessary in "leveling the playing field" for industry have had to adjust to accommodate rapidly expanding technologies. Learn how Quality Management, Best Practices and even "above code" process' can open and expand markets in a recovering economy.

COMP/ADV: How the City of Lincoln Ensures a high level of Public Engagement in Energy Codes & An Overview of the Kansas City Stakeholder Process

Speakers: [Milo Mumgaard](#), City of Lincoln, NE and [Isaac Elnecave](#), MEEA
Moderator: Ruth Hietbrink, Black Hills Energy

Lincoln is proud of its high level of civic engagement, including in the making of its building codes, and believes this creates well-supported and progressive codes. Lincoln's permit system, fee structure, inspection protocols, and enforcement procedures have been created through a detailed and inclusive public process that allows for regular updating. The City of Lincoln is now updating its building codes, including energy, to 2012 International Code standards. This session will discuss how the City of Lincoln creates public involvement and sparks attention to what often is an underappreciated area of very important public policy.

HVAC: Save Time and Money with Trace 700 HVAC Analysis Software

Speaker: [Jonathan Spreeman](#), Trane, Inc.
Moderator:

Energy analysis software can be a useful tool in for new construction and the retrofit markets to guide engineers and contractors to the best overall solution. Energy analysis tools can allow us to quickly and accurately evaluate different energy saving options. We will look at the minimum information needed to complete a preliminary energy study and a final energy study and how Trane TRACE 700 can help you get there.

Participants will take away:

1. Minimum requirements for an energy analysis/ study
2. Different ways to use energy analysis tools
3. Common mistakes made in energy modeling

COMMERCIAL: Getting to a Market-rate Net Zero Emissions Building

Speakers: [Chris Baker](#) & David Eijadi, The Weidt Group
Moderator:

An integrated design team, led by an architecture firm and energy consultant, has determined it is possible to construct a market-rate net zero emissions Class A, 170,000SF commercial office building in today's market as a result of a design exercise. The process will be presented, along with detailed energy and cost calculations that resulted in a net-zero emissions design on a difficult site. The team selected a realistic site in St. Louis. They selected this site for its challenging four-season climate, because electricity costs in Missouri are among the lowest in the country—a factor that challenged the team's ability to make it affordable—and because St. Louis' electrical fuel profile is 81 percent coal. The results: reduced carbon emissions by 76 percent through energy efficiency strategies, with only minor additional first costs compared to a conventional office building. On-site renewable energy is used to resolve getting to carbon neutral.

Session Goals and Learning Objectives: Attendees will need to have an understanding of integrated design processes, basic architectural and engineering terminology, and will ideally be a design professional, developer, or other professional who can benefit from this detailed case study. Attendees will come to understand the differences in the long-term value of investing in various technologies to reach net-zero.

- 1) Participants will be able to identify key early design parameters for developing carbon-neutral buildings
- 2) Participants will be able to distinguish carbon-intensive uses of energy from less carbon intensive uses of energy
- 3) Participants will be able to prioritize the most cost-effective energy conservation measures in advance of selecting renewable energy solutions
- 4) Participants will be able to better zone their building surfaces for generating heat and/or electricity

3:15-4:45 PM

RESIDENTIAL: Building Technology Options for New Homes

Speakers: Roger Hunt, Nebraska Public Power District, James Lamp, Goings Home, [Dave Swett](#), Real World HVAC, Inc.

Moderator: Garry Ruliffson, Omaha Public Power District

Homeowners interested in sustainable, energy efficient housing have a number of decisions to make when working with designers and builders. This session will demonstrate how positive partnerships were created between the customer, the utility provider and building contractor for education, guidance and assistance in making this type of home a reality. Our panel representatives will share how they utilized this partnership to optimize energy efficiency and create a customer training tool during the design and construction process by using the IECC (2009) to define minimum, better and best construction standards.

COMP/ADV: The Missing Stakeholders: How Consumers Feel About Energy Codes

Speakers: [Maria Ellingson](#), Building Codes Assistance Project & [Kristi Wamstad-Evans](#), City of Omaha

Moderator:

Consumers are a missing influential stakeholder in the energy code arena. To address this, BCAP partnered with Consumers Union (CU) and surveyed 5,000 consumers to gain a better understanding of their attitudes and awareness of energy codes, then created educational materials and conducted outreach in states. At the local level, the City of Omaha realized it needed some key information from its citizens to help craft its first Comprehensive Energy Management Plan. To address this, they conducted a statistically significant survey of local residents. Come learn about the results of these surveys and outreach efforts.

HVAC: Right-Sized HVAC Design is the Missing Ingredient in Most Homes

Speaker: [Darren Meyers](#), P.E., CEM, GBE, BPI-BA, International Energy Conservation Consultants, LLC

Moderator:

A home's HVAC (Heating, Ventilation, and Air-Conditioning) systems not only consume huge amounts of the home's total energy budget, but also impact the comfort and well-being of the occupants more than any other system in the home. Since these systems play such a large role in a home's performance, it is important that they receive proper "design" attention to make sure they'll work as intended. Generally speaking, this is not the case. The 2006, 2009 and 2012 I-Codes require room-by-room Manual-J load calculations and for 2009 and 2012 I-Codes, a Manual-S for selecting properly sized equipment, as part of the permitting and inspection process.

Whether you like it or not, the codes require these calculations, so there are two routes you can take:

- 1. Do it because they say so. Give it to them, to get the AHJ off of your back. Never look at the reports again.*
- 2. Satisfy the code officials by giving them the reports. Then, use these reports to select right-sized machinery, and use this data to size the ductwork for optimum performance. You'll most likely save money (increasing your margins) during this process, by installing smaller machinery and less ductwork.*

By attending this session, participants will: Understand the multitude of component inputs that go into a Manual-J calculation that will affect the results; Improve their capacity to identify a properly documented Manual-J submittal, to get an accurate picture of what the home requires and quickly assess a submittal for compliance; Discover how to determine whether there is such a thing as a bad Manual-J calculation.

COMMERCIAL: High Performance Day Lighting Design for Net-Zero Energy and LEED® Platinum Buildings

Speaker: [David A. Eijadi](#), FAIA, LEED AP BD+C, The Weidt Group

Moderator:

This workshop presents daylighting tested with multiple metrics for three net-zero-energy and LEED Platinum buildings: a speculative office building in St. Louis; the Great River Energy Headquarters in Minnesota; and a building research lab in India. The design options addressed complex building program and urban context issues to resolve architectural, electrical and HVAC designs—from site selection to fixture selection—to achieve the zero-energy goal with excellent visual & thermal comfort. The impact of daylighting and lighting design towards achieving project goals will be discussed.

Learning Objectives: *Participants will be able to recognize the role of daylighting and lighting design in net-zero-energy and LEED Platinum building design and how daylighting performance informs the architectural, electrical lighting and HVAC design decisions in order to meet the zero-energy goals by exploring the various case studies.*

- 1) Participants will be able to evaluate the impact of daylighting on overall building energy consumption explored by the integrated design approach of various case studies.*

- 2) Participants will be able to identify various daylighting and sun-control strategies and apply them for a sample building exercise.
- 3) Participants will be able to compare the usefulness of various metrics in judging the daylighting performance of a design.

Thursday, October 18, 2012

8:00-8:30 AM KEYNOTE: Next-Generation Codes: A look backward and the road ahead

Jeremy Sigmon, LEED® AP BD+C, Director, Technical Policy

Building projects and professionals continue to prove the business case for healthy, efficient and low-impact designs, technologies, materials and methods. As a result, states and localities are presented with the opportunity to integrate these new consumer expectations into tomorrow's minimum codes and standards. This presentation will offer new insights into what the U.S. Green Building Council and its community are learning from LEED projects in the region and around the world, and how this can inform the adoption and application of better, greener codes. Have an overview of building energy codes and other efficiency strategies, the role they play in meeting energy, economic and environmental challenges and the importance of compliance with those codes.

8:35 – 10:05 AM

RESIDENTIAL: 2009 IECC Building Envelope Tightness Verification and Duct Leakage Pressure Testing

Speaker: Matt Vande, VandeMusser Design, PLLC

Moderator: Roger Hunt, Nebraska Public Power District

This session will cover the "how" and "why" of envelope and duct air-tightness testing, and will review common methods, equipment, cost, and training options. Implementation and enforcement issues will be presented, with recommendations for implementation success. Troubleshooting methods and common reasons for test failure, including ways to avoid test failures will also be discussed.

ADV: Compliance Pilot Studies for Iowa, Illinois & Nebraska: How Are We Doing?

Speakers: David Ruffcorn, State of Iowa, Darren Meyers, International Energy Conservation Consultants, LLC, Lynn Chamberlin, Nebraska Energy Office & Isaac Elnecave, Midwest Energy Efficiency Alliance

Moderator: Ruth Hietbrink, Black Hills Energy

During 2010-2011, the U.S. DOE and the five national energy efficiency partnerships (EEPs) funded nine energy code compliance evaluation pilot studies in eight states designed to measure ARRA 90% code compliance. Iowa and Illinois will present their findings. The Nebraska Energy Office also conducted an independent study and will discuss the methodology and results.

COMP: ASHRAE 62.1

Speaker: Roger Hedrick, Senior Engineer, Architectural Energy Corporation

Moderator: Garry Ruliffson, Omaha Public Power District

Roger will provide an overview of Standard 62.1, Ventilation for Acceptable Indoor Air Quality. He will discuss many of the requirements for code compliance with particular focus on approaches to compliance while minimizing energy consumption. He will also discuss changes to the standard that he expects to see in future versions.

COMMERCIAL: Window Energy Ratings in Building Energy Codes

Speaker: Ray McGowan, Senior Program Manager, National Fenestration Rating Council

Moderator:

ASHRAE 90.1 and IECC both require U-factor and SHGC for all commercial windows, but how does a code official ensure the ratings are correct? NFRC 100 (U-factor) and 200 (SHGC and VT) are in each building energy code. These documents truly mean a window manufacturer must simulate and test energy performance and report the U-factor, SHGC, and VT on a project specific label certificate and record the ratings on web site. NFRC provides all this information, but many code officials are unaware of this powerful information simplifying how the window energy code can be confirmed. This session will provide code officials with all the details necessary to ensure windows energy code compliance.

10:30 AM-12:00 PM

ROUNDTABLE: Case Study in Nebraska: What happens When a Home Does Not Meet Code

Speakers: [Ginger Willson](#), [Lynn Chamberlin](#) and [Danielle Jensen](#), Nebraska Energy Office

Moderator: [David Karmol](#), International Codes Council

A homeowner in Nebraska sought the help of the Nebraska Energy Office in determining if the home met the state and/or local energy code. Nebraska's statutes allow the Energy Office to conduct such investigations. Information will be given about the homeowner's concerns, the Energy Office's investigation and what is happening now. Small groups will then discuss innovative ideas for compliance, how to protect the homeowner, how to protect the builder/contractor, possible penalties and other thought provoking questions.

1:00-2:30 PM

RESIDENTIAL: Overview of "Above Code Programs" for Residential and Commercial

Speaker: [Michelle Britt](#), Partner, Britt Makela Group, Inc.

Moderator:

Learn the keys to design and implement successful "beyond code" or green building programs for new commercial and residential buildings. Hear about the benefits of key elements from site development to energy to water. Detailed descriptions and analysis of actual programs are discussed, including lessons learned and best practices. Leave the session armed with resources to make the critical decisions, prepare your jurisdiction for the new codes, and successfully adopt and implement green building. Recommended download: "Going Beyond Code: A Guide for Creating Effective Green Building Programs for Energy Efficient and Sustainable Communities," U.S. DOE, 2011, available at BrittMakela.com

ADV: Developing Advocacy Material

Speakers: [Paul Karrer](#), Building Codes Assistance Project & [Isaac Elnecave](#), Midwest Energy Efficiency Alliance

Moderator:

Despite the importance and benefits of energy codes in reducing energy use, it is a subject that can often be dry, technical and difficult to explain. This session will discuss ways to write and disseminate informational materials that accurately and concisely explain the issues around energy codes as a way to help increase support for the issue.

COMP: Enforcing With Education

Speakers: [Barry Shull](#), [John Hay](#) & [Dr. Shirley Niemeyer](#), Univ. of Nebr. Institute of Agriculture & Natural Resources

Moderator:

Educating all the stakeholders in the building process in energy codes is extremely important process because of the changing nature of energy codes. The first part of this presentation will cover one approach to teaching energy codes to building professionals and trades that must do their job while complying with the codes. The second part of the presentation discuss one of the most important stakeholders in the building process, homeowners and commercial building owners and teaching this group how they can benefits from building codes as well a energy efficiency.

COMMERCIAL: Commercial Building Energy & Green Code Requirements for Lighting Controls

Speakers: [Michael Jouaneh](#) & [Brent Protzman](#), Lutron Electronics, Inc.

Moderator:

Lighting controls can eliminate 60% or more of the wasted lighting energy in buildings while enhancing occupant comfort and productivity. This session will review the mandated current and future lighting control requirements in standards/codes such as ASHRAE 90.1 2010 and IECC 2012.

3:00-4:00 PM

RESIDENTIAL: Remodeling and Retrofits: Making the Green Business Case

Speaker: [Matt Belcher](#), Principal/Director-High Performance Building Research Center, Verdatek Solutions/Univ. of Mo

Moderator:

According to the US Census: 98% of all homes are 20 years old or older. All are in need of energy and other upgrades. In their newly published "Green Smart Market Report" McGraw Hill Construction clearly shows the penetration of green and energy

efficiency in this market segment has grown rapidly and will accelerate. Learn how to incorporate these processes into your business to improve your reputation and bottom line!

ADV: Environment Omaha: A Collaborative Approach to Creating a Sustainable Omaha

Speakers: [Mike McMeekin](#), Lamp Rynearson & Associates; [Steve Jensen](#), Steve Jensen Consulting; [Connie Spellman](#), Omaha By Design; & [Kristi Wamstad-Evans](#), City of Omaha

Moderator:

This workshop will explore how Omaha's public and private sectors worked collaboratively to develop a comprehensive environmental vision for the city and will provide concrete examples of how each sector is addressing the implementation of the final document's more than 600 recommendations in five areas – the natural environment, urban form and transportation, building construction, resource conservation and community health. Representatives from Omaha by Design will discuss the use of professional, volunteer-based community advisory committees in both the development and implementation processes as well as the use of emerging technologies to facilitate community engagement. Representative of the city will discuss some of the projects implemented to achieve greater energy savings and a Comprehensive Energy Management Plan. Attendees will learn strategies for tackling controversial policy development issues and for dealing with “public engagement fatigue” from the community, and strategies for tracking and analyzing energy use at the community and municipal levels.

HVAC/COMP: Achieving Civic Engagement and Success Through the Cloud

Speakers: [John Yezza](#), Accela, Inc. & [Stuart Craven](#), City of Omaha, NE

Moderator: Jim Harper, P.E., CBO Code Official, Retired

Proactive communication (Civic Engagement) can provide people and organizations a means to integrate, organize, and promote information. Within organizations proactive communication increases the chances for success, improves morale and motivates people, promotes shared responsibilities, integrates business units, and is a foundational component for proficient business practices for effective government. In the case of government agencies, Civic Engagement is essential and with the mantra of “do more with less” this vital engagement across departments and with constituents will determine success or failure. Government agencies need to have well-ordered work processes in order to communicate their desired results. Can government agencies improve their communication procedures and work processes to better meet their business needs? The short answer is yes! This presentation will demonstrate how the City of Omaha is addressing these needs successfully through the Civic Engagement with their constituents, across department and divisions by delivering vital services through the cloud.

COMMERCIAL: Minding the Gap: From Sustainable Policy to Practice

Speakers: [Jason Steinbrock](#) & [Chris Baker](#), The Weidt Group

Moderator:

Regulations and national “best practice” recommendations on energy efficiency sometimes introduce misleading decision-making signals by discounting sound architectural decisions and over-rewarding engineering solutions. Models may be used throughout design to measure performance potential and manage expectations from pre-design through post-occupancy. Pre-design models help inform building architectural design, however reality gaps between standards-based solutions and actual projects exist. Architectural design outperformed standards but were not equally “rewarded” by the system in the six case studies in this presentation. Current requirements for establishing code baselines do not adequately address early design decisions such as building massing and glazing design. This presentation summarizes six cases where the best early architectural design alternatives for reducing carbon emissions were rewarded less by current modeling protocols in Appendix G to ASHRAE 90.1 than their alternative designs. These models can then be sequenced into continuously-improving models to measure performance potential and manage expectations from pre-design through post-occupancy.

Learning Objectives: Participants will be able to identify, for evaluation, energy savings opportunities that they may not be addressing given current guidelines and standards.

- 1) Participants will observe how to evaluate when standards, compared to code, may lead them away from maximum energy efficiency.
- 2) Question and understand the purpose and value of a modeling proposition at different stages of design.