



2013 RESNET Building Performance Core Conference Sessions

HOME ENERGY RATINGS

Early Returns on Blended Training: EnergyLogic Shares its Results After a Massive Shift in Training Methodology and Contrasting classroom with Synchronous Online Training- Pros and Cons

EnergyLogic ventured into the world of e-learning. Join us as we discuss our new approach to training using a learning management system. We will explore what it took to get there and the lessons learned from the journey. This session will focus on our hybrid Rater training design and results.

Certification based training has historically been delivered only in person. Classrooms, labs, and field locations have been the norm. But we're seeing an increasing amount of training being offered online, or even hybrid classroom/online sessions. Both training environments have advantages and disadvantages for the students and they also require different skill sets of the trainers. In this session the presenters will show how both models have a place in the future of RESNET certification training.

Presenters: Matt Thornberry and Scott Doyle, EnerFalexgyLogic; Darrel Tenter, Saturn Resource Management and Brett Dillon, IBS Advisors

Home Energy Rating Systems in Other Nations - The Industry Expands Internationally

There are a number of nations with active HERS and other Green labeling initiatives. Whether by mandate as in the EU nations or by market adoption such as in Canada, there are chances for mutual exchange on systems, policies and practices. Possible business opportunities for US based raters will be explored as well.

With a still vibrant housing industry in Canada and strict energy codes, interest in HERS ratings is growing rapidly in that country. In 2007, CRESNET (Canadian RESNET) was the first international organization to sign an MOU with RESNET to adapt the HERS Standards to another country's needs. With the Ontario building code now recognizing HERS ratings as one of 4 paths to show compliance with energy code, momentum is growing in Canada to train new HERS raters and move the industry forward.

Presenters: Steve Byers, EnergyLogic; Allison A Bailes III, Energy Vanguard and John Godden, Canadian Residential Energy Services Network

What's New With Chapter 2? (Rater Trainer Roundtable)

Over the last two years the RENSET Training and Education Committee has been rewriting Chapter 2 of the RESNET standards. Now updated, the recently adopted standard has some major changes that are intended to help RESNET certified individuals stay competitive in today's changing market. In this session Darrel Tenter will outline these changes, describe the committee's intents, and show how they benefit RESNET certified individuals.

Moderator: Kathy Spigarelli, RESNET

Presenters: Darrel Tenter, Saturn Resource Management and Andy Gordon, Chairman of RESNET Training and Education Committee

Incorporation of Hot Water Demand Reduction into HERS Software

This session will feature a discussion of the data behind and approach to the RESNET Technical Committee and HERS software providers in adding calculations to incorporate energy efficiency improvements for hot water demand reductions achieved through use of WaterSense for Homes water conservation faucet and showerhead flow rates, structured plumbing supply system designs and demand controlled hot water recirculation pumps. The presentation will include calculations, installation methods and rater verification, including the story of how this issue was brought to the attention of the RESNET Technical Committee.

Presenters: Gary Klein, Affiliated International Management, LLC

RESNET After Dark: Gotham Nights –Ventilation (Evening Session)

Part 1 of the series. Join professional trainers Alex Glenn and Dan Wildenhaus in an evening session as they use the story of Batman to showcase the beneficial and not so successful methods of delivering presentations to an audience such as RESNET. Each year, Batman will face a new foe in presentation competition over one of the industries hot topics. This year, Batman will challenge the Riddler in the merits of ASHRAE 62.2 2010 and whether or not to take the infiltration credit. Who's presentation will hold sway? Will Robin show up? Commissioner Gordon (special guest) will judge the winner of presentation effectiveness, but it's up to the attendees to vote on the topic! Each year will bring a new foe for Batman and a new topic to present. Only attendees of the previous year may join the cast of Gotham Nights.

Presenters: Alex Glenn, Advanced Energy and Dan Wildenhaus, Fluid

Integrated Software Solutions for Streamlined HERS Rating

Raters' and Providers' jobs are becoming more challenging due to the increasing complexity of energy efficiency programs and the demand for diagnostic code testing. The market for these services demands cost effectiveness as program funds are reduced and travel expenses increase. Successful companies will have to find ways to process more projects with less people more efficiently. Software solutions are an opportunity to streamline workflow. This session will introduce processes and solutions for field data collection, graphic modeling, energy modeling, and project management software. All these systems can be integrated through a cloud-based database. For Providers these solutions keep costs down by making Quality Assurance more cost effective by sharing, standardizing, and streamlining systems. Mike Browne and Steve Gardner will share their experience with integrating these software solutions.

Presenters: Michael A. Browne, Energy Raters of Massachusetts and Steven D. Gardner, Advanced Building Analysis

The Builder Said "No" to 3.0

With the introduction of Energy Star 3.0, some builders large and small have decided to opt out. Others tried to do it but were unable to implement the necessary changes and decided to drop the certification. This has cut into the revenue of many building performance companies with new home rating services. Replacing the lost revenue is crucial. Showing the value of Energy Star 3.0 to builders has never been so important.

Topics that need to be addressed include:

- Winning back builders who have dropped Energy Star by helping with implementation
- Marketing to and recruiting new builders

- Starting and selling your own program rooted in energy efficiency and building science
- Standalone HERs Ratings and their value to builders and homeowners
- Alternative utility programs
- Expanding into green verifications
- Alternative verifications, like standalone duct testing, blower door testing, and IR scanning
- Expanding to existing homes, if not there already

Presenter: Bill Klotz, Everblue Training Institute

A Rater's Guide to a SIP Envelope Inspection

This course will provide a baseline understanding of structural insulated panels (SIPs) and SIP structures. Attendees will review the standard detailing, connection methods, and sealing methodology used in the SIP industry. Raters will be shown where and how certain joints may fail in terms of initial air-tightness as well as long-term durability. The course will also explore the relationships between a SIP building envelope and other systems, followed by a discussion of best practices and industry standards as they relate to the proper installation and performance of a SIP structure.

Lastly, the course will review and discuss case studies that highlight both good and bad SIP detailing and how that detailing affects the rater. Attendees will gain insight into how a builder can achieve extremely low air infiltration rates as well as how to locate leaks when the numbers do not meet expectations.

Presenters: Al Cobb, SIP School and Don Jhanke, Energy Panel Structure

Creating Reports Your Clients Will Love

Your home performance report is a critical part of both sales before the job and client satisfaction and referrals after it's done. But the beautiful reports your hand your client can be time-consuming, expensive, and fraught with unintended errors. See behind the scenes of a successful performance diagnostics company's customized report building, including Infrared thermal imaging reports, energy modeling and investment analysis, utility history analysis, recommendations for Improvement, and a full tour of a reporting software created using the power of Excel spreadsheets, which uses a lot of (not-so-simple) formulas and "if-then" statements to enable you to automate over 50% of your reporting process.

Presenter: Corbett Lunsford, Green Dream Group

The Role of Utilities of Marketing the HERS Index to Improve Building Performance

Across the nation utilities are leading the effort to promote improved building performance through the HERS Index. This session will highlight two efforts. The promotion of the HERS Index Score to builders by Blue Grass Energy. Louisville Gas and Electric and Kentucky Utilities.

Presenters: Roy Honican, Blue Grass Energy and Bill Cooper LG&E/KU

RESNET's New ANSI Standards for the Calculation and Labeling of the Energy Performance of Low-Rise Residential Buildings Using the HERS Index and Building Energy Performance Testing

RESNET is in the process of incorporating its technical and performance testing standards into ANSI standards. This session will provide an overview of what the RESNET ANSI standards will cover, provide an update of the status of the standard development and explore the implications of having RESNET technical standards as ANSI standards.

Presenters: Philip Fairey, Florida Solar Energy Center and Rick Dixon, RESNET

Swimming Pool Rater Certification - Energy Savings for Homes with Pools

For the 10 million homes in the US with a swimming pool, their biggest energy hog is in the backyard. The average 1.5 horse power pool pump draws 2kW, is scheduled during peak load times, and consumes a whopping 4,000 kWh per year. This accounts for the total capacity of 25 medium sized power plants nationally or 9 to 14 billion kWh per year. Advanced new ECM variable speed motor technology can cut this demand by up to 90%, with the commonly overlooked savings exceeding savings by all the home's other appliances, combined. The session will illustrate the savings potential, help attendees decide when the pool pump warrants attention, and explain replacement considerations. Successful completion of this course provides the new RESNET/APSP Swimming pool rater certification.

Presenters: Jeff Farlow, Pentair Water Pool and Spa: Steve Easley, Steve Easley and Associates and Steve Barnes, Pentair Water Pool and Spa

The Independent Rater- "Challenges and Opportunities"

Training, testing, providers, certification, equipment, professional development credits, standards, software, and then finding business! For the new raters and those who have been in the business awhile maintaining a business as a Rater can be a challenge. This session will focus on ways to maintain and expand your rating business. There are so many opportunities for Raters at the moment. This session will give an overview of ways to expand a rating business beyond ENERGY STAR as well as offer tips for maintaining credentialing and finding a provider that works well for your business.

Presenter: Emelie Cuppernell, Performance Systems Development

Updates to the RESNET Quality Assurance Requirements (RESNET QAD Roundtable)

Based on feedback from RESNET Membership and Staff, the RESNET Quality Assurance Committee has completed another round of updates to the RESNET Quality Assurance Standard (Chapter 9). Learn what the new requirements are and how to comply. This session will fulfill the annual two hour RESNET QA Roundtable professional development requirement for all RESNET QA Designees.

Presenters: Daran Wastchak, Chairman of RESNET Technical Committee and Clinton Heyn, RESNET

RETROFIT TRACK

Testing the True-up Techniques: Methods for Testing the ability of Calibration Procedures to Improve Retrofit Energy Savings Predictions

Audit software users often "true-up" or "calibrate" simulation models for existing homes to historical utility billing data with the goal of increasing the accuracy of retrofit savings predictions. This is typically achieved by adjusting input parameters within their ranges of uncertainty until a desired level of agreement is seen between the pre-retrofit energy prediction and the historical energy use from utility bills. Calibration methods can range in complexity and repeatability from manual calibration, where the user decides which inputs to adjust and how to adjust them, to automated calibration, where mathematical and statistical procedures are built into a software program. While manual calibration methods provide flexibility for the user, and can take advantage of user experience and field observations, they lack repeatability (two different users may produce two different calibrated models for the same home). RESNET is in the process of developing a standard that would provide

guidance and a suite of tests to determine the accuracy of calibration procedures. This session will cover the National Renewable Energy Laboratory's efforts to develop methods for testing calibration procedures, and the efforts to apply those methods to develop better calibration procedures. The session will also discuss RESNET's initiation of a working group to develop a standard method of test for calibration procedures. These efforts will improve the accuracy and consistency of residential retrofit analysis.

Presenters: Ben Polly, Dave Roberts and Ron Judkoff, National Renewable Energy Laboratory; Philip Fairey, Florida Energy Center; and Joel Neymark

Advancing the Industry Teamwork in Supporting the Market for Home Performance with ENERGY STAR

In this session The U.S. Department of Energy's (DOE) Home Performance with ENERGY STAR (HPwES) Team will provide an update on the national program's efforts to advance the HPwES Program in an effort to offers scalabe approach for establishing homeowner confidence in solutions that improve the performance of the whole home. In 2012, DOE proposed changes and sought industry input on ideas to evolve the HPwES Program (aka HPwES v2). DOE will present an update on these efforts to advance the program. DOE will discuss how the national program is seeking to engage greater participation among industry stakeholders and results in providing the HPwES whole-house approach. Working with industry, DOE will explore the business opportunity for raters to work in the home performance marketplace – what works? What doesn't? What are the tricks of the trade? How could RESNET's EnergySmart contractor designation fit in? What's different from the new homes market?

Presenter: Ely Jacobsohn, U.S. Department of Energy

The RESNET Workforce Pre-Apprentice Technician Credential. Tracking Workforce and Job Quality with Your iPad!

The best design or scope of work means very little without proper follow through. What if there was an iPad app that could keep a visual library of workforce performance, track job quality, record program effectiveness and earn workers a Pre-Apprentice RESNET credential? Now there is and it's part of RESNET's quality assurance methodology for installers, crew chiefs, contractors, raters and programs. Get an update on the implementation of the RESNET Workforce protocol, corresponding Chapter 7 updates and new installer level credential. The credential incorporates On-The-Job training and continuing education so employers don't have to choose between enriching their workforce or completing the job.

Presenters: Rob Moody, Organic Think and Brett Dillon, IBS Advisors

Using HERS in a Green Renovation Project in Canada

In 2009, John Bell was the host of World's Greenest Homes (HGTV Canada/Dailey Planet Green USA). During a four month worldwide tour, Bell received his introduction to sustainable building practices and saw first-hand how people were trying to live better and healthier lives while reducing their carbon footprint. The show led to his personal Green Revelation, which inspired Bell and his family to sell their 100 year old 4500 sq. ft energy inefficient home and downsize to something almost half the size, and completely rebuild it as an energy efficient home. The show also kick started an interest into water conservation, which has evolved into Bell Co-Founding Greyter Systems, a greywater recycling manufacturer. The home reached a HERS Index of 47 was a 1970's energy hog that had R-12 Attic, R-9 exterior walls, uninsulated basement, single pane windows, an 80% AFUE gas furnace, 0.57 EF DHW and 7.22 ACH. It now features a greywater recycling system reducing water consumption by 35%, drain water heat recovery, R41 attic insulation, R22 and R26 exterior, full

height basement + R10 under slab, a high velocity air handler, a 98% efficient dual purpose condensing tankless boiler, 74% efficient HRV, Double Low-E Argon Windows and 1.6 ACH.

One of the most important steps that helped benchmark and measure the energy savings was Bell's decision to retain the services of a home energy rater. The ability to quantify the before and after and being able to model the home's performance was a huge asset. Knowing the original home's consumption levels and being able to model the new consumption rates was an empowering tool. The house is nearly 800 square feet larger than the original, yet its natural gas consumption is 60% less than before, resulting in annual savings of \$2000.

Presenters: John Bell, Host of World's Greenest Homes and John Godden, Clearsphere

HERS Ratings & Deep Retrofit Homes

This session will discuss HERS ratings performed on 10 deep retrofit homes that were designed to save more than 75% of their pre-retrofit energy use. The homes have been intensively monitored for total and individual end-use energy consumption over a year of operation for comparison to predicted energy use. This session will discuss the HERS ratings for these homes, occupant effects on energy use in low energy homes and details of alternative metrics that can be used to define low energy home performance. The end-use data will be used to indicate where there may be potential for improving home energy ratings for low energy homes and illustrate issues over which auditors need to take greater care when evaluating these homes.

Presenters: Iain Walker and Brennan Less, Lawrence Berkeley Laboratory

Case Study: Taking a 20 century house into the 21st

What can you do with a brick home built in the early 1900's? How can you make it energy efficient, aesthetically beautiful, and something that is fit for a modern 21st century family? Retrofit it of course and then add an addition, and ensure that the larger house uses less energy than the original structure. Come see how two houses built in the 1900's in Denver have gone through an energy and aesthetic upgrade that marries applied building science, systems thinking, and everything that the wife wanted.

Presenters: Robby Schwarz and, Charlie Stevens, EnergyLogic

HERS Ratings in the Retrofit Market

Between 2005 and 2010 US housing starts declined from 1.6 million to 330,000 units, a decrease of more than 80% that is only now slowly showing signs of improvement. As the new construction and real estate markets struggle to regain their health an increase in renovations and retrofits have helped homeowners meet their increased housing and energy efficient needs. Yet planning for and measuring the energy benefits of these projects pose unique challenges to both HERS Raters and energy efficiency program administrators. Presenting the lessons learned from a variety of Massachusetts utility sponsored programs dealing with single family, duplex, and triple decker retrofit work will be the focus of this presentation. Raters will learn how to properly address retrofit project, from modeling challenges to leveraging incentive programs. They will gain a thorough understanding of the many challenges that existing housing stocks present.

Presenters: Mike Berry and Greg Krantz, ICF International

Implementation of Affordable Audits and Retrofit Products

Home data collection and expensive scopes of work are two of the biggest issues that existing home retrofit programs face. Walk away from this session with tips on how Raters can get the job done faster and collect the important data that allows weatherization programs to focus on implementing

measures that matter and reducing the job cost. Learn tricks for labor reduction, low cost products and materials.

Presenters: Rob Moody, Organic Think; Ryan Boswell and Seth Baldy; Clinton Foundation

Existing Building Triage: What to Fix First

With so many properties in need of energy efficiency upgrades, it's often difficult to determine where to start. Auditors encounter this when working with owners of multiple properties. They often are unwilling to pay for audits for all of their properties, opting to not take action because there is no clear starting point. Energy efficiency program administrators frequently lack good metrics to decide which projects make sense to fund and simply award funding on a first-come, first-served basis. Energy intensity scores (benchmarks) provide a concise, clear-cut way to evaluate a number of buildings quickly and easily and pinpoint buildings in need of immediate attention. Program administrators can set cutoff thresholds to ensure that the least efficient buildings are the ones receiving funding. Auditors can identify the worst performers to target for audits first, providing overwhelmed owners a clear path forward. Studies have shown higher pre-retrofit energy intensity strongly correlates with post-retrofit savings, making this the logical first pass in identifying the buildings most in need of help and removing guesswork.

Presenter: Sean Shanley, WegoWise

Extreme Home Makeover: Going from HERS 364 to 0 Using the Passive House EnerPHit Standard

Deep energy retrofits are a growing market in the U.S. due to the age and quantity of existing housing stock. These projects offer different challenges than new construction: How to determine appropriate project goals? What are the cost impacts and benefits? Can (and should) certain measures be undertaken in existing buildings? We will examine a 1902 timber-frame house that was retrofitted to the Passive House EnerPHit Standard, reviewing why that standard was selected as the goal (and how it compares to the ENERGY STAR and LEED for Homes standards); energy modeling using both the Passive House Planning Package and REM/Rate software; modeling's influence on design; and finally construction and execution of critical details to get to the desired measured performance.

Presenters: Kristen Simmons and David Ruggiero, ICF International

BUILDERS TRACK

The Role of a Homebuilders Association in Fostering High Performance Homes

The Home Builders Association of Lexington has taken a leadership position in promoting the HERS Index. The builder association has entered into an agreement with RESNET in which it commits to have all of its builders to have all their homes energy rated and market their HERS Index Score. The association also works closely with its allied utility programs. The Home Builders Association of Lexington is also partnering with RESNET to host a regional residential energy efficiency conference. This session will demonstrate the leadership role that a homebuilder association can play.

Presenters: Sandy Beck, Home Builder Association of Lexington; Roy Honican, Blue Grass Energy and Bill Cooper, LG&E/KU

Cost Effective Ways to Help Builders Achieve Their Home's Desired HERS Index Score

During SkyeTec's presentation, builders will learn simple to more complex methods for lowering their home's HERS index score. These methods will involve performance, as well as specification recommendations. The methods discussed in this session will also be beneficial to builders and HERS Raters using RESNET approved software to achieve Florida Energy code compliance.

Presenters: Ryan McCracken, Tommy Spain and Frank Ferrentino, SkyeTec

Marketing Insight for Builders & Raters

Builders, raters, architects and building professionals all share a common goal and role – to help sell homes. It's one thing to build high-performance homes but how do you communicate its real value? This requires linking advanced technologies seamlessly – building science with powerful effective marketing. We will focus on critical marketing and communication tools, techniques and tactics for the building industry. Aspirational and emotional reasons for consumer home buying will be addressed as well as the rational and technical reasons. We will surprise you with concepts, strategies and perceived demographics. Topics discussed will include branding, social media distinctions and nuances, website development, print collateral, dynamic emails, and how they all should work together as an integrated team, much like on a building project.

Suggested Presenter: Rick von Schnier, Green Building Authority

The Cross-Border Challenge “Are Canadian Builders Better Than US Builders?”

With the HERS industry growing rapidly in Canada, CRESNET (Canadian RESNET) is challenging US home builders to see who can build more homes with a HERS Index of 50 or below. CRESNET president John Godden presented the idea to RESNET executive director Steve Baden at USGBC's GreenBuild in Toronto in September 2011. Basing the idea on the US DOE's Builders Challenge and adding a friendly competition between US and Canadian home builders, the CRESNET/RESNET sponsored event will culminate with awards given at the 2014 RESNET conference in Atlanta. The Challenge will run from June 2012 through the end of 2013, with awards for best Canadian builder, best American builder, and best international builder, based on the percentage of houses with a HERS Index below 50. The session also will discuss the emerging need for a North American rating system as well as the opportunities that exist for all North American builders.

Presenters: John Godden, Canadian Residential Energy Services Network and Jim Petersen, Pulte Group

Build a Better House at Lower cost by Controlling Infiltration

By using products and systems that provide effective control of air infiltration, builders can build homes that are more energy-efficient, meeting more stringent energy codes, but cost less. When builders use the prescriptive option to meet energy codes, the prescriptive list determines their cost. The prescriptive option is rarely, if ever, the most cost effective way to achieve the required energy performance. Increases in insulation levels required in the recent, more stringent energy codes, especially the 2009 and 2012 IECC, are often very poor economic choices. They provide little value in return for the required investment. Rather than investing construction resources in poor value items, builders should focus their resources on those areas providing the most value. Controlling air infiltration is shown to provide the highest value for funds invested to gain additional energy efficiency and meet the more stringent codes. Builders using the design and testing services provided by HERS Raters can take advantage of the performance path to meet energy codes at the lowest cost by receiving the proper credit for the enhanced energy performance provided by a reduction in air infiltration. Specific examples are provided that show homes that cost less to construct but offer the same or better energy performance, along with specific ways to control air infiltration.

Presenter: Dr. James Wells PhD, Tremco Inc

The Power of the HERS Index in Marketing New Homes

Across the nation homebuilders are committing to having all of their homes energy rated and marketing the homes' HERS Index. Why are buildings making this investment in these economic tough times? This session will feature representatives of the nation's largest homebuilders to discuss this question.

Presenters: Jim Petersen, Pulte Group; Jacob Atalla, KB and C.R. Herro, Meritage Homes

Air Infiltration- Products Demonstration

Air infiltration is widely regarded as one of the largest sources of energy loss in residential constructions. The 2012 International Energy Conservation Code (IECC) requires much reduced air infiltration rate compared to previous versions. How to choose a wall or building assembly with minimum air infiltration plays a vital role for a particular home to meet IECC, achieve ENERGY STAR Version 3 program requirements, or other energy efficiency programs.

This presentation will review the commonly used products to achieve reduced air sealing performance – Rigid foam insulation, one-component and two-component polyurethane foams for gaps, cracks, penetrations and hard-to-reach areas. Most of the session will be spent for hands-on demonstrations. The participants will have a chance themselves to feel, touch and apply the products so they can feel comfortable using these products in their future projects.

After this presentation, participants should be able to understand the product choices in the market to reduce air infiltration. The participants will also gain hands-on experience to apply different potential products to achieve the best air infiltration performance.

Presenters: Devin Marino, and Chunlin Cao, Dow

Do You Want To Eliminate the “small print” in Your Energy Saving Program?

You invest in building and marketing energy efficient homes. Homes that give your home buyer comfort, enjoyment, and savings on their utility bills. You promote your commitment to energy saving building methods and materials, and project the savings to be had in utility bills when buying your home over anyone else's. Then your attorney writes the disclaimer that waters down the reliability of your projections in the “small print”. Wouldn't it be great if you could eliminate the uncertainty and the “small print”? This session will tell you how you can replace the “small print” with a revolutionary new benefit for you and your home buyer.

Presenters: Roger Lange, Bonded Builders Warranty Group

TECHNICAL

Zone Pressure Diagnostics Testing: Purposes, Techniques, and Limitations

Zone Pressure Diagnostics Testing (ZPD) testing serves as a method of establishing where the air barrier exists in homes. Three levels of ZPD testing have been developed that generally increase in the degree and accuracy of information provided by the test. Various types of ZPD tests in each of these three levels are described along with the benefits and limitations of each. Examples of procedures for using Basic ZPD testing, Open-a-Door, Open-a-Hatch ZPD testing, and ZPD tests that involve software are provided.

Presenter: Stan Harbuck, A Better School of Building Inspection

Advanced Studies in Unvented Attics

Three Savannah Georgia custom home builders are turning 250 attics every year into very energy efficient unvented assemblies by using spray foam insulation. The hospitable environment that is created in the attic results in a haven for the air distribution system. Learn why these builders have bought into this approach and find out what airtightness and HVAC equipment savings they are achieving and the application details they have been using. Also, see the results of monitoring data on the temperature and humidity conditions experienced in one unvented attic and compare them to levels in adjacent living spaces. This session will arm you with plenty of practical knowledge on unvented attics and aid you in your quest to get your builders to the next level in energy efficient construction.

Presenter: John Broniek, Icynene

Airflow Measurement Techniques

Airflow measurements are among the most daunting tasks in the industry. Come to this session to learn the wide variety of measurement methods and the pluses and minuses of each. We will dig into the science behind good airflow measurement, as well as the importance of considering air density corrections. We'll also cover the ins and outs of picking the correct tool for the measurement task or application. Every major airflow measurement tool and technique will be explored and explained.

Presenter: Bill Spohn, TruTech Tools

Ask the Expert with Lucas Hamilton, Manager, Building Science Applications & Ed Pentz, Manager, Technical Training, CertainTeed Corporation

Building Science is an ever-changing world, with new products, applications, installation methods, and the need to meet rising code requirements. Take this opportunity to bring your burning questions straight to the experts! No question too small or too big. These 90 minutes are a completely open forum dedicated to helping you get answers!

Presenters: Lucas Hamilton and Ed Pentz, CertainTeed Corporation

Building Air-Tightness Testing - Beyond the Basics

This session is aimed to get a little deeper into building air-tightness testing. One area that could be discussed is the "Environmental info" information entered into the software used by blower door manufacturers such as Energy Conservatory's Tectite program will be discussed. The session will look at:

- What is Energy Climate Factor and how does it affect blower door test results?
- What is Vent Weather Factor and how does it affect blower door test results?
- Design Winter Wind Speed - how to get it & how does it affect blower door test results?
- Design Summer Wind Speed - how to get it & how does it affect blower door test results?
- How do HDDs and CDDs affect blower door test results, if at all?

Suggested Presenters: Gary Nelson, Energy Conservatory

Building Inspections using Thermography

Taking advantage of the advanced cameras available to inspect buildings involves inherent knowledge of building systems and the heat transfer physics particular to building construction techniques. This session will explore the application of ASTM standards and RESNET standards to fulfill an inspection of structures or particular problems within these buildings.

Presenter: Jay Bowen, FLIR/Infrared Training Center

Designing and Building Our Net-Zero Home - Knowledge Gained and Lessons Learned- (Evening Session)

Housing both the personal residence and professional offices for our home energy rating and architectural design companies, the goal of our ENERGY STAR-certified, LEED Platinum, Net-Zero home was to be able to have the conversation with clients about the logistics of creating a home that makes as much energy as it uses. Through careful design and system integration, along with carefully navigating the various local, state, and federal incentives available for energy efficiency, the home was built for the same cost or less than a typical built-to code home. Through extensive photos, construction details, and energy monitoring data, we will discuss what we learned - both the successes and the mistakes - from the entire process.

Presenters: Matthew Vande and Amy Musser, Vandemusser Design

Finally, the Truth about Condensation

A lot of ink has been spilled in describing the movement, condensation, and evaporation of water vapor through a building envelope. Unfortunately, all too much of it has been incomplete or even downright wrong. In this presentation the physics of water vapor transport will be described in detail. Some sacred cows will be slain and fundamental concepts regarding more robust envelope designs will be described. Also a look at the strengths and drawbacks of various calculation methods including the humble Dewpoint/Glaser method and the vaunted WUFI. Not for the faint of heart or slow of wit, be ready get re-acquainted with Dihydrogen Oxide on both the molecular and macroscopic scales.

Presenter: Daniel Tempas, The Dow Chemical Company

Hybrid Wall Systems and Spray Foam Insulation – Meet 2012 IECC

Part One- Hybrid Wall Systems are a great way to achieve a sustainable high R-Value, unsurpassed air resistance and revolutionary moisture control within a wall cavity. But with so many options out there, what's best for your application? Lucas will not only give an introduction to Hybrid wall systems and how they affect IAQ and building envelope ventilation, but he will detail for you a variety of product and install options, performance, code compliance, and how to create proper database entries for the REM Rate modeling program for 2x4 & 2x6 construction.

Part Two- Spray Foam can be one of the least understood insulation products in the Hybrid Wall System. Let Ed take the mystery out of the equation, with his Spray Foam 101 Session that will cover product specs, equipment, application/install techniques, as well as how Spray Foam is the product that will help you meet 2012 and beyond IECC codes inside the wall cavity.

Presenters: Lucas Hamilton and Ed Pentz, CertainTeed Corporation

Increased Energy Savings with Advanced Lighting and Controls

Across the nation energy codes requiring substantial percentages of high efficacy lighting have greatly impacted the energy saving opportunities and the cost effectiveness of performance based residential energy efficiency programs. In short, counting CFLs is no longer an effective HERS rating strategy. To deal with these challenges several Massachusetts programs have over the past two years collected case study data on:

- the positive impact of lighting controls
- the methodologies for calculating incremental savings
- the use of a lighting power density matrix for calculating energy savings.

In this session the managers of these programs will demonstrate the tools and methodologies that have been developed, and the lessons learned from addressing this critical and time sensitive issue.

Presenters: David Ruggiero and Ian Buba, ICF International

Observed Variability in Indoor Space Temperature in a Set of 60 Homes

The home energy rating system utilizes standardized assumptions regarding occupancy and operation of the home, including heating and cooling set point temperatures. Assumptions regarding indoor air temperature have a significant impact on energy use predictions generated by HERS software, particularly in poorly insulated homes. Understanding how occupant operation affects indoor air temperature can help improve the overall accuracy of energy analysis. In this session, the observed variability in indoor space temperature in a set of 60 homes located in Florida, New York, Oregon, and Washington will be presented. Temperature data collected for an entire year, including living room, master bedroom, and outdoor air temperature were examined to establish the average indoor space temperature for the set of homes for the heating and cooling seasons, and the variability of indoor space temperature both across the set of homes and within individual homes. Results are compared to RESNET and other commonly used standard assumptions for thermostat operation.

Presenter: Dave Roberts, National Renewable Energy Laboratory

Rock the CAZ-Bah!

Ever confused by CAZ testing and worst case depressurization? Clear the fog and learn more about RESNET's protocol for CAZ testing from Chapter 8 of the standards and why it is the easiest to use. Also pick up some teaching and assessment strategies for combustion safety.

Presenters: Rob Moody, Organic Think and Brett Dillon, IBS Advisors

Understanding Moisture Dynamics in Residential Construction

Moisture and energy control are two critically important aspects in residential construction. Energy efficiency is required to achieve acceptable comfort and operating costs for homeowners. Moisture control is required both for occupant health and comfort as well as the integrity and durability of the structure. Understanding the dynamics of moisture movement is essential to minimize moisture issues through proper design and to properly diagnose any issues that may occur. Moisture moves predictably according to natural laws; just as unsupported objects fall according to the law of gravity, moisture moves according to the laws governing its behavior. How moisture is transported, why and how much, under what conditions is covered in this presentation. Helpful tools and techniques are presented as well. Moisture and energy performance are so inter-related, developing a good understanding of moisture performance is essential to all energy professionals.

Presenter: Dr. James Wells PhD, Tremco Inc

Upcoming Changes in Water Heater Ratings to Reduce Biases of Water Heater Type, Climate Zone and Hot Water Load

Residential water heater ratings, Energy Factor (EF) and Recovery Efficiency (RE), are derived from the federally-mandated DOE Standard Test. Biases have become apparent in EF ratings for recently-emergent tankless and heat pump water heaters. The biases stem from use of an unrealistic draw profile in the specified simulated use test, potentially giving these two classes of water heaters a spuriously-high rating relative to traditional storage tank water heaters. Efforts are underway in the ASHRAE 118.2 committee to make the draw patterns somewhat realistic, in belief that better realism will minimize the biases. An overview of proposed revisions to testing procedures will be provided, along with potential impact on RESNET Standards, software testing procedures, and HERS ratings.

Water heating in homes is a big energy load and often equal to space heating. The current energy factor rating system for water heating is based upon an average climate and an average hot water load. Average Ef is not satisfactory because it can result in reasonably large bias errors; it is like using average climate data and house size to estimate space heating load for a particular house. This presentation details a new method for calculating site specific energy factor which eliminates bias errors. Furthermore, case studies will be presented with the equation applied across the 8 primary climates of the United States, including cost/benefit scenarios.

Presenters: Rod Buchalter, RenewABILITY Energy Inc. and Dave Roberts, NREL

The Impact of Return Air Strategies on Energy Efficiency, Comfort, and Cost (Evening Session)

This session will present the results of a yearlong research project on the performance of two different return air strategies in Hot Humid climate. Data was collected on 10 homes to evaluate temperature, Rh, energy consumption, and installed cost of each strategy. Homeowner surveys provided input as to the end user perceptions regarding light and sound transmission related issues. Five of the homes had a fully ducted return air system and another five homes had a single return with transoms for return air pathways. Findings suggest the single return with transoms approach to be a cost-effective, energy-efficient, and satisfactory alternative to a fully ducted return.

Presenters: Sarah Widder, PNNL and Ken Fonorow, Florida HERO

Using Utility Bill Analysis to Generate Auto-Calibrated Energy Models and Pre-Audit Diagnostics (Evening Session)

Most energy audits provide only a cursory inspection of insulation levels and name plate system efficiency, far from the level of detail needed for a complete energy model. Even when an audit records a high level of details, the standard modeling techniques are often unable to reproduce the actual performance of older residential buildings. Given this, utility bills may be the most accurate and valuable information available for an audited home. Using regression modeling of utility bills and weather, it is possible to derive energy characteristics of a building. Beyond providing a target weather normalized energy usage for the modeled home, these energy characteristics provide an energy usage model for most components of the building. This information can be used to create a calibrated energy model.

A good utility analysis can provide a significant amount of valuable information about a home before the auditor arrives on site. Beyond giving a general expectation of the overall energy use of the home, the utility analysis can provide specific energy characteristics that correlate to the envelope/system efficiency, gains and thermostat settings. When compared to the a generic home with the same square footage and in the same location, this information can help the auditor target the audit to better meet the needs of the particular home. If the auditor is using an energy model that can intelligently auto-calibrate using the utility bill analysis, the level of data entry required for the audit can be reduced. In an ideal situation an auditor can arrive at a home with a good idea of what they will find, verify general efficiency levels around the home, and then record detailed audit data only for the items they know are most in need.

Presenter: Gamaliel Lodge, OptiMiser LLC

SPF Industry Major Milestones 2012 – 2013

Two of the major milestones realized in the SPF industry ending 2012 and leading into 2013 stand to have the greatest impact upon its future direction. Very specifically, those milestones are the completion of a model industry Life Cycle Assessment (LCA) and roll-out of a new ANSI/ISO-compliant Sprayfoam Professional Certification program. SPFA has published the results an

industry-wide life cycle assessment (LCA) study for all three classes of spray polyurethane foam. These classes include low-density and medium-density insulation foams and roofing foam. This is the first cradle to end-of-life study for spray foam in North America, and was performed per ISO-standards using the new Insulation Product Category Rules. The results show that the environmental impacts associated with raw material extraction, chemical manufacturing, transportation, installation and disposal are dwarfed by the environmental impacts avoided from energy savings over a 60 year service life of a building. The second milestone, the new SPF Certification represents the most comprehensive training material and assessment techniques available in the industry and will serve as a benchmark of safety and performance for the future. These two premiere elements will be presented and discussed at the session.

Presenter: Kurt Riesenberg, Richard Duncan, Bonnie Strickler, and Kelly Marcavage, SPFA

Spray Foam Coalition- Spray Foam for Unvented Attics in Existing Buildings: Application Guidelines Before, During and After Installation (Evening Session)

Creating unvented attics (UVAs) is one of the most cost-effective applications for spray polyurethane foam (SPF) in existing buildings. UVAs can provide significant energy savings, not only by air sealing, but by bringing attic-mounted HVAC equipment and ductwork inside the building envelope. While UVAs can provide energy savings, there are several manageable issues for SPF contractors and applicators to consider before, during and after SPF installation. Attend this session to learn more about best practices from the Spray Foam Coalition. The Spray Foam Coalition (SFC) champions the use of spray polyurethane foam in U.S. building and construction applications and promotes its economic, environmental and societal benefits while supporting the safe manufacture, transport, and application of spray polyurethane foam. SFC consists of manufacturers of spray polyurethane foam systems as well as suppliers of raw materials and machinery used to apply the foam.

Presenter: Dr. Rick Duncan, PE, Consultant to the Spray Foam Coalition of the Center for the Polyurethanes Industry

HVAC TRACK

Rater / HVAC Contractor Relations

As Energy Smart Home Performance Teams become more prevalent, and the HERS Index includes more HVAC related testing, and the ENERGY STAR HVAC QI Program is more widely adopted it will be very important for Raters and Verifiers to learn to interact with HVAC contractors. This session provides lessons learned from years of interacting with the good, the bad, and the ugly...and how to survive.

Presenter: Brett Dillon, IBS Advisors

Verifying CAZ Safety (CO, Depress, Fuel Leaks)

Combustion appliances are wonderful when they're properly installed. This session reviews procedures to verify that these appliances meet the safety measures outlined in the ACCA 12 QH Standard and the actions to take if problems are identified.

Presenter: Abe Kruger, Kruger Sustainability Group

Verifying HVAC Equipment Selection

Designing an HVAC system can be a complicated process. But evaluating that the selected equipment is the "correct" size, is a properly matched system, and is what was installed in the home is pretty easy. This session will review the Manual J procedure outputs (heating and cooling loads),

the AHRI Certificate/database, OEM performance data (and free ACCA Manual S tool), and installed equipment in the field.

Presenter: Brett Dillon, IBS Advisors

Verifying HVAC Load Calculations

Complete comprehension of the HVAC system design process is a good thing, but it is not needed to verify that a load calculation is correct. This session will illustrate the elements of a buildings construction, how those elements are represented/modeled using the Manual J procedure, and how to verify those elements in a home.

Presenters: Dennis Stroer, Calcs Plus and Isaac Savage, Home Energy Partners

Verifying HVAC System Performance

Installing an HVAC system takes experience, specialized tools, mechanical ability, and the intelligence of a nuclear physicist (or at least we think so). However, measuring equipment capacity is not that tough. This session reviews the procedures, tools, and general installation practices that allow you to measure the approximate capacity of a newly installed HVAC system.

Presenter: Dennis Stroer, Calcs Plus

AC Systems Best Practices: How to Evaluate and Optimize Peak Performance

Using a simple three-step NON-INVASIVE process, technicians can quickly evaluate, optimize and verify peak AC system performance even in less than ideal conditions. Find out how to properly use the tools that allow techs across the country to "see the science" and better understand what corrective measures are necessary. Contractors currently using this system in a utility sponsored program are achieving better customer satisfaction, increased sales opportunities as well as advancing the program goals and objectives.

Presenter: Bill Spohn, TruTech Tools

ENERGY CODES

HERS Ratings and IECC Code Compliance

Little Rock, North Little Rock, and Fayetteville, AR are on track to adopt the 2009 IECC and require energy ratings for code compliance. Little Rock and North Little Rock are gathering surrounding towns in three counties and encouraging all to go in together. Pulaski Technical the local college, is providing the training using ARRA -funded Green Job training programs and facilities. 100+ Realtors have already been trained and more sessions planned. Appraisers are next. How did this happen? It was not by accident, but it can it happen in your town or your state. The crux is looking at code adoption not as a stand-alone issue, but in the larger context of how it can positively impact the "housing industry as a system." If any sector fails to do their part, the system fails. Duct testing opens the door. An energy rating will, for the first time ever in Arkansas, allow utility costs and the HERS Index to show up in the multilist and give appraisers the comps to value efficiency. That is HUGE! Don't use ratings and all we gain is some HVAC education. Use ratings and we start changing the whole industry!

While the requirements of IECC 2012 provide new challenges to the building industry, the proliferation of stretch codes, above codes, beyond codes and green building codes offer substantial business opportunities to the HERS Rating community. Yet not all states or jurisdictions have

adopted these progressive standards. In Massachusetts a successful partnership has been forged between utility companies, state regulators, municipal power brokers and HERS raters with very positive results – Massachusetts is now the nation's most energy efficient state. During this session a review of legislation, grass roots campaigns and the strategic planning that has successfully built a healthy HERS Rating infrastructure will be offered by two of the key individuals who are responsible for many of these successes.

Presenters: Ron Hughes, Pulaski Technical College, Mike Berry, ICF International and Richard Faesy, Energy Futures Group

Incorporating the HERS Index Into the International Energy Conservation Code (IECC) - A Time That Has Come?

With the large percentage of new homes that are energy rated and issued a HERS Index Score it just makes plain sense to consider creating a HERS Index Score as a compliance option to the IECC. The Natural Resources Defense Council (NRDC) is working with a coalition of energy advocacy and homebuilders to create a HERS Index option into the IECC. This session will explain the rationale for such an effort and provide an update on what a proposal would look like and explore the implications for homebuilders and energy raters.

Presenters: David Goldstein, Natural Resources Defense Council, Jim Petersen, Pulte Group and Dean Potter, K. Hovnanian Homes

Do Building Codes Really Incorporate Building Science?

Is building science really part of the building codes? The I-codes have all the makings of building a highly efficient house with best building science practices (2012 IECC is a 30% more efficient code). From new requirements of duct and blower door testing, to insulated headers, less framing, moisture flow, and conditioned attics. Learn if the code helps or hinders building science.

Learning Objectives:

1. Understand the building science basics in the I-codes
2. What's still missing and needs a building science expert (you) to explain to code officials and builders
3. Understand where the code matches up to best building practices
4. Incorporate building code education into your current organization

Suggested Presenters: Mike Barcik, Southface and Robby Schwarz, EnergyLogic

The Latest and Greatest on Energy Codes "What's in the 2012 IECC That's Not in the Old Code and Who's Doing What with this Code?"

The 2009 IECC is currently the most common energy code. It requires duct testing (although passing the leakage criteria is pretty easy) and offers the option of blower door testing the envelope to prove modest tightness (<7 ACH50). However, even though over thirty states have now adopted the 2009 IECC, the degree to which performance testing has been implemented varies widely.

The 2012 IECC tightens things up significantly – total duct leakage is now the only acceptable test and the criteria is < 4%! The thermal envelope must be visually inspected, requires insulated headers and corners, and must be proven tight with a blower door test (< 3 ACH50 for most of the country, <5 for CZ 1&2). This in turn triggers the need for intentional ventilation so we'll touch on those requirements too. In short, the 2012 "minimum" code sets the bar pretty darn high and even exceeds ENERGY STAR in some aspects!

Come to this session to learn these essentials. We'll provide you with the basic envelope requirements (guess what, R-values have gone up!). And we'll make sure you leave with some great

tools to help you implement and navigate your way through the next few years as more and more states begin to mandate testing and adopt this code.

We'll also share some valuable lessons learned as Georgia was the first state to mandate both blower door and duct testing under the 2009 code. We saw the need to create a minimum testing certification for Duct and Envelope Tightness (DET) Verifiers and to clarify how and when to apply the code to existing home upgrades.

With literally thousands of trainings between them, Mike and Ray promise to keep you entertained and help you stay informed!

Suggested Presenters: Mike Barcik and Ray Ivy, Southface Energy Institute

BUSINESS DEVELOPMENT/MARKETING

“The Best Ideas Ever”

Insulate America will host this session recognizing the best ideas in the industry, as submitted earlier by RESNET members, that drove success and differentiation in the member's business. The three winners, as selected from the judging panel will each take 15 minutes to tell their story, and then take questions from the audience. The goal of the session is to share the best ideas and practices, generated by your peers, with all who may benefit. We encourage you to take advantage of this informative and unique session.

Presenters: David Beam and Amy Goforth, Insulate America

After the Exams

Most people wanting to start a business built around Building Performance, Weatherization, Green Building, HERs Rating, etc. start by getting applicable certifications. They attain multiple certifications with the intent to start a business when the time is right in their market or they have raised enough capital. Some are watching the outcome and consequences of the HOMES Act. These aspiring business owners can cut the required start-up capital substantially by knowing exactly what to do, when to do it, and how to correctly start that business entity, instead of using trial and error or blind effort. Many of the people starting new businesses will need information and guidance that would take them through the first year with eyes on planning for the future.

Topics that need to be addressed include:

- Basics of business
- Planning and different business models
- Banks, loans, government help, raising capital
- Legally forming the business entity (registering, taxes, insurance, local licenses, etc.)
- Guerrilla marketing building performance services
- Tools that will inevitably be needed
- In's and out's of bidding work
- Efficiency in the field (new technologies and software, tricks of the trade, applying Lean principals)
- Efficiency in the office (new technologies and software, accounting and billing, applying Lean principals)
- Driving policy locally to increase revenue
- Taking advantage of utility programs and policies
- Is purchasing a franchise an option?

Presenter: Bill Klotz, Advanced Energy

Getting Builder's Sales Staff On-board with Energy Efficiency

As we know, home builders often have to put a lot of time, effort, and dollars to building high-performing homes. Unfortunately, many of them do not see the value of this investment during the sales process as sales staff are uncomfortable with talking about the features and benefits of high performing homes. Come to this session to learn how to gain traction with builder's sales staff and real estate agents including how to help them create an effective elevator speech and incorporate energy efficiency into each part of their sales process.

Presenters: Amber Stewart, and Rick Gazica, ICF International

SEO 101 - What It Really Means to RESNET Members

The Internet and social media are now the most effective and affordable way for companies, both large and small, to market their services to a large consumer base. However, with the vast number of websites already out there, it is hard for a company to have its website found by potential customers. This is where Search Engine Optimization (SEO) comes in. SEO helps put businesses on the top of the search list when consumers are looking for their services on the Web, and there are many tricks of the trade to optimizing a website. This session will be led by the RESNET digital agency, Fourth Dimension and will provide an overview of SEO and touch points regarding social media. It will also explore how RESNET rater members can build on RESNET's growing SEO authority and social media presence by taking advantage of the resources already provided by RESNET.

Presenters: Dru Vagale, Maggie Rust and Micky Singh, Fourth Dimension

RESNET, Home Raters, and Reflective Insulation Manufacturers: How All Can Work Together

This session presents a model of how RESNET and home raters can work together with trade organizations, in this case the Reflective Insulation Manufacturers Association International (RIMA - I). This session will present how a trade organization can assist home raters, based on solid technical data, include such information in their home rating procedures. As an outcome of the session, guidelines will be provided on how a rating of a home may be improved as a result of installing radiant barriers and interior radiation control coatings.

Presenter: Mario Medina, University of Kansas

Why Can't We Crack the Nut?

Aesthetics and location are still the drivers when it comes to selling a house. We have tried to educate sales people. We have tried silent sales tools and deconstructed homes. We have tried incentives and websites. Yet people are making the largest purchase of their lives with the least amount of information and knowledge about the product they are buying. How can we crack this nut? Join this panel discussion that will set the stage and offer some thought on how we can be the nut cracker.

Presenters: Robby Schwarz and Steve Byers, EnergyLogic

MULTIFAMILY BUILDINGS

Multi-Family Above-Code Certifications: Real World Things You Need to Know to do Them Right

Multi-family construction has been one of the few bright spots in the construction world over the last few years. Financial incentives are available to projects that build to an above-code standard and many developers are taking advantage of this great way to lower costs. How are these projects different than single-family homes for Raters who want to get in on the action? What are steps Raters can take to minimize time and maximize efficiency on these projects? What are some common mistakes that can easily be avoided?

Get answers to these questions and many more as Ray Ivy and Matt Monroe share their experiences involving a multitude of EarthCraft Multi-Family projects and thousands of tests and inspections. Learn about the best ways to handle all aspects of the process, including design guidance for builders and developers, ventilation issues, trade training, sampling procedures and field inspections. You don't have to learn the hard way or reinvent the wheel! Matt and Ray share do's and don'ts that will save new and experienced Raters much frustration involving this high-volume growth area.

Presenters: Matt Monroe and Ray Ivy, Southface Energy Institute

Updates in Water Efficiency: WaterSense for Multi-Family and More Energy Savings You Could be Missing

Since EPA released the WaterSense homes program in late 2009, it has become even more apparent that making the most out of our limited water resources will be one of the key challenges facing the building industry in the coming years. Increasing drought frequency and intensity, water and sewer rates that continue to rise at a disproportionate rate, and communities' inability to expand and update their water infrastructure quickly enough are all adding to the need to use water more efficiently. Building professionals, providers, and raters that are quick to add water-efficiency to their offerings will be well positioned to capitalize on this latest trend in green building.

In this session, professionals will learn the details of how EPA is now opening the WaterSense program to homes in multi-family buildings. Allowing this growing segment of the building market to earn the first national label for water-efficiency will provide new prospective clients for building science professionals. The session will also detail strategies for energy efficiency that many in the RESNET community may be missing; efficient distribution and use of hot water. Heating water is one of the two largest uses of energy in almost all homes and represents a disproportionately larger percentage in most homes with higher energy ratings. A revised approach for estimating the energy used for heating water has been proposed by factoring distribution and end-use efficiency in HERS in addition to efficient generation. Raters, providers, and builders who understand all three phases of hot water use (generation, distribution, and end-use) will be equipped to take advantage of on this opportunity.

Presenter: Jonah Schein, EPA WaterSense Program

How a Guinness world record can bring large building testing into the mainstream

What does it take to earn the Guinness World Record for the largest building ever blower door tested? 16 blower door fans, and tried and true techniques. Learn from this record breaking test, why large building testing is so beneficial and how blower doors can be used to test buildings of any size.

In this session you'll discover:

- How you can use the same equipment to test high rise buildings one day, and a house the next
- How to troubleshoot common air leakage testing issues, in buildings of any size
- The variety of procedures available for testing all large buildings
- Large building testing success stories from across the USA

Presenters: Colin Genge, Retrotec

Fannie Mae Multifamily Green Initiative

There is an emerging business opportunity with multifamily buildings. The U.S. multifamily housing stock is aging. The Harvard Joint Center for Housing Studies estimates that the average age of the nation's multifamily housing stock is 38 years. This means that there are many opportunities for making cost effective energy upgrades to multifamily buildings. Aging multifamily housing and increasing energy costs also provides an opportunity to preserve affordable housing. Fannie Mae has launched a Multifamily Green Initiative. This session will introduce the initiative and the 2012 Multifamily Energy and Water Market Research Study. Join Chrissa Pagitsas and Donna Varner as they discuss the need to collect and understand whole building energy and water costs and consumption data for existing multifamily buildings. Chrissa and Donna will talk about how this data helps in the creation of financing products for energy efficient property improvements. During this session, they will also explore the rationale behind creating the survey, how Fannie Mae selected the properties from their portfolio for participation in the survey, the various strategies to support the survey data collection, how the analysis was performed and the lessons learned. Learn how the results from this survey will facilitate the development of a Multifamily Energy Star® 1 to 100 performance and certification.

Presenters: Chrissa Pagitsas and Donna Varner, Fannie Mae

ENERGY STAR HOMES

Building on ENERGY STAR: Stepping up to EPA's Indoor Air Plus label

Building ENERGY STAR Certified Homes is a good start to building homes with better indoor air quality. EPA's Indoor airPLUS label provides a comprehensive approach to ensuring healthy indoor air. Learn how you can build on your ENERGY STAR partnership to earn the Indoor airPLUS label.

Presenters: ENERGY STAR Certified Homes team

(ESH-2) Capitalizing on the new ENERGY STAR Value Proposition (Builder Panel)

By building homes to the ENERGY STAR Version 3 requirements, builders have a more compelling message to share with consumers than ever before. Through this panel presentation, learn how builders have successfully integrating these messages into their own marketing and sales techniques to capture potential homebuyers.

Presenters: ENERGY STAR Certified Homes team

Designing and Installing HVAC Systems in ENERGY STAR Certified Homes: A Primer for Raters and Contractors

This session will cover the activities that must be performed by the HVAC contractor and Rater to comply with Sections one through five of the HVAC System QI Contractor Checklist and Section one of the HVAC System QI Rater Checklist. It will also explain where these requirements come from, how they help to ensure a properly functioning system, what documentation must be provided by the contractor, and how to avoid common pitfalls to success.

Presenters: ENERGY STAR Certified Homes team

ENERGY STAR v3 from a Raters perspective

No more transitions, no more learning - Now three years into it where do we stand. Stumbles, fumbles, and rumbles but we are making progress and yes we are still learning. Come hear one

Raters perspective on how ESv3 is going, what builders are thinking, and where we may want to go from here.

Presenters: Robby Schwarz, EnergyLogic

Getting the details right on the ENERGY STAR Thermal Enclosure Checklist

Learn the importance of the Thermal Enclosure System Rater Checklist, including best practices and strategies used to meet its requirements. Although this session is geared towards Home Energy Raters, builders are welcome to attend to learn more about this checklist required under Version 3.

Presenters: ENERGY STAR Certified Homes team

Getting the details right on the ENERGY STAR Water Management Checklist

ENERGY STAR Version 3 has introduced the Water Management Builder System Checklist to certify homes as ENERGY STAR. This session highlights areas of the checklist which are most complex based on feedback we've received from builders and Raters from the past year.

Presenters: ENERGY STAR Certified Homes team

How to Verify Key Components of the ENERGY STAR HVAC System QI Rater checklist

This session will walk through how to verify key components of the HVAC System QI Rater Checklist, including best practices and strategies used to meet its requirements. Although this is geared towards Home Energy Raters, HVAC contractors and builders are welcome to attend to learn more about this checklist required under Version 3.

Presenters: ENERGY STAR Certified Homes team

HVAC Business Case Studies: Building Success with ENERGY STAR Certified Homes (HVAC Contractor Panel)

This is a panel presentation, facilitated by EPA, in which HVAC contractors from across the country will discuss how working with ENERGY STAR certified homes has helped them build their businesses. Presenters will discuss their rationale for becoming credentialed and how they successfully transitioned to the new requirements.

Presenters: ENERGY STAR Certified Homes team

Ventilation Standards: ENERGY STAR, Raters, and ASHRAE 62.2

Every ENERGY STAR home certified under Version 3 must meet the requirements of ASHRAE 62.2-2010 – the industry standard for ventilation and acceptable indoor air quality in low-rise homes. This session will explain the value and the requirements of the three key components of the standard – review ventilation, exhaust, and filtration; discuss strategies for meeting these components; and clarify how these requirements relate to the RESNET standard.

Presenters: ENERGY STAR Certified Homes team

New Opportunities for Raters: ENERGY STAR's Multifamily High Rise Program

Energy efficient multifamily buildings from townhouses to high-rises are eligible to earn the EPA's ENERGY STAR label through two paths offered by the EPA: Version 3 of the Certified Homes program and the new Multifamily High Rise Program. This presentation will explain which multifamily buildings are eligible for the ENERGY STAR label through each path, compare and contrast the

procedures for earning the ENERGY STAR in the two approaches, and explain how Raters can be involved in the process.

Presenters: ENERGY STAR Certified Homes team

ENERGY STAR V3.0: Program Survival Strategies in Year One

Builders and raters have made it through the first year of ENERGY STAR V3.0. Efficient new homes programs have faced many challenges in maintaining participation rates. This session will highlight program designs and incentive adjustments adopted to ease the transition, discuss key challenges to V3.0 adoption, and present strategies for supporting raters, builders, and associated trades.

Presenter: Kathy Greely, Performance Systems Development

The Science and Process Behind Modifying REM/Rate, A Case Study (Evening Session)

Join Dan Wildenhaus from Northwest ENERGY STAR Homes as he leads a discussion of how the Northwest ENERGY STAR Homes team brought potential building science and modeling challenges to the table that led to a modification of REM/Rate to meet program-specific goals. The team brought issues with ventilation, ground contact, new technologies (such as ductless heat pumps and heat pump water heaters) and customized libraries and lockouts to a group of key stakeholders. This led to a partnership with software developer Architectural Energy Corporation, which was contracted to modify REM/Rate. The session will focus on the process and results of this experience and partnership.

Presenters: Rob Salcido, Architectural Energy Corporation, Andrew Gordon, Washington State University Energy Program and Dan Wildenhaus, Fluid

EEBA Track

****note the sessions in this track will be offered back-to-back and build off of one another***

Houses That Work: Indoor Air Quality

“Finding Opportunities & Minimizing Risks for Builders”

This workshop will teach participants essential information about indoor air quality as it applies to single family residences. Participants will learn the basics about the full range of potential pollutants and their impact on occupants. They will also learn the four important strategies for controlling and improving indoor air quality. This knowledge will empower builders and other participants to sort through the quagmire of IAQ information that is currently available. They will gain practical and affordable tools and strategies they can use to help their clients make better decisions and to incorporate healthy indoor initiatives into their building projects.

Participants will be equipped to avoid potential risks and identify new opportunities for marketing healthier homes. The information presented in this session will build on the basics of building science covered in the popular EEBA full day Houses That Work session. Participants for this IAQ session are encouraged to attend a HTW I session before taking this workshop.

An important element of the workshop will be to introduce EPA’s air quality home-labeling program – Indoor airPLUS. A compliment to ENERGY STAR, this program helps builders sort through a wide range of construction elements and techniques that can impact indoor air quality.

Relevance to Attendees

- Identify how IAQ is related to building science and high performance homes
- Describe how indoor air pollutants are related either to construction materials, building techniques and occupant activities

- Relate the potential impact of indoor air pollutants on the building and the occupants

Presenter: Gord Cooke, Building Knowledge

Houses That Work for Existing Homes: Remodeling for Indoor Air Quality

This workshop will teach participants essential information about Indoor Air Quality as it applies to single-family residences. Millions of American homes will be retrofitted in the coming years to improve their energy efficiency, make them more “green” or add features their owners want. Integrated healthy home and energy-efficiency retrofit activities can simultaneously lower utility costs and improve indoor air quality. Participants will learn the basics about the full range of potential pollutants and their impact on occupants. They will also learn the four important strategies for controlling and improving indoor air quality. They will gain practical strategies they can use to help their clients make better decisions. Participants will be equipped to avoid potential risks and identify new opportunities for marketing their services. The information presented in this session will build on the basics of building science covered in the popular EEBA full day Houses That Work session. Participants for this Indoor Air Quality session are encouraged to attend a HTW I session before taking this workshop. An important element of the workshop will be to introduce the EPA Healthy Indoor Environment Protocols for Home

Energy Upgrades, which provide practical guidance on improving or maintaining indoor air quality and indoor environments during home energy upgrades, retrofits or remodeling.

Relevance to Attendees

- Identify how Indoor Air Quality is related to building science and high performance homes
- Relate the potential impact of contaminants on the building and the occupants
- Apply cost-effective strategies to pollutant sources
- Describe the four essential strategies for controlling indoor air quality
- Demonstrate energy savings and return on investment to customers

Presenter: Gord Cooke, Building Knowledge

How to Sell the Benefits of Indoor Air Quality Protections – New and Existing Homes

This workshop will provide multiple perspectives from industry experts currently implementing indoor air quality (IAQ) protections within new and existing homes. Share valuable knowledge on how to use IAQ protections to provide a better service and also increase project scope. Learn how to Discuss IAQ concerns with homeowners to help them better understand the home improvement process and way to protect IAQ in daily life.

Attendees will develop an understanding of how to best educate homeowners on the importance of IAQ; learn about marketing and sales strategies to augment weatherization, renovation and retrofit scope with healthy home improvements; and understand how EPA’s Indoor airPLUS program and Healthy Indoor Environment Protocols for Home Energy Upgrades can help implement IAQ Protections and educate homeowners.

Presenter: Gord Cooke, Building Knowledge

How to Implement IAQ Protections During Weatherization and Renovations (EPA - Protocols)

This workshop will engage the audience through an in depth review of a case study that demonstrates the value of EPA’s Healthy Indoor Environment Protocols for Home Energy Upgrades (Protocols) during energy retrofits and the ease of implementation. The panelists will use photos and real world examples to discuss the health issues found within existing homes than can be improved during weatherization, renovations and energy upgrades. Attendees will learn how to sell the

Protocols as a guide for protecting and improving IAQ during weatherization, renovations and energy upgrades, as well as understand the connection between health and IAQ in Homes

Presenter: Gord Cooke, Building Knowledge

DOE BUILDING AMERICA TRACK

Paving the Way to Net-Zero Ready New Homes: Unprecedented Access to Expert Knowledge for Net-Zero Ready Homes with the Building America Solution Center

Up to now, expert guidance on high-performance homes has been a one way linear process from preparation to publishing fixed content. That all changes with the new Department of Energy, Building America Solution Center. This new tool, accessible from mobile devices and traditional web browser, will provide access to world-class research recommendations for proven innovations and best practices at the touch of your fingers. Moreover, the new database engine and elegant interfaces ensure you can find the exact information you'll need on any building science topic within seconds so they can be effectively applied in construction documents, field applications, negotiations with key decision-makers, or training sessions. And maybe most importantly, this tool will create a community of users who can continually improve and augment the content. This includes dramatically improved access to ongoing results from DOE's Building America research program. This session will acquaint the audience with the strategic process behind the tool; how it works, and why the content will enhance the capabilities for any stakeholder involved in high-performance new and existing homes. This includes a demonstration of a beta-version of the soon-to-be-released tool. If you have any role in designing, engineering, rating, or constructing high-performance homes, welcome to a sneak preview of your new best friend.

Presenters: Sam Rashkin, U.S. Department of Energy and Michael Baechler, Pacific Northwest Laboratory

Paving the Way to Net-Zero Ready New Homes: Why are DOE Challenge Home Net-Zero Ready Homes Better Business for Builders and Raters? And Paving the Way to Net-Zero Ready New Homes: Why is the DOE Challenge Home Better Business for The "New Normal" Housing Market?

Why should American homebuyers buy a new home in a subdivision far out of town with a longer commute and poor access to urban amenities? There are a lot of reasons... if it qualifies as a DOE Challenge Home. This is because future levels of affordability, comfort, health, safety, durability, and quality along with net-zero ready level performance are assured for buyers who make sure to look for the DOE Challenge Home label. Homebuyers want this level of excellence and assurance when they make the largest investment of a lifetime. They just don't know how to get it... yet. Attendees will learn what specifications create this major jump in home value and how leading edge builders and HERS raters can work with DOE Challenge Home to enhance their business metrics.

It's been five years since the housing industry began its current historic slow-down that continues to challenge builders across the country. As time marches on, it's becoming increasingly clear the recovery process is going to be extremely slow. Welcome to the new normal: less buyers, more competition from existing homes, and less assurance of appreciation. This traumatic reality has left far too many home builders obsessed with a minimum cost business model at a time when they should be focused on maximum value. The DOE Challenge Home is a perfect solution for adding compelling value propositions that substantially differentiate builders from the fire-sale of existing homes. This session will explore the business case for new home builders to take new housing to an extraordinary level of exclusiveness, advanced technology, comfort, pollutant reduction, net-zero

readiness, and quality. You and I want these type of homes, and so do American homebuyers. Home builders just don't realize it yet. Learn how DOE Challenge Home will help lead the way.

Presenters: Sam Rashkin, U.S. Department of Energy and Jamie Lyons, Newport Partners, LLC

Paving the Way to Net-Zero Ready New Homes: What Business Metrics are Driving Today's Net-Zero Ready Home Builders?

There are a secret club of home builders across the country who realize that constructing net-zero ready homes with sustainable features is better business. They experience some combination of lower time-of-sale; minimal marketing expenses; higher-profit margins; no or minimal call-back expenses; and superior customer satisfaction. It's time to share their experiences with other housing industry stakeholders. Members of this secret club working with the DOE Challenge Home have been invited to share their story and experiences in a fast-paced moderated session that intends to dig deep into their inner construction practices and business outcomes.

Moderator: Jamie Lyons, Newport Partners, LLC

DOE Programs Paving the Way to Zero Net-Energy Ready New Homes: What DOE Challenge Home Specifications Define Truly Zero Net-Energy Ready Performance?

It's time to establish a clear definition for zero net-energy ready homes as this concept increasingly resonates with home builders and home buyers in the U.S. and abroad. The DOE Challenge Home provides one important solution with a strategy that optimizes energy efficiency along with related home performance functions as a precursor to installing renewable energy systems. This session will address the detailed specifications that achieve this strategy. The primary focus will be mandatory DOE Challenge Home requirements and checklists for comprehensive building science, advanced innovations and best practices for thermal enclosures and HVAC systems, energy efficiency components, indoor air quality, and solar readiness. Additionally, this session will address specifications that are encouraged but not required including checklists for comprehensive water conservation, disaster resistance, and quality management. Constructing zero net-energy ready homes is relatively easy. Constructing them so they are affordable, comfortable, healthy, safe, durable and quality-built is the goal of the DOE Challenge Home specifications.

Presenters: Sam Rashkin, U.S. Department of Energy and Jamie Lyons, Newport Partners, LLC

DOE Programs Paving the Way to High Performance Home Improvements: What Top Innovations from Building America are Paving a Path to High Performance Home Improvements?

Most industries invest nearly 4 percent of annual revenue into research and development. The housing and remodeling industries only invest a tiny fraction of one percent. And when innovations do finally appear, the National Association of Home Builders reports it takes almost 25 years for them to be adopted by the housing industry. Recognizing that housing in the U.S. accounts for 20 percent of total energy consumption, The U.S. Department of Energy's Building America Program addresses this critical innovation gap and opportunity to save energy by delivering high-performance home solutions for new and retrofit construction and accelerating the market transformation process. The results of these efforts have had profound impacts increasing energy efficiency while ensuring greater affordability, comfort, air quality, and durability in U.S. housing. In recent years, Building America has shifted focus toward the same challenges facing the home performance retrofit market. What are the major innovations expected to impact home retrofits? Building America has created a 'Hall of Fame' for the most transformative past innovations and will make a major announcement each year promoting the latest innovations for both new housing and existing home retrofits. This presentation will highlight the top innovations in home retrofit technologies contributed by past research along with

strategies being employed to accelerate their adoption in the home performance market place. World class research makes a significant difference and that story needs to be effectively told.

Presenters: Sam Rashkin and Eric Werling, U.S. Department of Energy

Paving the Way to Net-Zero Ready New Homes: How to Execute HERS Plan Evaluation and Field Verification for DOE Challenge Homes

It's time to put a new tool in your HERS tool belt. Raters can augment their services offered to home builder clients with specialized skills needed for DOE Challenge Home certification. This label helps leading edge builders achieve extraordinary differentiation from their primary competition, existing resale homes. This session will demonstrate how HERS raters can perform plan DOE Challenge Home plan evaluations and field verification with actual home examples. The housing market is on a collision course with net-zero ready performance; learn how you can help be part of this movement.

Presenter: Jamie Lyons and Matt Evans, Newport Partners, LLC

FINANCING, POLICY AND PROGRAMS

Market Based Financing of Home Energy Upgrades

Everyone wants to make their home more efficient, but paying for the upgrades is a different story. That's where financing comes in. Making it easy for a homeowner to pay for the upgrades they need can make all the difference in the world. Sheree Eddie, President of Jax Metro and David Reed, Efficiency Specialist with JEA, will discuss how the Jax Metro Home Energy Upgrade Financing program works, why it has been successful and how it involves energy auditors, contractors and customers to ensure the process has value to everyone.

Presenters: David Reed, Jacksonville Electric Authority and Sheree Eddie, Jax Metro Home

FHA PowerSaver Program

The promise of EEMs (Energy Efficient Mortgages) and PACE (Property Assessed Clean Energy) financing have been elusive for most Americans, but a new federal government backed financing is showing promise. The U.S. Department of Housing and Urban Development has selected lenders nationwide to issue PowerSaver Loans insured by the Federal Housing Administration and purchased by FannieMae. Hear how selected lenders are marketing this new loan product and the potential role for home energy raters and installation contractors.

Presenters: Ed Thomas, UtilityExchange.org and Thorne Butler, W.J. Bradley Mortgage Capital Corp.

How Utility Programs can Make Rater's job easier

This presentation will examine the success of the Maryland ENERGY STAR for New Homes Programs as a case study of the significant opportunities for raters that can arise from energy efficiency regulations and utility residential new construction programs. Similar to what is being seen in many other areas, the EmPOWER Maryland State legislation requires regulated utilities to achieve 15% energy demand reduction by 2015. As a result, a consistently designed and implemented ENERGY STAR for New Homes program has been launched by all regulated utilities in the state. Raters have played a key role in the achievements of these programs, which have completed over 4,650 certified homes since 2009 – transforming the market from having 5% ENERGY STAR penetration in 2008 to well over 40% in 2011. This presentation will focus on the ways in which the programs have intentionally supported the rating industry and the ways raters have successfully increased their business opportunities by partnering with these programs. The programs have:

required builders to identify a RESNET accredited rater that they are working with in order to be accepted; enrolled both raters and builders as formal partners; dedicated rater account managers; a user friendly online data management and document storage system; a robust incentive structure; and frequent strategic training opportunities. As program partners, raters have: taken the initiative to recruit builders into the utility incentive programs; collaborated closely with program staff; participated in training opportunities to help raters, builders, and HVAC contractors transition to ENERGY STAR Version 3; and been allies in the field quality assurance inspection process. As an outcome of this presentation, raters should have good ideas for how to work effectively with utility residential new construction DSM programs in their markets, encourage any such programs to employ supportive and effective design and implementation concepts, and support the creation of successful programs if they don't yet exist.

Presenters: Rick Gazica and Justin Mackovyak, ICF International

The SAVE Act - Mainstreaming Energy Efficiency Into the Mortgage Loan and Appraisal Process and "What's Going On" - Developments in Congress

The SAVE Act is generating bipartisan support in Congress. It enjoys a wide range of support including environmental groups, homebuilders, the U.S. Chamber of Commerce and the National Manufacturers Association. This session will introduce the SAVE Act and its provisions, the effect that it will have on building performance and explore its chances of passage into law. The session will be led by Clayton Traylor of the Leading Builders of America.

There are currently a number of bills introduced in Congress to provide incentives for builders to build energy efficient homes and homeowners to improve their existing homes' energy efficient homes. This session will explore the status of such legislation, their chances of being passed and how the building performance industry can make its voice heard in Washington. The session will provide an example of how an Ohio Energy Rating Provider was able to reach out to a key leader of the House Ways and Means Committee and bring home performance into a local perspective.

Suggested Presenters: Clayton Traylor, Leading Builders of America; John Johnson, Tacoma Energy and Carl Chidlow and Victoria Benner, Cardenas Partners

Utility On-Bill Financing and Payment Recovery Programs

Support is growing nationwide for energy efficiency financing that is tied to collection on the utility bill. Discover how these programs work now in New York, South Carolina and Kansas and what you can do to bolster similar initiatives in your area.

Moderator: Ed Thomas, UtilityExchange.org

Presenters: John Ahearn, NYSERDA; Lindsey Smith, Electric Cooperatives of South Carolina and Greg Swob, Midwest Energy

Valuing, Financing and Marketing Green Homes

The biggest challenge in the high-building performance market is the appraisal valuation barrier. In other words, "What's it worth, what's the risk and how do we achieve economic cost benefits quickly?" Green Energy Money (GEM) is implementing a beta "green appraisal" program on 25 homes and will review the case studies, appraisals and RESNET HERS reports in this informative presentation. The agenda will cover monetizing and rating a high performance project within current guidelines, types of data needed to facilitate the process, (including HERS rating and HERS Index Score), resources to provide the data, importance of proper and consistent recordation with MLS, municipality and other databases.

A thorough explanation of market gaps, addressing the challenges, quantitative analysis and mobilizing regional, certified RESNET, appraisal and lending networks to support mass market

demand. We will discuss implementing new market platforms for financial institutions and ways to follow the “green brick road” toward standardization with new financial regulatory and legislative policies.

Presenter: Teresa Lopez, LEED Associate and Licensed Mortgage Banker, Green Energy Money

Partnering for Workforce Development Success: the Green Grad Education and Training Upgrade Program (GETUP) in California

The Green Grad Education and Training Upgrade Program (GETUP) promotes collaboration with key industry partners: working contractors in the home performance field, unemployed skilled individuals eager to find a career in energy efficiency and whole home approaches, and progressive local governments looking not only to comply with regulations and statutes but to spur growth within local economies. GETUP has provided participants hands-on and classroom training and paid internships with California’s most progressive energy efficiency contractors: the Energy Upgrade California participating contractors. This session will focus on how the program was funded, developed and implemented successfully enough that it has been expanded beyond its initial program design which was funded by the American Reinvestment and Recovery Act.

Presenter: Jennifer Green, Building Science Education Manager at the California Center for Sustainable Energy