

“Into the Great Wide Open”

2018 RESNET Building Performance Conference

Breakout Sessions

Updated: January 18, 2018

New Technologies and Building Practices that are Changing Our Industry

Disruptive Strategies for the Evolving Housing Market

High energy performance homes are increasingly are economically viable and net zero energy homes are no longer a pipe dream. The housing industry has not taken advantage of these opportunities as is economically justified. Why? Attend this session for an insider peak into the culture of large national production builder corporations and learn what are the barriers and what are the strategies to tackle these barriers.

Presenter: CR Herro, Meritage Homes

Durability, Resilience and Energy Efficiency: Working Together to Make Sustainable Building Envelopes

As building, energy and green codes become more stringent, new building technologies and innovations are being incorporated into the building envelope. When incorporating new technologies into building assemblies, traditional construction practices need to be adapted. However, as these adaptations of construction practices take place they still need to maintain adherence to basic principles of water management to prevent moisture accumulation in building assemblies. This presentation will describe some of the water management challenges and choices that arise when increasing the thermal performance of building. The presentation will include a review of the progress of industry standard practice and guideline development on the development of details to maintain air, water, and thermal barrier continuity and integrity.

Presenter: Theresa Weston, DuPont Protection Solutions

Emerging Smart Ventilation Strategies and ASHRAE 62.2-2016

This session will explore emerging technologies in smart whole-house ventilation and how these systems could reach maximum potential in hot and mixed-humid climate zones, and lessen industry push-back on fresh-air and tight building requirements. Time-varying control strategies are designed to optimize ventilation run-time by controlling function based on variables such as outdoor temperature, relative humidity and/or pollutant levels, or by taking advantage of off-peak grid hours or occupancy. Presenters will dive into research findings in order to analyze predicted benefits,

including: increased energy savings and indoor air quality. Additionally, presenters will demonstrate the power of ASHRAE 62.2-2016 and how Appendix C can be utilized in order to demonstrate compliance for these high performance, time-varying systems.

Presenters: Jenna Grygier, Mike Barcik & David Pedrick, Southface Energy Institute

Measure Twice, Cut Once: Design Charrettes Lead to Better Buildings

Top builders can achieve high efficiency buildings with minimal or even zero incremental costs by adopting an effective, intentional, and dedicated integrated design process. Design charrettes are a critical aspect of this process. They bring the entire project design and construction team together, codify the project's energy efficiency goals, and ensure each member of the team is on the same page. Learn how to formulate a residential design charrette, which includes setting the intention, building the agenda, and creating the attendee list. Recent case studies of both effective and ineffective integrated design processes of high-performance building projects in California will also be explored.

Presenter: Matt Christie, TRC Energy Services

Air Sealing Options: Choosing Wisely

Spray foam insulation and air sealing products are finding their way into many building applications with its ease of job site customization and range of product offerings. However, the wide variety of products and chemistries can lead to an overwhelming amount of many choices when it comes to ensuring the product used has the right code approval, and is effective for the application. This presentation will compare different air sealing products, including new one component flexible gasket foam technology, in addition to various other spray foam, caulk, and sill seal options. Air barrier control layer concept will be discussed for building envelope performance. Application-specific comparisons will help builders and installers choose the right product for air sealing effectiveness, durability and ease of use.

Presenter: Linda Jeng, Dow Building and Construction

Can you trust the data from a \$200 Indoor Air Quality (IAQ) monitor?

Indoor quality monitors based on low-cost sensors are now available for under \$200. These devices report measurements of temperature, relative humidity and concentrations of one or more air pollutants. LBNL conducted experiments to determine how well these consumer-grade monitors detect and quantify concentrations of fine particles (PM_{2.5} and PM₁₀) emitted from various common indoor sources. The output of low-cost monitors was compared to mass-based measurements using a Federal Equivalent Method and several research-grade light scattering monitors. This presentation will present results and discuss implications for using low-cost particle sensors to characterize and manage IAQ in homes.

Presenters: Brett Singer & Iain Walker, Lawrence Berkeley National Lab

High Performance Home Showcase

RESNET and [EnergySmart Builder](#), [Meritage Homes](#), are partnering to offer conference attendees a unique opportunity to see tomorrow's home today. A special feature of the 2018 RESNET Conference will be a breakout session as well as an onsite tour of Meritage Home's premier reNEWable Living Home. The reNEWable Living Home has been a year-long venture in today's most innovative design, engineering, materials science, and construction practices. The concept home is located at Parkside in Orlando, a short distance from the Lake Buena Vista Resort - site of the RESNET 2018

Conference. The renewable concept home has a HERS Score of 16, in the 1% of high performing homes and exemplifies the industry's best practice for home energy.

For more information of the reNEWable Living Home, see the [feature from Builder Magazine](#).

2018 RESNET Conference attendees have an opportunity to attend a breakout presentation by Meritage Home's CR Herro, followed by a tour of the home Monday February 26, 2018. This session is free of charge, but has limited availability. Transportation will be provided by RESNET.

Presenter: CR Herro, Meritage Homes

Automated house sealing - aerosol envelope sealing of new homes

This session will discuss the overall objectives and interim results of a Building America project focused on integrating a new technology for automating the building sealing process in new homes. The process involves briefly pressurizing the building while applying an aerosol sealant "fog" to the building interior. As air escapes the building through leaks in the envelope, the sealant particles are carried to the leaks where they impact and sticks to seal the leaks. A standard blower door is used to facilitate the sealing process, and provide real-time feedback and a permanent record of the sealing. The technology is thus capable of simultaneously measuring, locating, and sealing leaks in a building remotely.

Demonstrations of the technology have been very successful, as it typically seals 80% of the sealable leakage within two hours of injection. The Building America project will provide significant research needed to successfully integrate aerosol envelope sealing into the home building process. The project team is working directly with builders to identify the best stages for incorporating aerosol sealing from the perspectives of cost, performance, and seamless integration into the construction process. The cost of the aerosol sealing and resulting house tightness are compared to similar group of houses using conventional sealing methods. In addition to producing tighter houses, conventional sealing methods are evaluated to determine whether they can be eliminated or reduced to further improve cost effectiveness. This talk will present the results of the initial sealing demonstrations for builders in California and Minnesota.

Presenter: Dave Bohac, Center for Energy and Environment

Building Science Advisor Solving the Perfect Wall for All

Wall system design today is more challenging than ever. Performance expectations have changed. Materials and methods have changed. And cost competition is tougher than ever. Selecting a low-risk, moisture-managed, high-performance wall system design today often involves consultation from expert building scientists. If high performance homes are going to be commonplace however, we need a more scalable solution to get this expert knowledge into the hands of all industry professionals. Scientists from Oak Ridge National Laboratory and some of the world's top experts on durable high-performance wall system design are developing an online "expert system" tool that can help builders through moisture-managed high-performance envelope design decisions. The tool will draw from Building America research projects, lab and field test measurements of high performance wall systems, computer aided risk analysis, and the expert judgment needed to make sense out of all the data. This session will update the industry on the beta-testing of this tool, which will be complete by December 2017 with the tool ready for prime-time in 2018 and provide an opportunity for feedback.

Presenters: Eric Werling, U.S. Department of Energy & Andre Dejarlais, Oak Ridge National Laboratory

Clearing the Air National Baseline Indoor Air Quality Study and Methodology

Healthy indoor environments are valued by homeowners and buyers but there is currently no way to effectively indicate or value the IAQ performance of a home. Lawrence Berkeley National Laboratory and Building America have been solving this problem by developing an IAQ scoring methodology and tool – an asset rating similar to existing ratings for energy use. New this year is a national baseline study of occupied homes built to current energy codes (e.g., IECC 2012/2015) to better characterize the indoor air quality of new U.S. homes. This information will lead to improved guidance, future standards and code changes, and help prioritize future IAQ research. This session will present an update of progress on the development of the IAQ score and information on upcoming baseline studies. Comments and questions to help shape future development of the score are welcome.

Presenters: Eric Werling, U.S. Department of Energy & Iain Walker, Lawrence Berkeley National Lab

Do Sealed and Insulated Attics Save Energy in New Homes?

Residential attics have long been a contentious issue in building science and construction. Traditionally, attics have been insulated at the flat ceiling with deliberate venting between the attic and outside. This has aided with the thermal and moisture performance of attics. It is also common to place the HVAC system and ductwork in this attic space, especially in slab-on-grade homes. This exposes the entire HVAC system to the extreme temperature conditions of the attic, which in summer can widely exceed the outdoor conditions. This exacerbates the thermal and air leakage losses for the HVAC system. A solution that has been used for over 20-years is to seal and insulate the attic at the sloped roof surface, with no insulation on the ceiling. This makes the attic volume more like conditioned space, so that duct losses are minimized. However, this is offset by increased building envelope area and sometimes, less insulation - leading to increased building loads. If the attic contains older, leaky duct systems, then the net savings could be significant. But what about a modern, insulated duct system that is built to current code? Does a sealed and insulated attic add value to a system with R8 ducts and 5% leakage? What if there is also a cool roof finish or radiant barrier? Can we identify what makes this approach successful? When and where should it be used? How do we limit moisture risk? We will answer these questions through reviewing past literature, exploring data from current sealed attic monitoring studies, and through detailed simulations addressing these very questions in new California homes.

Presenters: Iain Walker & Brennan Less, Lawrence Berkeley National Lab

Beyond SEER: The Shifting Role of HVAC in Addressing Comfort through Efficiency

The energy performance of heating and cooling systems, like many other components of the home, has steadily improved over time. But as these technology developments continue and the everyday needs of the HVAC system shifts, it is critical to ensure that overall occupant comfort is addressed as efficiently as possible. Many of the HVAC-related solutions available today to address these occupant needs (e.g. multi-stage compressors, variable speed blowers) are too complex to be adequately simulated by RESNET's accredited home energy rating software. This session will cover how advanced HVAC systems and controls can address much more than just sensible heating and cooling loads, and the impact this shift can have on how we evaluate and market energy performance through the HERS Index; especially for residential new construction. This session will include results from field studies conducted by Trane to measure humidity response and control in the Southeastern US, modeling and analysis work by Salcido Solutions detailing the energy performance of variable speed equipment, and discussion by a dealer on the application of these advanced systems in the field.

Presenters: Ray Rite, Ingersoll Rand & Rob Salcido, Salcido Solutions

How is Comfort of a Home Related to the Design and HERS Number?

Today the challenge is not so much how one implements energy efficiency goals but is satisfying concurrently the durability and comfort performances that homeowners expect. Durability should be the first design driver, followed by comfort whilst still satisfying high performance at the same time. Achieving low HERS numbers on residential buildings is becoming mainstay - especially with the IECC 2015 requirements. However, even if you satisfy the energy requirements using either the RESNET/IECC standards for each US climate zone; how comfortable are these homes? Until recently, computer models that include the multi-disciplinary approach that account for the occupant response to the imposed environment for each room of a residential building was not possible. However this has now changed. Using advance whole building simulation tools with ASHRAE Standard 55 allows one to design for comfort. ANSI/ASHRAE Standard 55-2013 defines the range of indoor thermal environmental conditions acceptable to a majority of occupants, but accommodates an ever-increasing variety of design solutions intended to provide both comfort and respect to today's imperative for sustainable buildings. In this presentation, the impact of advancing codes (IECC 2006, 2015, PHIUS2017) on the positive thermal comfort will be analyzed for one residential home in all 8 IECC Climate Zones. Results will show how one can get significant benefits in comfort by designing homes that exceed the IECC 2015 requirements, where the justification of higher R-value envelopes can substantially improve the comfort of a home.

Presenter: Achilles Karagiozis, Owens Corning

The When and Where of Vapor Retarders

Code provisions on the use and placement of vapor retarders are becoming more detailed, and can be confusing. Additionally, building assembly components such as water-resistive barriers, air barriers, and sheathings are available as either vapor retarding or vapor permeable products. Moreover, new products with variable permeability - sometimes referred to as smart vapor retarders - are being introduced into the market. In 2015 the concepts of using hygrothermal modeling to determine the use and placement of vapor retarders were introduced into the International Building Code (IBC). This presentation will review changes to the vapor retarder requirements in the IBC and the IRC from 2009 to 2018. It will introduce hygrothermal modeling and provide guidance on the key considerations when conducting or reviewing a hygrothermal analysis.

Presenter: Theresa Weston, DuPont Protection Solutions

Got Air Infiltration Problems? Let's Make It Better (Tom Petty, 1985)

One of the most prevalent issues encountered by raters in the Maryland ENERGY STAR New Homes Program is the failure to meet air infiltration requirements. This session will discuss a highly effective technique for air sealing, capable of meeting the most stringent code requirements such as in states like Maryland, which enforces the progressive 2012/2015 IECC code, Energy Star[®] 8.1, and 3.0 ACH₅₀.

Using Liquid-Applied Air Barriers (LAB) is an air sealing technique applied to the shell of the home from the outside. This process of air sealing dramatically decreases air infiltration and can help builders decrease costs and delays. When homes fail to meet air infiltration goals, builders must spend additional time and effort to address the difficult task of air sealing the home after drywall. This retroactive process often fails, which can cost the builder thousands of dollars in code compliance, settlement delays, and often an ENERGY STAR[®] certification. This session can help your builders avoid this painful process and offer the added benefits listed below:

- Eliminate the need for house wrap
- Eliminate the need for using spray foam insulation on the exterior walls
- Reduce the need for air sealing framing

- Improve durability
- Improve performance of batt insulation
- Improve the efficiency/extend the life expectancy of any HVAC equipment or ducts in the attic
- Reduce instances of roof leaks
- Allow early use of a blower door to locate/repair any leaks
- Eliminate the need for measuring duct leakage to the outside since all ducts will be inside the thermal envelope of the house

This session will discuss current standard practices such as using plastic wrap as an air barrier and ways to integrate LAB into the building process. The session will also explore the costs and benefits associated with each approach.

Presenters: Tim Faff & Stephen Willingmyre, ICF International

Hidden in Plain Sight: Understanding Air Leakage and Innovative Technologies

The effect of air leakage in buildings is misunderstood. Energy savings are not modeled correctly and are not the main reason to have an air barrier in a building. Building operations in various climates need to be understood and the performance of the material needs to meet the building needs. This presentation identifies some of the issues that need to be considered as you evaluate the performance of a building and the performance of the air and water control layers.

Presenter: Laverne Dagleish, Air Barrier Association of America

Launching the HERS Rating Industry to a New Trajectory

Streamlining the Process from Rating to RESNET

The ratings game is changing. Additional requirements and quality assurance steps have created additional complexity. On top of that, builder clients are asking for faster turn-around, better documentation, and more services. The good news is that there are steps and tools Providers and Raters can use to streamline the process. This session will look at the rating process from A-Z and present tools, resources, and a success story. Learn how one Rater decreased rating times, increased profitability, and improved rating accuracy and consistency – all while providing more value to the builder.

Presenters: Mat Gates, Residential Science Resources, Hank Brekke & Amber Wood, NORESO

Breaking Down RESNET/ANSI/ICC Standard 380 and the Status of Implementation into the MINHERS Standards

This session will provide an update on the current implementation of RESNET/ANSI/ICC Standard 380 into the RESNET MINHERS Standards. It will also review the protocol and standard changes in RESNET/ANSI/ICC Standard 380.

Presenters: Iain Walker, Lawrence Berkeley Laboratory & Gary Nelson, The Energy Conservatory

Valuing HVAC Installation in the HERS Index

This session will provide an update from RESNET's HVAC Working Group who is currently working on protocols to value to the HERS index for proper HVAC installation.

Presenters: Dean Gamble, ENERGY STAR & James Jackson, Emerson

Advanced Field Test & Measurement- Beyond the Basics of Rater Training

Now that you've mastered blower door and duct testing, what's next? This hands-on session for novice raters will include demonstration of several common (and some not-so-common) airflow tests performed by advanced raters. In addition to the demonstration, attendees will learn the *how's* and *why's* of accounting for environmental factors such as temperature and air density.

Presenters: Bill Spohn, TruTec Tools & Rick Karg, Residential Energy Design

Field Verification and Modeling of Mechanical Ventilation Systems

It was once a rarity for a home to include a whole-house mechanical ventilation system. With the rise of advanced energy codes, ENERGY STAR Version 3, and more stringent HERS Index thresholds for many programs, whole-house mechanical ventilation systems have become standard in a vast majority of rated homes in many parts of the county. While whole-house mechanical ventilation systems are a required aspect of most ratings, there is a lack of clear understanding of how to verify and model these systems. Ventilation systems have up to 5 individual inputs that affect the HERS Index, and their verification requires raters to access different skill sets to correctly model these systems. The impact of correctly modeling these systems can affect the HERS index by several points.

This session will briefly review the current requirements for verification of whole-house mechanical ventilation systems, the process of gathering data/testing on-site, using online database for accessing third-party system rating data, and entering that data accurately into the rating software.

Presenter: Chris McTaggart, Building Efficiency Resources

Raters' Perspectives on New Homes Programs: Designs that Drive Participation—NATIONAL EDITION

As designers and implementers of residential new construction programs, manager of a HERS providership, and president of the Northeast Home Energy Rating System Alliance, the authors interact with HERS raters working in a variety of residential new construction programs across many states. Comments shared by dozens of raters made it clear that some programs presented a high "barrier to participation", through difficult qualification criteria, challenging submission requirements, or hard to track down program staff, while participation in other programs was relatively easy. The viewpoints shared by raters were purely anecdotal however. Despite the informality, it was clear that there was valuable feedback for program designers and administrators in the perspectives of these key trade allies. Therefore, the authors designed a survey to be administered to raters across the nation, as a follow-up to the NEHERS-focused survey conducted in 2016. Survey questions included topics such as: how important utility programs are to the raters' business; how many different programs they participate in; how programs support raters via marketing, technical assistance, and quality assurance; which forms of support are most valuable to the raters; what programs require for submissions beyond a standard HERS rating; factors - if any - that limit participation in utility programs. The survey also addresses variables such as the size of the raters' business, and the level of incentives made available through programs they participate in.

Presenter: Kathleen Greely, Performance Systems Development

There is an App for That - is Back. Let's go to the Next Level...

This session will become a standard at RESNET conferences. This includes demonstrations of some of the best apps/devices for testing and performing many of the required measurements for a Rating. Measurements? We will scan the room with Apple & Android devices and measure the room live. There are multiple different ways to measure a room or wall, and we will demonstrate multiple apps that do this with ease. Want precision measurements - Laser devices can send the readings to your phone/tablet and provide an Excel sheet - Nice!

How about duct testing on the fly or trying to find the leaks in the attic or crawl space and turning on/off the duct tester as you go? Handy! While standing in the living room, turn off the blower door fan so you can explain to your clients the conditions, then turn it back on and let them feel the air moving through the switch plate. These apps can do that. Needing to create a sketch up model of the home and export the surface area and volume? EnergyLogic has a solution and a training module for that, and all will be demonstrated in the session. But wait there is more... you have to come to the session to see.

If you want to see what's out there now and coming up next, this session is must for those who are on top of their game. Last year this session rocked and several asked me to update it and present it again. Here's a sample which includes James Hardie Contractor's Eye (aka Hover) must see app!
www.dropbox.com/s/joy4mrhtmbtpqu8/Theres%20An%20App%20For%20That%20sample.pdf?dl=0

Presenters: Joe Medosch, Energy & Environmental Consulting llc

New Construction & Healthy Homes: Observations & Measurements & for Raters

New construction & healthy homes: Observations & Measurements & for Raters Formal studies and anecdotal experiences have homeowners thinking more and more about achieving a healthy indoor environment. Many factors play into this including: siting, choice, installation and maintenance of materials, systems and furnishings, and the activities of the occupants. Come to this session to learn about some of the observations & measurements a Rater can make to help homeowners achieve a healthy home.

Presenter: Bill Spohn, TruTech Tools, LTD

AirFlow Measurements 2018 Edition

Airflow Measurements: 2018 Edition: Learn the wide variety of measurement methods and the pluses and minuses of each. Dig into the science behind good airflow measurement, as well as the importance of considering air density corrections. We will also cover the ins and outs of picking the correct tool for the measurement task or application. We will present test data about relative accuracies of some of the measurement types. Every major airflow measurement tool and technique will be explored and explained - especially those impacting RESNET ratings.

Presenter: Bill Spohn, TruTech Tools, LTD

How RESNET Helps You Market HERS to Builders (and Others)

Need help marketing HERS? Whether you're new to the industry or need a helpful refresher, attend this session to learn what RESNET resources are available to help you market your rating services to builders, homeowners, and others. You can also offer suggestions on additional RESNET resources that would be helpful to have in the future.

Presenters: Valerie Briggs, RESNET & Nate Kleist, Energy Diagnostics

Time is Money: Valuing When Energy is Used

Residential buildings use 40% of the electricity in the US, and often comprise over 50% of the utility peak demand. Utilities are increasingly adding renewable energy sources to their systems, both large supply-side systems and distributed systems such as rooftop solar. While higher penetrations of renewable energy bring many benefits, their variability creates new challenges for electric utilities. Buildings can play a key role in accommodating variable generation when they are flexible. Increasingly, when the building's use of energy becomes more important than how much energy is used. To stay relevant, HERS will need to adapt to this new paradigm by valuing when energy is used, and accounting for the technologies that enable flexibility -- onsite generation, storage, and controls. Dave will explore possible approaches for getting from where HERS is now to where it needs to be in the future.

Presenter: Dave Roberts, National Renewable Energy Laboratory

What if Uber or AirBnb Happened to the Home Building Industry?

The combination of new and/or repurposed technology plus an innovative business plan has led to significant market disruption for a number of industries over the last few years. Did the Big Cable companies see the threat Netflix would pose to their happy existence? Could Blockbuster have anticipated RedBox in time to reinvent themselves and salvage their own future? One could argue that market disruption is like the Grim Reaper. It will come for everyone eventually. It's been a fact of life since before tyre shops replaced the livery stable. Is there any reason to think the home building industry is immune? This session will explore some of our favorite "innovative" technologies and business plans, and imagine what could truly disrupt the home building market. Will the HERS Rater still have relevance in this imagined future? Come to this thought-provoking session to find out. (Warning: Audience Participation is advised)

Presenters: Colby Swanson, Momentum Innovation Group; Ari Rapport, IBACOS & Steve Byers, EnergyLogic

What do to When a Builder Challenges the Results of Your HERS Rating?

Join this discussion to hear experiences from raters and rating providers when homebuilders challenge the results of the HERS Ratings, and how both parties come to a resolution.

Presenters: Chris MCTaggart, The BER & Rater Panel (TBD)

The Future of the ERI Standard ANSI/RESNET/ICC 301 and the HERS Standard MINHERS – Next Editions

RESNET's American National Standard - Standard ANSI/RESNET/ICC 301-2014 - is scheduled for its first 5-year Update in 2019. Development and public review will be conducted during 2018. The updates will include new criteria for attached dwelling units ("Multi-Family") and sleeping units in buildings of any height, and incorporation of the many addenda and interpretations developed since 2014. As RESNET's technical standards migrate from the MINHERS (RESNET HERS standards) into ANSI American National Standards, the corresponding MINHERS chapters are also evolving. The plan, schedule, and highlights of major changes to both Standard 301 and the MINHERS will be presented during this Conference session.

Presenters: Philip Fairey, RESNET SMB Chair & Rick Dixon, RESNET

RESNET Rating Provider Roundtable

In this session, Rating Providers are encouraged to join in on an interactive session during which this critical aspect of the RESNET HERS Rating industry will have the floor. HERS Raters, Builders, and the RESNET Board and Sub-Committees are often the primary focus of the RESNET conference and

its technical sessions. However, this open discussion will be moderated by PEG LLC Senior Vice President - Matthew Cooper in his effort to give Rating Providers of all types and sizes the chance to collaborate, strategize for improved market up-take, and even help set the stage for the future of our industry. There will be several specific session segments that will provide delineation of primary subject matter followed by an open discussion period. Participants who wish to voice their thoughts in a specific discussion segment should look for a pre-conference online sign-up page to ensure they will have a designated seat.

Format:

Opening Statement and Welcome

Segment One: Rating Providers Perspective on the State of the New Construction Market and the Effectiveness of RESNET/HERS

- **Recognition & Market Penetration**
- 20 Minutes with Moderated Panel
- Five Primary Reserved Seats
- Open Floor Commentary

Segment Two: Rating Providers Outlook on the RESNET Progression Towards Enhanced QA

- 20 Minutes with Moderated Panel
- Five Primary Reserved Seats
- Open Floor Commentary

Segment Three: Rating Providers Role in Advancing the Future of HERS Ratings and RESNET as an Industry Leader

- 20 Minutes with Moderated Panel
- Five Primary Reserved Seats
- Open Floor Commentary

Segment Four: The Role of RESNET HERS Raters and their Providers as recognized professionals for non-HERS programs. What are the implications for: Quality Assurance/Quality Control/Professional Liability/Code of Ethics

- 20 Minutes with Moderated Panel
- Five Primary Reserved Seats
- Open Floor Commentary

Segment Five: Open Floor Discussion

- 20 Minutes of Open Floor Conversation

Presenters: JoAnn Spence & Matthew Cooper, PEG

ANSI/RESNET/ICC 301 and the New ASHRAE 90.2

ASHRAE Standard 90.2 is undergoing a major revision to transform it into a performance based standard which uses ANSI/RESNET/ICC 301 as the base methodology. This presentation will discuss the new direction of Standard 90.2 to become a leadership standard that has performance at least 50% more efficient than the energy efficiency defined by the 2006 IECC. The addition of the new Standard 90.2 to the industry portfolio allows benefits of having a range of energy efficiency levels based on the same base ANSI/RESNET/ICC 301 criteria. This presentation will discuss how the new 90.2 standard references ANSI/RESNET/ICC 301 create an accurate, flexible, performance-based tool that enables user creativity in meeting the performance objectives.

Presenters: Philip Fairey, Florida Solar Energy Center; David B. Goldstein, National Resources Defense Council & Theresa Weston, DuPont Protection Solutions

How to Implement the Current RESNET Sampling Protocol and What to Expect in the Future

New to Sampling? Just want to be sure you are properly implementing Sampling? Curious about how Sampling may change in the future? Come to this session to learn how to implement Sampling in

accordance to RESNET Standards, and get a preview of the proposed RESNET Sampling standard for multifamily projects.

Presenters: Scott Doyle, RESNET; Thiel Butner, Pando Alliance & Emelie Cuppernell, Performance Systems Development

So, What Does Grade I Insulation Really Look Like?

This session will provide insight into exactly what Grade I insulation really looks like, and includes an update to the revisions to RESNET Standard Appendix A on Insulation Installation.

Presenter: Charlie Haack, NAIMA

The Independent Provider - What are they Providing?

The role of the Independent third party RESNET QA Provider has changed over the last decade along with changes in the industry, changes in standards, and changes with RESNET. What does a provider provide? What can a rater expect? How has this changed? What changes are expected to come? This session will cover the changing role of the Independent QA Provider and the range of services available.

Presenters: Emelie Cuppernell, Performance Systems Development & Ethan MacCormick, Performance Systems Development

Emerging Leadership Council 2.0

Interested in future leadership opportunities in RESNET and the home building performance industry? Do you want to invite others to pursue the same? Then learn how to get involved with RESNET's Emerging Leadership Council (ELC). RESNET created the ELC to recruit, mentor, and motivate the future leaders, as well as advising RESNET on outreach efforts to create an inclusive, welcoming environment for the open exchange of ideas.

Join us to hear the Council discuss new initiatives on working with schools, technology, social media, and more to help RESNET and the industry support the next generation of leaders!

Presenters: Valerie Briggs, RESNET & Matt Gingrich, Energy Diagnostics

RESNET Rater Instructor Roundtable

Effective January 1, 2018, the testing requirements of MINHERS Chapter 8 were replaced by Standard ANSI/RESNET/ICC 380-2016 and its Addendum A-2017. This session aimed at Rater Instructors, and RESNET Accredited Training Providers will provide an overview of this new standard with a focus on how these changes affect curriculum and testing. During the last segment of the session, we will introduce a special bonus topic - early feedback for instructors from RESNET Staff's Quality Assurance Oversight of HERS Providers. This is the beginning of an ongoing and important feedback loop that connects QA findings back to training and instruction, with the goal of continuous improvement towards consistency.

Presenters: Scott Doyle, RESNET

Best Ideas of the HERS Industry – Insulate America and RESNET Awards Program

What would you pay to take home 20 successful ideas from your peers? Our price is \$20 and it is a steal! All conference attendees are encouraged to share their best ideas with the group; something that was innovative, made a difference in your company, or how to get to the next 2 Million rated

homes. The top three ideas, as judged by the session attendees, will split the money that was collected. Have an idea? Win some money!

Presenters: David Beam and Amy Goforth

2017 Cross Border Builder Challenge Lowest HERS Score Awards Presentation

The 2017 awards for the lowest HERS scores for production and custom builders along with net zero awards for both the U.S. and Canada will be presented by John Godden of the Canadian Residential Energy Services. Additionally, there will be some honorable mentions from this year's competition.

Presenters: John Godden, Canadian Residential Energy Services & Rod Buchalter, RenewABILITY Energy Inc

Understanding What Builders Want From HERS Raters

The Insulation Institute has published an indispensable guide for certified RESNET HERS Raters to better understand how communications with builders can be improved, making it easier to work together.

In the first half of 2016, the Insulation Institute conducted two rounds of qualitative research to better understand how builders and HERS Raters interact. This included a focus group of ten builders, followed by a series of one-on-one interviews with ten other builders. The residential builders involved in the research included a broad mix of regions, type, and number of homes built per year. The common denominator was their significant experience in working with HERS Raters, ranging from two to ten years.

The Insulation Institute published "The Guide to Understanding What Builders Want From HERS Raters" to help HERS Raters better serve their builder customers. In so doing, this will help improve the quality of future homes.

This session will explore the following topics:

- Why Builders Use HERS Raters
- What Builders Expect from HERS Raters
- How Raters Can Exceed Builders' Expectations

Presenter: Patrick Kiker, NAIMA

HERS Raters, HERS Ratings, and Code Compliance - The problem (opportunity?) with non-HERS code compliance ratings that receive no 3rd party oversight

This session will have two parts:

1. Analytics part presented by Ekotrope: - How many houses are meeting the performance code using RESNET accredited software without being registered or QA'd (through a data analysis or a survey)?
 - Market conditions
 - What raters are charging for code compliance as compared to HERS ratings, time spent on code compliance etc.?
2. A panel with raters/provider discussing questions like: -How can we get more HERS ratings done in the code compliance market?
 - What are the key impediments?
 - How can technology assist?

Presenters: Cy Kilbourn, Ekotrope; Steve Saunders, US-EcoLogic & TexEnergy; Jeffrey Sauls, Energy Vanguard & Robert Schildgen, Priority Energy

The Latest on Enhanced HERS Index Consistency and Quality Assurance

Calibration & Field Checks - What and When!

This session will explain the manufacturer calibration process and requirements, and how it relates accurate measurements. We will cover different procedures by each manufacturer to ensure your understanding of what must be completed and when, as well as good QA procedures. Ever wonder what the manufacturer does before you receive your equipment, or when you send it back to be calibrated? We'll take you behind the scenes to see the process. This session will explain the difference between gauge calibration (pressure) and fan calibration (flow). Do you know which will cause a greater error - a gauge off by 10% or a fan off by 10%? Find out the reality of accuracy and repeatability in this session.

Session Objectives:

- The difference between the manufacturer calibration and a field check.
- What is required by the manufacturer to be calibrated and when.
- Live demonstration on how to perform a field check on a gauge, when it should be performed and how to document results.
- Live demonstration on how to check a fan, blower door and duct testers, to make sure they "in calibration"
- Better understanding of what the manufacturer measures at the factory to confirms that your device is accurate.

Presenters: Joe Medosch, Energy & Environmental Consulting LLC & Frank Spevak, The Energy Conservatory

Faster ratings, bigger profit: Leverage Technology to Boost Your Rating Business

With RESNET's increasing quality assurance requirements, the data collection and tracking burden on Raters and Rating Providers is mounting. It's time to leverage technology to finish ratings faster and keep data all in one place. Learn how one RESNET Provider is successfully leveraging a new app to streamline the QA process and keep costs in check for their business. This allows them to remain cost competitive in the HERS ratings marketplace. This session will provide an overview of features in software technology that are directed at increasing the quality and efficiency of ratings, whilst also meeting the more rigorous requirements of RESNET QA.

Presenters: Michael Resech, Residential Science Resources; Daran Wastchak, DRW; Mat Gates Erik Sowers, Residential Science Resources

The Present and Future of RESNET Quality Assurance

Join Scott Doyle and Laurel Elam with RESNET to hear an update on the current Quality Assurance amendment and the future of RESNET Quality Assurance.

Presenters: Scott Doyle, RESNET & Laurel Elam, RESNET

The Genie is out of the Bottle! What we have Learned so far from QA Genie

Join Scott Doyle and Laurel Elam with RESNET to discover the findings from the first year of analysis of QA Genie - RESNET's Rating evaluation tool.

Presenters: Scott Doyle, RESNET & Laurel Elam, RESNET

HERS Consistency - A Discussion from a Software Perspective

The HERS Consistency Task Group has been looking at what changes can and should be made in order to make accredited HERS software produce a consistent HERS Index. This session will be a review of their findings and recommendations. Attendees will gain a better understanding of the calculation of the HERS Index and the challenges faced in producing a consistent HERS Index result. Format will be panel discussion with members of the Consistency Task Group.

Presenters: Nancy St Hilaire, Home Energy Group; Cy Cilbourn, Ekotrope & Brian Christensen, Noresco

Making Grade I Installation Training Effective and Repeatable

HERS Raters are frequently frustrated by the difficulty of getting Grade I insulation installations. While the reasons for this issue vary, a key challenge is providing consistent training in a repetitive manner in order for installers and crew leaders to know what is expected in advance. In 2017, Appalachian State University began a program focused on providing quick, easy and accessible trainings to insulation installers around North Carolina. It focused purely on getting Grade I and why it mattered. Their approach was quick, easy and popular among installers and business owners alike. This model holds the potential to scale and could be replicated by HERS raters as a value-added service to their builder customers to ensure quality outcomes (and the HERS points that come along with them).

Presenter: Chuck Perry, Appalachian State University Energy Center

Learn How to Use RESNET's File QA Checklist (QAD Roundtable)

This session will introduce RESNET's new QA Checklist. This checklist has been piloted by QADs and is ready for release to the broader QA community. We will be conducting mock QA file review using the checklist, so you can see how it works and learn how to implement it as a QAD. This session will count as the annually required QAD Roundtable.

Presenters: Laurel Elam & Scott Doyle, RESNET

Energy Policy and Programs that will Affect Our Industry

The Dog that Caught the Car: A Case Study in the Unexpected Hazards of Achieving ZNE
Zero Net Energy (ZNE) is the apex of energy efficiency in buildings. It was once thought of as the distant and lofty goal of only the most avid purists. However nudges from state policies, improved design methods, and efficiency certification programs have demonstrated that ZNE is both technically and financially viable for the mainstream. This has also brought into light a new slough of systemic challenges with grid reliability and utility business models. State energy offices and utility programs, particularly in California, that at one point were the primary champions of true ZNE are suddenly like the dog who caught the car - coping with unintended consequences and trying to strike a new balance between efficiency, distributed generation, and meeting their greenhouse gas reduction goals. Learn about the practical policy challenges that came along with the aggressive approach towards California's 2020 residential ZNE goal.

Presenter: Matt Christie, TRC Energy Services

RESNET/New Buildings Institute Partnership on Certification of Net Zero Energy Homes

The New Buildings Institute (NBI) is adopting a certification program for net zero energy buildings. The certification will involve both an asset rating and a performance rating. RESNET is working with NBI in having the HERS Index as part of the certification process for residential

buildings. This session will explain the NBI's Net Zero Energy Building Certification Program and explore the business opportunities this program has for HERS Raters and Energy Smart Builders.

Presenters: David Goldstein, NRDC & Alexi Miller, New Buildings Institute

Consortium for Energy Efficiency —Residential New Construction Initiative

The Consortium for Energy Efficiency (CEE) is the binational organization of energy efficiency program administrators responsible for ratepayer-funded offerings across 46 US states, the District of Columbia, and seven Canadian provinces. In 2016, CEE members directed nearly \$7 billion of the \$8.7 billion in energy efficiency and demand response program expenditures across the US and Canada. CEE has developed a *Residential New Construction Initiative* that promotes highly efficient new homes through a tiered specification of performance metrics and robust quality assurance measures. The initiative has significant implications and potential for the RESNET industry, as the HERS Index is a foundation element of the specification. This session will provide an overview of the program requirements and explore its implications for HERS Raters and builders in the market.

Presenters: Alice Rosenberg, Consortium for Energy Efficiency & David Goldstein, NRDC

RESNET and Utility Efficiency Programs - Enhancing Collaboration

Many utilities incentivize the design and construction of highly efficient buildings. These programs operate within the parameters of complex and rigorous regulatory environments that dictate how savings can be claimed. This often results in extensive energy modeling and verification requirements that go beyond the standard HERS tools, or only allow a single specific HERS tool to participate. The RESNET Utilities and HERS Software Programs Advisory Council worked in 2017 to address these barriers and propose ways to accelerate the use of RESNET software tools in utility programs through a series of recommendations. Come learn about this work to date and contribute to the shared mission for enhancing standardized output reports, utility-grade energy use and savings calculations, simplified custom reference home inclusion, and improved modeling guides and protocols. Members of the RESNET Utilities and HERS Software Programs Advisory Council will present their findings, discuss deployment strategies, and answer participant questions.

Presenters: Cy Kilbourn, Ekotrope; Alice Rosenberg, Consortium for Energy Efficiency; Nate Kleist, Energy Diagnostics & Matthew Christie, TRC Solutions

HERS, ENERGY STAR and Beyond! The Value of High Performance Homes and Energy Ratings

NEEA (Pacific Northwest's Regional Energy Efficiency Organization) has embarked on a mission to foster collaboration between multiple whole home certification programs and aggregate the data collected by the various programs to create a regional data hub of all above code certified homes. The aggregated address-level data is used for a variety of purposes, including: determining energy savings, informing code development and program design, tracking market activity and building trends, and more! This session will present the challenges of program collaboration, expand on the uses of the aggregated data, explore opportunities to develop new value propositions for home certification programs, and propose how raters, verifiers, and home builders can benefit.

Presenters: Neil Grigsby, NEEA; Matthew Christie, TRC; Mark Wyman, Energy Trust of Oregon & Bob Burns, Pivotal Energy Solutions

Residential Energy Guarantee - Don't Just Say Its Energy Efficient - Guarantee It!

As a Builder, you build Energy Efficient new homes and rate them with a HERS Index. As a HERS Rater, you rate Energy Efficient new homes for builders using the HERS Index.

How do you set yourself apart from the crowd?

As a Builder – you don't just say your homes are Energy Efficient – you guarantee it!

As a HERS Rater – you don't just rate homes with a HERS Index like other raters – you guarantee it!

Bonded Builders Warranty Group (now Centricity!) pioneered taking the HERS rating and Energy Efficient construction to a whole new level with the Residential Energy Guarantee.

Presenter: Roger Lange, Bonded Builders Warranty Group

Making LEED Accessible for Single Family Builders: Success with Streamlined Production Certification, and Major Rating System Updates

Learn about major new LEED For Homes Rating System updates that make LEED more streamlined and accessible for single family builders. Hear how one rating company has successfully implemented the new production home certification pathway, which helps deliver LEED certification on a production builder timeline - including certification within a week of final inspection. USGBC has been hard at work making LEED for Homes V4 more flexible and accessible. USFBC are specifically targeting the production home builder market with modified rating system requirements and point thresholds that reward best practices in high volume single family construction. In addition, a new certification pathway based on the DOE Zero Energy Ready Home program helps ease the transition from ENERGY STAR to LEED certification. Join Asa Foss - Technical Director of LEED for Homes - who's been putting all this together at USGBC, and Tom Flanagan - LEED Quality Assurance Manager for EnergyLogic - who's been making it all work in the field to get the skinny on these transformative program updates addressing the three major hurdles to making LEED digestible in a production environment: cost, timeline, and administration.

Presenters: Asa Foss, US Green Building Council & Tom Flanagan, EnergyLogic, Inc.

Opportunities for HERS Raters with the International Energy Conservation Code

The Role of Raters in Code Compliance Verification

With the incorporation of the Energy Rating Index in the two most recent editions of the IECC and building inspectors retiring in record numbers, HERS Raters are commonly being looked to as the professionals with the experience to verify compliance with residential energy codes. To gain the trust and confidence of the code officials often responsible for approving third parties for compliance verification, Raters should consider getting ICC's Residential Energy Inspector/Plans Examiner Certification. This session walks you through the process of getting the certification and explore what RESNET's role should be for homes where Raters verify compliance, but do not provide a HERS Rating.

Presenters: Ryan Meres, RESNET & Chris McTaggart, Building Efficiency Resources

What Are “Buried Ducts,” Do They Work, And How Do You Install Them?

2018 IECC explicitly allows the use of buried ducts in standard vented attics. This practice offers energy savings that can rival certain unvented attic designs but at a lower cost. Because of this, many builders are beginning to pilot this new approach. The code lays out details both for proper design, specification, and installation of buried duct systems, as well as prescribing methods for accounting for them in energy models when using the performance path or the ERI. In this session, we will review the science related to the performance of buried ducts and discuss the practical aspects of an effective installation. A secondary session will provide an overview of effectively modeling buried ducts using various software packages. Attendees will leave both sessions knowing

more about a significant new code change, and how to help their builder customers incorporate and model it in the homes they build.

Presenters: Katrina Keeley & Mark Smith, Owens Corning

Leveraging Raters in Energy Code Development and Adoption of ERI

The Energy Rating Index Compliance Path is now in the 2015 and 2018 editions of the International Energy Conservation Code. The popularity of the ERI continues to rise as it gets adopted in more states. With over 200,000 homes being rated each year, HERS Raters have the on-the-ground knowledge of construction practices and techniques that get debated during each development and adoption cycle. Come to this session to learn about the IECC development process that will happen in 2019, and hear about how you can get involved with the development and adoption of energy codes in your state. This session will also cover the major changes from the 2015 to the 2018 ERI path.

Presenters: Eric Makela, Cadmus Group & Robby Schwarz, Energy Logic

Set the Bar, and They Will Limbo

In 1997, Vermont's very first Energy Code had an Energy Rating code compliance path. Now more than 30% of new homes use an Energy Rating to show code compliance on an annual basis. In that interval, Efficiency Vermont - the state's energy efficiency utility and only Energy Rating provider - has leveraged the widespread use of Energy Ratings to increase the code compliance rate and develop a voluntary High Performance Home standard that has claimed triple digit growth in the new construction market every year since its introduction. In this session, we will discuss how Energy Ratings have supported the continually increasing performance of Vermont's housing stock: from a baseline, far exceeding code requirements, to creating a real estate market for energy efficient homes, to spurring a zero energy home industry. The trifecta of home energy efficiency: buyer expectations, builder expertise, and market incentive has come together in Vermont and it all started with Energy Ratings.

Presenters: Li Ling Young & Sara DeVico, Vermont Energy Investment Corporation

What are "Buried Ducts" and how do you model them?

2018 IECC explicitly allows the use of buried ducts in standard vented attics. This practice offers the energy savings that can rival certain unvented attic designs at a lower cost. Because of this, many builders are beginning to pilot this new approach. The code lays out details both for proper design, specification, and installation of buried duct systems, as well as prescribing methods for accounting for them in energy models when using the performance path or ERI. In this session, we will provide attendees with an overview of the latest code change as well as a step-by-step walkthrough of how to model this approach using REM/Rate, EnergyGauge and Ekotrope. Attendees will leave knowing more about a significant new code change and how to help their builder customers incorporate and model it in the homes they build.

Presenters: Charlie Haack, NAIMA & Craig Drumheller, NAHB

What's New with Codes and Standards

RESNET entered the standards world with the introduction of Standards 301 and 380, and their reference in the IECC. But several hundred other standards are also referenced in the I-codes, many of which are important to the rating industry. New standards and revisions to standards are proposed and adopted every year. This presentation will review new and upcoming developments in standards which intersect with RESNET and I-codes, including those from ASTM and ASHRAE.

Presenters: Theresa Weston, DuPont Protection Solutions

Stranger Things - the Energy Code Myths that Haunt Us

Seemingly simple things such as calculating the R-value of a hybrid insulation system and utilizing air space to contribute to your envelope compliance are often done incorrectly. Unfortunately, they can result in big energy penalties. We will take on these examples and help you educate your customers.

Presenters: Amy Schmidt, Dow Building and Construction & Jay Crandell, ARES Consulting

Illustrating the IECC

Why is the energy code so hard to understand? One issue concerns the different philosophical approaches of prescriptive versus performance. Another concerns the "code speak" that makes complicated concepts even harder. Learn how to unpack the code and steer others into a better understanding of its content. Methods we've found successful to deliver a home that truly is efficient include the use of short videos, electronic compliance tools with example problems, illustrative graphics, field guides, and clarifying amendment language and commentary.

Presenter: Mike Barcik & Bourke Reeve, Southface Energy Institute

Making an Impact with Energy Code Training (and Measuring it!)

Performance Systems Development recently completed a three-year effort to measure and improve energy code compliance in Pennsylvania. This project was a part of the Department of Energy's multi-state Residential Energy Code Field Study. It involved three phases: a baseline compliance measurement, a training, education and outreach program, and a post-program compliance measurement. With data from 171 job sites, the baseline compliance phase found that Pennsylvanians could save \$150 million over ten years through full compliance with duct leakage, above-grade wall insulation, and lighting requirements. Next, PSD launched the Penn Energy Codes Program, which focused on the key problem areas through training programs, seminars, in-office and on-site technical assistance, information drop-offs, Rater energy code consultations, a checklist/educational app, and a variety of marketing tactics including direct mailings and e-newsletters. Finally, PSD performed the post-program compliance measurement to see if the program had an impact across the broad geographic coverage area. Attend this session to learn about the process and find out the results.

Presenters: Mike Turns, Performance Systems Development

nMEUL Is the Worst of All Options Except for All the Rest: To Change or Not to Change Opinions Vary Widely

Normalized Modified End Use Loads (nMEUL) is the calculation methodology underlying Energy Rating Index (ERI). It has served RESNET well since its inception many years ago, but recent changes in application of ERI in codes and code-intended standards by ICC and ASHRAE have resulted in higher visibility and expressions of concern by different stakeholders who are not familiar with the nMEUL methodology. This panel discussion and audience participation session will provide attendees with various viewpoints about the current RESNET calculation methodologies as well as options for supplementing or changing the methodologies, especially nMEUL. Use cases and stakeholder impacts will be explored, along with future options that may (or may not) be better overall

than the current nMEUL methodology. Presentations will be followed by interactive discussions among panel members and with attendees during this 90 minute session.

Presenters: David Goldstein, National Resources Defense Council; Martha Brook, California Energy Commission & Craig Drumheller, National Association of Home Builders

The Vision for the ERI: Is a Cost-based Rating Index viable?

During 2015, the Calculation Subcommittee of RESNET's Standard Development Committee (SDC) 300 explored alternatives to the normalized Modified End Use Load (nMEUL) calculation method. Out of this effort, characteristics of a variety of metrics were derived including that of a cost-based calculation method. Combined with the need for harmonization between RESNET and California as well as the declared interest of stakeholder groups, the conclusion was drawn that a deeper examination of a cost-based approach is appropriate. The purpose of the CBRITG was to investigate the potential for development of a cost-based rating index and to develop a concept and work plan for a cost-based energy rating index calculation method. The scope of the CBRITG was to develop a concept of a cost-based energy rating index calculation method as a proposed alternative to the normalized Modified End Use Load energy rating calculation method in ANSI/RESNET/ICC Standard 301-2014, along with a work plan for further development by SDC 300. In this session, the audience will have the opportunity to hear from Members of the CBRITG on their key findings, conclusions, and recommendations through a review of the Feasibility Report submitted to the SDC 300.

Presenters: Jerry Phelan, Covestro LLC; Vrushali Mendon, Pacific Northwest National Laboratory & Philip Fairey, Florida Solar Energy Center

The Glide Path to Success from Energy Code Verification to Ratings and Beyond

Pilots follow a specific glide path to land a plane. Similarly, Raters can follow a stepwise approach to landing a client. Raters are the best-equipped housing industry professionals to provide a variety of services to builders: from blower door testing to above-code programs like Energy Star, DOE Zero Energy Ready Home, and Passive House. With much talk about the Energy Ratings Index Path in the 2015 and 2018 International Energy Conservation Codes (IECC), it is easy to lose track of the intermediate steps that may help Raters get a foothold with clients and then steadily increase their services. The model code has long held opportunities for HERS Raters. Starting with the 2009 IECC, duct leakage testing became mandatory (unless all ducts are inside). The 2009 IECC also mandates a blower door test or visual verification of air sealing and insulation details. In the 2012 IECC, blower door testing became mandatory in addition to the visual inspection(s). The 2015 IECC added the ERI path, with Index scores ranging from 51 to 55. The 2018 ERI made the path more accessible by increasing the maximum Index scores to 57-62, while clarifying the role of renewables. All the aforementioned codes also include the Simulated Performance Alternative – very similar to a rating – and the “above-code programs” provision, where participation in recognized energy programs may be accepted for energy code compliance. This session will review the details of the Rater glide path and discuss how to develop relationships with builders and code enforcement officials to expand their businesses. I have not contacted any raters yet, but I am happy to combine forces with anyone who's interested.

Presenter: Mike Turns, Performance Systems Development

Getting Credit Tips for Simplifying Code Compliance

Understanding today's energy codes already creates a unique new challenge for Home Energy Raters. Determining the builders needs for meeting the energy code while balancing cost and structural requirements can be difficult. This presentation will look at common building construction

practices in climate zones 3-5 and identify assemblies and credits that can be utilized for both ERI and simulated performance path compliance. Flexibility is often the key to whole home energy performance and cost effectiveness. This session will explore options that balance energy losses with measures that have greater efficiency gains to deliver a code compliant, energy efficient home.

Presenter: Matthew Brown, APA -The Engineered Wood Association

Tapping the Appraisal and Real Estate Market

RESNET's Appraiser Dashboard Enhances Appraisal Data

RESNET has made a huge improvement to the appraiser's search of HERS Ratings by developing an Appraiser's Dashboard. The Appraiser Dashboard will give them searchable fields to produce more meaningful trends in appraisal reports. HERS is not just a number any longer, and understanding the market share of new construction with HERS Ratings speaks volumes to how important energy efficiency is to a market. The updated AI Residential Green and Energy Efficient Addendum has been mapped to the MLS dictionary, RESO and to the mortgage industries' dictionary - MISMO. What does that mean to HERS and the future of your profession? This session will give you an overview of the meaning of these two advancements and how the secondary mortgage market guidelines have changed in regard to energy efficiency.

We'll end this session with a few quick rater/appraiser stories that will bring out ways to improve the relationship and importance of HERS Ratings in appraisals.

Presenter: Sandra K. (Sandy) Adomatis, Adomatis Appraisal Service

What Raters Need to Know About Appraisals

With the launch of RESNET's "Appraiser Portal", residential appraisers will have access to even more information to assist with the valuation of a home's energy performance. The Appraiser Portal allows appraisers to verify the HERS Index Score for a home they are appraising, as well as allowing them to search for comparable homes in the area with similar HERS scores. The portal also indicates whether a home is Energy Star Certified and provides the appraiser with the estimated annual energy cost and estimated annual energy savings. This session will provide a demonstration of the portal and offer key insights on how to talk to appraisers about using the portal.

Presenter: Sandy Adomatis, Adomatis Appraisal Services

Incorporating HERS Index Into the MLS

Lack of consumer awareness for the HERS Index was identified as a weakness in a SWOT analysis created by the RESNET Board several years ago. Since that time, momentum has grown for the inclusion of the HERS Index in local and regional MLS listings across the U.S. This session will celebrate the key successes with MLS listings, and offer attendees some actionable ideas for increasing consumer awareness and driving demand for HERS ratings in their local areas.

Presenter: Ryan Meres, RESNET

Social Media 101

Session for business owners to master social media, which platforms to use, and the best way to reach clients.

Presenter: Peter Troast, Energy Circle, LLC

Green Bonds Based on HERS Index Scores

Investors with over \$70 trillion in assets want to buy green bonds and stocks, which intern would cause the green bond market to grow to \$93 billion in just four years, with bonds oversubscribing 3x+. This would provide cheaper capital, more bond proceeds, and less risky bonds (Green Bond Business Case 2014). Such demand/supply imbalances would cause green bonds to be more valuable than conventional by 20 basis points and rising (Barclays 2016). Fannie Mae provides owners a 20-30 basis point incentive for green apartment bonds, and Freddie Mac gives more proceeds. DC Water's \$300 million green bond received orders for \$1.1 billion and was issued at \$350 billion, which also increases its investor base and reducing repetitional risk. Green bonds and their underlying assets were documented in 10 years of statistically valid data as more profitable, less risky, and preferred by investors (Green Bond Business Case 2014). For example, green buildings statistically have the highest rent, occupancy, valuation, cash flow, and occupant productivity, with 40% increasing retail sales according to Pacific Gas & Electric (Id.). There is less risk as well. Statistically, green homes have 32% fewer defaults. These Green Home Bonds achieved higher credit ratings, based on 22 green home underwriting attributes increasing bond cash flow including higher appraisal, insurance discounts, and HERS Index Scores. Morgan Stanley will buy loans for the first \$100 + million publicly traded and rated bonds to start the market, and will engage loan aggregators for the subsequent bonds (which will be \$500 million minimum). This session will explore the power of green bonds and discuss the implications within the housing industry.

Presenters: Mike Italiano, Capital Markets Partnership

Getting Past the Granite - It's on Us!

Stop complaining about Realtors, Appraisers, and Consumers not recognizing value and fix it. Building science education has been part of homebuilding and remodeling for years. So why are the people showing and selling the homes so uninformed? Bottomline: It's on us! We failed to include them on the journey. A real estate or sales professional who can only point out granite countertops is like a car dealer who can only tell you "The car is red." Price per square foot is an erroneous means of calculating value in new construction. This means change the equation! Provide the tools that will help Realtors and Builder Sales Teams demonstrate the value and benefits of high performance homes. Both you and the house will increase in value!

Presenter: Todd Gamboa, Building Trust LLC

The NEW AI Residential Green and Energy Efficient Addendum Auto Populate it with HERS-

The Appraisal Institute's Residential Green and Energy Efficient Addendum has been updated and mapped to MISMO and RESO. If those acronyms are unfamiliar to you, come to our session and you'll see how important they are to your profession and ours. We'll show you some examples of a completed Addendum and how it plays important roles in the appraisal/lending process. HERS Index Reports hold the "BIG DATA" that appraisers rarely see, and often miss in valuing high performance homes. It's easy to complete the Addendum if the report is available. Raters are the ideal people to complete the Addendum and educate your client on how important the HERS Report and Addendum are in the appraisal and listing process. Connecting the dots from HERS Reports to Green Fields will give you invaluable ways to sell the importance of your services to real estate agents. We'll show you how the connection from the MLS being populated accurately connects to the appraisal, and may even influence the sales price. It is a win-win for everyone.

Presenter: James L. (Jim) Murrett, MAI, SRA, Appraisal Institute & Sandra K. (Sandy) Adomatis, SRA, LEED Green Associ, Adomatis Appraisal Service

Rating Water Efficiency

RESNET HERSH2O Demonstration

KB Homes and TopBuild will host a live demonstration of RESNET's water efficiency rating. This home is only a short distance from Lake Buena Vista Resort, which is the site of the RESNET 2018 Conference. Four participants will hear a briefing about the development of the HERS_{H2O} rating system, then they will follow a HERS_{H2O} rater to perform the rating. Transportation will be provided.

Presenters: Dave Bell, TopBuild & Jacob Atalla, KB Home

Introducing the Water Rating Index

RESNET is developing an ANSI standard called the Water Rating Index, based on its WER Index guidelines. This session will provide an overview of the draft standard and the development process. Water ratings present a new opportunity for HERS Raters to expand their service offerings to builders and homeowners. There will be plenty of time for feedback and Q&A, so come prepared to participate!

Presenters: Jonah Schein, EPA & Ryan Meres, RESNET

HERSH2O: Training Raters and Conducting Pilot Projects

The RESNET HERSH2O Index was recently completed. This new index provides a comprehensive water efficiency rating for a home, similar to what a HERS Rating does for energy. Water ratings present a new opportunity for Raters to expand the services they offer to builders and homeowners. Come to this session to learn how to conduct a HERSH2O Index rating and inspection and hear about pilot projects happening in seven housing markets

Speakers: Dave Bell, TopBuild; Jonah Schein, EPA; Jacob Atalla, KB Home & John Gillett, Energy Inspectors

The Emerging Multifamily HERS Rating Market

How Standards are Evolving to Better Address 'Multifamily' Ratings

Updated and revised criteria for multifamily ratings and testing have been developed, and are pending public comment! Come to hear the latest and ask questions. This session is presented by members of RESNET's Multifamily Subcommittee, who used the RESNET Guidelines for Multifamily Ratings as a springboard to develop criteria to be included in the next edition of Standard ANSI/RESNET/ICC 301. It has shown to better address sampling, inspections, and the calculation of an Energy Rating Index for dwelling units and sleeping units in multifamily buildings. The Subcommittee has also proposed changes to ANSI/RESNET/ICC 380 that provide specific testing guidance for multifamily. In addition to providing an overview of the new proposed requirements, we will be sure to discuss:

1. Which 'multifamily' units are impacted by which changes
2. How the standards development process has evolved over the past year, and
3. The current status of the standards development proceedings and what happens next.

Presenters: Thiel Butner, Pando Alliance; Gayathri Vijayakumar, Steven Winter & Brian Christensen, NORESO

The DOE Energy Code Field Study: Assessing Energy Impacts and Air-leakage in Multifamily Buildings

Envelope air leakage tests have been developed to help reduce energy use and improve IAQ for multifamily units. There is a lack of consensus on the best methods for targeting lower energy use,

however This session will review the various test methods, what they measure, and how the results provide information related to energy use and IAQ concerns. Results will be presented from various studies that show the relationship between exterior and total unit leakage. Presenters will also provide an overview of the current DOE energy code field study for multifamily buildings, which will include extensive leakage measurements across various building configurations, as well as describe the test plan and preliminary results.

Presenters: Jeremiah Williams, U.S. Department of Energy & Benjamin Hannas, Ekotope, Inc.

Multifamily Ratings - what is needed in HERS Rating Software?

Multifamily buildings are the hot new trend in the US. Developers are building apartments to catch up on a lull of construction over previous years in a race to complete projects and capitalize on continuously rising rent. Investors are aggressively seeking opportunities to purchase multifamily properties, specifically core and value-add assets in top-tier markets. Given the rise in multifamily construction: What are the challenges providers and raters face when modeling numerous units in multifamily buildings?

How do these challenges affect raters and providers?

Is existing HERS Rating software up to the task?

What changes can be made in HERS Rating software to improve the efficiency with rating multifamily units?

This session will explore concepts to improve HERS Rating software efficiency for rating multifamily buildings/units. There will be a discussion at the end of the session to address these concepts as well as thoughts from the audience.

Presenters: Robert Salcido, Salcido Solutions, Thiel Butler, Panda Alliance & Rachel DellaValle, Southern Energy Management

Multifamily Housing: Perspectives from a Multi-Year Study Evaluating Rated vs. Measured Energy Performance and Construction Costs

This presentation shares findings from a multi-year study that measured the energy performance of green multifamily housing stock in Virginia. Over the last ten years, the Virginia Housing Development Authority (VHDA) has utilized green building rating system incentives as a policy vehicle in the Low-Income Housing Tax Credit (LIHTC) program to encourage energy efficiency (EE) in Virginia's affordable rental stock. This policy effort has led to 18,500 rated multifamily units since 2007. The study addresses key issues related to EE and affordable housing through the measurement of actual, unit-level energy use in 237 apartments across 15 developments. The effects of year to year operation, weather, and behavior on energy use were evaluated. Data, analysis, and findings focus specifically on facilities constructed and certified to the EarthCraft Multifamily rating system in Virginia. Additionally, construction cost data was analyzed for 23 developments containing 236 apartments to compare the cost for building green versus non-green. Research methodology will also be discussed.

Presenters: Sean Evensen-Shanley, Philip Agee, & Chris Maino, Viridiant

Domestic Hot Water Distribution Challenges in Multi-Family Construction

Supporting multifamily projects in the DOE Zero Energy Ready Homes and EPA WaterSense Programs was challenging, prior to revisions to the hot water distribution requirements for central distribution systems. This presentation will use case studies to demonstrate the hot water pipe lineal feet and testing 10°F requirements. We will review demand circulation technology for central distribution systems which seem to work fairly well for hot water distribution (referencing Building

America's "Control Strategies to Reduce Energy Consumption of Central Domestic Hot Water" report found roughly 10% DHW fuel savings). The energy benefits associated with a highly efficient central plant versus numerous in-unit small tanks will also be reviewed. One such solution is to solve efficient distribution with demand recirculation control based on both flow and temperature. While this strategy has merit, there are concerns with the functionality of mixing valves with non-continuous operation due to a concern for bacterial risk in HW piping, which doesn't have continuous flow but still sees frequent water exchange. Based upon early discussions, it's clear that more information needs to be shared amongst professionals. It is the presenter's intent to share challenges and solutions, modeling tools, and examples of verified and measured water and energy savings.

Presenters: Karla Butterfield, Steven Winter Associates, Inc. & James Lyons, P.E., Newport Partners

Emerging Technology in Deep Energy Retrofits for Multifamily Affordable Housing

What are the latest strategies used to slash energy consumption by 50% and improve the performance of existing multifamily buildings? This session will present how a comprehensive building science approach was used to retrofit two different multifamily buildings for the local housing authority in Rockford IL. Detailed baseline performance testing was done to measure envelope leakage, duct distribution, zonal pressures, and flows. The retrofit design included continuous "outsulation" wrap on the building, water heating upgrades, and a first-of-its-kind approach to effectively sealing the entire building envelope. This design utilized an aerosolized sealing system that simultaneously measures and seals building envelope leaks in homes. The design enabled the retrofit of small 15,000 btu modulating furnaces with VRF heat pumps for cooling. Modeling details, construction costs, and in-progress results from monitored and sub metered post-occupancy performance will be presented in this research-driven project.

Presenters: Lindsey Elton, Eco Achievers; Paul Springer, AeroSeal; Brandon Weiss, Evolutionary Home Builders & Jason LaFleur (MODERATOR), Eco Achievers

EEBA Track

The HERS Associate & Taking the Performance Path: An Introduction to the HERS Index & IECC Compliance

This full day, three-part course is **ideal for anyone new to the industry** and reviews Building Science principles as they relate to the Performance Path option in the International Energy Conservation Code (IECC). The course will introduce RESNET and the HERS Index, and relate the principles of building science as they apply to HERS. Explore the ERI/HERS Index as a tool to successfully design and build houses that comply using the Performance Path option, while meeting the minimum prescriptive code requirements of the 2015 IECC. Participants will learn about the guiding principles used by HERS Raters to rate a home to produce a HERS Index Score, and will spend the last part of the session reviewing energy rating software and manipulating construction assemblies to see the effect of energy scores.

Attendees who wish to **earn the RESNET HERS Associate designation** will have the opportunity to take a brief test at the end of the session and, upon passing, will receive the RESNET HERS Associate designation certificate. The fee for testing and processing the designation is \$75, which can be paid on site by credit card or check made payable to EEBA.

Presenter: Mike Barcik, Southface

Federal High-Performance Housing Track

ENERGY STAR RaterPRO Round Table: The Open Future

The first quarter of 2018 will bring the release of the public beta of ENERGY STAR RaterPRO. This free app that will help Raters complete high-quality field inspections for ENERGY STAR certifications and HERS ratings. Even before its release, partners have requested features to extend and enhance its functionality, such as support beyond HERS ratings and ENERGY STAR certifications, advanced two-way communication with energy rating software and third-party software programs, and customization opportunities.

The ENERGY STAR team invites partners, particularly software developers and rating organization technology leads, to help explore options for an open RaterPRO future that makes these kinds of developments possible. In this round table discussion, partners can share their 'wants' and explore possible solutions with the ENERGY STAR team, like adding enhanced APIs or converting to an open-source project.

Presenter: Dean Gamble, Elliot Seibert, EPA

ENERGY STAR: The Year Ahead

If you go to just one ENERGY STAR session, this is the one for you! Get a quick recap of the program in 2017, highlighted by increased participation driven by Rev. 08. Then, hear an overview of our major initiatives for 2018 – recruiting efforts to drive additional growth, RaterPRO, HERS points for proper HVAC design and installation, and a “one-multifamily” effort to unify the low-rise and high-rise programs. Finally, provide our team with input about how we can help you be even more successful with ENERGY STAR. By the end, you’ll want to attend our entire track for a deeper dive on these topics and more.

Presenters: Dean Gamble and Rebecca Hudson, EPA

What is this Movement to Zero Energy and Why Should Raters Join?

Every so often there are clear signals a major market shift is rapidly approaching. Such is the case with zero energy in the housing industry. It begins with the new consumer experience market reality that will profoundly drive this transformation. It continues with policies adopted by a number of states putting them on the path to various forms of zero energy codes and it reveals itself with substantial commitments to zero energy developments across the country. This session will discuss why zero, what the fundamental building blocks to zero are, how we can effectively translate the compelling value of zero, and how HERS raters can become active in this movement.

Presenter: Sam Rashkin, U.S. DOE

Announcing the RaterPRO Public Beta

The ENERGY STAR team has been busy developing and refining RaterPRO, a free app that will help complete high-quality field inspections for ENERGY STAR certifications and HERS ratings. Understand how RaterPRO can streamline the inspection process and see a preview of the latest features. Most importantly, learn how to get RaterPRO into your hands by joining the public beta period beginning the first quarter of 2018.

Presenters: Elliot Seibert, Dean Gamble, EPA

New ENERGY STAR for Multifamily New Construction Program: How does it compare to Certified Homes and Multifamily High Rise?

Multifamily new construction projects of all sizes—from two-over-two condos to high-rise buildings—currently get certified through either the ENERGY STAR Certified Homes program or the ENERGY STAR Multifamily High Rise (MFHR) program. Having two programs address the new construction multifamily sector has created some unintended challenges. As a result, EPA is creating a new program to cover all multifamily new construction projects by merging the current requirements and adopting the most appropriate from each. After getting stakeholder input in the fall of 2017, EPA has updated the proposed requirements. Join this session to learn more about how the new program compares to Certified Homes and MFHR and how you can still provide input.

Presenters: *Rebecca Hudson, EPA; Gayathri Vijayakumar, Steven Winter Associates*

Resources for Raters to Upserve High-Performance Builders

We're talking about upserving, not upselling. There's a big difference! Upselling is just getting clients to buy more without regard for value. Upserving is providing additional services that are all about making your clients more successful - and your high-performance builder clients need a lot of support! They need more recognition for their leadership, including marketing resources that effectively convey the value of their superior consumer experience; and they need a Voice of Authority to cut through the greenwashing of competitors. This session will present an impressive array of free resources from the DOE Zero Energy Ready Home program, along with builder insights on how they use these resources. Take advantage of this opportunity for raters to enhance their value to builders and create more opportunities for themselves.

Presenters: *Sam Bowles, Newport Partners; Chrissi Antonopoulous, PNNL & Builder Panel*

Valuing HVAC Installation in the HERS Index

This session will provide an update from RESNET's HVAC Working Group, who is currently working on protocols to allow properly designed and installed HVAC equipment to earn HERS index points.

Presenters: *Dean Gamble, EPA; Iain Walker, LBNL*

Indoor AirPLUS Measured Humidity Loads & Surface Water Activity in 12 Occupied Florida Homes

Given the need for ventilation in high performance homes, can we rely on industry-standard practices to achieve humidity control? In theory, standard load calculation software accounts for latent loads. But what about swing seasons and humid ventilation air? EPA's Indoor airPLUS Program helps address this with dehumidification in hot, humid climates. In this session, you'll explore research of real-time humidity loads in occupied Florida homes. Surface water activity of ceilings was also monitored over six months to understand changes of biologically-available moisture that could support mold growth. These important findings may help you reduce risks with your next HVAC design challenge.

Presenters: *Lew Harriman, Mason-Grant Consulting & Nick Hurst, EPA*

The Key Challenges Rating High-Performance Homes

With over 1,700 homes certified to Zero Energy Ready Home and over 10,000 in the pipeline, the early players have benefitted from significant lessons learned. In this session, the key HERS rating FAQs and challenges in modeling and verifying Zero Energy Ready Homes will be highlighted. Our panel of leading HERS raters will also share their recommendations for addressing these challenges

– making the path to verifying high performance zero-ready homes simpler and more predictable for Raters throughout the U.S.

Presenters: *Joe Nebbia, Newport Partners; Robby Schwarz, EnergyLogic & Rater Panel*

What's New with WaterSense? Moving Toward Version 2.0

The EPA WaterSense Homes program was designed to give the building and building science communities the tools and resources needed to build more water efficient homes. With codes becoming more stringent, watering restrictions increasing, and the ever-present threat of drought hanging over critical building markets; the need for water efficiency has never been greater. To continue to respond to the needs of the industry, EPA is currently developing its WaterSense Homes Specification 2.0. As the program continues to grow, it aims at keeping up with technological advances as well as new market trends, thus the necessity for EPA's WaterSense Homes Specification 2.0.

This session will provide an overview of the history of WaterSense labeled homes including successes, challenges, and other lessons learned. It will give an update on EPA's priorities moving forward with version 2.0. and highlight the process for those that wish to provide feedback on program implementation, design and construction techniques/requirements, and inspection and certification.

Presenters: Olga Cano, Jonah Schein, EPA

It's an Easy Lift to Zero for Over a 100,000 Homes!

There were over 240,000 homes HERS rated homes in 2016 with an average HERS Index Score of 61. That suggests over 100,000 homes have achieved a HERS Index Score of 55 or lower. Further, about 85,000 homes earned ENERGY STAR Certification in 2016. It's a shockingly easy lift for an ENERGY STAR certified home with a HERS Index in the 50s to meet Zero Energy Ready Home. The biggest additional requirement is Indoor airPLUS certification and we estimate over half of those requirements are already met by ENERGY STAR certified Homes. It time for these 100,000 homes to get recognition for meeting the federal government's most rigorous guidelines for performance. This session will lay out the simple incremental requirements to go from ENERGY STAR certified Homes to Zero Energy Ready Homes. So much additional recognition and differentiation was never so easy.

Presenters: Jamie Lyons, Newport Partners