



2017 RESNET Building Performance Conference Breakout Session Nominations

Advanced Building Science

ABS-1- A Breath of (Measurable) Fresh Air: An IAQ Scoring Methodology and Tool

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 are helping to solve this problem by developing an IAQ scoring methodology and tool – an asset rating similar to existing ratings for energy use. Ratings will be based on observable and measurable quantities assessed by inspection and diagnostic tests. This session will present an outline of the score and a summary of the attributes of the home included in the rating. Comments and questions to help shape future development of the score are welcome.

Suggested Presenter(s): Iain Walker, Lawrence Berkeley National Laboratory & Eric Werling, U.S. Department of Energy

ABS-2- A Changing Home Performance Market - Beating the Odds with Building Science

Codes are changing. Materials are changing. Houses are getting tighter. Consumers are getting more educated, and more demanding. At Building America, our work is focused on researching and developing solutions to advance the market for high performance homes. Our solutions are designed to help builders succeed in the changing market - and to help home energy raters grow their businesses by staying ahead of technical trends. Our research projects result in tried-and-true technical and business solutions that can help weather changes and deliver high performance homes. In this session, we will discuss progress on Building America's Research-to-Market Plan and associated Technology-to-Market Roadmaps, walk through all of the new and cool projects being undertaken by the labs and our industry teams, and highlight Building America resources that that can be used today.

Suggested Presenter(s): Eric Werling, U.S. Department of Energy

ABS-3- An IAQ Score For Homes

Healthy indoor environments are valued by homeowners and buyers but not currently included in formal cost-effectiveness calculations for retrofit and new home performance measures. DOE's Building America Program and LBNL are working to create a method of providing an IAQ score for homes that combines health, moisture and odor performance into a single metric. The IAQ score will be similar to existing ratings for energy use, in that it will be an asset rating, and will use identifiable features of the home including HVAC design and sizing, home size and occupancy, materials and finishes, presence of filtration, etc. Ratings will be based on observable and measurable quantities assessed by inspection and diagnostic tests. An outline of the score, including metrics, what aspects of the home are included in the rating, and the basis for the calculation of the score will be presented, together with some example scores from homes. Comments and questions to help shape future development of the score are welcome.

Suggested Presenter(s): Iain Walker, LBNL & Eric Werling, DOE Building America

ABS-4- Blind faith: Understanding IAQ with low-cost monitors

Advances in low-cost sensors have enabled the development of air quality monitors that are affordable to home performance professionals and even consumers. Devices such as the Air Quality Egg, Foobot, Speck, and Awair are making indoor air quality data accessible to the masses. The era when we will all routinely measure air pollutant concentrations just as we now measure temperature in our homes is just around the corner! Or is it? How reliable

are the low-cost air quality monitors? Perhaps they are good for some pollutants, but not others? And even if they are not perfect, are they good enough for at least some pollutants? This session will present results of controlled studies that have evaluated the accuracy and other performance characteristics of low-cost sensors and monitors, and address the questions of what can we learn from these devices and how can we use them to advance home performance .

Suggested Presenter(s): Brett Singer, Lawrence Berkeley National Lab & Sydney Roberts, Southface

ABS-5- Building Better Homes Challenge Finds Moisture in Commonly Built Homes

Dow's Building Better Homes Challenge is a multi-home, 5 year research project partnership between Dow Building Solutions and Cobblestone Homes to investigate the performance of building enclosures designed to meet and exceed energy code requirements. Twelve case study single family research houses were constructed in Midland, MI (CZ 5) with four building energy efficiency strategies. Data will be presented on the cost to build, energy use and hygrothermal performance of the various strategies. Bi-annual occupant surveys provide qualitative insight to the value of High Performance Homes..

Suggested Presenter(s): Brian Lieburn, The Dow Chemical Company & Brent Jacobs, The Dow Chemical Company

ABS-6- Can you really do an infrared inspection of a house with an IR camera that costs less than \$1,000?

This is a high tech session that takes a close look at the new under \$1,000 class of infrared cameras that work with smart phones and examines their ability to deliver the professional results needed for a meaningful examination of the insulation system in a house, and the hidden air paths.

Suggested Presenter(s): Terry Clausing, P.E., Drysdale & Associates Inc

ABS-7- Compartmentalization and Air Sealing Party Walls

Builders and contractors are still struggling to meet the 3 ACH50 blower door requirement in townhomes. They're small, often sit on top of garages, and have party wall details not found in their detached-built counterparts. Party walls have proven to be a major connection to outdoors and adjacent units, and air sealing these assemblies is confounded as code officials are hesitant to allow the use of additional materials that may compromise the UL fire rating of the assembly. This session will review the issues that make air sealing party walls complex and information & data on getting to 3ACH50.

Suggested Presenter(s): Clint Shireman, Knauf Insulation

ABS-8- Consumer Choice with Solar - Ownership Models for PV

There are three options in installing a PV system:

- Direct purchase
- Lease
- Power purchase agreement

This session will explore each option and discuss the pluses and minuses of each option as well the implications for HERS ratings and code.

Suggested Presenter(s): Jim Petersen, Lennar; Representative, Solar City & Representative, Solar USA

ABS-9- Finally, The Truth About Condensation

You think that walls need to "breathe"? You think that you can solve potential condensation issues with some fancy new "smart" vapor retarder? Think again! 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.

Suggested Presenter(s): Dan Tempas & Brian Lieburn, The Dow Chemical Company

ABS-10- Going All In - Getting to 100% Indoor airPLUS

Indoor air quality (IAQ) continues to grow in importance for new homebuyers and is now a focal point in the high performance home building industry. As a result, the Indoor airPLUS Program has seen an incredible growth in new builder partnerships over the last 3 years. Some of these builders have been slowly incorporating IAQ best practices and eventually earning the Indoor airPLUS label.

Others have gone “all in” and are now building 100% of their homes to the Indoor airPLUS Construction Specifications. Whether you are a large production builder or a custom home builder, it makes economic sense to standardize your methods and offer your homebuyer a government-backed label for improved IAQ on every home you build, not just as an optional upgrade. With only a few additional tools and techniques in your bag, it’s simple to add a “healthier home” message to your already-considerable ENERGY STAR value proposition.

Join this session to hear how you can overcome some of the common questions and pitfalls other builders have had and how easy it is to go “all-in” and market your 100% Commitment to Indoor airPLUS.

Suggested Presenter(s): Nick Hurst, ICF International

ABS-11- Got Gas? Low-load home solutions with combustion equipment

Over half the homes in America heat with natural gas (or propane), yet much of the advancement in space heating and cooling strategies have been targeted at electrically heated homes. Consultant Dan Wildenhaus and Contractor Preston Kuckuck will discuss the opportunities in low-load homes for advanced gas technologies. We'll look at real world experience and studies performed on micro-gas furnaces, condensing gas fireplaces, combination gas boiler applications, and possibly even residential combined heat and power. We'll discuss savings opportunities, integration of cooling, installation applications, and impact to HERs scoring when properly applied.

Suggested Presenter(s): Preston Kuckuck, Performance Insulation & Dan Wildenhaus, CLEARResult

ABS-12- Heat Recovery Ventilators (HRVs) and Central Air Handler Integration

Why should Builders care about integrated HRVs? HRVs are a smart way to ventilate that you can sell at a higher profit margin and avoid call backs with negative comfort issues. In contrast to simple exhaust fans or holes in the home, HRV allow for heat recovery, health through fresh, filtered air. Codes dictate ventilation, yet HRVs allow for both meeting code and adding value to the customer through IAQ controlled with the least economic impact or comfort impact. What are the benefits of integrated vs. two stand-alone systems? With integrated systems builders are required to install fewer ducts, requires less room and few holes cut into the buildings. An HRV adds the V back into the HVAC system.

Why should Raters care about integrated HRVs? More energy savings in the model (SRE and fan wattage), adding value as a consultant to the builder and designers, future proofing given RESNET is going the direction of grading HVAC systems.

Why should HVAC designers care about integrated HRVs? Fewer design challenges, better chance at success (the thing works), and a clear process to install/better guidance.

Suggested Presenter(s): Bruce Manclark & Dan Wildenhaus, CLEARResult

ABS-13- High Performance, Moisture Managed Envelope Systems for the Masses

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. But, if high performance homes are going to be commonplace, 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 introduce this tool, provide real-world examples of the research informing envelope best practices, and provide an opportunity for feedback.

Suggested Presenter(s): Roderick Jackson, Oak Ridge National Laboratory

ABS-14- IAQ in High Performance Homes

Stringent ventilation and airtightness requirements are becoming commonplace in the high performance homes industry, and green building rating systems are encouraging and sometimes requiring aggressive IAQ provisions. But do these challenging requirements result in better or acceptable indoor air quality for home occupants? Are some high performance specifications contributing to poor IAQ? How important are pollutant source control, occupant education, cooking, or commissioning? This session will answer these questions by presenting summaries of field studies including results from two recent field studies of air pollutant levels in high performance homes in California and New Mexico. We will also present laboratory and field test results from assessments of kitchen range hoods.

Suggested Presenter(s): Brett Singer & Iain Walker, Lawrence Berkeley National Lab

ABS-15- IAQ News: Health Studies & Building Performance PLUS Web-Connected Consumer IAQ Products

Learn about studies that show a direct correlation between Building Performance, IAQ and health. We will show some popular consumer level IAW monitors that now give refined IAQ data that contractors will have to learn how to interpret.

LEARNING OBJECTIVES:

Health studies and programs underway show strong ties back into building performance. How consumers now monitor their own IAQ.

Suggested Presenter(s): Bill Spohn, TruTech Tools, LTD

ABS-16- Insulation misconceptions: there are more than you think

Despite all the data and literature on insulation, there is a surprising amount of misinformation in the market. This misinformation is not unique to any market segment or product category. In this session, we plan to use 3rd party data and literature to dispel some common misconceptions relating to insulation, including:

- What R-value includes and what it doesn't
- The reality of convection in wall cavities
- Product settling
- Lifetime performance of products
- Performance across temperature ranges
- How installation quality really affects performance

Understanding the facts relating to these issues, among others, is critical to ensure HERS raters can help builders deliver the high performance envelopes their customers expect.

Suggested Presenter(s): Charles Cottrell, NAIMA

ABS-17- Introducing the ANSI/RESNET/ICC Standard 380 - The American Consensus Standard for Conducting Air and Duct Leakage Tests

RESNET and the International Code Council (ICC) have jointly published the ANSI/RESNET/ICC Standard 380. This is the first national consensus standard on conducting air and duct leakage testing.

The 2018 IECC includes this standard for meeting the IECC duct and air leakage tests.

Suggested Presenter(s): Iain Walker, Lawrence Berkeley National Laboratory

ABS-18- Lessons Learned From Real Time Data Management and Continued Commissioning in Multifamily and Mix Use Buildings

See what works and what doesn't in EE measures in multifamily and Mix use buildings, using real world examples.

Jeremy Begley and Luke Sestito of Sanus Connect will present real life examples of the implementation of IoT sensors and data collection from the energy and water systems in a multifamily and mix use building. They will identify opportunities to reduce the use of electricity and electric demand, water and thermal energy. They will demonstrate how to use real-time data to minimize unoccupied loads and optimize start/stop times of HVAC systems. The data software will generate actionable intelligence demonstrating how owners and building managers can drive down consumption without compromising occupant comfort or building functionality. They will demonstrate the value of “continuous commissioning” so that a building or process remains tuned and operating at peak performance.

Suggested Presenter(s): Jeremy Begley & Luke Sestito, Sanus Connect

ABS-19- Model Calibration: Introduction, Benefits, and Standardization

Model calibration can improve the accuracy of software predictions of retrofit energy savings under a home's actual operating conditions. Typically, about a year's worth of historical monthly utility billing data are used to “true-up” or “tune” the baseline model for the home. Model inputs are adjusted within their ranges of uncertainty until a required level of agreement is achieved between predicted and metered baseline energy use. This session will provide an introduction to the topic of model calibration, present analysis results that demonstrate the benefits and challenges of model calibration, and describe how NREL, RESNET, and many residential software developers are working together to standardize a method to test and improve model calibration approaches. RESNET is in the process of developing the standard into an ANSI American Consensus Standard.

Suggested Presenter(s): Ron Judkof & Ben Polly, NREL

ABS-20- Net Zero Energy Homes - Here Today

Across the nation builders are constructing homes that produce as much energy as they consume (net zero energy homes). Always in the past this concept has been seen as only a dream. This is no longer the case.

This session will feature two large production builders, KB Home and Meritage Homes that are building and selling net zero energy homes. The session will explore the motivations for this and what has been consumer response.

Suggested Presenter(s): Jacob Atalla, KB Homes & CR Herro, Meritage Homes

ABS-21- Residential Frost-Protected Shallow Foundations

Residential building foundations in cold climates must be supported on solid soil and their footing located below the local frost penetration depth to prevent heaving and other frost-related damage. Frost-protected foundations allow much shallower installation of foundation walls and footings while still protecting the foundations from frost damage. The installation of the proper level of thermal insulation in specific configurations at the outside perimeter of the building accomplishes this. This presentation will address the building science and engineering principles behind Frost-Protected Shallow Foundations (FPSF), summarize Code acceptance of this design concept and outline the proper insulation choices/placement for FPSF in accordance with ASCE 32.01 “Design and Construction of Frost-Protected Shallow Foundations”. Case studies will be discussed, demonstrating the construction savings of FPSF relative to standard full-depth foundation construction. Design decisions as well as advantages and disadvantages of FPSF's will be discussed.

Suggested Presenter(s): Brian Lieburn & Dan Tempas, The Dow Chemical Company

ABS-22- Size Does Matter

When it comes to building high performance homes, we are building houses better but HVAC can pose challenges for builders.

From not being able to get equipment small enough and having thermal comfort complaints; “we are building houses better, why are we having issues with heating and cooling?” As HERS Raters, you are often the influencers and the problem solvers. As builders are striving for and achieving to higher codes and standards you hear and see this all the time. so., looking to HVAC - How can builders achieve better, faster and more cost efficient?

- What builders and industry told us they needed from an HVAC system moving forward
- An overview of the findings when integrating right-sized modulating equipment
- Better distribution – decreased leakage low to medium velocity
- HRV/ERV integration - an Enhanced Ventilation System
- The benefits and examples of Dettson’s HVAC in a Box – and how to achieve Better, Faster, Cost efficient

Suggested Presenter(s): Michelle Cote, Dettson Industries

ABS-23- Smart Thermostats, Building Science, and the Connected Home

Smart thermostats are quickly becoming recognized as the smart home hub and have the potential to provide significant energy savings. These devices blend technology with building science, weather data, and occupant behavior and offer a unique opportunity for builders and energy efficiency programs. This session will provide an overview of smart thermostat technology, various case studies in regards to energy savings, and general information how the devices could potentially impact a home’s comfort and energy modeling.

Suggested Presenter(s): Justin Mackovyak, ICF International; Rick Gazica, ICF International & Julia Dalla Rosa, Ecobee

ABS-24- The challenges and opportunities to move to zoning in High Performance Homes

You will look at ZONING on a whole new level when you participate in this session, and walk away feeling warm and fuzzy about the overall benefits of a right-sized system integrated into an “HVAC in a BOX” approach that delivers a WIN-WIN-WIN for the designers, builders, and homeowners.

Re-cap of the HVAC Challenges builders are facing today while striving for better, faster and cost efficient building practices. For builders not only trying to meet increased energy efficiency requirements in building codes, but also, for those targeting higher performance homes.

Explore the challenges with traditional zoning systems, and the reasons that made them unattainable technology for smaller square footage and multi-residential products, where many challenges will continue to rise.

Discover the benefits of a right-sized system featuring modulation through smart controls – the first step in delivering better comfort, lower noise, and energy management while driving cost efficiencies.

With this winning formula, builders and designers will be walked through zoned system(s) that solve the challenges of traditional zoning while being economical, providing superior heating and cooling performance to all areas of the house and that is user friendly.

Suggested Presenter(s): Michelle Cote, Dettson Industries

ABS-25- The Great HERS Rater Debate

Building professionals, including HERS Raters, must address evolving homebuyer demands and increasingly stringent code compliance. This session brings together three different perspectives from building professionals, including HERS Raters, in a moderated debate session to address the top issues facing this industry. Through engaging and interactive debate-style exchanges, we will explore pros and cons of different energy-focused construction techniques and solutions to meet today’s marketplace needs. From cost-effective solutions that achieve code compliance to managing increasing homebuyer demands and addressing the growing trend of sustainable and efficient “healthy homes,” The Great Debate will provide real, on-the-job insights and data to support their respective positions and approach on each of the issues. Incorporating real-time audience interaction, the moderator will ask both prepared questions as well as those provided by the audience via text and Twitter using #GreatDebate. At the conclusion of this presentation, attendees will gain insights from across the country that can help shape energy strategies that work best for their climate zone and performance targets.

Suggested Presenter(s): Robby Schwarz, Energy Logic; Chris Urbanus, Burgess Construction Consultants, Inc. & Jon Girod, Quail Homes

ABS-26- The When and Where of Vapor Retarders

Code provisions on the use and placement vapor retarders and 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. In 2015 the concept of using hygrothermal modeling to determine the use and placement of vapor retarders was 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 2015. It will introduce hygrothermal modeling and provide guidance on the key considerations when conducting or reviewing a hygrothermal analysis.

Suggested Presenter(s): Theresa Weston, DuPont Building Innovations

ABS-27- Understanding the Cost of Quality

As builders are increasingly building high performance homes, the costs and paybacks of the higher performance are under critical review. Sometimes over-looked are the cost benefits which can be achieved by improving the quality of the building process and of the installed performance of building assemblies. The program will consist of two presentations. The first presentation will focus on an analysis of the overall costs associated with construction defects and warranty claims. The second will introduce a methodology for profiling your organization's overall spend on quality. It will highlight 8 cost savings opportunities that result from improved home quality and performance and demonstrate (thru a case study) how investing in quality can return savings six times the investment. Builder benchmark data across these 8 opportunities will be shared. See how your company compares.

Suggested Presenter(s): Theresa Weston, DuPont Building Innovations & Glenn Cottrell, IBACOS

ABS-28- Understanding the Impacts of Enhanced Energy Efficiency and Elevated Levels of Airtightness and the need for enhanced Moisture Management

The use of continuous insulation on building exteriors and the air tightening of building envelopes only increases the need for the elevated drying potential of fiber glass insulation in the framing cavity. We seem to keep finding ways to add more layers and new materials to our building envelopes. While these additional layers have helped reduce energy losses they have not managed to keep water out of our walls. We are human and people make mistakes, like occasionally tucking their raincoat into their rain pants, but we also suffer a disconnect between expected material performance and practice. Hey here's shocking news: in the US "self-flashing" residential windows are allowed to leak from "the nailing flange out". Consider now how you are integrating the wrapping of the rough opening with the water resistive barrier and the continuous insulation to ensure that the water which will come on the face of that window nailing flange is going to be re-directed to the exterior. Will it wind up in front of or behind vapor resistive layers? If it is behind resistive layers, chances are very good the direction of the highest potential rate of drying is actually towards the interior. The vapor open nature of fiber glass, combined with an adaptive "smart" vapor retarder where needed, provides the assembly with the maximum potential for drying moisture that may intrude in these scenarios. It's a little ironic that with regard to moisture management what had been considered fiber glasses Achilles heel, being so vapor open, may actually be one of its best benefits. While working to reduce our consumption of energy, we must always keep durability as a principle concern for there is nothing sustainable about a building that can't last.

In this session, we will explore these concepts and practices and dig into a thorough understanding of what impacts we can expect in the future due to increasing the energy efficiency of the building envelope and increasing the airtightness levels of today's homes. Here is a hint--we can expect the drying potential to be reduced; whereas, our buildings are still getting wet (and may in fact get more wet...). Managing this moisture will be the key to successfully building the sustainable homes of the future.

Suggested Presenter(s): Ted Winslow & Lucas Hamilton, CertainTeed Corporation

ABS-29- Zero Net Energy Housing: Costs and Profit margins in Affordable and Market Rate Housing

Sean Armstrong will review a selection of the 150 solarized housing projects Redwood Energy has worked on in the last five years, showing cost trends and profit margins while showcasing best practices in Zero Net Energy design. Topics will include the costs of thermal storage in DHW tanks vs. electro-chemical batteries, photovoltaic (electric) panels vs. solar thermal panels, heat pump DHW vs. high performance gas DHW, heat pump space conditioning vs. AC with gas AFUE, and insulation vs. mechanical system investments.

Suggested Presenter(s): Sean Armstrong, Redwood Energy

Energy Policy & Programs

EPP-1- 2018 IECC- The Peaks and Valleys

The progression of the energy codes over the past few decades can sometimes look like a “black diamond slope” instead of a “relaxing green ski run”. Let’s explore the progression from the 2015 IECC to the 2018 IECC and what it has in store for builders, code officials, and raters. Will it be a black diamond? A green run? Or have we fallen off the lift? We will talk about the various compliance options and the changes (peaks and valleys) in each of them.

Suggested Presenter(s): Amy Schmidt, The Dow Chemical Company

EPP-2- Affordable Zero Energy Ready Homes

Habitat for Humanity of Catawba Valley recently completed construction on the first certified DOE Zero Energy Ready Home in North Carolina. The home also qualifies for a two-year comfort and energy use guarantee through the Advanced Energy SystemVision program. This workshop will take an in depth look at the construction technologies and techniques involved in building an affordable Zero Energy Ready Home, including a super-insulated building envelope, as well as high performance heating, cooling, and ventilation systems. Preliminary data will be shared from monitoring of energy use, temperature and relative humidity.

Suggested Presenter(s): Rob Howard, Habitat for Humanity of Catawba Valley; Chad Gillespie, Mitsubishi Electric Cooling & Heating & David Treleven, Advanced Energy

EPP-3- Building Code Officials as the Next Generation of Trade Allies

Building code officials are becoming a new kind of trade ally, both for program administrators entering the code compliance space, as well as for traditional new construction programs. Code officials present unique opportunities for programs as they interact with the builders and designers of nearly every new building and can be a key influencers of construction decisions. But, code officials are not energy professionals and energy is often not their top priority. This session will discuss creative strategies to engage code officials to help meet program goals, including examples from new construction programs and energy code enhancement programs in multiple utility territories across the Mid-Atlantic. Examples of engagement activities include game-show-style training activities, small group discussions, custom in-office and in-field training/technical assistance sessions, an energy code verification and educational tablet app, and an online “energy code challenge” that incorporates gamification principles. In addition, code officials serve as helpful channel partners by aiding in the dissemination of new construction and codes program literature to potential participants and other trade allies. With nearly one-third of code officials planning to retire in the next five years, the time is right to indoctrinate the next generation of plan reviewers, inspectors, and administrators into energy efficiency program outreach and support.

Suggested Presenter(s): Mike Turns, Performance Systems Development

EPP-4- Diving In to the Water/Energy Nexus

Meeting energy efficiency standards, complying with new water efficiency regulations, and addressing the needs of evolving homebuyer preferences—these are all key concerns for competitive homebuilders. Fortunately, there are labeling programs such as ENERGY STAR and WaterSense Labeled Homes to help builders exceed code minimums and offer homebuyers superior performance, convenience, and utility savings in their new home. Additionally, the connection between water efficiency and energy efficiency is becoming increasingly important, not just to the home building industry, but also to municipalities and utilities. When accounting for the energy intensity of water delivery, programs such as WaterSense Labeled Homes could also deliver important energy savings for utilities,

which magnifies their value beyond just reduced water consumption. This is incredibly important for states such as California, who have not only suffered from drought in recent years, but also continue to see housing growth in metropolitan areas and a need to achieve reductions in both water and energy demand. Attend this session to explore the water/energy nexus, recent industry trends, and how these might impact future of the WaterSense program.

Suggested Presenter(s): Jonah Schein, US EPA Office of Water & Nick Hurst, ICF International

EPP-5- Energy Code Field Study Results and Opportunities for Program Administrators

An increasing number of states and utilities are including code compliance enhancement programs in their energy efficiency program portfolios, but for these programs to become widespread, regulators need information on quantifiable savings from energy code support activities. To help provide this information, researchers across the country recently embarked on an effort to demonstrate a measurable improvement in the energy efficiency of new homes via training, education, and outreach, as part of a USDOE research project spanning eight states. This presentation compares results of the baseline field studies of several states implementing different versions of the IECC (the 2009 and the 2015), both in terms of energy savings potential and key building practices identified as areas for improvement. The presentation also presents lessons from performing the two independent baseline field studies, comparing the unique approaches of the separate project teams and along with challenges faced and how to mitigate those challenges. The second phase of the projects involve training, education, and outreach to builders, code officials, raters, and related trades aimed at improving the average energy efficiency of new homes. The project teams are using a variety of approaches across this diverse mix of stakeholders which are compared and contrasted here, including classroom training, webinars, custom technical assistance, a codes hotline, compliance guides and support materials, a tablet app, and HERS Raters as code consultants. The effectiveness of these activities will be measured with a post-program field study in 2017, yielding statistically significant data on savings attributable to code compliance. If proven successful, these programs may increase opportunities for Raters.

Other panelists may include: Appalachian State University, Newport Partners, Advanced Energy, Southface, Regional Energy Efficiency Organizations (NEEP, SWEEP, SEEA, NEEA, etc.), NASEO

Suggested Presenter(s): Mike Turns, Performance Systems Development

EPP-6- Exciting New Opportunities with LEED for Homes and Production Builders

While finding outstanding success in many market sectors, LEED for Homes has struggled to gain market share with national production builders. In short, the certification process has proven too cumbersome and time intensive to dovetail with a production schedule. USGBC has taken the upcoming switch to LEED v4 for Homes as an opportunity to rectify this. The new LEED for Homes V4 rating system will have a certification pathway specifically optimized for a production builder. Join Asa Foss, Technical Director of LEED for Homes, and Tom Flanagan, QAD and LEED Specialist of EnergyLogic to learn how the new process overcomes the three major hurdles to making LEED digestible in a production environment: cost, timeline, and administration. (If you're following along – that's basically the whole process!)

Suggested Presenter(s): Asa Foss, USGBC & Tom Flanagan, EnergyLogic

EPP-7- HERS Harmonization: Progress in California and the Pacific Northwest

RESNET HERS has become a staple energy efficiency metric across the country for programs, code compliance, and consumers. However, many western US states have not followed this trend, due to a multitude of barriers: progressive and distinct energy codes, unique energy modeling requirements, different climate zones, California's TDV energy, and a complex regulatory environment, among others.

Over the last three years, steady progress has been made in overcoming these barriers, cracking the door to RESNET HERS ratings. This session will explore the current state of HERS harmonization in California, Oregon, and Washington with deep insight on modeling, data sharing, and energy code updates across the states.

Suggested Presenter(s): Matt Christie, TRC Energy Services

EPP-8- How a Statewide HERS Rater Association and Providership Benefits Rating Companies and Builders

In 2014, North Carolina Raters headed up the formation of the NC Building Performance Association (NCBPA) to offer their companies a voice in energy code advocacy, centralized communications and market growth initiatives, and a not-for-profit Rating Providership. Three years in, NC Raters generate the third highest number of new home ratings per year and are positioned to support ERI/energy code compliance activities in 2019, which is anticipated to triple the number of ratings in the state to more than 35,000 per year. In addition to offering growth opportunities and leads for member Raters, NCBPA's Providership utilizes a centralized, cloud-hosted database platform in order to streamline the data collection and quality assurance of both HERS ratings and ENERGY STAR homes. This database enables NCBPA users, home builders, and utilities to access a single, shared data source and serves as the hub for a variety of value-added offerings such as home guarantee programs, MLS data, and marketing material. The platform is being planned to "green the MLS" in North Carolina and create greater value for HERS Raters and Builders. This session will highlight the benefits of centralizing educational resources, advocacy and policy work, and also energy rating data to increase HERS Rater profits while maximizing the market penetration and growth of energy efficiency ratings and certification programs.

Suggested Presenter(s): Ryan Miller, North Carolina Building Performance Association & Bob Burns, Pivotal Energy Solutions

EPP-9- How Does the 2016 Election Impact Residential Energy Efficiency

With the 2016 elections the U.S. will have a new presidential administration and congress. How will this impact residential energy efficiency? Take an insofe Washington peak what can be expected from Congress and the White House. The session will also look into the leadership of the U.S. Department of Energy and Environmental Protection Agency

Suggested Presenter(s): Carl Chidlow, Winning Strategies Washington; John Libonati, Owens Corning & David Goldstein, Natural Resources Defense Council

EPP-10- Raters' Perspectives on New Homes Programs: Designs that Drive Participation

As a designer and implementer 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. However, the viewpoints shared by raters were purely anecdotal. 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 the 370 raters that are members of the Northeast Home Energy Rating System Alliance, which covers ten states. Included in these programs are the Massachusetts stretch codes and the evolution of New York State's programs as changes associated with "Reforming the Energy Vision" are rolled out. Survey questions included topics such as: how important are utility programs to the raters' business; how many different programs do they participate in; how do programs support raters via marketing, technical assistance, and quality assurance; which forms of support are most valuable to the raters; what do programs require for submissions beyond a standard HERS rating; what factors if any limit your 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.

Suggested Presenter(s): Kathleen Greely & Emelie Cuppernell, Performance Systems Development

EPP-11- Residential Energy Guarantee - Don't Just Say Its Energy Efficient - Guarantee It!

Energy efficiency in new construction is on everyone's mind. And promising to build an energy efficient home is great. Guaranteeing it is even better. This session will introduce you to the product that pioneered taking the HERS rating and your energy efficient construction to a whole new level and is providing new opportunities to raters to rate more homes and builders to sell more homes.

Suggested Presenter(s): Roger Lange, Bonded Builders Warranty Group

EPP-12- RESNET HERS: Putting the "EE" in Green

Green certifications are used to label a home as sustainable, durable, and environmentally sound, attracting the eco-conscious and adding value to the building. As a HERS Rater, delivering green labeling support services likewise increases your value and your business. However, the complex patchwork of green labels available can make it difficult to know how to take advantage of this opportunity.

This session will break down the patchwork of US regional and national green programs and provide advice for RESNET HERS Raters interested in tapping into this growing market of sustainability certifications. As one example, the session will address how HERS Ratings or software models for Ratings can be used to demonstrate compliance with the energy component of broader green certification programs.

Suggested Presenter(s): Matt Christie, TRC Energy Services

EPP-13- Stop, Data Time!

What can data and validation studies tell us about efficient homes and what can we do with this information? Dan and Neil will share results from a pilot for advanced performance homes. This engaging session will include pilot background, lessons learned, building of modeling guidelines, modeling validation analysis, and performance data from the "Next Step Homes" pilot. We hope to answer whether or not homes that are predicted to have low energy bills actually deliver. We'll do so by including the lenses cost evaluation while also adding in additional goals of proper ventilation and comfort.

By attending this session, participants will...

- Understand the critical guidance for energy modeling to best predict real performance
- Be prepared to discuss the applicable benefits for builders when armed with evaluation data
- Be armed to discuss measured energy savings when promoting efficient homes

Suggested Presenter(s): Dan Wildenhaus, CLEAResult & Neil Grigsby, Northwest Energy Efficiency Alliance (NEEA)

EPP-14- The Pacific Northwest's Regional Approach to Enabling Transparency, Efficiency, and Value in New Homes Energy Efficiency Programs

Over the last several years, the Northwest Energy Efficiency Alliance and the Energy Trust of Oregon have been working with regulatory agencies and utility partners in the Pacific Northwest to transform the energy efficiency market in the region. 2017 will see more market transformation in the region as NEEA transitions existing energy efficiency programs to new, innovative programs with added value for HERS Rater, Providers, and utility partners while Energy Trust of Oregon expands the reach of its successful EPS program. Attend this session and learn how the Pacific Northwest can be a model for the country by transforming markets through progressive energy efficiency programs and centralization and sharing of program data with utility partners, program sponsors, and the real estate industry.

Suggested Presenter(s): Neil Grigsby, NEEA; Scott Leonard, Energy Trust of Oregon & Bob Burns, Pivotal Energy Solutions

EPP-15- What Are the Goals with Energy Codes

Currently there is no central goal for building energy codes in the U.S. The State of California has set a policy goal that beginning in 2010 all new homes must be net zero energy. The European Union has set a similar goal.

Codes in the U.S. do not follow a consistent pattern. Sometimes the codes stringency significant increases other times they remain stable.

This discussion will look into the question of what should be goal of energy codes.

The panel will represent a divergence of opinion from builders and code advocates. Come join this lively discussion.

Suggested Presenter(s): Jacob Atalla, KB Home; Clayton Traylor, Leading Builders of America; David Goldstein, Natural Resources Defense Council & Bill Faye, Energy Efficient Code Coalition

Enhanced HERS Index Consistency/Quality Assurance

QA-1- Affecting Change within RESNET: The Story of Shepherding Changes to the RESNET Standard via the ANSI Process

From asking for an interpretation to creating a standard change, learn how to affect change in the standards development system and how to shepherd those changes through the process. For example, EnergyLogic had a lot of questions about duct testing. Do ducts leak to the outside when they are verified to be 100% inside the air barrier of the home? What is the value of doing the duct leakage to outside test when you know the duct are all inside? How accurate is the test and what is its impact on a rating, code compliance, or program compliance? These questions and more have led EnergyLogic to work through the standard change process with a proposed change delivered to the RESNET Standards Development Committee.

Suggested Presenter(s): Robby Schwarz & Glenn Pease, EnergyLogic, Inc.

QA-2- Changing Training for Changing Times

The Northeast HERS Alliance has been training HERS Raters since the 1990s, long before a national exam, let alone 4 tests. Increasing need for consistency on a national level has led to increasing expectations for trainers and students. The NEHERS Alliance has evolved its core training from a 4 or 5 day class, to a multi-week, hybrid online/classroom/field class to prepare the students for written, practical, and simulation exams, as well as for the demands of an evolving HERS industry. We will include the perspectives of other Accredited Trainers, for example Southface, EnergyLogic, and the BER.

Suggested Presenter(s): Ethan MacCormick & Emelie Cuppernell, PSD

QA-3- Conducting Quality Assurance Oversight Remotely

RESNET is striving to make the quality assurance of HERS Ratings more consistent and affordable. An exciting opportunity is being able to monitor air and duct leakage testing in the field over the internet.

This session will feature the two leading leakage testing manufacturers to explain how the testing can be reviewed remotely.

Suggested Presenter(s): Joe Medosch, RetroTec & Representative, Energy Conservatory

QA-4- Futurology - Experience What's Next!

Futurology- the ability to imagine, anticipate and integrate future technologies.

The year is 2025, all homes (new and existing) live and die by their HERI (Health & Energy Rating Index). No one would purchase a home without knowing the HERI, as common as solar panels. Come experience the future!

This is not a traditional presentation but a live simulated "evaluation" of a Home. All technologies are based on current and predicted technologies that will be implemented sooner than we imagine. I will mix together a collection of techno-advances, nanotechnology and social big-data. See how the structure, mechanical systems, energy consumption, IAQ, heat transfer, moisture and air movement can be visualized during this walkthrough.

I will guide you through a house built in 2021 that is being evaluated in 2025. You will experience technologies that are now common construction in a "smart home". Many construction techniques are the same, but some have evolved and integrated into common items. FYI- Home's now have a proper name, such as "Brad." It's easier to talk to your Home if it has a name!

This "evaluation" will include the super duper high tech devices that are already being introduced

in the market today. You'll see how they're incorporated into the tools we will use and even alert you to conditions that are not visible. Big Data becomes simplified and provides a history of each Home based on the shared social experiences from the occupants. Remember that leak in the bathroom you posted - now that leak is associated with that address, forever.

Healthy home becomes synonymous with a Zero+ Home, (homes that produce energy and dividends) Duh - its 2025! Did I mention your community now has a Health Index based on the number of reported hospital visits for conditions like Asthma.

The HERI incorporates healthy building conditions and hazardous materials. The "evaluation" includes real time VOC's and other conditions that compliment or conflict with the occupants genome.

This all comes together in a live performance simulating the "evaluation". As I walk through the House, you the audience will see the views from my "surround cameras", "wrist PC", Augmented Reality and other micro devices that evaluate the conditions in the house, (all simulated). There is a narrator that is explaining the conditions, devices and what current technology this is based on. Join me in the Future!

Suggested Presenter(s): Joe Medosch, Energy & Environmental Consulting llc

QA-5- HERS Index Adjustment Factor Proposal Assessment

Recent studies and experience with the HERS Index as a Energy Rating Index (ERI) performance metric have shown that home geometry and operating assumptions can play a significant role in resulting Index. An Index Adjustment Factor (IAF) was proposed to adjust ERI / HERS Index scores such that the variations arising from differences in conditioned area, number of bedrooms, and number of stories, are minimized. The proposed IAF will reduce the variation between rated homes based on geometry with minimal impact on the average reported Index. The RESNET Calculation Sub-Committee also evaluated the effect of different software tools used for ERI with the proposed IAF methodology, and found similar reduction in the variation of ERI regardless of software used.

Suggested Presenter(s): Linda Jeng, Dow Building Solutions & David Roberts, NREL

QA-6- New Industry Designation & Certification

In this session we plan to discuss a new designation, HERS Associate, and propose a new certification, HERS Designer.

HERS Raters are playing a larger role in the residential construction industry. In the past Raters focused on verifying homes for green building programs, but today they are also verifying compliance for the International Energy Conservation Codes (IECC). As the Rater's role in the residential construction industry grows so does the need for a wider understanding of their qualifications. The HERS Associate designation is designed to educate and recognize architects, engineers, builders, estimators, code officials and industry consultants about RESNET and the role of the HERS Rater. After completing approved training and testing professionals in the home building industry can receive the HERS Associate designation.

The proposed HERS Designer certification is intended to train design professionals in the fundamentals of building science and using computer modeling to generate a HERS index. This certification would open the use of RESNET approved software to designers who can benefit from the use of the software tools, but have no need for the full HERS Rater training. Educating and unlocking the software tools to designers will improve the overall results of home design and increase the HERS Index consistency. Join us to discuss this new certification and the potential that it creates in the industry.

Suggested Presenter(s): Steve Byers & Robby Schwarz, EnergyLogic, Inc

QA-7- Protect Ya Neck: How to Prevent Common Errors in a HERS Rating

It is very important to perform accurately and effectively in order to ensure your business can withstand any challenges it faces. This depends on the business' employees ability to execute what they must do and to strive to

eliminate any and all errors they may come across. This proposal consists of discussing common errors as well as solutions to prevent these errors.

Suggested Presenter(s): Brett Dillon & Connor Dillon, The Dillon Group, Inc

QA-8- QA Training 201

I feel like there is a need for a 1/2 day training for the QA designees that are in the midst of their learning curve (folks that are somewhat experienced in the rating industry but are young in their QA career). Learning the expectations for a QA designee have been difficult. The majority of the information that I've picked up about QA, I have learned from the folks that we have hired to come in and do QA on my ratings. The QA roundtable is a good concept but it seems to be more of town hall style session where the same people air their frustrations every year. I'm proposing more of a training session to communicate clearly what RESNET expects out of QA professionals and maybe provide examples of what or how some of the best providers handle QA.

Suggested Presenter(s): Laurel Elam, RESNET & Daran Wastchak, DR Wastchak

QA-9- RESNET HERS Index Portal Interface (HIPI) for calculating the HERS Index

A key pillar of RESNET's commitment to enhancing the consistency of HERS Index Scores is the consistent calculation of the HERS Index Score by accredited HERS Software Tools. On February 19, 2016, the RESNET Board approved a proposal by Salcido Solutions and NREL for:

- Develop an open source API for RESNET accredited HERS Software Tools to calculate the HERS Index.
- Development of a timeline that HERS software tools must incorporate new technologies adopted by RESNET into their programs.
- All RESNET accredited HERS software programs must calculate loads through hourly simulation.
- New HERS software reference test boundaries for ASHRAE 140 loads test.

Salcido Solutions and NREL presented the development plan for the HERS Index Portal Interface (HIPI) to the RESNET Board of Directors on July 14, 2016. This session will go over the HIPI development plan and give an update on the current status of the project.

Suggested Presenter(s): V. Robert Salcido, Salcido Solutions & David Roberts, National Renewable Energy Laboratory

QA-10- Results Pilot Project on Projected HERS New Construction Rating Variability Assessments

Variability assessments (VA) identify discrepancies in results from multiple raters on a single home, for either projected or confirmed ratings. The assessments can be used as a training tool to identify areas of concern, or for quality assurance to assess areas where raters may be consistently missing key components of a rating. The quality assurance element can be conducted at the provider level, or as part of RESNET's overall quality assurance efforts. Guidelines for conducting VA also referred to as "round robins" were developed under a grant from the National Institute of Standards and Technology. These guidelines have been employed in a pilot research effort by WSU researchers working with a RESNET VA task group. The VA goal is to assess the variability of the HERS index, and improve the consistency of information to builders, efficiency program providers and code officials using the HERS index. The objectives included; 1) developing and implementing a variability assessment research pilot project, focused on proposed HERS ratings (for new construction), and 2) identify the key factors that impact variability in IECC level and high performance homes voluntary energy efficiency programs. The pilot project is "proof of concept" demonstration where VA procedures can be used by RESNET on a broader scale to focus on the following research questions:

The pilot project took place in Lexington, Kentucky. This session will explain the results of the pilot.

Suggested Presenter(s): Andy Gordon, Washington State University Energy Program

QA-11- Role of a Rater: Unhappy homeowners of a new ENERGY STAR home

Homeowners of ENERGY STAR homes are becoming more conscious of their home's performance and when not happy with the builder's customer service are calling local Raters for second opinions. Their common complaints

or concerns include: comfort issues (hot/cold, dusty room); higher than expected gas and electric bills; and noise, purpose and operation of mechanical ventilation. What protocol should a Rater take when called by a new homeowner to verify that their home was accurately verified to meet ENERGY STAR by another rating company? What items can be verified after final? What procedure should the Rater take if some items do not comply with ENERGY STAR Checklists?

Suggested Presenter(s): Les Lazareck, Home Energy Connection, LLC

QA-12- Software Persistence and How It Will Affect Your Business.

Section 103.2.2 of the RESNET standard currently deal with the notion of software persistence. "Once a Projected Rating has been made on a property, the version of the rating software that was used initially may be used for the Confirmed Rating on that property." What if the software is updated and the new software calculates the HERS index differently? By the time we see each other at the conference in February of 2017, this section will have changed. How will the changes in this section of the Standard affect you and your business and why is it important for all raters to be utilizing the same software versions? Let's understand how this section of the standard has been changed and discuss the issue so we all understand it's relevance to the industry.

Suggested Presenter(s): Robby Schwarz, EnergyLogic

QA-13- Taking It to the Streets - The RESNET Enhance Quality Assurance Pilot Program

The RESNET Board of Directors has adopted a policy that Quality Assurance Agents must be financially independent from a HERS rating company. In 2017 RESNET will be undertaking a pilot program with two Rating Quality Assurance Providers to demonstrate whether this approach is economically feasible. RESNET Quality Assurance Manager Laurel Elam and the representatives of the two pilot providers will present an overview the pilot program and lead a discussion on what will be learned from the effort.

Suggested Presenter(s): Laurel Elam, RESNET

QA-14- There is an app for that is back. - Now they do what?

WiFi devices are a of standard in most of the equipment we use and the apps that access the data are growing and becoming part of the testing procedures. This session will uncover some of the best apps / devices for testing and performing many of the required measurements for a Rating.

Measurements? Scan the room with your device and measure the room. Laser measurement devices that can send the readings to your phone/tablet - and provide an Excel sheet. Nice!

IR cameras have eliminated the challenge of 2-3 people trying to see what's on the camera - without moving it. Show the IR image on an iPad while the client sits on the couch and you go through the house explaining the findings. Even go where your client will not, like the attic and show them the same image that is on your IR camera. Cool!

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!

Creating a sketchup model of the home and export the surface area and volume. EnergyLogic has a solution and a training module. We'll demonstrate this in the session.

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.

Imagine an app that will geo-locate and time date stamp the test, confirm the altitude, go to the local weather station and get the temperature and wind conditions, check on Zillow if there is any existing information, connect to the gauge and fan and automatically perform a single or multi-point test and of course create an easy to read report that can be sent immediately. Did I mention the data can be shared with providers or utility programs. Yes, there are apps that do all that and more.

But wait there is more... but 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 presentation had a catastrophic failure - technical meltdown! I have recovered and expanded the content. Here is an example of some of the apps and devices. <https://db.tt/wjblkhq1>

Suggested Presenter(s): Joe Medosch, Energy & Environmental Consulting llc

QA-15- Utilizing Technology in Education

An evolving economy follows technological advancements that should be embraced and utilized to allow for maximum efficiency. In this proposal, we intend to discuss the advent of mobile learning, as well as integrating e-Learning and field training.

Suggested Presenter(s): Brett Dillon & Connor Dillon, The Dillon Group, Inc.

QA-16- Virtual QA- Timely Feedback in a Long Distance Partnership

Access to homes is an issue that impedes on meeting the intent of the RESNET QA Standards. Limited accessibility requires careful planning and often means there is less room for random selection and "credible discovery" in the QA process. Changes to the RESNET Quality Assurance Standards, which require that QA be carried out by a third-party external to the Rating Quality Assurance Provider, may compound the issue of accessibility. Some Providers potentially will need to hire outside their market for QA services. In this case, the Provider often times has to schedule QA with the QAD weeks in advance in order to accommodate travel schedules and access to homes. While site QA will still be required in the proposed model, using video conferencing in virtual QA can help strengthen a quality assurance program by making it more efficient, cost effective, easier to accommodate geographic distances, and provide more regular feedback to Raters and their Providers. Come see what we learned from developing and testing out this new protocol for RESNET QA.

Suggested Presenter(s): Daran Wastchak, DR Wastchak; Paul Gay, EnergyLogic & Aaron Gary, US-EcoLogic

QA-17- What Constitutes Proper Quality Management?

Quality management is an essential part of the Rating industry and some may be uninformed on all that it constitutes. We propose to properly examine the elements of quality management, how the HERS Rating industry uses these elements, and how we can improve the processes.

Suggested Presenter(s): Brett Dillon, The Dillon Group, Inc.

Home Energy Ratings

HERS-1- 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 along with some honorable mentions from this year's competition.

Suggested Presenter(s): John Godden, Canadian Residential Energy Services & Rod Buchalter, RenewABILITY Energy Inc

HERS-2- A Reflection of Growth

Part of a good and effectual business (corp/company, etc.) is not only to look forward to the future, but also to look back and reflect upon the successes and failures of said business while maintaining a constructive perspective. Growth can only be effectively measured this way; to see how far the business has grown and how to prep for the best method of further growth. We propose a reflection upon the growth of the HERS industry over the past few years and to search for opportunities that increase the revenue streams available for Raters and future Raters.

Suggested Presenter(s): Brett Dillon and Connor Dillon, The Dillon Group, Inc

HERS-3- Airflow Measurements: 2017 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.

Every major airflow measurement tool and technique will be explored and explained, especially those impacting RESNET ratings.

Suggested Presenter(s): Bill Spohn, TruTech Tools, LTD

HERS-4- Are you up to date on the OSHA Confined Space Rule?

Although raters always try to practice safe work habits, a recent ruling by OSHA requires many contractors working in the home to comply with the Confined Space Entry Rule for construction. This session will focus in on atmospheric and temperature hazards.

LEARNING OBJECTIVES:

Who is affected by the rule and when the rule comes into play. Learn what can happen in a confined space, See what type of products are needed to comply with the rule, Understand how these products work and need to be maintained

Suggested Presenter(s): Bill Spohn, TruTech Tools, LTD

HERS-5- Best Ideas of the HERS Industry- Insulate America and RESNET Awards Program

What would you pay to take home 30-40 successful ideas from your peers? Our price is \$20 and it is a steal.

All HERS Rating companies are encouraged to share their best ideas with the group, something that was innovative or made a difference in your company. The top three ideas, as judged by the attendees will split the entire proceeds. Everyone is welcome at \$20 per attendee

Suggested Presenter(s): David Beam & Amy Goforth, Insulate America

HERS-6- Bricks, Sticks, and HERS Ratings: Mitigating Commoditization of the HERS Industry

Commoditization occurs when there is no clear differentiation in the quality of service or product in a market. In some cases, this forces a race to the bottom where a HERS Rating service is devalued to just being an official piece of paper to push. Cost-cutting pressures from builders are a large part of the issue of commoditization of our industry, but Raters are culpable as well. Let's explore the reasons why our industry is being commodified and how we can work together to mitigate this trend.

Suggested Presenter(s): Steve Byers & Robby Schwarz, EnergyLogic

HERS-7- Can the National Asset Rating Standard be Used to Implement California Energy Policy? Progress on the RESNET and California HERS Harmonization Efforts

For the past year RESNET and the California Energy Commission have worked to determine how California's HERS specifications can better align with the RESNET Standard such that (1) new homes using a HERS index to comply with building standards and/or to market relative efficiency assets can be compared across state borders, and (2) both new and existing homes in California can be rated using a single HERS specification that is consistent with state energy policies.

The authors are using the EnergyGauge (egUSA) energy modeling software to represent the RESNET HERS standard and the CBECC-Res tool to represent the California HERS calculations. 140 energy models have been built in each tool to represent one single family home design across five climate regions, seven levels of energy efficiency, two building azimuths and two fuel types. One set of parametric runs compares loads, source energy and HERS indexes between egUSA and CBECC-Res when the latter implements all the RESNET modeling specifications

except nMUELS. A second set of parametrics explores HERS indexes calculated in CBECC-Res when additional modeling specifications move away from the RESNET standard to align with current California energy policies.

This conference session will summarize the results of the modeling efforts described above and discuss outstanding issues.

Suggested Presenter(s): Philip Fairey, Florida Solar Energy Center & Martha Brook, California Energy Commission

HERS-8- Construction Fix: Conquering Home Performance Errors

What's your pain point? Many times in construction certain problem areas get overlooked because they can be a nuisance. However, not addressing them up front can cause issues later on in the home's life cycle. This presentation will discuss current problem areas and provide insights to easy, proven techniques and insulation solutions in locations such as vaulted ceilings where space is extremely limited, slowing inward vapor drive behind stone claddings, insulating cantilevered floors, and numerous other applications. Real life issues will be looked at and addressed from both a remediation and proper initial construction standpoint. After completion of the presentation you will have the knowledge to overcome common insulation and air sealing errors made during the construction process.

Suggested Presenter(s): Brent Jacobs, Dow Building Solutions; Brian Lieburn, Dow Building Solutions

HERS-9- Cultivating a New Generation of Leadership in the HERS Industry

To remain sustainable the HERS Industry needs to cultivate leadership from the new generation. X generation and Millennials communicate in different form than Baby Boomers who have birth for the industry. In order to remain relevant the industry must recruit, mentor and nurture the next generation of leaders. This session will be a forum led by and aimed at the next generation of leaders.

Suggested Presenter(s): Matt Gingrich, Energy Diagnostics; Stephanie DeZee, RESNET

HERS-10- Customer Service in the Energy Rating Industry

Customer service, however trying it may sometimes feel, can make or break a business and determines whether the business will flourish or flop. It is important to properly educate oneself of effective methods and actions to take when working with customers. We intend to discuss the fundamentals of customer service and how it relates to the HERS Rater in the field as well as in the office.

Suggested Presenter(s): Brett Dillon, The Dillon Group, Inc.

HERS-11- Decoding Unvented Attics: From Concept to Simulation to Inspection

Across the U.S. builders are being asked to build tighter and more energy-efficient homes. Accomplishing these goals under the pressures of today's market is not always any easy task. High-performance attics like unvented attics offer builders an opportunity to transform an often ignored space into a significant energy-saver. These designs can provide homeowners with more a comfortable living space, while offering builders a cost-effective option for complying with building energy codes.

It's important for home energy raters to understand the material technologies and building practices required for successful unvented attic constructions. Learning objectives for this session include:

1. Identify applicable building and energy code requirements for unvented attics.
2. Understand the building science concepts behind successful unvented attic designs for various climate zones.
3. Understand how to properly model energy-efficiency performance of unvented attics using home energy rating tools.
4. Learn how to incorporate unvented attics into existing home designs.
5. Understand inspection techniques for verifying unvented attic performance.

Suggested Presenter(s): Rick Duncan, Spray Foam Coalition & John Broniek, Icynene

HERS-12- Energy Rating for “High-Volume” Builders

In this four part mini-track, hear from industry experts on ways to more effectively serve what are typically categorized as “High-Volume” production and regional builders. Hear real-world advice and anecdotal evidence to help you understand and respond to the unique needs of the builder who offers dozens of home types and options and that builds hundreds or even thousands of homes per year. This category of builder demands consistency, collaboration and continuous improvement from energy raters. Attend this session to see how your business can benefit from experience gained from leading high-volume Rating companies.

Suggested Presenter(s): Matthew Cooper, PEG; Dave Bell, TopBuild & Tommy Spain, SkyeTec

HERS-13- Evidence-Based Learning: Exploding Myths

In any environment there are a vast amount of myths surrounding it- this inevitably rings true with Learning. It is extremely important to address, research, and expose these myths for they may hinder one’s ability to develop as a well-rounded human being. We intend to thoroughly discuss common learning myths and present evidence on why they are incorrect, and solutions to obtain maximum learning opportunities.

Suggested Presenter(s): Brett Dillon, The Dillon Group, Inc.

HERS-14- Expand your Business; Breaking into the Existing Homes Market

In this session we’ll discuss the opportunities for HERS Raters in the existing homes market and how they can take advantage of their Combustion Safety and Work Scope Development training. We will focus on some of the important elements of being a successful existing homes assessor, like conducting thorough homeowner interviews and identifying comfort and health concerns in the home. We’ll go in depth to determine what drives a buying decision, why people purchase, and techniques that can help you position your business to the average homeowner. We’ll also discuss various business models and strategies seen from HERS raters in the Southeast who have already approached the existing market. We’ll share their success stories and find out what really took their business to the next level.

Suggested Presenter(s): William Anderson & Luke Bertram, ICF International

HERS-15- HERS Smart Tools - Save Time, Save Money Panel Discussion

Diagnostic tools used in the HERS industry have evolved substantially in the last few years. One of the key innovations for these tools has been to integrate them with the internet. This allows for remote control of tools, geo-tagging of tests, and automatic data reporting. Our panel will discuss how each of these developments provides better accuracy and control for installers and Raters alike, and what that means for your business.

Suggested Presenter(s): Charlie Bachand, CalCERTS Inc.

HERS-16- How To Effectively Sell Your Services to Homebuilders - From A Builder's Perspective

How would you like to substantially increase your builder business? HERS raters and performance contractors can have a significant impact on how new homes are designed, built, and sold. Building high performance homes requires building science knowledge, qualified trade partners, improved products, and training. HERS raters can be the link to all of it, if they can properly demonstrate their value as a resource to prospective customers and builder clients. Learn how to deliver an effective message, sell your services, and be the "Most Valuable Player" to the homebuilder ... from their perspective. Grow your business, your brand, and your bottom-line!

Suggested Presenter(s): Todd Gamboa, Building Trust LLC

HERS-17- How to Get Things Done

With proper execution comes prosperous results: we intend to explore and expand upon tips allowing for effective productivity in the energy rating industry. These will be based around peer-reviewed research and influenced by decades of business experience.

Suggested Presenter(s): Brett Dillon, The Dillon Group, Inc.

HERS-18- How to Measure Airflow (External Static Pressure)

Installing a heating and cooling system requires proper airflow through the equipment. Measuring airflow, and evaluating it, is one of the key skills that Raters perform to confirm that a heating and cooling system is installed properly. This session will discuss the importance of measuring airflow, it will cover the basics of how to measure airflow, discuss typical equipment configurations, and discuss how to measure airflow in each of those configurations.

Suggested Presenter(s): Wes Davis, ACCA

HERS-19- How to Sale Effectively

Sales is an extremely important aspect of any industry. It allows for continuous and prosperous workflow. How you portray your services is directly dependent on getting commissioned for those services. We will discuss sales, effective techniques for selling services, and more.

Suggested Presenter(s): Brett Dillon, The Dillon Group, Inc.

HERS-20- HVAC Equipment Sizing - Bigger is NOT Better

Selecting the correct size heating and cooling equipment has a large impact on the price the customer pays, the comfort they will experience, and the "life" of the equipment.

Many times when a home is uncomfortable, the solution is to install a unit with more capacity... to provide more comfort. However, many times a larger unit fails to provide the expected improvements. The reasons for this failure to deliver are myriad.

This session will discuss the reasons why incorrectly "sized" heating and cooling equipment fail to provide comfort, why equipment with excess capacity generally fails sooner, how to avoid these problems, what to look for when evaluating the capacity of the selected equipment, and provide better support to your customer.

Suggested Presenter(s): Wes Davis, ACCA

HERS-21- Identifying and eliminating HERS Rating process inefficiencies

This session will analyze the process of a HERS Rating, start to finish. Over the last 12 months, the presenters have collected market data from a wide swath of the Rating industry, including interviews, shadow ratings, and video recordings. The data has been synthesized to put together a summary of the typical rating process across the industry. This session will scrutinize the process, identifying wasted effort and opportunities for efficiency improvements. Attendees will leave the session with clear action items for how to immediately reduce wasted resources and improve process efficiency, plus a long term vision of where the industry can move within the next 12 months.

Suggested Presenter(s): Brett Dillon, IBS Advisors; Connor Dillon, IBS Advisors; Cy Kilbourn, Ekotrope & Ziv Rozenblum, Ekotrope

HERS-22- Making HERS Ratings Cost-Effectively Available in Remote, Under Served Areas

The RESNET Board of Directors has adopted a priority to expand RESNET's services to rural America. Rural Americans pay some of the highest energy bills in the nation.

Working with electric cooperatives RESNET is piloting a process in which cooperative energy advisors can become certified as Rating Field Inspectors, conduct the necessary field inspections and testing and feed the results to a certified HERS Rater electronically.

RESNET is conducting a pilot quality assurance project to test remote quality assurance field views.

This session will explain the pilot project and explore the implications of this for areas of the country that are currently underserved with HERS Ratings

Suggested Presenter(s): Laurel Elam, RESNET; Roy Honican, Blue Grass Energy & Alan Shedd, Touchstone Energy

HERS-23- Multi-Family Certifications: In the Trenches and Out(side)

This session will highlight field proven techniques that manage the process of multi-family testing & inspections, while providing insight into additional opportunities to integrate RESNET-based protocols and HERS rater services. Example projects will include Energy Star Multi-Family High-rise, LEED for Homes Mid-rise, compliance with IECC, and verification of outdoor water use.

The panel will consist of a RESNET/LEED provider and a HERS rater/architect.

Suggested Presenter(s): Lauren Blissard, LTLB Envirotecture

HERS-24- Multifamily Guidelines are becoming a Standard!

Law and order is coming to the Wild West of multifamily ratings! Come to hear the latest and ask questions. Session is presented by members of RESNET's Multifamily Subcommittee, who are building on the existing Multifamily Guidelines in support of developing a Standard dedicated to Multifamily. In addition to getting your feedback on issues encountered while using the existing Guidelines, we will discuss:

1. The transformation of existing Guidance into a new distinct but related Standard for MF.
2. How Standards 301 & 380 will adjust to eliminate areas of conflict & overlap with this MF Standard.
3. The ongoing maintenance the MF Standard will be subjected to, in order to be amended as needed to better support the multifamily sector as more data and experience come available.

Suggested Presenter(s): Brian Christensen, NORESCO

HERS-25- Practically Speaking: Applying the 380 Standard for Measuring Airflow of Mechanical Ventilation Systems

Measuring the airflow through a ventilation system has challenges for installed system testing. The 380 Standard requires results that have an accuracy of $\pm 5\%$ or 5 cfm which is interesting since the most commonly used device (the TEC EXH) specifies an accuracy of $\pm 10\%$. How "accurate" are the testing devices? Bristol Community College in Fall River, Massachusetts has created a test cabin and training laboratory that compares the tests described by the 380 Standard from a Duct Tester to a Garbage Bag. This session will describe and compare the results of the testing classes that have been held there. It will also elaborate on the set up protocols from the differences in the performance of bathroom fan with the bathroom door open or closed to the exhaust flow from a dryer running with and without the range hood operating simultaneously

Suggested Presenter(s): Paul H. Raymer, Heyoka Solutions, LLC

HERS-26- Professionalism is Prosperous

In order to prosper in any industry, there is a clear and distinct need for professionalism. In some cases, there is a misconception on what all defines professionalism, not only with effectively performing as a professional but with maintaining a respectable image. In this proposal we will explore what constitutes a professional in the context of the energy rating industry, explaining why a professional Rater is important and provide tips on how to increase professionalism.

Suggested Presenter(s): Brett Dillon, The Dillon Group, Inc

HERS-27- Rater Support from ACCA

Installing heating and cooling (HVAC) systems requires skill, special tools, and is enhanced by experience. Raters evaluating an HVAC system installation also benefit from experience, especially if unpleasant feedback must be delivered.

ACCA is here to assist those Raters who a pre-check on the HVAC Contractor (Designer, Installer, or both), or to address a concern with an installation. ACCA has a new mobile app, free to accredited contractors that will review equipment sizing, equipment efficiency, and installation metrics related to the ENERGY STAR HVAC Contractor Checklists. Additionally, Raters are welcome to ask questions about an HVAC system installation, or about accepted industry practices, or whether and installation is in compliance to the ACCA 5 QI Standard.

HVAC system installation is becoming a larger part of the Energy Rating Index, and ACCA is here to help.

Suggested Presenter(s): Wes Davis, ACCA

HERS-28- Raters: Fresh Blood, Part 1

Where are the young people? The energy rating industry has an aging workforce, and it seems harder to find, recruit, and train younger people to join the industry. We propose to explore the challenges in finding and recruiting younger pupils into the energy rating industry, and potential solutions to overcome this lack of fresh blood.

Suggested Presenter(s): Thiel Butner, PANDO Alliance & Connor Dillon, The Dillon Group, Inc.

HERS-29- Rating the Performance of HVAC Systems in a HERS Rating

With current HERS ratings one of the largest influences of a home's energy performance, the HVAC system, is still rated based upon name plate information. It is not a secret that far too often the HVAC system is sized properly and is installed per manufacturer specifications. The State of California requires HVAC testing as part of its rating regulations. RESNET is in the process of amending this picture and addressing the actual performance of HVAC systems.

If done right, the new standard can provide an incentive for builders to require their HVAC contractors to properly size and commission their homes' HVAC systems.

Suggested Presenter(s): Dean Gamble, EPA ENERGY STAR; Wes Davis, ACCA & Iain Walker, Lawrence Berkeley National Laboratory

HERS-30- Should RESNET Changes the Basis of HERS to Cost Based?

Since 2000 the technical basis for the HERS calculation has been the Normalized Modified End Use Loads Method. Standard ANSI/RESNET/ICC 301-2014 and the Energy Rating Index compliance option of the 2015 International Energy Conservation Standard are both based on this calculation method. To date over 1.7 million homes have been HERS rated and issued a HERS Index score based on the method. Philip Fairey provided a primer on the Method at the 2016 RESNET Building Performance Conference.

There has been discussion as to whether RESNET should consider another metric as the basis for calculating the HERS Index. RESNET's Standard Development Committee (SDC) 300 Calculations Subcommittee researched available options, identified pros and cons for each alternative and submitted a report to the SDC 300 Chair. That effort did not result in a consensus recommendation for change.

One popular proposal is an energy cost-based method but a major concern with this approach is the influence of competing energy industries. To investigate this concern further the RESNET Standards Management Board (SMB) has directed the SDC 300 to establish a Cost Based HERS Index Task Group. Previously the Edison Electric Institute submitted a proposed standard amendment that focused on a cost-based Index calculation method. The proposed amendment was not deemed critical by the SMB and will be considered in the next scheduled update of the RESNET Standards. The task group will explore whether a consensus can be achieved on a cost-based index concept and, if so, draft a work-plan for its development. At this time, this is a preliminary feasibility study and not a standard development effort. The issue needs to be very carefully considered because a change could result in significant changes in HERS Index scores.

This session will provide an update on the deliberations of the task group and the elements being considered

Suggested Presenter(s): Philip Fairey, Florida Solar Energy Center; Steve Rosenstock, Edison Electric Institute & Neil Leslie, American Gas Research Institute

HERS-31- The HERS Score impact of insulation installation grades

It is crucial for raters and builders to understand how different products and practices impact HERS scores. One area of impact that is not well understood is how insulation installation quality, assessed by assigning grades 1-3, actually impacts HERS scores. This is important because expectations on delivered quality can impact specification decisions, and ultimately cost. Many experienced raters may have an intuitive sense of this subject but, to our knowledge, a detailed analysis of this question has not taken place. In late 2016, NAIMA contracted with Ekotrope, a RESNET approved rating software provider, to conduct this modeling. Ekotrope modeled two homes across eight climate zones (two locations in each), 4 wall R-value levels, two different ACH 50 levels and the three installation grade levels to generate a population of 768 homes across the US. This robust new data set shows the actual impact insulation installation quality has on HERS scores across the country, and the results may be surprising.

Suggested Presenter(s): Jordan Doria, NAIMA

HERS-32- The Million Dollar Question

Would your builder clients pay attention if you showed them an opportunity to generate \$100,000, \$200,000 or even \$1,000,000 + in additional Gross Profit Margin?

High Performance Homes are the way!!

We all know the story ... builders today typically fall into one of three categories that I often refer to as ...

1. Bob the Builder, also known as “we build barely code” and are best described as those who have no idea what a HERS rating is ...
2. Tom the Builder, also known as “what number do I need to hit” and these folks know what a HERS rating is, but typically think of it as a way to earn a couple hundred extra bucks per home in the form of some form of rebate or tax credit ...
3. And then finally, Bill the High Performance Builder, also known as the “how low can I get the HERS score” builders, these folks completely embrace building science & high performance homes.

Unfortunately, in most markets, the builders that fall into the first two categories greatly outnumber the third category ... and these are the folks that need to win over to if we are going to expand market acceptance of third party certified high performance homes.

So, how are we going to do this, and where the heck is the \$1,000,000+ going to come from ...check this out ... First of all ... How the Heck are we going to do this? ... the session that I propose to present at the 2017 RESNET conference will be based on the results of a pilot marketing program that we will be rolling to the new home builder community in the late summer and fall of 2016. The pilot will be based on a program that we have developed to help the builders and their marketing teams sell more high performance homes. The pilot will provide participating builders with a suite of proprietary tools which reinforce the value proposition that they communicate to their prospective home buyers. The tools contain the following components ... (1) FHA Energy Efficient Mortgage's and strategically designed Conventional Mortgages to expand buyer purchasing power and address potential appraisal shortfalls, (2) each enhanced with the TCO® (Total Cost of Ownership®) financial optimization program to assure buyers that buying a high performance is a great investment, (3) a 2yr Residential Energy Guarantee® (REG) program from Bonded Builder Warranty Group to provide financial security for buyers, and (4) a complementary Neuroio (Home Energy Monitoring Device) and smartphone/tablet app access so the buyers can see, share and monitor the performance of their new high performance home in real time, 24/7, from anywhere in the world.

And what about the \$1,000,000 ... this is where it gets really fun. In a recent review of a quarterly financial report for one of the largest publically owned builders in the USA. Their Gross Profit Margin on sales was right at 20% and their average home sold for approx. \$300,000. Speaking with one of the HERS raters that works with this builder ... he estimated that this builder could enhance the standard EnergyStar homes that they build today into a HERS 50-60 home for approx. \$10-\$12,500. If this builder made the choice to step up their game to these higher performing homes, using our program, it is logical to believe that the builder should be able to maintain the same Gross Profit Margin on this \$10-\$12,500 in energy performance upgrades as they do on the total home today. So if you do the math on the lower end of the range, and say that \$10,000 x 20% = \$2,000 in additional Gross Profit Margin ... and

then take the \$2,000 x 500 homes = \$1,000,000. My proposed session will also review the enhanced financial performance achieved by the builders who participate in the pilot program.

If all goes according to plans, our goal is to complete the pilot program just prior to the 2017 RESNET conference, and ideally, we will be in a position to announce a national rollout of the program to builders all across the country.

Suggested Presenter(s): Kerry M. Langley, PrimeLending

HERS-33- The Shape of Things to Come - The Future of HERS Ratings

There has been a veritable revolution in how a home's energy performance can be tested and inspected. This session will take a futuristic look into what emerging technologies are coming that hold promise for HERS ratings to be more consistent and less timely.

Suggested Presenter(s): John Tooley, Advanced Energy; Joe Medosch, Independent Trainer & Galo LeBron, Energy Inspectors

HERS-34- The State of the HERS Industry

Identifying improvement has no limitations in any area and should always be approached constructively. This applies to the HERS industry, in that no matter how effective, there is always room for improvement. In this proposal, we will examine and re-examine the many business models and utilize data in order to provide insight into the current state of affairs within the HERS Industry.

Suggested Presenter(s): Brett Dillon, The Dillon Group, Inc.

HERS-35- Tired of Getting Rejected?

Rejection is a difficult thing to experience from anyone in any form. However, more than a few people do not have proper knowledge on how to handle and use rejection constructively. This proposal will target small business owners, entrepreneurs, and more in order to effectively tackle the negative effects of rejection.

Suggested Presenter(s): Brett Dillon, The Dillon Group, Inc.

HERS-36- Understanding the energy efficiency of Advanced Frame and Raised Heel Truss Systems-

Builders often rely on raters to help answer questions about detailing and the energy savings of advanced framing and raised heel truss systems. This session will further the rater's understanding of raised heel truss and advanced framing details, the energy savings that can be attained by using them and the use of the correct software entries. Raised heel truss use is increasing in areas of the country and many advanced framing details are becoming standard practice in today's construction. This presentation will cover the "how to", where the systems are permitted by the International Residential Code (IRC) and how to properly enter assemblies into the software in order to obtain appropriate credit. Raters will also learn how to dispel common myths about the structural integrity of these systems and how to overcome customer perception issues.

Attendees will learn:

- Advanced framing details and options for maximizing cavity insulation
- Raised heel truss energy savings, and energy code allowances
- Energy savings that can be earned by implementing advanced framing details
- Where the IRC permits the use of raised heel trusses and how they can actually reduce costs of meeting some IRC structural requirements
- How the structural performance of raised heel trusses and advanced frame construction compare to standard construction
- Proper software entries to obtain the appropriate credit for the each system

Suggested Presenter(s): Matthew Brown, APA-The Engineered Wood Association

HERS-37- What builders really think of HERS raters: new market research

In 2016, NAIMA conducted two rounds of qualitative research with a diverse set of builders. This research revealed important details about why builders choose to work with raters, what they expect, what frustrates them and

examples of raters who have exceeded expectations and delivered unique value. These insights will be useful for raters as they seek to differentiate themselves and deliver value to their builder customers.

Suggested Presenter(s): Jordan Doria, NAIMA

HERS-38- What's Missing in HERS?

As we push to higher performance buildings and work within the confines of building energy codes and rating software, we uncover limitations with both. This session will discuss the following: 1) Skylights are typically treated as energy losers; however, they can prove to be more effective than a window. 2) Residential lighting is not regulated by the energy codes; however, this creates a lost opportunity to significantly reduce energy consumption in multifamily buildings. 3) Air leakage testing is not designed to compartmentalize apartments; however, the City of Fort Collins has successfully changed the approach to address this. 4) If designing a Passive House it is important to be able to rely on the software to guide you to the right solutions. With HERS, it's difficult to get below a rating of 40 with a super-insulated and state-of-the-art mechanical system which is inconsistent with the Passive House rating.

The presenters are experts in their fields with over 60 years of combined experience in energy modeling, research and design, and field testing.

Suggested Presenter(s): Susan Reilly, Group14 Engineering; Allison Bygott, Group14 Engineering; Kim Devoe, Fort Collins Utilities & Robby Schwarz, EnergyLogic, Inc.

HERS-39- Will smart measurement products make you smarter?

New phone/tablet connected measurement devices are popping up all over. Come learn about the different types of measurements and combinations of product currently on the market. We will cover the impact of: different radio technologies, remote connections, Geo tagging, common specifications, use of trouble shooting amongst many other topics. What are the latest smart products on the market. How they can facilitate & improve a rater's work.

Suggested Presenter(s): Bill Spohn, TruTech Tools, LTD

HERS-40- Your Guided Tour through Standards Updates and Changes.

The RESNET Standards have changed significantly over the last few years. With changes to field diagnostic testing procedures, certification requirements, and software modeling requirements to name a few, the world of HERS Ratings are not what they used to be. Have you been able to keep up? Let us guide you! Join two RESNET Accredited Trainers, Raters, and QADs as we provide a guided tour through the last new year's and point out the significant updates and changes. Enjoy some interesting background, history, battles, and commentary along the way. Destination: the present.

Suggested Presenter(s): Emelie Cuppernell & Ethan MacCormick, Performance Systems Development

Opportunities for HERS Raters with the International Energy Conservation Code

ICC-1- 2018 IECC - What you need to know, how to work with utility programs and building officials

The changes for the 2018 IECC are finalized. The code will be published in 2017. How does the 2018 stack up to the 2015 IECC. During 2016 the newest energy code was developed with many proposals to increase and decrease energy efficiency. Where does ERI fit into this newest code and where do Raters support the other compliance paths in the code. How does this new code affect utility and state efficiency programs.

Suggested Presenter(s): Jim Meyers, SWEEP & Sharon Bonesteel, SRP

ICC-2- 2018 IECC Code Change Process and the Results from the ICC hearings

By the time the 2017 RESNET conference commences the 2018 IECC will have been published. From original proposals through committee actions and public comments and final votes, those proposals travel a bumpy road to being approved or disapproved and then ultimately published in the newest version of the IECC. This session will discuss the process and the results of the 2018 code change process. How all of this impacts the Rating industry and why you might want to get involved in the process.

Suggested Presenter(s): Robby Schwarz, EnergyLogic & Shaunna Mazingo, Colorado Code Consultants

ICC-3- Build Your Business and Bring Builders More Value Using the HERS Index Path to Green Certification

The National Green Building Standard ICC/ASHRAE 700-2015 now includes a streamlined HERS Index Path toward NGBS Green certification. Builders looking to gain even more value from their IECC ERI HERS rating can leverage it to take advantage of a simple and affordable process to earn NGBS Green Certification and capitalize on all of the marketing, valuation, and quality control benefits that accompany a third-party green certification. Come learn about the HERS Index Target Path in the 2015 NGBS and how NGBS Green certification can boost the services and value you provide to your builder clients; single family and multifamily alike.

Suggested Presenter(s): Michelle Foster, Home Innovation Research Labs & Matthew Cooper, PEG

ICC-4- California HERS Ratings and RESNET HERS Ratings- Finding Common Ground (Opportunities)

HERS Ratings performed in California follow a methodology distinctly different from RESNET HERS Ratings, and use a different set of energy standards, generally referred to as Title 24. Despite these differences there is significant overlap between Title 24 and the IECC codes, and many similarities between RESNET Ratings and California HERS Ratings. This presentation will highlight some of the key differences between California Ratings and RESNET Ratings for Raters that would like to expand their business to serve both markets

Suggested Presenter(s): Charlie Bachand, CalCERTS Inc

ICC-5- ERI- More Than a HERS Rating

The relationship between the Energy Rating Index and the other pathway through the IECC is crucial to understand. What is prescriptive, what is mandatory, what is simulated performance, and what truly does the ERI pathway require? In order to partner with the code jurisdiction and the builder to demonstrate code compliance with the IECC, all of this needs to be understood. This session will reveal the mysteries behind the IECC so you can successfully add implementation of code compliance into your rating business.

Suggested Presenter(s): Robby Schwarz, EnergyLogic

ICC-6- Expand Your Business Opportunity: HERS Raters Becoming ICC Certified Energy Code Inspectors

Across the nation the HERS Index is fast becoming seen as a viable energy code option. The 2015 IECC has an Energy Rating Index option. HERS Raters have an even bigger role to play than producing a HERS Index. They can become third party energy code inspectors for jurisdictions that have adopted an Energy Rating Index compliance option.

RESNET has entered into a partnership with the International Code Council that allows HERS Raters to become energy code inspectors.

This session will explore the career opportunities of being an ICC certified energy code inspector and what are the requirements.

Suggested Presenter(s): Mark Johnson, International Code Council

ICC-7- Georgia: A case study for how the rating industry has affected code compliance

The Department of Energy is funding Residential Energy Code Field Studies in eight states to establish baseline energy efficiency practices in new single family construction and to determine if intensive targeted education and outreach efforts can have a measurable impact with energy savings. With the initial baseline data analysis is now

available, this session will present the Georgia results and share perspective on how the rating industry has influenced energy efficiency programs, initiatives and code compliance in the state.

Suggested Presenter(s): Amy Dzura, Southeast Energy Efficiency Alliance & Mike Barcik, Southface

ICC-8- Heat Pump Water Heaters in residential new construction - An untapped energy resource

As the result of tighter envelopes and improved HVAC and Lighting efficiency, water heating often represents now about 20% of the energy consumption in residential new construction. On the way to Net Zero, more attention needs to be paid on water heating.

Heat Pump Water Heaters like the GE GeoSpring help reduce the HERS index score by up to 7 pts across climate zones and home configurations. For reference: www.geospring.com/pro.

This session will explore the value for energy raters and builders to consider the cost/benefits of Heat Pump Water Heater compared to other energy upgrades.

The session will also show how Heat Pump Water Heaters can be used to store energy to maximize the output of rooftop solar PV and other renewable energy sources, and avoid peak electricity rates.

Suggested Presenter(s): Francois Lebrasseur, GE Appliances

ICC-9- HERS Raters and the Energy Code- Bridging the Gap

Why is it in certain parts of the country HERS Raters are not being used? Why are some people more willing to use the Prescriptive Path of compliance in the Energy Code rather than the Simulated Performance Approach or the ERI path? There's so much more flexibility in these performance approaches, why would they not get used in some places? This session will go over research done on this issue and possible solutions for bridging the gaps in the compliance paths.

Suggested Presenter(s): Shaunna Mozingo, Colorado Code Consulting

ICC-10- HERS Raters in Commercial Buildings?

HERS Raters are one of the keys to residential energy code compliance as well as energy efficiency in residential buildings. What keeps them from doing the same great work in commercial buildings? The commercial provisions of the IECC as well as ASHRAE 90.1 have an option for a performance approach to compliance but so few owners and designers choose this path because there aren't enough people out there who know how to get them through it. Having done a lot of research on this subject, we find that commercial buildings are far less compliant with the energy code than residential. Why not take your expertise into the buildings that really need it most? Make a big difference in the energy efficiency actually realized in our commercial buildings. Let's look at the road blocks and the solutions to getting the right people into these buildings.

Suggested Presenter(s): Shaunna Mozingo, Colorado Code Consulting

ICC-11- Home Energy Rating Index Studies - How Does The Energy Code Stack Up to Currently Rated Homes

With the energy code advancing efficiency and the ERI path included in the 2015 IECC there is a lot of unknowns as to how the IECC aligns with current construction practices across a spectrum of HERS scores. Learn how Raters can leverage this knowledge to support energy code adoption, energy code compliance work, support builders to meet code and exceed energy efficiency program requirements.

Suggested Presenter(s): Isaac Elnecave, Midwest Energy Efficiency Alliance (MEEA) & Jim Meyers, Southwest Energy Efficiency Project (SWEET)

ICC-12- How to Become a Consultant

Many that are intent on becoming consultants or currently sell themselves as consultant, may not have the experience or insight necessary, and may lack the traits to become an effective Consultant. This proposal will be to explore the necessary steps to becoming a proper consultant, based around experience and skill development.

Suggested Presenter(s): Brett Dillon, The Dillon Group, Inc.

ICC-13- More value, more impact, more profit - upgrading your value proposition to builders

How can we triple the size of the HERS Rating industry to grow our businesses together? By enhancing the value of our services. This session will discuss techniques for generating more value to builders, including consulting during the design phase, saving your builders time and money, offering sales tools to help your builders hit sales targets, and using large data to make business insights.

Suggested Presenter(s): Cy Kilbourn, Ekotrope

ICC-14- New Option to Compliance to Energy Codes: The Energy Rating Index Performance Option of the IECC

Performance compliance options to the International Energy Conservation Code (IECC) are becoming increasing compliance option for home builders. Performance compliance sets a target and allows the builder the flexibility to choose how to meet the targets. There are now two performance options in the IECC: Performance Option and the Energy Rating Index Option. Ten states have already adopted the Energy Rating Index Option. This session will feature a homebuilder, state energy office representative and a HERS rating company to describe how the Energy Rating Index was adopted in Illinois, Michigan, Texas and Utah and the benefits of compliance option to the energy code.

Suggested Presenter(s): Shawna Cuan, Utah Governor's Office of Energy Development; Clayton Traylor, Leading Builders of America & Matt Gingrich, Energy Diagnostics

ICC-15- Tackling Current and Future Codes with your Builders

Code change can be a traumatic experience for builders and trades and often lends itself to the lowest first cost option for each measure/assembly being upgraded. Dan and Neil have developed training that is being used in four states by Code trainers to formalize the Business Case methodology for code change. Building business cases is not solely an effort to push builders to more expensive solutions, but rather an approach that includes balance and transparency in decision making when considering how new codes will be met. Balancing costs and benefits for each option for code compliance, along with transparency in the decision making process can allow the Sales, Construction, Purchasing, and Finance departments of a construction company to get on the same page internally and with trade allies. Join this session for an interactive discussion and activities that can help Raters build their skill sets for communicating with their builder clients around code change.

Suggested Presenter(s): Dan Wildenhaus, CLEAResult & Neil Grigsby, Northwest Energy Efficiency Alliance (NEEA)

ICC-16- What Are the Big Changes with the 2018 International Energy Conservation Code

The International Code Council will soon formally adopt the 2018 International Energy Conservation Code (IECC). This session will highlight the major changes affecting the Energy Rating Index, performance path and the testing of air and duct leakage

Suggested Presenter(s): Eric Makela, Cadmus, Energy Services Division

ICC-17- What Code Officials and Raters Need to Know - About Each Other's Businesses...

The Stage is set for HERS Raters to provide another service - for Energy Code Compliance in their communities using the Energy Rating Index (ERI) in the 2015 IECC. However, Raters and code is don't always understand each other's businesses, certifications, qualifications and the like to enable that third Party Service. This session will teach what you need to learn about each other's' worlds to enable you to work together successfully providing superior code compliance for Homebuilders in the way Raters know best - Performance!

Suggested Presenter(s): Mike DeWein, Leidos

ICC-18- What Roll Should On Site Power Production Play in Building Energy Codes?

There is a great controversy on what role onsite power production play in building energy codes. There are at least three perspectives on this:

- Onsite power production should have no role in energy codes. Energy codes should be based on energy efficiency with emphasis on the envelope efficiency
- There should be a limit on the contribution of onsite power production so that there is no trade offs between envelope efficiency and power production
- Onsite power production reduces consumer energy costs and should not be limited. America cannot meet net zero energy without onsite power.

This session will explore these perspectives and see if a consensus on this issue is possible.

Suggested Presenter(s): Bill Fay, Energy Efficient Code Coalition; David Goldstein, Natural Resources Defense Council & Jim Petersen, Lennar

ICC-19- What's New with Codes and Standards

RESNET entered the standards world with the introduction of Standards 301 and 380 and their likely 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. This presentation will review new and upcoming developments in standards which intersect with RESNET and I-codes, including those from ASTM and ASHRAE.

Suggested Presenter(s): Theresa Weston, DuPont Building Innovations

Tapping the Appraisal and Real Estate Market

TAP-1- 3 Secrets to Tap the Real Estate Market with Energy Ratings

What does it take to tap the appraisal and real estate market with HERS? How do you make the HERS Index a household word? How do HERS Raters gain credibility with appraisers, lenders, sales agents and the public? What is the value of a HERS Index in a transaction? If these questions are ones you often ask yourself, this session is for you. Appraisers are value scientists, real estate agents are inventory scientists and HERS raters are energy scientists. Allow these value scientists to walk through the answers to these questions by showing the parallel of our industry with yours. We'll analyze your industry with facts and figures that show you how far appraisers have come in understanding energy and HERS. All three scientists must work in harmony to revolutionize the housing industry. You'll leave this session with tools and tips to allow you to tap the real estate industry in a more meaningful way. Come to this session to identify the ways to tap the real estate market with HERS, list ways to gain credibility in the real estate transaction and explain the value HERS brings to all stakeholders in a transaction.

Suggested Presenter(s): Jim Amorin, MAI, SRA, AI-GRS, Appraisal Institute & Sandra K. Adomatis, SRA, LEED Green Associate, Adomatis Appraisal Service

TAP-2- Building a neighborhood of data: A HERS-Rated Home Market Update

Green MLS Data has existed for years in some markets but the analysis of that data is scarce. In this panel discussion session, presenters will analyze national trends in green and sustainable homes in comparison to the local Chicago market. Learn how one market of green homes and HERS-rated homes are performing in the urban core and the surrounding suburban metro market. What features of a HERS-rated home are driving the value? Which energy efficiency upgrades are homeowners investing in and who is benefiting from the investment? Hear from all perspectives: What are builders including in their new construction homes? Does it cost more, less or the same as conventional construction? Attendees to this session will learn what homeowners are asking for, and how is it driving up real estate property value.

Suggested Presenter(s): Jason La Fleur, Eco Achievers & Michael Hobbs, PahRoo Appraisal & Consultancy

TAP-3- Communicating HERS to Appraisers and Real Estate Sales Agents (originally presented at 2016 RESNET Conference)

The key to educating the public on HERS is through investing in appraiser and real estate sales professionals. This session will reveal some tips to more efficiently communicate with the real estate sales agents and appraisers. Sales agents that can articulate the importance of a HERS report is an agent that will educate the buyers. The definition of market value includes a knowledgeable buyer and seller. If they have the knowledge of HERS, they have the power to make more informed decisions. More informed decisions usually results in higher prices for better products. Come to this session for power tips to increase the importance of your product.

Suggested Presenter(s): Jim Amorin, MAI, SRA, AI-GRS, Appraisal Institute & Sandra K. Adomatis, SRA, LEED Green Associate, Adomatis Appraisal Service

TAP-4- Going Beyond Incentives- How the Maryland ENERGY STAR New Homes Program Helped Drive Home Prices Through 3rd Party Verification

Despite the well documented consumer and environmental benefits of above code certification programs like the ENERGY STAR® Certified New Homes Program, the question remains of how these certifications generate economic value beyond utility incentives. This session will directly address this question with recent study findings quantifying the impact of ENERGY STAR Certification on home prices and explore how ENERGY STAR New Homes programs helped drive a market transformation in Maryland. The study findings presented in this session will help raters communicate the case for energy efficiency, builders make more informed decision, and utilities recognize the power multiplier effect of energy efficiency incentive programs.

Suggested Presenter(s): Michelle Yuan, ICF International,

TAP-5- Green Appraisal

How much is my “green” home worth? How can I determine the right selling price? How can I sell a “green” home to get my investment value? These questions and more including HERS ratings, Green MLS listings, Appraisal Institute’s “Green Addendum” will be answered. Things change and so do expectations, building codes and methods by which we value and appraise houses. Three areas of review in this lecture include; building science, mathematics of energy investment and why, and how to sell the concept of high performance homes to contractors, brokers and appraisers.

Suggested Presenter(s): William S Janhonen, WSJ Enterprises

TAP-6- How the HERS and Appraisal Industries Can Work Together to Improve Home Energy Performance

The Appraisal Institute and RESNET has entered into a partnership with the Appraisal Institute to provide residential real estate appraisers with the tools to recognize the value of high energy performance homes in the appraisal process. The partnership will give residential real estate appraisers an education campaign on what the HERS Index and the value of HERS rated homes. It will also provide appraisers tools to find HERS rated homes in their market.

This session will be presented by Fred Grubbe the Chief Executive of the Appraisal Institute. The Appraisal Institute represents over 21,000 real estate appraisers.

Suggested Presenter(s): Fred Grubbe, Appraisal Institute

TAP-7- Making the Case for a Preliminary HERS Rating

Are you typically only asked to provide final HERS Ratings? Aren't those ratings well after the appraisal is completed? How is an appraiser expected to acknowledge the efficiency without a Preliminary HERS Rating? Appraisers are valuation experts but they must have the proper documentation to understand the efficiency of new construction. Making the case for the Preliminary HERS Rating to assist the appraiser in a more accurate value is the key. Do you want power tips to make the case for a Preliminary HERS Rating? It may result in increased business for you AND more accurate valuations for the builder.

Suggested Presenter(s): Sandra K Adomatis, SRA, LEED Green Assoc, Adomatis Appraisal Service

TAP-8- Rating the market: How one rater increases HERS Adaption and Awareness through Real Estate Market Research

In order to grow the number of HERS-rated homes, homeowners want to see the statistical data proving its value in the real estate market. While the HERS Index and energy certifications are “yes or no” options in various local multiple listing services (MLS), homeowners and real estate brokers both have trouble understanding the meaning and value behind them. As third-party certifications become more of an industry standard in residential and commercial projects, raters are becoming increasingly important to this education component and therefore have less time on their hands. This panel discussion will walk through the steps of creating a local rater-driven market research project and emphasize the power of collaboration in breaking down barriers to providing the marketable green real estate data necessary for market transformation. How can we collaborate and share information without threatening the trust and relationships built with clients? Hear how a rater, appraiser, real estate broker and local builders partnered up to transform their local green real estate market and in turn, grow their HERS-Rater business.

Suggested Presenter(s): Michael Hobbs, PahRoo Appraisal & Consultancy & Jason LaFleur, Eco Achievers; Lauren Tavel, Eco Achievers

TAP-9- Realtors - The Client You've Never Called On

Realtors represent buyers in over 90% of new homes transactions. So how is it that they know nothing about building science, changes in codes, and high performance homes? Effective HERS Raters have great influence on builders and contractors. But who is educating the people responsible for guiding the Buyer through the transaction? Realtor education is key to converting prospective buyers. Builders and performance contractors rely heavily on their Broker network to generate leads, promote referrals, and increase sales to drive business. However, they fail to include the Realtor as part of their Sales Team. It's time to stop whining about Realtors not making it past the granite countertops and start inviting them into the Mechanical Room! Improve your sales, build your brand, promote efficiencies, and capture additional business by demonstrating high performance and "Why Buy New". Convert a buyer and you have a deal,convert a Realtor and they'll bring you 10 great deals!

Suggested Presenter(s): Todd Gamboa, Building Trust LLC

TAP-10- The HERS-Rated Real Estate Appraisal Bootcamp

If you've ever experienced the frustration around the valuation of energy efficient and green real estate, then this session is for you. Learn how to speak to real estate appraisers in the language of determining value of important energy efficient improvements and home energy ratings. This session will highlight how you as a HERS Rater play an integral role in identifying and quantifying energy-saving home performance and your role as an advocate for the project. Using real data from a HERS rated home, attendees will learn and apply the tools familiar to appraisers to rate your projects. An appraisal case study and its supporting Green and Energy Efficient Addendum from RemRate will be analyzed to develop attendees' knowledge and resources necessary to support their builder clients, homeowners and potential homebuyers. With this knowledge, HERS raters can address appraisal challenges and potentially increase borrowing power based on energy efficiency's value. Attendees will depart with a tangible credible report they can complete and give to any lender or real estate appraiser to enhance the lending process. The information provided by this session is important for anyone hoping to see increases in the market penetration of HERS-rated and energy efficient homes.

Suggested Presenter(s): Jason La Fleur, Eco Achievers & Michael Hobbs, PahRoo Appraisal & Consultancy

TAP-11- Why the Smart Money Lenders & Investors Who Finance New & Existing Residential Projects Are Seeking EnergySmart Teams & Contractors

It is no secret that private sector lenders and investors are risk averse when making loans and mortgages. However, to survive they also must constantly seek opportunities to invest the trillions of dollars in pent-up capital that they control into what they consider to be reasonably safe investments. Loans for new construction depend on the income and credit-worthiness of the buyers. Utility savings that can be expected from properly installed energy efficiency features are seldom considered. Loans for energy upgrades on existing homes depend on homeowner income and credit-worthiness as well as the abilities of those performing the upgrades to get the job

done in a professional and timely manner. However, lenders are aware of the chaotic and undisciplined nature of the energy retrofit industries are justifiably reluctant to offer any project funding.

This is highly unfortunate because those of us in the energy efficiency, green/sustainable, renewable energy industries have documented proof that well executed and properly installed energy efficiency and renewable energy systems can more than pay for themselves. It is not unusual for a deep energy retrofit to provide a quick payback and ongoing abundant Return-On-Investment (ROI). Energy Efficient Mortgages (EEMs) and Energy Improvement Mortgages (EIMs) use calculated utility savings to boost the income side of the loan decision, increase the value of the property, and support the safety of the investment. In short; the home owner or buyer qualifies for the mortgage; the house qualifies for the energy mortgage.

What appears to be lacking is a controlled, systematic approach to making sure that the trade contractors, energy professionals, HVAC companies and others involved in energy efficiency and renewable energy industries are trained and certified, that the project schedule is professionally overseen, and that the results of the energy improvements are verified and documented. This session will cover energy mortgages, EnergySmart contractors and EnergySmart teams. The mechanics of energy mortgages will be explained as well as how EnergySmart builders, contractors and teams lessen risk for mortgage companies. Also discussed is how EnergySmart teams bring the design/build discipline of new construction to the energy improvement marketplace for existing homes. As a HERS Rater; you are already qualified to verify projects for energy mortgages. Come to this session to learn how to speak to builders, contractors and lenders about this incredible financing tool.

Suggested Presenter(s): Sharla Riead, Accurate Rater Network / EnergySmart Institute

Water Efficiency Rating Index

WER-1- Introducing RESNET's New Water Efficiency Rating Index

For the past two years a group of water and energy efficiency professionals have been developing the RESNET Water Efficiency Rating (WER) Index.

The RESNET WER Index will work with water efficiency of a home in the manner that the HERS Index works for energy efficiency.

The RESNET WER Index is based on the following policies:

- The WER Index Reference Home tracks with the reference home of the HERS Index (the water use applications that represent standard new home construction in 2006)
- Modeling produces a WER Index that will be a quantitative assessment of the relative efficiency of two buildings (reference and rated home) that produces a numeric scale. The reference home will be assigned a WER Index Score of 100. The relative departure of the rated home from the Reference Home will be either added or subtracted from the 100 score. The more efficient the rated home, the lower its score.
- The WER Index score will be based on calculations of potable water use.

The near term goal is to create a water efficiency rating index that the HERS infrastructure can readily and timely adopt – Vision is that the 165,000 new homes that are rated and issued a HERS Index annually can also be cost effectively assigned a WER Index score at affordable cost to builders.

The WER Index will be submitted to the ANSI process to develop an American Consensus Standard and be co-published by RESNET and the International Code Council.

Suggested Presenter(s): Jacob Atalla, KB Home; Ed Osann, Natural Resources Defense Council & Jonah Schein, EPA WaterSense

WER-2- The "Whole Water" Concept

Water efficiency/conservation incentive and rebate programs typically focus on pieces and parts of a property; a toilet here, a faucet there... and maybe a showerhead, too. While those have positive incremental effects, the focus should be on the entire property and incentivizing wholesale improvements. For example, are you maximizing

“free” water to its full potential? Are you minimizing stormwater runoff’s impact on downstream properties? Even when you consider all that, it’s only half the equation! If we use too little water, we could create unintended problems. How do we know there’s enough water in the system to deliver effluent to the wastewater treatment plants? Attend this session to learn more about this equation, and how smart design can solve it!

Suggested Presenter(s): Mike Collignon, Green Builder Coalition

WER-3- Water Efficiency Ratings in Multifamily Buildings

As the building industry starts to look beyond water ratings for single-family residences, multifamily is the next logical step. Thanks to the multiplier effect, ROI on water efficiency in such structures will greatly benefit building owners. This session will highlight the differences between single-family ratings and multifamily ratings as well as whole building rating verses individual ratings. The role of sampling will be discussed, including references to the synergies between multifamily energy and water ratings.

Suggested Presenter(s): Laureen Blissard, Green Builder Coalition & Bill Roth, Modern Design + Construction Inc