

**EEBA-RESNET Collaboration for  
Industry Training on the IECC 2015  
ERI and RESNET HERS Index**



**Panelists:**  
**Daran Wastchak, RESNET**  
**Laura Dwyer, DuPont**  
**Susan Buchan, EEBA**  
**Brad Turner, Southface**



## What we'll discuss

1. Why we collaborated on training
2. Who is involved
3. The changes in the IECC that make this training essential for builders and raters
4. How products and manufacturers will be affected by the ERI/HERS option
5. Why energy modeling and associated software are a "new normal" skill for builders
6. How, where and when to get training

## EEBA/RESNET Collaboration

- The basis for collaboration, 1+1 = 3
- Collaboration on Conferences
- EEBA course for builders, designers, energy raters and allied trade professional to better understand and implement the ERI in the IECC 2015
- RESNET support: financial, recruitment for RFP, technical assistance, and assistance with outreach and promotion of course

## Course Structure

- The initial course launch will be in early 2016.
- Purpose of the RFQ was to identify an instructor or group of instructors to develop and deliver a new training session on the 2015 International Energy Conservation Code (IECC), with specific emphasis on the newly introduced ERI (Energy Rating Index) within the performance path option.
- The Lead Developer chosen is Southface Institute.
- Chosen allied trainers are Energy Logic, Performance Systems Development, and FSEC.

## Course Purpose

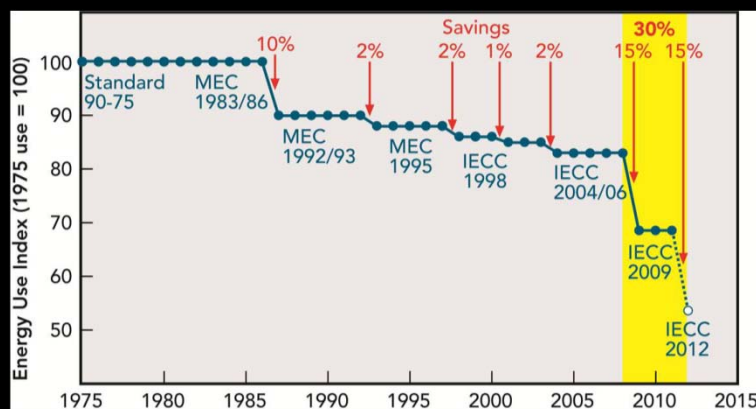
- Enhance the attendee's understanding of the underlying building science concepts that form the basis of the current energy code;
- Customized sessions, addressing the specific considerations resulting from the adoption of the IECC, including practical changes from previous local energy codes, prevailing market conditions, common regional construction practices and materials, and climate zone.
- Provide training in the use of the ERI (Energy Rating Index) as a Performance Path Option in the IECC, and the structure and value of the HERS Score as a tool for measuring the energy performance of a building;
- Using energy performance and assessment as a marketing tool to customers

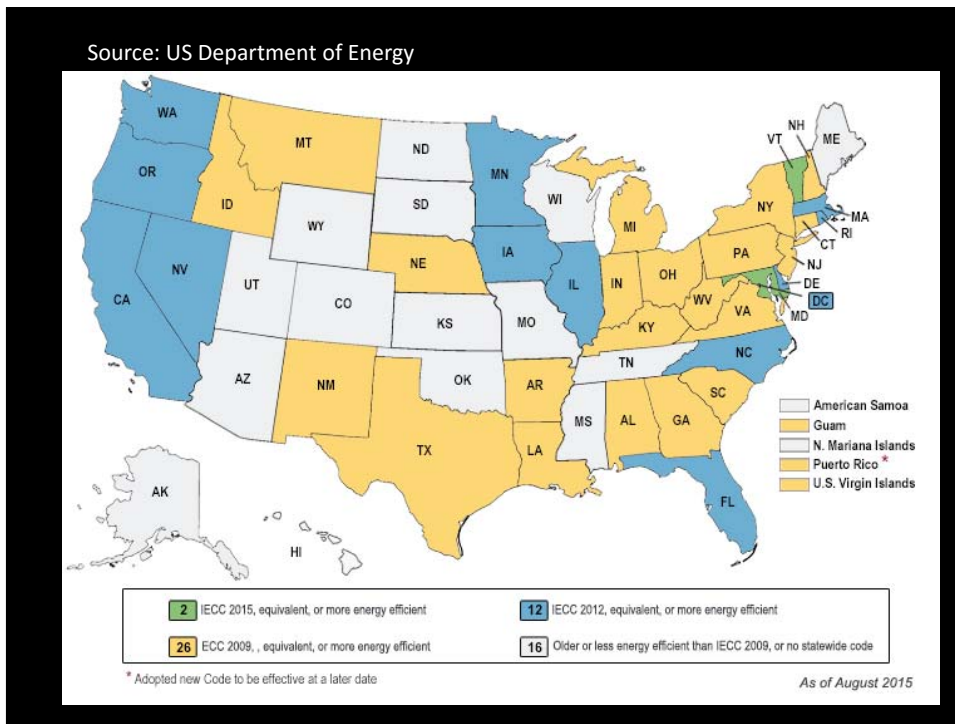
## Course Outline

- Introduction to Building Science
  - House as a System
  - Comfort/Health
  - Thermodynamics
  - Thermal & Air Barriers
  - Mechanical Systems
  - Relationship between building science, IECC, and ERI
- Energy Codes
  - History
  - Overview of 2015 IECC
    - Mandatory Requirements
    - Compliance Options
    - ERI vs. Prescriptive/Trade-off approaches
    - How ERI is determined
- HERS Rating and Rating Demonstration
  - Overview, Qualifications, Marketing

## The IECC Performance Path

- 2004: Performance Path introduced in Code
- 2006, 2009, 2012, 2015 IECC included continued use and refinement of Performance Path





- PNNL determined HERS Value range that would correspond to compliance with the 2012 IECC
- Compares Proposed design to Standard Reference Home
- Characteristics considered:
  - ✓ HVAC equipment type and efficiency
  - ✓ conditioned floor area (CFA)
  - ✓ window-floor ratio (WFR)
  - ✓ appliance efficiency
  - ✓ foundation type
  - ✓ number of stories
  - ✓ glazing distribution / orientation

PNNL-22560

Prepared for the U.S. Department of Energy  
 under Contract DE-AC05-78NP01400

Identification of RESNET HERS  
 Index Values Corresponding to  
 Minimal Compliance with the IECC  
 Performance Path

Z Todd Taylor  
 Vrushali Mendon

May 2014

Pacific Northwest  
 NATIONAL LABORATORY  
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## Benefits of the Performance Path

- Design Flexibility - trade off approach
- Designer/Builder can use the most cost effective means of meeting energy code saving requirements: Leading Builders of America estimated that a home that costs \$3,000 extra to build for energy efficiency obtained through prescriptive methods only costs \$1,300 for the same performance obtained by our proposed approach.
- Technology and Material neutral – allowing incorporation of new techniques into actual projects more quickly.
- ERI give Code Officials an understandable tool to determine compliance with the IECC

## Manufacturer's Perspective

### Opportunities:

- Promoting durable, comfortable and energy efficient construction
- Helping our customers understand how our products can impact HERS scores

### Challenges:

- Common language used by manufacturers
- Educating our networks
- Accurately communicating impact to HERS scores
- W.I.I.F.M. (What's In It For Me!)

## 2015 IECC ENERGY RATING INDEX REPORT

**Property**  
ERI Compliance Test  
ERI Compliance Drive  
Maryville, TN 37804

**Organization**  
Southface  
Jenna Grygier

**HERS**  
Confirmed  
04/04/2015  
Rater ID: 0366747

Annual Energy Consumption			
	HERS Reference Home (MBTU)	Rated Home nMUEL (MBTU)	Rated Home Cost (\$/yr)
Heating	20.1	12.1	229
Cooling	20.4	7.8	86
Water Heating	11.5	2.9	100
Lights & Appliances	22.5	13.3	421
Photovoltaics	0	-0.0	-0
<b>Total</b>	<b>74.4</b>	<b>36.1</b>	<b>951</b>

Annual Estimates			
Electric(kWh):	7768	CO2 Emissions(Tons):	4
		Energy Savings (\$)**:	1393

\*Based on standard operating conditions  
\*\*Based on U.S. DOE designation of a HERS Index of 130 as the 'Typical Existing Home'

**TARGET INDEX: 54**      **HERS INDEX: 49**      **PASS**

This home MEETS the RESNET Home Energy Rating Index requirements of Sections 406.3 and 406.4 of the 2015 International Energy Conservation Code based on a climate zone of 4A.

Name   Jenna Grygier	Signature
Organization   Southface	Date   2 October 2015

Mandatory Requirements			
HERS Target	PASS	Duct Insulation (Ducts outside R-6, inside is R-0)	PASS
2009 IECC UA	PASS	Maximum Fenestration U-factor (2012)	PASS
Duct Sealing (2012)	PASS	Maximum Fenestration SHGC (2012)	PASS
Mechanical Ventilation	PASS	Air Leakage (5 ACH50 for CZ1-2, 3 ACH50 for CZ3-8)	PASS
Mechanical Ventilation Efficacy	PASS		

Software

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Confirmed  
04/04/2015  
Rater ID: 0366747

Annual Energy Consumption			
	HERS Reference Home (MBTU)	Rated Home nMUEL (MBTU)	Rated Home Cost (\$/yr)
Heating	20.1	12.4	235
Cooling	20.4	7.8	86
Water Heating	11.5	2.9	100
Lights & Appliances	22.5	13.3	421
Photovoltaics	0	-0.0	-0
<b>Total</b>	<b>74.4</b>	<b>36.5</b>	<b>958</b>

Annual Estimates			
Electric(kWh):	7827	CO2 Emissions(Tons):	4
		Energy Savings (\$)**:	1387

\*Based on standard operating conditions  
\*\*Based on U.S. DOE designation of a HERS Index of 130 as the 'Typical Existing Home'

**TARGET INDEX: 54**      **HERS INDEX: 49**      **FAIL**

This home DOES NOT meet the RESNET Home Energy Rating Index requirements of Sections 406.3 and 406.4 of the 2015 International Energy Conservation Code based on a climate zone of 4A.

Name   Jenna Grygier	Signature
Organization   Southface	Date   2 October 2015

Mandatory Requirements			
HERS Target	PASS	Duct Insulation (Ducts outside R-6, inside is R-0)	PASS
2009 IECC UA	PASS	Maximum Fenestration U-factor (2012)	PASS
Duct Sealing (2012)	PASS	Maximum Fenestration SHGC (2012)	PASS
Mechanical Ventilation	PASS	Air Leakage (5 ACH50 for CZ1-2, 3 ACH50 for CZ3-8)	<b>FAIL</b>
Mechanical Ventilation Efficacy	PASS		

Software

## Benefits to Builders and Homeowners

- Provides flexibility to builder in meeting code
  - Trade-offs for Mechanicals, Renewables, etc.
  - Building Envelope to 2009 IECC
  - Prescriptive Path = \$3,000 vs. ERI = \$1,300 (HIRL Research)
- RESNET Quality Control = Quality Home
  - Fewer callbacks (and associated costs)
  - Home costs less to operate
  - Know what you're getting vs. other homes

## HERS/ERI Training

- EEBA will launch a full day training class in January 2016
- Initial locations will reflect states in the process of adopting the 2015 ICC (or that have recently adopted); States contemplating moving from 2009 to the 2015 IECC; other locations such as national conference venues.

