U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

DOE Zero Energy Ready Home

2019 Leading Rater Roundtable Summary

October 2019

ZERO ENERGY READY HOME
U.S. DEPARTMENT OF ENERGY

Building AMERICA
U.S. Department of Energy

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2019 Leading Rater Roundtable Summary

September, 21st 2019
Empire, Colorado

Prepared for

DOE Zero Energy Ready Home Program

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Intro

A dramatic movement to zero energy ready homes continues to gain momentum. This includes DOE Zero Energy Ready Home (ZERH) doubling certifications for three straight years, total zero energy and zero energy ready homes in the U.S. and Canada nearly quadrupling from 6,000+ to 22,000+ from 2015 to 2018 and an increasing number of city and state commitments to net zero energy policies, programs, and codes. Continued progress will rely on an increasing number of Home Energy Rating System (HERS) raters effectively bringing the business case, technical solutions, and verification services for Zero Energy Ready Home to our nation's builders. At this meeting, a select group of HERS raters gathered to share lessons-learned, identify key challenges moving the housing industry to high-performance homes, and collaborate on opportunities moving forward.

Agenda

Meeting Plan		
Invited Raters: EnergyLogic RaterFest Attendees	**Other Participants:** DOE/ZERH Program Staff	
Desired Outcomes: • Understand perceived value of ZERH to HERS raters • List of key lessons-learned by HERS raters promoting and verifying ZERH • List of key challenges and solutions for HERS raters verifying ZERH • List of what DOE can do to better support HERS raters promoting and verifying ZERH		
Agenda:		
Time	**What**	**Who/How**
1:00pm-1:15pm	Welcome & Introduction to ZERH • Overview of ZERH	ZERH Staff
1:15pm-1:30pm	***Exercise 1 (Whole Group):*** What are the benefits of the ZERH program?	Participants List
1:30pm-1:45pm	***Exercise 2 (Small Groups):*** With the given list of benefits, pick your top 2-3 and develop a sales pitch to builders describing the value of Zero Energy Ready Homes.	Participants
1:45pm-2:00pm	***Exercise 2****:* Groups share value statements and discuss.	Participants List/Sorting
2:00pm-2:15pm	ZERH Updates • ZERH video, Marketing Resources	ZERH Staff
2:15pm-2:30pm	***Exercise 3 (Small Groups- Sorted by program experience):*** Discuss the challenges and develop a list of "challenging, unenforceable, or unachievable items."	Participants
2:30pm-2:45pm	***Exercise 3:*** *List Challenge items*	List/Sorting
2:45pm-3:00pm	***Break***	
3:00pm-3:15pm	***Exercise 3 (Whole Group):*** Discuss **solutions** to the challenges	Participants
3:15pm-3:30pm	***Exercise 4 (Small Groups-Random Assignment):*** Discuss and come up with one MAJOR opportunity for ZERH in the next year.	Participants
3:30pm-3:45pm	***Exercise 4:*** Groups share opportunities and discuss.	Cards/Sorting/Ranking
3:45pm-4:15pm	***Exercise 5 (Whole Group):*** What can DOE do to better serve Raters?	Participants List/Sorting
4:15-4:30 pm	ZERH Team Wrap-Up and Summary	ZERH Staff

EXERCISE 1 & 2: ZERH Value Message

The first exercise of the roundtable meeting had the raters in the room offer their perception of; and ideas for; communicating the value of a Zero Energy Ready Home (ZERH). A large group of approximately 75 participating raters were asked what they believed to be the benefits of the ZERH program. Several common themes came out of these group discussions including:

- ZERH is a chance for builders to differentiate themselves from the competition
- The ZERH program is less costly, simpler, and more streamlined by leveraging an identical approach to specifications, performance reference home, and verification as ENERGY STAR.
- ZERH offers a blueprint for how a high-performance, healthy home should be built.
- ZERH serves as a builder risk management tool for trouble areas such as moisture, comfort and IAQ
- The total cost of ownership is a strong selling point for ZERH

We then asked the participants to split into small groups to develop a value message based on these benefits they felt would best resonate with builders considering the ZERH program. Through discussion, each group came up with several value messages for each of the benefits listed in the table below.

Zero Energy Ready Home Value Message	
Benefit	**Value Message**
Differentiation	• "The Zero Energy Ready Home program will give you an advantage over less focused programs." • "Mitigate your risks, increase your profits, increase homeowner satisfaction, and future-proof your home with the Zero Energy Ready Home Program!" • "You can sell a house at a premium, that has better long term durability, and lower operating costs." • "With the marketing resources and Zero Energy Ready Home program branding you will have an advantage over your competition." • "Zero Energy Ready Homes should be the standard in home building, not an option." • "For builders working with utility partners, you will be able to provide them with more predictable loads."
Simplicity	• "There is less paperwork and cost are lower compared to other, less focused, green programs. And it's a national program." • "One small step from ENERGYSTAR, one giant leap for….."
Risk Management	• "Mitigate your risks, increase your profits, increase homeowner satisfaction, and future-proof your home with the Zero Energy Ready Home Program!" • "Decrease your warranty calls!" • "The extra steps taken to ensure comfort and durability will mean less call backs and happier homeowners."
Quality Built	• "It's a way for builders to take out the guesswork and know they're building the house the right way." • "You are building the Mercedes of homes, not the Toyota. And you will have proof, from 3rd party verification that you are building a superior home."
Total Cost of Ownership/ Happy Homeowner	• "Total cost of ownership is important to how builders market towards homeowners. The Zero Energy Ready Home program provides value in total cost of ownership." • "Homeowners will be able to spend a lifetime in the house that is more than move-in ready. It's a great return on investment."

EXERCISE 3: Challenges Certifying ZERH

After summarizing the outcomes of the first exercise, the next part of the meeting had the participants break into small groups again, to discuss the challenges faced when certifying Zero Energy Ready Homes. This time participants were broken into groups based on the amount of experience working with the ZERH program; from little to no experience at all, to some experience but not as part of their everyday business, and finally to those who were most experienced and are well informed on the ZERH program requirements. This break-out structure allowed us to gain an understanding of how perceived challenges varied by degree of familiarity with the program.

Once again, we found some common themes arise amongst the various groups. Not surprisingly, the first group of less experienced raters focused heavily on the marketing, sales, and education and with the more experienced raters focused on more technical issues. Overall, the challenges discussed by all groups included:

- A lack of program knowledge and familiarity with specifications among trades. An increase in education for trades will help to improve work quality and consistency. Communicating specs and value of ZERH to all trades, sales staff, etc. is critical.
- It is challenging to get builders to move beyond code, much less move beyond ENERGY STAR.
- There is a fear that builders can undermine their own homes (if they aren't 100%) by offering ZERH as an option.
- Climate specific challenges include getting compliant windows at high altitude and ventilation and moisture issues in hot/humid climates.
- The Indoor airPLUS program creates some specific challenges, especially when not all parties involved are informed on the vision and requirements for the project.

The challenges discussed by the groups with varying degrees of experience are outlined in the table below.

Challenges in Certifying Zero Energy Ready Homes	
ZERH Experience Groups	**Challenges**
Raters with Little to No ZERH Experience	• Educating trades • Limited program recognition with non-ENERGY STAR builders • Perception that 'built to code' is good enough • Builder Risk undermining their base product if they don't build all homes the same way. • Just getting builders to move to ENERGY STAR can be a challenge
Raters with Moderate ZERH Experience	• High performance windows at high elevations • How to handle (heated) conditioned garages? • Not enough understanding what needs to be done for a ZERH home (i.e. builder still puts the ducts in the attic) • IAP specs – making sure a sub • Moving to the next step with solar • People don't always understand value for the extra investment
Raters with Extensive ZERH Experience	• High window to wall ratios don't allow builders to hit HERS Target • Builder wants to do it, but homeowner doesn't necessarily • Ducts in conditioned space…are there other equivalents that could be possible? This can be a show stopper in some of the open floor plan designs. • ZERH needs to market directly to the trades. • Getting specs from builder down through the construction manager. • Garage separation testing – seem to be some barriers there. They don't know why testing isn't needed if a home uses balanced ventilation. • Paperwork – the process gets held up if a checklist isn't ready or available. • Who is assigned the Builder ID, if it's an owner-built home?

After discussing these challenges as a large group, we then asked everyone to discuss some solutions to these issues. The table below highlights the various challenges and the discussion around finding solutions to them.

Solutions to Challenges Certifying ZERH	
Challenges	**Potential Solutions**
Training the Trades	• Create a ZERH certification for trades • Builder sponsored trade seminars • Take trade training out to the field • Increase in code stringency will increase trade awareness/knowledge • Develop/train more generally rounded trades rather than so much specialization. • Photo-based "how to" for the trades
Indoor airPLUS	• Create an Indoor airPLUS and healthy home benefit binder for each community • Testing the exhaust system by mocking up drywall
Architectural Integration	• Explore any type of trade-off for the projects where architectural design makes it difficult • Reach out to architects and designers with more training on importance of duct layout
Program Operations	• Streamline checklists • Digitize checklists and sign off from the rater. • Look for ways to streamline the PV-Ready checklist in particular. Create an online signature for the builder that the rater can access.
Branding and Marketing	• Focus more on communicating builder value (risk management, fewer call backs, etc.) • Any resources that ENERGY STAR has, ZERH should also have as well • Develop a certification for Raters
Selling Builders on ZERH	• Builder rebate program to get them to try it • Communicate the value on various attributes that homeowners care about to builders and how ZERH addresses these concerns. Ex: IAQ, Comfort
Windows • **Windows in high altitude** • **Window to wall ratio**	• Look for opportunities to minimize the cost premium for windows with high-R value and that work at high altitude. • Find strategies for homes with lots of windows to meet the HERS target number.
Ventilation in hot/humid climates	• Separate whole-home dehumidifier. The challenge is getting the HVAC contractor to do this without a significant increase in price.

EXERCISE 4: Opportunities for ZERH in the Next Year

After talking through some of the challenges and potential solutions , we then asked the group to identify any opportunities they might see for the Zero Energy Ready Home program in the next year. Several participants discussed the increasing affordability of solar and that the program should communicate the value of having solar installed or having the house constructed so that solar could be added on later should the homeowners want. Adding components to the ZERH specifications such as aging in place measures, disaster resistance, and adding a component for EV ready homes were also identified as opportunities.

Opportunities for ZERH in the Next Year	
Categories	**Opportunities**
Solar	• Priming homes for solar as it continues to become more economically efficient • Communicating the message that ZERH homes are ready for solar
Program Add Ons	• Adding a component for EV ready • Opportunities for aging-in-place. Lower risk. More accessible. • Disaster resistance for hazardous weather conditions

Local Government/Utility Involvement	• Piggyback off ENERGY STAR utility rebates
	• Tiered rebates
	• Federal tax credits for solar
	• The local level has a lot of activity around sustainability/energy. Engage cities and local governments to be included in:
	  o Sustainability programs
	  o Climate Action Plans
	  o Qualified Allocation Plans

EXERCISE 5: What Can DOE do to Support Raters?

Every roundtable meeting is concluded by asking participants to identify key action items for DOE that help inform how our efforts over the next year can be most effective supporting our partners. Many of the action items identified by partners are a result prior discussions about challenges, solutions and opportunities. At this meeting, raters indicated that one useful tool would be a one-page outline or summary highlighting all the incremental steps from ENERGYSTAR to get a builder to ZERH certification. This would help with marketing the program to builders. Related to marketing, highlighting more Total Cost of Ownership was a popular idea among participants. As usual, training and education for all parties (realtors, builders, trades, local governments, developers, etc.) was mentioned by many participants. Additionally, several ideas for partnering, with both sub-contractors and manufacturer partners would bring more awareness to the program, as well as highlight the products being used in these homes.

What Can DOE do to Support Raters?	
Categories	**DOE Action Items**

Marketing	• We often say it's just a little more than ENERGY STAR. Develop a 1 pager to outline steps above/beyond building to code and ENERGY STAR
	• Partnering with subcontractors to increase brand awareness with DOE logo (e.g., EnergyLogic has stickers on all of their cars that indicates they are an ENERGYSTAR partner)
	• Logos on websites (DOE and partners)
	• Market Total Cost of Ownership.
	  o TCO calculator
	  o TCO on the Tour of Zero
	  o Show an actual home examples and their actual numbers to highlight TCO benefits

Training and Education	• Work with real estate agents to educate them more on the benefits and values of ZERH • Builder Orientation. Make all parties take orientation webinar/training including purchasing and construction staff. • Builder incentive for having more people (sales, construction staff) trained on ZERH • Highlight the amount of re-work and cost added when subs are not trained properly
Opportunities	• Work with states that are having certified builder programs where training is required • Get ZERH and high-performance building into required training • Engage developers to go 100% ZERH communities • Partner with manufacturers who could upload all of their specifications on qualifying ZERH products
Operations	• Combine and simplify rater checklists

Appendix A: 2018 Rater Roundtable Report Card

The following report card summarizes the recommendations from rater participants in the 2018 Leading Rater Roundtable Meeting and the progress DOE has made in those subject categories.

What Can DOE do to Better Serve Raters?			
Categories	**Opportunities**	**DOE Progress**	**Grade**

Technical	• Require balanced mechanical ventilation
	• Help to develop technical guidance on ducted mini-splits
	  o Ducts in conditioned space
	  o Electrification
		• Continue to encourage balance ventilation
		• Highlight mini-split units and ducts in conditioning space in technical training
			B+

Local Incentives & Interactions	• Pushing codes & incentive programs to include ZERH
	• Promoting the benefits of program(s) compliance to municipalities (local level)
	• Create a toolkit for engaging localities, utilities, state QAPs
	• More utilities to provide incentives for ZERH certification
	• ZERH as stretch code
	• Local outreach/toolkit
	  o Local incentives
	  o Toolkit for regional, mayors, policy makers, non-profits
		• ZERH is included in state QAPs in DE, NJ, GA, DC, and PA
		• Incentives for building to ZERH in NJ, CT, and CA
		• Developed outreach materials for local jurisdictions
		• ZERH integration into Enterprise Green Communities (2020)
		• Engaged in talks with CO Housing Authority and CHAFA about Colorado QAP and local jurisdictions making ZERH Code (Summit County)
		• RI stretch code
		• ZERH on schedule to be basis for OR code in 2023
			B+

Simplification	• Integrated checklists/requirements documentation • Influence the Rater PRO team to add a full ZERH option in the software. Unified UX (user experience) to walk through with PMs and site supers	• One page spec summary of technical requirements • Simplified building blocks in ZERH training	B
Multi-Family	• Include dorm style housing • Push multi-family	• Integrating new MultiFamily spec for ZERH with ENERGYSTAR V1 MultiFamily • Increase in MultiFamily certifications • State QAP integration	B+
Education/ Tools	• Interactive trainings • More software companies to include reports showing ZE scenarios with projected HERS index and cost savings • Excel based tool which integrates checklists, footnotes and field verifications • Advanced guidance for raters to account for PV/ZERH	• Building America Solutions Center updated with latest ZERH spec • New webinars on technical topics as well as updated Orientation webinar and Sales webinar being scheduled • Market based changes for Rev. 07 of ZERH spec	B-

Consumer Outreach & Marketing	• Easy access to regional case studies (filter/search by location and size) • Marketing directed towards architects • Brand recognition continues to be a challenge • Some builders want Zero but why do they need ZERH?	• Developed individual comparison bar fact sheets based on attributes in point of sale fact sheet • Developed testimonials database including all testimonials from HIA applications since 2013. • Developed new ZERH introductory video • New section of website dedicated to consumers • Continue to work with what is now "Team Zero" on a larger effort to raise awareness of ZERH	B+