

H.E.R.S. Ratings & Energy Code Compliance in New Homes

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RESNET[®] **HERS**[®] Rater



What is a H.E.R.S. Rating?

- ▶ Home Energy Rating System – (HERS)
- ▶ A way to “score” how energy-efficient new and existing residential buildings are, or can be
- ▶ Uses energy-modeling software & sophisticated air-leakage and duct-leakage testing equipment, along with visual inspections
- ▶ Provides an extra quality-assurance aspect for new buildings with respect to energy-efficiency

Created by RESNET

Residential Energy Services Network

Voluntary, market driven, heating fuel-neutral

Mission: Increase residential energy efficiency

Goals:

- New construction energy-code enforcement (2009-2015 IECC)
- Expand ENERGY STAR Homes program
- Increase use of energy efficient mortgages
- More affordable housing
- Increase consumer and industry awareness



HERS Rating Software - Rem/Rate

Rates Home's Energy Efficiency on HERS Scale
– Lower Scores Are Better

Average Score in Kentucky is in 70's

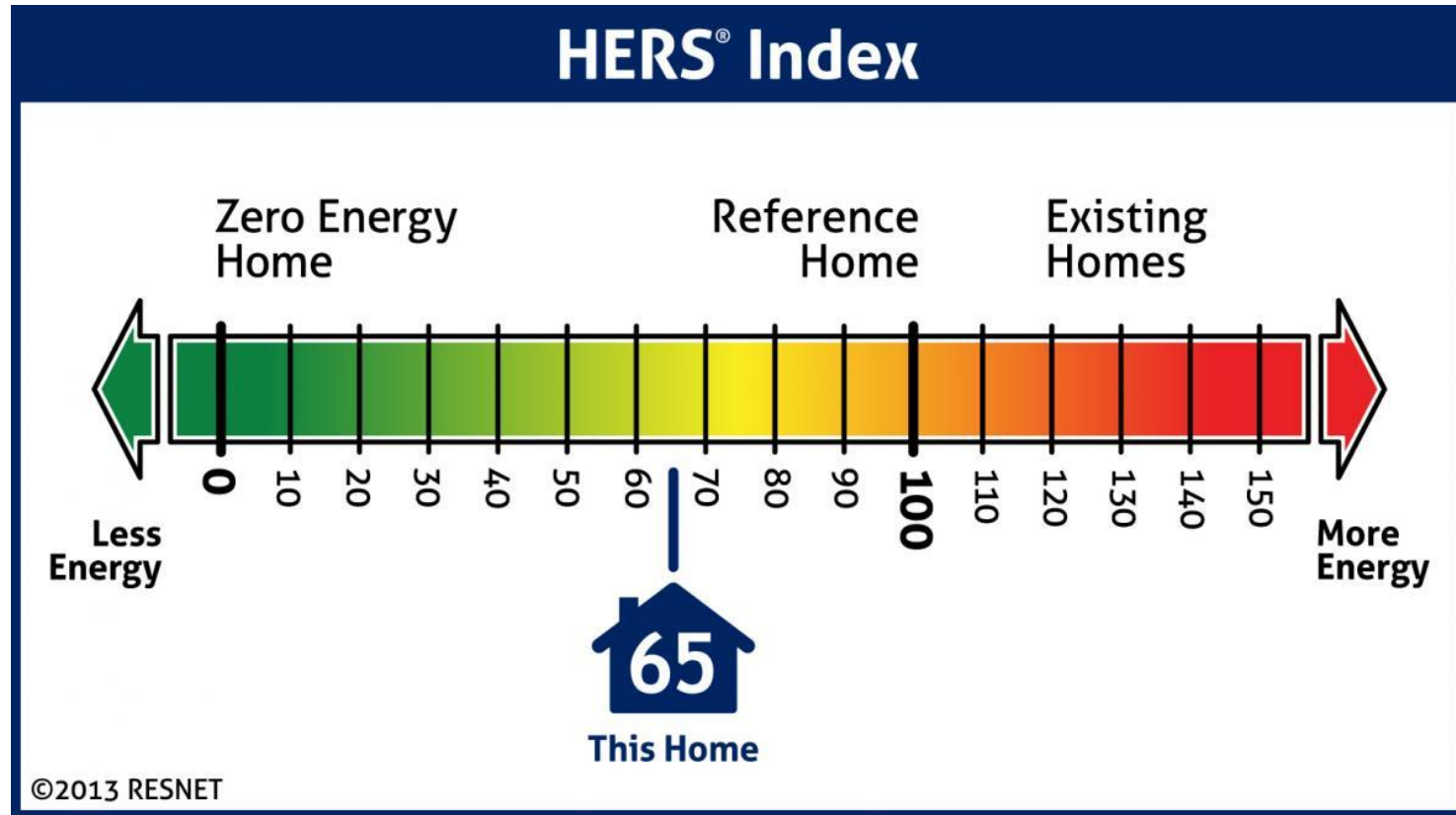
- ▶ Calculate surface areas & volume
- ▶ Insulation R-values and installation quality
- ▶ Air-leakage rate tested w/ Blower Door
- ▶ Heating/cooling equipment efficiency and output
- ▶ U-values of windows & doors
- ▶ Duct-leakage w/duct blaster

Produces reports that include estimated utility costs, HVAC equipment sizes, indoor air quality, and emissions information.



HERS Index Scale

Typically 0 to 100 – Lower Scores Are Better



HERS Ratings & Code Compliance

Three compliance options for new construction energy codes:

1. Prescriptive Path (code as written)
2. UA Alternative Path (Similar to REScheck)
3. Performance Path (HERS Rater)

Some new homes will not pass under Prescriptive Path and must use a HERS Rater to prove compliance

Kentucky adopted the 2009 IECC in October 2012



HERS Rating Process

Essentially 3 Steps:

1. Projected Rating, based on plans
2. Pre-drywall inspection (visual)
3. Final Inspection (testing & visual)

How the Process Works

1st Step – Projected Rating

Builder provides HERS rater with blueprints and all specs for:

- HVAC equipment – Type, size and efficiency
- Water heater - Type, size (gallons) and EF rating
- Windows & doors – Sizes, U-values & SHGC
- Insulation - R-Values for all areas in house
- Type & thickness of exterior sheathing

How the Process Works

2nd Step – Pre-drywall Inspection

- ▶ After insulation and air-sealing is complete, but before any drywall is installed, the HERS rater does a *Thermal By-pass inspection* (visual inspection)
- ▶ Ensure that all insulation is installed properly, with no gaps, voids, or compressions.
- ▶ Electrical, plumbing, and HVAC penetrations through exterior floors, ceilings, and walls must be air-sealed.
- ▶ Ductwork must be air-sealed & insulated properly

Pre-Drywall Inspection



Bad Install



Good Install

Pre-Drywall Inspection



Disconnected
Duct



Compressed Duct

Final Inspection

- ▶ **3rd Step – Once house is nearly complete**
- ▶ Blower-door test to quantify house air-leakage rate
 - Kentucky energy code requires less than 7 ACH@50 Pa
- ▶ Duct-blaster test to quantify duct-leakage to outdoors
 - Kentucky Energy code requires less than 6 CFM per 100 Sq Ft of living area
 - Ducts located in attics **MUST** be tested!
- ▶ Gather model #'s from HVAC equipment & water heater
- ▶ Inspect attic insulation for proper installation and R-value
- ▶ If passes, code-compliance sticker completed & installed on electric panel

Diagnostic Testing Equipment

Blower Door



Duct Blaster



Pressure Gauge



Duct Mask



Local Opportunities & Challenges

- Since 2009, roughly 28% of all new homes built in Kentucky had a HERS Rating done. (Source – LG&E/KU)
- Huge market transformation and national recognition!
 - Driven by rebate program offered by LG&E/KU, no longer available
- However, since it's adoption in October 2012, there has been lots of confusion, misinterpretation, and misunderstanding of the new residential energy code
- Building inspectors interpret code differently, enforce differently or not at all
- Without code-enforcement and/or rebates as incentive, many new homes today are being built that do not comply!

How Can We Improve?

- Many cities and even some states have made HERS Ratings mandatory for all new homes
 - Make it easier for code officials to enforce
 - Saves government resources (labor time, money)
- Provide better training for building inspectors and plan review personnel – Support from Frankfort
- Renew rebate programs offered by utility providers
- Include HERS Scores in MLS listings – increase awareness

Questions?

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