



# Energy Rating Index Performance Path

## Frequently Asked Questions

### Q: What is the Energy Ratings Index performance path?

**A:** The Energy Ratings Index (ERI) performance path gives builders yet another option for complying with the 2015 International Energy Conservation Code (IECC). In addition to the prescriptive and performance paths of previous versions of the IECC, builders now have the option of meeting a target ERI score through a wide range of performance options to demonstrate compliance. The ERI performance path also requires builders to achieve the mandatory code requirements of the IECC, including water heating provisions, and comply with the minimum insulation and window envelope performance requirements of the 2009 IECC.

### Q: What is an ERI score?

**A:** The ERI score is defined as a numerical score where 100 is equivalent to the 2006 IECC and 0 is equivalent to a net-zero home. Each integer value on the scale represents a one percent change in the total energy use of the rated design relative to the total energy use of the ERI reference design. The ERI scores required in the 2015 IECC, listed below, were determined using a modeling method in each of the climate zones and are based on values represented in the IECC:

- Climate Zone 1: 52
- Climate Zone 2: 52
- Climate Zone 3: 51
- Climate Zone 4: 54
- Climate Zone 5: 55
- Climate Zone 6: 54
- Climate Zone 7: 53
- Climate Zone 8: 53

### Q: Which rating systems are compatible with the ERI performance path requirements?

**A:** RESNET's Home Energy Rating System (HERS) index, based on ANSI RESNET Standard 301-2014, is the existing compliant ERI method and is nationally recognized for inspecting and calculating a home's energy performance. To date, over 1.5 million homes have been rated in the U.S. under the RESNET standards and in 2013, half of all new homes were rated and issued a HERS Index Score.

### Q: How were the required ERI rating scores determined?

**A:** The scores required under the ERI performance path are based on an analysis performed by the Florida Solar Energy Center of HERS index scores for homes in 16 cities distributed throughout the climate zones. The homes used in the analysis were one-story 2000 ft<sup>2</sup> and two-story 2400 ft<sup>2</sup> homes built using the 2012 IECC envelope and air leakage requirements and state-of-the-shelf high-efficiency HVAC and water heating equipment.<sup>1</sup> Alternately, the ERI scores are obtainable by reducing energy use by an additional 10% compared to a home with the 2012 envelope and duct systems and assuming best-case orientation and architecture of prototype homes. The homes were modeled for the 2006, 2009 and 2012 IECC which provided a range of HERS Index scores by climate zone.

### Q: What is the energy savings of the ERI performance path?

**A:** Using the ERI performance path will result in an annual energy savings of approximately \$468 over a comparable house built to the 2012 IECC with a savings to investment ratio (SIR) of 1.69. An SIR over one (1) identifies a financial benefit as a result of the investment. In addition, the ERI performance path will deliver 20 percent savings in utility bills compared to the 2012 code and 40 percent savings compared to the 2006 code based on Natural Resources Defense Council (NRDC) estimates.

### Q: What is the purpose of including the 2009 IECC minimum envelope requirements in the ERI performance path?

**A:** The envelope requirements of the 2009 IECC have been widely accepted by code jurisdictions and by builders. Requiring a home to meet the minimum envelope requirements of the 2009 IECC ensures that jurisdictions do not alter the ERI score requirements when adopting the 2015 IECC. It is also unlikely that a builder will achieve the required ERI score without meeting the envelope requirements of the 2009 IECC.



## Q: Why do the required ERI scores vary by climate zone?

**A:** The ERI scores were determined by modeling homes for the 2006, 2009 and 2012 IECC. Since the IECC does not require an equal level of efficiency in each climate zone, the ERI performance path reflects this.

## Q: Why isn't the required ERI score adjusted based on house size?

**A:** ERI scores have significant variability as a function of house orientation, shape, basement configuration, and many other variables. As such, savings may be quite large for some homes and smaller for others. With an average savings of 10% in the case of higher efficiency equipment, however, or 20% assuming the legal minimum, the ERI scores were derived so that virtually any home that meets the ERI score will use less energy than a home that minimally meets the prescriptive standard.

## Q: How will the ERI performance path be regulated?

**A:** The ERI performance path is intentionally written to allow a state or jurisdiction adopting the IECC to specify which qualifying Energy Rating Index method it will use. RESNET's HERS index is the existing compliant ERI method and is currently being used by builders to rate over 40% of new homes. Although a jurisdiction may select a qualifying Energy Rating Index method, all ERI scores must be verified by a third-party. The third-party serves as an energy consultant to the builder and can reassure the code official that an energy efficient, code complicate home is built.

## Q: How are HERS raters certified and what level of quality assurance will be built into the ERI performance path?

**A:** The HERS index is built on elaborate quality control and quality assurance. HERS raters are certified by RESNET after they have taken training courses and have passed field and online tests. RESNET requires HERS raters to have continual professional education and periodic recertification; HERS raters must also demonstrate compliance with ethical standards. At least 1% of every rater's output each year must be rechecked by an independent rater, and the two ratings must agree within 3 ERI/HERS points. In addition, it is recommended that all HERS raters take the residential IECC certification exam.

## Q: Can a jurisdiction negotiate or alter the ERI scores instead of using the scores required in the 2015 IECC?

**A:** Yes. A jurisdiction can amend any model building code, including energy, prior to adoption unless there are specific federal, state or local statutes that prohibit these amendments. The ERI scores were determined using a modeling method in each of the climate zones and are based on values represented in the 2015 IECC. In addition, the ERI performance path requires that homes meet the minimum envelope requirements of the 2009 IECC which ensures that jurisdictions do not alter the ERI score requirements. It is important for states and jurisdictions to remember that lower HERS Index Scores equate to greater energy savings.

## Q: Will the ERI performance path weaken the requirements of the 2015 IECC?

**A:** No. Although the ERI performance path introduces many new variables into code compliance, such as heating, cooling and water heating trade-offs, credits for appliances, and other assumptions not currently in the IECC, the required ERI scores were determined using a modeling method in each of the climate zones based on values represented in the IECC. States or jurisdictions adopting the 2015 IECC and using the ERI performance path must use the scores required in the 2015 IECC, follow the mandatory requirements of the 2015 IECC and meet the minimum envelope requirements of the 2009 IECC. RESNET will only support the ERI scores as they are presented in the 2015 IECC.

## Q: How does the ERI performance path compare with the other IECC compliance paths?

**A:** The 2015 IECC will include a defined set of required ERI scores that were determined using a modeling method in each of the climate zones based on values represented in the IECC. The baselines for the ERI performance path and the 2015 IECC are very different and thus a fair comparison of the ERI performance path and the IECC compliance paths is difficult to produce. In terms of efficiency, the ERI performance path is simply another option for achieving the same efficiency as following either the prescriptive or performance path. The current performance and prescriptive paths are generally not evaluated against one another and instead are regarded as two means of achieving the same result; the ERI performance path is yet another way to achieve the efficiency of the 2015 IECC.

# Energy Ratings Index Performance Path



## Q: Will there be a registry of current RESNET HERS raters?

**A:** Yes. To ensure that code officials are confident in selecting a HERS rater, current certified HERS raters will be listed on the RESNET website.

## Q: Will information on individual homes be available online?

**A:** Yes. The RESNET database will be available to code officials.

## Q: Will code officials receive on-site verification that matches code submittal information?

**A:** Yes. RESNET will adopt a standard Energy Rating Index report that will list the ERI score and checklist of compliance for the 2009 IECC mandatory measures. These documents will be presented to the code official.

## Q: What information will be included on the labels affixed to a home using the ERI performance path?

**A:** The IECC requires a permanent certificate in all homes that lists predominant R-values, U-factors and efficiency types and values. It is recommended that the IECC labels also list the name and contact information for the qualifying ERI method and rater used as well as the ERI score achieved. For jurisdictions using the HERS index, score labels provide an image of the Home Energy Rating Scale that ranges from 0 (a net zero home) to 100 (a home that is compliant with the 2006 IECC) as well as the score achieved by a particular home.

## Q: Does the ERI performance path have requirements for the software used to determine an ERI score?

**A:** The qualifying ERI method selected by a jurisdiction must use software that is required to pass tests of accuracy and consistency, generate reference houses automatically and be easy to interpret. In addition, the software must have a set of equations designed to assure fuel neutrality in that the ERI score does not change when a house switches from electric heating to gas and vice versa. This condition must be satisfied both for minimum National Appliance Energy Conservation Act (NAECA) efficiency furnaces compared to heat pumps and for the highest available AFUE and HSPF. RESNET has adopted a suite of software tests that a software must pass in order to be accredited by RESNET.

## Q: What support is available for the code software?

**A:** Online and telephone support is available from the two most widely used software programs that can be used to support the ERI performance path.

## Q: Does inclusion of mechanical systems as a tradeoff violate federal pre-emption of state standards on equipment efficiency?

**A:** No. A code cannot be based on equipment efficiency higher than the NAECA minimum, either as a requirement or in the reference house for a tradeoff procedure. The ERI performance path does not include requirements for an equipment level; instead, equipment efficiencies are a percentage reduction from a reference home. Restrictions on the characteristics of the energy use of a reference home apply only if the energy use of the proposed home is evaluated against the energy use of a reference home, not if it is compared to a fraction of such energy use. The concept of a standard that is a percentage below a prescriptive level was tested in a lawsuit in the State of Washington and found to pass muster.

## Q: Will using the ERI performance path interrupt normal code adoption cycles?

**A:** Code adoption cycles are influenced by the U.S. Department of Energy's (DOE) Determination process, not the adoption of an approach, e.g., the ERI performance approach. This process requires states to review their existing residential energy code after DOE has issued a determination on a new residential energy code and determine if it will update the existing code to meet the new levels of efficiency. A state or local jurisdiction can adopt the ERI performance approach for use with the 2009 to 2015 IECC, but because the determination is typically based on the prescriptive requirements in the code, states will still need to adopt new codes to meet the new prescriptive requirements.

## Q: The ERI performance path is based on the Normalized Modified End Use Loads Method. What is the purpose of this calculation?

**A:** The purpose of the Normalized Modified End Use Loads calculation procedure is to provide fuel parity across fuel types such that fuel switching is neither encouraged nor discouraged in the marketplace. The procedure is designed to meet the challenge of EPA Act 92, which provides that rating systems "not discriminate among fuel types."

<sup>1</sup> SEER 16 air conditioners in the South, SEER 14.5 in the north, 94% AFUE furnaces in the North (5-8), 90% AFUE furnaces in climate zones 3-4, 8.7 HSPF, and point-of-use gas or ENERGY STAR® electric water heaters.