



# Energy Rating Index for Homes & Residential Buildings

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Newly constructed residential buildings in Illinois have three paths for compliance, shown below. This energy code smart tip explores the basics of the **Energy Rating Index (ERI)** compliance path.

## Illinois Energy Code Compliance Paths for Residential Buildings

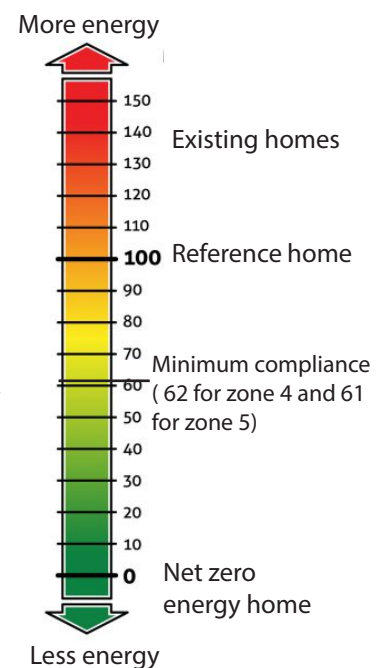
**With the Prescriptive path**, each component meets or exceeds the values found in sections R401-R404 of the IECC. The Trade-off method combines prescriptive provisions with envelope trade-offs and typically uses software such as REScheck.

**The Simulated Performance Alternative** compares the proposed design to a baseline design that minimally meets the Illinois Energy Code (2018 IECC with Illinois amendments) to show that the proposed design will be no more costly to operate than the baseline.

**The Energy Rating Index (ERI)** compares the energy performance to a baseline rather than the energy cost. The ERI requires the design to be a specified percentage better than the baseline. The baseline for the ERI is the 2006 IECC whereas the simulated performance method uses a current baseline.

### How does ERI work?

The ERI provides a score from 0 to over 100. A score of 0 is a net zero home. A score of 100 is a home that meets the 2006 IECC. A compliant score can be no higher than 62 for climate zone 4 (Southern Illinois) and no higher than 61 for zone 5 (Northern Illinois). This means that a home complying with the ERI will use approximately 40% less energy than a home that was built to the 2006 IECC. Each point on the ERI scale represents a 1% change in the relative energy efficiency of the building. Each point higher is 1% less efficient and each point lower is 1% more efficient. The ERI is analogous to Miles Per Gallon (MPG) for cars, except the lower the ERI ranking the more energy efficient the building is. It's a way to gauge how a particular home compares in energy efficiency to others.



### The process

An ERI rater reviews construction plans, completes onsite inspections, and produces a compliance report with the design score. The ERI rater can then provide confirmation to the local Code Official that the residence meets the threshold for code compliance.



# What software can be used?

There are presently 3 software programs certified by RESNET as suitable for use with the RESNET/ICC Standard 301 as called for in the 2018 IECC Section 406, Energy Rating Index, as shown in table 1 below.

Comply with 2018 IECC	Do not currently comply with 2018 IECC
Ekotrope EnergyGuage USA REM/Rate	Home Energy Rating Index (HERS) Energy Star Home Energy Yard Stick Energy Star Home US DOE Home Energy Score

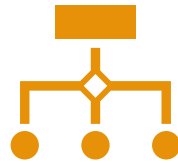
## What about HERS?

HERS home energy raters are licensed and certified by Residential Energy Services Network (RESNET) and provide for third-party and independent review of the building's envelope assemblies, HVAC systems, and quality of construction. However, HERS is not currently compliant with the 2018 IECC.

For the 2015 IECC, ERI used the same value as the HERS Index (they used the same standard used by RESNET). However, this is no longer the case. The current HERS Index is still based on the 2014 version of Standard 301 which aligns with the 2015 IECC. Now that Illinois has moved on to 2018 IECC, the HERS Index is out of sync. This amounts to differences in calculations.

## Benefits of ERI compliance

**Flexibility.** One primary benefit of the ERI compliance path is that it offers flexibility, compared to the prescriptive path, allowing builders to find the most cost-effective way to meet energy codes. This opens the door for unique designs and flexibility. The flexibility doesn't mean it's easy to meet requirements. Builders will need to apply a lot of energy efficiency measures to receive a compliant score.



**Third party verification.** The ERI compliance path is a third party verified rating process. Although there is a cost to the rating, it can save money in the long run for code officials. It can also save contractors money and time for inspections.

**Improved market value.** An ERI score is easy for buyers to understand and can make a home more marketable. Realtors and landlords share ERI scores to let potential buyers understand the efficiency of the home. Being able to compare ratings allows the buyer to make informed decisions. A lower score suggests greater energy efficiency, comfort, greater attention to detail, and higher quality construction.



**Mortgage programs.** Homes need an ERI for HUD's Energy Efficient Mortgages program. If the homebuyer plans on applying for an energy mortgage, the rater can produce an Energy Mortgage Report, containing information needed by a lender to underwrite an energy mortgage, including monthly energy savings and added energy value to the home's appraisal.



## Mandatory requirements

Residential buildings that use ERI must also meet the mandatory requirements that all residential buildings must meet, including:

- Building Certificate R401.3
- Air leakage installation & testing R402.4
- System controls R403.1
- Pipe insulation R403.4
- Heated water circulation & temp. maintenance systems R403.5.1
- Mechanical ventilation R403.6
- Equipment sizing & efficiency R403.7
- Snow melt & ice system controls R403.9
- Pools & permanent spas 4403.1
- High efficacy lighting R404.1

## WHO WE ARE

The Smart Energy Design Assistance Center (SEDAC) assists buildings and communities in achieving energy efficiency, saving money, and becoming more sustainable. SEDAC is an applied research program at the University of Illinois at Urbana-Champaign working in collaboration with 360 Energy Group.

SEDAC is the Illinois Energy Code Training Provider on behalf of the Illinois EPA Office of Energy. We offer workshops, webinars, online courses, and technical support. Learn more about our Energy Code Training Program at

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