



**Boulder
County**

Boulder County
Land Use Department
Publications

Energy Efficient Homes

Land Use Department
Courthouse Annex Building
2045 13th Street
PO Box 471
Boulder, CO 80302

Planning Division:
Phone: 303-441-3930
Fax: 303-441-4856

Email: planner@bouldercounty.org
<http://www.bouldercounty.org/lu/>

Office Hours:
Monday – Friday 8:00 AM to 4:30 PM

Energy Efficient Homes

BuildSmart code changes affect all new residential construction and additions throughout unincorporated Boulder County and went into affect May 1, 2008.

Why is this important to our community?

Energy used in our homes often comes from burning fossil fuels at power plants that contribute to air pollution and climate change. Each year the average house releases more than twice as much greenhouse gas as the typical car – more than 22,000 lbs. of carbon dioxide. Simply put, the less energy we use, the less air pollution we generate.

Properly installed energy efficiency improvements deliver superior home comfort through protection against cold, heat, drafts, moisture, pollution, and noise. An energy efficient home provides more consistent comfort, improved indoor air quality, and greater durability.

Economic Advantage

Energy costs for typical Boulder County existing homes (~3,000 sq. ft.) and new homes (~6,500 sq. ft.) are roughly \$2,000 and \$4,200 per year, respectively. From 10 to 50% of that energy is wasted without contributing to comfort or convenience. Compared to standard homes, low Home Energy Rating System (HERS) Index homes use substantially less energy for space heating & cooling, and water heating delivering \$400 to \$1,000 in annual savings.

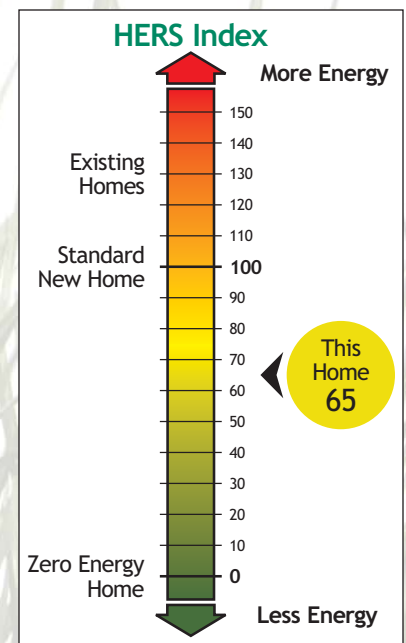
A study by The Appraisal Journal found that the selling price of homes increased by \$20.73 for every \$1 decrease in energy bills. As an example, if an average home energy bill is \$1,500/yr and realized energy efficiency savings are \$400/yr, home value would increase by \$8,300.

Home Energy Audit/HERS Index

A home energy audit, performed by a certified Energy Rater, is the first step to assess how much energy your home consumes and to evaluate what measures will make your home more energy efficient. An audit identifies problems that may, when corrected, save you significant amounts of money over time. During the audit, you can pinpoint where your house wastes energy and determine the efficiency of your home's heating and cooling systems.

The HERS Index, a nationally recognized standard for home energy rating, scores a home in relation to a HERS Reference Home, which scores 100 (based on the 2006 International Energy Conservation Code). Each 1-point decrease in the HERS Index corresponds to a 1% reduction in energy consumption compared to the HERS Reference Home.

Thus, a home with a HERS Index of 85 is 15% more energy efficient than the HERS Reference Home, a home with a HERS Index of 80 is 20% more energy efficient, and a home with a HERS Index of 0 would be a net-zero energy home.



BuildSmart Exterior Energy Use

Onsite renewable energy systems must offset all energy use by interior/exterior pools and spas, ice melt systems, patio heaters, and similar outdoor features or equipment that require a building permit. Plans for approved on-site renewable energy systems (e.g., solar, wind, geothermal, biomass) must be included with the building permit application and the expected exterior energy consumption must be documented and verified by an Energy Rater.

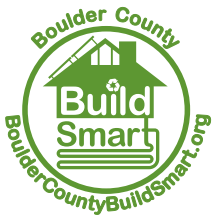
Energy Efficiency Roles and Responsibilities

General Contractor:

- **Ongoing:** Coordination with Energy Rater for various inspections and tests throughout building process

Energy Rater:

- **Provide a Resnet Energy Model** showing compliance with specified HERS Index rating for pre-permit application for new homes, major additions, and renovations.
- **Conduct a Performance Audit** for pre-permit application for minor additions and renovations.
- For pre-permit application **Verify That On-Site Renewable Energy Systems** are adequate to support energy use for interior/exterior pools and spas, and exterior energy uses.
- **Perform Post-Insulation/Pre-Drywall Inspection** to ensure home can achieve the required HERS Index for ONLY new homes, major additions and renovations.
- **Perform a Final Inspection, Blower Door Test, and Duct Blaster Test** (if applicable), and **Verify That Residence Meets Specified HERS Index** after construction and before C.O. for new homes, major additions and renovations.



Required Elements

See Boulder County BuildSmart Requirements
www.BoulderCountyBuildSmart.org

Resources

Smart Energy Living
www.smartenergyliving.org

Rocky Mountain Institute - Home Energy Efficiency Briefs
www.nc.rmi.org/NETCOMMUNITY/Page.aspx?pid=217&srcid=217

U.S. DOE - Guide to Energy Efficiency
www.eere.energy.gov/consumer/your_home/

Energy Conservation Timeline

1 Pre-Building Permit Application

In addition to standard building application documents you **MUST** Submit the following:

- For New, reconstructed, and re-located dwellings; major additions and renovations; and accessory structures, submitted with application: RESNET Energy Model, or
- For Minor Additions and renovations under 500 square feet total, submitted with application: Home Energy Audit
- For Interior/exterior pool and spa energy use, and external energy use submit with applications: verification on-site renewables to support exterior energy use.

2 Site Inspections

No additional changes.

3 Rough Inspections

In addition to required rough inspections prior to a Rough Inspection i.e., mechanical, electrical, plumbing, framing) you **MUST**:

- For ONLY New, reconstructed, and re-located dwellings; major additions and renovations; and accessory structures, confirm: Energy Rater inspections for building compliance.

4 Final Inspections

In addition to required rough inspections prior to a Final Inspections (i.e., HVAC, electrical, plumbing, framing), you **MUST**:

- For ONLY New, reconstructed, and re-located dwellings; major additions and renovations; and accessory structures: Energy Rater perform blower door and duct blaster test; submit final report verifying residence meets applicable HERS Index (Prior to final inspection approval)

5 Final Approval

Receive Certificate of Occupancy.

