

***Santa Fe County's New Energy Efficient Building Code
for New Home Construction:
A Guide for Homeowners and Home Builders***



In December 2015, the Board of County Commissioners (BCC) finalized adoption of a new land use code called the Sustainable Land Development Code (SLDC). The entire Code can be reviewed on the County's web site at:

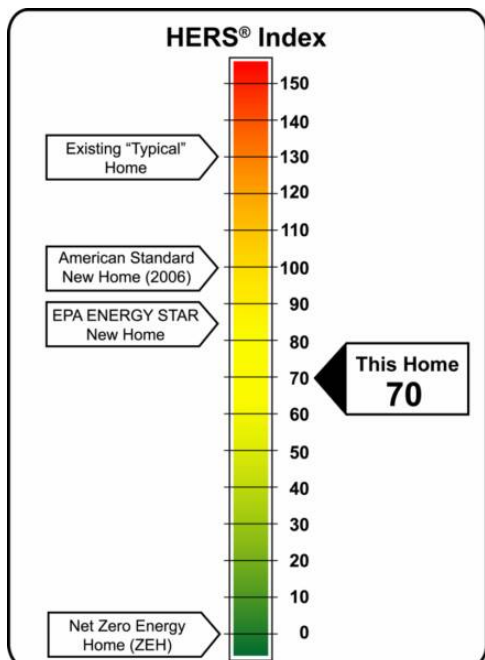
<http://www.santafecountynm.gov/userfiles/SLDC/ClickableSLDCwithOrdinance.pdf>.

The SLDC includes a new energy efficiency requirement for home construction that is more stringent than the State of New Mexico building code. The SLDC applies to homes within the unincorporated areas of Santa Fe County. All new home construction must comply with this requirement, including modular homes. Mobile and manufactured homes and additions to existing homes are exempt from this requirement.

What is the energy efficient building requirement in the Code?

“Each new residential structure, excluding mobile homes and manufactured homes...shall achieve a HERS rating of 70 or less.....Structures required to achieve this rating shall be designed, constructed, tested and certified according to the Home Energy Rating Standards (HERS) index, as most recently adopted by the Residential Energy Services Network.” (7.14.2)

The Home Energy Rating System (HERS) Index



The HERS Index is a nationally recognized scoring system for measuring a home's energy performance. The HERS Index Score can be described as a sort of miles-per-gallon sticker for houses, giving prospective buyers and homeowners an insight as to how the home ranks in terms of energy efficiency. HERS is based off of a "reference home" with a HERS rating of 100 – roughly equal to the energy efficiency of a home built to meet the 2006 International Energy Conservation Code standards. A lower HERS score means a more efficient, better performing home. Calculating a HERS Index is only done by a certified HERS Rater. The HERS index program is administered by the Residential Energy Services Network (RESNET, <http://www.resnet.us/>), a non-profit organization focused on residential energy efficiency. RESNET establishes training and testing standards and institutes quality assurance and control on the work of HERS Raters.

A HERS Index is calculated and verified as follows: The HERS Rater reviews the home plans as they are being developed and consults with the homeowner and designer. This consultation early on allows the designer and homeowner the opportunity to be aware

of the energy impact of design and equipment decisions. Design decisions include the wall and roof construction details, the type and size of windows and the orientation of the home. Equipment decisions include the type, size and model of the furnace or boiler, the water heating system and even the home's lighting. Once the home plans are complete, the HERS Rater calculates a preliminary HERS Index score. *In order to obtain a Development Permit from Santa Fe County, the homebuilder must have and submit a Preliminary HERS Index Score of 70 or lower as determined and verified by a certified HERS rater.*

While the home is being built, the HERS Rater will inspect the construction, to make sure that the home is being built as designed and that the construction methods and details will ensure the best possible energy efficiency performance. Proper installation of the energy-efficient construction materials and methods is critical to ensure an energy efficient home. For example, the effectiveness of insulation depends upon the care taken during its installation. Poorly installed insulation and poorly installed air sealing measures can result in significantly higher electric, gas and/or propane usage, and, therefore, higher energy utility bills over the life of the home. In addition to improperly installed energy efficiency measures, changing the size and/or type of windows or the type of furnace from the original plans can have a significant impact on a home's energy performance.

Once the home is fully constructed, the HERS Rater will also test the air-tightness of a home's ductwork and exterior shell. Upon substantial completion of the home, a Final, verified HERS Index is calculated. Once again, in Santa Fe County, this verified HERS Index must be 70 or less. *Documentation of the home's final HERS Index rating must be provided to the County Building and Development Services Division.*

With respect to new home construction, a HERS requirement (such as the County's HERS 70 standard) is a "performance-based" requirement, in comparison to the more traditional "prescriptive-based" requirements of most state and local building codes. A prescriptive building code energy efficiency requirement is more rigid in that it specifically stipulates the minimum standard each individual building component (windows, insulation, etc.) must meet. A performance-based requirement, like HERS, is more flexible, allowing the home owner, designer, HERS rater, and builder to choose from a host of energy efficient technologies to meet the standard. The State of New Mexico energy efficiency building code provides the option of complying with the prescriptive code or utilizing a HERS-based performance code. In Santa Fe County's climate zone, the state HERS requirement is a score of 89 or less – compared with the County's more aggressive requirement of a HERS 70 or less.

Here are some of the factors that go into a HERS Index rating:

- 1.) The size and shape of the home.
- 2.) Details regarding the "building envelope" such as:
 - a. The construction details of the home's walls.
 - b. The thickness and type of insulation for the foundation, walls and roof.
 - c. The number, size and orientation of the home's windows.
 - d. The air tightness of the building with respect to allowing air flow from or into the outdoors.
- 3.) The efficiency of a home's water heating system.
- 4.) The type and efficiency of space heating, ventilating and cooling systems.
- 5.) The efficiency of major appliances such as refrigerators, dishwashers, etc.

6.) The efficiency of lighting systems.

7.) The type and size renewable energy systems (solar and wind), if included.

Including a Solar System in Your Homebuilding Plans to Help Meet the HERS 70 Requirement

Including a solar electric photovoltaic (PV) and/or solar thermal (for water or space heating) system in your homebuilding project can be an effective way to achieve a HERS rating of 70 or lower. Many citizens don't realize that solar systems have become incredibly cost-effective in the last 5 years – with about a 60% reduction in cost. Also, there is a 30% federal and 10% state income tax credit that makes solar even more financially attractive. Solar PV's low cost combined with the combined 40% income tax credit (not a Schedule A "deduction" to your taxable income but a full dollar-for-dollar reduction to the taxes you have to pay) makes including PV a cash-positive proposition. You can size an affordable solar PV system such that your home electric bill is less than \$10 per month! Consider including the solar system in your construction loan or utilize other available attractive financing mechanisms. *If you are including a solar system as a means to help achieve a HERS 70 rating for your home, you must provide documentation confirming that a solar system is an integral part of your construction plans (e.g. solar system design details and production calculations a contract with a solar installation company.)*

Helpful information on the HERS index can be found on RESNET's web site: <http://www.resnet.us/>

Building a home? Getting started....

As you (or your architect) begin to design your home, it is critical to retain the services of a RESNET-certified HERS Rater at the beginning of the design process in order to make sure that your home will meet the HERS 70 standard upon its completion. Do not make the mistake of getting a HERS rater on-board after your home has already been designed! This will result in unnecessary project delays and added design costs to redo the building plans in order to achieve the HERS 70 rating.

There are a number of certified HERS raters in Santa Fe County and a number of "HERS savvy" homebuilders from which to choose. You can access them on the RESNET web site: <http://www.resnet.us/directory/search>. In addition, the City of Santa Fe has had a HERS 70 requirement for over 7 years. The City maintains a list of certified HERS raters at: http://www.santafenm.gov/media/files/Public_Uilities_Environmental_Services/List_1-22-14.pdf

The Santa Fe Area Home Builders Association (SFAHBA) is a non-profit trade association representing members throughout Santa Fe County and beyond. SFAHBA maintains a Green Building Council member list (<http://sfahba.com/images/pdf/2014-greenbuild-list.pdf>) that includes a number of homebuilding contractors that are familiar with meeting HERS standards. SFAHBA staff is also a great resource for energy efficient home construction. (982-1774)

If, at any point, you have questions or are confused about this HERS 70 requirement, please feel free to contact the County's Energy Programs Specialist, Craig O'Hare (992-3044).

What about home remodels and additions?

Home remodels, renovations and additions are exempt from the County's HERS 70 requirement.

Is there an alternative to achieving the HERS 70 requirement?

Yes. "Other energy efficiency performance measures or methodologies may be utilized to demonstrate compliance with the requirement, provided that: 1) the residential structure achieves an equivalent or lower level of energy performance (in BTUs per square foot per year) as a HERS 70 rated structure; and 2) a New Mexico licensed engineer, architect, or qualified independent building science professional performs the analyses, inspections and certifications." (7.14.2.3) The engineer or architect used to verify a "HERS 70 energy efficiency equivalency" cannot be the same engineer or architect that was used to design the home.

The Benefits of a HERS 70 (or lower) Energy Efficient Home

Over its 60 to 70 year life, an energy efficient HERS 70 home will enjoy significantly lower monthly energy utility bills compared with a home built to just the New Mexico building code. An analysis conducted by the County indicated that the total energy bill savings (for electricity, natural gas and/or propane) compared to one built to the state code could range from over \$300 per year (for a natural gas-heated home) to over \$1000 per year (propane-heated) at current prices for electricity, natural gas and propane. These savings will increase over time as energy costs increase. In addition, energy efficient homes provide greater living comfort – both in the summer and the winter.

For More Information:

- Craig O'Hare, Energy Programs Specialist, Public Works Department - cohare@santafecountynm.gov 505-992-3044
- Nathan Manzanares, Building and Development Services Division, nathancm@santafecountynm.gov 505-986-6307

1/15/16