

Why go to all this extra trouble? Any new home will be built to code and inspected by the code authority.

Building codes and code inspectors have been around forever, but the facts are that there are many homes that are not adequately inspected—and the codes have never addressed all the issues.

Today, we are more aware of environmental issues and the ever-increasing cost of heating and cooling fuels. According to the Environmental Protection Agency:

- ***The average home is responsible for more air pollution than the average car.*** If one household in 10 used ENERGY STAR qualified heating and cooling equipment, the change would keep more than 17 billion pounds of pollution out of the air.
- ***The average family spends \$1,300 a year on energy bills, with nearly half of that on heating and cooling.*** Energy-efficient heating and cooling equipment, sized and installed correctly, with properly sealed ducts, can save consumers as much as 20% on their annual energy costs.

The time to implement energy conservation measures is now. Residential costs for natural gas from PNM have increased 233% since August of 2002, and most recently, about 39% within the last month.

Features include:

- R-20 walls, framed with 2X6 at 24" on center
- R-49 ceiling, flat roof
- Slab perimeter insulation to 2' depth, and full underslab insulated, all with R-10.
- 10 foot ceiling height throughout the house.
- Design criteria generally as suggested by "Passive Solar Design Guidelines for Northern New Mexico", compiled by Ben Luce for the New Mexico Solar Energy Association, as follows:
 - No west facing windows, house is sheltered by the garage
 - South facing windows at 12% of conditioned floor area, completely shaded during the cooling season
 - East and north facing windows each at 4% of conditioned floor area
 - Double glazed low E vinyl windows
 - 35 SF of Solartube® skylights (2% of conditioned floor area)
- Solar domestic water heating and solar space (radiant floor) heating utilizing 96 SF of liquid collectors with a 200 gallon storage capacity
- 80 AFUE boiler, properly sized at 36,000 Btu/hr
- 50 gallon gas fired water heater (back up)
- Evaporative cooling
- Interior thermal mass
- Building envelope air sealed to obtain .35 natural air changes per hour, per the current Energy Star Homes standard.

What is a HERS Rating?

The HERS Rating is a score used to compare the energy features and energy efficiency of different homes. All of the building features that affect energy consumption are analyzed by computer software which estimates how much energy will be consumed and generates the HERS Rating score. The Building America threshold score is 88. The Energy Star for Homes threshold score is 86. A score of 80 represents construction meeting the 1993 Model Energy Code (MEC). Each point above 80 represents a 5% savings in energy consumption for heating, cooling, and hot water as compared to the 1993 MEC. The HERS score for this house is 95.7, which means it is estimated to use 79% less energy than the house built to the 1993 MEC. The state building code as of July 1 is the 2003 International Energy Conservation Code. Implementation of this code may not take place in all municipalities.

Why do I need a HERS Rater like Building Energy Solutions?

Before your home is constructed, the HERS Rater will do a plan review and ensure that the components of your home work together as an efficient system, providing energy conservation, adequate ventilation and comfort for you and your family. If the HERS Rating does not produce the desired score, the rater will suggest ways to increase your home's score. At your request, the evaluation of features may also include a cost/benefits analysis that estimates the payback of features such as better windows and more insulation. The rater is also knowledgeable in the latest ventilation requirements and will suggest design features, which will assure indoor air quality.



Energy and Comfort Solutions for Your Home

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Solar Design, Energy Conservation and the HERS Rating System – “HOUSE A”, incorporating both active and passive solar features

The purpose of the two reports is to demonstrate the energy savings achieved by incorporating solar design features into our homes and optimizing the designs while recognizing the basic premise of building science, which is the fact that *a house is a system where all components affect all other components*. Programs such as Energy Star for Homes, which promotes properly sized mechanical equipment and utilizes the HERS Rating System, may be used to optimize the designs. In addition, how do these homes perform as compared to homes to be constructed in accordance to the new building code, the 2003 International Energy Conservation Code (IECC).

Both houses are located in Santa Fe, New Mexico

This report contains the results of a HERS rating from the plans done on an 1728 SF house 60 feet long and 30 feet deep (House A) with the long axis oriented in and east/west position. An additional 72 SF of sunspace is included for 1800 SF within the building envelope.

**House A exceeds the requirements of Section 402 of the 2003 International Energy Conservation Code by 58.1%, and the 2004 IECC by 58.0%.
Estimated annual cost to heat and cool this house is \$170.00.**

