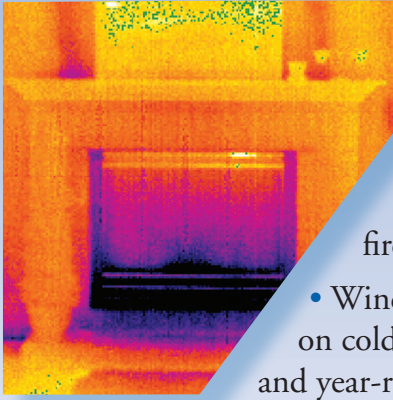


# The Evolving Art Of Home Building

Building practices continually evolve, offering home buyers more value for their dollar. Studies of Colorado homes built in the mid- to late-1990s identified a number of potential problem areas in some new homes. Builders are using this information to improve the performance of the homes they build. This page provides examples of the problems and opportunities found in some of the study homes.

## Comfort



- Occupants had little control over moisture levels and the distribution of heating and cooling to different parts of the home.
- Indoor air was very dry during the winter.
- Upper levels were hard to heat and cool, basements were cold during the winter, and drafts were felt near fireplaces and built-in entertainment centers.
- Windows were linked with cold and condensation on cold winter days, too much heat in summer and year-round glare.



More attention to design and construction details can prevent these problems. As you shop for a new home, ask builders about the steps they take to provide total home comfort.

Cold and drafts from fireplaces—dark areas in the infrared photo (left)—often result from insulation and air sealing problems in the cavity behind the fireplace. Carefully detailed insulation and air sealing work (right)—invisible behind the wallboard in a finished home—mean a fireplace will meet homeowner comfort expectations.

## Health



- Bathroom exhaust fans were noisy and ineffective at removing moisture and odors. In kitchens, recirculating range hoods provided very little air quality benefit.
- The potential existed for combustion safety problems—dangerous pollutants from furnaces, water heaters, fireplaces and gas ovens in the air you breathe.
- Air leakage between living spaces and attached garages, attics and the surrounding soil offered paths for pollutants to enter the home.
- Moisture levels in crawl spaces below structural basement subfloors were high enough to support mold growth.

A combination of strategies can be used to avoid these problems. Ask builders what steps they take to ensure healthy indoor air.



Typical construction practices create pressure imbalances that can cause standard gas water heaters (left) to spill combustion exhaust into the home rather than out the vent. Closed-combustion or power-vented appliances (right) are much less susceptible to combustion safety problems even when pressure imbalances exist.

## Durability



- Holes and cracks allowed moist indoor air to leak into cold building cavities where the moisture could condense and cause damage.
- Moisture levels in crawl spaces below structural basement subfloors were high enough to corrode or rot structural members.
- Heating and cooling equipment that was significantly oversized or operated outside the limits of manufacturer specifications was liable to need more maintenance and earlier replacement.



Smart design choices and careful construction practices can address all of these issues. Ask builders what steps they take to minimize future maintenance needs.

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Excessive oversizing of air conditioners (left) doesn't improve comfort but may lead to higher maintenance requirements. Testing and adjustment as equipment is installed (right) can help to assure furnaces and air conditioners operate efficiently and last longer.

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## Value—Energy and Dollar Savings



- Energy costs per square foot of living area varied by five times from the lowest to the highest energy users.
- Some homes had no need for air conditioning, while others had summertime cooling bills as high as \$300.

Energy prices can change quickly. It's hard to predict short-term trends, but it is certain that energy prices will continue to increase in the future. In new homes, it's easy to make choices that ensure low energy bills even as rates change. Ask builders about the steps they take to control energy costs.



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New home choices offer many opportunities to keep energy bills low over the life of the home. The payoff will only get better as utility rates increase.

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To learn more, ask your builder and check the fact sheets available through the organizations that provided this brochure. These fact sheets provide details about your choices in the areas of insulation, windows, foundations, indoor-air quality and much more. You can also find the fact sheets and more information at [www.ColoradoNewHomeChoices.org](http://www.ColoradoNewHomeChoices.org).