



# FIGHTING FIRE WITH FACTS

No home is fireproof, but these strategies will make your home fire-resistant.

By Scott Rodwin & Ron Flax

IN THE WAKE OF THE Fourmile Canyon Fire that destroyed 169 homes in Boulder County, learning how to create a fire-resistant home is on the minds of many residents. Though there's no such thing as a fireproof home, you can substantially mitigate the danger with these 10 strategies:

## 1. Defensible Zones

Creating a defensible zone around your home is the first line of protection. Remove all trees within at least 15 feet of your home. If the trees are dense or of mixed species, expand the zone to 30 feet. Space trees at least 10 feet apart, and remove the lower limbs on mature trees within 100 feet of your home (if the trees are dense or mixed, increase that to 200 feet). Surround your home with nonflammable materials such as gravel, stone or concrete. For landscaping, use low ground covers or short grasses. Bury propane tanks or give them their own defensible zone.



## 2 Decks & Fences

Decks are often constructed with standard wood-framing lumber, which is not only easily combustible but a dangerous fuel source right at your doorstep. The safest decks are built from noncombustible materials like stone, metal and concrete. There are also fire-resistant hardwoods and composite decking materials on the market, but be sure to check the manufacturers' literature for fire-resistance ratings. If fire can attack these structures from below, they are especially at risk, so if possible enclose decks to the ground.

Use noncombustible materials such as metal or masonry for fences or other items that attach directly to your home.

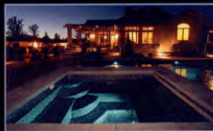


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## 3 Exterior Construction Materials

Choose noncombustible exterior materials like stone, cementitious stucco, brick, metal, fiber cement siding or concrete. If you use wood on the exterior, specify heavy timbers—4-by-6's or larger—instead of 2-by-dimensional lumber, as heavier timbers are harder to ignite. Fire-resistant paints and coatings can help protect homes that have combustible exterior materials, but they have to be reapplied regularly to maintain their effectiveness. Boulder County does not typically accept these coatings as alternatives to noncombustible materials.

Perhaps the single most important surface to consider is roofing. Use a Class A fire-rated material (required in all Boulder County mountain communities), such as metal, clay tile, concrete or composite asphalt shingles. Keep in mind that some other materials, such as molded plastic shingles, only achieve a Class A rating when they're part of a rated assembly that includes a fire-resistant underlayment, like DensDeck Roof Board.

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## 4 Unvented Attics & Crawl Spaces

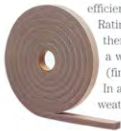
Most attics and crawl spaces built in the last 50 years were vented, both for improved energy efficiency and to decrease the possibility of hot air and burning embers entering the home's envelope.

But building scientists now strongly recommend unvented attics and crawl spaces. This is achieved by placing insulation directly on the underside of the sheathing (and the perimeter of the crawl space), and treating the enclosed attic and crawl spaces as part of the home's conditioned area. Not only does this lend itself to super-tight, energy-efficient, fire-resistant homes, it often results in additional usable storage space.

## 6 Airtight Construction

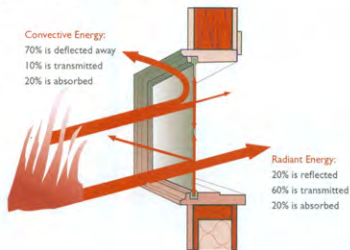
During wildfires, superheated air and small embers often enter the home through very small gaps and cracks. To keep hot gases and embers out, introduce the same kind of air sealing and weatherization recommended for energy efficiency and thermal comfort. Home Energy

Rating System (HERS) auditors can identify thermal gaps in your home's envelope, and a weatherization contractor can seal them (find these energy specialists at [bgbg.org](http://bgbg.org)). In a wildfire, even things as simple as good weather stripping can make a big difference.



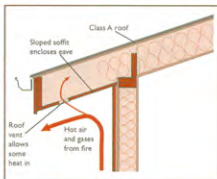
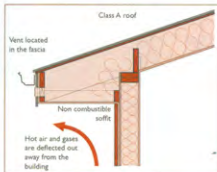
## 5 High-Performance Windows


Many house fires actually start on the inside of the home from radiant heat passing through the windows. When glass shatters from thermal shock and falls away, the home rarely survives. Double-pane, low-E windows that have a low solar-heat-gain coefficient reflect a significant portion of radiant heat and inhibit combustion from within. For even more protection, consider tempered glass, as it's more likely to stay intact during a fire. Metal-clad or fiberglass window frames are considerably more flame-resistant than wood or vinyl. For extreme protection, consider exterior metal shutters.



## 7 Eaves & Soffits

Superheated air and flames can gather on the underside of eaves and soffits, making these spots especially vulnerable. Boulder County requires ignition-resistant soffit details that move soffit vents to the fascia.





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## 8 Geometry

Design your home or addition with simple geometry for both walls and roof. Nooks and crannies often catch pine needles, dry leaves and other dead vegetation, which places a fuel source right where you don't want it. Complex geometry also encourages superheated air to swirl around projections, which concentrates heat and can deposit burring embers on the house.



PHOTO COURTESY UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

## 9 Emergency Access & Water

When planning driveways and site design, create easy access for fire vehicles. Good emergency access includes pullouts on long driveways, clearing overhanging vegetation over the driveway and making sure the home is easily visible from the road.

A water cistern designed for fire protection is best, but a pool, pond or hot tub can sometimes be a useful water supply for firefighters. As long as it's still working when the fire arrives, a landscape sprinkler system can help create a protective ring around the home. While internal fire-sprinkler systems are useful for suppressing fires inside the home, they're much less effective against wildfires.

## 10 Property Maintenance

Property maintenance is a crucial ingredient to creating a fire-safe home. Remove dead landscape and gutter debris regularly, because windblown embers easily ignite them. Store firewood and propane tanks at least 30 feet from the house (burying the tank is best).

BY IMPLEMENTING THESE 10 strategies, you'll stack the odds in your favor during a wildfire. Defensible zones and noncombustible building materials will protect your home from direct-flame contact and windblown flaming debris. Tight seals and high-performance windows will protect against superheated air, windblown embers and radiant heat.

And while no home is fireproof, yours at least will be fire-resistant. 🏠

*Scott Rodwin, AIA, LEED AP, and Ron Flax, RESNET, BPI, LEED AP, teach a fire-resistant construction seminar for several organizations and Green Building 101 for the city and county of Boulder. To see their fire-resistance PowerPoint, visit [rodwinarch.com](http://rodwinarch.com). To read more tips on creating a fire-resistant landscape, visit [homeandgardenmag.com/?p=1685](http://homeandgardenmag.com/?p=1685).*

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