The 2016, Fort McMurray, Alberta, Canada wildfire is another example of why wildfires are so dangerous and absolutely uncontrollable despite advancements in housing design and fire protection equipment. Our homes are our most valuable possession next to family and pets. Doing nothing is usually not an option. In recent years, wildfires have exploded, a loss inflated by drought conditions in both eastern and western states, along with steady encroachment of development onto "frontier" lands. Jim Smalley, manager of wildland fire protection for the National Fire Protection Association (NFPA), notes that some home builders have taken an active role in fire prevention--often getting some perks in the process. The NFPA's Firewise program holds frequent meetings where builders can share ideas with fire experts.

"We had some New York builders who attended our workshops," he notes, "and they added a whole new level."

Additionally, the 2015 fire season set a new record for the number of acres burned in the United States. Between January 1 and December 30, 2015 there were 68,151 wildfires, which burned 10,125,149 acres, according to the National Interagency Fire Center. During the same period in 2014, 63,417 fires burned 3,577,620 acres. The previous record was set in 2006 at 9,873,745 acres (2016, National Insurance Information Institute). Even with terrific insurance the disruption and loss is devastating to a family and can last for years. Structure protection is mandatory if you live in the areas that are threatened annually by wildfires.

Modern housing construction is a tit-for-tat thought process, on one hand the builder is placed under constraints by the consumer to build homes that are safe, but ultra-modern in look and design. Products such as facings and façades are good examples of material that is highly combustible when a wildfire strikes, especially if the material used is not flame retardant. So here are some tips to consider when working improving your home's defense against wildfires.

**Builder influence**

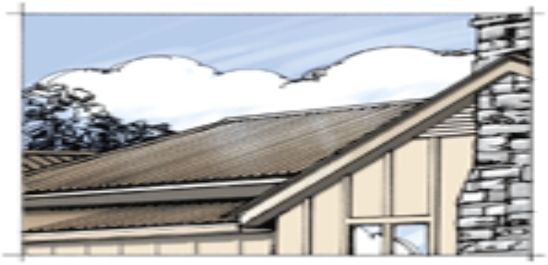
While "fire people" tend to focus primarily on the use of non-combustible materials, he explains, builders talk about changing the layout of lots or the way streets interact with properties. "Instead of homes on the side of the cliff, for example, they came up with a way to wrap the road around the crest below. That gives them more prime lots with great views, and a firebreak. We've actually seen it work in real fire situations." Of course, product choices still play a big part in fire prevention, but like so many other aspects of housing, they have to be considered as part of the whole package.

"We're especially interested in different kinds of materials for fences and decks," notes Smalley. "A lot of the new [composite] decking materials look promising, because they don't tend to burn the same way wood does. In many cases they appear to sort of fall apart and drop to the ground without further spreading the fire."

**From the ground up:** What's the incentive for builders to address wildfire risks? "They get a much better project out of it," asserts Smalley. "Rather than doing the design and trying to get it approved--only to have

somebody say, 'You didn't take this into account,' you begin the whole process up front. You talk to land planners, national park people, the Nature Conservancy. You say, 'This is what we have in mind,' and collaborate on how to get there," he explains.

"Of course, the builder also wants to maximize profit," Smalley adds. "We have seen some builders using the fact that homes are in a “Firewise community” as a selling tool."



"We don't need to have an adversarial relationship with builders," he adds. "What we need is more collaboration. The problem has always been that we're interested in public safety and the builder is interested in making a living. We're now bridging that divide." He adds that home buyers need to shoulder personal responsibility for keeping their homes in accordance with fire-safe practices. "That means clearing leaves, cleaning gutters--they need to take personal responsibility," he says.

"Insurance companies don't offer special incentives for “Firewise” homes," Smalley adds. "That's because wildfire is so unpredictable. But we do know that all the big fires you see on TV aren't the ones that burn homes. It's the little bitty fires, the firebrands and embers that drop on the house from a mile away. Of the 200 homes that burned down in the Los Alamos fire, the majority were 18-inch flames--just ground fires that crept across people's lawns."

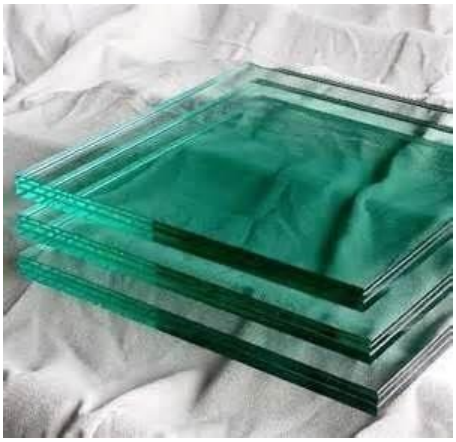
So what can be done, here are some tips that you can consider.

**1. Stay detached** Keep in mind that many rural fires begin as vehicle fires. Also, outbuildings such as garages and storage sheds often contain flammable materials, such as paint thinners and gasoline. By keeping them detached and well separated (30 feet seems to be the preferred minimum) from the main house, a bigger loss may be prevented.

**2. Upgrade glazing:** As a general rule,

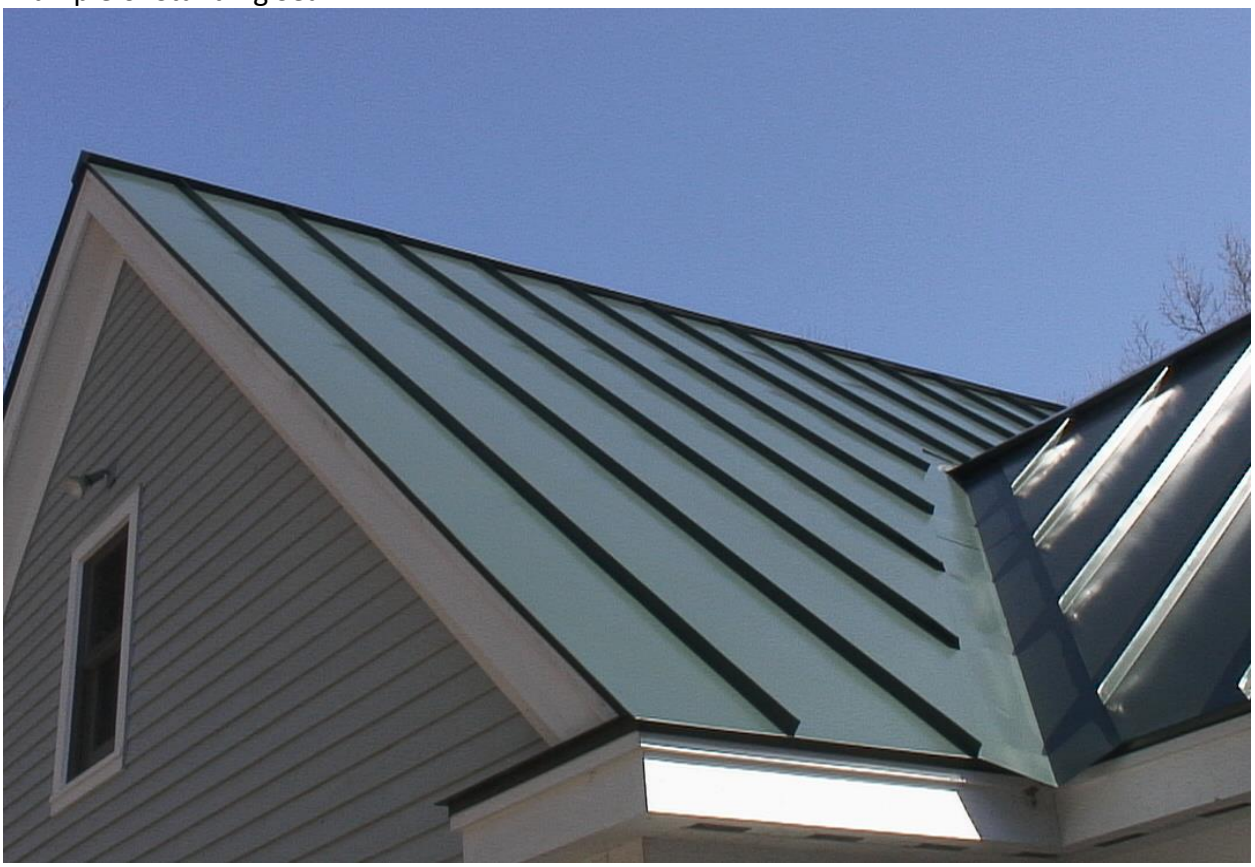
insulated (double-pane) glass holds up longer than single pane when faced with the heat of a wildfire. Consider tempered glass. Sliding doors are tempered and insulated and have been found to withstand heat longer than standard plate glass. In general, smaller window panes survive better than big ones. Also, steer away from acrylic skylights. They can quickly

melt and leave a gaping hole in the roof. Another good alternative if budget permits: Add non-flammable shutters similar to hurricane shutters.

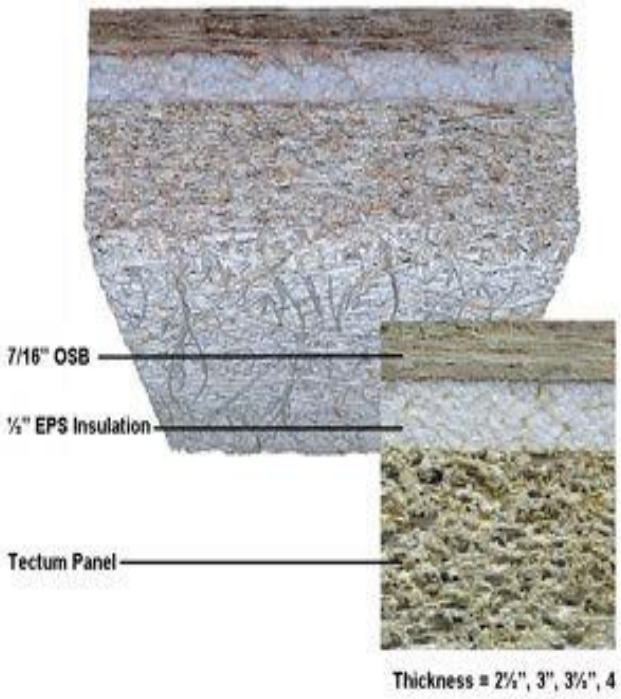


**3. Armor the roof:** On the home's roof, install a Class A, fire-rated material, such as standing seam, tile, slate, or cementitious composite roofing. If you must use wood shakes, apply a good fire treatment but inform owners that the treatment is only good for a limited time (usually five years or so). A steeper roof pitch has much better fire resistance than a flat one. Burning embers roll off before they have time to burn through. Inform homeowners that they need to clean gutters to maintain fire safety.

Example of Standing Seam:



Cementitious composite roofing




**4. Screen entry points**

To keep flaming material from finding a way into the inner recesses of the home, critical areas should be covered with a 1/8-inch wire mesh. These include soffit vents, gable end vents, and even dryer vents. Be aware that nylon window screens may melt. Pay special attention to basement windows, where fire may be hottest and glass may break. Shroud chimneys with a 1/4-inch wire mesh but be sure to consult the manufacturer about proper tolerances--so as not to create a buildup of exhaust gases.

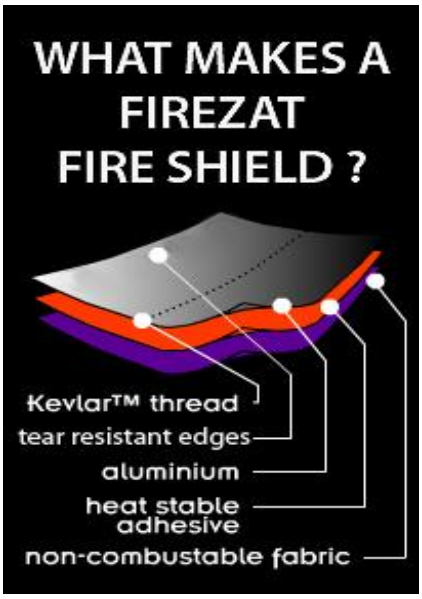
**5. Armor the walls:** For siding, specify non-flammable material, such as fiber-cement siding, cultured stone, brick, or stucco. Avoid untreated wood. Vinyl siding may be adequate if fire can find no route to burn too close to the house (it tends to melt and slough off), but all gaps and crevices beneath the vinyl must be sealed--or fire could find a way into the structure. To protect the base of the siding, where wood sills may overhang the foundation, consider putting a perimeter of crushed stone, so fire can't get a foothold adjacent to the house.

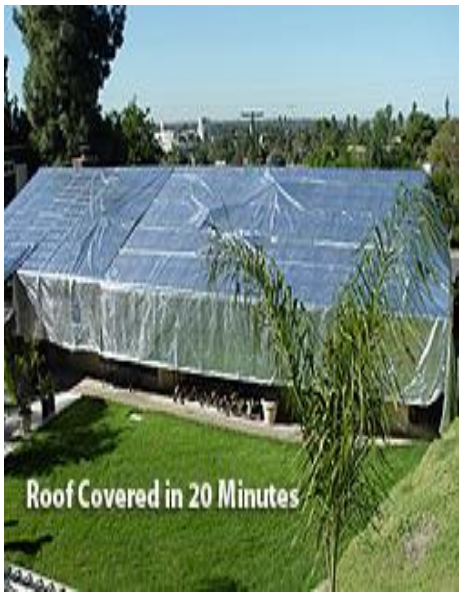
Fiber-cement siding

Perimeter of crushed stone

**6. Plan decks with care:** Wood decks often provide fuel for wildfires and ignite the house. If you do use wood, it should be treated against fire. Better yet, consider building with composites, which may spread fire less quickly. Also, look at concrete products and think about terracing and landscaping as an alternative to a traditional wood deck. Put metal screening around the crawlspace beneath the deck, to keep fire and embers out. Aluminum decking material such as Versadeck (no I am not plugging them, as the end all company, just did some research on them, for my decking needs) is an alternative to wood decks and for my buck seems to be a good investment and looks like wood.


7. Consider using an Aluminized Structure Wrap, or cabin wrap, to protect them from radiant heat and burning embers. It's the best protection strategy when it's too dangerous to stay. Next Generation Fire Shields offer superior protection against burning embers and radiant heat and are now available to private business and homeowners. The new redesigned large Shields allow for faster deployment, better coverage, and fewer failure points. To see what your options are go to oo dangerous to stay. Two companies out there, but I am sure there are more are FireZat and FireFoil. You can deploy your shields at the first sign of fire and protect large parts of your home while you stay and await instructions. Covering your roof and the side of the home facing the fire front can greatly increase your survival odds. Fire Shields cover attic vents, windows, and eaves protecting them from radiant heat and ember attack. They can be left up for days or weeks and can be used again and again for future fire threats. You can google them, but if your home is in an area prone to wildfires or high density forests, you should consider this one of your best options for combating a wildfire. No foil is a guarantee, but based on the wildfire data, these storms last only minutes, and therefore protecting this using this product might prevent your home from being destroyed. I've included a few pictures for you to consider this option.




Spray Foam or Gel on Your House

Gel and foams can be a big help but they have limitations. When applied by fire professionals just before fire arrival they can be effective. They have the proper pumps, water supply, pressure, and experience to lay down a heavy coat. Most importantly they have access to the property shortly before the fire approaches. Foams hold extra water suspended in bubbles, but under wildfire conditions of wind, heat, and low humidity their effective window is just a few hours at best, after all these are perfect conditions for evaporation. Foams will not protect attic vents or large windows once the foam has dried. If the fire stalls or turns delaying arrival, your foam might be ineffective. While it can be re-hydrated once, with evacuations, road blocks, and municipal water demands it may be impossible to do. And once it's used you must purchase more for additional fire threats.

Lastly you can defend your home with the water hose. However, as Fort McMurray taught us, essential services such as water was destroyed due to the infrastructure was effected also. You can't assume you will have enough water or water pressure during a firestorm to defend your property. Remember everyone including the fire fighters are drawing on the same water supply system. It will be difficult and dangerous to keep your whole house wet enough during conditions of low humidity, high heat, and winds blowing 30 to 60 MPH or more. Other than evaporation, you are fighting burning embers falling all around you and radiant heat over several hundred degrees. This can be very dangerous. In my case, I have a 86PSI water pump with a fire hose and nozzle that will pull water from my pool. I also have adapted a metal stanchion with clamp that will hold the nozzle and hose in place, should I have to evacuate. The nozzle will spray a fine mist on the roof top, but like I have bought several roles of aluminized structure wrap for when I have enough time to deploy it. In our location in Texas, wildfires are quite abrupt unlike the forest fires that occur in the Rockies, the Northwest and California.

So good luck and keep prepping!

## WILDFIRE PROTECTION TIPS FOR SURVIVAL AND PROPERTY

There are many factors which affect the risk to life and property. These include property location and access, the amount and type of nearby vegetation, building position and condition, availability of water and the physical capabilities of those involved. In wildfires, radiant heat, dehydration and asphyxiation (choking) are the major killers. Well-prepared houses can resist exposure to wildfires, protecting those inside who may then be able to save their homes.

Protecting your family and property from fire requires a balanced effort of awareness, education, and preparedness. Using Fire Shields to protect your home can improve the chances your property will survive a threatening wildfire. It can also provide extra time to allow the fire department and fire fighters time to save your home. Your chances can be greatly increased if you follow these tips. Also check with your local fire department for area specific tips that they will be happy to share with you.

### Important Fire Facts

Embers or firebrands threaten your property over a longer period of time than Radiant Heat or Direct Flame Contact. Direct Flame Contact and Radiant Heat arrive with the fire front and will last from 3 to 5 minutes to 10 - 15 minutes depending on wind speeds and terrain. Ember attack usually occurs up to 30 minutes prior to the arrival of fire front and for several hours afterwards. Embers can travel over 1/2 mile in advance of the winds and be as large as fiery golf balls when they land on your roof or property and start new fires.

### PREPARATION BEFORE THE WILDFIRE SEASON

- Create a defensible area around your home for a minimum of 100 feet or if your home is located on a slope or in high wind area increase that area to 150 feet. Use a mower, spade, rake, and trim branches well clear of the house.
- Clear roof gutters of leaves, twigs etc.
- Store wood, fuel, paints etc. well clear of the house.
- Remove rubbish, leaf litter and native shrubs close to house. Keep grass short/green.
- Store firewood away from your house.
- Prevent sparks from entering your house by covering vents with wire mesh no larger than 1/8". Fit wire screens to doors, windows, vents. Enclose gaps, roof eaves and under house.
- Keep a ladder handy for roof access (inside and outside) and hoses to reach all parts of house and garden. If water is not connected, obtain a high pressure pump.
- Decide on a household plan to either leave early or stay to protect your properly-prepared home during a bushfire.
- Check to see if you have bushfire insurance and it covers replacement cost should you lose your home to a wildfire or bushfire.
- Have a plan to deploy your fire retardant house cover and confirm you have your installation kits and sand bag material handy.

### IF A WILDFIRE APPROACHES - Leave or Protect

If you prepare your house as noted above, and unless you decide to leave early or have been ordered by authorities to do so, stay in the house after taking these extra precautions:

- Phone 911 or 000 in Australia- do not assume they know about the fire.
- Deploy your fire retardant house cover. Secure with stakes, nails, and sandbags covering all seams.

- Fill baths, sinks, buckets etc. with reserve water and turn off gas and power.
- Remove curtains and move furniture away from windows.
- Wear long woolen or heavy cotton clothes and solid boots or shoes, a hat or woolen balaclava and gloves.
- Plug down pipes with rags and fill all roof gutters with water. Hose down walls, garden, etc on the sides of the house facing the 'fire-front' and watch for spot-fires.
- Inside, close all windows, doors and block crevices and gaps. When the fire-front arrives, stay inside, away from windows, while it passes (usually 5 to 15 minutes).
- Quickly extinguish any fires which may have started in, on, or under the house and check inside the roof cavity as well.
- If the house is on fire and can't be extinguished, move away to safe burnt ground. Don't leave the area, wait for help. Listen to the battery radio for official information.

**IF CAUGHT IN A FIRE, DRIVING - Shelter in Car**

- Don't drive into or near bushfires. If caught in one don't drive through flames or smoke.
- Stop in an area of low vegetation. Leave motor running and air conditioner (recycle), hazard lights and headlights on.
- Stay inside unless near safe shelter. Keep vents, windows and doors closed. Lie inside, below window level, under a woolen blanket for skin protection until the fire-front passes.
- Research shows that in a bushfire, a car fuel tank is unlikely to explode in the period needed to stay inside the vehicle using it as a shield against deadly radiant heat of the fire-front.
- After the main fire-front passes, if car is on fire or heat and fumes inside are severe, get out and move to already burnt ground, keeping your whole body covered with the blanket.

**IF CAUGHT IN FIRE, ON FOOT - Seek Shelter**

- **Don't Panic** - cover all exposed skin.
- Move across-slope, away from the fire-front, then down-slope towards the rear of the main fire.
- Find open ground, or already burnt ground. Don't try to out-run the fire or run uphill or go through even low flames unless you can clearly-see a safe area close-by.
- If you can't avoid the fire, protect yourself from heat radiation by lying face down under an embankment, rock, loose earth, or in a hollow, or if possible get into a pond, dam or stream - but not into a water tank.