

Layered Mitigation Strategy

Building Multiple Lines of Defense Against Wildfire

Wildfire protection works best when it is approached as a **layered system of defenses** rather than a single solution.

No individual action—whether clearing vegetation, upgrading building materials, or installing sprinklers—can completely eliminate wildfire risk. However, when several protective measures are combined, they work together to **reduce the chance that a home will ignite during a wildfire event**.

A layered mitigation strategy focuses on **managing fuels around the property, strengthening the structure itself, and preparing for ember exposure**, which is the most common cause of home ignition.

This approach reflects the recommendations of wildfire research organizations, fire agencies, and programs such as **FireSmart Canada and the Insurance Institute for Business & Home Safety (IBHS)**.

Why a Layered Strategy Is Important

Wildfires affect structures through several mechanisms:

Wind-Driven Embers

Burning embers can travel **kilometres ahead of a wildfire** and land on roofs, decks, or nearby vegetation.

Radiant Heat

Large fires produce intense heat that can **preheat and dry materials**, making them easier to ignite.

Direct Flame Contact

If flames reach structures or nearby attachments, ignition can occur quickly.

Because these hazards come from multiple directions, protecting a home requires **multiple layers of defense working together**.

Layer 1: Managing the Area Around the Home

The first layer of protection focuses on **reducing fuels near the structure** so fire has less opportunity to reach the building.

This is commonly referred to as **defensible space**.

Key actions

- Remove leaves and debris from roofs, gutters, and decks
- Maintain spacing between shrubs, trees, and structures
- Keep grass trimmed during fire season
- Store firewood and combustible materials away from buildings
- Thin dense vegetation and remove dead plants

Managing the landscape reduces the intensity of fire approaching the home and limits materials that embers can ignite.

Layer 2: Hardening the Structure

The second layer focuses on **making the home itself more resistant to wildfire exposure.**

Home hardening involves improving building materials and design features so embers and heat have fewer opportunities to ignite the structure.

Examples of home hardening

- Fire-resistant roofing materials
- Ember-resistant vents and screens
- Non-combustible siding or foundation materials
- Tempered or double-pane windows
- Fire-resistant deck materials

These improvements help prevent embers from entering the structure or igniting vulnerable surfaces.

Layer 3: Removing Ignition Points

Small details around a home can become ignition points during ember storms.

Common examples include:

- Dry leaves in gutters
- Wooden fences attached directly to structures
- Mulch against siding
- Stored lumber or furniture on decks
- Debris beneath stairs or patios

Removing these vulnerabilities helps ensure that **embers do not find easy fuel near the building.**

Layer 4: Active Protection Systems

Some homeowners add an additional layer of protection through **active systems designed to reduce ignition risk during wildfire events.**

These systems help keep surfaces cool and damp during periods of ember exposure.

Examples include:

- Rooftop sprinkler systems
- Perimeter sprinkler systems
- Water storage tanks for emergency use
- Pump systems connected to lakes or ponds

Active protection systems are particularly useful in areas where wildfire response times may be limited or where ember exposure is likely.

Layer 5: Maintenance and Preparedness

Even well-designed wildfire protection measures require **ongoing maintenance**.

Over time, debris, vegetation growth, and weather conditions can create new vulnerabilities around the home.

Important maintenance tasks include:

- Cleaning roofs and gutters regularly
- Trimming vegetation near structures
- Removing fallen branches and debris
- Checking vents and screens
- Maintaining spacing between vegetation and buildings

Consistent maintenance ensures that each layer of protection remains effective.

Understanding Ember Storms

One reason layered mitigation is so important is the role of **ember storms during wildfires**.

Embers can be carried long distances by wind and may fall onto structures long before the main fire front arrives.

If they land in combustible materials—such as dry leaves, wooden decks, or mulch—they can start small fires that spread to the home.

A layered strategy reduces the chance that embers will find a place to ignite.

How the Layers Work Together

Each layer of wildfire mitigation addresses a different part of the ignition process.

For example:

- Defensible space reduces fire intensity near the home
- Home hardening prevents embers from entering the structure
- Removing ignition points limits available fuel
- Active protection systems help cool vulnerable areas
- Maintenance ensures protection remains effective

Together, these layers create a system where **multiple barriers must fail before the structure is exposed to ignition.**

This dramatically improves the likelihood that a home will survive a wildfire event.

A Practical Approach for Homeowners

For most homeowners, a layered mitigation strategy can be implemented gradually.

A typical approach might include:

1. Clearing debris and managing vegetation around the home
2. Improving vulnerable building components such as vents and roofing
3. Addressing ignition points like gutters, decks, and stored materials
4. Adding additional protection systems where appropriate
5. Maintaining the property regularly throughout wildfire season

Even small improvements can make a meaningful difference when combined together.

Supporting Safer Communities

Wildfire resilience is not only about individual homes. When many properties in a neighbourhood adopt mitigation measures, the entire community becomes **more resistant to wildfire spread.**

Reducing ignition points and managing fuels across multiple properties can help limit the number of structures that burn during a wildfire event.

Community-wide preparation plays an important role in protecting homes, infrastructure, and emergency responders.

Final Thoughts

Wildfire risk is increasing in many regions where homes meet forests or grasslands. Preparing for wildfire requires more than a single solution.

A layered mitigation strategy combines **property management, structural improvements, and preparedness** to reduce the chance that a home will ignite.

By applying multiple protective measures together, homeowners can significantly improve the resilience of their property during wildfire events.