

Resilience to Wildfires

Institute for Catastrophic Loss Reduction

📍 Lytton, British Columbia, Canada

Hazard(s):

Wildfire

Type of action:

Fuel management, building standards change, bylaw change

Type of actor:

Local government

Description

The Institute for Catastrophic Loss Reduction (ICLR) is an independent, not-for-profit research institute affiliated with the engineering department of Western University of Toronto and was established by Canada's property and casualty insurance industry. It focuses its work where quantifiable disaster loss is accounted for to foster change in impact assessment in Canada, especially in understanding the vulnerability of low-rise buildings.

The ICLR and the FireSmart BC agency assessed the damages following the Lytton disaster to address wildfire preparedness from different angles. In Lytton, community ignition was studied as the event of extreme wildfires that cannot be stopped. The study aimed at determining the causes of ignition and pathways for preventing community ignition.

As the fire destroyed nearly 90% of the village, this led to one of the most expansive pushes for redesigning not only buildings, but communities as a whole to withstand fire. The core concept in this approach is to avoid fighting fire, and rather to let it run through the land while focusing on the protection of buildings and assets. The main concepts are the use of materials resistant to external fire for building construction, and fuel management at the community scale to divert fire away from buildings and communities.

In Lytton, the fire destroyed the municipal buildings, which caused the loss of all records. The municipal authority seized the opportunity to rewrite guidelines and laws, and in particular the bylaw. When completed, it will be the most comprehensive fire protection law in Canada. It was largely based on federal standards from the National Research Council Canada. The expectation is that the meticulous process to craft such a comprehensive bylaw will become a model for other jurisdictions in British Columbia (where municipalities have the authority to draft bylaws). Changing the bylaw makes sure the insurance companies will rebuild to higher standards, as they tend to build back at the default standards.

Audience

Studies completed to develop new design standards involved expertise from multiple stakeholders:

- **FireSmart BC**, a group of agencies and experts that support wildfire preparedness
- **National Research Council Canada**, for adapting national standards and guidelines

Initiatives linked to code updates and standards crafting are targeted towards:

- **Law and policy makers**, to enable the strengthening of existing codes
- **Community leaders**, to raise awareness
- **Developers and insurers**, to understand the cost effectiveness of higher standards

Timeline

- The Lytton wildfire burned on June 30, 2021, the day after the village set record for the highest temperature ever recorded in Canada:
 - two fatalities,
 - destroyed 90% of the village and cut remaining houses from water, electricity, and sewer services
 - forced the evacuation of nearby First Nations communities.
- The bylaw is currently being reviewed by the provincial government and will be adopted soon.
- As Lytton served as a case study for protection against wildfire, the study was supported by a group of insurers that agreed to delay reconstruction until the new bylaw is adopted, to help set an example of ambitious adaptation measures.

How does the initiative address the 10 Principles?

1. Urgency

There is a scientific consensus that wildfires are getting worse with rising temperatures and climate change. Statistics on the frequency and magnitude of wildfire events and the evaluation of the cost of such events call for immediate action. The disaster of Lytton makes it the ideal opportunity to implement an actionable case study for wildfire resilience.

2. Stakeholders

This initiative has a steep learning curve and will be a textbook case study for future projects: local, provincial, and federal governments worked together with insurers, National Research Council Canada, and Standards Canada. They had to deal with push backs from residents who hoped to resume life without additional costs, thus requiring their concerns to be addressed, and an extensive information campaign by external experts to demonstrate the benefits of improved wildfire safety measures.

3. Process

The key component of the Lytton wildfire protection project was assessing the cost associated with the measures to be implemented and to compare it to the cost of inaction. Cross assessment of all potential measures was performed, with the explicit goal to both find the most suitable solutions and to bring the residents on board.

4. Mitigation

There are two axes for implementing resilience to wildfire: structural upgrading of buildings against ember, and fuel management to prevent fire from getting to the community. Avoiding combustion is increasing the life cycle and durability of buildings, which is directly linked to carbon emissions.

5. Data

There is consensus that wildfires are getting worse with climate change and rising temperatures. In this context, understanding the uncertainty linked to wildfire events is key to assess and act in consequence to seize the opportunity to implement resilience measures.

6. Scale

Structural upgrading and fuel management must not only be implemented at the building level with high-tech materials, but also at the community with vegetation management and behavioural changes.

7. Green

Wildfires are increasingly understood as natural and ecological phenomena with non negligible cobenefits. Fuel management through vegetation management is a nature-based solution that allows fire to burn without getting to the community.

8. People

A major source of inspiration for vegetation management bylaws was indigenous knowledge, using actionable and cheap solutions. Furthermore, to make of Lytton a study case, agreements were found with insurance company and residents to delay the reconstruction of Lytton by two years so the new standards can be crafted, and houses be rebuilt up to the new standards.

9. Finance

Though insurance companies agreed to delay reconstruction, push backs from the residents were mostly driven by the fact that many were uninsured. To make of Lytton a true learning opportunity, solutions should be found to avoid making the residents bear the price of adaptation.

10. Local

The reconstruction of Lytton with higher wildfire protection standards is widely seen and an opportunity to capitalise on lesson learn and draw actionable guidelines for other municipalities and insurance companies.