Learning from Wildland/Urban Interface Fire Disasters: “The Case for Risk Mitigation”

Alan Westhaver  M.Sc.
ForestWise Environmental Consulting Ltd.
Fernie, British Columbia

April 18, 2018
A lot has changed in 108 years ...

... but outcomes are strikingly similar!

- Technology ➔ Fire fighting capability
- Equipment ➔ Response times
- Construction ➔ Building codes and materials
- Science ➔ Knowledge of fire behavior
To achieve better outcomes... we must change our approach!

A lesson is not “learned”, until it is put into practice.

“To many other parts throughout the province, Fernie will contain a lesson in this respect.”

- Wm. Fernie
1908
4 Pillars of Emergency Management

- **Planning and Preparedness:** Measures taken in advance to be ready

- **Loss Prevention + Risk Mitigation**
  Pro-active work to reduce/eliminate risks & hazards

- **Response:**
  Re-actions to address direct fire effects + limit loss

- **Recovery:**
  Activities to restore, recover, rebuild following disaster and reduce socio-economic disruption
How do homes ignite?

Embers ignite >50% of homes destroyed by wildfires - up to 80-90%

- Firebrand “blizzard”
- Embers travel 0.5+ km

Most of the time...

- It’s not the BIG flames
- Or radiant heat
- 30m clearance (fire guard) is sufficient

Burn Holes in Canopy of Porch Glider – Ft. McMurray
"The presence of structures in locations where conditions result in the potential for their ignition from flames, radiant heat or the firebrands* of a wildland fire."

*A.K.A. embers

Where forest meets homes
How do WUI Fire disasters develop?

Slave Lake, AB
May 21, 2011
Wildland Fire
Rapid fire spread and/or high fire intensity

Severe Fire Conditions
Fuel, Weather, and Topography

Wildland Fire
Multiple highly ignitable homes exposed flame + embers

Firefighting Resources Overwhelmed
By wildfire and burning homes

Firefighting Effectiveness Reduced or Non-existent
home-to-home spread

DISASTER!
Many homes destroyed

* Calkin et al. (2014)
Wildland Fire
Rapid fire spread and/or high fire intensity

Severe Fire Conditions
Fuel, Weather, and Topography

Wildland Fire
Urban Fire
Multiple highly ignitable homes exposed flame + embers

Firefighting Resources Overwhelmed
By wildfire and burning homes

Firefighting Effectiveness
Reduced or Non-existent
home-to-home spread

DISASTER!
Many homes destroyed

* Calkin et al. (2014)
We must address the root issue:

1. Homes that are highly susceptible to ignition during a wildfire event, mostly by embers.

2. Easily combustible materials within 30m of the home, that carry fire to the home.

“If homes do not ignite, they cannot burn..... If homes do not burn, then disaster is avoided”

- Jack Cohen
US Forest Service Scientist
What are our best solutions for preventing home ignitions?

FireSmart: “Principles, practices and programs for reducing interface fire loss”

20 Recommended FireSmart Guidelines*

1. Structural Hazard Factors
2. Vegetation Hazards within 30m
3. Ignition Site Hazards
   - Miscellaneous Combustibles
   - Ember Accumulators
4. Topographic Hazards (compensate)

* based on NFPA Standards
Where to apply FireSmart solutions?

“Hunt Where the Ducks Are”

“Start at home, work outwards”
Lessons learned

Small actions, make a BIG difference

• Most risk mitigations around homes are:
  o Inexpensive
  o Easily accomplished
  o Not very time consuming
  o More like, “organized puttering”

• WUI residents are not helpless victims!

Find and eliminate Fire Pathways
Lessons learned

- No fire suppression system in the world can stop losses from large conflagrations.
- RESPONSE is not enough!
- The outcome depends on risk mitigations taken before the fire, on our property!
- More fire trucks are not the answer....

**this is !**

TEAM WORK
What is in the future? (More WUI fires)

Climate Warming
- Increased: fire danger, # fires, fire intensity, area burned

Development in wildland areas

Forest Health Issues
- rising fuel loads

Lack of Wildfire Risk Mitigations

Response Frequently Overwhelmed

WUI Disasters

(More WUI fires)
Challenge #1

Preventing future disasters requires shifting primary focus of WUI programs onto attacking the root cause of loss.

**MOVE AWAY FROM:**
Fighting fire and fuel around our WUI communities, on remote public lands.

**MOVE TOWARD:**
Facilitating more extensive risk mitigation activities by residents working together in neighbourhoods, on private land, to reduce vulnerability of homes to ignition – and provide fire fighters with key advantages.

ForestWise Environmental Consulting Ltd.
How?
Invest strategically... in risk mitigation

Landscape Zone
(Public land 100m to 2km)

Community Zone
(Public land – 30 to 100m)

Home Ignition Zone
(Private land – 0 to 30m)

VALUE OF CURRENT LOSSES / INVESTMENT
How? Fast-track the FS Community Recognition Program in BC

Recruit an army of residents to reduce wildfire risks!

1. **Community Contacts FireSmart**
2. **Site Visit by Local FireSmart Representative**
3. **Hazard Assessment**
4. **Champion Forms FireSmart Board**
5. **Create FireSmart Plan**
6. **Implement Solutions**
7. **Apply for Recognition**
8. **Renew Recognition**

Highly Effective + Cost-efficient

Fire personnel assist/mentor residents.

900+ Residents
450+ Homes
9 Neighbourhoods
2 Local FireSmart Representatives

Fernie, B.C. Example

Recruit an army of residents to reduce wildfire risks!
Promote the FireSmart Canada Community Recognition Program

- A citizen led, grassroots program to reduce risk of wildfire losses
- Operates at the neighbourhood level
- Facilitated by trained fire personnel
- Empowers WUI residents with understanding, motivates them with a framework to organize risk management actions
- Residents to develop their own FireSmart plan
- Overcomes barriers to FS progress
- Leads to national recognition
Thank You!

Discussion and questions ..... 

Alan Westhaver, M.Sc. 
ForestWise Environmental Consulting Ltd. 
Fernie, British Columbia 
(250) 423-4818 
(250) 430-7206 
alan.westhaver@shaw.ca 

Reports available at: iclr.org\ profiled publications