FIRE INSURANCE AND FIRST NATIONS COMMUNITIES

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Summary

Communities that have effective and appropriate levels of fire protection for the level of fire risk within their protection areas receive lower fire insurance grades which, in turn, typically result in lower insurance premiums for property owners. This analysis gives an overview of the factors that affect a community's fire insurance grading and how these ratings affect insurance premiums. A series of scenarios are be provided that estimate potential cost benefit based on accessibility to community fire services and the insurance gradings of the community's building stock. The baseline or point of comparison will be the case where there is no fire service and the insurance grading would be "unprotected" in both lines of the Public and Dwelling classifications.

Cost-benefit scenarios are developed for Indigenous communities to estimate the relative costs that might be incurred by property owners who purchase their insurance based on improvement values provided by insurance underwriters. Factors that affect insurance rates include ongoing investments in local fire prevention services and the condition of local housing stocks. This analysis demonstrates the net savings or avoided costs obtained through the provision of improved fire protection on residential insurance policies.

Overall, it is estimated that increasing fire protection services in a community easily pays for the cost of those services through savings in insurance premiums. This is the case even when a minority of households in the community purchase insurance. The benefits increase dramatically as the cost of replacement for housing destroyed in a fire and the size of the community increases.

Introduction

Fire-related incidents occur across Canada but, on First Nations communities, they tend to be relatively more frequent and often include more victims. In December 2016, for example, five people, including four children, died in a fire on the Oneida Nation of the Thames. In March of that year, three generations of one family died on the Pikangikum First Nation. A fire in Kitchenuhmaykoosib Inninuwug, (Big Trout Lake), on May 2, 2019 killed five people including four children under the age of 13. While these catastrophic fires are often attributed to substandard housing, safety systems and water access issues in many communities, little systematic data exists to demonstrate definitively where and to what degree those confounding factors have an impact.

Part of the reason for this is likely due to the absence of regulations, standards or legislation governing fire protection in Indigenous communities, in contrast to off-reserve municipalities. Furthermore, while most cities and towns in Canada have specialized risk assessments in place and plans to cover them, such assessments are not consistent across First Nations communities.

Unlike automobile insurance, insurance to cover the loss of one's home or property is not required by law in Canada. Generally, property insurance is driven either by the residents' personal commitment to risk mitigation or by financial institution that require coverage as a condition for obtaining a mortgage or equity loan. Due to differences in housing acquisition and allocation on reserves, most on-reserve residents do not have the financial pressure of a mortgage provider to obtain insurance. Instead, any obligation to do so comes either from requirement of local councils or, again, the personal commitment to risk-mitigation on the part of the occupant.

First Nations Band Councils are responsible for determining the type and level of fire protection that exists within a given community. Using funding provided under the annual core capital allotments provided by Ingenious Services Canada (ISC), communities may establish their own fire departments or contract services from nearby communities.

How losses are mitigated also varies considerably from one community to another. In some communities, residents purchase insurance from commercial providers as is common in off-reserve communities. In other instances, residents do not have private coverage and losses are born by the Band Council or, ultimately, the Government of Canada. This latter form of coverage is known as self-insurance.

What has not been examined systematically, is the cost-benefit of using the self-insurance model relative to contracting with private providers. The comparison is complicated by the fact that not all FN communities are commercially "rated;" that is, rated according to their relative risk. This rating determines the premiums that an individual or corporate entity pays for coverage on the open market.

Background to Fire Insurance

Fire insurance is a relatively new type of product. In England, fire insurance came into being in response to the Great Fire of London in 1666.[1] In the United States, Benjamin Franklin and several colleagues founded "The Philadelphia Contributionship for the Insurance of Houses from Loss by Fire" in 1752. While one of the largest and most prosperous cities in the Americas at the time, housing in Philadelphia was dense, typically of wooden construction and highly prone to fire incidents. Early insurance companies such as that founded by Franklin, tended to be mutual societies where the policyholders owned a share of the risk. Unlike today's insurance companies, mutual societies did not typically seek profits but were structured solely for collaborative risk mitigation. Subsequently, from the late 1790s onward, several joint-stock or public companies were founded to provide a return to the shareholders' investments. Canadian fire insurance companies did not come into being until the mid 1800s.[2]

Structure of Coverage

Fundamentally, the purpose of insurance is to mitigate or reduce the impact of economic loss on an individual due to a catastrophic event. A homeowner, for example, may not be able to absorb the immediate costs associated with a fire or flood. However, if the costs are amortized over a sufficient period and across a large enough group, the annual cost or premium, is bearable for that individual.

Unfortunately, the history of early insurance organizations is littered with economic collapse and bankruptcies. The primary reasons for this were either due to an underestimation of the risk likelihood or an insufficiently large client base. Both underestimating the risk and having an insufficiently large base of contributors, or clients, generally leads to an underestimation of the premium and necessary capital reserve of the insuring entity. Thus, when a catastrophic event occurs, the insuring organization does not have the capital reserve necessary to cover the event.

Modern insurance companies are less likely to become insolvent for several reasons. First, the statistics of risk are better understood and the data necessary to estimate those risks are more readily available than in the past. Consequently, insurance companies are better able to estimate the necessary premiums and capital reserves. Second, insurance companies often share their risk in a secondary market (reinsurance) so that the effective base over which the risk is shared is broadened. Reinsurance both allows companies to balance their risk portfolio and to ensure that they are not overly exposed to a particularly large event or disaster. Third, regulatory oversights have been put in place to ensure that companies have reasonable capital reserves to cover catastrophic events. In Canada, the Office of the Superintendent of Financial Institutions (OSFI) regulates the solvency and financial practices of property insurers nationally. Each province and territory also has an office of the Superintendent of Insurance which oversees solvency and a company's business practices (such as marketing and claims settlements) within their jurisdiction.

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[1] For a more detailed background see: Robert Evans (1987) "The early history of fire insurance," *The Journal of Legal History*, 8:1, 88-91, DOI: 10.1080/01440368708530888.

[2] C. Haehling Von Lanzenauer (2006) "Insurance," *The Canadian Encyclopedia*. https://www.thecanadianencyclopedia.ca/en/article/insurance

Currently, most insurance is offered through private companies. The necessary funds to cover risk obligations along with shareholder returns and operating costs are generated through premiums and capital investments in stock markets, real estate or other places where companies can generate a return on capital.[3] There are, however, some situations where organizations self-insure either by setting aside a capital reserve within the organization or by collaborating with several like organizations.

One example of collaborative self-insurance is that of Canadian Universities. Most universities maintain their primary insurance policies through the Canadian University Reciprocal Insurance Exchange (CURIE). This is a non-profit collaboration that covers university property, liability, and "errors and omissions." Even with membership in CURIE, individual institutions typically have a large deductible of around a quarter million dollars which they effectively self-insure. The advantages of CURIE are that premiums are lower since the exchange is non-profit, and the institutions believe they have a better understanding of the risks to which they are exposed than would a general insurance company.

Within the current context, there are two type of coverage that need to be considered. The first, which is known as "home insurance," typically covers a homeowner's residential building, outbuildings, contents, additional living expenses (if an insured event damages the home so that it is uninhabitable during the repairs) and personal liability. Where the property is owned by the occupant, it is the occupant who is responsible for obtaining the insurance. In situations where the occupant is a tenant, it is the responsibility of the property owner to obtain the insurance on the structure. Where the occupant is not the property owner, "tenant's insurance" comes into play and covers any loss or damage to personal belongings, additional living expenses and personal liability.

While accurate figures are sometimes hard to come by, it is fair to say that a higher percentage of home occupants on reserves are tenants rather that owners of the structures they inhabit. That is, most people living on reserve tend to live in band-owned housing or are tenants to private owners.

Besides the standard elements relating to the amount of coverage and deductibles, property insurance can vary according to various "perils." For example, a basic or standard policy may not provide coverage for flooding or earthquakes unless those factors are specified explicitly. Specific and all perils policies are available in some circumstances but, where they are, they generally require additional premiums.

Insurance Rating Systems

Background and History of Fire Underwriters Survey (FUS)

The Fire Underwriters Survey's (FUS) function is to measure fire defences that came into being after several communities across North America had extraordinary fire-related losses. A fire insurance grading

[3] One significant cost element that drives insurance overhead is fraud. It is estimated that between 5% to 15% of Canadian automobile premiums, for example, are to cover fraudulent claims. This amounts to about $1.6 billion annually. [I. Nadarajah (2018) "Auto Insurance Fraud." *CIP Emerging Trends Papers*. https://www.insuranceinstitute.ca/en/cipsociety/information-services/advantage-monthly/0718-insurance-fraud]. Fire-related fraud appears to be less frequent but it has been estimated that about 6% of fire claims in the US and about 8% of claims in Ontario were fraudulent. [G. Gibson and A. Eckart (2017) Property Loss Update: The Importance of Good Fire Investigation." *Canadian Underwriter*. https://www.canadianunderwriter.ca/features/cc-property-loss-update-importance-good-fire-investigation]

system was developed to provide insurers with better and more consistent information related to the levels of fire risk and fire protection within each community in Canada.[4] Currently, the FUS is used by over 90% of Canadian property and casualty insurers. The system is designed to provide a cost benefit to communities for providing fire protection. Communities that have effective and appropriate levels of fire protection for the level of fire risk within their protection areas typically receive lower fire insurance grades, which result in lower insurance premiums for property owners. This assessment gives an overview of the factors that affect a community's fire insurance grading and how those ratings affect insurance premiums.

The Fire Underwriters Survey is a national organization financed and directed by SCM Opta Intelligence Inc.[5] The organization assesses, evaluates and grades the quality of public fire defenses maintained in Canadian municipalities and communities. This technical information is provided to FUS subscribers for use in their fire insurance rating and underwriting programs. FUS member companies provide most of the private general insurance underwritten each year in Canada. The grading system has two components, the Dwelling Protection Grade (DPG) and Public Fire Protection Classification (PFPC) which is typically used for commercial and industrial-type properties.

Dwelling Protection Grade for Personal Lines Insurance

The first fire insurance classification established and provided to Fire Underwriters Survey (FUS) member companies is the Dwelling Protection Grade (DPG) which is used by Personal Lines insurers, specifically for dwellings.[6] Personal Lines insurance covers the liability and property damage exposures of private individuals and their households as opposed to Commercial Lines. Typically, Personal Lines insurance includes all detached dwellings that are designated as single family residential or a duplex but it is not intended for anything larger.

The DPG is a numerical system scaled from 1 to 5. DPG grade 1 represents the highest standard of service whereas DPG grade 5 indicates little or no recognized level of public fire protection. This grading reflects the ability of a community to effectively respond to fires in small buildings (again, typically single-family residences and duplexes, or detached dwellings). An effective response requires adequate personnel with appropriate training and equipment, apparatus and water supply. The estimated response time must also be reasonable enough to be effective. Table 1 provides a descriptive summary of the DPG level and expected coverage.

The Dwelling Protection Grade is simplified in comparison with the Public Fire Protection Classification system. Particularly when grouped into three tiers as insurers prefer to do, the Dwelling Protection Grade system does not provide a reasonable measurement of the effectiveness of public fire protection facilities insured under personal lines. The Fire Underwriters Survey is currently considering discontinuing the publication of Dwelling Protection Grades and, instead, working with the Personal

[4] See: https://fireunderwriters.ca/
[5] See: https://optaintel.ca/About for more details.
[6] See M.R. Currie (2010) "Dissecting dwelling insurance." *Firefighting in Canada,* Vol. 54, No. 7, p. 24. Available at: https://www.firefightingincanada.com/dissecting-dwelling-insurance-7187. Also see the FUS website at: https://fireunderwriters.ca/

Lines insurers across Canada to switch their systems to use the more robust and accurate Public Fire Protection Classification system.

Table 1: DPG Level and Summary of Coverage

DPG	*Summary*
1	Career FD; fully protected; hydrant water system
2	Composite FD; fully protected; hydrant water system
3A	Auxiliary, volunteer, POC FD; fully protected; hydrant water system
3B(S)	Auxiliary, volunteer, POC FD; Superior Shuttle (STSS)
3B	Auxiliary, volunteer, POC FD; semi-protected; Standard Shuttle
4	Auxiliary, volunteer, POC FD; limited protection
5	Unprotected

Public Fire Protection Classification for Commercial Lines

The Public Fire Protection Classification (PFPC) is calculated using a comprehensive evaluation of the level of risk in the built environment and the fire defense capabilities of the community. This classification is a numerical value between 1 and 10 with 1 being superior fire protection and 10 being unprotected. The PFPC of a community is a significant factor that most insurance companies use to set insurance premium rates for all buildings insured under Commercial Lines (all buildings that are not single-family residences or duplexes). This includes assembly, institutional, industrial, multi-family residential and all other structure. Many of these exist on First Nations communities as well as off-reserve communities. The PFPC considers over 500 different variables from 5 key areas: Fire Risk (benchmark against which others are measured), Water Supplies (30%), Fire Department (40%), Fire Safety Control (20%), and Emergency Communications (10%). The scores in each area are added together to give a final score out of 100% which is then published as a 1-10 Class (see Table 2).

Table 2: Dwelling (DPG) and Public Fire Protection (PFPC) Classification Grades for Insurance Purposes

Public Fire Protection Classifications	Dwelling Protection Grades	Insurance Companies Typically Refer to this Grade As:	Percentage of Premium Decrease	Cumulative Percent of Decrease
1			2%	57%
2	1		3%	55%
3	2	Protected	5%	52%
4	3A		5%	44%
5			5%	39%
6	3B	Semi-Protected	5%	34%
7	4		5%	29%
8			5%	24%
9	5	Unprotected	9%	15%
10			0%	0%

Community DPGs and PFPC ratings are but one factor in determining insurance rates. Those focus on the location of the property where insurers track the number, type and cost of claims by neighbourhood. According to the Insurance Bureau of Canada, there are several immediate risk factors that also contribute to the setting of an individual's premium. These include such factors as:[7]

1. Replacement cost. The size, composition and contents of the property.
2. Proximity to water. Insurers look at how far the structure is from a fire hydrant or fire station.
3. Personal claims history. Past claims are often an insurers' best predictor of future claims activity.
4. Electricity. This includes the type of wiring, especially knob-and-tube or aluminum wiring. Also, a minimum of 100-amp service is preferred
5. Pipes. Galvanized or lead piping is generally considered less desirable than copper or plastic plumbing.
6. Wood stoves.
7. Age of roof.
8. Other uses. This includes the presence of a rental apartment or a home business.
9. Other factors. Items such as security and/or fire alarms can have an impact.

Increasingly, insurance rates are being influenced by major events such as extreme weather activity. Some formerly low risk areas are now being subject to devastating weather events such as overland flooding and other forms of storm damage.[8] Beyond both general and specific risk factors, an individual's premiums are also affected by the personal liability or "deductible" one is willing to assume.

On-Reserve Fire Protection Services

According to ISC, there are currently 654 population sites within 612 First Nations communities across the country. On those sites, there are 320 INAC-funded fire halls and 450 INAC-funded fire vehicles. Among the First Nations communities, 14 were considered underserviced for fire protection while 39 were considered to have limited service for fire protection.[9] While not universal, it appears that fire protection on First Nations communities is adequate for most. Unfortunately, information on the condition of the available fire-fighting equipment, its level of support and the quality of support crews was not available.

Currently, there are 258 reserve communities that have been insurance- graded according to FUS. A breakdown by rating level is provided in Table 3. Of the 258 reserve communities, 169 have agreements with off-reserve communities for fire services. Those agreements have dual benefits for First Nations communities. First, the agreements provide access to nearby firefighting facilities that the reserve

[7] Insurance Bureau of Canada. http://www.ibc.ca/on/home/buying-home-insurance/premiums
[8] A recent example is the 2013 flooding along the Bow River in Alberta. See: https://en.wikipedia.org/wiki/2013_Alberta_floods for details.
[9] INAC (2016) Fire Protection Note for the Minister. Ottawa: Indigenous and Northern Affairs Canada. July 15, 2016, p.5-6.

community likely could not put in place on their own for financial or other reasons. In fact, the federal government pays up to 90% of those municipal agreements, allowing the community to have the benefit of protection for a very small investment. Base on the benefits of having those agreements, it would be worthwhile investigating whether communities that do not have municipal agreements and do not house their own fire services would benefit from pursuing agreements with neighboring municipalities.

Second, by having a municipal agreement with another community, it is easier for the reserve to achieve an insurance rating or to increase the level of their insurance rating. This, in turn, reduces the cost of householders' insurance premiums.

Table 3: Insurance Grades of On-reserve Communities

Grade	*No. of Communities*
1	9
2	17
3A	63
3B	74
4	87
Unknown	8
Total	258

While it is up to individual communities to ensure that adequate fire prevention and suppression systems are in place, Indigenous Services Canada supports services based on a three-tiered foundation of fire protection. Briefly, these are:

Tier 1 – **Fire prevention** and **fire education** programming.

- Focused on individual home safety and household fire prevention;
- Examples - applying comparable smoke alarm standards and code compliance.

Tier 2 - Invests in **capacity development, training, and the effective operation and maintenance of fire protection equipment.**

- Focused on community fire prevention inclusive of both individual home fire safety and enhanced public fire safety governance;
- Examples - firefighter recruitment and retention.

Tier 3 - Provides **capital investments toward fire protection infrastructure or equipment** dependent on clearly identified risks and requirements.

- Focused on fire services inclusive of individual home fire safety, public/community fire safety governance and an operational fire department.

Insurance Premiums

For most residents, property insurance tends to appear inexpensive in comparison with a typical automotive policy. However, it should be noted that, for many individuals, a premium of only a few hundred dollars a year can prove to be challenging. InsureEYE has calculated the average monthly premium for home insurance in several provinces for 2020 for non-commercial properties.[10] Those estimates are presented in Table 4. The estimates range from an average of $21 a month for renter's insurance in Ontario to $33 a month in Quebec. Of course, the range varies considerably even within a province. For example, in Quebec, the minimum month premium is estimated to be $16 with a maximum of about $68.

Table 4: Monthly Home Insurance Rates for Renters

Province	Minimum	Average	Maximum
Quebec	$16	**$33**	$68
Ontario	$13	**$21**	$34
Alberta	$15	**$25**	$40
British Columbia	$16	**$24**	$40

For homeowners, monthly premiums are significantly higher, depending upon the home's value. InsureEYE's estimates are presented in Table 5. For properties worth $100,000 to $300,000,

Table 5: Monthly Home Insurance Rates for Homeowners

Quebec	**Home Value**		
	<$100k	$100-300k	$300-700k
Maximum	$ 110	$ 115	$ 128
Average	**$ 50**	**$ 66**	**$ 79**
Minimum	$ 16	$ 30	$ 43

Ontario	**Home Value**		
	<$100k	$100-300k	$300-700k
Maximum	$ 101	$ 134	$ 143
Average	**$ 45**	**$ 72**	**$ 77**
Minimum	$ 20	$ 27	$ 32

Alberta	**Home Value**		
	<$100k	$100-300k	$300-700k
Maximum	$ 33	$ 158	$ 138
Average	**$ 23**	**$ 76**	**$ 80**
Minimum	$ 13	$ 19	$ 38

British Columbia	**Home Value**		
	<$100k	$100-300k	$300-700k
Maximum	$ 68	$ 89	$ 153
Average	**$ 43**	**$ 51**	**$ 87**
Minimum	$ 21	$ 22	$ 34

[10] InsurEYE. https://insureye.com/average-home-insurance-cost-overpaying-do-a-30-second-test

the average monthly premium in Alberta is estimated at $76 (with a range of $19 to $158) and in Quebec, it is estimated to be $66 (with a range of $30 to $115). Average rates in Ontario and British Columbia tend to fall within that range.

Annually, homeowner's insurance can be a considerable expense, even for a modest property. For example, in Ontario, the average annual cost for a structure valued at less than $100,000 is approximately $540. The maximum, however, can be more than twice that amount at $1,212 per year.

Data Issues

Obtaining detailed fire-risk data for both on- and off-reserve communities in Canada is difficult. While the recently constructed National Fire Information Database (NFID) provides some data relative to fire across the country, it does not cover all jurisdictions. Essentially, the responsibility for collecting fire-related data is the responsibility of the Provinces and their provincial Fire Marshalls'/Commissioners' offices. More detailed, risk-related data are collected by the insurance companies, but those data are typically considered proprietary for the purposes of setting competitive premium rates. Due to both proprietary limitations and to confidentiality issues, all data and analyses/results provided in this report are necessarily at an aggregate or high level of analysis.

While a few provincial Fire Marshalls' offices collect information relating to on-reserve fire incidents, they do not collect information on exposure or risk. Some information relating to the number and types of properties at risk can be obtained through housing profile data from Indigenous Services Canada. Most of that data is obtained through the quinquennial Census of Canada which covers most but not all First Nations or reserve communities.[11]

First Nations Housing

As with the rest of the country, the quality and quantity of housing on First Nations communities varies considerably.[12] A complicating factor is the fact that, proportionately, much more First Nations' housing is in remote and isolated communities where the logistics of transporting raw material and construction are significantly more expensive and complicated than in the more densely populated parts of the country. In the far North, for example, considerable money and effort is spent maintaining properties that are sinking due to permafrost problems. The quantity and quality of Band-owned housing is often subject to the limited financial capacity of Band Councils and the subject to the discretion of federal funding transfers.

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[11] In 2016, there were 14 "incompletely enumerated" Indian reserves and Indian settlements [see: Statistics Canada (2017) *Guide to the Census of Population, 2016*. Ottawa: Ministry of Industry. Available online at: https://www12.statcan.gc.ca/census-recensement/2016/ref/98-304/app-ann1-2-eng.cfm]

[12] For a synthesis of on-reserve housing policy issues, see: B.C. Housing (2018) *Interim Guide to Indigenous Housing Development and Design*. BC Housing Research Centre: Burnaby, BC. For a detailed discussion of off-reserve housing, see: D.J. Brant and C. Irwin-Gibson (2019) *Urban, Rural and Northern Indigenous Housing: The Next Step*. The Canadian Housing and Renewal Association.

A further distinguishing feature of on-reserve housing is that while the structures *may* be owned by individuals and families in some communities, the land on which those structures sit is typically community property. According to the 2016 Census of Canada, 37.9% of residents on First Nations communities live in owner-occupied accommodations; 13.4% are renters; and, 48.6% reside in Band-owned housing. Nationally, 67.8% of residences outside of reserves are owner-occupied. Consequently, First Nations residents are more likely than other Canadians to be tenants; that is, renters rather than owners.

In general, much housing in First Nations communities is older, inadequate for the location, not owner-occupied, and overcrowded.[13] According to the 2016 Census, approximately 46% of on-reserve housing required "major" maintenance or repairs. The overcrowding issue is related to general shortages of supply which often requires extended families to share accommodation whether they want to or not, and to the fact that First Nations families tend to be larger than average due to higher fertility rates.

Beyond housing, there are numerous public-access building that might exist on a reserve, many of which are ISC-funded. These include:[14]

- Offices
- Schools
- Day Care Centers
- Fire Stations
- Student Residences
- Teacherages
- Community/Cultural Centers
- Arenas
- Gymnasiums
- Indoor Pools
- Youth/Senior Citizen Centers
- Trade Shops/Workshops
- Garages, and
- Warehouses

There may also be privately-owned and commercial building (e.g., stores, gas stations) on a given reserve. Due to a lack of detailed information on the size and composition of the structures, this analysis will not include commercial or public-access buildings. It should be noted, however, that by not including those structures, the cost-benefits outlined in this report tend to be conservative or underestimated. Consequently, the actual benefits of improving fire protection services will be greater than those determined for residential structures only.

A limitation of building structures on reserves is that they may or may not conform to either national or provincial/territorial building and fire codes. ISC requires infrastructure they fund to be compliant with

[13] P.C. Webster (2015) "Housing triggers health problems for Canada's First Nations." *Lancet World Report*. 9967: 495-96. DOI: https://doi.org/10.1016/S0140-6736(15)60187-8

[14] Government of Canada (2018) *Level of Service Standards – Fire Protection Services – Capital Facilities and Maintenance Program.* Available at: https://www.sac-isc.gc.ca/eng/1100100010632/1534353148780

all relevant codes, including fire and building codes. It is the prerogative of the local Chief and Council, however, to create local by-laws or to require that provincial/territorial fire building code standards must apply in construction.

Size of On-reserve Market

It is possible to get an estimate of the on-reserve housing market from the 2016 Census. Table 6 indicates the number of households surveyed and whether they are owner-occupied, rental units or band housing.[15] While these are estimates due to issues of under enumeration and other factors, they still provide a reasonable estimate of scope of households at risk.

Nationally, there are approximately 112,000 households on First Nations communities incorporating about 364,000 people.

Table 6: Number of Households and Percentage Owner, Renter and Band Housing

		Percentage		
Province/Territory	**Households**	**Owner**	**Renter**	**Band housing**
Newfoundland and Labrador	770	28%	14%	57%
Prince Edward Island	190	34%	13%	50%
Nova Scotia	3,290	18%	14%	68%
New Brunswick	3,110	25%	14%	60%
Quebec	12,640	37%	16%	47%
Ontario	18,890	45%	15%	40%
Manitoba	15,375	12%	7%	81%
Saskatchewan	13,865	8%	11%	81%
Alberta	12,890	19%	7%	74%
British Columbia	31,670	71%	18%	11%
Total	112,690	38%	13%	49%

Insurance Premiums and Level of Fire Protection

As indicated previously, the insurance industry rates communities by their level of protection, with those communities with the highest level of protection being rated as Class 1 and those with no protection rated as Class 10. The percentage decrease in premium from one grade or class is outlined in column 2 of Table 7.

[15] Extracted from Statistics Canada, 2026 Census of Canada, Table 98-400-X2016017.IVT. Note that percentages may not sum to 100% due to rounding. As distributed, all initial numerical values are rounded to nearest 5 or 0. The Yukon and Northwest Territories are excluded due to small numerical values.

Table 7: Premium Discounts by Level of Protection

Public Fire Protection Classification Change	Percentage of Premium Decrease	Cumulative Percent of Decrease
Class 10 to Class 9	15%	15%
Class 9 to Class 8	9%	24%
Class 8 to Class 7	5%	29%
Class 7 to Class 6	5%	34%
Class 6 to Class 5	5%	39%
Class 5 to Class 4	5%	44%
Class 4 to Class 3	5%	52%
Class 3 to Class 2	3%	55%
Class 2 to Class 1	2%	57%

The third column in Table 7 indicates the typical rate discount a community can expect as the level of protection increases across each of the 10 classifications. For example, moving from Class 10 (the lowest level) to Class 9 (next lowest) typically results in a 15% decrease in premiums. Going from Class 9 to Class 8 results in a further decrease of 9%. Thus, the cumulative decrease of going from Class 10 to Class 8 results in an aggregate decrease of 24%. As column three indicates, the cumulative difference between a community ranked as Class 10 and one rated as Class 1 is 57%. That is, a community with the highest level of protection can expect to pay 57% less per $100 of coverage than a community with the lowest level of protection.

Table 8 indicates what typical coverage rates (premium per $100 of coverage) are in 2021 for different types of structures. The rates presented are not fixed but are for typical situations. Additional discounts may be given based on several factors including the volume of business (total amount to be underwritten), level of competition and an insured's claim history.

As column 4 in Table 8 illustrates, the typical premium for a residential structure in an unprotected community would be about $1.12 per $100 of coverage. For a structure valued at $50,000, this would amount to an average of about $560 per year. In a fully protected community, the annual premium for the same structure would be approximately $150 per year.

Table 8: Premium Rates per $100 Coverage by Level of Protection

Rate/$100 Coverage	Fully Protected	Semi- Protected	Un-protected	NO FIRE SERVICE
Pct. Difference (average)	44% to 57%	29% to 39%	0% to 24%	0%
Residential	$0.30	$0.45	$1.12	$1.12
Medium Industry	$0.19	$0.26	$0.22	$0.04
Commercial General	$0.07	$0.10	$0.13	$0.14
Office	$0.06	$0.09	$0.12	$0.13
Heavy Industry	$0.05	$0.07	$0.09	$0.11
Light Industry	$0.12	$0.16	$0.22	$0.26

Estimating Losses due to Fires

Obtaining loss data for First Nations communities is extremely difficult since there is no on-going national data repository. Many noninsured structural fires are not reported, and insurance claims data are considered proprietary by the industry and are not publicly available. Consequently, estimating annual total fire-related losses is difficult. Furthermore, there is no national inventory of housing value for First Nations communities, thus making the total value of property at risk difficult to estimate.

To further complicate matters, not all fires result in the complete loss of the structure although remedial costs can often come close to that of replacement. Where a structure is a destroyed completely, the expense of site clean-up must also be included along with the replacement value. In either case, there is also the issue of loss of contents which is not included in this analysis.

On proxy measure we can use to mirror the value of housing, however, it the typical or average cost of construction within a particular location. It is this estimate that will be used in the cost models generated by this analysis.

Cost of Construction

Construction costs vary considerably across Canada as do housing preferences. Construction costs on First Nations communities in southern Ontario or southern Quebec tend to mirror those of neighboring non-FN communities. Costs rise dramatically, however, as we start to consider housing in more remote locations and the far northern parts of the country.

The Altus Group[16] estimates that for major urban areas in 2018, the average cost per square foot for a single-family residential unit ranged from a low of $90-150 per sq. ft. in Halifax to $145-260 in Vancouver. Nationally, the average was estimated to be in the range of $118 to $189 per sq. ft. Consequently, the cost for a modest, 1,000 sq. ft. unit would be within the range of $118,000 to $189,000. These estimates are for the primary residential structure only and do not include ancillary items such as site preparation, permits and additional structures such as decks.

Costs vary substantially outside of major urban areas. For example, NIDO, a construction company located in Kelowna BC, indicates that the average cost of "living space only" in the interior of BC varies substantially according to the type of home. In 2019, they estimate the following cost ranges per square foot:[17]

- $200/sq. ft. +/-$50/sq. ft. Full Scale Remodel/Retrofit
- $225/sq. ft. +/-$50/sq. ft. Minimum Code Construction
- $300/sq. ft. +/-$50/sq. ft. Passive House / Net-Zero / Positive Construction

[16] https://www.altusgroup.com/services/reports/2020-canadian-cost-guide/
[17] https://www.nido.design/post/2019-construction-costs-bc-interior

NIDO notes that, "the above values are based on a serviced lot (municipal water, power, sewer, telephone, cable) that is generally flat and does not include garages, patios, balconies, landscaping, appliances, pools and hot tubs. Additional items can include hazardous material removal and demolition of existing structures, septic fields, water wells, solar panels, etc."

In the far north (Nunavut, Yukon and Northwest Territories), the lack of skilled trades people, the need for specialized building materials and design elements to combat moisture and mold, the need for extra insulation, and the expense of delivering construction materials can add up considerably. Prefabricated and "kit" homes tend to be less expensive although, as indicated, transportation costs can be substantial when locating structures in remote areas. For example, Nunavik Building Inc., a Quebec company that builds housing for northern communities, estimates it cost about $40,000 to ship a prefabricated house from the port of Montreal to Kuujjuaq.[18] The company sells a small modular house (roughly 600 square feet) for about $220,000, with two- or three-bedroom homes costing about $100,000 more. The company estimates that constructing a conventional house on site would run from $500,000 to $1 million in the region.

These estimates generally reflect what it would cost to completely replace a residential structure. They do not include the cost of demolishing the fire damaged structure or removal and site preparation. Partially damaged structures will likely cost less in the aggregate to renovate, although the cost per square foot will typically be higher than for new construction.

Insurance Premiums, Protection Level and Replacement Costs

The key question for this analysis is: What is the impact of increasing a community's protection level on the total cost of insurance? That is, how much can a community expect to save in insurance premiums if they move, for example, from being semi-protected to fully protected according to the FUC protocol? Furthermore, would savings in aggregate or community-level premium costs offset the cost of increasing the community's level of protection?[19]

As indicated, we did not have access to the actual replacement values of residential structures on First Nations communities across the country. What we have done, however, is to model what the cost might be for replacing a modest structure based on an average size and varying costs of construction for different sized communities. These values are outlined in Table 9. There numerous limitations to these estimates. For example, they assume that a structure needs complete replacement and is not a candidate for partial renovation. The cost of site preparation (for example, removal of existing structure) is also not included. By assuming a small structure of 1,000 sq. ft. (about 90 sq. m.), the cost values generated at the community level will likely be conservative.

Table 9 provides and indication of the total premiums that might be expected for varying construction costs. Among the assumptions made here are the size of the structure and the size of the community. For the sake of illustration, a structure of 1,000 sq. ft. has been chosen. Since First Nations communities tend to be relatively small, estimates are given for communities with 50, 100, 150 and 250 residential

[18] https://canada.constructconnect.com/joc/news/projects/2019/12/nunavik-building-sets-foundation-for-canadian-north-homes-construction

[19] In this instance, we are only considering direct dollar costs. Costs associated with possible reductions in deaths or injuries or other factors are not taken into consideration.

units. The residential premium rates per $100 of coverage for different levels of fire protection are taken from the first row of Table 8.[20]

As an example, based on a construction cost of $118 per sq. ft. and a community of 100 insurable homes, the total insurable house value would be $11,800,000. For a fully protected community, the corresponding total annual insurance premium, if all structures were insured (at $0.30 per $100 of value), would be $35,400.

Moving from one insurance grade to another clearly makes a considerable difference in the total cost of coverage. The largest difference occurs when a community moves from unprotected status to semi-protected since the rate for unprotected coverage is almost 2.5 times that of semi-protected coverage. There is also a savings by moving from semi- to fully protected although the ratio is not as great. Here, premiums for semi-protected structures are 1.5 times that of fully protected structures.

Table 10 provides and indication of the total premium *savings* that might be expected as a community makes the transition from unprotected to semi-protected, and from semi-protected to fully protected for varying construction costs. Again, among the assumptions made are the size of the structure and the size of the community. Also, estimates are given for communities with 50, 100, 150 and 250 residential units with the national average ranges of $118 and $189 are used as are the values of $225, $300, $350 and $400. We have also chosen to estimate what the saving might be over 1-year, 5-year and 10-year periods. For the 5- and 10-year periods, the amounts are in constant dollars and not inflation adjusted. Again, it should be remembered that the dollar amounts reported in Table 10 are for the total premium amount *saved* assuming that all structures are insured, and not the total cost of coverage.

[20] Most First Nations communities have additional structures such as administrative offices, lodges and community centres. The impact of those structures on community-level insurance costs has not been included in this analysis. The main reason for this is that it was not possible to generate estimates of the average values of those structures without doing a community by community survey.

Table 9: Residential Insurance Premium Modelling based on Protection Level

					Insurance Premium (per $100)		
					Full Protection	Semi Protected	Unprotected
Construction Cost (per sq. ft.)	Average Size (sq. ft.)	Cost per Home	No. Homes	Total Value of Homes	$0.30	$0.45	$1.12
$118	1,000	$118,000	50	$5,900,000	*$17,700*	*$26,550*	*$66,080*
$189	1,000	$189,000	50	$9,450,000	*$28,350*	*$42,525*	*$105,840*
$225	1,000	$225,000	50	$11,250,000	*$33,750*	*$50,625*	*$126,000*
$300	1,000	$300,000	50	$15,000,000	*$45,000*	*$67,500*	*$168,000*
$350	1,000	$350,000	50	$17,500,000	*$52,500*	*$78,750*	*$196,000*
$400	1,000	$400,000	50	$20,000,000	*$60,000*	*$90,000*	*$224,000*
$118	1,000	$118,000	100	$11,800,000	*$35,400*	*$53,100*	*$132,160*
$189	1,000	$189,000	100	$18,900,000	*$56,700*	*$85,050*	*$211,680*
$225	1,000	$225,000	100	$22,500,000	*$67,500*	*$101,250*	*$252,000*
$300	1,000	$300,000	100	$30,000,000	*$90,000*	*$135,000*	*$336,000*
$350	1,000	$350,000	100	$35,000,000	*$105,000*	*$157,500*	*$392,000*
$400	1,000	$400,000	100	$40,000,000	*$120,000*	*$180,000*	*$448,000*
$118	1,000	$118,000	250	$29,500,000	*$88,500*	*$132,750*	*$330,400*
$189	1,000	$189,000	250	$47,250,000	*$141,750*	*$212,625*	*$529,200*
$225	1,000	$225,000	250	$56,250,000	*$168,750*	*$253,125*	*$630,000*
$300	1,000	$300,000	250	$75,000,000	*$225,000*	*$337,500*	*$840,000*
$350	1,000	$350,000	250	$87,500,000	*$262,500*	*$393,750*	*$980,000*
$400	1,000	$400,000	250	$100,000,000	*$300,000*	*$450,000*	*$1,120,000*

Table 10: Residential Insurance Premium Modelling based on Protection Level

				Premium Savings due to Protection Level Increase					
				1-Year Savings		5-Year Savings		10-Year Savings	
Construction Cost (per sq. ft.)	Average Size (sq. ft.)	Cost per Home	No. Homes	Semi to Full	Unprotected to Semi	Semi to Full	Unprotected to Semi	Semi to Full	Unprotected to Semi
$118	1,000	$118,000	50	*$8,850*	*$39,530*	*$44,250*	*$197,650*	*$88,500*	*$395,300*
$189	1,000	$189,000	50	*$14,175*	*$63,315*	*$70,875*	*$316,575*	*$141,750*	*$633,150*
$225	1,000	$225,000	50	*$16,875*	*$75,375*	*$84,375*	*$376,875*	*$168,750*	*$753,750*
$300	1,000	$300,000	50	*$22,500*	*$100,500*	*$112,500*	*$502,500*	*$225,000*	*$1,005,000*
$350	1,000	$350,000	50	*$26,250*	*$117,250*	*$131,250*	*$586,250*	*$262,500*	*$1,172,500*
$400	1,000	$400,000	50	*$30,000*	*$134,000*	*$150,000*	*$670,000*	*$300,000*	*$1,340,000*
$118	1,000	$118,000	100	*$17,700*	*$79,060*	*$88,500*	*$395,300*	*$177,000*	*$790,600*
$189	1,000	$189,000	100	*$28,350*	*$126,630*	*$141,750*	*$633,150*	*$283,500*	*$1,266,300*
$225	1,000	$225,000	100	*$33,750*	*$150,750*	*$168,750*	*$753,750*	*$337,500*	*$1,507,500*
$300	1,000	$300,000	100	*$45,000*	*$201,000*	*$225,000*	*$1,005,000*	*$450,000*	*$2,010,000*
$350	1,000	$350,000	100	*$52,500*	*$234,500*	*$262,500*	*$1,172,500*	*$525,000*	*$2,345,000*
$400	1,000	$400,000	100	*$60,000*	*$268,000*	*$300,000*	*$1,340,000*	*$600,000*	*$2,680,000*
$118	1,000	$118,000	150	*$26,550*	*$118,590*	*$132,750*	*$592,950*	*$265,500*	*$1,185,900*
$189	1,000	$189,000	150	*$42,525*	*$189,945*	*$212,625*	*$949,725*	*$425,250*	*$1,899,450*
$225	1,000	$225,000	150	*$50,625*	*$226,125*	*$253,125*	*$1,130,625*	*$506,250*	*$2,261,250*
$300	1,000	$300,000	150	*$67,500*	*$301,500*	*$337,500*	*$1,507,500*	*$675,000*	*$3,015,000*
$350	1,000	$350,000	150	*$78,750*	*$351,750*	*$393,750*	*$1,758,750*	*$787,500*	*$3,517,500*
$400	1,000	$400,000	150	*$90,000*	*$402,000*	*$450,000*	*$2,010,000*	*$900,000*	*$4,020,000*
$118	1,000	$118,000	250	*$44,250*	*$197,650*	*$221,250*	*$988,250*	*$442,500*	*$1,976,500*
$189	1,000	$189,000	250	*$70,875*	*$316,575*	*$354,375*	*$1,582,875*	*$708,750*	*$3,165,750*
$225	1,000	$225,000	250	*$84,375*	*$376,875*	*$421,875*	*$1,884,375*	*$843,750*	*$3,768,750*
$300	1,000	$300,000	250	*$112,500*	*$502,500*	*$562,500*	*$2,512,500*	*$1,125,000*	*$5,025,000*
$350	1,000	$350,000	250	*$131,250*	*$586,250*	*$656,250*	*$2,931,250*	*$1,312,500*	*$5,862,500*
$400	1,000	$400,000	250	*$150,000*	*$670,000*	*$750,000*	*$3,350,000*	*$1,500,000*	*$6,700,000*

Notes:

1. See text for construction cost and insurance premium estimate sources
2. Does not include coverage for contents or outbuildings/structures

Cost-Benefit Analysis

Tables 9 and 10 provide estimates of expected insurance costs and saving across various scenarios. However, a key question this analysis is designed to address is: What are the net savings in premium costs to be accrued by introducing different levels of fire protection? Essentially, this question requires that the gross premium savings for a community be offset by the cost of introducing fire protection into that community to generate a net savings (or, alternatively, additional cost).

Going forward, the analysis will focus on the example of *communities with 250 insurable structures* although the basic principles can be applied to a community of any size. The analysis will, however, include the differing construction costs (from $118 to $400) used in the previous sections. The total cost of insurance for the residential structures is reproduced in Table 11 (again for a community of 250 people). Cost savings for those communities based on increasing insurance grade levels is reproduced in Table 12.

Table 11: Total Expected Residential Insurance Premiums, based on Protection Level

					Insurance Premium (per $100)		
					Full Protection	Semi Protected	Unprotected
Construction Cost (per sq. ft.)	Average Size (sq. ft.)	Cost per Home	No. Homes	Total Value of Homes	$0.30	$0.45	$1.12
$118	1,000	$118,000	250	$29,500,000	*$88,500*	*$132,750*	*$330,400*
$189	1,000	$189,000	250	$47,250,000	*$141,750*	*$212,625*	*$529,200*
$225	1,000	$225,000	250	$56,250,000	*$168,750*	*$253,125*	*$630,000*
$300	1,000	$300,000	250	$75,000,000	*$225,000*	*$337,500*	*$840,000*
$350	1,000	$350,000	250	$87,500,000	*$262,500*	*$393,750*	*$980,000*
$400	1,000	$400,000	250	$100,000,000	*$300,000*	*$450,000*	*$1,120,000*

Table 12: Residential Insurance Premium Modelling based on Protection Level

				1-Year Premium Savings	
Construction Cost (sq. ft.)	Average Size (sq. ft.)	Cost per Home	No. Homes	Semi to Full	Unprotected to Semi
$118	1,000	$118,000	250	*$44,250*	*$197,650*
$189	1,000	$189,000	250	*$70,875*	*$316,575*
$225	1,000	$225,000	250	*$84,375*	*$376,875*
$300	1,000	$300,000	250	*$112,500*	*$502,500*
$350	1,000	$350,000	250	*$131,250*	*$586,250*
$400	1,000	$400,000	250	*$150,000*	*$670,000*

The estimated annual cost of firefighting equipment is provided in Table 13. For equipment, the costs are amortized over the life expectancy of the equipment. For example, the life expectancy of a vehicle might be 25 to 30 years while that of personal protective equipment might only be 7 years. It is also assumed that staff are volunteers, so no amount has been included for salaries and associated expenses or honoraria. Training costs are also excluded.

Overall, the cost for a medium sized department (which would equate to grading of semi-protection for the community) is estimated to be approximately $27,007 annually. For a large department (which would be required for full protection), the equivalent annual cost would be approximately, $36,562. Overall, the "large" department is $9,555 or slightly more than 35% more expensive than a "medium" department on an annual basis.

Table 13: Annual Firefighting Equipment Cost[1]

	Medium[2]			Large[3]		
Item	**Total Cost**	**Useful Life**	**Annualized Cost**	**Total Cost**	**Useful Life**	**Annualized Cost**
Vehicle	$170,000	25	*$6,800*	$210,000	25	*$8,400*
Com Link	11,250	5	*2,250*	12,150	5	*2,430*
Personal Protective Equipment	41,115	7	*5,874*	58,875	7	*8,411*
Fire Fighting Equipment	32,885	15	*2,192*	44,390	15	*2,959*
First Responder Equipment	2,560	10	*256*	2,560	10	*256*
Jaws of Life (w/ Prov. Registry)	0			31,500	10	*3,150*
Forestry Equipment	3,972	10	*397*	4,682	10	*468*
Shelter	369,500	40	*9,238*	419,500	40	*10,488*
Staff	0			0		*0*
Total	$631,282		*$ 27,007*	$783,657		*$36,562*

Notes:

1. Annual cost amortized over life expectancy of equipment
2. Mini Pumper Apparatus - 300 Gallon capacity
3. Triple Combination Pumper - 500 Gallon Capacity

Comparing these amounts to Table 12, it is evident that even for a community where the cost of construction is only $118 per sq. ft., the cost of protection is less than the expected savings in insurance premiums. That is, the total premium savings for the $118 scenario where the community goes from semi- to full protection is $44,250 per year while the cost of the fire department is $36,562, for a net savings of about $7,688 per year. The impact is even greater where a community makes the transition from being unprotected to semi-protected. Again, for the $118 scenario, the total annual *savings* in insurance is about $197,650 while the annual cost of protection is estimated to be $27,007 for a net saving of over $170,000 per year.

The overall benefits for the various cost of construction scenarios are presented in Table 14. It should be noted that in Table 14, the increased cost of protection by going from being unprotected to semi protected is estimated to be $36,562 per year (that is, the difference in annual amortized costs of $36,562-$0=$36,562). That value generally remains the same regardless of the size of the community and the cost of structural replacement or remediation. Moving from semi protection to full protection, however, results in an average annual increase of $9,555 (that is, the difference in annual amortized costs of $36,562-$27,007=$9,555).

The expected amount saved increases dramatically as the cost of replacement construction increases since the cost associated with fire protection remains constant.

Table 14: Cost Benefits of Increasing Protection Level

		1-Year Premium Savings		Cost of Protection[1]		Benefit Ratio[2]	
Construction Cost (sq. ft.)	Total Value of Homes	Unprotected to Semi	Semi to Full	Unprotected to Semi	Semi to Full	Unprotected to Semi	Semi to Full
$118	$29,500,000	$197,650	$44,250	$36,562	$9,555	*5.4*	*4.6*
$189	$47,250,000	$316,575	$70,875	$36,562	$9,555	*8.7*	*7.4*
$225	$56,250,000	$376,875	$84,375	$36,562	$9,555	*10.3*	*8.8*
$300	$75,000,000	$502,500	$112,500	$36,562	$9,555	*13.7*	*11.8*
$350	$87,500,000	$586,250	$131,250	$36,562	$9,555	*16.0*	*13.7*
$400	$100,000,000	$670,000	$150,000	$36,562	$9,555	*18.3*	*15.7*

Notes:

1. Incremental cost of protection is difference of $36,562-$27,007=$9,555 going from semi to full protection.
2. Benefit ratio is dollar saving per dollar invested in increasing fire protection.

Impact of Level of Coverage in Community

In this modelling, it is assumed that the community would have 100% coverage. That is, every household in the community would opt for house insurance. While this may be the case for some communities, that will rarely be the case. However, as Table 6 indicates, about half (49%) of on-reserve housing is band housing on average. Thus, it might be possible to consider an average of 50% coverage to be a reasonable floor if the band decides to insure or require insurance for its housing assets. Likely, some proportion of those who either own their own structures or rent on the reserve would purchase insurance. Basic economics would also suggest that this likelihood would increase as the level of fire protection increases and the corresponding cost of premiums decreases.

Figure 1 and Figure 2 illustrate the relationship between the amount of premium savings by the percent of coverage in the community by varying costs of construction as fire protection increases. Figure 1

indicates the relationship as the community goes from semi to full coverage. Figure 2 shows the corresponding relationships as the community goes from unprotected to semi coverage. As the previous analysis indicates, greater proportional savings are gained by making the initial step of moving from no fire coverage to semi coverage. The proportional savings are less making the transition from semi to full coverage although substantial savings can still be accrued at the community level since the annual price increase associated with improving fire coverage is minimal ($27,007 to $36,562 on average).

Figure 1

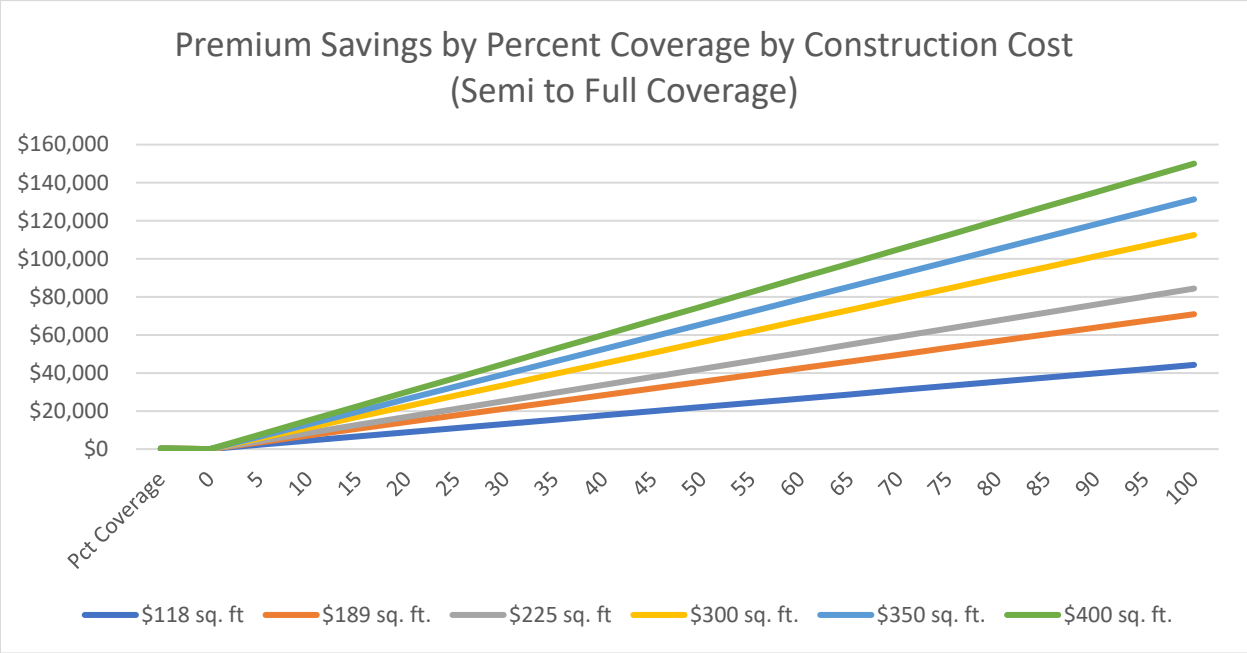
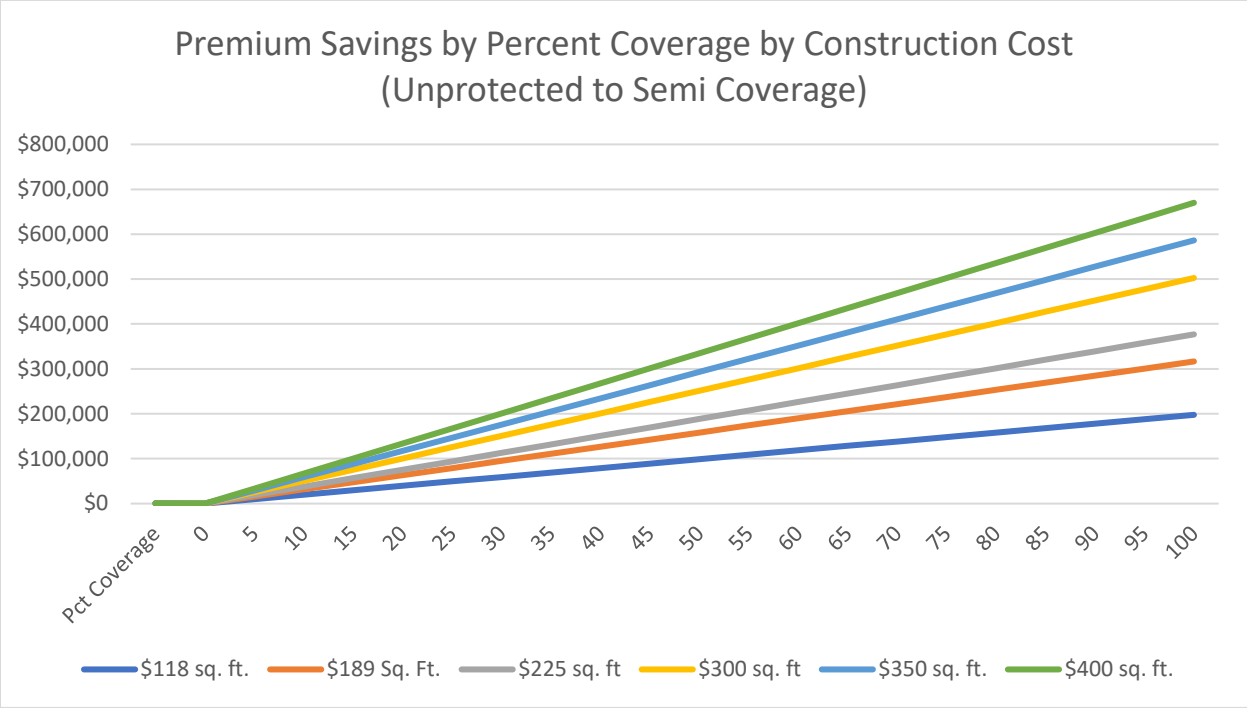


Figure 2



Based on the data provided in Figures 1 and 2, it is possible to determine what the percentage coverage break-even point would be based on the cost of construction and the annual cost of fire coverage. Table 12 indicates what the estimated break-even values are for communities moving from semi to full coverage. Where construction costs are $118 per sq. ft., 61% of the community would need to be covered in order to pay for the increase in annual fire service coverage based on savings from fire insurance premiums alone. The percentage of required coverage in a community would drop to 18% if the replacement cost of construction were $400 per sq. ft. For all values of construction costs above the upper national average of $189 per sq. ft., 38% or less of the community's housing structures would have to be insured to cover the cost of the fire equipment.

Again, to put this in context, band housing constitutes about 50% of the housing on a typical First Nations community. This means that if the band covered only the housing it provided, the savings would typically cover the cost of increased fire coverage and still provide overall savings in insurance premiums. The impact would be greater, however, since private owners would also benefit from the decrease in insurance rates. This reduction in rate would likely provide an incentive for more owners to insure their structures.

Needless to say, even smaller proportions of a community's housing stock would need to be insured if a community's fire coverage increased from unprotected to semi-protected. As Table 15 indicates, at a replacement cost of $118 per sq. ft. on a community with 250 homes, only 18% of the housing stock would need to be insured to pay for the increased cost of fire equipment. At $400 per sq. ft., only 5% of the housing stock would need to be insured in order to cover the cost of fire equipment. Moving from

unprotected to semi-protected results in significant cost savings insurance premiums. Again, the difference is likely great enough to not only encourage the band council to pursue outside coverage, but it also provides a major economic incentive for more individual owners to insure their structures.

Table 15: Break Even Percent Coverage (Uncovered to Semi)

Construction Cost (sq. ft.)	Unprotected to Semi Coverage Savings	Incremental Fire Coverage	Break-Even Percentage
$118	$197,650	$36,562	18%
$189	$316,575	$36,562	12%
$225	$376,875	$36,562	10%
$300	$502,500	$36,562	7%
$350	$586,250	$36,562	6%
$400	$670,000	$36,562	5%

The economic impact of moving from semi-protection to full protection is somewhat less that making the move from no protection to being semi-protected. Table 16 illustrates the expected coverage break-even points based on cost of construction. At a replacement cost of $118 per sq. ft., about 61% of the community of 250 homes would need to be insured. Where construction costs approach $400 per sq. ft., only 14% of the community's units would have to be covered for the savings in insurance premiums to cover the annual cost of fire protection.

Table 16: Break Even Percent Coverage (Semi to Full)

Construction Cost (sq. ft.)	Semi to Full Coverage Savings	Incremental Fire Coverage	Break-Even Percentage
$118	$44,250	$27,007	61%
$189	$70,875	$27,007	38%
$225	$84,375	$27,007	32%
$300	$112,500	$27,007	24%
$350	$131,250	$27,007	21%
$400	$150,000	$27,007	18%

As indicated, these values are based on a community of 250 housing units. The break-even point in for required insurance coverage would be greater for smaller communities and lower for larger

communities. Still, the savings in insurance premiums alone would cover the cost of a small community of 50 housing units moving from unprotected to semi-protected even at a replacement cost of $118 per sq. ft. Replacement costs would have to be close to $500 for a community of 50 houses to offset the cost of moving from semi-protected to full protection. Regardless, the point remains the increasing the level of fire protection in a community results in substantial premium savings even when a low to middling proportion of the housing stock is insured.

Other Issues

Another area where the cost of insurance premiums might be trimmed somewhat relates to taxes imposed by various provincial governments. In Canada, all provinces collect some type of insurance premium tax, but the amount varies in scope and revenue. While there are questions as to whether the taxes, as collected and currently employed throughout Canada are legal, it is generally accepted that goods and services provided on First Nations communities are tax exempt.[21] In some provinces, the tax is as low as 0.5%. British Columbia's tax, at 4.4% of all property and vehicle insurance premiums, is the highest in the country. British Columbia's contribution to municipal fire departments is limited to its funding of the Office of the Fire Commission, which in 2003/04 received $2.3 million (about 0.7% of the insurance premium tax revenue).

The most progressive province in this area, Manitoba, collects a 1.25% tax and applies the revenue directly to its Office of the Fire Commissioner. In that province, the OFC provides a wide range of services for municipal fire departments, including but not limited to: training, a financial incentive program for training, maintenance of Provincial Mutual Aid System, operational costs for the provincial emergency services college, operational support for hazardous material situations, lost person rescues and more.

Yukon levies a 1% tax on fire-related insurance for properties and vehicles. While the revenue is not directly earmarked for fire services, the Yukon government pays for most equipment, vehicles and training for local fire departments, which also receive 70% of their wildland firefighting expenses from the federal government.

Other provinces join British Columbia in withholding the tax revenues from municipalities, but the taxes generally have a more limited application and represent a much smaller amount of revenue. Alberta, for example, collects the tax and applies it to general revenue. However, it does subsidize training to an approximate value of $1.5 million per year and provides substantial support for wildland interface firefighting in some areas.

[21] It may be possible that legal challenges could be based on sections 7 and 15 of the *Canadian Charter of Rights and Freedoms*. In terms of section 7, the case would hinge on making the argument that the deleterious effect of diverting the insurance premium tax away from fire services outweighs the benefits of using the money for other budgetary items. A section 15 challenge would have to be framed by the argument that the insurance premium tax is discriminatory because it imposes a tax on property taxpayers that other provincial taxpayers do not have to pay.

New Brunswick collects about $1 million per year from its 1% tax on fire insurance premiums for residential and commercial occupancies only. Municipalities receive no direct fire service funding, and New Brunswick's Office of the Fire Marshall offers limited support for municipal departments.

Examining whether First Nations communities should receive a premium rebate based on the tax or whether the amount collected should be used to subsidize local fire services, is worth pursuing.

Conclusions

Insurance coverage is a way of mitigating or "smoothing out" the economic impact of a catastrophic event. Instead of having to absorb the immediate cost of a major loss due to fire, property owners distribute the costs over time through the payments of regular premiums. The risk burden is also reduced by having a broader base of individual owners contributing to the premium pool. As with any other product or service, the incentive to purchase is related to price. High premiums deter people from buying insurance while low premiums generally provide an incentive to purchase the product.

Numerous factors affect the price of insurance from the condition of the structure to be insured, (including building materials, electrical and plumbing issues), the existence municipal water supplies, and the claims history withing the community. Combined, these factors are aggregated by the insurance industry to provide a risk code for the community. One of the primary factors affecting premiums, however, is the existence of fire protection through the presence of a properly equipped and trained fire department (either volunteer or professional).

What we have shown in this analysis is that increasing the level of fire protection in a community can typically be offset by a reduction in premiums that members of the community would have to absorb. In fact, for most communities, the reduction in premium costs is many times that the cost of providing adequate protection.

There are other ways of reducing insurance premiums. It has been noted that many, but not all, First Nations communities have agreements with nearby communities to provide or share fire services. Undoubtedly, the existence of those agreements assists a community in obtaining an FUC rating that has a substantial impact on reducing premiums. While a substantial proportion of First Nations communities are insurance-rated and have municipal agreements, many do not. Given the Federal Government's willingness to subsidize those arrangements, it is clearly worthwhile examining where such arrangements might be pursued by those communities currently lacking such agreements. Undoubtedly, many communities are too remote for such agreements to be viable, but examining the possibility is of great benefit with little cost associated with it.

The issue of provincial taxes on insurance premiums has also been noted. While the amount of the tax may appear relatively small, it can add substantially to the overall amount that a community contributes. Whether the imposition of this tax is appropriate for off-reserve communities, the long-standing principle that the federal and provincial governments should not impose taxes on reserve economies would suggest that First Nations communities ought to be exempt

Throughout this analysis, it has been assumed that communities would source insurance through the commercial market. In the longer term, the same principles would apply even if communities were to self-insure or, were to become part of a broader First Nations fire insurance trust or consortium. The essential risk-driving factor underlying coverage premiums remains the same. Whether self-insurance or some form of First Nations consortium would be more or less expensive than commercial coverage is a question beyond the scope of this analysis.

The focus of this analysis has been on the direct economic benefits of increasing fire protection within a typical community. By reducing the cost of insurance premiums for owners, it is likely that both band councils and individual owners would be more likely to purchase coverage. Increased coverage has other benefits. Not only does it mitigate the impact of a catastrophic economic even on the property owner, it

also provides the psychological assurance that should such an event take place, immediate costs associated with temporary housing and reconstruction would be looked after. Accompanying content insurance, which has not been included in this analysis, would provide for the replacement of household items, clothing and other personal effects.

APPENDIX A

Available at: https://www.sac-isc.gc.ca/eng/1478084921403/1534353572919