



Fire Underwriters Survey (FUS)

**A service to Insurers and Municipalities
in Canada since 1883**



Fire Underwriters Survey (FUS)

Canadian Fire Insurance Grading Index

Verisk Canada's Fire Underwriters Survey (FUS), formerly an Opta service, now a Verisk business, is a national organization that produces **Fire Insurance Grades** for properties that have been in use by the Property and Casualty Insurance industry in Canada for over 100 years. FUS is the authority responsible for establishing fire insurance grades and publishing them through its Canadian Fire Insurance Grading Index.

Fire remains the costliest single cause of property loss in Canada's history.

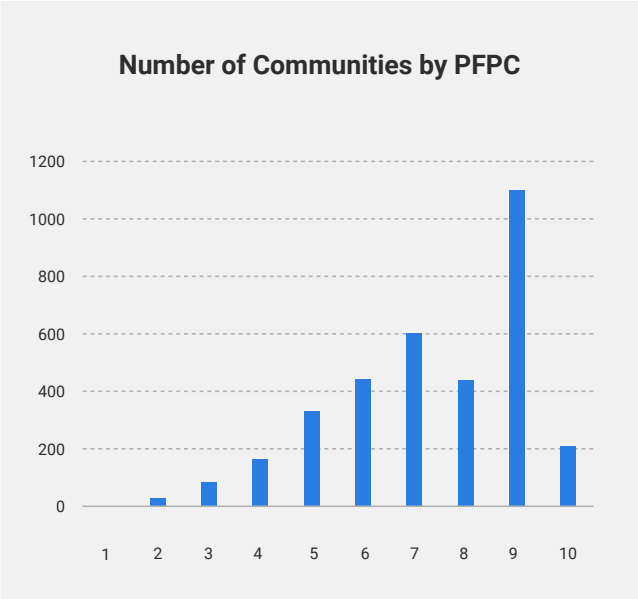
Communities that are committed to saving lives and property need trained firefighters, proper equipment, and adequate supplies of water. Insurance companies consider it good public policy — and good business — to promote and encourage the efforts of individual communities to improve their fire-protection services. That's why, for over a century, Canadian property insurance companies have funded key initiatives aimed at fire prevention and fire mitigation.

In the battle against the fire peril, one of the insurance industry's most important weapons is the Canadian fire insurance grading system which includes the Public Fire Protection Classification (PFPC) program and Dwelling Protection Grading system from FUS. The PFPC program provides important, up-to-date information about municipal fire-protection services throughout the country. A community's investment in fire mitigation is a proven and reliable predictor of future fire losses. So insurance companies use fire insurance grading information to help establish fair premiums for fire insurance — generally offering lower premiums in communities with better protection.

By offering economic benefits for communities that invest in effective firefighting services, the fire insurance grading program provides a real incentive for improving and maintaining public fire protection. And that incentive produces results.

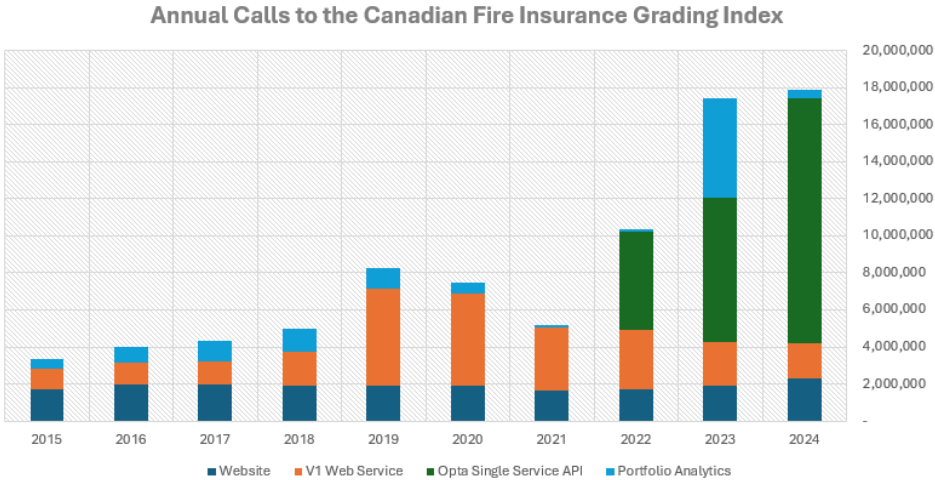


Fire Chiefs across Canada have said that this program is vital to them getting the funding they need each year to sustain the ability to control losses in their communities. When budget talks begin, Fire Chiefs remind municipal councils that the amount they spend on fire protection and emergency response services will impact property insurance premiums and this is one of the most important justifications for ongoing funding. It has been so effective that across Canada over \$6 billion dollars per year is spent on the fire protection services of more than 3,500 fire departments.



It's important to note that funding for emergency services doesn't just help control losses due to structure fires. Fire departments have become vitally important in responses to all kinds of emergencies including flooding, ice storms, tornadoes, wildfires and every other peril that puts Canadian citizens and property owners at risk.

After creating the program more than a hundred years ago, the Canadian P&C community continue to use the program more than ever. Since the advent of digital technology, the system has been shifted into an online format that supports instantaneous analysis of fire protection characteristics for every location in Canada. As a result, insurers use the system now more than ever.



Improving Efficiency and Profitability

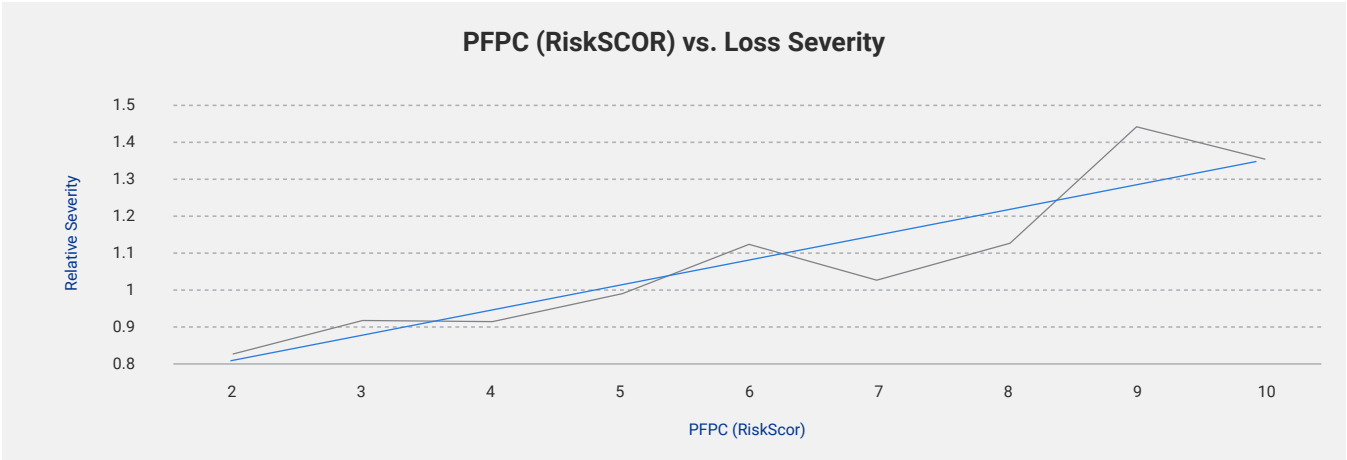
Additionally, the fire insurance grading system is now available as an API which allows the national standardized data to be automatically pulled during the quoting process. Canadian insurance companies have estimated this saves more than 10 minutes on average per risk being evaluated. Across thousands of policies this time savings makes an enormous difference in efficiency.

The program also helps Canadian insurers price the risk accurately and has been shown to correlate to loss severity.

Loss Severity

Public Fire Protection Classification and RiskSCOR

On average, per \$1,000 of insured property, communities in the worst classification had fire losses almost twice as costly as communities in the best classification.





Benefits of FUS Fire Insurance Grades

- Fire Underwriters Survey was created by the Canadian insurance community in 1883
- FUS assists municipalities with best practices relating to the overall fire protection they provide to their community, with the purpose of recognition of their efforts by the Property and Casualty Insurance Industry. FUS engineers and field specialists insure that fire insurance grades provide municipalities and the insurance industry with a clear picture of the fire protection in a community;
- FUS transmits up-to-date data to decision-makers. Transparency and accuracy of data assists underwriters to make the right decisions that reflect the reality of municipal fire control effectiveness in a community. It also allows fire insurance premiums to reflect the investments made by municipalities towards fire protection;
- The integration by FUS of GIS data in its Canadian Fire Insurance Grading Index, such as response jurisdiction boundaries, fire halls and hydrants distance to risks, contributes largely in reducing the time it takes to bind and helps standardize interpretation of fire protection information. This is becoming increasingly important as insurers move toward automation;
- The most critically important benefit to the fire insurance grade system is the incentive created to fund fire departments. Without this incentive fire chiefs have stated unequivocally that their departments will lose funding. This means losses would become more severe and insurers would see loss expenses rise again.

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Fire Underwriters Survey has embraced the technological turn by integrating into its operations Geographical Information Systems (GIS) and various related databases such as civic addresses, fire hydrants, fire halls, and jurisdictional response boundaries. The integration of GIS technology into its operations has allowed FUS to produce fire insurance grades by “geocoded risk address” through our online platform, taking into account the servicing fire hall, response type and strength, initial; response time, available hydrant coverage, and many other detailed factors of response, instead of an overall grade for a municipality. This approach by fire hall assessment has allowed the Insurance industry to get a more accurate picture of each risk being analyzed for insurance purposes, while improving subscribers’ productivity. It also reflects specific municipalities’ efforts to improve fire safety through funding of emergency services. Insurance companies and municipalities are thus getting the best leverage of FUS data intelligence, fire protection, and engineering analysis performed by its technical staff and field engineers across the country.

Fire Insurance Grades are established by FUS to reflect the ability of a community to prevent, control, and mitigate probable commercial, industrial, and residential fire risks. Specialists at Fire Underwriters Survey perform detailed analysis of the overall fire protection by auditing five key areas: **fire risk, fire department capacity, water supplies, fire prevention, and emergency communications**. Those areas are essential components in establishing Fire Insurance Grades for the control of fires by taking into account various human and physical elements such as the adequacy of resources, distribution of fire stations, fire apparatus, fire fighting and intervention strategies, capacity of water systems, testing and reliability of equipment, structures, building types and occupancy risk level in the community, future urban territorial expansion plans, fire prevention regulations, related municipal by-laws, training of fire fighters, construction and occupancy permits, and the adequacy of the emergency communications such as the 911 call centres, etc.



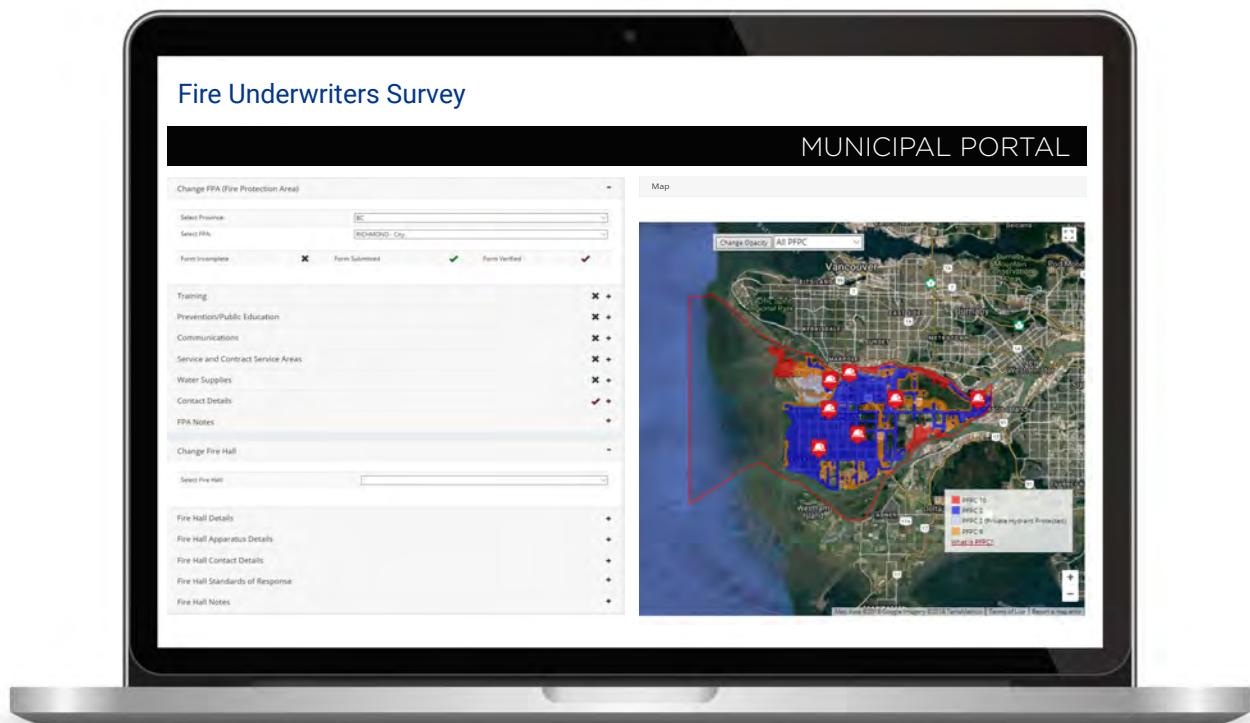
FUS Municipal Portal

An Online Platform Linking Municipalities to the Insurance Industry

This easy to use portal is the only national fire protection database allowing municipalities to quickly view and transmit information pertaining to the fire protection data and FUS Fire Insurance Grades in their community.

The Municipal Portal allows Fire Chiefs and Municipal management to:

- Easily view current FUS Fire Insurance Grades and protection data relating to their community as seen by the Insurance Industry across Canada
- Provide regular updates related to fire protection and connect with their Grade details
- Transmit and upload documents regarding any improvements or revisions to the data on the overall fire safety of the territory served which may impact the FUS Grade
- Access a geographical map allowing easy navigation and analysis of FUS grades for each sector of their municipality
- Keep the fire protection up to date within their communities with a more efficient and streamlined data exchange process allowing FUS specialists to quickly process, analyze and transmit improved FUS Grades back to the insurance industry
- Reduce significant time through an enhanced communication process with FUS specialists





FUS Produces Two Categories of Fire Insurance Grades for Structure Fires:

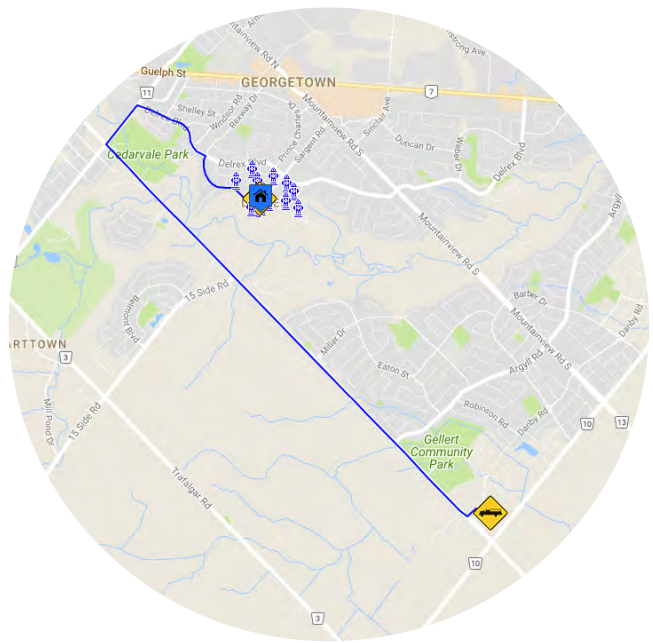
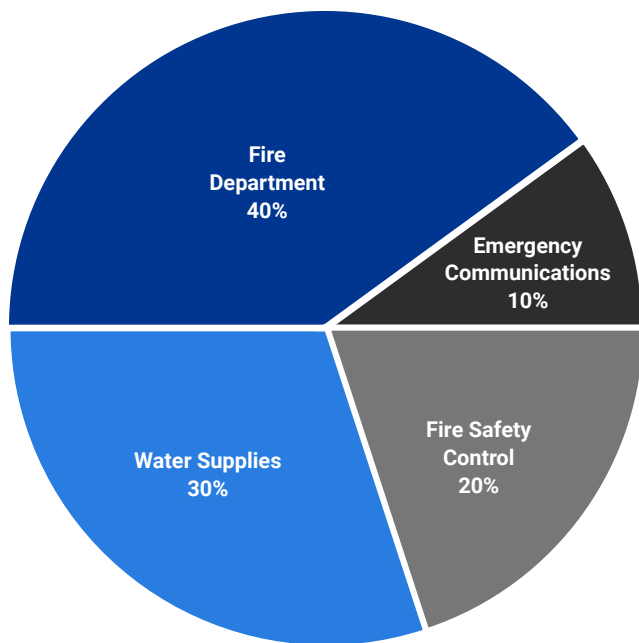
- **Public Fire Protection Classification grades (PFPC)** for commercial, multi-family residential, institutional and industrial risks: A scale of 1 to 10 (1 being the best).
- **Dwelling Protection Grades (DPG)** for one and two family dwelling risks: A scale of 1 to 5 (1 being the best).

Fire Insurance Grades established by Fire Underwriters Survey reflect the analysis of more than 500 fire protection related key elements. FUS fire protection specialists, technologists and engineers analyze and audit the overall fire protection organization of a community to determine its ability to prevent, control, and extinguish the majority of potential fires.

Route distance to servicing fire halls and available fire flows to adequately control a fire: In order to be recognized for fire insurance grading purposes by Fire Underwriters Survey, a responding fire hall must be located within a maximum of 5 km route distance of the insured commercial risk. For dwellings, the acceptable maximum distance goes up to 8 km. The rationale behind FUS approach is related to the key element of time. Time has a direct impact on controlling and limiting building damage due to the exponential progression of a fire, particularly post flash over. FUS classifies risks according to the occupancy type, size, and level of combustibility within to determine “required fire flows.” The latter requires adequate pressure levels and volume of water for sustained operations throughout the expected duration of a fire event.

Fire department estimated intervention time considers , alarm handling, response type (volunteer, career, composite, etc.) and probable turn out time, response travel distance and estimated average response time. Other factors such as time to discover a fire and set up time at a structure are variable based on the specific incident conditions. Intervention time is a critical measurement as interventions that occur before flash over have a much higher success rate in reducing property losses and saving the primary structure fire building, as opposed to interventions that occur post flash over which are more likely to be handled defensively with a focus on protection exposures only.

The mandate of FUS is to evaluate public (tax-based) portions of protection, as opposed to private portions of protection which are owner based. Typically, insurers evaluate and consider the portions of protection which are controlled by the building owner/occupant (ex. sprinklers, fire separations, etc.). However privately owned water systems and private hydrants can be a challenge to understand and deal with. FUS works to carefully identify these wherever possible so insurers can see which hydrants and water systems are privately owned and not evaluated by FUS. further information on privately owned water systems and hydrants is available through FUS on request.



FUS Grading is based on a detailed risk indexing system analyzing more than 500 fire protection elements

Commercial Fire Insurance Grades

(Public Fire Protection Classification - PFPC)

The Public Fire Protection Classifications published by FUS include 10 possible classifications, 1 being the best and a classification of 10 indicating that the location does not meet the minimum criteria for a recognized and effective level of fire response.

The PFPC considers the variable level of response across a jurisdiction and can vary significantly from one area to another as the level of fire response is not standardized and can be significantly different from one fire hall response jurisdiction to another, even within a single municipality. Furthermore, by integrating GIS data, FUS has been able to refine the process to provide more accurate fire insurance grades for every geocoded risk address.

FUS algorithms take into account the analysis performed by its staff of all the fire halls located within the maximum recognized response distances of a geocoded risk address to determine the first responding fire hall, as well as all other fire halls which may be called upon to respond to multi-alarm calls (including those under Automatic Aid and Contract Service agreements). In some cases, the fire hall determined to be the first responding fire hall may not be the closest fire hall in terms of road distance. This is frequently the case when risks are located close to response jurisdiction boundaries or when there are fire halls with on duty fire fighters available to respond to the risk slightly further than on-call fire fighters that may be assigned to a physically closer fire hall.

Commercial RISKSCOR Adjustment

Fire Underwriters Survey introduced the concept of **Adjusted Risk Specific Commercial Property Response** to automatically adjust applicable Public Fire Protection Classes to take into account the factors that have the most significant influence on response effectiveness, including a location specific analysis of hydrant coverage and response distance utilizing the RiskSCOR adjustments provides insurers with a more accurate scoring of the level of risk at a specific location within a municipality. It also ensures that municipalities have a strong financial incentive to provide adequate levels of fire response and water supplies to all risks across the jurisdiction.



Dwelling Fire Insurance Grades

(Dwelling Protection Grades – DPG)

One and two family dwellings make up the largest number and value of insurable property risks across most Canadian communities. The level of fire risk associated with typical one and two family dwellings is standardized and as such a standardized (and prescriptive) scale of effective response has been created, the Dwelling Protection Grade system. It is important to note that if a given risk has severe exposures or is unusually large (or used for other purposes, etc.) then the DPG system should not be used. The DPG system is only applicable to typical one and two family dwellings.

The system of fire insurance grading used for dwellings uses a simplified scale of one to five; one represents the maximum possible credit for fire protection programs and five represents a level of protection that does not meet all minimum criteria (unrecognized), or no protection at all.

Similar to fire insurance grades for commercial lines insurance, the fire insurance grades for one and two family dwellings are determined based on the capacity of the community to respond with a reasonable minimum amount of resources (within a specified time frame) for the level of risk being considered. The greatest difference between the two grading systems (PFPC and DPG) is in the quantification of the level of risk. In the commercial lines grading system, the level of risk is specifically determined for the built environment within that community, whereas the personal lines system considers a single level of risk to reasonably represent all detached dwellings. Here is a brief overview of some FUS minimum requirements for Dwelling Protection Grades

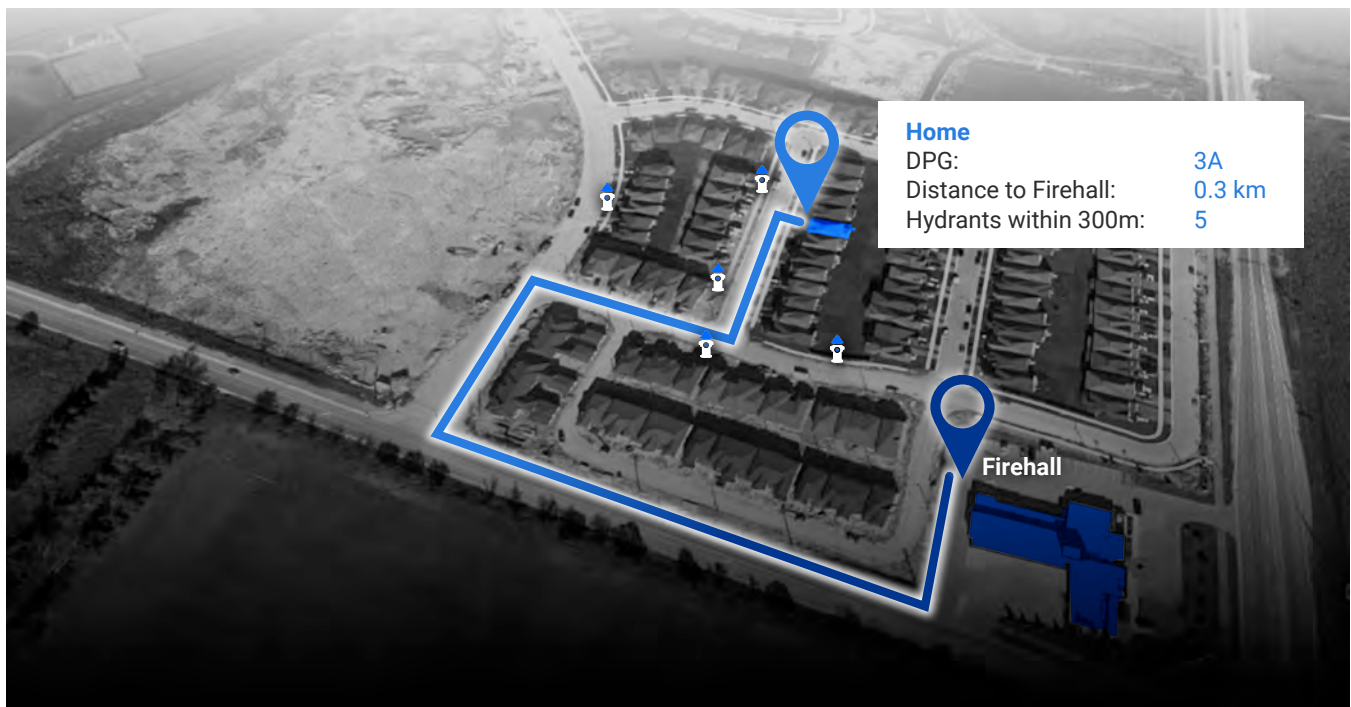


Grade	Fire Department type	Water Supply	Personnel	Other requirements
1	Career	Recognized* Municipal Water Supply with Hydrants (Class 5 or better)	On duty response (24/7) of 3 career fire fighters + 1 chief officer	Less than 8 km route distance to fire hall. Less than 300m hose lay distance to fire hydrant. Fire Department Class 5 or better.
2	Composite	Recognized* Municipal Water Supply with Hydrants (Class 6 or better)	On duty response (24/7) of 1 career fire fighter + 1 chief officer + roster with minimum 15 auxiliary fire fighters	Less than 8 km route distance to fire hall. Less than 300m hose lay distance to fire hydrant. Fire Department Class 6 or better.
3A	Auxiliary	Recognized* Municipal Water Supply with Hydrants	Roster with minimum 15 auxiliary fire fighters (trained and equipped)	Less than 8 km route distance to fire hall. Less than 300m hose lay distance to fire hydrant.
3B(S)	Career/ Composite/ Auxiliary	Accredited by FUS to deliver Superior Tanker Shuttle Service (STSS)	Roster with minimum 15 auxiliary fire fighters (trained and equipped) + mobile water supply op's	All requirements for DPG 3B must be met or exceeded. Less than 8 km route distance to fire hall. Less than 5 km route distance to recognized water supply point.
3B	Career/ Composite/ Auxiliary	Combined Apparatus water capacity minimum of 1,500 imp. gal.	Roster with minimum 15 auxiliary fire fighters (trained and equipped)	Less than 8 km route distance to fire hall.
4	Career/ Composite/ Auxiliary	Same as DPG 3B with one allowable deficiency (within limit)	Same as DPG 3B with one allowable deficiency (within limit)	Less than 8 km route distance to fire hall. Must have some ability to deliver water during a fire.
5	Unrecognized public fire protection service by FUS.			

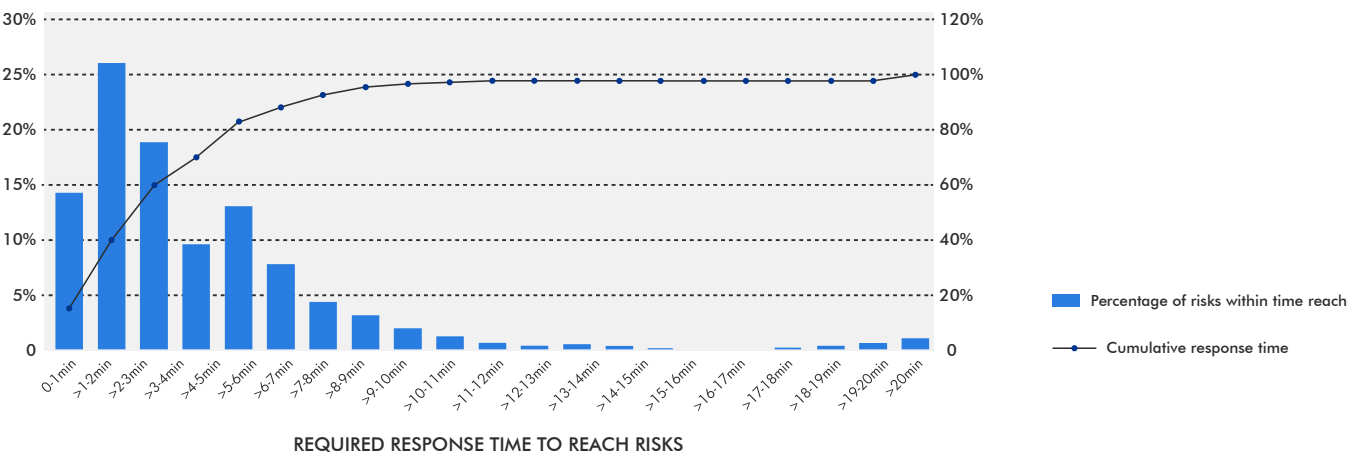
*Water supply system designed in accordance with Fire Underwriters Survey standard "Water Supply for Public Fire Protection".

Benefits of FUS Fire Insurance Grades to Municipalities:

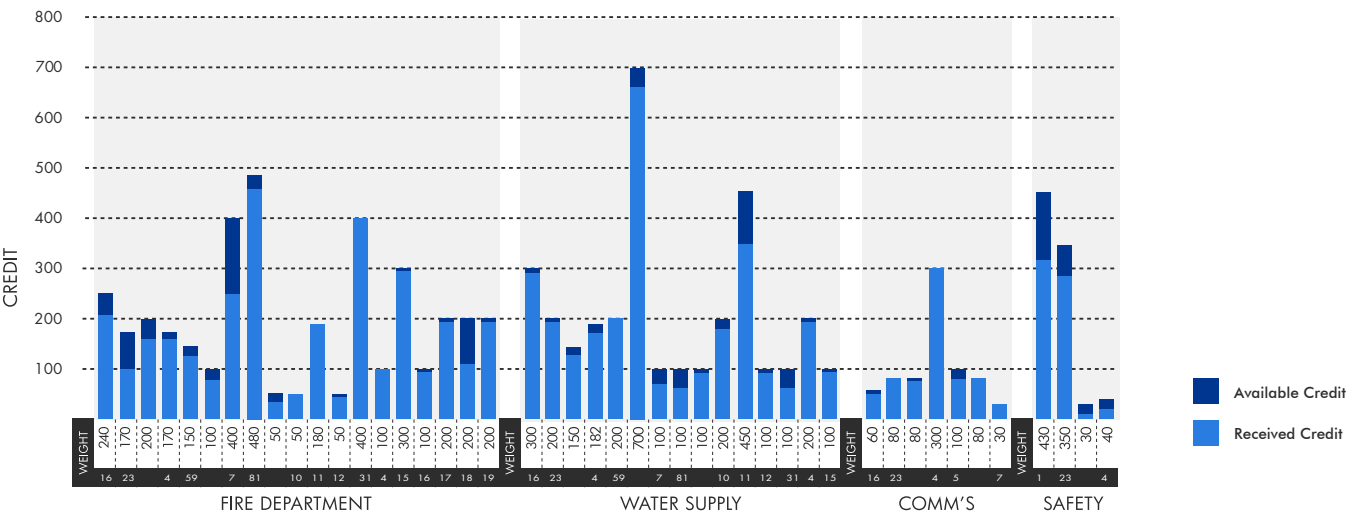
- Fire Underwriters Survey does not charge municipalities to analyze, visit, audit, update, produce, and publish fire insurance grades to the Insurance Industry;
- FUS assists municipalities with best practices relating to the overall fire protection they provide to their community, with the purpose of recognition of their efforts by the Property and Casualty Insurance Industry. FUS fire protection engineers, technologists and specialists ensure that fire insurance grades provide municipalities and the insurance industry with a clear picture of the effectiveness of public fire protection in each community;
- FUS transmits up-to-date data to decision-makers. By providing municipalities with a transparent understanding of how their fire protection investments are graded it helps them to make proactive financial decisions that support funding of effective levels of fire protection and controlling severity of fire losses. It also allows fire insurance premiums to reflect the investments made by municipalities towards fire protection;
- The integration by FUS of GIS data in its Canadian Fire Insurance Grading Index, such as fire halls and hydrants distance to risks, contributes largely in reducing the number of telephone calls and inquiries received by municipalities from insureds, who are often requested to provide this information to their brokers and insurance companies;
- Alternatively, with standardized fire protection information centralized through FUS and available online through the Canadian Fire Insurance Grading Index web portal and API service to insurance companies, municipal fire departments receive less requests from the insurance industry to update the municipal fire protection information they possess to properly underwrite risks.



Example Complete Fire Protection Response Time - Risk Distribution Within A Community - Road Travel Time to Closest Fire Hall.



Example Fire Insurance Grading Item Credits



Fire Underwriters Survey is committed to both the insurance industry and Canadian municipalities. FUS is involved with the provincial and the national Fire Chiefs associations to establish and promote best practices in public fire protection for all stakeholders. Fire insurance grades published by FUS are a key component of individual fire premiums, and assist municipalities in directing their tax funded fire protection investment efforts to improve access for property owners to improved fire insurance premiums.



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