

Squamish Fire Rescue Five-Year Plan 2022-2026 (Mid-Point Update)

This mid-point update reflects on the major accomplishments within the first half of the Five-Year plan, while also updating any significant data and recommendations that have transpired since the development of the plan.

Highlights of accomplishments:

- A significant investment in two new post-disaster fire hall replacements is in the final months of construction to wrap up this major project.
 - Benefits include:
 - Post disaster functionality of both fire halls, that can operate for 7 days independently from the power grid.
 - The Emergency Operations Center moved out of the flood plain and incorporated into the fire hall where the Emergency Program is based.
 - Main fire hall (Alex Munro Fire Hall 1) is located close to the downtown area with the greatest density and potential risk. (see heat mapping)
 - Both Halls designed as purpose-built facilities with industry leading cancer prevention equipment and functionality.
 - Both halls are designed for 24-hour operations with overnight accommodation.
- Staffing increases from 8-12 career firefighters, over a two-year period.
 - have allowed for 24-hour initial response capabilities, from previous dayshift only career response on-shift.
 - permit a quicker initial response to incidents, which has benefits with suppressing fires earlier in their development and reducing property loss.
 - The elimination of a duty officer being on-call for 7 nights in addition to their regular shift (96hrs straight)
 - Improved response capabilities and ability to instruct Paid-on-Call members on weekends and evenings on-shift.
- Paid Training for Paid on Call firefighters.
 - Paid on call firefighters are now paid hourly for required training after they have completed the Recruit-level training.
 - This improves their ability to commit to these required courses and recognizes the value that Paid on Call members bring to the department.

Introduction

In October 2021 the District of Squamish Public Safety Review was presented to Council. Subsequently, Fire Rescue was tasked with developing a five-year plan to support the document's recommendations. This plan was written in response to that request. It utilizes membership input, industry best practice and historic data to identify key strategic issues and develop recommendations that will address issues and help Squamish Fire provide better service to the community. This update considers the impact of growth, density, incident volume and legislative requirements placed on the fire service and identifies options to mitigate these impacts and improve service delivery.

The Department

Membership

Squamish Fire Rescue is made up of 45 paid on call firefighters, 12 career firefighters, three chief officers and one administrative support position. All of the department's dedicated members take an immense level of pride in the service they provide to the community and work extremely hard to ensure that residents and visitors receive an outstanding level of care.

Career Staff

Career staff provide coverage seven days a week, 24 hours per day, staff work a four-on-four-off schedule, with shifts running from 7:00 am to 5:00 pm and night shifts from 5:00pm to 7:00 am. The shift staffing typically is 3 firefighters per shift during the day and 2 firefighters per shift in the evening.

The department's career staff are very effective; in addition to responding to calls throughout a shift, each firefighter has additional responsibilities, such as fire inspections, plan examining, public education, equipment maintenance and instruction of other firefighters. While this model provides a cost-effective means of providing fire and rescue services, the combination of on-call shifts, administrative work and response duties place a greater level of stress on Squamish Fire's members than would be experienced by a "typical" career firefighter.

Paid on Call Firefighters

Paid on call firefighters primarily respond in a supportive role during evenings and weekends, although the trend is also requiring their services during the daytime hours. Paid on call membership is dedicated and well trained. They work extremely hard while they are part of the department but unfortunately, many members do not stay with the department for very long. Over the past five years, the department's average annual POC turnover has exceeded 20%. While this problem does appear to be improving, it remains one of the department's greatest challenges.



Administrative Support

The administrative support position takes care of many important duties, such as scheduling fire inspections, handling telephone inquiries, spearheading recognition events etc. however most of this position's time is allocated to entering training and incident records. Performing manual data entry when more effective automated systems exist limits the full effectiveness of this position. [Squamish Fire Rescue has a 2024 capital project to upgrade the record management system which will alleviate the duplication of data entry.](#)

Fire Chiefs

In 2021 the department hired a Deputy Fire Chief of Training and Operations, which brings the total number of chief officers to three. All three chief officers have specific portfolios and have in-the-field responsibilities, being on-call 24-7 for one week of every three. Responsibilities of each chief officer are listed below:

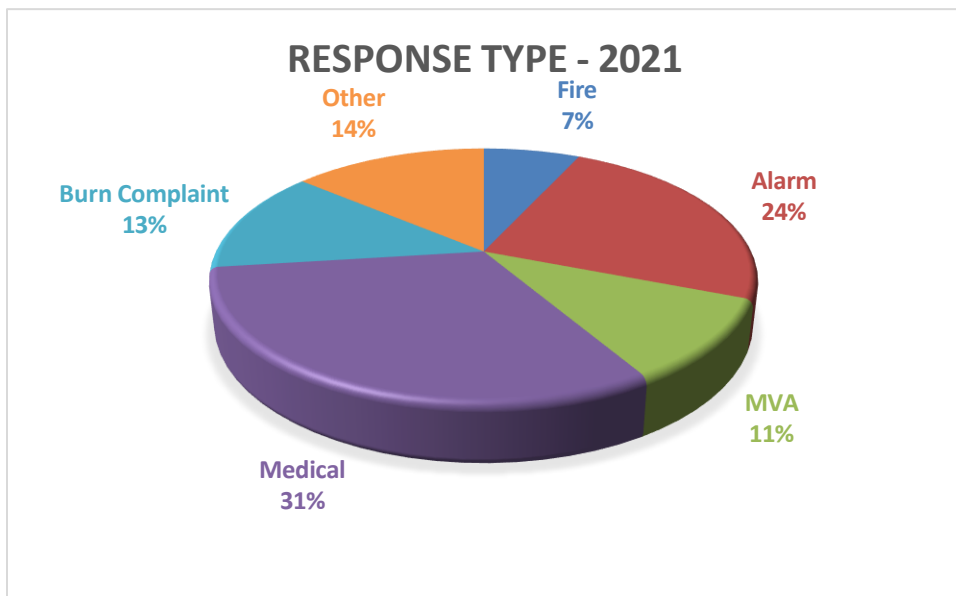
- Fire Chief
 - Planning, data management systems, communications, and capital / facility projects.
- Deputy Fire Chief Prevention:
 - Fire prevention, public education, health & safety, and wellness.
- Deputy Fire Chief Operations and Training:
 - Operations, training, and Fleet / facility maintenance.

Response

Squamish Fire responds to a wide variety of calls. Large numbers of outdoor sporting enthusiasts visiting our community and the department's lack of contiguous mutual aid partners requires all members to be well versed in multiple fire and rescue disciplines. Response types include:

- Structure Fires
- Wildland Fire
- Motor Vehicle Accidents (Extrication)
- Alarms
- Medical
- Rescue (trail, rope, swift water)
- Hazmat
- Burn complaints.
- General calls for service (elevator entrapment, lines down etc.)

Each one of these disciplines involves a specific, focused training program. A chart showing 2021's call response type is presented below for reference.



Cost of the Fire Service

The below table shows fire department budget as a percentage of municipal budget for communities with 20 000 to 35 000 people.

Municipality	2019 Population	Fire Department Budget (2019)	District/ City Total Expenses 2019	Fire as % of Municipal Budget
North Cowichan	32,030	\$1,700,000	\$49,987,497	3.40%
Courtenay	28,184	\$1,887,500	\$52,267,604	3.61%
Squamish	21,080	\$2,257,342	\$50,110,625	4.50%
Campbell River	35,625	\$4,627,364	\$65,446,255	7.07%
Fort St. John	22,006	\$5,411,128	\$61,837,717	8.75%
Cranbrook	21,399	\$4,139,105	\$44,967,606	9.20%
White Rock	21,037	\$4,235,741	\$43,723,290	9.69%
Langley, City of	27,769	\$5,313,700	\$47,384,586	11.21%
Port Moody	35,279	\$8,401,000	\$73,378,984	11.45%

Squamish Fire Rescue, like most fire departments in the province, saves property owners money, as a building owner's investment in the fire service is offset by a reduction in insurance premiums. The Fire Chief's Association of British Columbia has indicated that property owners within the district would have paid about \$11.1 million in insurance in 2016 if there was no fire protection. On the other hand, it is estimated that property owners paid \$5.7 million for insurance *and* fire protection, which relates to \$5.4 million in savings. (Fire Chief's Association of British Columbia, 2017)

The Planning Process

The planning process was initiated by Squamish Fire's Planning and Growth Committee, which is made up of paid on call firefighters, career staff and chief officers. The planning process involved membership workshops that gathered feedback about internal strengths and weaknesses and examined the department's relevant external environment. The workshops were followed by a survey, sent to every paid-on-call member, as a means of gathering further input. Additional feedback from career firefighters was gathered through regular weekly operational meetings and labour-management meetings.

The Planning and Growth Committee reviewed this input as well as documents outlining industry best practice, such as:

- The District of Squamish's Community Wildfire Prevention Program,
- The Fire Underwriters Survey,
- NFPA 1720, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer/composite Fire Departments; and
- WorkSafe BC regulations

Based on these reviews, six specific issues were identified as strategic priorities, which are listed below and examined in further detail throughout the rest of this document:

1. Changing fire risk within the district, in particular downtown and the surrounding area
2. Increased risk of wildland-interface fires
3. Antiquated software systems
4. Decreased frequency of fire and life safety inspections
5. Identified need to address known health challenges
6. Need to meet all provincial firefighter/fire officer training standards

Strategic Issues

1. Changing Fire Risk – Overview

One of the biggest challenges faced by Squamish Fire Rescue is the changing nature of Downtown's building stock. The number of four plus storey residential/commercial buildings has grown significantly. This type of building has many advantages for the district; however it does impact the provision of fire rescue services. The density and complexity related to mid-rise/high rise buildings requires more firefighters, more apparatus, and much faster response times.

Firefighter Force

As buildings grow larger, more resources are required to mitigate fires. The department's response to structure fires is generally in keeping with industry norms for single family homes, but its ability to field sufficient personnel to fight fires in larger, more complex buildings is a major challenge. The table below compares the number of firefighters required to fight a fire in a given type of building, according to recognized standards, with the department's average roster strength at a working fire, of any building type. This table shows that according to National Fire Protection Association (NFPA) and the Fire Underwriters Survey (FUS), Squamish will have trouble fielding sufficient personnel to address a fire in a larger building.

Type of Building (Standard)	Firefighters Required	Standard Met	Average Shortfall
Single Family (NFPA)	15	81% of the time	1
Apartment Fire (NFPA)	27	54% of the time	9
High-rise Fire (NFPA)	42	Not met	17
FUS	37	30% of the time	9

Fire Underwriters requirements taken from 2008 Fire Underwriters Survey.

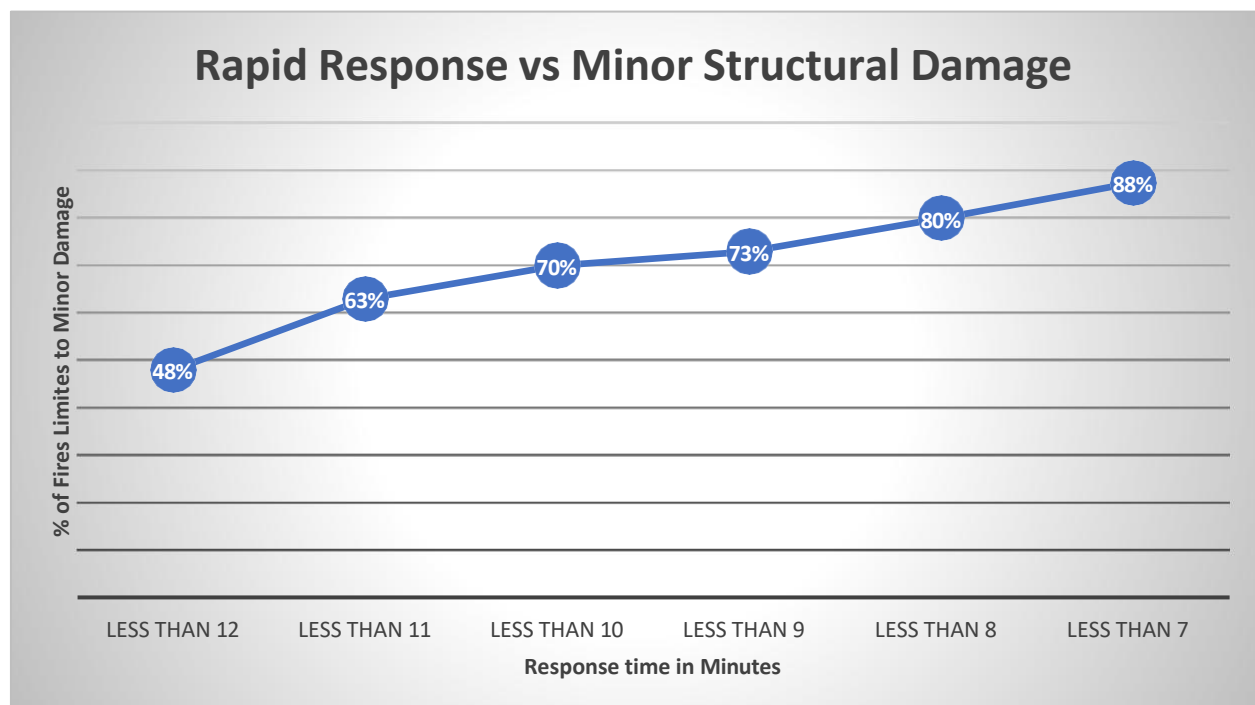
Response Time

Addressing the fire risk in complex buildings requires sufficient resources and the ability to get those resources on scene quickly. One of the key metrics of fire department service delivery is response time. The quicker crews arrive, the smaller the fire.

NFPA 1720 provides "best practice" response time standards for composite fire departments. The standard suggests that composite departments should be responding to fires in suburban environments (500-1000 people per square mile) within 10 minutes 80% of the time, and urban environments (greater than 1000 per square mile) within nine minutes 90% of the time. The table below shows that Squamish has difficulty meeting the standards for suburban areas and is not meeting this standard for the community's Downtown core.

Area	NFPA Standard	Standard Met - All hours	Standard Met - Daytime	Standard Met - Evenings / Weekends	Average Response Time
DOS – Suburban	10 Min - 80%	26%	56%	11%	12:00
DOS – Urban – Downtown	9 Min – 90%	0%	0%	0%	14:47

Data from Squamish’s working fires since 2017 illustrates the positive impact of a rapid response time. The below graph shows a direct correlation between response times and fire damage. The quicker the response, the better chance that fires will cause only “minor damage” to a structure. When response times are less than 9 minutes, fire damage is limited to “minor” 73% of the time, whereas when response times are less than 12 minutes fire is limited to “minor” only 48% of the time.



Strategic Issue

The influx of large complex buildings in downtown Squamish has increased the district’s fire risk significantly. To address this change, Squamish Fire needs to get more firefighters on scene quicker. The solution to this challenge will require an examination of career staff, paid on call staff and apparatus.

Career Staff

Squamish Staffing and Workload Relative to Comparable Communities

To consider an “adequate” staffing model, it is useful to compare Squamish to other communities. The below table displays staffing levels and workloads of Squamish Fire and departments in similar sized communities. The table does not present a “standard” staffing model however it does identify some trends, for example:

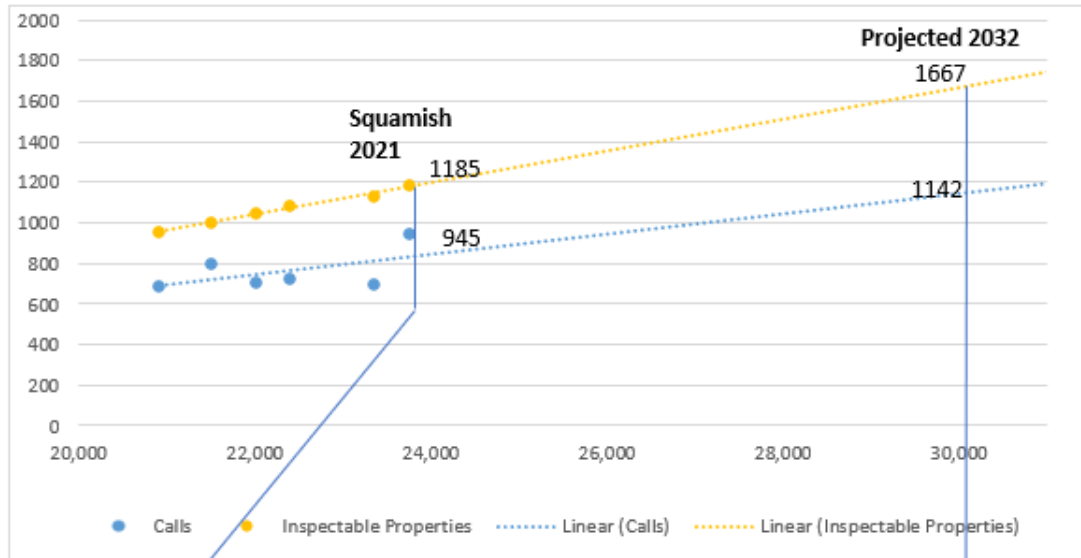
- Most communities with 20 000 people have at least 20 career firefighters on staff.
- Almost every listed department has contiguous mutual aid partners which can supply additional firefighters to an emergency call out in a timely manner.
- Every fire department that runs over 1,000 calls/year has over 20 firefighters.
- Squamish’s call volume has surpassed 2032’s projected call volume already in 2023.
- The one department listed below with 8 firefighters does not have 24-hour response with career staff and has mutual aid with 8 neighboring departments and automatic aid with 2 departments.

Municipality	2022 est. Population	Career Staff 2023	24 Hour	Calls 2023	Inspectable properties	Contiguous Mutual Aid
Whistler*	13 982	24*	Yes	1258	1099	No
Pitt Meadows	20,300	17	Yes	902	830	Yes
Cranbrook	21,269	28	Yes	2295	1239	No
White Rock	21,939	22	Yes	1825	815	Yes
Fort St. John	22,261	30	Yes	790	1238	Yes
Squamish	24,000	12	Yes	1206	1132	No
Langley, City of	28,963	27	Yes	3934	2150	Yes
Courtenay	28,184	8	No	806	1608	Yes multiple
Port Moody	33,551	50	Yes	1756	773	Yes
Campbell River	35,625	27	Yes	4376	1500	Yes

*Whistler has announced a staffing increase to staff a second fire hall with daytime coverage, adding an additional 9 career firefighters in 2024-2025.

Further analysis is provided in the chart on the next page. By comparing Squamish Fire’s projected future workload with other similar communities, some estimates of staffing needs can be predicted. *(this data has not been revised for the Mid-Point Update but shows that Squamish Fire workload is beyond the projected 2032 levels already in 2023 with 1206 incident responses)*

District Of Squamish -Projected Workload vs Population Growth



White Rock

Population: 21 037
Paid Staff: 22
Inspections: 815
Calls: 1825
Mutual aid? Yes
24/7 Staff Yes

Courtenay

Population: 28 184
Paid Staff: 6
Inspections: 1608
Calls: 806
Mutual aid? Yes
24/7 Staff No

Cranbrook

Population: 21 399
Paid Staff: 21
Inspections: 1147
Calls: 1321
Mutual aid? No
24/7 Staff Yes

Langley City

Population: 27 769
Paid Staff: 24
Inspections: 2092
Calls: 2540
Mutual aid? Yes
24/7 Staff Yes

Fort St John

Population: 22 006
Paid Staff: 30
Inspections: 1200
Calls: 790
Mutual aid? Yes
24/7 Staff Yes

Campbell River

Population: 35 625
Paid Staff: 27
Inspections: 1500
Calls: 2576
Mutual aid? Yes
24/7 Staff Yes

Third Party Analysis

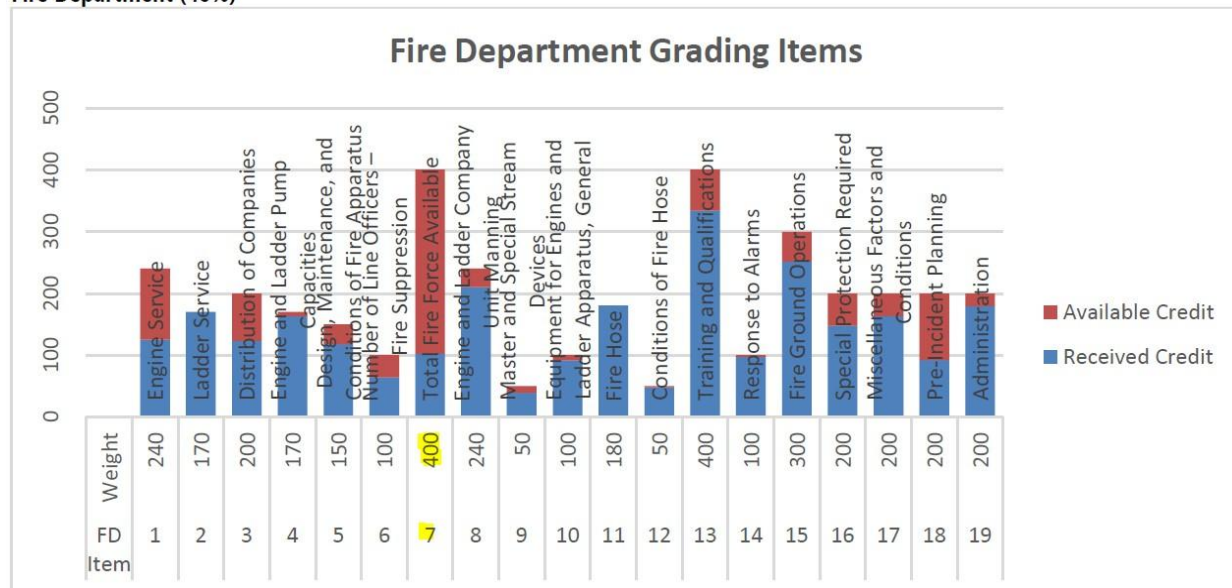
In 2021, the Fire Underwriter's Survey reviewed the District of Squamish's fire protection systems. Enhancements to the community's water supply system led to an improvement of the District's Public Fire Protection Classification (see table below). The Fire Underwriters Survey – District of Squamish Fire Insurance Grade Classification Results letter is found in Appendix A.

FUS Survey Year		
Area of Review	2008	2021
Water Supply	5	2
Fire Suppression	5	6
Communications	2	1
Fire Safety Control	5	3
Public Fire Protection Classification Final	5	4

*Better ratings are lower with "1" being the best possible rating
PFPC is for hydrant protected areas within the district.*

Even though the Public Fire Protection Classification (PFPC) was upgraded, the Fire Underwriters did highlight some areas where improvements could be made. These concerns led to a [decreased rating for the fire department operations compared to the last survey conducted in 2008](#). This decline was mostly related to staffing levels. The below table shows that Squamish Fire graded well in most areas, with the exception of staffing (fire force) and "engine service", with staffing receiving 100 of a possible 400 points. Engine service will be covered later in the Apparatus and Equipment section.

Fire Department (40%)



Career Staff – Goal

- Squamish Fire Rescue should address the changing nature of the community’s fire and life safety risk by meeting or exceeding NFPA standard response times for composite departments to downtown and the industrial areas of Squamish by 2027.

Career Staff – Recommendation

Based on the current challenges with Squamish’s new building stocks and an examination of similar sized communities, it is recommended that:

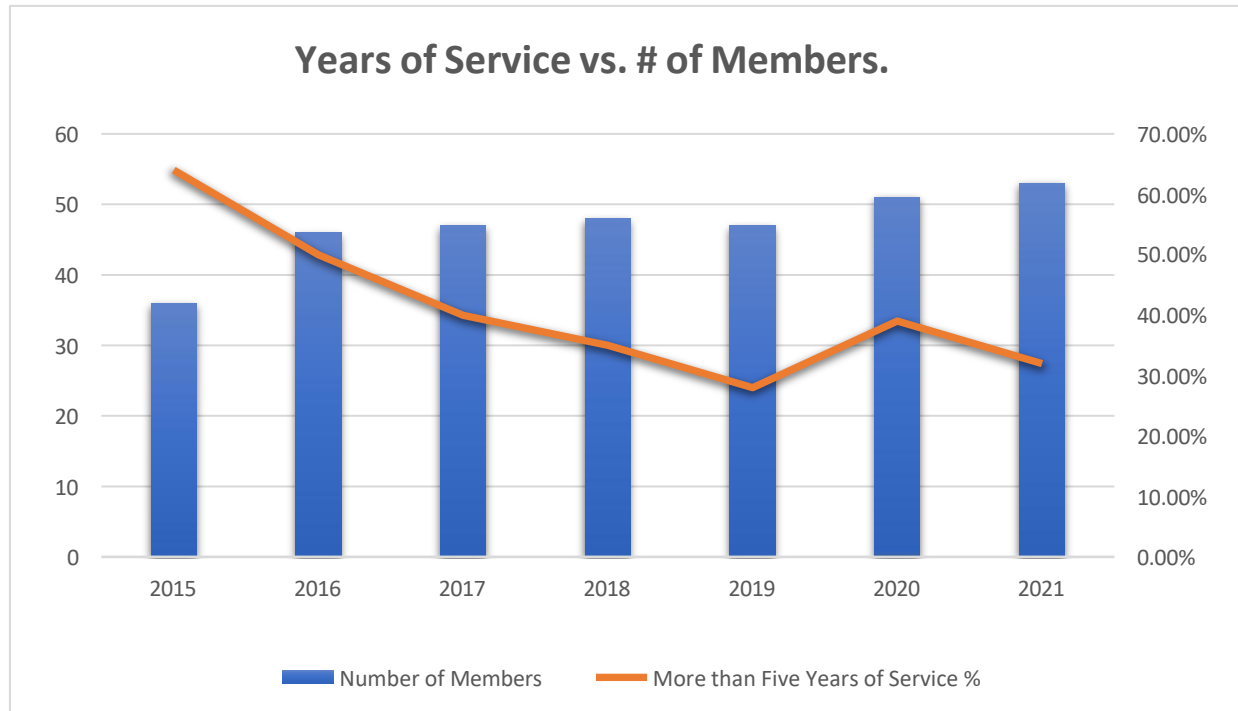
- The fire department has moved to 24 hour staffed coverage based on the 2018-2022 plan in 2023 with four shifts, but with minimal staffing on the shifts.
- **Staffing levels should increase** from the current 12 suppression firefighters (2023) to **16 by 2025**, due to the rapid increase in population density, the corresponding incident response volume and workload.
 - This will allow for 24-hour coverage with minimum staffing of three firefighters on-shift.
 - Adding a Fire Prevention Inspector will alleviate a lot of administrative workload and increase the volume of fire prevention inspections while reducing high risk incidents.
 - *Population is projected to exceed 25 000 in 2024 (Squamish Economic Development)*
 - *We have reached the **2032 projected call volume already in 2023**, the district will need to look at rapidly increasing the staffing levels in subsequent years to maintain current response levels.*
- Plan to reach a staffing level of **20 suppression firefighters** by 2027, this can be done in a block of four or 2 per year in 2026 and 2027.
 - This will allow for 24-hour coverage with minimum staffing level of four firefighters per shift, which is the industry standard.
 - This would add some comfort to look at increasing building heights from the current six-story (18meter) to tall buildings as defined in the BC Building Code.
 - *Population is projected to exceed 27 500 in 2028, incident call volume is closely tied to population.*
- Plan for initial staffing of Firehall 2 in 2029, this could start as shifts of 2, to reduce response times in the Firehall 2 area as the density increases and provide for a backup (RIT) on initial fire responses.

Career Staff – Estimated Financial Impact

Year	Additional Staff	Financial Impact (4 th year firefighter/2021 rates)
2025	3 firefighters, 1 Fire Prevention	\$552 000/year
2026	2 firefighters	\$276 000/year
2027	2 firefighters	\$276 000/year
Total Cost 2025-2027		\$1 104 000/year
2028	1 - Training Officer	\$165 000/year
2029	2 firefighters	\$276,000.00

Paid on Call Firefighters

Squamish Fire has had success over the last five years building its paid on call firefighter membership. Since 2015, membership has grown by 41%, which lessens the impacts of the department's increased call volume. The benefits of this growth are offset by a high annual turnover rate, which averages 21% per year. This high level of turnover leads to two strategic issues - a lack of firefighter experience and the high costs of training both in course fees but also the extra workload for our crews instructing.



Experience

The decreasing numbers of experienced firefighters is potential a concern. All members of the department undergo extensive training before being put into the field, however, only so much can be taught in a simulated environment. Firefighters with time in the field will work safer and more effectively than firefighters with two to three years of experience. Continued decline of experienced members could lead to well trained, but inexperienced firefighters leading other inexperienced firefighters at scenes, which increases the risk of poor outcomes.

Cost

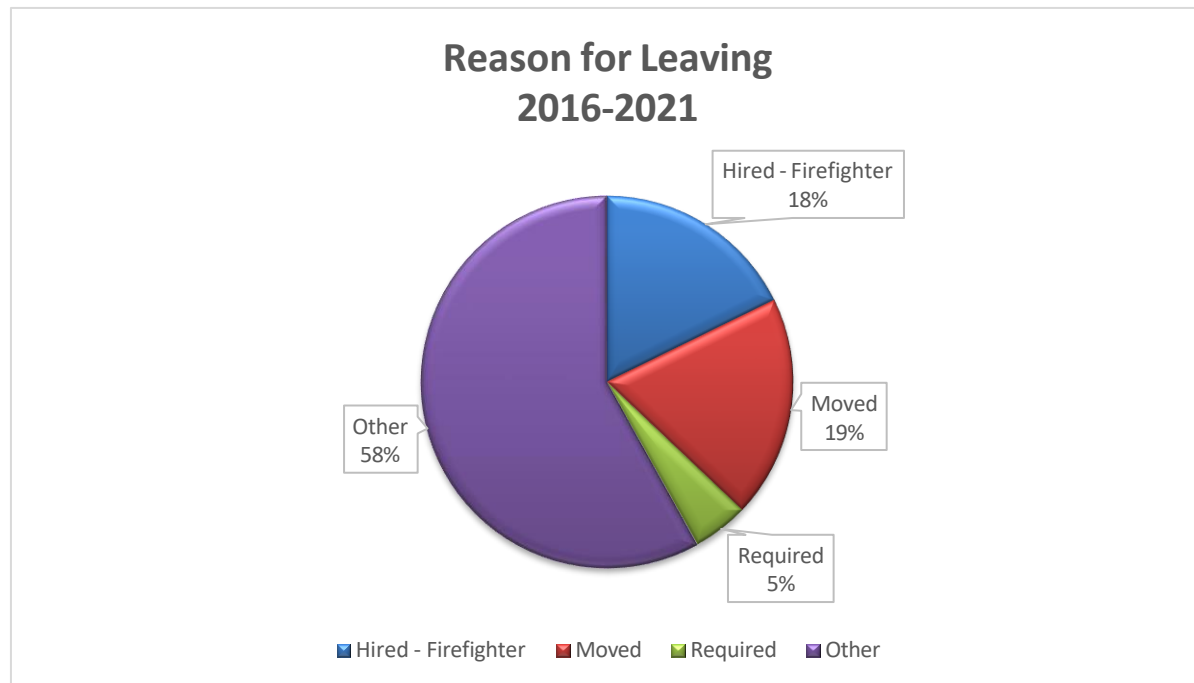
Training a firefighter is a time-consuming process. The table below shows that a third year paid-on-call firefighter, meeting minimum training standards, will have received at least 380 hours, or 54 days of training. Most of this training requires at least two instructors so a new firefighter will receive roughly 108 workdays, or 21 five-day weeks of staff time before they become a full-service structural firefighter who is capable of operating an apparatus. An analysis of recent recruit classes shows that 1/3 of all new recruits leave the department before they complete three years of service or, based on average training times, before they have reached full utility within the department. A lot of time is spent training firefighters who leave before they are fully able to operate at an emergency.

Typical Time Needed for Training Requirements

Training Program	Hours	Days
Department Orientation	8	1
JIBC Exterior Program	90	13
JIBC Interior Program	43	6
JIBC Full-Service Program	47	7
Introduction to Auto Extrication	8	1
Emergency Scene Traffic Control	6	1
Wildland Firefighter	16	2
Structural Protection Workshop	16	2
Hazardous Materials Training	16	2
Medical First Responder	40	6
Total Full-Service Firefighter	290	41
Driver Operator	50	7
Rope Rescue Operations	40	6
Total	380	54

Why Are They Leaving?

Since 2016, 42% of the people who left Squamish Fire did so because they were either moving, hired by a career department, or faced other situations beyond their control, such as personal health issues. There is little that Squamish Fire could do to keep these members. The other 58% left the department but stayed in the community, so they could still technically act as paid on call firefighters. Reasons why people in this group decided to leave are varied, but common themes include an inability to meet required time commitments due to work and/or family life, changing interests and occasionally, dissatisfaction with departmental direction. Any plan to address paid on call firefighter turnover hinges on understanding the unmet needs of firefighters similar to the ones in this group.



In 2018 the department held a workshop to do just that. It was hosted by a former member with considerable experience as a facilitator. To ensure that firefighters felt free to discuss concerns openly, fire chiefs were not involved. Many issues were brought forward but the four highest ranking issues were:

- The Pay structure – relating to stress, increased commitment and work/life balance
- Protecting comradery
- Protecting work/life balance
- Negative politics – relating to departmental culture
(workshop feedback found in Appendix B).

Even though this workshop was held in 2018, recent internal polls of department members show similar trends. Concerns about politics seemed to have waned in recent years but pay structure, work/life balance and comradery remain key issues, so they are worth examining further.

Time Commitments

Within the last 10 years, the province has introduced minimum training standards for firefighters. These have increased training requirements for new and existing members. Also more recently, SFR has enhanced enforcement of minimum attendance standards to ensure the safety of firefighters and the public. Increased training requirements and greater enforcement of standards have increased the workload of POC firefighters. Discussions with senior firefighters have indicated that meeting every departmental standard may involve too much commitment. This creates a delicate balance between standards compliance and creating over-burdened firefighters.

For 2021, the average minimum commitment for training and call attendance was over 180 hours.

Remuneration

Recent changes have been made to paid on call firefighter pay structure at the request of membership. Firefighters are now remunerated directly for their efforts, and they receive hour for hour remuneration for weekly practices. These changes have been well received. A challenge still exists with full day training sessions; according to current policy, paid on call firefighters receive a single hour of compensation for a full day course. Membership feedback surveys have shown that firefighters would feel more appreciated if their efforts were fully compensated and they would be more inclined to attend full day sessions. This issue is most pertinent when it comes to training sessions that are several days long. Firefighters generally need to miss some work to take these courses, but some members cannot afford to take time off unless compensated.

A recent poll of Lower Mainland Fire Chiefs shows that most departments remunerate all paid-on-call firefighter training on an hour for hour basis, which is at odds with Squamish's current policy.

Paid on Call Firefighters – Goal

- Continue to grow paid on call membership to a level where the department can meet NFPA's fire force on scene requirements.
- Reduce average paid on call firefighter turnover from 21% average to a 16% average by 2026.
- Build and maintain each Paid-on-Call company strength to at least 30 members per fire hall.

Paid on Call Firefighters – Recommendations

- Update pay structure to ensure that POC firefighters are remunerated for attending required full day courses by the end of 2024. [\(this is now in-place\)](#)
- As Covid related health restrictions recede, department-wide events and training sessions should be maximized to strengthen the sense of comradery that was diminished during the pandemic.
- Ensure paid on call firefighters continue to have an opportunity to provide input into operational decisions.
- As the fire department moves to 24-hour career staff coverage, ensure that paid on call members maintain the ability to provide meaningful service to their community. [\(This is an on-going priority\)](#)

Paid on Call Firefighters – Estimated Financial Impact

Paid on call firefighter remuneration - \$50 000/year beginning in 2024.

Apparatus and Equipment

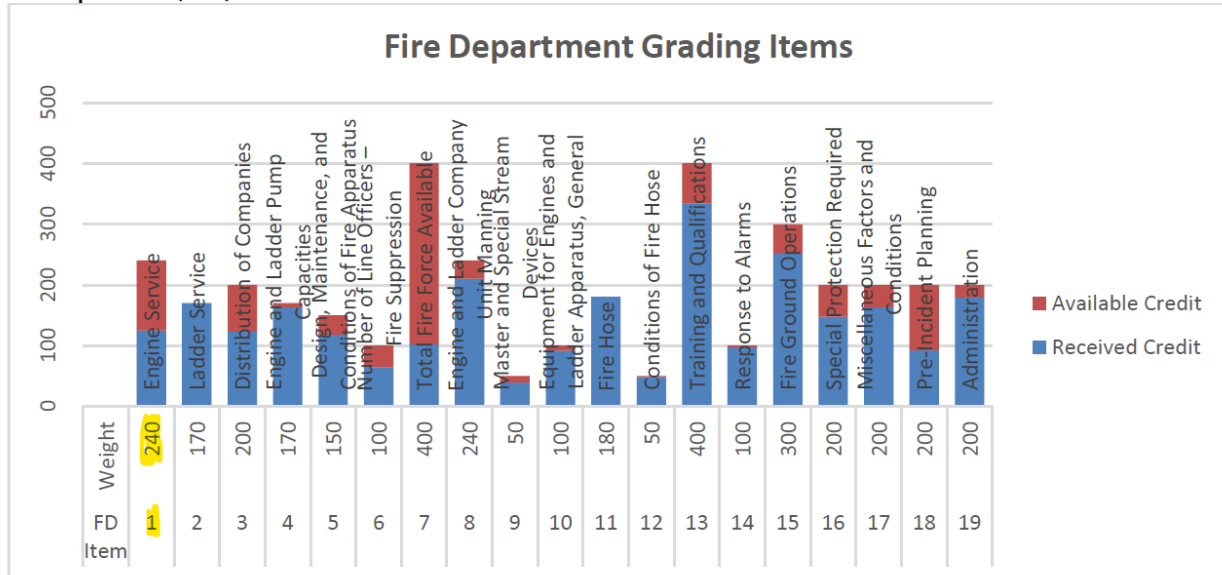
As previously noted, the Fire Underwriter's Survey conducted a review of the district's fire protection systems in 2021. One area flagged for improvement was "Engine Service", or the number of available structural protection engines. The Underwriters base engine service requirements on fire loading and life safety risks. The growing number of mid-rise/high-rise buildings in the district has increased fire loading and life safety risks, thus pushing the need for more apparatus. Squamish Fire currently has three front-line pumper apparatus and one ladder truck. One pumper is scheduled to be replaced in 2022 and the department is keeping the retired apparatus as a reserve to help increase pump capacity.

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Another apparatus is scheduled to be replaced in 2024. All apparatus are on a replacement cycle which is based on industry best practice. Adding additional pumpers to the fleet will have some beneficial impact on fire protection, however this action will not, by itself, be enough to improve Public Fire Protection Classification ratings thereby generating equivalent reduction in insurance premiums.

Squamish Fire has an opportunity to help the district meet its climate change action goals by replacing current vehicles with electric or hybrid options. Most utility and support vehicles would be well suited to electric options and electric fire apparatus will soon be entering British Columbia's fire stations.

Fire Department (40%)



Apparatus and Equipment – Goal

- Maintain fleet strength and look for cost effective means of improving pump capacity.
- All new vehicles in the Squamish Fire fleet will be electric or electric hybrid as operational requirements permit.

Apparatus and Equipment – Recommendations

- Maintain the current practice of replacing apparatus in accordance with industry best practice.
- Engine 11, built in 2007, should be replaced in 2024. It is suggested that Fire Rescue examine the operating costs and response limitations of electric apparatus in BC and submit a recommendation to council regarding the replacement of Engine 11 with an electric apparatus before the 2024 budget deliberations.

Apparatus and Equipment – Estimated Financial Impact

The current purchase cost of a pumper apparatus is estimated to be \$1.7 million dollars. Estimated cost for an electric hybrid apparatus is \$2.4 million.

Changing Fire Risk - Future Considerations

Downtown development is driving the need for changes in service delivery in south Squamish, the number of six-story buildings has increased rapidly - out pacing the modest staffing growth rate and the fire departments capability to respond to this risk.

If the District of Squamish is considering tall buildings (as defined by BCBC) as an option to further densify, the fire departments staffing would need to grow significantly to meet this challenge. Refer to the NFPA / FUS staffing recommendations for high rise buildings. (Strategic Issues page 6)

While beyond the scope of this five-year plan, some thought should be given to future development in the North of Squamish. Zoning in the Garibaldi Estates area provides for significant density. Additionally, the planned Cheekye Fan development will trigger the need for an additional fire hall when multifamily homes are built more than 5km away from the Tantalus Fire Hall. Additionally, staffing of Firehall 2 should be considered with the densifying of that area to reduce the response times within that area and provide a second apparatus (rapid intervention team) at structure fires within 10 minutes of fire suppression entry. (WorkSafe BC regulations)

Recommendations:

- Career staff hiring will need to rapidly accelerate in order to adequately respond to the increasing number of six-story complex buildings within Squamish.
- Training staff to safely and effectively respond to this increased risk takes time, hiring in blocks of four, adds one firefighter per shift and permits a consistent level of staffing on each shift.
- The District of Squamish should ensure that decisions made within the next five years consider the densification of Garibaldi Estates and a possible future fire hall in Brackendale.
- Consider staffing of Fire Hall 2, with the densification of the Garibaldi Estates and future development in Brackendale.
- Future reviews of the Community Amenity Contribution policy should consider the development-driven apparatus and equipment requirements.
- The district should look for opportunities to improve “Engine Service” by ensuring that new or replacement pieces of equipment come with fire rated pumps, when feasible.
- A Second Aerial apparatus should be considered for Fire Hall 2 with increased densification and taller buildings.
- A water-tender apparatus should be considered for Capital planning, there are areas within the District of Squamish that do not have a water/hydrant system and are considered unprotected by FUS. A water tender would assist in water supply for these areas of Squamish.
- Consider remote water fill stations in outlying areas not served by the District of Squamish water/hydrant system, to reduce water shuttling distances.

2. Wildland Fire Threat - Overview

The risk of wildland/interface fires is increasing within the province of BC and appears to be increasing within the district. The Community Wildfire Protection Plan updated in 2017 cites the 2015 Boulder Creek Complex wildfires, the devastating events in Fort McMurray in 2017 and provincial wildfire events of 2017 as indicators that large catastrophic wildfires have the potential to impact the District of Squamish. Since the plan was completed, two significant wildfire events in Squamish Valley (2019 & 2020) and a very active wildfire season in 2021, which destroyed the Village of Lytton, provide further evidence of a growing threat. [The Community Wildfire Protection Plan](#) set out 48 recommendations; many have been addressed but some remain outstanding. As such, Fire Rescue and the Emergency Program will continue to address the plan's recommendations over the next five years with focus on fuel treatments for high-risk interface areas, FireSmart education and wildfire response.

Funding

To date, these initiatives have been funded by provincial grants. Some fuel treatment opportunities have been lost because provincial funding does not cover all applicable costs but Fire Rescue has an opportunity to generate revenues to offset the costs not covered by grants. In 2021 Squamish Fire was deployed to the interior for wildland structural protection. This deployment generated \$35 000 of net revenues. If deployed in the future, the District of Squamish could direct these unbudgeted revenues to a reserve account which could be used for wildfire prevention purposes.

Response

Recommendation #46 of the Wildfire Protection Plan draws attention to a fire suppression performance gap. It outlines the need for a wildfire response truck with a larger GVW and greater response capacity. The department's current initial response truck is undersized so it can not deliver both firefighters and water to a wildland fire. An appropriately sized apparatus would greatly improve the department's initial attack capabilities.

Strategic Issue

Wildland interface fire trends in British Columbia have shown that the frequency and severity of wildfires is increasing. The District of Squamish has had significant fire events on its borders, indicating that the risk to the community is also increasing.

Goals

- Reduce wildfire hazard in high-risk areas north of Brackendale that are in proximity to the airport and other critical infrastructure.
- Improve homeowner wildfire prevention in high-risk Squamish neighborhoods.
- Improve wildland initial response capabilities.

Recommendations

- Continue with fuel treatments of the Airport Fuel Polygon. Review funding model to ensure that treatments can be completed. (2022-2026)
- Increase education initiatives relating to FireSmart practices of individual households, with the goal of having several recognized FireSmart Neighborhoods within the District by 2026.
- Purchase a wildland response truck with capacity to carry personnel and adequate water supply in 2023. (*This has been ordered and is nearing completion*)
- Consider capital projects that improve the water supply challenges in remote areas within the district.

Estimated Financial Impact

Fuel treatments are largely grant funded. Some consideration may be given to partially funding this activity, as meeting cost per hectare requirements associated with grant parameters is prohibitive. Cost of treatments in excess of provincial grant parameters range from \$1 000 to \$5 000/ha, depending on terrain.

FireSmart education is grant funded.

The cost of a heavy-duty pickup truck and wildland skid capable of transporting water and crew is currently in the five-year financial plan for 2023 with a budget of \$200 000.

3. Software - Overview

Squamish Fire Rescue's record management system was identified as needing replacement at the outset of the District's Technological Transformation Program. While some improvements to the system have been applied as stop-gap measures, a full replacement has not yet been implemented. Issues with the current system include:

- The system is made up of multiple pieces of software that do not interact.
- Incompatible software frequently requires double entries which is a labor-intensive process that increases the possibility of error.
- The core program of the current system is antiquated; the manufacturer does not appear to be supporting the product into the future.
- Most data entry is conducted via manual processes, which is much more time consuming than other available alternatives. During busy periods of emergency response, additional staff are required to enter data in a timely manner.
- Report generation is poor. Work arounds are being planned but the system lacks flexibility; end users will require consultant assistance to generate custom reports as required.
- Squamish Fire's dispatcher is currently exploring proposals for a new records management system, which may provide opportunities to adopt a similar system. This would allow for a direct link between fire dispatch and the department, generating workplace efficiencies, reducing data entry errors, and improving information availability in the field.

Strategic Issue

The current fire department records management system is antiquated. It demands a high level of manual data entry and redundant processes. Report generation does not provide needed information.

Goals

- Implement a new software system that is less labour intensive and generates meaningful reports by the end of 2024.

Recommendation

- Develop a request for proposal for a new system in 2023 with the goal of purchasing and implementing the system in 2024. [\(This is a capital project for 2024 awaiting our dispatch contractor implementing the new RMS upgrade\)](#)

Estimated Financial Impact

Fire Rescue has requested that \$20 000 be included in the 2023 budget for the development of a request for proposal for new software.

Software estimates will be related to specs set out in the request for proposal, however a brief examination of potential software systems reveal a cost range of \$10 000 to \$27 000 a year, depending on modules, customer support and level of integration with dispatch services.

4. Fire Inspections - Overview

Every municipality in BC is regulated to, [“...provide for a regular system of inspections of hotels and public buildings within the municipality”](#). Squamish Fire bases inspection frequencies on industry best practice but for a number of reasons, the department is not meeting its targets. Some of the reasons for missing targets are temporary, such as the impacts of COVID, while others are more definite.

Community growth and the development of a more complex building stock are placing greater strain on firefighter/inspectors. Also, the array of responsibilities held by firefighter/inspectors makes focusing on a single duty difficult. In addition to conducting fire and life safety inspections, the department’s inspectors also:

- Review fire safety plans.
- Develop Pre-Incident plans.
- Respond to emergencies.
- Perform public education.
- Perform post fire investigations.
- Instruct and evaluate paid-on-call firefighters to recognized standards.
- Perform truck and equipment checks.
- Sit on committees (Occupational Health and Safety, Mental Health).
- Engage in daily training/skills maintenance.
- Maintain firehall equipment and training grounds.
- Test turnout gear, fire hose, PPE, SCBA fit-testing.
- Build training courses for delivery in-house.

This collection of duties tends to steer time allotments to immediate operational needs, such as paid on call training and emergency response, over other activities that are effective, but are not immediately pressing, such as fire inspections.



Strategic Issue

Squamish Fire is not meeting fire and life safety inspection targets that are based on industry best practice and risk assessments. Inspectors are having trouble keeping up with the growing building stock and are not able to focus efforts on addressing this issue, due to the various job duties that each fire inspector performs.

Goal

- Squamish Fire will meet annual inspection frequency targets for all occupancy types by the end of 2026.

Recommendation

- Utilize new fire department software to generate accurate measure of inspection requirements and streamline the data entry process.
- Add Fire Inspector positions to meet industry standards and /or best practices.
- Manage day-to-day operations to find any efficiencies for additional inspection opportunities.
- Consider the creation of a council-approved inspection policy as opposed to department produced targets.

Estimated Financial Impact

Costs are addressed in the “Career Staff” and “Software” sections of this document.

5. Health – Overview

While there are a number of health concerns that the North American fire service needs to address, such as physical fitness and cancer prevention, mental health is Squamish Fire's most pressing health related issue. Studies have shown that personnel in emergency services are more prone to experience mental health disorders than the general population ([Harvey et.al, 2016](#)), ([Carleton, 2018](#)), ([SAMHSA, 2018](#)). These impacts may be physical, mental, and/or behavioral, causing difficulties for firefighters at home and at work, which relates to increased costs for employers ([Butry et.al, 2019](#)). All members of Squamish Fire encounter the type of traumatic events that contribute to the development of mental health disorders; however, career staff face extra pressures because they are frequently on call during the evening after working their regularly scheduled day shifts. This shift pattern requires some level of sleep deprivation and does not allow adequate time to decompress between traumatic calls. These influences have been linked to the development of mental health disorders in first responders ([Cramm, et. al, 2021](#)), ([Halpern, et. al, 2014](#)).

The stress of being on call has not been flagged as a major issue by paid on call firefighters but consideration should be given to the health impacts of on-call scheduling. Even though paid on call firefighters have some discretion with their availability to respond, they generally spend most of their time on-call and emergency ready.

Squamish Fire has a long history of taking a proactive approach to mental health issues. Currently, the department has a strong peer support team and a process in place to initiate critical incident stress defusing's and debriefings as required. A mental health committee oversees the program to ensure it remains effective. One weak element of the program is resilience training for individual firefighters. While some members have taken this type of training, there is no department-wide program in place.

Strategic Issues

The shifts worked by career staff add strain to an inherently stressful profession. Paid on call shift responsibilities may also lead to challenges. These stresses have an impact firefighter's personal lives and may increase costs to the District of Squamish.

It has been shown that prevention-focused programs increase resilience and improve mental health ([Szeto, Dodson & Knaak, 2019](#)).

Goals

- Shifts of career staff and paid on call firefighters should be altered to lessen mental health impacts of on-call work.
- Every member of the department should have access to recognized resiliency tools and training by the end of 2023.

Recommendations

- The fire department should move to 24-hour staffed coverage based on the plan outlined in the career staff section of this document.
- The fire department captain's committee will examine paid on call responsibilities with the goal of ensuring all members receive scheduled downtime by the end of 2024.
- Continue with the mental health committee.

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- Implement a firefighter resilience program, such as Resilient Minds or Road to Mental Readiness.

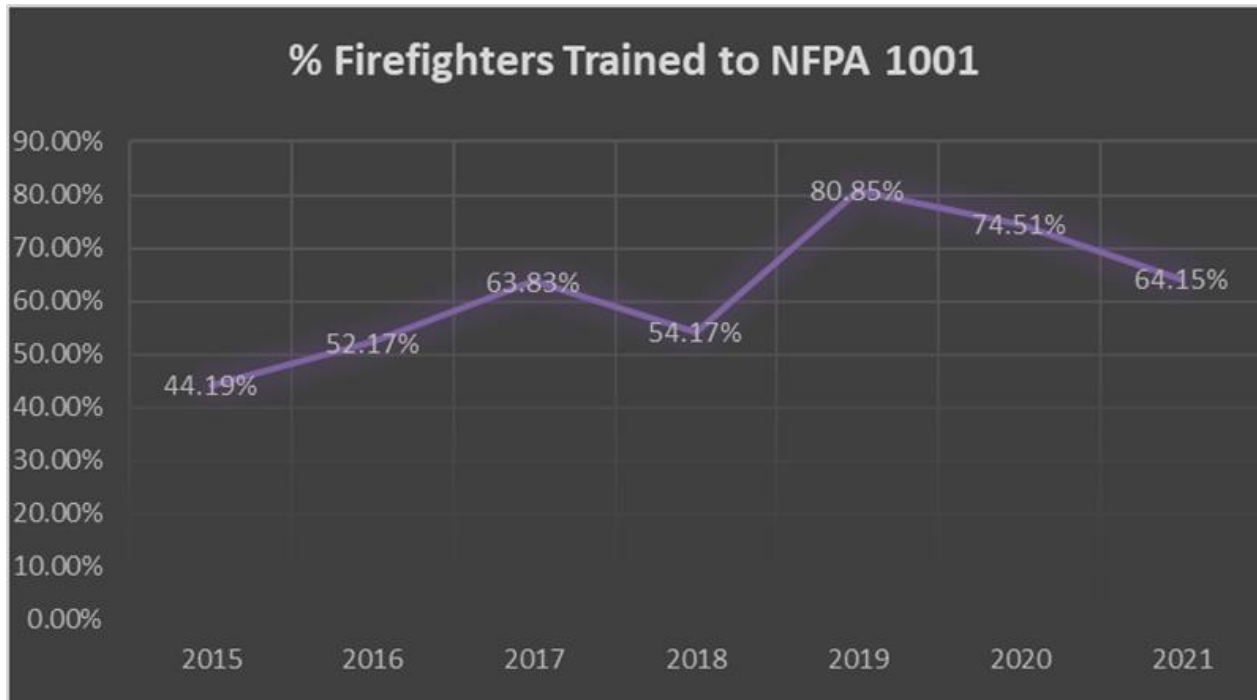
Estimated Financial Impact

Costs associated with staffing addressed in “Career Staff” section.

Resilience Training – estimated at \$4 000- \$6000/year.

6. Training – Overview

In 2014, the British Columbia Office of the Fire Commissioner revised the minimum training standards for fire departments. As noted earlier, Squamish Fire has put a great deal of effort into meeting the new standards with positive results; in 2020, 74% of membership had met the qualifications of a “Full Service” firefighter. The department will likely remain at the 75% to 80% level while turnover remains at current levels.



Even though Squamish Fire has succeeded in meeting required firefighter standards, some work remains with meeting the *fire officer* standard. Every fire officer in the department has received the training necessary to be an incident commander but the standard contains additional courses which address personnel and administrative aspects of the fire officer’s role, which many officers have yet to complete. Currently, half of the firefighters who could be placed into an officer’s role meet the full NFPA standard. Those who are not fully compliant are, for the most part, just two to three courses short.

As Squamish Fire’s goal to comply with recognized standards is met, the focus needs to shift to standards maintenance. Most disciplines within the department have a maintenance program however, greater emphasis needs to be placed on ensuring that every firefighter meets annual maintenance requirements.

Strategic Issue

Squamish Fire Rescue is meeting provincial standards for firefighters. Focus needs to be placed on fire officer’s standards and on ensuring consistent and documented skills maintenance.

Goal

- To ensure that every member of the department meets provincial training standards and adheres to SFR's skills maintenance programs.

Recommendations

- Every firefighter acting in the role of a fire officer will meet the full NFPA Fire Office 1 Standard by 2026.
- Squamish Fire will ensure that all key programs have a robust standard maintenance program in place and that adherence to programs is measured and enforced.
- Use succession planning to identify areas to improve mentorship programs and develop new fire officers skills and certifications prior to their need.

Estimated Financial Impact

Costs associated with meeting the full officer's standard can be accommodated within current operating budgets.

It is anticipated that all maintenance programs can also be accommodated in operating budgets; however, if additional programs are required, they will be brought forward as part of annual budget processes.

Appendix A – Summary of Recommendations

Career Staff	
The fire department move to 24 hour staffed coverage	2022
Staffing levels should increase to 12 members	2023
Staffing to reach 16 firefighters	2025
Paid on Call	
POC firefighters should be remunerated for attending required full day courses	2024
Department-wide events and training sessions should be maximized	2022
Ensure that paid on call firefighters continue to have an opportunity to provide input into all operational decisions	On Going
Ensure that paid on call members maintain the ability to provide meaningful service	On Going
Apparatus and Equipment	
Continue apparatus in accordance with industry best practice.	On Going
Engine 11, built in 2007 should be replaced in 2024	2024
Examine the operating costs and response limitations of electric apparatus in BC	On Going
Future Considerations	
Ensure that decisions made within the next five years consider the densification of Garibaldi Estates and a possible future fire hall in Brackendale.	Future Consideration
Ensure that #2 Hall has the ability to expand to house career staff when required.	2024
Future reviews of the Community Amenity Contribution policy should consider the development-driven apparatus and equipment requirements	Future Consideration
Look for opportunities to improve “Engine Service” by ensuring that new or replacement pieces of equipment come with fire rated pumps, when feasible.	Future Consideration
Wildland Fire Threat	
Continue with fuel treatments of the Airport Fuel Polygon. Review funding model to ensure that treatments can be completed.	2022-2026
several recognized FireSmart neighbourhoods within the District by 2026	2026
Purchase a wildland response truck	2023
Software	
Purchase and implement a new fire department software system	2024
Fire Inspections	
Utilize new fire department software to generate accurate measure of inspection requirements	2024
Hire a Fire Prevention Inspector to conduct inspections and Investigations	2025
Utilize the new staffing model to free up daytime shifts for company inspections.	2023
Consider the creation of a council-approved inspection policy	2025
Health	
The fire department should move to 24 hour staffed coverage	2022
Ensuring all paid on call members receive scheduled downtime	2022
Continue with the mental health committee	On Going
Implement a firefighter resilience program	2024
Training	
Every firefighter acting in the role of a fire officer will meet the Fire Office 1 Standard	2026
Ensure that all key programs have a robust standard maintenance program	2024

Areas for Improvement – Pains

Description	Group	Number of votes
We want to change the pay structure because it can alleviate stresses, increased commitment, responsibilities, and improve work/life balance	2-5 years	41
We want to change the politics because it creates gossip and a negative environment	2-5 years	19
We want to improve mentoring because it will help with other issues (respect for history, experience etc)	over 5 years	13
We want a voice that is heard because right now it feels like we are underserved by management and mayor/council	2-5 years	11
We want to improve the overall enjoyment because its not as fun any more	over 5 years	9
We want to change the quality of in house training specifically wed nights because the level of expertise and experience	2-5 Years	9
We want to improve needed skills (Drivers, Officers etc) because these are areas the department lacks in	over 5 years	4
We want to improve recruit screening because we need more involved and committed members	over 5 years	2
We want to consider moving to paid on call and paid training as a way to incentivize attendance and to training and call response	under 2 years	1
We want to change training structure of recruit training (rigidity, no time off) because 6 months is a long time not to have weekends away with friends and family. Life gets put on hold.	under 2 years	0
We want to change group sizes during training and evaluation because some training days are very slow with large groups and not an efficient use of time	under 2 years	0

What's Going Right – Gains

Description	Group	Number of votes
We want to protect the comradery because it keeps us together	2-5 years	27
We want to protect work life balance because it is easy to get in too deep	over 5 years	24
We want to protect our training to maintain a high level of professionalism	2-5 years	17
We want to protect our community engagement because it's a core value of the fire service	2-5 years	16
We want to protect the quality and amount of training because we will be better prepared, safer, builds stronger teams and more professional	under 2 years	9
We want to protect rank and hierarchy because if we don't respect opinion on small things then what about large things	over 5 years	6
We want to protect volunteer/career comradery because the two groups do not interact as much with new training schedule	under 2 years	6
We want to protect respect because past and present members deserve it	Over 5 years	5
We want to protect our call volume because we want to apply skills, fight complacency, we will forget skills if not used, build confidence	under 2 years	5
We want to protect community involvement because that what we are here for	under 2 years	0

Appendix C – Heat Mapping

The following section examines incident locations in a series of ‘heat maps’ which illustrate by color-coding the locations of the highest occurrence¹.

All Incidents

The heat map for incident types is shown in *Figure 1* with the highest concentration in the downtown portion of Squamish with a second concentration of responses in the developed area around firehall 2. This map illustrates that the fire halls are located strategically where incidents are generated.

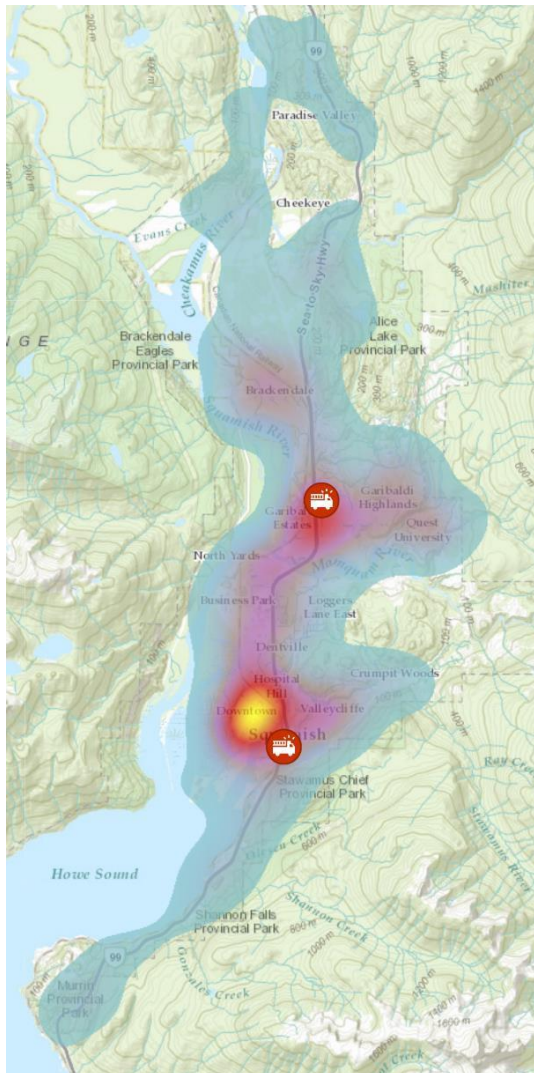


Figure 1: Heat Map for All Events 2013 to 2022

¹ The maps are created using ESRI

Structure Fires

The occurrence of structure fires is illustrated in Figure 2, which is similar to the previous map but with a more visible cluster in Brackendale and the Garibaldi Highlands.

Figure 21 and 22 show that both Alex Munro Firehall 1 and Firehall 2 are located strategically where the highest occurrence of incidents are and also; look at the future need for a third fire hall location in the North of Squamish for planning purposes.

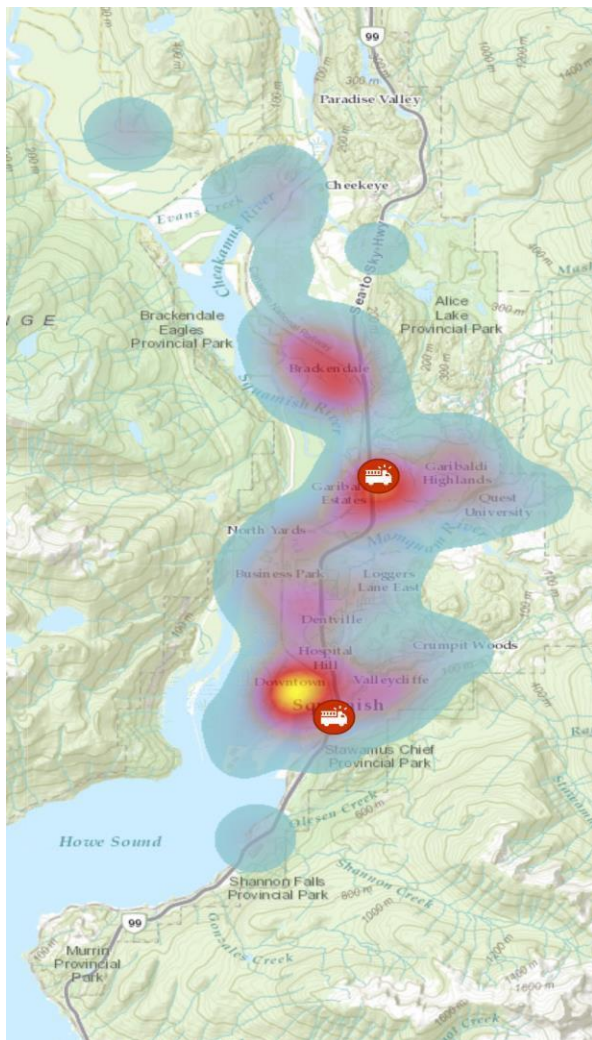


Figure 2: Heat Map for Structure Fires 2013 to 2022

Alarms Activated

Error! Reference source not found. shows the highest occurrence of Alarms with a concentration in the core portion of Squamish but a secondary concentration in the Garibaldi Highlands and University area. There is also a cluster not seen previously around the hospital.

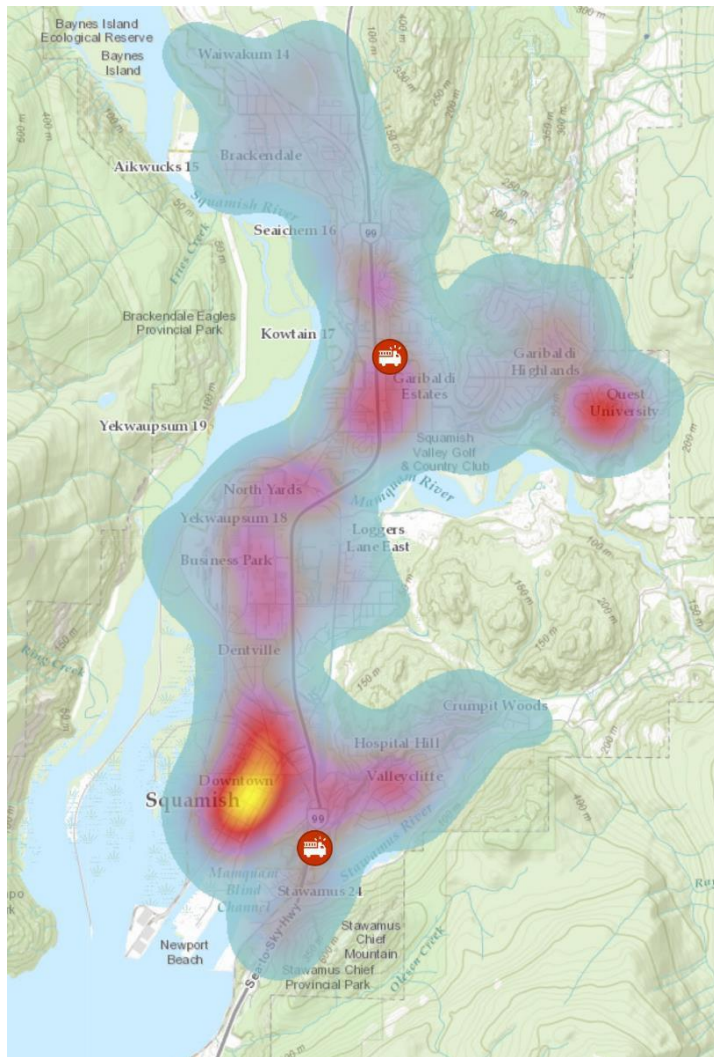


Figure 3: Heat Map for Alarm Activations 2013 to 2022