



FIRE AND RESCUE

COMMUNITY RISK ASSESSMENT: STANDARDS OF COVER 2020-2025

Document for Accreditation with the Commission on Fire Accreditation International



Executive Version

DNV.org/FireAccreditation

FIRE SERVICE ACCREDITATION - INTRODUCTION

In 2018 the District of North Vancouver Fire & Rescue Services (DNVFRS) began a process to become an accredited fire service through the Center for Public Safety Excellence (CPSE). The CPSE is a not-for-profit international technical organization that oversees three (3) quality improvement programs: accreditation, credentialing, and education for fire and emergency services. The Commission on Fire Service Accreditation International (CFAI) oversees the accreditation program for CPSE.

The drive supporting the DNVFRS goal for accreditation; to build on proactive processes already in place and to ensure a foundation of sustainable department-wide continuous improvement. The DNVFRS timeline for first accreditation is the CFAI public hearing in the spring 2022 and aligns with the transition of the CPSE to the 10th Edition manual entitled “Quality Improvement for the Fire and Emergency Services”.

Accreditation is a credible reality-based process whereby a model and methodology is established to measure outputs and outcomes, and compare services against best practices. This is achieved through process review and analytics. Supporting this initial body of work towards accreditation also includes developing a system of annual compliance review and reporting, which aligns with the DNVFRS annual reporting process in place since 2018. Goals and performance are articulated in three companion documents that outline the commitment to a process of continuous review and improvement:

- Community Risk Assessment: Standards of Cover 2020-2025 (CRA/SOC)
- Fire & Emergency Service Self-Assessment Manual 2021-2026 (FESSAM)
- Strategic Plan 2020-2025

This document is an “Executive Version” of the CRA/SOC. It includes components of the CRA/SOC such as an overview of the municipality of the District of North Vancouver (DNV) and its fire service. A summary of the risk assessment is discussed for all areas of service that are provided by DNVFRS. The analysis in the CRA/SOC includes critical tasking based on determined service level objectives, and reflects distribution (first arriving apparatus) and concentration (effective response force) measures. Calls for service focus on a municipal perspective, but also include the impact on the DNV and the DNVFRS of regional service provision with its Cooperative Fire/Rescue Service partners: the City of North Vancouver and the District of West Vancouver. Performance analytics are displayed as baseline (current performance) and benchmarks (target performance) to industry standard of 90th percentile response times.

The DNVFRS is committed to attaining and maintaining CFAI accreditation. The path to achieving this goal provides the opportunities to:

- Emphasize DNVFRS dedication to excellence
- Establish a culture of continuous improvement
- Receive independent validation of all service areas
- Provide tangible data for elected officials and stakeholders

The collaboration and transformation being facilitated as a result of accreditation will influence the DNVFRS, its internal and external stakeholders, and the community of the DNV into the foreseeable future. Through accreditation, DNVFRS will create a foundation for data analytics and metrics to support decision-making, and



promote steady growth in service provision into the future. The journey to accreditation demonstrates the DNVFRS commitment to research, review, validation, verification and evidence-based decision-making. This also highlights the momentum towards establishing a culture of self-improvement, providing the community with an innovative, progressive fire department that meets and even exceeds expectations.



MESSAGE FROM THE FIRE CHIEF

On behalf of the women and men of the District of North Vancouver Fire & Rescue Services (DNVFRS), it is my honour to present the “Executive Version” of the Community Risk Assessment: Standards of Cover 2020-2025 (CRA/SOC).

The DNVFRS is an “all-hazards” Fire Service providing emergency medical response, fire suppression, technical rescue, fire inspections, public education, investigation, and community training and education. We strive to provide the highest quality services to protect the lives, property, and environment of our North Vancouver community. Currently the DNVFRS is working towards accreditation through the Commission on Fire Accreditation International/Center for Public Safety Excellence within which the CRA/SOC is a key step.

Conducting a CRA/SOC is a planning process of gathering data, analyzing it, prioritizing risks, and balancing our emergency response with our prevention/mitigation efforts. Developing strategies to deal with the risks means different things depending on whether you are focusing on emergency response or on prevention. That means being prepared to deal with any real or potential risk identified for the community. But focusing prevention efforts often means prioritizing the risks and problems that will receive special attention. This is where the Community Risk Assessment transitions into Community Risk Reduction (CRR). A true CRR effort involves an integrated approach where we more thoughtfully combine our emergency response and prevention efforts. The purpose for completing this document is to assist the DNVFRS in ensuring a safe and effective response force for emergency medical services, fire suppression, and specialty response situations, while viewing our efforts through a wider lens that involves prevention, preparedness, response, and recovery. Our ability to support community resiliency will be enhanced through this process.

In closing I want to thank all those who have contributed to this process. This involved significant collaboration internally and with external stakeholders and required that a number of key areas be researched, studied, and evaluated. These efforts set the stage as we look to the future and strive towards continuous improvement in the services we deliver today and into tomorrow.



Brian Hutchinson, MA, CEM[®], ECFO
Fire Chief



DNVFRS MISSION, VISION AND VALUES

In 2018, the DNVFRS engaged with personnel over a ten (10) month period aimed at developing a shared mission, vision and values. These initial steps then resulted in a further eleven (11) month process commencing in 2019 to build a five-year strategic plan. This inclusive strategic planning process entailed focus groups, feedback forums and workshops, and notably included a dedicated strategic planning working group of nine (9) personnel from across the organization that championed the initiative.

Highlights of the DNVFRS Strategic Plan 2020-2025:

The District of North Vancouver Fire & Rescue Services (DNVFRS) is committed and focused on what it does—it's *Mission*. DNVFRS has defined and declared a *Vision* of who it is and where it is going. DNVFRS *Values* are reflected in its culture and are integral to performance and public service duties.

What We Believe

Our Mission

We proudly serve our community by providing exceptional fire suppression, medical aid, technical rescue, fire prevention and public education services.

Our Vision

To be an inclusive and progressive leader that consistently provides our community with excellent service.

Our Values

- Community – Treat people with kindness and respect
- Integrity – Do the right thing
- Wellbeing – Foster physical, mental, and emotional wellbeing
- Innovation – Drive change for the good

Four broad strategic priorities were identified: deliver exceptional emergency services, promote a shared culture of inclusion and engagement, foster resilient communities, and promote external and internal partnerships. DNVFRS has created strategic objectives for each of these priorities and assigned target dates for supporting actions. The Strategic Plan 2020-2025 was reviewed by DNV staff, was accepted by Council, and can be found on [DNV.org/FireStrategicPlan](https://www.dnv.org/FireStrategicPlan).



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EXECUTIVE SUMMARY

Why become an accredited agency? Creating a process of accreditation affords an organization the opportunity to take a deep dive into *who* they provide services to, *what* services they provide, *where* they are being provided, *when* they are being provided, and *why* they are being provided. It affords the opportunity to evaluate, monitor and plan for continuous improvement. It is an opportunity to verify and validate efficiency and effectiveness to industry best practices. Through this process DNVFRS will create a foundation for data analytics and evidence-based metrics to support decision-making affecting service provision into the future.

Three Companion Documents of Fire Service Accreditation

DNVFRS goals and performance are articulated in three companion documents of accreditation:

- Community Risk Assessment: Standards of Cover 2020-2025 (CRA/SOC)
- Fire & Emergency Service Self-Assessment Manual 2021-2026 (FESSAM)
- Strategic Plan 2020-2025

The *Community Risk Assessment* represented in Section I of the CRA/SOC reflects the makeup of the community—its demographics and design. It is an assessment of the risks that have been identified for the community both from natural and human-caused disasters. The assessment of community specific risk includes physical factors such as boundaries, development, population growth, critical infrastructure, topography, and transportation networks. This is identified by geographic planning zones (Fire Station Response Areas), and is the component of the accreditation model that reflects risk specific to the community.

The *Standards of Cover* represented in Section II of the CRA/SOC reflects the policies and procedures that have been put in place to establish response within the jurisdiction. This is a mandatory component of accreditation. It is an analysis of how the agency matches its resources to the community need; to its risks and the expectation that the community has for service. This may be accomplished by varying levels of service, but must be accomplished through and with the support of District Council. The Standards of Cover includes a report of response times for the top three moderate risk responses within the municipality of the District of North Vancouver (DNV). Response is detailed by first due apparatus (distribution), and the effective response force (ERF) of the complete first alarm, identified as concentration. As an agency going through accreditation for the first time, DNVFRS will be reporting on a total of four identified response types as represented in the performance tables: fire suppression (moderate), emergency medical services (MESA), and two categories of rescues. The rescue responses are broken down into moderate risk, and high risk (technical rescue). This reporting will delineate the critical tasking to effectively mitigate these response types and 90th percentile baselines (actual performance) and benchmarks (target performance).

The *Fire & Emergency Service Self-Assessment Manual* is a standardized template of performance indicators used by organizations going through the CFAI process to complete a self-assessment of services that it provides to the community. These are divided into the following 11 categories:

- Category I – Governance and Administration
- Category II – Assessment and Planning
- Category III – Goals and Objectives
- Category IV – Financial Resources



- Category V – Community Risk Reduction Programs
- Category VI – Physical Resources
- Category VII – Human Resources
- Category VIII – Training and Competency
- Category IX – Essential Resources
- Category X – External Systems Relationships
- Category XI – Health and Safety

These 11 categories contain 251 performance indicators in total, which represent specific services provided to the community. Each performance indicator includes a description of the level of service that the fire service provides, if the performance is meeting the identified needs, and what plans are in place to measure change or progress towards goals. References of industry best practices for each performance indicator are also included.

The *Strategic Plan 2020-2025* was completed in July 2020. It was created in collaboration with a broad section of DNVFRS personnel. The outcome of this inclusive process is a community-focused plan that is measurable and results-oriented. As stated by Fire Chief Brian Hutchinson “this plan is our roadmap to guide us in our journey to implementing proactive change with a focus on the most important challenges and opportunities before us. The resulting outcomes will directly benefit our community and sustain our tradition of excellence.” Specific objectives have resulted from the strategic priorities and will be measured and reported on annually as part of the strategic implementation plan.

Direction for the Future

Supporting this initial accreditation work includes an annual expectation for compliance review and reporting of each category program area. A full accreditation resubmission is required every five years. The data analysis performed through the creation of this CRA/SOC and its companion documents reflects a fire service that is advancing toward its goals. The roadmap that has been laid out in the Strategic Plan 2020-2025 is well supported by the process that is being established through accreditation and the performance measures of systems that are already in place. Goals, objectives and actions that have resulted from this CRA/SOC, together with the Strategic Plan priorities, and the recommendations that will results from the CFAI Accreditation process, form the direction for the future. The measures that are being put in place today, solidify the establishment of a culture of continuous improvement and align DNVFRS output and outcomes with the community needs.



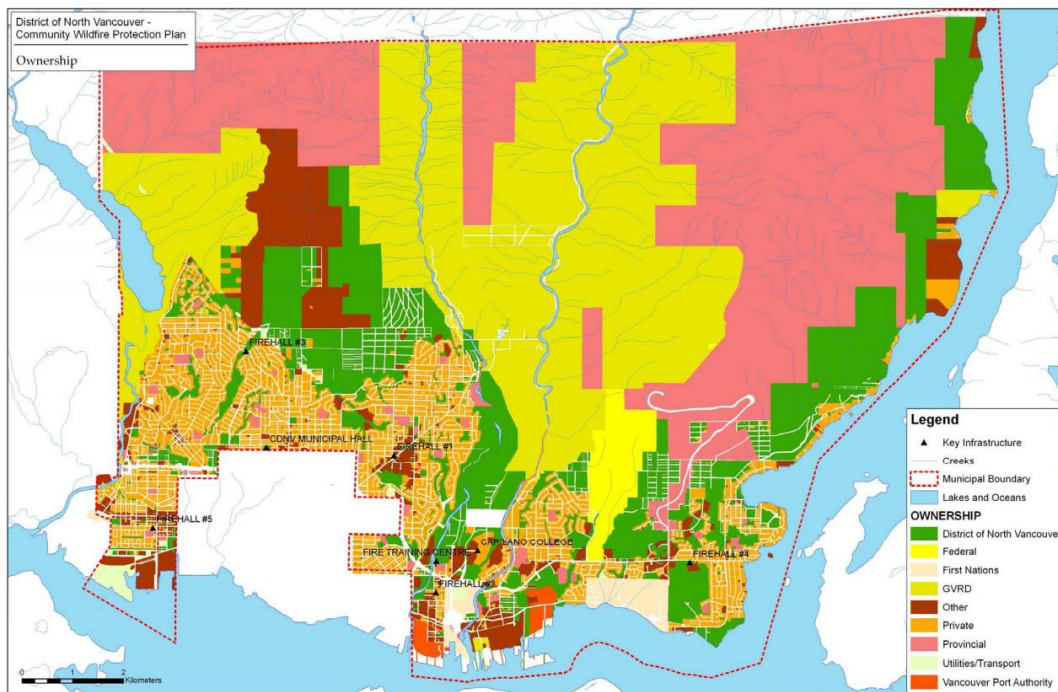
SECTION 1 COMMUNITY RISK ASSESSMENT

The District of North Vancouver

Located on the North Shore within Metro Vancouver, the District of North Vancouver (DNV) was incorporated in 1891 and is a separate municipality from the City of North Vancouver, of which the DNV borders on three sides. It is also separate from the District of West Vancouver which lies to the west adjacent to the Capilano River. The three municipalities are often referred to collectively as the North Shore.

The DNV is located in Canada's Pacific South West and is part of the Metro Vancouver region. It is an urban municipality with occupancy uses located in town centres, in adjacent neighbourhoods, along greenways and forests, and up the Burrard Inlet to Indian Arm. Most development is contained within the regionally defined Metro Vancouver "urban containment boundary". However, there are a number of clusters of development located along the Indian Arm waterway, including boat access only seasonal and full-time dwellings.

The District of North Vancouver is bordered on the North by forest, provincial parks, and two recreational ski mountains—Grouse Mountain and Mount Seymour—further to the north by the Coast Mountains, the east by Indian Arm, south by the City of North Vancouver and the Burrard Inlet, and west by the Capilano River and adjacent West Vancouver. It spans from sea level to 1,449 metres above sea level (4,754 feet). Industrial lands are located along the shores of Burrard Inlet, with road, water and rail access. The Trans-Canada Highway intersects North Vancouver, and is a major travel route across the North Shore for freight transportation, tourism, and commuters.



As reported in the Canadian Census 2016, DNV spans an area of 160.76 km² (62.07 square miles). As reflected in the above map, there are federal lands, provincial lands, Indigenous peoples lands (First Nations), Metro Vancouver Regional District (Greater Vancouver Regional District), the City of North Vancouver, The District of



West Vancouver, and Vancouver Port Authority Lands encompassed within or adjacent to the jurisdiction. With such a large number of adjacent agencies, and a relatively cut-off geographic location from Metro Vancouver, inter-agency and stakeholder relationships are a priority for the DNV.

Fire & Rescue Services Overview - DNVFRS

DNVFRS is an all-hazards fire and rescue service providing fire suppression, emergency medical services (commonly referred to by DNVFRS as MESA), technical rescue, fire prevention and public education services to the community and visitors of the DNV. DNVFRS also participates in an automatic aid Cooperative Fire/Rescue Service Agreement on the North Shore through a tri-municipal regional service partnership, and further provides mutual aid to member municipalities of the Metro Vancouver area.

DNVFRS is a career fire service, consisting of 129 International Association of Fire Fighters (IAFF) Local 1183 members, two and half (2-1/2) Canadian Union of Public Employee (CUPE) Local 389 members, one (1) exempt Administrative Staff, and seven (7) exempt Command Staff. There is a minimum staffing requirement of twenty-three (23) Fire Suppression members on duty at any time, ready to respond from five primary Fire Station locations. Response to incidents takes place in a combination of engines, quints, ladder, rescue, and squad apparatus depending on the incident type and critical tasking determinations.

DNVFRS believes that a collaborative relationship with the International Association of Fire Fighters Local 1183 serves the long-term interests of all. Collaboration enables both parties to work together for common goals including the delivery of quality services, customer satisfaction, and valuing personnel. Business is conducted with commitment and accountability in accordance with the following seven (7) principles as listed in the signed Working Relationship Agreement:

- Recognizing and respecting each other's roles, interests and accountabilities.
- Communicating with each other in ways that promote common understanding, affective problem solving, and enhanced relationships.
- Working to earn and sustain trust.
- Using a collaborative approach to problem solving, decision-making, and negotiation.
- Attacking issues, not people.
- Honouring the agreements we reach.
- Giving each other the benefit of the doubt.

The three North Shore Fire and Rescue Services participate in a "Cooperative Fire/Rescue Service". This functional service is executed by memorandum of understanding dated April 6, 2017 between the respective Chief Administrative Officers and Fire Chiefs of the three municipalities. As stated the goal is increasing cooperation and shared services between the three in order to:

- Improve fire/rescue service levels to residents, businesses, and industry.
- Improve the safety of responders at mutual aid incidents.
- Improve resource coordination between the three departments.
- Stabilize or even reduce operating and/or capital costs of fire/rescue services.
- Reduce risks associated with providing fire/rescue services.



The DNV has entered into a “Mutual Aid Agreement for Emergencies, October 13, 1995”. The agreement is in place for requesting and rendering aid between 20 signatory members of the Greater Vancouver/Metro Vancouver Mutual Aid consortium. Ongoing consultation, provision of emergency resources, cost recovery, termination of agreement, legal action, and negligence are all addressed within the agreement. Mutual aid response is activated by a Chief Officer when there is a need for additional resources, or resources with a capacity that does not exist in that municipality.

Interoperability

DNVFRS values its relationships with internal and external stakeholders. Interoperability is developed internally with DNV departments through weekly management meetings. Opportunities that have developed include standing up an Extended Operations Unit (EOU) staffed by DNV non-fire personnel. Beginning in 2018, DNVFRS strengthened its local response by training this 35-member EOU team of DNV personnel with skills and experience from their assigned “day” jobs such as arborists and heavy equipment operators. This trained group of staff would be used to augment the capacity of DNVFRS, resulting in increased community resiliency, and facilitating swifter recovery during disasters. The EOU team is trained in wildfire basic fire suppression, disaster emergency response training, and participates in ongoing exercises with DNVFRS personnel.

Residents and visitors to DNV forested areas and waterways benefit from the outdoor recreation destination. This popular pass time results in specialized training and requirement for technical rescue responses such as for swift water and high angle rescue in the rivers and canyons, as well, injured hikers and mountain bike rescues in the mountains and forested trails. To support this unique need, interagency partnerships have been developed with Royal Canadian Mounted Police (RCMP), North Shore Rescue (NSR), Talon Helicopters, Metro Vancouver, Royal Canadian Marine Search and Rescue (RCMSAR), and BC Emergency Health Services (BCEHS). Exercising has provided further interoperability with partners and emergency response agencies from across the lower mainland, including the Tsleil-Waututh Nation, the Squamish Nation, Canadian Coast Guard, Vancouver Police Department, and Canada Task Force 1.



DNVFRS along with the North Vancouver City Fire Department (NVCFD) and West Vancouver Fire & Rescue (WVFR) have a service agreement with Seaspan Vancouver Shipyards, to respond to land-based marine emergencies. The service agreement includes Vancouver Fire Rescue Services (VFRS) with true marine firefighting capability on the water through VFRS’s two fire boats. Fire personnel are trained in partnership with Justice Institute of BC (JIBC) and Seaspan. This interagency collaboration actively involves RCMSAR, RCMP Marine Unit, VFRS Fireboat, Vancouver Police Department Marine Unit, and the Port of Vancouver.

DNVFRS personnel respond to incidents in the wildland areas of the DNV. Rescue calls may involve a need for specialized search and rescue capacity. Interoperability with NSR and Talon Helicopters facilitates a need for speedier response, access to challenging locations, and urgent medical evacuation needs of patients. Members of NSR are trained in Helicopter Human External Transport Systems (HETS), also known as long-line rescue.



Talon Helicopters is accessible through NSR for rescue incidents. In December 2020, NSR was given provincial authority for a pilot project that allows night rescue using a night-vision imaging system.

Aerial fire-fighting service is typically accessed through BC Wildfire and may include any number of air support services that are provincially available at the time. Together with BC Wildfire and Metro Vancouver Watershed Wildfire response team, helicopter companies provide integral access and resource deployment into the wildland area. During 2019 technological advancements enhanced the capacity of aerial fire-fighting and rescue response service. Talon Helicopters is the first Transportation Canada approved NVG Night Fire Attack medium helicopter. The Dauphin Airbus AS365 N2 is certified for night hover exit, medevac, SAR, passenger transport, and day and night fire attack. The Dauphin has a capacity of 901L of water and 83L of foam via belly tank.



North Shore Emergency Management (NSEM)

North Shore Emergency Management (NSEM) is a tri-municipal agency located in the Gerry Brewer Building in the City of North Vancouver. It has provided emergency management services to the three North Shore municipalities since 1978. The NSEM facility is an Emergency Operations Centre (EOC) which can operate in support of one or more of the municipalities on the North Shore in the event of an emergency and coordinates the regional emergency program for the three (3) municipalities. In major emergencies the facility becomes the Integrated North Shore Emergency Operations Center (INSEOC). This proactive integration of service enhances response capacity and capability for each individual community, and for the greater region of the North Shore.

NSEM has completed a Hazard, Risk, and Vulnerability Analysis (HRVA) to “identify hazards or emergency situations which are a priority for North and West Vancouver.” In British Columbia (BC) the development of a HRVA is mandated in the Emergency Program Act [1996]. Specifically local governments are mandated to assess the “relative risk of occurrence and potential impact on people and property of emergencies or disasters.” The January 2010 HRVA was prepared using the HRVA Community Self-Assessment Tool that is provided by the Ministry of Public Safety and Solicitor General, Provincial Emergency Program.

A process is currently in place to update the 2010 HRVA for the North Shore. Ebbwater Consulting Inc. has been hired to develop a preliminary HRVA for the North Shore including a baseline assessment of priority hazards, vulnerabilities and risks in the region, utilizing a template to build-out a complete HRVA. On September 17, 2019, fifty-eight (58) stakeholders with subject matter expertise from across the North Shore attended a collaborative HRVA workshop. The working group considered eight (8) priority hazards, focusing on hazard likelihood, historical events, hazard trends, vulnerability/resiliency, strategic risk treatments, and consequences. The following is the resulting risk priority list:

1. Windstorm
2. Landslide/debris flow
3. Extreme heat



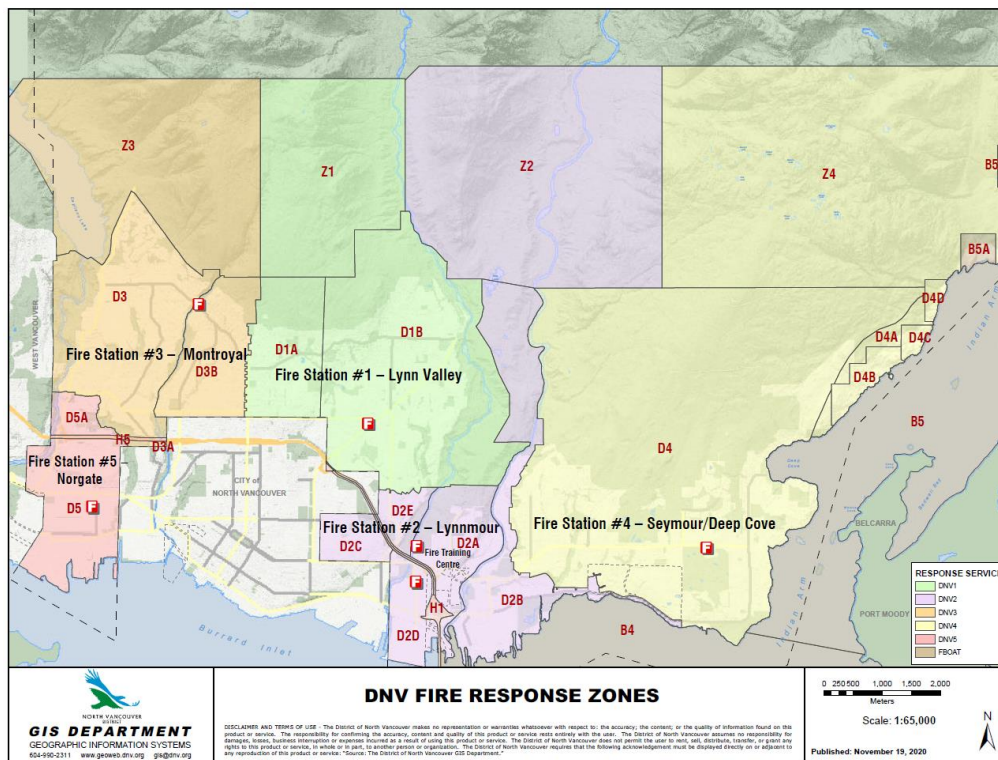
4. Wildfire (tied with extreme heat)
5. Coastal flood
6. Earthquake
7. Hazardous material spill
8. Clearwater flooding
9. Forest Fire and Wildland Urban Interface Fire Risks

Risk Methodology

For the purposes of Fire Department response, the DNV is divided into five (5) fire station response planning areas:

- Fire Station #1 – Lynn Valley
- Fire Station #2 – Lynnmour
- Fire Station #3 – Montroyal
- Fire Station #4 – Seymour/Deep Cove
- Fire Station #5 – Norgate

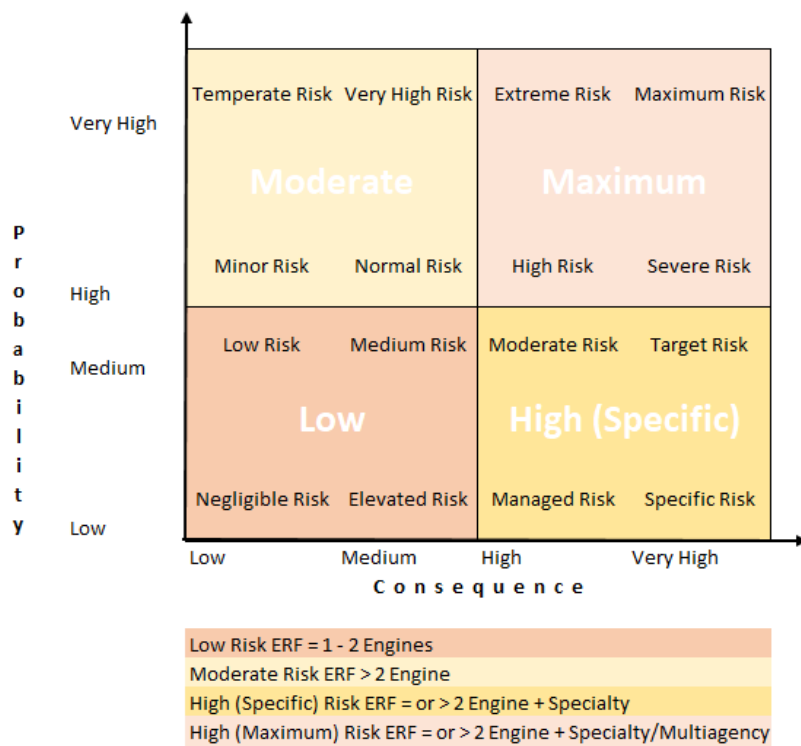
Further dividing these five (5) fire response planning areas into fire response zones allows for greater determination of closest apparatus for fulfilling concentration (effective response force ERF), as well, for recognizing unique areas in the DNV, such as wildland zones Z1 – Z4, and highway zones H1 – H5. The zones are used by computer aided dispatch (CAD) for managing resources through computer-aided move-ups using a “live move-up module” termed LiveMUM by Deccan International.



DNVFRS risk methodology takes into consideration a 2-axis risk categorization based on probability and consequence. This methodology relies on the commitment of resources for the service being provided, as well as the frequency of incidents by type and the severity of the outcome on the community. Outcome on community takes into consideration the types of use in the built-up area and the wildland.

The allocation of resources has been determined to meet the level of risk. Resource commitment for the service being provided also incorporates consequences as a factor, rated from low to very high. The benefit to recognizing moderate risk as including minor risk, normal risk, temperate risk, and very high risk, aligns with the resources deployed for high probability events that occur frequently, for example structure fires (see following commitment of resources chart).

Commitment of Resources for the Service Being Provided



This methodology also recognizes maximum risk as including maximum risk, extreme risk, and severe risk, which aligns with the high probability of a wildfire to the community, and the high consequence it could have on the wildland area and urban interface.

Risk methodology for the DNV considers occupancy type/use information which aligns with fire department response. The services provided include consideration for natural and human-made hazards and risk identification and correlate with the existing HRVA. The anticipated future needs related to wildfire are also included in the HRVA update that is currently underway.



Risk is further determined by fire station response area, providing a more detailed Community Risk Assessment (CRA). In the future, additional data sets would form a component part of a comprehensive CRA, including census demographics by neighbourhood. This would include socio-economic factors, gender, age, and cultural background which could then be applied to a mapping layer that includes incident response. The work may require realigning fire station response areas to align with neighbourhood mapping or vice versa.

SECTION 2 STANDARDS OF COVER

Current Delivery System

District of North Vancouver Fire and Rescue Services (DNVFRS) provides emergency and non-emergency response, and community risk reduction services to the residents and visitors of the District of North Vancouver (DNV). DNVFRS “engages across the organization at the strategic, tactical, and task level” as referenced by Fire Chief Brian Hutchinson “our priorities are summed up as the five ‘rights’: our job is to ensure the right people (our Fire Fighters), are at the right place, at the right time, with the right equipment and training, doing the right things and solving the problems at hand” (Annual Report 2019).

DNVFRS provides service to the DNV urban and wildland environment. Frontline apparatus consisting of five (5) fire engines/quints, one (1) each tower/rescue (cross-staffed), and a command vehicle, operate from five (5) strategically located fire stations, and together with the training centre, support DNVFRS capacity. Additional light apparatus including wildland and rescue squads support response throughout the jurisdiction.

In addition to fighting fires, DNVFRS Fire Fighters routinely respond to calls for medical assistance, rescue of all kinds, hazardous materials concerns, requests for public assistance and more. In 2019 DNVFRS Fire Fighters responded to 4,256 incidents. The top five response types in 2019 were: emergency medical services (MESA) 52%, alarms ringing 18%, vehicle accidents 9%, fires 7%, and rescues 4% (Annual Report, 2019).

Mitigating the impact of fire and reducing the number of fires that start in the first place is a primary goal of DNVFRS. Risk reduction measures are pursued by investigating fires to understand where they started and what caused them, by working with builders and developers to ensure that measures are in place to limit fire risk, and by regularly inspecting commercial, industrial, and multi-family buildings to ensure they comply with fire codes and standards. Risk reduction measures benefit the community and DNVFRS Fire Fighters by providing building and occupancy specific details, hazard alerts, and ensuring that life safety systems are regularly serviced.

The personnel of DNVFRS are its greatest asset. DNVFRS provides comprehensive training to its members. In 2019 the Training Division provided 9,392 hours of specialized training delivered in 343 training sessions to 126 staff (Annual Report, 2019). Specialized training of fire and rescue disciplines is delivered by DNVFRS professionally certified instructors. The instructor led disciplines include: fire ground survival, rapid intervention team, emergency vehicle operations, Critical Incident Stress Management/Resilient Minds, utilities safety, structural collapse, Blue Card Hazard Zone Incident Command, fire behavior, swift-water rescue, high angle rope rescue, vehicle extrication, fire ground operations, wildland firefighting, and Emergency Medical Assistant (EMA) delivered at the First Medical Responder (FMR) and Emergency Medical Responder (EMR) levels. This depth and breadth of training enhances DNVFRS operational capacity and effectiveness when responding to emergencies.



In addition to specialized training, DNVFRS personnel also receive a significant amount of on-the-job training that teaches foundational skills such as: ladder operations, traffic safety, radio communications, hose deployment, gas and electric safety, and building construction. Foundational skill training ensures that DNVFRS Fire Fighters maintain the required competency standards for Fire Fighters in a 'Full Service' Fire Department as outlined by the BC Office of the Fire Commissioner in the BC Fire Service Structure Fire Fighters Competency and Training Playbook (Playbook, May 2015).

Staffing Levels and Patterns

DNVFRS Fire Suppression personnel follow the two-platoon system as referenced in the Fire Department Act [RSBC 1996] Chapter 143. The DNVFRS has four (4) platoons lettered A, B, C, and D. All personnel within this system work forty-eight (48) hours in an eight (8) day cycle; with two (2) 10-hour days followed by two (2) 14-hour nights, followed by four (4) days off. The two platoon system as defined is the *No. 2 System* (Fire Department Act, Section 4).

DNVFRS maintains a regular shift strength of the following levels as per Letter of Understanding (LOU) dated March 15, 2016:

- | | |
|----------------------------|--|
| • Station #1 – Lynn Valley | Two (2) Captains plus five (5) Fire Fighters |
| • Station #2 – Lynnmour | One (1) Captain plus three (3) Fire Fighters |
| • Station #3 – Montroyal | One (1) Captain plus three (3) Fire Fighters |
| • Station #4 – Deep Cove | One (1) Captain plus three (3) Fire Fighters |
| • Station #5 – Norgate | One (1) Captain plus three (3) Fire Fighters |

Minimum staffing of shift strength is equal to 23 Fire Suppression personnel.

Since 1997, the least senior ten (10) Fire Suppression personnel are scheduled on a 56-day cycle in accordance with Operating Guideline 5.01.16.16 "Fire Fighter Relief Pool" and Letter of Understanding (LOU) dated March 15, 2016. The guideline is in place to ensure appropriate shift strength is maintained. Relief pool members are full-time Fire Fighters who are assigned to a platoon for the purposes of determining benefits. However, instead of working the two-platoon system, they work a 56-day cycle consisting of no more than 336 hours through working any combination of platoons.

As of December 2020 DNVFRS maintains eight (8) positions in the Public Safety Division, staffed by Group 2 IAFF personnel. The Training Division is staffed by one (1) Group 2 IAFF member. The hours of work are a 35-hour week. As of January 1, 1977 a principle of hours was set out in the Collective Agreement stating that Group 2 employees who are required to work a four (4) day week shall work a 9-1/4 hour day inclusive of a 30 minute lunch break. Employees who work a five (5) day week shall work eight (8) hours with a one (1) hour lunch break.

PERFORMANCE MONITORING

Incident Volume Breakdown

DNVFRS provides emergency and non-emergency services to the DNV residents and visitors. Through the regional Cooperative Fire/Rescue Service Letter of Understanding (commonly referred to as the Shared Service

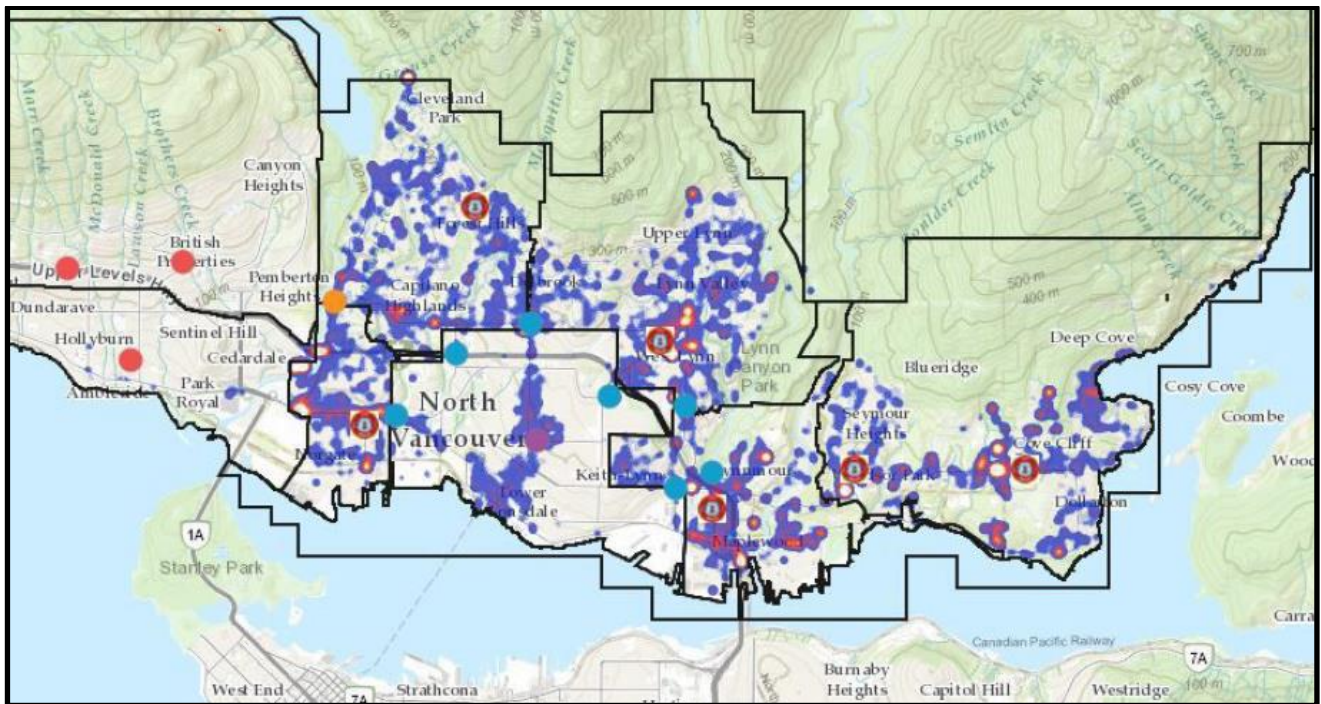


Agreement), DNVFRS also responds to the City of North Vancouver and the District of West Vancouver. DNVFRS fire apparatus and personnel could be a first due apparatus in any of the three municipalities, as well as part of the effective response force (ERF) and vice versa.

Incident Volume Breakdown - All DNV Fire Station Response Areas

| <u>Incident Type</u> | <u>2017</u> | <u>2018</u> | <u>2019</u> |
|----------------------------|-------------|-------------|-------------|
| Fire Suppression | 1076 | 1076 | 1142 |
| Rescue and MVA | 464 | 447 | 470 |
| Emergency Medical Services | 2605 | 2009 | 1912 |
| Non-Emergency | 400 | 431 | 483 |
| Hazardous Materials | 91 | 83 | 68 |
| Standbys | 324 | 289 | 182 |
| TOTALS | 4960 | 4335 | 4257 |

All Incidents within All DNV Fire Station Response Areas 2017 - 2019



*Five (5) Fire Stations and the Training Centre are noted by the DNVFRS Maltese Cross (logo)
Standby locations are noted by the twelve (12) large circles coloured light blue, purple, orange and red*



Benchmarks/Response Targets

As a fire service agency that is seeking first time accreditation, DNVFRS is required to write to all services areas in the Fire & Emergency Services Self-Assessment Manual (FESSAM), to report the response data for the top three (3) moderate response types, and any high risk response type where service was provided more than 10 times annually, or cumulative 50 over five (5) years.

DNVFRS records the total response time to incidents (*baseline actuals*) and has established goals for response time aligned with industry best practice (*benchmark targets*). The incident types being reported in the CRA/SOC are: Fire Suppression Moderate Risk, Emergency Medical Services (MESA) Moderate Risk, Rescue Motor Vehicle Accident (MVA) Moderate Risk, and Technical Rescue High Risk.

The benchmark targets that have been established for these four (4) incident types are broken down by alarm handling, turnout time, travel time of first due, total response time of first due, additional travel time for the effective response force (ERF), and the total response time of the ERF. Establishing a benchmark target has allowed the DNVFRS to review and analyze performance to the 90th percentile. The following table represents the benchmark targets for DNVFRS:

| Benchmarks for Reporting | | | | | | | |
|---|-------|--------------------|--------------|-----------------------|---------------------------------|-----------------------|---------------------------|
| Reportable Categories Based on Moderate Risk and Responses Greater than 10/Year | | in Minutes:Seconds | | | | | |
| | | Alarm Handling | Turnout Time | Travel Time First Due | Total Response Time - First Due | Add'l Travel Time ERF | Total Response Time - ERF |
| Fire Suppression - Moderate Risk | Urban | 01:00 | 01:30 | 04:00 | 06:30 | 04:00 | 10:30 |
| Emergency Medical Services (MESA) - Moderate Risk | Urban | 01:00 | 01:00 | 04:00 | 06:00 | n/a | 06:00 |
| Rescue Motor Vehicle Accident (MVA) - Moderate Risk | Urban | 01:00 | 01:30 | 04:00 | 06:30 | 04:00 | 10:30 |
| Technical Rescue - High Risk | Urban | 01:00 | 01:30 | 04:00 | 06:30 | 04:00 | 10:30 |

In 2018 DNVFRS established a data analytics reporting process for turnout times by incident. Data was analyzed and cleaned utilizing actual information based on Fire Command (automatic vehicle locator tool) and supported by Chief Officers. As an example, an incident dispatched as an alarms call that became a fire suppression incident would be coded to the actual nature of the incident and reported as such. Responses that were over a total response time of 10 minutes were investigated and compared against Fire Command for actuals and the records were adjusted if warranted.

The reporting statistic reflected in both the 2018 and 2019 Annual Reports employed an “average” response time calculation. DNVFRS has transitioned away from reporting as an average to reporting based on the CFAI model of 90th percentile. This means that DNVFRS is now reporting data on what is being done 90% of the time, as opposed to the broader range that averages provides. This process also provides the ability to quantify deployment data and compare to previous years, and established benchmark targets with like-sized organizations. 90th percentile based on baseline actuals and benchmark targets established by DNVFRS provides a consistent and quantifiable approach to data analytics. The total response time of the first due unit allows DNVFRS to test distribution of resources within the DNV, and determine how well the needs of the



community are met. The total response time of the ERF allows DNVFRS to test how well the concentration of the full first alarm complement performed, as determined based on critical tasking analysis.

Alarm handling time is under the control of Surrey Fire Service (SFS) Dispatch Centre and consistently meets and exceeds NFPA 1121 (2019) of 60 seconds, 90% of the time. Alarm handling time is not influenced by DNVFRS personnel. DNVFRS personnel have the capacity to influence turnout time and travel time as components of total response time.

NFPA 1710 (2020) is an internationally recognized standard for “Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments.” The economic restrictions for DNVFRS to provide response coverage meeting NFPA 1710 all of the time (100%) is not possible. Using the industry best practice of the CFAI model supports the positioning of fire stations and resources to cover 90 percent of the service area in each first-due area, and achieving the concentration of the effective response force (ERF) to multi-unit responses. Utilizing the 90th percentile and CFAI aligned data analytics will support decision-making to allow for equity of service to DNV residents and visitors, and the ability to proactively plan for efficient and effective service levels.

RESPONSE DATA ANALYTICS (2017-2019)

To align with best practices and the CFAI accreditation model, DNVFRS is supported by Deccan International’s purpose-built CAD Analyst application for reporting the three (3) year period 2017-2019 using the methodology of calculating 90th percentile. This sets a realistic expectation of response performance for the community.



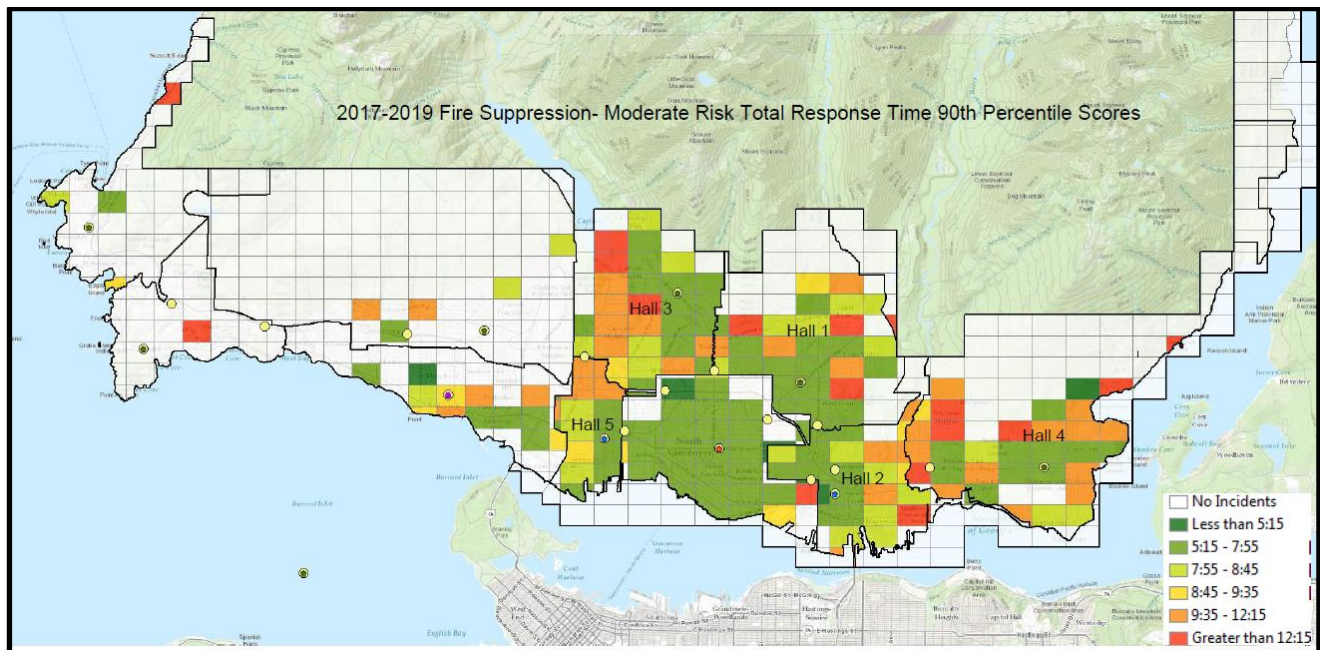
Fire Suppression

As supported by three (3) years of cumulative data, DNVFRS meets its goal of 00:06:30 minutes for first due total response time to fire suppression calls 64% of the time. The 90th percentile performance for the period for total response time was 00:08:45.

1st Due Target Benchmark - Based on 90th Percentile Three Year Period 2017-2019

| Fire Suppression - Moderate Risk | Alarm Handling (1 Min) | | Turnout Time (1.5 Min) | | Travel Time (4 Min) | | Total Response Time | |
|-------------------------------------|------------------------|----------|------------------------|----------|---------------------|----------|---------------------|----------|
| All Fire Stations | 89% | 00:00:58 | 34% | 00:02:25 | 62% | 00:06:21 | 64% | 00:08:45 |
| Fire Station #1 - Lynn Valley | 91% | 00:00:58 | 29% | 00:02:36 | 69% | 00:05:49 | 71% | 00:08:25 |
| Fire Station #2 - Lynnmour | 89% | 00:01:00 | 38% | 00:02:23 | 49% | 00:06:26 | 55% | 00:08:40 |
| Fire Station #3 - Montroyal | 91% | 00:00:56 | 28% | 00:02:35 | 47% | 00:06:26 | 50% | 00:08:54 |
| Fire Station #4 - Seymour/Deep Cove | 94% | 00:00:53 | 25% | 00:02:37 | 42% | 00:08:10 | 43% | 00:10:38 |
| Fire Station #5 - Norgate | 92% | 00:00:54 | 24% | 00:02:40 | 65% | 00:06:14 | 65% | 00:08:43 |

Performance would be positively effected by decreasing turnout time and travel time. There is the greatest opportunity for improvement with turnout time, as the benchmarks are consistently not being achieved; targets set by DNVFRS personnel are being achieved 34% of the time. The best response performance is Fire Station #2 – Lynnmour. Alternately, travel times are significantly longer in Fire Station #4 – Seymour/Deep Cove which has the largest area of coverage at 10.81 km² of urban area, and 56.72 km² of wildland.



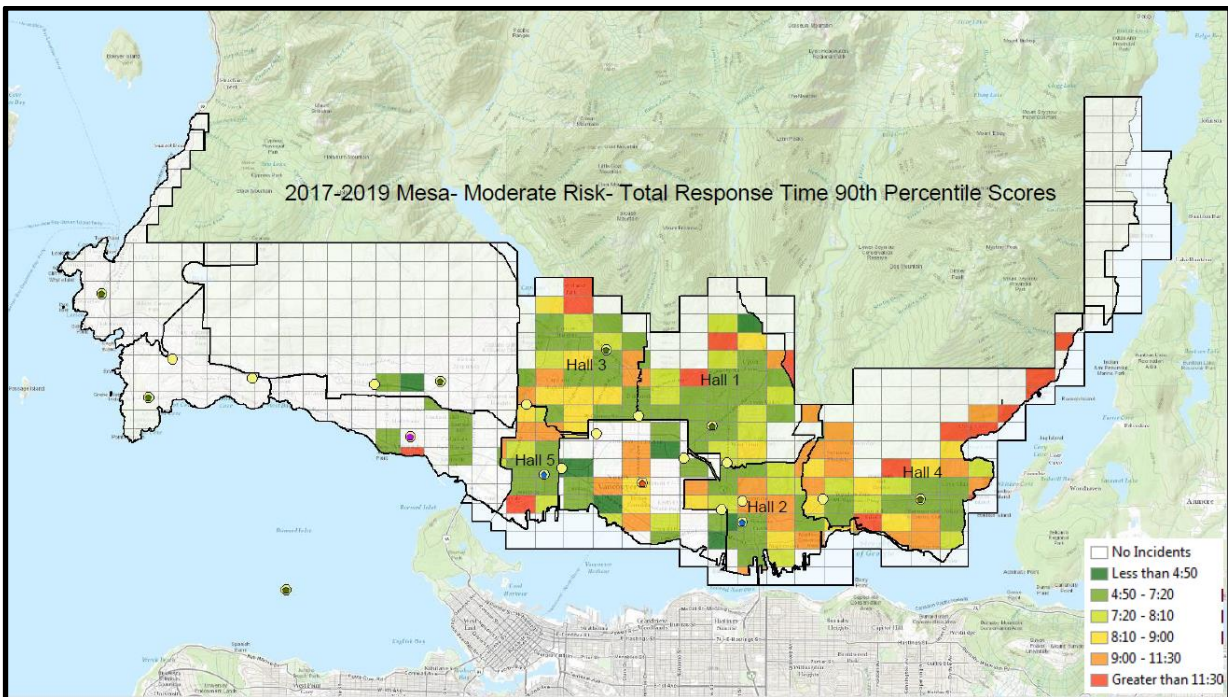
Emergency Medical Services (MESA)

The three (3) years of cumulative data 2017-2019 show the DNVFRS meets its goal of 06:00 minutes for first due total response time to MESA calls 65% of the time. The 90th percentile performance for the period for total response time was 00:08:10.

**1st Due Target Benchmark - Based on 90th Percentile
Three Year Period 2017-2019**

| Emergency Medical Services (MESA) - Moderate | Alarm Handling (1 Min) | Turnout Time (1.5 Min) | Travel Time (4 Min) | Total Response Time |
|--|---------------------------|---------------------------|------------------------|---------------------|
| All Fire Stations | 95% 00:00:38 | 21% 00:02:27 | 64% 00:06:02 | 65% 00:08:10 |
| Fire Station #1 - Lynn Valley | 93% 00:00:45 | 21% 00:02:24 | 78% 00:05:04 | 77% 00:07:22 |
| Fire Station #2 - Lynnmour | 93% 00:00:41 | 26% 00:02:22 | 53% 00:06:23 | 57% 00:08:25 |
| Fire Station #3 - Montroyal | 97% 00:00:29 | 17% 00:02:38 | 58% 00:05:51 | 58% 00:08:07 |
| Fire Station #4 - Seymour/Deep Cove | 96% 00:00:35 | 18% 00:02:30 | 62% 00:06:25 | 61% 00:08:38 |
| Fire Station #5 - Norgate | 97% 00:00:29 | 23% 00:02:20 | 58% 00:06:06 | 63% 00:08:15 |

Changes that are made to reduce turnout time and travel time for fire suppression should also have a positive affect on MESA as changes in behaviour, readiness, fire station design, etc. will have overall effects. DNVFRS personnel do not typically turn out for MESA incidents in structural fire fighting Personal Protective Equipment (PPE). Appropriate MESA PPE is available in the apparatus and may be donned on route while seat-belted or upon arrival as the situation dictates, i.e. masks, gowns, face shield. Updates regarding level of MESA PPE required may be noted in the incident notes, or may be updated on route by dispatch.

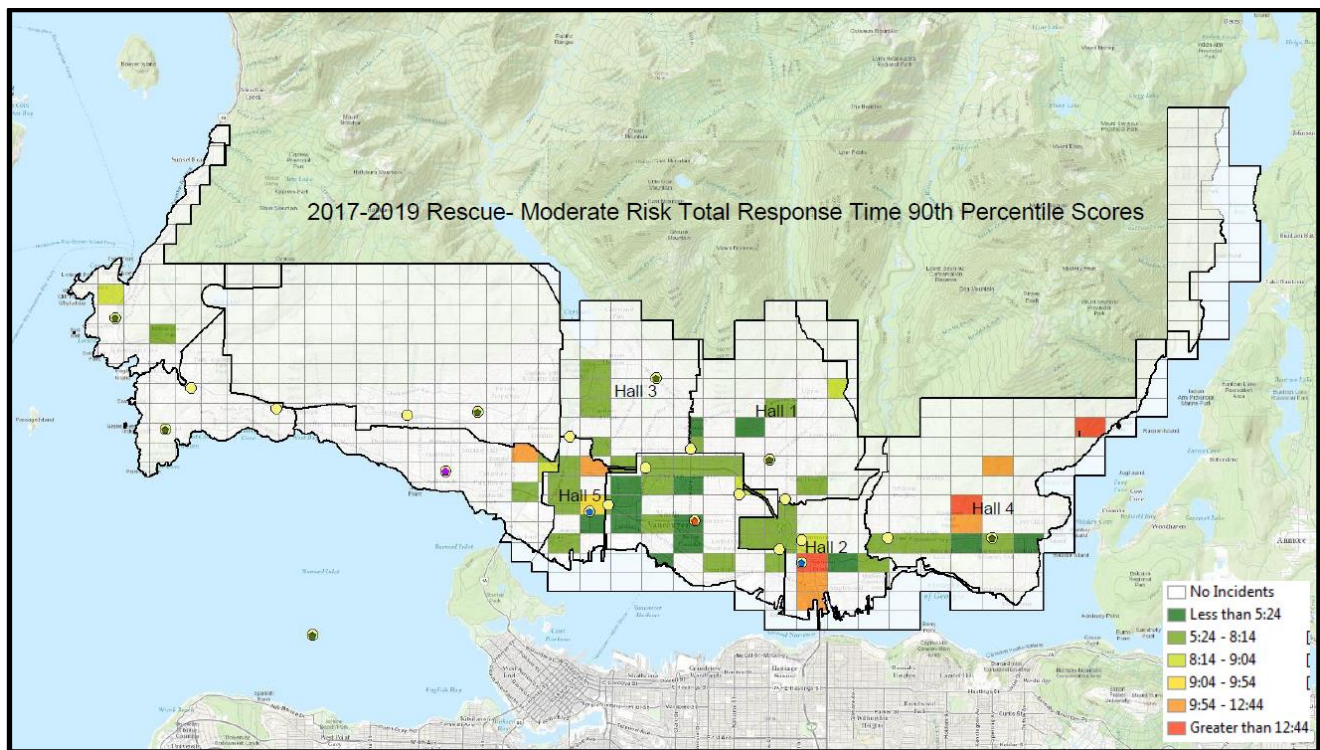


Rescue Motor Vehicle Accident (MVA) (Moderate Risk)

DNVFRS responded to an annual average of 540 rescue calls for all risk levels, from 2017-2019. Based on 2-axis risk analysis and critical tasking that aligns with O.G. #2.03.04, rescues have been divided into low risk, moderate risk, and high risk. Over the three (3) year period, DNVFRS responded to an average of 211 moderate risk rescues. Moderate risk rescues are MVA Rescue Required, including MVA Highway. The first due for a moderate risk rescue met the goal of 06:30 for total response time 40% of the time. The 90th percentile time was 00:09:04.

**1st Due Target Benchmark - Based on 90th Percentile
Three Year Period 2017-2019**

| Rescue MVA - Moderate Risk | Alarm Handling (1 Min) | | Turnout Time (1.5 Min) | | Travel Time (4 Min) | | Total Response Time | |
|-------------------------------------|------------------------|----------|------------------------|----------|---------------------|----------|---------------------|----------|
| All Fire Stations | 78% | 00:01:27 | 40% | 00:02:37 | 35% | 00:06:45 | 40% | 00:09:04 |
| Fire Station #1 - Lynn Valley | 88% | 00:00:43 | 25% | 00:02:09 | 75% | 00:05:04 | 62% | 00:07:01 |
| Fire Station #2 - Lynnmour | 81% | 00:01:13 | 41% | 00:02:42 | 31% | 00:07:10 | 37% | 00:10:07 |
| Fire Station #3 - Montroyal | 100% | 00:00:30 | 0% | 00:02:24 | 20% | 00:04:39 | 20% | 00:07:18 |
| Fire Station #4 - Seymour/Deep Cove | 93% | 00:00:42 | 14% | 00:02:45 | 29% | 00:10:22 | 36% | 00:13:00 |
| Fire Station #5 - Norgate | 91% | 00:00:52 | 36% | 00:02:23 | 26% | 00:06:09 | 41% | 00:07:57 |



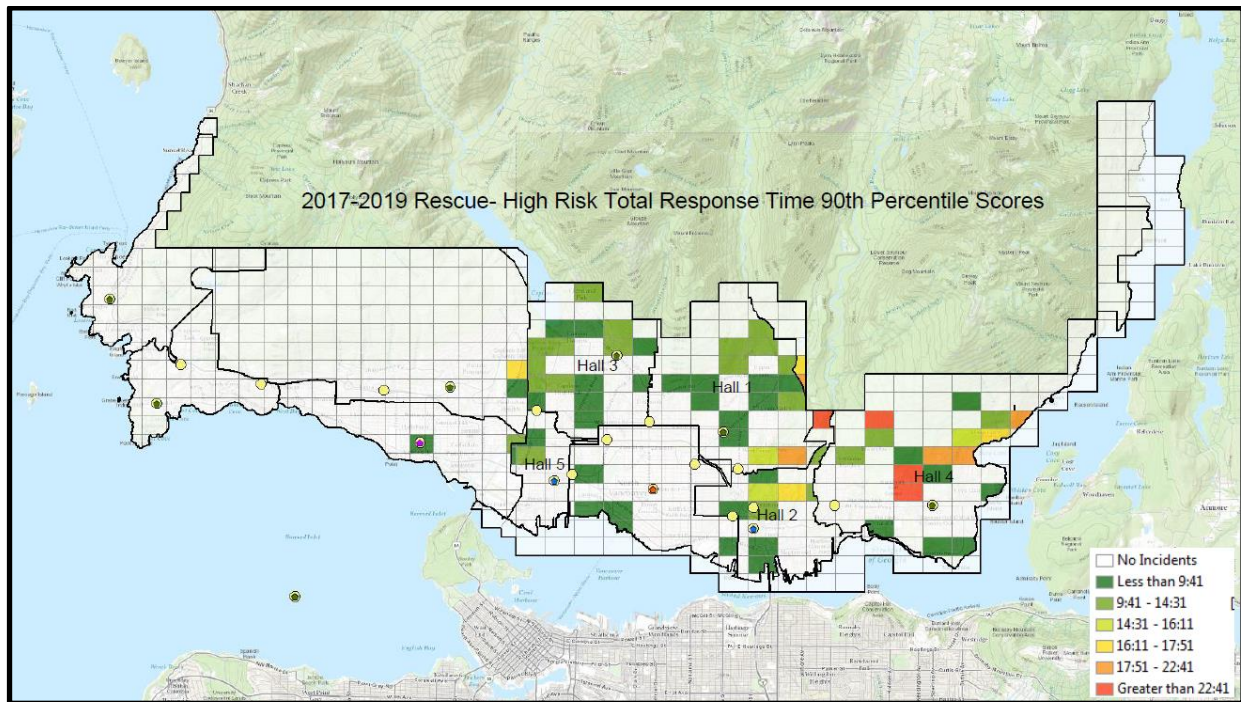
Technical Rescue (High Risk)

DNVFRS responded to an annual average of 100 high risk rescues (technical rescues) during the three year period. High risk rescues are technical rescues involving swift water, high angle, trench, confined space, and trail. For high risk technical rescues the 06:30 total response time was achieved 26% of the time. The 90th percentile total response time was 00:16:11.

**1st Due Target Benchmark - Based on 90th Percentile
Three Year Period 2017-2019**

| Technical Rescue - High Risk | Alarm Handling (1 Min) | | Turnout Time (1.5 Min) | | Travel Time (4 Min) | | Total Response Time | |
|-------------------------------------|---------------------------|----------|---------------------------|----------|------------------------|----------|---------------------|----------|
| All Fire Stations | 49% | 00:04:27 | 43% | 00:02:50 | 33% | 00:11:45 | 26% | 00:16:11 |
| Fire Station #1 - Lynn Valley | 60% | 00:02:05 | 34% | 00:02:47 | 37% | 00:08:19 | 37% | 00:11:14 |
| Fire Station #2 - Lynnmour | 40% | 00:03:31 | 55% | 00:02:37 | 20% | 00:14:33 | 15% | 00:17:15 |
| Fire Station #3 - Montroyal | 50% | 00:01:41 | 29% | 00:02:42 | 47% | 00:08:27 | 26% | 00:10:54 |
| Fire Station #4 - Seymour/Deep Cove | 37% | 00:05:22 | 51% | 00:03:00 | 25% | 00:15:45 | 12% | 00:19:08 |
| Fire Station #5 - Norgate | 44% | 00:01:40 | 56% | 00:02:57 | 62% | 00:05:48 | 50% | 00:08:05 |

Changes made to reduce turnout time and travel time should have a positive effect on all calls, as changes in behaviour, readiness, station design and layout, will have overall effects. Notably alarm handling time for rescue calls is increased. Additional information is taken by the dispatch call taker, information is often verified, additional questions asked, etc. Turnout time does not appear measurably affected by the added complexity of these call types. Travel time is measurably longer which could be as a result of location in the wildland, additional PPE or information required at a staging point, or may include travel time to the patient/incident.



DATA ANALYTICS SUMMARY

Reflecting on the 90th percentile performance tables of all four reportable categories, there is a historical pattern of response performance that can be improved. Addressing performance may consider changes on multiple levels:

- What changes are controlled by personnel related to behavior and readiness?
- What support do personnel need to make those changes?
- What changes are controlled by management, and what are the barriers to those changes?

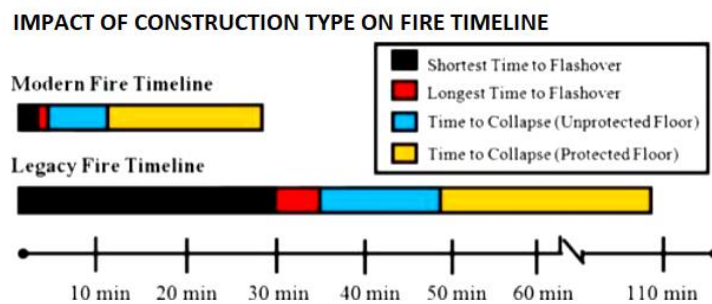
Assessing the need, identifying the changes, initiating change, and monitoring and providing feedback on success and challenges are part of a process that began in 2019 related to turnout times. In mid-2020 DNVFRS began reporting average turnout times to department personnel. Data reporting to personnel has now been realigned from average to 90th percentile.

Why does time matter?

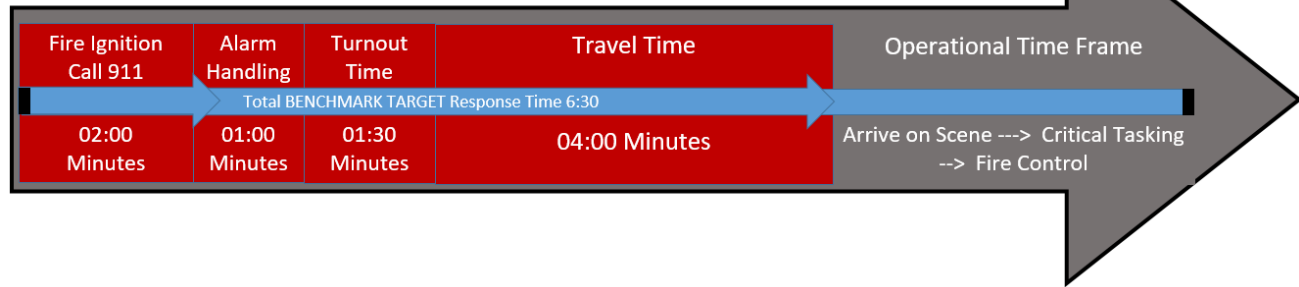
There are two (2) time-critical response needs for the first fire apparatus to arrive at an incident. For a fire it is the time-critical need to stop progression towards flashover. For a cardiac arrest patient it is the point of brain death.

Flashover is a threat to life and property. There is little opportunity for the first arriving apparatus to save lives and property once flashover occurs in an occupancy. Public Safety personnel can mitigate this threat through public education, outreach, and inspections on inspectable properties. Occupants can mitigate this threat through good fire safety practices and housekeeping, practicing escape planning, having sprinkler systems, working smoke alarms and fire alarm devices, or potentially through protecting in a safe area and awaiting rescue.

Regardless, fires happen and when they do, they burn quicker and hotter as new building construction materials and the composition of home furnishings are drastically different than 40+ years ago. Today's home contents contain large quantities of petroleum-based products and synthetics that burn faster and hotter versus traditional, more natural materials such as wood and cotton. Legacy construction as occurred before the mid-80s could typically sustain until flashover for around 30 minutes. However, science is showing that this time frame is now outdated. Due to the modern fire environment—building construction and fuel load—fire is accelerating faster, and times to collapse and flashover may occur as quickly as 3-4 minutes. This gives occupants less time to evacuate, and means that the total response time for a fire suppression response matters!



FIRE RESPONSE TIMELINE (Based on Benchmark Targets) from Fire Ignition to Fire Control



When we consider time as it relates to emergency medical services we consider that irreversible brain death can occur within six (6) minutes when oxygen is not circulating to the brain. Bystander CPR, early defibrillation, and community CPR type programs can be mitigating measures. Regardless, the greatest chance for survivability is within the first 10 minutes of the event occurring. This means that total response time for emergency medical service calls matters too!

Cooperative Fire/Rescue Service – DNV Response

The Cooperative Fire/Rescue Service Letter of Understanding supports the provision of the best service for all residents and visitors to the North Shore. When resources in any municipality are anticipated to be tied up for greater than 10 minutes, LiveMUM anticipates whether due to the time of day/day of week, there is a historical need for a coverage move-up. This computer-aided move-up anticipates service gaps, and allows all three (3) municipalities the benefit of additional resources for simultaneous calls without having to be concerned with habitual draw-down of resources.

While DNVFRS predominantly responds within the DNV, service is also provided to the City of North Vancouver and the District of West Vancouver to support their primary service provision. On average during the three year period 2017-2019, 86.6% of DNVFRS calls for service were located in the DNV. DNVFRS personnel responded into the City of North Vancouver 10.2%, and 3.2% in the District of West Vancouver.



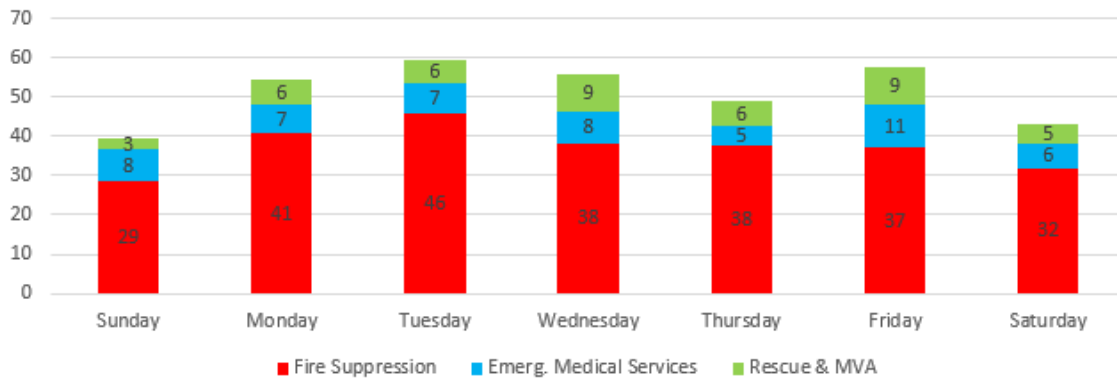
Response to City of North Vancouver (CNV)

DNVFRS predominantly responds into the CNV as a component of Fire Suppression ERF as noted in the following table. Calls for service tend to occur more frequently on Tuesdays and less frequently on Sundays.

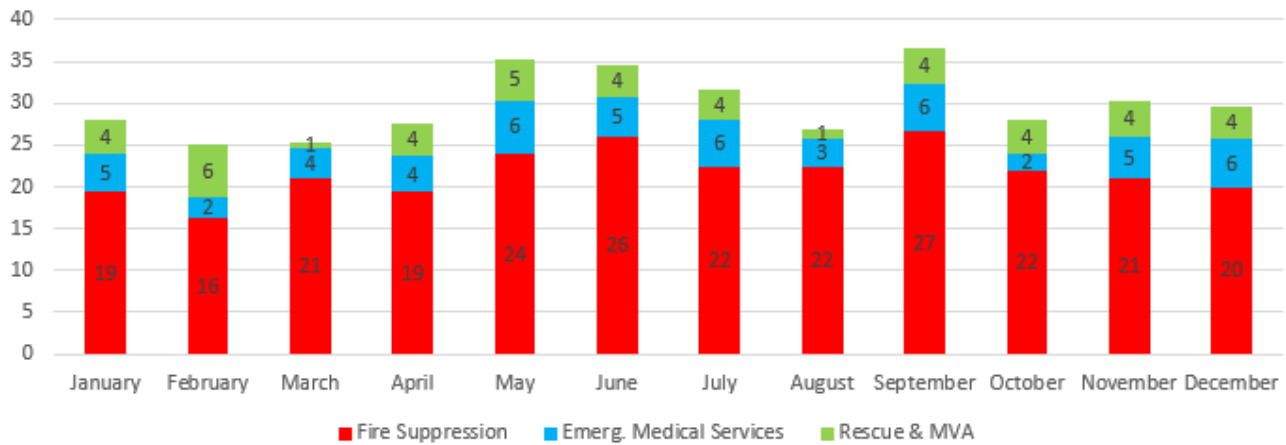
Incident Volume Breakdown - CNV Fire Station Response Area

| Incident Type | 2017 | 2018 | 2019 |
|----------------------------|------------|------------|------------|
| Fire Suppression | 268 | 258 | 255 |
| Rescue and MVA | 39 | 47 | 51 |
| Emergency Medical Services | 70 | 43 | 47 |
| Non-Emergency | 10 | 10 | 14 |
| Hazardous Materials | 8 | 7 | 5 |
| Standbys | 146 | 175 | 117 |
| TOTALS | 541 | 540 | 489 |

Incident Volume (Avg) by Day of Week - CNV Response Area



Incident Volume (Avg) by Month of Year - CNV Response Area



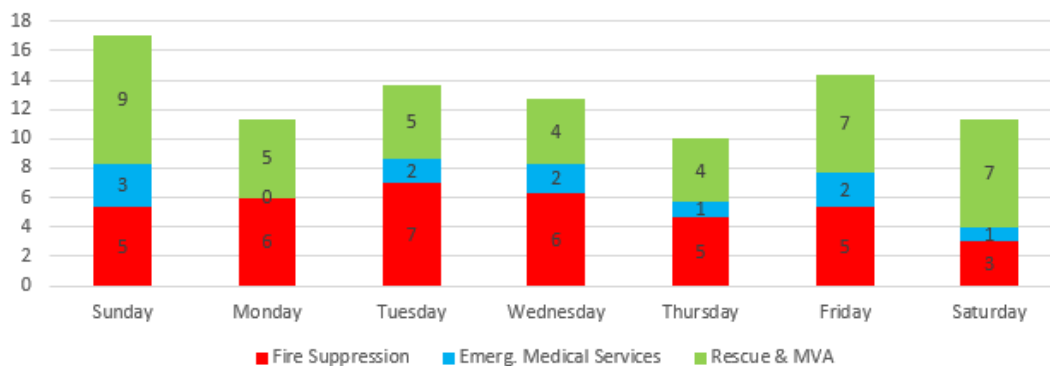
Response to District of West Vancouver (DWV)

DNVFRS personnel respond into the DWV as a component of Fire Suppression ERF but also for rescues and motor vehicle accidents (MVAs). MESA support services are less frequent. Rescue calls are most likely to occur on a Friday, Saturday or Sunday.

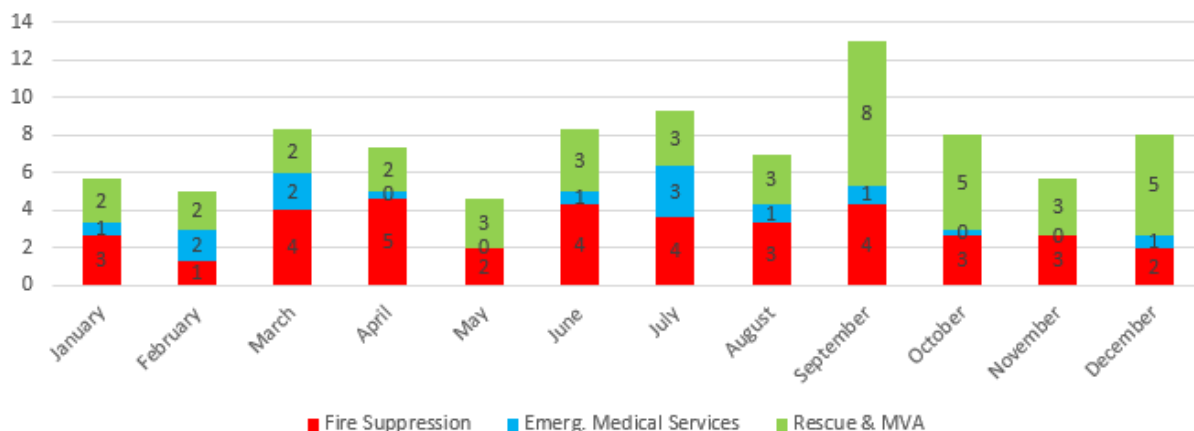
Incident Volume Breakdown - DWV Fire Station Response Areas

| <u>Incident Type</u> | <u>2017</u> | <u>2018</u> | <u>2019</u> |
|----------------------------|-------------|-------------|-------------|
| Fire Suppression | 48 | 32 | 33 |
| Rescue and MVA | 50 | 49 | 25 |
| Emergency Medical Services | 10 | 16 | 7 |
| Non-Emergency | 0 | 5 | 0 |
| Hazardous Materials | 1 | 2 | 2 |
| Standbys | 99 | 78 | 26 |
| TOTALS | 208 | 182 | 93 |

Incident Volume (Avg) by Day of Week - DWV Response Areas



Incident Volume (Avg) by Month of Year - DWV Response Areas



PERFORMANCE IMPROVEMENT GOALS

GOAL #1 – Meet total response time 90th percentile benchmark targets by Q4, 2025.

DNVFRS has identified a need to monitor and improve response performance. When fire department response times and effective response force assembly times are low, it is more likely that sufficient resources have been deployed, which is associated with more positive outcomes from risk events.

Performance objectives to meet Goal #1 are related to: total response time targets, location of apparatus, access to remote locations, and traffic congestion. Actions are required to meet objectives, and are expected to align with the DNVFRS Strategic Plan 2020-2025.

1.1 Total Response Time Targets

Improving response time can be affected in a number of ways. Personnel have the capacity to influence turnout time and travel time, thereby impacting overall response time. Turnout time can be influenced by operational readiness, physical location, and fire station physical layout. Travel time can be influenced by operational readiness and area street location familiarity. Travel time is also impacted by traffic congestion, construction, and fluctuates with time of day, day of week, time of year, and weather conditions. Anticipated actions include:

- Review turnout time and travel time benchmark targets to determine whether they are achievable, realistic and safe.
- Encourage personnel to be ready to respond to incidents with PPE checked and staged in an appropriate location to ensure timeliness in turnout time can be met and improved upon.
- Promote familiarity with streets and routes and/or reliance on digital routing information so as to eliminate time spent at the map.
- Encourage consistency for Fire Officers to select “on route” when the apparatus rolls the tires to an incident, and to select “on scene” when the apparatus stops its tires/arrives at the incident.
- Explore efficiencies in fire station layout and design to reduce/remove barriers to timely turnout time.
- Evaluate locations of new fire stations in consideration of data analytics aligned with 90th percentile as opposed to average times.
- Undertake a program of regular reviews of performance aligned with annual reporting of 90th percentile.

1.2 Location of Apparatus

DNVFRS apparatus are strategically located in the community. The location of the closest fire station can influence the travel time(s) of apparatus and affect the outcomes of fire suppression or a patient that is in need of critical intervention. DNVFRS has been working with Deccan International and its predictive analysis model to plan for a regional model of response across the North Shore by “closest fire station”. DNVFRS is working with Fire Dispatch to prepare a test environment where scenarios for response in all three (3) North Shore municipalities can be tested and demonstrated to support the data analytics that have been prepared. Anticipated actions include:



- Collaborate across the North Shore on the “closest fire station” response model.
- Report analytics to reflect 90th percentile as opposed to average times.
- Investigate the impact that staffing a 4th Fire Fighter on the Tower/Rescue would have on apparatus availability, standby’s, and overall response time in DNV.
- Investigate time of day and day of year predictive analytics to determine best locations (including standby locations) for responses that would improve response time targets.
- Investigate options to improve response to the road access areas of the homes in the wildland using predictive analytics, such as pre-deployment to a staging area during times where risk is escalated.
- Collaborate with internal and external stakeholders (Planning Division, Metro Vancouver migration numbers, predictive analytics, etc.) on data research for projected densification and population growth and its impact on future operational capabilities.

1.3 Access to Remote Locations

DNVFRS responds to structures outside of the Metro Vancouver Urban Containment Boundary. There are also a number of residential structures adjacent to the Wildland Urban Interface (WUI), some of which are accessed by road and some are by boat/water access only. These response locations could be considered rural, although the DNVFRS does not currently have the capacity to track response to those locations, i.e. “arrive at patient”. To obtain a comprehensive total response time into the wildland interface and intermix areas DNVFRS would need to begin tracking response time to the patient or point of concern. Anticipated actions include:

- Evaluate the number of responses that would be affected and determine the value that would be received from tracking this information.
- Conduct annual analysis of response data to determine best location for resources responding to the wildland urban interface, and wildland intermix areas.
- Assess if predictive analysis could result in location assignments or move-ups of apparatus during various time periods that could reduce travel times to these areas.

1.4 Traffic Congestion

DNVFRS has been collaborating with the DNV Traffic Division regarding building a comprehensive Traffic Pre-emption Program. As of 2020 two (2) traffic signals have been upgraded with GTT Opticom 2.4 GHz pre-emption equipment. An additional five (5) are planned for 2021. Traffic pre-emption signals can alleviate delays with traffic congestion and increase Fire Fighter and civilian safety when responding in an emergency situation. Anticipated actions include:

- Develop a comprehensive plan in partnership with DNV Traffic Division for prioritizing key intersections for implementation of Traffic Pre-emption Program.
- Collaborate with NVCFD and WVFR to align the Traffic Pre-emption Program across the North Shore.
- Proactively work to ensure capital funding and ongoing operational funding for the GTT transmitter equipment for frontline apparatus is in place to support the Traffic Pre-emption Program.



GOAL #2 – Collaborate with internal and external stakeholders to build a comprehensive Community Risk Assessment (CRA) by Q2, 2022.

DNVFRS has performed a Community Risk Assessment (CRA) based on population, Fire Station Response Area, occupancy type/use, and response type. Additional data sets could be combined to provide a more comprehensive CRA. The resulting analytics may then be used to inform all programs in the fire service—both proactive and reactive programs—and potentially public safety programs that are under the jurisdiction of other service providers. In 2020 DNVFRS filled the temporary full time position of Captain – Community Risk Reduction and Pre-Incident Fire Planning. This three-year annually renewable position is planned to work with the Assistant Fire Chief Public Safety on a comprehensive CRA, and build a comprehensive pre-planning program. Data analytics on the productivity and effectiveness of this position will need to be tracked to determine community impacts and value.

Performance objectives to meet Goal #2 are related to: availability of data sets, data analytics, and communications. Actions are required to meet objectives, and are expected to align with the DNVFRS Strategic Plan 2020-2025. Anticipated actions include:

- Investigate industry best practices for inclusion of a wide range of data to support a comprehensive and evergreen CRA.
- Review and revise programs to ensure messaging and content is appropriate and applicable for intended target audiences, and monitor community impact of these programs.
- Share data analytics with other stakeholders and service providers to gain maximum benefits towards Community Risk Reduction (CRR).
- Dedicate time and resources to develop a comprehensive Pre-Incident Fire Planning Program.
- Utilize evidence-based decision making and data analytics to support the business plan facilitating transition of the Captain – Public Safety (Community Risk Reduction and Pre-Incident Fire Planning) from a temporary full-time position to a full-time position with DNVFRS.
- Build out a diversity and inclusion program (in coordination with Training Division).

GOAL #3 – Investigate current capability and capacity of DNVFRS Training Division to meet organizational needs and expectations. Complete a gap analysis with regards to training delivery and staffing needs by Q1, 2022.

DNVFRS Training Division provides mandated support services to personnel. A pool of Acting Captains are utilized to provide the depth of training and lesson plan development that is required to maintain personnel proficiencies. The pending Maplewood Fire Rescue Centre will have enhanced training facilities to support robust internal delivery of programs, offer increased interagency opportunities, and may provide for revenue generation options through external program delivery. Relocation of the Training Centre to the new location will require a great deal of planning and implementation.



Performance objectives to meet Goal #3 are related to: data analytics, stakeholder engagement, and communications. Actions are required to meet objectives, and are expected to align with the DNVFRS Strategic Plan 2020-2025. Anticipated actions include:

- Incorporate data analytics to support mid-range and long-range functional capacity needs of the Training Division through creation of a five-year staffing plan.
- Assess and identify staffing strategies to enhance the internal focus on diversity and inclusion within recruitment and outreach efforts.
- Seek ways to embed best practices with regard to diversity and inclusion throughout the DNVFRS.

GOAL #4 – Implement a comprehensive risk-based inspection program based on data analytics by Q1, 2022.

Performance objectives to meet Goal #4 are related to: availability of data sets, data analytics, internal/external collaboration, and communications. Actions are required to meet objectives, and are expected to align with the DNVFRS Strategic Plan 2020-2025. Anticipated actions include:

- Participate in a proof of concept program with OPTA/FUS for the use of predictive analysis within a risk-based inspection program.
- Through partnership with DNV GIS and IT Services, seek to incorporate leading edge technology that supports use of data analytics within evidence-based decision making for the DNVFRS.
- Identify a mobile inspection application that will meet the needs of DNVFRS.
- Utilize data analytics to support a pilot project focused on low risk occupancies undertaking self-inspection or third-party inspection programs.

GOAL #5 – Develop a regular review program for all Fire Department related bylaws and operating guidelines by Q4, 2021.

DNVFRS and the DNV legal department have been working on an updated Fire Bylaw. The current Fire Bylaw was created in 2009 and does not reflect all current services. A revised DNV Fire Bylaw is expected to be ready for presentation to DNV Council in 2021. The Radio Communications Bylaw is also under review. The Fees and Charges Bylaw is updated annually and was thoroughly reviewed by DNVFRS in 2020.

Performance objectives to meet Goal #5 are related to: internal and external stakeholder collaboration, community risk reduction, and communications. Actions are required to meet objectives, and are expected to align with the DNVFRS Strategic Plan 2020-2025. Anticipated actions include:

- Collaborate with DNV legal to update the Fire Bylaw to reflect current business practices.
- Work with DNV staff on updates to the Fireworks Bylaw to reflect the wants/needs of Council and the community.
- Review bylaws to include relevant components of accreditation documents.



- Advocate with NVCFD and WVFR to align all fire bylaws amongst the Cooperate Fire/Rescue Services partners.
- Ensure a rigorous review and revision process is completed annually for all department operating guidelines.

GOAL #6 – Collaborate with DNV Utilities Division to support further enhancement of the water distribution system in the DNV by Q2, 2022.

DNV has been rated by the Fire Underwriters Survey 2016 (FUS) as having a high performance for water distribution. Areas that have been noted in the past that have limited access to the water distribution network include the highway, and the remote/wildland areas on Indian River Drive. DNV has a network of water tank/reservoirs strategically located throughout the DNV. One of these tanks has been decommissioned but is still in place along Indian River Drive.

Performance objectives to meet Goal #6 are related to: internal and external stakeholder collaboration, community risk reduction, predictive analytics, and communications. Actions are required to meet objectives, and are expected to align with the DNVFRS Strategic Plan 2020-2025. Anticipated actions include:

- Implement colour coding of fire hydrants in the DNV in accordance with NFPA 291 (2019) “Recommended Practice for Fire Flow Testing and Marking of Hydrants” and in alignment with FUS recommendation #10.
- Work collaboratively with DNV Utilities Division to address potential gaps in water distribution system (i.e. Highway Right-of-Way) and placement of fire hydrants in the DNV.
- Undertake a thorough needs assessment and identify options for water distribution in remote residential areas such as the Woodland/Sunshine Falls/Cascade areas.
- Collaborate with DNV Utilities Division on a long-term plan to ensure back-up power for the water distribution pumping stations.
- Identify any potential use that DNVFRS could recommend for the water tank/reservoir that has been decommissioned in the Indian River Drive area.

GOAL #7 – Develop and implement a five (5) year comprehensive stakeholder engagement program by Q2, 2022.

DNVFRS does not have a formal stakeholder engagement program. In the fall of 2020, DNVFRS staff commenced collaboration with DNV Communications Division to establish a robust stakeholder engagement program.

Performance objectives to meet Goal #7 are related to: community risk reduction, collaboration with internal/external stakeholders, and communications. Actions are required to meet objectives, and are expected to align with the DNVFRS Strategic Plan 2020-2025. Anticipated actions include:

- Engage with the Communications Division to identify internal and external stakeholders with potential interest in the fire service for follow up consultation.



- Implement a pilot project to establish a stakeholder working group in the form of a Fire Service Advisory Group. Establish terms of reference that ensure expectations, and length of service are clear for all participants.
- Consider what the best format would be for information sharing and gathering.
- Empower the Fire Service Advisory Group to examine and report on opportunities regarding DNVFRS recruitment, outreach, diversity, and inclusion.

GOAL #8 – Initiate a comprehensive and collaborative review process for the Cooperative Fire/Rescue Services Letter of Understanding by Q1, 2022.

The current Letter of Understanding for the three North Shore Fire Departments has an end of term date of December 31, 2022.

Performance objectives to meet Goal #8 are related to: collaboration, data analytics, stakeholder engagement, and communications. Actions are required to meet objectives, and are expected to align with the DNVFRS Strategic Plan 2020-2025. Anticipated actions include:

- Seek and support active participation of all three participating North Shore Fire Services (DNVFRS, NVCFD, and WVFR) in the review/revision process.
- Conduct a review of service provision and performance using data analytics.
- Conduct a gap analysis of service provision in comparison with industry best practices.
- Engage internal/external stakeholders in a review of the current LOU.

GOAL #9 – Identify opportunities to align fire rescue service provision that supports and empowers Indigenous peoples by Q2, 2021.

DNVFRS supports reconciliation efforts and sustaining a mutually respectful relationship with all Indigenous peoples. Aligning services and promoting fire safety will build a more resilient community for all. The current service agreement with the Tsleil Waututh Nation (TWN) expired on December 31, 2020. The TWN has a Fire Bylaw but does not have its own fire department. The Squamish Nation agreement does not have an established expiration date.

Performance objectives to meet Goal #9 are related to: community risk reduction, collaboration, internal/external stakeholder engagement, and communications. Actions are required to meet objectives, and are expected to align with the DNVFRS Strategic Plan 2020-2025. Anticipated actions include:

- Utilize data analytics to conduct a performance review of services provided to Indigenous peoples on their lands.
- Perform a review of fire service operational agreement(s) to identify gaps with service provision and identify areas to align services across the North Shore.
- Collaborate with internal and external stakeholders from the TWN and the Squamish Nation, inter-agency partners and the North Shore Fire Departments to identify opportunities to align services.



- Support cultural safety and humility across the DNV in partnership with Indigenous peoples and in alignment with the Truth and Reconciliation Commission of Canada (TRC) and United Nations Declaration on the Rights of Indigenous Peoples in Canada (UNDRIP)
- Capitalize on innovative solutions to empower DNVFRS partnership with the Indigenous peoples of the North Shore, i.e. community risk reduction, public education, inspections, training, etc.

GOAL #10 – Create a process to annually monitor, evaluate, and report on progress with: CRA/SOC goals, Strategic Plan priorities, Community Wildfire Protection Plan recommendations, Fire Underwriters’ Survey recommendations, and CFAI Commissioners’ recommendations by Q3, 2021.

Performance objectives to meet Goal #10 are related to: administration, internal/external stakeholder collaboration, professional development, data analytics, and communications. Actions are required to meet objectives, and are expected to align with the DNVFRS Strategic Plan 2020-2025. Anticipated actions include:

- Report annual performance to internal and external stakeholders via DNVFRS Annual Report.
- Ensure annual reporting process aligns with CFAI Accreditation Model for reporting methodology.
- Annually assign a DNVFRS Accreditation Manager to oversee CRA/SOC Goal #10.
- Support Quality Improvement through Accreditation (QITA) and Peer Assessor Training of interested personnel.
- Support Peer Assessors for accreditation reviews of other fire service agencies.
- Develop and implement a DNVFRS Operating Guideline for Annual Compliance Monitoring.

CONCLUSION

As an innovative and progressive fire service, DNVFRS is committed to building a process for continuous improvement across all divisions of the department. While components of the process have been in place for some time, formally recognizing methodologies, and aligning with CFAI have resulted in a consistent approach across the organization. It is recognized that the path to accreditation involves the work of many internal and external stakeholders to achieve success in both the short-term working towards accreditation, and the long-term of building a sustainable process that will be achievable into the future.

DNVFRS values its personnel and the relationship its people have with the community and stakeholders. The organization continues to move forward and build its capacity and resiliency with its emergency and non-emergency services, to support its shared services partners, and to be a leader towards collaboration and innovation beyond the borders of the DNV.

Sharing the CRA/SOC and its companion documents of fire service accreditation is the DNVFRS story of service to the community. Both the Executive Version and the full CRA/SOC are available on [DNV.org/FireAccreditation](https://dnv.org/FireAccreditation). Feedback and questions about these documents and fire service accreditation is welcome and encouraged at FireAccreditation@dnv.org.





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