Rocky View County
2022 FIRE SERVICES MASTER PLAN

Final Report: January 25, 2022

Presented to:

ROCKY VIEW COUNTY
Cultivating Communities

Presented by:

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PREFACE

This document serves as Rocky View County's fire service master plan. The primary motivation for developing this document is for the County and Rocky View County Fire Services in establishing a long-term strategy based on community risk, safety, corporate priorities, and county council approved budget allocations. This document will be used as a tool to evaluate and forecast immediate and future emergency service needs of the community.

ACKNOWLEDGEMENTS

Behr would like to specifically acknowledge the leadership, diligence and continuous improvement focus of Fire Chief, Randy Smith. While there are some challenges for the Rocky View County Fire Services, Chief Smith remains positive in his efforts to enhance the department and public safety for the community and its citizens. Rocky View County Fire Services leadership and firefighters are dedicated and engaged in all facets of their community. Their pride in the department and their service is clear.

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ACRONYMS

AHJ	Authority Having Jurisdiction
ASP	Area Structure Plan
CAO	Chief Administration Officer
RVCFS	Rocky View County Fire Services
NFPA	National Fire Protection Association
QMP	Quality Management Plan

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EXECUTIVE SUMMARY

Introduction

Today's fire and emergency services are continually being challenged by budget constraints, rising call volumes, and increasing and unusual risks against a backdrop of expectations to do more with less. The demand for emergency response and emergency management services has expanded, causing the role to shift and for services to diversify. Failing to realize and address these challenges could leave both the community and its responders vulnerable.

Effective management of an emergency services department requires a clear understanding of risk and the ability to provide an appropriate response to mitigate the risks. Contemporary fire, rescue and emergency services have evolved into a critical component of a community's social safety net. Whereas early fire departments were established specifically to combat structure fires that, at the time, were often devastating. Today's fire departments are also called upon to respond to medical emergencies, rescues of all sorts, dangerous goods releases, etc. As a result, fire departments must be adequately resourced and equipped to provide these services safely, efficiently, effectively and competently.

The goal of developing this fire service master plan (FSMP) project is to conduct a comprehensive review of Rocky View County's fire and emergency services with the purpose on producing an up to date FSMP. This FSMP will provide a systematic and comprehensive approach to evaluate current response capabilities by mitigating risks and assist in formulating and communicating strategic directions for the fire service, while highlighting opportunities for improved service delivery. The FSMP will also assist in conveying information to municipal council, the general public, and staff about what to expect in the county's approach to fire and emergency service planning, service delivery model, policy and development.

While risks are the basis for triggering response service decisions, our analysis will investigate the needs of the community and will provide a point of reference upon which future decisions and priorities can be evaluated and implemented. This includes identifying priorities, challenges, and opportunities for the improvement of the delivery of emergency services to the community, businesses and overall public safety.

This FSMP also considers applicable legislation, industry-leading practices, and standards, along with current and anticipated risks to provide unbiased analysis and evidence-based recommendations. Ultimately, the analysis will determine optimum service delivery model and position the county to be more effective and efficient.[1]

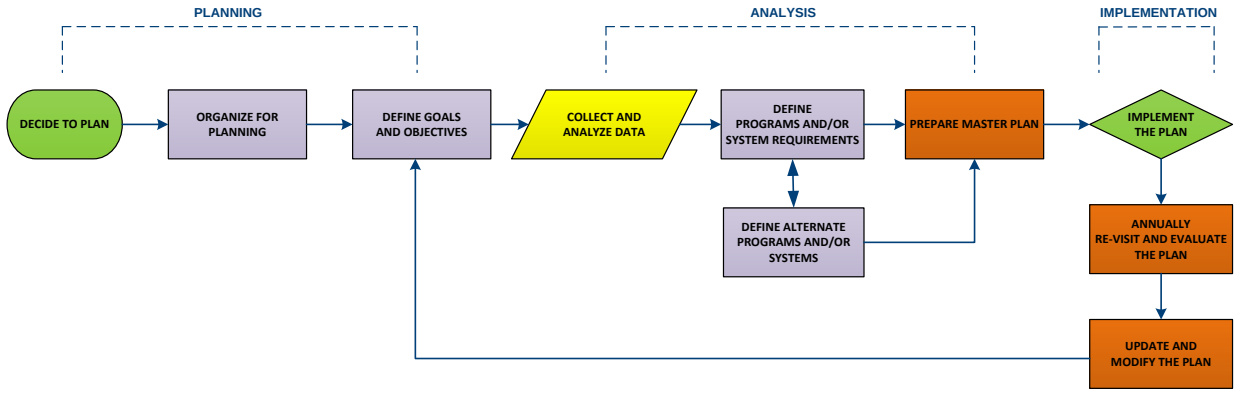
[1] *Reference: Section 1.5 Fire Service Master Plan Process, Page 3*

Fire Services Master Plan Process

The following diagram illustrates the process used to complete this FSMP. The FSMP is sometimes referred to as a 'road map' to the future and used as a guiding document for current and future department leaders and decision makers.

As described in the 'implementation' phase, it is highly recommended that this plan be reviewed and evaluated, at minimum, on an annual basis or when there are unusual changes in risk, response demands, population and residential or industrial development activity. When reasonably practicable, we also recommend a third-party update of the FSMP at the five-year mark to apply an unbiased review into the operation and provide further credibility to the master plan process.

Figure 1: Fire Services Master Plan Process



Community and Risk Overview

Rocky View County is a municipal district in southern Alberta. The county surrounds most of Calgary, forming the city's northern boundary and most of the city's western and eastern boundaries. The County has an area of 3,885 km^2. Though predominantly rural in nature, Rocky View County is home to 14 hamlets and its rural areas are home to numerous country residential subdivisions

In 2020, Rocky View recorded a population of 40,948[2] living in 14,394 total private dwellings, a 6.63% increase from 2016. With a land area of 3,885 km^2, it has a population density of 10.54/km^2. Rocky View County is bisected by the Trans-Canada Highway (Highway 1) and Highway 2. Highway 9, a major transportation route between Calgary and Saskatoon, Saskatchewan, also bisects the eastern portion of Rocky View County.

The Canadian Pacific Railway and the Canadian National Railway between Calgary and Edmonton travel through the County. There are two airports located within the County, one in Beiseker and the other in Springbank.

[2] *https://regionaldashboard.alberta.ca - As adapted from Statistics Canada*

Every municipality has unique challenges and characteristics contributing to the overall risk profile of the community. Some general examples of challenges that may impact community risks include:

- Fire/rescue service model and response capacity
- Population and demographics
- Population growth rate
- Industry types
- Economy
- Rate of development
- Transportation corridor types
- Typography
- Weather
- Historical response data

The evaluation of fire or rescue risks considers both the probability and consequence of emergency event types. The probability of an event is quantified by analyzing historical, current and projected data. The consequence of the event type or risk is based on an informed assessment of the potential impact on a community should the event occur.

The county's geographical features include agricultural properties with natural resource development including forestry, oil and gas industries across the region. Larger stands of timber can be found in the west and northwest regions of the county. A blend of residential, commercial and industrial properties is scattered across the county's many towns, hamlets and subdivisions. As a result of its large area and geographical diversity, the emergency response zones include urban, suburban, rural and remote regions.

The community risk factor analysis identified the following factors:

- Diverse response area and fire station demand zones
- Residential construction
- Industrial and commercial properties
- Multiple transportation corridors
- Wildland urban interface fires
- Severe weather events

Department Overview

Rocky View County Fire Services was initially made up of the Irricana, Langdon and Madden Volunteer Fire Departments. Today's Today's RVCFS is a composite fire service, relying on a group of career full-time firefighters, supported by part-time and paid-per-call volunteer firefighters responding out of seven fire stations (four career full-time and three paid-per-call volunteers.

The seven stations RVCFS responds from include:

- Elbow Valley (full-time)
- Springbank (full-time)
- Bearspaw (full-time)
- Balzac (full-time)
- Madden (paid-per-call volunteer)
- Irricana (paid-per-call volunteer)
- Langdon (paid-per-call volunteer)

RVCFS employs a total of 276 staff including administration, career full-time, part-time, and paid-per-call volunteer firefighters, to provide fire, rescue, and medical first response services to residents and visitors of Rocky View County. There are also two contracts for augmented protection with the Town of Crossfield and the Townsite of Redwood Meadows along with mutual aid and automatic aid agreements to provide reciprocal response aid from neighbouring communities if requested.

The people of this service have dedicated their time and energy to faithfully serve their communities by using training, technology, and commitment in providing valued service to the citizens and visitors to the County. RVCFS is a proud department that values their past, embraces the present and looks forward to the challenges of the future.

RVCFS maintains an administrative structure supporting a combination of career full-time, part-time firefighters, and paid-per-call volunteer firefighters to deliver emergency services, and fire prevention within Rocky View County. The current RVCFS organizational structure consists of the following personnel:

- 1 fire chief/emergency manager
- 1 deputy chief
- 3 district chiefs
- 1 fire inspector
- 16 full-time captains
- 8 full-time firefighters
- 120 part-time firefighters
- 2 administration coordinators
- 1 emergency management coordinator
- 1 community reliance coordinator (temporary)
- 1 logistics administrator (temporary)
- 1 fire service chaplain (casual)
- 120 paid-per-call (volunteer) firefighters

Note: *RVCFS staffing levels of part-time and paid-per-call volunteer firefighters may vary given the recruitment and retention challenges.*

Summary of Observations and Recommendations

The following recommendations are drawn from findings presented throughout the report. They are grouped into four categories according to priority: critical, short term, intermediate and long term. A colour code is applied to each recommendation according to prioritization and completion. A timeframe within 0 – 120 months (1 – 10 years) has been assigned to each recommendation, recognizing that the start and completion of any recommendation is based on annual corporate priorities and council approved budget allocations.

Critical	Short Term	Intermediate	Long Term
0 -12 months	12 - 48 months	48 - 60 months	60 - 120 months

Most of the recommendations presented in this report are achievable using existing staff or members' time and will therefore not pose significant additional costs to the community. Other recommendations regarding staffing, database management and software will have associated costs. Costs are estimates only and will require further investigation. Cost 'neutral' refers to the use of internal staff through a normal workday schedule. Additional costs may apply if overtime is required. Undertaking of these cost neutral recommendations are contingent upon staff availability.

Note: *Observations and recommendations are numbered based on how the appear in the report.*

Observation #1: The County requires a development permit when establishing a business in a vacant commercial space, changing the use of business space or developing a new commercial building. The County does not require a business licence or cyclical fire and life safety inspections. The absence of a business license process limits the ability for the fire inspection program to track fire and life safety risks, occupancy classifications, and establishing cyclical inspections based upon risks. Also, there doesn't appear to be a system for reviewing new and existing properties. As a result, the RVCFS has limited access to adequate data to identify high-priority structure fire and life safety risks and to develop risk management strategies. These observations may be reduced with the introduction of business licenses, which will provide a database available to the fire service.

Reference: Section 2.7, Structural Fire Risk Analysis, p.17

> ***Recommendation #1: Develop a comprehensive structural risk inventory program and business licence application program***
>
> *(Suggested completion: 48 - 60 months)*
>
> *It is recommended that the fire chief work with the Rocky View County Economic Development and Planning and Development departments to provide a process to inventory all existing and new properties, and that the building inventory be classified, documented and maintained using the Alberta Building Code Major Occupancy Classification system.*
>
> > ***Rationale:*** *Monitoring changes in building stock allows the community to be well positioned to assess the impact of future growth and the changing risk profile of the community, adjusting the concentration and distribution of fire department resources as required. Further a comprehensive review of the business licence process to further establish fire and life safety inspection process along with a frequency of inspections.*

Observation #2: As previously discussed, the data regarding building stock and specific properties is limited. Further, the risks and characteristics of the response area covered by RVCFS differ in the demand zones of the seven stations and two contract stations. By Identifying the building type and resource demands for each station, this process facilitates an accurate assessment of emergency response capabilities and potential system gaps in each demand zone.

A standard of cover policy identifies high and extreme risks in a community and measures the current performance of the fire service to ensure these risks are managed safely. This policy is used to define services, service levels and outline performance-reporting requirements. Where service gaps are identified, the analysis of the unique and common risks in specific demand zone provide elected officials with the information required to make informed service level decisions. This information can be used to identify performance-reporting requirements. Appropriate levels of performance reports can be shared with key stakeholders and inform the public.

One of the common themes in the interviews was a lack of public understanding of the general operations of the RVCFS and the lack of information flowing back to key stakeholders. The information gathered in the standard of cover process can be shared both at the senior administrative and elected official levels. This can facilitate a purposeful and informed decision-

making framework for both these groups of officials regarding the need for specific services, setting service levels, allocating funding, and establishing performance goals for the RVCFS.

In the absence of regular performance reporting, municipal leaders and citizens may not have a clear understanding of the services and service levels of the RVCFS. Once completed, a standard of cover policy may be shared with the public to provide clarity with respect to services provided and service level expectations.

Reference: Section 2.8.1, Fire Station Response (Demand) Zone, p.20

Recommendation #2: Undertake a comprehensive risk analysis of the individual station demand zones and include it as part of a standard of cover policy

(Suggested completion: 48 - 60 months)

It is recommended that RVCFS undertake the development of a standard of cover for all demand zones within the county. After completing this review, the results should be compiled into a single document and presented to council. Identified service concerns or policy gaps should be discussed with council and policy should clearly reflect the services and service levels provided by the RVCFS. Further, RVCFS SOGs and SOPs should be updated to reflect changes in services or service levels. The process of completing the standard of cover (SOC) involves considerable effort. To be successful, this process requires the support of all levels of senior county leadership and county council, as well as adequate resourcing within the RVCFS.

Rationale: *A standard of cover policy offers several benefits to the operation and governance of the RVCFS. A comprehensive risk analysis completed at the level of individual demand zones would identify all high, extreme and unique risks within the different demand zones. It also involves a complete review of existing services and service levels, standard operating guidelines and policies, a review of fire department resource distribution and concentration based on risk factors, and fire department performance measurement and reporting.*

Observation #3: Numerous developments within Rocky View County have high value properties with limited water supply for firefighting purposes. Many of the privately managed firefighting water supplies are not maintained as reliable water sources for firefighting. Further, fire responses frequently require splitting the initial response crew of four into two firefighters on the engine and two on the water tender to provide adequate water supply.

Reference: Section 2.8.1, Fire Station Response (Demand) Zone, p.20

Recommendation #3: Complete a review of the water supply for new and current developments within the county

(Suggested completion: 12 - 24 months)

It is recommended that the fire chief, in conjunction with the RVC Planning Department, complete a review on the water supply for new and current building stock. Further it is recommended that the county undertake a complete review of all water supplies suitable for firefighting. The outcome of this would be a formal process for monitoring water supplies with ongoing inspections particularly for future developments.

> ***Rationale:*** *Inadequate firefighting water supplies severely limit the effectiveness of a fire rescue and fire suppression capabilities. Splitting fire crews also impacts their effectiveness, as firefighters must be assigned to the tasks of providing water and not fire suppression or rescue. The intent would be to establish adequate and reliable firefighting water supplies to all current and new buildings.*

Observation #4: Dangerous goods and hazardous materials are transported by road and rail through Rocky View County. The quantities and types of materials transported on rail are being monitored and documented based on availability of information. There are also numerous intersecting roadways and rail crossings which increase the risk of collisions involving hazardous materials. A major hazardous material release due to a collision or derailment near populated area is assessed as a low probability, high consequence event that could result in a high to extreme life safety risk.

Reference: Section 2.8.2, Multiple Transportation Corridors, p.24

Recommendation #4: Continue to maintain and improve partnerships with rail and other industry operators, to enhance knowledge of dangerous goods inventory being transported thought the county

(Suggested completion: 36-48 months)

It is recommended that the RVCFS continue review the Protective Directive (PD) 36 information from CN and CP Rail, and other industry operators transporting dangerous goods through the county, on the types and quantities of dangerous goods they transport. In addition to this, it is recommended that the RVCFS continue to engage in training exercises and learning opportunities with these entities on a consistent basis.

> ***Rationale****: This information is invaluable to the operations and training section of the RVCFS to build response protocols and pre-incident training scenarios. Additionally, a periodic assessment of the types of dangerous goods transported through the county informs future risk assessments and regional hazard identification and risk assessments (HIRA).*

Observation #5: There is an opportunity to enhance the delivery of the FireSmart principals applied in Bragg Creek to the other areas within the county that have wildfire interface risks. There are grants available through provincial programs to assist municipalities to complete plans and implement risk reduction strategies. Joint response to larger prolonged wildfire incidents could be partially funded through the Municipal Wildfire Assistance Program which compensates the municipality based on a funding formula for overall incident expenses.

Reference: Section 2.8.4, Wildland Urban Interface Fires, p.26

Recommendation #5: Complete a community wildfire protection plan and implement the FireSmart program throughout all wildland interface areas within the county

(Suggested completion: 24 - 36 months)

It is recommended that the fire chief research the possibility for a Forest Resource Improvement Association of Alberta (FRIAA) grant to complete a community wildfire protection plan and further the FireSmart program implementation in wildland urban interface areas beyond the Bragg Creek area. Further, in cooperation with provincial and forestry industry representatives, develop a joint strategy to assess risk from wildfire and industry lumber storage.

***Rationale:** The community wildfire protection plan along with the FireSmart program will provide business owners and homeowners alike the information along with the opportunity to prevent the spread of wildfire within their respective areas in the county.*

Observation #6: The fire and life safety inspections are done by request or complaint. There are inspections distributed to the fire crews that are conducted inconsistently. Numerous major facilities of high value currently exist or are in the development process within the county. These facilities contribute to the positive economic position of Rocky View County.

Reference: Section 2.8.5, Limitations of the Career Full-time, Part-time and Paid-Per-Call Volunteer Staffing Model, p.27

Recommendation #6: Develop a fire prevention branch with the capability to support ongoing cyclical inspections of high-risk properties and life safety systems

(Suggested completion: 12 - 24 months)

It is recommended that RVCFS implements dedicated fire prevention capability to support increased fire prevention inspections and public education program delivery that are aligned with the county's current program. It is Behr's understanding that a full-time fire inspector position was implemented during this review. The duties of this position should include but not be limited to developing a schedule of inspections for the high-risk buildings and private water supplies within the County, conducting highly technical industrial and commercial inspections, and providing inspection training for the fire crews.

Rationale: *A dedicated inspection branch with the capacity to ensure high-risk property inspections are conducted on a regular basis and that the crew (company) inspections are conducted on a consistent basis across all shifts. This provides the capacity to maintain a property database, inspections and compliance monitoring, and crew inspections duties as required.*

Observation #7: Each RVCFS station largely acts as an independent fire department within the RVCFS system but not necessarily working together towards a common purpose and goal. This practice does not facilitate a cohesive model to achieve common goals and objectives.

Reference: Section 2.8.5, Limitations of the Full-time, Part-time and Paid-Per-Call Volunteer Staffing Model, p.27

Recommendation #7: Complete a mission statement along with vision and mandate exercise with all the fire stations that are under direct management of RVCFS

(Suggested completion: 0 - 12 months)

It is recommended that the fire chief generates an opportunity for all county fire stations to have input into and participate in creating a mission, vision and core values mandate. The intent of this exercise is to advance the RVCFS, so all members recognize themselves as being part of one single fire service.

Rationale: *This exercise will foster a more inclusive, cohesive and coordinated fire service.*

Observation #8: RVCFS relies heavily on maintaining a sufficient complement of part-time firefighters to staff career fire stations in the Elbow Valley, Springbank, Bearspaw and Balzac fire stations. As with any paid-per-call volunteer department, RVCFS has been challenged with the rate of turnover for part time staff. This could be because of firefighters transitioning to full-time opportunities within the RVCFS or to other departments, as well as other personal reasons.

The ongoing challenge of maintaining a sustainable part-time firefighter pool is making it difficult to ensure sufficiently trained and experienced frontline staff on shift. The initial cost of training and outfitting a single firefighter is estimated to be $5,000.00 dollars or more. This doesn't include annual training and residual costs of maintaining equipment.

Reference: Section 3.2.2, Contracted Fire Departments, p.34

Recommendation #8: Conduct a staffing ratio analysis and pursue full-time staffing options in the Elbow Valley, Springbank, Bearspaw, and Balzac fire stations

(Suggested completion 24 - 48 months)

It is recommended that the fire chief should undertake a critical review of the benefits and challenges of relying on part-time firefighters to staff career stations. The review should include a study of full-time firefighters to part-time firefighters considering the financial and operational needs to determine the optimal ratio.

Rationale: *The reliance on part-time firefighters to routinely fill staffing requirements is something that should be thoroughly evaluated. While there are financial advantages to relying on part-time staff to fill full-time positions, the advantage of a full-time complement includes enhanced retention, commitment, availability, and consistency.*

Observation #9: During the station tours and interviews, the Behr team detected a degree of concern towards the move from paid-per-call volunteer to career firefighting staff from a few of the volunteer members. While this was not the feeling of the majority, it could adversely affect the operational cohesiveness, teamwork, and the overall effectiveness of the service if this resistance is not addressed.

Reference: Section 3.2.3, Department Leadership, Management and Operations, p.35

Recommendation #9: Enhance the current level of communication with RVCFS administration and all senior officers with the focus to address the concerns raised about the transition from paid-per-call volunteer to career firefighting staff

(Suggested completion: 3 - 6 months)

It is recommended that the RVCFS administration team, paid-per-call volunteer chiefs and senior officers engage with the leaders of each fire station, with the purpose of addressing this transitional resistance by confirming the value of paid-per-call volunteers, clarifying roles and responsibilities. The overarching goal is to re-establish a cohesive, high-performing team that has a clear vision and understanding of RVCFS' direction and how the community and public will be well served.

Rationale: *An organizational change leading practice is to acknowledge and address resistance as an opportunity gain greater clarity and understanding of the effects of change. The transition from paid-per-call volunteer to full-time has been typical for the majority of fire services across Canada. It is essential for the formal leadership to initiate respectful dialogue and engagement in order to retain trust, understanding and sustain organizational effectiveness.*

Observation #10: During the interviews and survey with staff, an emerging theme was the desire for RVCFS administration to improve their internal communication processes amongst the RVCFS team members and key stakeholders. It is acknowledged that daily virtual team sessions are conducted by the fire chief and that the COVID-19 pandemic has impacted the opportunities to have in person, face-to-face discussions.

Reference: Section 3.2.4.5, Logistics Coordinator, p.40

Recommendation #10: Enhance internal communications with the fire chief, deputy chief and district chiefs

(Suggested completion: 3 - 6 months)

The intent of this recommendation is to continually reaffirm and measure the progression of agreed upon goals, priorities and defined timelines. For example, this could be achieved by planning sessions, or the development of work plans. Furthermore, the development of a work plan with specific, measurable, realistic attainable and timely (SMART) goals will ensure that the RVCFS administration team efforts are focused on a unified direction.

***Rationale**: High perfuming teams have the following attributes: clear goals tied closely to team and organizational priorities; understand how their work fits into the organizational mission, defined roles and responsibilities, communicate clearly and respectfully, manage work and deadlines based on priorities and trust and respect each other.*

Observation #11: Currently, both the fire chief and union president have a respectful working relationship with a common vision for advancing RVCFS. In the past there have been issues towards fostering a positive labour management environment.

Reference: Section 3.2.4.5, Logistics Coordinator, p.40

Recommendation #11: RVCFS administration and Rocky View County Fire Fighters Union IAFF Local 4794 should develop a working relationship agreement document between the two parties

(Suggested completion: 3 - 6 months)

A recommended industry best practice is to develop a working relationship agreement. The purpose of this agreement is to clarify lines of communication, roles and responsibilities in order to collaboratively build a high performing organization.

***Rationale**: Where organized labour is woven into an organization, a professional and respectful working relationship between the administration and bargaining unit is a cornerstone to promote effectiveness and cooperation between all parties. With this type of philosophy embraced by the senior administration and Local 4794 executive members RVCFS will become a high performing organization.*

Observation #12: The district fire chiefs are required to be on call-out on a rotational basis. This requirement places additional demands on their capacity to effectively manage their respective administrative responsibilities. It is recognized that RVCFS personnel adhere to dispatch protocols for efficient escalation of required resources at the scene of any emergency however no SOG currently exist.

Reference: Section 3.2.4.5, Logistics Coordinator, p.40

Recommendation #12: Develop an updated administration response matrix and SOG

(Suggested completion: 6 - 9 months)

It is recommended that the fire chief, in consultation with the deputy chief and district chiefs formalize an 'alarm assignment response matrix' and SOG that is embedded with the dispatch protocols. The first responding officer declares the alarm response required as part of the size-up. For example:

- *First Alarm: Routine calls that do not require additional support from an assisting station or the recall of on-call staff. Primary response has the capacity to mitigate.*
- *Second Alarm: Working fires or emergencies that require a response from the assisting station and the recall of on-duty staff (district chief).*
- *Third Alarm: Major events that require additional response from assisting stations, recall of district chief and additional chief officers.*
- *General Alarm: Recall of all on-call and off-duty firefighters.*

Rationale: *This SOG will assist incident commanders with administrative support and response escalation when warranted, while limiting the need for duty chiefs to attend emergency scenes when not required.*

Observation #13: The attraction and retention of paid-per-call volunteer firefighters is dependent on fire station locations and availability within the specific station's catchment area. Resignations of existing paid-per-call volunteer firefighters can occur at any time, however most times advanced notice is provided to allow the department the ability to recruit and train replacement firefighters to maintain desired firefighter levels. The time required to train a new recruit to respond as part of the crew can be up to a year or longer. The current recruitment and retention of paid-per-call volunteer firefighters is managed independently by each fire station.

Reference: Section 3.3.4, Retention, p.48

Recommendation #13: Implement an annual paid-per-call volunteer recruitment program to include all paid-per-call volunteer fire stations with common messaging and processes

(Suggested completion: 12 - 24 months)

It is recommended that the RVCFS develop a common and consistent recruitment and retention process to be utilized by all paid-per-call volunteer fire stations. This would include training programs that can be coordinated amongst the fire stations promoting cost savings and efficiencies of training resources.

Rationale: *A recruitment and retention program that meets the common needs of RVCFS could institute and coordinate some of the industry best recruitment practices and resources. Ideally there would be an eligibility list that can be drawn on as required. Scheduling training programs for recruit classes can be coordinated to include the needs of all the paid-per-call volunteer fire stations.*

Observation #14: The RVCFS does not have a training division specifically mandated with the responsibility of the development and coordinated delivery of all necessary training for the RVCFS personnel. Rather this is a shared responsibility of chief officers and Individual station captains. During the interview process there was an indication of some fragmentation of training consistency and priorities.

The task of identifying, delivering, and tracking all required training while balancing the operational readiness and budgets is a large portfolio. Close coordination with operational duty chiefs, station captains and vehicle mechanical services staff is required to ensure minimal impact to service delivery while meeting RVCFS identified priorities.

Reference: Section 3.4, Training, p.50

> ***Recommendation #14: Create a training division with a dedicated training coordinator position***
>
> *(Suggested completion: 12 - 24 months)*
>
> *To maintain operation readiness, it is recommended that the RVCFS develop a division with the specific mandate to develop, coordinate, and track the delivery of all necessary training for new recruits and existing frontline personnel. Initially, this division could maintain a dedicated training coordinator with the responsibility of coordinating and tracking the training needs of the RVCFS.*
>
> > ***Rationale:*** *By creating a centralized training division and dedicated training coordinator, this would ensure a coordinated effort in training consistency and scheduling required for the safe and effective delivery of emergency services for a fire service as large and complex as RVCFS.*

Observation #15: RVCFS does not have reliable access to a live fire training facility. Historically, the live fire training that was necessary to maintain the required skills, was available at the Calgary Fire Department Training Academy. Most recently, the availability for RVCFS to schedule any live fire training has been difficult and resulted in RVCFS firefighter's inability to be consistently trained. Additionally, there are limited live fire training facilities in southern Alberta that would be available. The reliance on outside agencies to provide the necessary live fire training has resulted in a failure to complete the required training.

Reference: Section 3.4, Training, p.50

> ***Recommendation #15: Continue building and developing an in-house live fire training facility***
>
> *(Suggested completion: 24-36 months)*
>
> *It is recommended that the RVCFS continue the ongoing development of the RVCFS training facility to include an in-house live fire training facility. It is recognized that funds have been allocated for future additions to the current live fire training program and training facility in compliance with NFPA 1402 Standard on Facilities for Fire Training and Associated Props.*

Rationale: *A modern training facility including a local live fire training structure would provide reliable training opportunities that can be scheduled based exclusively on the needs of the RVCFS. The continued development of the training facility will be prioritized to meet these needs. The ability to provide identified training needs within Rocky View County will provide cost efficiencies and increase the ability to provide on-shift training with minimal effect to response capabilities.*

Observation #16: In review of the current RVCFS apparatus inventory and replacement timelines, there are two engines (107 Engine and 207 Engine) that have very high kilometers and are incurring significantly increased repair and servicing, resulting in excessive out-of-service timelines. The result of the increased out-of-service times is an increased reliance on available reserve apparatus, compromising the RVCFS engine fleet.

Reference: Section 3.6.1, Structural Firefighting (provided to the NFPA 1001, Level II, and NFPA 1002 Standard), p., p.55

Recommendation #16: Expedite the replacement of 107 Engine and 207 Engine

(Suggested completion: 12 - 24 months)

It is recommended that the replacement of 107 Engine and 207 Engine be done as soon as possible.

Rationale*: The heavy usage of these two front line engines is affecting the reliability and serviceability of the engine fleet in RVCFS. The increased amount of repair and service requirements result significant repair costs and a reliance on reserve apparatus that are required to serve front line duty.*

Observation #17: RVCFS does not have an aerial apparatus within their fleet inventory. Should an aerial apparatus be required for response in the county, it is usually deployed from one of the neighbouring communities (Airdrie or Chestermere). The delay or inability to have an aerial apparatus on scene can seriously hinder the safe and effective operations. Also, there is no assurance that this apparatus will be made available to leave from their respective community.

Reference: Section 3.6.1, Structural Firefighting (provided to the NFPA 1001, Level II, and NFPA 1002 Standard), p., p.55

Recommendation #17: Purchase an aerial apparatus

(Suggested completion: 48 - 60 months)

It is recommended that the RVCFS should work towards securing funding for the design, procurement and purchase of an aerial apparatus. At minimum the aerial apparatus should be 100 ft.

Rationale: *The requirement of an aerial apparatus on many emergency scenes is critical for safe and effective firefighting and rescue operations. Aerial apparatus is typically required for:*

- *Elevated water streams*
- *Roof top fire attack/entry*
- *Elevated evacuations and rescues*
- *Water curtains*
- *Exposure protection*

Observation #18: The Government of Alberta (GoA) requires municipalities to regulate the development, construction and fire protection requirements through the application of Alberta Building Code (ABC) and the Alberta Fire Code (AFC). As discussed, it is useful to develop and maintain a property risk profile to identify high-priority risks and develop risk management strategies. The Rocky View County QMP has RVCFS providing fire inspections based on request or complaint.

Reference: Section 3.6.7.1, Fire Code Inspection Services (provided to the NFPA 1031 Standard), p.60

Recommendation #18: Modify the Rocky View County Quality Management Plan to include a cyclical inspection program

(Suggested completion: 12 - 24 months)

It is recommended that Rocky View County modifies its QMP to include a cyclical inspection program that focusses on the higher fire and life safety risk properties.

Rationale*: A mandatory inspection program of high-risk properties puts the county in the position to assess the impact of future growth and the changing risk profile of the community. An inspection of all higher risk structures should be conducted and evaluated in terms of safety codes compliance, risk assessment, and public safety. This will aid in the long-term planning of response resources (personnel and equipment) and the developing RVCFS standard operating guidelines.*

Observation #19: RVCFS has access to all county building inventory. This inventory should serve as the basis for a formal pre-plan process. Individual RVCFS crews conduct pre-planning when opportunity arises, however it is more of a familiarization process. Formally capturing relevant information to be later available in complex type cards or provided electronically would ensure this information is available to all personnel when needed.

Reference: Section 3.6.8, Pre-emergency Planning (provided to the NFPA 1021 Standard), p.62

Recommendation #19: Formalize pre-emergency plan inventory

(Suggested completion: 36 - 48 months)

It is recommended that RVCFS establish a formal pre- planning program that documents significant operational aspects in a hard copy or electronic database where it can be retrieved when responding to incidents.

***Rationale:** Access to relevant information that has been previously captured while enroute to the incident will assist with an effective and safe response.*

Observation #20: RVCFS has developed a mobile equipment life cycle program that outlines each piece of equipment's purchase date and anticipated replacement year. The annual funding contribution towards the RVCFS mobile equipment reserve fund was only established in the last few years and the annual contributions appear to be insufficient to fully fund the needs of replacements. Based on this information provided (See table 9) there should be $9,300,000 in the reserve fund this year if properly funded. The total funds needed to replace apparatus on their dates would be $17,548,000. Currently, funds allocated to each piece of apparatus when replacement is necessary is not sufficient.

Reference: Section 3.10.5, Apparatus and Light Duty Vehicle Fleet Inventory, p.89

Recommendation #20: Review the RVCFS mobile equipment list and amend the life cycle program accordingly

(Suggested completion: 0 - 12 months)

Based on usage, kilometers, anticipated replacement costs, and other relevant parameters, it is recommended that the RVCFS work together with the fleet and finance department to review and update the RVCFS mobile equipment list for replacements and amend reserve funding model as necessary.

***Rationale:** Given the unique demands placed on each piece of RVCFS mobile equipment, an annual review and update of the replacement and reserve funding will assure available funds will be available when required. Replacement of mobile equipment is based on usage, kilometers, and other relevant parameters.*

Outcome of the review should result in an increase to capital replacement reserves in order to maintain the fleet.

Observation #21: Rocky View County Council has done well to identify and approve fire service levels. However, the data, technology and processes currently available to RVCFS administrative staff does not support the performance measurement and reporting of the service levels identified in Policy C-704. Incidents falling within and outside of the eight km of road travel can only be identified through a manual search of the address. Additionally, current reporting is primarily limited to annual activity reports. Response performance or service level compliance is not monitored or reported with regularity.

Reference: Section 3.14, Asset Management, p.115

Recommendation #21: Enhance the data management, and reporting processes to measure, monitor and report service level performance

(Suggested completion: 12 - 24 months)

The current records management system (RMS), Fire Pro, may have the functionality to improve the measurement and reporting of service level performance. If Fire Pro is not able to provide this functionality, alternative products should be considered. Additionally, RVCFS should work with Calgary 911 to develop the appropriate data export format to input into the RMS.

***Rationale:** A large amount of performance data is available to RVCFS. Data is only useful when it is converted to useful information. It can be used for reporting type of incidents, activity levels, response performance and supporting performance improvement initiatives. However, this is only possible when the systems required to provide timely and useful reporting are in place.*

Observation #22: Currently the core services of fire suppression, vehicle rescue and shore-based water protection services are listed in Policy C-704. Further, other than providing four responders, contracted service provider performance cannot really be measured. It is difficult to measure a 90th percentile performance goal when the response time is not determined or tracked.

Reference: Section 4.3.3, Rocky View County Council Policy C-704, p.115

Recommendation #22: Update the Rocky View County Council Policy C-704, Fire Protection Service Levels

(Suggested completion: 24-48 months)

This policy is an excellent foundation to advance the further refinement of fire service levels. This policy could be improved by including a broader list of services provided by the RVCFS and refining service level expectations for all RVCFS and contracted stations. As discussed, this policy should be amended to include a more comprehensive list of services provided and defined or measurable service levels for contracted service providers.

***Rationale:** A comprehensive list of services provided with measurable service levels clarify performance expectations for RVCFS, contracted fire departments and the citizens of the county.*

Observation #23: Calgary 911 is contracted to provide dispatching for all RVCFS stations and the contracted stations in Crossfield and Redwood Meadows. RVCFS does not have a specific alarm handling service level or performance goal identified for Calgary 911. Further, there is considerable variation in the time taken to assess the severity and location of the incident and complete the station notification. There are clearly some stations that have shorter alarm handling process reported than others.

Reference: Section 4.4.1, Alarm Handling Performance, p.139

Recommendation #23: Conduct a review of the alarm handling process and establish performance goals for Calgary 911

(Suggested completion: 12 – 24 months)

Working with Calgary 911 staff, RVCFS should review the processes for alarm handling and when specific timestamps are captured.

> ***Rationale:*** *Maintaining reliable and valid data is a critical first step in monitoring and managing response performance. A review of the alarm handling process may reveal irregularities in the current practices involved with station notification and response timestamps. Further, at 168 seconds, Calgary 911's five-year 90th percentile time is nearly double the time suggested in the standards offered by NFPA when all stations are considered together. While this varies considerably from station to station and year to year, if possible, it would be in the best interest of RVCFS to establish performance goals with Calgary 911 and monitor alarm handling performance.*

Observation #24: A new RVCFS fire station is identified for development in the Rocky View County 2020-2024 Financial Plan for the Conrich area. The need for this station is predicated on the rate of growth and demand for service in this area of the county. Balzac and Langdon stations currently servicing this area are the two busiest stations in the RVCFS by a considerable margin. Additionally, mapping of response locations identifies the Conrich area as an emerging area of higher demand for service. However, growth and development rates are unpredictable. Further, the current fiscal and economic environment in Alberta in general has created budgetary pressures for all municipalities.

Reference: Section 4.7, Response Time Mapping Analysis, p.149

Recommendation #24: Evaluate growth and development, demand for services and response performance in Conrich area based on council approved standard of cover and service policy.

Proceed with Conrich station design, build and staffing as service demands dictate and operating capital funding is allocated. This station development should proceed when the risks or service pressures can no longer be managed with current RVCFS resources.

(Suggested completion: 60 - 120 months)

> ***Rationale:*** *The RVCFS currently meets RVC Council approved service levels in the Conrich area. Rates of development and increasing demand for service are difficult to predict in the current fiscal environment. The RVCFS could access mutual and potentially automatic aid from the City of Chestermere to assist in providing immediate response coverage in the Conrich area. Demand for service should be monitored.*

Observation #25: RVCFS provides excellent service to the community but is limited in its ability to manage structure fires. As previously identified, access to a reliable water supply adequate for firefighting is limited across the county. The initial response from career stations in Balzac, Bearspaw, Springbank and Elbow Valley can be as few as four firefighters on two fire apparatus. Large response zones result in extended response times for the second arriving station resources as considerable distances separate the stations. If the second response is from a station staffed with paid-per-call volunteer firefighters, additional time for the paid-per-call volunteers to travel to their respective stations extends the arrival of the second response further. In addition, the closure of 101 St SW will slow the arrival of the second arriving station in the Springbank and Elbow Valley response zones. As a result, the RVCFS response to structure fires is always limited to an exterior fire attack until adequate resources arrive and an ERF is assembled.

Rocky View County Council, Policy C-704, identifies that service levels must be limited to defensive strategies when firefighter safety or survivability of occupants is doubtful:

- *Entry into a structure for firefighting and rescue purposes is contingent on the life safety hazard, probability of survivability of occupants, and firefighter safety.*
- *If rescue is not required and the structure's involvement is such that the likelihood extinguishment is minimal, then the protection of exposures is the primary focus of firefighters upon arrival.*
- *For all areas of the County not included in sections 9 and 10 of this policy, the accepted level of service for structural firefighting and rescue is the protection of exposures and protection against fire extension to adjacent properties. A defensive firefighting strategy is mandated to these areas.*

Therefore, in most circumstances the initial response of the RVCFS will be limited to defensive strategies, including exterior firefighting and exposure protection, until the second arriving station is in place. Interior firefighting without adequate water supply or before an ERF including a rapid intervention crew (RIC), also known as a rapid intervention team (RIT) can be in place is not considered safe.

Reference: Section 4.9, Critical Task Analysis, p.157

Recommendation #25: Increase minimum career station staffing to six firefighters if reliable interior fire suppression is desired

(Suggested completion: 36 – 48 months)

As part of reviewing and completing a revised standard of cover, fire suppression service levels should also be reviewed. As growth and development in the county proceeds, the community risk profile will change, and fire suppression service expectations should be reviewed to ensure they align with community and RVC Council expectations.

Rationale: *Map 3 identifies that RVCFS fire stations are strategically located near areas of highest incident frequency. Therefore, additional stations will not necessarily improve response performance in the short term. The most efficient approach to ensuring that the initial arriving RVCFS response is capable of interior fire suppression is to increase the minimum daily staffing of the career stations to six firefighters. This could be done incrementally or within one budget cycle depending on available funding.*

NFPA 1710 identifies critical tasking for 16 firefighters for a low-risk residential structure fire. This requirement varies depending on specific circumstances and firefighter availability. However, generally accepted minimum industry safety practices such as the "two firefighters in/two firefighters out" rule should be observed in most cases. This practice requires two firefighters to be available on the outside of a structure to act as the RIC crew in the event the two on the inside require immediate assistance.

Therefore, the RVCFS must limit initial response activities to defensive strategies until the second arriving station is in a position to complete critical tasks and assume the role of the RIC team. The only circumstances under which this practice could be ignored is when the fire is obviously in its earliest stages of development and easily safely extinguished or rescue is likely to be successful. Given the extended response times experienced across rural areas of the county, the likelihood of the latter is relatively low in comparison to urban response.

Furthermore, the Alberta OHS Occupational health and safety (OHS) guide for firefighting acknowledges that the guidelines and policies developed should include, as per National Fire Protection Agency (NFPA) standards:

a. *identification of the standard firefighting functions based on the emergency services to be offered, including functions that must be performed simultaneously; and*
b. *the minimum number of firefighters required to safely perform each identified firefighting function or evolution.*

Note: *The following table shows the recommendations, along with cost implications, in order of criticality and timeline for implementation.*

	Recommendation	'22	'23	'24	'25	'26	'27	'28	'29	'30	'31	Source	Est. Cost	Comments
3	Complete a review of the water supply for new and current developments within the county											Staff time	Cost neutral	Safety Codes/Fire Prevention Officer suggested to undertake this.
6	Develop a fire prevention branch with the capability to support ongoing cyclical inspections of high-risk properties and life safety systems											Staff time	$200,000 annually including corporate load factor	Includes one officer and one admin. Support. Chief to negotiate with IAFF.
7	Complete a mission statement along with vision and mandate exercise with all the fire stations that are under direct management of RVCFS											Staff time	Cost neutral	
9	Enhance the current level of communication with RVCFS administration and all senior officers with the focus to address the concerns raised about the transition from paid-per-call volunteer to career full-time firefighting staff											Staff time	Cost neutral	
10	Enhance internal communications with the fire chief, deputy chief and district chiefs											Staff time	Cost neutral	SMART work plan is suggested as one option.

	Recommendation	'22	'23	'24	'25	'26	'27	'28	'29	'30	'31	Source	Est. Cost	Comments
11	RVCFS administration and Rocky View County Fire Fighters Union IAFF Local 4794 should develop a working relationship agreement document between the two parties											Staff Time	Cost neutral	
12	Develop an updated administration response matrix and SOG											Staff Time	Cost neutral	
13	Implement an annual paid-per-call volunteer recruitment program to include all paid-per-call volunteer fire stations with common messaging and processes											Staff Time	Cost for annual recruitment estimated at $5,000.00	
14	Create a training division with a dedicated training coordinator position												Salary could be in the range of 85 – 95K per year, plus corporate load factor	Costs are based on an administrative, out-of-scope position.

	Recommendation	'22	'23	'24	'25	'26	'27	'28	'29	'30	'31	Source	Est. Cost	Comments
16	Review the RVCFS mobile equipment list and amend the life cycle program accordingly											Staff time	Cost neutral;	Outcome of the review should result in an increase to capital replacement reserves in order to maintain the fleet.
17	Expedite the replacement of 107 Engine and 207 Engine													800 – 1.2M each
19	Modify the Rocky View County Quality Management Plan to include a cyclical inspection program											Staff time	Cost neutral	
22	Enhance the data management, and reporting processes to measure, monitor and report service level performance											Staff time	Possible third-party costs	Rough order magnitude costs depending upon vendor and modules: $10-50K initial with recurring annual costs $5-10K
23	Conduct a review of the alarm handling process and establish performance goals for Calgary 911											Staff time	Cost neutral	

	Recommendation	'22	'23	'24	'25	'26	'27	'28	'29	'30	'31	Source	Est. Cost	Comments
4	Continue to maintain and improve partnerships with rail and other industry operators, to enhance knowledge of dangerous goods inventory being transported thought the county.											Staff time	Cost neutral	
5	Complete a community wildfire protection plan and implement the FireSmart program throughout all wildland interface areas within the county											Staff time	Cost neutral	Possible third-party costs for FireSmart program. FRIAA grant may offset program costs
8	Conduct a staffing ratio analysis and pursue full-time staffing options in the Elbow Valley, Springbank, Bearspaw, and Balzac fire stations interface areas within the county											Staff time	Cost neutral	Review is cost neutral. Results may lead to additional full-time staffing costs.
15	Continue building and developing an in-house live fire training facility											Third-party	Cost varies significantly	Depending on the training provided from this facility, there may be additional costs for props, equipment and engineering

	Recommendation	'22	'23	'24	'25	'26	'27	'28	'29	'30	'31	Source	Est. Cost	Comments
20	Formalize pre-emergency plan inventory											Staff Time	Cost neutral	
21	Update the Rocky View County Council Policy C-704, Fire Protection Service Levels											Staff Time	Cost neutral	
25	Increase minimum career station staffing to six firefighters if reliable interior fire suppression is desired											Operational budget	Depending upon staffing ratio. Range could be increase of up to 10 full-time positions estimated to be $1.25 M	Costs are based on current IAFF agreement and salary plus corporate load factor
1	Develop a comprehensive structural risk inventory program and business licence application program											Staff Time	Cost neutral	
2	Undertake a comprehensive risk analysis of the individual station demand zones and include it as part of a standard of cover policy											Staff time	Cost neutral	
18	Purchase an aerial apparatus											Capital fleet budget	1.2 M–1.8M	Dependent on desired use, type and manufacturer

	Recommendation	'22	'23	'24	'25	'26	'27	'28	'29	'30	'31	Source	Est. Cost	Comments
24	Evaluate growth and development, demand for services and response performance in Conrich area based on council approved standard of cover and service policy and the requirement for a new station.											Third-party contractor	Cost varies significantly	Dependent on career or volunteer station, land purchases, size of station etc.

Conclusion

The master plan was completed to assist Rocky View County and the Rocky View County Fire Services (RVCFS) in evaluating the current service delivery model and develop a strategy to inform future investments in fire, rescue and emergency services. The plan involved a comprehensive analysis of all key elements of service delivery. This analysis included a review of the operational and administrative aspects of the RVCFS, community profile and risks, staffing, core service and program delivery, training, recruitment and retention, facilities and major equipment.

Further, RVCFS response data was assessed with a focus on the current performance, capabilities and alignment with both existing and projected risks and levels of demand.

There are several observations and recommendations provided in this master plan to improve operational effectiveness and efficiencies. Key among the 25 recommendations is:

- Undertake a comprehensive risk analysis of the individual station demand zones and include it as part of a Standard of Cover (SOC) policy. Identified service concerns or policy gaps should be discussed with council and the SOC policy should clearly reflect the services and service levels provided by the RVCFS.
- Develop a comprehensive structural risk inventory program and business licence application program. The fire chief working with the Rocky View County Economic Development and Planning and Development departments to provide a process to inventory all existing and new properties, and that the building inventory be classified, documented and maintained using the Alberta Building Code Major Occupancy Classification system.
- Develop a fire prevention branch with the capability to support ongoing cyclical inspections of high-risk properties and life safety systems Enhance response data management, performance assessments and reporting.
- Create a training division with a dedicated training coordinator position.
- Develop an updated administration response matrix and Standard Operating Guidelines (SOG). Formalize an 'alarm assignment response matrix' and SOG that is embedded with the dispatch protocols. The first responding officer declares the alarm response required as part of the size-up.
- Complete a review of the firefighter water supply for new and current developments within the county.

Although each recommendation has a corresponding timeframe, it is important to note this FSMP needs to be revisited on a regular basis to confirm that the observations and recommendations remain relevant. The recommendations outlined in this FSMP will better position the RVCFS to mitigate and manage community risks, monitor response capabilities and performance, and maintain excellent community relationships and value for money.

Our interactions with the staff revealed a highly professional and dedicated organization that is committed to providing the best possible service to the citizens of the County.

SECTION 1
INTRODUCTION

1.1 Background and Significance

Across Canada, all levels of government are facing increased demands for effective and efficient fiscal municipal department management. To meet these demands, elected officials and department managers are relentlessly looking for ways to reduce and avoid costs while still maintaining and increasing value in the delivery of services.

This environment has generated the need for communities to adopt a more business-like approach for delivering public safety services. Senior fire and emergency service leadership, along with their municipal leadership realize they need to be proactive and examine all aspects of the service delivery systems while looking for sustainable and innovative ways to improve efficiency and effectiveness.

1.2 Goals and Objectives

The goal of developing this fire service master plan (FSMP) is to conduct a comprehensive review of Rocky View County's fire and emergency services and produce a strategic plan for the next 10 years, specifically the RVCFS FSMP. This will provide a systematic and comprehensive approach to evaluate current response capabilities by mitigating risks and assist in formulating and communicating strategic directions for the fire service, while highlighting opportunities for improved service delivery. The FSMP will also assist in conveying information to the general public, staff and municipal council about what to expect in the county's approach to fire and emergency service planning, service delivery model, policy and development.

This FSMP considers applicable legislation, industry-leading practices, and standards, along with current and anticipated risks to provide unbiased analysis and evidence-based recommendations.

While risks are the basis for triggering response decisions, our analysis also investigated the needs of the community and will provide a point of reference upon which future decisions and priorities can be evaluated and implemented. This includes identifying priorities, challenges, and opportunities for the improvement of the delivery of emergency services to the community, businesses and overall public safety.

Ultimately, this FSMP will determine optimum service delivery model and position the county to be more effective and efficient in the delivery of emergency services through current and future challenges.

1.3 Project Scope

Where applicable, we've identified observations, recommendations, rationale, options, timelines and budget implications. Ultimately, the FSMP will serve as the county's blueprint for fire and emergency services.

The FSMP will consider and achieve the following benefits:

- Enhanced firefighter safety
- Enhanced cost control and containment
- Increased efficiency and effectiveness
- Identification of the right sized service to meet the current and future needs of the community

At minimum, we completed the following items:

1. Reviewed existing means of delivering fire services including an investigation of any underlying issues, budgets, human resources, service delivery protocols, bylaws, etc.
2. Consulted with fire service personnel to understand how fire and emergency response services are delivered, with a view to evaluate existing program efficiencies and effectiveness while identifying potential enhancements.
3. Consulted with the County management and fire department staff to understand administratively and operationally what is and what is not working in fire and emergency response service delivery.
4. Identified needs, opportunities and concerns expressed by interview and survey participants with a view to developing recommendations on improvements or maintaining an effective delivery of service to residents, safety of emergency responders, financial efficiencies, proper infrastructure, fair compensation, and rewards for emergency responders.
5. Considered the growth in population and activities within the areas of jurisdiction over the next 5 - 15 years, and the potential impact to service delivery and operations of fire and emergency services.
6. Reviewed all areas of service delivery including policy and procedures, staffing, station locations, response times, vehicles, and apparatus (new and replacement cycles), vehicle and apparatus maintenance, other equipment, administration, training, mechanical, fire prevention, emergency planning and public education.
7. Developed recommendations, rational and their approximate financial implications and implementation plans, including timelines.

1.4 Standards and References

This plan considers the following references and standards:

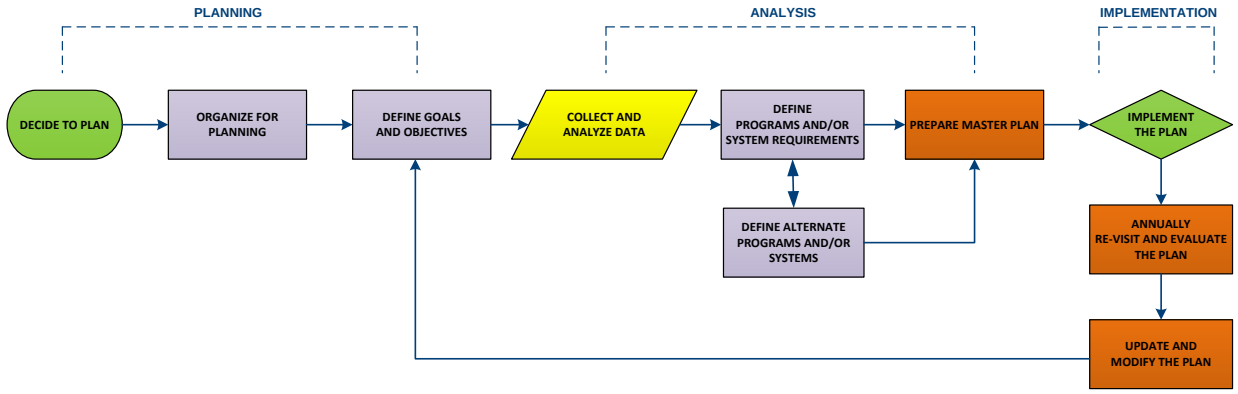
- Alberta Occupational Health and Safety, Guide for Firefighting, 2019
- Municipal Government Act, September 1,2020
- Alberta Building Code Limiting Distance and Fire Response Requirements
- Alberta Safety Codes Act, July 23, 2020
- Alberta Building and Fire Codes, 2019
- Commission on Fire Accreditation International
- Canadian Standards Association (CSA)
- Fire Underwriters Survey (FUS)
- Underwriters Laboratories (UL/ULC)
- Service provisions from similar communities and other authorities
- National Fire Protection Association Standards

1.5 Fire Services Master Plan Process

The following diagram illustrates the process used to complete this FSMP. The FSMP is sometimes referred to as a 'road map' to the future and used as a guiding document for current and future department leaders and decision makers.

As described in the 'implementation' phase, it is highly recommended that this plan be reviewed and evaluated, at minimum, on an annual basis or when there are unusual changes in risk, response demands, population and residential or industrial development activity. When reasonably practicable, we also recommend a third-party update of the FSMP at the five-year mark to apply an unbiased review into the operation and provide further credibility to the master plan process.

Figure 2: Fire Services Master Plan Process



1.6 Consultative Process

1.6.1 Community and Fire Station Tour

The community and station tour focused on the overall footprint, topography, transportation infrastructure of the County and the various response zones for each of the seven stations. Touring each station provided an opportunity to conduct a general condition and operational functionality assessment on each station. This tour also provided the opportunity to meet with various RVCFS staff and discuss their respective interests regarding the FSMP development.

1.6.2 Targeted Interviews

Targeted interviews were part of the data and information collection process. Participants were asked questions related to their areas of purview and expertise. An interview guide was used to conduct the interviews. The interview was used to promote an open discussion about the community, risks, general concerns related to the County and County operations including strengths, weaknesses, opportunities, challenges, and anticipated changes.

Table 1: Targeted Interview List

No.	Name	Job Title
1	Randy Smith	Fire Chief
2	Ken Hubbard	District Chief
3	William Clarke	District Chief
4	Dax Huba	District Chief-Urban Operations
5	Marcus Weckesser	District Chief-Urban Operations
6	Thomas Blasetti	Station Chief Irricana
7	Ron Wenstrom	Station Chief Langdon
8	Gary Barnett	Deputy Chief
9	Clayton Whitney	Director Human Resources
10	David Kalinchuk	Economic Development Manager
11	Dominic Kazmierczak	Manager Planning Policy
12	Lorraine Wesley	Manager Enforcement Services
13	Gurbir Nijjar	Manager Planning and Development Services
14	Devin Teal	IAFF President
15	Adam Harris	IAFF
16	Bill Wohl	IAFF
17	Andrew Mardell	IAFF
18	Falyn McInnes	Administrative Assistant
19	Ben Niven	Fire Chief Town of Crossfield
20	Rob Evans	Fire Chief Redwood Meadows

1.6.3 Online Firefighter and Dispatcher Survey

To obtain balanced input, we also employed an online firefighter and dispatcher survey. Our survey methodology offers several unique benefits. First, it offers an opportunity to gather opinions from an entire group as opposed to a limited sample of opinions from a select few. The online survey also offers an extremely flexible approach to the collection of data as respondents can complete the survey questions when it is convenient for them. Additionally, the anonymity of participants is relatively easy to control and therefore may yield more candid and valid responses. Finally, surveys are also extremely time and cost-efficient methods to engage large groups while capturing extensive data.

1.6.4 Municipal Comparative Analysis

An industry peer comparative analysis[3] of Rocky View County Fire Services was conducted as a method of benchmarking the performance of departments to similar municipalities. These benchmarks include budgets, performance, effectiveness, and efficiencies. Although fire and emergency services ultimately have the same goal of protecting life and property, each community has its unique features in how to accomplish their goals. Our main criteria for the comparative analysis are indicators of effectiveness and efficiencies amongst the communities for risk and mitigation.

[3] *Please see Section 3.15, Municipal Comparative Analysis, Page 116*

1.7 Study Considerations

The following factors that affected both the assessment and effective mitigation of risk were considered and assessed:

Community-Specific Considerations

- Total area of review
- Population and future growth
- Community risk factors
- Community demographic information
- Development and area structure plans
- Multi-jurisdictional requirements and cooperation
- Current and future development impact on risks and response
- Financial resources and constraints
- Impacts of government legislation
- Bylaws affecting the emergency services
- Economic factors
- Tourism
- Construction
- Industrial activity
- Utilities
- Retail businesses and other services
- Agriculture
- Buildings and structures concentrating on high-risk demands, including business, assembly occupancies, etc.
- Municipal emergency management plans

Department-Specific Considerations

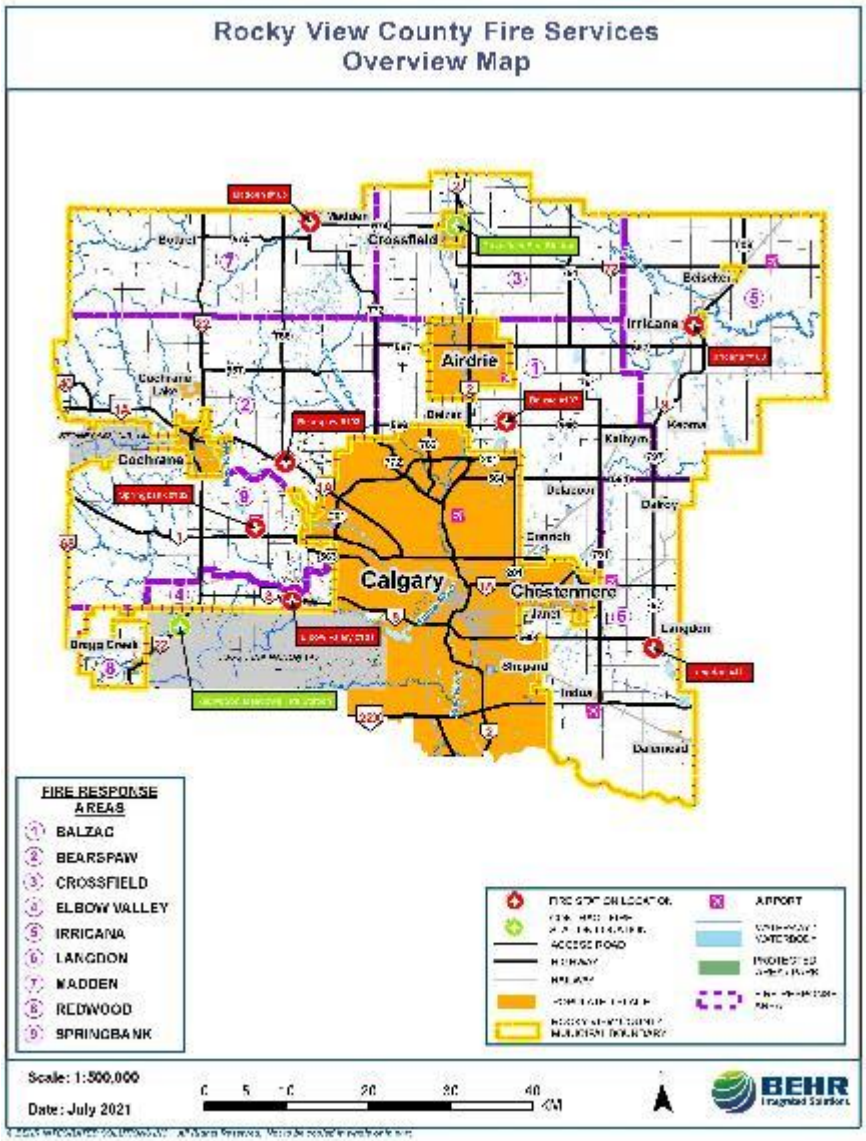
- Geographic and physical boundaries for response
- Fire service annual reports
- Fire service focused reports previously conducted
- Standard of cover
- Budgets
- Current staff rosters with qualifications
- Fire station locations and other infrastructure
- Support services
- Department structure
- Service delivery models
- Apparatus and equipment inventory, and future needs
- Building space requirements
- Operation staffing and administrative needs
- Bylaw, policies, and procedures
- Reporting structure and requirements
- Fire prevention & public education
- Emergency core service response
- Health and wellness
- Training and recruitment records and standards
- Succession planning
- Prevention programs such as inspections, education, and enforcement
- Records and data management
- Emergency services standard operating guidelines and procedures

SECTION 2
COMMUNITY PROFILE AND RISK OVERVIEW

2.1 Community Overview

Rocky View county is a municipal district in southern Alberta. The county surrounds most of Calgary, forming the city's northern boundary and most of the city's western and eastern boundaries. Though predominantly rural in nature, Rocky View County is home to 14 hamlets and its rural areas are home to numerous country residential subdivisions.

Map 1: Rocky View County Response Overview Map



In 2020, Rocky View County recorded a population of 40,948 living in 14,394 private dwellings. This represents a 6.63% increase from 2016. With a land area of 3,885 km^2, it has a population density of 10.54/km^2. Rocky View County is bisected by the Trans-Canada Highway (Highway 1) and Highway 2. Highway 9, a major transportation route between Calgary and Saskatoon, Saskatchewan, also bisects the eastern portion of Rocky View County.

The Canadian Pacific Railway and the Canadian National Railway between Calgary and Edmonton travel through the County. There are two airports located within the County, one in Beiseker and the other in Springbank.

2.2 Economic Indicators

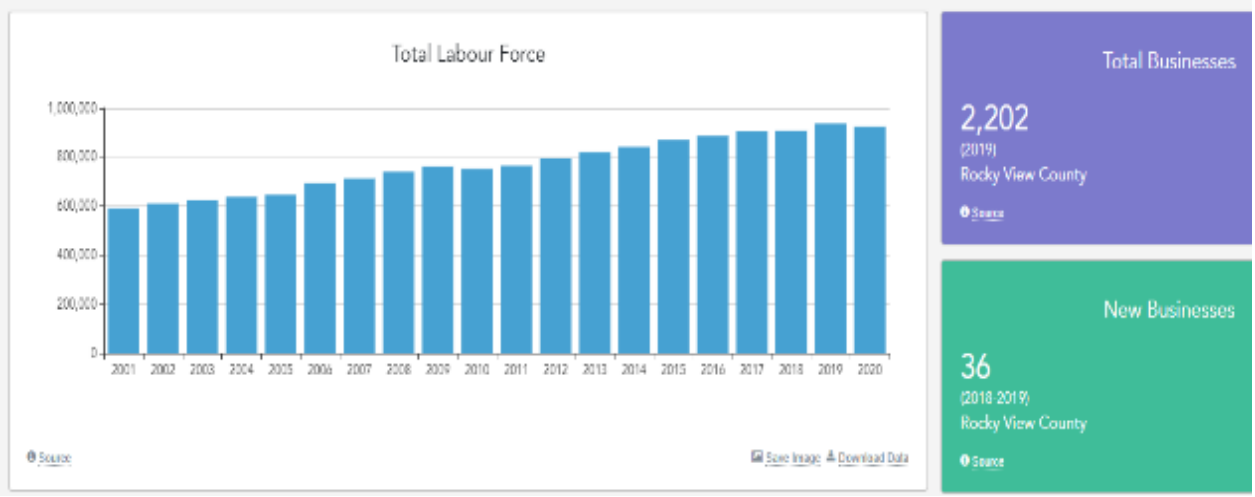
The primary economic base for Rocky View County is agriculture along with commercial and industrial development. For the first time in the history as a county, the 2020 tax revenue from commercial and industrial assessments was actually larger than residential revenue. This most recent assessment indicated a 15.2 percent increase in revenue from commercial/industrial land. Those properties were assessed at $39.1 million, compared to the $33.9 million for all County residential property and farmland.

The Rocky View County advantage includes competitive local tax rates that are supported by a large and diversified assessment base of $18.7 billion. With some of the lowest tax rates in the Calgary metropolitan region across all assessment classes, the County's residential to non-residential assessment and tax ratios are the envy of many municipalities in Alberta.

In comparison to other provinces, businesses in Alberta enjoy a distinct advantage when it comes to corporate income taxes. With no provincial sales tax, no payroll tax, no health care premiums, lower personal income tax rates and the lowest fuel tax among provinces, Alberta continues to be a great destination to do business along with and overall lower cost of living for the residents. These tax benefits are supplemented by extensive infrastructure, strong urban growth centres, an increasingly diverse economy, a growing population and lucrative investment opportunities.

Higher incomes combined with a lower cost of living and affordable housing makes this region a preferable place to establish roots. There are a number of business support initiatives that aid businesses in setting up in the County.

Figure 2: Rocky View County Economic Growth (2001 – 2020)[4]

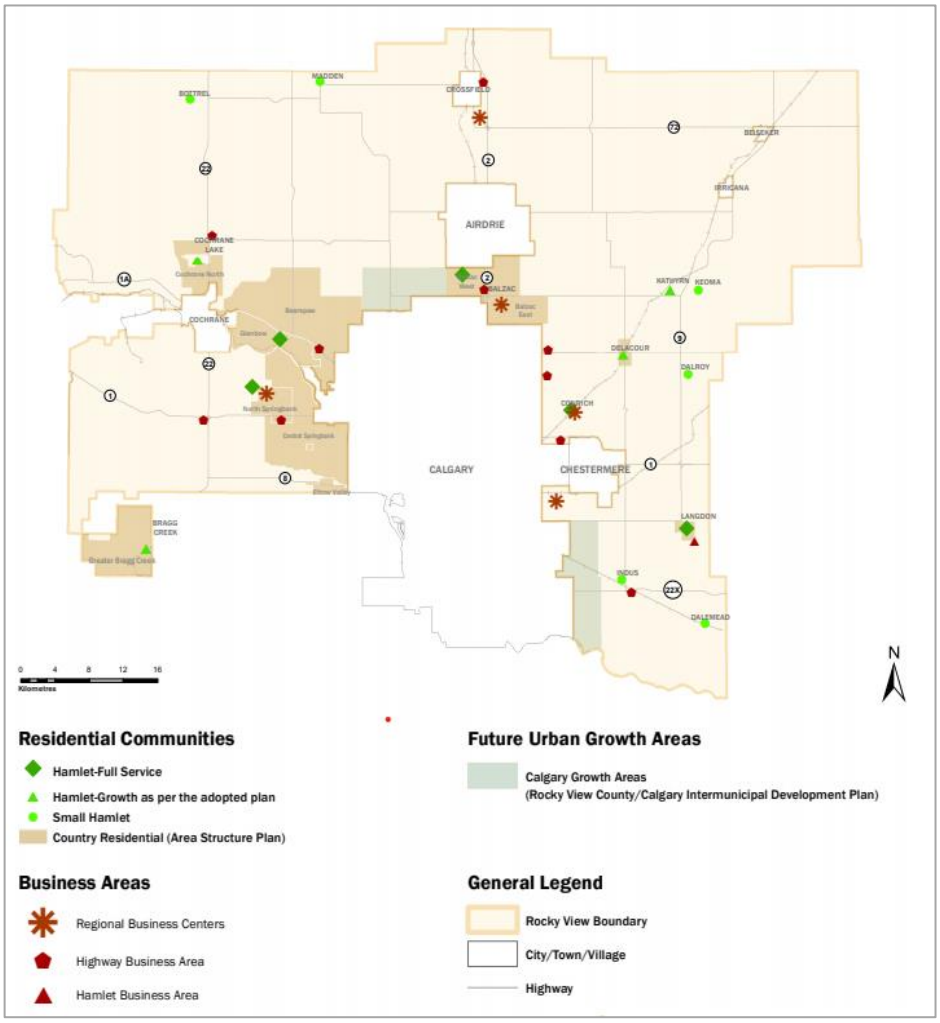


[4] https://rockyview.ecdev.org/business-climate

2.3 Growth Projections

Rocky View County population growth is projected to increase to approximately three times its current population of 40,948 to 114,008 in the next 20 years. The major residential growth is projected in Balzac, Bearspaw, Conrich and Springbank.[5] A list of potential build-out populations (Table 2) was provided by the County Manager, Planning Policy based on calculations on gross area of the Area Structure Plan (ASP)[6], taking out 30% for roads and other infrastructure and then times the number by the proposed density and a population of 2.7 people per household the county total build-out population would be 192,973.

Map 2: Rocky View County Land Use Map



The industrial/commercial growth is expected to continue in the Balzac, Langdon and Conrich areas that border the City of Calgary. The revised *Land Use Bylaw C-8000-2020* went into effect on September 8, 2020. Since that time, staff have been reviewing opportunities for improvements in consistency and clarity. As such, a series of revisions is being proposed.[7]

[5] *https://townfolio.co/ab/rocky-view-county/demographics*

[6] *Copies of all the existing and proposed ASP documents can be located at: www.rockyview.ca/area-structure-plans & www.rockyview.ca/plans-under-review.*

[7] *https://www.rockyview.ca/land-use-bylaw*

Table 2: Rocky View County Build-Out Projection

Community	Population Projection	Details
Balzac East	2,188	(based on the continued use of 4 acre parcels)
Balzac West	24,933	(based on an expected more urban-based density of four dwellings per acre)
Bearspaw	22,007	based on the continued use of averaged 2 acre parcels; 23,288 developable agricultural (& residential acres x 0.7 x 0.5 x 2.7)
Cochrane Lake	8,344	: (based on an estimated minimum of four units per acre)
Cochrane North	5,398	based on 2 acre parcels – higher densities are proposed as well as parcel sizes up to 10 acres
Conrich (Proposed)	27,174	With varied residential land use styles (based on the build-out of approved conceptual schemes and of the FPA) This may increase if plans are passed for Farm Air and Meadow Ridge. • Hamlet/Phase 2 Residential/South Conrich: 20,946 • Buffalo Hills: 1,159 • Prince of Peace: 3,892 • Pleasant Place: 1,039 • Township Road 250: 138
Dalroy	900	Had a population of 46 in 2000, with residential development occurring in the Balance Lands and Hamlet Expansion Area
Delacour	885	Based on an average of 2 acre parcels
Elbow View (Proposed)	12,750	Based on 1,020 net residential acres, an average of five units per acre among density types, and 2.5 people/unit
Glenbow Ranch	12,074	Based on multiplying the provided number of dwellings (4,472) by 2.7
Greater Bragg Creek	9,147	Based on the development of the Hamlet Expansion Lands which will increase both infill and new development in the GBCA
Indus	2,069	Based on a majority parcel size of 20,000sq ft or 0.46 acres
Janet	154	Primarily commercial and Industrial development; are the only two residential areas currently identified Janet Crossing (73) Prairie Schooner (81)
Langdon	14,538	Based on multiplying 1346.09 residential acres x 4 units per acre x 2.7
Moddle	143	Based on 105.7 residential acres and 2 acre parcels
Omni	N/A	Primarily commercial and industrial development
Shepard	450	Based on the simple projection outlined in the ASP
Springbank Central	21,000	Using 2.7 avg residents produces a forecast with continued use of 2ac lots
Springbank North (Proposed)	14,536	Due to alterations to ASP boundary and residential dwelling densities, net residential acres = 7,336, includes 1,860 population. in 2018
Springbank South (Proposed)	11,417	Due to alterations to ASP boundary and residential dwelling densities, net residential acres = 5,191, includes 3,989 population in 2018)
Total Population	190,107	

2.3.1 Community Demographics

The population (2020) of Rocky View County was 40,948. This equates to a population density of approximately 10.3 people per km². There is a total of 13,620 private dwellings. The age breakdown has 89.2% of Rocky View's population under 65 years of age.

- 53.5% are under 45 years old
- 33.6% are under 25 years old
- 19.4% are under 15 years old

The median family income (2013) is reported as $112,295 annually. The home ownership rate was 92.2%. 68.7% of Rocky View County residents have obtained a post-secondary education, with 91% having a high school diploma or above. One would classify the average Rocky View County resident as:

- 43 years old
- Married
- One child
- English speaking
- Canadian born
- Owns their own home
- Works outside the home for someone else, full-time
- Commutes 30 minutes each way
- Has a post-secondary education, obtained in Alberta

2.4 Community Planning and Development

Rocky View County is included in the 'South Saskatchewan land use framework region' in southern Alberta. One of seven land use regions in the province, each is intended to develop and implement a regional plan, complementing the planning efforts of member municipalities in order to coordinate future growth. Corresponding roughly to major watersheds while following municipal boundaries, these regions are managed by Alberta Environment and Parks[8].

As it includes the Calgary Metropolitan Region, the largest urban area in Alberta, the South Saskatchewan Region has the highest population of any Alberta land use region. The Rocky View County "Revised *Land Use Bylaw C-8000-2020"* is the book of rules for development in Rocky View County, and covers a wide range of regulations, including:

- Establishing the development permit process and the process for re-designation (rezoning) and Land Use Bylaw text amendments
- Regulates the size and use of land and buildings

[8] *https://landuse.alberta.ca/LandUse%20Documents/South%20Saskatchewan%20Regional%20Plan%202014-2024%20-%20May%202018.pdf*

- Classifies land use districts (zones) and determines minimum development standards for each of these districts
- Determines the appropriate permitted and discretionary uses for each land use district

Each property in the county has a land use district (sometimes called "zoning"). Each district has a different purpose and intent for the use of land and has different rules and regulations that must be followed. Types of districts include:

- Agricultural
- Residential
- Business
- Commercial
- Special

Additionally, 'Direct Control Districts' have been designed for unique developments which do not fall under any of the above categories or require unique regulations.

2.5 Community Risk Assessment

Every municipality has unique characteristics and challenges contributing to risk. Risk can be managed through either accepting the risk, insuring against damages, or investing in risk prevention and mitigation strategies. Local governments typically employ a combination of these approaches. In general, the risks and management strategies of a community are relative to a municipality's financial capacity, geography, population demographics, fixed assets, and critical infrastructure, as well as overall service delivery.

Risk Evaluation

- *Identify the existing risks and assign a value to specific risks based on quantitative and qualitative data*
- *Identify fire department management strategies for high priority risks*
- *Predict future risks*

This study provides a high-level community assessment of risk associated with fire and hazards, specifically focusing on the high-priority risks managed with a fire department response. High-priority risks are those associated with a high consequence or those that have moderate consequences and greater likelihood of occurring. The overall purpose of conducting a risk assessment is to establish an immediate, short-term, and long-range general strategy for the management these types of community risks.

Conducting a risk assessment is the first step towards establishing a strategic plan to manage community risks based upon local fire department response capabilities. The results are used to assist the municipality in making informed decisions regarding the allocation of limited fire prevention and fire response resources.

2.5.1 Factors Contributing to Risk

As mentioned, every municipality has unique challenges and characteristics contributing to the overall risk profile of the community. Some general examples of challenges that may impact community risks include:

- Fire/rescue service model and response capacity
- Population and demographics
- Population growth rate
- Industry types
- Economy
- Rate of development
- Transportation corridor types
- Typography
- Weather
- Historical response data

2.5.2 Risk Management

Image 1: Risk Management Cycle Process

All communities require a process to identify and actively manage high-priority risks. As previously discussed, there are several approaches to managing risk. The focus of this report is to identify and discuss specific risks, and unique community characteristics that contribute to risk, typically managed through fire prevention or fire department response. Image 1 describes the risk management cycle. The first step in the risk management process includes the assessment of the probability and consequence of specific risks. The next step is the assessment to identify key risks which are then evaluated against the current prevention or response strategy to identify potential service gaps. The third step in this cycle includes adjusting fire prevention and response service levels to manage the resources necessary to pre-emptively mitigate or respond as determined by approved service levels. The final step in cycle is to measure and report results to key policy makers. This cycle should be repeated periodically to address changes in the risk profile and make thoughtful and informed decisions regarding strategies to manage any changes.

In Canada, local governments are charged with delivering most of the fire and rescue response services for their citizens. Elected officials are the authority having jurisdiction (AHJ) who ultimately determine the level of service required to manage fire and rescue risks to an acceptable level within their jurisdiction. The challenge for elected officials lies in

determining the best balance between investing in adequate emergency services and accepting a certain level of risk.

2.6 Risk Evaluation vs. Service Levels

The evaluation of fire or rescue risks considers both the probability and consequence of emergency event types. The probability of an event is quantified by analyzing historical, current, and projected data. The consequence of the event type or risk is based on an informed assessment of the potential impact on a community should the event occur.

Probability – The probability of a risk, or event type, is the determined likelihood that an event will occur within a given time. The probability is quantified by considering the frequency of event type data. An event that occurs daily is highly probable and therefore higher risk. An event that occurs only once in a century is assessed as a lower risk as it may never occur.

Consequence – There are three types of consequences when considering possible fire/rescue response requirements:

- Life safety impact: Life safety risk for victims and responding emergency personnel are the highest order of consequence when considering the risk associated with specific event types. Events with a high likelihood of injury/death occurring and even a moderate probability of occurring require close examination to ensure adequate resources required to safely rescue or protect the lives of occupants from life-threatening are accessible to respond. Incidents that risk life safety include motor vehicle accidents, extreme weather, flooding, fire, release of hazardous materials, medical emergencies, and all types of rescue situations.
- Economic impact: Events with high negative impact on the local economy are devastating to a municipality. For example, recovering from the fire loss of a large employer's property or key public infrastructure in smaller municipalities can be difficult. Therefore, providing adequate response capacity necessary to manage these types of events must be considered.
- Environmental impact: Negative environmental consequences resulting in irreversible or long-term damage to the environment must also be considered in the analysis. Events with risk of negatively impacting water, soil and air quality are also likely to impact life safety as well as the economy and therefore must be considered.

Social and cultural impacts as experienced with the loss of historic buildings, recreation facilities or non-critical community infrastructure, are considered but do not typically affect how fire department resources are deployed.

As discussed, the risk evaluation process is used to identify high-priority risks and the appropriate risk management strategy. Where a fire department response is determined to be the most appropriate management strategy, the appropriate services and service levels should be established to safely manage the risks. Elected officials are responsible for determining which services are delivered and setting service level goals. The service level goals determine the necessary concentration and distribution of either fire prevention or emergency response resources to safely manage the identified risks.

Distribution *refers to the number of fixed resources, such as fire stations, and where they are placed throughout the community. Distribution varies depending on factors related to the number of incidents and types of calls for service in the defined area.*

Concentration *refers to the assembling of resources, such as a specialized work force and equipment, needed to effectively respond to an incident in each area within the community. It must also identify the availability of additional response resources including the reliability and time of arrival of a secondary responding unit.*

The risk evaluation matrix (see Figure 3.) can be divided into four levels of risk based on the probability and consequence, each with specific implications for the concentration and distribution of resources. It is provided as a reference and context for use of the matrix to quantify fire response risks in your municipality. Different quadrants of the risk matrix need different response requirements.

Figure 3: Risk Evaluation Matrix

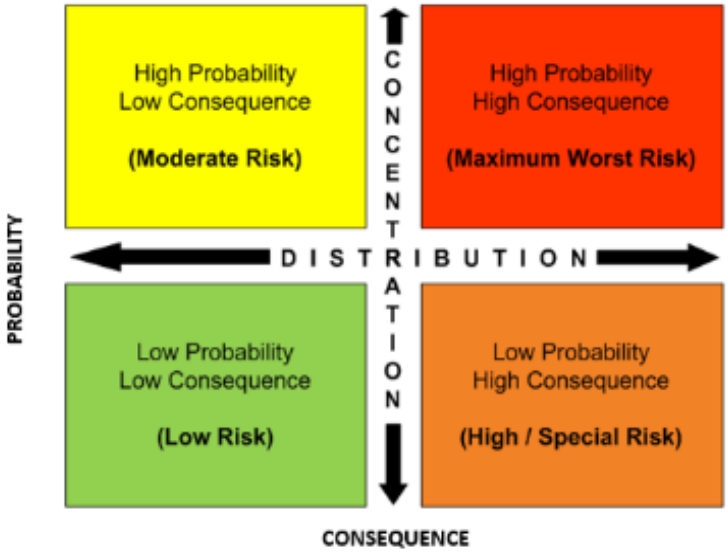


Table 3 offers examples of categories of types of structural fires and general hazards commonly found in communities. As described above, these risks are categorized by considering the probability and consequence of the fire or hazard. This qualitative analysis is based on experience and expertise, and should be completed with input from fire, building and emergency management officials. Every community will have a unique risk inventory contributing to its risk profile.

Table 3: Risk Inventory (Sample Only)

Low Risk = Low Probability and Low Consequence

This category is limited to areas or incidents having a low probability of fire risk and low consequence for the potential for loss of life or economic loss. Some low risks include:

- Outdoor fire pits
- Non-structure lightning strikes
- Vacant land
- Parks without structures
- Isolated structures such as sheds

Moderate Risk = High Probability and Low Consequence

Most responses fall under this category. Moderate risks include:

- Motor vehicle collisions
- Carbon monoxide detection (emergency medical co-response)
- Monitoring/local alarms
- Vehicle fires
- Dangerous goods incidents with small quantities of a known product (20 litres or less), outdoor odours (natural gas or unknown)
- Miscellaneous explosions
- Emergency standbys
- Smoke
- Odours
- Fires:
  - garbage
  - detached garages
  - single or multi-family residential fires
  - small non-residential buildings less than 600 square metres

High Risk = Low Probability and High Consequence

There are very few properties/responses that are considered high probability, high consequence. These properties are categorized as large properties, over 600 square metres, without adequate built-in fire protection systems, or that has large concentrations of people or has a significant impact on the local economy. High risks include:

- Commercial, industrial warehouse
- Dangerous goods incidents with large quantities of known products (75 litres or more), unknown products or large exposure
- Hospitals, care homes, institutions
- Derailments & transportation of dangerous goods
- Aircraft crashes on or off the airport
- Bulk fuel storage facility fire/explosion

Maximum Risk = High Probability and High Consequence

This category of risk can be generally categorized as properties over 600 square metres that have high economic value in the form of employment or are not easily replaceable, or natural disasters occurring in highly populated areas, creating high life and property loss potential and strains on the department and other agency resources. Damage to properties in this category could result in temporary job loss or permanent closure of the business. Such properties are highly regulated or possess built-in fire protection systems. Some maximum risks include:

- Wildland fires
- Weather related events (floods, tornadoes, serve storms etc.)
- Large vehicle accidents, pileups, derailments
- Quantities of known flammable products (500-1000 litres)
- Explosions or substation electrical fires
- Confirmed natural gas leak

2.7 Structural Fire Risk Analysis

It is critical to use careful planning and consider alternative solutions when managing risk because the ability to increase the distribution of resources and add capacity is always limited. Spending large amounts of time and resources to manage a risk with low frequency/low consequences will have limited impact and make a minimal improvement to community safety. When planning for fire department response, the planning process includes a detailed review of the frequency of events and their potential consequence(s) to ensure prevention and response efforts maximize life safety and minimize negative consequences for high-priority events.

This section describes how the risk of structure fires can be evaluated and how to use this information to inform the distribution and concentration of limited fire department resources.

Analyzing structural fire risk begins by developing an exhaustive inventory of existing building stock and monitoring changes to the inventory. This process should include staff from the planning and development departments, as well as building and fire safety codes officers (SCOs). This provides the fire SCOs with an opportunity to evaluate the Alberta Fire Code requirements in the design, construction, and operation phases of the building.

The building inventory database becomes the foundation of assessing fire risk in the community. This inventory provides a count of all property types including single and multi-family residential, assembly (including schools, churches, hospitals, personal care homes, etc.), mercantile, commercial, and industrial properties.

Once the inventory is assembled, fire department response capability is measured against the identified property risks. This simple identification of the relatively high numbers of specific high-risk property types may identify gaps in the current response model, resulting in the reorganization or addition of fire department resources. As building stocks increase, fire departments should continue to monitor response capability and capacity to ensure service levels are maintained.

Fire departments should work with the planning department and building SCOs to develop a process of monitoring the addition of new buildings or significant changes to existing properties. The process can be used to involve them in the review of building plans and identify inspectable properties. It can also inform the development of fire response pre-plans to prepare fire responders for the specific hazards in high-risk structures. Table 4 provides an example of a smaller town. It is typical for single-family detached properties to make up the largest percentage of property types. As a result, fires in this type of moderate-risk structure are typically the most probable. However, the consequence of these types of fires is low relative to other residential properties, such as low-rise and high-rise buildings.

Table 4: Example of Basic Building Inventory by Property Type

Property Type	Count of Properties	% of Total Properties
Assembly (theatres, hotels convention centres, public facilities with high occupancies etc.)	40	2
Institutional (schools, hospitals, care homes etc.)	15	1
Residential - single family	2000	86
Residential - multi-unit	40	2
Business and personal services	100	4
Mercantile	100	4
Industrial	20	1
Total	2,315	100

As new residential, commercial, and industrial buildings are added to the community building inventory, it is important that fire departments be involved early in the planning and development process. This provides an opportunity to review and evaluate the impact on services and provide recommendations that would serve to mitigate new risk.

The 2016 Statistics Canada Census provides a count of 13,605 residential properties within the County. The analysis of this data identifys that a limited number of multi-unit Group C properties exist in the County. There are no apartment buildings with five storeys or more in the RVCFS fire demand zones. Single-detached homes are the primary residential unit type. The are also a number of mobile home dwellings within the county.

In conjunction with the residential structural fire risk there are additional risks with the developments such as:

- Large warehousing and distribution facilities
- Estate homes and properties
- Total Businesses (2019) 2,202 New Businesses (2018-2019) 36

Observation #1: The county requires a development permit when establishing a business in a vacant commercial space, changing the use of business space or developing a new commercial building. The county does not require a business licence or cyclical fire and life safety inspections. The absence of a business license process limits the ability for the fire inspection program to track fire and life safety risks, occupancy classifications, and establishing cyclical inspections based upon risks. Also, there doesn't appear to be a system for reviewing new and existing properties. As a result, the RVCFS has limited access to adequate data to identify high-priority structure fire and life safety risks and to develop risk management strategies. These observations may be reduced with the introduction of business licenses, which will provide a database available to the fire service.

Recommendation #1: Develop a comprehensive structural risk inventory program and business licence application program

(Suggested completion: 48 - 60 months)

It is recommended that the fire chief work with the Rocky View County Economic Development and Planning and Development departments to provide a process to inventory all existing and new properties, and that the building inventory be classified, documented and maintained using the Alberta Building Code Major Occupancy Classification system.

Rationale: *Monitoring changes in building stock allows the community to be well positioned to assess the impact of future growth and the changing risk profile of the community, adjusting the concentration and distribution of fire department resources as required. Further a comprehensive review of the business licence process to further establish fire and life safety inspection process along with a frequency of inspections.*

2.8 Community Risk Analysis Overview

The following section provides an overview of the unique characteristics, hazards, and risks in the County specifically that impact the fire service response. This study is not intended to be a comprehensive all-hazards risk and vulnerability assessment. The discussion provides additional context to assess fire department response capability by offering an assessment of some of the medium, high, and maximum risks identified in the interview process and analysis of fire department response data.

- Community growth and anticipated changes to building stock
- Multiple road transportation corridors
  - Major rail transport systems along with staging and switching yards; CN and CP Rail
- Dangerous goods release
- Interface fires mixed with wind and high temperatures during summer months
- Geographic footprint and diverse topography of the county
- Limitations of the composite fire staffing model
- Reliable firefighting water supply (accessible)

2.8.1 Fire Station Response (Demand) Zone

One of the challenges for Rocky View County and the RVCFS is to provide fire, rescue, and first medical response services in an area of 3,836 km^2, with vastly different topography, population density and land development. Theoretically, RVCFS has nine response zones, or demand zones (NFPA 1720), centred on each of the seven RVCFS fire stations and two contract fire stations (Crossfield and Redwood). Table 5 shows the immediate demand zones.

Table 5: RVCFS Demand Zones

Name	Station	Staffing	Location	Zone Details
Balzac	#107	Full-time IAFF	North of Calgary and South of Airdrie	Recent industrial/commercial growth especially in the warehousing and distribution centres. A number of these facilities exceed 1 million square feet.
Bearspaw	#103	Full-time IAFF	West-Central	Relatively densely populated area with "high valued homes". There is a large development proposed for this demand zone. The Bow River flows through this portion of the county and poses a flooding risk.
Elbow Valley	#101	Full-time IAFF	South-West West of Calgary, North of Tsuut'ina First Nation	Is primarily residential with "high valued homes". Limited access and water supply. The Elbow River flows through this portion of the county and poses a flooding risk.
Irricana	#108	Paid-per-call Volunteer	Northeast	Strong agricultural base along with an industrial development that includes the railway industry. The fire service reaches beyond the demand zone to recruit and staff the fire station.
Langdon	#111	Paid-per-call Volunteer	Southeast	Strong agricultural/crop base along with complementary agricultural industries.
Madden	#105	Paid-per-call Volunteer	North-West On northern border of county	Strong agricultural/ranching base along with oil and gas reserves.
Springbank	#102	Full-time IAFF	West, West of Calgary	Springbank (YBW) Airport is Alberta's second busiest airport. Residential with "high valued homes". Predicting large residential growth into the future.
Redwood Meadows		Paid-per-call volunteer Contract	Southwest, Bragg Creek and surrounding areas	The majority of this area is forested and has a high risk of wildland/interface fires residential and tourism.
Crossfield		Paid-per-call Volunteer Contract	Northern portion of the county	Large areas of rural agriculture development which is less densely populated, along with oil and gas deposits.

Based on these different characteristics it is reasonable to consider providing different fire and rescue services, as well as service levels, to manage the unique risks found in the varying demand zones. The structural fire risks along with the differing hazards within each demand zone should be analyzed using the risk matrix methodology. This process should identify high, extreme, and unique risks in these demand zones. As a result, the types and service levels necessary to manage these risks may differ across the demand zones within the County.

Additionally, the County has both urban and rural areas within the county that are not serviced by fire hydrants, have private fire hydrant systems that are not inspected annually or lack alternate water supplies all together. Operationally, firefighters split their fire force in order to respond with an engine and water tender.

Observation #2: As previously discussed, the data regarding building stock and specific properties is limited. Further, the risks and characteristics of the response area covered by RVCFS differ in the demand zones of the seven stations and two contract stations. By identifying the building type and resource demands for each station, this process facilitates an accurate assessment of emergency response capabilities and potential system gaps in each demand zone.

A standard of cover policy identifies high and extreme risks in a community and measures the current performance of the fire service to ensure these risks are managed safely. This policy is used to define services, service levels and outline performance reporting requirements. Where service gaps are identified, the analysis of the unique and common risks in specific demand zone provide elected officials with the information required to make informed service level decisions. This information can be used to identify performance reporting requirements. Appropriate levels of performance reports can be shared with key stakeholders and inform the public.

One of the common themes in the interviews was a lack of public understanding of the general operations of the RVCFS and the lack of information flowing back to key stakeholders. The information gathered in the standard of cover process can be shared both at the senior administrative and elected official levels. This can facilitate a purposeful and informed decision-making framework for both these groups of officials regarding the need for specific services, setting service levels, allocating funding, and establishing performance goals for the RVCFS.

In the absence of regular performance reporting, municipal leaders and citizens may not have a clear understanding of the services and service levels of the RVCFS. Once completed, a standard of cover policy may be shared with the public to provide clarity with respect to services provided and service level expectations.

Recommendation #2: Undertake a comprehensive risk analysis of the individual station demand zones and include it as part of a standard of cover policy

(Suggested completion: 48 - 60 months)

It is recommended that RVCFS undertake the development of a standard of cover for all demand zones within the county. After completing this review, the results should be compiled into a single document and presented to council. Identified service concerns or policy gaps should be discussed with council and policy should clearly reflect the services and service levels provided by the RVCFS. Further, RVCFS SOGs and SOPs should be updated to reflect changes in services or service levels. The process of completing the SOC involves considerable effort. To be successful, this process requires the support of all levels of senior County leadership and county council, as well as adequate resourcing within the RVCFS.

> ***Rationale:*** *A standard of cover policy offers several benefits to the operation and governance of the RVCFS. A comprehensive risk analysis completed at the level of individual demand zones would identify all high, extreme and unique risks within the different demand zones. It also involves a complete review of existing services and service levels, standard operating guidelines and policies, a review of fire department resource distribution and concentration based on risk factors, and fire department performance measurement and reporting.*

Observation #3: Numerous developments within Rocky View County have high value properties with limited water supply for firefighting purposes. Many of the privately managed firefighting water supplies are not maintained as reliable water sources for firefighting. Further, fire responses frequently require splitting the initial response crew of four into two firefighters on the engine and two on the water tender to provide adequate water supply.

Recommendation #3: Complete a review of the water supply for new and current developments within the county

(Suggested completion: 12 - 24 months)

It is recommended that the fire chief, in conjunction with the RVC Planning Department, complete a review on the water supply for new and current building stock. Further it is recommended that the county undertake a complete review of all water supplies suitable for firefighting. The outcome of this would be a formal process for monitoring water supplies with ongoing inspections particularly for future developments.

> ***Rationale:*** *Inadequate firefighting water supplies severely limit the effectiveness of a fire rescue and fire suppression capabilities. Splitting fire crews also impacts their effectiveness, as firefighters must be assigned to the tasks of providing water and not fire suppression or rescue. The intent would be to establish adequate and reliable firefighting water supplies to all current and new buildings.*

2.8.2 Multiple Transportation Corridors

Several of the Provinces major highways as well as a CNR and CPR rail lines travel through Rocky View County. The County is bisected by the Trans-Canada Highway (Highway 1) and Highway 2. Highway 9, a major transportation route between Calgary and Saskatoon, Saskatchewan, also bisects the eastern portion of Rocky View

The primary RVCFS response risk associated with these heavily traveled roadways is an increasing number of motor vehicle collisions (MVCs) as well as an increased probability for a collision involving many victims, or a mass casualty incident. MVCs are typically a moderate risk, low in consequence but relatively probable across the County. From 2017 to 2019, responses to vehicle collisions represented more than 20% of the total number of responses reported by RVCFS.

While events involving multiple casualties are less frequent, these events are considered a maximum risk, as the consequences of these types of events are considerably greater than smaller MVCs and can overwhelm the fire rescue and EMS response resources of smaller communities.

Dangerous goods and hazardous materials are routinely transported through the County on roadways and rail lines. Although the probability is relatively low, an incident involving the release of hazardous materials in any of the populated hamlets within the County could have devastating life safety, economic and environmental consequences.

In addition to roadways, the CPR rail line is routed through the City of Airdrie and the Town of Crossfield, while the CNR rail line is routed through the Town of Irricana and the Village of Beiseker. These rail lines operate throughout the County and are used to transport several different commodities including hazardous materials.[9][10]

There are two airports located within Rocky View County, one in Beiseker and the other in Springbank. Springbank Airport (YBW) is Alberta's second busiest airport in terms of aircraft movements, and the 6th-busiest aerodrome in Canada overall. There were 147,000 aircraft movements in 2014.

Operating 24 hours a day YBW supports light aircraft activity including flight training, recreational flying, corporate and air charter activity and compatible aircraft maintenance, manufacturing and support operations. YBW serves as a base for air tanker fire suppression

[9] *https://www.cpr.ca/en/choose-rail-site/Documents/cp-network-map-2020.pdf*
https://cnebusiness.geomapguide.ca/

aircraft. YBW tenants occupy more than 50 hangars, and the airport is home to more than 400 aircraft.

Observation #4: Dangerous goods and hazardous materials are transported by road and rail through Rocky View County. The quantities and types of materials transported on rail are being monitored and documented based on availability of information. There are also numerous intersecting roadways and rail crossings which increase the risk of collisions involving hazardous materials. A major hazardous material release due to a collision or derailment near populated area is assessed as a low probability, high consequence event that could result in a high to extreme life safety risk.

Recommendation #4: Continue to maintain and improve partnerships with rail and other industry operators, to enhance knowledge of dangerous goods inventory being transported thought the county

(Suggested completion: 36-48 months)

It is recommended that the RVCFS continue review the Protective Directive (PD) 36 information from CN and CP Rail, and other industry operators transporting dangerous goods through the county, on the types and quantities of dangerous goods they transport. In addition to this, it is recommended that the RVCFS continue to engage in training exercises and learning opportunities with these entities on a consistent basis.

***Rationale**: This information is invaluable to the operations and training section of the RVCFS to build response protocols and pre-incident training scenarios. Additionally, a periodic assessment of the types of dangerous goods transported through the county informs future risk assessments and regional hazard identification and risk assessments (HIRA).*

2.8.3 Dangerous Goods Response

The presence of gas and oil within the County, as well as processing facilities, pipelines and sour gas compound the risk of a release of hazardous materials in the County. Depending on the magnitude of the release and risk to life safety, an event involving the release of a hazardous material may be categorized as high or maximum risks (see Table 6.).

Controlling a release of hazardous materials often requires highly specialized training and equipment. Although the probability of an incident of this type is somewhat higher for RVCFS given the quantities of hazardous materials being transported by road, rail and pipeline, the resources required to safely manage these events exceed the required competencies and capacity in all but the largest communities in Alberta. As a result, fire departments from smaller and mid-sized municipalities typically only provide an initial response to identify the issue and initiate an evacuation process as required. In most cases, significant releases almost always require support from agencies able to maintain specialized competencies and equipment to completely control the release.

2.8.4 Wildland Urban Interface Fires

Residential, agricultural, and industrial development areas continue to increase, and as a result, due to the high winds and dry conditions typical to this area of Alberta, spring, summer and fall are high-risk seasons for wildfire.

Rocky View County has developed the Bragg Creek FireSmart Zone Planning Committee, as Bragg Creek is one of the communities identified as being at high risk of wildfire. The committee also developed the Greater Bragg Creek FireSmart Mitigation Strategy (PDF), which includes both strategic and operational options to reduce wildfire threat for inclusion in municipal development, natural resource, and forest protection plans. The committee has worked to educate local residents about FireSmart principles through meetings, media and demonstration plots within the community.

The County is also subjected to grassland wildfires and requires strategies to mitigate these concerns through best practices in engineering and education to reduce the threat.

Observation #5: There is an opportunity to enhance the delivery of the FireSmart principals applied in Bragg Creek to the other areas within the county that have wildfire interface risks. There are grants available through provincial programs to assist municipalities to complete plans and implement risk reduction strategies. Joint response to larger prolonged wildfire incidents could be partially funded through the Municipal Wildfire Assistance Program which compensates the municipality based on a funding formula for overall incident expenses.

> ***Recommendation #5: Complete a community wildfire protection plan and implement the FireSmart program throughout all wildland interface areas within the county***
>
> *(Suggested completion: 24 - 36 months)*
>
> *It is recommended that the fire chief research the possibility for a Forest Resource Improvement Association of Alberta (FRIAA) grant to complete a community wildfire protection plan and further the FireSmart program implementation in wildland urban interface areas beyond the Bragg Creek area. Further, in cooperation with provincial and forestry industry representatives, develop a joint strategy to assess risk from wildfire and industry lumber storage.*
>
> > ***Rationale:*** *The community wildfire protection plan along with the FireSmart program will provide business owners and homeowners alike the information along with the opportunity to prevent the spread of wildfire within their respective areas in the county.*

The increased economic activities such as industrial/commercial activity over the past few years has seen unprecedented growth within the County. Many nationally recognized brands and companies have made the County a base of operations for western Canada and beyond. These activities have put the County on the map as a business-friendly location that is

geographically well positioned. This economic activity has more room to grow and expand within the County, into the future.

Tourist Activity continues to grow especially in the "Tourism Heart of Rocky View County", Bragg Creek. It provides year-round tourist activities from fall/winter activities of skiing and snowshoeing to spring/summer activities of hiking, biking and fishing. Artisans and art lovers flock to Bragg Creek for inspiration.

2.8.5 Limitations of the Full-Time, Part-time and Paid-Per-Call Volunteer Staffing Model

The Rocky View County Fire Service operates a composite fire service that includes full-time paid, part-time paid and paid-per-call volunteer staffing model. While very cost effective, these models are not without challenges. The number of firefighters responding to emergencies can be unpredictable. Training commitments can conflict with personal commitments making it difficult to maintain required competencies. Turnover of paid-per-call volunteer and part-time firefighters can be high and persistent, increasing recruitment and training costs. Recruitment can be a challenge. Finally, fewer paid-per-call firefighters can maintain long-term commitments which limits the number of senior paid-per-call staff with experience and leadership skills.

Paid-per-call firefighters' compliments vary depending upon the demand zones (fire station) where some demand zones have waitlists to participate in the station and others are having to recruit members outside of their demand zones and are still struggling to maintain an active paid-per-call volunteer firefighting compliment.

The RVCFS paid-per-call volunteer firefighters are clearly proud and committed members who identify that training objectives and requirements are overall manageable. RVCFS full-time members work a 24-hour shift rotation which is a challenge with respect to training delivery and upkeep of training competencies.

Observation #6: The fire and life safety inspections are done by request or complaint. There are inspections distributed to the fire crews that are conducted inconsistently. Numerous major facilities of high value currently exist or are in the development process within the county. These facilities contribute to the positive economic position of Rocky View County.

Recommendation #6: Develop a fire prevention branch with the capability to support ongoing cyclical inspections of high-risk properties and life safety systems

(Suggested completion: 12 - 24 months)

It is recommended that RVCFS implements dedicated fire prevention capability to support increased fire prevention inspections and public education program delivery that are aligned with the county's current program. It is Behr's understanding that a full-time fire inspector position was implemented during this review. The duties of this position should include but not be limited to developing a schedule of inspections for the high-risk buildings and private water supplies within the County, conducting highly technical industrial and commercial inspections, and providing inspection training for the fire crews.

> ***Rationale:*** *A dedicated inspection branch with the capacity to ensure high-risk property inspections are conducted on a regular basis and that the crew (company) inspections are conducted on a consistent basis across all shifts. This provides the capacity to maintain a property database, inspections and compliance monitoring, and crew inspections duties as required.*

Observation #7: Each RVCFS station largely acts as an independent fire department within the RVCFS system but not necessarily working together towards a common purpose and goal. This practice does not facilitate a cohesive model to achieve common goals and objectives.

Recommendation #7: Complete a mission statement along with vision and mandate exercise with all the fire stations that are under direct management of RVCFS

(Suggested completion: 0 - 12 months)

It is recommended that the fire chief generates an opportunity for all county fire stations to have input into and participate in creating a mission, vision and core values mandate. The intent of this exercise is to advance the RVCFS, so all members recognize themselves as being part of one single fire service.

> ***Rationale:*** *This exercise will foster a more inclusive, cohesive and coordinated fire service.*

2.8.6 Severe Weather Events

As identified in Risk Assessment for Community completed by Rocky View County, Community Emergency Management Program in 2020, the County experiences significant risks from severe weather events. The following severe weather events are listed as extreme or very high:

- Forest fire (wildfire)
- Floods (watercourse)
- Tornado
- Floods (rainfall/runoff)
- Winds

The County is susceptible to wildfire in the case of forests and grasslands. Further, with winds included in the top five severe weather events within the county they can accelerate fire spread should fire occur concurrently.

The County has also experienced numerous flooding events on its waterways. Flooding events are typically not high life safety events in Alberta but pose significant risks to critical infrastructure.

Additionally, Tornadoes and microburst winds in populated areas may pose a considerable threat to life safety. High winds can cause significant property damage and interruption to critical infrastructure such as power distribution systems, communication systems and transportation corridors.

Extreme weather events are often protracted and impact large areas. These events often require a multi-agency response coordinated by emergency operations centre staff. As a result, wildfires, floods and high wind events can draw down the response capacity of a fire service. This is particularly true for composite fire services that utilize paid-per-call volunteer firefighters, where these firefighters have other obligations to manage, and it is a challenge to sustain a multiple-day response. The RVCFS response plans should anticipate this limitation.

SECTION 3
DEPARTMENT PROFILE

3.1 Department Overview

Rocky View County Fire Services was initially made up of the Irricana, Langdon and Madden Volunteer Fire Departments. Today's RVCFS is a composite fire service, relying on a group of career full-time firefighters, supported by part-time and paid-per-call volunteer firefighters responding out of seven fire stations (four career full-time and three paid-per-call volunteer). These stations include:

- Elbow Valley (full-time)
- Springbank (full-time)
- Bearspaw (full-time)
- Balzac (full-time)
- Madden (paid-per-call volunteer)
- Irricana (paid-per-call volunteer)
- Langdon (paid-per-call volunteer)

RVCFS is a composite fire service, relying on minimal full-time firefighters, supported by part-time, paid-by-call, and volunteer firefighters responding out of seven fire stations (four career and three paid-per-call volunteer). RVCFS employs a total of 300 staff including administration, career, paid-per-call volunteer firefighters, to provide fire, rescue, and medical first response services to residents and visitors of Rocky View County. There are also two contracts for augmented protection with the Town of Crossfield and the Townsite of Redwood Meadows along with mutual aid and automatic aid agreements to provide reciprocal response aid from other neighbouring communities if requested.

The people of this service have dedicated their time and energy to faithfully serve their communities by using training, technology, and commitment in providing valued service to the citizens and visitors to the County. RVCFS is a proud department that values their past, embraces the present and looks forward to the challenges of the future.

Modern fire departments have evolved into a critical component of a community's social safety net. Whereas early fire departments were established specifically to combat structure fires that, at the time, were often devastating. Today, fire departments are also called upon to respond to medical emergencies, technical rescues, and dangerous goods releases, often working together with other response agencies. As a result, fire departments must be properly structured, adequately resourced and equipped to deliver these services safely and competently.

Rocky View County is a large and diverse municipal district (3,885 km²) with a mixture of urban, rural, commercial and industrial communities with a 2020 census population of 40,948. RVCFS fire stations, staffing and resources are situated throughout the county in anticipation of responding to the identified risks and needs.

The Rocky View County Council has developed a Strategic Plan that outlines the council's visions, values, strategic themes, and objectives. As well, a corporate business plan was developed to assist with reaching council objectives. One of council's strategic themes is to manage growth while maintaining financial health.

The anticipated growth in development and population in certain areas of the county will challenge RVCFS to maintain the current level of service going forward. It is desirable to ensure current services and infrastructure is in step with future development. In the case of a fire service, the lead-time to have stations, staffing and equipment in place at the appropriate time is validating the need to develop a masterplan that is aligned with council priorities.

While volunteer fire departments have a long-valued service history with their respective communities throughout North America, there may be a point that necessitated a transition toward a hybrid full-time/volunteer staffing model, typically referred to as a composite delivery model. RVCFS has transitioned to this model as a result of increased call volume, complexity and resource demand in certain areas of the County.

3.1.1. Mission, Vision of Rocky View County

A department mission is an essential element of department identity as it describes the purpose firefighters serve and why the department exists. Vision offer insight into where the department strives to be in the future. The following mission and vision statements were provided, but not specific to RVCFS:

Rocky View County Mission Statement

To preserve the Rocky View County's diverse landscape, lifestyle, and economic opportunities by serving our residents and businesses so that they can flourish and thrive

Rocky View County Vision Statement

Rocky View County's rural and urban communities uniquely contribute to a diverse municipality that leads with integrity and intelligently manages growth

3.2 Human Resources

Whether full-time (career), full volunteer, paid-on-call or paid-per-call volunteer; a fire department's employees are its most valuable asset. Emergency services are often delivered under difficult and stressful circumstances, with little room for error. Fire departments must be adequately resourced with staff, equipment, and training to be effective in delivering the highly technical services to achieve service excellence. As a result, a considerable effort is warranted to ensure that only highly committed, team-oriented, and physically able employees are recruited, trained, and retained.

An effective organizational structure must promote and support strong, effective leadership, sound business management and continuity, and effective communication with opportunities for staff development.

3.2.1 Staffing Complement

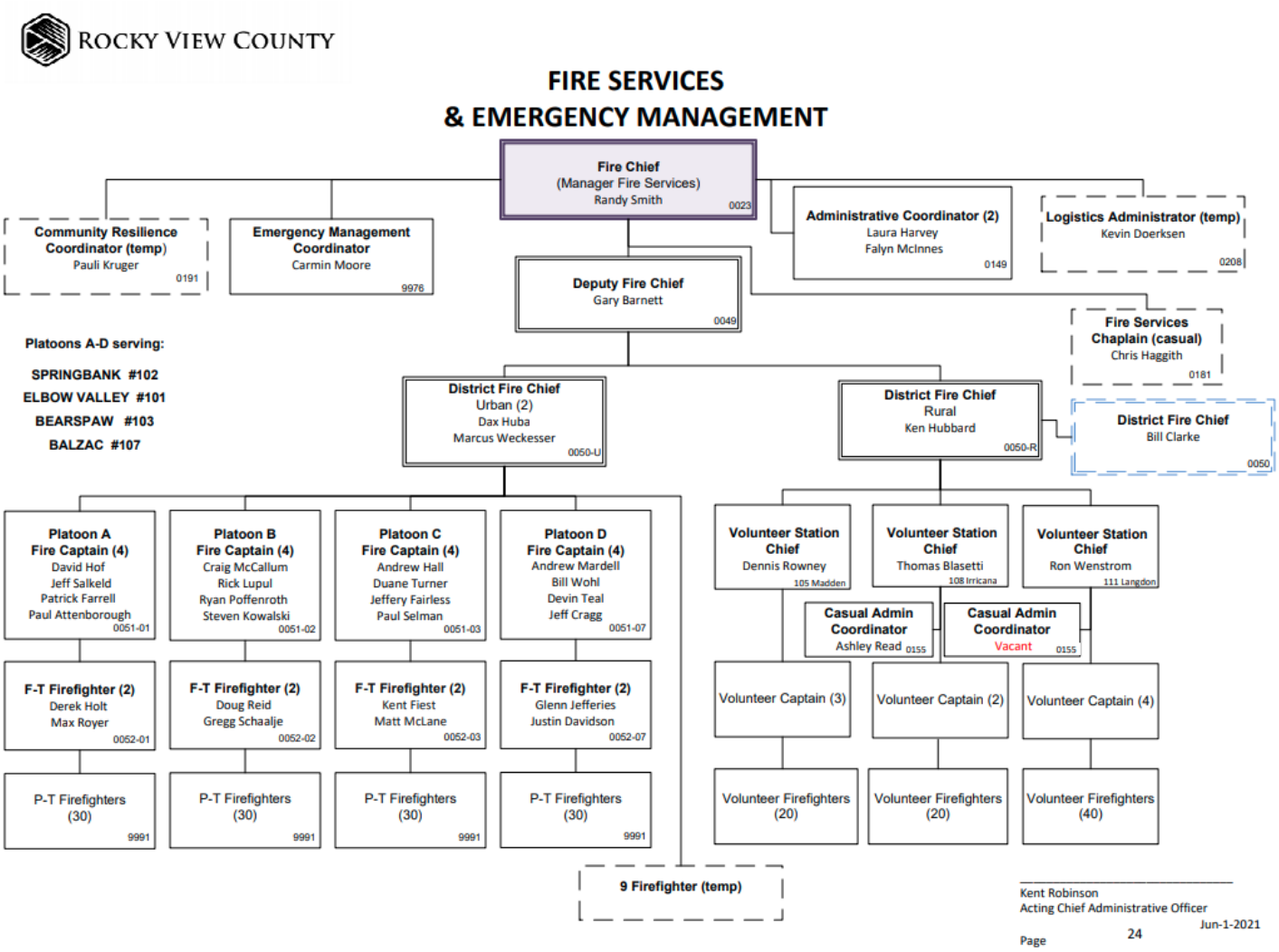
The RVCFS maintains an administrative structure supporting a combination of career full-time and part-time firefighters, paid-per-call (volunteer) firefighters to deliver emergency services, and fire prevention within Rocky View County. The current RVCFS organizational structure represents the career full-time, part-time and paid-per-call volunteer positions:

As illustrated in Figure 4: RVCFS Organizational Structure, the RVCFS is currently funded to employ the following full-time, part-time and casual positions:

- 1 fire chief/emergency manager
- 1 deputy chief
- 3 district chiefs
- 16 full-time captains
- 8 full-time firefighters
- 120 part-time firefighters
- 2 administration coordinators
- 1 emergency management coordinator
- 1 community reliance coordinator (temporary)
- 1 logistics administrator (temporary)
- 1 fire service chaplain (casual)
- 120 paid-per-call volunteer firefighters

Note: *RVCFS staffing levels of part-time and paid-per-call volunteer firefighters vary given the recruitment and retention challenges.*

Figure 4: Rocky View Fire Services and Emergency Management Organization Chart[11].



[11] *Source: Rocky View County Fire Services, 2021*

Table 6: RVCFS Staffing by Station (per shift)

Station	Staffing	
Station # 101 Elbow Valley Staffing 4	• Full-time captain firefighter (1)	• Part-time firefighters (3)
Station # 102 Springbank Staffing Min. 4 – Max .6	• Full-time captain firefighter (1) • Full-time firefighters (1)	• Part-time firefighters (4)
Station # 103 Bearspaw Staffing Min. 4 – Max .6	• Full-time captain firefighter (1)	• Part-time firefighters (5)
Station # 105 Madden Staffing as available	Paid-per-call volunteer: • Station chief (1) • Captain firefighter (1) • Lieutenant firefighters (2)	• Paid-per-call volunteer firefighters (16)
Station # 107 Balzac Staffing Min. 4 – Max .6	• Full-time captain firefighter (1) • Full-time firefighter (1)	• Part-time firefighters (4)
Station # 108 Irricana Staffing as available	Paid-per–call volunteer: • Station chief (1) • Captain firefighter (1) • Lieutenant firefighters (2)	• Paid-per-call volunteer firefighters (16)
Station # 111 Langdon Staffing as available	Paid-per-call volunteer: • Station chief (1) • Captain firefighters (2) • Lieutenant firefighters (2)	• Paid-per-call volunteer firefighters (36)

3.2.2 Contracted Fire Departments

The County have agreements with the Town of Crossfield and the Townsite of Redwood Meadows to provide fire response coverage to defined areas within the county. Each of these fire departments has their own respective staffing and organizational structure that includes paid-per-call volunteer fire captains, lieutenants, and firefighters. Each of these services maintains a contractual relationship to the RVCFS fire chief.

Observation #8: RVCFS relies heavily on maintaining a sufficient complement of part-time firefighters to staff career fire stations in the Elbow Valley, Springbank, Bearspaw and Balzac fire stations. As with any volunteer or paid-per-call volunteer department, RVCFS has been challenged with the rate of turnover for part-time staff. This could be because of firefighters transitioning to full-time opportunities within the RVCFS or to other departments, as well as other personal reasons.

The ongoing challenge of maintaining a sustainable part-time firefighter pool is making it difficult to ensure sufficiently trained and experienced frontline staff on shift. The initial cost of training and outfitting a single firefighter is estimated to be $5,000.00 dollars or more. This doesn't include annual training and residual costs of maintaining equipment.

Recommendation #8: Conduct a staffing ratio analysis and pursue full-time staffing options in the Elbow Valley, Springbank, Bearspaw, and Balzac fire stations

(Suggested completion 24 - 48 months)

It is recommended that the fire chief should undertake a critical review of the benefits and challenges of relying on part-time firefighters to staff career stations. The review should include a study of full-time firefighters to part-time firefighters considering the financial and operational needs to determine the optimal ratio.

***Rationale:** The reliance on part-time firefighters to routinely fill staffing requirements is something that should be thoroughly evaluated. While there are financial advantages to relying on part-time staff to fill full-time positions, the advantage of a full-time complement includes enhanced retention, commitment, availability, and consistency.*

3.2.3 Department Leadership, Management and Operations

Effective leadership and management start at the top of an organization to guide it towards success. With increasing pressure to find value for money, elected officials are relentlessly looking for ways to increase the value for money proposition for their citizens. Department managers are challenged to maintain or increase services while avoiding services cost increases. This environment generates the need for communities to adopt more business-like approaches for delivering public safety services. Managers of fire and emergency services are required to develop private sector-like business practices such as:

- Conducting regular market (external) cost analysis
- Developing performance measures and objectives for core services including emergency response, fire prevention, public education and health and safety
- Regularly monitoring and reviewing performance to determine effectiveness
- Ensuring value for service

In some cases, this requires a shift from the historical approach of a focus on day-to-day service delivery to scanning the future and moving towards a department that is responsive to change, sustainable and efficient.

Fire department leaders must also adopt a more business-like approach to leading and managing their departments. Along with their municipality's senior administration, they need to be proactive and examine all aspects of their service delivery systems to look for innovative efficiencies and effectiveness.

The following theoretical figure suggest how to allocate leadership time to effectively operate a fire department, scan for improvement opportunities and implement system improvements:

Figure 5: Fire Service Time Management

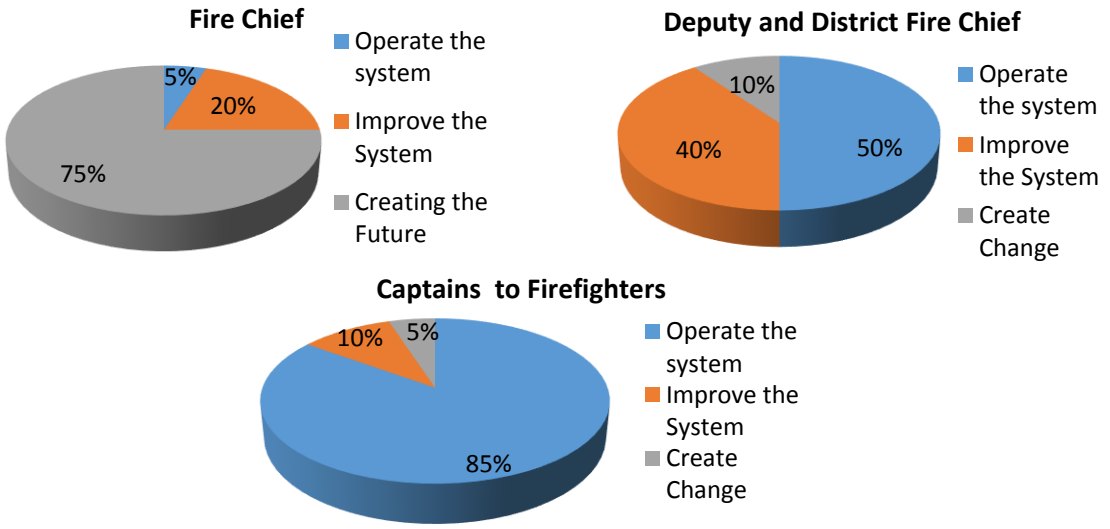


Figure 5 illustrates two important points: one, the amount of time allocated to operating, improving, and identifying strategy varies at different levels in the organization; two, senior leadership positions in the RVCFS must retain the capacity to identify and implement change.

When compared to similar sized departments, RVCFS administrative leadership team size is consistent with industry best practices (see Section 3.15 Municipal Comparators). The number of positions reflect their responsibilities; however position workload appears to be of concern. The administrative positions are assigned specific portfolios for the safe and effective management and leadership of the department.

It is extremely important that administration works closely as a team. A highly functioning team is one that understands each person's roles and responsibilities and brings their skills together in a collaborative manner to lead the organization in achieving their vision, mission, and goals. Therefore, it is important to ensure that accurate and updated job descriptions are made available to each team member to promote role clarity.

Traits of a high performing team include:

- Trust
- Strong communication
- Transparency
- Collaboration
- Support
- Clarity
- Adaptive
- Reflective

Leadership is a function of all members of the RVCFS. Chief Officers to firefighters contribute to the leadership required to achieve service excellence in a fire department. Day-to-day station leadership and management is the responsibility shared with the district chiefs and each station officer. These positions play a critical role in leading, managing, and mentoring firefighters. This role is crucial in ensuring firefighter practice is aligned with department policy, as well as being the critical link in the chain of command between firefighters and chief officers.

Current community growth projections, risk factors, paid-per-call volunteer attrition and increasing management demands associated with maintaining a diverse composite service will require additional operational and administrative staff capacity. The chief officers should be focusing most of their time on improving the current system and creating change to meet future challenges. In our opinion there is a shortfall with administrative level supervision/management capacity. The recommended organization response matrix would allow for roles and responsibilities to be evenly distributed through the administration team and officer ranks while creating capacity to undertake and complete fire service management and strategic level requirements including those recommended in this FSMP.

RVCFS officers and firefighters are responsible for the delivery of most services. They are the primary point of interaction between a fire department and someone in crisis or the public. Their leadership is exhibited by their professionalism and commitment to service excellence. Although their influence may be limited to their immediate coworkers, their role in forming public perceptions regarding the value and support of their services is critical.

Finally, the importance of maintaining a team atmosphere across the department and commitment to common goals cannot be overstated. Despite the varying roles and responsibilities assigned to administrative, senior officer and more junior staff, the characteristics of a successful team should be promoted at every level in the organization. As strategic direction and vision are identified, they should be openly shared across the department.

This is especially true in a unionized environment where a division between in-scope and out-of-scope staff can erode the sense of belonging to a common team. Further to that, officers

and firefighters may work in isolation from the fire chief and other chief officers. This heightens the need for senior leadership positions, including the chiefs, and station officers to communicate frequently and bridge perceived gaps regarding commitment to mission and service excellence. It also highlights the need to recruit only the best candidates to join the RVCFS team.

Based upon our review, the RVCFS is positioned to achieve service excellence in the future. Led by the fire chief, the leadership team needs to work closely together to guide and manage the department. The administrative team is working towards a positive and constructive relationship with the Rocky View County Firefighters Association, IAFF Local 4794 executive. Further, RVCFS firefighters show a high degree of pride and commitment to the department and their community.

Observation #9: During the station tours and interviews, the Behr team detected a degree of concern towards the move from paid-per-call volunteer to career firefighting staff from a few of the volunteer members. While this was not the feeling of the majority, it could adversely affect the operational cohesiveness, teamwork, and the overall effectiveness of the service if this resistance is not addressed.

Recommendation #9: Enhance the current level of communication with RVCFS administration and all senior officers with the focus to address the concerns raised about the transition from paid-per-call volunteer to career firefighting staff

(Suggested completion: 3 - 6 months)

It is recommended that the RVCFS administration team, paid-per-call volunteer chiefs and senior officers engage with the leaders of each fire station, with the purpose of addressing this transitional resistance by confirming the value of paid-per-call volunteers, clarifying roles and responsibilities. The overarching goal is to re-establish a cohesive, high-performing team that has a clear vision and understanding of RVCFS' direction and how the community and public will be well served.

Rationale: *An organizational change leading practice is to acknowledge and address resistance as an opportunity gain greater clarity and understanding of the effects of change. The transition from paid-per-call volunteer to full-time has been typical for the majority of fire services across Canada. It is essential for the formal leadership to initiate respectful dialogue and engagement in order to retain trust, understanding and sustain organizational effectiveness.*

3.2.4 RVCFS Administrative Positions

The capacity of the RVCFS administrative positions is strained to complete their current respective roles and responsibilities. It was mentioned that specific responsibilities were creating capacity challenges and that additional assistance may be required.

Current community growth projections, risk factors, firefighter attrition and increasing management demands associated with maintaining a composite service will require additional operational and administrative staff capacity. The chief officers should be focusing most of their time on improving the current system and creating change to meet future challenges. In our opinion there is a shortfall with administrative level supervision/management capacity. The recommended organization response matrix would allow for roles and responsibilities to be effectively managed throughout the administration team while creating capacity to undertake and complete fire service management and strategic level requirements including those recommended in this FSMP.

3.2.4.1 Manager Fire Services/Fire Chief (April 2013)

The manager fire services/fire chief provides leadership, coordination, collaboration and direction to ensure that services are provided to senior management, employees, residents and stakeholders in a timely, accurate, effective and efficient manner. The manager participates in strategic planning, identifies budget requirements and manages personnel requirements, issues and concerns. The manager fire services provides leadership, coordination, collaboration and direction to all full-time, paid-per-call volunteer fire employees.

3.2.4.2 Deputy Fire Chief (November 2016)

The deputy fire chief provides leadership, coordination, collaboration and direction to ensure that services are provided to employees, residents and stakeholders in a timely, accurate, effective and efficient manner. The deputy chief works in conjunction with the manager to develop short and long-term strategies for the department.

3.2.4.3 District Fire Chief – Urban (November 2020)

Reporting to the deputy fire chief, the district fire chief-urban is responsible for overseeing daily operational activities, response procedures and fire services provided to Rocky View County residents by full-time urban fire stations. The incumbent provides leadership and guidance to station officers and firefighters in urban stations regarding personnel issues, the provision of fire suppression and medical services, training, fire prevention, inspection and investigation activities. They ensure all documentation and legislative requirements are met in a timely fashion. They demonstrate an active and ongoing commitment to and role within the community in which they work (this relates to community involvement, problem solving, education, etc.). The district chief-urban also supports the functions of headquarters.

3.2.4.4 District Fire Chief – Rural (November 2020)

Reporting to the deputy fire chief, the district fire chief- rural is responsible for coordinating fire prevention efforts and supporting operational activities, response procedures and fire services provided to Rocky View County residents by the paid-per-call volunteer stations The Incumbent provides leadership and guidance to Rocky View

County Fire Services paid-per-call volunteer personnel regarding employee issues and supports the provision of fire suppression, medical assist services, training, fire prevention inspection and investigation activities. They are responsible for proper application and ensuring compliance of provincial and municipal statutes, including Alberta Safety Codes, Alberta Fire Code, and Alberta Building Code and explosives Act (as referenced by fire code). They demonstrate an active and ongoing commitment to and role within the community in which they work (this relates to community involvement, problem solving, education, etc.). The district chief-rural also supports the functions of headquarters.

3.2.4.5 Logistics Coordinator

Reporting to the deputy fire chief, fire services and emergency management, this position is a materials buyer as well as a coordinator for fire prevention requests. This position is responsible for purchasing and inventory control of materials, coordination of equipment repair and/or testing, stationery and consumables for the Fire Services and Emergency Management department, coordinating activities involved with procuring goods and services, the logistics administrator will negotiate with vendors to obtain optimum quality, price, and delivery in accordance with established policies and procedures of the County.

This position is also responsible for the daily coordination and tracking of incoming requests for fire safety inspections, burn and fireworks permits.

Observation #10: During the interviews and survey with staff, an emerging theme was the desire for RVCFS administration to improve their internal communication processes amongst the RVCFS team members and key stakeholders. It is acknowledged that daily virtual team sessions are conducted by the fire chief and that the COVID-19 pandemic has impacted the opportunities to have in person, face-to-face discussions.

Recommendation #10: Enhance internal communications with the fire chief, deputy chief and district chiefs

(Suggested completion: 3 - 6 months)

The intent of this recommendation is to continually reaffirm and measure the progression of agreed upon goals, priorities and defined timelines. For example, this could be achieved by planning sessions, or the development of work plans. Furthermore, the development of a work plan with specific, measurable, realistic attainable and timely (SMART) goals will ensure that the RVCFS administration team efforts are focused on a unified direction.

***Rationale**: High performing teams have the following attributes: clear goals tied closely to team and organizational priorities; understand how their work fits into the organizational mission, defined roles and responsibilities, communicate clearly and respectfully, manage work and deadlines based on priorities and trust and respect each other.*

Observation #11: Currently, both the fire chief and union president have a respectful working relationship with a common vision for advancing RVCFS. In the past there have been issues towards fostering a positive labour management environment.

Recommendation #11: RVCFS administration and Rocky View County Fire Fighters Union IAFF Local 4794 should develop a working relationship agreement document between the two parties

(Suggested completion: 3 - 6 months)

A recommended industry best practice is to develop a working relationship agreement. The purpose of this agreement is to clarify lines of communication, roles and responsibilities in order to collaboratively build a high performing organization.

***Rationale**: Where organized labour is woven into an organization, a professional and respectful working relationship between the administration and bargaining unit is a cornerstone to promote effectiveness and cooperation between all parties. With this type of philosophy embraced by the senior administration and Local 4794 executive members RVCFS will become a high performing organization.*

Observation #12: The district fire chiefs are required to be on call-out on a rotational basis. This requirement places additional demands on their capacity to effectively manage their respective administrative responsibilities. It is recognized that RVCFS personnel adhere to dispatch protocols for efficient escalation of required resources at the scene of any emergency however no SOG currently exist.

Recommendation #12: Develop an updated administration response matrix and SOG

(Suggested completion: 6 - 9 months)

It is recommended that the fire chief, in consultation with the deputy chief and district chiefs formalize an 'alarm assignment response matrix' and SOG that is embedded with the dispatch protocols. The first responding officer declares the alarm response required as part of the size-up. For example:

- *First Alarm: Routine calls that do not require additional support from an assisting station or the recall of on-call staff. Primary response has the capacity to mitigate.*
- *Second Alarm: Working fires or emergencies that require a response from the assisting station and the recall of on-duty staff (district chief).*
- *Third Alarm: Major events that require additional response from assisting stations, recall of district chief and additional chief officers.*
- *General Alarm: Recall of all on-call and off-duty firefighters.*

***Rationale:** This SOG will assist incident commanders with administrative support and response escalation when warranted, while limiting the need for duty chiefs to attend emergency scenes when not required.*

3.2.5 RVCFS Non-Administrative Positions

All RVCFS full-time and part-time firefighter positions are represented by the IAFF Local 4794 through collective agreement between Local 4794 and Rocky View County, with an effective date of January 2018 to December 2019. The county maintains position descriptions that include the position purpose, duties, and responsibilities, as well as the qualifications necessary to hold each position.

3.2.5.1. Captain (September 2020)

Reporting to the district chief, the fire captain is responsible for protecting life and property as the senior officer for their assigned station. The incumbent provides leadership and guidance to Rocky View County Fire Services personnel assigned to their platoon with personnel issues, in the provision of fire suppression, medical assist services, training, fire prevention, inspection and investigative activities. The fire captain will demonstrate an active and ongoing commitment to and role within the community in which they work (this relates to community involvement, problem solving, education, etc.). They ensure all documentation and legislative requirements are met in a timely fashion. The fire captain also supports the functions of headquarters.

3.2.5.2 Lieutenant (September 2020)

Reporting to the station captain or, in their absence, the district chief, the lieutenant is responsible for protecting life and property as the officer for their assigned platoon/station. The incumbent provides leadership and guidance to Rocky View County Fire Services personnel assigned to their platoon with personnel issues, in the provision of fire suppression, medical assist services, training, fire prevention, inspection and investigative activities. They ensure all documentation and legislative requirements are met in a timely fashion. Currently, this position is only filled short-term and in an acting capacity when a captain is on leave.

3.2.5.3 Firefighter (Base, Part-time, Class 1 -4)

(Firefighter Job Description September 2020, Part-Time firefighter Job Description December 2018)

Reporting to a fire captain, the firefighter is responsible for fire suppression, rescue medical assist services and other related fire and life safety services and for fulfilling these duties rapidly, efficiently and safely under emergency conditions frequently involving considerable hazard. The firefighter may be responsible for fire ground and emergency operations until command is assumed by an officer. They deliver programs for the prevention of fires, saving of life and property and public safety education. The firefighter will demonstrate an active and ongoing commitment to and role within the community in which they work (this relates to community involvement, problem solving, education, etc.). The work also includes routine duties ensuring the firefighting vehicles are properly maintained, conducting routine maintenance of equipment and fire department facilities and assisting with training of other firefighters.

3.2.5.4 Fire Inspector (September 2020)

Reporting directly to the deputy fire chief, the fire inspector is responsible for leading and actively participating in the provision of Fire Safety Education and Code enforcement. Through the Fire Service Quality Management Plan (QMP), the fire inspector ensures consistent attention to operational preparedness and ongoing community planning. They conduct fire investigations and conduct or direct fire inspections. The fire inspector directs and coordinates daily public interaction and ensures the provision of public education related to prevention safety and risk mitigation through a strategic community approach.

3.2.5.5 Paid-Per-Call Volunteer Captain (September 2021)

Reporting to the station chief, the fire captain is responsible for protecting life and property as the senior officer for their assigned station. The incumbent provides leadership and guidance to Rocky View County Fire Services personnel assigned to their platoon with personnel issues, in the provision of fire suppression, medical assist services, training, fire prevention, inspection and investigative activities. The paid-per-call

volunteer captain will demonstrate an active and ongoing commitment to and role within the community in which they work (this relates to community involvement, problem solving, education, etc.). They ensure all documentation and legislative requirements are met in a timely fashion.

3.2.5.6 Paid-Per-Call Volunteer Lieutenant (September 2020)

Reporting to a paid-per-call fire captain, the paid-per-call volunteer lieutenant is responsible for fire suppression, rescue, medical assist services and other related fire and life safety services and for fulfilling these duties rapidly, efficiently and safely under emergency conditions frequently involving considerable hazard. The paid-per-call volunteer lieutenant will generally lead/supervise an engine/rescue company and from time to time be responsible for fire ground and emergency operations until a senior officer assumes command. They deliver programs for the prevention of fires, saving of life and property and public safety education. The paid-per-call volunteer lieutenant will demonstrate an active and ongoing commitment to and role within the community in which they work (this relates to community involvement, problem solving, education, etc.*)* The work also includes routine duties ensuring the firefighting vehicles are properly maintained; conduct routine maintenance of equipment and fire department facilities and assisting with training of other firefighters.

3.2.5.7 Paid-Per-Call Volunteer Firefighter (September 2020)

Reporting to a paid-per-call volunteer fire captain or paid-per-call volunteer station chief, the paid-per-call volunteer firefighter is responsible for fire suppression, rescue, medical assist services and other related fire and life safety services and for fulfilling these duties rapidly, efficiently and safely under emergency conditions frequently involving considerable hazard. The firefighter may be responsible for fire ground and emergency operations until command is assumed by an officer. They deliver programs for the prevention of fires, saving of life and property and public safety education. The work also includes routine duties ensuring the firefighting vehicles are properly maintained, conducting routine maintenance of equipment and fire department facilities and assisting with training of other firefighters.

3.3 Remuneration, Recruitment, Selection, Retention, Promotion

Public service is a sought after and competitive employment sector. Local governments must balance the cost of competitive salaries and benefits to attract with their search for the best candidate.

3.3.1 Remuneration

Rocky View County is committed to recruiting the best candidates possible. Competitive salaries and benefits are offered to all administrative positions. The administrative positions on the corporate salary grid are determined by a review of their respective job informaiton questionnaire (JIQs). The manager fire services/fire chief, deputy chief, and district chiefs are

provided a competitive salary in alignment with senior management positions in Rocky View County.

All non-administrative uniformed in-scope positions are provided hourly rates of pay and benefits as negotiated in the 2018-2020 collective agreement between Rocky View County and the Rocky View County Fire Fighters' Union, IAFF Local 4794. Most of the rates of pay are negotiated relative the first-class firefighter's hourly rate of pay. This negotiation, or arbitrated, approach is common to all fire departments represented by IAFF locals. Hourly rates are typically based on local conditions and the comparative rates of other IAFF locals across the province.

In addition to competitive salaries, the County offers full-time employees additional financial benefits including:

- A defined benefit pension plan
- Extended health, dental and vision care
- Drug and medical appliance benefit
- Life/disability insurance
- Long service recognition

The total remuneration package offered both administrative and non-administrative full-time employees of the RVCFS is competitive. Part-time employs are offered some of the above benefits on a pro-rated hour basis. Paid-per-call volunteer firefighters are not eligible for any benefits.

3.3.2 Recruitment

Recruitment is a key function of all emergency service agencies. The community places a tremendous amount of faith in their fire department personnel, trusting them to provide the highest level of service when the public is most vulnerable. As such, the process used to select personnel should be very comprehensive.

Experience within the emergency services industry has shown that relaxing the requirements for entry-level positions is not the answer for recruiting any employee. Instead, most departments have had the greatest success when qualified applicants are encouraged to apply. This process often involves targeted advertising and promotional campaigns aimed at demonstrating the benefits, as well as the personal satisfaction of becoming part the fire service. Existing firefighters should be encouraged to participate in any such campaign.

Most interview and survey participants suggested that RVCFS's firefighter recruiting efforts for both career and paid-per-call volunteer firefighters were successful in attracting qualified applicants.

A comprehensive process for recruiting full-time and part-time firefighters is established for fire suppression staff. Job postings including minimum requirements and process are listed on the county website.

The minimum qualifications for all RVCFS firefighters include:

- 18 years of age or older
- Physically fit
- Non-GDL driver's license
- Clean criminal record, medical clearance, and drivers abstract

Additionally requirements for:

Part-time firefighters include:

- Standard first aid and CPR "C" certificate
- Class 3Q license (or equivalent)
- NFPA 1001 Level 2 certification with IFSAC or ProBoard seal
- Standard First Aid and CPR 'C'
- High school graduation

Full-time firefighters include:

- Class 3Q license (or equivalent)
- NFPA 1001 Level 2 certification with IFSAC or ProBoard seal
- NFPA 1002 Driver/Operator
- Standard First Aid and CPR 'C'
- WHMIS
- High school graduation

Paid-per-call volunteer firefighters include:

- For primary response paid-per-call volunteers
  - Must live within an 8 km radius or 15-minute drive
- For secondary response paid-per-call volunteers
  - May live up to 1 hour drive (20 minutes preferred)

3.3.3 Selection and Training of Recruit Firefighters

The RVCFS has an extensive part-time and full-time firefighter selection process. After submitting their application and meeting the minimum qualifications, firefighter candidates are required to move through a multi-stage process.

3.3.3.1 Part-time Firefighter Recruit Selection and Onboarding Process

Applications are only accepted when there is an open competition but can build a profile at any time on the County career website. Candidates meeting all the initial requirements begin the following process:

Completed applications must contain all of the following elements:

- Resume and cover letter

- Copies of NFPA 1001 seals, Standard First Aid and CPR 'C' certificate and any other related training certificates

Once the complete application package is received and reviewed, the candidate may be selected to begin the process. Performance will be reviewed after each stage and a decision will be made regarding suitability to move on.

1. Exam: two-hour general aptitude test.
2. Skills testing and Beep Test: Evaluated on five different firefighting skills (medical clearance required). The beep test measures aerobic capacity (VO2 max) and involves running continuously between two points that are 20 metres apart. The time allowed to do a lap reduces each time until the candidate can no longer complete the run in the time allowed.
3. Interview: The interview is made up of behaviour and scenario-based questions and is held with a small panel.
4. Submit CPAT (Candidate Physical Ability Test) - current within one (1) year.
5. Decision: If all stages are passed, the file is forwarded to the selection committee. If selected, an offer will be made and, upon acceptance, you will be scheduled for a 10-day orientation process. Candidates are not eligible to attend at the station until orientation is successfully completed.

3.3.3.2 Full-time Firefighter Recruit Selection and Onboarding Process

Applications are only accepted when there is an open competition but can build a profile at any time on the County career website. Candidates meeting all the initial requirements begin the following process:

Complete applications must contain all of the following elements:

- Resume and cover letter
- Copies of training certificates

Once the complete application package is received and reviewed, the candidate may be selected to begin the process. Performance will be reviewed after each stage and a decision will be made regarding suitability to move on.

1. Exam: Two-hour exam based on the content covered in NFPA 1001 Level 2.
2. Report Completion Exercise.
3. Personality Assessment: Complete either Hogan or DISC profile personality assessment tests. The assessment provides insights into your behavioural style in relation to, leadership, management, and other situations in the workplace and provides input into fit for the position.
4. Reference check with supervisor or pool captain.

5. Interview with presentation: The interview is made up of behaviour and scenario-based questions and is held with a small panel.
6. Decision: File is forwarded to the selection committee. If selected, an offer package will be sent.

3.3.3.3 Paid-Per-Call Volunteer Firefighter Recruit Selection and Onboarding Process

Applications are only accepted when there is an open competition but can build a profile at any time on the County career website. Candidates meeting all the initial requirements begin the following process:

- Interview
- Background check – criminal record check, including vulnerable sector check
- Medical check by a physician within 6 months of interview
- Provide drivers abstract with 5 year driving history
- If successful must complete station orientation sessions prior to volunteering at the fire station

3.3.4 Retention

Career full-time employee retention is not generally an issue for the RVCFS in fire suppression. The highest turnover typically exists in the part-time and volunteer groups. Full-time positions in the RVCFS are highly sought after and valued. The county offers a competitive salary and benefit package. Occasionally, full-time employees may leave to pursue other opportunities, but this is a relatively infrequent occurrence. As stated above, full-time firefighter positions are typically filled by current part-time firefighters, which adds to the availability of part-time firefighters.

Part-time firefighters typically are seeking a career in the fire service, and while working in the capacity of part-time, will usually be applying for full-time opportunities in other career fire departments. The constant turnover of trained firefighters results in staffing shortages and increased costs of recruitment and training.

Observation #13: The attraction and retention of paid-per-call volunteer firefighters is dependent on fire station locations and availability within the specific station's catchment area. Resignations of existing paid-per-call volunteer firefighters can occur at any time, however most times advanced notice is provided to allow the department the ability to recruit and train replacement firefighters to maintain desired firefighter levels. The time required to train a new recruit to respond as part of the crew can be up to a year or longer. The current recruitment and retention of paid-per-call volunteer firefighters is managed independently by each fire station.

Recommendation #13: Implement an annual paid-per-call volunteer recruitment program to include all paid-per-call volunteer fire stations with common messaging and processes

(Suggested completion: 12 - 24 months)

It is recommended that the RVCFS develop a common and consistent recruitment and retention process to be utilized by all paid-per-call volunteer fire stations. This would include training programs that can be coordinated amongst the fire stations promoting cost savings and efficiencies of training resources.

***Rationale:** A recruitment and retention program that meets the common needs of RVCFS could institute and coordinate some of the industry best recruitment practices and resources. Ideally there would be an eligibility list that can be drawn on as required. Scheduling training programs for recruit classes can be coordinated to include the needs of all the paid-per-call volunteer fire stations.*

3.3.5 Promotions and Advancement

The promotional policy for administrative (non-unionized) staff positions are filled through a competitive process and appointment:

- Manager fire services/fire chief - appointed by the chief administrative officer
- Deputy fire chief - appointed by the manager fire services/fire chief
- District chiefs– appointed by the manager fire services/ fire chief

3.3.5.1 IAFF Local 4794

Non-administrative (unionized) advancement and promotion criteria for fire suppression staff are contained in the collective agreement. As described in Article 22 of the Collective Agreement, vacancies contained within the agreement are to be internally posted for a minimum of 14 days. Persons that most suit all the requirements of the position through the process as identified in the relevant job classification will be offered the position. The successful person/s will be subject to a six-month trial period.

Process for promotion to captain firefighter:

Requirements:

- Class 3Q license (or equivalent)
- NFPA 1001 Level 2 certification with IFSAC or ProBoard seals
- NFPA 1021 Level 2
- NFPA 1041 Level 1 Instructor
- NFPA 1002 Driver/Operator
- Standard First Aid and CPR ‘C’
- WHMIS

- Application and selection requirements

Candidate provides:

- Resume and cover letter
- Copies of training certificates as listed above

Once qualification and requirements are met the process includes:

1. Exam - Two-hour exam based on the information covered in NFPA 1021 Levels 1 and 2
2. Report completion exercise
3. Presentation and essay questions
4. Personality assessment
5. Reference check with supervisor
6. Interview
7. Decision
8. Offer of position.

3.3.5.2 Paid-Per-Call Volunteer

Promotions to officer ranks for the paid-per-call volunteer stations are based on filling vacant officer positions as required with qualified members of the respective station.

3.4 Training

Training and competency development are essential and ongoing activities for all contemporary fire departments. A prepared and competent workforce reduces risk and safely optimizes service delivery. An effective workforce-training program aligns the growth and development of personnel to the organization's mission and goals.

Training and education program activities are identified by assessing the knowledge, skills, and abilities (KSA) needed for the firefighters to perform their duties as outlined in the department's SOGs and Procedures. Additionally, occupational health and safety (OHS) has increased the formal requirements for training and maintaining records of that training with compliance to Alberta OHS regulations: Guide for Firefighting and applicable NFPA standards. When firefighters are competently trained and possess the KSAs for the services they are expected to provide, they reduce risk and increase their own safety and the safety of the public they serve.

The training program of a fire service is a very important and demanding portfolio. The scheduling of instructors, facilities and participants is a daunting task to ensure safe and consistent training, while not negatively impacting the operational capacity.

Typical training and qualification programs include:

- Officer development
- Incident command

- Fire ground safety
- Driver/operator
- Technical rescue
- Dangerous goods
- OH&S
- WHMIIS
- Firefighter core competency
- Inspections
- Investigations

The RVCFS does not have a dedicated training section or officer to oversee the training needs of the department. In general, this responsibility is distributed amongst the deputy chief, district chiefs and station officers.

RVCFS fire suppression interview and survey participants indicated that their training is satisfactory. One gap in firefighting training is the ability to do necessary live fire training. Historically, the RVCFS has relied on scheduled access to the City of Calgary Fire Department live fire training tower. The availability of this resource has not been readily available, and results in RVCFS personnel being denied this important component of training.

Observation #14: The RVCFS does not have a training division specifically mandated with the responsibility of the development and coordinated delivery of all necessary training for the RVCFS personnel. Rather this is a shared responsibility of chief officers and individual station captains. During the interview process there was an indication of some fragmentation of training consistency and priorities.

The task of identifying, delivering, and tracking all required training while balancing the operational readiness and budgets is a large portfolio. Close coordination with operational duty chiefs, station captains and vehicle mechanical services staff is required to ensure minimal impact to service delivery while meeting RVCFS identified priorities.

Recommendation #14: Create a training division with a dedicated training coordinator position

(Suggested completion: 12 - 24 months)

To maintain operation readiness, it is recommended that the RVCFS develop a division with the specific mandate to develop, coordinate, and track the delivery of all necessary training for new recruits and existing frontline personnel. Initially, this division could maintain a dedicated training coordinator with the responsibility of coordinating and tracking the training needs of the RVCFS.

Rationale: *By creating a centralized training division and dedicated training coordinator, this would ensure a coordinated effort in training consistency and scheduling required for the safe and effective delivery of emergency services for a fire service as large and complex as RVCFS.*

Observation #15: RVCFS does not have reliable access to a live fire training facility. Historically, the live fire training that was necessary to maintain the required skills, was available at the Calgary Fire Department Training Academy. Most recently, the availability for RVCFS to schedule any live fire training has been difficult and resulted in RVCFS firefighter's inability to be consistently trained. Additionally, there are limited live fire training facilities in southern Alberta that would be available. The reliance on outside agencies to provide the necessary live fire training has resulted in a failure to complete the required training.

Recommendation #15: Continue building and developing an in-house live fire training facility

(Suggested completion: 24-36 months)

It is recommended that the RVCFS continue the ongoing development of the RVCFS training facility to include an in-house live fire training facility. It is recognized that funds have been allocated for future additions to the current live fire training program and training facility in compliance with NFPA 1402 Standard on Facilities for Fire Training and Associated Props.

Rationale: *A modern training facility including a local live fire training structure would provide reliable training opportunities that can be scheduled based exclusively on the needs of the RVCFS. The continued development of the training facility will be prioritized to meet these needs. The ability to provide identified training needs within Rocky View County will provide cost efficiencies and increase the ability to provide on-shift training with minimal effect to response capabilities.*

3.4.1 Industry Recommended Qualifications

NFPA certification standards represent industry best practices. However, the following list may not apply to all fire departments. The qualifications required for specific positions vary depending on identified community risks and services provided to manage the risks. Position profiles and associated KSAs should prepare staff to competently provide the services necessary to address the risks in their community.

Further, organizational size and structure will often change the breadth of tasks and competencies required by specific positions. For example, large full-time paid fire departments tend to have a higher degree of specialization for senior positions and less need for senior officers to be directly involved in fire suppression or rescue operations. In contrast,

smaller volunteer paid-on-call or paid-per-call volunteer department senior officers will lead or be directly involved in fire suppression and rescue operations.

The following list of NFPA standards is offered as a general guideline for NFPA training standards aligned with most fire department positions:

Deputy Chief and Fire Chief

- NFPA 472 Dangerous Goods Operations
- NFPA 1001 Firefighter (Level 2)
- NFPA 1002 Pump Operator
- NPFA 1021 Fire Officer (Level 2)
- NFPA 1041 Instructor (Level 1)
- NFPA 1403 Standard on Live Fire Training Evolutions
- NFPA 1521 Incident Safety Officer

Captain

- NFPA 472 Dangerous Goods Operations
- NFPA 1001 Firefighter (Level 2)
- NFPA 1002 Pump Operator
- NPFA 1021 Fire Officer (Level 1)
- NFPA 1041 Instructor (Level 1)
- NFPA 1403 Standard on Live Fire Training Evolutions
- NFPA 1521 Incident Safety Officer

Lieutenant

- NFPA 472 Dangerous Goods Operations
- NFPA 1001 Firefighter (Level 2)
- NFPA 1002 Pump Operator
- NPFA 1021 Fire Officer (Level 1)
- NFPA 1041 Instructor (Level 1)

Firefighter

- NFPA 472 Dangerous Goods Operations
- NFPA 1001 Firefighter (Level 1)
- NFPA 1002 Driver/Pump Operator
- NFPA 1006 Vehicle extrication Level 1

Operator

- NFPA 472 Dangerous Goods Operations
- NFPA 1001 Firefighter (Level 1)
- NFPA 1002 Driver/Pump Operator
- NFPA 1002 Aerial Operator
- NFPA 1006 Vehicle extrication Level 1

Training Officer

- NFPA 1041 Instructor (Level 1)
- All Qualifications required to instruct firefighters and recruits
- NFPA 1403 Standard on Live Fire Training Evolutions

Safety Officer

- NFPA 1521 Incident Safety Officer

3.5 Health and Wellness

The active pursuit of employee/member health and wellness is extremely important to an organization. The benefits may include but not be limited to:

- Early recognition and treatment of illness
- Reduction in absenteeism due to short/long-term illness
- Decreased injuries during normal duties
- Decreased workers compensation board (WCB) premiums
- Increased employee career longevity
- Improved work/life balance

RVCFS have designed and updated existing fire stations where possible with the health and safety of their staff a priority.

Some of the enhancements include:

- Air exchange units on the apparatus floor
- Enhanced lighting
- Fitness equipment and designated space
- Separate bunker storage areas
- Commercial washers/extractors and dryers for contaminated protective gear

Rocky View County provides health and wellness programs for its employees. As an employer, the 9+ provides RVCFS full-time employees access to their group benefit plans. Part-time employees are only allowed access to the Employee Assistance Program.

RVCFS also supports health and wellness initiatives for uniformed staff. The RVCFS and the Rocky View Firefighters' Union participate in the fire service joint labour management wellness-fitness initiative (WFI). As identified in 34.2 of the collective agreement, parties agree to work together to maintain the WFI. All RVCFS uniformed staff are required to undertake an annual fitness and medical assessment as outlined in the program. The program outlines best practices for firefighter medical examinations, fitness, injury and medical rehabilitation and behavioural health practices.

The mental health of first responders is an issue that has garnered considerable attention over the past 10 years. As identified in the WFI Manual (p. 48, Joint Labor Management Wellness-Fitness Initiative, 4th Edition), "a firefighter's work is characterized by long hours, shift work, disruptions in sleep patterns, sporadic high intensity situations, strong emotional involvement, life and death decisions and exposure to extreme human suffering." Over time, this type of work can impose considerable stress on some individuals.

3.6 Core Services

As most modern fire departments, the RVCFS provides a broad range of services to the citizens of Rocky View County. Any services provided should align with the identified community risks

and the needs of the citizens. Cyclical evaluation of community risks and fire department response capability is necessary to support ongoing emergency planning. Most citizens will not have the need to access fire department services. However, when emergencies occur, service expectations are high. Good planning processes are necessary to ensure citizens get the services they expect, and the community gets good value for their investment.

3.6.1 Structural Firefighting (provided to the NFPA 1001, Level II, and NFPA 1002 Standard)

Fire department resources should be adequate to manage the most probable risks. Structural fire suppression encompasses a wide range of tactics for the control and extinguishment of fires originating from several sources. Single-family dwellings are the most prevalent building type in most communities. As a result, these types of structure fires are typically the most probable, but only rated as a moderate risk as the consequence are limited to one or two properties. Residential fires are a leading cause of fire-related death, injuries and property loss in Canada.

Structure fires frequently require entry into the building for fire suppression and rescue. These tactics require many critical tasks to occur simultaneously for the safety of both the victims and the firefighters. Each of these tasks may require one or more companies of firefighters to accomplish them safely and effectively. Without enough companies of firefighters on scene, entry may be delayed until some of these tasks are completed.

Residential structure fires are a frequent type of structure fire encountered by RVCFS. Available staffing and equipment should be adequate for firefighters to be able to safely perform the task expected of them. Based on the population density of a given area of the County and whether it was served by a full-time career station or paid-per-call volunteer fire station, the applicable NFPA standard would apply.

- *NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, suggest an effective firefighting force of 16 for a 2000 ft^2 residential fire with a basement.
- *NFPA 1720 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Volunteer Fire Departments* recommends a minimum of six firefighters to commence structural firefighting on a low-hazard structure in a rural setting, and four firefighters in remote settings.

Structure fires that require entry into the building for fire suppression and rescue require many critical tasks to occur simultaneously for the safety of both the victims and the firefighters. Each of these tasks may require one or more companies of firefighters to accomplish them safely and effectively. Without enough companies of firefighters on scene, entry may be delayed until some of these tasks are completed.

Structural fire suppression encompasses a wide range of tactics for the control and extinguishment of fires originating from several sources. In both the interviews and survey, firefighters indicated that the RVCFS is equipped and properly trained to respond to fires that originate within or outside a structure, allowing safe and effective rescue and suppression tactics for the control and extinguishment of fires. RVCFS maintains a modern fleet of emergency response vehicles and equipment along with a committed team of firefighter staff available for emergency response.

During the interviews and within the survey, a degree of concern was expressed regarding the lack of an aerial device within the RVCFS apparatus inventory. Where aerial apparatus is recommended, and/or required, they must rely on the availability of one from the mutual aid partners.

Most interview and survey participants agreed that the RVCFS was inadequately staffed to safely manage most structural fire incidents. As previous discussed, RVCFS has a minimum staff compliment of four fire suppression staff on duty at each career fire station. Confirmed structure fires will require firefighter callback to safely handle an interior attack and/or rescue. The staffing level is discussed in Section 4 of this FSMP and recommendation #26

Rocky View County Policy 704 Outlines the Fire Protection services and the levels of service for areas within the County. Council fire service level policy identifies that if adequate resources are not present, efforts should be limited to exterior defensive firefighting.

Observation #16: In review of the current RVCFS apparatus inventory and replacement timelines, there are two engines (107 Engine and 207 Engine) that have very high kilometers and are incurring significantly increased repair and servicing, resulting in excessive out-of-service timelines. The result of the increased out-of-service times is an increased reliance on available reserve apparatus, compromising the RVCFS engine fleet.

Recommendation #16: Expedite the replacement of 107 Engine and 207 Engine

(Suggested completion: 12 - 24 months)

It is recommended that the replacement of 107 Engine and 207 Engine be done as soon as possible.

***Rationale**: The heavy usage of these two front line engines is affecting the reliability and serviceability of the engine fleet in RVCFS. The increased amount of repair and service requirements result significant repair costs and a reliance on reserve apparatus that are required to serve front line duty.*

Observation #17: RVCFS does not have an aerial apparatus within their fleet inventory. Should an aerial apparatus be required for response in the county, it is usually deployed from one of the neighbouring communities (Airdrie or Chestermere). The delay or inability to have an aerial apparatus on scene can seriously hinder the safe and effective operations. Also, there is no assurance that this apparatus will be made available to leave from their respective community.

Recommendation #17: Purchase an aerial apparatus

(Suggested completion: 48 - 60 months)

It is recommended that the RVCFS should work towards securing funding for the design, procurement and purchase of an aerial apparatus. At minimum the aerial apparatus should be 100 ft.

***Rationale:** The requirement of an aerial apparatus on many emergency scenes is critical for safe and effective firefighting and rescue operations. Aerial apparatus is typically required for:*

- *Elevated water streams*
- *Roof top fire attack/entry*
- *Elevated evacuations and rescues*
- *Water curtains*
- *Exposure protection*

3.6.2 Wildland/Urban Interface (provided to the NFPA 1051 Standard)

Wildland urban interface (WUI) fires are a risk that may range from low to extreme depending on the magnitude of the fire. Furthermore, large WUI events are typically active for extended periods and can quickly exhaust local resources.

WUI fires were identified as a community risk for the Rocky View County. The RVCFS has identified areas of the County that have a moderate to high risk of wildfire. The largest target area is in the southwest area of the county and the Bragg Creek area.

RVCFS fire suppression staff are trained to a NFPA 1051 Standard for Wildland Firefighting. In addition, support is available through mutual aid agreement Alberta Forestry. In general, the department is well resourced to manage smaller WUI fires. To manage a large WUI fire, the RVCFS would be required to rely on neighbouring fire stations, call back off-duty staff and/or activate mutual aid agreements with a request for additional support.

3.6.3 Medical First Response (provided to the MFR level)

Medical co-response is a valuable service provided by the RVCFS. At more than 3300 responses in the past five years, medical co-response is the most frequent service provided by the RVCFS. The distribution of fire department resources often exceeds that of ambulance

resources and as a result, firefighters are often able to respond to medical emergencies faster, or in support of, ambulance services.

In Alberta, fire department resources across the province provide support to Alberta Health Services emergency medical services. The RVCFS is trained to provide medical aid at the highest level of fire medical first responder recognized by Alberta Health Services. The department currently has limited responses to delta and echo priority emergencies, which are potentially or immediately life-threatening events.

Survey and interview participants felt this service was not over-taxing the department's response capacity and was valued by the community.

3.6.4 Motor Vehicle Collisions, Vehicle Extrication (services provided to the NFPA 1001 and NFPA 1006 Standard)

Motor vehicle collisions (MVCs) with or without trapped persons can pose unique hazards to both the victims and responders. Vehicle extrication requires specialized training and equipment. Close coordination with police and ambulance services is necessary for the safety of both victims and responders. Weather conditions also contribute significantly to both the severity of the incident and the effectiveness of the response.

Many of modern vehicles have added risks to firefighters, such as airbag deployment and hybrid vehicles containing fuel cells or batteries. Vehicle collisions or events involving transport vehicles often pose the additional challenge of involving dangerous goods or requiring heavy equipment to manage.

The RVCFS is well equipped and trained to manage vehicle collision and extrication incidents. Depending on the nature of the incident, fire engines and/or tenders are typically deployed to these events. MVCs was the second most common incident over the five-year period within the county. High-speed roadways are common throughout the county. The primary and secondary highways have speeds of up to 110 km. Responses on these roadways may present hazardous conditions for responders. However, the RVCFS is well-trained and equipped to respond to these types of incidents when the need arises. Additional apparatus and staff are often required to provide additional support for equipment and roadway safety.

3.6.5 Hazardous Materials Response (services provided to the NFPA 472 Standard)

Response capabilities should align with service levels defined in the NFPA 472: Standard for Competence of Responders to Hazardous Materials Weapons of Mass Destruction Incidents service level matrix. It requires departments without advanced hazmat training to take only a limited role in hazardous materials (hazmat) response. There are three hazmat response service levels.

The first level of service is the awareness level. This level is the most basic and is for persons who could be the first on the scene of emergency involving hazardous materials. Responders at the awareness level are expected to recognize the presence of hazardous materials,

protect themselves, call for trained personnel and secure the area to the best of their abilities. It does not involve donning protective suits to enter the contaminated zone to stop the flow of hazardous materials or conducting decontamination.

The second level of response is the operations service level. Responders are trained to be part of the initial response and control the impact of the release in a defensive fashion. Crews are expected to take a more hands-on approach than considered at the awareness level. They will use absorption, damming and diking to stop or redirect the flow of the hazardous material. Firefighters are trained to don protective suits, enter the hot zone to conduct rescue activities and control the product release. They must also establish a decontamination zone for responders and equipment. Crews also lead the evacuation in the hot zone.

The third level of response is the technician level. Technical-level responders must be certified hazmat technicians, trained in the use of specialized chemical protective clothing and control equipment. Responders at this level take offensive action in responding to releases or potential releases of hazardous materials. Given the required training, cost of equipment and limited community need, this level of service is only provided by larger communities in Alberta.

The RVCFS does not have a hazardous materials response unit. While incidents involving hazardous materials are infrequent, these types of events can result significant environmental and life-threatening consequences. In addition, a hazardous material release was identified and discussed as a community risk factor. Given that the on-duty response of RVCFS is provided at the operations and/or awareness level of service, the RVCFS may require outside support to manage these types of incidents.

3.6.6 Technical Rescue Services

Rescue operations are often unique situations that require specialized equipment and training to ensure the responders maintain the competencies to safely execute the rescue. The challenge in maintaining these skills is the low frequency of the events. As a result, fire departments offering technical rescue services must provide adequate training to maintain competencies and equipment.

The RVCFS provides a considerable range of specialized technical services. The department is equipped and trained to provide the and maintains competencies as follows:

- Ice rescue (services provided to the NFPA 1006 Standard)
  - Technician level
- Swift/flat water rescue (services provided to the NFPA 1006 Standard)
  - Technician level
- Trench rescue (services provided to the NFPA 1006 Standard)
  - Operations level plus select advanced procedures
- Confined space rescue (services provided to the NFPA 1006 Standard)
  - Technician level

- Rope rescue (services provided to the NFPA 1006 Standard)
  - High and low angle rescue to operations level plus select advanced procedures
- Elevator rescue (services provided to NFPA 1001, Level II Standard)
  - Operations level
- Power lines down/electrical hazards (services provided to NFPA 1001, Level II)
  - Operations level
- Building collapse (services provided to the NFPA 1006 Standard)
  - Awareness and limited operations level

3.6.7 Fire Prevention Services

As departments increase their emphasis on fire prevention activities, communities are seeing a significant reduction in fire-related losses. In Canada alone, deaths caused by fire have been reduced over the last 100 years from 3500 deaths per year to 330 each year. Although difficult to measure, effective fire prevention programs generally reduce fire-related deaths and property loss proportionately to the resources committed. Data collection and analysis will determine the effectiveness of these programs and their impact on the overall reduction of losses.

Rocky View County is an accredited agency under the Alberta Safety Codes Act in the fire discipline. The department's quality management plan (QMP) is based on request or complaint only. The RVCFS is budgeted for a fire prevention officer. This position has recently been filled on a permanent basis and reports to the deputy fire chief.

3.6.7.1 Fire Code Inspection Services (provided to the NFPA 1031 Standard)

Modern building codes including life safety design and operating requirements are key component of risk management. Cyclical fire inspection programs for high-risk buildings ensure these systems continue to function throughout the life of the building. This is especially important for high occupancy and special purpose buildings such as apartment buildings, hospitals, seniors housing and schools.

The Alberta Building Code and the Alberta Fire Code are based upon the National Model Building and Fire Code of Canada. The Alberta Codes set out the technical provisions regulating activities related to:

- The construction, use or demolition of buildings and facilities
- The condition of specific fire and life safety elements of buildings and facilities
- The design or construction of facilities related to certain hazards
- The fire protection measures for the current or intended use of buildings

The Alberta Fire Code requires regular inspections for fire alarm and sprinkler systems, updated fire and emergency evacuations plans, unobstructed means of egress and other

fire life safety systems based upon the Major Occupancies Classifications and other criteria contained in the Alberta Fire Code. The Alberta Fire Code does not legislate the frequency or cycle for fire inspections as this is left to the authority having jurisdiction. In all cases, it is the property owner's responsibility to comply with the Alberta Building Code and Alberta Fire Code.

The RVCFS does not have a dedicated fire prevention division to provide critical fire prevention services to the community, but rather place this responsibility to one of the District Chiefs, and most recently a single fire prevention officer (recently filled on a permanent basis). While the benefits of an effective fire prevention program are sometimes difficult to fully quantify, the reduction of fire deaths and injuries in Canada following the implementation and enforcement of modern building and fire codes illustrates the value. These services are fundamental elements of a broader community fire reduction and life safety strategy. Fire inspections are critical services in identifying fire hazards and maintaining life safety systems. With the competing demands for capacity in the operations with both career and paid-per–call firefighters, increases in fire inspection demands will be hard to meet. As the RVCFS has recently filled a fire prevention officer position, advancements should be taken to ensure the County's Quality Management Plan (QMP) and public safety education mandates are met.

Observation #18: The Government of Alberta (GoA) requires municipalities to regulate the development, construction and fire protection requirements through the application of Alberta Building Code (ABC) and the Alberta Fire Code (AFC). As discussed, it is useful to develop and maintain a property risk profile to identify high-priority risks and develop risk management strategies. The Rocky View County QMP has RVCFS providing fire inspections based on request or complaint.

Recommendation #18: Modify the Rocky View County Quality Management Plan to include a cyclical inspection program

(Suggested completion: 12 - 24 months)

It is recommended that Rocky View County modifies its QMP to include a cyclical inspection program that focusses on the higher fire and life safety risk properties.

***Rationale**: A mandatory inspection program of high-risk properties puts the county in the position to assess the impact of future growth and the changing risk profile of the community. An inspection of all higher risk structures should be conducted and evaluated in terms of safety codes compliance, risk assessment, and public safety. This will aid in the long-term planning of response resources (personnel and equipment) and the developing RVCFS standard operating guidelines.*

3.6.7.2 New Developments Plan Reviews

Working with the County's Planning and Development Services Department, the district chief and fire prevention officer are involved in development and construction plans review. RVCFS and the planning and development staff work together to review building and site plans to ensure the construction process complies with Alberta Building Code and Fire Code requirements. This is a key public safety function as the fire risk during the framing phase of wood-framed development is relatively high.

3.6.7.3 Fire Cause and Origin Services (provided to the NFPA 1033 Standard)

All fires causing injury, death and property loss should be investigated in Alberta. The Alberta Government maintains a fire incident database and provides trend analysis to identify specific prevention campaigns based upon leading fire causes. Examples include cooking safety, smoke alarm maintenance, and fire prevention.

RVCFS chief fire officers share this responsibility. All required reporting is completed and submitted to the Government of Alberta as required.

3.6.7.4 Fire Public Education Services (provided to the NFPA 1035 Standard)

Public education programs and active involvement in the community are important efforts that inform and engage citizens to think about fire safety and risk reduction. In 2020, public education was limited because of COVID-19 opportunities to deliver fire safety messaging as well as displaying the services that are provided by the fire department station tours and public appearances are typical public education activities provided at each of the RVCFS stations. FireSmart programs are an important program promoted in the areas of the county that have wildland interface risks.

3.6.8 Pre-Emergency Planning (provided to the NFPA 1021 Standard)

Pre-fire, emergency or incident plans are intended to provide emergency responders with advanced knowledge and processes for a safe and effective response. These pre-plans include information regarding the construction type, occupancy, building status, emergency contacts, utility shutoffs, fire suppression and detection systems, exposure information, water supply availability, access problems and any other hazards.

Pre-planning programs are not necessarily tied directly to the fire inspection program, but rather include operationally relevant information that was gained on a site visit. Pre-planning should also include potential responses to areas of concern that are not captured in the formal fire inspection program.

The RVCFS firefighters have conducted some pre-planning, typically when doing a fire inspection to look at access points, exit locations and other components to pre-plan or assist with firefighting operations. This program is not formalized, and an enhanced emphasis

should be placed on the completion and implementation of a formal pre-emergency plan program.

Observation #19: RVCFS has access to all county building inventory. This inventory should serve as the basis for a formal pre-plan process. Individual RVCFS crews conduct pre-planning when opportunity arises, however it is more of a familiarization process. Formally capturing relevant information to be later available in complex type cards or provided electronically would ensure this information is available to all personnel when needed.

Recommendation #19: Formalize pre-emergency plan inventory

(Suggested completion: 36 - 48 months)

It is recommended that RVCFS establish a formal pre- planning program that documents significant operational aspects in a hard copy or electronic database where it can be retrieved when responding to incidents.

***Rationale:** Access to relevant information that has been previously captured while enroute to the incident will assist with an effective and safe response.*

3.6.9 Citizen Assist and Public Services

Fire departments play an important but often unrecognized role in the social safety net of communities. When citizens perceive an emergency or an urgent request for assistance, the agency most frequent called to help is the fire department. These types of requests can vary broadly - from a request to rescue a pet to help with flooding. In reviewing RVCFS response data, this response type occurs relatively frequently in the County. RVCFS should continue to provide this service where practical to help in their communities. It is a value-added service of considerable value for citizens making the request.

3.6.10 911 and Fire Dispatch

The Calgary 911 provides 911 call answering as a public safety answer point (PSAP) and emergency fire dispatching services for Rocky View County.

3.7 Emergency Management Program and Emergency Coordination Centre (ECC)

The Alberta Emergency Management Act legislates that all municipalities require an emergency management plan and are responsible for managing the first response to an emergency event. As a result, municipalities are required to develop emergency response plans and programs approved by the province. The emergency management program coordinator is a member of the RVCFS staff.

Rocky View County's Emergency Management Agency works with County departments and neighbouring municipalities to prepare for emergencies that may occur in the County. When a large-scale emergency occurs, the county will activate its Emergency Response Plan. The plan

details the methods in which the county mobilizes its resources during a crisis. It also ensures all County organizations, emergency response services, and key agencies are fully aware of their respective roles and responsibilities.

Depending on the nature of the emergency, the county's emergency response will include some if not all of the following services:

- Dispatching the Canadian Red Cross to attend to affected residents' needs including temporary accommodation, transportation, arrangements for food and clothing, and other personal supports
- In large-scale events, opening an evacuation/reception centre
- Providing information and assistance with rehousing (if necessary) and coordinated updates to affected evacuees

During an emergency, Rocky View County will provide information using the following channels:

- Safe and Sound
- Alberta Emergency Alert
- The county's website, Twitter, and Facebook pages
- Updates to local television and radio stations

3.8 Mutual Aid and Other Service Agreements

Large fire events or emergencies with multiple casualties will quickly outstrip the capacity of most municipal fire departments in Alberta. As a result, mutual aid and automatic aid agreements are a necessary component in adding service capacity in these low frequencies but potentially high or extreme consequence events.

Rocky View County maintains inter-municipal agreements for fire services with:

- Airdrie
- Beiseker Village
- Chestermere
- Cochrane
- Redwood Meadows
- Crossfield

Rocky View County has contracts with the Town of Crossfield and the Township of Redwood Meadows to provide emergency response within defined areas of the County. These contracts outline expectations of both parties including fees and services for response into the designated County response zones, as well as when RVCFS is requested into either Township of Redwood Meadows or town of Crossfield.

As RVCFS has limited firefighting resources available on a full-time basis, a large-scale incident or concurrent emergency incidents could exhaust these resources. As examples, wildland urban interface fire and industrial fire are identified community risks that could easily consume all

RVCFS resources and would require additional resources to safely manage, RVCFS relies on formalized mutual aid agreements with neighbouring communities to supplement operational requirements where needed. These agreements whether fee for service, mutual or automatic clarify operational and financial commitments, as well as liability concerns. These agreements are an effective process to ensure timely and reliable response of required resources this type of agreement would not require the need for additional assistance to be vetted

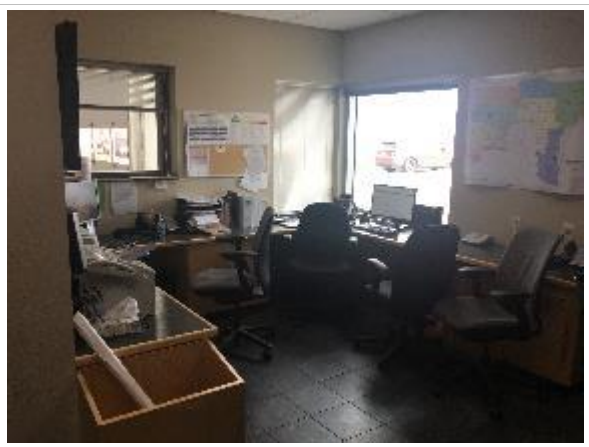
3.9 Facilities

RVCFS provides fire and emergency response out of seven owned and operated facilities along with two contracted fire departments that are strategically located throughout the community. Station # 107 Balzac serves as the RVCFS headquarters.

3.9.1 Fire Station Overview and Assessment

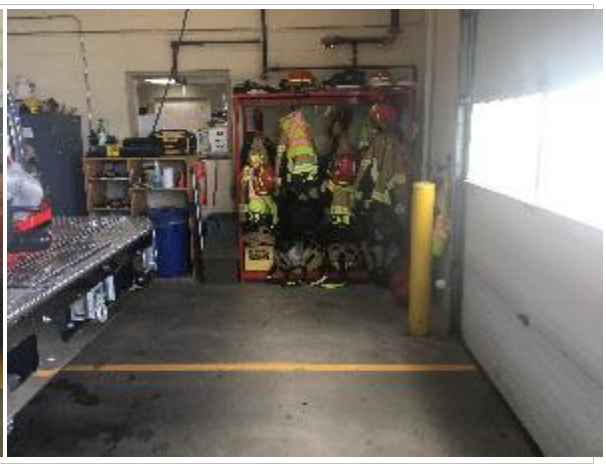
Note: *See Section 3.10.5 apparatus details*

Station #107 Balzac (Headquarters)					
Bays:	3-bay tandem drive-thru	Unit Capacity:	7	Year in Service:	2012
Comments:	This station serves as the headquarters and all apparatus, operations and full-time response personnel for the Balzac response area.				
Unit Inventory:	107 Engine	107 Tender	107 Bush Buggy		
	207 Engine	107 Tender	207 Bush Buggy		
	RVC Chief 1	RVC Chief 2	RVC 3,4		
	RVIN01				

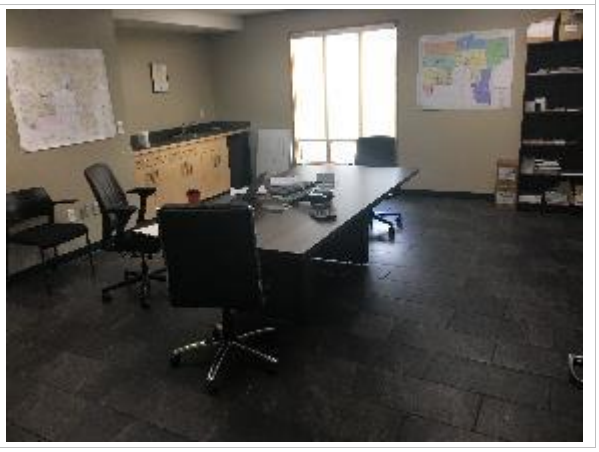


Station #101 Elbow Valley					
Bays:	2- tandem, drive-thru	Unit Capacity:	4	Year in Service:	2012
Comments:	This station serves as the single station for all apparatus, operations and full-time response personnel for the response area of Elbow Valley.				
Unit Inventory:	101 Engine	101 Tender		101 Bush Buggy	

Station #102 Springbank					
Bays:	1 tandem drive-thru 1 single non drive-thru	Unit Capacity:	4	Year in Service:	2003
Comments:	This station serves as the single station for all apparatus, operations and full-time response personnel for the response area of Springbank.				
Unit Inventory:	102 Engine	102 Tender	102 Bush Buggy		
	102 Airlight				

Station #103 Bearspaw					
Bays:	2 tandem, drive-thru	Unit Capacity:	4	Year in Service:	2014
Comments:	This station serves as the single station for all apparatus, operations and full-time response personnel for the response area of Bearspaw.				
Unit Inventory:	103 Engine	203 Engine		103 Tender	
	103 Bush Buggy				

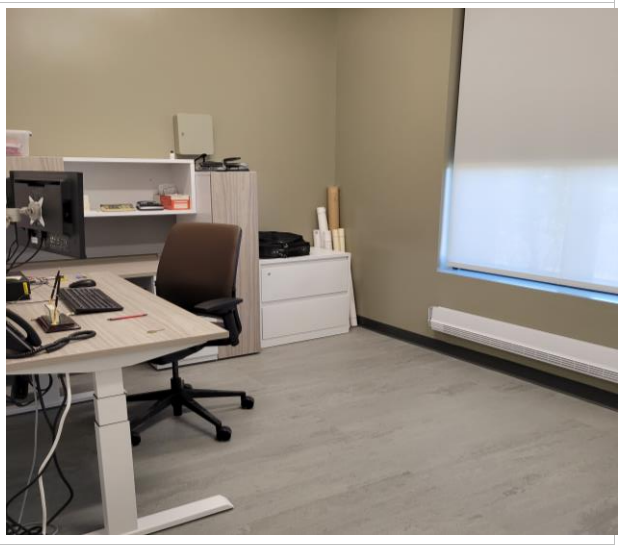


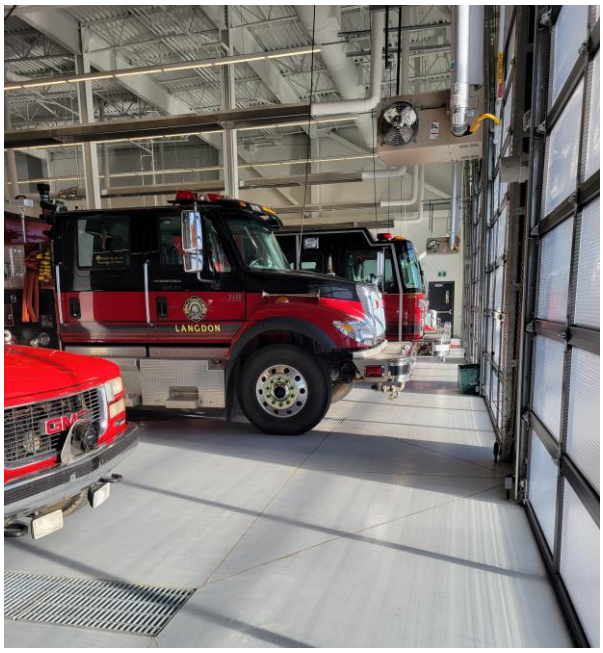
Station #105 Madden					
Bays:	2-bay back-in	Unit Capacity:	2	Year in Service:	1991
Comments:	This station serves as the single station for all apparatus, operations and volunteer response personnel for the response area of Madden.				
Unit Inventory:	105 Engine	105 Tender		105 Bush Buggy	
	105 Command				

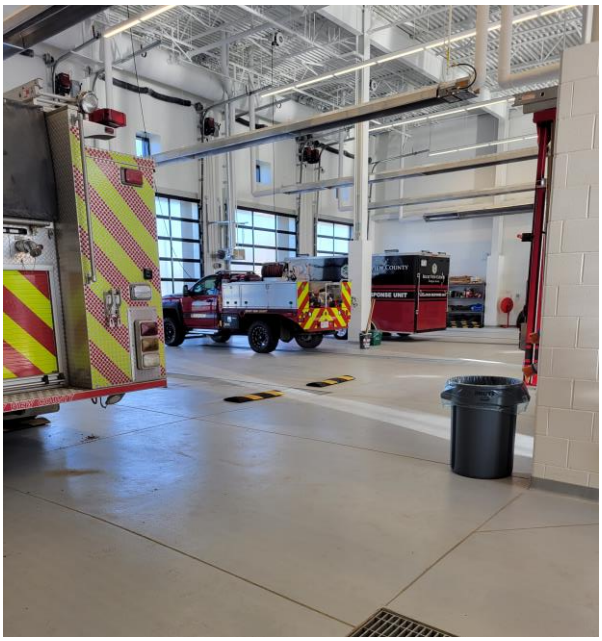

E108

Station #108 Irricana					
Bays:	3-bay back-in	Unit Capacity:	3	Year in Service:	1993
Comments:	This station serves as the single hub for all apparatus, operations and volunteer response personnel for the response area of Irricana.				
Unit Inventory:	Engine 108	108 Tender	108 Bush Buggy		
	208 Bush Buggy	208 Rescue			

Station #111 Langdon						
Bays:	5-bay tandem, drive-thru		Unit Capacity:	10	Year in Service:	2021
Comments:	This station serves as the single station for all apparatus, operations and volunteer response personnel for the response area of Langdon.					
Unit Inventory:	111 Engine	Flood Trailer	111 Bush Buggy			
	211 Engine	111 Tender	111 ERU			
	111 Command	111 Rescue	111 UTV Trailer			
	111 Rehab Trailer	111 UTV	SPU Trailer			
	EM Command Trailer	Livestock Trailer				




LANGDON



3.10 Equipment

3.10.1 Apparatus and Light Duty Vehicles

Fire apparatus and light duty vehicles are typically the largest asset expenditures for any fire department. Purchasing and managing these assets requires strong fiscal responsibility to endure public and County Council scrutiny. Currently, RVCFS has millions of dollars invested in vehicles and equipment. The lifespan of apparatus varies depending on its type and use. Fire services typically designate a lifecycle to each piece of apparatus and contribute to a reserve fund to ensure enough funds are available when the replacement is needed.

3.10.1.1 NFPA Standards for Fire Apparatus

NFPA has developed standards to assist a fire service with the design, maintenance, inspection, testing, life cycling, and dispersal for their fire apparatus. Fire departments may choose to adopt these standards or utilize them as a reference in their own standards and practices.

NFPA 1901: Standard for Automotive Fire Apparatus

The NFPA 1901 standard defines the requirements for new automotive fire apparatus and trailers designed to be used under emergency conditions to transport personnel and equipment and to support the suppression of fires and mitigation of hazardous conditions. This standard recommends that fire apparatus should respond to first alarms for the first 15 years of service, with the expectation that they perform as designed 95% of the time. For the next five years, it should be held in reserve for use at large fires or used as a temporary replacement for out-of-service first line apparatus.

NFPA 1911: Standard for the Inspection, Maintenance, Testing and Retirement of In-Service Emergency Vehicles

The NFPA 1911 standard defines the minimum requirements for establishing an inspection, maintenance, and testing program. Also included are guidelines for emergency vehicle refurbishment and retirement.

ULC: Utilizes many of the provisions within these standards as part of the Underwriters survey for determining fire insurance ratings for a community. For example, it follows the life cycle program with the exception that it may award full credit for a fire apparatus older than 15 years, but not more than 20 years, in remote locations only if the piece of equipment is deemed in excellent condition and all necessary upgrades are done. The value of the additional credit in this case which is only a portion of the total grading for a final FUS rating may well be overshadowed by the cost of maintaining an older unit.

In addition, the National Fire Protection Association Standard (NFPA) 1901: Standard for Automotive Fire Apparatus recommends the following:

D.1 General

To maximize firefighter capabilities and minimize risk of injuries, it is important that fire apparatuses be equipped with the latest safety features and operating capabilities.

In the last 10 to 15 years, much progress has been made in upgrading functional capabilities and improving the safety features of fire apparatus. Apparatuses more than 15 years old might include only a few of the safety upgrades required by the recent editions of the NFPA fire department apparatus standards or the equivalent Underwriters Laboratories of Canada (ULC) standards. Because the changes, upgrades, and fine-tuning to NFPA 1901 have been truly significant, especially in safety, fire departments should seriously consider the value (or risk) to firefighters of keeping fire apparatus more than 15 years old in first line service. It is recommended that apparatus more than 15 years old that have been properly maintained and that are still in serviceable condition be placed in reserve status; be upgraded in accordance with NFPA 1912; and incorporate as many features as possible of the current fire apparatus standard (See Section D3 of Standard). This will ensure that, while the apparatus might not totally comply with the current editions of the automotive fire apparatus standards, many of the improvements and upgrades required by the current editions of the standards are available to the firefighters who use the apparatus. Apparatuses that were not manufactured to the applicable NFPA fire apparatus standards or that are over 25 years old should be replaced.

Underwriters Laboratories of Canada

Current Underwriters Laboratories of Canada (ULC[12]) and NFPA 1901: Standard for Automobile Firefighting Apparatus Standards recommend using apparatus on the front line for up to 15 years, then as a backup for another four to five years. Of course, this timeline is dependent on the frequency of use, scheduled maintenance, and budgets. As indicated in Table 7, some emergency vehicles life cycles can be extended due to low usage or serviceable condition. A leading practice is to have a complete condition survey conducted to determine if there is usable life cycle remaining. This condition survey must consider the NPFA and FUS standards along with the maintenance and cost records of the respective vehicle.

[12] *Underwriters Laboratories of Canada (ULC) is an independent product safety testing, certification, and inspection organization. www.canada.ul.com*

Table 7: Fire Apparatus Service Schedule (Fire Insurance Grading)

Apparatus Age (Yrs.)	Major Cities [3]	Medium Sized Cities [4]	Small Communities[5] and Rural Centres
0 – 15	First Line Duty	First Line Duty	First Line Duty
16-20	Reserve	2nd Line Duty	First Line Duty
20-25[1]	No Credit in Grading	No Credit in Grading or Reserve[2]	No Credit in Grading or 2nd Line Duty[2]
26-29[1]	No Credit in Grading	No Credit in Grading or Reserve[2]	No Credit in Grading or Reserve[2]
30+	No Credit in Grading	No Credit in Grading	No Credit in Grading

[1]All listed fire apparatus 20 years of age and older are required to be service tested by recognized testing agency on an annual basis to be eligible for grading recognition (NFPA 1071).

[2]Exceptions to age status may be considered in a small to medium sized communities and rural centres conditionally, when apparatus condition is acceptable, and apparatus successfully passes required testing.

[3]Major Cities are defined as an incorporated or unincorporated community that has:

- *a populated area (or multiple areas) with a density of at least 400 people per square kilometer; AND*
- *a total population of 100,000 or greater.*

[4]Medium Communities are defined as an incorporated or unincorporated community that has:

- *a populated area (or multiple areas) with a density of at least 200 people per square kilometer; and/or*
- *a total population of 1,000 or greater.*

[5]Small Communities are defined as an incorporated or unincorporated community that has:

- *no populated areas with densities that exceed 200 people per square kilometer; AND*
- *does not have a total population more than 1,000.*

3.10.2 Fire Apparatus Design and Procurement

Fire apparatus are designed and tendered based on the unique requirements of the fire service and the community needs that it serves. With the design, tender and procurement processes typically taking two to three years or longer as well as with the expected life cycles of these apparatus of 20 years or more, it is important that the initial decisions accurately reflect the immediate needs and those in the future.

RVCFS fire stations vary significantly in the risks and needs of each area. As an example Balzac has significant commercial development, while Madden is primarily rural development. As a result the ideal apparatus for each fire station may be considerably different. RVCFS seeks input from station officers for the concentration and distribution of replacement apparatus. Together with input from RVC fleet staff, RVCFS administration develops a specification for replacement apparatus for tender.

3.10.3 Fire Apparatus Maintenance and Repair

All commercial vehicles operating on Alberta highways, including firefighting vehicles registered for 11,794 kg or more must meet certain legislated and regulatory requirements regarding vehicle maintenance and record keeping and are required to be compliant with all the rules and regulations as contained in the Province of Alberta Traffic Safety Act – Commercial Vehicle Safety Regulation. Maintenance and inspection programs under the Act must be in writing and provide a continuous and regular program for the inspection, maintenance, and repair.

A sound and reliable preventative maintenance program is a vital component of the overall fleet management process ensuring each piece operates reliably in the way it was intended safely and effectively while assisting in making it to the anticipated life cycle. Poor maintenance scheduling or neglect on required checks and repairs can lead to accidents, breakdowns, and life safety issues. A fire apparatus pre-maintenance program should consist of the flowing components:

- Trip inspections (daily, pre-trip, post trip)
- Regular PM scheduling
- Annual PM comprehensive check

RVCFS apparatus maintenance and testing is provided by the county fleet services department, following recommended service schedules, testing and certification requirements.

Daily inspection sheets and post trip inspections are forwarded to Fleet Services staff to ensure any necessary repairs are made as soon as possible. Recommended service schedules, testing and certifications are coordinated with RVCFS administration to ensure compliance with as little disruption to service as possible. Rocky View County fleet services employs emergency vehicle technician (EVT's) that possess the knowledge, experience and skill sets to maintain these specialized emergency vehicles and supporting equipment.

3.10.4 Fire Apparatus Replacement and Dispersal

Rocky View County does not have a policy for the replacement of capital equipment and vehicles. RVCFS has been making a conscious attempt to extend the life of their apparatus. A list of all RVCFS apparatus and their anticipated replacement dates has been developed. There are monies put into a reserve fund for the anticipated apparatus replacement, however, there does not appear to be sufficient annual contributions to fully fund the RVCFS replacements.

There are a number of assumptions that form the criteria for replacements.

- The original purchase price
- Expected useful life
- Inflationary factor

- Replacement apparatus specifications

This process for determining the appropriate dollar value required to be placed in the reserve fund to ensure sufficient monies are available at the time of replacement is based on the identified life cycle, forecasted inflation, depreciation and salvage value of current assets. Calculating the yearly contributions is based on the number of years of expected life in the fleet inventory. Although both NFPA and FUS have criteria on re-classifying or retiring apparatus, modifications or upgrades may be required based on age or heavy usage.

For example:

- Engines: 16-20 years frontline (FUS & NFPA), but can be reduced due to high usage
- Rescue Truck: 15 years frontline (NFPA), but can be reduced due to high usage

Replacement lifecycles for RVCFS vehicles are not consistent with lifecycles recommended by NFPA 1901 and the FUS body reporting to the Canadian General Insurance (CGI). For example (as detailed in Table 9) first line apparatus are to be utilized for up to 15 years and then serve as a backup, or in reserve capacity for up to five additional years. RVCFS heavy apparatus have a planned life cycle of 20 plus years with no defined reserve status.

In review of current apparatus, a study of the original purchase price minus market depreciation is compared to the anticipated replacement cost, taking into consideration the trend in inflationary increases. The salvage or trade-in value of the original apparatus can be estimated based on industry trends. This value is subject to a number of considerations including:

- Age of the vehicle
- Kilometers
- General condition
- Certifications
- Annual test results

Through careful analysis the optimal replacement year can be determined. The table below shows an example of an apparatus purchased in 2007 with a 25-year replacement timeline. Assumptions need to be determined for a particular piece of apparatus to consider the type of factors above, as well as the type of requirements for the replacement apparatus to meet the needs for the next 20 plus years. Annual reserve contributions should be made to ensure sufficient funds are available at the time of anticipated replacement.

Table 8: Fire Apparatus Life Cycle Cost Projection Example

Vehicle	Year	Replacement cost based on 6.5% increase per year	Difference between original and replacement	Depreciated value
1	2007	$240,000.00	$0.00	$240,000.00
2	2008	$255,840.00	$15,840.00	$223,200.00
3	2009	$272,725.44	$32,725.44	$207,576.00
4	2010	$290,725.32	$50,725.32	$193,045.68
5	2011	$309,913.19	$69,913.19	$179,532.48
6	2012	$330,367.46	$90,367.46	$166,965.21
7	2013	$352,171.71	$112,171.71	$155,277.64
8	2014	$375,415.05	$135,415.05	$144,408.21
9	2015	$400,192.44	$160,192.44	$134,299.63
10	2016	$426,605.14	$186,605.14	$124,898.66
11	2017	$454,761.08	$214,761.08	$116,155.75
12	2018	$484,775.31	$244,775.31	$108,024.85
13	2019	$516,770.48	$276,770.48	$100,463.11
14	2020	$550,877.33	$310,877.33	$93,430.69
15	2021	$587,235.24	$347,235.24	$86,890.55
16	2022	$625,992.76	$385,992.76	$69,512.44
17	2023	$667,308.28	$427,308.28	$55,609.95
18	2024	$711,350.63	$471,350.63	$44,487.96
19	2025	$758,299.77	$518,299.77	$35,590.37
20	2026	$808,347.56	$568,347.56	$28,472.29
21	2027	$861,698.50	$621,698.50	$22,777.84
22	2028	$918,570.60	$678,570.60	$18,222.27
23	2029	$979,196.26	$739,196.26	$14,577.81
24	2030	$1,043,823.21	$803,823.21	$11,662.25
25	2031	$1,112,715.54	$872,715.54	$9,329.80
26	2032	$1,186,154.77	$946,154.77	$7,463.84

Figure 6: Fire Apparatus Life Cycle Cost Projection Example

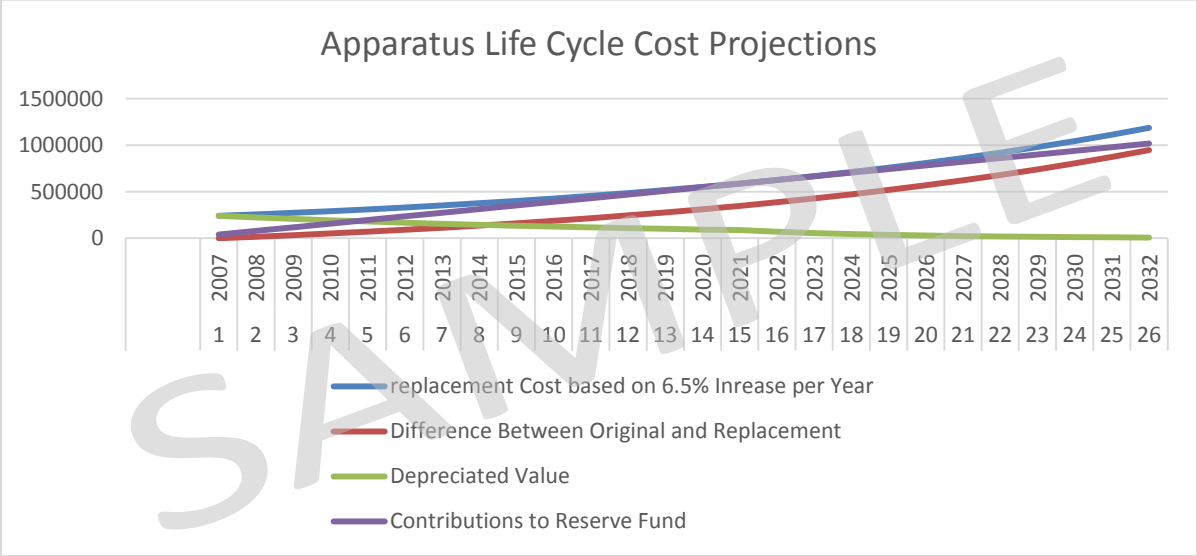


Table 8 and Figure 6 show that the monies put into the replacement reserve fund is close to the projected replacement cost in year 15 and requires additional contributions to extend past. Note the following key points:

- Five-year increase to replacement cost from 15-20 years = $182,533
- Five-year decrease in depreciation value from 15-20 years = $58,415
- Total increased costs to retain apparatus for additional 5 years (15-20) = $240,948
- Additional contributions to reserve fund $195,500
- Difference between 15 and 20 years is $240,948 - $195,500 =$45,448 or an additional $9,090 of contribution per year
- Changing from 15 to 20-year replacement cycle requires $1,818 per year more from year

Table 9: RVCFS Apparatus Service Life and Five-year (2016–2020) Average Incidents

Unit Name	Assignment Number	Year Built	Planned Yr. Replacement	Current kms.	5-yr. avg. incidents
Station #107 Balzac (Headquarters)					
Engine, Fort Garry Spartan	107 EN	2006	2028	218,001	2035
Engine, Fort Garry 7400	207 EN	2006	2022	201,615	100
Tender, Rosenbauer 7400	207 TE	2015	2033	52,814	5
Tender, Freightliner	107 TE	2020	2040	16,297	5
Bush Buggy, Chevrolet 3500	107 BB	2016	2031	45,074	958
Bush Buggy, Ford F550	207 BB	2008	2024	98,179	137
Mobile Command, Ford Explorer	RVC Chief 1	2008	2022	NA	
Mobile Command, Ford Explorer	RVC Chief 2	2019	2030	15,458	
Mobile Command, GM Yukon	RVC Chief 3 and 4	2013	2023	255,447	
Mobile Command, Ford Explorer	RVC Chief 5	2019	2030	8,800	
Fire Investigator, GMC Sierra	RVINV01	2007	2025	186,925	
Station #101 Elbow Valley					
Engine, Smeal Spartan	101 EN	2012	2032	100,877	728
Tender, Rosenbauer 7600	101 TE	2011	2032	47,581	450
Bush Buggy, GMC Sierra	101 BB	2013	2025	50,397	290
Station #102 Springbank					
Engine, Crimson Spartan	102 EN	2008	2028	124,001	1470
Tender, Rosenbauer 7600	102 TE	2012	2032	79,564	1120
Bush Buggy, GMC Sierra	102 BB	2016	2026	27,857	536
Station #103 Bearspaw					
Engine, Rosenbauer Spartan	103 EN	2009	2028	152,953	1366
Engine, Rosenbauer 7400	203 EN	2014	2033	53,461	
Bush Buggy, GMC 3500	103 BB	2014	2025	50,429	796
Tender, Fort Garry 7600	103 TE	2008	2030	121,121	895
Station #105 Madden					
Engine, Pierce International	105 EN	2006	2031	37,519	213
Tender, International 7600	105 TE	2014	2034	8,252	165
Mobile Command, Ford Transit	105 MC	2020	2035	3,855	147
Bush Buggy, BMC 3500	105 BB	2014	2030	6,158	175

Unit Name	Assignment Number	Year Built	Planned Yr. Replacement	Current kms.	5-yr. avg. incidents
Station #108 Irricana					
Tender, Pierce Kenworth T370	108 TE	2009	2034	52,606	250
Engine, Fort Garry International 7600	108 EN	2008	2033	61,661	381
Bush Buggy, GMC 2500 / Gas	108 BB	2010	2028	44,316	479
Bush Buggy, GMC Sierra 1500	208 BB	2007	2023	N/A	60
Rescue, Pierce International 4400 SBA	208 RC	2005	2033	68,008	239
Station #111 Langdon					
Engine, Crimson Spartan	111 EN	2008	2031	67,335	1083
Engine, Pierce 7400	211 EN	2006	2033	87,520	525
Tender, International 7600	111 TE	2015	2039	20,274	857
Bush Buggy, GMC 3500	111 BB	2015	2030	11,230	601
Rescue, Sualsbury Spartan	111 RC			114,163	397
Emergency Response Unit, GMC 3500	111 ERU	1999	2021	174,170	725
Support Unit, Mirage Cargo	111 UTV Trailer	2013	NA	NA	36
Rehab Trailer, Keystone Sprinter	111 Rehab Trailer	2002	NA	NA	
SPU Trailer, FROR B: 822T4A	SPU Trailer	2019	NA	NA	
Flood Trailer, 20’ FROR BL 82-TA5	Flood Trailer	NA	NA	NA	

3.10.5 Apparatus and Light Duty Vehicle Fleet Inventory

The array of apparatus and equipment is deemed appropriate and adequate for the type of service the department provides and there are no foreseeable issues with type and style. The following tables summarize RVCFS' current apparatus and light duty equipment inventory.

Note: *The proceeding information was supplied by RVCFS. The tank, foam and pump capacity measurements may differ (USG, US IMP, Metric) due to the origin and description of the apparatus.*

Station #107 Balzac (Headquarters)			
			
Assigned Number:	**107 EN**	Assigned Number:	**207 EN**
Unit Number:	**5649**	Unit Number:	**5489**
Year/Make:	2006 Fort Garry Spartan	Year/Make:	2006 Fort Garry 7400
Type:	Engine / Diesel	Type:	Engine / Diesel
Odometer (kms.):	218,001	Odometer (kms.):	201,615
Pump Capacity:	8000 LPM	Pump Capacity:	6000 LPM
Tank Capacity: (Water)	800 IMP (Water)	Tank Capacity: (water)	1000 USG (Water)
Foam Capacity:	20 USG	Foam Capacity:	30 USG
Delivery Method:	FOAM PRO	Delivery Method:	CAF System
Usage:	Front line support engine for fires, alarms, MVC, rescues and medical aid etc.	Usage:	Front line support engine for water supply either nursing, water shuttle or drafting operations, MVC safety fend off.
Comments:		Comments:	

Station #107 Balzac (Headquarters)			
			
Assigned Number:	**107 TE**	Assigned Number:	**207 TE**
Unit Number:	**7192**	Unit Number:	**5822**
Year/Make:	2020 Freightliner Maxi	Year/Make:	2015 Rosenbauer 7400
Type:	Tender / Diesel	Type:	Tender / Diesel
Odometer (kms.):	16,297	Odometer (kms.):	52,814
Pump Capacity:	1250 USGPM	Pump Capacity:	3065 IMP
Tank Capacity:	2520 IMP (Water)	Tank Capacity:	1800 USG (Water)
Foam:	NA	Foam:	NA
Delivery Method:	NA	Delivery Method:	NA
Usage:	Front line support tender for water supply either nursing, water shuttle or drafting operations, MVC safety.	Usage:	Second line support tender for water supply either nursing, water shuttle or drafting operations, MVC safety fend off, used as a flex-unit.
Comments:		Comments:	

Station #107 Balzac (Headquarters)			
			
Assigned Number:	**107 BB**	Assigned Number:	**207 BB**
Unit Number:	**7061**	Unit Number:	**5669**
Year/Make:	2016 Chevrolet 3500	Year/Make:	2008 Ford F550 / Diesel
Type:	Bush Buggy / Gas	Type:	Bush Buggy
Odometer (kms.):	45,074	Odometer (kms.):	98,179
Pump Capacity:	450 LPM	Pump Capacity:	220 USGPM
Tank Capacity:	250 USG (Water)	Tank Capacity:	250 USG (Water)
Foam:	20 USG (Foam)	Foam:	30 USG (Foam)
Delivery Method:	Scotty	Delivery Method:	Scotty
Usage:	Front line support bush buggy for medical, MVC, grass fires, rescues.	Usage:	Second line support bush buggy for medical, MVC, grass fires, rescues.
Comments:		Comments:	

Station #107 Balzac (Headquarters)			
			
Assigned Number:	**RVC Chief 1**	Assigned Number:	**RVC Chief 2**
Unit Number:	**5661**	Unit Number:	**7217**
Year/Make:	2008 Ford Explorer	Year/Make:	2019 Ford Explorer
Type:	Mobile Command / Gas	Type:	Mobile Command / Gas
Odometer (kms.):	NA	Odometer (kms.):	15,458
Pump Capacity:	NA	Pump Capacity:	NA
Tank Capacity:	NA	Tank Capacity:	NA
Foam:	NA	Foam:	NA
Delivery Method:	NA	Delivery Method:	NA
Usage:	Second line support incident command vehicle for fires, alarms, MVC, rescues and Hazmat.	Usage:	Second line support incident command vehicle for fires, alarms, MVC, rescues and Hazmat.
Comments:		Comments:	

Station #107 Balzac (Headquarters)			
			
Assigned Number:	**RVC Chief 3 & Chief 4**	Assigned Number:	**RVC Chief 5**
Unit Number:	**5771**	Unit Number:	**7218**
Year/Make:	2013 GMC Yukon	Year/Make:	2019 Ford Explorer
Type:	Mobile Command / Gas	Type:	Mobile Command / Gas
Odometer (kms.):	255,447	Odometer (kms.):	8,800
Pump Capacity:	NA	Pump Capacity:	NA
Tank Capacity:	NA	Tank Capacity:	NA
Foam:	NA	Foam:	NA
Delivery Method:	NA	Delivery Method:	NA
Usage:	Front line support incident command vehicle for fires, alarms, MVC, rescues and Hazmat.	Usage:	Second line support incident command vehicle for fires, alarms, MVC, rescues and Hazmat.
Comments:		Comments:	

Station #107 Balzac (Headquarters)	
	
Assigned Number:	**RVINV01**
Unit Number:	**5623**
Year/Make:	2007 GMC Sierra
Type:	Fire Investigator / Gas
Odometer (kms.):	186,925 KM
Pump Capacity:	NA
Tank Capacity:	NA
Foam:	NA
Delivery Method:	NA
Usage:	Second line support vehicle for Inspections and investigations.
Comments:	

Station #101 Elbow Valley			
			
Assigned Number:	**101 EN**	Assigned Number:	**101 TE**
Unit Number:	**5736**	Unit Number:	**5724**
Year/Make:	2012 Smeal Spartan	Year/Make:	2011 Rosenbauer 7600
Type:	Engine / Diesel	Type:	Tender / Diesel
Odometer (kms.):	100,877	Odometer (kms.):	47,581
Pump Capacity:	5000 LPM	Pump Capacity:	5034 LPM
Tank Capacity:	730 USG (Water)	Tank Capacity:	3000 USG (Water)
Foam:	20 USG	Foam:	20 USG (Foam)
Delivery Method:	CAF System	Delivery Method:	FOAMPRO
Usage:	Front line support engine for fires, alarms, MVC, rescues and medical aid, etc.	Usage:	Front line support tender for water supply either nursing, water shuttle or drafting operations, MVC safety fend off.
Comments:		Comments:	

Station #101 Elbow Valley	
	
Assigned Number:	**101 BB**
Unit Number:	**5751**
Year/Make:	2013 GMC Sierra
Type:	Bush Buggy / Gas
Odometer (kms.):	100,877
Pump Capacity:	220 USGPM
Tank Capacity:	250 USG (Water)
Foam:	5 USG (Foam)
Delivery Method:	Scotty
Usage:	Front line support bush buggy for medical, MVC, grass fires, rescues.
Comments:	

Station #102 Springbank			
			
Assigned Number:	**102 EN**	Assigned Number:	**102 TE**
Unit Number:	**7096**	Unit Number:	**5725**
Year/Make:	2008 Crimson Spartan	Year/Make:	2012 Rosenbauer 7600
Type:	Engine / Diesel	Type:	Tender / Diesel
Odometer (kms.):	124,001	Odometer (kms.):	79,564
Pump Capacity:	1500 GPM	Pump Capacity:	5034 LPM
Tank Capacity:	500 USG (Water)	Tank Capacity:	3000 USG (Water)
Foam:	2 x 30 USG (Foam)	Foam:	20 USG (Foam)
Delivery Method:	FOAMPRO	Delivery Method:	FOAMPRO
Usage:	Front line support engine for fires, alarms, MVC, rescues and medical aid, etc.	Usage:	Front line support tender for water supply either nursing, water shuttle or drafting operations, MVC safety fend off.
Comments:		Comments:	

Station #102 Springbank			
			
Assigned Number:	**102 BB**	Assigned Number:	**102 Airlight**
Unit Number:	**7050**	Unit Number:	**7220**
Year/Make:	2016 GMC 3500	Year/Make:	2020 Ford Transit
Type:	Bush Buggy / Gas	Type:	Air Light Unit / Gas
Odometer (kms.):	27,857	Odometer (kms.):	4002
Pump Capacity:	220 USGPM	Pump Capacity:	NA
Tank Capacity:	250 USG (Water)	Tank Capacity:	NA
Foam:	10 USG (Foam)	Foam:	NA
Delivery Method:	Scotty	Delivery Method:	NA
Usage:	Front line support bush buggy for medical, MVC, grass fires, rescues.	Usage:	Second line support vehicle for fires, rescues and Hazmat.
Comments:		Comments:	

Station #103 Bearspaw			
			
Assigned Number:	**103 EN**	Assigned Number:	**203 EN**
Unit Number:	**5670**	Unit Number:	**5821**
Year/Make:	2009 Rosenbauer Spartan	Year/Make:	2014 Rosenbauer 7400
Type:	Engine / Diesel	Type:	Engine / Diesel
Odometer (kms.):	152,953	Odometer (kms.):	53,461
Pump Capacity:	5000 LPM	Pump Capacity:	4022 LPM
Tank Capacity:	1000 USG (Water)	Tank Capacity:	792 USG (Water)
Foam:	30 USG (Foam)	Foam:	35 USG (Foam)
Delivery Method:	FOAMPRO	Delivery Method:	FOAMPRO
Usage:	Front line support engine for fires, alarms, MVC, rescues and medical aid etc.	Usage:	Second line support engine for fires, alarms, MVC, rescues and medical aid, etc.
Comments:		Comments:	

Station #103 Bearspaw			
			
Assigned Number:	**103 TE**	Assigned Number:	**103 BB**
Unit Number:	**5640**	Unit Number:	**5834**
Year/Make:	2008 Fort Garry 7600	Year/Make:	2014 GMC 3500
Type:	Tender / Diesel	Type:	Bush Buggy / Gas
Odometer (kms.):	121,121	Odometer (kms.):	50,429
Pump Capacity:	5000 LPM	Pump Capacity:	150 USGPM
Tank Capacity:	3000 USG (Water)	Tank Capacity:	150 USG (Water)
Foam:	2 x 25 USG (Foam)	Foam:	8 USG (Foam)
Delivery Method:	FOAMPRO	Delivery Method:	WATERAX
Usage:	Front line support tender for water supply either nursing, water shuttle or drafting operations, MVC safety fend off.	Usage:	Front line support bush buggy for medical, MVC, grass fires, rescues.
Comments:		Comments:	

Station #105 Madden			
			
Assigned Number:	**105 EN**	Assigned Number:	**105 TE**
Unit Number:	**5494**	Unit Number:	**5846**
Year/Make:	2006 Pierce International	Year/Make:	2014 International 7600
Type:	Engine / Diesel	Type:	Tender / Diesel
Odometer (kms.):	37,519	Odometer (kms.):	8,252
Pump Capacity:	1500 USGPM	Pump Capacity:	NA
Tank Capacity:	1000 USG (Water)	Tank Capacity:	3000 USG (Water)
Foam:	20 USG (Foam)	Foam:	NA
Delivery Method:	FOAMPRO	Delivery Method:	NA
Usage:	Front line support engine for fires, alarms, MVC, rescues and medical aid, etc.	Usage:	Front line support tender for water supply either nursing, water shuttle or drafting operations, MVC safety fend off.
Comments:		Comments:	

Station #105 Madden			
			
Assigned Number:	**105 BB**	Assigned Number:	**105 MC**
Unit Number:	**5832**	Unit Number:	**7219**
Year/Make:	2014 GMC 3500	Year/Make:	2020 Ford Transit
Type:	Bush Buggy / Gas	Type:	Mobile Command / Gas
Odometer (kms.):	6,158	Odometer (kms.):	3,855
Pump Capacity:	120 USGPM	Pump Capacity:	NA
Tank Capacity:	250 USG (Water)	Tank Capacity:	NA
Foam:	30 USG (Foam)	Foam:	NA
Delivery Method:	Scotty	Delivery Method:	NA
Usage:	Front line support bush buggy for medical, MVC, grass fires, rescues.	Usage:	Front line support command vehicle for fires, alarms, MVC, rescues and Hazmat, etc.
Comments:		Comments:	

Station #108 Irricana			
			
Assigned Number:	**108 EN**	Assigned Number:	**108 TE**
Unit Number:	**5630**	Unit Number:	**5658**
Year/Make:	2008 Fort Garry International 7600	Year/Make:	2009 Pierce Kenworth T370
Type:	Engine / Diesel	Type:	Tender / Diesel
Odometer (kms.):	61,661	Odometer (kms.):	52,606
Pump Capacity:	6000 LPM	Pump Capacity:	500 USG
Tank Capacity:	1000 IMP (Water)	Tank Capacity:	2522 IMP (Water)
Foam:	2 x 10 USG (Foam)	Foam:	10 USG (Foam)
Delivery Method:	FOAMPRO	Delivery Method:	FOAMPRO
Usage:	Front line support engine for fires, alarms, MVC, rescues and medical aid, etc.	Usage:	Front line support tender for water supply either nursing, water shuttle or drafting operations, MVC, safety fend off.
Comments:		Comments:	

Station #108 Irricana			
			
Assigned Number:	**108 BB**	Assigned Number:	**208 BB**
Unit Number:	**5705**	Unit Number:	**5599**
Year/Make:	2010 GMC 2500 / Gas	Year/Make:	2007 GMC Sierra 1500
Type:	Bush Buggy	Type:	Bush Buggy / Gas
Odometer (kms.):	44,316	Odometer (kms.):	NA
Pump Capacity:	30 IMP	Pump Capacity:	30 IMP
Tank Capacity:	300 USG (Water)	Tank Capacity:	300 USG (Water)
Foam:	2x 30 USG (Foam)	Foam:	NA
Delivery Method:	Scotty	Delivery Method:	NA
Usage:	Front line support bush buggy for medical, MVC, grass fires, rescues.	Usage:	Front line support bush buggy for medical, MVC, grass fires, rescues.
Comments:		Comments:	

Station #108 Irricana	
	
Assigned Number:	**208 RC**
Unit Number:	**5631**
Year/Make:	2005 Pierce International 4400 SBA
Type:	Rescue / Diesel
Odometer (kms.):	68,088
Pump Capacity:	NA
Tank Capacity:	NA
Foam:	2 x 10 USG (Foam)
Delivery Method:	NA
Usage:	Front line support rescue vehicle for rescues and MVC, if requested.
Comments:	

Station #111 Langdon			
			
Assigned Number:	**111 EN**	Assigned Number:	**211 EN**
Unit Number:	**7095**	Unit Number:	**5495**
Year/Make:	2008 Crimson Spartan	Year/Make:	2006 Pierce 7400
Type:	Engine / Diesel	Type:	Engine / Diesel
Odometer (kms.):	67,335	Odometer (kms.):	87,520
Pump Capacity:	1500 GPM	Pump Capacity:	1500 GPM
Tank Capacity:	500 USG (Water)	Tank Capacity:	1000 USG (Water)
Foam:	2 x 30 USG (Foam)	Foam:	20 USG (Foam)
Delivery Method:	FOAMPRO	Delivery Method:	FOAMPRO
Usage:	Front line support engine for fires, alarms, MVC, rescues and medical aid, etc.	Usage:	Second line support engine for fires, alarms, MVC, rescues and medical aid, etc.
Comments:		Comments:	

Station #111 Langdon			
			
Assigned Number:	**111 TE**	Assigned Number:	**111 BB**
Unit Number:	**5847**	Unit Number:	**5833**
Year/Make:	2015 International 7600	Year/Make:	2015 GMC 3500
Type:	Tender / Diesel	Type:	Bush Buggy / Gas
Odometer (kms.):	20,274	Odometer (kms.):	11,230
Pump Capacity:	NA	Pump Capacity:	120 USGPM
Tank Capacity:	3500 IMP (Water)	Tank Capacity:	250 IMP (Water)
Foam:	NA	Foam:	40 L (Foam)
Delivery Method:	NA	Delivery Method:	Scotty
Usage:	Front line support tender for water supply either nursing, water shuttle or drafting operations, MVC safety fend off.	Usage:	Front line support bush buggy for medical, MVC, grass fires, rescues.
Comments:		Comments:	

Station #111 Langdon			
			
Assigned Number:	**111 RC**	Assigned Number:	**111 ERU**
Unit Number:	**5794**	Unit Number:	**4432**
Year/Make:	Saulsbury Spartan	Year/Make:	1999 GMC 3500
Type:	Rescue / Diesel	Type:	Emergency Response Unit / Gas
Odometer (kms.):	114,163	Odometer (kms.):	174,170
Pump Capacity:	NA	Pump Capacity:	NA
Tank Capacity:	NA	Tank Capacity:	NA
Foam:	NA	Foam:	NA
Delivery Method:	NA	Delivery Method:	NA
Usage:	Front line support rescue vehicle for rescues and MVC, if requested.	Usage:	Front line support vehicle for medicals.
Comments:		Comments:	

Station #111 Langdon			
			
Assigned Number:	**111 MC**	Assigned Number:	**111 UTV**
Unit Number:	**7007**	Unit Number:	**5772**
Year/Make:	2015 GMC 1500	Year/Make:	2012 Polaris SXS
Type:	Mobile Command / Gas	Type:	Utility Vehicle / Gas
Odometer (kms.):	116,414	Odometer (kms.):	429
Pump Capacity:	NA	Pump Capacity:	90 USGPM
Tank Capacity:	NA	Tank Capacity:	75 IMP (Water)
Foam:	NA	Foam:	20 L (Foam)
Delivery Method:	NA	Delivery Method:	Scotty
Usage:	front line support command vehicle for fires, alarms, MVC, rescues and Hazmat, etc.	Usage:	Specialty front line vehicle for off road use.
Comments:		Comments:	

Station #111 Langdon			
			
Assigned Number:	**111 UTV Trailer**	Assigned Number:	**111 Rehab Trailer**
Unit Number:	**5790**	Unit Number:	**5789**
Year/Make:	2013 Mirage Cargo	Year/Make:	2002 Keystone Sprinter
Type:	UTV Trailer	Type:	Rehab Trailer
Odometer (kms.):	NA	Odometer (kms.):	NA
Pump Capacity:	NA	Pump Capacity:	NA
Tank Capacity:	NA	Tank Capacity:	NA
Foam:	NA	Foam:	NA
Delivery Method:	NA	Delivery Method:	NA
Usage:	Transport unit for UTV.	Usage:	Second line support command vehicle for fires, alarms, MVC, rescues and Hazmat for large-scale incidents.
Comments:		Comments:	

Station #111 Langdon			
			
Assigned Number:	**EM Command Trailer**	Assigned Number:	**Flood Trailer**
Unit Number:	**5541**	Unit Number:	**7167**
Year/Make:	Travel Air	Year/Make:	2018 20’ FROR BL 820TA5
Type:	Emergency Management Trailer	Type:	Tiger Dam Trailer
Odometer (kms.):		Odometer (kms.):	NA
Pump Capacity:	NA	Pump Capacity:	NA
Tank Capacity:	NA	Tank Capacity:	NA
Foam:	NA	Foam:	NA
Delivery Method:	NA	Delivery Method:	NA
Usage:	Second line support command unit for fires, alarms, MVC, rescues and Hazmat for large-scale incidents.	Usage:	Front line specialty support unit for flood mitigation
Comments:		Comments:	

Station #111 Langdon			
			
Assigned Number:	**Livestock Trailer**	Assigned Number:	**SPU Trailer**
Unit Number:	**7164**	Unit Number:	**7165**
Year/Make:	2018 16” Rainbow Trailer Excursion	Year/Make:	2019 22’ FROR BL 822T4A
Type:	Livestock Trailer	Type:	Sprinkler Protection Trailer
Odometer (kms.):	NA	Odometer (kms.):	NA
Pump Capacity:	NA	Pump Capacity:	NA
Tank Capacity:	NA	Tank Capacity:	NA
Foam:	NA	Foam:	NA
Delivery Method:	NA	Delivery Method:	NA
Usage:	Second line specialty support unit for assistance with livestock incidents.	Usage:	Front line specialty support unit for sprinkler protection for wildland urban interface.
Comments:		Comments:	

The RVC through RVCFS owns and maintains 28 heavy apparatus, four mobile command vehicles, five light duty vehicles and four trailers that are deployed out of the seven RVCFS fire stations. Each piece of apparatus has specific roles in anticipation of the risks in each response zone. This mobile equipment is supported by similar types of apparatus deployed out of contracted fire departments, as well as from mutual aid departments when requested. There was some concern expressed by RVCFS personnel that the pump capacity of some of these engines are no sufficient for the increasing fire loads that are occurring in certain parts of the County. One noted gap is the absence of an elevated platform or ladder truck in the RVCFS apparatus inventory, and rather depend on one being available when requested from one of the mutual aid partners.

The maintenance and repair of all RVCFS mobile equipment is managed through the RVC Fleet Department and the customers (RVCFS) are very satisfied with the level of service that they receive.

When reviewing the replacement and/or addition of any RVCFS mobile equipment it is important that design specifications are tailored to the anticipated risks of the communities they serve.

Observation #20: RVCFS has developed a mobile equipment life cycle program that outlines each piece of equipment's purchase date and anticipated replacement year. The annual funding contribution towards the RVCFS mobile equipment reserve fund was only established in the last few years and the annual contributions appear to be insufficient to fully fund the needs of replacements. Based on this information provided (See table 9) there should be $9,300,000 in the reserve fund this year if properly funded. The total funds needed to replace apparatus on their dates would be $17,548,000. Currently, funds allocated to each piece of apparatus when replacement is necessary is not sufficient.

Recommendation #20: Review the RVCFS mobile equipment list and amend the life cycle program accordingly

(Suggested completion: 0 - 12 months)

Based on usage, kilometers, anticipated replacement costs, and other relevant parameters, it is recommended that the RVCFS work together with the fleet and finance department to review and update the RVCFS mobile equipment list for replacements and amend reserve funding model as necessary.

Rationale: *Given the unique demands placed on each piece of RVCFS mobile equipment, an annual review and update of the replacement and reserve funding will assure available funds will be available when required. Replacement of mobile equipment is based on usage, kilometers, and other relevant parameters.*

Outcome of the review should result in an increase to capital replacement reserves in order to maintain the fleet.

Rationale: *Given the nature of emergency services and the reliance on safe and dependable equipment and vehicles, the need for regular and a critical review of these assets is important to determine if the intended life cycle is both achievable and financially responsible.*

Fire apparatus are routinely utilized under extreme conditions for long periods of time. The reliability of these critical pieces of equipment cannot be suspect. As stipulated in NFPA 1901, frontline apparatus is required to maintain a 95% in service status.

In addition to maintaining a current fleet capable of providing reliably service, meeting insurance (ULC) guidelines favourably impacts municipal insurance ratings. While the life expectancy of any piece of equipment or vehicle is contingent on proper use, maintenance and repair, fire apparatus life cycles are subject to adjustments more frequently than normal service vehicles. Annual reviews of all apparatus in the RVCFS, including mileage, call volume, maintenance records, testing results and salvage values should be carefully done with subsequent adjustments to the original life cycle, whether reduced or extended as warranted.

3.11 Ancillary Equipment

Equipment needed for field response operations such as vehicle extrication tools, hand tools and blowers are current and appropriate for the needs of RVCFS. The ancillary equipment is designed and maintained to meet the department's current core service, goals and objectives. As the response needs change or grow, additional equipment to match the service must be considered.

3.12 Personal Protective Equipment

RVCFS personnel are supplied with NFPA, NIOSH and CSA approved personal protective equipment (PPE) including turnout (bunker gear), gloves, helmets, boots and any specialized gear for specific rescue and EMS operations. RVCFS has a strict cleaning and maintenance program in compliance with NFPA 1971: Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting for the health and safety of their firefighters.

Of particular concern through the past 2 years has been ensuring appropriate and sufficient PPE is available and properly utilized for protection from the COVID-19 pandemic as mandated through Alberta Health Services.

The PPE provided is current, appropriate, and designed to meet the department's safety goals and objectives.

3.13 Specialized Operations Equipment

Effective and efficient response to an incident requires equipment designed for a specific purpose. RVCFS responds with specialized equipment to incidents involving motor vehicles, Hazmat/DG incidents, technical rope rescue, confined space, ice rescue, water rescue and wildland interface fires. This equipment is typically kept on the apparatus or in-station in anticipation of the known risks in each response zone.

The equipment currently meets the goals and objectives of the department, however, may need upgrading or replacement based on usage or change in response risks for any given response zone.

3.14 Asset Management

In some municipalities, the municipal corporation manages fire and emergency services assets to take advantage of synergies with other fleet and facilities management programs.

Observation #21: Rocky View County Council has done well to identify and approve fire service levels. However, the data, technology and processes currently available to RVCFS administrative staff does not support the performance measurement and reporting of the service levels identified in Policy C-704. Incidents falling within and outside of the eight km of road travel can only be identified through a manual search of the address. Additionally, current reporting is primarily limited to annual activity reports. Response performance or service level compliance is not monitored or reported with regularity.

Recommendation #21: Enhance the data management, and reporting processes to measure, monitor and report service level performance

(Suggested completion: 12 - 24 months)

The current records management system (RMS), Fire Pro, may have the functionality to improve the measurement and reporting of service level performance. If Fire Pro is not able to provide this functionality, alternative products should be considered. Additionally, RVCFS should work with Calgary 911 to develop the appropriate data export format to input into the RMS.

Rationale: *A large amount of performance data is available to RVCFS. Data is only useful when it is converted to useful information. It can be used for reporting type of incidents, activity levels, response performance and supporting performance improvement initiatives. However, this is only possible when the systems required to provide timely and useful reporting are in place.*

3.15 Municipal Comparative Analysis

Comparing the Rocky View County Fire Department to that of similar counties is a good way to identify benchmarks or trends. It must be noted that all communities have different attributes such as risk factors and community profile. For this reason, the comparative community analysis should be used as a base reference that is not intended to be replicated in Rocky View County. These benchmarks include budgets, performance, effectiveness and efficiencies.

For the purposes of this municipal comparator review, we used 2016-2020 information in order to get common information from each community. Data and statistics for 2020 were used for this report which shows the impact that the COVID-19 pandemic had on various jurisdictions regarding budgets and response protocols (statistics). Although fire and emergency services ultimately have the same goal of protecting life and property, each community has its unique features in how to accomplish their goals. Therefore, there are no ideal or identical comparators for Rocky View County. Our main criteria for collecting information were:

- Population
- Budgets
- Department Size
- Type (full-time, part-time or combination)
- Department Staffing

Additional information for evaluation was:

- Number of fire stations
- Call volume
- Call types

Table 10: Participating County Comparatives

County	Population	Jurisdiction Land Area (km^2)	Population per km^2
Rocky View County	40,948	3,885	10.1
County of Grande Prairie	22,303	5,700	3.9
Clearwater County	18,888	18,921	0.99
Foothills County	21,248	3,643	5.8
Yellowhead County	10,990	23,000	0.5

3.15.1 Department Profile

Department profile, staffing models and levels of service are based on community risk, risk tolerance and the ability for a community to pay for and sustain desired service levels.

Table 11: County Comparative Departments' Profile

FT: Full-time PT: Part-time POC: Paid-On-Call PPC: Paid-Per-Call

Community	Department Type	No. of Fire stations	Total Staff	Fire Chief	Deputy or Asst. Chief	Fire Prev. /FF	Fire Inspector	Dispatchers	Training Officer	Admin. Support Staff	Firefighters
Rocky View County	Composite	9	252	1	3		1			2	244
County of Grande Prairie	Composite	9	21 FTE 40 PTE 130 PPC	1	4					1	185
Clearwater County	PPC	5	6 FTE 84 PPC	1	3					2	84
Foothills County	PPC	6	103	1	2		1		1	1	97
Yellowhead County	Composite	7	100	1	3			14	1	1	8FTE, 72 PPC

3.15.2 Budgets

Department budgets are of specific concern to most communities. In some instances, budgeting for fire and emergency services make up a considerable portion of a community's operating budget. We evaluated the budgets for each community, and it is important to note that each is unique in how each municipality allocates their budgets.

Table 12: Community Comparative Budget Ranking

County	County Budget	Department Operating Budget	Cost per capita	Percentage of Municipal Budget
Rocky View County	$216 M	$15.2 M	$386.99	7%
County of Grande Prairie	$82 M	$8.26	$370.30	10%
Clearwater County	RMH: $26.5M Village: $1.1M County: $54.5M	$2.7M (County $2.32M)	County: $154.35 Town: $91.62 Village: 63.56	
Foothills County	$41.58 M	$5.4 M	$256.14	13%
Yellowhead County	$133.5 M	$6.73 M	$613.00	5%

3.15.3 Industry Standards

Table 13: Community Comparative Standard of Cover

Community	Standard of Cover	Standard of Cover approved by Council	Is the standard based on a leading practice such as NFPA 1710/ 1720 and or the Alberta OHS Regulations for firefighters?
Rocky View County	Yes	Yes	Yes
County of Grande Prairie	No	No	N/A
Clearwater County	No	No	N/A
Foothills County	Yes	Yes	Yes
Yellowhead County	Yes	Yes	Yes

3.15.4 Response Data

For the purposes of this municipal comparator analysis, we used 2016–2020 information in order to get common information from each community. Breakdowns are divided into the two following categories:

Table 14: Examples of Incident Types for Statistical Analysis

INCIDENTS BY TYPE		
EMS Related Calls		
Call Types	Pre-Hospital Care: Alfa, Bravo Charlie Delta Echo	
	Lift Assist	
	False Alarms	
Fire-Related Calls		
Fire Emergency	Alarm Burning Complaint Structure Fire Minor Fire Smoke	Car Fire Re-check Wildfire – Grass, Brush, Outdoor Oven/Pot on Stove Explosion
MVI (Motor Vehicle Incident), aka MVC (Motor Vehicle Collision)	Extrication	No Extrication
Rescue	Stalled Elevator Lake/Marine Rescue High Angle	Swift Water Building Collapse Ice
Hazmat/Dangerous Good	Highway Incident Rail Incident	Industrial Incident Resident Incident
Non-Emergency	Carbon Monoxide Gas/Oil Smell/Spill Power/Telephone/Cable Line Down Natural Gas Leak	Aircraft Standby Incident Bomb Threat Hazardous Materials Propane Leak/Smell
Other	Inspection Burning Pile Inspection Assist Other Agency Public Service	Needle Pick-up Flood Assessment Water Problem (in structure)

Note: *Description and category names may not be common terminology in all jurisdictions.*

Table 15: Municipal Comparative Response Call Volume

Community		Rocky View	Grand Prairie	Clearwater	Yellowhead	Foothills
Total Call Volume	2076	2076	1524	470	585	1029
	2327	2327	1647	482	606	1267
	2049	2049	1888	484	566	1272
	2122	2122	1891	479	559	1163
	1915	1915	1589	473	394	830
Fire/ Rescue/ MVC Related Calls	1572	1572	706	52	514	284
	1707	1707	852	40	576	302
	1350	1350	990	75	538	308
	1475	1475	663	70	531	267
	1337	1337	707	43	374	305
EMS Related Calls	504	504	634	31	30	334
	620	620	766	113	30	549
	699	699	858	118	28	561
	647	647	905	109	28	510
	578	578	544	99	20	132

There is no standard for categorizing incidents so it must be understood that these statistics are broadly based and are only general reference when comparing fire departments.

The community comparative analysis can only be interpreted from an indirect basic level due the disparity from each of the surveyed communities' organizational structure, core services and levels, emergency response categorization, and financial systems. Direct comparison is strongly discouraged.

SECTION 4
RESPONSE STATISTICS AND PERFORMANCE STANDARDS

The following section provides an overview of incident and response frequency, relevant fire service legislation and NFPA standards, as well as a summary of emergency response performance for incidents within Rocky View County.

4.1 Response and Service Categories

Fire and emergency services departments typically have access to large amounts of detailed data. Incident type and response performance data for RVCFS is captured by the City of Calgary 911 dispatch centre. The dispatch centre identifies specific incident types for each type of emergency received and a series of incident time benchmarks. This data is typically exported into a records management system from which incident type, frequency and response performance reports are developed.

Incident data can be used and reported for several purposes. Incident type and frequency data is used to analyze department activity levels. The breadth of services provided by the modern fire service is often surprising. Fire departments have evolved from responding only to fires to responding to a broad range of public service and emergency incidents and becoming a critical component of a community's social safety net.

Additionally, incident types may be collected as specific categories and used to identify trends in services provided in a community. For example, fire incidents may be categorized into specific fire types such as brush, chimney, garbage dumpster, cooking or vehicle fires. This level of detail is useful to a fire chief in analyzing community risk and service requirements. It may also be useful in identifying specific fire prevention and public education opportunities.

Incident data may also be summarized into broader categories to provide a more general report on activities undertaken by the fire department. For example, all types of fires may also be combined in a single category along with other broad categories such as rescue, motor vehicle and medical incidents to provide a general report of fire department activity to the public or elected officials.

Historical RVCFS and contracted fire department incident data was analyzed for the period of 2016-2020. Detailed counts of all incident types were assessed. Common incident types were aggregated to identify general trends across the county. Response and incident counts were also analyzed for each of the County and contracted fire departments.

Table 16 provides a relatively detailed count of specific incident types. Medical co-response was the most frequent type of response over the five-year period. This is a common experience for fire services across Alberta and North America. It illustrates the importance of the value-added service as well as the role modern fire services play as part of a community's social safety net.

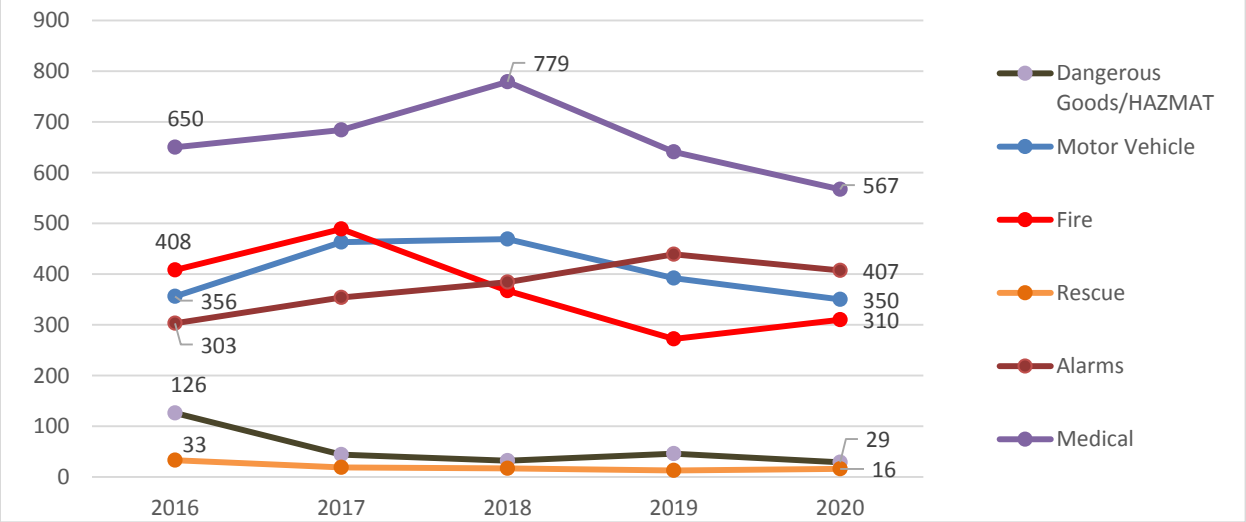
Motor vehicle collisions are also frequent incidents in Rocky View County. This community risk is expected given the volumes of traffic leaving and entering the City of Calgary. Fire alarms are the third most common incidents. While low risk once confirmed as alarms, until this type of incident is confirmed as an alarm only it typically warrants an emergency response.

Table 16: Incident Type and Frequency (2016-2020)

Incident Type	2016	2017	2018	2019	2020	Total
Medical Co-response	650	684	779	641	567	3321
Motor Vehicle Collision	356	463	469	391	349	2028
Alarms	303	354	384	439	407	1887
Outside Fire	14	266	175	106	106	667
Vegetation/Wildland/Brush/Grass Fire	83	34	19	19	67	222
Vehicle Fire	76	72	67	52	37	304
Structure Fire - Residential	3	33	50	47	40	173
Structure Fire	98	22	14	21	18	173
Fire Investigation	133	53	32	17	32	267
Misc.	25	36	41	60	68	230
Gas Leak/Odour	29	29	16	36	19	129
Hazmat	97	5	10	5	5	122
Citizen Assist/Service Call	12	73	36	15	1	137
Structure Fire - Commercial/Industrial	1	9	10	10	10	40
Mutual Aid/Assist Agency	7	20	23	15	13	78
Electrical Hazard	4	19	11	15	8	57
Aircraft Emergencies	5	9	6	2	8	30
Water/Ice Rescue	6	5	6	5	5	27
Fuel Spill	0	10	6	5	5	26
Public Service	0	11	2	4	0	17
Rescue	18	0	0	0	1	19
Explosion	4	2	1	2	1	10
Extrications/Entrapped	0	2	1	2	2	7
Odour	1	3	3	4	1	12
Confined Space	1	2	3	1	0	7
High Angle Rescue	1	1	1	0	0	3
Train/Rail Collision	2	0	0	1	1	4
Elevator Rescue	0	0	0	3	0	3
Utilities	0	0	1	0	0	1
Total	1929	2217	2166	1918	1771	10001

Figure 7 (below) provides an overview of the trends experienced for high-risk or frequent incidents. Medical responses trended upward considerably until 2018. One of the drivers behind this trend was the opioid crisis in Alberta. During the time period 2018 to 2020, medical incidents decreased by 27%. This is trend was common for first responders in Alberta as incident response protocols were changed to reduce the risk of COVID-19 exposures. As the pandemic wanes, it may well be that the frequency of medical incidents increases. Responses for alarms increased modestly, and all other broad categories decreased over this period. Fire-related incidents responses decreased by 24%.

Figure 7: General Incident Type Trends



RVCFS identified seven response (demand) zones across the county. These zones are the primary response zones either career, paid-per-call volunteer or contracted volunteer stations. Only incidents occurring within the county were considered for the contracted stations.

Table 17 (below) considered the differences in the type and location of the broad categories of incidents. The Balzac response zone experienced the greatest number of incidents in all categories other than rescue incidents. Of the career stations, Bearspaw and Springbank zones had similar total counts of incidents, but Bearspaw experienced more medical incidents and Springbank experienced more motor vehicle related incidents. The Langdon zone experienced considerably more incidents of all types than the zones covered by paid-per-call volunteer and volunteer contracted departments.

Table 17: General Incident Types by Response Zone (2016-2020)

Incident Type	Career Full-Time Zones				Paid-Per-Call Volunteer Zones			Contracted Zones		Total
	Balzac	Bearspaw	Springbank	Elbow Valley	Langdon	Irricana	Madden	Redwood	Crossfield	
Medical	737	599	367	189	493	115	119	357	90	3,321
Motor Vehicle	662	283	399	74	225	60	42	25	147	2,030
Alarms	369	331	366	194	376	35	35	59	37	1,887
Fire	417	320	258	106	275	84	56	52	97	1,846
Public Service	89	81	76	54	37	14	3	56	13	465
Dangerous Goods/ Hazmat	72	44	52	20	46	1	6	10	9	277
Rescue	16	13	28	4	15	4	1	6	1	98
Misc.	10	5	7	2	9	1	1	5	5	77
Total	2,372	1,676	1,553	643	1,476	314	263	570	399	10,001

Fire risks vary across the zones. Table 18 (below) focused on the types, locations and frequency of fire incidents across the response zones. This analysis illustrates the varying fire risks within each zone. Fires of all types occurred most often within the Balzac, Bearspaw, Springbank and Langdon zones. Residential fires occurred most frequently in the Bearspaw zone. Balzac and Langdon zones had the most industrial/commercial fire incidents.

Table 18: Fire Incidents by Response Zone (2016-2020)

	Career Full-Time Zones				Paid-Per-Call Volunteer Zones			Contracted Zones	
Fire Incident Type	Balzac	Bearspaw	Springbank	Elbow Valley	Langdon	Irricana	Madden	Redwood	Crossfield
Outside Fire	157	120	93	36	114	26	29	23	30
Vehicle Fire	90	30	41	10	63	16	6	1	22
Structure Fire - Residential	18	37	21	19	30	4	0	2	4
Structure Fire	36	29	23	3	16	6	4	2	6
Vegetation/ Wildland/ Brush/Grass Fire	52	49	20	10	27	19	13	2	15
Structure Fire - Commercial/ Industrial	13	2	2	0	12	3	0	1	2
Fire Investigation	51	53	58	28	13	10	4	21	18
Total	417	320	258	106	275	84	56	52	97

Table 19 (below) identifies the number of responses and the location of the responses for each of the RVCFS and contracted stations. This data reflects responses by each station as opposed to individual incidents. In other words, one incident may generate numerous responses. The Balzac and Langdon stations responded most frequently by a considerable margin. Not surprisingly, all stations responded most frequently into their respective primary response zones.

Table 19 also illustrates how often and where stations are drawn out of their primary response zone to support other stations. For example, the Balzac station responded to incidents with the Langdon, Irricana and Crossfield zones most often. Similarly, Springbank and Elbow Valley stations most frequently responded into the others zone most frequently. The Langdon station responded into the Balzac most frequently. The Irricana station responded to Balzac and Bearspaw zones on occasion. The Madden station occasionally responded to the Bearspaw zone as well. The contracted stations in Redwood Meadows and Crossfield primarily responded to their respective response zones within the county.

Table 19: Station Responses in County Response Zones (2016-2020)

County Response Zone	Career Full-Time Stations				Paid-Per-Call Volunteer Stations			Contracted Stations		Total
	Balzac	Bearspaw	Springbank	Elbow Valley	Langdon	Irricana	Madden	Redwood Meadows	Crossfield	
Balzac	4,257	51	5	9	303	111	11	0	0	4,747
Bearspaw	49	2,824	159	10	12	82	92	0	0	3,228
Springbank	8	28	2,659	350	0	4	1	1	0	3,051
Elbow Valley	3	5	129	1,025	0	0	2	3	0	1,167
Langdon	93	0	0	1	3,835	9	0	0	0	3,938
Irricana	119	2	0	0	24	726	2	0	2	875
Madden	7	48	4	0	0	2	549	0	1	611
Redwood Meadows	0	1	5	47	0	0	0	1,284	0	1,337
Crossfield	248	1	1	0	1	17	19	0	771	1,058
Total	4,784	2,960	2,962	1,442	4,175	951	676	1,288	774	20,012

Occasionally, the RVCFS responded outside of the county. Table 20 (below) illustrates the frequency and location of the 1,291 RVCFS responses out of county. RVCFS responded to Beiseker, Calgary, Cochrane and Irricana most often in this period. The Irricana station responded within the towns of Irricana and Beiseker relatively often. The vast majority of out of county responses were contemplated within the conditions of existing mutual aid agreements. Contracted stations were not included as their responses out of the county are not a component of this analysis.

Table 20: Station Responses Out of County (2016-2020)

Out of County Location	Career Full-Time Station				Paid-Per-Call Volunteer Station			Total
	Balzac	Bearspaw	Springbank	Elbow Valley	Langdon	Irricana	Madden	
Airdrie	52	2	0	0	0	1	0	55
Beiseker	9	2	0	1	0	183	0	195
Calgary	45	32	17	6	34	7	7	148
Chestermere	13	0	1	0	76	1	2	93
Cochrane	0	111	44	1	1	1	0	158
Irricana (town)	22	0	1	0	0	375	0	398
Stoney 142, 143, 144 FN	0	1	6	0	0	1	0	8
Stoney 142B FN	0	2	1	0	0	0	0	3
Tsuu T'ina 145 FN	1	1	3	16	0	1	1	23
Other	14	25	91	2	52	12	14	210
Total	156	176	164	26	163	582	24	1,291

Figure 8 (below) considered the time-of-day incidents occurred during this five-year period. Fire and rescue departments are typically experienced the highest period of demand for services throughout the daytime hours. Incidents in the county followed this pattern. The number of incidents began to increase around 6 a.m., peaked near 3 p.m. and decreased until the following morning. This general pattern of service demand is typical throughout the fire service industry. However, the peak time is typically between 5 p.m. and 7 p.m. This difference may be accounted for by peak traffic flows and motor vehicle related incidents.

Figure 8: Incidents by Hour of Day (24-hour clock)

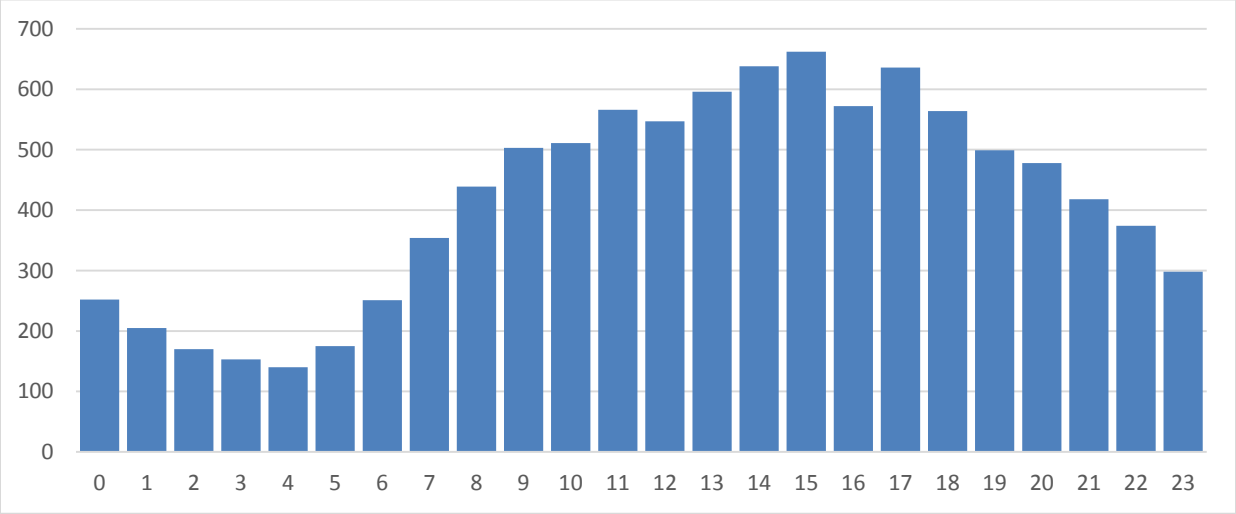
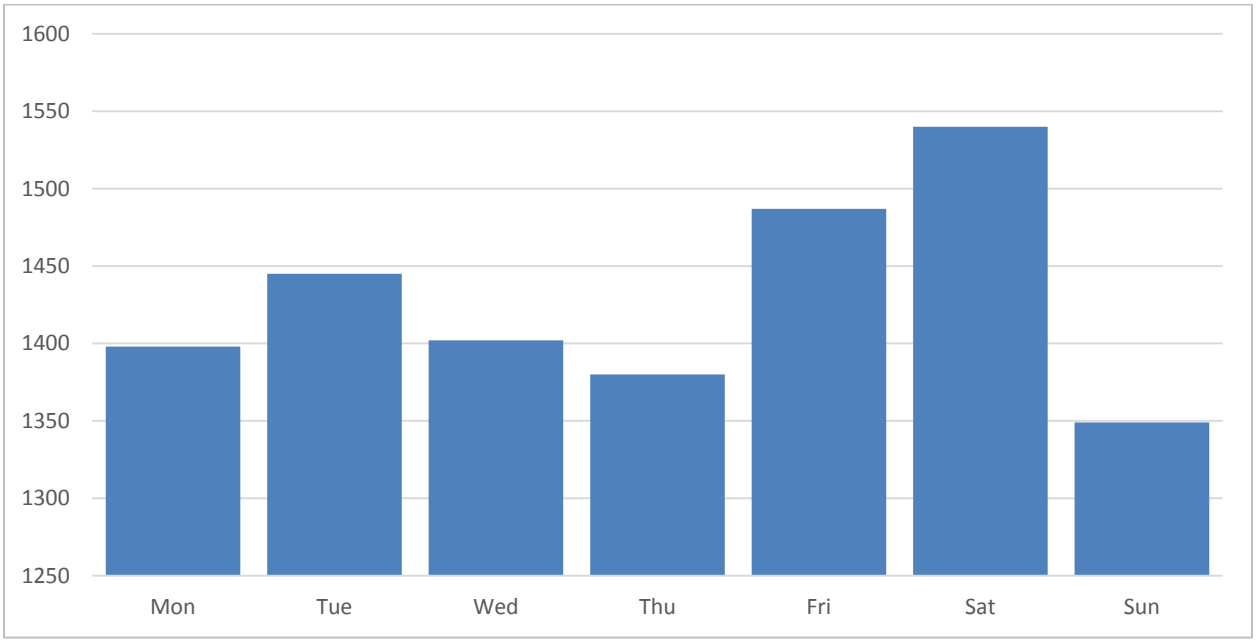


Figure 9 (below) identifies the peak demand occurred on Fridays and Saturdays and the lowest demand occurred on Sundays. Sunday is commonly the day of the week with lowest demand experienced by fire and emergency services.

Figure 9: Incidents by Day of Week



4.2 Alberta Fire Service Regulations and Industry Standards

While communities in Alberta are not required to provide fire protection services, most small to mid-sized municipalities attempt to provide fire and rescue services directly or through contracted services. This section provides an overview of the Alberta regulatory framework and NFPA service standards used to inform the development of fire service levels, as well as the Rocky View County Council Policy C-704, Fire Protection Service Levels.

4.2.1. National Fire Protection Agency Standards

The most widely accepted standards for the fire service are developed by the National Fire Protection Agency (NFPA). Established in 1986, "*the NFPA is a self-funded non-profit organization devoted to eliminating death, injury, property and economic loss due to fire, electrical and related hazards (NFPA, 2021).*" The NFPA has developed over 300 consensus-based codes and standards designed to minimize the effects of fires. Several decades of research have resulted in the NFPA establishing industry benchmarks for fire department operations, training and equipment.

NFPA has done considerable research in developing the recommended standards and ensuring they reflect the primary value of life safety in emergency response. They are referenced in both the Alberta OHS regulations for firefighters and the National Building Code – Alberta Version, 2019. The two standards addressing fire department operational performance and service levels are NFPA Standard 1710: Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments and NFPA 1720: Standard for the Organization and Deployment of Fire Suppression Operations Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments.

The use of industry standards, such as those offered by the NFPA, does not limit a local government's flexibility to develop levels of service and response time performance goals. Most Canadian municipalities choose to develop service levels and performance standards based on their specific risk factors, organizational capacity and economic conditions.

4.2.2 Occupational Health and Safety Guide for Firefighting

On March 2019 Alberta Occupational Health and Safety (OHS) released a new bulletin the "Occupational Health and Safety (OHS) Guide for Firefighting". This bulletin replaced the former Code of Practice for Firefighters, 2007. The bulletin describes the minimum standards to which a fire service must achieve compliance with OHS legislation.

The document is intended to be a guide to assist in developing standard operating procedures and guidelines meeting NFPA standards and industry best practice. It states:

> *The guidelines and policies developed should include, as per National Fire Protection Agency (NFPA) standard:*
>
> - *Services to be offered, including functions that must be performed simultaneously*
> - *The minimum number of firefighters required to safely perform each identified firefighting function or evolution*
> - *The specific worker safety rules, procedures, first aid and medical attention services for firefighters to be followed at each type of incident*
> - *The number and types of firefighting vehicles, equipment and firefighters required for the initial response to each type of emergency to which firefighters might reasonably be expected to respond*

- *This includes policies or procedures to be followed when minimum staffing or equipment levels cannot be met*
- *Guideline or policy on the minimum amount of training and experience a firefighter must be given before being considered competent to perform certain emergency operation functions*
- *Detailed description of the incident management system to be followed at an emergency incident; and detailed description of the personnel accountability system to be used at each incident*

The guideline provides the requirements for managing hazardous materials, working in confined spaces, general safety requirements, emergency preparedness, fall protection, personal protective equipment and additional elements of hazards found in the firefighting environment. The detailed description of OHS requirements are outlined in this document to ensure safe work practices are in place for all firefighters, including their physical and mental health.

4.2.3 Alberta Building Code Limiting Distance and Fire Department Response Requirements

In 2009, the Government of Alberta amended its building and fire codes to address high intensity residential fires (HIRFs). These types of residential fires involve rapid heat release and fire spread beyond the point of origin that usually involve adjacent buildings. Typically, these fires include early exposure to large amounts of combustible materials. HIRFs can occur in any of the following groupings:

- Occupied residential buildings
- Unoccupied residential buildings (under construction)
- A mix of occupied and under-construction residential buildings

The new regulations could only be applied to new construction and not retroactively. The 2019 National Building Code – Alberta Version, 2019, also referred to as the Alberta Building Code states:

> ***A-3.2.3.1. (8) Intervention Time and Limiting Distance.*** *The total time from the start of a fire until fire suppression by the fire department depends on the time taken for a series of actions. Sentence 3.2.3.1.(8) is only concerned with the time from receipt of notification of a fire by the fire department until the first fire department vehicle capable of beginning suppression activities arrives at the building. It specifies a 10-min time limit which must be met in more than 90% of the calls to the building served by the fire department. This reliability level and provision for flexibility is essentially consistent with NFPA 1710, "Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments." While providing some guidance, NFPA 1710 does not cover all situations.*

Where the 10-minute limit cannot be met by the fire department at least 90% of the time, Sentence 3.2.3.1.(8) specifies that a value corresponding to half the actual limiting distance be used in requirements that depend on limiting distance to define other criteria.

The Alberta Building Code specifies a 10-minute response time must be achieved for 90 percent of residential fire incidents. The definition of response time is the time from when Calgary 911 dispatch centre receives the notification of an emergency to the time when a RVCFS or contracted fire engine with a water supply and firefighters arrives at the scene of an incident.

The reason this regulation is relevant to the response performance analysis is that residential development outside of the 10-minute response time must meet different construction or development requirements. The Alberta Building Code requirements only impact new urban types of developments where properties are relatively close to one another. The spatial separation between rural and suburban properties is typically adequate to satisfy limiting distance requirements. Where RVCFS is unable to respond within 10 minutes to new development in the county, the limiting distance regulations or construction requirements must be satisfied. Buildings must have increased spatial separation, enhanced fire protection from exposure fires or fire resources must be added within a 10-minute response area.

The typical approach is to either increase spatial separations or enhance the fire protection in construction within these developments. This can be achieved in several ways. Residential sprinkler systems may exempt the property from these building code requirements. Alternatively, the setbacks for new construction along adjacent property lines must be doubled or enhanced fire-resistant construction and reduced number of unprotected openings along adjacent walls can be required. Additional fire protection measures slow the spread of fire by either containing it or suppressing it and giving the fire department additional time to arrive before the fire spreads or becomes a high intensity residential fire.

4.3 NFPA 1710/1720 Response Time Standards, Effective Response Force (ERF) Standards Rocky View County Policy

The following sections provide an overview of NFPA response time standards and Rocky View County Council Policy C-704, Fire Protection Service Levels used in assessing RVCFS response performance.

4.3.1 NFPA 1710 Performance Standards

NFPA 1710 standards apply to the career staffed fire stations. Time standards are identified for alarm handling (alarm answering plus alarm processing times), turnout (or chute) time and travel time. NFPA 1710 also includes several additional standards for fire, rescue and EMS operations, and indicates the number of firefighters required to safely manage different types of fire and rescue incidents. This standard also provides a platform for developing response plans for higher hazard fires.

Table 21: NFPA 1710 Performance Standards

	NFPA 1710 Primary Standards				NFPA 1710 Secondary Standards			
	Primary	Seconds	Percentile	FFs	Secondary	Seconds	Percentile	FFs
Alarm Answering	1	15	95%		2	40	99%	
Alarm Processing	1	64	90%		2	106	95%	
Turnout	Fire	80	90%		EMS	60	90%	
Travel	First arriving	240	90%	4	Full Alarm	480	90%	16
Response (inferred)	*First arriving*	*399*	*90%*	*4*				
Response (inferred)	*Full Alarm*	*639*	*90%*	*16*				

NFPA 1710 response standards are based on a typical single-family dwelling of 2,000 ft.^{2} (186 m^2) without a basement and with no exposures. Alarm answering should be completed within 15 seconds 90% of the time. Alarm processing, when added to alarm answering are defined as alarm handling, should be completed within 64 seconds 90% of the time. The first engine company is to arrive no less than 320 seconds (6 minutes and 20 seconds) to 90 percent of all fire suppression incidents following the alarm handling process. This timeline includes a turnout time of 80 seconds and travel time of 240 seconds.

This standard also requires a 480-second travel time or less for deployment of an initial full alarm assignment to a low to medium risk fire incident with a minimum of 16 members (17 if an aerial device is used). Larger or more complex incidents may require more firefighters and may have an extended time to assemble an effective response force (ERF).

NFPA does not specifically identify a response standard for first arriving fire apparatus and assembly time for the full alarm (ERF). However, it is common practice to add the percentile performance times for alarm handling, turnout and travel times to infer the first arriving response goal of 6 minutes and 39 seconds, 90% of the time. Similarly, the full alarm response goal of 10 minutes and 39 seconds, 90% of the time is often considered the inferred time standard for the assembly of the full alarm assignment.

The intent of these aggressive timelines is to minimize intervention time. Intervention time is defined as the time between the fire department receiving notification of an emergency and commencing assistance at the scene of the emergency. It is the best reflection of the elapsed time from identifying an emergency to having the fire department arrive and engage in managing the incident. Increased intervention time can have the following important impacts on a property owner:

- Decreased survivability for trapped victims
- Increased loss in the event of an emergency

- Building design restrictions
- Higher property insurance premiums
- Economic impacts

There are two primary variable portions of the total intervention time for career service models. The availability of firefighters to respond is a variable depending upon the individual station apparatus staffing levels. The second variable is the travel time, which is primarily a function of the distance from the station to the incident and the speed traveled, which is influenced by several other factors, including but not limited to:

- The size of the demand zone
- The layout and footprint of the community (route widths and alternatives)
- Impediments, such as weather or time of day (traffic jam)
- Transportation system (including roadways, bridges, underpasses, overpasses)

Both variables will affect intervention time and the time taken to assemble the ERF. Figure 10 illustrates the time segments of the total intervention time for a structure fire.

Figure 10: NFPA 1710 (2016) Intervention Time Defined

Total Fire Service Intervention Time for Incident					
Notification		**Intervention Time**			
Discovery	Emergency Call	Alarm Handling	Turnout Time	Travel Time	Set Up
Time unknown		79 Seconds (90%)	80 Seconds Fire 60 seconds Medical (90%)	240 Seconds (90%)	May vary by event
Time indirectly manageable		*Time directly manageable*			
		Response Time Values			

Note: *Although the percentile time segments are not legislated requirements for fire departments, they are industry-leading practices and useful context in establishing service level goals.*

Discovery: This is the time between the start of the emergency and when a person or an engineered system has detected the incident.

Emergency Call: This is the time between discovery and the actual notification of need for emergency services.

Alarm Handling: This is the time required to extract the necessary information from the caller to allow the proper response to be initiated.

Turnout Time: This is the time from when dispatch notifies the firefighters until the vehicle leaves the station for response. Time is required to safely egress the station with proper personal protective equipment (PPE) and equipment for the anticipated emergency.

Travel Time: This time begins upon leaving the station or otherwise begins the response to the scene of the emergency and ends at the time when the assigned vehicle arrives on scene.

Response Time: This time includes the time from 911 alarm answering to the arrival of the first fire apparatus capable of commencing fire extinguishment activities. This is the time used for the purposes of calculating the Alberta Building Code limiting distance requirements.

Setup Time: This is the time it takes (on site) to evaluate the necessary actions, position the required resources, and commence the intervention. In the case of a fire, completing size-up, assigning the necessary tasks, and deploying resources can provide delays on scene. A well-trained crew can minimize these delays while providing a safe, successful response. The recommended standard for this increment is 2 minutes.

4.3.2 NFPA 1720 Response Standards and Paid-Per-Call Volunteer Station Response Performance

NFPA 1720 response standards are based on population density and travel distances. It is important to note the county has a number of different regions of varying population density therefore response (demand) zone types. For example, Langdon may meet urban/suburban densities within the hamlet but rural densities in the surrounding area of this response zone. As a result, it is difficult to assign a single service level to any specific response zone and establishing service levels can be challenge.

Table 22: NFPA 1720 Staffing and Response Time Standards

Demand Zone [a]	Demographics	Minimum Staff to Respond [b]	Response Time (minutes)[c]	Meets Objective (%)
Urban area	>1000 people/2.6km^2	15	9	90
Suburban area	500-1000 people/2.6 km^2	10	10	80
Rural area	<500 people/2.6 km^2	6	14	80
Remote area	Travel distance ≥ 12.87 km	4	Directly dependent on travel distance	90
Special risks	Determined by AHJ	Determined by AHJ based on risk	Determined by AHJ	90

[a] *jurisdiction can have more than one demand zone.*
[b] *Minimum staffing includes members responding from the AHJs department and automatic aid*
[c] *Response time begins upon completion of the dispatch notification and ends at the time interval shown in the table*

Given the differences and distances across the response zones in the county, it is reasonable to develop more than one service level across the County and within response zones. NFPA 1720 acknowledges the challenges of covering large rural and remote areas by reducing the minimum responding staff and extending response time goals. Additionally, NFPA 1720 recognizes that a demand (response) zone may have more than one service level assigned.

4.3.3 Rocky View County Council Policy C-704, Fire Protection Service Levels

The County has done commendable work in establishing a policy that identifies service level time benchmarks. Rocky View County Council is the authority having jurisdiction regarding RVCFS service levels. In January 2020, Rocky View Council Policy C-704, Fire Protection Service Levels was established. The policy states:

> *Within eight kilometers of travel by road, County fire stations located in Elbow Valley, Springbank, Bearspaw, Balzac and Langdon provide:*
>
> *(1) the fire protection services that include vehicle rescue, shore-based water rescue, interior/offensive fire suppression, and exterior/defensive firefighting activities; and*
>
> *(2) at least four firefighters on scene within 10 minutes 80% of the time. Within eight kilometers of travel by road, County fire stations in Irricana and Madden provide:*
>
> *(1) the fire protection services that include vehicle rescue; exterior/defensive fire suppression activities; and*
>
> *(2) a level of service of at least four firefighters on scene within 18 minutes 80% of the time.*

Amongst other aspects, this policy outlines fire department response time goals within certain areas of the county. Although the response time benchmarks are identified as "guidelines only" and that the County "does not guarantee specific response times", the policy provides the fire chief with clear direction with respect to performance objectives for this composite department.

The policy breaks down service level into two categories of distance traveled – within an eight km of travel distance by road from each station and outside of eight km of travel. Within eight km, 80th percentile response time benchmarks are set at 10 minutes for the Balzac, Elbow Valley, Springbank, Bearspaw and Langdon fire stations to arrive with four firefighters. The Irricana and Madden fire stations have an 80th percentile response time goal of 18 minutes to arrive with four firefighters. All areas outside of the eight km travel zone, including the contracted stations in Redwood Meadows and Crossfield, have no clear response time benchmarks.

> *For all areas of the County not included in sections 12 and 13 of this policy:*
>
> *(1) fire protection services include rescue, basic exterior/defensive fire suppression activities; and*
>
> *(2) the level of service is at least four firefighters on scene within an indeterminate period of time 90% of the time.*

Policy C-704 reflects the County's efforts to establish achievable service levels for most demand zones which are reasonable given the size and diverse conditions of each zone. The policy also identifies whether interior or exterior firefighting efforts should be initiated. This clarity highlights the difficult decision-making facing officers with limited resources and water supply. Given the large response zones and the extended arrival times of the secondary

response resources, clear policy supporting or mandating the decision to limit suppression efforts to defensive firefighting tactics is necessary.

Observation #22: Currently the core services of fire suppression, vehicle rescue and shore-based water protection services are listed in Policy C-704. Further, other than providing four responders, contracted service provider performance cannot really be measured. It is difficult to measure a 90th percentile performance goal when the response time is not determined or tracked.

Recommendation #22: Update the Rocky View County Council Policy C-704, Fire Protection Service Levels

(Suggested completion: 24-48 months)

This policy is an excellent foundation to advance the further refinement of fire service levels. This policy could be improved by including a broader list of services provided by the RVCFS and refining service level expectations for all RVCFS and contracted stations. As discussed, this policy should be amended to include a more comprehensive list of services provided and defined or measurable service levels for contracted service providers.

***Rationale:** A comprehensive list of services provided with measurable service levels clarify performance expectations for RVCFS, contracted fire departments and the citizens of the county.*

4.4 RVCFS Emergency Response Performance Analysis

The response performance analysis focuses on emergency responses only from 2016-2020. It includes an analysis of alarm handling, turnout (or chute) and assembly (or muster) time, travel time, and total response time. Structure fire response performance is also considered uniquely.

This response data was graciously provided by Calgary 911. Calgary 911 captured the important key response timestamps for all emergency responses. Examples of typical incident timestamps include:

- Incident begin
- Incident notification
- Apparatus responding
- Apparatus arrived
- All clear
- Loss stopped
- Leaving scene
- Returned to station

These timestamps are used to compile a complete history for all responding emergency vehicles to every incident. This emergency response data is then dissected into time segments to analyze

alarm handling time, total response time, the number and type of apparatus arriving, the number of firefighters on scene, time taken to stop or manage the fire/incident, time on scene and the total incident time. As a result, emergency response data can be used by the fire chief and county administration to:

- Monitor response effectiveness
- Report performance to community and elected officials
- Assess current community risks
- Evaluate the effectiveness and compliance with national and provincial codes
- Evaluate the effectiveness and compliance with council policies and local bylaws
- Identify possible service efficiencies and deficiencies
- Develop or modifying service level standards
- Plan for future resource needs (operational and capital)

This analysis measures RVCFS performance relative to NFPA 1710 and 1720 standards, and the County Council Fire Protection Service Levels policy benchmarks. Council policy does not identify response guidelines for alarm handling time, chute time or travel time. NFPA 1710 standards are applied to the alarm handling analysis. The chute time performance of career stations is compared relative to NFPA 1710 standards. The muster time of paid-per-call volunteer fire stations is also provided as context as NFPA 1720 does not include muster time performance benchmark. Travel and response time analyzes reflect the two County policy categories – stations with 10-minute and 18-minute response goals.

Tables 23 and 24 provide a summarized overview of the 10-minute and 18-minute stations' five-year performance. This summary table only included incidents within 8 km. The five-year 80th percentile time is reported for each response benchmark. A more detailed discussion for each response benchmark is provided in the sections following.

Table 23: 2016-2020 80th Percentile Performance for 10-Minute Stations < 8 KM (in seconds)

Station	Alarm Handling	Chute/Muster	Travel	Response (<8km)
Balzac	118	154	510	714
Bearspaw	110	144	543	724
Springbank	104	135	575	755
Elbow Valley	67	151	465	630
Langdon	48	386	418	863

Table 24: 2016-2020 80th Percentile Performance for 18-Minute Stations < 8 KM (in seconds)

Station	Alarm Handling	Muster	Travel	Response (<8km)
Irricana	99	541	535	995
Madden	105	899	449	1304
Redwood Meadows	70	534	392	966
Crossfield	133	396	516	954

4.4.1 Alarm Handling Performance

Alarm handling time is the cumulative time taken for alarm answering and alarm processing in the dispatching process. NFPA 1710 recommends a 95th percentile of 15 seconds or less for call answering and an 90th percentile call processing goal of 64 seconds or less. Combined, the standard for alarm handling is 79 seconds or less, 90 percent of the time. Alarm handling performance is somewhat manageable by implementing best practice processes and the appropriate technology. This benchmark should be monitored with the aim of ensuring this process is as efficient as possible to achieve optimal response performance.

Table 25: Alarm Handling Performance (in seconds)

	2016	2017	2018	2019	2020	5 Year
80th percentile	105	129	114	113	115	114
90th percentile	165	179	171	160	164	168
79 sec. compliance	71%	66%	69%	68%	67%	68%

The 80th percentile alarm handling times are provided as context when considering its impact on response time performance within eight km of a fire station as identified in County Council Policy C-704.

Table 26: 80th Percentile Alarm Handling by Station by Year (in seconds)

Station	2016	2017	2018	2019	2020
Balzac	112	118	123	122	111
Bearspaw	133	93	102	72	108
Springbank	63	131	103	121	108
Elbow Valley	48	47	56	109	87
Langdon	54	54	28	49	46
Irricana	63	131	131	39	142
Madden	72	105	15	104	118
Redwood Meadows	78	24	25	74	77
Crossfield	108	172	258	79	86

The 80th percentile alarm handling time had a range of 24 seconds in Redwood in 2017 to 142 seconds in Irricana in 2020.

Observation #23: Calgary 911 is contracted to provide dispatching for all RVCFS stations and the contracted stations in Crossfield and Redwood Meadows. RVCFS does not have a specific alarm handling service level or performance goal identified for Calgary 911. Further, there is considerable variation in the time taken to assess the severity and location of the incident and complete the station notification. There are clearly some stations that have shorter alarm handling process reported than others.

Recommendation #23: Conduct a review of the alarm handling process and establish performance goals for Calgary 911

(Suggested completion: 12 – 24 months)

Working with Calgary 911 staff, RVCFS should review the processes for alarm handling and when specific timestamps are captured.

Rationale: *Maintaining reliable and valid data is a critical first step in monitoring and managing response performance. A review of the alarm handling process may reveal irregularities in the current practices involved with station notification and response timestamps. Further, at 168 seconds, Calgary 911's five-year 90th percentile time is nearly double the time suggested in the standards offered by NFPA when all stations are considered together. While this varies considerably from station to station and year to year, if possible, it would be in the best interest of RVCFS to establish performance goals with Calgary 911 and monitor alarm handling performance.*

4.4.2 Chute and Muster Performance

Chute (turnout) and muster (assembly) time is the time taken from point at which alarm handling process and notification is completed until the first responding emergency vehicle has responded. Chute or turnout time is the reference for career stations; muster or assembly time applies to paid-per-call volunteer stations. For career staff, this chute time is typically much shorter as it is limited to moving toward the fire engine, donning their bunker gear and getting into the vehicle. For paid-per-call volunteer stations, muster time includes the time required to travel to the fire station as well as any preparation before responding.

Chute time performance should be monitored and reported to firefighting crews regularly. NFPA 1710 identifies a 90th percentile turnout time standard of 80 seconds for a career fire station responding to a fire/rescue incident. The 80-second standard can be a challenge to achieve. Attention to station design, activities within a station and firefighter awareness can all help to improve the performance and optimize response performance.

NFPA 1720 does not include a muster (assembly) time standard. Muster time is influenced by a number of factors including time of incident, availability of firefighters, travel distance to the fire station. As a result, it is difficult to assess whether muster time performance can

be improved given the range of factors influencing it. However, it should be monitored to assess the impact of muster time on total response time and establishing service levels.

Table 27: Career Station Chute Time for All Emergency Incidents (in seconds)

Station	2016	2017	2018	2019	2020	5 Year
Balzac	207	214	201	222	192	210
Bearspaw	191	190	187	178	224	195
Springbank	177	175	187	185	198	181
Elbow Valley	179	253	253	189	195	204
90th percentile	191	204	199	196	200	198
80-sec compliance	46%	44%	40%	42%	39%	42%

Table 27 identifies the annual and five-year 90th percentile chute time performance for RVCFS career stations. The current performance for all RVCFS career stations compliance with the 80-second goal is quite low. The 90th percentile performance for all stations was more than double the NFPA standard for this five-year period.

Table 28: Paid-Per-Call Volunteer Station 80th Percentile Muster Time for All Emergency Incidents (in seconds)

Station	2016	2017	2018	2019	2020	5 Year
Langdon	383	377	424	414	386	395
Irricana	618	527	566	545	624	588
Madden	885	794	941	848	912	893
Redwood Meadows	506	561	544	527	494	529
Crossfield	474	436	380	371	412	423

The 80th percentile muster times for all volunteer RVCFS and contracted stations are provided as context. There are no specific muster standards for paid-per-call volunteer departments. Muster time ranged from a high of 941 seconds (approx. 15.5 minutes) in Madden (2018) to a low of 377 seconds (approx. 6 minutes) in Langdon (2017). In general, Langdon muster times are the shortest and Madden the longest. These times have a direct effect on total response times and must be considered in establishing service levels.

4.4.3 Travel Time Performance

Travel time is the time taken to drive to the location of the incident. It is measured from the beginning of the responding timestamp to the point of arrival on scene. Travel time is a function of distance from the fire station to the incident and the speed travelled to the incident. It can be actively managed by distributing fire resources in the most optimal response locations in the demand zones. Travel time should be monitored over time to assess whether additional resources are required in different locations to maintain service levels.

NFPA 1710 identifies a performance goal of 240 seconds, 90% of the time for career fire stations. This standard is most frequently applied to urban and suburban developments. It

can be a difficult standard to achieve as development in much of Alberta based on single residential properties and urban sprawl. NFPA 1720 acknowledges the considerable variations in size and population densities of the demand zones of many paid-per-call volunteer fire services. Depending upon the specific geography, it offers several different response time benchmarks, but it does not identify a specific travel time standard.

County Council Policy C-704 does well to acknowledge different service standards within demand zones based on distance from a fire station. Establishing service levels for incidents occurring within eight km of travel distance and a second for those beyond is reasonable, as incidents further away from the station will clearly have longer response times. As a result, the following section considered travel time for incidents within the eight km distance and reported the 80th percentile to reflect the response standards in Policy C-704. Further, this policy identifies stations with 10-minute and 18-minute response time standards. The station was analyzed in the 10-minute and 18-minute groups to reflect this policy.

Table 29: 80th Percentile Travel Time for Stations with 10-Minute Response Goal (<8 km, in seconds)

Station	2016	2017	2018	2019	2020	5 Year
Balzac	521	517	504	486	523	510
Bearspaw	617	491	501	543	527	543
Springbank	607	591	557	557	532	575
Elbow Valley	492	437	472	462	443	465
Langdon	411	406	475	413	413	418
80th percentile	555	507	514	490	522	519

Table 29 provides the 80th percentile travel time for all emergency incidents occurring within eight kilometers from RVCFS stations assigned with a 10-minute response time goal. While most are career stations, Langdon is a paid-per-call volunteer station. The five-year 80th percentile travel times for these stations was the lowest in Langdon (nearly 7 minutes), and highest in Springbank (just over 9.5 minutes).

Table 30: 80th Percentile Travel Time for Stations with 18-Minute Response Goal (<8 km, in seconds)

Station	2016	2017	2018	2019	2020	5 Year
Irricana	922	473	553	464	434	535
Madden	1281	209	341	407	433	449
Redwood Meadows	385	416	364	391	405	392
Crossfield	535	466	596	379	503	516
80th percentile	516	466	452	393	460	456

Table 30 identifies the 80th percentile travel times for all incidents occurring within eight kilometers of the RVCFS and contracted paid-per-call volunteer stations. Only incidents occurring within the County were considered for the contracted stations. The five-year 80th

percentile travel time for these incidents ranged from six and one-half minutes for Redwood Meadows station and nearly nine minutes in Irricana.

4.4.4 Total Response Time Performance

Total response time is measured from the point at which the 911 call enters the computer aided design (CAD) system to the point at which the first arriving firefighting apparatus arrives. The NFPA 1710 standard implies a response time performance goal of 399 seconds for the first arriving fire apparatus in urban areas (see section 4.3.1). NFPA 1720 identifies a range of response time standards based upon population density and distance traveled (see section 4.3.2).

Policy C-704 identifies two categories of stations – a 10-minute response time group and 18-minute response time group which are all paid-per-call volunteer stations. This County council guideline applies to incidents within eight kilometers of the stations. Incidents beyond that distance have a travel time dependent response goal. No standard is identified for contracted fire services. As already discussed, these stations should have similar response goals.

The following response time analyzes only consider emergency responses within Rocky View County.

Table 31: 80th Percentile Response Time by Response Zone for All Emergency Incidents

Response Zone	2016	2017	2018	2019	2020	5 Year
Balzac	1121	1112	1060	1049	1027	1074
Bearspaw	1213	1084	1194	1079	1026	1131
Springbank	985	917	958	1039	946	975
Elbow Valley	877	746	749	684	770	764
Langdon	1234	1324	1314	1362	1455	1345
Irricana	1569	1573	1579	1683	1463	1571
Madden	1941	1762	2034	1713	1881	1901
Redwood Meadows	1220	1301	1174	1147	1134	1220
Crossfield	1085	1155	1469	1133	1042	1155

Table 31 considers response performance for all emergency responses within the county from a response (demand) zone perspective. In other words, it illustrates the 80th percentile response time within each zone, regardless of the distance from the stations. This information is provided as context and not as a comparison to established standards.

The 80th percentile total response time of the first arriving fire apparatus was consistently the lowest in the Elbow Valley response zone and the longest in Madden. The variation in response time reflects the distances traveled and operating model, whether career or paid-per-call volunteer, within the zones.

Table 32: 80th Percentile Response Time for Stations with 10-Minute Response Goal (<8 km)

Station	2016	2017	2018	2019	2020	5 Year
Balzac	728	716	721	693	766	714
Bearspaw	756	682	737	691	711	724
Springbank	776	766	716	778	725	755
Elbow Valley	674	603	625	631	689	630
Langdon	771	824	887	856	928	863
80th percentile	739	722	722	705	732	727
600 sec. compliance	60%	58%	56%	61%	59%	59%

Table 32 illustrates the 80th percentile response time performance for all emergency incidents within eight kilometers of the 10-minute (600 sec) response goal stations for this five-year period. In general, the 10-minute response time was only achieved around 60% of the time. The Elbow Valley station consistently nearly achieved the 600-second response time. Generally, total response time performance was relatively stable throughout this period, with the exception of the Langdon station which increased by 20%.

Table 33: 80th Percentile Response Time for Stations with 18-Minute Response Goal (<8 KM)

Station	2016	2017	2018	2019	2020	5 Year
Irricana	1018	1275	1061	810	909	995
Madden	2119	887	1061	1119	1235	1304
Redwood	912	1202	937	937	1058	966
Crossfield	1006	895	854	769	945	954
80th percentile	982	1117	958	863	967	981
1080 sec compliance	88%	77%	84%	96%	87%	85%

Table 33 illustrates the 80th percentile response time performance for all emergency incidents within eight kilometers of the 18-minute (1080 seconds) response goal stations for this five-year period. The annual compliance with the 18-minute response standard was high, nearly achieved by all stations with the exception of Madden. There was considerable year over year variation, reflecting the low number of responses within the eight-kilometer distance from these stations over this period.

4.4.5 Effective Response Force and RVCFS Structure Fire Performance

NFPA 1710 suggests an effective the first arriving fire apparatus should arrive within 399 seconds, 90% of the time and the effective response force (ERF) of 16 firefighters within 639 seconds (10 minutes 39 seconds) 90% of the time for low to moderate-risk residential fires. NFPA 1720 also identifies the minimum number of firefighters that should respond to a fire incident within a specific timeframe. However, NFPA 1720 acknowledges rural and remote responses will not typically have the same resources available as urban career stations.

The ERF standards are established based on critical task analyzes completed by organizations such as NFPA and the National Institute of Standards and Technology (NIST). These standards are established to ensure adequate resources are available to complete critical tasks and safely manage incidents.

Policy C-704 also identifies the minimum standard for response is four firefighters. This policy acknowledges that in the absence of a complete ERF, defensive firefighting strategies must be the priority. The actual number of firefighters required to safely manage an incident will vary based on specific circumstances and availability of resources. However, if an ERF cannot be assembled firefighting operating procedures reflect this limitation and fireground tactics and performance expectations are more defensive until an ERF is assembled.

This section assesses the time taken to assemble firefighters for structure fires within Rocky View County. The 80th percentile response times of four firefighters to structure fires within eight kilometers of 10-minute response goal stations. There were only nine structure fires that occurred within eight kilometers from each 18-minute response goal stations during the study period. Statistical analysis of the small number of events was not valid.

Table 34: 80th Percentile Time to Assemble Up to 12 Firefighters for All Structure Fires in County (in minutes)

# firefighters	2016	2017	2018	2019	2020	5 Year
4	22	26	28	24	21	24
6	26	26	29	28	28	28
8	66	43	43	68	63	57
10	34	26	41	41	56	37
12	41	51	79	55	35	52

Table 34 provides the 80th percentile time taken to assemble four to 12 firefighters for structure fires in the county. The analysis was limited to 12 firefighters as the number of structure fires where more than 12 firefighters responded was limited to a small number over the five-year period. This data provides an overview of the time taken to assemble an ERF for all structure fires in the county.

The 80th percentile time to assemble four firefighters was 24 minutes. The time taken to assemble six was not much greater. However, the time taken to assemble eight, ten, or twelve firefighters to structure fires, which is what is typically required to take an offensive firefighting posture requires as an ERF, takes an additional 10 - 30 minutes. With only four firefighters arriving initially and a considerable time to wait for the second arriving fire engine, the RVCFS will be limited to defensive firefighting tactics for most structure fires within the county.

Table 35: Time to Assemble Four Firefighters, 10-Minute Service Level Stations (<8 KM)

Station	2016	2017	2018	2019	2020	5 Year
Balzac	651	897	649	513	918	705
Bearspaw	724	908	834	970	750	816
Springbank	663	914	1752	759	552	753
Elbow Valley	578	583	981	697	807	784
Langdon	682	820	748	857	926	842
80th percentile	716	928	823	838	830	817
600 sec. compliance	60%	58%	56%	61%	59%	59%
90th percentile	748	1027	1139	899	905	908

Table 35 identifies the time taken to assemble four firefighters to respond to structure fires within eight kilometers from each 10-minute response goal station. NFPA 1710 suggests the first apparatus with four firefighters should arrive within 399 seconds, 90% of the time. County Policy C-704 indicates that the first arriving four firefighters should arrive within 10 minutes, 80% of the time.

The five-year 80th percentile response time of four firefighters within eight kilometers in 817 seconds and 90th percentile is 908 seconds. The 600 second response goal is achieved approximately 60% of the time. The 10-minute response performance goal is also relevant to new residential development within the County. The National Building Code – Alberta Version (2019 Edition) requires new residential properties to have extended limiting distances or specific fire-resistant construction requirements when total fire service response time extends beyond 10 minutes, 90 percent of the time.

4.5 Measuring, Managing and Reporting Performance

Performance measurement is at the core of moving toward a data-based culture and moves it away from mere opinion for fire services. Performance measurement allows fire services to:

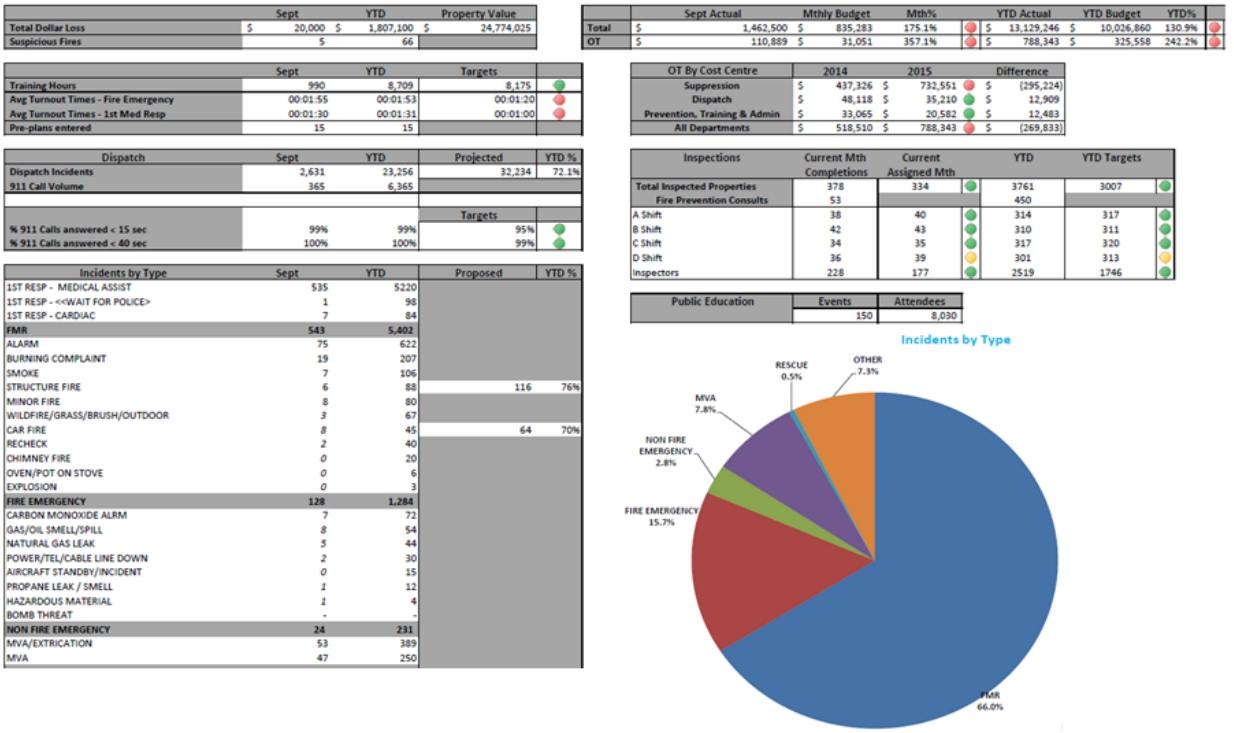
- Determine a baseline performance level according to the indicators
- Establish goals based on current performance
- Determine the gap between desired goals and current performance levels
- track progress toward achieving goals
- Benchmark and compare performance between departments
- Identify problems and causes
- Plan for the future. Once fire departments can be measured according to the same indicators, standards based on best practices can be more easily established.

Performance data must be relevant, timely and useful to drive performance improvement through performance management. Performance management refers to the process of monitoring and identifying service excellence and service gaps. In this context, it is not intended as an individual performance review.

Measurable service levels and objectives, as well processes to access timely data must be in place to support performance measurement, management and reporting. County Council is the authority having jurisdiction over establishing service levels. Senior administration and the fire chief should provide County Councillors with relevant performance reports reflecting the fire service performance information to support this process. However, a number of factors beyond performance information contribute to how appropriate service levels are established including assessment of local risks, cost and general economic conditions.

Operational performance data and service level expectations should be regularly reported to staff. Timely performance reporting reflecting operational performance metrics and service levels is key to implementing performance management and system improvements. One approach to providing timely information to fire staff is develop a performance dashboard. CAD and RMS technologies must be integrated to support this tool. Figure 11 provides an example of a performance dashboard.

Figure 11: Performance Dashboard



	Sept	YTD	Property Value
Total Dollar Loss	$ 20,000	$ 1,807,100	$ 24,774,025
Suspicious Fires	5	66	

	Sept Actual	Mthly Budget	Mth%	YTD Actual	YTD Budget	YTD%
Total	$ 1,462,500	$ 835,283	175.1%	$ 13,129,246	$ 10,026,860	130.9%
OT	$ 110,889	$ 31,051	357.1%	$ 788,343	$ 325,558	242.2%

	Sept	YTD	Targets
Training Hours	990	8,709	8,175
Avg Turnout Times - Fire Emergency	00:01:55	00:01:53	00:01:20
Avg Turnout Times - 1st Med Resp	00:01:30	00:01:31	00:01:00
Pre-plans entered	15	15	

OT By Cost Centre	2014	2015	Difference
Suppression	$ 437,326	$ 732,551	$ (295,224)
Dispatch	$ 48,118	$ 35,210	$ 12,909
Prevention, Training & Admin	$ 33,065	$ 20,582	$ 12,483
All Departments	$ 518,510	$ 788,343	$ (269,833)

Dispatch	Sept	YTD	Projected	YTD %
Dispatch Incidents	2,631	23,256	32,234	72.1%
911 Call Volume	365	6,365		
			Targets	
% 911 Calls answered < 15 sec	99%	99%	95%	
% 911 Calls answered < 40 sec	100%	100%	99%	

Inspections	Current Mth Completions	Current Assigned Mth	YTD	YTD Targets
Total Inspected Properties	378	334	3761	3007
Fire Prevention Consults	53		450	
A Shift	38	40	314	317
B Shift	42	43	310	311
C Shift	34	35	317	320
D Shift	36	39	301	313
Inspectors	228	177	2519	1746

Incidents by Type	Sept	YTD	Proposed	YTD %
1ST RESP - MEDICAL ASSIST	535	5220		
1ST RESP - <<WAIT FOR POLICE>	1	98		
1ST RESP - CARDIAC	7	84		
FMR	543	5,402		
ALARM	75	622		
BURNING COMPLAINT	19	207		
SMOKE	7	106		
STRUCTURE FIRE	6	88	116	76%
MINOR FIRE	8	80		
WILDFIRE/GRASS/BRUSH/OUTDOOR	3	67		
CAR FIRE	8	45	64	70%
RECHECK	2	40		
CHIMNEY FIRE	0	20		
OVEN/POT ON STOVE	0	6		
EXPLOSION	0	3		
FIRE EMERGENCY	128	1,284		
CARBON MONOXIDE ALRM	7	72		
GAS/OIL SMELL/SPILL	8	54		
NATURAL GAS LEAK	5	44		
POWER/TEL/CABLE LINE DOWN	2	30		
AIRCRAFT STANDBY/INCIDENT	0	15		
PROPANE LEAK / SMELL	1	12		
HAZARDOUS MATERIAL	1	4		
BOMB THREAT	-	-		
NON FIRE EMERGENCY	24	231		
MVA/EXTRICATION	53	389		
MVA	47	250		

Public Education	Events	Attendees
	150	8,030

As discussed earlier in Section 4.3.3, the current use of the Fire Pro RMS does not currently support a seamless import of response data from Calgary 911, performance analysis and timely reporting.

4.6 Data Management

Figure 12 illustrates the distribution of chute time for the 10-minute response stations. Accurate analysis of response performance can only be completed with good data. A significant portion of the data was clustered in the first-time segment in the analysis of chute (turnout) and muster (assembly) times. A total of 1512 responses within the zero to 20-second time segment were

noted. Beyond the zero to 20-second time segment, the distribution takes the shape of a relative normal bell curve with an extended tail of data, which is commonly seen in response data.

Figure 12: Distribution of Chute/Muster Times For 10-Minute Response Stations (in seconds)

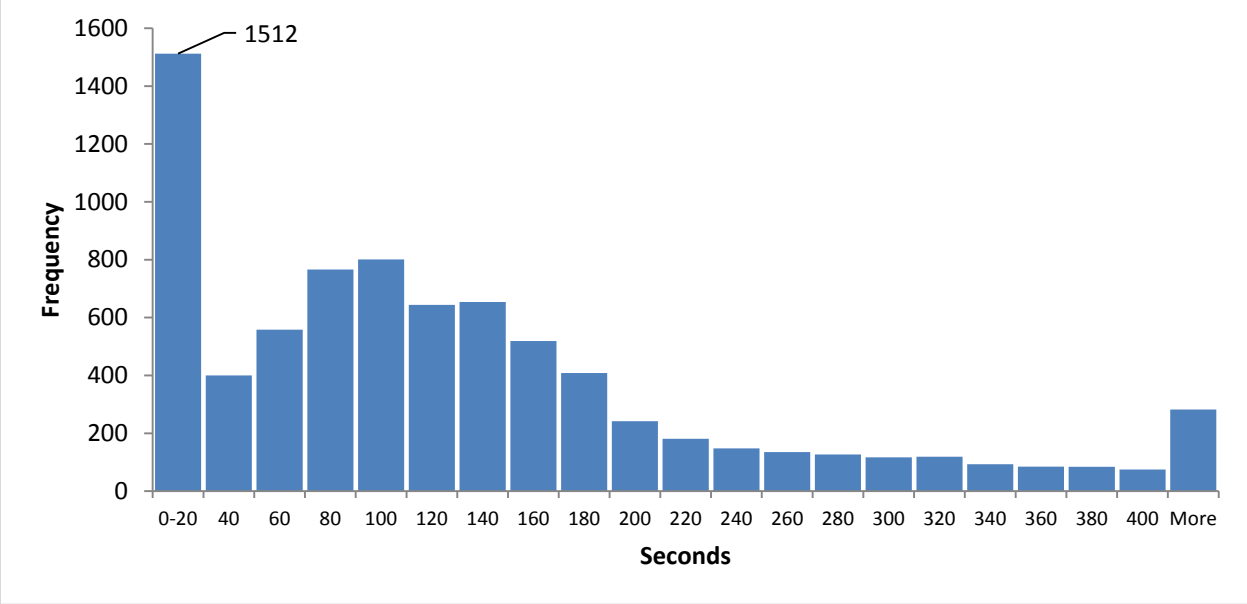
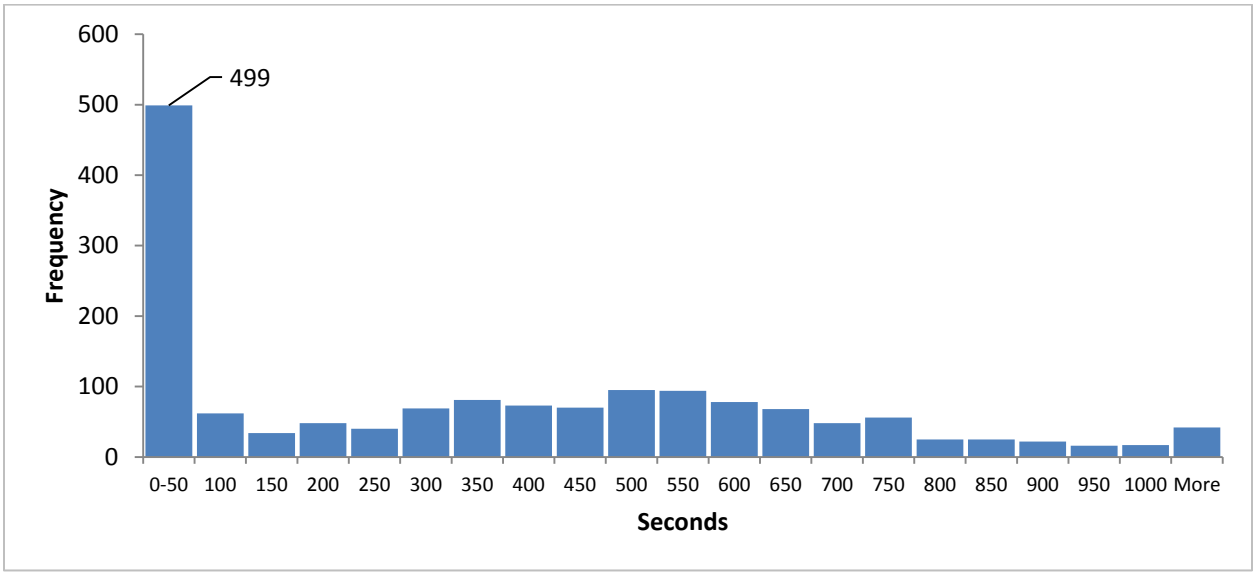


Figure 13 illustrates the distribution of the muster times for RVCFS and contracted 18-minute response stations. Similarly, there were 499 responses in the zero to 50-second category. While a generally flatter curve, the large number in the initial category is somewhat suspect.

Figure 13: Distribution of Muster Time for 18-Minute Response Group (in seconds)

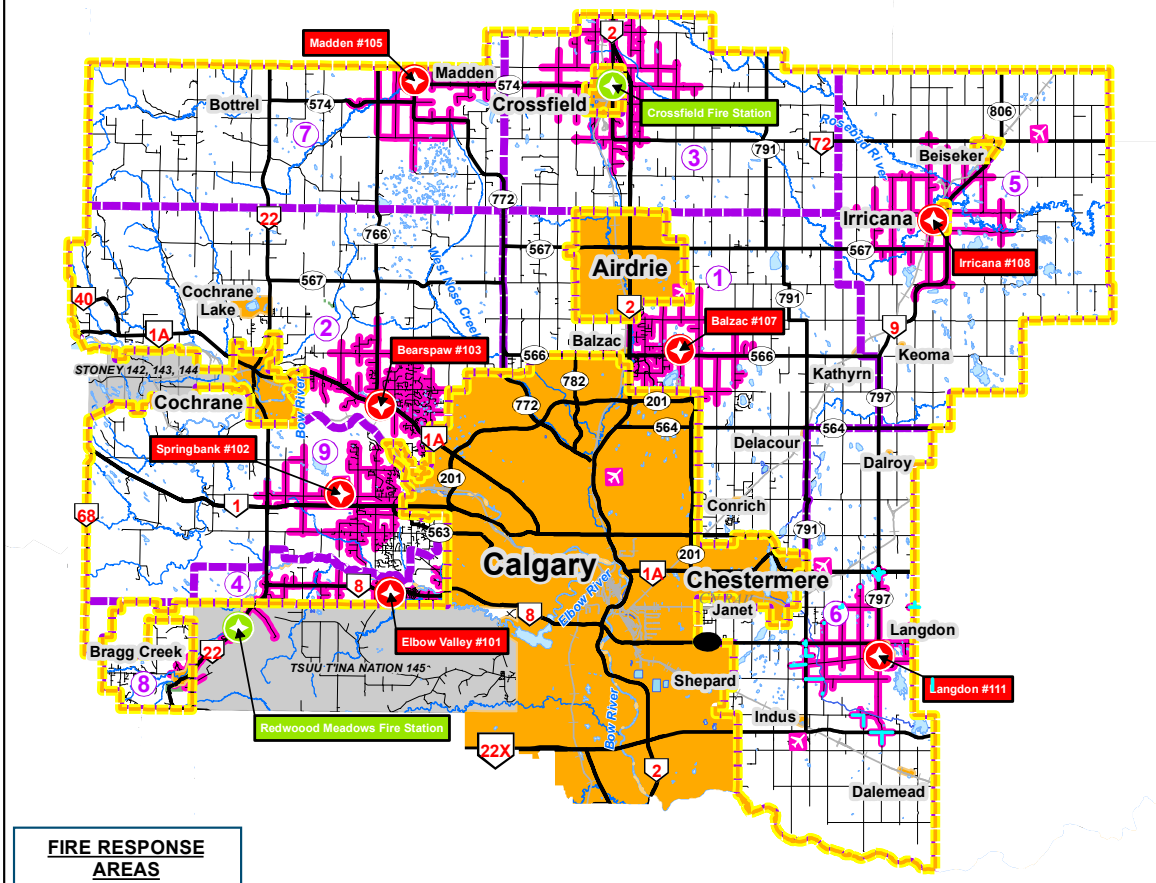


4.7 Response Time Mapping Analysis

Map 2: Rocky View County Fire Services Eight KM Service Level Coverage

Rocky View County Fire Services

Eight Kilometer Road Travel Network for RVCFS and Contracted Stations



FIRE RESPONSE AREAS

1. BALZAC
2. BEARSPAW
3. CROSSFIELD
4. ELBOW VALLEY
5. IRRICANA
6. LANGDON
7. MADDEN
8. REDWOOD
9. SPRINGBANK

8 KM TRAVEL FROM STATION

Times to Travel 8 KM from the Station		
Station	Min Seconds	Max Seconds
Balzac	304	442
Bearspaw	288	439
Springbank	319	391
Elbow Valley	321	369
Langdon	335	436
Irricana	307	367
Madden	288	359
Crossfield	290	386
Redwood Meadows	317	461

FIRE STATION LOCATION
CONTRACT FIRE STATION LOCATION
ACCESS ROAD
HIGHWAY
RAILWAY
POPULATED PLACE
ROCKY VIEW COUNTY MUNICIPAL BOUNDARY
AIRPORT
WATERWAY / WATERBODY
PROTECTED AREA / PARK
FIRE RESPONSE AREA

Scale: 1:500,000

Date: October 2021

0 5 10 20 30 40 KM

N

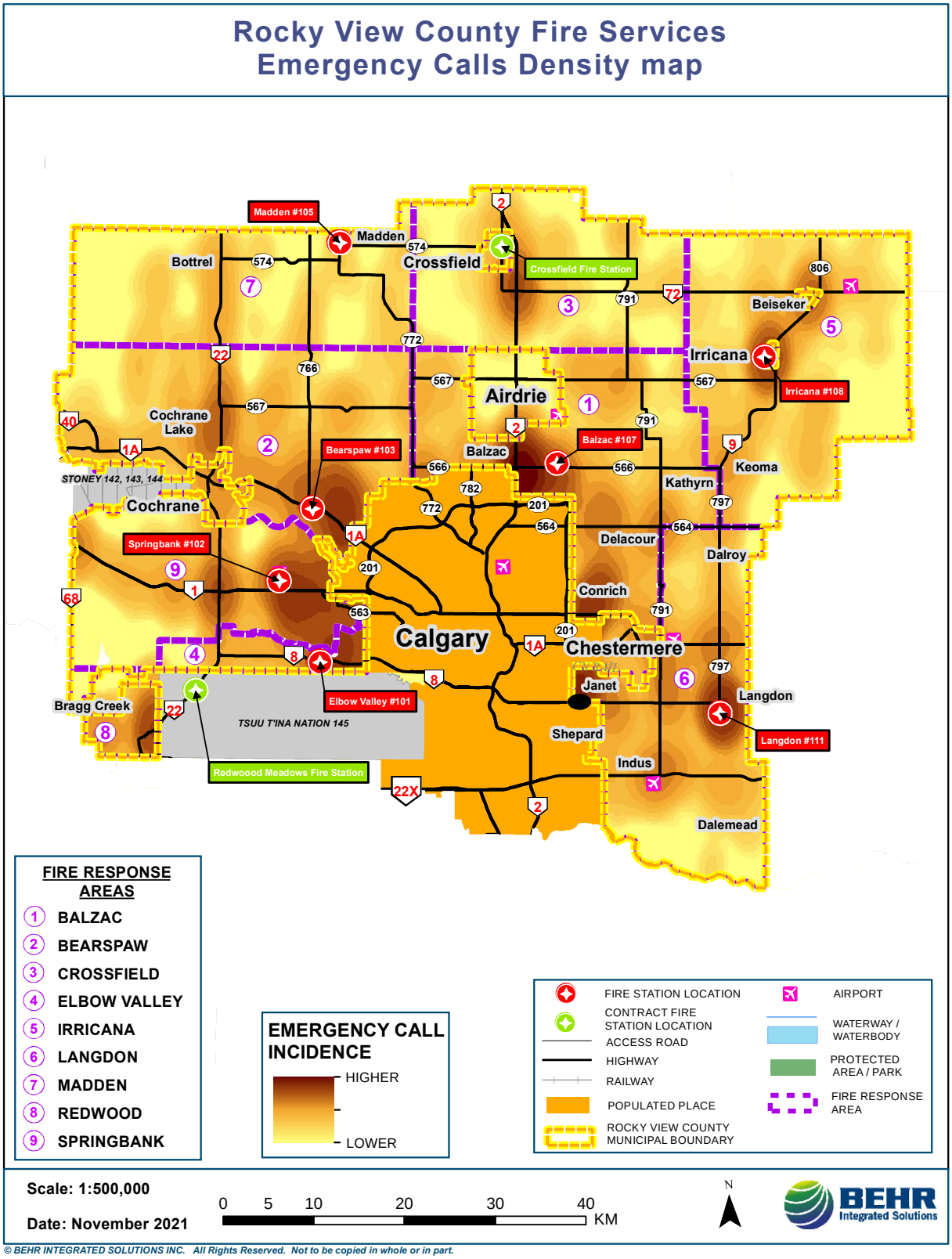
BEHR Integrated Solutions

Map 2 illustrates RVCFS stations, the response zones and the eight-kilometer travel road network aligning with the service standard in Rocky View Council Policy C-704. The RVCFS is a composite department with full-time career stations in the Balzac, Bearspaw, Springbank and Elbow Valley response zones. The stations in Irricana, Langdon and Madden response zones are staffed with paid-per-call volunteers. Redwood Meadows and Crossfield response zones are contracted to provide emergency services in their respective response zones and are staffed with paid-per-call volunteers as well. As a general comment, the RVCFS covers a large and diverse response area surrounding Calgary to the east, north and west.

The purple highlighted travel networks identify the eight kilometers of travel from each of the stations linked to Policy C-704. The service level for areas noted by the purple roadways in Balzac, Langdon, Elbow Valley, Springbank and Bearspaw zones is to provide four firefighters within 10 minutes 80% of the time. The service level noted by the purple roadways in the Madden and Irricana response zones is to provide four firefighters within 18 minutes 80% of the time. The service level for areas beyond the purple highlighted road networks in all response zones is to provide four firefighters in an indeterminate amount of time. As contracted departments, neither Crossfield nor Redwood Meadows are required to provide this service level. The mapping of their eight-kilometer road network area is provided as a reference.

Map 2 also identifies the time taken to travel eight kilometers along varies roads from each station. Travel times vary from 288 seconds in the Madden and Bearspaw response zones to a high of 442 seconds in the Balzac response zone. These times are calculated based on a GIS algorithm based on ideal conditions. It does not consider variable conditions such as time of day, weather or traffic flows.

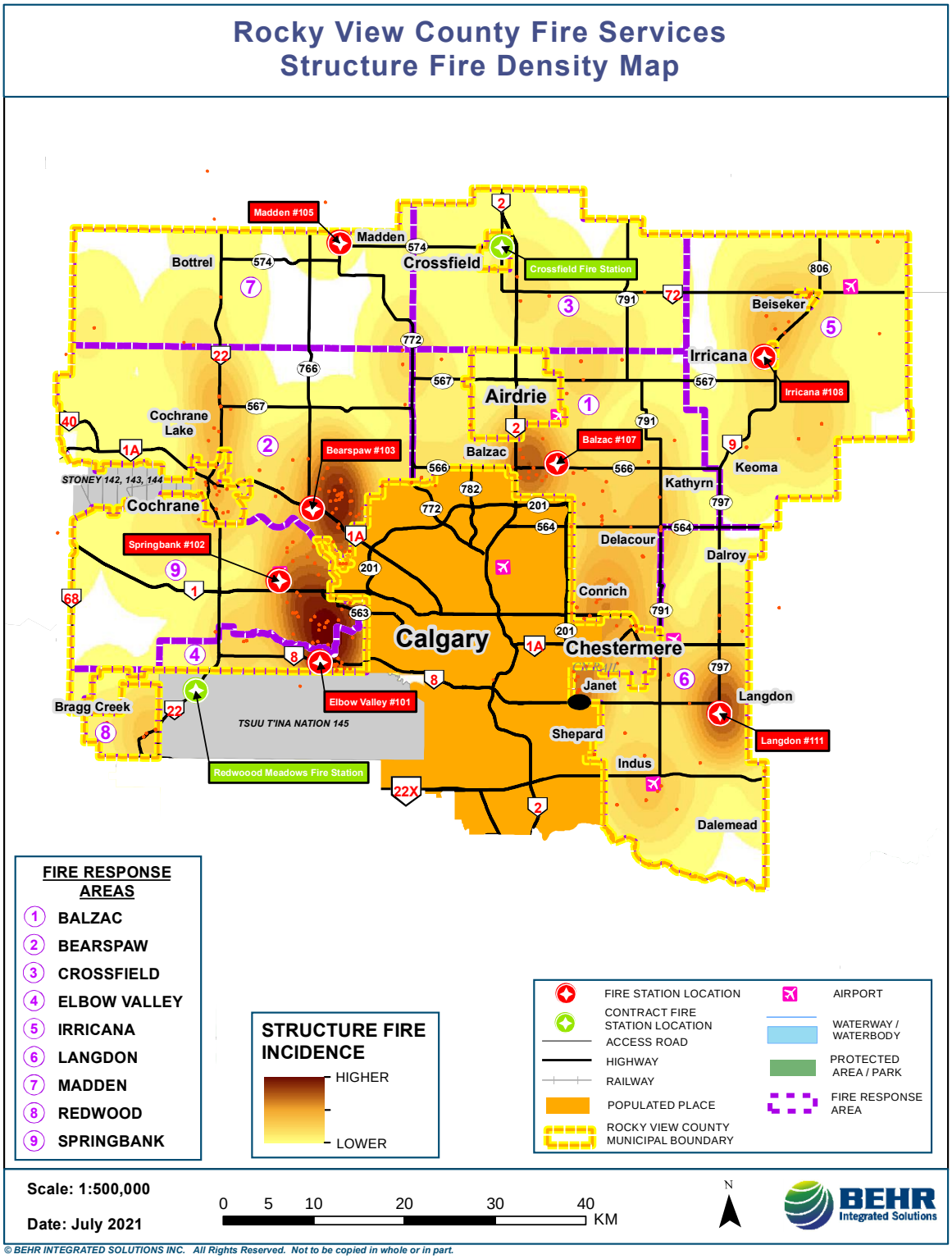
Map 3: Rocky View County Emergency Incident Location Density



Map 3 identifies the areas within Rocky View County where most emergency responses occur. The darker shaded areas represent a higher incidence, or density, of emergency responses. As a generalization, RVCFS stations are well located to respond to the areas of highest emergency incidents. Further, most emergency responses within the county occurred between existing stations and the boundary of Calgary. As previously noted, the location of these incidents supports the idea of discussions with the City of Calgary to provide response services should be considered. As recommended, mutual and automatic aid will continue to be important elements to support RVCFS response capacity for larger and more complex incidents.

As development and growth occurs; new regions of higher incident density will emerge. The increasing risks and population in these areas should be monitored and assessed as part of completing the SOC policy. The areas surrounding Conrich and Delacour are areas that should be monitored. Additionally, the Cochrane Lakes area is another growth area where responses are occurring more frequently. The development and response frequency in the Harmony development should also monitored.

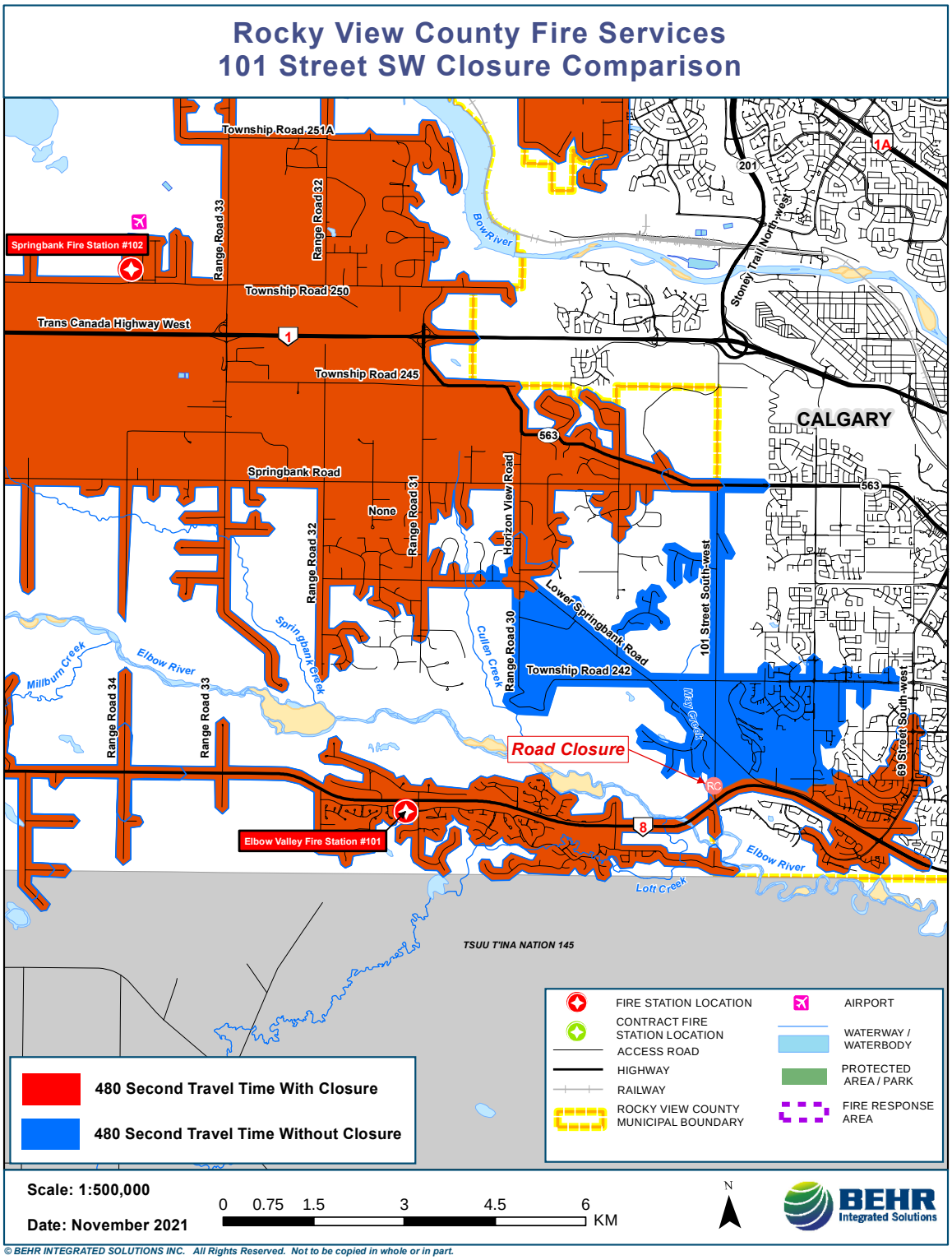
Map 4: Rocky View County Structure Fire Location Density



Map 4 identifies focuses on structure fire location. Despite the relatively low frequency of these events, structure fires are generally higher risk events for firefighters and therefore remain a focus of this plan. The areas of highest structure fire densities are the darker shaded regions in the map. Most structure fires between 2016 and 2020 occurred in the Balzac, Bearspaw, Springbank, Elbow Valley and Langdon response zones. RVCFS and contracted departments are well located to respond to these events.

As discussed in Recommendation # 26 RVCFS stations are widely distributed across the county. A minimum of four firefighters respond initially to most fire structure fire incidents. Additional support is provided by the stations in the adjacent response but given the distances traveled is some time away before it will arrive. As a result, immediate fire suppression efforts will most likely be limited to exterior firefighting only. Given the distances between stations and that the current stations are well located; the most efficient approach to improving service levels to support effective interior fire operations is to increase the number of firefighters in these locations.

Map 5: Impact of 101 St. SW Calgary Road Closure to Cross-zone Response between Springbank and Elbow Valley Response Zones



Map 5 illustrates the impact of the closure of 101 St. SW by the City of Calgary. The blue areas in the map are the road networks currently covered within an 8-minute (480 second) travel time by the Elbow Valley Station in the southeast corner of the Springbank response zone. Map 3 identified that this region is an area where structure fires occurred relatively frequently between 2016 and 2020. The Elbow Valley Station responded into the Springbank response area 350 times and the Springbank Station 129 times in cross-zone coverage or support.

Table 36: Cross-zone Coverage for Springbank and Elbow Valley Stations 2016-2020

Response Zone	Springbank Station	Elbow Valley Station
Springbank		350
Elbow Valley	129	

Should the closure occur permanently, it will result in a lower level of service to these areas if Highway 22 is used as the alternative route. GIS analysis suggests that cross-zone coverage response times will increase by nearly four minutes for both stations to co-respond and arrive in the areas where fires are most frequently occurring today. The increasing response time will delay fire suppression and rescue efforts.

Observation #24: A new RVCFS fire station is identified for development in the Rocky View County 2020-2024 Financial Plan for the Conrich area. The need for this station is predicated on the rate of growth and demand for service in this area of the county. Balzac and Langdon stations currently servicing this area are the two busiest stations in the RVCFS by a considerable margin. Additionally, mapping of response locations identifies the Conrich area as an emerging area of higher demand for service. However, growth and development rates are unpredictable. Further, the current fiscal and economic environment in Alberta in general has created budgetary pressures for all municipalities.

Recommendation #24: Evaluate growth and development, demand for services and response performance in Conrich area based on council approved standard of cover and service policy.

Proceed with Conrich station design, build and staffing as service demands dictate and operating capital funding is allocated. This station development should proceed when the risks or service pressures can no longer be managed with current RVCFS resources.

(Suggested completion: 60 - 120 months)

Rationale: *The RVCFS currently meets RVC Council approved service levels in the Conrich area. Rates of development and increasing demand for service are difficult to predict in the current fiscal environment. The RVCFS could access mutual and potentially automatic aid from the City of Chestermere to assist in providing immediate response coverage in the Conrich area. Demand for service should be monitored.*

4.8 Incident Management System

An effective incident management system will assist with providing a standardized approach to the command, control, and coordination of an incident. The OHS guide for firefighting states that fire department policy should include a "detailed description of the incident management system to be followed at an emergency incident."

The chosen incident command system must meet the needs of the jurisdiction for a safe and effective management of emergencies by providing clear direction through defined leadership (command), common terminology, span of control, firefighter accountability and effective coordination of activities. The incident command system must be designed to expand, or contract as required based on the nature of the incident.

RVCFS has implemented the Blue Card Command system within their department. Blue Card states, "this training and certification program produces incident commanders that make better decisions that will potentially eliminate the lethal and/or costly mistakes that cause injury, death, and unnecessary fire losses in the local response area." It is a proprietary program with a cost for training and ongoing certification. However, this incident management system is considered a leading practice for developing a common approach to fireground tactics and firefighter accountability.

All career officers are trained and certified to the required standard. Irricana and Langdon fire chiefs are also trained in this system of communication. However, the contracted stations at Redwood Meadows and Crossfield do not use this system.

Additionally, all firefighters are required to be certified in Incident Command System (ICS) 100 and 200. ICS is another incident management system commonly used for large incidents. This system was developed as a standardized on-site management system designed to enable effective, efficient incident management by integrating a combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure. It is typically used for larger incidents but can be scaled depending on the incident. Furthermore, the Blue Card incident management system can be integrated into the ICS system.

4.9 Critical Task Analysis

The purpose of completing a critical task analysis is to consider whether RVCFS response standard operating guidelines reflect the number of firefighters required to safely manage common risks. In other words, are enough firefighters typically responding to complete the critical tasks on an emergency scene in a safe and timely manner. The OHS guide for firefighting states that fire department policy should include "the minimum number of firefighters required to safely perform each identified firefighting function or evolution."

Considerable research was undertaken by the NIST to identify the optimum number of four firefighters in a fire company necessary for the most effective completion of the over 22 essential fire ground tasks at a typical single-family house fire. A fire company is defined as the team of firefighters assigned to a fire apparatus. On average, a four-member crew operating on a structure fire completed all the tasks on the fire ground seven minutes faster (nearly 30%) than

the two-person crews. The four-person crews completed the same number of fire ground tasks 5.1 minutes faster on average (nearly 25%) than the 3-person crews. NFPA recommends that for a standard single-house residential fire that a minimum 16 firefighters, or four companies of four firefighters, are required for a full alarm assignment (17 if an aerial devise is used).

The following critical task assignments are offered as examples that can be used by the RVCFS to complete a critical task analysis for their most common and moderate/high-risk responses. Resource requirements will vary based on the incident type and risk.

Table 37: Low Risk (no exposures): garbage, vehicle – private, grass, investigate (external), monitoring alarm (w/o confirmation)

Initial Deployment	No. FF	Task Assignment
Engine	4	Incident Command, Scene Safety, Size-up, IAP Development, Accountability, Resource Determination, Water Supply, 360 assessment, Forcible Entry, Primary Search, Fire Control, Incident Stabilization
Total Personnel	4	

Table 38: Moderate Risk (with exposures): grass/wildland/brush

Initial Deployment	No. FF	Task Assignment
Bush Buggy	4	Incident Command, Scene Safety, Size-up, IAP Development, Accountability, Resource Determination, Water Supply, Fire Control, Incident Stabilization
Tender	2	Water Supply
Engine	4	Manpower for operations
District Chief	1	Transfer of Command, Scene Safety, IAP Confirmation and Evaluation, Accountability, Resource Management
Total Personnel	11	

Table 39: Moderate Risk: Attached garage, single-family residential (detached/duplex)

Initial Deployment	No. FF	Task Assignment
Engine	4	Incident Command, Scene Safety, Size-up, IAP Development, Accountability, Resource Determination, Water Supply, 360 assessment, Forcible Entry, Primary Search, Fire Control, Incident Stabilization
Ladder (if available)	4	Scene Safety, Water Supply, Aerial Operations, On-deck Assignment, Primary Search, Fire Control
Rescue	4	Scene Safety, On-Deck, Primary/Secondary Search, Fire Control
2nd Engine	4	Scene Safety, Water Supply, On-deck Assignment, Primary Search, Fire Control
District Chief	1	Transfer of Command, Scene Safety, IAP Confirmation and Evaluation, Accountability, Resource Management.
RDU & Pickup truck		Rehab, Command area, protection from elements
Total Personnel	17	

Table 40: High Risk: Commercial, industrial, strip mall, warehouse, mid-rise residential

Initial Deployment	No. FF	Task Assignment
Ladder (if available)	4	Incident Command, Scene Safety, Size-up, IAP Development, Accountability, Resource Determination, Water Supply, 360 assessment, Aerial Operations, Forcible Entry, Primary Search, Fire Control, Incident Stabilization
Engine	4	Scene Safety, Water Supply, On-deck Assignment, Primary Search, Fire Control
Rescue	4	Scene Safety, On-Deck, Primary/Secondary Search, Fire Control
3rd Engine	4	Scene Safety, Water Supply, On-deck Assignment, Primary Search, Fire Control
District Chief	1	Transfer of Command, Scene Safety, IAP Confirmation and Evaluation, Accountability, Resource Management
RDU & Pickup	2	Rehab, Command area, protection from elements
Total Personnel	19	

Table 41: Moderate Risk: FMR Emergency, vehicle vs. pedestrian

Initial Deployment	No. FF	Task Assignment
Engine	4	Incident Command, scene safety, patient assessment / Care, patient packaging, Traffic Management
Rescue	4	Stabilization, Extrication, Traffic Management
Total Personnel	8	

Table 42: Moderate Risk: Motor vehicle crash (1-3 private vehicles)

Initial Deployment	No. FF	Task Assignment
Rescue	4	Incident command and size-up, safety, establish outer perimeter, pump operation, 2 FFs prepare hand line.
Engine	4	Establish inner perimeter, triage patients, patient care, extrication, patient packaging.
Total Personnel	8	

Table 43: Moderate Risk: Surface water, swift water or ice rescue, animal rescue

Initial Deployment	No. FF	Task Assignment
Water Rescue Unit	4	Officer of first arriving unit on scene assumes command, size-up, scene safety and communications, patient contact, shore rescue if possible or water/ice rescue if required.
Rescue	4	Addition Resources for Shore operations, On-Deck, Patient care
Squad	4	Addition Resources for Shore operations, On-Deck, Patient care
District Chief	1	Overall Incident Command, safety, accountability, resource management.
Total Personnel	13	

Table 44: Moderate Risk: Small quantity (<20 L) of known product (gasoline, anti-freeze), open space natural gas smell or odour from unknown source

Initial Deployment	No. FF	Task Assignment
Engine	4	Incident Command, Scene Safety, Size-up, IAP Development, Accountability, Resource Determination, Water Supply, 360 assessment, Forcible Entry, Incident Stabilization
Hazmat Unit	4	• Hazard and risk evaluation • Selection of personal protective equipment • Information management and resource coordination • Implement response objectives • Decontamination and clean up operations • Terminate the incident
Total Personnel	8	

Table 45: High Risk: Large quantity (>75 L) of known product, known hazardous product, unknown substance, large exposure, or train derailment

Initial Deployment	No. FF	Task Assignment
Ladder	4	Incident Command, Scene Safety, Size-up, IAP Development, Accountability, Resource Determination, 360 assessment, Incident Stabilization
Engine	4	Scene Safety, Water Supply, On-deck Assignment, Incident Stabilization, Search and Rescue
Hazardous Materials Response Unit	4	• Identify problem • Selection of personal protective equipment • Implement response objectives • Terminate the incident
Additional, Rescues, Ladder, Engines	6(+)	• Scene Safety, Water Supply, On-deck Assignment, Primary Search, Fire Control, Decontamination, Clean up
District Chief	1	• Hazard and risk evaluation • Information management and resource coordination
RDU & Pickup Truck		• Rehab, Command area, protection from the elements
Total Personnel	+19	

Observation #25: RVCFS provides excellent service to the community but is limited in its ability to manage structure fires. As previously identified, access to a reliable water supply adequate for firefighting is limited across the county. The initial response from career stations in Balzac, Bearspaw, Springbank and Elbow Valley can be as few as four firefighters on two fire apparatus. Large response zones result in extended response times for the second arriving station resources as considerable distances separate the stations. If the second response is from a station staffed with paid-per-call volunteer firefighters, additional time for the paid-per-call volunteers to travel to their respective stations extends the arrival of the second response further. In addition, the closure of 101 St SW will slow the arrival of the second arriving station in the Springbank and Elbow Valley response zones. As a result, the RVCFS response to structure fires is always limited to an exterior fire attack until adequate resources arrive and an ERF is assembled.

Rocky View County Council, Policy C-704, identifies that service levels must be limited to defensive strategies when firefighter safety or survivability of occupants is doubtful:

- *Entry into a structure for firefighting and rescue purposes is contingent on the life safety hazard, probability of survivability of occupants, and firefighter safety.*
- *If rescue is not required and the structure's involvement is such that the likelihood extinguishment is minimal, then the protection of exposures is the primary focus of firefighters upon arrival.*
- *For all areas of the County not included in sections 9 and 10 of this policy, the accepted level of service for structural firefighting and rescue is the protection of exposures and protection against fire extension to adjacent properties. A defensive firefighting strategy is mandated to these areas*

Therefore, in most circumstances the initial response of the RVCFS will be limited to defensive strategies, including exterior firefighting and exposure protection, until the second arriving station is in place. Interior firefighting without adequate water supply or before an ERF including a rapid intervention crew (RIC), also known as a rapid intervention team (RIT) can be in place is not considered safe.

Recommendation #25: Increase minimum career station staffing to six firefighters if reliable interior fire suppression is desired

(Suggested completion: 36 – 48 months)

As part of reviewing and completing a revised standard of cover, fire suppression service levels should also be reviewed. As growth and development in the county proceeds, the community risk profile will change, and fire suppression service expectations should be reviewed to ensure they align with community and RVC Council expectations.

Rationale: *Map 3 identifies that RVCFS fire stations are strategically located near areas of highest incident frequency. Therefore, additional stations will not necessarily improve response performance in the short term. The most efficient approach to ensuring that the initial arriving RVCFS response is capable of interior fire suppression is to increase the minimum daily staffing of the career stations to six firefighters. This could be done incrementally or within one budget cycle depending on available funding.*

NFPA 1710 identifies critical tasking for 16 firefighters for a low-risk residential structure fire. This requirement varies depending on specific circumstances and firefighter availability. However, generally accepted minimum industry safety practices such as the "two firefighters in/two firefighters out" rule should be observed in most cases. This practice requires two firefighters to be available on the outside of a structure to act as the RIC crew in the event the two on the inside require immediate assistance.

Therefore, the RVCFS must limit initial response activities to defensive strategies until the second arriving station is in a position to complete critical tasks and assume the role of the RIC team. The only circumstances under which this practice could be ignored is when the fire is obviously in its earliest stages of development and easily safely extinguished or rescue is likely to be successful. Given the extended response times experienced across rural areas of the county, the likelihood of the latter is relatively low in comparison to urban response.

Furthermore, the Alberta OHS Occupational health and safety (OHS) guide for firefighting acknowledges that the guidelines and policies developed should include, as per National Fire Protection Agency (NFPA) standards:

c. *identification of the standard firefighting functions based on the emergency services to be offered, including functions that must be performed simultaneously; and*
d. *the minimum number of firefighters required to safely perform each identified firefighting function or evolution.*

The following concurrent critical task examples identify the tasks each RVCFS firefighter is responsible for:

Critical Tasks for RVCFS Firefighters to Structure Fire

Table 46: Initial Arriving Crew Critical Tasks – 10-minute response

Initial Deployment	No. FF	Task Assignment
Crew officer	1	Incident Command, Scene Safety, Size-up, Accountability, Resource Determination and Site Management, 360^0 assessment, Fire Control, Incident Stabilization
Engine operator	1	Pump operations, accountability, water supply management
Water tanker/tender driver	1	Secure water supply, Primary Search, Forcible Entry, Fire Control
Water tanker firefighter	1	Primary Search, Forcible Entry, Fire Control
Total Personnel	4	

Table 47: Second Arriving Crew Critical Tasks – 20 – 30-minute response

Second Deployment	No. FF	Task Assignment
Crew officer	1	RIC Team/2^{nd} Up, Scene Safety, Fire Control, Accountability, Fire Control, Scene Safety, Incident Stabilization
Engine operator	1	RIC Team/2^{nd} Up, accountability, Fire Control, Ventilation, Raise Ladders
Water tanker/tender driver	1	Water supply and hose line support, Primary/secondary Search, RIC Team, Fire Control
Water tanker firefighter	1	Scene Safety, Water Supply, Primary Search, Fire Control
Total Personnel	4	

SECTION 5
CONCLUSION

The master plan was completed to assist Rocky View County and the Rocky View County Fire Services (RVCFS) in evaluating the current service delivery model and develop a strategy to advise in future investments in fire, rescue and emergency services. The plan involved a comprehensive analysis of all key elements of service delivery. This analysis included a review of the operational and administrative aspects of the RVCFS, community profile and risks, staffing, core service and program delivery, training, recruitment and retention, facilities and major equipment. Further, RVCFS response data was assessed with a focus on the current performance, capabilities and alignment with both existing and projected risks and levels of demand.

There are several observations and recommendations provided in this master plan to improve operational effectiveness and efficiencies. Key among the 25 recommendations is:

- Undertake a comprehensive risk analysis of the individual station demand zones and include it as part of a Standard of Cover (SOC) policy. Identified service concerns or policy gaps should be discussed with council and the SOC policy should clearly reflect the services and service levels provided by the RVCFS.
- Develop a comprehensive structural risk inventory program and business licence application program. The fire chief working with the Rocky View County Economic Development and Planning and Development departments to provide a process to inventory all existing and new properties, and that the building inventory be classified, documented and maintained using the Alberta Building Code Major Occupancy Classification system.
- Develop a fire prevention branch with the capability to support ongoing cyclical inspections of high-risk properties and life safety systems Enhance response data management, performance assessments and reporting.
- Create a training division with a dedicated training coordinator position.
- Develop an updated administration response matrix and Standard Operating Guidelines (SOG). Formalize an 'alarm assignment response matrix' and SOG that is embedded with the dispatch protocols. The first responding officer declares the alarm response required as part of the size-up.
- Complete a review of the firefighter water supply for new and current developments within the county.

Although each recommendation has a corresponding timeframe, it is important to note this FSMP needs to be revisited on a regular basis to confirm that the observations and recommendations remain relevant. The recommendations outlined in this FSMP will better position the RVCFS to mitigate and manage community risks, monitor response capabilities and performance, and maintain excellent community relationships and value for money.

Finally, our interactions with the staff revealed a highly professional and dedicated organization that is committed to providing the best possible service to the citizens of Rocky View County.

APPENDICES

Appendix A: Glossary of Terms

Appendix B: List of Figures, Maps, and Tables

Appendix C: Theoretical Response Mapping Methodology

Appendix D: RVCFS Online Firefighter Questionnaire Results

Appendix A: Glossary of Terms

Apparatus	Any vehicle provided with machinery, devices, equipment, or materials of the Fire department for firefighting as well as equipment used to transport firefighters or supplies.
Assembly Time	From the time the notification sounds in the fire station until the first vehicle leaves the station. In a full-time department this is expected to be within 80 seconds but for volunteer departments the time to collect a response crew can vary widely depending on location and time of emergency as well as all the factors that impact travel time.
Chute Time	See Assembly Time
Dangerous Goods	This term is synonymous with the terms hazardous materials and restricted articles. The term is used internationally in the transportation industry and includes explosives and any other article defined as a combustible liquid, corrosive material, infectious substances, flammable compressed gases, oxidizing materials, poisonous articles, radioactive materials, and other restrictive articles.
Discovery	This is the time between the start of the emergency and when someone or an engineered system has detected the incident.
Dispatch Time	This is the time required to extract the necessary information from the caller to allow the proper response to be initiated. The dispatcher identifies the correct fire location and initiates the dispatch by paging the appropriate fire station.
Emergency Call	This is the period between discovery and the actual notification of emergency services.
Emergency Communications Centre (ECC)	A facility dedicated to service receives calls, processes them, and then dispatches emergency units to the correct location in the appropriate time period.
Emergency Operations Centre (EOC)	The protected sites from which civil officials coordinate, monitor, and direct emergency response activities during an emergency or disaster.
Emergency	Any occasion or instance that warrants action to save lives and to protect property, public health, and safety. A situation is larger in scope and more severe in terms of actual or potential effects.
Fire Suppression	The application of an extinguishing agent to a fire at a level such that an open flame is arrested; however, a deep-seated fire will require additional steps to assure total extinguishment.
Hazard Analysis	A document, which identifies the local hazards that have caused, or possess the potential to adversely affect public health and safety, public and private property, or the environment.
Impact	The effect that each hazard will have on people such as injury and loss, adverse effects on health, property, the environment, and the economy.

Incident	A situation that is limited in scope and potential effects.
Intervention Time	The time from fire reporting to the point where the first arriving pumper, or other apparatus providing comparable functions, arrives at the fire scene and directs an extinguishing agent on the fire.
Mutual Aid Agreement	An agreement between jurisdictions to assist each other during emergencies by responding with available manpower and apparatus.
National Fire Protection Association	The National Fire Protection Association (NFPA) is an internationally recognized trade association established in 1896 that creates and maintains standards and codes for usage and adoption by local governments to reduce the worldwide burden of fire and other hazards. This includes standards and guidelines to which many fire departments utilize to carry on day-today operations.
Response	Those measures undertaken immediately after an emergency has occurred, primarily to save human life, treat the injured, and prevent further injury and losses. They include response plan activation, opening and staffing the EOC, mobilization of resources, issuance of warnings and direction, provision of aid, and may include the declaration of a State of Local Emergency.
Risk	The chance or likelihood of an occurrence based on the vulnerability and known circumstances of a community.
Setup Time	This is the time necessary on site to evaluate the necessary actions, position the required resources and commence the intervention. In the case of a fire, completing size-up, assigning the necessary tasks, and deploying resources can provide delays on scene. A well-trained crew can minimize these delays while providing a safe, successful response.
Standard Operating Guidelines (SOG)	A written organizational directive that establishes or prescribes specific operational or administrative methods to be followed routinely, which can be varied due to operational need in the performance of designated operations or actions.
Standard Operating Procedures (SOP)	A written organizational directive that establishes or prescribes specific operational or administrative methods to be followed routinely for the performance of designated operations or actions.
Travel Time	Once a vehicle leaves the station, it must negotiate the best route between that point and the location of the emergency. Factors to consider for travel time are driver skill, weather, traffic, topography, road conditions and vehicle capabilities.

Appendix B: List of Figures, Maps, Images and Tables

Appendix C: Theoretical Response Mapping Methodology

Response travel times are directly influenced by station location and can be varied based upon a cost/risk analysis and the development of performance targets.

Base Data Layers Requested

- Hydrology
- Single Line Road/Transportation Network
- Railways
- Municipal Boundaries
- Parks
- Projection File
- Orthophoto (GeoTIFF, Mr.SID), if available
- Emergency Services Locations

Data Formats

- Preference of ESRI Shapefiles

Purpose of Files

A. Hydrology
   i. Identify needs for response to water locations (if dependent on a water response unit)
   ii. Can be identified and analyzed with the rail network to locate spill contaminations, as well as containment for overland flow & flooding to water spills
   iii. Locations of bridge crossings which can convert to varying incidents, as MVC/MVA, spill contaminants, etc.
   iv. Assists in the definition of the map for locational awareness by others
   v. Completes the map

B. Single Line Road/Transportation Network
   i. Used to determine response times from emergency locations to determine a network based on road speeds
   ii. Roads are created into a network for response

C. Railways
   i. Identified risk areas for impeding response time when crossing a roadway or proximity to municipal areas will also determine the response and apparatus used for a derailment response or other rail emergency or risks, such as chemical spill evacuations.

D. Municipal Boundaries
   i. Identifies the limits to response for mutual aid and responsibilities when overlaps occur within a response area. Also identifies sub areas for specific mapping and identification of municipal and regional response zones. Provides information for gap analysis for future state locations or refinement of locations.

E. Parks
   i. Identifies the potential risk areas due to accessibility issues for tracts of land, as well as constraints and opportunities for new locational analysis for or against new stations within a municipality. Ability to determine development of new locations due to proximity. Parks are identified as local, regional, provincial, and national.

F. Projection File
   i. To ensure that we have the same data set up as being used by the Municipality or Client, measurements (both distance and time) and spatial location are correct when determining analysis.

G. Orthophoto (GeoTIFF, Mr.SID), if available
   i. We typically do not use the ortho on the output maps, but the analysis sometimes needs clarification of what is on the ground, and we use it to quickly ground truth locations and information needed prior to asking clients for clarification, or to substantiate clarification of an area.
   ii. Is a nice to have, yet hard to use, as it takes up a lot of memory/space and is difficult to ship/transfer.

H. Emergency Services Locations
   i. Identify the actual location rather than a theoretical location based on an address match to ensure that the data location is as correct as possible, and no mis-locations are identified on the initial running of the theoretical response times.
   ii. Locations may be moved from within a parcel to the front of the parcel whereby it touches the road network. Ensures the response from the station is captured. There are no corrections made to the movement of station to time, as it is typically within 50 metres.

Theoretical Response Zone

A. Assumptions
   i. Weather is average – no storms, rain, snow etc.
   ii. Roadway segments contain a node/junction at intersections
      - If not available, road network needs to be cleaned and fixed
   iii. Roadways need to sometimes extend beyond some municipalities
   iv. Emergency responders are trained on response vehicles
   v. Response vehicles are in good condition
   vi. Roads are dry and in good condition
   vii. Left turns are not reduced by a time %
   viii. Road speeds are provided by client, if not
      - Road class table used to populate speeds based on road classification
      - Road speeds are reduced from the posted sign, typically no more than 5%

ix. Traffic volume is average, there is no congestion or there is a free-flowing lane to be used
x. Rail crossings are free to cross and do not impede response
xi. Time of day is based on an average time from 9 am – 9 pm
xii. Opticoms (or similar product for traffic light manipulation) are present to allow for free moving response
xiii. Intersections of roads are not reduced (the roads are reduced from other project limits and averaged over time for generality of best fit)
xiv. School zones are not adjusted unless identified, then changes to road net are made

B. Response Time
   i. Customized response based on Emergency Services Input
   ii. Response time includes 80% of all calls for service
   iii. Total drive time along roads (determined above by road speeds)
   iv. Variances are identified and are tweaked based on known data or other trends

C. Response Polygons
   i. Identify general area of response from the outer most limits driven
   ii. Also identify response zones for mutual aid
   iii. Identify gaps in response
   iv. Aid in the development of Fire Zones for response
   v. Assist in the identification of new stations
   vi. Also identifies needs to move stations to another location, as required

Additional Analysis

A. Out of Scope Analysis (needs further discussion with client)
   i. Transition from project to operationally based:
      - Specific distance and travel
      - Based on time of day
      - Based on time of year
      - Call volume
      - Call types
      - Modeling
      - Scripting for batch work

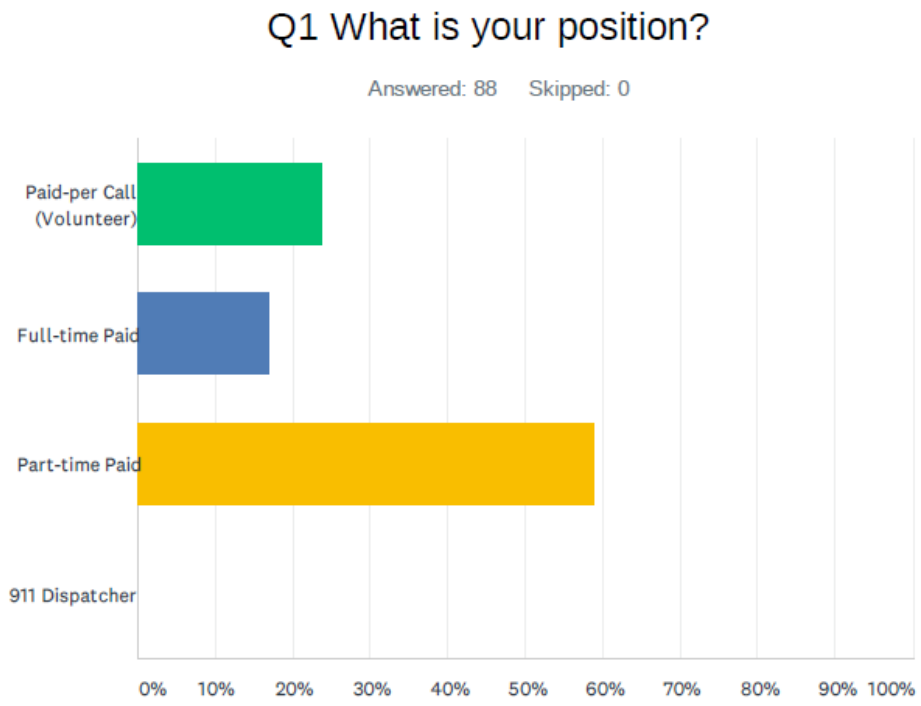
B. Data Availability
   i. When data available from clients is detailed enough, it is used
   ii. Not all data is detailed enough, and assumptions are made

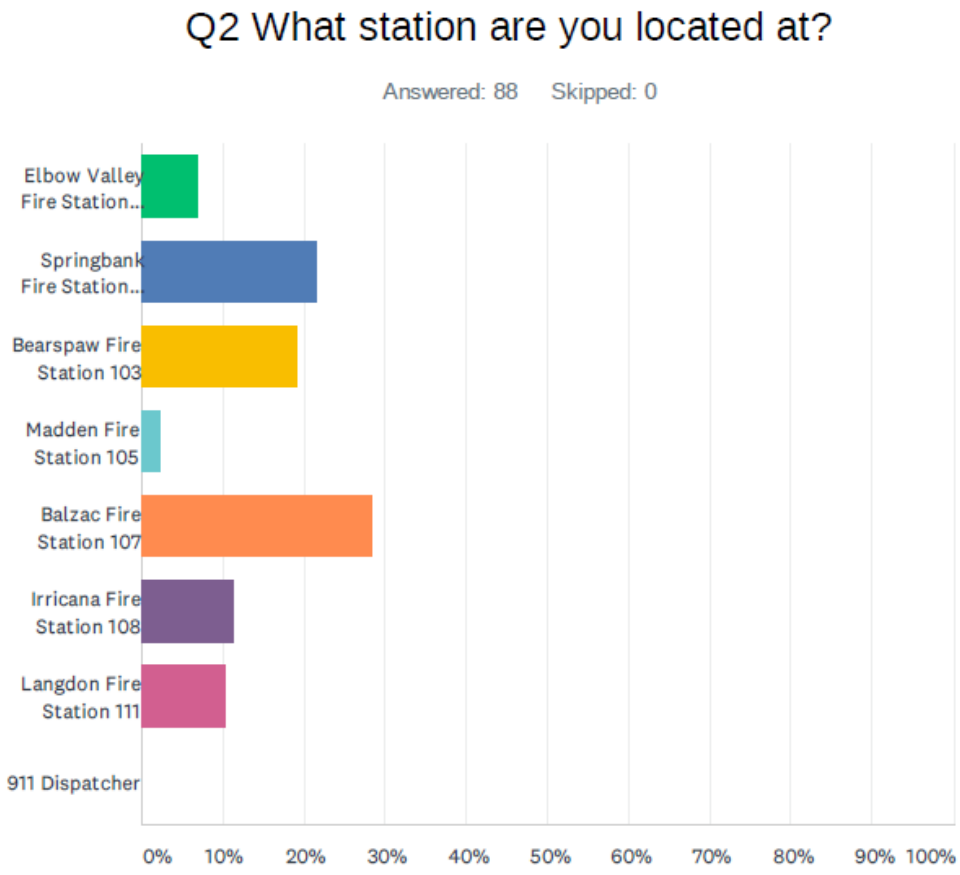
C. Analysis
   i. Additional analysis can be performed (as reduction of road speeds to an intersection)

- For above example, identification of intersections can be complex, and data not always available:
    - Stop Sign
    - 3-Way Stop
    - Yield
    - Lights
    - Flashing Light

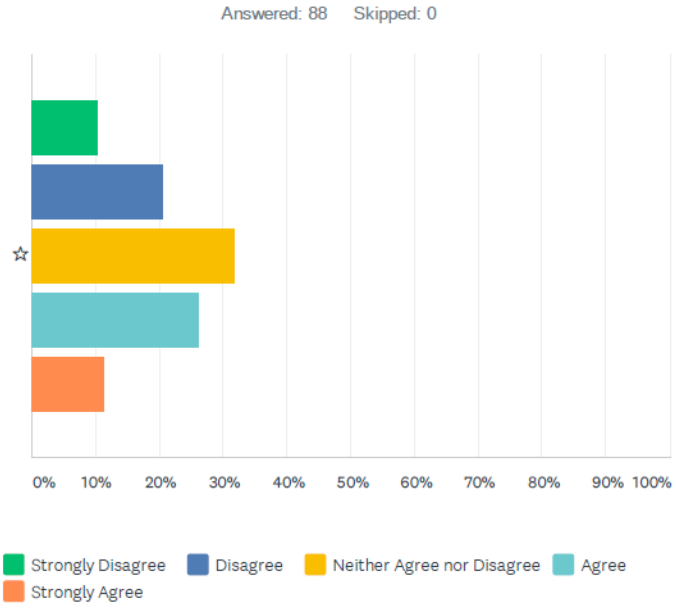
ii. Tends to be time consuming
    - Clients not willing to engage cost of this project
    - Levels of data may not be accessible
    - Missing detail
    - Usually is a one-off project and new data is typically not leveraged

Appendix D: RVCFS Online Firefighter Questionnaire Results

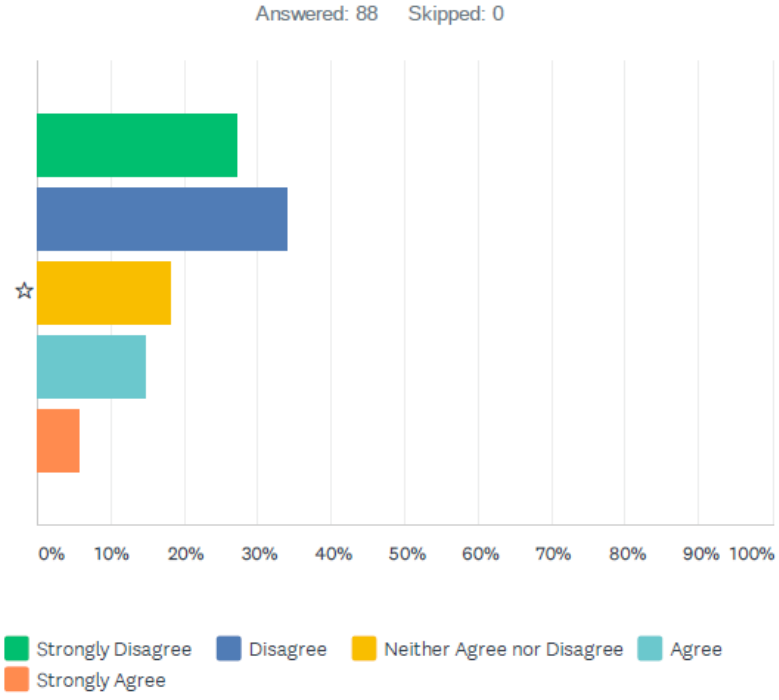




Q3 The public feels they are getting good value for their tax dollars for fire and emergency services.

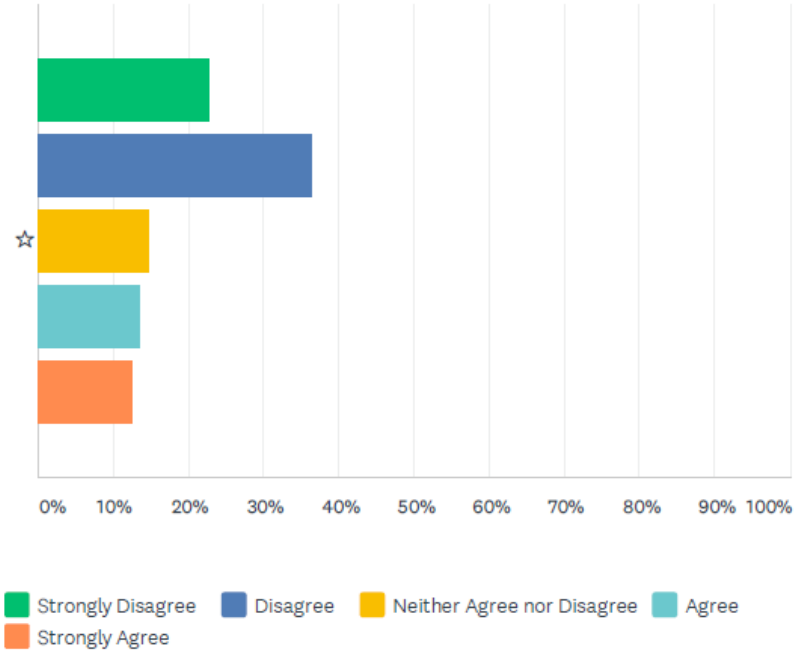


Q4 The public has a good understanding the fire service and its capabilities.



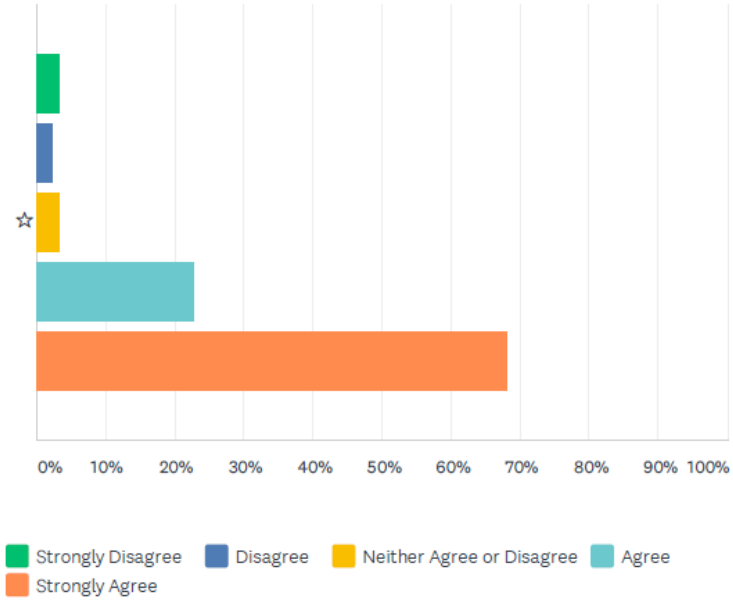
Q5 Your community receives adequate fire/rescue protection.

Answered: 88 Skipped: 0



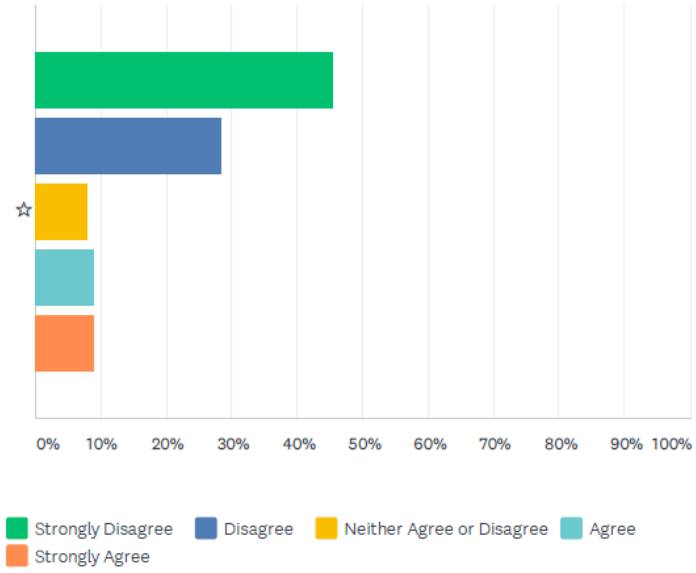
Q6 Based on the rate of community and economic growth, the fire service's demands for service will increase in the future.

Answered: 88 Skipped: 0



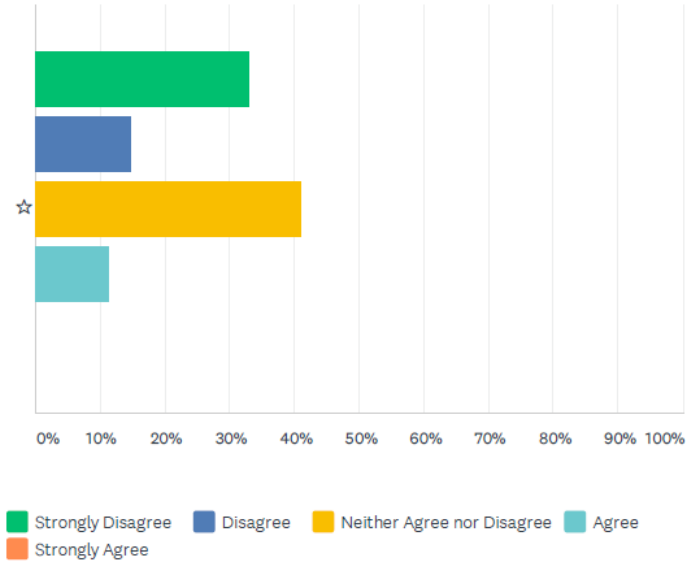
Q7 The current response system is adequate to meet future demand for services.

Answered: 88 Skipped: 0



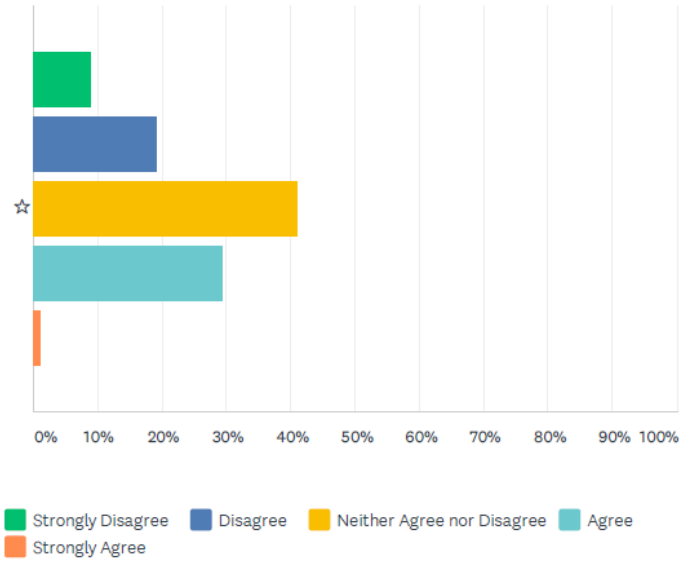
Q8 The fire service is involved in the planning of new development within your community.

Answered: 88 Skipped: 0



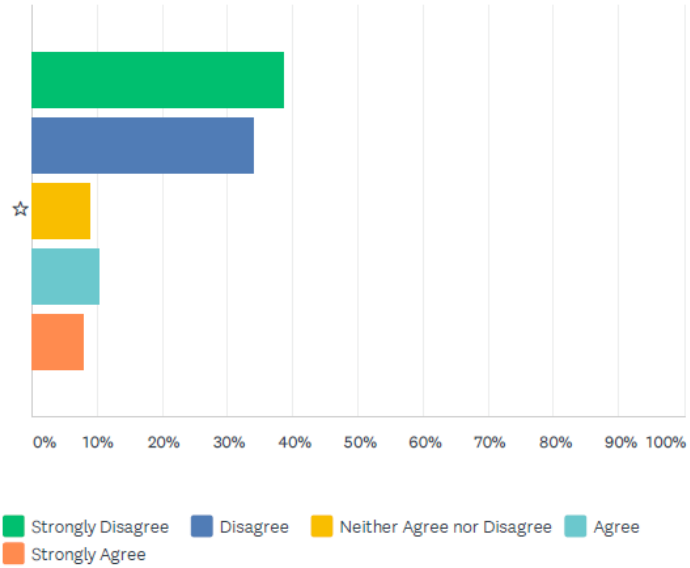
Q9 The community has adequate alternate fire risk reduction strategies (e.g. residential sprinklers, FireSmart program, public education).

Answered: 88 Skipped: 0

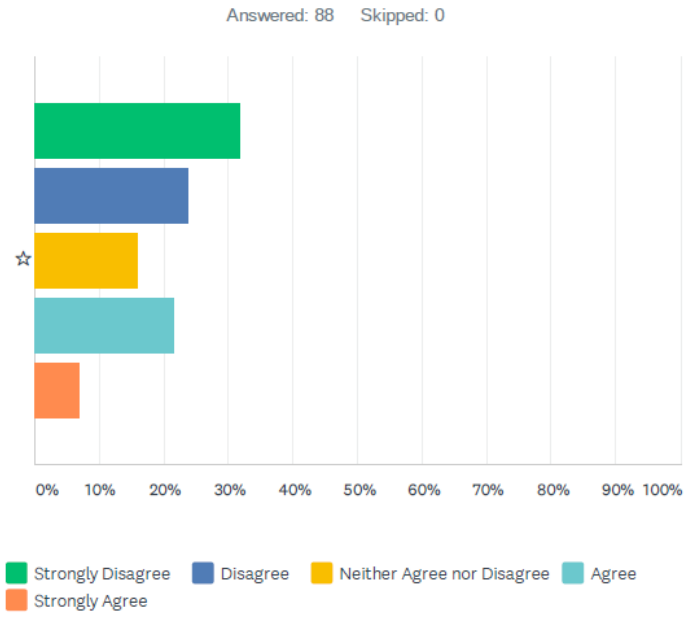


Q10 The fire service's current response model is adequately staffed for fire/rescue response.

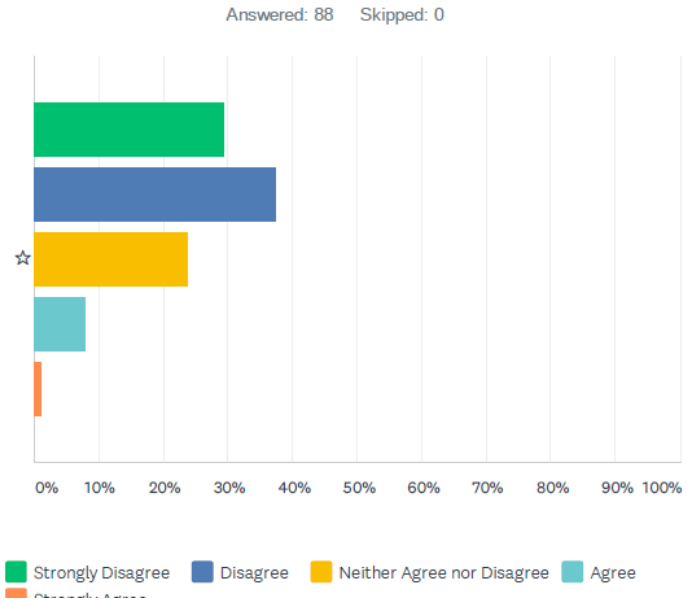
Answered: 88 Skipped: 0



Q11 The fire service's policies/procedures reflect fire/rescue industry best practices.

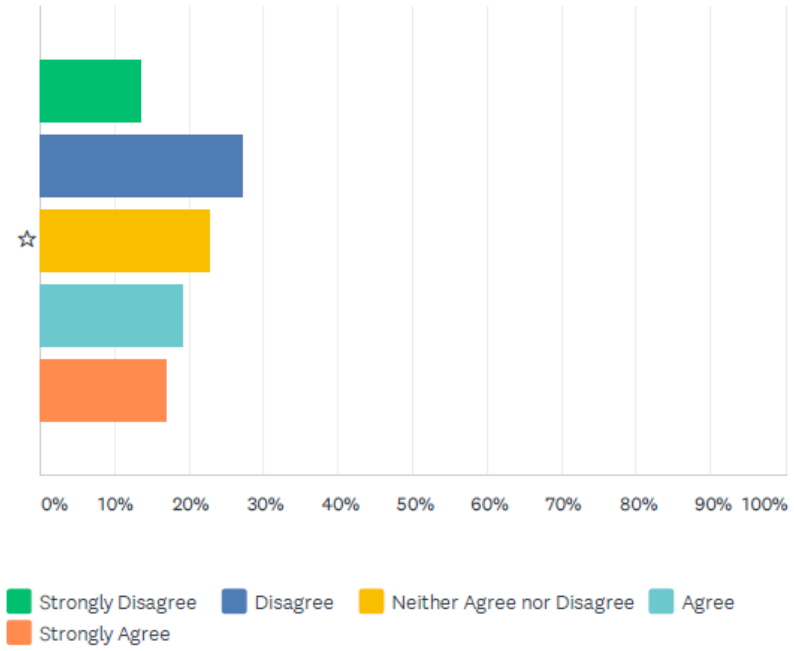


Q12 Medical responses are over tasking the service's response capacity.



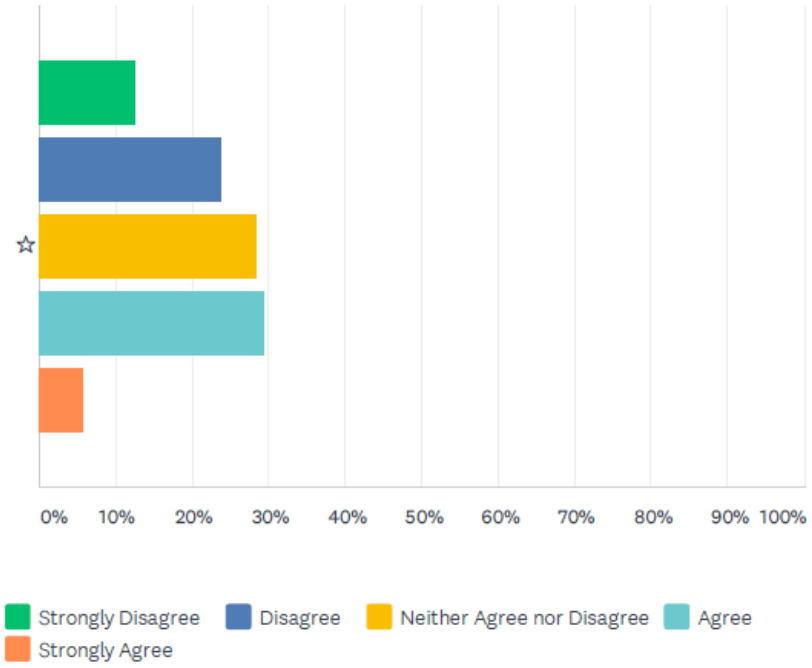
Q13 Your fire service experiences a high rate of turnover.

Answered: 88 Skipped: 0



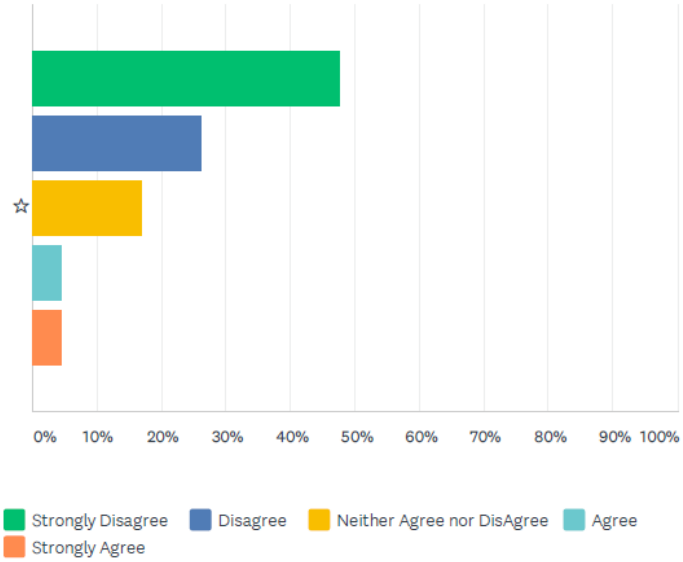
Q14 Your current recruiting program is effective.

Answered: 88 Skipped: 0



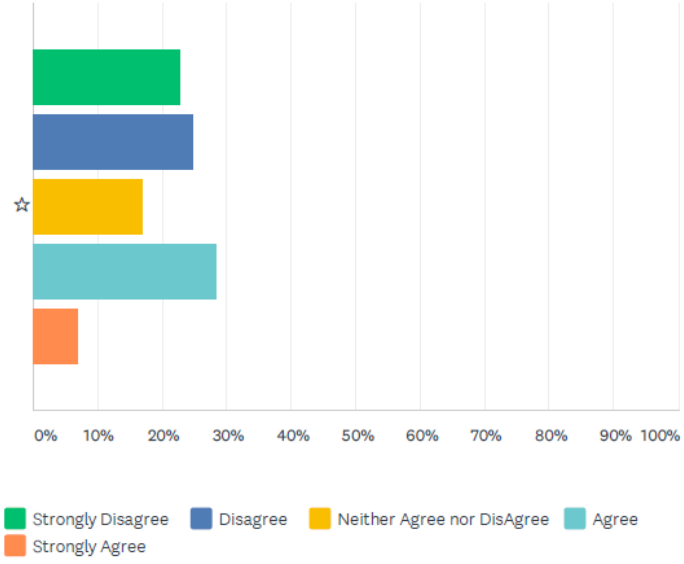
Q15 The current level of live-fire and specialty team training is adequate for the services provided.

Answered: 88 Skipped: 0



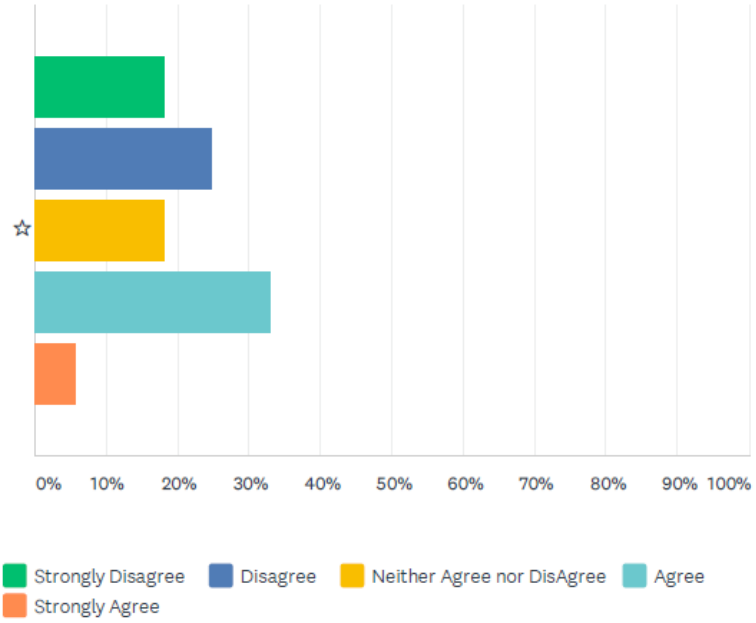
Q16 The current level of theoretical fire/rescue or leadership training you receive is adequate.

Answered: 88 Skipped: 0



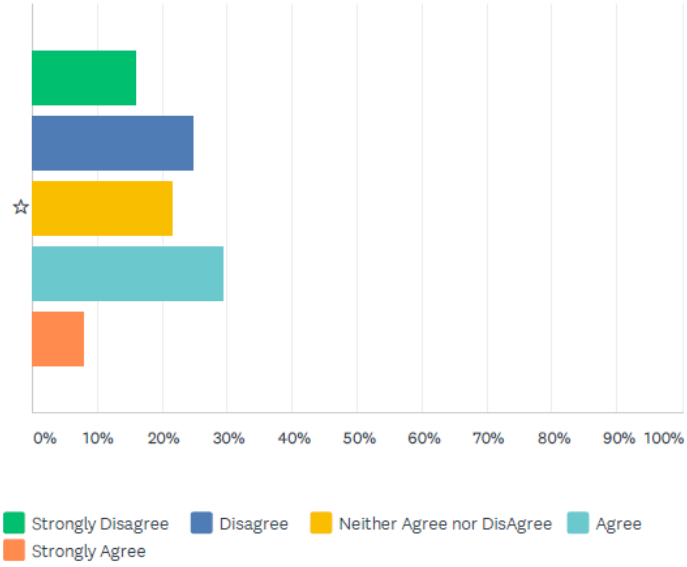
Q17 You receive adequate training to maintain competencies and certifications.

Answered: 88 Skipped: 0



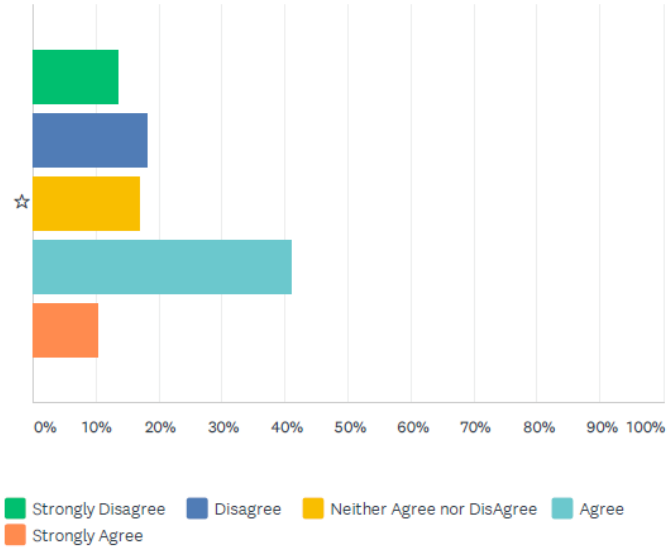
Q18 Recruits are adequately trained before they are assigned to full duty.

Answered: 88 Skipped: 0



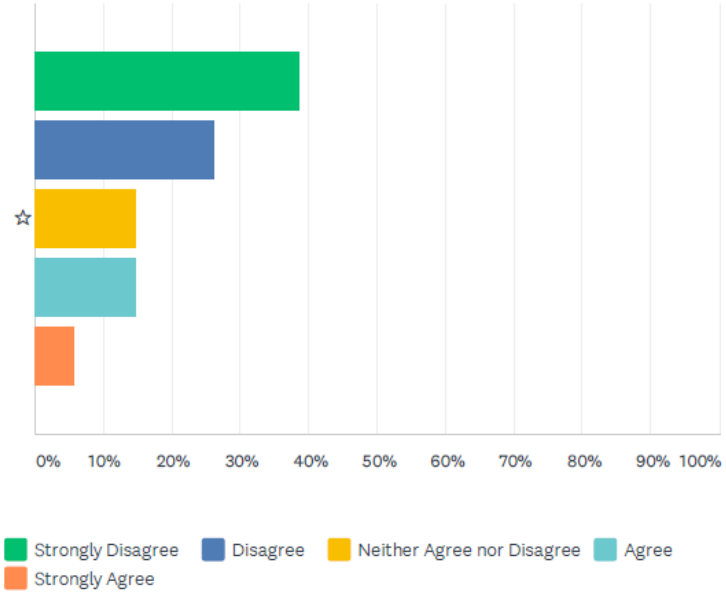
Q19 The service is adequately resourced with small equipment (i.e. SCBA, light duty vehicles, loose equipment and consumables).

Answered: 88 Skipped: 0



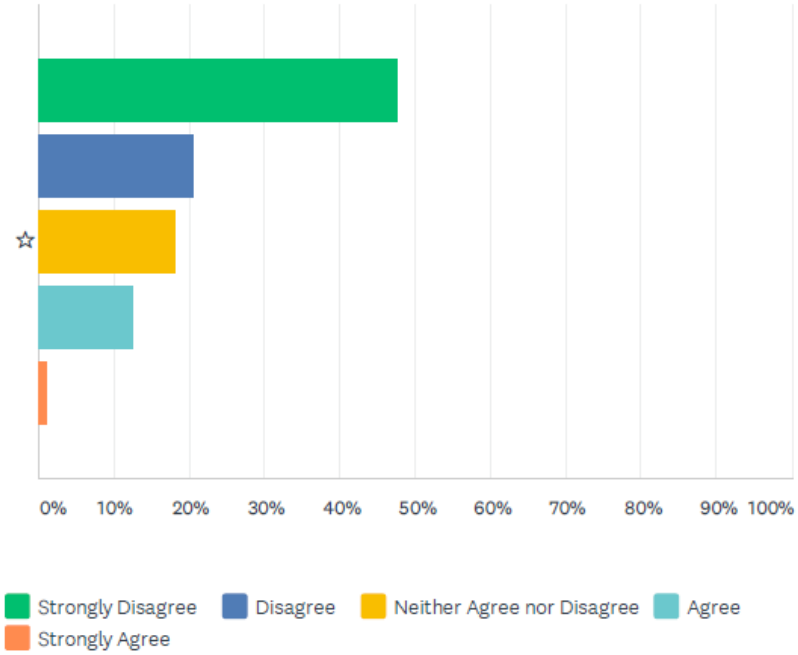
Q20 The current vehicle fleet of fire apparatus provide the capacity/capability necessary to meet the demands and types of responses.

Answered: 88 Skipped: 0



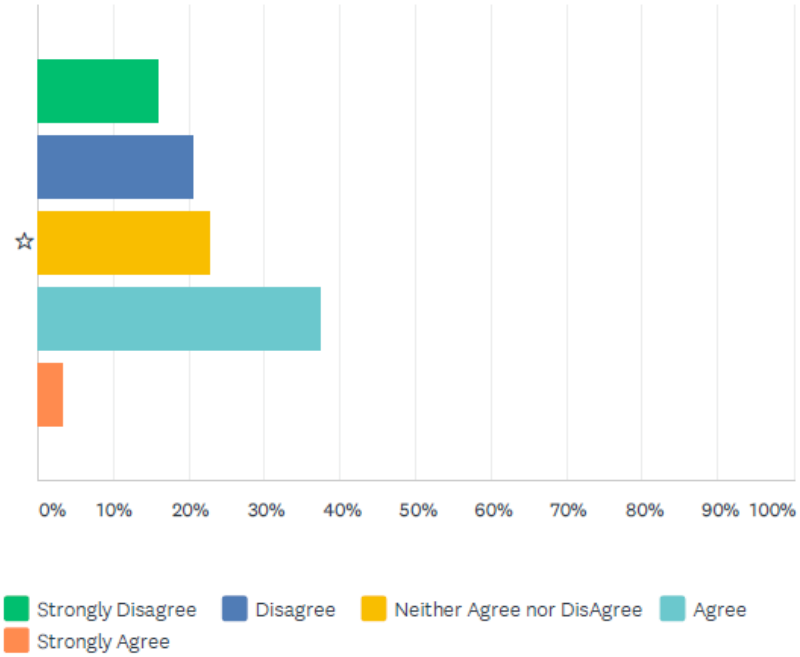
Q21 Fire apparatus are appropriately life-cycled.

Answered: 88 Skipped: 0



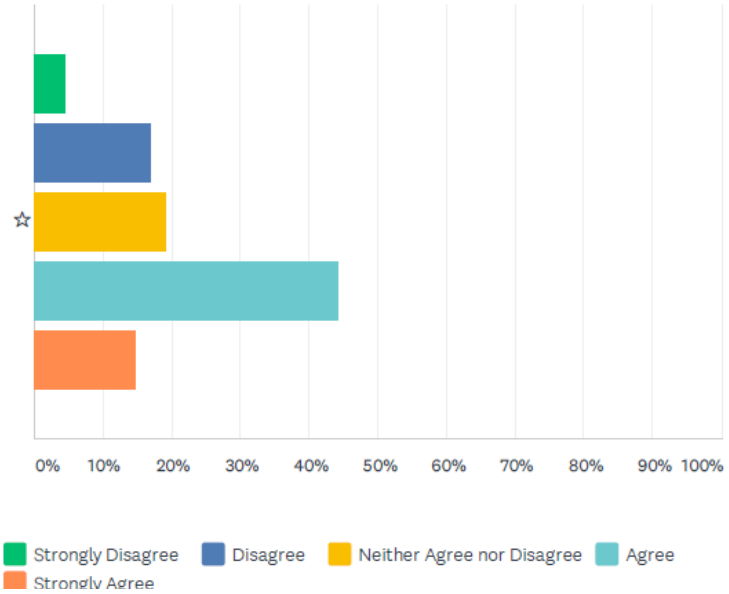
Q22 The maintenance of fire apparatus is adequate.

Answered: 88 Skipped: 0



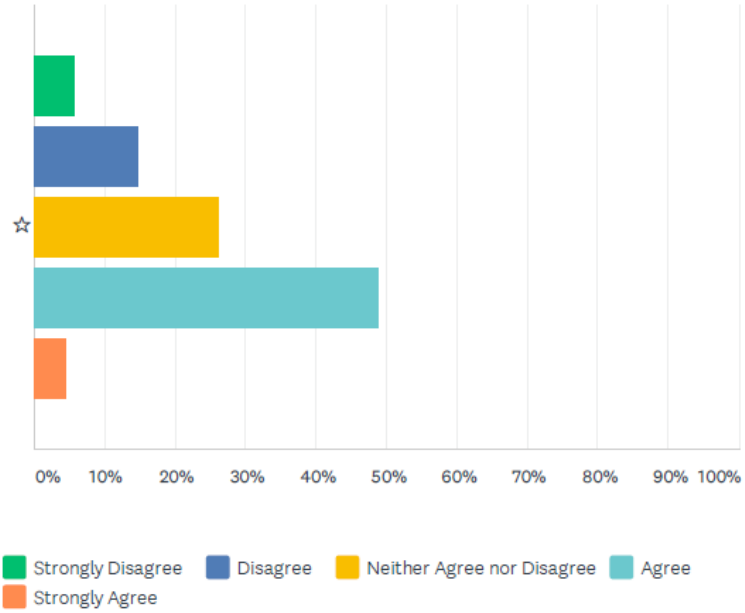
Q23 The current fire stations are functional and meet the operational requirements of the department.

Answered: 88 Skipped: 0



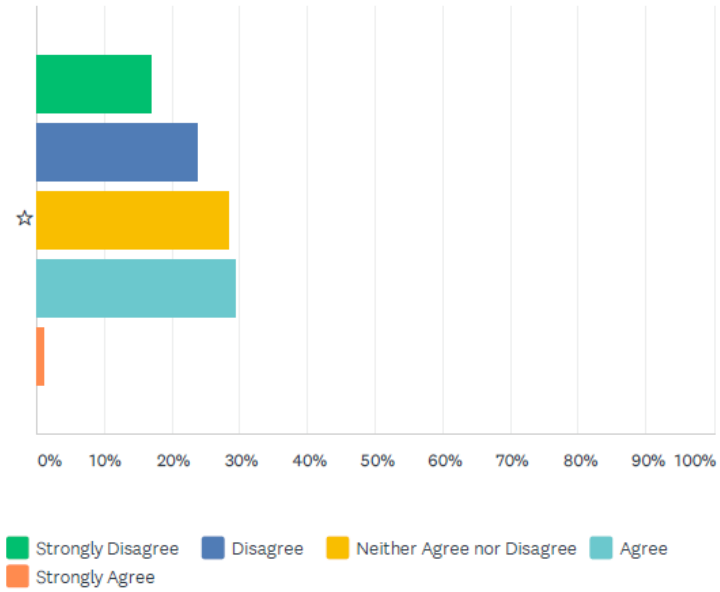
Q24 The current fire stations are strategically located for adequate geographic coverage.

Answered: 88 Skipped: 0



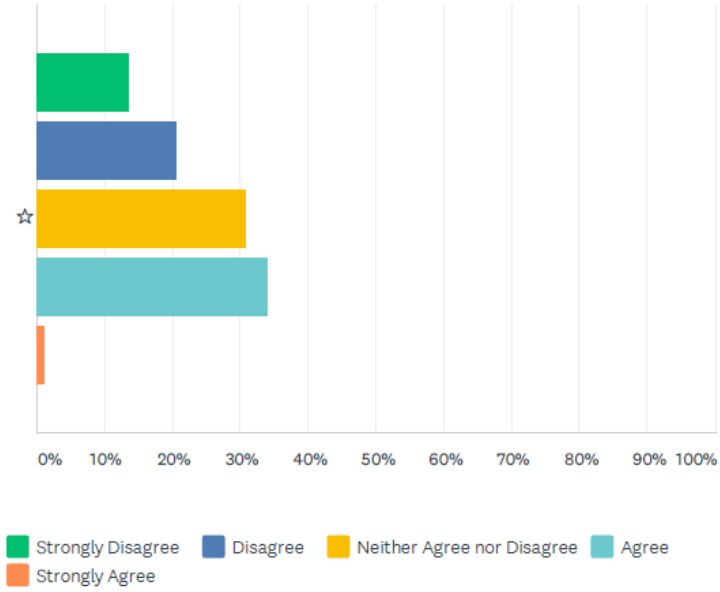
Q25 The service kept pace with leading technology in communications systems.

Answered: 88 Skipped: 0



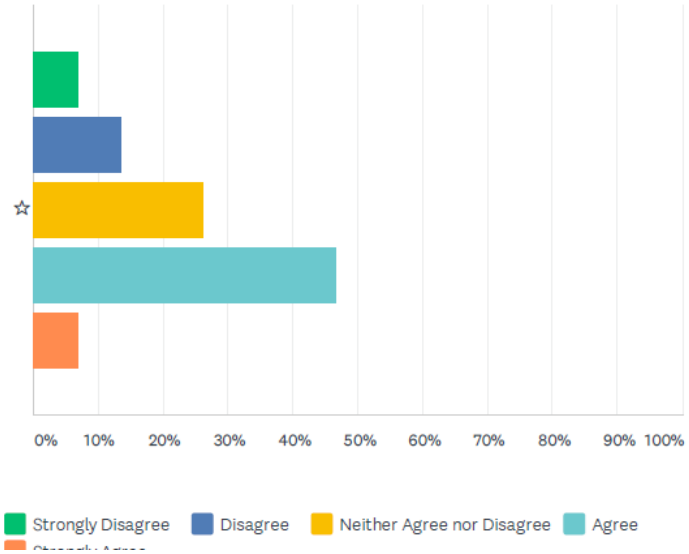
Q26 The service kept pace with leading technology in auto and mobile CAD systems.

Answered: 88 Skipped: 0



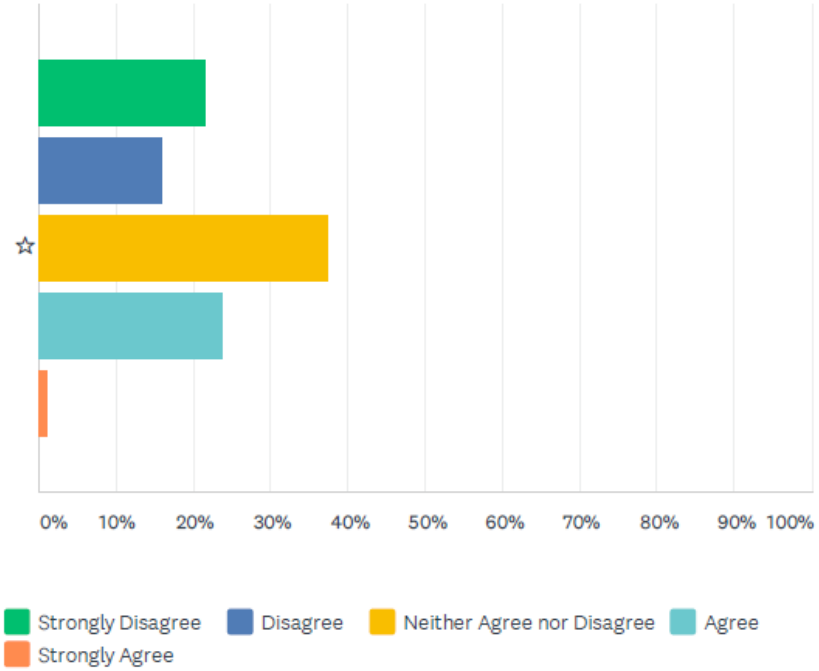
Q27 The service kept pace with leading technology in station alerting and pre-alerting.

Answered: 88 Skipped: 0



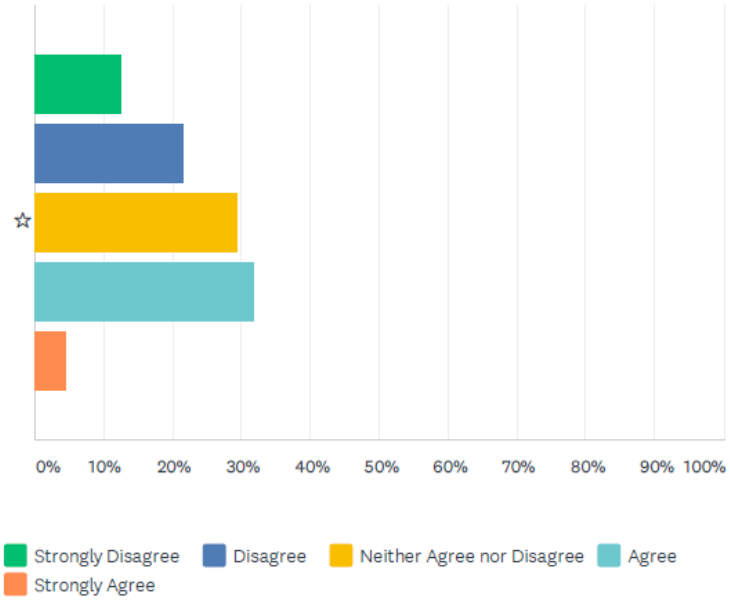
Q28 The service kept pace with leading technology in records management and fire reporting systems.

Answered: 88 Skipped: 0



Q29 The service kept pace with leading technology in online learning management systems (LMS).

Answered: 88 Skipped: 0



Q30 The service kept pace with leading technology in traffic pre-emption system.

Answered: 88 Skipped: 0