2020

MEDICINE HAT FIRE SERVICE STRATEGIC PLAN

Medicine Hat
The Gas City

Message from the Chief

Welcome to the 2020 Medicine Hat Fire Service Strategic Plan.

2020 has been a year of challenges, and perhaps a suitable launching point for a new strategic plan. Residents across the country are faced with challenges due to the pandemic, and the resulting economic downturn. In the case of our City, the added challenge of provision of services without the benefit of a energy dividend to offset property taxes compounds the challenges of this time.

Staff of the Medicine Hat Fire Service are cognizant of these challenges and constantly look for new ways to deliver and improve services while holding the line on costs. I'm proud of the efforts of our staff, and their care for the residents of this community.

I hope you find this view into the future of Fire Services in the City of Medicine Hat both interesting and reassuring as we move forward through both todays' and future challenges.

Brian Stauth

Mission Statement

Medicine Hat Fire Services continually strives to provide optimum protection and prevention for our residents, businesses, and visitors, while continually adapting to an ever changing future to uphold the quality of life and safety in our community. We plan comprehensively, balance efficiency with effectiveness while customizing services to the needs of our community.

Vision

Medicine Hat Fire Services is dedicated to remaining a progressive and innovative fire service that ensures a safe community through the delivery of comprehensive public education, fire prevention, training, and fire suppression.

Contents

SECTION 1 - EXECUTIVE SUMMARY

Report Development

This report evaluates fire protection for the City of Medicine Hat in relation to growth forecasts contained in the myMH plan authored by Planning and Development Services. This strategic plan was authored by Medicine Hat Fire Service (MHFS) staff, utilizing the history and knowledge of the community and fire protection within the community obtained by those individuals. Modern standards and guidelines, best practices, Graphical Information System (GIS) reports, and evidence-based decisions all contribute to the makeup of the report and the recommendations contained herein.

Definitions

First Arriving Engine Company - consists of four firefighters and is capable of assessing the incident, laying initial hose lines, initiating pump operations, and preparing for search and rescue.

Full Alarm Assignment - consists of a three station response with 14 or 15 firefighters and is capable of carrying out victim rescue, applying water through multiple hose lines, providing building ventilation, and completing salvage and overhaul on single family residential structures.

myMH – The Medicine Hat Municipal Development Plan.

Recommendations

The City of Medicine Hat benefits from excellent fire protection with services delivered aligning with National Fire Protection Association (NFPA) standards. Changes made through recommendations put forth in the Fire Service Response Coverage Optimization Plan have positioned Fire Services to serve the City without seeking incremental increases in suppression operating costs for the foreseeable future. As presented in recent benchmarking initiatives, MHFS remains similar to comparators from a cost per capita perspective however outperforms comparators in customer quality areas such as response times, percentage of loss (fire), and delivery of advanced response services such as underwater rescue and recovery, and technical /confined space rescue.

Recommendations for a 30 year operating period are impossible to make with great certainty. The following recommendations provide direction while still allowing for consideration of variables as time passes.

1. Maintain a three station response model until residential growth in the NW requires additional response capabilities.

2. Examine opportunities for inter-municipal collaboration on suppression services, prevention services, training opportunities, and capital projects.

3. Maintain current agreements for services and mutual aid with bordering municipalities, and ensure timely renewals and updates occur.

4. In accordance with NFPA 1710, maintain a first arriving engine response time target of 6:20 90% of the time inside the City of Medicine Hat response areas and arrive as soon as possible outside the City of Medicine Hat response area.

5. Maintain a full alarm assignment response time target of 12:20 90% of the time inside the City of Medicine Hat response areas and arrive as soon as possible outside the City of Medicine Hat response area.

6. Maintain Medical Fire Response (MFR) in support of Alberta Health Services (AHS) on Delta and Echo level incidents with the aim of improving outcomes for residents with medical emergencies.

7. Examine operating models and impacts to services of lower cost options. While these lower cost options are being examined, maintain the current optimal response of:

    a. Engine companies staffed with four firefighters to ensure critical fireground tasks are completed expediently.

    b. Equalized staffing on both day and night shifts.

8. Support the myMH plan requiring residential sprinklers for new residential developments outside of the 6:20 response target area.

9. Examine/Implement a policy to provide a financial contribution for residential sprinkler installation in:

    a. New subdivisions as required.

    b. Homes in infill areas.

10. Maintain and develop as required effective, targeted fire safety education programs to enhance resident and visitor safety, including enhanced opportunitites for residential fire safety inspections as they remain the number one fire problem in the community.

11. Pursue cost effective training solutions where possible for technical training.

12. Develop further leadership and supervisory training for all MHFS staff to align with the respectful workplace policy.

13. Investigate/pursue technological advancements that may reduce fleet or personnel requirements while maintaining or improving safety.

14. Continue cultivating a culture of continuous improvement through the use of LEAN principles and evidence based decision making.

SECTION 2 - Introduction

myMH Plan

In 2020, the City of Medicine Hat adopted myMH, a 30year plan providing long range vision for future growth and development of our community. This broad conceptual framework provides the foundation for more detailed plans, such as this Fire Service Strategic Plan (FSSP). One of the five strategic goals of the myMH plan is “Efficient Public Services.” The plan looks to develop “services and infrastructure that are efficiently delivered to meet the needs of our changing community in a cost-effective manner.” (City of Medicine Hat, 2020) As the myMH

plan looks out over 30 years, so does this Strategic Plan, linking to and aligning with the myMH plan wherever possible.

Financial Challenges/Opportunities

As we create this plan, the City of Medicine Hat is solving a $23 M budget shortfall in municipal operations. Levers such as revenue increase, cost reductions, and service level changes are being analyzed through the Strategic Opportunities Team (SOT) with the result being municipal operations running without the benefit/requirement of a dividend from the energy side of the corporation. Taxpayers are resistant to continued increases in taxes, therefore new and innovative ways to approach business operations in all departments must be found.

Fire Services exist to enhance the quality of life for all residents, business, and visitors. It accomplishes this through providing life safety protection, property protection, and environmental protection. Medicine Hat residents expect a high level of service provided by well trained and equipped staff. That level of service is expected to be delivered with the least possible burden on the taxpayer. This plan examines opportunities and challenges facing the City of Medicine Hat and the MHFS as we look forward over the next three decades.

Scope

Council adopted the Fire Service Response Optimization Plan in January of 2013 and its recommendations were implemented from 2013 to 2018. The 2019-2022 business plan includes the development of a new strategic plan for Fire Services. The Fire Chief and Commissioner of Public Services committed to having a 30-year plan completed to support the myMH plan and provide recommendations for setting the direction for Fire Services for the next 30 years. A 30-year plan is impossible to create without allowing for variables over time. This plan will provide a roadmap and allow future Administrations and Councils to alter as required.

SECTION 3 - SUPPRESSION SERVICES

CURRENT STATE

Past Strategic Plans

Fire Service Strategic Plan (FSSP)

The Medicine Hat Fire Service Strategic Plan was developed and presented to City Council for approval in July of 2010. This document was intended to provide a roadmap for Fire Services in the City of Medicine Hat for the next 10 years. The plan included many recommendations, with some being implemented and in place today. Other recommendations which included infrastructure costs (stations) and operating increases were approved conditionally subject to funding in the 2012-2014 budget process.

For the first time in the Department's history, Geographic Information System (GIS) analysis was used in the development of the FSSP. Five years of response data (2005-2009) were retrieved from the records management database and analyzed to determine how well the department was meeting a response time guideline of having the first fire engine arrive at an incident within 6 minutes, 90% of the time across the entire city. As represented in Figure 1, Fire Services was able to achieve this less than 60% of the time. This graph in Figure 1 was developed to look at citywide capabilities and represents response time in 6 minutes or less, 90% of the time, across the entire city. The Council-approved guideline at that time was 6 minutes or less, 90% of the time, and outside the response areas as soon as reasonably possible.

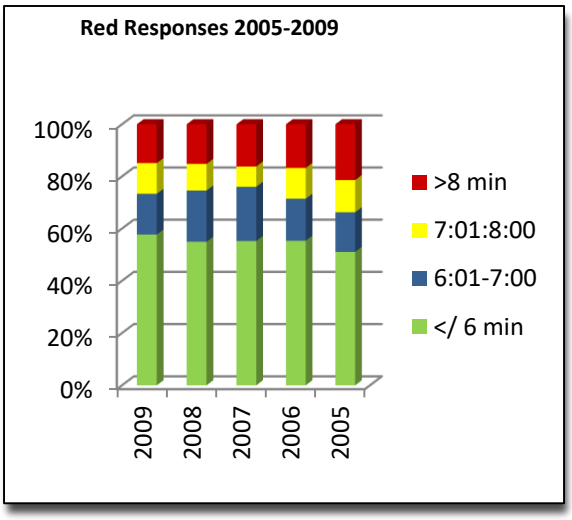


Figure 1: First arriving engine in 6 minutes or less.

Represented through GIS analysis, the 2010 6 minute response areas looked as follows:

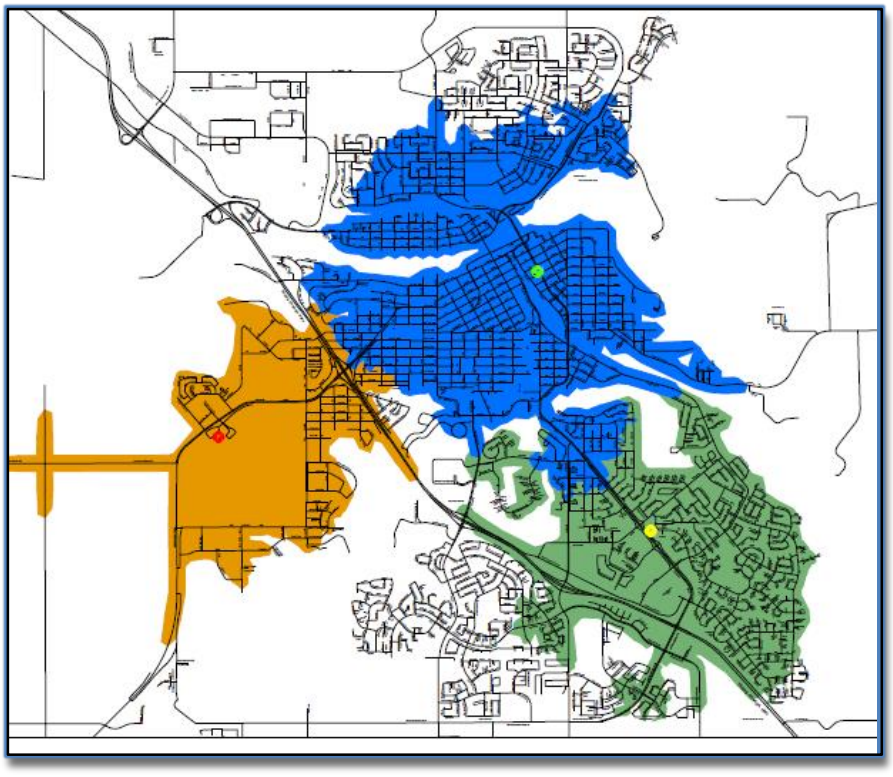


Figure 2: 2010 6 minute response area

Considerable portions of the City's residential areas were not within Fire Services' 6-minute response areas, in fact over 30% of the population lived outside of the response areas displayed above.

During the development of the FSSP, considerable discussion took place about the feasibility and necessity of Fire Services maintaining a 6 minute response time target for first arriving engine companies.

To determine what response time target would be recommended in the FSSP, Fire Services Administration considered several factors, including comparator response time targets, NFPA standards, fire statistics, and scientific study by the National Research Council of Canada.

NFPA 1710 is the standard for the organization and deployment of fire suppression operations, emergency medical operations, and special operations to the public by career fire departments. The standard states, "The fire department's fire suppression resources shall be deployed to provide for the arrival of an engine company within a 240-second travel time to 90 percent of the incidents" (NFPA, 2010, p.9). This 4 minute travel time coupled with 60 seconds of turn out time, and 60 seconds of call processing time, provides a standard of 6 minutes total response time. Call processing is addressed in NFPA 1221 and states, "Ninety percent of emergency alarm processing shall be completed within 60 seconds" (NFPA, 2010, p.15).

The FSSP also referenced information from a 2008 study completed by the National Research Council of Canada. The FSSP states "a 2008 report by the National Research Council of Canada (NRC) indicates occupants of a residence have less than 5 minutes before the residence becomes untenable in a standard fire. A significant residential fire may put occupants who are unable to escape on their own at severe risk before firefighters are on scene" (City of Medicine Hat, 2010, p.23). Additionally, the NRC study addressed structural collapse in new construction and this too was referenced in the FSSP as it states, "Additionally, where fire units arrive on scene in more than six minutes (360 seconds), they could be immediately faced with floor collapse conditions in newer residential or commercial construction. Engineered floor joists, unlike dimensional lumber, fail without warning in as little as 325 seconds if fire directly impacts them" (City of Medicine Hat, 2010, p.23).

Figure 3: Floor Joist Collapse (National Research Council of Canada)

The 2009 Alberta Fire Commissioner's Statistical Report outlines residential fires as the greatest risk of fire death in the province. The report says, "Residential properties accounted for 75 percent of fire deaths in 2009 and 76 percent in the five year period 2005-2009" (aema.alberta.ca, 2011, p.7). Fire statistics in the MHFS records management system also indicate that residential fires present the greatest risk of injury and death to residents of Medicine Hat. Residential fires are also the most frequent type of fire encountered in the City of Medicine Hat.

Consideration of comparator information, NFPA standards, fire statistics, and scientific study led to Fire Services Administration recommending in the FSSP that a response time guideline of 6 minutes or less 90% of the time for the first arriving engine company and outside the response area as soon as reasonably possible. This recommendation mirrored the response time target recommendation adopted in 2004 and laid the foundation for infrastructure and staffing

recommendations required to achieve that target, with the prime area of concern being the protection of residential areas.

GIS analysis of Fire Services response capabilities in 2010 indicated that over 11,000 residents in the south end of the city and 9,000 residents in the north end of the city lived outside of the department's 6 minute response area. Future growth projections indicated an additional 19,000 residents in the south and an additional 3,000 residents in the north would be outside of the 6 minute response time area. For that reason, recommendations were put forth that included a fire station to open in the south part of the city in 2014, with other recommendations to increase coverage for the north end to follow later in the 10 year plan. The GIS representation of the coverage model appears in Figure 4.

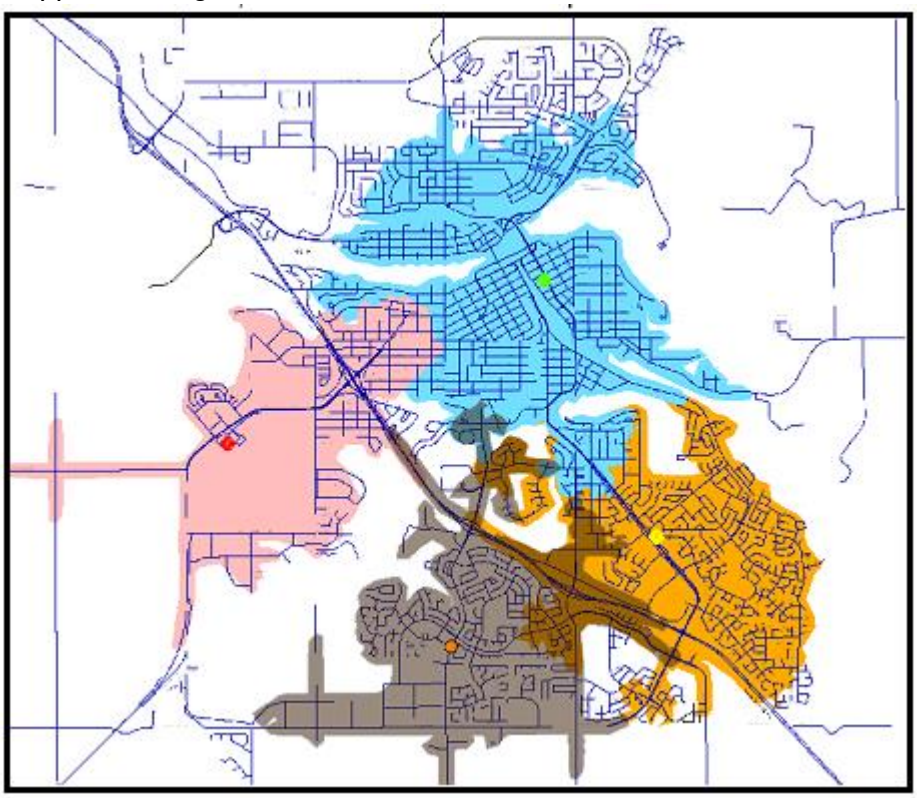


Figure 4: Proposed 4 Station Model (FSSP)

The recommendation to open the fourth fire station in the south in 2014 involved capital costs of $7.5 million and ongoing operating costs of approximately $2.5 million annually. The $2.5 million in operating costs included staffing costs associated with 20 additional firefighters, fleet lease and insurance costs, as well as station operating costs.

Opening the fourth fire station would have resulted in a tax increase of 5% to residents to fund the operating increase and a further 1% increase to fund debt servicing costs. When the 2012-2014 budget was approved in March of 2012, it included tax increases of 4.9%, 5.5%, and 5.5% in each of the three years respectively, to pay for the services and additional operating costs. The budget did not include funding of the infrastructure and suppression staffing recommendations included in the FSSP. These additions would have added another 6% tax increase over the three years of the budget period.

Fire Service Response Coverage Optimization Plan

In March of 2012, Fire Services began reviewing available technology and processes to subsequently provide a report on the findings which would possibly amend the FSSP. The direction provided indicated that proposed amendments would not include a change in staffing levels or an increase in the number of response stations, but could include the relocation of any existing fire station and a change to current response time guidelines.

This report analyzed the effects of traffic preemption technology, Mobile Computer-Aided Dispatch (CAD), and changes to dispatch processes on fire response coverage. It also reviews the National Fire Protection Association (NFPA) standards referenced in the FSSP. The report includes analysis through the use of the Geographical Information System (GIS).

Traffic preemption and its benefits were studied across numerous municipalities in North America, including Denver, Colorado; Houston, Texas; Surrey, British Columbia; and York, Ontario. These studies indicated there were significant improvements in response coverage.

The Medicine Hat Fire Service performed field tests to quantify the response time savings with preemption technology at signalized intersections. The results of this field test demonstrated an average time savings of 8 seconds per intersection with traffic preemption technology.

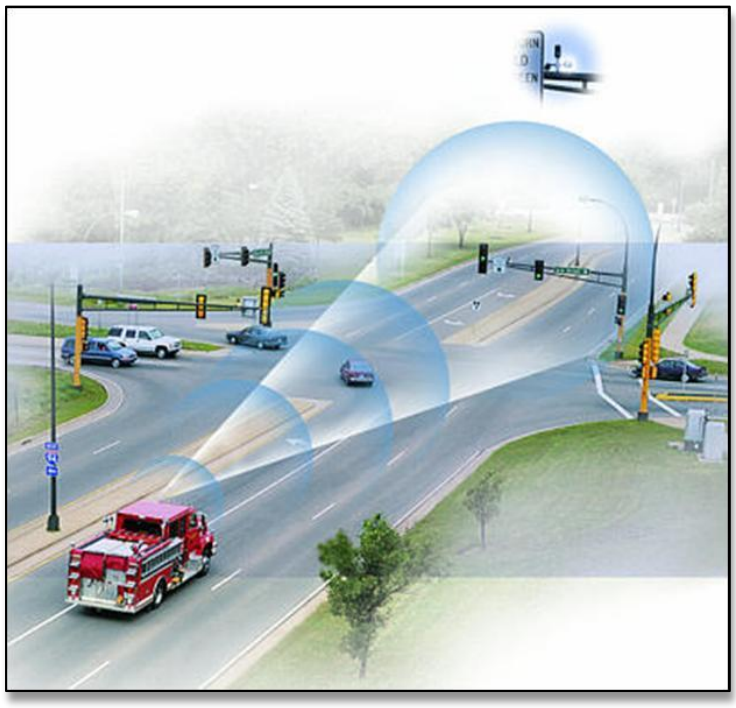


Figure 5: Beam Style Traffic Preemption

Further field tests were done to simulate actual fire engine response. The results of these field tests demonstrated an average time savings of 22 seconds per run with the simulated preemption performance.

The results of these two test methods are supportive of each other. The individual intersection test findings of 8 second savings per intersection closely support the 22 second savings found during the simulated response runs through six signalized intersections, encountering three red signals.

The 2010 revision of NFPA 1710 changed to reflect a longer firefighter turn out time for fire calls than what was provided in the earlier edition. Turn out time has increased from 60 seconds to 80 seconds. Call taking time remains at 60 seconds and travel time remains at 240 seconds (4 minutes) in the standards. This effectively increased the total response time suggested in the standard to 380 seconds or 6 minutes and 20 seconds from the previous 6 minute standard.

A key to the development of the strategic recommendations that were proposed in the report was the analysis and modeling made available through GIS technology. “Unlike previous methods that employed grid and concentric circle analysis, GIS simulates the real road network

of the area being analyzed. A high degree of accuracy is ensured by using actual travel distances, vehicle speeds, time delays for roadway conditions (e.g. congestion, turning radius, weather, hills), accounting for one-way or unusable roadways, and implementing user-defined risk factors" (ESRI, 2007, p.14).

Fire Services used GIS analysis during the development of the FSSP. Consideration of the additional factors discussed previously in this report has allowed Fire Services to develop and present models that supported new recommendations.

Before the effects of traffic preemption were considered, a review of the road network speeds was conducted in the GIS database. Road segment speed changes on certain arterial roads such as the Trans-Canada Highway and major arterial routes with highspeed limits were completed. Next, the 22 second average improvement in response times due to traffic preemption was built into the model. Finally, other important internal process changes reduced the total time for average call taking and turn out time to 110 seconds from 120 seconds. This, coupled with a 20 second increase in the total response time standard from NFPA 1710 is represented in the modeling by allowing a 30 second longer travel time model to be presented.

GIS Models

With the new information, the model was developed to visualize what response coverage would be achieved without relocating any of the three fire stations. With the revised GIS road network speeds and allowances made for time savings in dispatch and turn out, the 6 minute and 20 second response model is represented in Figure 6.

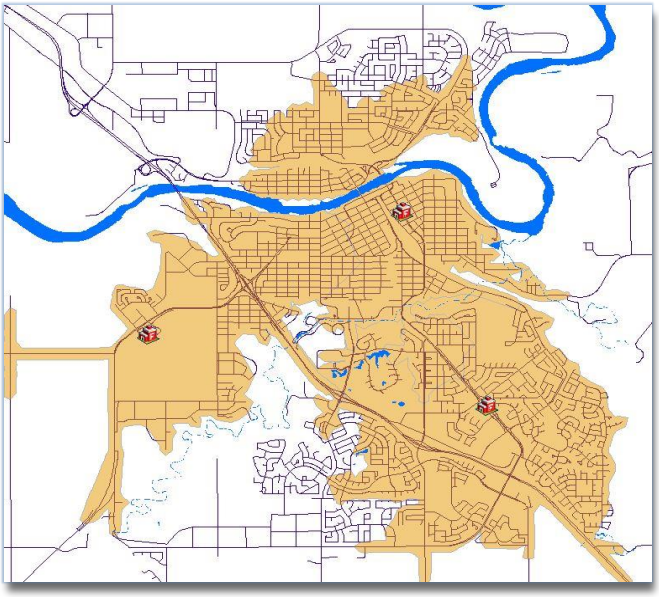
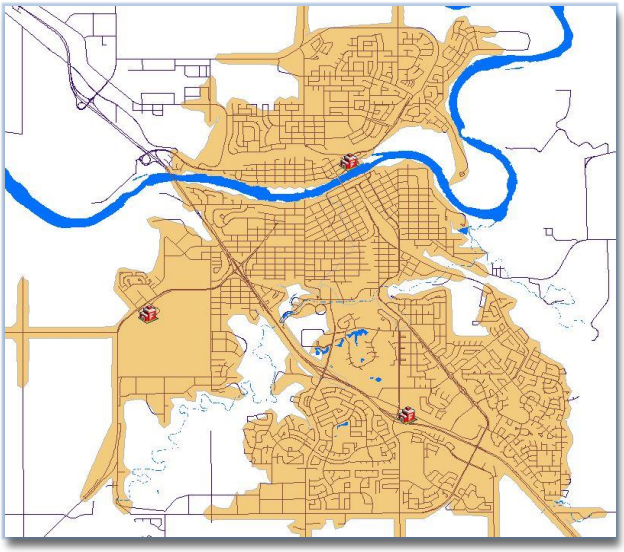


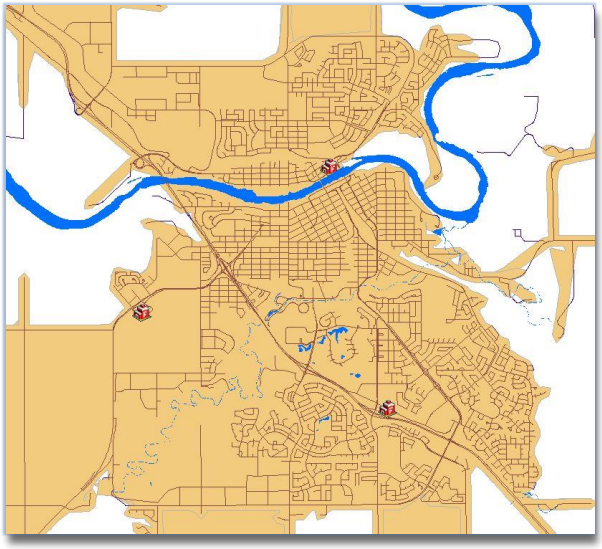
Figure 6: 2016 Existing Stations - 6 Minute 20 Second Response

GIS analysis of census data reveals the model pictured here improves coverage to 82% of the population living within a 6 minute and 20 second response area.



Further analysis was performed alleviating the constraint of station location to optimize response coverage. Numerous models were analyzed to determine optimal response coverage. The best combination involved the relocation of Station 1 from 440 Maple Avenue to 401 Parkview Drive NE (on the north side of the Maple Avenue Bridge), and the strategic relocation of Station 2 from Dunmore Road to 1303 Trans Canada Way SE. That modeling representing 6 minutes and 20 seconds of total response time is pictured in Figure 7. The model indicates that relocation of Station 1 and Station 2 placed 95% of the population within Fire Services' 6 minute and 20 second response area.

Figure 7: Relocating Station 1 and 2 - 6 Minute 20 Second Response



A 12 minute and 20 second full alarm assignment target is required to achieve coverage over the entire city (Figure 8). This full alarm assignment modeling is an improvement over what was previously projected in the FSSP. This improvement is due to the addition of traffic preemption technology to all intersections within the city.

Figure 8: Full Alarm Assignment - 12 Minutes 20 Seconds

The work completed on traffic preemption and GIS Modeling, along with the change in NFPA 1710 from 6:00 to 6:20, led to the following recommendations which were approved by the Council in January of 2013.

1. Approve a response time guideline for the first arriving engine company of 4 minutes and 30 seconds travel time or 6 minutes and 20 seconds total response time, 90% of the time and outside the response area as soon as reasonably possible.

2. Approve a response time guideline for a full alarm assignment of 10 minutes and 30 seconds travel time or 12 minutes and 20 seconds total response time 90% of the time and outside the response area as soon as reasonably possible.

3. Approve Phase 1 of the capital projects which would include the strategic relocation of Station 2 in 2014/2015 and sale of the current Station 2 property.

4. Approve Phase 2 of the capital projects which would include the construction of a fire station north of the South Saskatchewan River, in the vicinity of Maple Avenue and Altawana Avenue in 2016/2017.

5. Maintain the current Station 1 location but not as an operational response station. This location could be referred to as Fire Headquarters. Fire Administration, Fire Prevention, Training, and seasonal apparatus could be housed at this location.

6. Continue to install traffic preemption technology on all signal controlled intersections.

All of these recommendations were carried out except for #5. Fire Services made significant reductions in its fleet count and seasonal apparatus storage was not required. Administration, Prevention, and Training were moved to the new headquarters at 1303 Trans Canada Way, and the 440 Maple Avenue station was placed on the market for sale.

Fire Underwriters Survey

Fire Underwriters Survey (FUS) is a national organization that represents more than 90 percent of the private sector and casualty insurers operating in Canada. Fire Underwriters Survey provides data to program subscribers regarding public fire protection for fire insurance statistical and underwriting evaluation.

Fire Underwriters Survey conducted an assessment of Medicine Hat's fire defenses for the primary purpose of fire insurance grading and classification.

The Public Fire Protection Classification (PFPC) is a numerical grading system scaled from 1 to 10 that is used by Commercial Lines insurers. Class 1 represents the highest grading possible, alternatively, Class 10 represents an unrecognized level of fire protection or fire protection beyond 5km by road travel distance from the nearest responding fire station. The PFPC grading system evaluates the ability of a community's fire protection programs to prevent and control major fires that may occur in multi-family residential, commercial, industrial, institutional buildings, and construction developments.

Fire Underwriters Survey also assigns a second grade for fire protection. The second grading system, entitled Dwelling Protection Grade (DPG), assesses the protection available for small buildings, such as single-family dwellings, and is used by Personal Lines insurers. The DPG is a numerical grading system scaled from 1 to 5. Class 1 is the highest grading possible, Class 5 indicates little or no fire protection is present; Class 5 also represents fire protection beyond 8km by road travel distance of a responding fire station. This grading reflects the ability of a community to handle fires in small buildings such as single family dwellings and semi-detached dwellings.

In the Public Fire Protection Classification, the City improved overall from the fourth highest class to the third highest class and in the Dwelling Protection Grade, the City remains at the highest possible class. This was achieved as the City experienced significant growth between 2010 and 2019 when Fire Underwriter Survey assessments were completed, all the while without increasing resources in the Fire Department, through carrying out the recommendations in the Fire Service Response Coverage Optimization Plan.

CITY GROWTH

myMH Plan

The myMH plan has been developed to guide our community over the next 30 years. Review of legislative requirements, analysis of development patterns and policies contained within previous plans, identifying current constraints, and review of current planning best practices have created a financially feasible growth management strategy.

Medicine Hat has located it's fire stations based on the most significant fire problem in the community, residential fires. According to the NFPA, 82% of all fire deaths occur in the home, making residential fires the most important life safety challenge for fire services in North America. With this important fact in mind, it is necessary to maintain focus on fire responses in residential areas.

Medicine Hat is projected to experience population growth of 0.8% per year over the short term, with a gradual decline to 0.6% per year by 2050, arriving at a projected population of 80,000. This will provide a relatively steady growth rate of 400 to 600 people per year, requiring 125 to 175 new dwellings per year. Currently, 18% of our population is over 65 years of age. This is projected to rise to 33% in 2050, likely resulting in a higher ratio of multi-unit dwellings to single unit dwellings and more institutions that specialize in various levels of supportive living.

Infill will also be an important growth option. Infill is far less costly to service than greenfield expansion, and core services are generally easier and less costly to deliver.

Specific to Fire Services the myMH plan says the following:

"The City should continue to provide safe, efficient, and effective fire suppression, prevention, rescue, and hazardous material response by:

a) Maintaining a target fire suppression response time;

b) Maintaining a three fire station system for as long as possible, until a fourth station is required; and;

c) Requiring alternative fire protection measures, such as building sprinklers, to ensure safety when development is outside of target response areas." (City of Medicine Hat, 2020)

SUBURBAN/RESIDENTIAL GROWTH

Future suburban residential growth is represented in the myMH plan in the following growth map:

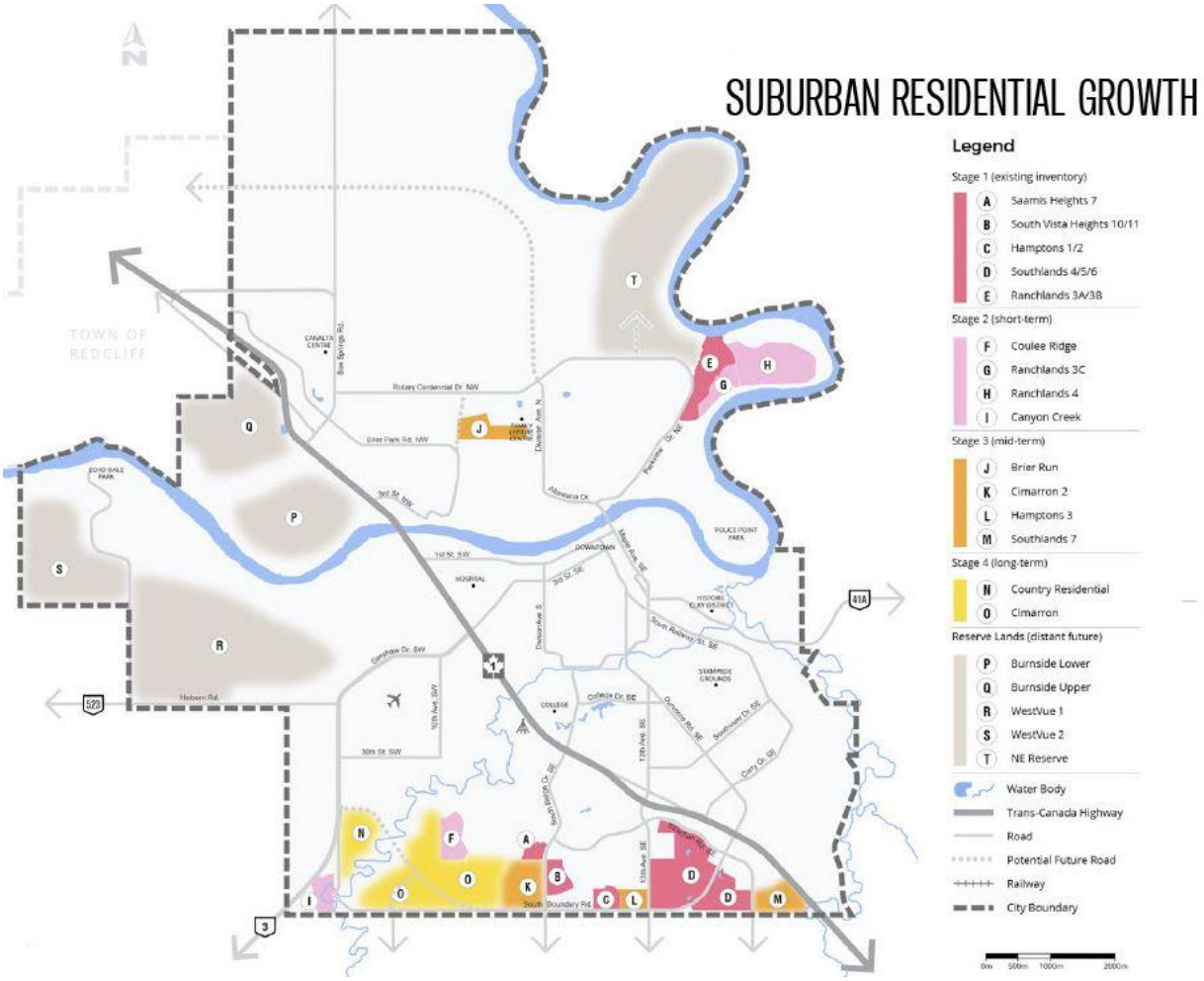


Figure 9: myMH Surburban Residential Growth Projection

The following illustration lays the current first engine fire response coverage over the suburban residential growth map:

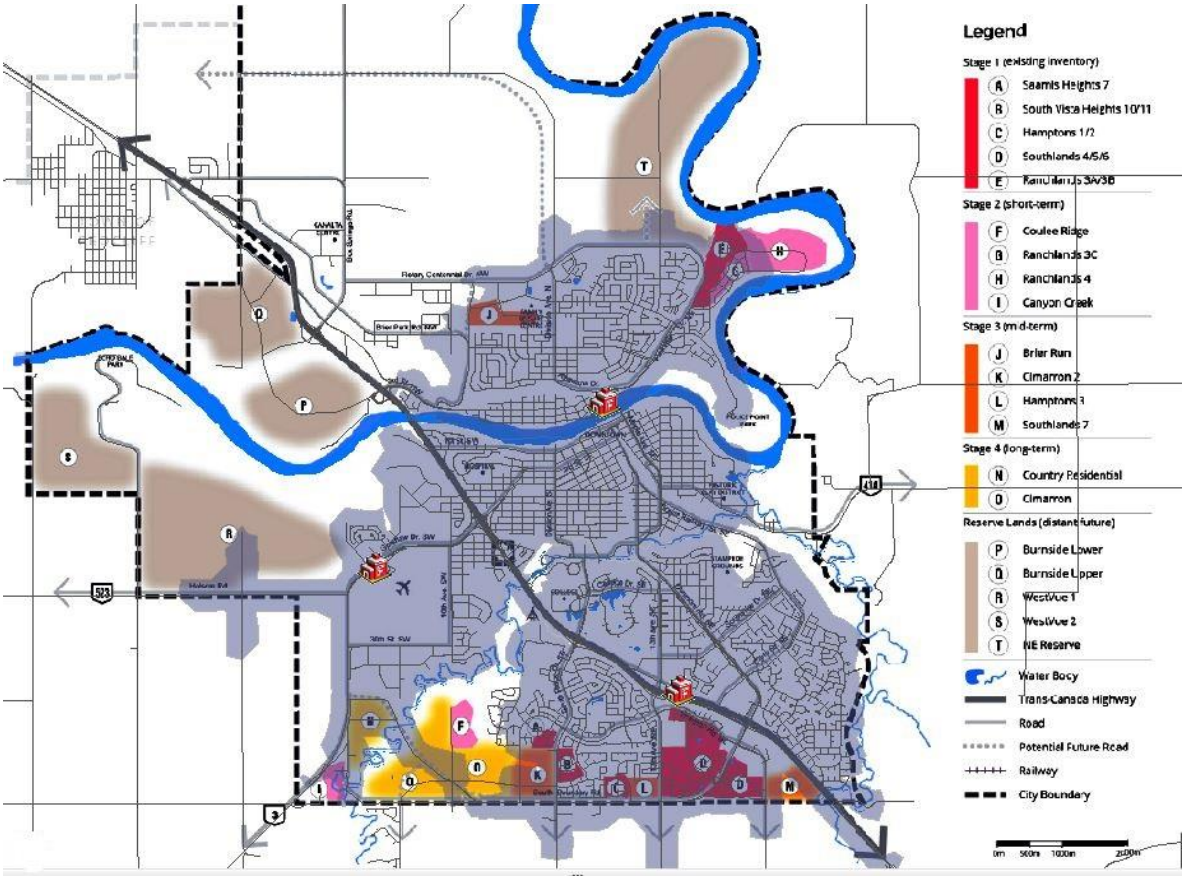


Figure 10: myMH Surburban Residential Growth Projection with 6:20 Fire Service Response Overlay

Through this representation, we can see that fire services will cover all Stage 1 (existing inventory) growth in its current first engine response target of 6:20 90% of the time. This includes Saamis Heights 7, South Vista Heights 10/11, Hampton's 1/2, Southlands 4/5/6, and Ranchlands 3A/3B. The estimated build-out times for existing inventory is 2020-2025.

Stage 2 (short term) development includes Coulee Ridge, Ranchlands 3C, Ranchlands 4, and Canyon Creek. The Coulee Ridge development is outside of the department's current first engine response target area, but fire suppression will be augmented through the required use of residential sprinklers. Canyon Creek and Ranchlands 3C will fall within the first engine response target area. Ranchlands 4 will fall partially beyond the first engine response target area and would be a development that would benefit from the use of residential sprinklers. These areas are expected to develop between 2025 and 2035.

Stage 3 (mid-term) development includes Brier Run, Cimmaron 2, Hamptons 3, and Southlands 7. All of these developments are within the first engine response target area. These areas are expected to develop between 2035-2045.

As Cimarron 2 develops there will be a point where required water flows will reach/exceed current delivery capacity. Any further development will require additional water supply and will lead to the development of the SW Connector (which will run between Gershaw Drive and South Boundary Road). It is shown in Figure 10. The SW Connector will significantly improve first engine response to the Cimarron area from Fire Station 3.

Stage 4 developments include Country Residential and Cimarron. The Country Residential area resides within the current first engine response target area and the SW Connector will allow all of Cimarron to reside within that target area as well. These areas are expected to develop beyond 2045.

Finally, reserve lands in the NE, NW, and SW are to be developed in the distant future and are outside the timeframe of this document.

These projections are based on the first engine response target capabilities. Equally important to Fire Services is the full alarm assignment performance. This response target represents how fast 14 or more firefighters can be assembled on scene at an emergency. Currently, this requires response from all three stations. Below is the current full alarm assignment capability overlaid on the Suburban Residential Growth map from the myMH plan.

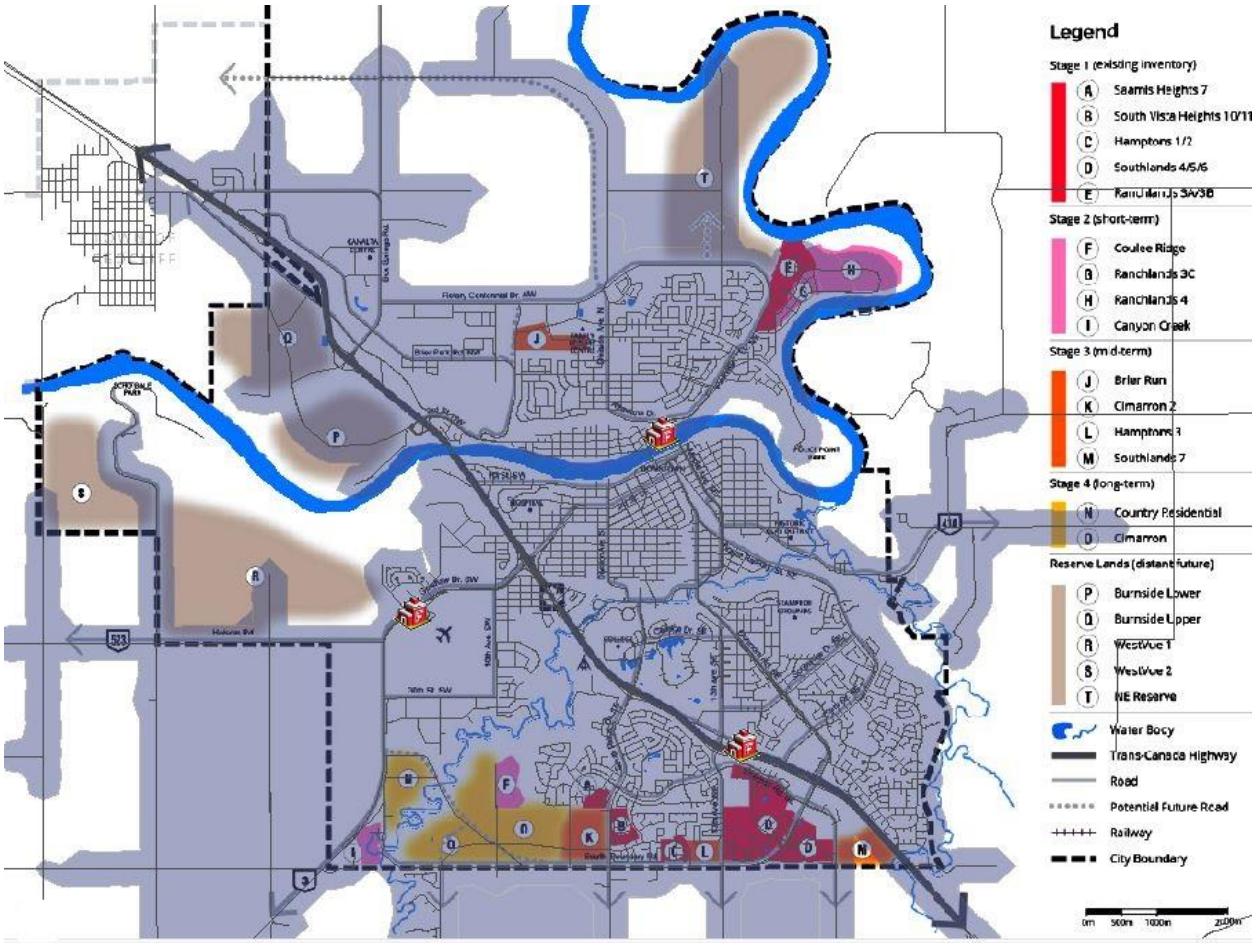


Figure 11: myMH Surburban Residential Growth Projection with 12:20 Fire Service Response Overlay

The only development that cannot be covered in the full alarm assignment response target area (other than distant future developments) is Ranchlands 4. As mentioned above, Ranchlands 4 will benefit from the requirement of residential sprinklers.

INDUSTRIAL/COMMERCIAL GROWTH

Although Medicine Hat's fire stations are located to optimize response to residential fires, commercial and industrial occupancies require efficient and effective fire protection. In commercial and industrial occupancies, supplemental fire protection measures are often required by building and fire code. These can include building sprinklers and automatic suppression systems. The risk of fire death in these occupancies is also lower as people in the buildings are at work and awake, not at home and sleeping. Heavy industrial occupancies such as Methanex and Canadian Fertilizer (CF) also have onsite emergency response to begin incident stabilization before MHFS arrives. The myMH plan illustrates commercial and industrial growth as follows:

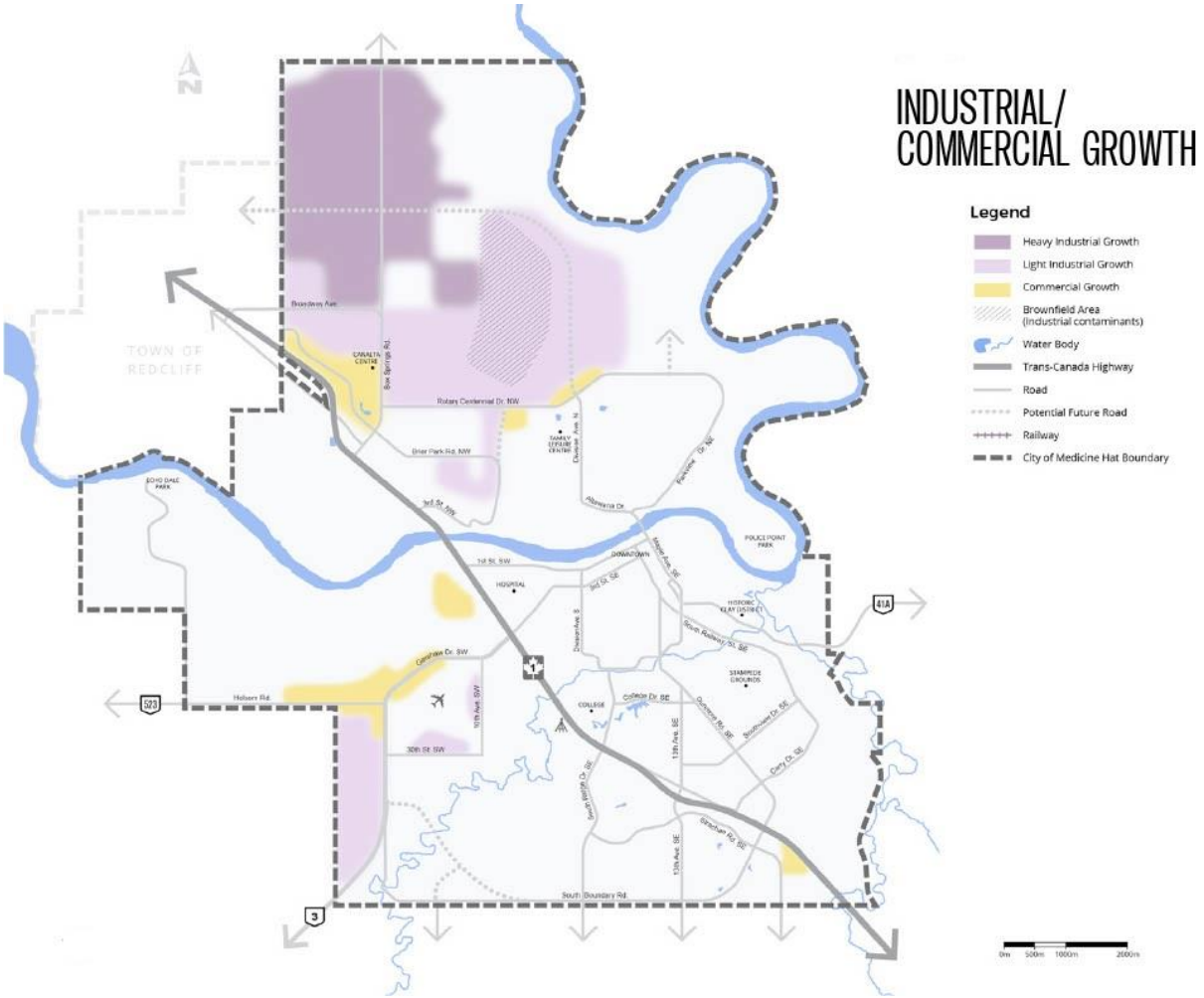


Figure 12: myMH Industrial/Commercial Growth Projection

MHFS full alarm assignment response into this forecasted industrial commercial growth is displayed in the following overlaid map:

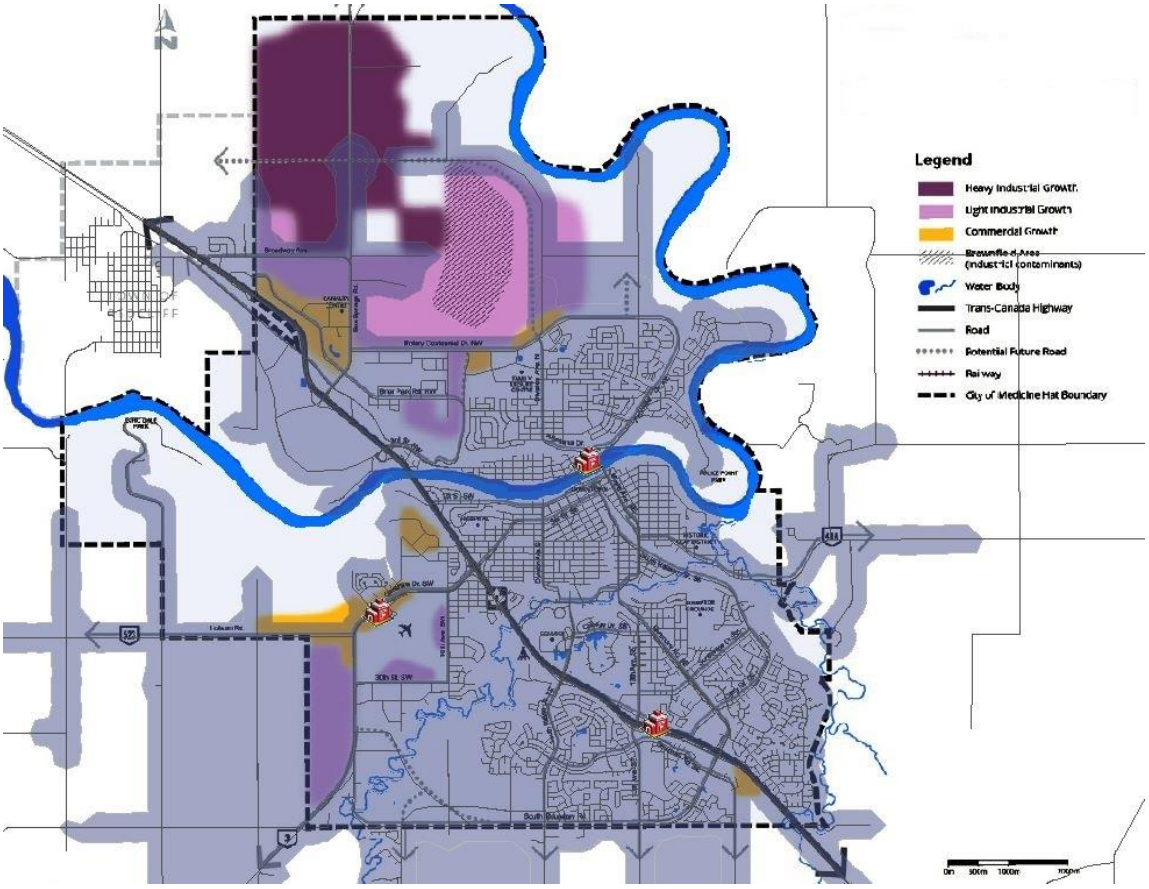


Figure 13: myMH Industrial/Commercial Growth Projection with 12:20 Fire Service Response Overlay

MHFS cannot place 14-15 firefighters on scene in the forecasted growth areas within the target of 12:20 90% of the time. Response to heavy industrial facilities in the City of Medicine Hat is low with an average of 8.7 incidents per year to these occupancies (based on a 3 year average from 2017-2019). Again these heavy industrial operations are usually staffed with onsite emergency response, have additional fire suppression safety systems in place, and rely on MHFS mainly for additional resources and incident command. Any serious incident at a heavy industrial facility triggers a full call back of off duty firefighters to respond to the incident and also maintain coverage for the rest of the City.

PROTECTING GROWTH

RESPONSE TIMES

NFPA response time standards as outlined in 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 are as follows:

First Arriving Engine – On scene with four firefighters in 6:20 90% of the time. This is broken down in NFPA 1710 as follows:

Call Processing 60 Seconds (NFPA 1221)	Turn Out Time 80 Seconds (NFPA 1710)	Travel Time 240 Seconds (NFPA 1710)
380 Seconds		

In the MHFS, a pre-alert system is used which allows call taking and firefighter turnout to occur simultaneously, thereby allowing a drive time of 270 seconds to be achieved within the 380 second total. It is represented as follows:

Pre-Alert Time 30 Seconds	Chief Complaint and Address Processing 80 Seconds	
	Turn Out Time 80 Seconds	Travel Time 270 Seconds (NFPA 1710)
380 Seconds		

The first full year of operations out of the two relocated stations was 2019. Fire Services did not initially achieve the benchmark of 6:20 90% of the time for first arriving engines. Continual analysis of firefighter turn out time, Dispatch and additional Fire Service processes, resulted in positive changes. In 2020, Fire Services achieved the following performance levels against the first arriving engine target:

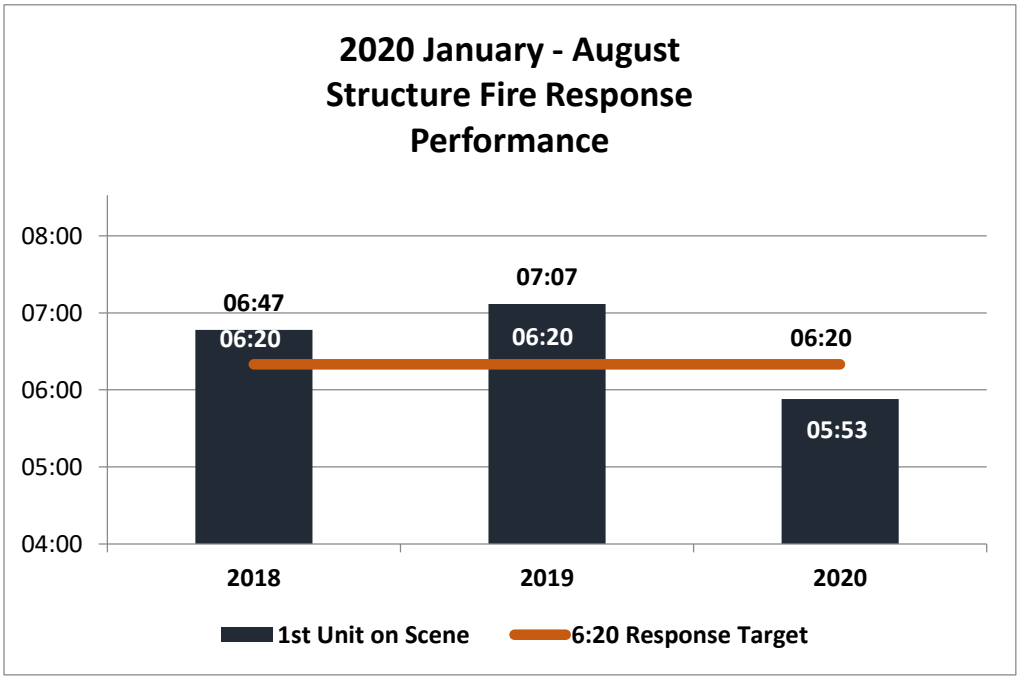


Figure 14: First Arriving Engine 6:20 90% of the time

Full Alarm Assignment – 14 -15 firefighters on scene in 12:20 90% of the time. It is represented as follows:

Pre-Alert Time 30 Seconds	**Chief Complaint and Address Processing 80 Seconds**	
	Turn Out Time 80 Seconds	**Travel Time 630 Seconds (NFPA 1710)**
740 Seconds		

MHFS has performed well against the full alarm assignment target as illustrated below:

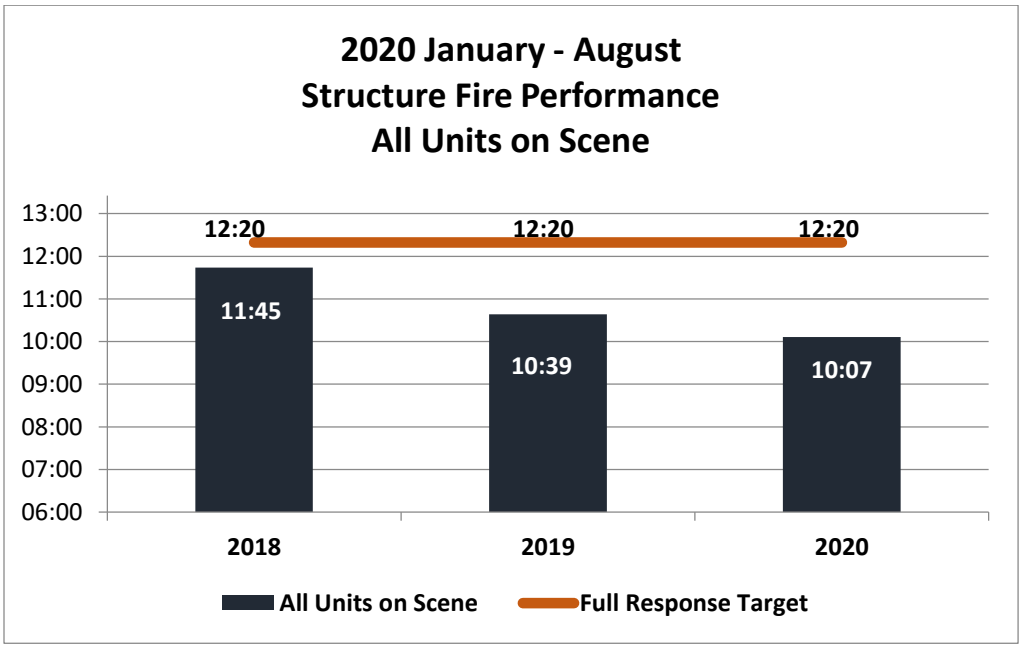


Figure 15 - Full Alarm Assignment - 12 Minutes 20 Seconds 90% of the time

As presented, the department has outperformed the NFPA standard for full alarm assignment response. Consideration could be given to reducing the target for MHFS from 12:20 to 10:20, however industrial growth in future years would lie significantly outside the department's ability to respond in 10:20 without the addition of a fourth response station in the NW.

The positive outcomes of the Fire Service Response Coverage Optimization Plan are proven in the analysis. Residents and visitors to Medicine Hat receive the benefit of effective fire rescue services based on Council-approved response time targets.

Recommendations related to response times include:

1. Maintain a first arriving engine response time target of 6:20 90% of the time inside the City of Medicine Hat response areas and arrive as soon as possible outside the City of Medicine Hat response area.

2. Maintain a full alarm assignment response time target of 12:20 90% of the time inside the City of Medicine Hat response areas and arrive as soon as possible outside the City of Medicine Hat response area.

STATION ANALYSIS

As mentioned earlier in this plan, Medicine Hat has located its stations to provide optimal response to the most significant fire problem, residential fires. Planned developments outside of the department's 6:20 target area include Ranchlands 4 and Coulee Ridge.

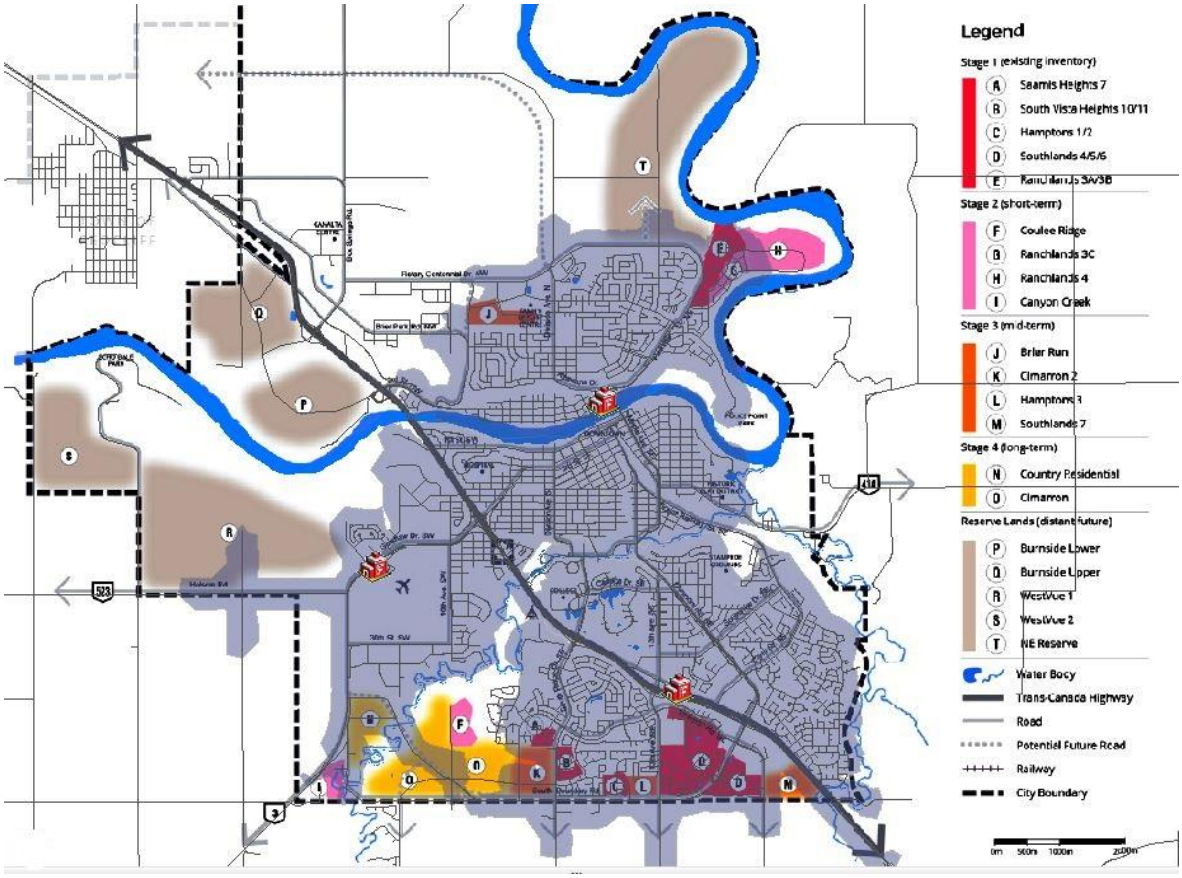


Figure 16: myMH Surburban Residential Growth Projection with 6:20 Fire Service Response Overlay

Coulee Ridge is required to have residential fire sprinklers in every home, and Ranchlands 4 will also benefit from residential sprinklers. As illustrated above, any future developments that lie outside the 6:20 response target area, other than the two mentioned developments, are in the distant future timeline for development.

Due to the relocation of two stations as recommended in the Fire Service Response Coverage Optimization Plan, and the use of residential sprinklers in fringe development areas, Medicine Hat will continue to maintain appropriate residential fire suppression coverage for the foreseeable future.

The recommendation related to station planning and locations would be to maintain a three station response model until residential growth in the NW requires additional response capabilities.

STAFFING ANALYSIS

MHFS operates out of three stations, with four suppression platoons of 18 firefighters utilizing a day/night platoon system. The desired staffing level is 15 firefighters on duty 24 hours per day. This allows for NFPA recommended staffing levels and still permits three firefighters off on different types of leave (vacation, lieu, training, sick, etc.).

Staffing is maintained at the same level on day and night shifts. Interpretation of total response data may indicate that staff numbers could be different between day and night shifts due to the higher call volume between the hours of 8:00 AM and 6:00 PM.

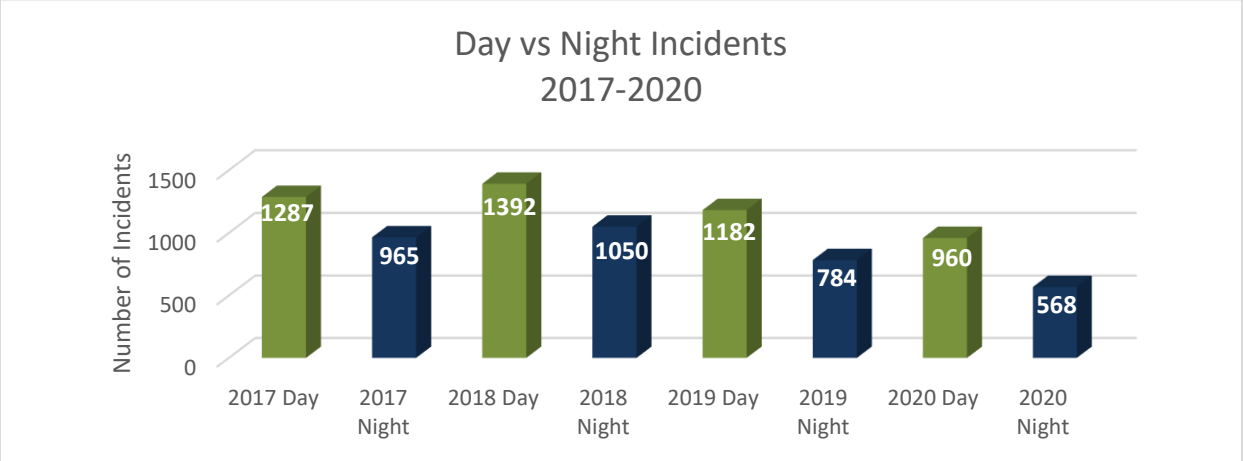


Figure 17: MHFS Emergency Response Incidents – Day vs Night 2017-2020 (2020 - Jan 1 – Aug. 31)

Further analysis of labour intensive calls (such as structure fire response), supports having equal numbers of staff working day and night. A greater number of structure fires occur between 6:00 PM and 8:00 AM, when residents are occupying their homes and could be asleep. This increases the chance of requiring rescue and offsets higher call volume during the day.

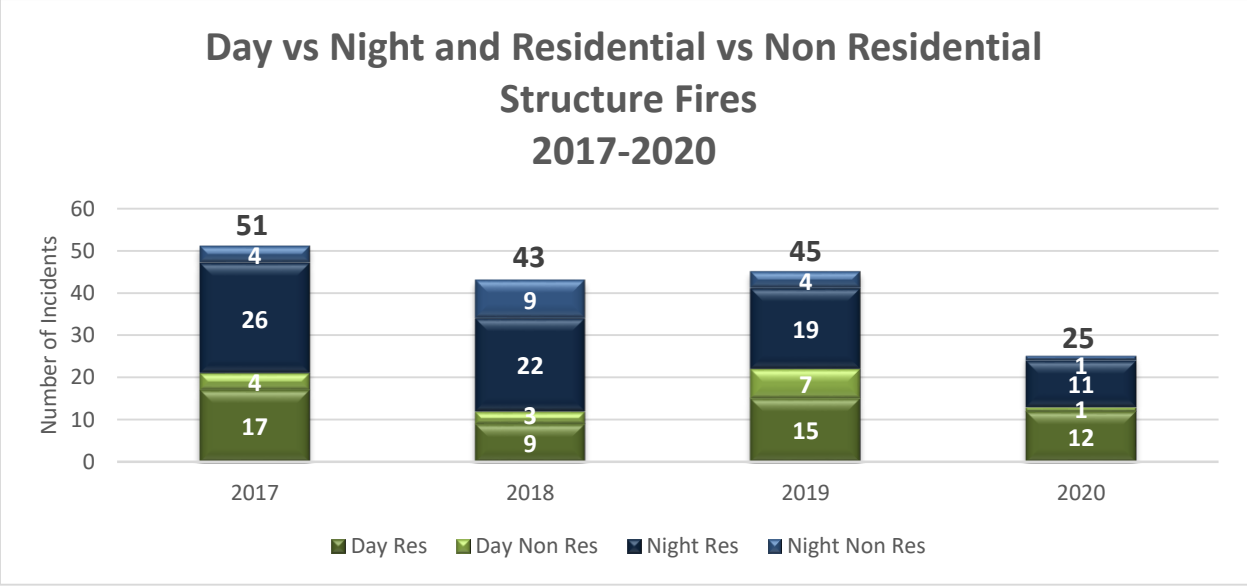


Figure 18: MHFS Structure Fire Incidents –Day vs Night and Residential vs Non-Residential 2017-2020. (2020 – Jan. 1 – Aug. 31)

In previous analyses, Fire Services has considered the possibility of using volunteer paid on-call (POC) firefighters to supplement a smaller core of on-duty career firefighters. Departments that utilize this model report that recruitment and retention of volunteer or POC firefighters has become increasingly difficult over time. Training requirements as well as the risk of higher cancer contraction rates discourage many from taking a position as a POC firefighter in an urban setting. Operating with a smaller core of on-duty firefighters would also diminish the department's fire prevention programs.

The number of firefighters required to handle a serious industrial incident, or multiple residential fires simultaneously occurring can easily reach 40 – 50. This number of firefighters allows for incident action plans to be developed to mitigate serious or complex incidents as quickly as possible. As mentioned earlier, MHFS staffs to a level of 14 - 15 firefighters. Although this means the department must react quickly by calling additional staff to duty when major incidents occur, the department is regularly staffed and prepared to handle the majority of required emergency responses.

One option of reducing costs in suppression staffing would be to reduce the number of full-time firefighters on each platoon from 18 to 16 and recruit a casual pool of 8 to 12 firefighters that would be called to work for coverage of scheduled or unscheduled leave of full-time firefighters. Savings of $200K annually could be achieved through a reduction of overtime and benefit costs. These reductions would be partially offset by other staffing expenses. This includes increased costs of recruitment (casual staff often leave in pursuit of full time employment), the need for more PPE and uniforms (due to staff turnover), and additional training costs (to train new casuals as a result of staff turnover). The Full-Time/Casual model has been used in Canada with varying degrees of success. Most urban departments utilizing casual or POC staff are transitioning to a full-time model.

Engine crew sizes vary between municipalities. MHFS utilizes four person crews on front line engines/ladders and one or two person response on second-line units. Some departments utilizing composite staffing models rely on one or two firefighters on duty to respond with apparatus and are supplemented by casual staff. Other departments such as Edmonton Fire Rescue Service utilize four person crews on all engines and ladders.

The National Institute of Standards and Technology (NIST) did a comprehensive study on fire crew sizes in 2010, including the time to complete critical fire ground operations, and the physiological effect on firefighters dependent on crew size.

- Four person engine crews operating on low-hazard structure fires were able to complete 22 critical fire ground tasks 25% faster than three-person crews. Five person crews did not show a significant gain in time over four-person crews until high hazard structure fires in urban settings were modeled.

- Four person crews can apply water on a fire 6% faster than three person crews and five person crews were 6% faster than four. This may seem like a small percentage but a free burning fire can double in size every 30 seconds and faster water application results in fires being contained to smaller areas.

- Four and five person crews also completed primary search and rescue 6% faster than three person crews. Tenability and survivability decrease rapidly over time in burning structures.

- Average heart rates were higher for firefighters in small crews, particularly two person crews. Danger is increased for small crews because the stress of fire fighting keeps heart

rates elevated beyond the maximum heart rate for the duration of a fire response. And so the higher heart rates were maintained for sustained intervals.

Recommendations include:

1. Examine operating models and impacts to services of lower cost options. While these lower cost options are being examined, maintain the current optimal response of:

    a. Engine companies staffed with four firefighters to ensure critical fireground tasks are completed expediently.

    b. Equalized staffing on both day and night shifts.

MEDICAL FIRST RESPONSE (MFR)

From 1998 to 2005 MHFS was heavily involved in the delivery of what was called at the time, Medical Co-Response (MCR). This program was created to support the Palliser Health Authority as they operated EMS out of one operational station, the Medicine Hat Regional Hospital. Fire Services was able to respond ahead of EMS in most areas of the City, providing initial medical treatment then supporting EMS after their arrival. At that time, MHFS responded to many severity levels of medical emergencies resulting in approximately 2,500 MHFS medical responses per year. In 2005 the Province of Alberta made the decision that EMS was a provincial responsibility, not municipal, and MCR was discontinued in the City of Medicine Hat.

Although there were many benefits to residents from the MCR program, some problems did exist including:

- Splitting of four man engine companies, sending two on medical response, and leaving two in the station.

- Response to many lower severity calls (classified as Alpha, Bravo, and Charlie level calls) where MCR had little or no benefit to patient outcome.

- Requirement for additional MCR vehicles, increasing operating costs for MHFS.

In 2015, MHFS revisited the concept of supporting EMS through fire response but built the program to eliminate the problems of the earlier model. In collaboration with AHS, a comprehensive review of medical severity indexes and fire response benefits was completed. New protocols allowed MHFS to respond to certain Delta level calls and all Echo level calls (most severe) resulting in MHFS attending calls only where an opportunity existed to improve patient outcomes. Call volume was reduced from approximately 2500 annual responses to 350 responses per year. Fire response to these calls is now performed by a full engine company, eliminating crew splitting and maintaining crew strength for fire response. Additionally, no extra vehicles are required for MHFS fleet.

Medical First Response (MFR) strives to have a positive impact on patient outcomes, and improve cooperation between EMS, Fire, and Police Services.

The recommendation is to maintain Medical First Response (MFR) in support of EMS on Delta and Echo level incidents with the aim of improving outcomes for residents during medical emergencies.

INTERMUNICIPAL COLLABORATION FRAMEWORK

The City of Medicine Hat, Town of Redcliff, and Cypress County have established a framework to examine areas of collaboration that may increase the effectiveness and efficiency of services. One such example was the development of the new Fire Services Agreement between the City of Medicine Hat and Cypress County.

Opportunities may exist in the future to investigate staffing and or capital projects between the three municipalities. One such area to evaluate may be the protection of future industrial areas/developments in the City's NW quadrant.

Although the agreement for Fire Services between the City and County is current, the agreement between the Town of Redcliff and the City is old and needs to be updated. A new agreement should be pursued in the near future.

Recommendations include:

1. Examine opportunities for inter-municipal collaboration on suppression services, prevention services, training opportunities, and capital projects.

2. Maintain current agreements for services and mutual aid with bordering municipalities, and ensure timely renewals and updates occur.

RESIDENTIAL SPRINKLERS

Providing adequate fire protection to developments farther from fire stations is a problem every municipality has encountered. Residential fire sprinklers are a way to enhance fire protection and reduce risk to firefighters when response times are not optimal. Homes equipped with automatic fire sprinklers and smoke alarms reduce the risk of death in a home fire by 82% and decrease property damage by as much as 90%. Many myths exist about residential sprinklers creating resistance to the installation of these life and property saving devices. Here are some of the common reoccurring myths about residential fire sprinklers that have been debunked:

Myth	Fact
"Water damage from a sprinkler system will be more extensive than fire damage."	Water damage from a sprinkler system will be much less severe than the damage caused by water from firefighting hose-lines or smoke and fire damage if the fire goes unabated. Quick response sprinklers release 8 to 24 gallons of water per minute compared to 50 to 125 gallons per minute released by a firehose.
"When a fire occurs, every sprinkler head goes off."	Sprinkler heads are individually activated by fire. Residential fires are usually controlled with one sprinkler head.
"The added cost of sprinklers will make housing unaffordable to buyers."	A sprinkler system costs one to two percent of the total construction costs. The cost of a sprinkler system is comparable to what many people pay for carpet upgrades, a paving stone driveway, or a whirlpool bath.
"It is unfair to target new construction because new buildings are safer than older buildings."	Modern construction techniques such as webbed truss construction, vented soffits, and human-made composite materials, make newer houses far more susceptible to serious damage from fire.
"Insurance costs will go up due to fire sprinkler system ruptures and leaks."	Sprinkler head failure rate is one in 16 million. Domestic plumbing ruptures and leaks are over a 1000 to 1 ratio compared to sprinkler system ruptures and leaks.

A 200 year history of building in Canada shows that safety features are rarely installed when left to good intentions. Code changes and requirements have been the most common way of ensuring safety features exist. Municipalities in Alberta are not able to enact bylaws requiring sprinklers in residential structures as of yet because of Section 66(1) of the Safety Codes Act which states “Except as provided in this section, a bylaw of a municipality that purports to regulate a matter that is regulated by this Act is inoperative.” (Province of Alberta, 2020) The Alberta Building Code and Alberta Fire Code fall under the regulations of the Safety Codes Act.

The City of Medicine Hat has a history of requiring residential sprinklers in different developments. Cottonwood Coulee was the first development requiring residential sprinklers. The first phase of the development has sprinklers but then a legal challenge occurred in later phases where potential homeowners questioned the need for sprinklers when other areas of the City had similar response times, and no sprinkler requirement. The City changed its position to recommending residential sprinklers, and there was a limited amount of sprinklers installed after that time.

After relocating fire stations in 2017 and 2018, 95% of residents lived inside the department’s response area of 6:20 90% of the time, while the remaining 5% were seconds outside the response area. Since the relocations, the City worked with the developers of the Coulee Ridge subdivision and made residential sprinklers a requirement. Coulee Ridge is significantly outside of Council approved response time targets, and more so than any other current residential development in Medicine Hat.

The City of Medicine Hat provided $2500 contributions to the homeowners of the Coulee Ridge development. For an outlying or out of step development, contributions such as this help the homeowner with the cost of sprinkler installation (1%-2% of construction costs). While one time costs to the City for residential sprinkler contributions in Coulee Ridge could total $550,000 over the next 10-20 years, it is vastly less than the one time $10,000,000 capital costs, and $3,000,000 annual operating costs that would have been incurred if a fire station was built and staffed in that area.

Future suburban growth projections indicate Ranchlands 4 will be outside the department’s 6:20 response area and will benefit from a similar requirement that all homes will be constructed with residential sprinklers in that development to augment fire suppression and life safety provided by MHFS.

Recommendations include:

1. Implement a policy requiring residential sprinklers for new residential developments outside of the 6:20 response target area.

2. Implement a policy to provide a financial contribution for residential sprinkler installation in new subdivisions as required.

SECTION 4 - FIRE PREVENTION

Fire prevention remains the focus of MHFS. Fire Safety inspections are one of three pillars of the fire prevention program in MHFS. Suppression crews remain immersed in fire prevention activities, completing approximately 1400 Life Safety Checks on commercial properties annually in Medicine Hat. Four Fire Safety Codes Officers reside in the Fire Prevention Branch and

complete approximately 300 complex inspections in higher hazard occupancies and institutions annually.

The second pillar of the fire prevention program is investigation. Accurate cause determination can contribute to stopping arsonists, and more frequently, drive the changes that occur in building and fire codes to address gaps in fire safety. Members of the Fire Prevention branch perform approximately 50-60 fire investigations per year, as part of the Quality Management Plan as an accredited municipality under the Safety Codes Act.

The third pillar of the fire prevention program is education. All members of MHFS participate in education programs. Firefighters conduct station tours to pre-school and elementary aged students, while Fire Prevention Officers target programs for more in-depth pre-school and school presentations, senior's residences, and new Canadians.

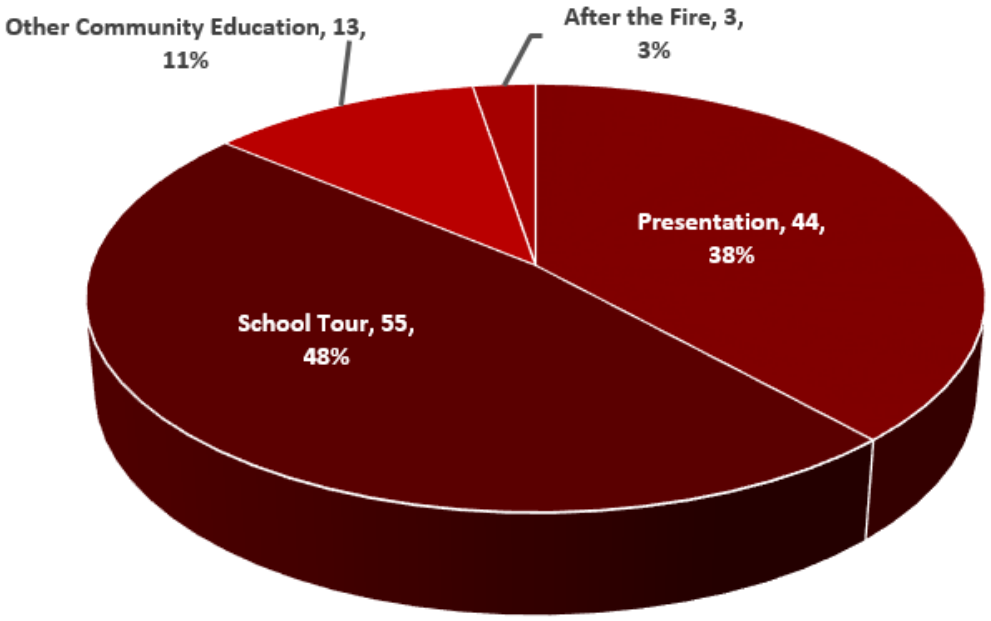


Figure 19: MHFS Pubic Education Incidents – January – December 2019

School programs are the most effective method to reach families with fire safety education. Elementary school students have the greatest capacity to return home and spread fire safety messaging with their family so the department attempts to reach as many elementary aged students as possible.

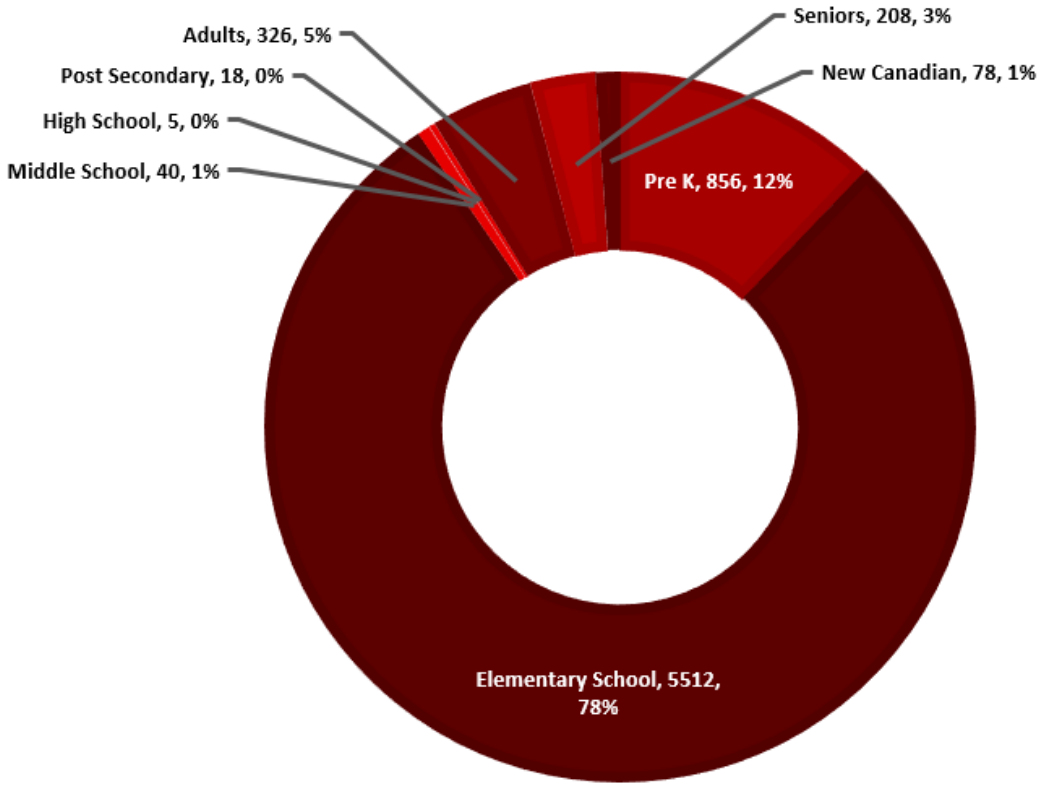


Figure 20: MHFS Pubic Education Incidents – January – December 2019 – Age of particpants

The three pillars do not define the entire scope of work completed by the Fire Prevention Branch. The Fire Prevention Branch addresses all occupancy inspections for new businesses, occupant load certification for occupancies allowing gatherings, fire pit permits, and inspections, above ground and underground storage tank inspections, fireworks permits and supervision, plans review for the Technical Coordinating Committee, and ad-hoc citizen and business concerns.

Streamlining or applying LEAN principles to department prevention activities has resulted in the following:

- Inspections and Life Safety Checks are now completed using tablets to speed data entry and enhance service to customers.
- Fire pit permits are now available to residents online, reducing the amount of time Fire Prevention Officers spend on permits and enhancing residents' experience and satisfaction.
- Life Safety Checks are completed by address and sector to keep suppression crews working in one area, reducing fuel costs, and increasing efficiency of inspections.

Other programs have been developed in recent years that have enhanced resident safety including:

- Secondary Suite Registry. Developed in collaboration with the Planning Department, this program identifies, inspects, and registers secondary suites that meet the requirements of the Alberta Building Code. Landlords and tenants are ensured the suites they rent or are renting meet safety standards. This project won the CAO's Award in 2018.

- After the Fire Program. Attention to fire safety is high when a fire occurs in a neighbourhood. As soon as possible following a residential fire, crews canvas homes in the nearby neighbourhood to talk about fire safety and answer any concerns of residents.

Neighbouring accredited municipalities are beginning to ask for services and assistance from the Fire Prevention Branch. These include complex/difficult fire inspections which basic safety codes officers require assistance with, or these municipalities no longer have safety codes officers employed, and wish to remain accredited. These services are provided on a fee for service and may present a greater revenue opportunity in the future as a more regional approach to accreditation evolves.

The Fire Prevention Branch will continue to apply LEAN principles to provide efficient and effective fire safety programs in the City and elsewhere when requested. The Branch consists of a Fire Marshal and three Fire Prevention Officers (Safety Codes Officers). They have and will continue to provide a high level of services as capacity exists. New ways of involving suppression crew members when available, may also increase the capacity of the branch.

The recommendation is to maintain and develop as required effective, targeted fire safety education programs to enhance resident and visitor safety, including enhanced opportunitites for residential fire safety inspections as they remain the number one fire problem in the community.

SECTION 5 – TECHNOLOGY

Routinely, MHFS uses technology to build efficiencies and/or to support decisions that are made regarding operations. Whether it is in day to day operations or during crisis management, tools are in place to allow the focus to be on resourceful decision making that provides exceptional fire protection service for residents of the City of Medicine Hat. MHFS utilizes best practices and technology to improve services and streamline processes for both staff and residents.

Technology like traffic preemption and the use of mobile data terminals (MDTs) with enhanced mapping in frontline fire apparatus creates efficiencies in travel time by having traffic signals advance to clear intersections for approaching fire apparatus and optimizing the route the apparatus takes to the incident. The enhanced maps on the MDT have multiple layers that include infrastructure for City Utilities which benefit fire officers on scene, who must manage incidents or create incident action plans to mitigate complex situations. Pre-Incident Plans are created for commercial buildings allowing fire officers to plan while en route to a fire. These plans highlight building construction, site data, and note unique features or hazards contained within a building. Pre-Incident Plans are also connected to the MDT software which provides one more dimension of preparedness and defense for firefighters through advanced planning. Other technologies, such as GIS software assists in fire station location modeling, so that the relocation of Fire Stations allows for long term timely fire response and improved service to residents.

MHFS also focuses on streamlining and simplifying processes to improve service for the residents while increasing productivity for firefighters. Commercial business inspections and life safety checks are done using mobile technology, that updates information in the Records Management System in real-time. Having up to to date information about property and building contacts prepares firefighters for the next fire emergency situation. This solution also allows for

the inspection reports to be emailed directly to the business while fire officers are with the customer. This year MHFS implemented an online fire pit application process and is working on the same type of online application for tank inspections. MHFS is also undertaking the implementation of an Asset Management solution that will manage inventory and allow for asset inspection or vehicle checks to be done using a mobile device. This will promote efficiency by tracking assets, scheduling regular service and inspections, arranging for testing, regular replacement, while continuing to do so with a high level of consistency. A secondary suite registry was developed in cooperation with the Planning and Development Services Department. Landlords and tenants both benefit from knowing the suites that are rented are meeting safety standards and requirements of the Alberta Building Code and the Alberta Fire Code.

Communication with our employees and the residents of Medicine Hat is important. We employ technology platforms for remote meetings to keep our people safe during COVID-19. MHFS also utilizes digital signs to share important key messaging and timely information with employees throughout the 3 fire stations. While complying with restrictions due to COVID-19 this year, we did a virtual tour of the fire station and a couple of fire apparatus. While it was not the same as having fire station tours with schools and visitors, it still allowed for community outreach to promote fire safety.

MHFS will continue to use data analysis to improve performance by evaluating actions and procedures, removing barriers, and using business intelligence to support critical decisions with accurate insight. Software and systems are used to leverage technology to create opportunities to lessen our environmental footprint, improve service to the community by automating and transforming processes, mitigating risk, and maximizing productivity and effectiveness.

Recommendations include:

1. Investigate/pursue technological advancements that may reduce fleet or personnel requirements while maintaining or improving safety.

2. Continue cultivating a culture of continuous improvement through the use of LEAN principles and evidence based decision making.

SECTION 6 - TRAINING

Training is the foundation of any Fire Service. Residents expect a timely response from highly trained responders. The health and safety of these responders rely on the training they acquire. MHFS training is comprised of four main segments; technical knowledge and career advancement, skills maintenance, health and safety, and finally leadership and supervisory skills.

The department utilizes Target Solutions as a training platform. This platform allows the delivery of training at individualized pace, as well as tracking and recording to ensure all staff receive required training and are competent in required skills.

The department's Human Resources Development Program (HRDP) outlines the skills and abilities needed for each classification level in scope, as well as requirements for Advanced Response Team participation. The HRDP covers all technical knowledge and career advancement training requirements. NFPA standards and certification levels from other bodies such as the Safety Codes Act, Canadian Standards Association (CSA), and Underwriters

Laboratory of Canada (ULC) are embedded in the HRDP. The department tracks the training completed against the training required, currently achieving 86% completion. This number should be in the 95% range, meaning we are doing well delivering “just in time” training, however, we are not “overtraining” by providing training too early in a member’s career. Training too early creates the risk of learned skills being lost before being put into application. COVID-19 delayed training in 2020 resulting in the number falling to 86%, programs will resume once restrictions are lifted.

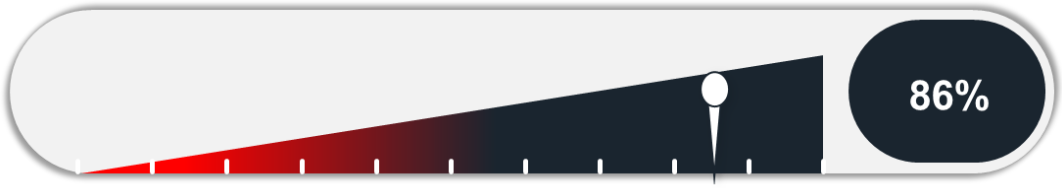


Figure 21: MHFS Percentage of CareerTraining Completed

All suppression members perform skills maintenance training on shift. Required schedules are developed by the Chief Training Officer and distributed to all platoon members. Each platoon trains on basic and advanced firefighting, rescue, and self-rescue procedures. Total training hours in the department are tracked:

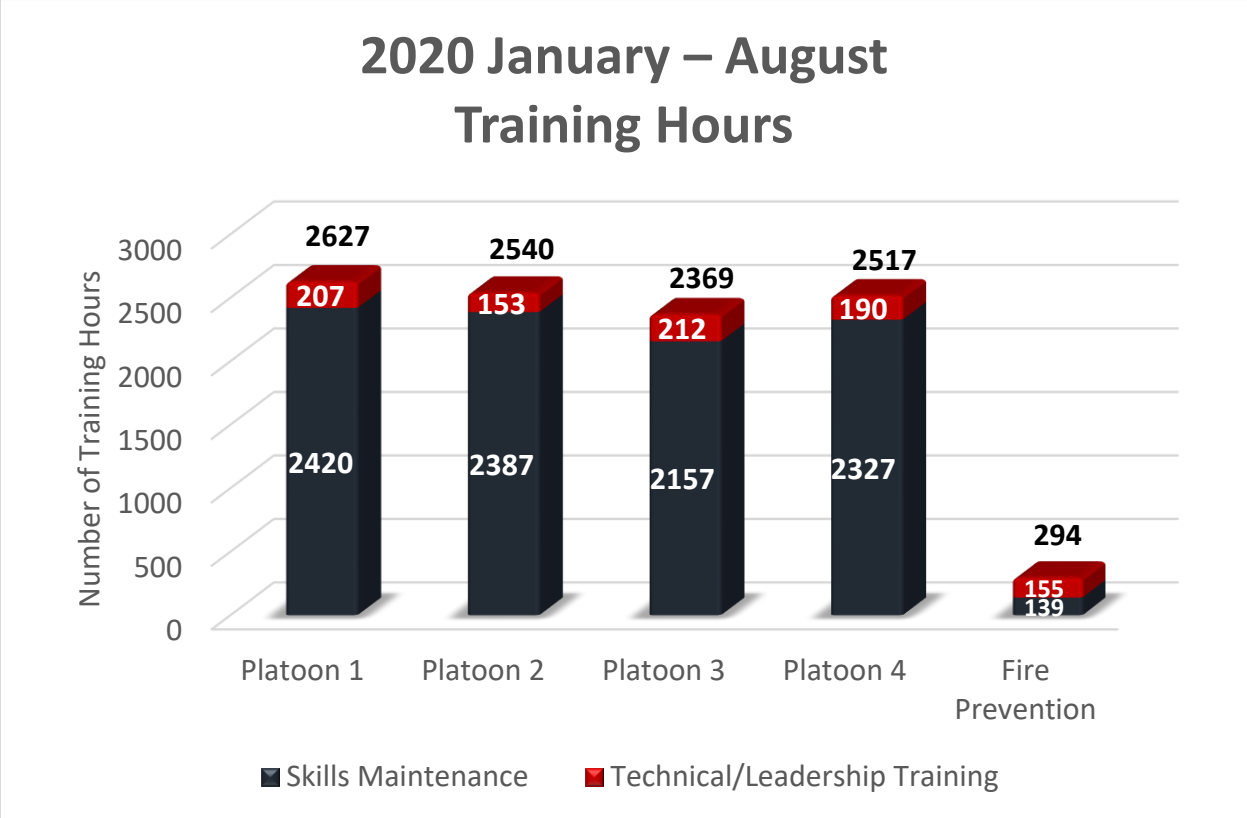


Figure 22: MHFS Training Hours – January – August 2020

Recently MHFS has engaged with other fire services, both municipal, federal, and industrial, in southeastern Alberta to collaborate and share training programs. This approach creates

efficiencies by reducing the duplication of facilities, lowering costs, and promotes greater familiarity and cooperation amongst departments. These programs and opportunities continue to be investigated, developed, and delivered.

Leadership training has been identified as a gap in the department's training program. Members are now enrolled in the Management Growth Program offered by the City as well as other learning opportunities including understanding DiSC profiles and workstyles. In 2020 the department developed its Officer development program to enhance the skills and abilities of members nearing promotion to Officer ranks. Additional future training plans include specific leadership and supervisory training to prepare and assist new supervisors to work through day to day human resource issues they may encounter.

Recommendations include:

1. Pursue cost effective training solutions where possible for technical training.

2. Develop further leadership and supervisory training for all MHFS staff and deliver this training in a face to face environment to ensure maximum return on investment.

SECTION 7 – RECOMMENDATIONS

1. Maintain a three station response model until residential growth in the NW requires additional response capabilities.

2. Examine opportunities for inter-municipal collaboration on suppression services, prevention services, training opportunities, and capital projects.

3. Maintain current agreements for services and mutual aid with bordering municipalities, and ensure timely renewals and updates occur.

4. In accordance with NFPA 1710, maintain a first arriving engine response time target of 6:20 90% of the time inside the City of Medicine Hat response areas and arrive as soon as possible outside the City of Medicine Hat response area.

5. Maintain a full alarm assignment response time target of 12:20 90% of the time inside the City of Medicine Hat response areas and arrive as soon as possible outside the City of Medicine Hat response area.

6. Maintain Medical Fire Response (MFR) in support of Alberta Health Services (AHS) on Delta and Echo level incidents with the aim of improving outcomes for residents with medical emergencies.

7. Examine operating models and impacts to services of lower cost options. While these lower cost options are being examined, maintain the current optimal response of:

    a. Engine companies staffed with four firefighters to ensure critical fireground tasks are completed expediently.

    b. Equalized staffing on both day and night shifts.

8. Support the myMH plan requiring residential sprinklers for new residential developments outside of the 6:20 response target area.

9. Examine/Implement a policy to provide a financial contribution for residential sprinkler installation in:

    a. New subdivisions as required.

    b. Homes in infill areas.

10. Maintain and develop as required effective, targeted fire safety education programs to enhance resident and visitor safety, including enhanced opportunitites for residential fire safety inspections as they remain the number one fire problem in the community.

11. Pursue cost effective training solutions where possible for technical training.

12. Develop further leadership and supervisory training for all MHFS staff to align with the respectful workplace policy.

13. Investigate/pursue technological advancements that may reduce fleet or personnel requirements while maintaining or improving safety.

14. Continue cultivating a culture of continuous improvement through the use of LEAN principles and evidence based decision making.

SECTION 8 - SUMMARY AND CONCLUSIONS

The department performs competently against NFPA standards and maintains an appropriate level of safety for residents and responders by maintaining reasonable staffing levels and ensuring adequate training is provided.

Focused, consistent, and repeated fire safety programs delivered by knowledgeable Fire Prevention Officers, coupled with timely response from Suppression crews result in MHFS maintaining low or non-existent fire deaths and injuries. A vibrant program of Life Safety Checks and formal inspections allow firefighters and Fire Prevention Officers to be familiar with commercial and industrial occupancies. These programs also allow Fire Services to improve fire safety in these occupancies through an atmosphere of collaboration with business, rather than simple enforcement. Community programs have been implemented to improve resident safety. Development of new safety measures should continue into the future.

A heightened corporate awareness of Health and Safety has added to the workload of the Training Branch. New programs and procedures have been developed to maintain the health and safety of our employees. These not only assist through acute periods, such as COVID-19, but also during day to day tasks. Staff can access and monitor their training activities/progress in all aspects of their job easily through the department's adoption of a program called "Target Solutions". This program tracks and maintains individual employee progress.

The residents of the City of Medicine Hat are well protected by the Fire Service. MHFS takes pride in providing the best service and the highest level of care for the residents. Changes made as a result of recommendations put forth in the Fire Service Response Coverage Optimization

Plan have positioned Fire Services to serve the City without seeking incremental increases in suppression operating costs for the foreseeable future. As presented in recent benchmarking initiatives, MHFS remains similar to comparators from a cost per capita perspective however outperforms comparators in customer quality areas such as response times, percentage of loss (fire), and delivery of advanced response services such as underwater rescue and recovery, and technical /confined space rescue.

Although incremental operational cost increases are not expected for the foreseeable future, a reduction in funding would have an impact on service levels and would need to be closely analyzed and evaluated from a resident and employee safety perspective.

ACKNOWLEDGEMENTS

The authors would like to acknowledge assistance from the Public Services Commissioner's Office, the Medicine Hat Fire Fighters Association, the City of Medicine Hat GIS Department, and the staff of the Medicine Hat Fire Service.

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