

# Saskatoon Fire Department Strategic Facilities Plan Update

## ISSUE

The Saskatoon Fire Department (SFD) continues to develop short and long-term strategies to ensure the City of Saskatoon (the City) can continue to meet its emergency response objectives. As the City grows, the SFD must re-evaluate the distribution and concentration of fixed and mobile resources that contribute to ensuring a safe and effective response force for fire suppression, emergency medical services, and specialty response.

## BACKGROUND

At the May 11, 2020 public meeting of the Standing Policy Committee on Planning Development and Community Services, the Fire Chief provided an overview regarding key aspects of a long-term strategy to best support response models to align with the Growth Plan to Half a Million (the Growth Plan).

## CURRENT STATUS

Key aspects of the Strategic Facilities Plan are underway including a dedicated regional training facility and ongoing data analysis for future station builds and replacements. The long-term strategy optimizes the location of several facilities including the regional training facility, fire stations, central dispatch, and the maintenance/mechanical shop.

Constant analysis uses Geographical Information Systems (GIS) mapping to study new, and existing, neighbourhoods and travel times to support improvements to service-level targets within the National Fire Protection Association (NFPA) 1710 benchmark. Data is used to support SFD growth to align with the Growth Plan.

## DISCUSSION/ANALYSIS

Travel time is mapped and assessed to provide the lowest long-term operating cost to meet the emergency response needs of Saskatoon residents. NFPA 1710 identifies the travel time for first engine arrival for fire and medical emergencies to be four minutes. Emergency service level targets are based on industry-guiding standards utilizing scientific studies.

Fire growth and fire behavior are scientifically measurable, as are the expected outcomes associated with untreated cardiac arrest, and specific resource requirements to control fires and prevent deaths. Some of the main considerations for developing fire deployment models are emergency service levels, training needs, staffing levels, and operational requirements.

Important criteria in NFPA 1710 are based on the Fire Propagation Curve, a universally accepted, empirically based measurement of how quickly a fire will reach the flashover stage and potential spread to surrounding buildings if left unaddressed. Established medical response times are based on well established, empirically based

measurements of the maximum amount of time that a patient in cardiac arrest can survive without intervention.

In 2020, data for District 2 neighbourhoods, listed below, was analyzed applying data-driven decision making to mark a balance between proactive measures and reactive response.

<ul style="list-style-type: none"><li>• Montgomery Place</li><li>• South West Industrial</li><li>• Holiday Park</li><li>• Pleasant Hill</li><li>• Meadowgreen</li><li>• Fairhaven</li></ul>	<ul style="list-style-type: none"><li>• Parkridge</li><li>• Blairmore Urban Centre</li><li>• Kensington</li><li>• Pacific Heights</li><li>• Confederation Park</li><li>• Confederation Urban Centre</li></ul>	<ul style="list-style-type: none"><li>• Massey Place</li><li>• Mount Royal</li><li>• Hudson Bay Park</li><li>• Westview</li><li>• Dundonald</li><li>• Hampton Village</li><li>• Elk Point</li></ul>
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Immediate priorities have been identified for future facilities to maintain emergency service levels shown in Appendix 1 - Station Location and Apparatus Deployment Priorities (immediate and future). District 2 has become the number one priority based on out of range and/or exceeded travel time incident data. Data and modelling indicate service level deficits in both the North (Engine 22) and South (Engine 21) portions of District 2. Increased response time reduces the likelihood of controlling a fire in time to prevent major damage, possible loss of life, and increases the danger to firefighters.

From 2016 – 2021, response times have exceeded four-minute travel (240 seconds) for the North portion of District 2 as shown in Appendix 2, 2016 - July 27, 2021 Fire and EMS E22 Travel Time (seconds). Science shows that the recommended maximum travel time is four minutes (first engine arrival) for fire and medical emergencies 90 % of the time. The standard uses the 90<sup>th</sup> percentile recognizing various factors reduce the ability to achieve the four minutes such as: simultaneous calls for service, out of district range, high call frequency, road construction, traffic calming measures, railway, weather conditions, and traffic congestion.

In 2020, slightly lower travel times were experienced due to less congestion on the roadways; likely due to COVID-19 restrictions. For the first half of 2021, numbers are similar, however, higher than 2019 indicating we are getting worse not better.

From 2016 – 2021, Appendix 3 (Fire and EMS E22 Travel Time-Percentage) shows fire paramedic crews are not meeting the 90% standard. Compliance has trended down from 70% in 2016 to 64% in 2021.

Decision making about staffing levels and geographic distribution of resources must consider times when there will be simultaneous calls for service requiring resource deployment. Sufficient redundancy or overlap in the system should be in place to allow for simultaneous calls and high volume of near simultaneous responses without

compromising the safety of the public or firefighters. Appendix 4 (District 1 and 2 Station Location and Boundaries) shows the current location of Fire Stations No. 1 and No. 2 and their district boundaries.

The busiest areas in the City exist in District 1 and 2 (Appendix 5, 2016- July 27, 2021 Incident Call Volume Heat Map). The boundary where the two districts meet is one of the busiest areas in the city in terms of call volume. These Districts account for about 50% of the call volume throughout the city. The SFD must also evaluate geographic distribution of stations and the concentration of resources deployed based on time parameters. Deployment models require a concentration of resources to maintain service level targets in high workload areas with multiple simultaneous calls for service.

Fire districts are designed through a combination of analyzing posted road speeds and historical data to determine the district boundary. Appendix 6 (2016 - July 27, 2021 NFPA 1710 Non-Compliance Heat Map) shows fire paramedic crews are not achieving the four-minute response in the highest concentration area that exists at the border of District 1 and 2. Contributing factors to this are simultaneous calls for service and high call frequency.

### **FINANCIAL IMPLICATIONS**

The cost for proposed new facilities will be included in the Civic Facilities Funding Plan and funding requirements will be identified. Individual projects will be included as a capital budget submission, along with identified operating impacts, at the appropriate time.

### **OTHER IMPLICATIONS**

At this time, there are no legal, social, or environmental implications. Each of these will be considered in future stages.

### **NEXT STEPS**

Continue to evaluate strategies that include:

- Station Location and Apparatus Deployment Priorities
- Community Risk Assessment
- Standards of Coverage (emergency service level)
- SFD Master Plan

### **APPENDICES**

1. Station Location and Apparatus Deployment Priorities (immediate and future)
2. 2016 - July 27, 2021 Fire and EMS E22 Travel Time (seconds)
3. 2016 - July 27, 2021 Fire and EMS E22 Travel Time (percentage)
4. District 1 and 2 Station Location and District Boundaries
5. 2016 - July 27, 2021 Incident Call Volume Heat Map
6. 2016 - July 27, 2021 NFPA 1710 Non-Compliance Heat Map

## Saskatoon Fire Department Strategic Facilities Plan Update

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### Report Approval

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