Strathcona County Emergency Services

2023 Standards of Cover

Final Report, April 24, 2023 (Revised)

How to Use this Document

This document, the Strathcona County Emergency Services 2023 Standards of Cover, presents information in the following manner:

- Executive Summary – this provides an overview of the key messages in the Standards of Cover.
- Section 1: Introduction and Background – this provides the reader context for the Standards of Cover.
- Section 2: Description of Community Served – this provides an introduction to Strathcona County.
- Section 3: Review of Services Provided – this is a summary of services provided by Strathcona County Emergency Services.
- Section 4: Review of Community Expectations and Performance Goals – this provides corporate and strategic drivers for services.
- Section 5: Review of Historical Performance – this provides examples of historical performance.
- Section 6: Overview of Compliance Methodology – this provides those methodologies used by the Department to ensure service quality.
- Section 7: Overview of Community Risk – this provides an overview of current and future community risk.
- Section 8: Observations and Analysis – this provides key observations and analysis to support recommendations.
- Section 9: Recommendations – these are the proposed go-forward actions.
- Appendices – this provides supporting information to the Standards of Cover.

It is important to note the 2022 Community Risk Assessment report provides additional information and analysis supporting this Standards of Cover.

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Executive Summary

The Standards of Cover

This Strathcona County Emergency Services (SCES) Standards of Cover (SOC) is an evidence-based, community risk-driven document that defines the standards of coverage. This document is intended to inform decisions over the next five years.

The Standards of Cover is part of an overall continuous improvement and service delivery excellence process. The 2023 Standards of Cover is a living document that should be referred to often, reviewed and updated on a regular basis, and embraced by leaders in the County. The SOC, a technical document, is supported by the 2022 Community Risk Assessment (CRA), a technical document.

The Standards of Cover and the Community Risk Assessment will be used to inform the Master Plan, a strategic document.

Figure ES1: Demand, Commitment, Path Model

Community Served

Strathcona County (County), located in Alberta's industrial heartland, is a specialized municipality representing urban and rural areas and population. The vast majority (>70%) of the 100,362 population (2022 municipal census) resides in Sherwood Park.

The County is a legally established municipality under the Province of Alberta Municipal Government Act R.S.A. 2000, Chapter M-26. Section 7 of the Municipal Government Act enables County Council to pass Bylaws respecting safety, health and welfare of people and the protection of people and property.

SCES is a standing department within the County. There are three bylaws supporting the department 1) Fire Services Bylaw, 2) Emergency Management Bylaw, and 3) Outdoor Fire Bylaw. In addition, the County has a wide variety of service and mutual aid agreements for fire services and emergency management services for partners in the region and the province.

Services Provided

SCES provides integrated fire, rescue and emergency medical services (EMS) and other services and programs for the County. SCES also provides 9-1-1 and dispatch emergency communications, fire prevention and investigation, emergency management and other specialty rescue services.

These services are provided from six (6) fire stations, four (4) full-time stations (i.e., Station #1 Sherwood Drive, Station #4 Heartland Hall, Station #5 Cloverbar Road, and Station #6 Bison Way), and two (2) part-time stations (Station #2 South Cooking Lake, Station #3 Ardrossan). Station #6 was opened in 2013. A seventh station is planned for the Cambrian development area within the next ten years.

While the department provides EMS services, the majority of these services are completed under Alberta Health Services with all aspects of the distribution and concentration of these resources outside of the control of SCES. It should be noted that many EMS ambulance calls are dispatched by Alberta Health Services. These EMS calls are often outside the County.

Community Expectations and Performance Goals

Emergency services have changed dramatically over the last 30-40 years. This period has seen a shift toward prevention, education, and enforcement to complement and mitigate emergency response investments. The demand for increased efficiency and effectiveness has seen a focus on fiscal realities and balancing a broad set of needs across the County.

In the future, policy development and operational decision-making will require even more evidence-based information and technology and a greater shift towards data analytics. Performance measurement and reporting are today and will remain a key element of effective emergency services management into the future. Future change and the implication of that growth will require strong leadership at all levels of the community.

Historical System Performance

Emergency services have historically faced challenges in defining the levels of service for the community they serve. Exacerbating these challenges is the wide variance in how different communities define and measure the performance of these fire and emergency medical services.

SCES has taken a proactive and evolving approach toward measuring and reporting on system performance. Going forward those performance related activities and outputs will benefit from consistency, standardization, and evidence-based use in decision-making including investments by the County.

The historical performance of SCES has been reasonable given the established performance targets, the fiscal realities, and the significant increase in call or service demand without any increased resources.

Community Risk

Essential toward the establishment of services and service levels is understanding the primary drivers of risk, both now and in the future. Community risk is described in greater detail in the 2022 Community Risk Assessment report. The following are highlights from that report.

Current community risks include:

- Large urban and rural service areas
- Emergency call demands especially for EMS and ambulance
- Aging population and changing demographics
- Significant heavy industrial areas
- Numerous industrial and commercial occupancies, especially those with hazardous materials
- Petrochemical transportation and storage
- Consequences of economic disruption and or loss
- Nature and number of critical infrastructures
- Wildland interface fires

Future community risks include:

- Continuance of current community risks
- Anticipated growth over next 10-20 years especially with new urban growth nodes
- Increase in call volumes

Current and future challenges include:

- Climate change
- Staff wellness, life balance and occupational stress
- Workforce planning and training
- Need for new stations with staffing and apparatus
- Unit utilization and deployment of resources
- Achievement of first due response particularly for high priority calls and effective response force targets for structure fires and high-risk occupancies

Recommendations

The following incorporates or consolidates recommendations contained within the Standards of Cover and Community Risk Assessment reports.

Near-Term

In the near term (1-2 years), the focus of recommendations will be initiatives target readily attainable opportunities while laying the foundation for the future. These recommendations are:

1. Develop and implement a Community Risk Reduction Plan (CRRP).

2. Conduct a comprehensive Fire Underwriters Survey (FUS).
3. Complete the update and then maintain the completeness and currency of related bylaws, mutual aid agreements, and service agreements.
4. Develop and implement a more comprehensive, integrated, and standardized performance dashboard with reporting of a) key community-level performance metrics, and b) detailed departmental-level performance metrics across all divisions based on industry-leading practices (e.g., NFPA, CPSE, ISO).
5. Enhance quality management by integrating select principles and criteria of the Centre of Public Safety Excellence (CPSE) and criteria from the Fire Underwriters Survey toward service excellence across SCES.
6. Enhance the understanding and use of data analytics and evidence-based decision-making.
7. Identify and implement improvements, where possible, to emergency response intervals for urban and rural service areas targeting a closer alignment with industry-leading practices including:
    a. Reduce call handling and turnout times by 30 seconds each (e.g., NFPA 1225 - Emergency Communications).
    b. Increase first due performance % (NFPA 1710 - Urban Response and Deployment, NFPA 1720 - Rural Response and Deployment) by:
        i. improving workforce management to maintain appropriate staffing levels in operations,
        ii. optimizing fire zones and related dispatching protocol, and
        iii. improving turn-out processes and/or mechanisms.
    c. Increase effective response force performance % (NFPA 1710, NFPA 1720) by:
        i. optimizing use of departmental resources, and
        ii. Appropriate use of regional resources.

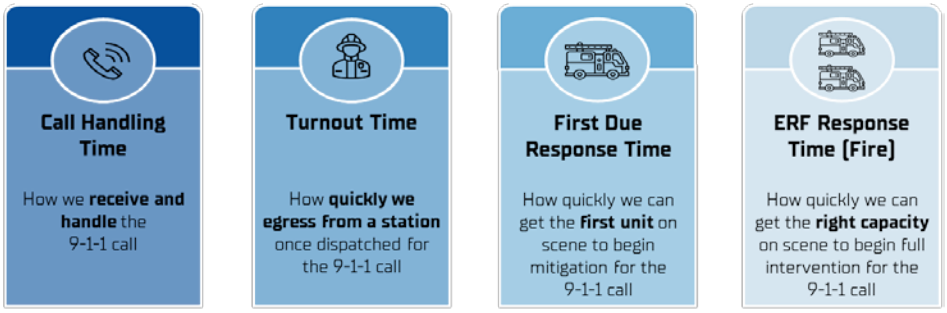


Figure ES2: Emergency Response Measures

8. Identify and implement improvements, where possible, for community safety through fire prevention, fire inspection, pre-incident planning, public education, and emergency management, that more closely align with industry-leading practices (e.g., NFPA 1500 - Occupational Health and Safety; NFPA 1300 - Community Risk Assessment; NFPA 1620 - Pre-Incident Planning; NFPA 1730 - Fire Prevention Enforcement; CSA Z1600 - Emergency Management).

Figure ES3: Community Safety Measures

Mid-Term

In the mid-term (3-5 years) SCES will begin investing in the additional resources and systems needed to address growth and a changing community risk. These recommendations are:

9. Identify the operational and financial strategies, using the 5E's framework for community risk reduction, that mitigate community risk, improve service performance, and enhance effectiveness of SCES including:

    a. Conduct a rural response study designed to determine the role and contributions of the part-time stations and firefighters.

    b. Conduct a comprehensive deployment modeling study.

    c. Optimize on-duty training for operations and non-operations staff including options for an in-County training centre.

d. Increase operations capacity through the addition of new fire stations, apparatus, equipment, and firefighters including modeling optimal locations for future fire stations #7 and #8.

e. Expand the management, administration, community safety, and operations support (e.g., training staff) required for a larger department and increased operations.

10. Continue to identify and implement improvements, where possible, to emergency response intervals for urban and rural service areas targeting a closer alignment with industry-leading practices including:

    a. Reduce call handling times by 20 seconds and reduce turnout times by 30 seconds (e.g., NFPA 1225).

    b. First due performance % (NFPA 1710, 1720).

    c. Effective response force performance % (NFPA 1710, 1720).

11. Continue to update the Fire Underwriters Survey.

The execution of the above should be based on practical, realistic, and achievable investments that contribute toward service excellence, collaborative partnerships, and a safe community – the desired outcomes and results.

Additional longer-term recommendations in the Master Plan will carry forward many of the above initiatives.

Conclusion

The Standards of Cover is an integral document that informs evidence-based decision-making and performance reporting. The Standards of Cover recommendations should be pursued in a manner that optimizes system performance, within fiscal realities, based on the following:

- set industry-leading targets or standards
- work towards those targets or standards
- ensure on-going continuous improvement

Section 1: Introduction

Strathcona County Emergency Services (SCES) provides integrated fire, rescue, and emergency medical services (EMS) services for Strathcona County.

The SCES 2023-2035 Master Plan and the 2023 Standards of Cover (SOC) anticipate and navigate the future challenges and opportunities of community growth and associated risk while balancing fiscal and other realities for emergency services. Supporting this Standards of Cover is the 2022 Community Risk Assessment (CRA).

Definitions

For the purposes of this Standards of Cover, we will use definitions from the Centre for Fire Accreditation International (CFAI).

- A Standards of Cover describes those written policies and procedures that establish the distribution and concentration of fixed and mobile resources of an organization.[1]
    - Resource distribution is associated with the geography of the community and considers the travel or drive time to emergencies. This distribution is best measured by the percent of the first-due unit arriving on scene within a specific time frame.
    - Resource concentration is also about geography of the community and considers the ability to have an effective response force (ERF) needed to mitigate the emergency. This concentration is best measured by the percentage a number of multiple resources are able to arrive on scene within a specific time frame.

Purpose and Scope

A SOC, a companion document to the Master Plan, is one of the tools to enable modern emergency services organizations to plan for and invest in those services and programs that mitigate community risk and ensure public safety. In simple terms, the SOC identifies key service levels and standards to inform departmental and related corporate planning and decision-making for the near-term, and future growth in the County.

Typically, a Standards of Cover focuses on frontline emergency response including elements of emergency communications. However, this Standards of Cover will take a broader approach to include other important activities within the department including community safety and operations support.

Value of a Standards of Cover

Modern emergency services are about much more than putting out fires and caring for patients. Emergency services has changed dramatically over the last 30-40 years. This period has seen a shift toward prevention, education, and compliance to complement and mitigate emergency response needs.

[1] Defined by CFAI, a leading entity for fire and emergency services excellence. The CFAI Manual states “to control an emergency before it has reached its maximum intensity requires geographic dispersion of technical assets and cost-effective clustering of service delivery points for maximum effectiveness against the greatest number and types of risk.”

The demand for increased efficiency and effectiveness has seen a focus on fiscal realities and balancing a broad set of needs across the community.

Performance management is today and will remain a key element of effective emergency services management into the future. Future change and the implication of that change will require strong leadership of emergency services at all levels of the community.

In the future, policy development and operational decision-making will require even more evidence-based information and technology and a shift towards data analytics and knowledge.

Figure 1.1: Performance, Knowledge, Decision-making

The SOC is part of an overall continuous improvement and service delivery excellence process. The SOC is a **living document** that should be referred to often, reviewed and updated on a regular basis, and embraced by leaders in the County. This SOC will contemplate next steps toward services and service levels, especially over the next five years. This SOC will need to be revisited regularly and ideally be updated for the remaining period of the Master Plan.

Why Set Standards?

"Effectively managing a fire and emergency services department requires an understanding of and an ability to demonstrate how changes to resources will affect community outcomes. It is imperative that department leaders, as well as political decision makers, know how department resource deployment in their local community affects community outcomes in three important areas: firefighter injury and death; civilian injury and death; and property loss."[2]

SCES operational performance is a function of three considerations; resource availability/reliability, department capability and overall operational effectiveness. Before an emergency event, the structure and staffing of SCES is critical for the departmental capability and operational effectiveness.

[2] Adapted from Fire Service Deployment: Assessing Community Vulnerability, 2021.

The values at risk in any community are the people including first responders, buildings, assets, and critical infrastructure. Should an incident occur, time becomes the critical factor in mitigating the situation.

Cardiac Arrest

For example, the brain can only survive 5:00–6:00 minutes without oxygen. Cardiac arrest and other events can cause oxygen deprivation to the brain. Numerous studies have shown that without CPR/defibrillation, survival rates drop around two percent for every additional minute of response.

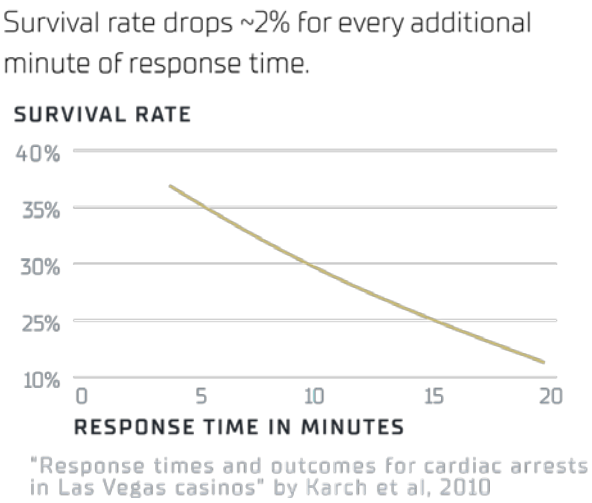


Figure 1.2: Intervention to Cardiac Arrest Events

Structure Fires

Today, fires reach hotter temperatures more quickly due to building geometrics, larger homes, increased fuel loads, and changing construction materials. In a building fire, a small incipient fire can grow to involve the entire room in a 6:00 to 8:00 minute time frame.

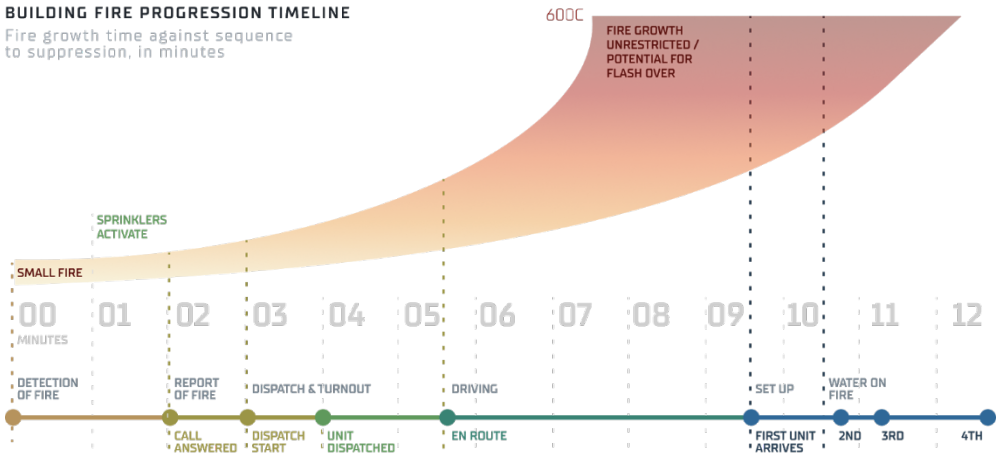


Figure 1.3: Intervention to Structure Fire Events

As well, studies have shown that property damage increases by ~3% for each additional minute of response.

What Standards?

Standards of service or service levels recognize and should include the following:

- Optimal intervention (e.g., training, public education, inspections) before an emergency event contributes to a capable community and department
- Optimal intervention to medical events mitigates injury, harm, and in some cases death
- Optimal intervention to fire events mitigates fire loss, fatalities, and injuries

Time is the critical factor for people and property in an emergency incident. An effective response system is one that can consistently mitigate emergencies, and the consequences of those emergencies in an appropriate time, thereby increasing the likelihood of a positive outcome for the communities' values at risk. Time or distribution of is commonly reflected as a **First Due** or First Due Unit performance standard for fire and medical events.

Due to the nature of the emergency services work, there is a consistent risk to responders due to the uncertainty when arriving at any incident, responders cannot safely operate without the right number of personnel. If the response system is to achieve positive outcomes in severe emergency situations, specifically fires, an effective concentration of resources is required, meaning all required resources must arrive, assess the situation, and deploy effective measures before the situation escalates.

The department develops critical tasks for each fire incident type and pre-plans for typical (e.g., residential structure fires) and higher risk incidents (e.g., high-rise structure fires) with detailed critical tasks required to control the incident as quickly as possible. The fewer the number of responders on scene - for first response, second response, and full alarm response - the longer the critical tasks take, thereby increasing risk to all community values involved. Appropriate staffing becomes a health and wellness concern for employees as much as improving the effectiveness of the response system.

Capacity or concentration of resources is commonly reflected as an **Effective Response Force** performance standard for fire events.

Why NFPA Standards?

For decades fire and emergency services have sought some common service standards so as to determine where their community is relative to other communities. As communities grow, leaders and decision-makers struggle with defining levels of service that are practical, achievable, and contribute to community risk reduction.

What has emerged through industry consensus are the National Fire Protection Association (NFPA) standards. While some of these standards may appear daunting, and in fact audacious, they do provide an evidence-based benchmark.

NFPA standards have been developed through an open-consensus process and incorporates more than 300 standards, some of which the department is conforming with today. Key NFPA standards essential to the department address training, fire prevention, occupational health and safety, emergency communications, urban and rural operations, and community risk.

Thus, by more fully adopting the principles of NFPA, the department will have more clearly defined and defendable stretch targets and much like a vision, can strive to achieve those targets over time where reasonable and practical.

Other Standards and Codes

NFPA is not the only important set of standards for a fire and emergency services organization. Other standards or codes include:

- Alberta Building Code
- International Standards Organization
- Canadian Standards Association

The NFPA and other standards along with quality management initiatives are discussed in detail in Section 6 of this report.

This SOC document establishes performance standards and corresponding metrics designed to measure departmental performance and outcomes. These performance targets or standards will:

- inform departmental business plans
- inform other corporate planning
- be used to support system performance measurement and reporting

Performance measurement will be discussed in further detail later in this report.

Developing the Standards of Cover

The project approach was based on the following Darkhorse/iStrategic iterative model:

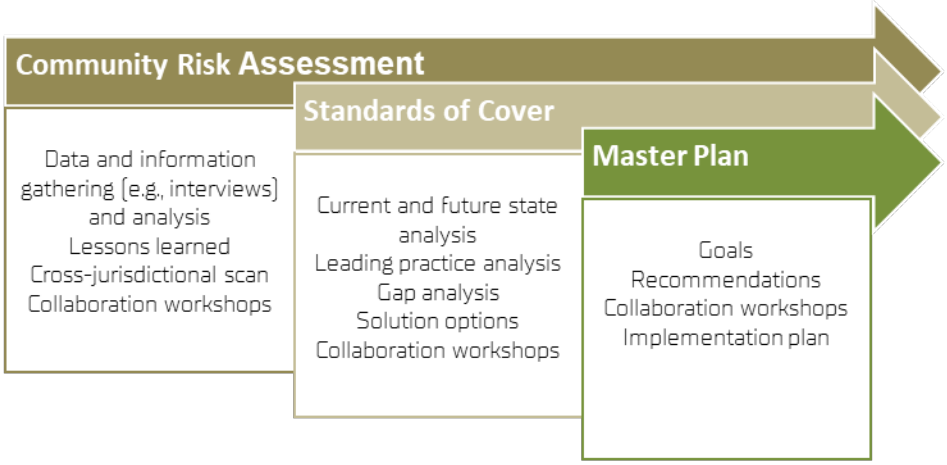


Figure 1.4: Darkhorse Analytics/iStrategic Advisors Project Approach

The SOC is the result of stakeholder contributions from the department, other County departments, Executive, Council, and other community and industry partners. While this SOC did not include public engagement, the stakeholder collaborations ensured community needs and interests were represented.

A cross-jurisdictional scan was completed; however, it became abundantly clear that few organizations have similar standards, terminology, and/or comparable benchmarks. A blinded summary of key elements of the cross-jurisdictional scan are included in Appendix E.

The methodology used for completion of this SOC is based on industry best practices[3] and includes the following steps:

- identify community risk,
- identify community expectations,
- evaluate past performance,
- evaluate expected future growth,
- identify service levels or targets, and
- ensure community support, through Council, for the service levels.

The SOC is informed by the Community Risk Assessment. Both tools help to support evidence-based decisions about the types and levels of emergency services to be provided in the County. The scope of this SOC is primarily focused on fire services; however, the principles of service standards are transferable to emergency medical services and other programs within SCES (e.g., community safety).

Figure 1.5: Community Risk and Performance

The SOC should be integrated into SCES and County long-term planning and evaluation processes. The cycle of activities enabling the SOC are assessing risk in the community, setting performance objectives, evaluating the performance, and making modifications as needed and appropriate to optimize effectiveness and efficiency. The SOC can and should be used to inform departmental business planning, adjusted by fiscal realities, and changing needs. Further, the SOC must be guided by the departmental visions, mission and values.

[3] Primarily the National Fire Protection Association and the Centre for Fire Accreditation International

Ultimately, performance measures must be based on the expectations of the community, the emergency services leadership and community risk. The performance measures should drive station location, apparatus deployment, staffing levels and capability of that staffing.

Figure 1.6: Performance Measures

Performance measures can be applied to all SCES at a community level, a departmental level, a division or branch level and a unit level (e.g., call handling, response time). As the SOC is used to inform strategies in the Master Plan, the primary focus of this report is on performance at a system or community level.

Considerations for this SOC include:

- the fire and non-fire risk common and/or unique to the County;
- the service levels to be provided to the urban and rural services areas of the County;
- an analysis of current response capability in terms of various time intervals and on-scene capacity, and
- describing how resources should be allocated and deployed to maximize emergency response effectiveness.

A limitation of this SOC is the data available within the context of this project, the time the Community Risk Assessment was completed, and the subsequent analysis on service levels.

The assumptions for the SOC include:

- risk is a normal and expected characteristic of any community; and
- service levels must be balanced against that risk while considering fiscal realities and other community factors and needs.

Section 2: Description of Community Served

Jurisdiction

Strathcona County (County), located in Alberta's industrial heartland, is a specialized municipality representing urban and rural areas and population. The County is a critical voice within the Edmonton Metropolitan Region.

The urban population resides in Sherwood Park, while the rural population resides in a large rural area that includes eight hamlets (Antler Lake, Ardrossan, Collingwood Cove, Half Moon Lake, Hastings Lake, Josephburg, North Cooking Lake, and South Cooking Lake).

The County is a diverse community with a population of 100,362 in 2022, the 4th highest in the province. The vast majority of the population (>70%) resides in Sherwood Park.

The community encompasses 1,262 square kilometres (or 125,536 hectares) and is situated within a UNESCO biosphere called the Beaver Hills/Cooking Lake Moraine. The Moraine is the traditional territory of First Nations people. There are more than 87,000 hectares of land utilized for agriculture purposes.

The County May 2019 Community Profile describes the County as having "a rich cultural and economic history, with strong agricultural roots, a robust petrochemical sector, and high quality natural and recreational amenities and is situated within a world-renowned natural biosphere."

Governance

The County is a legally established municipality under the Province of Alberta *Municipal Government Act R*.S.A. 2000, Chapter M-26. Section 7 of the *Municipal Government Act* enables County Council (Council) to pass Bylaws respecting safety, health and welfare of people and the protection of people and property.

Currently, there are no federal or provincial regulations specifically mandating specific fire services or service levels. There is legislation and regulations and other requirements in Alberta for the provision of emergency medical services specifically including medical first response and the provision of ambulance services.

Legislation

Alberta legislation and regulation is relevant to the department and includes:

- *Disaster Recovery Regulation* provides for the assessment and payment of financial assistance for the damage or loss from disasters including that by municipalities.
- *Emergency Management Act* (EMA) provides the framework for local and provincial management of emergencies and disasters.
- *Emergency 911 Act* provides for the fees related to 9-1-1 and other standards and guidelines for call taking processes and procedures.

- *Emergency 911 Grants Regulation* establishes the ability to provide grants to 911 Public Safety Answering Points based on the *Emergency 911 Levy Regulation*.
- *Forest and Prairie Protection Act*, RSA 2000, C F-19, makes Strathcona County responsible for providing fire services in the non-urban areas of the County.
- *Government Emergency Management Regulation* provides for emergency management, emergency management partners, and emergency plans including those by municipalities.
- *Local Authorities Emergency Management Regulation* (LEMR) provides the direction on emergency management roles and responsibilities and other municipal requirements for the planning and preparation for emergencies.
- *Occupational Health and Safety Code and Regulations* provides for workplace safety that can be applied to firefighting and non-firefighting activities.
- *Safety Codes Act* provides for the requirements and accreditations by municipalities for building, and other codes relevant to fire protection, quality management plans, and training.

National legislation relevant to the department includes:

- *National Building Code* (Alberta Edition)
- *National Fire Code* (Alberta Edition)

Bylaws

Council enacted the *Fire* Services Bylaw 5-2021, which enables SCES to provide fire and emergency services including those related to the suppression or prevention of fires, rescue and emergency medical services, and other activities (e.g., investigation of fires).

Central to this bylaw are two important principles adopted by Council:

- "Council recognizes that Strathcona County has a role to play in ensuring fires are effectively managed and that firefighting activities are carried out when necessary; and
- Council believes that the costs for providing fire services in Strathcona County are appropriately paid by the person responsible for the fire;"[4]

The *Fire Services Bylaw* was preceded by the *Emergency Services Bylaw* 68-200 which provided for fire and ambulance services. This Bylaw was replaced with the above Bylaw following Alberta Health Services assuming responsibility for ambulance services within Alberta.

The Chief Commissioner of the County is responsible under the *Fire Services Bylaw* for appointing the Fire Chief. The Director/Fire Chief reports directly to the Associate Commissioner of Community Services. The department through an Executive Team, that includes the County Commissioner and Associate Commissioners, make regular reports and presentations to Council.

Council has also enacted the *Emergency Management Bylaw* 17-2018, which enables an Strathcona County Emergency Management Agency (SCEMA) that is guided by an Emergency Advisory Committee (EAC) represented by Council, and supported by SCES, and other County departments.

[4] Strathcona County Bylaw 5-2021 Fire Services Bylaw

Another bylaw is the *Outdoor Fire Bylaw* 4-2021 is the third of the three primary Strathcona County Emergency Services related bylaws.

Agreements

The term agreement means many different things for emergency services including fire mutual aid, emergency management mutual aid, fire service agreements (e.g., fee for service). These agreements are typically amongst municipalities, for a select group of municipalities, with the Government of Alberta and/or with other entities.

Some agreements may provide for a fee or grant, such as service agreements. Each of these agreements typically have specific requirements, standards, and/or services defined and may include payment for such aid or services. These fees, payments, and/or grants provide revenue to the County to offset departmental operating costs.

The County has contracts or service agreements with:

- Alberta Health Services (AHS) for the provision of ambulance services
- Telus for the provision of a Public Safety Answering Point (PSAP) services; grant agreement with Government of Alberta for population-based levy funding
- Some 28 Alberta municipalities (e.g., Beaver County Emergency Services Commission, Flagstaff Regional Emergency Services Society) for the provision of 9-1-1 call answer and dispatch services
- Hay River, NWT for fire dispatch and community protection officer services

Mutual aid plans typically establish procedures for requesting and dispatching help between fire departments or services so that each party will know what is expected. Mutual aid or automatic aid agreements may include the following functions:

- immediate joint response of several fire departments to high-risk properties
- joint response to alarms adjacent to the boundaries between fire department areas
- coverage of vacated territories by outside departments when the resources of the local department are engaged
- provision of additional units to assist at major fires that may be too large for the local department to handle
- provision of specialized types of fire fighting equipment not available locally in adequate quantity for the particular incident
- emergency management supports

The County has mutual aid or response agreements for fire services and/or emergency management supports with:

- City of Fort Saskatchewan for fire and emergency management services or supports
- City of Edmonton for fire and emergency management services or supports
- City of Calgary through the Calgary Emergency Management Agency for CAN-TF2

- Government of Alberta Ministry of Agriculture and Forestry for wildland interface fires

The County is a partner to many regional initiatives in support of emergency services and emergency management interests including:

- Edmonton Metropolitan Region Board
- Strathcona County Industrial Association (SIA) and the Strathcona District Mutual Assistance Program (SDMAP)

Section 3: Review of Services Provided

SCES is an integrated fire, rescue and EMS department operating in a unique urban and rural environment and provides services to the entire County and other industry and service partners. The department is community-focused, proactive department that works closely with the public, industry and strategic partners toward community safety, response to emergencies and customer service outcomes.

Department History

SCES has a long and rich history of establishing emergency services and service levels in the County. A few highlights are:

- 1956, Strathcona County Fire Department established through volunteers
- 1959 (February), first fire station opened in Sherwood Park
- 1962 (January), first fire brigade established
- 1965, first full-time firefighter hired
- 1972 (April), County Council passed Bylaw No. 200 establishing ambulance service operated by Strathcona County Fire Department
- 1975 (September), full-time firefighters certified as members the International Association of Fire Fighters (IAFF) with Local 2461
- 1985, development of public safety education division in the department
- 1987, County 9-1-1 system and emergency communications centre activated
- 2010 (January), Strathcona County Emergency Management Agency created
- 2012, Department Annual Report and 2012-2015 Department Strategic Plan prepared
- 2013, Superior Tanker Shuttle Accreditation
- 2013, Station 6 added as a full-time station
- 2014, Strathcona County Alert system established for mass notification
- 2018, Accreditation Canada EMS Certification
- 2021, Department celebrates 65th Anniversary!

The first formal and comprehensive SOC was completed in 2012. That SOC was supported by a first formal Community Risk Assessment in 2011. These documents were used to inform the departmental strategic plan in 2012.

SCES had a solid record of preparing informative and valuable Annual Reports and Strategic Workplans during the period of 2012 through 2018. Much of these documents contained detailed information on services, service levels, and objectives; however, ultimately much of that knowledge was migrated into a

higher-level format within a departmental business plan document with the evolution of the County business planning process

Current Services

The frontline or client-facing services of SCES include:

- 9-1-1 centre (i.e., Public Safety Answering Point or PSAP)
- ambulance response and transport
- fire prevention, inspections, investigations, and code enforcement
- fire and EMS public safety education
- fire suppression and rescue
- industrial engagement
- medical first response (i.e., response by fire apparatus and firefighters)
- specialty rescue (e.g., swift water, technical rescue, drone)
- emergency management

Numerous services and programs behind the front-line include:

- management
- administration
- communications and marketing
- financial management (e.g., accounting, payroll supports)
- fire protection engineering
- plan development reviews
- materials management
- quality management
- training
- occupational health and safety
- business continuity

Organizational Structure

SCES provides services to the entire County. The department is managed through four divisions led by the Director/Fire Chief. The divisions are:

- Community Safety
- Strategic Services
- Operations
- Operations Support

The following chart depicts the functions and services within each division.

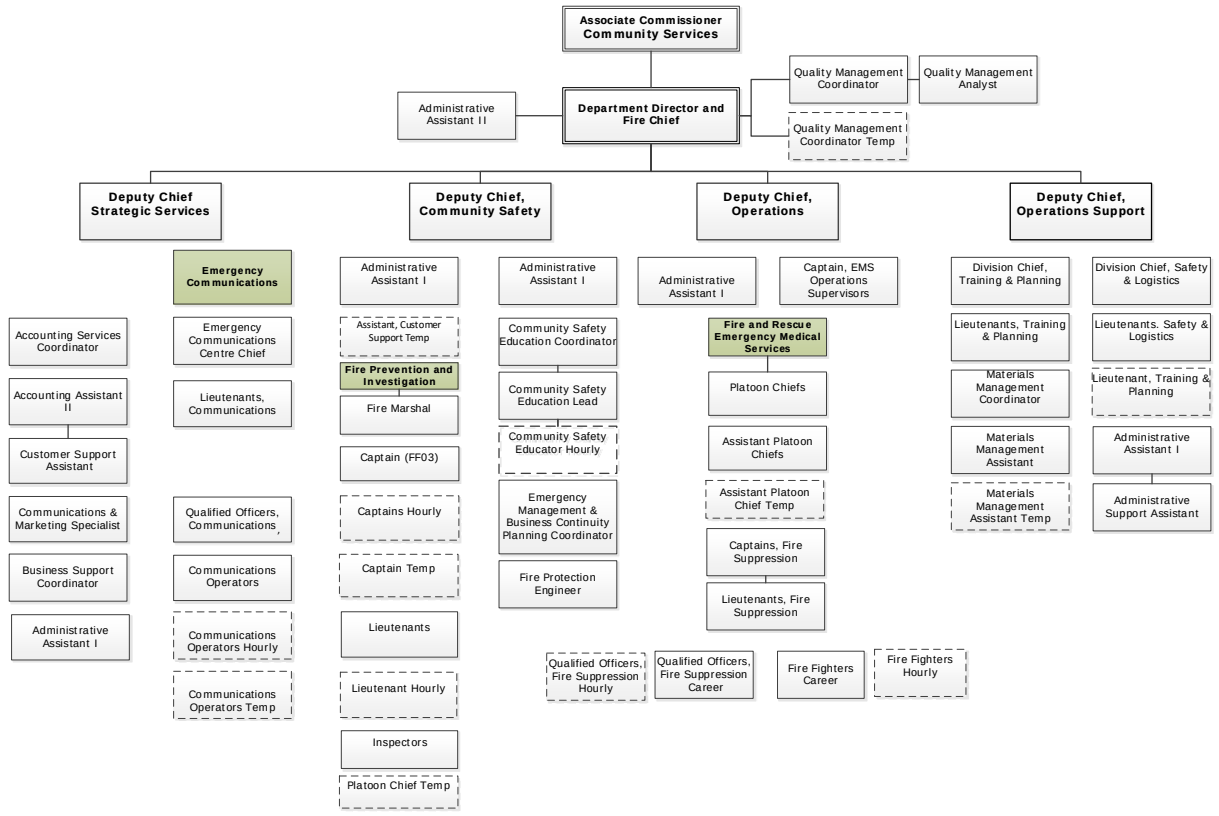


Figure 3.1: Organizational Structure (2023)

The following identifies key responsibilities under the Fire Chief:

- represent the department through the Associate Commissioner to Executive Team and Council
- lead and manage four divisions
- quality management

The following identifies some specific responsibilities within each division:

- Community Safety includes the following functions and services:
    - fire prevention, fire inspections, and fire investigations
    - community safety education
    - emergency management and business continuity
    - fire protection (i.e., fire engineering)
    - administrative supports
- Strategic Services includes the following functions and services:
    - accounting
    - payroll and benefits support
    - Emergency communications
    - communications and marketing
    - administrative support
- Operations includes the following functions and services:
    - fire suppression
    - fire rescue
    - Emergency Medical Services (i.e., MFR and ambulance)
    - hazardous materials
    - technical and specialty rescue
    - administrative supports
- Operations Support include the following functions and services:
    - materials management
    - training
    - occupational health and safety
    - administrative supports

SCES is broadly supported by and regularly engaged with other County departments including:

- Planning and Development Services (e.g., planning and permitting)
- Human Resources (e.g., compensation and benefits, labour relations)
- Fleet and Facility Management (e.g., fleet and station acquisition and maintenance)
- Information Technology Services (e.g., IT infrastructure)
- Family and Community Services (e.g., crisis supports)

- Finance and Strategic Services (e.g., procurement)
- Legislative and Legal Services (e.g., contracting)
- Corporate Communications (e.g., communication support)

Staffing Resources

The vast majority (~75%) of SCES staff are employed in fire suppression/EMS roles within the Operations division. The overall permanent staffing in the department is currently at 219.6 employees for 2022 with an expected increase of 4 full-time firefighters in 2023.

The following reflects the full-time staffing (i.e., management, classified, and unionized) for 2017-2023:

	2017	2018	2019	2020	2021	2022	2023
Management	6	6	6	6	5	5	5
Business Operations	15	15	15	15	15	15	15
Emergency Communications	13	13	13	13	13	13	13
Operations	153	153	153	153	154	166	170
Community Safety	13	13	13	14	13	13	13
Operations Support	6.6	6.6	6.6	6.6	7.6	7.6	7.6
Total	**206.6**	**206.6**	**206.6**	**207.6**	**207.6**	**219.6**	**223.6**

Table 3.1: Full-Time Staffing

Figure 3.2: Full-Time Staffing

The above reflects no increases in staffing fire rescue and EMS functions for the period 2017-2021 despite the significant increase in event or call volume for the same period.

Staffing coverage for emergency response is with career firefighters on alternating 10-hour day, 14-hour night shifts for an average 42-hour work week. For fire/EMS response, the target minimum staffing is 28 firefighters/fire officers and 1 platoon chief for the fire/rescue and EMS functions.

These frontline fire resources are dual role firefighter/Primary Care Paramedics (PCPs) or Advanced Care Paramedics (ACPs) personnel on a typical squad fire apparatus with four firefighters. Depending on the nature of the event, firefighters may be reassigned to other apparatus including tankers, towers, rescues, brush trucks.

Ambulances have been typically staffed by three dual role firefighter/Primary Care Paramedics (PCPs) and/or Advanced Care Paramedics (ACPs). In some cases, the staffing for these ambulance units is only two firefighter personnel.

Recently, in June 2022, the third firefighter on each of the four ambulances have been reassigned to a Community Response Unit (CRU), a pilot initiative. This 2-person resource responds to both EMS and fire events, providing Advanced Life Support (ALS) medical treatment to critical patients prior to an ambulance arriving, as well as fire response and staffing to high acuity fire and rescue events. Staffing for these CRUs was accomplished by reducing ambulances to 2 person units and reallocating those personnel to the CRU. Early data demonstrates significant benefit for the community in fire and EMS response times and capabilities.

In addition to the full-time or career staff there are 40-50 paid-on-call staff who perform firefighting functions from the two part-time stations (i.e., stations #2 and #3). In addition to firefighting training, these firefighters are typically medically trained to a standard first aid and or Emergency Medical Responder (EMR) level of certification.

Fire Stations

Integral to the services provided by SCES are six fire stations:

- Three full-time stations located in the urban service area of Sherwood Park (Sherwood Drive, Bison Way, and Cloverbar Road)
- One full-time station located in the north (Heartland Hall in Josephburg) rural service area
- Two part-time stations located in the east (Ardrossan) and south (South Cooking Lake) rural service area

The figure below illustrates the relative location of the fire stations and associated fire zones.

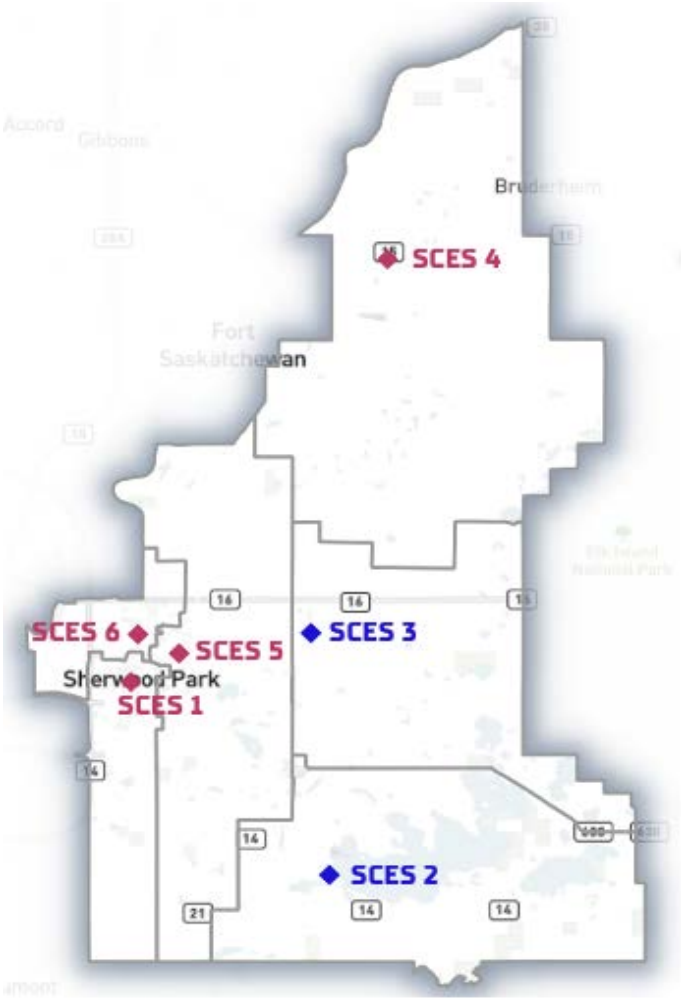


Figure 3.3: Fire Station Locations and Fire Zones

Apparatus and Equipment

Apparatus and equipment critical for the provision of services includes:

- Ambulances
- Engines/squads
- Aerial/ladder trucks
- Heavy rescue and other rescue units
- Tankers/tenders
- Brush units

- Specialty vehicles and support units
- Thousands of equipment including fire intervention (e.g., hoses, rescue tools, cutters, hand tools) and medical response items (e.g., defibrillators, medical therapy)

Other Infrastructure

Other infrastructure critical for the provision of services includes:

- Emergency Communications Centre
- Information technology
- Water system and hydrants

This infrastructure and assets have associated significant operating and capital budgets to purchase, maintain, and replace same.

Training

Training is integral toward the leadership of management and officers, and the readiness of firefighters and staff. In order for frontline firefighters (meaning working on either fire or ambulance apparatus) to receive training, typically this needs to be done on duty. However, given call volumes, distances to a training location or facility, and other factors this is often challenging.

The following is some of the recruit orientation training activities:

- NFPA 1001 Level I, II
- Blue Card Command Communication module
- EQi emotional intelligence assessment
- Crucial Conversation
- Conflict De-escalation
- Extensive practical skill development time
- Software introductions
- OHS – SC Safety Management System introductions
- HR Conversations

The following is some of the ongoing fire related training activities:

- Officer Level I
    - NFPA 1021 LI
    - NFPA 1521
- Blue Card Command Certification

- EQi emotional intelligence assessment and 1 day workshop
- Crucial Conversation 2 Day certificate course
- Conflict De-escalation 1 Day
- Leadership discussions
- Software training
- OHS – SC Safety Management System
- OHS Leadership for Safety Excellence Certification - AMHSA
- Fire Ground Tactics
- NFPA 1002 – Driver – Aerial
- NFPA 1041 – Instructor LI
- NFPA 1006
- Officer Level II
    - NFPA 1021 LII
    - Review of Key modules from Level I
- Officer Level III
    - NFPA 1021 LIII
    - Review of Key Modules from Level II
- Senior Officer Program
    - Support for a Diploma of Applied Degree related to leadership/public administration for the Fire Service
    - IAFC FESHE Model is used as a reference document

The following is some of the ongoing EMS related training activities:

- ASHEMS including ongoing PDIC every two years
- EMS Simulations – developed by SIM Team with AHSEMS and contracted physician input
- MCP skill days to support the online ASHEMS MCP content
- Any required training as a result of new equipment
- Annual CPR recertification

Additionally, there is a wide array of other departmental related training activities:

- Quarterly training – both online and in-person
- Resource material related to equipment and apparatus
- Officer training material
- Recruit training
- EMS Alberta College of Paramedics Con-ed credit approved training modules.
- Developed by SCES P&T Division and Red Deer Emergency Services Training Division.
- UL, NIOSH training modules
- Changes to SOPs with emphasis on strategy and tactical implications
- Fire Ground Survival (FGS) annual recertification
- Specialty rescue (e.g., Ice Rescue)
- WUI annual review – in-house
- Platoon Level Training Day – commonly referred to as “tower runs” or “fire sim”
- New equipment training. (e.g., MSA SCBA)
- Apparatus step-up training as per SOP 501
- HR directed training:
    - Online as required (e.g., Indigenous Awareness)
    - In-person – for supervisors (e.g., Respectful Workplace)
    - Policy updates
    - Software training (e.g., iTRACK)
    - Officers deliver to the crews when applicable
- SCES Management directed training:
    - Management day annually with the officers
    - Officers deliver to the crews
    - 2023 example – “Just Culture”

There are numerous other training requirements across all departmental positions including community safety, operations, support, and administration.

The above reflects the requirements and challenges of ensuring the “ready and able workforce.” Going forward innovative strategies and investments will be required to optimize the training and minimizing any negative impact to on-duty staff being available to respond to calls.

Budget

Municipal budgets consist of operating and capital budgets. The operating budget plans for the day-to-day costs of providing services to residents and businesses. The capital budget plans for the purchase of municipal assets and infrastructure, such as roads, water lines, information technology, stations, and vehicles or apparatus.

Through the County budgeting process, municipal administration identifies the source of funding to cover these costs. These funding sources include property taxes, service fees, government grants, financial reserves, or borrowing.

The 2023 County consolidated operating budget is $409.1 million. The departments net operating budget is 31.24 million. The department net operating budget ($ million) reflects the net tax support by the County is based on the following:

- Total operating costs (e.g., wages and benefits, expenses, non operating items)
- Less total revenue (e.g., service fees, agreement payments)

The net operating budget is apportioned across the four divisions and programs including the management and administration.

The following reflects the net operating budget from 2017-2023:

	2017	2018	2019	2020	2021	2022	2023
Total	**26.46**	**26.75**	**27.80**	**28.00**	**29.30**	**31.12**	**31.24**

Table 3.2: Operating Budget ($ Millions)

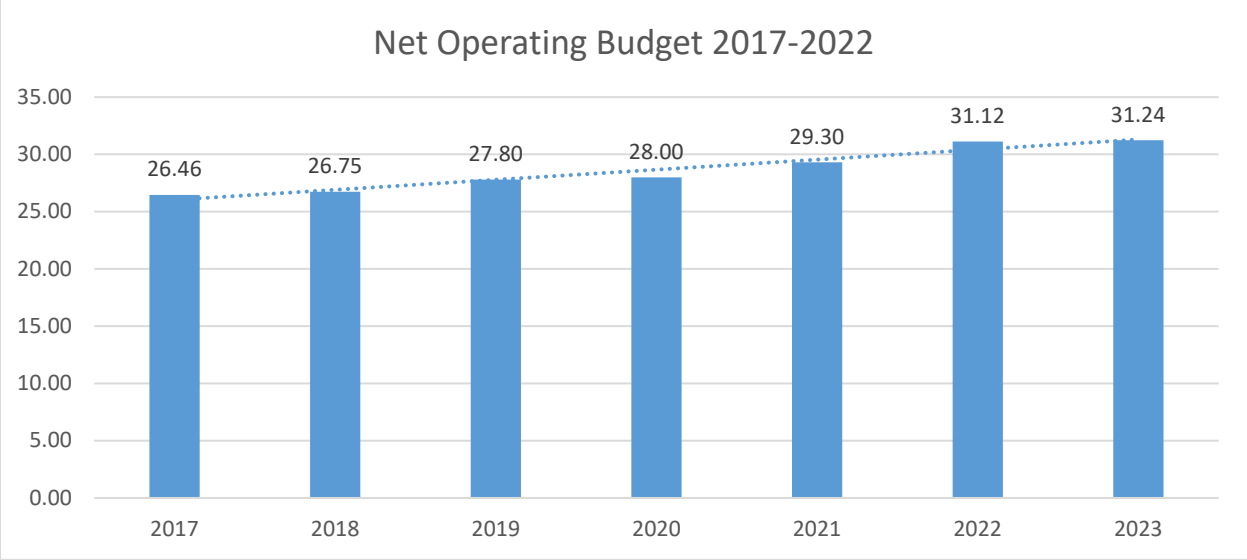


Figure 3.4: Net Operating Budget ($ Millions)

Recent net operating budget increases include collective bargaining agreement increases (i.e., 2017-2019 6.2%) and COVID-19 expenses (i.e., 2020). The 2022 increase was partially driven by the addition of

12 full-time firefighters to mitigate overtime implications and staffing constraints. The 2023 increase will include 4 additional full-time firefighters.

Many of the traditional costs (i.e., operating and capital) for the provision of fire or emergency services are incorporated into other County departments budgets including information and technology services and fleet and facilities management.

The department specific capital budget includes various items including hardware, software, machinery, equipment and land purchase while the vast majority of capital costs are incorporated into other departments capital budgets (e.g., apparatus acquisition and maintenance, facility construction and maintenance).

Section 4: Review of Community Expectations and Performance Goals

County Strategic Plan

Strathcona County's 2023-2026 Strategic Plan is the organization's core guiding document for governance, community development, infrastructure, and program and service delivery. It serves to keep the organizations vision, goals, priorities and performance indicators top of mind. It uses the mission and values as a lens by which strategic decisions are made.

The Strategic Plan forms the foundation for other key plans such as the corporate business plan, department business plans, budget plans and master plans. It acts as a compass for new ideas and initiatives for Council's consideration and decision.

The development of the Strategic Plan is guided by:

The corporate vision:

- *"Becoming Canada's most livable community."*

The corporate mission:

- *"Strathcona County is committed to working collaboratively, efficiently, and effectively to provide quality service delivery to citizens, business, and industry alike."*

The corporate values are:

- *"Integrity, Respect, Safety, Fairness, Cooperation."*

The SCES vision, mission, and values compliment the corporate vision, mission and values and are utilized to guide service delivery and department planning.

The SCES vision:

- *"We will lead our community to be the safest in Canada."*

The SCES mission:

- *"To protect from risk the things that matter to those we serve."*

The SCES values:

- *Respect, Synergy, Leadership, Community, Progress, Ownership, Integrity*

The SCES motto is "Honoured to Serve, Inspired to Lead."

The SCES 2023 Standards of Cover has been developed to support each of the strategic goals outlined in the corporate Strategic Plan.

Department Business Plan

The Department Business Plan is developed based on a four-year advancing plan. The Business Plan outlines strategic initiatives, including increases to service levels and new capital, programs or services developed to action strategic goals – and improvement initiatives, designed to enhance the effectiveness and efficiency with which the department delivers its programs and services.

Going forward Council will only receive for consideration and approval the Corporate Strategic Plan and budgets. The Corporate Business plan will be received for information only.

The department prepared a Department Business Plan for 2022-2025 for public use. In previous years the department has also prepared an Internal Department Business Plan with additional information including key performance indicators.

The following are the current performance indicators for core functions as identified in the most recent Internal Department Business Plan:

Core Functions	Measure	Target/Service Levels
Talent Management and Employee Engagement	% of employee engagement indexed	Not defined
	% of required workplace safety inspections	100%
Business Operations	% of standard operating procedures reviewed	Not defined
Community Communications and Relations	% of total population contacted annually through non-emergency	20%
Emergency Management and Business Continuity	% attendance of scheduled exercises with partners	80%
Emergency Communications	% 9-1-1 calls answered within 15 seconds	95%
	% 9-1-1 calls transferred to downstream agencies within 60 seconds	95%
Industry Engagement	% review of safety culture of industrial partners based on CSA Z-767	75%
Prevention	% of violations per inspection based on lower than previous baseline	20%
Emergency Response (EMS)	% overall client satisfaction	90%
	% overall client perception of safety	90%
Emergency Response (Fire/Rescue)	% first due unit (fire) on scene capable of incident mitigation after initial 9-1-1 call within 8 minutes urban service area	90%
	% first due unit (fire) on scene capable of incident mitigation after initial 9-1-1 call within 17 minutes rural service area	90%
	% an effective response force (fire) on scene after initial 9-1-1 call within 12 minutes for low-risk incident in urban service area	80%

% an effective response force (fire) on scene after initial 9-1-1 call within 20 minutes for low-risk incident in rural service area	80%

Table 4.1: Current Key Performance Indicators

In past years, the department prepared Annual Reports (last developed in 2018). These reports were an excellent tool to champion the organization, staff, and various services, programs, and accomplishments.

Section 5: Review of Historical System Performance

System performance considers two distinct perspectives. First, what is the historical demand on the system; and, second how have we historically performed to that demand. The demand on emergency services includes many requests and needs including emergency response, public education, inspections, and investigations; however, response to emergency and non-emergency events are a reflection of the demand.

What is the demand on our system?

Total Service Events

To begin let us define service events. A service event is a single incident that the department responds to. For any given event, there may by one or more apparatus responding to that event. An example is a residential structure fire where an initial response may include 3-4 fire apparatus, ambulances, and a platoon chief. In addition, other support apparatus during and following the event may be required for operational support, fire investigation, and other functions.

The following illustrates the total service events.

	2017	2018	2019	2020	2021	2022
EMS	6,159	6,598	6,964	7,260	9,362	10,063
Fire	1,141	1,262	1,226	1,177	1,429	1,557
Unknown	206	33	100	95	203	567
Total	7,506	7,893	8,290	8,532	10,994	12,187

Note: EMS calls include ambulance and medical first response.

Table 5.1: Total EMS/Fire Events

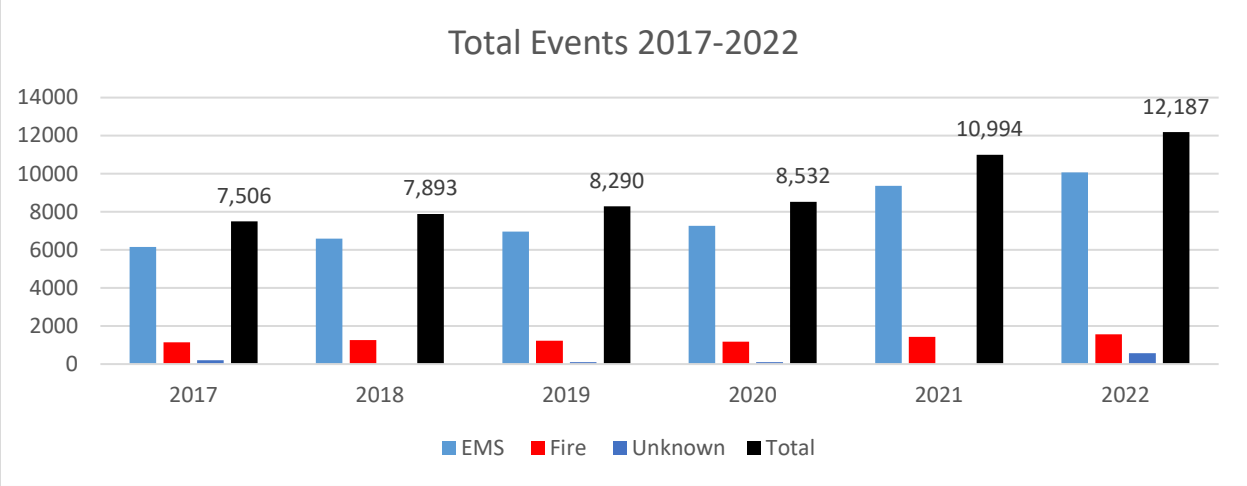


Figure 5.1: Total Fire/EMS Events

The above reflects an increased call volume of 62% from 2017 to 2022 including fire services and a significant increase in EMS responses, the latter specifically in the last two years. Ambulance responses are the primary apparatus responding to medical events and the dispatch and utilization of those ambulance units are under the authority of Alberta Health Services.

Total Sub-Events

The following illustrates the sub-events or sub-types of service events.

	2017	2018	2019	2020	2021	2022
Fire	413	408	339	340	489	437
Alarms	559	531	633	597	641	676
Medical	5,929	6,349	6,593	6,698	8,655	9,240
Medical First Response	0	78	206	424	661	1,025
Traffic Transportation	489	420	418	336	333	390
Rescue	17	21	20	33	22	29
Dangerous Goods	65	46	39	50	52	36
Other (FPI, Unknown)	34	41	42	54	141	317
Total	7,506	7,894	8,290	8,532	10,994	12,187

Note: Other calls include some fire prevention inspection events and unknown events.

Table 5.2: Sub-Events

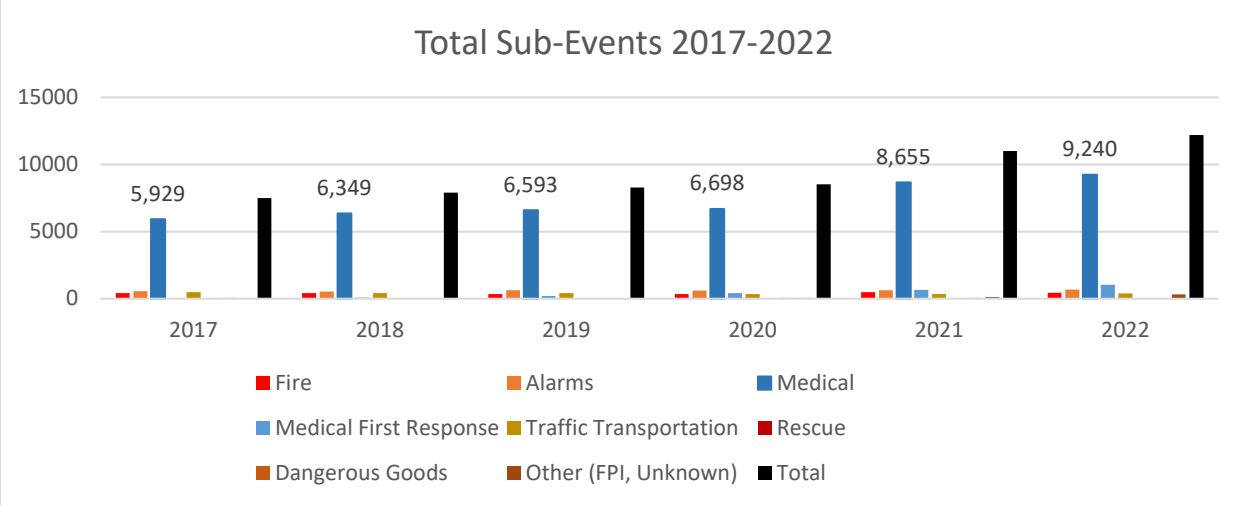


Figure 5.2: Sub-Events

For fire events above, this is meant to mean fire suppression events. Medical first response (MFR) events were not formally identified until mid-2018; however, these responses by frontline fire apparatus have increased significantly over the last several years as demand from medical events has increased.

Priority of Events

The priority of events considers two main groups of calls – emergency (meaning bravo, charlie, delta, and echo) and non-emergency (meaning omega and alpha). The determination of these events is based on the best information obtained and prioritized within the Emergency Communications Centre and does not reflect the actual nature of the call upon arrival.

The following illustrates the relative priority of service events.

	2017	2018	2019	2020	2021	2022
Omega	73	86	79	379	404	742
Alpha	1,730	1,799	1,952	1,875	2,281	2,584
Bravo	1,826	1,842	1,831	1,997	2,822	2,431
Charlie	1,914	2,028	2,162	2,152	2,705	3,049
Delta	1,805	1,959	2,060	1,925	2,548	3,163
Echo	158	180	206	204	232	218
Total	7,506	7,894	8,290	8,532	10,992	12,187

Table 5.3: Priority of Events

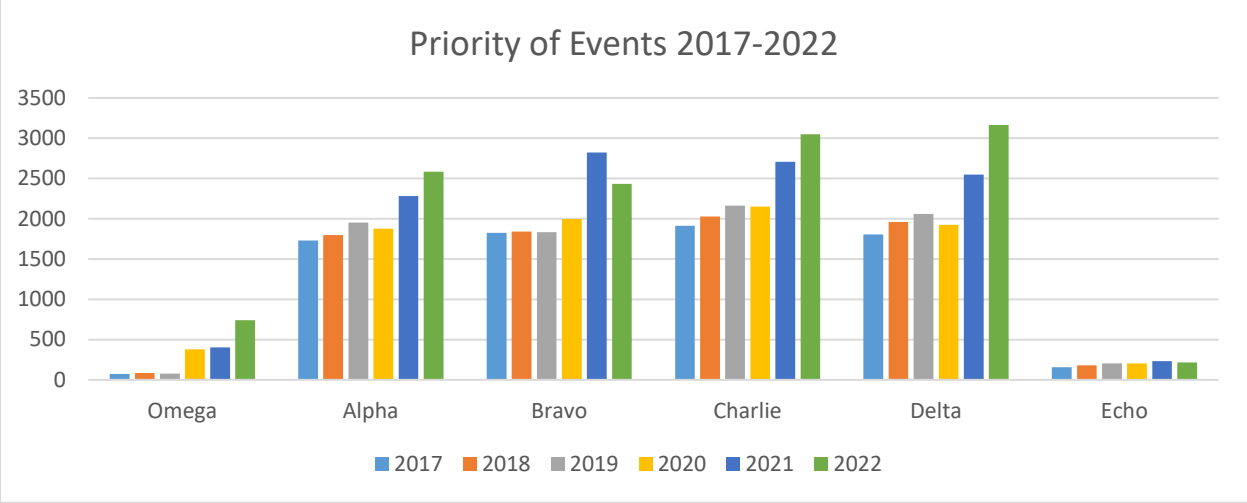


Figure 5.3: Priority of Events

The above reflects the majority of calls are of an emergency nature based on dispatch evaluation.

When is the demand on our system?

Emergency services occur all days and all hours during the year. Since January 1, 2017 through December 31, 2022, SCES have responded to ~55,400 events.

Events by Hour of the Day

Peak service demand is during the typical working hours of the day into early evening. The service demand is relatively consistent month to month during a year.

The following illustrates the EMS events (in blue) and fire events (in red) by hour of day averaged across six years.

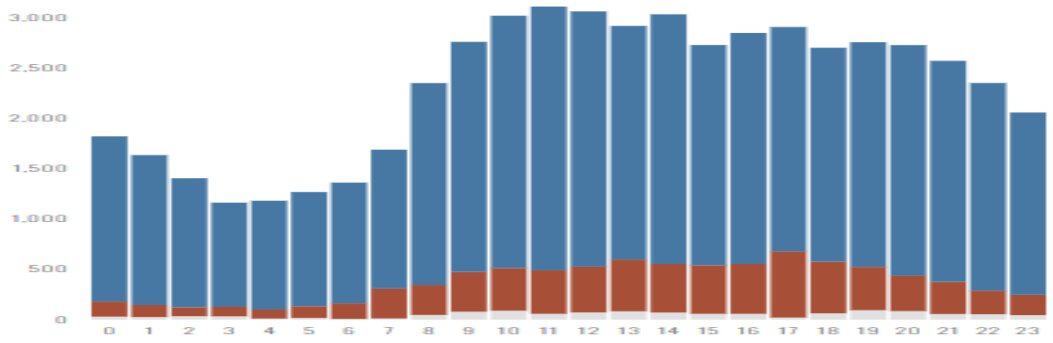


Figure 5.4: Events by Hour of the Day

The trend shows typical event volume at its highest between 8:00 a.m. and 8:00 p.m., with the lowest event volume experienced in the very early hours of a morning.

Events by Day of the Week

The following illustrates the EMS events (in blue) and fire events (in red) by day of the week averaged across six years.

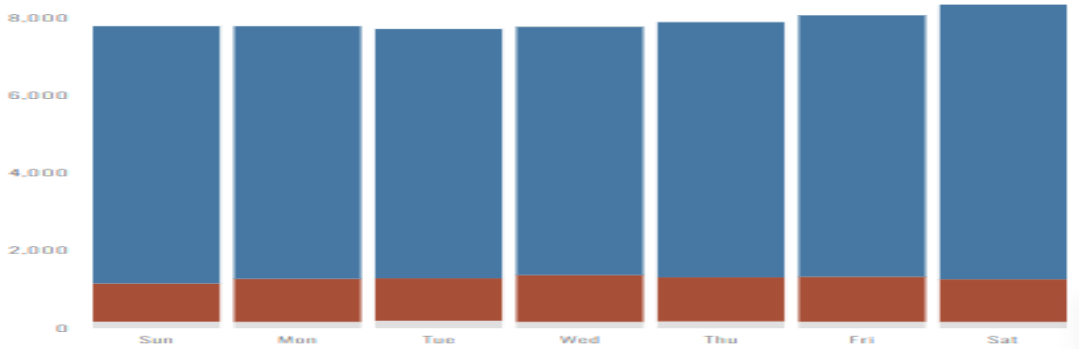


Figure 5.5: Events by Month of the Year

The above reflects service demand is fairly consistent across most days with some increase of medical events on Fridays and Saturdays.

Where is the demand on our system?

The vast majority of fire events are within the boundaries of the County although mutual aid and other response to fires, motor vehicle accidents, and rescues do occur outside the County. As Alberta Health Services dispatches all ambulances, those service events may occur in the County or outside the County including across the metropolitan region.

Rural and Urban Areas

The following illustrates service events by rural and urban service areas within the County. Most of the unknown events will be responses outside the County, typically by ambulances.

	2017	2018	2019	2020	2021	2022
Rural	1,237	1,190	1,147	1,124	1,265	1,309
Urban	4,767	4,636	4,749	4,856	5,068	5,752
Unknown	1,502	2,068	2,394	2,552	4,661	5,126
Total	7,506	7,894	8,290	8,532	10,994	12,187

Table 5.4: Urban vs. Rural Events

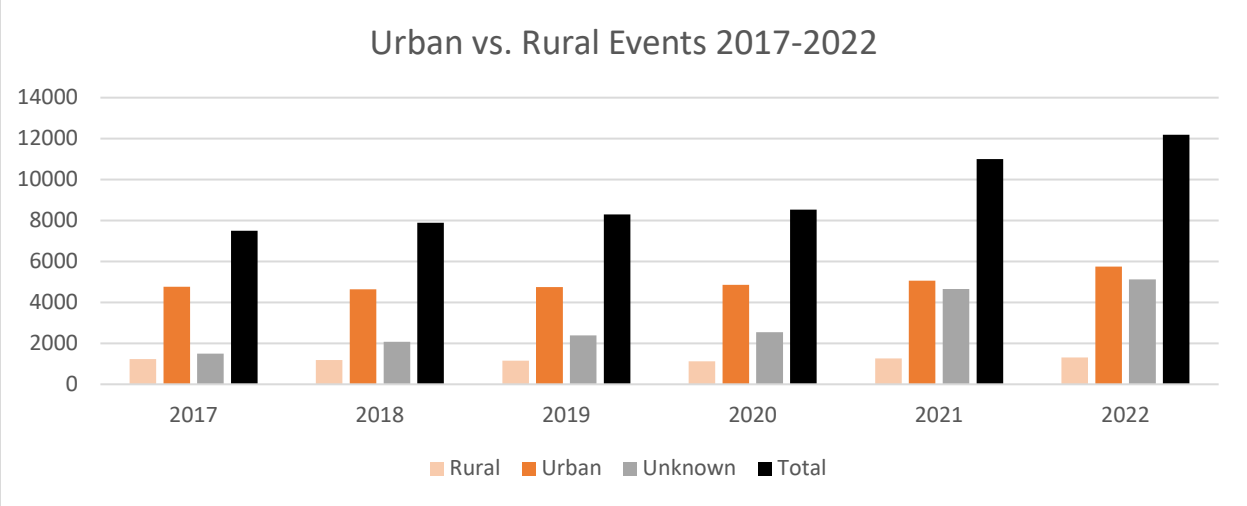


Figure 5.6: Urban vs. Rural Events

The above reflects the vast number of all events in the County are within the urban area of Sherwood Park where most of the population and employment is.

Wards

Another view of service events is by wards in the County. The urban wards are defined within Sherwood Park while rural wards are to the east, north, and south.

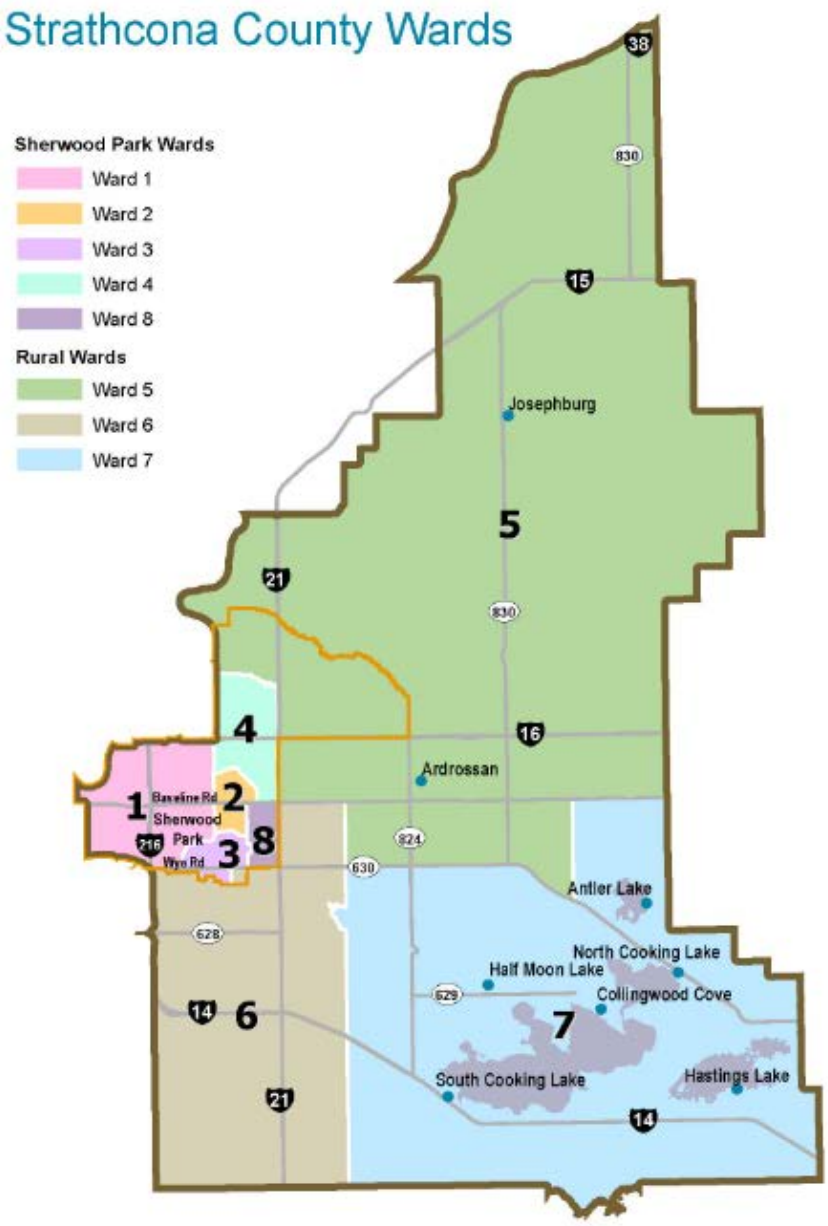


Figure 5.7: County Wards

The following illustrates service events by wards within the County. The unknown events will include responses outside the County, typically by ambulances.

	2017	2018	2019	2020	2021	2022
Ward 1	1,639	1,631	1,738	1,757	1,996	2,176
Ward 2	789	787	808	753	801	993
Ward 3	840	727	714	684	629	736
Ward 4	1,061	1,079	1,086	1,209	1,185	1,343
Ward 5	482	457	463	435	506	553
Ward 6	468	448	403	447	448	462
Ward 7	316	317	318	283	346	341
Ward 8	411	380	370	415	425	459
Unknown	1,500	2,068	2,390	2,549	4,658	5,124
Total	7,506	7,894	8,290	8,532	10,994	12,187

Table 5.5: Events by Ward

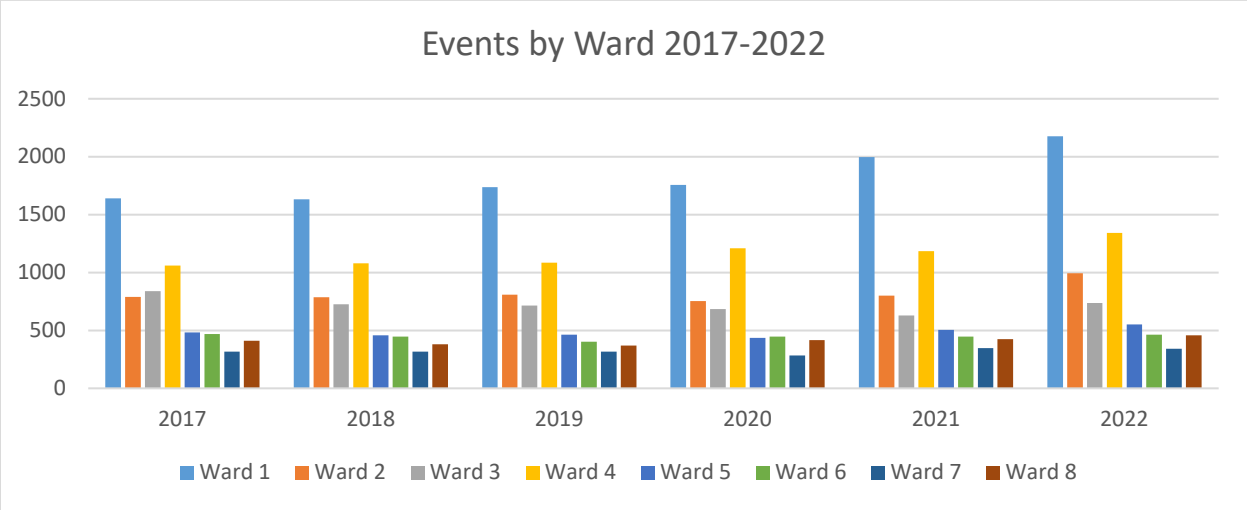


Figure 5.8: Events by Ward

The above reflects the majority of all service events are occurring within the urban area – Wards 1, 2, 3, 4, and 8.

Policy Area

Complimentary to service events by wards, the view of service events by policy area further supports the impact of service demand from urban areas, country residential, industrial, and various business areas.

The following illustrates service events by policy area within the County. The unknown events may be responses outside the policy area, typically by ambulances outside the County.

	2017	2018	2019	2020	2021	2022
Residential	2,188	2,139	2,146	2,271	2,334	2,707
Compact	1,643	1,613	1,723	1,738	1,850	2,095
Urban Centre	348	330	330	330	385	423
Country Residential	395	378	363	410	383	393
Agriculture Small Holdings	305	302	273	250	314	323
Commercial	291	278	262	228	230	258
Beaver Hills	275	233	263	237	275	253
Hamlet	103	92	88	79	89	116
Light Medium Industrial	109	111	111	104	95	100
Heartland	60	67	56	57	91	84
Agricultural Large Holding	56	52	48	44	56	76
Transportation Utility Corridor	68	70	76	62	74	62
Major Public Service	93	58	69	52	37	52
Heavy Industrial	43	51	48	66	68	48
Neighborhood	14	18	12	25	19	33
Local Employment	12	27	21	24	29	32
Business Park	2	4	3	4	1	4
Regional Park	0	0	2	0	0	0
Urban Reserve	0	1	0	0	1	0
Unknown	1,501	2,070	2,396	2,551	4,663	5,128
Total	7,506	7,894	8,290	8,532	10,994	6,071

Table 5.6: Events by Policy Area

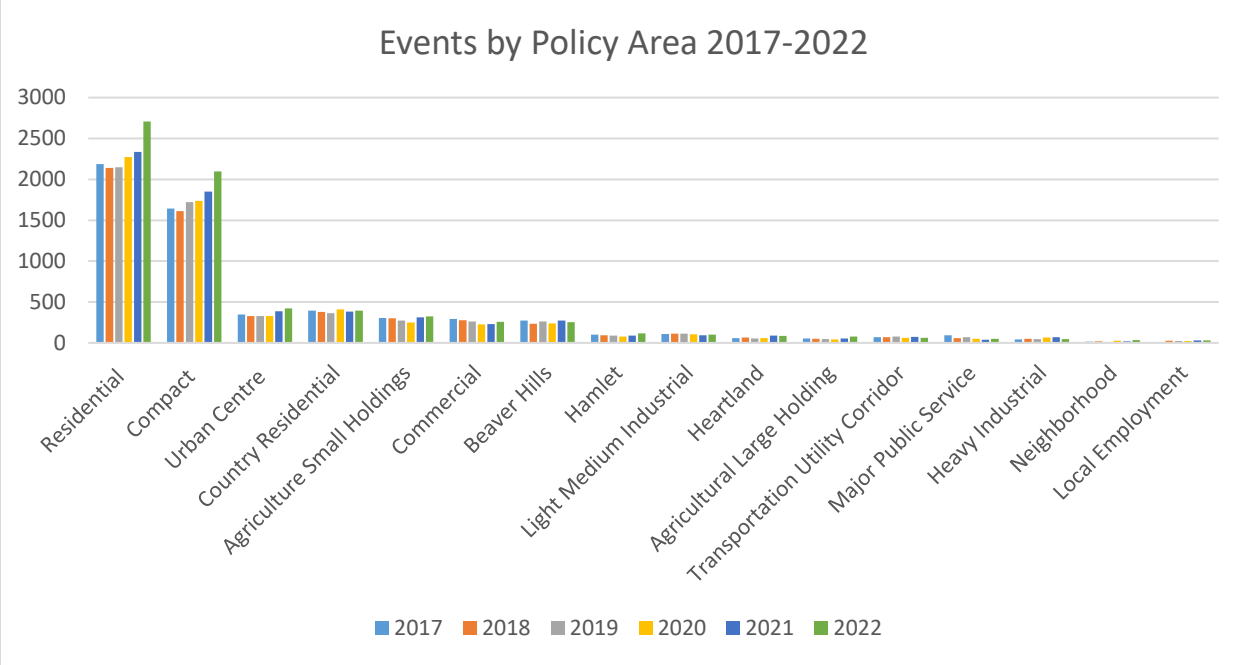


Figure 5.9: Events by Policy Area

The above reflects service demand based on policy areas including residential and country residential areas in and around Sherwood Park.

The following illustrates the relative location of all events responded to by SCES resources from January 1, 2022 to February 20, 2023 including ambulance responses inside and outside of the County. The figure below identifies the six SCES fire stations, some 30 fire stations for Edmonton Fire Rescue Services, and other fire stations operated across a broader region.

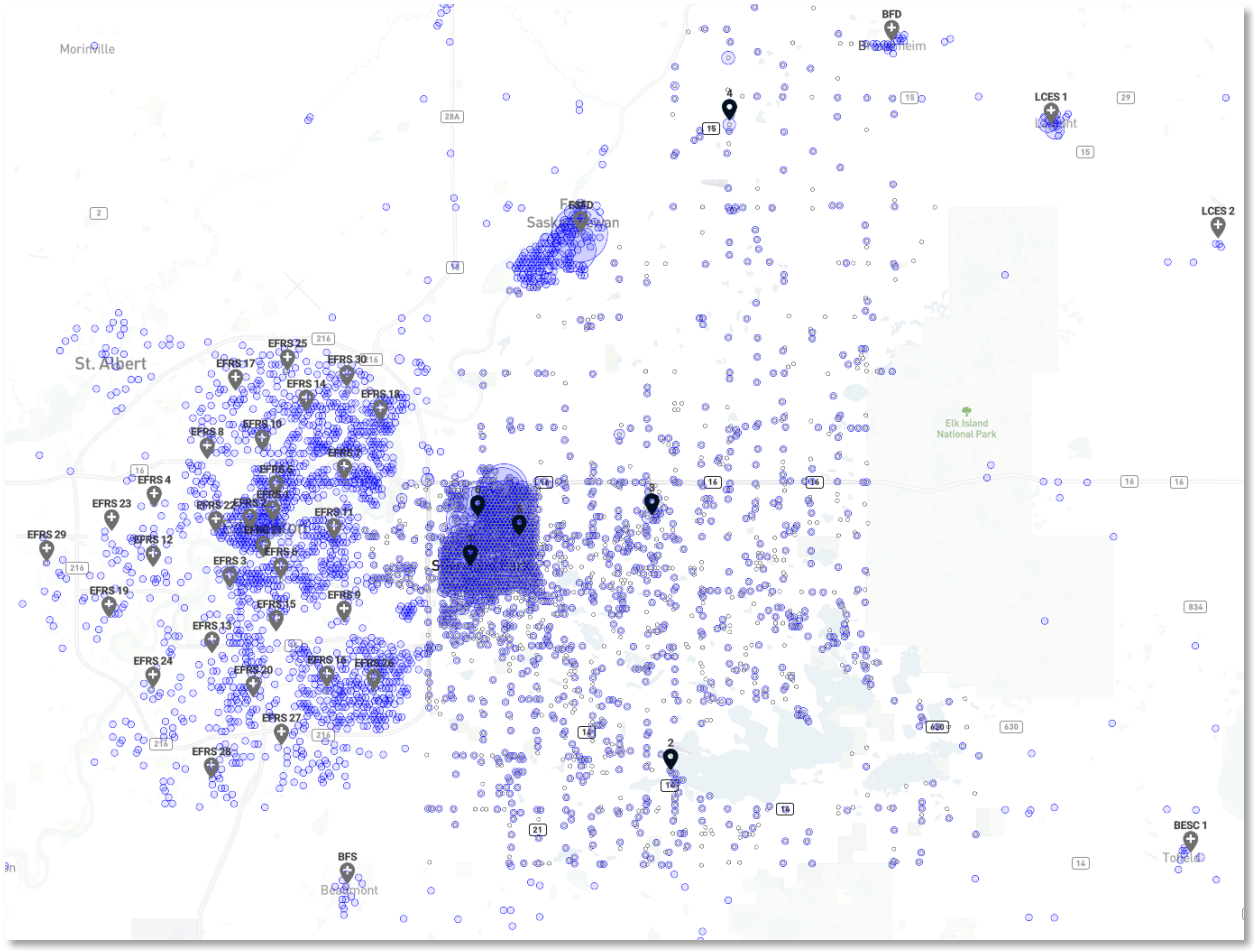


Figure 5.10: All Events 2022-YTD

The above reflects a concentration of events in and around urban areas including in particular ambulance responses by SCES within the City of Edmonton and the City of Fort Saskatchewan. What is not included in the above is all of the other Alberta Health Services ambulances responses in either the County or across the region.

The frequency and nature of fire and EMS events are a significant community risk.

The following illustrates the relative location of all fire events responded to by SCES resources from January 1, 2022 to February 20, 2023 not including medical, medical first response, nor unknown events inside and outside of the County. For the period there were 1,526 fire events as represented below.

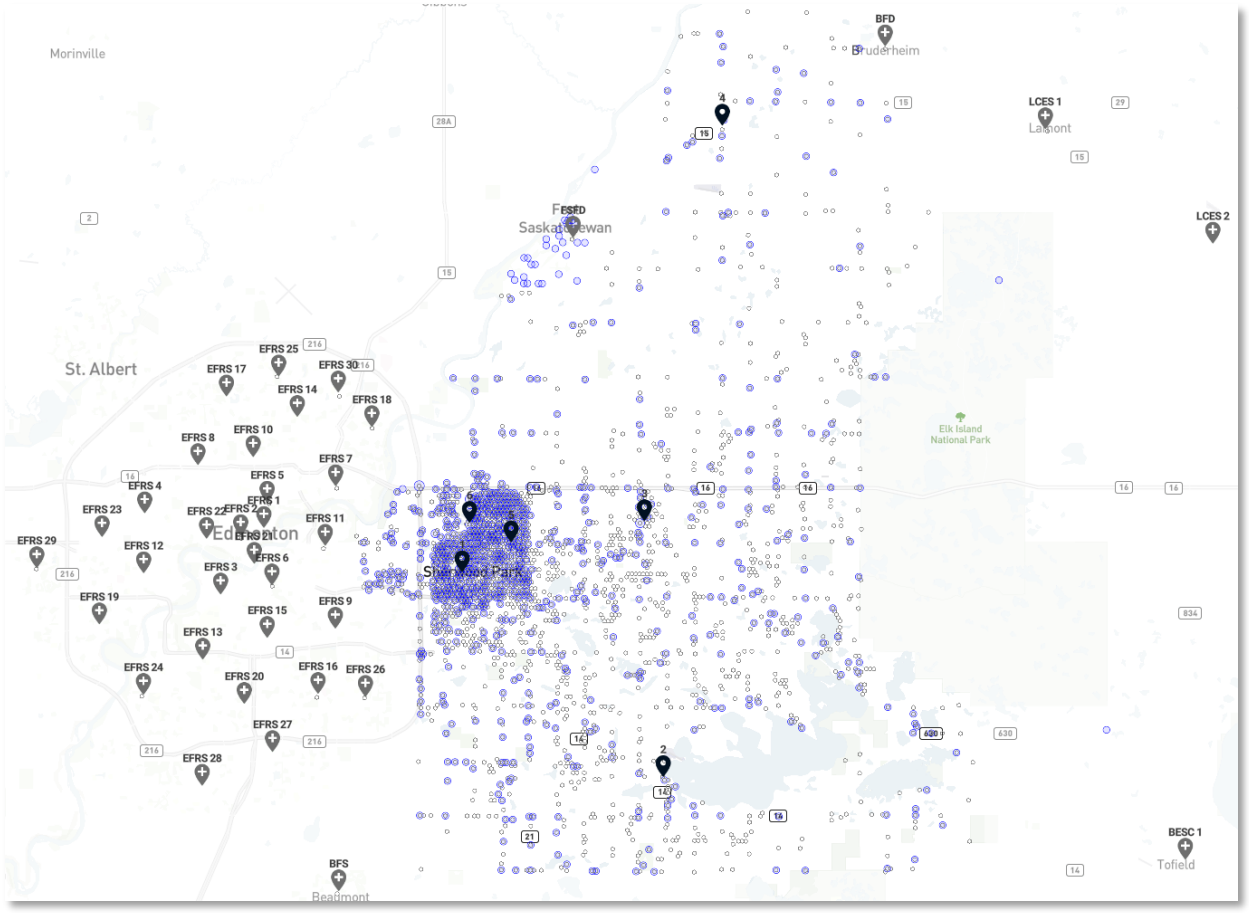


Figure 5.11: Fire Only Events 2022-YTD

The above reflects a concentration of fire events (e.g., structure fires, alarms, motor vehicle accidents) in Sherwood Park in the surrounding rural service area. What is included in the above is fire responses into the City of Fort Saskatchewan.

Thus, while EMS events makeup the predominant service event in the County, fire events are both an urban and rural community risk.

The following illustrates the relative cluster of structure fire events in the urban service area including surrounding heavy industry areas to the west and rural service areas to the east responded to by SCES resources from January 1, 2022 to February 20, 2023. For the period there were 87 structure fires including some not represented below.

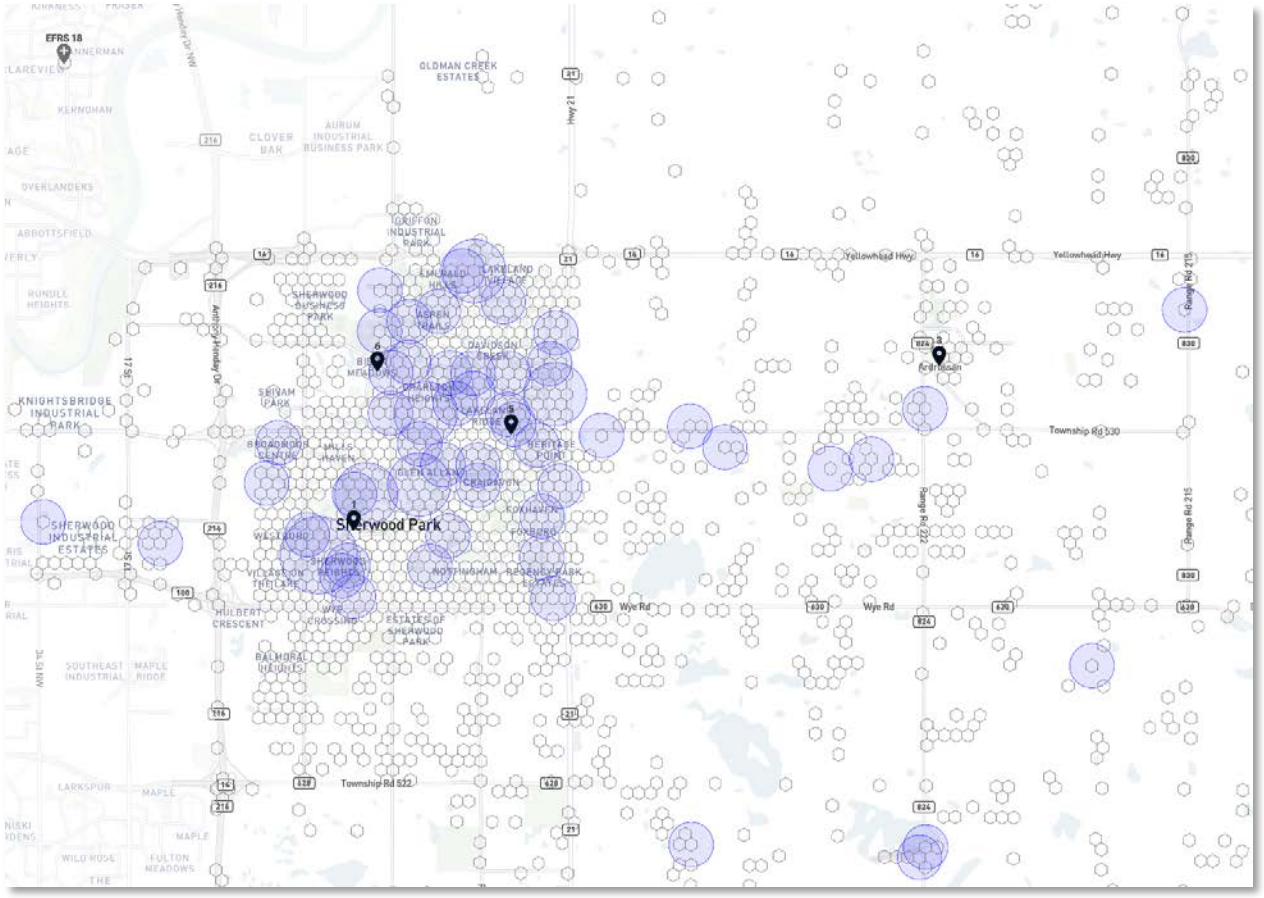


Figure 5.12: Structure Fire Events (Urban Area) 2022-YTD

The above reflects a concentration of structure fire events in Sherwood Park and the surrounding rural service area.

Thus, while industry and heavy industry occupancies pose a community risk, it is quite clear structure fires within urban and rural service areas pose a greater community risk based on frequency.

What does our response look like?

Station Responses

Each station has assigned apparatus, equipment and firefighters. Depending on the nature of an event, one or more resources may be deployed.

The following reflects the first assigned station apparatus or unit to a specific service event. If additional resources are required, these may be dispatched from other stations.

	2017	2018	2019	2020	2021	2022
Station 1	2,252	2,435	2,505	2,575	3,208	3,270
Station 2	87	85	78	41	27	85
Station 3	56	44	64	43	16	59
Station 4	592	535	680	710	1,307	1,807
Station 5	2,156	2,243	2,212	2,355	3,001	3,256
Station 6	2,363	2,552	2,751	2,808	3,435	3,710
Total	7,506	7,894	8,290	8,532	10,994	12,187

Table 5.7: Station Responses

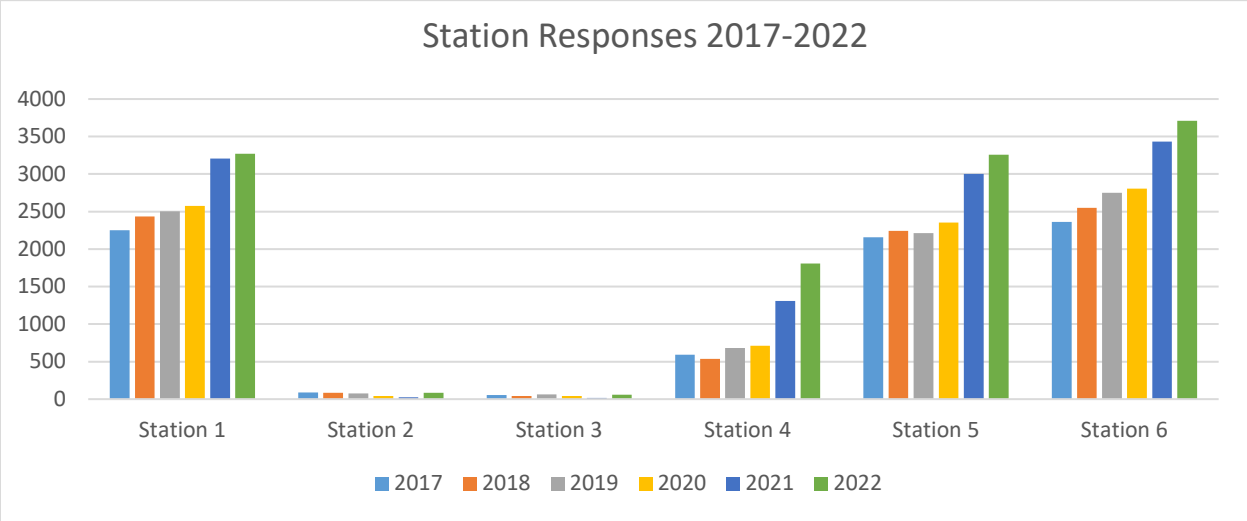


Figure 5.13: Station Responses

The above reflects that full-time fire stations - stations #1, #4, #5, and #6 are providing almost all of the first assignments to service events including urban and rural responses.

Location of Response

Sometimes resources (e.g., apparatus, equipment, and firefighters) are in station while other times they may be enroute back to a station and thus dispatched from a specific location.

The following illustrates whether the responses the relative state of where the resources are located and the relative destination of the event. For example, an ambulance completing a call at the University of Alberta Hospital (meaning out-of-zone) may be dispatched back to the County for a call (meaning in-zone) or dispatched to another location outside of the County (meaning out-of-zone).

	2017	2018	2019	2020	2021	2022
From Station – In Zone	3,546	3,515	3,800	3,825	3,855	3,945
From Station - Out of Zone	2,518	2,478	2,552	2,662	3,352	4,232
Out of Station – In Zone	65	80	72	50	107	104
Out of Station – Out of Zone	94	81	57	73	114	114
Unknown	1,283	1,740	1,809	1,922	3,566	3,732
Total	7,506	7,894	8,290	8,532	10,994	12,187

Table 5.8: Location of Response

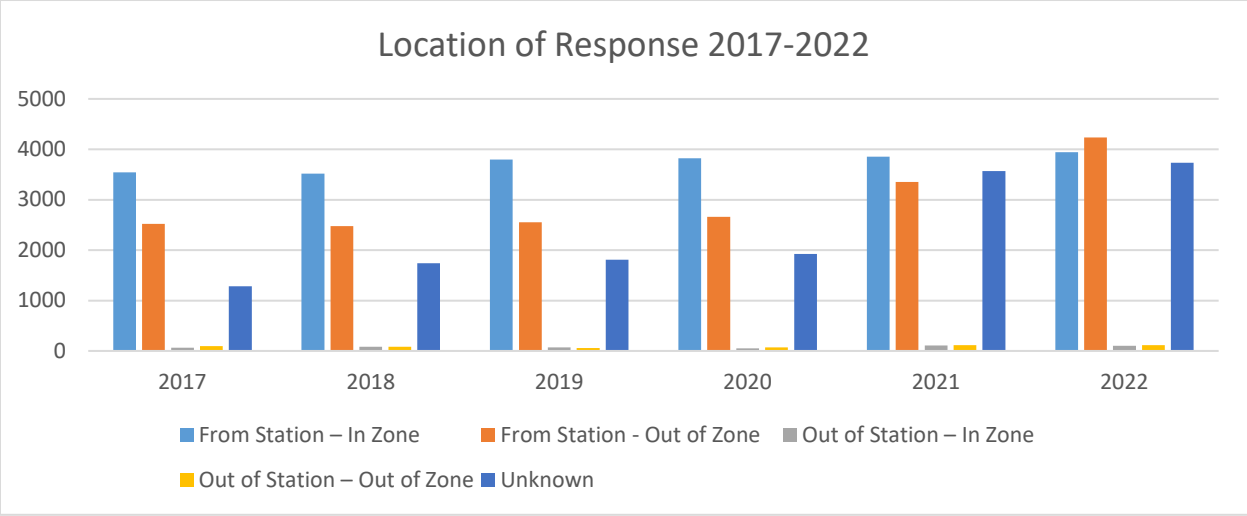


Figure 5.14: Location of Responses

Response by Initial Apparatus

Based on the nature and priority of a call, an initial and available apparatus will be dispatched.

The following illustrates the first unit deployed or assigned to an event.

	2017	2018	2019	2020	2021	2022
Ambulance	5,767	6,212	6,677	7,053	9,002	9,286
Brush Truck	122	172	134	67	95	149
Chief	204	193	186	145	231	260
Rescue	15	20	38	33	25	44
Squad	1,203	1,068	1,003	976	1,368	1,379
Tanker	36	36	42	36	49	45
Tower	86	85	95	113	78	78
Unknown	73	108	115	109	146	946
Total	7,506	7,894	8,290	8,532	10,994	12,187

Table 5.9: Response by Initial Apparatus

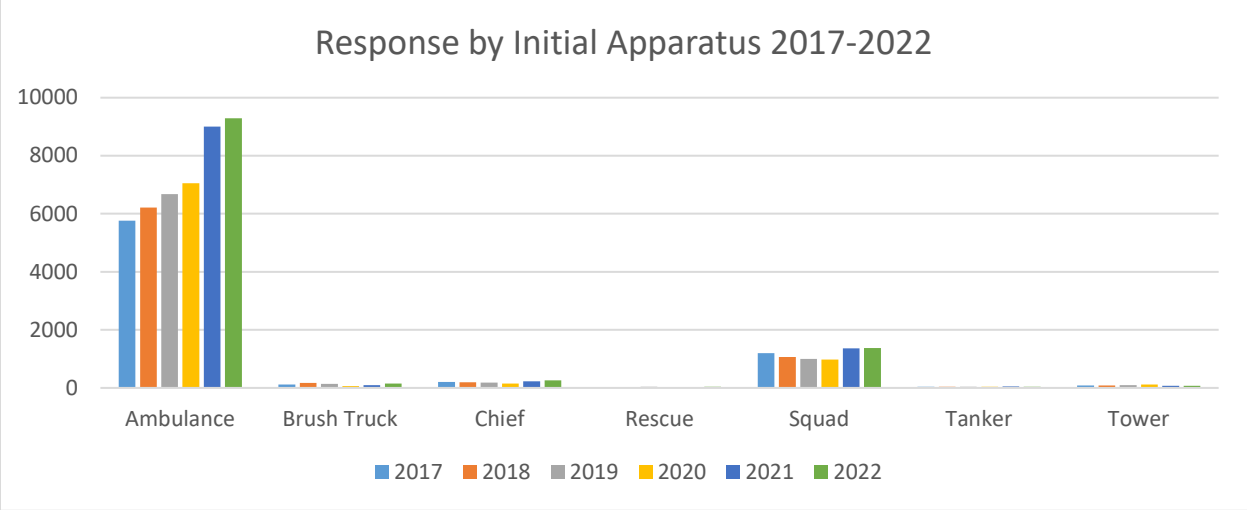


Figure 5.15: Response by Initial Apparatus

The above reflects a direct correlation to the majority of service events being of a medical nature including responses by ambulances. As squads are staffed at all full-time stations, these are the primary apparatus to fire events and medical first response events.

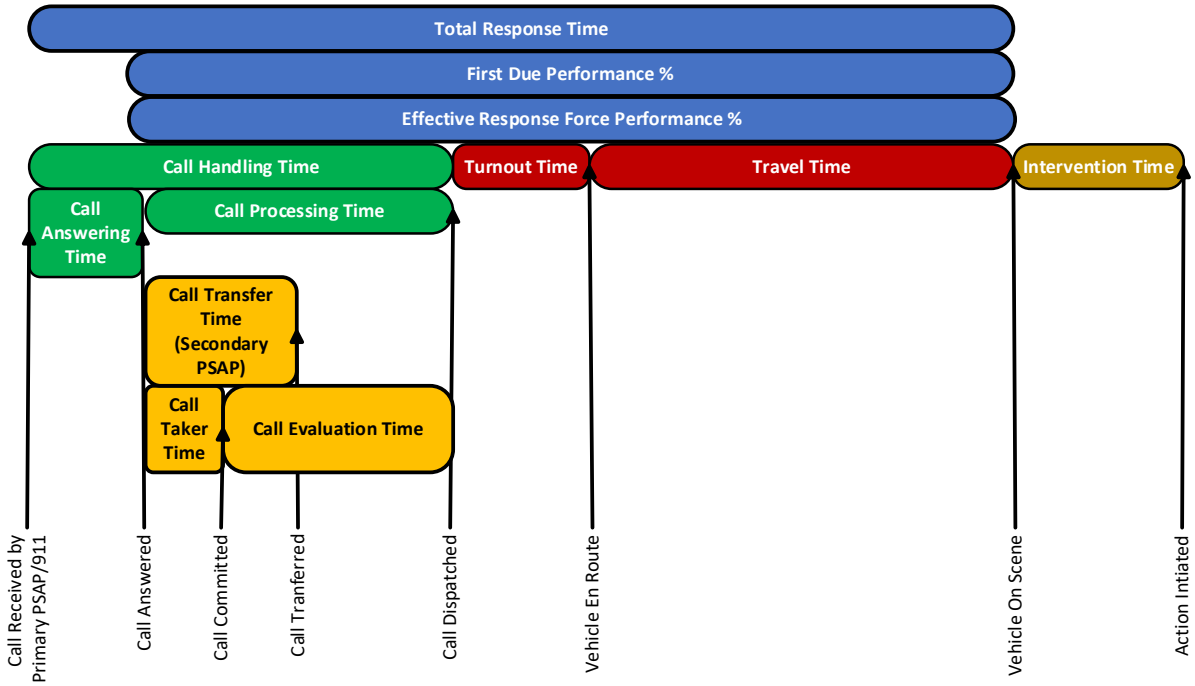
What is our Performance?

Response Time Intervals

Time is critical in mitigating emergencies and emergency events. Timely arrival to a fire event is integral towards fire suppression and life safety. Timely arrival to medical events is integral to survival and reduced harm.

A typical response is divided into several intervals, including the call handling time which is comprised of call answer and call processing or dispatch; the turnout time, which represents the time from dispatch to enroute; and the travel time, which is the time it takes a unit to reach the scene once it is enroute. Ultimately, the intervention time is critical however, this is not always uniformly measured, if at all.

Each of these response time intervals will have their own specified descriptions or definitions and targets (see Appendix A).



Note: Size of the bars do not represent actual times interval length; time is measured in minutes/seconds or m/s)

Figure 5.16: Response Time Intervals

Industry best practices use percentiles when measuring these response time intervals. Each of these response time intervals are typically measured and reported on as the 90th percentile (meaning 90$^{\%)}$ for urban areas, and for some metrics 80th percentile for rural areas.

Using an average makes it impossible to know how many incidents had response times that were far above the average or just above. By using a distribution of response times for all responses, the percentile (or fractile) time can be more easily understood. This is an accurate method to examine the service delivery of a department.

In simple terms this means how many times was the performance achieved within the established performance target or measure. One way to view using the 90th percentile target time, is to say that nine out of ten responses will arrive in the established target of time or less.

The following illustrates an example of a response time distribution, with 90th percentile time.

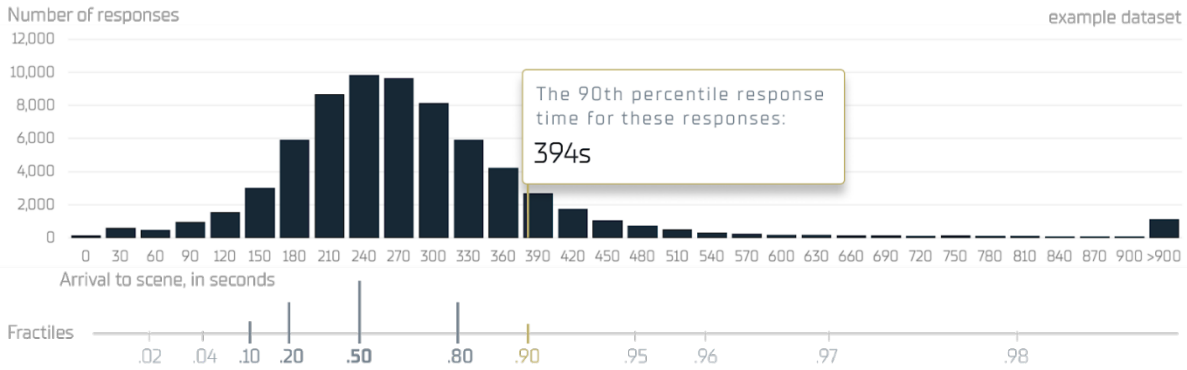


Figure 5.17: 90th Percentile

Once a time benchmark or target is set, the service can then measure its performance, with the goal of continuous improvement toward positive outcomes.

The following illustrates the NFPA target for urban response (i.e., 380s), the SCES target for urban response (i.e., 480s), and the actual SCES urban response for 2022 fire only events (i.e., 654s).

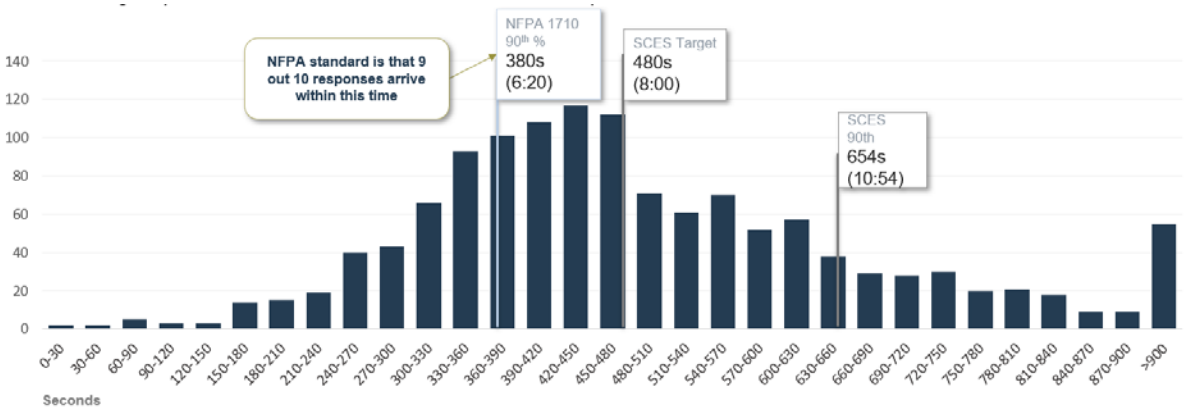


Figure 5.18: Urban Response Targets and Actual (2022)

The following illustrates the NFPA target for rural response (i.e., 840s), the SCES target for rural response (i.e., 1,020s), and the actual SCES rural response for 2022 fire only events (i.e., 1,325s).

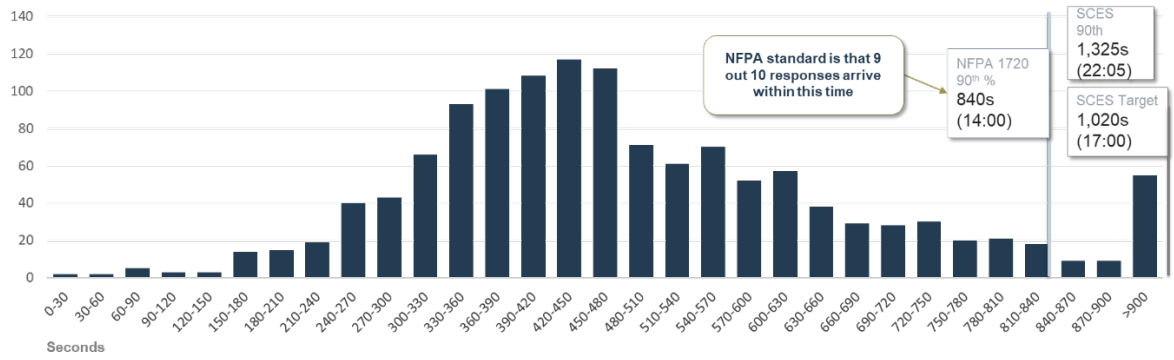


Figure 5.19: Rural Response Targets and Actual (2022)

It is important to state the data and related analysis in this report may be revised in the future based on clarification and validation of Telus and/or FDM data being captured and modeled in the Darkhorse Engine (DHE). Some of the current challenges should be addressed with the full implementation of the NG 9-1-1 system.

Call Handling Time

Call handling includes the first contact with citizens and businesses. Call Handling Time (also known as Alarm Handling Time, an NFPA phrase) includes 1) Call Answer, 2) Call Transfer (where applicable), and 3) Call Processing (also known as Dispatch).

When calls are transferred (e.g., to Alberta Health Services Ambulance Control Centre), call handling is essentially terminated. Data related to those calls are not included in overall call handling times for the department.

Following call processing a response unit is notified and is essentially dispatched. Often during call processing, the response unit may be alerted to begin readiness to respond to an event.

As a PSAP centre in Alberta, the department has a specific requirement to meet the Alberta 9-1-1 standard of call answer within 15s, 95%, and call transfer within 60s, 95%. The department has consistently met and exceeded these targets.

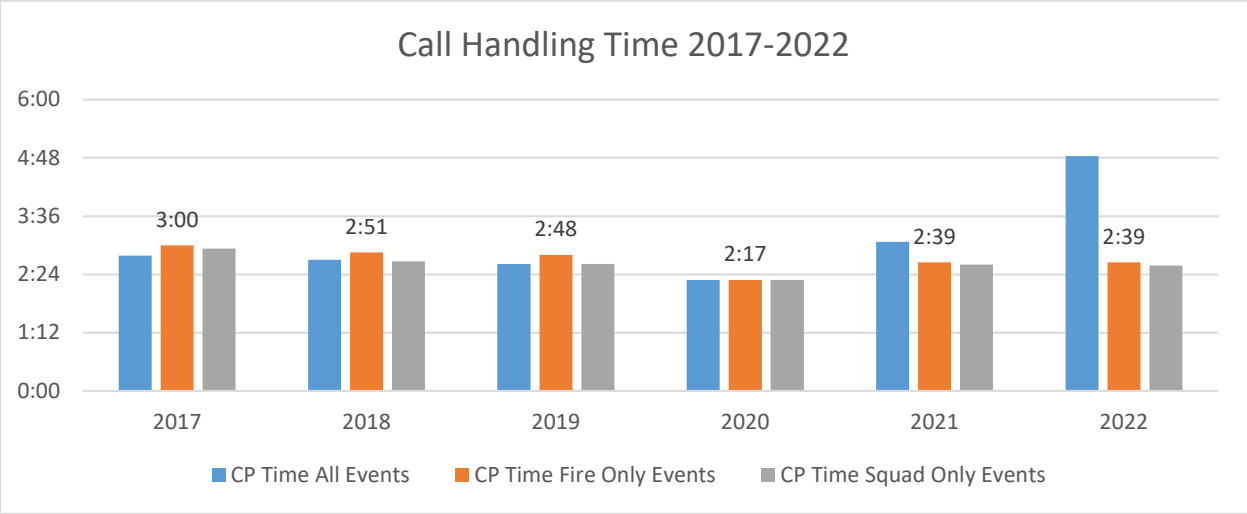
NFPA Call Handling performance is 15s (seconds) for call answer and 1m (minute) or 60s for call processing of emergent and high-priority calls; thus, the call handling performance is 1m15s or 75s to the 90th percentile.

The following reflects call handling (CH) times for events.

	2017	2018	2019	2020	2021	2022
CH Time All Events	2:47	2:42	2:37	2:17	3:04	4:50
CH Time Fire Only Events	3:00	2:51	2:48	2:17	2:39	2:39
CH Time Squad Only Events	2:56	2:40	2:37	2:17	2:36	2:35

Note: The above includes 1m15s of call answer and call processing based on current data sources.

Table 5.10: Call Handling Times



Note: The above includes 1m15s of call answer and call processing based on current data sources.

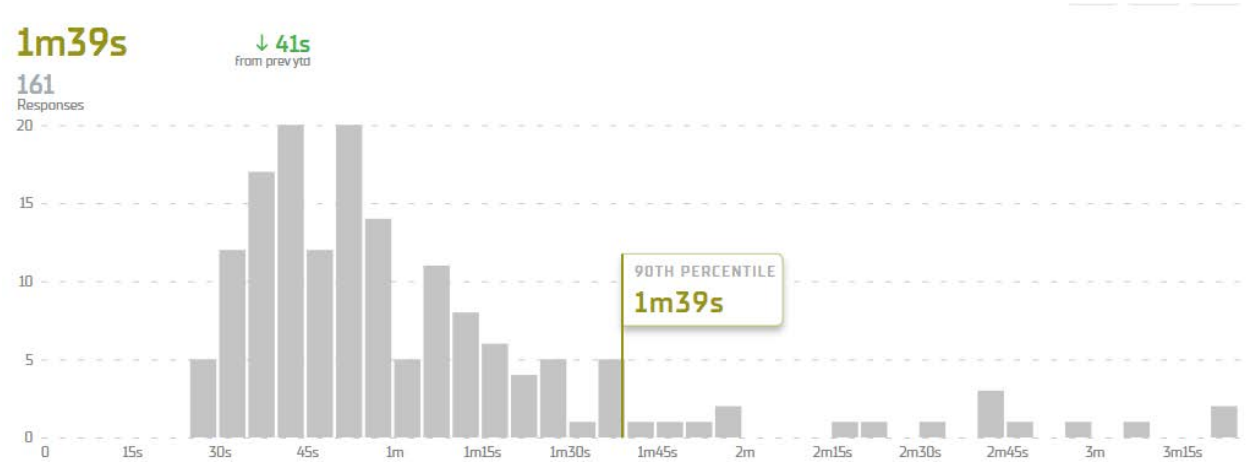
Figure 5.20: Call Handling Times

The above reflects some significant variance in call handling for all events versus fire only events (e.g., fire suppressions, traffic accidents). This is attributed to the variance in how calls come into the 9-1-1 centre and which may be negatively impacted by calls from the Alberta Health Services Ambulance Dispatch Control Centre.

Based on the NFPA target of 60s, 90%, the department should be seeking a significant improvement in call processing time and thus the improvements to the overall call handling time.

The fire only events including specifically the Squad apparatus responses are a more consistent activity within the control of the Emergency Communications Centre. Seeking technology, process, and other strategies to reduce call processing for fire events will allow the department to standardize on improvements that may inform call handling for all events.

It is noted that Call Handling Times for the YTD period beginning January 1, 2023 to February 20, 2023 have seen a reduction by ~30s based on Fire only events average in 2022. This is a direct result of process and standardization improvements in the Emergency Communications Centre. This improvement has further contributed to improved First Due Performance and lower overgoal situations.



Note: The above includes 1m15s of call answer and call processing based on current data sources.

Figure 5.21: Call Handling Times Year-to-date 2023

Turnout Time

Turnout time is the reaction (e.g., equipment, apparatus) of firefighters within the fire station before responding from the station. Turnout time represents the time from notification by dispatch or the Emergency Communications Centre of a service event to the point the responding apparatus is ready to begin the response. The readiness for response may include 1) putting on protective clothing, 2) identifying the appropriate apparatus (e.g., Squad versus Brush Truck), and 3) having all firefighters in the unit to begin response.

NFPA turnout performance is 1m20s or 80s to the 90th percentile meaning 90% of the time for fire apparatus and 1m or 60s, 90% for EMS or ambulance apparatus.

The following reflects turnout time for events.

	2017	2018	2019	2020	2021	2022
TO Time All Events	3:00	2:48	2:35	2:34	2:39	2:44
TO Time Fire Only Events	3:09	3:14	3:12	3:09	3:25	3:12
TO Time Squad Only Events	2:56	3:04	3:01	3:08	3:19	3:10

Table 5.11: Turnout Times

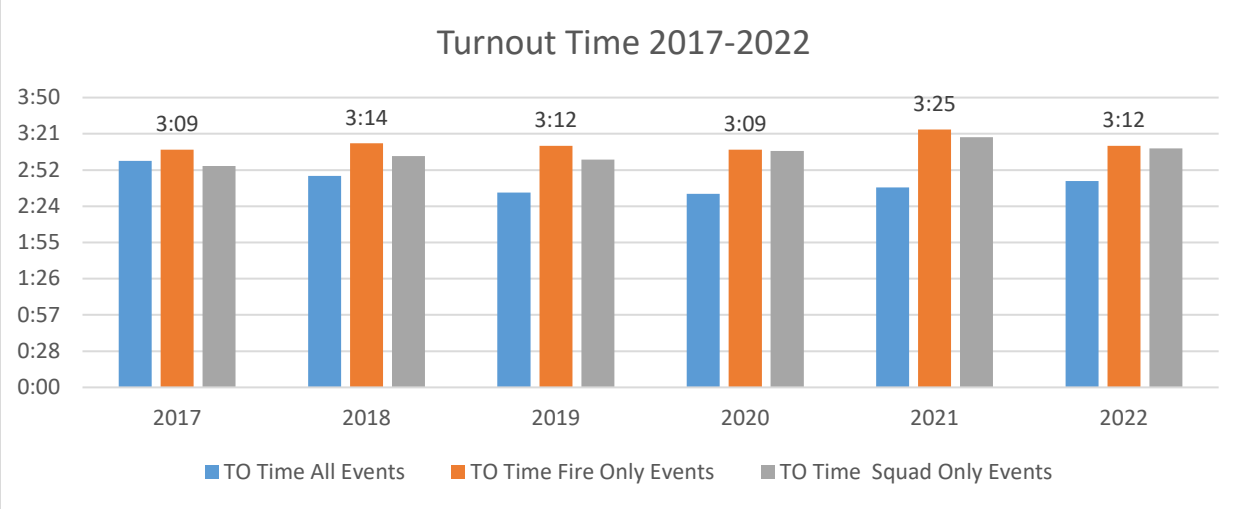
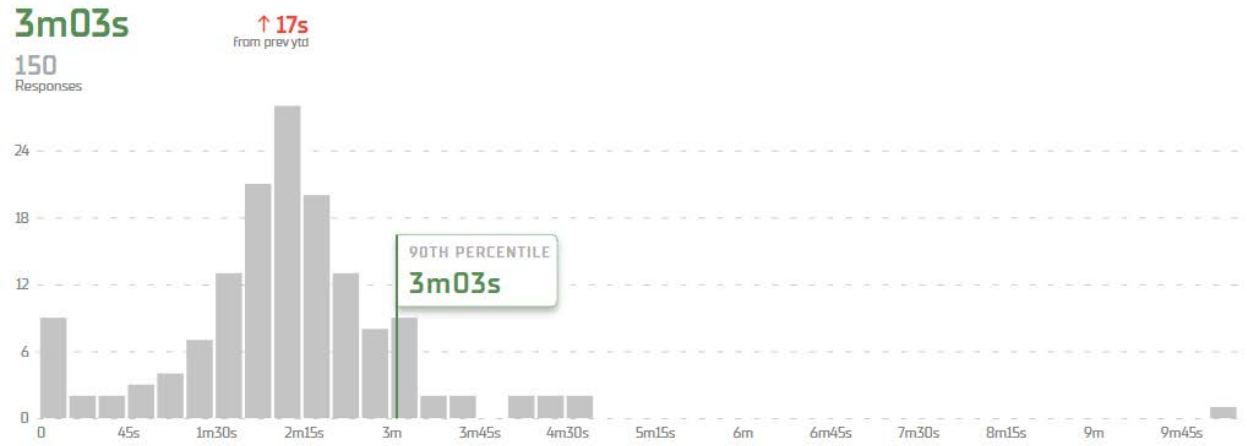


Figure 5.22: Turnout Times

The above reflects a lower turnout time average for all events versus fire only events. This is attributed to the inclusion of significant volumes of ambulance responses which require less setup and readiness compared to fire events.

It is noted that Turnout Times for the YTD period beginning January 1, 2023 to February 20, 2023 have seen a reduction by ~10s based on Fire only events average in 2022. This may be attributed to discussions within operations toward improvements. This improvement has marginally contributed to improved First Due Performance and lower overgoal situations.



Note: Turnout times can be significantly impacted by station design, egress, and other perceptions of the nature of the call.

Figure 5.23: Turnout Times Year-to-date 2023

Travel Time

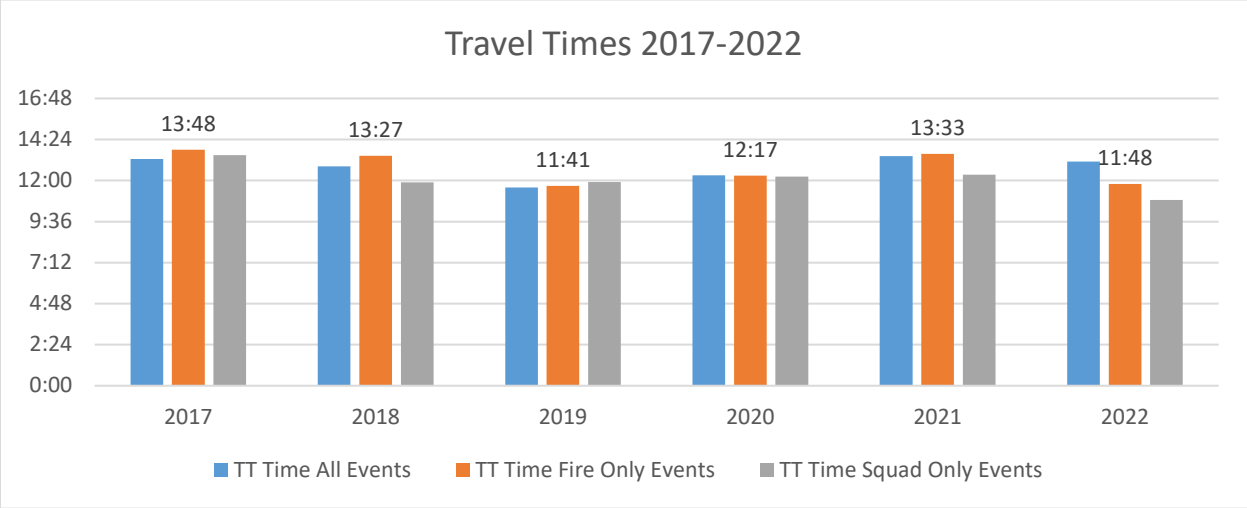
Travel time is sometimes known as drive time. The NFPA 1710 target for travel time of the first due unit to an urban fire event is 240s (i.e., 4 minutes), 90%.

Figure 5.24: Travel Times

	2017	2018	2019	2020	2021	2022
TT Time All Events	13:15	12:50	11:36	12:18	13:26	13:06
TT Time Fire Only Events	13:48	13:27	11:41	12:17	13:33	11:48
TT Time Squad Only Events	13:29	11:53	11:55	12:14	12:21	10:52

Note: Fire only means unknowns, no medical, or medical first response; this includes travel times for squads/engines, towers, tankers and brush trucks.

Table 5.12: Travel Times



Note: Travel times for towers, tankers and brush trucks tend to be longer given the apparatus size and/or distribution of these resources.

Figure 5.25: Travel Times

The above reflects significant travel times for events. This is attributed to the distribution and deployment of resources such as station locations, call volumes, available resources, and the distance travelled from available resources to a call.

Given some data access and provision constraints with Alberta Health Services, a detailed breakdown of travel time for ambulance units is not known.

Darkhorse uses a method of modelling the probability within the target travel time being achieved and using that to inform the influence of travel time on overall total response time and overgoal analysis.

Total Response Time

Total response time includes call handling time, turnout time, and travel time. The current target in the County is 8 minutes for urban areas and 17 minutes for rural areas. It is important to distinguish the minor difference between Total Response Time and First Due Time. The latter does not include Call Answer Time.

Alberta Building Code

The Alberta Building Code has a requirement for fire department response time as a condition of building construction. The requirement is a total response time less than 10 minutes by the municipality or additional fire protection measures (e.g., spatial separation, sprinklers) to slow the spread of fire and before the event becomes a high intensity residential fire (HIRF).

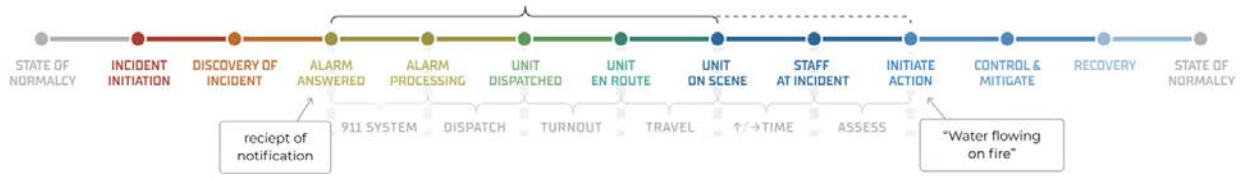


Figure 5.26: Alberta Building Code Requirement

First Due Unit Performance

First due unit is the time it takes following a 9-1-1 call answer for the first capable unit to arrive on scene. While there may be additional apparatus dispatched, this first due unit is often able to initiate some level of intervention or assessment.

NFPA first due unit performance also known as total response time for the first arriving fire apparatus is 6m20s or 380s, 90% for urban service areas.

Historically, SCES has used an 8m or 480s, 90% urban performance target and a 17m or 1,020s, 90% for rural performance target. Associated with the first due response is travel time which has a 4m or 480s, 90% urban performance target. Rural travel time is understandably much longer.

The following reflects how NFPA 1710 targets might be represented for first due:

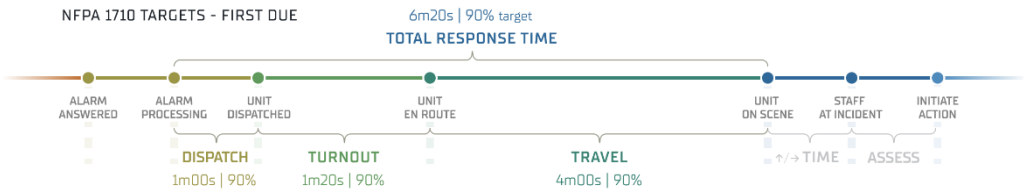


Figure 5.27: First Due Unit Measure

The following reflects the first due unit configuration of 4 firefighters to fire events:

Figure 5.28: First Due Unit Configuration

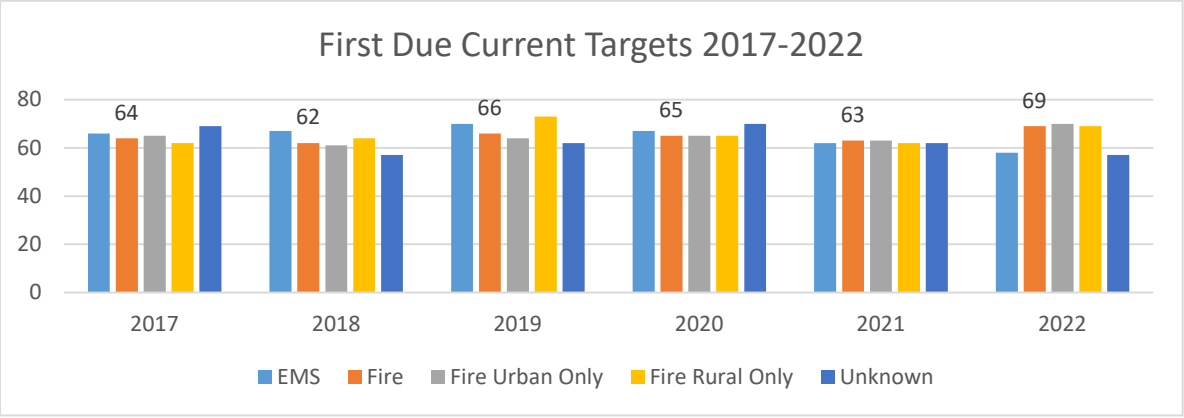


Figure 5.29: First Due Unit Performance using Current Targets

The above historical performance of first due unit fire event performance based on SCES targets of 8 minutes for urban areas and 17 minutes for rural areas has been in the order of 62-69% over the period 2017-2022.

The following illustrates the SCES performance of first due unit within 6m20s (this does not include Call Answer of ~15s) to an event based on the NFPA urban and rural targets.

	2017	2018	2019	2020	2021	2022
EMS	36	35	38	37	31	30
Fire	42	37	46	42	40	48
Fire Urban Only	42	32	41	37	38	46
Fire Rural Only	42	47	45	39	44	52
Unknown	40	35	40	40	42	24
Total	37	37	46	42	40	48

Table 5.12: First Due Unit Performance using NFPA Targets

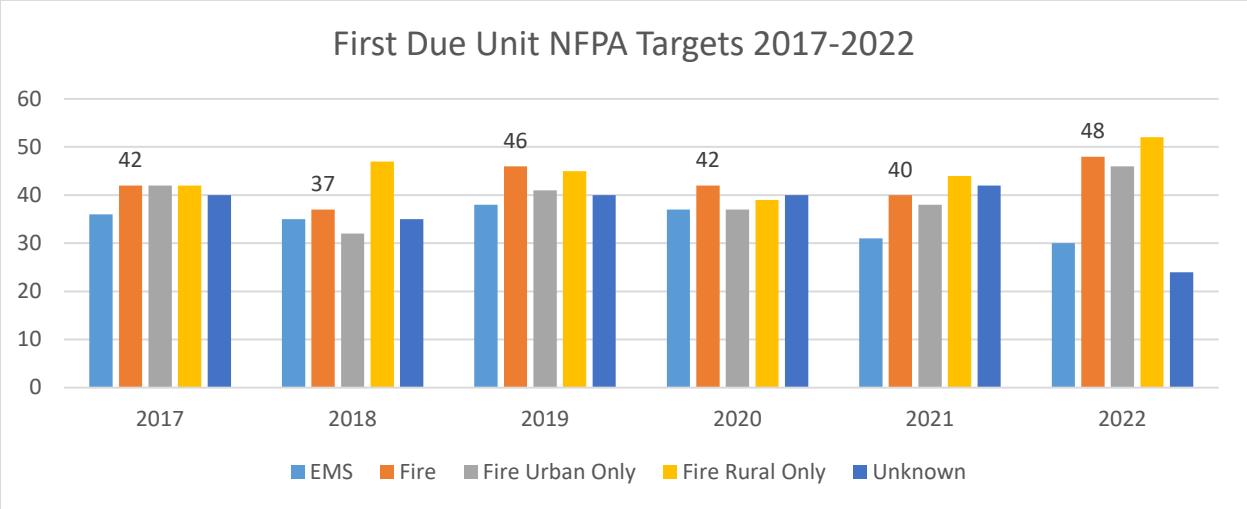


Figure 5.30: First Due Unit Performance using NFPA Targets

The above reflects first due unit performance for fire events based on NFPA targets is 40-48% over the period 2017-2022. This performance is attributed to the distribution and deployment of resources such as station locations, call volumes, available resources, and the distance travelled from available resources to a call. As anticipated first due unit performance for fire events in rural areas is longer given additional factors including part-time stations and rural travel distances.

First Due Unit Overgoals

Examining the root cause for events exceeding their target can provide insight into opportunities for improvement. Responses were defined as overgoal if they were over the targeted 90th percentile time.

The following defines the root cause factors:

- Driving: call location and expected drive time from a station exceeded, potential warning of station locations, traffic controls, obstructions/geography (uses AVL location and available and within first due area)
- Distance: expected drive time high enough on avg day; potential station location
- Busy: vehicle in first due area is busy on a call so response from other first due area
- Assignment: vehicle available in first due area but unit from another area sent

The following Illustrates the root cause logic.

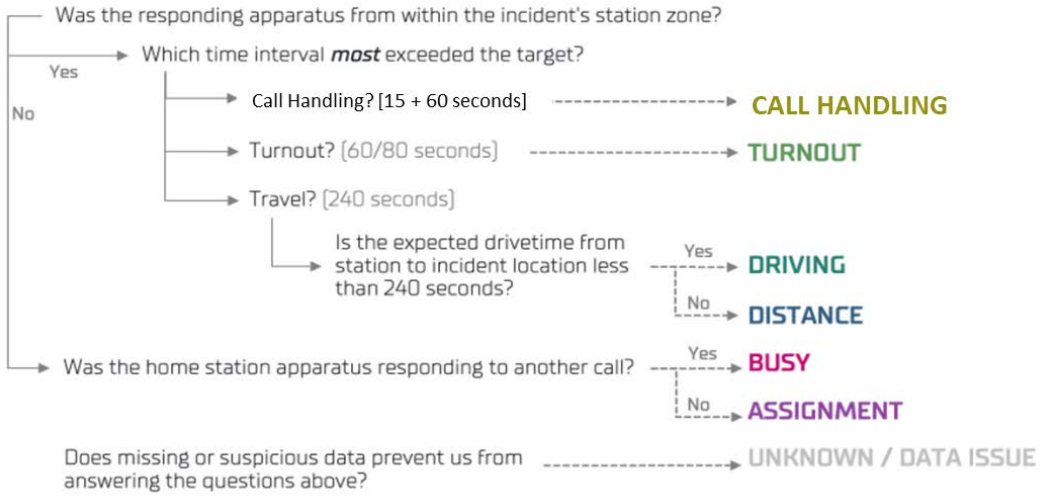


Figure 5.31: Root Cause Types for Overgoals

The logic seeks to identify which factor is the primary contributor to the overgoal performance.

The following Illustrates the overgoal analysis for first due unit from 2017 through 2022 based on NFPA performance targets.

	2017	2018	2019	2020	2021	2022
Call Processing	86	78	74	64	75	64
Turnout	537	522	454	492	471	373
Driving	258	279	252	241	293	227
Distance	182	219	201	162	138	153
Busy	143	157	166	147	232	203
Assignment	986	826	932	1088	1302	1054
Late Dispatch	9	7	10	8	8	5
Unknown	330	243	275	240	217	330
Total	2531	2331	2364	2442	2736	2409

Note: These overgoals are for first due for fire, EMS and unknown events

Table 5.14: First Unit Due Performance Overgoals

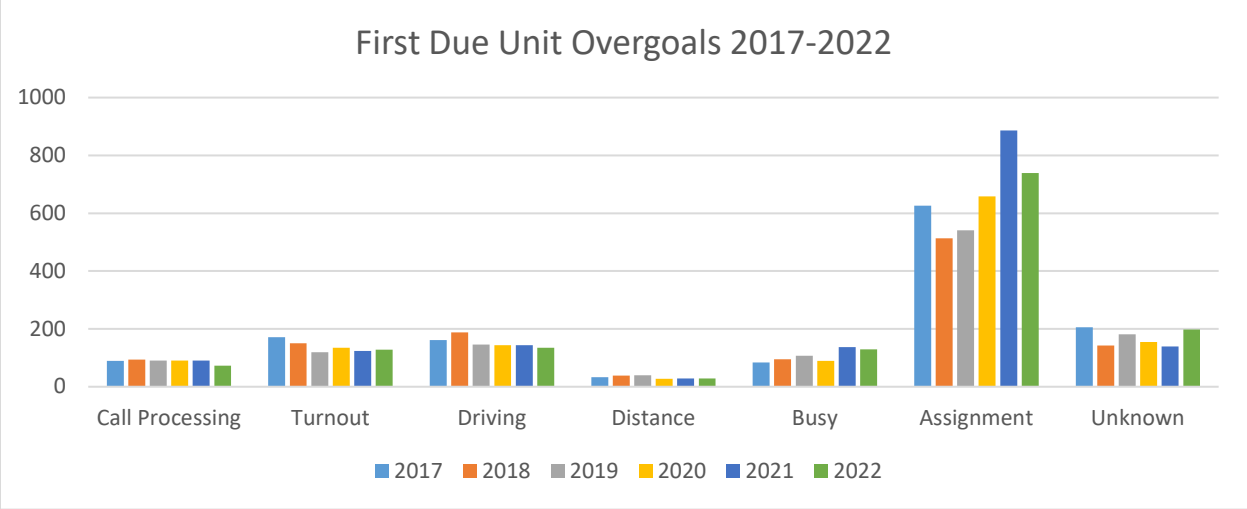


Figure 5.32: First Due Unit Overgoals

The above reflects the variety of contributing root cause factors for events where the performance target of 6m20s was not achieved. Overgoal events due to events means the unit normally assigned to respond was not within the area (e.g., fire zone).

The overgoal analysis suggests significant opportunity exists to further understand the overgoal factors and what improvements can be made to mitigating same.

Effective Response Force Performance

Effective response force (ERF), also known as the concentration of resources, represents the time it takes for the appropriate number of firefighters to arrive at the scene of a structure fire. Due to the nature of firefighting, a certain number of firefighters are required before engaging in active fire suppression or rescue. Without an effective response force, the risk to firefighters increases to unacceptable levels and the time to effective intervention may be increased.

Appropriately, NFPA effective response force has discreet performance targets for low, medium, and high-hazard building types of occupancies. Each of these hazard scenarios have major implications for time to intervention, firefighter safety, and critical tasking. Low-hazard (e.g., residential structure fire, no exposures, no basement) NFPA ERF performance is 16 or 17FF (firefighters) 10m 10s or 610s, 90%. Medium-hazard (e.g., commercial) occupancies require 28FF within the target and high-hazard (e.g., high-rise) occupancies require 43FF within the target.

Few municipalities are in a position to deploy on-duty firefighters to accomplish the required ERF for medium-hazard and high-hazard incidents without call backs of off-duty full-time staff, use of part-time staff, and/or mutual aid supports from other jurisdictions.

The following reflects how NFPA 1710 targets might be represented for effective response force for an urban low-hazard occupancy (e.g., residential structure fire).

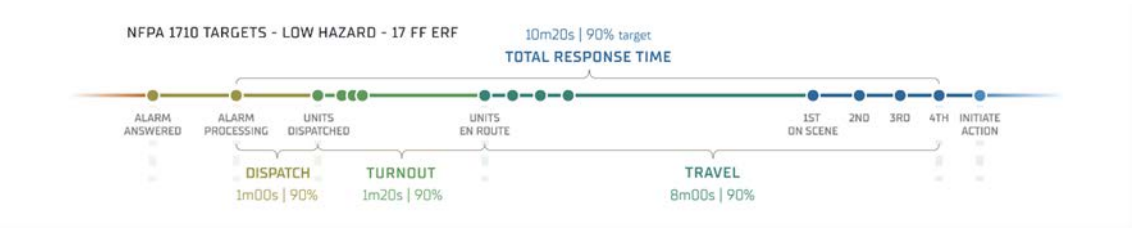


Figure 5.33: Effective Response Force Measure (Urban Areas)

SCES is currently striving toward an Effective Response Force (ERF) of 16 firefighters on scene to low-hazard residential structure fires. The current strategy is to use three fire apparatus each with 4 firefighters, meaning all three current full-time stations supported by 1 or 2 ambulance units with cross-trained firefighters and/or other responding apparatus (e.g., tankers, towers). This strategy assumes the availability of cross-trained ambulance units and staff and/or additional staffing for tankers and towers.

The following illustrates the current ERF configuration for an urban low-hazard event:

Figure 5.34: Current Configuration Effective Response Force (Urban Low-Hazard)

The following illustrates the current ERF configuration for a rural low-hazard event:

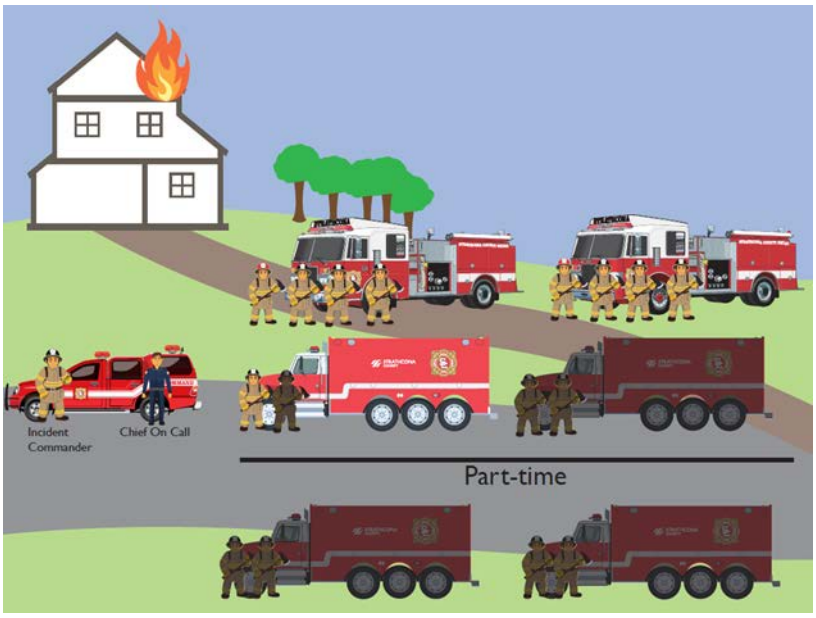


Figure 5.35: Current Configuration Effective Response Force (Rural Low-Hazard)

Although atypical, SCES tracks ERF for non-structure fires including motor vehicle accidents and other events requiring more than one apparatus.

The following illustrates the SCES effective response force performance for low-hazard fire events based on the current target of 12 firefighters:

	2017	2018	2019	2020	2021	2022
Urban	71	67	72	64	67	-
Rural	37	61	33	50	68	-

Table 5.15: Effective Response Performance using Current Targets

The above reflects a reasonable achievement of ERF based on current targets; however, that ERF performance for low-hazard (e.g., single residential structure fire) drops to less than 5% based on NFPA targets given the requirement for 16 firefighters or 17 firefighters with a tower or aerial.

Section 6: Overview of Compliance Methodology

Quality Management

SCES has a robust commitment to measuring performance through numerous quality management initiatives, analysis, and regular reporting.

The following identify quality management initiatives currently used by SCES:

- International Standards Organization (ISO) 9001 Certification supported by annual external audits.
- Accreditation Canada Qmentum Program EMS and Interfacility Transport supported by regular audits.
- Emergency Communications Centre Quality Assurance Plan (QAP) supported by Quality Manual, Standard Operating Procedure #307 and #307A, and annual internal reviews.
- Alberta Safety Codes Council, Quality Management Plan for various disciplines including fire, prepared annually, reviewed annually through internal reviews, and reviewed by the Safety Codes Council.
- Fire Underwriters Survey (FUS) completed on an ad hoc basis. The most recent FUS were completed in 1989 and 2011. A comprehensive FUS has not been completed to-date.
- Accredited Superior Tanker Shuttle Service through FUS

NFPA Standards

Key National Fire Protection Association (NFPA) standards that SCES is either pursuing or has considered include:

- NFPA 1300 (Community Risk)
- NFPA 1001 (Firefighter Level I and II)
- NFPA 1006 (Technical Rescue)
- NFPA 1021 (Fire Officers)
- NFPA 1041 (Instructor)
- NFPA 1521 (Fire Safety Officer)
- NFPA 1730 (Fire Prevention/Inspection)
- NFPA 1620 (Pre-Incident Planning)
- NFPA 1001 (Firefighters)
- NFPA 1500 (Occupational Health and Safety)
- NFPA 1225 (Emergency Communications)

- NFPA 1710 (Urban Operations)
- NFPA 1720 (Rural Operations)

Other Standards and Guidance

Today SCES leverages numerous standards, guidelines and practices to contribute to service excellence including:

- National and Alberta Edition Building Code
- National and Alberta Edition Fire Code
- Government of Alberta 9-1-1 Standard (Emergency Communications)
- International Association of Emergency Dispatch
- Canadian Standards Association (CSA):
    a. CSA Z1600 Emergency & Continuity Management)
    b. CSA Z767 (Process Safety)
- Incident Command System (Emergency Management)
- Blue Card Command (Fireground Communications)

Reporting

That Standards of Cover 2012 document recommended the following performance elements:

- Call-processing (related to dispatching of resources)
- Turn-out time (related to activation of resources in stations)
- Distribution of resources (related to response times)
- Concentration of resources (related to the capacity for an effective response)

SCES does not regularly report call processing times nor turn-out times at a community-level. The distribution of resources has to date been reported in terms of call answer, call transfer, total response time, urban/rural first due unit performance. The concentration of resources has been reported in terms of urban/rural effective response force performance.

The following identify some of the performance analysis and regular reporting completed by SCES:

- Analysis by Darkhorse Analytics regarding emergency response data from the Fire Data Management (FDM) system into the Darkhorse Engine
- Regular internal reporting to Deputy Chiefs and the Fire Chief
- Regular external reporting to:
    - Council and Executive Team
    - Alberta Health related to ambulance services agreement

- Government of Alberta related to the PSAP grant agreement
- Regular reporting to Alberta Municipal Affairs regarding fire cause and fire loss
- Alberta Emergency Management Agency regarding emergency management (LEMR)

Section 7: Overview of Community Risk

The following section provides an overview of community risk. Detailed findings can be reviewed in the Community Risk Assessment (CRA) Final Report (May 2022).

The CRA informs response standards, performance objectives, deployment strategies and other service level criteria addressed in this SOC document.

Risk Profiles

The Community Risk Assessment considered nine risk profiles identified through the principles of NFPA 1300:

1. **Geography**
2. **Demographic**
3. **Economic**
4. **Building Stock**
5. **Hazards**
6. Critical Infrastructure Systems
7. Public Safety and Response Agencies
8. Community Services and Supports
9. **Past Loss and Event History**

Based on data availability, the 2022 CRA focused on those profiles highlighted in bold above. Some elements of geography and critical infrastructure were incorporated into the analysis.

Key Findings

Community risk is described in greater detail in the 2022 Community Risk Assessment report. The following are highlights from that report.

Some of the key community risks the County and SCES face today include:

- Large urban and rural service areas
- Emergency call demands especially for EMS and ambulance
- Aging population and changing demographics
- Significant heavy industrial areas
- Numerous industrial and commercial occupancies, especially those with hazardous materials
- Petrochemical transportation and storage
- Consequences of economic disruption and or loss

- Nature and number of critical infrastructures
- Wildland interface fires

For the County and SCES, some specific challenges going forward include:

- Anticipated growth over next 10-20 years especially with new urban growth nodes
- Need for new stations with staffing and apparatus
- Increase in call volumes
- Staff wellness, life balance and occupational stress
- Workforce planning and training
- Unit utilization and deployment of resources based on actual risk and call volumes

The following are the key community risk types identified in the Community Risk Assessment (2022):

- Major or heavy industrial areas
- Hazardous materials storage (e.g., sites, tanks)
- Call volumes and types (e.g., EMS calls)
- Response distances
- Petrochemical transport (e.g., road, rail)
- High-hazard occupancies (e.g., high-rise, high-capacity)
- Medium-hazard occupancies (e.g., mid-rise, commercial, general industrial)
- Wildland urban interface fires

The following is some important context for the community risk assessment:

- In 2016, the County and SCES provided significant mutual aid and community reception support for the Fort McMurray Fires over many months.
- In 2018, the County and SCES experienced one of the most significant major incidents in its recent history, the Parkade Incident at the Community Centre resulting in some community-wide disruptions and additional consequences.
- During all of 2020 and 2021, SCES has like all jurisdictions, responded to service needs while in the midst of the most significant pandemic, COVID-19, in the last century.
- Community risk data, availability and use remain a challenge.

Section 8: Observations and Analysis

Community Served

The County has experienced significant growth in population and employment since the last and initial Master Plan and Standards of Cover in 2012.

SCES call volumes now exceed 12,500 single incidents or events, some requiring multiple apparatus deployments which now exceeding 16,000 responses. These volumes do not include response by non-County AHS ambulances related to EMS needs within the County. There are additionally numerous in-zone and out-of-zone responses related to fire and emergency management mutual aid.

The build-out of Cambrian is underway and planning is underway for development in Bremner. Growth in each of these urban-like developments in the rural service area along with continuing growth in the existing urban services area will place increased demands on SCES.

Over the next 25 years the population will grow by an estimated 60%, emergency call volume will likely double. Employment areas for industry and commercial developments will also influence risk in the community.

Services Provided

The SCES profile has not dramatically changed during the last 10 years with the public facing services of fire suppressions, fire rescue, and emergency medical services including ambulance services, emergency management and prevention and inspections still being provided.

In 2013, Station 6 opened adding an additional full-time response location and adding additional capacity primarily for the urban service area.

Since 2013, some key internal organizational changes have included:

- Emergency management and fire prevention, inspections, and education consolidated into the Community Safety division
- Emergency communications and business operations consolidated under the Strategic Services division
- Fire suppression, fire rescue and emergency medical services including ambulance services still within the Operations division.
- Quality management migrated under the Fire Chief

The departmental budget net operating budget has increased from ~$16.4 million 2012 net operating budget to ~$31.4 million in 2023 net operating budget.

Community Expectations and Performance Goals

The County expectations of SCES have remained relatively consistent since 2012-13, that being to provide the best possible service within fiscal realities.

The Standards of Cover 2012 characterized the community expectations as per the following summaries:

1. "Fire suppression – SCES shall arrive in a timely manner with sufficient resources …"
2. "Fire Rescue – SCES shall arrive in a timely manner with sufficient training and equipped personnel … to stabilize the situation …"
3. "Emergency Medical Services – SCES shall arrive in a timely manner with sufficient training and equipped personnel … to stabilize the situation … provide care and support to (patients) …"

The current and future community expectations will be consistent with the above. However, there is and will be an expectation that performance goals are optimized and keep pace with future growth.

Historical Performance

SCES has performed reasonably well given the past 10 years of growth.

The Standards of Cover 2012 and Master Plan 2012 identified the total event volume in 2011 as ~5,900 events with ambulance responses as having a small increase from years prior to 2011 while rescue calls increased moderately from previous years.

Since 2017 through 2022, the call volume or service events have increased by 62% and now exceed 12,000 events per year. One example is the significant increase in 2022 EMS events, ambulances responding out-of-zone or outside the County to medical events accounted for almost the entire call volume or total events in 2011.

Most recently, demands on EMS have been significant and placed a significant stress on the system. This has resulted in a Council decision (December 2021) to add 12 additional firefighters (came into effect July 2022), primarily to ensure minimum plus staffing can be achieved on a day-to-day basis and reduce overtime costs.

Data and Analytics

A comprehensive and focused effort toward the gathering and use of knowledge and analytics to support system performance measurement and reporting should be embraced. These efforts will build on a consistent and industry leading set of principles that ensures data and information are collected across multiple years to identify trends and other causal factors.

SCES leadership will incorporate this knowledge and analytics to inform departmental strategies and service targets and support evidence-based decision-making by the Executive Team and Council.

The following Illustrates areas for future consideration and analysis:

1. A comprehensive, standardized and integrated approach to establishing and measuring service targets and levels

2. Clear and concise community level performance reporting supported by a performance dashboard at a departmental and division/branch level
3. A current and future state deployment study including both current and future stations, apparatus and staffing configurations and alternate peak-demand strategies
4. A fire station optimization review to ensure the design and layout optimizes safety, egress and ultimately turnout times
5. Given the growth and nature of structures within the County, we recommend aligning with the NFPA low hazard target of 17 firefighters with a plan to eventually meet the medium hazard target of 28 firefighters.
    - When looking at structure fires in the County – even assuming a low-risk response – SCES will struggle to field an ERF in a timely manner without additional resources. Currently, the service aims to respond to structure fires with an effective force of 16 firefighters. However, the availability of 17 firefighters either requires all four full-time stations are available and responding to an event and/or three full-time stations with cross-trained firefighters on ambulances, assuming they are available.
6. Either scenario places additional risk on the County in that no or limited units are available to respond to a second and or more calls at the same time as the structure fire. Furthermore, it is difficult to find sufficient off-duty staff to backfill operations during incidents.
7. Unit availability is a major issue hindering SCES response performance. Distance issues are the second main issue facing the County. To address this, we recommend in the near term that SCES staff at least one fire unit for all or peak hours of the day. This will deal with the depth of coverage needed in the Sherwood Park urban area and bring the service more in line with a capability at an ERF for low hazard structure fires. This will also improve First Due Unit performance for fire calls.
8. The addition of a new full-time station (e.g., #7) is anticipated to improve the ERF performance. It also sets the stage for SCES to begin effectively dealing with medium hazard incidents that occur in multi-family dwellings and require a much larger response. Effectively, these changes will allow SCES to address structure fires in the busiest areas of the County in a timely manner while also providing some coverage during simultaneous events.
9. An In-county fire training centre would be a huge value by allowing on-shift training that contributes to the high standards accepted of firefighters and increased likelihood of a fire unit being available within the County versus out of County training locations.

Compliance Methodology

The compliance methodology is an analysis of those activities performed on a regular basis to ensure system performance is where it is expected and is providing value to the County.

In the Standards of Cover 2013, the compliance methodologies provided were based on:

- Consistency of processes
- Comprehensive processes
- Data Reliability
- Clear and concise performance measurement and reporting

The current analysis reflects the above remain an area for improvement. Additionally, an analysis of current compliance methodologies has revealed the following strengths:

- Regular quality assurance of emergency communication processes and time intervals
- Regular reviews of operational incidents including fires
- Regular analysis of staffing and overtime

This analysis has also revealed the following weaknesses, thus opportunities for improvement:

- Need for regular, on-going and standardized community risk assessments
- Need for regular and comprehensive Fire Underwriters Survey
- Need for consistent and easily understood service definitions and service levels
- Need for increased consistency and terminology for key performance indicators for internal and external audiences
- Need for consistent and standardized historical system performance measurement and reporting
- Need for greater detail of well-defined, consistent measuring and reporting of operations or emergency response performance targets
- Need for greater detail of well-defined, consistent measuring and reporting of quality management, strategic services, operations support and community safety performance targets

Departmental-level performance targets and reporting should include sub-components of the divisions so as to represent different functional units or teams (e.g., training, occupational health safety, operations platoons, operations stations).

Performance measurement and reporting should be consistent and standardized including 1) priority of emergency events (versus all events including non-emergency), 2) fire events, 3) medical first response, 4) medical (ambulance) where appropriate.

Going forward, SCES will benefit from enhancing their quality management and service excellence through a more consistent, standardized, and comprehensive performance measurement and reporting.

Community Performance Dashboard

The 2023 Standards of Cover identifies the following performance elements that should be measured and reported at a community-level using the NFPA target and/or the appropriate Government of Alberta 9-1-1 Standard (*).

- Community Safety:
    - Number of public safety engagements
    - Trends in fire inspections and code violations
    - Trends in fire and EMS events per population
    - Trends in structure fires per population
    - Total fire loss, injuries, and other (meaning fatalities) per population
- Operations:
    - Call Handling Time (Emergency calls including High Priority calls)
    - Turnout Time (Emergency calls)
    - Travel Time (emergency calls)
    - First Due Unit % (fire emergency calls for urban and rural service areas)
    - Effective Response Force % (fire emergency calls for urban and rural service areas for low-hazard residential structure fires)
- Operations Support:
    - Number of new firefighters certified
    - Hours completed of legislative or professional required training
- Strategic Services:
    - Number and type of mutual aid and other agreements updated
- Quality Management:
    - Number and type of audits and reviews completed
    - Status of all major accreditations and legislative or contractual related requirements completed (e.g., Mutual Aid Agreements, Alberta Health Services)

The following is a sample dashboard, that will need to be redesigned to ensure community-level data is consistent, accessible, and easy to understand:

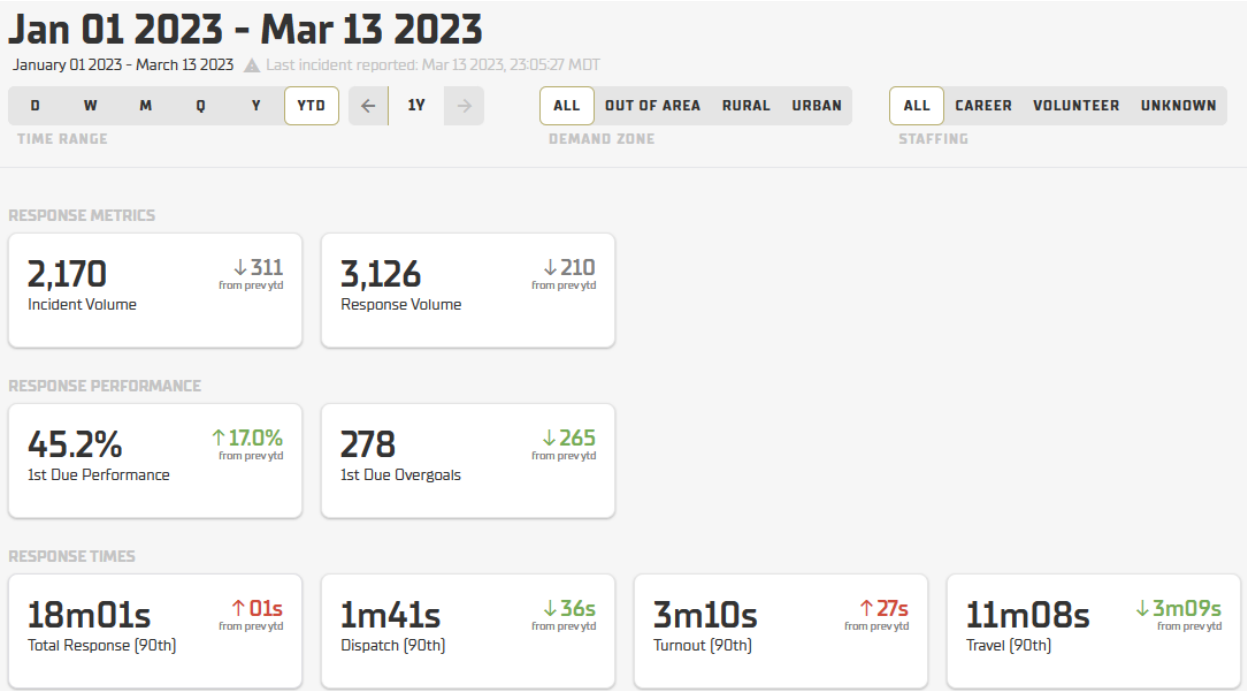


Figure 8.1: Sample Performance Dashboard

Departmental Performance Dashboard

The 2023 Standards of Cover identifies the following performance elements that should be measured and reported at a Department-level using the NFPA target and/or the appropriate Government of Alberta 9-1-1 Standard (*).

- Community Safety:
    - % of community contacted for specific satisfaction or public feedback surveys including emergency management
    - Number and type of public safety engagements
    - Number and type of industry specific engagements
    - Number and type of plan reviews
    - Number and type of exercises completed and reviewed including with partnerships
    - Number of fire inspections including by major occupancy classifications and fire zones
    - Number of code violations including by major occupancy classifications and fire zones

  - Total fire loss, injuries, and other including details for fire zones, stations, and platoons
  - # and subtypes of structure fires including details for fire zones, stations, and platoons
  - # and subtypes fire and EMS events including details for fire zones, stations, and platoons
- Operations:
  - Number and type of pre-incident plan reviews
  - Turnout Time (Emergency calls including by station, platoon, apparatus and event type)
  - Travel Time (Emergency calls including by station, platoon, apparatus, and event type)
  - First Due Unit % (fire emergency calls for urban and rural service areas including by fire/EMS subtypes)
  - Effective Response Force % (fire emergency calls for urban and rural service areas for low-medium, and high-hazard events)
- Operations Support:
  - Number of new firefighters certified
  - Hours completed of legislative or professional required training including by sub-types
  - Number of and estimated hours of on-scene supports including rehab and other
  - Number of OHS incidents by nature and type
  - Number of equipment inspected
- Strategic Services:
  - Call Answer Time
  - Call Transfer Time
  - Call Handling Time (Emergency calls including High Priority calls)
  - Number and type of mutual aid and other agreements updated
  - Budget and actual expenditures and revenue
  - Trend in overtime hours
- Quality Management:
  - Number and type of audits and reviews completed
  - Status of all major accreditations and legislative or contractual related requirements completed (e.g., Mutual Aid Agreements, Alberta Health Services)

The intent of the above is for the department to be much more aware of the desired performance, performance targets, and achievement of results toward public safety.

Community Risk Reduction

The County is growing quickly. Within the next twenty years there will be major increases in population, employment, urban footprint, industrial facilities and vehicle traffic. Together, these will lead to more emergency incidents and more and changing risk. The maps below show the expected growth in emergency calls and the decline in response performance that can be expected in the area around Sherwood Park.

Fire and emergency services have in recent years taken a broader view of their role in protecting their communities. The focus of fire and emergency services has moved from emergency response being the first line of defence to a more balanced suite of proactive, preventative and mitigation activities. The Five E's of Community Risk Reduction framework is the culmination of this new and innovative thinking.

Managing risk is more than emergency response.

Current and future community risk is mitigated by a whole of community approach to Community Risk Reduction (CRR). It is noted the department is already performing many elements of community risk reduction. Going forward this approach must be expanded, standardized, and integrated in daily planning and decision-making.

This modern framework for community risk reduction has built on a precursor risk reduction model known in fire services as the Three Lines of Defense – Enforcement, Education, Emergency Response.

Figure 8.2: Five E's of Community Risk Reduction

The Five E's of Community Risk Reduction activities are:

- **Education –** contribute toward public and stakeholder awareness of risks (e.g., fires, falls) and how to mitigate those risks.
- **Engineering –** provides an opportunity to work with local organizations and government to promote new fire safety technologies in our community.
- **Enforcement –** identifies potential risks and non-compliance in local properties and teaches our community how fire safety codes protect them.
- **Economic incentives –** are useful to encourage individuals and businesses to make choices that reduce risk.
- **Emergency response –** protects our community and our firefighters by ensuring they have the equipment, apparatus, and training they need.

The Five Es framework is intended as the primary "solutions toolbox" for the County to transform community risk reduction in the future. A whole of community, data-driven process will ensure the changes needed across the County for community risk reduction can occur including its influence on reinvention of the SCES.

Community risk reduction is not just the responsibility of SCES. Rather, it requires a whole of community approach. That means all County departments working with citizens, business, industry and other community partners need to be involved in and contribute information toward a CRA. This "whole of community" approach should include regional, industry and community partners.

Further, those efforts need to result in a Community Risk Reduction Plan (CRRP) which provides for the preservation of life, property and the environment, which contributes to the well-being of the community.

What is important to recognize is planning and investments in emergency response should not be the sole community risk reduction strategy. Rather, as demonstrated within the County today, investments in engineering, education, enforcement, and economic incentives must all play an integral role in community risk reduction.

Future Demand Modelling

Appropriate demand forecasting is key to ensure response effectiveness viability over the long term. Service demand follows fluctuations in population. Simply put, where there are people, there will be events requiring emergency services. The department's call volumes and locations (i.e., Station 7 and 8) are predicted to increase in accordance with the current demand locations and population (and employment) growth forecast.

Forecast Population

As the County grows and develops, there will be an increased demand for fire and emergency services. Based on a low-growth scenario, the total population is predicted to be ~132,000 by 2044.

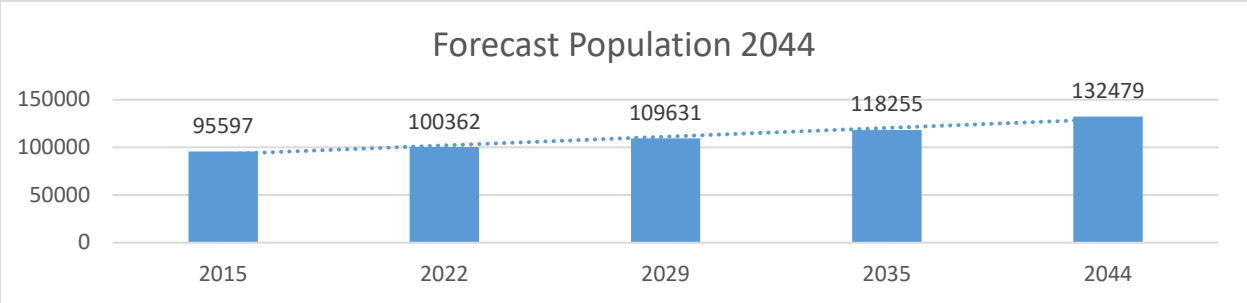


Figure 8.3: Forecast Population 2044

Forecast Employment

As the County grows and develops, there will be an increased demand for fire and emergency services. Based on a low-growth scenario, the total employment is predicted to be ~72,000 by 2044.

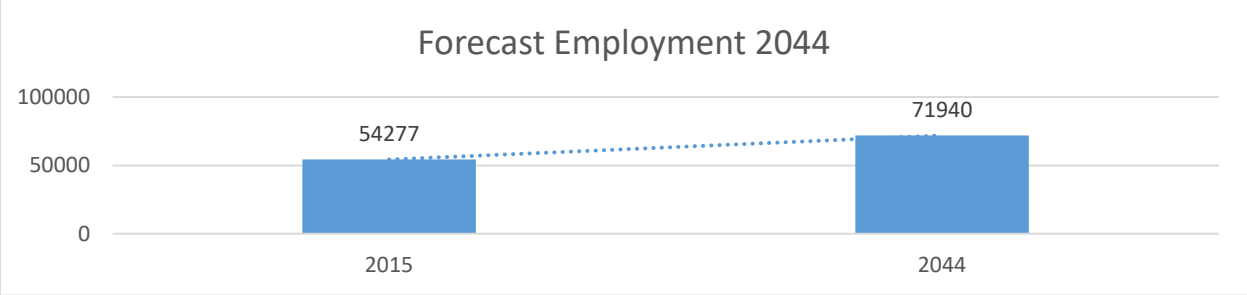


Figure 8.4: Forecast Employment 2044

Forecast Event Volume

As the County grows and develops, there will be an increased demand for fire and emergency services. Based on a low-growth scenario, the total call volume or events is predicted to be ~16,000 by 2044.

	2017	2018	2019	2020	2021	2022	2044
Fire (All)	1141	1262	1226	1177	1429	1556	2099
EMS (All)	6159	6598	6964	7260	9362	10063	13457
Unknown (All)	206	33	100	95	203	567	435
Total (All)	7506	7893	8290	8532	10994	12186	15991

Table 8.1: Forecast Call Volume 2044

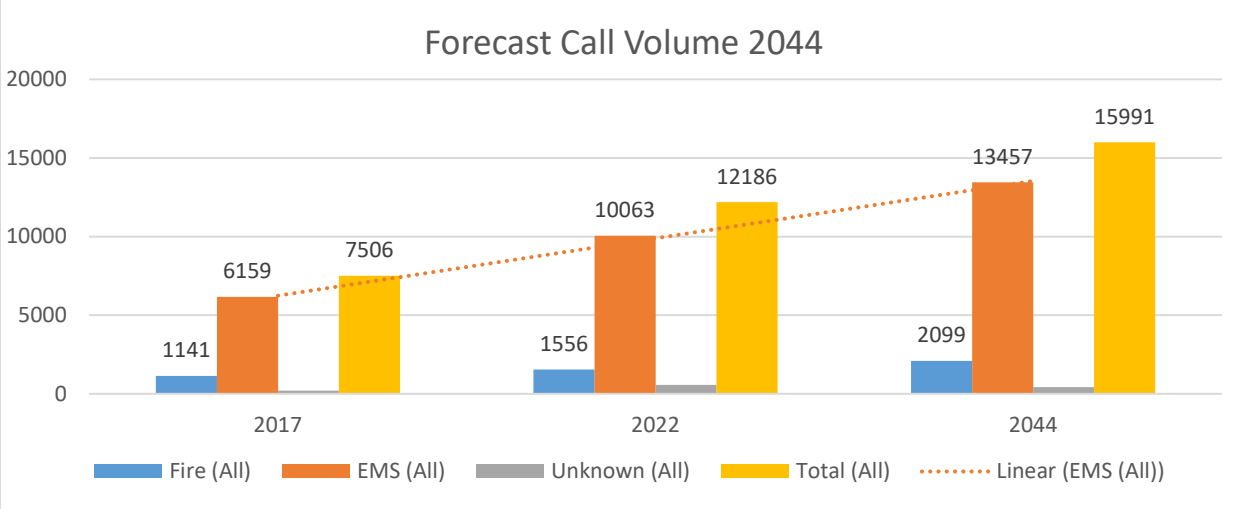


Figure 8.5: Forecast Event Volume 2044

Future First Due

While still below NFPA targets, with near-term and mid-term operational improvements to call processing and turnout times (e.g., 30s each), supported by the existing station infrastructure and above minimum staffing, first due performance (NFPA 6m20s) in the Sherwood Park area can be improved by up to 8%.

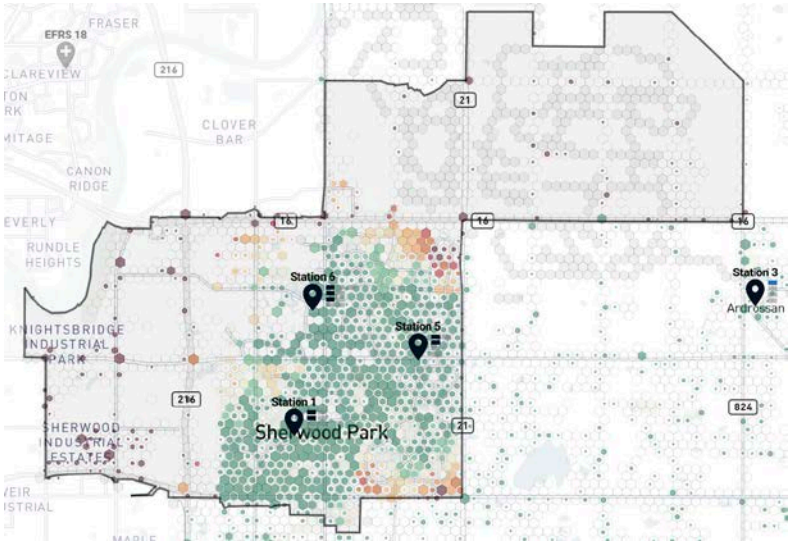


Figure 8.6: Future First Due Performance (All Events)

With no additional improvements beyond the above and with forecast growth (e.g., Cambrian) by 2044, first due performance in that growth area will erode and remain far below NFPA targets.

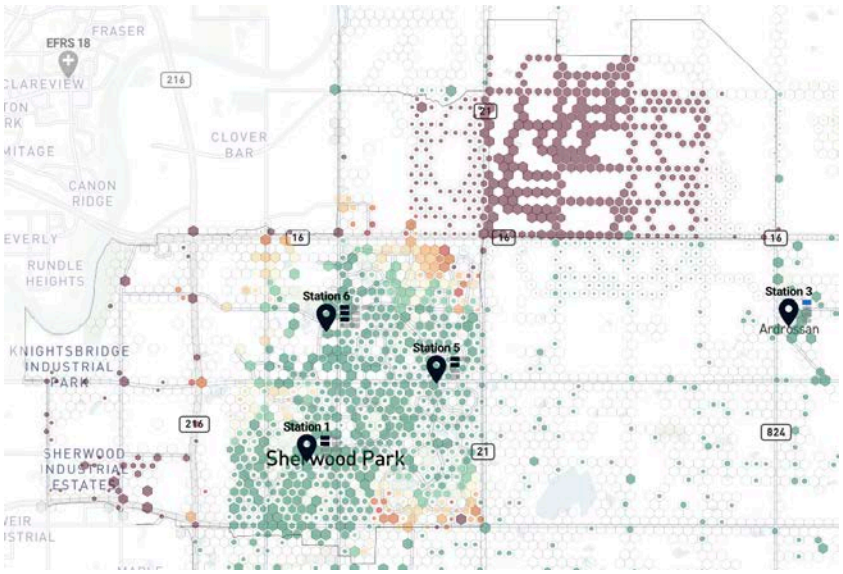


Figure 8.7: Future First Due in Growth Area (All Events)

Interventions to mitigate both current demand and future growth are required. Two and possibly three new stations will be needed to meet the growing demand, risk and service area for Cambrian and Bremner by 2044.

Future Effective Response Force

The move from 12 to 16 or 17 firefighters as the standard response to structure fires is a significant investment. But it is necessary given the densification, growing risk and increasing multi-family dwellings in the County.

The current staffing is only able to meet the NFPA low hazard ERF standard (16 firefighters, 10m20s) less than 6% of the time in urban areas and that assumes two ambulances with cross-trained firefighters are available to be on-scene to support the first three fire apparatus. This will be exacerbated as the County grows.

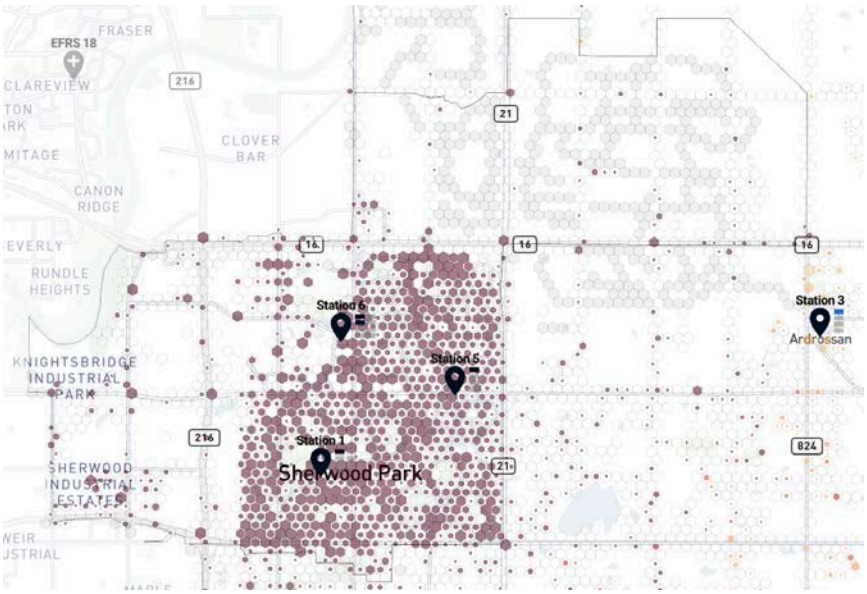


Figure 8.8: Current ERF Performance to Low-Hazard Fire Events

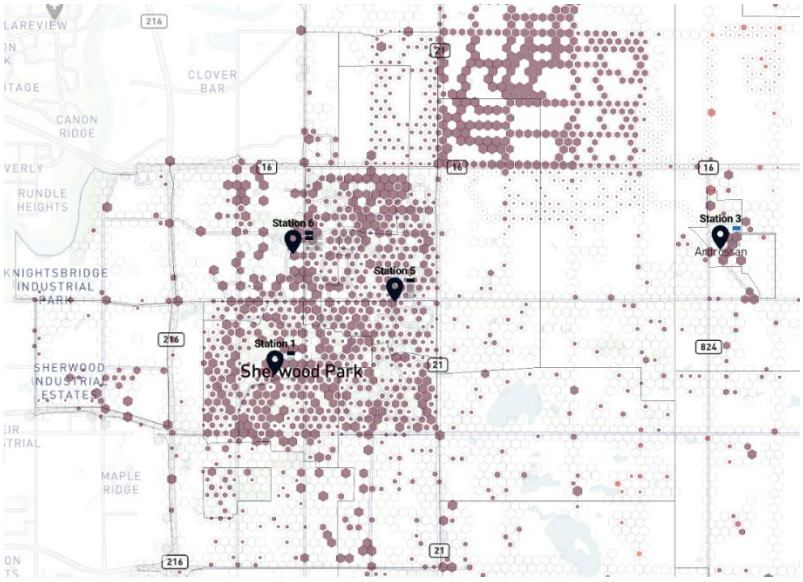


Figure 8.9: Future ERF Performance to Low-Hazard Fire Events

In the future, SCES will need more stations and crews. To realize a 50% ERF performance based on the NFPA target, daily staffing for at least one additional squad will be needed within Sherwood Park proper. Given that the department has additional spare apparatus, investment in staffing may be the a near-term or mid-term solution.

Going forward, the department should be utilizing a 1.5 ratio for calculating the staffing requirements versus the current ratio of 1.25. This means that for one squad with 4 firefighters across 4 platoons, 24 full-time equivalents of staffing budget are required.

The associated Master Plan 2023 recommends a station and deployment study be conducted to inform resource decision-making.

Scenario Modeling

Scenario modelling is used to investigate possible strategies to increase First Due and Effective Response Force performance. The scenario considers interventions based on current and future call volume. The Darkhorse method is a probabilistic approach of determining response drive times and performance both now (e.g., improve call handling) and in the future (e.g., add fire stations to growth development areas).

We determine the impact of future interventions and forecast those interventions into a scenario with consideration to the following:

- Most likely route travelled for all emergency responses in the dataset using standard routing methods.
- Model average travel time as a function of distance using historical actuals in each fire zone.
- Model variability as a function of average travel time in each fire zone.

The overarching goal is to explore resource deployment options to increase response performance for both First Due and the 17FF ERF, towards attaining the targeted time 90% of the time. As part of this endeavor, we tested several interventions to see which changes to station configuration, deployment, or staffing would have the greatest positive impact.

For the scenarios, we focused the future event demand derived from the 2044 population forecast.

The series of interventions represents our recommended scenario for 2044 and include interventions that may be made during the life of this Master Plan. It provides the best combination of performance improvement and risk reduction while respecting the fiscal realities facing the County.

The following are potential initial interventions:

Intervention	Description	Objective
A	Reduce Call Handling time by 30s	Improve overall first due and ERF performance
B	Reduce Turnout time by 30s	Improve overall first due and ERF performance
C	Add daytime unit to Station 6	Improve ERF performance in urban area
D	Move Squad from Station 4 to 6	Improve ERF performance in urban area

Table 8.2: Initial Interventions

The following are potential future interventions after the above:

Intervention	Description	Objective
E	Add Station 7 (Cambrian)	Improve overall first due and ERF performance
F	Add Station 4 (Bremner)	Improve overall first due and ERF performance

Table 8.3: Future Interventions

The following illustrates current (2022) and forecast future (2044) first due performance and potential performance improvement with specific resource interventions.

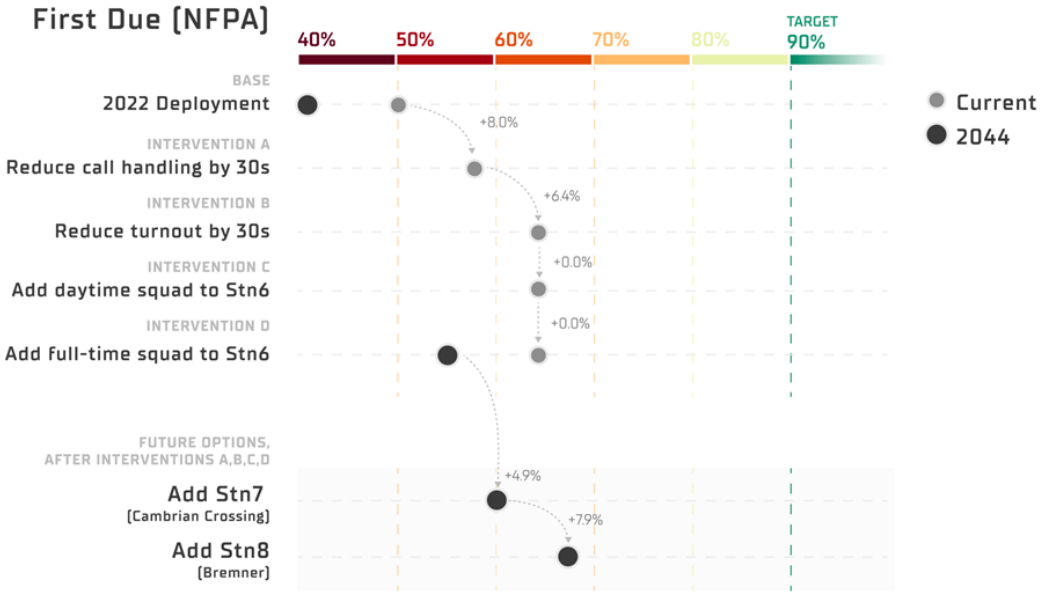


Figure 8.10: First Due Performance (Fire Events) with Interventions

Analysis:

The above interventions illustrate that improvements to call processing (Intervention A) and turnout times (Intervention B) can have a significant positive impact on overall first due performance and provides a significant contribution to public value without the need for investment in "brick and mortar" stations, apparatus, and staffing.

These interventions would bring SCES in closer alignment to industry good practices for first due performance, now and in the future. While an ideal future is meeting the NFPA performance targets, this is not reasonable nor expected given fiscal realities. Rather, the targets set a clear path toward continuous improvement. These improvements will contribute to community risk reduction and a safer community.

However, that being said growth will bring new challenges including increased call volumes, longer drive times, and changing risk. Eventually, the County needs to build new fire stations, an investment that is already recognized by senior decision-makers.

These interventions bring the department in closer alignment to industry good practice for first due performance, now and in the future.

The following illustrates current (2022) and forecast future (2044) effective response force performance and potential performance improvement with specific resource interventions.

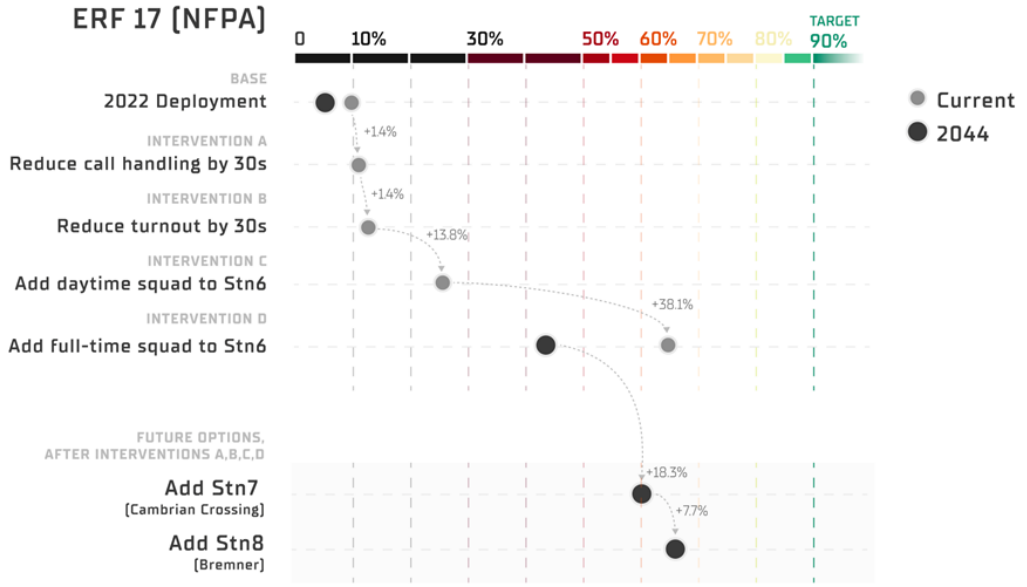


Figure 8.11: Effective Response Force Performance (Fire Events) with Interventions

Analysis:

The above interventions illustrate that additional resources (Intervention C and D) can have a significant positive impact on effective response force performance and provides a contribution to public value without the need for investment in "brick and mortar" stations.

While an ideal future would see an effective response force performance at the target level for low-hazard (17FF), medium-hazard (28FF), and high-hazard structure fires (43FF), unfortunately, few emergency services organizations have unlimited resources. SCES will need to be innovative while adopting the spirit of the NFPA targets. In the short-term and medium-term, continued use of staffing of tankers and towers, and cross-trained firefighters on ambulances, and Community Response Units can contribute to the capability to have the right capacity of firefighters at major fire events.

However, that being said growth will bring new challenges including increased call volumes, longer drive times, and changing risk. Eventually, the County needs to build new fire stations, with supporting apparatus, equipment, and staffing, an investment that is already recognized by senior decision-makers. These interventions would bring SCES in closer alignment with industry good practices for effective response force performance, now and in the future.

A combination of various interventions could increase current effective response force performance of ~6% to almost 62%! These interventions bring the department in closer alignment to industry good practice for effective response force performance, now and in the future. Thus, if improvements toward the target can be made, this will contribute to community risk reduction and a safer community.

Section 9: Recommendations

SCES has for decades pursued and achieved excellence in many areas of its services. The department has been agile and innovative with strategies and tactics that get the most out of what has been and is now a challenging environment. Going forward those challenges will continue and will require the department to be even more innovative in pursuing excellence and meetings the service needs and expectations of the community.

Recent investments and commitments by the County have been important to support current and future services, community risk, and community growth.

- Enhanced emergency management including business continuity
- Addition of 16 firefighters (i.e., 12 in 2022, 4 in 2023) to support day-to-day staffing needs, reduce overtime costs, and increase the opportunity to have staffing above minimum
- Planning for Station #7 in Cambrian development area
- Planning for Station #8 in the Bremner development area

The following incorporates or consolidates recommendations contained within the Community Risk Assessment report.

Near-Term

In the near term (1-2 years), the focus will be on initiatives that address “low-hanging fruit” while laying the foundation for the future. These recommendations are:

1. Develop and implement a Community Risk Reduction Plan (CRRP).
2. Conduct a comprehensive Fire Underwriters Survey (FUS).
3. Develop and implement a more comprehensive, integrated, and standardized performance dashboard with reporting of a) key community-level performance metrics, and b) detailed departmental-level performance metrics across all divisions based on industry leading practices (e.g., NFPA, CPSE, ISO).
4. Enhance quality management by integrating select principles and criteria of the Centre of Public Safety Excellence (CPSE) and criteria from the Fire Underwriters Survey toward service excellence across the department.
5. Enhance the understanding and use of data analytics and evidence-based decision-making.
6. Establish a Resource Deployment Working Group to evaluate and make recommendations to improve the deployment of resources.
7. Identify and implement improvements, where possible, for emergency response intervals for front-line services for urban and rural service areas toward industry-leading practices including:
    a. Call handling and turnout times reduced by 30 seconds each (e.g., NFPA 1225).

b. First due performance % (NFPA 1710, 1720) by ensuring above minimum manning levels in operations, optimized fire zone dispatching protocol, and improved turn-out processes and/or mechanisms.

c. Effective response force performance % (NFPA 1710, 1720) by optimized use of resources including departmental and regional resources.

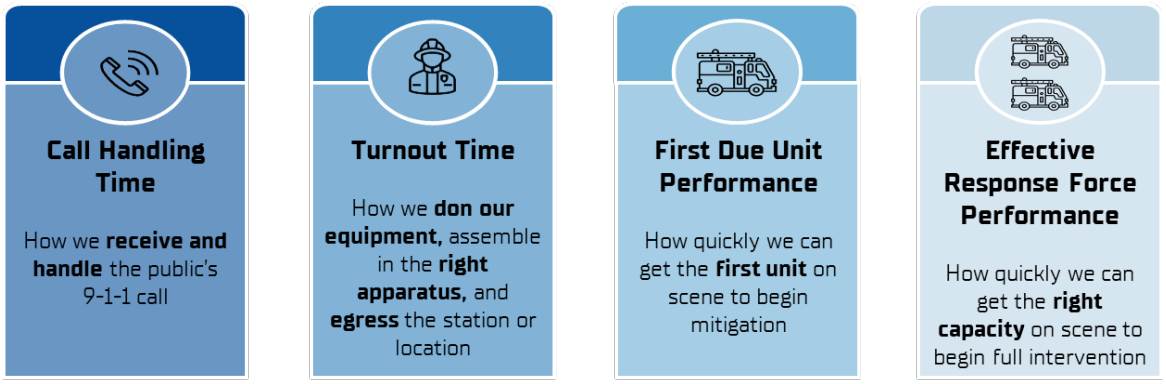


Figure 9.1: Emergency Response Measures

8. Identify and implement improvements, where possible, for community safety through fire prevention, fire inspection, public education, and emergency management, that more closely align with industry-leading practices (e.g., NFPA 1730, 1300, 1500; CSA 1600).

Figure 9.2: Community Safety Measures

Mid-Term

In the mid-term (3-5 years) SCES will begin investing in the resources and systems needed to address the growth and changing nature of the community. These recommendations are:

9. Identify the operational and financial strategies, using the 5E's framework for community risk reduction, that mitigate community risk, improve service performance, and enhance the effectiveness of the department including:
    a. Conduct a rural response study designed to determine the role and contributions of the part-time stations and firefighters.
    a. Conduct a comprehensive deployment modeling study.
    b. Optimize on-duty training for operations and non-operations staff including options for an in-County training centre.
    c. Increase operations capacity including through new fire stations, apparatus, equipment, and firefighters including modeling optimal locations for future fire stations #7 and #8.
    d. Expand the management, administration, community safety, and operations support required for a larger department and increased operations.
10. Continue to identify and implement improvements, where possible, for emergency response intervals for front-line services for urban and rural service areas toward industry-leading practices including:
    a. Call handling reduced by 20 seconds and turnout times reduced by 30 seconds (e.g., NFPA 1225).
    b. First due performance % (NFPA 1710, 1720).
    c. Effective response force performance % (NFPA 1710, 1720).
11. Continue to update the Fire Underwriters Survey (e.g., every 3-5 years).

Longer-Term

In the longer-term (6-12 years) Strathcona County Emergency Services will continue investing in the resources and systems needed to address the growth and changing nature of the community. These recommendations are:

12. Implement the operational and financial strategies, using the 5E's framework for community risk reduction, that mitigate community risk, improve service performance, and enhance the effectiveness of the department including:

    a. Optimize distribution and concentration of resources.

    b. Optimize emergency response intervals for front-line services for urban and rural service areas that more closely align with industry leading practices (e.g., NFPA 1225, 1710, 1720).

    c. Optimize community safety through fire prevention, fire inspection, public education, and emergency management, that more closely align with industry-leading practices (e.g., NFPA 1730, 1300, 1500; CSA 1600).

    d. Timely, efficient, and effective on-duty training including that with regional and industrial partners, thereby ensuring a ready and able workforce.

    e. Increase operations capacity including new fire stations, apparatus, equipment, and firefighters.

    e. Increase the management, administration, community safety, and operations support required for a larger department and increased operations.

    f. Where appropriate adopt the principles of the Center for Public Safety Excellence (CPSE) accreditation framework.

The execution of the above should be based on practical, realistic, and achievable investments that contribute toward service excellence, collaborative partnerships, and a safe community – the desired outcomes and results.

Conclusion

The SOC is an integral document that informs evidence-based decision-making and performance reporting. The SOC recommendations should be pursued in a manner that optimizes system performance, within fiscal realities, based on the following:

- set industry-leading targets or standards
- work towards those targets or standards
- ensure on-going continuous improvement

Appendix A: Glossary

Acronyms

The following lists acronyms used in this report:

ABS	Alberta Building Code
CFAI	Commission on Fire Accreditation International
CPSE	Center for Public Safety Excellence
CRA	Community Risk Assessment
CRR	Community Risk Reduction
CRRP	Community Risk Reduction Plan
CSA	Canadian Standards Association
EMRB	Edmonton Metropolitan Region Board
EMR	Emergency Medical Responder
EMS	Emergency Medical Services
EOC	Emergency Operations Centre
EVP	Emergency Vehicle Pre-Emption
FF	Firefighter
FUS	Fire Underwriters Survey
IAFF	International Association of Fire Fighters
ICS	Incident Command System
ISO	International Standards Organization
MP	Master Plan
NFPA	National Fire Protection Association
SCES	Strathcona County Emergency Services
SOC	Standards of Cover
SOG	Standard Operating Guideline

Appendix B: Acknowledgements

This Standards of Cover builds on decades of effort and commitment by firefighters, staff, management, and the community as a whole.

Of particular recognition is the amazing work done by the entire Strathcona County Emergency Services (SCES) team especially over the last many years through the parkade incident, the protracted COVID-19 pandemic journey, and the day-to-day demands on services.

It is further recognized the historical and most recent investments in SCES by the community have contributed to public and community safety.

The preparation of this Standards of Cover has involved many contributors which have represented the following stakeholders:

- Council
- Executive Team
- County departments
- SCES Management Team
- SCES leaders
- SCES frontline staff
- IAFF Executive
- Industry and businesses
- Community partners and agencies

Appendix C: References

The following materials (e.g., reports, presentations) provide key references used to support the development of the Standards of Cover document.

1. Center for Public Safety Excellence, Community Risk Assessment Standards of Cover 6th Edition, 2016
2. Center for Public Safety Excellence, Fire and Emergency Services Self-Assessment Manual 9th Edition, 2015
3. Center for Public Safety Excellence, Quality Improvement for the Fire and Emergency Services, 2020
4. Edmonton Metropolitan Region Board, Edmonton Metropolitan Region Growth Plan, Re-Imagine. Plan. Build, Amended January 2020
5. Edmonton Metropolitan Region Board, 2019 Metropolitan Region Servicing Plan Report, 2019
6. Edmonton Metropolitan Region Board, Environmental Scan, December 2018
7. National Fire Protection Association, 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, 2020
8. National Fire Protection Association, 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, 2020
9. National Fire Protection Association, NFPA 1730 Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations, 2019
10. National Fire Protection Association, NFPA 1300 Standard on Community Risk Assessment and Community Risk Reduction Plan Development, 2020
11. Province of Alberta, *Municipal Government Act*, Updated December 8, 2021
12. Province of Alberta, *Emergency Management Act*, current as of September 1, 2020
13. Province of Alberta, *Emergency Management Amendment Act*, March 20, 2020
14. Province of Alberta, *Local Authority Emergency Management Regulation*, January 1, 2020
15. Strathcona County, Community Profile, May 2019
16. Strathcona County, Community Trends, 2021
17. Strathcona County, 2021-2024 Corporate Business Plan Emergency Services, April 2021

18. Strathcona County, 2021-2024 Department Business Plan Emergency Services, January 2021
19. Strathcona County, Emergency Management Bylaw 17-2018, May 2018
20. Strathcona County, Emergency Medical Service Patient Care Survey, January 2020
21. Strathcona County Emergency Services, Comprehensive Analysis of Emergency Services Operations, February 2017
22. Strathcona County, 2021-2024 Internal Department Business Plan Emergency Services, January 2021
23. Strathcona County, Emergency Services Master Plan, August 2012
24. Strathcona County, Emergency Services Standards of Cover, 2013
25. Strathcona County, Fire Services Bylaw 5-2021, January 2021
26. Strathcona County, Long-Term Financial Sustainability Framework, March 2018
27. Strathcona County, Municipal Development Plan Bylaw 20-2017 Forwarding Our Future Together, Consolidated December 2020
28. Strathcona County, Municipal Land Framework, October 2019
29. Strathcona County, Outdoor Fire Bylaw 4-2021, January 2021
30. Strathcona County, 2019 Public Satisfaction Survey Research Results, August 2020
31. Strathcona County, Social Framework, May 2017
32. Strathcona County, 2023-2026 Strategic Plan

Appendix D: Community Risk Assessment Recommendations

The Community Risk Assessment (CRA) 2022 report recommendations are:

1. Strathcona County Emergency Services use the CRA findings and analysis to inform services and service targets within the 2022 Standards of Cover - the commitment side of risk. Community risk reduction strategies supporting the 5Es of community risk reduction - education, enforcement, engineering, emergency response, and economic incentives should be identified for key community risks. Based on the 2022 Community Risk Assessment, Strathcona County Emergency Services should optimize education, enforcement, and engineering strategies and interventions to reduce the dependency on emergency response to address risk, both now and in the future.
2. Within Strathcona County Emergency Services, Community Risk Reduction (CRR) be integrated in all or most programs and services, where appropriate. The CRR plan should include identification of goals and accountabilities that support the use of the 5 Es model. In time, this should be extended across the County with other departments and community partners.
3. Strathcona County Emergency Services develop a list of community risk stakeholders to optimize access to community risk data, inform future community risk assessment, and support collaboration of a Community Risk Reduction Plan (CRRP).
4. Strathcona County Emergency Services ensure alignment of CRA terminology, risk analysis scales (i.e., probability and impact), and the CRA use and alignment with other departmental risk instruments (e.g., Industrial Cumulative Risk Assessment). Specifically for each risk profile, all data sets should be reviewed for relative weighting of importance to the community. This should result in a single County Risk Register.
5. Strathcona County Emergency Services ensure an enhanced (e.g., current, metadata, more data sets) collection of community risk data supporting each of the nine risk profiles. This data should be supported by clear meta data to ensure its source, use, and validity for interpretation, and be available in a geo-spatial format for analysis and modelling.
6. Strathcona County Emergency Services maintain (i.e., update and review) the CRA on a regular basis (e.g., bi, or tri-annually) so as to inform a SOC update which is typically completed every 5 years. The updated CRA should be used to inform a CRRP. A useful tool is "Community Risk Assessment: A Guide for Conducting a Community Risk Assessment".[5]
7. Strathcona County Emergency Services champion a CRRP, the roadmap for community risk reduction, ensuring it is developed, implemented, and

[5] https://strategicfire.org/wp-content/uploads/2016/04/Community-Risk-Assessment-Guide-v1.5.pdf

maintained on a regular basis. The CRRP should have defined strategies, goals, and measures and may begin with a focus on Strathcona County Emergency Services initiatives within the community. The CRRP should be a whole of community effort.

Appendix E: Deployment of Resources

The following illustrates the planned deployment of resources as of February 1, 2023:

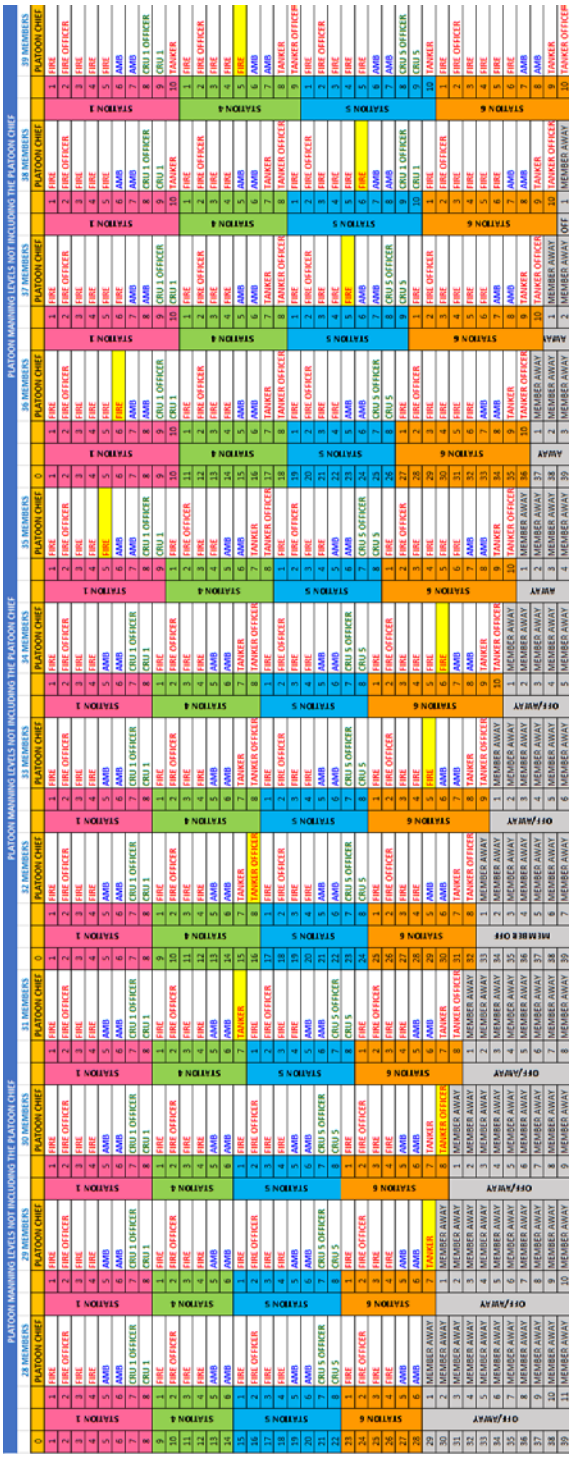


Figure AE1: Deployment of Resources