



perivale + taylor

# INTEGRATED CALL EVALUATION + DISPATCH BUSINESS CASE

Edmonton, Alberta, Canada

## - FINAL -

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*We acknowledge the traditional land on which Edmonton sits, the Territory of the Treaty 6 First Nations and the homelands of the Métis people. Together we call upon all of our collective honoured traditions and spirits to work in building a great city for today and future generations.*

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- Canadian Mental Health Association 2-1-1
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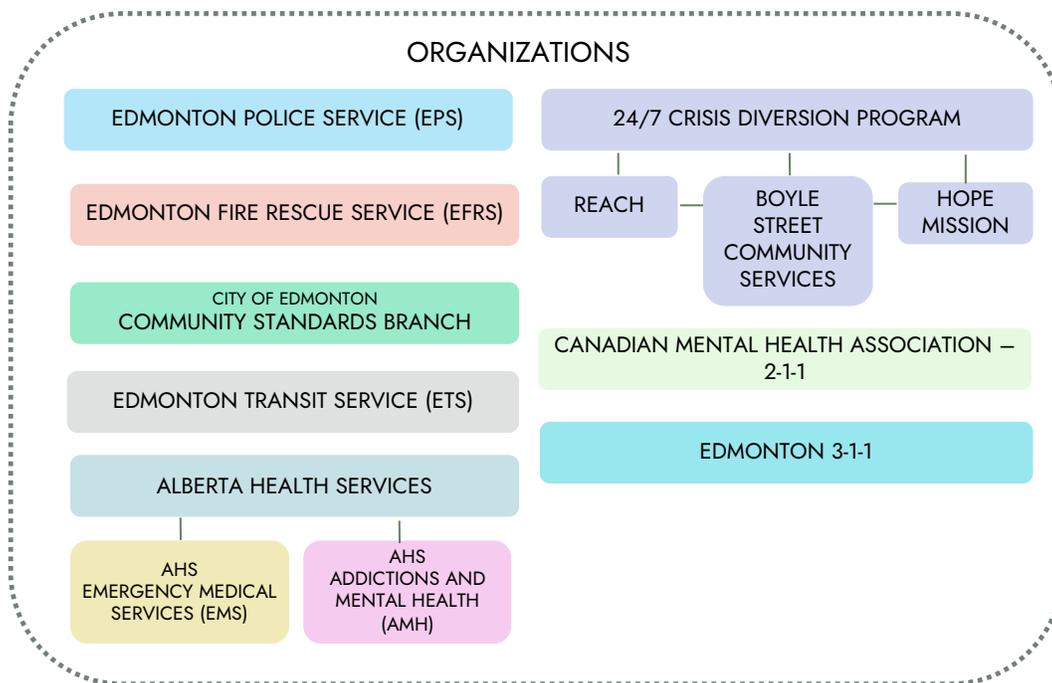


# EXECUTIVE SUMMARY

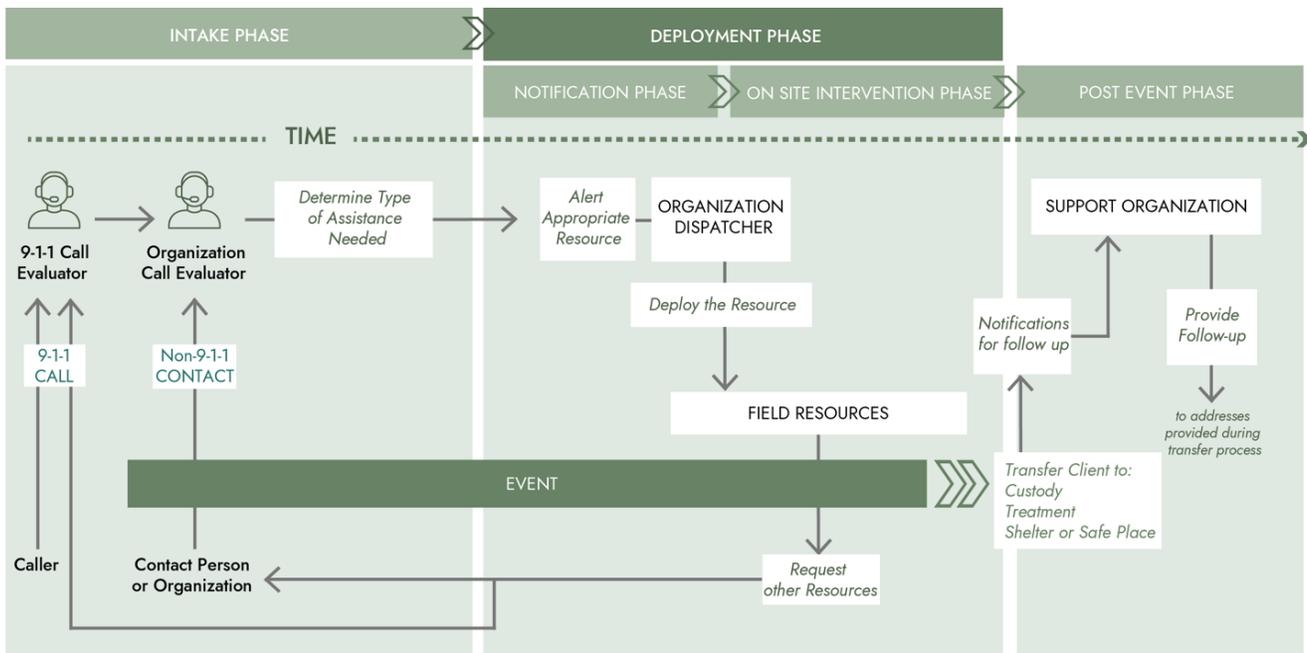
The Goals and Objectives of the project are identified in the Project Charter as:

*“To move from a traditional emergency response towards getting the right response at the first call to Edmontonians.”*

The Business Case proposes the development of an **integrated call evaluation and dispatch system** for the City of Edmonton that will enhance services to the public, particularly concerning requests for service with an addiction, mental health, or social services component. The process involves a group of organizations that extends beyond the core emergency services. The following diagram indicates the organizations which collaborated on the development of the Business Case. The intention will be to scale with the appropriate organizations as the implementation of the integrated system for call evaluation and dispatch progresses.



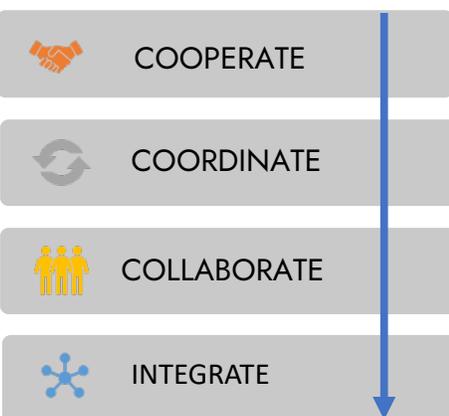




In order to achieve the desired service enhancement outcomes, the Post Event Phase was also incorporated into the Business Case process.

## DEGREES OF INTEGRATION

In moving forward with integration, the partner organizations can progress through a continuum of integration at different rates. A matrix was developed that combines the **degrees** and **elements** of integration. The **Degrees** of integration identify progressive levels of collaboration among the organizations both internally and externally.



Cooperate is defined as 'personal relationships between management and staff in different organizations.'

Coordinate is defined as 'multiple organizations which work together to coordinate services.'

Collaborate is defined as 'multiple organizations which share the framework elements such as technology, process, governance, technology.'

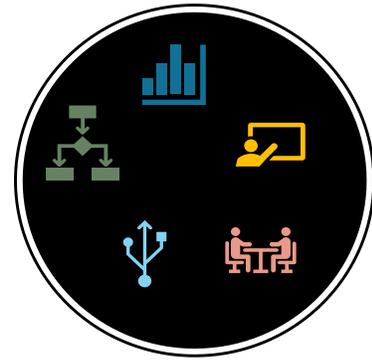
Integrate is defined as 'multiple organizations which agree to merge into a new fully inter-operational / inter-organizational relationship.'



## KEY ELEMENTS OF INTEGRATION

**Elements** of integration are the features that make the degrees of integration possible. Five elements were identified through discussions with various stakeholders as key areas of adaptation and change. These Elements are relevant for all the organizations.

- ELEMENT 1: GOVERNANCE
- ELEMENT 2: PROTOCOLS AND PROCESSES
- ELEMENT 3: INFORMATION
- ELEMENT 4: TECHNOLOGY
- ELEMENT 5: TRAINING AND EDUCATION



The goal is to move from the **Cooperate** level - where the organizations are responding to calls for service with informal relationships, siloed information systems, unique process and training to the **Integrated** level where multiple organizations agree to merge into a new fully inter-operational/inter-organizational relationship. This would include the sharing of technology, information, common processes and training as well as a clear and supportive governance and oversight structure.

## RECOMMENDATIONS FOR ACTION

The result is a framework for a long-term approach that is scalable, sustainable, measurable and interoperable. To start the process 47 action items were created to move towards the desired degree of integration. These action items were assigned short-, medium- and longer-term milestone targets to assist in the migration from Cooperate to Integrate. This assumes short-term action items can be achieved in less than one year, with medium-term targets achieved in one year, and longer-term targets achieved in over one year.

## COST AND FACILITY IMPLICATIONS

Integration of service partners does not necessarily mean the co-location of all services. Operational changes may impact several of the organization's resources. Finding ways to mitigate or share the cost impacts will be a significant challenge as each of partners has their own sources for operating and capital



funding. This will likely involve a series of MOUs relating to specific costs and/or funding sources and will adjust and evolve as the operating model shifts through the degrees of integration.

## GOVERNANCE

- *Potential Operating Cost impacts for project related consulting services*
- *Capital Cost impacts directly related to Governance are unlikely*

## PROTOCOLS AND PROCESSES

- *Potential Operating Cost impacts related to personnel*
- *Capital Cost impacts unlikely unless co-location deemed advantageous*

## INFORMATION

- *Potential Operating Cost impacts related to personnel*
- *Equipment related Capital Costs are noted in Technology*

## TECHNOLOGY

- *Potential Operating Cost impacts relating to consulting fees, personnel, equipment lease, etc.*
- *Potential Capital Costs impacts relating to equipment purchase, facility adjustments if deemed necessary*

## TRAINING & EDUCATION

- *Potential Operating Cost impacts relating to education service fees or personnel*
- *Potential Capital Cost impacts unlikely unless expanded or new training facilities are deemed necessary*

## SHORT-TERM INITIATIVES

The following short-term initiatives are recommended for action as soon as possible.

- With the stakeholders involved in the Integrated Call Evaluation and Dispatch Business Case, secure a Dedicated Resource and formalize a governance structure with appropriate MOUs.
- Create a quick reference sheet on existing resources call evaluators and responders to use for general support for questions on referrals.
- Establish orientation and familiarization training of existing services for all organizations



- Establish a Technology Working Group and assess technology sharing opportunities.
- Streamline process to request assistance from other organizations. Create formal pathways to reduce the informal connections being used (phoning a friend).
- Establish sharing of CCTV feeds among existing dispatch organizations. This would converge the multiple CCTV intake points and allow all dispatch systems to have access to first-hand information feeds.
- Review opportunities for sharing data within existing frameworks, such as the Community Safety Dashboard, to utilize the shared data to allow further development of shared metrics.
- Explore functional co-location options and prepare a Facilities Strategy for accommodating the operations of an integrated call evaluation and dispatch model.



# 1 INTRODUCTION

The Business Case provides an overview of Edmonton’s current call evaluation and dispatch functions for emergency services, crisis diversion, and general public safety and wellbeing, and identifies challenges and opportunities, with a set of actionable recommendations to achieve better outcomes for integration of these functions among the participating organizations shown in the following diagram.

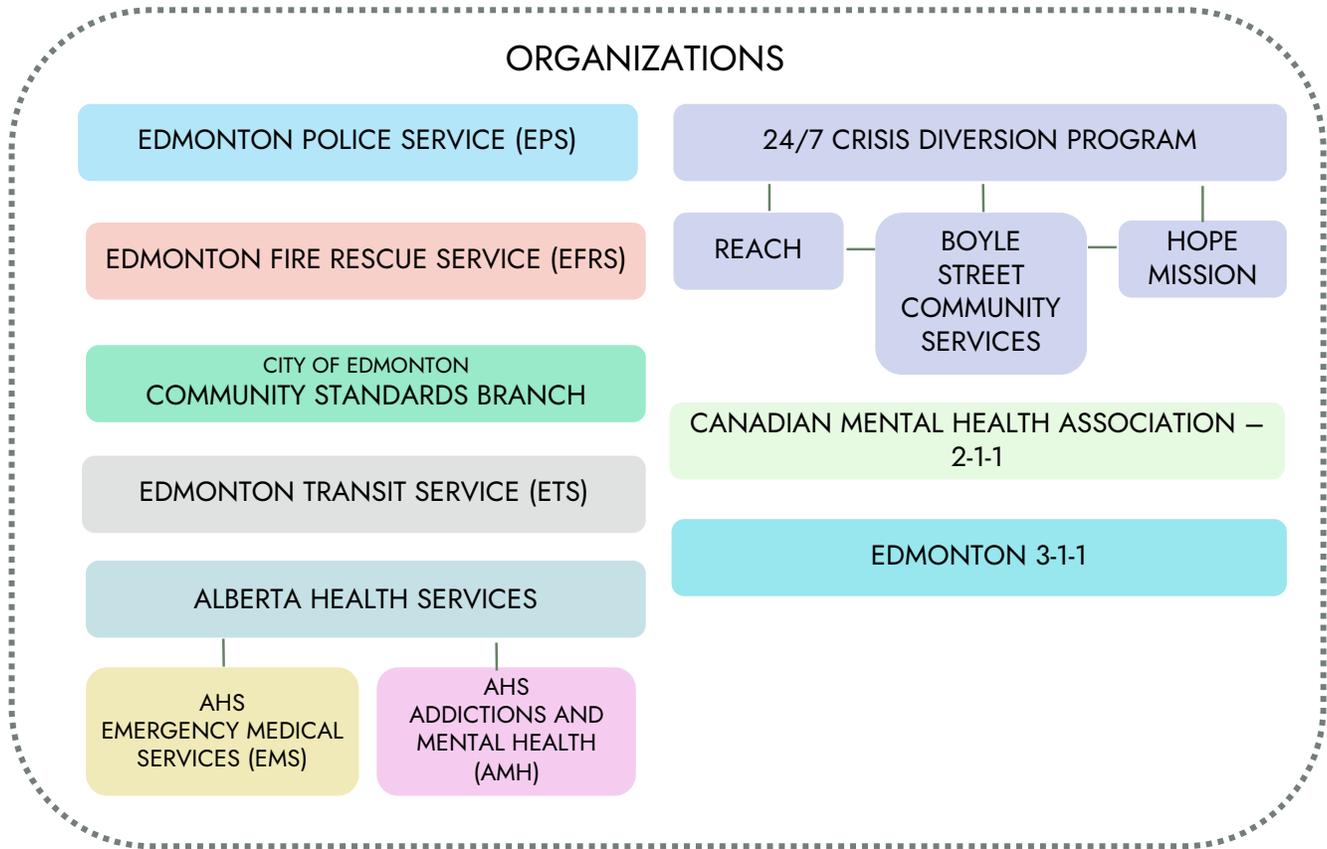


Figure 1: Current Organizations included in Call Evaluation and Dispatch Business Case Diagram

The rationale for identifying the organizations was largely based on the premise that the Business Case would be an exploratory pilot project. Community organizations collaborated on the development of the Business Case, based on those which have the most reach, or greatest capacity to serve and meet the volume of calls for service. The intention was to create a framework that was scalable so that additional stakeholders could be incorporated as needs change and the system grows.





## 1.1 PURPOSE OF THE BUSINESS CASE

The Business Case explores the development of an integrated call evaluation and dispatch system that addresses general enhancement of the service to the public, particularly, requests for service with an addiction, mental health or social services component.

The Business Case provides:

- 1. A comprehensive summary of the need and ability of each partner/service.** Current Service Profiles (refer to Appendix B - Service Profiles) provides clear descriptions of governance, facilities, staffing, processes and workflows, and technology, data and communication platforms. A wide range of capacity and ability became apparent across the partners/services provided indicating an opportunity to enhance relationships and build upon shared synergies within each of these elements.
- 2. A clear understanding of risk, risk ownership and mitigations.** The process of integration is complex. It requires the orchestration of resources from municipal and non-municipal emergency and non-emergency services. The positive outcomes of the project will have significant impact upon the budgets, personnel safety, client service and reputations of public organizations and an enhanced sense of community well-being. However, although unlikely, there may be negative consequences which impact service and, possibly, create liability issues. Inevitably, this creates risk for the participating organizations. Ideally, such risks will be identified prior to, and during, the implementation process. Mitigation strategies are proposed.
- 3. Viable delivery options and pathways for an integrated continuum of response.** Section 6 'Recommendations for Action' provides a high-level approach with the identification of key Action Items that can be implemented along the pathway at various milestones.
- 4. Financial Analysis and Impact of Options.** For each element identified within the integration framework, high level costing implications are provided. The preliminary exploration of this work is not detailed sufficiently to provide complete operational cost estimates.
- 5. Overarching governance for integrated service provision.** There are a number of multi-jurisdictional organizations that provide critical communication and public support services to the citizens of Edmonton. Determining an appropriate governance framework for an umbrella, integrated communications process in Edmonton involves municipal, provincial and 'not-for-profit' organizations which are significantly different. An effective governance regime, an 'Integrated Coalition' is recommended to develop the integration model, and subsequently, to maximize service efficiency and effectiveness.
- 6. Parameters to measure success.** With such a broad, community impactful project with significant opportunities for enhanced services, it is important to establish measures of success. The parameters for assessment consider process effectiveness and public and client benefit but will take



into consideration the performance metrics required for individual organization oversight and monitoring.

7. **An assessment of the transformational readiness of the various partners/service providers.** The diverse organizations involved in the first phase of coalition are at various levels of technological sophistication and organizational development. The integration process must proceed in such a way, and at such a speed, that permits the exchange of expertise and knowledge between the organizations to permit all to contribute to an effective coalition commensurate with their size, client and community impact and funding. A review of organizational readiness will be a key to ensuring the most appropriate response in the Deployment Phase. To be successful, the organization(s) responsible for the service must have the capacity to provide the service before the service is taken on. Failure to ensure funding and capacity could result in client dissatisfaction and erosion of trust with the community.
8. **Potential sequencing for the implementation of delivery options.** Through the development of the conceptual framework for integration, key milestone targets for implementation are identified.

## 1.2 BUSINESS CASE PROCESS OVERVIEW

The analysis and consultation to develop the Business Case was organized to evolve progressively and was adjusted as the evidence of the need for, and interest in the Business Case evolved weekly and provided new insights. This flow diagram reflects the nature of the responsive and iterative approach, which proved to be appropriate given the changing nature of the current public safety environment in Edmonton.

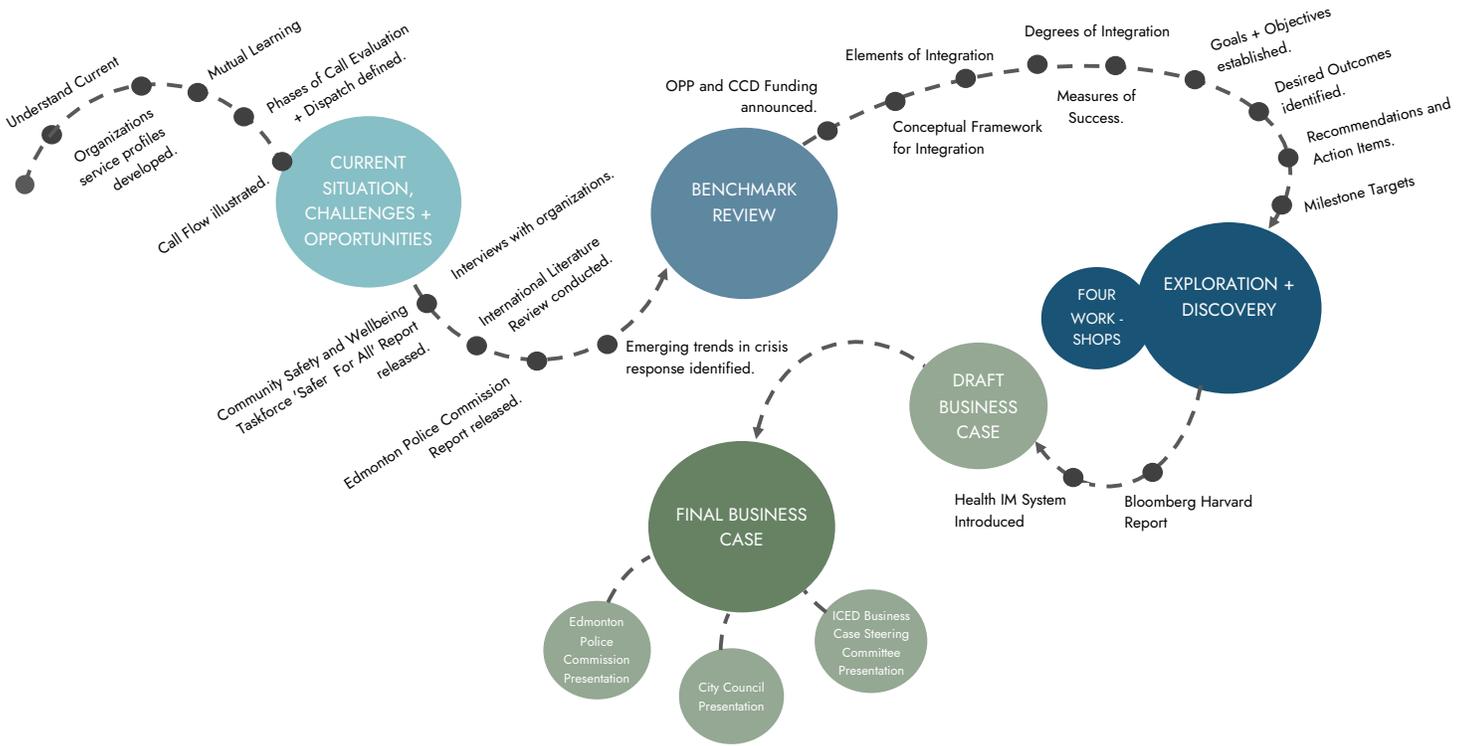


Figure 2: Process Flow Diagram



# 1.3 SERVICE AREA AND POPULATION PROFILE

The Service Area designated for the Business Case is the municipal area of Edmonton. Between 2014 and 2019, the census population of City of Edmonton grew by 10.7%.

Census Population

2014	877,926
2016	899,447
2019	972,223

The demographic profile in 2019 was weighted towards the under 40 age groups. Looking to the future, the pandemic and disruptions in the oil industry are likely to impact both the population and demographics, however, currently it is difficult to identify likely patterns.

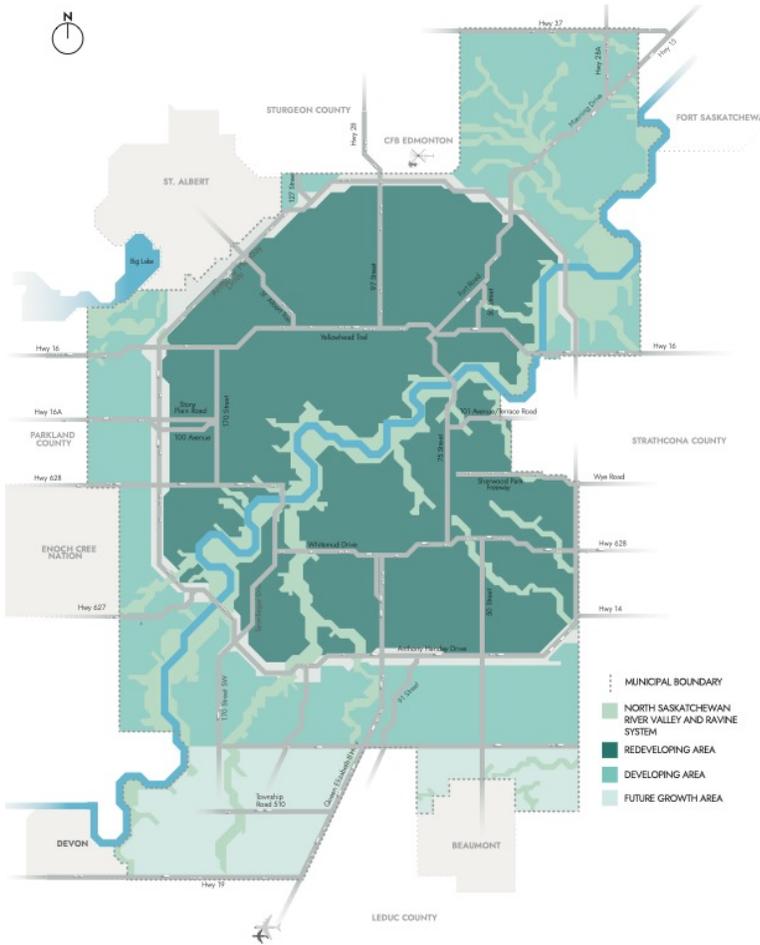


Figure 3: Service Area – City of Edmonton



### City of Edmonton 2019 Population by Age Range

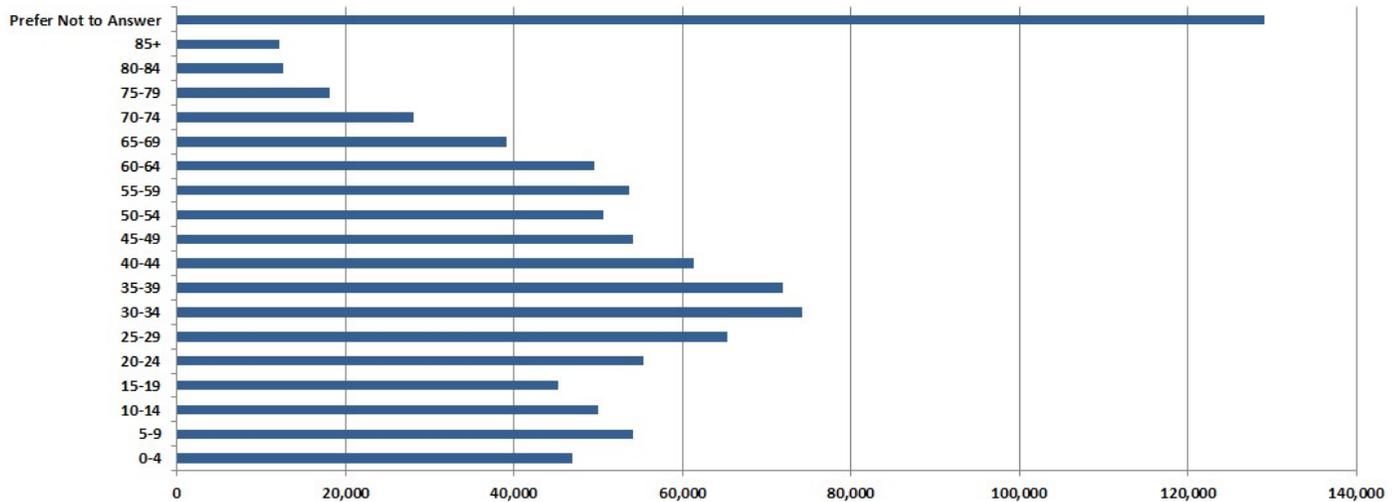


Figure 4: City of Edmonton 2019 Population by Age

The City expanded its boundaries to accommodate and sustain current and anticipated population growth. In 2019, the City annexed land from the town of Beaumont and Leduc County to increase the city’s size by 22%.<sup>1</sup> Residents of those areas are now considered Edmontonians.

## 1.4 CURRENT SERVICE DELIVERY CHALLENGES

Based on information provided during interviews and workshops, the challenges that motivated the Business Case include:

- Individuals who frequently make an emergency call which necessitates a response from the ‘system’. Often these are managed by police due to 24/7 service availability and a lack of understanding of alternative resources. These are often situations that do not require a police response, resulting in inefficient allocations of time and resources.
- Difficulty analyzing available information to determine frequent callers and provide an alternative system response that could provide more appropriate supportive action. This failure to provide a fully supportive service potentially compounds the gravity of the problem experienced by the member of the public.
- Callers being transferred from a call evaluator in one organization to a call evaluator in another requiring the caller to repeat the same information. This leads to the duplication of some

<sup>1</sup> City of Edmonton, The Way We Grow Municipal Development Plan (2010) and City Plan (2020)



components of the call evaluation process, with potential for longer response times and frustration of the caller.

- Absence of comprehensive 24/7 coverage by all organizations compounds the problem of service inadequacy given that the quality and type of system response depends upon the time of day that a call is made.
- The lack of adequate information available at intake means that an event can be over or under-attended by emergency services.



## 1.5 FOCUS OF BUSINESS CASE

The scope of the work defined in the Project Charter outlined the development of a Business Case for an integrated call evaluation and dispatch system that addresses requests for service with an addiction, mental health or social services component. It encompasses call intake, triage, and dispatch.

The project team found that the intention to review only the initial processing of requests for service was too limited as this process is directly impacted by processes in later stages of response. How an event is responded to by organization(s) defines what information and actions are required prior to response. As a result, the Business Case was rescoped to be a Business Case for an integrated call evaluation and dispatch system that addresses requests for service with an addiction, mental health or social services component. It encompasses call evaluation (intake), and dispatch (deployment).

CALL EVALUATION = INTAKE  
DISPATCH = DEPLOYMENT

Given the complexity of a municipal response to calls for service and the multiple input points to the system, it was demonstrated that separating these two foundation functions within the context of this Business Case would do a disservice to emergency and non-emergency response to calls for service. This conclusion was supported by organizations engaged in the development of the Business Case. In order to meet the objective of establishing an integrated process that would resolve the perceived service delivery challenges, the Business Case was further extended to include the **Intake, Deployment, and Post Event** phases. It was recognized that this modification in the focus of the work was beyond the scope originally defined in the Business Case Project Charter.



## 1.6 CALL EVALUATION AND DISPATCH CONTEXT

It is important to have a clear understanding of the terms and processes described in the Business Case. Through the course of the project, a glossary of common language was developed which included terms, processes and acronyms. This glossary can be found in the Business Case Appendices, which includes the definition of all the components of the continuum of response.

CALL EVALUATION = INTAKE

DISPATCH = DEPLOYMENT

- 'Call Evaluation' is a main component of the Intake phase, where the calls for service are received, triaged or evaluated and processed by transferring the caller to another organization or processing the call through to the Dispatch phase.
- 'Dispatch' is a small component of the Deployment phase, where the calls for service are assigned to the appropriate resources for response. This phase is the key driver of the Intake Phase, as how an organization responds to an event will dictate the process for the call evaluation, such as what information should be collected, or which organization will lead the call evaluation process.

Organizations create policy and procedures for response protocols including what resources will respond to specific event types. For example, the Police Department will create a standard response for a bank robbery which drives the questions the call evaluator will ask such as location, person description and weapons. This response would be different for an impaired driver (or other events), resulting in different questions for call evaluation. Both of these protocols are established in advance and the Intake process is defined and trained.

Many of the partner organizations currently have some level of co-response in their deployment plans. In these cases, this is taken into consideration during the Intake Phase and mechanisms are in place to support this style of intake and deployment. Ongoing review and adjustments to the process will be required to optimize effectiveness and efficiency.



The phasing diagram below illustrates the event lifecycle for call evaluation and dispatch services:

Phase	Description
<b>Intake (Call Evaluation)</b>	Initial receipt of the request for service. For example, 9-1-1, non-emergency or business lines, 3-1-1, 2-1-1, text, online reporting, email, CCTV cameras, etc.
<b>Deployment (Dispatch)</b>	The “dispatch” and response of appropriate service(s).
<b>Post Event</b>	The follow up services provided after the end of the initial request for service.

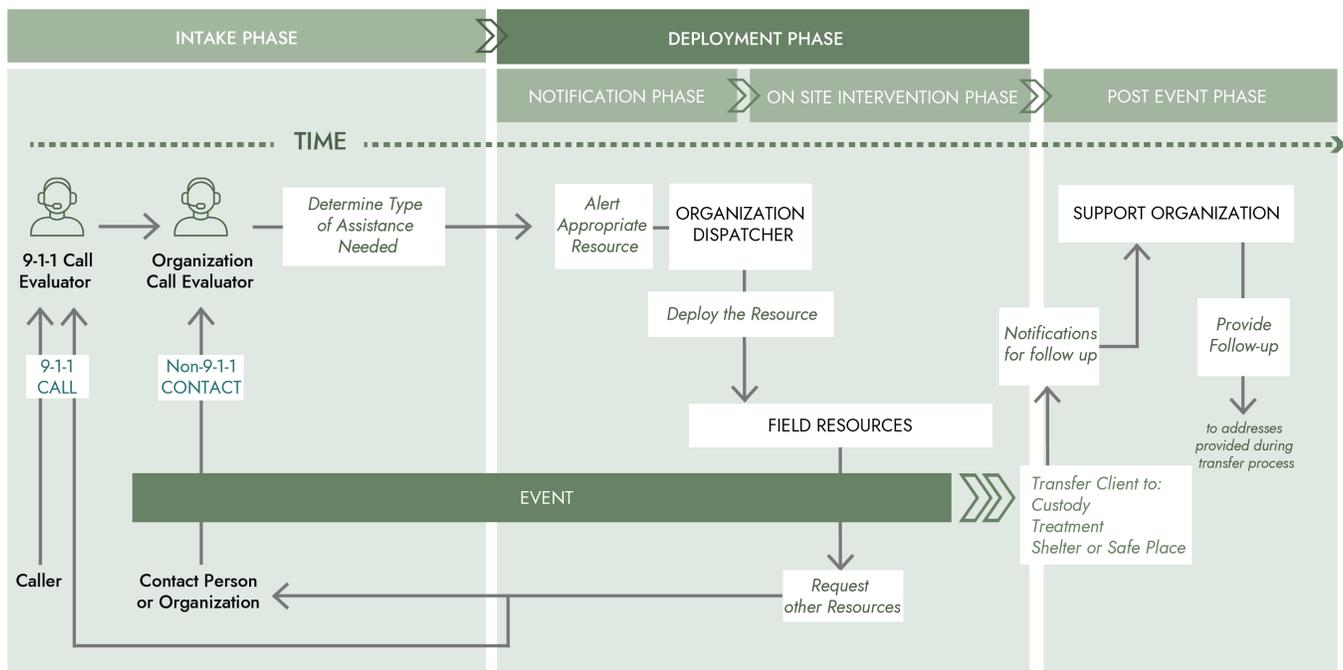


Diagram 5: Call Evaluation and Dispatch by Phase

Each phase includes an aspect of oversight and monitoring which ties back to the governance and quality assurance and improvement for the services. Each of these phases have impacts on each other and need to be considered as a whole in an integrated system.

Currently the Intake phase can be handled by 2 different call evaluators depending on how the call for service was received. A call could be received through 9-1-1, or it could be received directly by one of the



organization’s call evaluators. The 9-1-1 call evaluation is different from the organization call evaluation. Calls for service received through 9-1-1, are transferred to an organization call evaluator for full evaluation and processing. This is done for several reasons including adherence to associated legislative requirements<sup>2</sup> and ensuring 9-1-1 lines are available for the next person calling for assistance.

9-1-1 calls are processed with an expectation that the call has a “need for speed” component, meaning that the situation requires response from Police, Fire or Ambulance in a timely manner to ensure public safety and patient care. For example, events such as structure fires, cardiac incidents or weapons incidents. These events have a different protocol that have critical time elements tied to known outcomes (fire propagation curve or cerebral hypoxia). Legislation and performance standards require that the 9-1-1 call evaluator has 60 seconds (90% of the time) to determine the caller’s location, phone number and which organization they need to be transferred to receive the appropriate resource deployment, based on the organization deployment model.

It is the organization call evaluation (intake) phase that allows the opportunity of time for the caller to provide further information about the event. In this phase, calls for service could be received from a 9-1-1 transfer, but they could also be received directly from the caller through any of the many methods available such as phone, texting, or online reporting or a CCTV camera being monitored by a dispatcher. EPS or many of the other partner organizations’ call evaluators could receive the call for service. It is important to consider all available intake options when establishing a consistent response to the caller.

The initial analysis of the organizations in the Business Case highlighted many areas where these organizations are currently working together successfully. Several of the organizations share MOU’s agreements with each other and some share data and technology.

In many cases there are multiple organizations responding to the same types of service requests as either primary organizations or supporting organizations. Given the limited operating hours of some organizations, some services are only available during business hours. However, the general public is often unaware of this limitation and call emergency service responders when they are unable to connect. As a result, emergency service responders and their partner organizations can be frequently required to fill the gap in after-hours periods.

The Business Case has focused primarily on the first two phases: Intake and Deployment. However, as noted above, the importance of the Post Event Phase in the longer-term has also been recognized as an opportunity to develop a holistic model of integrated service delivery. The Post Event Phase will increase ongoing support, in order to reduce the necessity for citizens to require



<sup>2</sup> Alberta 9-1-1 Standards: Appendix A To Ministerial Order No. A:001/18.



additional or on-going services, impacting the Intake and Deployment Phases. In developing an enhanced system, ongoing re-assessment and monitoring will ensure ongoing process efficiency and effectiveness. Coordinated governance will keep the system agile and able to adjust to the changing needs of the community, organizations and the methods of service to the public.

As a new deployment mode is developed, the Intake phase will be impacted. Although it may not result in significant change in the high-level workflows, it is anticipated that the tasks performed within that workflow would be impacted. These intake tasks could be impacted by factors such as changes in response by the organization which could result in the call being handled or transferred to a different organization call evaluator, technology changes allowing for event information to be with co-response organizations, or access to information.

## 1.7 KEY LEARNINGS

Key learnings emerged during the Current Situation Review, and during the extensive literature review for benchmarks and case studies. It became clear that there are many cities and organizations working on similar call diversion projects though most focused solely on police response. Few considered all of the different organizations in how service could be delivered for mental health, addictions and social disorder type events. A clear governance and oversight structure is the key to the success of a fully integrated system.

1. Intake is complex as requests for service originate from more than thirty sources.
2. Call Evaluation and Dispatch decisions depend on the current response options of each organization.
3. There can be several dispatch activities within the Deployment Phase. When the resources on the initial response attend a scene and determine that the situation is different than what was original reported, they may call on additional resources from other organizations better suited to handle the situation.
4. The effectiveness of Post Event services can impact the volume, type of calls and the actual versus perceived response to the public.
5. An Integrated Call Evaluation and Dispatch system needs to consider Intake, Deployment, and Post Event activities to inform potential enhancements of call evaluation and dispatch functions.
6. Some, but not all, of the partner organizations have the ability and capacity to extend their hours and service beyond what is currently available to provide consistent 24/7 service delivery.

THE INTAKE PHASE IS DIRECTLY IMPACTED  
BY THE DEPLOYMENT PHASE.





ORGANIZATIONS	INTAKE METHODS	
	<ul style="list-style-type: none"> <li>#3-7-7 (Mobile Access)</li> <li>Blue Phone (River Valley)</li> <li>Yellow Phone (Police Stations)</li> <li>AHS – EMS</li> </ul>	<ul style="list-style-type: none"> <li>On view by units</li> <li>Walk in (to stations)</li> </ul>
Edmonton Fire Rescue Services	<ul style="list-style-type: none"> <li>9-1-1 (Transferred from 9-1-1 PSAP)</li> <li>Non-911 business lines</li> <li>ATCO</li> <li>EPCOR</li> <li>3-1-1</li> </ul>	<ul style="list-style-type: none"> <li>AHS (phone and CAD to CAD)</li> <li>Police</li> <li>On view by units</li> <li>Walk in (to stations)</li> </ul>
Community Standards Branch - Peace Officers (Park Rangers, Animal Control, Churchill Team, General Duty, etc)	<ul style="list-style-type: none"> <li>3-1-1</li> <li>Business Lines</li> </ul>	<ul style="list-style-type: none"> <li>EPS</li> <li>On view from Peace Officers</li> </ul>
Alberta Health Services - EMS Provincial Model (Edmonton is in the Central Zone)	<ul style="list-style-type: none"> <li>9-1-1 (Transferred from 9-1-1 PSAP - includes other organizations)</li> <li>Non-911 business lines</li> <li>1-800</li> <li>Fire (phone and CAD to CAD)</li> <li>Police</li> </ul>	<ul style="list-style-type: none"> <li>On view by units</li> <li>Walk in (to stations)</li> <li>Web Interface (transfers only)</li> <li>AHS – AMH</li> <li>Community Paramedics</li> </ul>
CMHA - 2-1-1	<ul style="list-style-type: none"> <li>Phone 2-1-1</li> <li>Text</li> </ul>	<ul style="list-style-type: none"> <li>Live Chat</li> </ul>
Edmonton Transit Services (and related Peace Officers and Security)	<ul style="list-style-type: none"> <li>EPS</li> <li>AHS</li> <li>Fire</li> <li>Text</li> <li>Cameras</li> <li>LRT Control Centre</li> <li>Surface Control Centre</li> <li>Transit Security</li> </ul>	<ul style="list-style-type: none"> <li>Transit Watch</li> <li>Washroom Phones</li> <li>Google Chat</li> <li>Email</li> <li>Alarms</li> <li>3-1-1</li> <li>Business Lines</li> <li>On view by units</li> </ul>
City of Edmonton 3-1-1	<ul style="list-style-type: none"> <li>Phone 3-1-1</li> <li>Text</li> <li>Online</li> </ul>	<ul style="list-style-type: none"> <li>3-1-1 App</li> <li>Email</li> </ul>
Alberta Health Services - Protective Services	<ul style="list-style-type: none"> <li>Walk in</li> <li>AHS</li> </ul>	<ul style="list-style-type: none"> <li>EPS</li> <li>Business Lines (facility staff)</li> </ul>
Alberta Health Services - AMH	<ul style="list-style-type: none"> <li>Public Phone - 424-2424</li> <li>Police - 421-PACT</li> <li>Walk In</li> <li>REACH - 24/7 Crisis Diversion</li> </ul>	<ul style="list-style-type: none"> <li>Hope Mission</li> <li>Boyle Street</li> <li>8-1-1</li> <li>2-1-1</li> </ul>
24/7 Crisis Diversion (HOPE MISSION)	<ul style="list-style-type: none"> <li>2-1-1</li> <li>AHS - EMS (CAD to Text)</li> <li>AHS - EMS (Phone call)</li> </ul>	<ul style="list-style-type: none"> <li>Police (Phone call)</li> <li>Drop in or walk in</li> </ul>
24/7 Crisis Diversion (REACH)	<ul style="list-style-type: none"> <li>2-1-1</li> <li>AHS - EMS (Phone call)</li> </ul>	<ul style="list-style-type: none"> <li>Drop in or walk In</li> </ul>
24/7 Crisis Diversion (BOYLE STREET)	<ul style="list-style-type: none"> <li>2-1-1</li> <li>AHS</li> </ul>	<ul style="list-style-type: none"> <li>Police (phone call)</li> <li>Drop in or walk in</li> </ul>

Table 2: Organization Intake Methods



Overall, the Intake phase has more than 30 unique intake methods. Each organization has its own intake protocols which include referrals to/from a partner organization. The following diagram illustrates the complexity of the intake process and the different pathways a caller can be routed when they initiate a request for service. In many cases, the referral process utilizes 9-1-1 for organizations to notify each other when additional assistance or co-response is required. This is represented through the arrows which connect an organization to 9-1-1. For example, if ETS Peace Officers require assistance from EPS, ETS dispatch will call 9-1-1 to initiate the request.

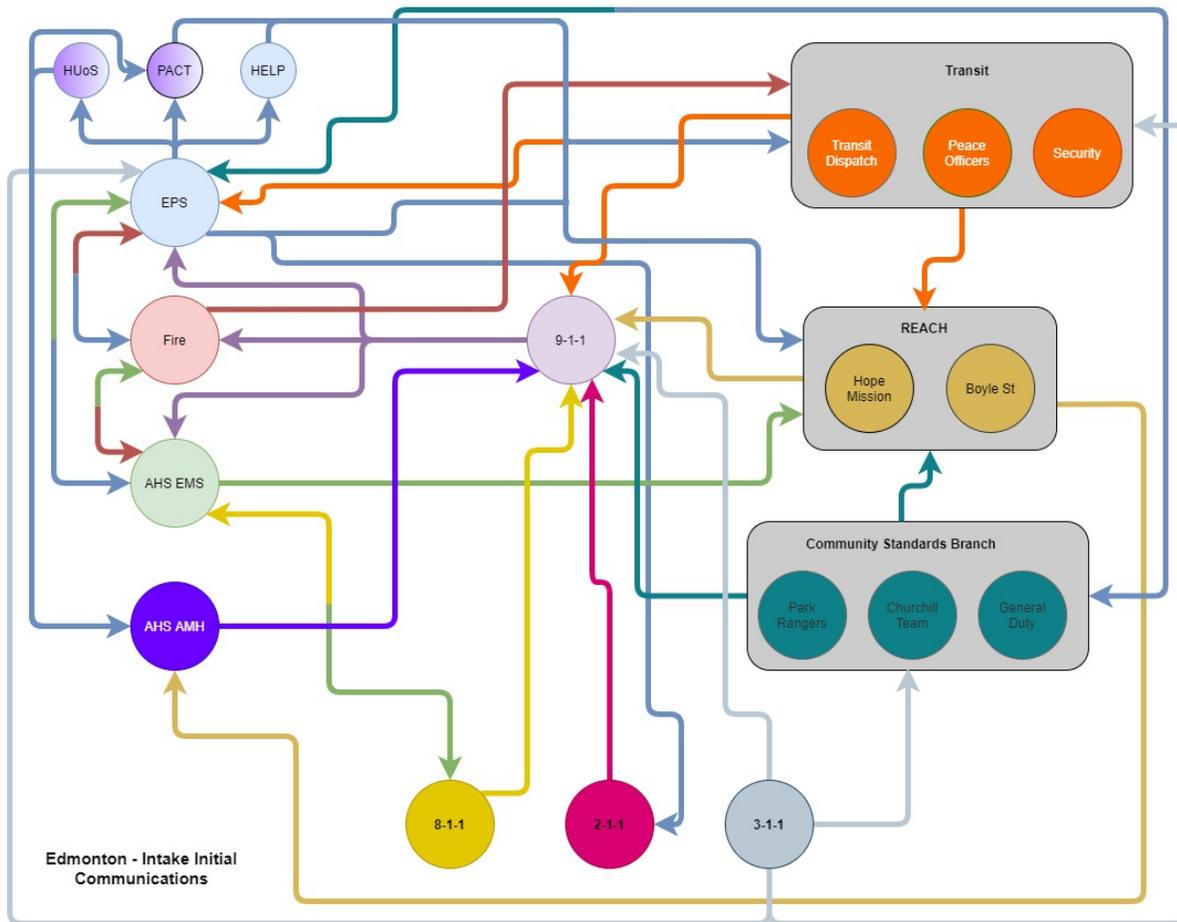


Figure 6: Current Intake of Initial Communications Diagram

High level workflows for each of the organizations have been developed to show the communications workflow between all the organizations. During the analysis, it became clear that during the Intake phase there is very little data or technology is currently being shared between the organizations except for the location and basic event details. For most organizations, the detailed data sharing does not begin until the response component of the Deployment phase. The call evaluators will gather the request information from the client (create the event in the CAD or other application) and pass that information (dispatch) to the



people who are responsible for the Deployment phase. Generally, call evaluators are not querying other partner organizations for specific client information prior to dispatch.

In the traditional emergency services (9-1-1, Police, Ambulance and Fire) there are performance metrics tied to receipt and dispatch of a request for service. In the case of 9-1-1, there are provincial regulations related to the time to receive and transfer the caller to an appropriate organization. It was noted in interviews that the current emergency dispatch systems for Police, Fire, and EMS are primarily designed to manage emergencies. Organizations have designed their intake and deployment methods to quickly assess and respond. Complex non-emergency responses typically require further call evaluation to determine an appropriate response. This can have impacts on performance metrics expectations for both the Intake and Deployment Phases.

During the Deployment Phase, data is shared between organizations that participate in co-response for a request for service. The level of the data being shared varies and in some cases is based on pre-defined MOU agreements. Examples of data sharing during the Deployment Phase include:

Intake Organization	Partner Organization	Data Sharing Method	Types of Data Shared	MOU
AHS	EFRS	CAD to CAD interface (automatic and manual)	Event data such as Location, Type of Call, caller information	Yes
AHS	Hope Mission	CAD SMS	Location, Type of Call	No
2-1-1	REACH - 24/7 Crisis Diversion Hope Mission Boyle St	Application developed through REACH or Phone	Location, call information	Yes
AHS-AMH	EPS	Data shared only as appropriate with co-response teams – PACT and HUoS		Yes
3-1-1	Other City Services	Multiple applications	Request/complaint information	No but have agreed delivery expectations/process

Table 3: Data Sharing during Deployment Phase



The only organizations with a robust two-way CAD-to-CAD interface are AHS-EMS and EFRS. This two-way interface transfer automatically generates an event in the other organization's CAD system based on pre-defined business rules. There is also the ability for a call evaluator or dispatcher to manually initiate a request for service through the interface. The data included in the interface includes basic event information such as the location, event type, caller information and safety warnings (if known). Some organizations within the Edmonton service network have purpose-built technology that allows for the sharing of data between the partner organizations, such as 2-1-1, REACH, Hope Mission and Boyle St groups or AHS-EMS and AHS-AMH groups. Although technology sharing is limited between the organizations, verbal data sharing occurs more frequently. However, due to privacy considerations, there are limitations regarding the types of information that can be shared.

The following diagram illustrates the data and technology sharing between the organizations.

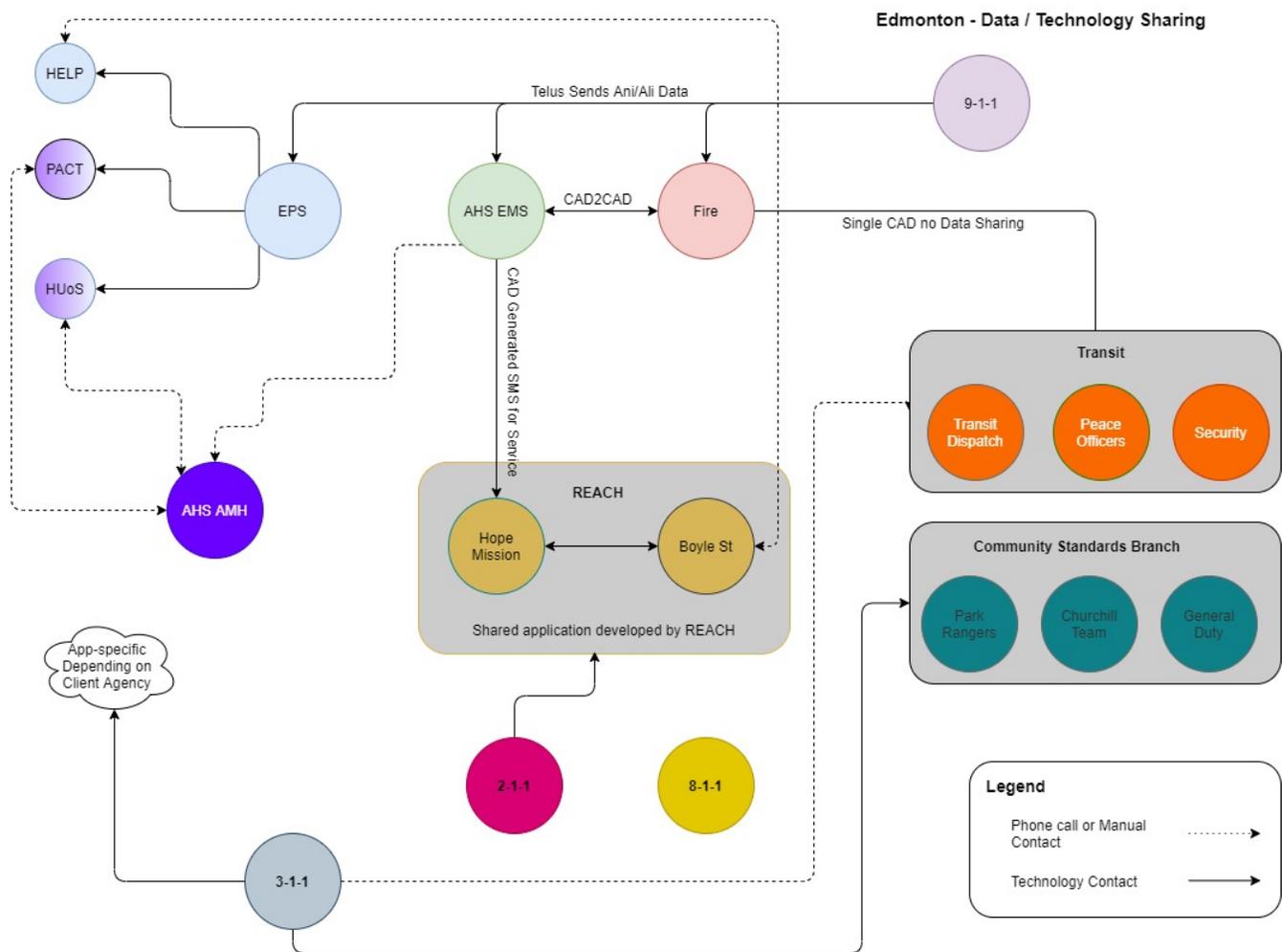


Figure 7: Technology and Communication Sharing Pathways Diagram

EPS, AHS-EMS, EFRS, ETS and Community Standards participate in the provincial Alberta First Responders Radio Communication System (AFRRCS) program which is a common radio system which allows for the



sharing of radio talk groups. The system is used by the individual organizations for their internal day-to-day operations. AFRRCS has been configured with (external) common talk-groups to allow Police, Peace Officer, Fire and EMS to communicate during co-response events. This external communication functionality within AFRRCS has not been well operationalized, and few organizations make use of it frequently or consistently. There is an inter-operability group made up of all the AFFRCS users which works to develop co-response business processes. These processes have not been well used nor personnel trained. To date there have been limited scenario driven training (table-top) or other inter-organization training exercises amongst the partners to aid in the development of combined operational communication processes.

EFRS and ETS share a CAD system with security mechanisms in place to ensure data privacy and confidentiality. More recently, CSB has been provided licenses to begin to utilize this shared CAD system. As well, EPS and EFRS are working towards sharing telephony, GIS and other technology where possible to achieve efficiencies. This sharing started with the technology requirements from NG9-1-1<sup>3</sup> and have led to the exploration of other opportunities. ETS is working with their partner organizations to be able to provide real time access to their live camera feeds. These types of joint ventures create the possibility for collaboration on a broader scale. The following chart illustrates some of the technology utilized across the participating organizations. Types and availability of technology varies from organization to organization.

TECHNOLOGY, DATA, AND COMMUNICATIONS	EPS	EFRS	EMS	ETS	3-1-1	CSB
Digital Centrex for 9-1-1	x	x				
IP Call Handling (Solacom)			x			
IP Call Handling (Solacom) – NG9-1-1 for Q4 2022	x	x				
Cisco Telephony					x	x
NICE Call Logging	x	x				
Eventide Call Logging			x			
AFRRCS with talk groups configured for shared comms.	x	x	x	x		
Hexagon CAD 9.4 (standalone) Latest Version	x		x			
Hexagon CAD 9.4 Latest Version – shared system but no shared data		x		x		x
Hexagon CAD-to-CAD interface		x	x			
ProQA	x	x	x			
NICHE RMS	x					
Coplogic Online Reporting	x					
Content Management System or Intranet for SOP Mgmt	x					
ICO Solutions RMS		x				

<sup>3</sup> <https://crtc.gc.ca/eng/phone/911/gen.htm>



SAP Customer Relationship Management (CRM) System					x	x
Posse					x	x
3-1-1 App					x	
Kana					x	
Two-way interface with some other city organizations					x	
Cloud based technology for remote working					x	

Table 4: Comparing Technology Applications across Organizations



# 3 RESPONDING TO CROSS-ORGANIZATION CHALLENGES

Many specific challenges to cross organization integration have emerged through the development of the Business Case. While these challenges have been noted, it is also important to comment that all organizations have been expressly interested in the potential and open to explore a new pathway in service response and delivery and some form of integrated response model. The identified cross organization service delivery challenges have been sorted into the following five categories:

## 1. Achieving Effective Service Outcomes

- Service demands frequently exceed the capacity to respond indicating a need for more resources or for ways to apply resources more efficiently.
- Recurring callers absorb resources from more than one service that could be better applied to meet community demand.
- If it is not a clear emergency situation, callers can be passed from one agent to another leading to caller frustration with having to repeat the same information and ultimately a loss of confidence or trust in the system.

## 2. Maintaining Operational Efficiencies

- Multiple organizations responding to the same event – duplication of efforts.
- In requests for support from partner organizations there can be confusion on who should handle the call request.
- High turnover of staff in some social services organizations. Need to keep training current help to better communicate with the dispatchers.

## 3. Coordinating Services to Optimize Outcomes and Efficiencies

Each service organization has some means of tracking information to monitor the scale and effectiveness of the services they deliver. The efficacy can vary to some degree among the organizations but there is a general perception that there is a lack of clear definition of what is tracked and measured across organizations.

- While the various services often intersect in terms of places and people involved, there are limited avenues and procedures for coordinating and monitoring outcomes among a broad set of organizations.



#### **4. Information Management and Technology**

While there is some congruity among the data and communication systems used by the various services, there are a number of gaps that inhibit the ability to monitor demand and outcomes in a way that supports a continuum of services and optimal outcomes. These include:

- No means of referencing multiple requests from one citizen.
- Not all 9-1-1 data is transferred between the call receiving organizations
- In some cases, the telephony system does not capture non-9-1-1 information
- CAD systems can be highly configured for a particular organization's specific use which can be problematic when implementing CAD upgrades

#### **5. Governance**

The governance of the overall communications process involves organizations which are significantly different in terms of:

- Service cultures
- Existence of a Board
- Oversight prescribed for the Board
- Variations in nature of service mandates
- Funding sources
- Availability of Services (24/7; Mon to Fri; part time)
- Data collection, storage, and sharing capabilities

This complex jurisdictional and funding framework represents a significant challenge to establishing an integrated model for maintaining public health and safety. There will need to be a working agreement to coordinate the services being delivered.



## 3.1 SERVICE ENHANCEMENT OPPORTUNITIES

To facilitate discussion, we have summarized observations on the identified opportunities for collaborative and operational model adjustments and enhanced technology.

### Collaborative and Operational Model Adjustments

While significant challenges to establishing an effective integrated model for delivery of public safety services have been identified, there have been some efforts to improve through the introduction of City, Police, and 24/7 initiatives, for example:

- Police and Crisis Team (PACT) (EPS+AHS-AMH),
- Human-Centred Engagement and Liaison Partnership (HELP) Unit (EPS+ Boyle Street)
- 24/7 Crisis Diversion (Boyle Street, CMHA 2-1-1, Hope Mission, REACH Edmonton, EPS + AHS - EMS)

Additionally, through the development of the Business Case, it has been noted that an extension of the 'Trusted Partner Program' with AHS and other service providers would be beneficial. Trusted Partner Programs allow for recognition and accommodation of expertise of partner organizations.

Information on examples from other communities has been gathered through the Literature Review and Benchmark process to enhance and further support concepts and opportunities related to an integrated response from call evaluation and dispatch. It is anticipated that Edmonton has an opportunity to introduce innovative collaborations that can extend the progress already underway, while acknowledging the distinct abilities that each organization can support.

An example of this comes from the Task Force Report (Safer for All) which identifies four major goals for how Police and others should approach their roles differently in order for there to be improved and lasting community safety for everyone.

- Send the most appropriate responders.
- Modernize the way people respond.
- Build and sustain trust.
- Reduce demand for Police.

One of the significant hurdles identified in achieving a more integrated approach to call evaluation and dispatch are the lack of 24/7 service delivery capabilities in social and mental health organizations. Based on examples from other places, this appears to be a challenge that can be overcome and can even reduce costs.



### Enhanced Technologies

Sharing information is considered a key requirement for providing a more effective and coordinated response. For example, being able to connect with case managers or other organizations is key in providing the person in need with the best care both during the event and during follow-up phases.

Collection and sharing of real time data and continued collaboration among partner organizations will be an asset. While this will require data and communications systems adjustments, the main challenges will be operational adjustments rather than technical. Based on advances in various communities to date, the potential to both improve services and reduce costs can be a motivational factor for change.



# 4 GOALS, OBJECTIVES + DESIRED OUTCOMES OF INTEGRATION

## 4.1 GOALS AND OBJECTIVES

The goal of the Business Case is to "eliminate barriers, increase understanding and engagement by stakeholder, and move the response from a traditional emergency response of Police, Fire, and EMS toward an integrated continuum of response. An integrated continuum of response means getting the right resources to the right place at the right time.

The desired objectives of an integrated call evaluation and dispatch system for Edmonton have been identified as one which is:

### SCALABLE

The ability of an organization, system, model, or function to cope and perform well under an expanding or contracting workload or scope.

### SUSTAINABLE

The capacity to evolve in a responsive, resilient and robust manner over time with sufficient funding and resources to maintain the desired service level.

### INTEROPERABLE

The ability to work in a collaborative model for response/ deployment enabled by the ability to share data, information and communications.

### MEASURABLE

The ability to collect and analyze information and content to evaluate degree of success in achieving desired goals, objectives and to support decision making.



## 4.2 DESIRED OUTCOMES OF INTEGRATION

*“What does it mean to get the right resources to the right place, at the right time?”*

To measure whether or not a goal is achieved, a series of outcomes are identified. These are the desired state or detailed changes that result from the work being completed. In the context of the Business Case, several outcomes have been identified by the participating organizations through the initial stages of this project. These outcomes would be used to measure the effectiveness of the integration and subsequent changes.

### 1. APPROPRIATE RESOURCE ALLOCATION

**Based on the nature of the call and the assessed risk, the resource most likely to facilitate a positive outcome is assigned to the event.** Appropriate resource allocation is about understanding the expectations within the deployment phase and clearly defining those expectations. Not all calls for service are emergency events nor require an immediate response. Sharing of resourcing during a response enables partner organizations to be supported to achieve desired outcomes.

*For example, EPS may not be required to attend all events, however where public or responder safety is in question, EPS should be included in the response.*

### 2. 24/7 SERVICE DELIVERY

**To have the opportunity for the same level of service delivery at all times of the day throughout the year.** To provide the appropriate resource allocation consistently, the appropriate teams providing that service need to be available 24/7. There is a degradation of service when responders do not have the same access to information or partner resources.

*For example, having 3-1-1 and Peace Officers available to manage calls for service would prevent other organizations from having to pick up this work after hours, resulting in a different level of service for the community.*

### 3. REDUCE THE NUMBER OF TIMES CLIENTS WITH COMPLEX NEEDS REQUIRE ACCESS TO EMERGENCY SERVICES

**Aligning appropriate and ongoing supports to clients with complex needs to reduce their reliance on the emergency and community providers.** The most critical phases for this outcome are the deployment and follow up phases. The deployment phase allows for the identification of the client's immediate needs which may or may not require an immediate response. The follow up phase ensures that the client receives the necessary ongoing support to address their needs. This can include mental health, housing, medical or judicial services. Using the data collected and sharing the data with partners can assist the response to clients with complex needs.



*For example, having the details of the personal recovery plan for the client available to the appropriate partners could result in a reduction of wait times, improved outcomes, a more positive client experience and better use of resources. Reduction in the number of times an individual has to contact emergency services results in better outcomes for the individual and the community.*

#### 4. IMPROVED CUSTOMER SERVICE AND QUALITY OF CARE

**From the initial call to the final outcome, provide an exceptional customer experience and high-level quality of care.** By sharing information, processes and technology, it will reduce the number of times a client has to repeat their personal and situation related information. Having the ability to dynamically transfer the client with the information already gathered to the appropriate organizations results in a more client-centric approach and reduces the time consumed by subsequent organizations in the process. Organizations partnering to provide all necessary services in a coordinated, pro-active, and timely fashion improves the overall care and satisfaction of the client.

*For example, if a client calls 9-1-1 to report a non-emergency event or situation that requires mental health support, the 9-1-1 can perform a warm transfer of the caller to 2-1-1. In the future, this transfer could also include the transfer of any information collected in the NG9-1-1 Call Handling solution or CAD system to the 2-1-1 Contact Management Software. This would allow the 2-1-1 call evaluator to continue the intake process minimizing the amount of information the caller must repeat.*

#### 5. INTER-ORGANIZATIONAL NETWORKS

**Organizations working together in an integrated manner to provide the best continuum of response for the best outcome for the client.** To meet the needs of the clients, the partners must work together and build trust among the group. Meeting the needs of the clients can only truly happen when all supporting organizations are considering the client's needs and tailoring the work plan for success. This includes aligning information, training, processes, technology and having overarching governance to ensure active participation and funding.

*For example, with agreed protocols and training, when a client with complex needs calls any of the partners for assistance, the call intake is managed in the same way resulting in the most appropriate resources being deployed and/or follow up actions being taken.*

#### 6. APPROPRIATE USE OF DATA AND METRICS

**To have the ability to collect, share and analyze data and information to support the response continuum and measure outcomes and impacts of the integrated model.** Organizations would share a common language and data elements to allow for sharing of appropriate (agreed) Information across technology platforms in real time. Aggregation of the data in a combined system would allow for the creation of common metrics for accountability and KPI reporting both internally and externally.



*For example, having the ability to share the client's care plan (with client consent) so all resources supporting them can provide the care required and update information as they work with the client. This shared information would include common data elements that would allow for reporting of outcomes. It would also allow for tracking of patterns, show areas of concern or opportunities to improve service and provides transparency with the community being served.*

## 7. IMPROVE CITIZEN QUALITY OF LIFE

**Through reaching the desired outcomes it has the potential to improve the overall quality of life for Edmontonians by increased access to support systems on a 24/7 basis.** Diversion of calls can result in the client getting the most appropriate assistance at the time they need it.

*For example, a person without housing is provided with transportation to shelter and follow up assistance to obtain appropriate housing and support to maintain it. The resolution of multiple such cases within the community facilitates a sense of well-being.*

## 4.3 MEASURES OF SUCCESS AND KEY PERFORMANCE INDICATORS

Within an integrated system of call evaluation and dispatch, and with the desired outcomes identified above, key metrics and indicators of successful performance should be agreed to and shared with all organizations. Each of the outcomes should align with a methodology for determining success. The components for measuring that success could include:

- What data is required to know progress has been made?
- How is this measurable?
- How is this scalable?
- How is this sustainable?
- How is this interorganizational and interoperable?
- How is this actionable?





Key Performance Indicators are the critical indicators of progress toward an intended outcome. They provide a focus for strategic and operational improvement, create an analytical basis for decision making and help focus attention on what matters most.

All Action Items include targets (quarterly calendar milestones) as well as relevant data metrics that can be quantified and measured. This approach focuses on indicators to ensure future success.

Through the development of the Business Case, the following key performance indicators are identified to support future measures of success:

- Enhanced quality of operator response to calls for service - adhering to established and periodically updated protocols.
- Increased use of one-point information gathering from a caller.
- A reduction in the need for two-way contact between organizations – accurate intake evaluation, caller transferred to the appropriate organization and effective deployment for the relevant organization(s) with reduced need for organizations to check back on event details or the appropriateness of deployment.
- Provision of 24/7 service delivery to the community through the appropriate use of the organizations in an integrated model.
- A reduction in the number of repeat callers through the provision of a coordinated multi-organization identification and resolution of complex individual and community issues.
- Minimal time, to agreed standards, concerning call response and organization deployment.
- Adoption of a philosophy and practice that a response to a call for service is the first step in ensuring service to the public, and community safety and well-being.
- Periodic reviews of the public perception of 9-1-1 and non-emergency service, soliciting input from a broad range of system clients.
- Recognition and practice that not every call demands an emergency response.
- The establishment and adoption of appropriate organization and integrated system metrics which afford the ability for monitoring performance and service enhancement.



## 4.6 CURRENT MOU OVERVIEW

There are fifteen organizations currently involved in the Integrated Call Evaluation and Dispatch Business Case. Nine of these organizations are involved in MOU's with other organizations regarding various aspects of sharing resources or coordinating services. The other six organizations do not appear to currently have resource sharing or services coordination MOU's with other organizations.

A few of the MOU's define the 'terms of reference' for a specified team or alliance involving two or more organizations. Others are focused on arrangements for sharing some type of resource (e.g. mobile radio system, helicopters, etc.).

Some of the existing MOU's may be able to be modified to incorporate other organizations as part of moving towards a more integrated model. In other cases, it will be necessary to establish new MOU's. Given the flexibility of MOU arrangements, this approach appears to be well suited to accommodating a variety of arrangements in a manner that can evolve over time.

The following summary table of current MOUs between and across organizations working within the call evaluation and dispatch system has been developed. It provides a clear illustration where communications and relationships may exist already in a formalized manner, and where there may be opportunities to enhance communications and relationships.



MOU	Edmonton Police Service (EPS)	Edmonton Fire Rescue Service (EFRS)	City of Edmonton (CoE)	(AHS) - Emergency Medical Services (EMS)	(AHS) - Addictions and Mental Health (AMH)	Alberta Gaming and Liquor Commission	Ministry of JSG + ML	24/7 Crisis Diversion (BOYLE STREET)	24/7 Crisis Diversion (HOPE MISSION)	24/7 Crisis Diversion (REACH)	Community Standards Branch	Edmonton Transit Service	Canadian Mental Health Association (CMHA) 211	SCOPE
MOU 189 COE Planning and Dev, EPS, AGLC, and Edm Fire Rescue	X	X	X			X								Defines <b>Public Safety Compliance Team</b> duties and jurisdiction.
CLM 204128 MOU PACT Draft EPS and AHS 2019 (Draft)	X			X										Defines <b>Police and Crisis Team</b> duties and jurisdiction.
MOU-29 2018 EPS & AHS EMS – Tactical Emerg Medical Support Paramedics - NA	X			X										Defines purpose and objectives of TEMS program and nature of working relationship
MOU-87 EPS & EFRS – Emergency Response – NA	X	X												Details the responsibility of EPS and EFRS members in context of serious collision sites.
MOU-191(a) EPS & AHS-IC PACT extension	X			X										Agreement to extend previous agreement.
MOU-192 EPS and Edm Fire Rescue Helicopter	X	X												Articulates arrangements for use of Edmonton Police Service helicopter by the Edmonton Fire Rescue Services.
MOU-221 EPS & AHS Forensic Assess & Comm Svc	X	X												Defines purpose and objectives of the <b>strategic alliance</b>
MOU-265 EPS & AHS & COE – Residential Living Governance Committee	X		X	X										Define roles and responsibilities of City, AHS, EPS, and GOA in the Residential Living Governance Committee
Sharing Agreements with AFRRCS for sharing AFRRCS talk groups	X	X	X	X							X	X		All agencies using AFRRCS
MOUs exist between Community Standards Peace Officers and ETS											X	X		Service delivery MOU
MOU for data sharing between AHS and EFRS		X		X										CAD to CAD interface

Table 5: MOU Summary



## 4.7 RISK IDENTIFICATION AND MITIGATION

The process of integration is complex. It requires the orchestration of resources from municipal and non-municipal emergency and non-emergency services. The positive outcomes of an integrated system have significant impact upon the budgets, personnel safety, client service and reputations of public organizations and an enhanced sense of community well-being. However, although unlikely, there could also be negative consequences which impact service and create liability issues. This could create risks for the participating organizations. Such risks can be identified prior to, and during, the implementation process and mitigation strategies can be developed.

The following table identifies possible risks which could be encountered by the organizations the suggested mitigation strategies to address the risks as process toward integration. Some of these risks are already evident in current service delivery.

RISK	ORGANIZATIONS INVOLVED / AFFECTED	MITIGATION
Insufficient staff to address anticipated demand	24/7 Crisis Diversion (REACH)	Establish data collection (baseline and ongoing) and monitoring of service quality and changes, assess staffing loads and requirements, bring to Steering and Working groups to assess impact and resolution.
	24/7 Crisis Diversion (BOYLE STREET)	
	24/7 Crisis Diversion (HOPE MISSION)	
	AHS – AMH	
	Edmonton 3-1-1	
Inadequate information to effectively fulfil an integrated role	AHS – AMH	Develop list of required information, review constraints imposed by related legislation, and submit to Working Group and Steering Committee for prospective development of MOUs.
	EPS	
	EFRS	
	ETS	
	Edmonton 3-1-1	
	CSB	
Inaccurate assessment of incident at intake resulting in: · Delayed attendance of EMS / EPS / EFRS /	24/7 Crisis Diversion (REACH)	Accurate intake processes, by incident types, developed by Working Groups and Steering Committee with tipping points clearly established; information regarding location history/individual made available; training of
	24/7 Crisis Diversion (BOYLE STREET)	
	24/7 Crisis Diversion (HOPE MISSION)	



RISK	ORGANIZATIONS INVOLVED / AFFECTED	MITIGATION
<p>ETS</p> <ul style="list-style-type: none"> <li>· Danger to attending staff / personnel</li> </ul> <p>Inaccurate assessment of incident and location (e.g. Park System) at intake resulting in:</p> <ul style="list-style-type: none"> <li>· Delayed attendance of personnel</li> </ul>	EPS	<p>intake and organization personnel; ongoing assessment of evaluation and service quality.</p>
	EFRS	
	ETS	
	AHS – EMS	
	CSB	
<p>Reliance upon non-City organizations to actively become engaged in the integration process.</p>	COE	<p>Development of an MOU with roles and responsibilities clearly delineated and funding considered.</p>
<p>Public fails to understand the new integration processes.</p>	COE	<p>An essential element of the Integration process is the development of information packages for media, the public, and organization staff regarding the changed processes and the service benefits and ongoing public engagement.</p>
<p>Inability to accurately assess the value of the integration initiatives.</p>	COE	<p>Establish governance process to oversee implementation and development of elements, data collection (baseline and ongoing) and monitoring of service quality and changes, seek public, user and stakeholder input.</p>
<p>Perceived differences between the role of the Organization Board / Council + City Directors / Police Commission / AHS Provincial Board / CMHA Board and the role of governance of the integration process.</p>	24/7 Crisis Diversion (REACH)	<p>Development of an MOU with roles and responsibilities clearly delineated.</p>
	24/7 Crisis Diversion (BOYLE STREET)	
	24/7 Crisis Diversion (HOPE MISSION)	
	CMHA – 2-1-1	
	AHS – AMH	
	AHS – EMS	
	EPS	
	COE	
	24/7 Crisis Diversion (REACH)	



RISK	ORGANIZATIONS INVOLVED / AFFECTED	MITIGATION
<p>With focus upon more appropriate use of social service skills and experience of personnel vs. attendance of police, greater potential for personnel to interact with violent offenders.</p>	24/7 Crisis Diversion (BOYLE STREET)	<p>Appropriate training of personnel in de-escalation skills. Provide to attending personnel information regarding violent history or access to weapons - based upon MOU addressing sharing of information.</p>
	24/7 Crisis Diversion (HOPE MISSION)	
	ETS	
	CSB	
	AHS – EMS	
	AHS – AMH	
CMHA – 2-1-1		
<p>Inability to provide 24/7 coverage requires alternative organization involvement.</p>	<p>Edmonton 3-1-1</p>	<p>Establish data collection (baseline and ongoing) and monitoring of service quality and changes, assess staffing loads and requirements, bring to Steering and Working groups to assess impact and resolution. In the interim, MOUs to address service gap.</p>
<p>Organizations with a mandate beyond Edmonton challenged by reconciling broader strategies with Edmonton focussed strategies.</p>	<p>AHS - EMS CMHA</p>	<p>With partner organizations, explore local requirements, identify conflict with the broader mandate/authority, attempt to adapt to Edmonton requirements with, if necessary, development of MOUs.</p>

Table 6: Risk and Risk Mitigation Summary



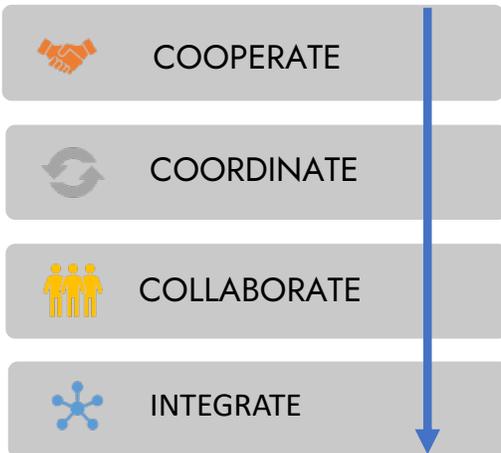
# 5. FRAMEWORK FOR INTEGRATION

## 5.1 DEGREES OF INTEGRATION

Based on findings in previous stages of exploration during the Business Case, various degrees of possible integration emerged as a way to frame and understand the role and importance of each contribution to the service being provided.

These degrees form a template of progression along the continuum of integration. They provide a mechanism to monitor forward movement and success in achieving desired outcomes. It should be noted that the partner organizations can progress through the continuum at different rates. The success of the whole is tied to the ability of all organizations to reach each degree in partnership.

Together with the integration elements, these degrees of integration form the basis of the proposed model of the integrated call evaluation and dispatch system. In review of current literature, benchmarks and best practice, these four phases of integration we often considered as distinct phases toward an integration outcome. A clear example of can be found in the Homeland Security and CITG frameworks.



**Cooperate** is defined as 'personal relationships between management and staff in different organizations.'

As important relationships between the organizations exist, albeit in an informal way, the pre-integrated call evaluation and dispatch period can be categorized as the "Cooperate" phase.

**Coordinate** is defined as 'multiple organizations which work together to coordinate services.'

With the efforts to improve various aspects of public service delivery (e.g. CSWB, PACT, HUoS and HELP), and the initial establishment of integrated call evaluation and dispatch systems and communications, this period can be categorized as the "Coordinate" phase.

**Collaborate** is defined as 'multiple organizations which share the framework elements such as information, process, governance, technology.'

Organizations anticipate issues and problems that may, concurrently, exist within partner organizations. Inquiry, discussion, planning, and deployment strategies are addressed as a collective. Common outcome measurements are determined prior to service deployment being initiated. Assessment of outcomes is conducted as a group.



**Integrate** is defined as ' multiple organizations which agree to merge into a new fully inter-operational / inter-organizational relationship.'

Seen as the "ideal" state, it will take considerable time and resources to realize; and, because of the complexities inherent in integration, it may not be possible or desirable to fully integrate all aspects of the call evaluation and dispatch process. The progress of each element of integration will progress at different rates.

CALL EVALUATION = INTAKE  
DISPATCH = DEPLOYMENT



## 5.2 ELEMENTS OF INTEGRATION

The elements of integration emerged through the process of conducting current service profiles for each organization in Edmonton impacted by the need to respond to addiction, mental health or social service-related calls for service. These elements were identified through discussions with various stakeholders given their relevance and critical nature as key driving resources for each organization involved.

The five elements involved integration are:

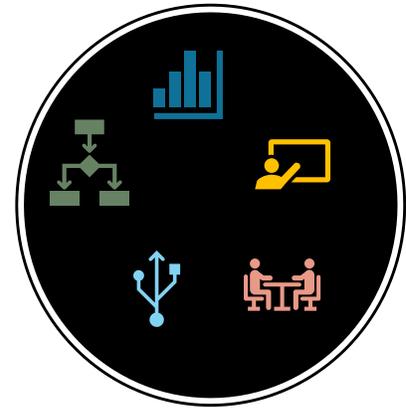
**ELEMENT 1: GOVERNANCE**

**ELEMENT 2: PROTOCOLS AND PROCESSES**

**ELEMENT 3: INFORMATION**

**ELEMENT 4: TECHNOLOGY**

**ELEMENT 5: TRAINING AND EDUCATION**



### ELEMENT 1: GOVERNANCE



Reliable, continuous and high-quality call evaluation and dispatch services are critical to the Province of Alberta and the City of Edmonton’s public safety outcomes and public service aspirations. There are a number of multi-jurisdictional organizations that provide critical communication and public support services to the citizens of Edmonton.

Currently, some of the participating organizations have begun the process of integrated response through establishing shared MOUs and protocols. These are not consistent across the organizations. From this process of developing the Business Case, and its Steering Committee and Working Group, Governance is at the degree of **'Coordinate'**.

An effective governance regime will help to maximize service efficiency and effectiveness. The Auditor General of Alberta’s website reads: *“For performance audits of governance and oversight, have entities established effective governance practices and regimes?”*



Determining an appropriate governance framework for an umbrella, integrated communications' process in Edmonton involves municipal, provincial and not-for-profit organizations which are significantly different in terms of:

- Legislative restrictions
- Privacy and security requirements
- Employee contractual agreements
- Risk universes
- Service cultures
- Board/Organizational oversight
- Variations in nature of service mandates
- Budgets and funding sources
- Availability of Services (24-7; Mon to Fri; part time)
- Data collection, storage, and sharing capabilities

*"An organization that uses good governance is one that always, in word and action, demonstrates: accountability, leadership; integrity; stewardship; and transparency."*

- Office of the Auditor General of BC

This complex jurisdictional, legal and funding framework among the partners represents a significant challenge to establishing an integrated model for maintaining public safety and community well-being. A workable model will evolve as the implementation progresses. However, this complex development process must be organized and orchestrated to ensure recognition of the organization differences and facilitate timely development of the detail and logistics of the process.

A governance arrangement to direct the integration process does not imply necessarily imply the amalgamation of all services, co-location of operations, nor major changes to the mandate, authority and responsibilities of the organizations involved. It is essentially a shared understanding of a structured process that advances progress towards an integrated service delivery model.

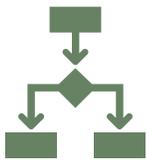
The chosen governance model will influence the flow and pace of progress as the process moves through the degrees of integration and continues to evolve over time.

Questions to ask when exploring the element of governance for an integrated call evaluation and dispatch response:

- Who has the authority to respond in a given scenario?
- How can partners become more fully coordinated?
- What efficiencies and synergies can be added and expanded?
- What Data / Information Sharing Agreements need to be created?
- How do we alleviate the FOIPPA concerns?
- How is this partnership structured and funded?
- How can partners become more fully coordinated?
- What efficiencies and synergies can be added and expanded?



## ELEMENT 2: PROTOCOLS AND PROCESSES



Protocols and processes refer to how calls for service are managed both through intake, deployment and post event phases. It includes policies and procedures, workflow and general operating guidelines. Protocols and processes speak to the planning of responses and the goal of consistently getting the right resource to the right location at the right time.

Currently, there are limited shared protocols amongst the partner organizations and inconsistencies in how similar calls for service are managed. Protocols and processes between the organizations involved in this Business Case are minimal or at the degree of '**Coordinate**'.

In many cases, coordination between resources is done at a supervisory level rather than at the organizational level. Many of the processes being followed have grown organically and are not well documented or formalized.

Due to the number of methods for receiving calls for service, consistent protocols are required across the partner organizations as a single point of intake is not viable in the short term. As well, these calls for service do not always come from the public, sometimes they are generated by internal stakeholders while performing their day-to-day duties. Solutions will need to take this into account to allow for different reporting pathways resulting in consistent outcomes.

Questions to ask when exploring the element of processes and protocols for an integrated call evaluation and dispatch response:

- What procedures must be adopted to support the optimized coordinated in-take, deployment and post event model?
- What are the impacts on the follow-up?
- What needs to change to provide the desired 24/7 service delivery model?
- How can we simplify and streamline communication lines?
- What technologies are required to support modified procedures?
- How do we communicate and assist users to manage the changes?
- What authorities are needed to support these changes?



### ELEMENT 3: INFORMATION



Information and data are quantitative/statistical, and qualitative. Information and data take various forms, each generated to meet the needs and requirements of organizations to fulfill contractual and reporting obligations to Boards or funders, inform client records, track organization interactions and to receive information from the public and make deployment decisions to calls for service.

Currently information sharing does occur but in a limited way. At the current Cooperate degree, it often occurs as a result of personal connections. The exchange of information does not follow a universal pattern and information sharing often takes place at the scene of a multi-organization response.

The qualitative aspect of information sharing between integrated organizations is more problematic than the quantitative or location-based event data. Information related to victims or 'frequent users', for example, often requires the sharing of personal information. Such information exchange is bound by legislation such as the *Freedom of Information and Protection of Privacy Act*, *Health Information Act* or the *Personal Information Protection Act*.

Questions to ask when exploring the element of information for an integrated call evaluation and dispatch response:

- What data needs to be shared?
- Who shares the data?
- When does it need to be shared?
- How do we share data / information?
- What are the enablers?

Questions to ask when exploring the element of technology for an integrated call evaluation and dispatch response:

- What do we need the technology to do?
- What technology is required?
- Are the existing technologies able to meet the need?
- How will the selected technology be funded and supported?
- What are the enablers?

### ELEMENT 4: TECHNOLOGY



Technology refers to computer, voice or data systems used by skilled personnel for the management of the call evaluation and dispatch response. When properly configured, staffed, and implemented, technology will support all the elements, people and processes. Currently there is a disparity in access to, and use of, technology amongst the partner organizations. This limited interface of technology between the partner organizations results in minimal shared data elements or centralized reporting. The use of technology within the organizations involved in this Business Case is minimal or at the degree of 'Coordinate'.



## ELEMENT 5: TRAINING AND EDUCATION



Training and education provide an opportunity for staff to gain knowledge, skills and abilities related to all elements of integration. This includes resources in all phases of the integrated call evaluation and dispatch process. In its many forms training and

education is a significant element of successful integration. Consistent training on agreed policies, procedures and technology improves quality, reliability and outcomes.

Currently, there are several organizations who have started to create orientation training which is provided to assist other organizations to understand what they do and how they can work together to provide a higher level of service. Much of this training was designed as in-person training but has been impacted by COVID-19 restrictions. Training and education between the organizations involved in this Business Case is minimal or at the degree of '**Coordinate**'.

Questions to ask when exploring the element of training and education for an integrated call evaluation and dispatch response:

- What training is required to adopt an integrated model?
- What needs to be adapted to optimize training and education efforts?
- Who provides the training?
- How do you coordinate consistent training across the partners?
- How do you address ongoing training needs?

## 5.4 INTEGRATION MATRIX

Each of the Elements can progress through the stages of integration at a different pace. Using the Department of Homeland Interoperability Continuum tool as a basis, the following integration matrix was created to help manage the integration process. The matrix will allow for the measurement and tracking of progress towards integration by the individual organizations or by the partners as a whole. The examples provided for each of the elements by degree are intended as examples of what was discussed during interviews and workshops.



	COOPERATE	COORDINATE	COLLABORATE	INTEGRATE	
<b>GOVERNANCE</b>	Individual governance structures with some partnerships.	Stewardship Committee chaired by neutral 3rd party. Form of governance identified. Mutual understanding.	Decision making structures evolve. Aggregation of collective strengths across organizations. Scalable interim solutions emerge. Hub model developed.	Coalition of Authorities. Trust. Shared Accountability and Ownership. MOUs, governance and reporting structure in place. Risk mitigation strategies established.	
<b>PROTOCOLS + PROCESSES</b>	Individual protocols - limited sharing. No formal inter-organizational agreements.	Some agreements established between some organizations. Limited sharing of protocols and processes.	Sharing inter-organizational processes and protocols. Framework for agreed processs established.	Trusted partners protocols and process established. Agreements established among all partner organizations. Consistent level of service for all regardless of intake format or organization.	
<b>INFORMATION</b>	Individual sharing not system based sharing.	Initiate development of common language. Established flow of information and common codes achieved. User friendly tools and system for data capture and analysis.	Rules and framework for proactive collecting and sharing established. Shared common language utilized. Information and timing is shared appropriately across the continuum.	Relevant, trusted, accurate, and timely information shared appropriately.	
<b>TECHNOLOGY</b>	Disparate, stand alone applications used by each organization. Systems do not support shared data collection methods.	Limited sharing of systems (NG9-1-1 Implementation). Limited shared data collection methods.	Agreements to share systems and technology. Consistent data hub (e.g. CAD). Leverage of system and technology to support inter-organization adoption of integration model.	Real time sharing of systems and data. Partnerships with external stakeholders to support future technology such as AI. Technology supports internal and external reporting.	
<b>TRAINING + EDUCATION</b>	Individual organizations conduct separate and institutional training. Limited orientation to partner organizations.	Inter-organization education curriculum explored. More consistent inter-organization orientation.	Inter-organization education, certifications standardized and implemented. Exploration of 3rd party education opportunities.	Inter-organization education, certifications standardized and common practice. Ongoing and consistent training for all organizations. 3rd party training providers include training components in their standard training.	

Figure 8: Integration Matrix

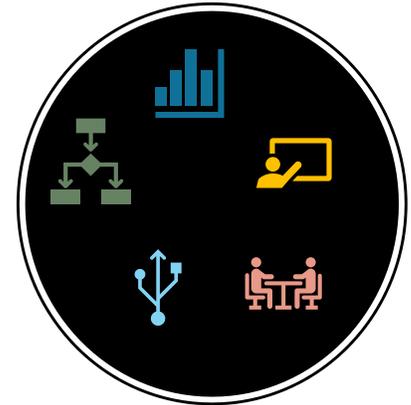


## 6. RECOMMENDATIONS FOR ACTION

The following 'Recommendations for Action' are intended to assist participating organizations with a number of implementable 'Action Items' to move towards an integrated service model for call evaluation and dispatch. The suggested actions are aimed at achieving the identified goals and outcomes. Facility and Cost Implications are noted in Sections 6.2. and 6.3.

### 6.1 'ACTION ITEM' APPROACH BY ELEMENT

We have identified an 'Action Item' approach that provides a clear set of actions with milestone targets, the primary phase impacted by the Action Item, cost and facility implications.





## ELEMENT 1: GOVERNANCE

Governance refers to the structures and accompanying processes implemented to ensure accountability, transparency, responsiveness, adherence to the rule of law, along with equity and inclusiveness, empowerment, and a broad-based participation in an organization's activities.



Action Items to support governance to move toward integration include:



ELEMENT 1: GOVERNANCE	
An Integration Coalition	
a	The Designated Resource, time limited contract signed and develops a strategic approach to integration.
b	Establish MOU and Terms of Engagement for all organizations seeking integration.
c	The Designated Resource meets with Steering Committee and Working Group to develop, review and amend the overview Implementation Plan. Initial draft amended and presented to stakeholders.
d	Steering Committee and Working Group begin active role in implementation, organizing assignment of tasks and responsibilities and Project committees by 'Element', Information; Processes and protocols; Training; Technology; and short-term meeting schedule.
e	Break the project into a draft list of milestones and deliverables which are specific, measurable, acceptable, realistic, and time-based.
f	Establish a process of ongoing communication across organizations.
g	Consider public engagement in the planning process.
h	Identify risks and mitigation strategies.
i	Create a budget.
j	Establish reporting guidelines to stakeholders, Council, organizations and the public.
k	Monitor progress, adjust the plan and add milestones.
l	Establish ongoing monitoring and adjustments of the integration plan.
m	Launch the multi-organization governance structure with the Steering Committee providing oversight, with the operational leadership assigned to the Working Group.

### a) AN INTEGRATION COALITION

Building upon the participation of the Steering Committee and Working Group organizations in the creation of the Business Case, an MOU should be established to describe the intent to continue to work together, the mandate or scope of the group ('herein referred to as a coalition'), the representative of each organization (and alternatives), roles and responsibilities, protocols, reporting requirements and other provisions. The MOU should be supported and approved by all relevant organizations. The Governance structure for the Integrated Model operation will evolve as part of the implementation activities.

The Coalition Steering Committee (CSC), assumed to be members of the Business Case Steering Committee, should assign a Dedicated Resource with the appropriate authority to facilitate meetings and lead the coalition. The Coalition Steering Committee would ensure that it has broad representation from the coalition participants. As well, organization representatives on the CSC should be individuals able to make decisions and influence policy direction on

Coalition is a term used for a group formed when two or more people, agree to work together temporarily in a partnership to achieve a common goal.

behalf of their organization.

The CSC should determine what resources would be required to support the coalition, identify funding sources, define short and longer-term priorities and set performance metrics and expected outcomes. The current Working Group will continue in its information gathering and the provision of the invaluable operational perspective.



Ideally, the CSC Dedicated Resource, would start as an an external appointment on a limited term contract to serve to manage the process and monitor progress. This position could revert to an internal position when the governance structure has been established. The Dedicated Resource should facilitate the work of the CSC and orchestrate the information gathering and input of the Working Group and follow up on issues. The Dedicated Resource should have *ad*

*hoc* access to specialists with expertise in legal, technology, privacy and other matters to assist the Steering Committee in developing necessary MOUs, legislation, legal agreements and other documents to support future integration. The engagement of independent, contracted personnel will facilitate the development of integration given the current demanding work routines of committee members. The Dedicated Resource should have sufficient experience of oversight and strategic planning and be of the stature that he/she can orchestrate executives and managers, report to the Police Board and Council and understand the mechanics of municipal and provincial governments and emergency services.

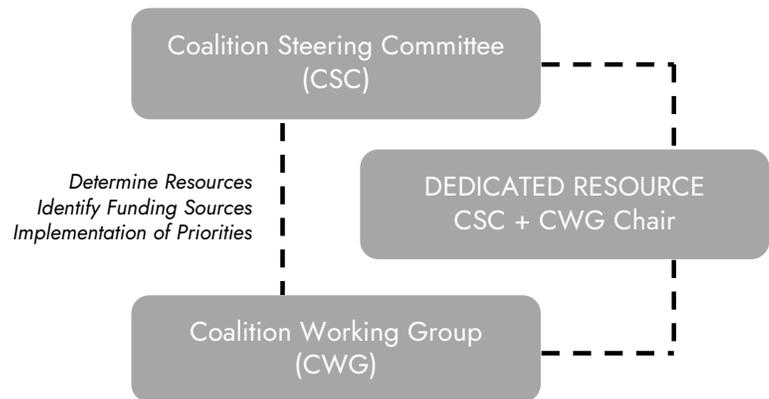


Figure 9: Coalition Structure Diagram

Priorities should be formalized through detailed partnership agreements and will expand as the development of integration progresses. The CSC should oversee the implementation of priorities directed and managed by the Working Group, through the Dedicated Resource who will, additionally, lead the Working Group.

Although a complex multi-organizational strategy, the planning process is relatively simple:

1. The Dedicated Resource to develop a strategic approach to integration.
2. Establish MOUs and Terms of Engagement for all organizations.
3. The Dedicated Resource meets with Steering Committee and Working Group to develop, review and amend the overview Implementation Plan. Initial draft amended and presented to stakeholders.
4. Steering Committee and Working Group begin active role in implementation, organizing assignment of tasks and responsibilities and short-term meeting schedule.
5. Break the project into a draft list of milestones and deliverables which are specific, measurable, acceptable, realistic, and time-based.
6. Establish a process of ongoing communication across organizations.
7. Consider public engagement in the planning process.
8. Identify risks and mitigation strategies.
9. Create a budget.
10. Monitor progress, adjust the plan and add milestones.



11. Establish reporting guidelines to stakeholders, Council, organizations and the public.
12. Establish ongoing monitoring and adjustments of the integration plan.
13. Upon completion of the Implementation phase and the transition to the Operational phase, the oversight moves from the external Dedicated Resource from the participating organizations with change in the CSC Chair occurring periodically, for example, 1 year.

## GOVERNANCE FOUNDATION MOU FRAMEWORK

The governance model would continue with the Integrated Call Evaluation and Dispatch Steering Committee and the Working Group to capitalize upon the current collaborative efforts.

At the outset, all parties would enter into an MOU to describe, in summary, the intent to work together, the mandate or scope of the group ('herein referred to as a coalition'), the representative of each organization (and alternatives), roles and responsibilities, protocols, reporting requirements and other provisions. This foundation MOU will facilitate the development of the implementation process and supportive policies and MOUs.

Other provisions should include terms such as:

- MOU to be approved by all relevant organization governing bodies.
- Details of the governance structure and oversight.
- Process for appointing the Dedicated Resource and the term of the appointment/re-appointment.
- Process for appointing Board members (and their delegates) and the term of their appointments/reappointments.
- Duration, withdrawal and termination provisions.
- Start-up financial or in-kind contributions.
- How day-to-day and long-term decisions will be made (e.g. consensus, majority rule, etc.).
- Communication and media protocols.
- A dispute resolution process.

In both the Implementation and Operational phases of the integration, the essential elements in the work of the Steering Committee and the Working Group are an orchestrated approach to information sharing, problem identification and issue resolution.

Both the Implementation and Operational aspects of oversight provide a way of utilizing and mobilizing the systems and resources already in place in different, unified, and dynamic ways to address specific situations of elevated risk, for which an integrated approach is required.

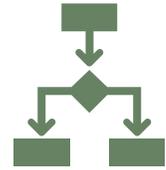
The Steering Committee and the Working Group provide:

- the format for establishing partnerships,
- the facilitation of open dialogue amongst partner organizations,
- the forthright discussion of inter-organizational and service issues, and
- the identification and deployment of personnel to appropriately address community issues or clients in need.

Models such as Hub, E-Comm, PRIME-BC and the Calgary model might also serve as frameworks for future governance considerations for the integrated system as a whole.



## ELEMENT 2: PROTOCOLS AND PROCESSES



Establishment of common protocols and processes allows for consistent service delivery to the clients regardless of which organization receives the initial call for service. When established and consistently applied it also improves client experience and enhances the safety of all participants.

Action Items to support protocols and processes to move toward integration include:

ELEMENT 2: PROTOCOLS AND PROCESSES	
a	Identify and establish key agreements between organizations.
b	Create common response processes.
c	Establish common communication protocols.
d	Create escalation protocols.
e	Establish trusted partners protocols.
f	Quality assurance and improvement.
g	Establishment of a Change Board.

### a) IDENTIFY AND ESTABLISH KEY AGREEMENTS BETWEEN ORGANIZATIONS

As the common processes and protocols are agreed a review of the agreements between organizations and within organizations should be performed. Changes may result in the need for additional MOUs or changes to existing MOUs. A review of agreements with employee groups (unions) should also be reviewed to ensure the new processes and protocols do not fall outside of the agreements.

### b) CREATE COMMON RESPONSE PROCESSES

The intake process is largely driven by how an organization is directed or decides to respond to an event or situation. Identifying an agreed upon deployment and follow up process will allow for the intake process to be modified to fit the expected response component. Common call evaluation questions should also be established to support the common response protocols. This will also result in the opportunity to establish a common set of situations or types of calls for service that make up the new model. Common protocols and processes are framed and agreed to by all organizations. Consideration needs to be given to organizations utilizing standard protocols such as IAED (MPDS). Any new protocols will need to be blended into these formal protocols to ensure the organization can maintain its certification and Key Performance Indicators (KPI).

The policies and procedures will not address all situations that the organizations respond to. They are not typically the "need for speed" type of events such as structure fires, cardiac events or



weapons events. Those events have a different protocol that have critical time elements tied to known outcomes (fire propagation curve, cerebral hypoxia, etc.). This can be done in a phased manner starting with situations where the response is clearly not a public safety issue and may require response by a single organization. As processes are learned and streamlined, further situations can be added including those that require a multi-layered response. As each process and protocol is created and agreed, each organization will perform an impact assessment to identify the changes required within their organization. It is important to ensure all partner organizations understand their roles and responsibilities in each of the agreed protocols and processes to build trust within the partners and within the community.

### c) ESTABLISH COMMON COMMUNICATION PROTOCOLS

There are two different types of communication protocols to be established and trained. The first is communication of the processes and protocols including the reporting of KPIs and feedback to all stakeholders on the efficacy of the program. This methodology needs to be agreed and formalized to ensure the organizational teams and the community receive the information in the manner it is intended. Staff, unions, management and leadership teams need to be on the same page at the same time to minimize uncertainty or misinformation being circulated. The second component of the communications protocols is related to how the partners communicate with each other during an event. This includes common language development and standard communication formats at the appropriate times. For example, how dispatch, deployment and follow up teams communicate with each other during and after an event. Standard protocols and terminology should be used at all levels. Plain English for all communications where possible will be used to reduce any confusion that can be created when radio codes are used. Standard terminology should be established and used to transmit information. Whether it is dispatch to dispatch, dispatch to inter-organizational deployment teams or deployment teams to follow up teams, communications should be structured and consistent to allow for clear and concise transfer of the appropriate information to the appropriate people at the appropriate point in the response continuum.

### d) CREATE ESCALATION PROTOCOLS

Processes and protocols should include appropriate escalation procedures when issues arise within a single organization and inter-organizationally. These processes should include processes for dispute resolution at the time of events during business hours and after business hours. These procedures should also include directions for any complaints or historical investigations required on co-response events. Which organization takes the lead and what the expectations are for response time frames for example.



e) ESTABLISH TRUSTED PARTNERS PROTOCOLS

As common protocols and processes are normalized, consideration can be given to extend these protocols to other partners thereby enabling external groups to be integrated. This may extend the program further into the community, optimizing the intake and deployment phases by creating more consistent service delivery to the community.

This consistency also builds further trust between the organizations, external partners, and community. This includes things such as establishing trust that partner organizations have followed agreed to protocols and processes and will reach out for assistance when appropriate. When they reach out there could also be established processes to reduce the intake process to account for the work that has already been done. This results in the call evaluators not asking the same questions the client has already been asked or that the partner organizations may not have available. For example, the AHS-EMS Advanced SEND protocols.

f) QUALITY ASSURANCE AND IMPROVEMENT

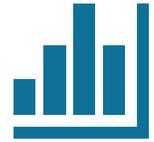
Many of the organizations have Quality Assurance (QA) and Quality Improvement (QI) programs in place. These programs would need to be modified to include the new processes and protocols. Feedback to the teams is critical to empowering all team members to have a clear understanding of their performance. Where no programs exist, they should be created to conduct routine monitoring and evaluation of the protocols put in place, and making changes as warranted.

g) ESTABLISHMENT OF A CHANGE REVIEW BOARD

Creation of a change review process allows for proper management of desired changes to protocols among the partner organizations. The Change Review Board (CRB) would have overarching leadership on the more complex changes to protocols and technology including the allocation of prioritization and review of impacts. Co-ordinated change is critical to organizational participation as it empowers each group to participate in changes that impact their organization. The CRB, is a sub-group to the Steering Committee and will liaise with the Working Group and should include representation from all organizations. This is a unique function, within the Coalition structure, given that the Steering Committee will generally not be engaged in the day-to-day processes. The Steering Committee will address any conflict resolution situations where the CRB and Working Group will work to establish priorities and timelines.



## ELEMENT 3: INFORMATION



Information is the life blood of effective integration of emergency services. Accurate information concerning the caller and the situation facilitate effective decisions concerning the resources required to ensure that the situation is addressed appropriately, those involved receive an appropriate level of care and that attending personnel are safe. Who, how and when information is collected and shared will be a prominent consideration within all information Action Items.

Action Items to support information to move toward integration include:

ELEMENT 3: INFORMATION	
a	Cross-organizational critical information exchange analysis.
b	Information sharing threshold evaluation.
c	Information sharing protocol development.
d	Service Engagement Common Language Development
e	Common service activity development.
f	Common data elements.
g	Mental Health information sharing.
h	Voluntary Registry.
i	Review Community Safety Deployment Model.
j	Resource Contact Sheet.
k	Crisis Intervention Reference Tools.

### a) CROSS-ORGANIZATIONAL CRITICAL INFORMATION EXCHANGE ANALYSIS

Identify and prioritize the levels of client information required by partner organizations to deliver the optimal response. Some information presently is exchanged through compatible technology application (AHS-EMS CAD to EFRS CAD), while other client details are exchanged at the response scene between responders.

Some client information that is deemed essential in order to initiate the response is collected multiple times, by each organization entering the joint client response situation. Clarity among organizations regarding this necessity and implementing technology solutions or operational practices to enhance

efficiency while reducing client frustrations from repeating basic information to each respective organization will enhance the overall response and client experience.

Common standards should be adopted regarding identifiers in events which may jeopardise the safety of public safety personnel and protocols developed to facilitate safety and security.

Where client service interactions can be noted, responsive organizations can determine the most recently or most frequently responding organization which may become the natural lead responder.

For example: Tombstone: Name, Date of Birth, place of residence or location frequented. Service History: Services engaged, frequency of attendance, date of most recent service organization engagement, most actively involved organization.



## b) INFORMATION SHARING THRESHOLD EVALUATION

Organizations are restricted by provincial legislation, professional standards and ethics and procedural and operational policy regarding the level of client information that can be exchanged without the consent of the client. This situation often leaves the client or support persons assisting the client repeating basic information to each additional organization that becomes involved in an intervention. This experience may also be repeated with each successive service engagement, contributing to frustration and a perception that support organizations do not work together nor respect the level of distress the client faces when requesting service.

A formal organization by organization review of legislative, professional standard and operational policy information sharing permissions and restrictions should be conducted by legal staff skilled in assessing Information sharing barriers. At the same time, organization legal staff should collaborate to identify successful means of implementing information sharing protocols that acknowledge existing restrictions, while contributing acceptable information sharing parameters in order to enhance an organizations service delivery and client service experience.

## c) INFORMATION SHARING PROTOCOL DEVELOPMENT

Existing models implemented in many Canadian jurisdictions have determined legal mechanisms whereby critical client information can be shared between organizations which are part of a multi-organizational service response or intervention.

Traditionally, these communication and information sharing issues have been attributed to confidentiality and freedom of information, however, inter- organizational information sharing is freed from concerns by designating the jointly located multi- organizational team as a "sealed intelligence hub" where information can be collated and released from the organizations' database and used to inform risk assessment with protocols covering the dissemination outside the hub. Achieving reliability and legitimacy in these safeguarding relationships at the service level is dependent upon the integrity of the dialogue facilitated in each individual case where a multi-organization response is provided.

A formal review of existing Canadian models for confidentiality and information sharing processes could be undertaken, with an acceptable model adopted within the context of Edmonton's *Integrated Call Evaluation and Dispatch* system.

## d) SERVICE ENGAGEMENT COMMON LANGUAGE DEVELOPMENT

Service engagement records and client information records are maintained to meet the needs of the service organization, comply with professional standards and report internally on service activity. Unique language and recordkeeping practices exist across all organizations.



Common language and terminology are necessary when multiple service organizations bring resources together to respond collaboratively to resolve a problem. Where individual organization language is not consistent, the potential for miscommunicating is introduced. Unique organization influences and bias may be introduced where common language parameters are not defined.

This scenario is particularly problematic when urgency in response or presenting risk is assessed by one organization but is not compatible with definitions of a partner responding organization.

Organizations' operational leads, the Working Group, should conduct analysis of common and disparate language in order to determine the most efficient and effective method to exchange multi-organization information that provides clarity when risk assessments are shared and to assure communications between and among organizations is bias-aware.

The development of a common language shared and used, across all public safety serving organizations and organizations is a key priority for establishing an effective and technically sound integrated call evaluation and dispatch system. Every functional and operational role would be required to be trained and fluent in this shared language. A Common Language 'Glossary' has been developed to support efforts of integration across the organizations. Full Glossary can be found in Appendix A of the Business Case.

#### e) COMMON SERVICE ACTIVITY DATA DEVELOPMENT

Reporting quantitative and qualitative outcomes is critical in order to satisfy operational standards and audits, demonstrate funding expectations have been met and to inform the public of progress toward stated priorities. Organizations meet these often-mandated reporting requirements following different methodologies, time frames and priorities.

When this service information is shared among organizations, the identification of opportunities to gain service efficiencies and to enhance collaboration emerges. This collaboration extends to providing a more robust method to report to the community in areas where organizations are mutually contributing to address a shared priority.

A comprehensive collaborative reporting and information exchange framework should be developed that satisfies multi-organization reporting requirements and presents a satisfactory report card on the outcomes and successes of the *Integrated Call Evaluation and Dispatch* process.

#### f) COMMON DATA ELEMENTS

Development of shared common data elements for information sharing. Capturing like information to share among organizations and form part of the metrics or measurement of success is important. The development of the data elements consideration must be given to how the data elements are to



be collected and used. When collected and shared effectively, the same data elements will not need to be collected time and time again. Reference to, and review of, other previously identified data, including those from external reports such as the Safer for All Report, should be part of the development of shared common data elements. The rationale for the collection of common data must be clearly defined as meaningful and not just data collection with no purpose. Examples of shared common data elements would include name, (identified) gender and birth date.

## g) MENTAL HEALTH INFORMATION SHARING

Develop a protocol to allow shared access to an individual's mental health information in circumstances that would provide for a more effective response to a person in crisis. This protocol must respect privacy laws and physician - patient confidentiality. This is an effort to ensure the continuum of care includes Police, Fire, and EMS response.

Models implemented in numerous Canadian jurisdictions have addressed legally acceptable information sharing frameworks that enable the sharing of personal information between organizations participating in a joint response.

In Ontario, the *Guidance on Information Sharing in Multi-sectoral Risk Intervention Models* document, which was developed by the Ontario Ministry of the Solicitor General, is available to support communities implementing models in sharing information across sectors on situations of acutely elevated risk. An Information Sharing Agreement (ISA) would be needed to be signed by all participating parties. The ISA permits those signatory organizations' representatives to collaborate and share necessary information required to address the complex needs of individuals in situations of acutely elevated risk.

Address how healthcare, treatment and planning information with respect to people with repeated crisis interactions with the public safety organizations can be shared while respecting all relevant privacy and physician-patient confidentiality concerns, and when shared can be segregated in data collection to prevent it being passed onto other Public Safety organizations. Refer to Appendices for summary of Alberta Health Privacy Act.

## h) VOLUNTARY REGISTRY

Create a voluntary registry for all individuals to complement the above protocol, providing permission to share healthcare information with all organizations, only to be accessed by emergency responders in the event of a crisis situation and subject to due consideration to privacy rights. See Next Gen9-1-1. (Reference to Ontario Provincial Framework)

## i) REVIEW COMMUNITY SAFETY DEPLOYMENT MODEL



Currently, there is a partnership between the City of Edmonton, EPS and REACH Edmonton to consolidate data for a common operating picture and resource deployment based on shared insight. The model leverages data (non-personal) for CFS based on time, location, and event type to provide predictive capabilities. There has been a shift from 412 call types to 36 call types. Partners include City of Edmonton Corporate Security, ETS, Community Peace Officers and contract security, EPS and REACH. This tool is currently underutilized and a review to determine options for enhanced data metrics compatible with the development of common data elements and a data warehouse would allow for further development of an existing resource.

#### j) RESOURCE CONTACT SHEET

Generate a fast access contact sheet to indicate where Mental Health resources are available in Edmonton - an aggregated reference tool of all community supports. Establish points of contact for all call evaluators and dispatch for key resource organizations in mental health and social services. This list of contacts will be useful during intake and deployment phases to support getting the right resources engaged at the right time.

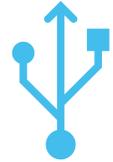
#### k) CRISIS INTERVENTION REFERENCE TOOLS

When responding to events, a quick-reference tool can be beneficial for dealing with people in crisis that reminds call evaluators and dispatch to consider such context as fear versus aggression, availability of additional information and background, alternative communications if event has really escalated, if event/scene containment is possible, is discretion necessary in response. An example of this tool could be the implementation of tools like HealthIM.



## ELEMENT 4: TECHNOLOGY

Integrated technology solutions are the backbone of interoperability. Shared technology environments empower organizations to enhance efficiency and support the organizational goals, objectives and outcomes. They allow for the sharing of information, communication and drive innovations that may otherwise not be possible.



Action Items to support technology to move toward integration include:

ELEMENT 4: TECHNOLOGY	
a	Establish Technology Working Group.
b	Assessment of technology sharing opportunities.
c	Establish shared data collection infrastructure and systems.
d	Establish shared telephony infrastructure and systems.
e	Expand use of shared communication systems.
f	Establish information exchange model.
g	Partnership with Private or Academic Resources to develop AI.

### a) ESTABLISH TECHNOLOGY WORKING GROUP

There are a different levels of technology availability and support amongst the partner organizations. This needs to be taken into account when finding and implementing solutions. Establishment of a technology working group would enable a collaborative approach to the development of technology solutions. Bringing together technology representatives from all partner organizations to work with operational subject matter experts will allow for solutions that will benefit

everyone. It is critical that any solution be driven by the business processes and needs of the organizations. Implementing technology solutions that cannot be operationalized by the users will lead to frustration and abandonment by the end users.

### b) ASSESSMENT OF TECHNOLOGY SHARING OPPORTUNITIES

Partner organizations are utilizing many different data collection systems which result in the inability to collect and share information easily. With the establishment of a committee, a review of available technology can be conducted with a goal of identifying opportunities to extend and share appropriate solutions amongst the partner organizations. Performing this assessment may lead to opportunities for streamlining technology solutions rather than each organization implementing and maintaining unique technology to meet their needs. The approach of technology sharing can reduce costs and provide opportunities to collect information and standardize communication more easily. There may also be a potential to offer solutions to partners that could not otherwise acquire and maintain complex systems.

### c) ESTABLISH SHARED DATA COLLECTION INFRASTRUCTURE AND SYSTEMS



At this time, it is difficult to establish an accurate measure of KPIs or even the number of events across all of the organizations. When a common data element framework has been established it would be beneficial to create a shared data collection infrastructure that allows for organizations to contribute data. Some of the organizations will continue to use unique systems to collect their information due to the services they provide and the standards they are required to meet. For example, police and 2-1-1 have different needs for reporting and although willing to share information, neither organization would benefit from being required to use the same system as it would be unlikely to meet all their needs. Using common systems could simplify the standardization of data elements and reporting metrics.

A review of the points in the phases where data should be shared appropriately should also be undertaken. When events call for co-response by partner organizations, each organization requires similar and dissimilar information from the caller. This may include data elements like:

1. Address or exact location of the event
2. Call-back number
3. The nature of event
4. Any known hazards; weapons

Data collected at the intake phase should be able to be dynamically handed off to the appropriate partner when calls are transferred between organizations. By creating systems that allow for sharing of information, it can reduce the number of questions asked of the client and the number of times they are asked to repeat their situation.

#### d) ESTABLISH SHARED TELEPHONY INFRASTRUCTURE AND SYSTEMS

EPS and EFRS are in the process of implementing a NG9-1-1 call handling system which when fully implemented will allow for the receipt and sharing of information on calls received. EPS has indicated that this solution could potentially be shared or connected to other partner organization solutions to enhance information sharing during the intake phase. As noted above, shared systems can produce other benefits such as cost savings and streamlining of ongoing support and maintenance.

#### e) EXPAND USE OF SHARED COMMUNICATION SYSTEMS

Many of the partner organizations utilize the AFRRCS radio system. This system has been configured to allow for shared talk groups so the partners can communicate particularly during the deployment phase. These common talk groups are not currently being operationalized or trained. Further inter-operability discussions are required to establish shared processes and protocols and training. There are opportunities to streamline communications during co-response events including day-to-day and special events.



## f) ESTABLISH INFORMATION EXCHANGE MODEL

Data standards, such as NEIM, are very useful, in principle, as they theoretically allow information from diverse organizations or sources to be:

- amalgamated to increase the depth of individual data records, or
- correlated so that a single query about an individual or “object” in the database in general can return several potential ‘hits’.

These ‘hits’ can then either be viewed separately or combined into a higher-level result.

The use of the same data standard (such as NEIM) making the information available to other organizations via query, can be superior in context-sensitive or privacy-sensitive organizations. Any organization may only wish to allow limited access to its full data set via a database “view”.

This is analogous to the current Police Information Portal (PIP) where many police organizations across Canada can decide to “publish to the PIP” and push only acceptable (in their terms) data elements to the centralized database for events, victims, suspects, or witnesses. Disparate organizations will often have different understandings as to the meaning of data, how to determine its veracity, and how data elements relate to one another.

Thus, in the use of approaches such as NIEMS, there will always be a caution factor, and a need on the part of integrated organizations for wariness and consideration of where a particular piece of information originated, its veracity, and its degree of confidentiality.

## g) PARTNERSHIP WITH PRIVATE OR ACADEMIC RESOURCES TO DEVELOP AI

Alberta has a number of top tier technology institutes which presents an opportunity for partnering to develop a call evaluation system using artificial intelligence (AI). When properly developed, AI is capable of learning, seeing patterns in data and making recommendations which can support and enhance all phases within the continuum of response. With partner organizations sharing information, a well-developed AI solution can utilize this data to assist in reaching desired outcomes. By partnering with private or academic resources, the partner organizations can gain the necessary technical expertise while providing the operational requirements. Several of the CAD vendors (including Hexagon) are beginning to develop AI functions within their systems to assist in the call evaluation process. Where possible and appropriate, these systems can be further utilized and shared amongst the partners.

The benefits of AI are not restricted to CAD or call evaluation systems. AI can be used in many technology aspects including mass notification systems and supporting co-response teams during the deployment and post-event phases.



## ELEMENT 5: TRAINING AND EDUCATION



Training is critical to the success of the integrated call evaluation and dispatch system. Common training developed by training specialists and shared amongst the partners, creates consistent learnings and supports interorganizational processes and protocols.

Action Items to support training and education to move toward integration include:

ELEMENT 5: TRAINING AND EDUCATION	
a	Establish inter-organization training team.
b	Establish common training standards.
c	Establish common training curriculum.
d	Orientation / Familiarization training.
e	Develop common language training.
f	Conduct inter-organization training exercises.
g	Create ongoing inter-organization training opportunities.
h	Create trusted partners and community outreach training.
i	Engage 3rd party training entities.

### a) ESTABLISH INTER-ORGANIZATION TRAINING TEAM

To support and streamline the process for establishing common training protocols, an inter-organization training team should be established. This team would be made up of representatives from each of the partner organizations and can work together to ensure a cross-section of appropriate information is available for the training. The team would also recommend the standards, format and curriculum for training. Having all of the organizations represented at this level enables the sharing of information, roles and responsibilities and the opportunity to ensure all necessary training needs are met in a consistent manner.

### b) ESTABLISH COMMON TRAINING STANDARDS

Each organization has their own set of training standards due to the different type of dispatching being performed. Additionally, each have different performance expectations based on standards related to their specific service deliverables. It would not be viable for all organizations to have the exact same training standards. However, it would be beneficial to have a smaller subset of the training which would be consistent across all organizations. Having all call evaluators trained to basic standards with the organization specific requirements being layered on top would provide a more consistent level of service to the clients. In some ways this is already being achieved by the dispatch centres hiring graduates of the Grant MacEwan University Emergency Communications and Response program. To further reinforce that basic introduction of the training, the organizations can agree on how the common protocols and processes are trained.



### c) ESTABLISH COMMON TRAINING CURRICULUM

Another benefit of having a shared training team and identified standards is the ability to develop and share common training curriculum and material. This reduces the amount of effort that each organization must individually exert to develop their own unique lesson plans and materials. It also allows inter-organizational development of training for the agreed upon common language, protocols and processes. Once agreed, the common training curriculum can be developed and disseminated by the proposed training team. The team can also liaise with external partners to blend curriculum modules.

By developing a common training curriculum, a level of trust is created between the partner organizations as there is an understanding of what users have been trained and how that training was delivered. When call evaluators are working with partner organizations there is an inherent trust that the other call evaluator has asked the appropriate questions and will provide the information reducing the need to ask the client the same questions.

Training curriculum should be updated on a constant basis to ensure that the material and components are up to date as the day-to-day operations shift and adjust to the needs of the clients. The training team will need to identify how and when to update the users training each time changes and adjustments are made. A combination of training formats should be considered including in class, online and self-paced learning. Where possible, all users should be exposed to inter-organization training opportunities.

### d) ORIENTATION/FAMILIARIZATION TRAINING

Prior to COVID-19, some organizations were providing a level of orientation and familiarization amongst their partners. Reinstating this and extending it as an aspect of the overall training plan in the Call Evaluation and Dispatch System will allow a more fulsome understanding of the available cross-organizational services. Proactively sharing information regarding the roles and responsibilities of each partner organization assists all users acquire knowledge of how each organization can be resourced during intake, deployment, or post event phases of an event. This removes the unknown from the equation and ensures that the right resources are getting to the right location at the right time.

This could include:

1. Speaker Series: engage mental health workers to speak to call evaluators and dispatchers. Proactively educate all call evaluators and dispatchers on available mental health resources within Edmonton.



2. Generate a fast access 'contact sheet' to illustrate where mental health resources are available in Edmonton - an aggregated reference tool of all community supports. Establish points of contact for all call evaluators and dispatch to key resource people in MH or to contact for advice.

It should be noted that these same resources should be shared at all levels (Call Evaluators, Dispatchers and Responders) to ensure that the knowledge extends past the initial intake phase.

#### e) CONDUCT INTER-ORGANIZATION TRAINING EXERCISES

Inter-organization training can be conducted in several ways. Firstly, when the common training is delivered there is benefit to having participants from all partner organizations in each session. Combining these sessions provides opportunity to network with resources from other partners and build relationships. It also allows for the participants to provide lived experiences and incorporate real world scenarios into the training.

For training to be fully effective, the users must use the skills and techniques that were taught and convert them into "muscle memory" so they become part of their day-to-day skill set. This is a primary example of the adage "use it or lose it". To fully operationalize the common standards, processes and protocols inter-organization training should be conducted on a scheduled, on-going basis. These could include scenario driven training (table-top) or other inter-organization training exercises amongst the partners to aid in the development of combined operational communication processes.

#### f) CREATE ON-GOING INTER-ORGANIZATION TRAINING OPPORTUNITIES

Training cannot be expected to be effective if only delivered once at the beginning of a person's career. To truly maximize the knowledge transfer, on-going inter-organizational training should be planned and delivered to users throughout the year. This will ensure that users are kept up to date with changes in protocols and processes. Training needs to be continued throughout a user's career to support the sustained learning and ensure continued success for the citizens of Edmonton.

#### g) CREATE TRUSTED PARTNERS & COMMUNITY OUTREACH TRAINING

The concept of trusted partners is to build relationships with external organizations that interact with the clients and can be participants in the overall continuum of response. Training groups such as external security or other non-partner organizations to provide specific information for the intake process allows for a streamlined intake and enhanced opportunity to determine the correct resources from the initial call. Although these are non-partner organizations, they interact and connect with the clients on a day-to-day basis and can provide valuable situational information and



insights. Likewise, there are training opportunities from outside resources and organizations which could enhance the service delivery of the partner organizations. Sharing information and including these groups in the continuum of response leads to better outcomes for the community.

## h) ENGAGE 3RD PARTY TRAINING ENTITIES

There are several ways that a third-party training institution such as MacEwan University can participate in providing training to all the partner organizations.

1. Graduates from MacEwan University programs are hired by many of the partner organizations. Engaging MacEwan in discussions to include common training curriculum would provide opportunity for new recruits to be hired with some basic inter-organizational knowledge. This would aid in the integration process as new team members begin their careers with the partner organizations.
2. University of Alberta (U of A), Northern Alberta Institute of Technology (NAIT) and MacEwan University could be approached to participate in providing on-going training for partner organizations. These teams have professional instructors for relevant areas such as mental health and addictions, Inclusion, Diversity, Equity & Accessibility and may be able to assist with development of curriculum for the partner organizations.

## 6.2 COST IMPLICATIONS BY ELEMENT

The recommended action items required to establish the integrated model involve modifications to all of the elements across the framework. The operational changes will impact a number of the organizational resources associated with the delivering the services. These resources include personnel, equipment, information/technology, facilities, and money (capital and operating).

A more integrated model has the potential to achieve efficiencies that can reduce overall costs while enhancing the effectiveness of the services. There may also be a need to increase the overall resources to achieve the desired outcomes. These additional costs and/or cost savings will not necessarily be evenly distributed among the organizations each of whom have their own role and sources for operating and capital funding.

Finding ways to equitably share the cost impacts of shifting to a more integrated model will be a significant challenge as the implementation process moves forward. This will likely involve a series of MOUs among different organizations regarding arrangements relating to specific costs and/or funding sources. These



arrangements will adjust and evolve as the operating model shifts through the 'degrees of integration' (Cooperate – Coordinate – Collaborate - Integrate).

## GOVERNANCE

- *Potential operating costs for project related consulting services*
- *No capital cost directly related to Governance*

The Steering Committee that guided the Business Case study was established as part of an agreement between the City of Edmonton and the Edmonton Police Service to prepare a Business Case for an Integrated Call Evaluation and Dispatch System. A Working Group (Project Team) was also established to work with the consulting team (Cornerstone Planning Group, Smith Brownlee & Associates, Perivale + Taylor). If approval is given to proceed with the actions recommended in the Business Plan, the role of the Steering Committee and Working Group will need to be reviewed and redefined. Based on the views expressed during the interviews and works sessions, there appears to be a general consensus that there is value in having an independent person take on the role of managing the process and assisting in the evolution of the Integrated Model. If a consultant team is considered a suitable option to fill this role, there would be an operating cost impact in the form of consulting fees. There would be no capital cost implications directly related to activities associated with governance activities.

## PROTOCOLS AND PROCESSES

- *Primarily operating cost implications*
- *Capital cost impacts unlikely*

Inter-organization discussions at a senior and a technical level will be required to consider adjustments that will be required to establish teams that can identify the steps needed to create common response processes and protocols. A Change Board will be required to coordinate modifications in a manner that does not compromise the ability to deliver the target level of service. These commitments of personnel time may make it necessary to augment human resources in the short to medium term, but the revised processes could make it feasible to achieve greater efficiencies in the future.

## INFORMATION

- *Primarily operating cost implications*
- *Equipment related Capital Costs are noted in Technology*

Adjusting Information resources will involve significant consultation and analysis to identify the changes required in relation to procedures and technology. If additional personnel are required to compensate for the time being taken away from normal duties, this may increase operating costs. Similarly, if consulting services are retained to assist in the process and



reduce the allocation of in-house personnel time, those fees will impact operating costs. Offsetting those additional operating costs are the potential operational savings that may be achieved through service delivery efficiencies.

## TECHNOLOGY

- *Potential operating costs (e.g. fees)*
- *Potential capital costs (e.g. equipment purchase)*

Technology costs will depend on the scale of new and/or enhanced systems that will be required to support the operational changes arising from the proposed initiatives in the other Elements. There may be some increase in operating costs for equipment leases or increases in capital costs for equipment purchases. Personnel costs could increase in organizations that need to augment their technical team. Alternately there may be opportunities for equipment and/or personnel sharing that could reduce costs.

## TRAINING & EDUCATION

- *Nominal operating cost implications*
- *Capital cost impacts unlikely*

The initial Training and Education initiatives will be primarily aimed at defining a shared understanding of the knowledge and skills required to deliver effective integrated responses. This will require discussion among the partners, which may be considered part of the normal allocation of effort for managing educational programs. Having confirmed the shared educational goals, the next stage will focus on establishing the appropriate programs and courses and to make them available. Although some aspects of the training will be updated to incorporate new material, it is not anticipated that training costs would be significantly higher. The enhanced training may make it feasible to achieve efficiencies in call and dispatch functions.

## 6.3 FACILITY IMPLICATIONS

The initiatives proposed to establish an integrated call evaluation and dispatch model will involve changes in how calls for service are handled and the nature of the responses. These changes in activities may have implications for the quantity of organizational resources required. For strategic planning purposes it is useful to consider the following five key resources as interdependent, in the sense that a change in one has repercussions for the others.



Interdependent Organizational Resources

- People
- Information
- Equipment
- Facilities
- Money

The Cost Implications of the proposed Action Items for each Element have been identified, in general terms, noting potential impacts on Operating and Capital costs. Cost estimates will be developed in more detail as the process moves forward into planning and implementing the proposed initiatives.

The amount and type of facilities that will be required to accommodate the activities and equipment associated with a more integrated call evaluation and dispatch system will depend on the models and processes that are established as part of the next stage of planning. Given the potential disruption and costs of changes to facilities, they require consideration of a longer planning time frame.

Although an integrated model does not necessarily imply that all functions and organizations need to be accommodated in one facility there may be some operational and/or cost benefits that could be gained by physically co-locating some functions. Exploration of these opportunities has been set as a priority initiative in the short term. The objective would be to identify the functional facility requirements associated with beneficial co-location arrangements that can be used to assess the relative merits of potential development opportunities.

One of the potential benefits of co-location of services could be a reduction in the amount of facilities and the associated equipment/technology ) required to support the operations. Given that the estimated capital costs for such facilities are substantial, even a small percentage reduction in costs can be significant.



## 7 TARGET MILESTONES

The target milestones proposed take into account the limited time that those leading the initiative may have available, given the demands of their day-to-day positions in their organizations. The timing and sequencing are based on the following logic:

- Holding six ICED WPC meetings per year (likely virtual). We have assumed that the dates and agendas for the meetings should be formalized as soon as possible to support this initiative.
- We have proposed that the objectives in **Element 1 Governance** be achieved as early as possible, given that enhanced internal governance and communication will benefit all Elements within the framework.
- **Element 3 Information** Action Items are focused on the short to medium term, recognizing that some of the initiatives may require additional time and effort to complete.
- Monitoring, maintenance, and ongoing evaluation will occur following the implementation of the initial action item.
- The Integration Coalition process, as a recommendation for governance, will involve simultaneous activities on a number of initiatives carried out by the designated leads and their teams drawn from the partners in the endeavor. Coordination among the initiatives will be critical to maintaining momentum and avoiding duplication of effort. In other projects involving multiple organizations in a joint effort, a shared milestone schedule and some form of communications dashboard has facilitated coordination and helped to maintain a sense of “team”.

The primary phase impacted has been identified for each action item, noting that it may not be the only phase impacted. Impact implies at what point the action item, or its result is being utilized.

The Target Milestones below are an example of an overview multi-year schedule that can be used to track progress at a macro level. More detailed charts, organized by week/month, can be generated for each Action Item, to help manage team efforts on a regular basis.

Some form of an on-line site that can be easily shared among the partners to obtain updates and facilitate communications among the teams, is also highly desirable. This type of “Dashboard” can be set up so that it is only available to authorized users, which is advantageous given the potentially sensitive nature of the information being shared.



ELEMENT 1: GOVERNANCE		2021	2022	2023	PRIMARY PHASE IMPACTED
An Integration Coalition					
a	Integration Director, appointed, time limited contract signed and develops a strategic approach to integration.				ALL
b	Establish MOU and Terms of Engagement for all organizations seeking integration.				ALL
c	Integration Director meets with Steering Committee and Working Group to develop, review and amend the overview Implementation Plan. Initial draft amended and presented to stakeholders.				ALL
d	Steering Committee and Working Group begin active role in implementation, organizing assignment of tasks and responsibilities and Project committees by 'Element', Information; Processes and protocols; Training; Technology; and short-term meeting schedule.				ALL
e	Break the project into a draft list of milestones and deliverables which are specific, measurable, acceptable, realistic, and time-based.				ALL
f	Establish a process of ongoing communication across organizations.				ALL
g	Consider public engagement in the planning process.				ALL
h	Identify risks and mitigation strategies.				ALL
i	Create a budget.				ALL
j	Establish reporting guidelines to stakeholders, Council, organizations and the public.				ALL
k	Monitor progress, adjust the plan and add milestones.				ALL
l	Establish ongoing monitoring and adjustments of the integration plan.				ALL
m	Launch the multi-organization governance structure with the Steering Committee providing oversight, with the operational leadership assigned to the Working Group.				ALL



Table 7: Governance Target Milestones

ELEMENT 2: PROTOCOLS AND PROCESSES		2021	2022	2023	PRIMARY PHASE IMPACTED
a	Identify and establish key agreements between organizations.				DEPLOYMENT
b	Create common response processes.				DEPLOYMENT
c	Establish common communication protocols.				DEPLOYMENT
d	Create escalation protocols.				DEPLOYMENT
e	Establish trusted partners protocols.				INTAKE
f	Quality assurance and improvement.				ALL
g	Establishment of a Change Board.				ALL

Table 8: Protocols and Processes Target Milestones



ELEMENT 3: INFORMATION		2021	2022	2023	PRIMARY PHASE IMPACTED
a	Cross-organizational critical information exchange analysis.				DEPLOYMENT
b	Information sharing threshold evaluation.				DEPLOYMENT
c	Information sharing protocol development.				DEPLOYMENT
d	Service Engagement Common Language Development				ALL
e	Common service activity development.				INTAKE
f	Common data elements.				DEPLOYMENT
g	Mental Health information sharing.				DEPLOYMENT
h	Voluntary Registry.				INTAKE
i	Review Community Safety Deployment Model.				DEPLOYMENT
j	Resource Contact Sheet.				INTAKE
k	Crisis Intervention Reference Tools.				DEPLOYMENT

Table 9: Information Target Milestones

ELEMENT 4: TECHNOLOGY		2021	2022	2023	PRIMARY PHASE IMPACTED
a	Establish Technology Working Group.				ALL
b	Assessment of technology sharing opportunities.				ALL
c	Establish shared data collection infrastructure and systems.				ALL
d	Establish shared telephony infrastructure and systems.				INTAKE
e	Expand use of shared communication systems.				DEPLOYMENT
f	Establish information exchange model.				ALL
g	Partnership with Private or Academic Resources to develop AI.				ALL



Table 10: Technology Target Milestones

ELEMENT 5: TRAINING AND EDUCATION		2021				2022				2023				PRIMARY PHASE IMPACTED
a	Establish inter-organization training team.													ALL
b	Establish common training standards.													ALL
c	Establish common training curriculum.													ALL
d	Orientation / Familiarization training.													ALL
e	Develop common language training.													ALL
f	Conduct inter-organization training exercises.													ALL
g	Create ongoing inter-organization training opportunities.													ALL
h	Create trusted partners and community outreach training.													INTAKE
i	Engage 3rd party training entities.													INTAKE

Table 11: Training and Education Target Milestones



## 7.1 SHORT TERM INITIATIVES

The following are examples of short-term initiatives from the action items with milestone targets for the third quarter of 2021.

1. Establish the 'Integration' governance model and its constituent elements, selection of the Dedicated Resource, timelines, budgets, committees and meet formats and schedules.
2. Establish a Technology Working Group and assess technology sharing opportunities.
3. Orientation and familiarization training of existing services for all organizations.
4. Streamlining of process to request assistance from other organizations. Create formal pathways to reduce the informal connections being used (phoning a friend).
5. Create a quick reference sheet on existing resources call evaluators and responders to use for general support for questions on referrals.
6. Establish sharing of CCTV feeds among existing dispatch organizations where possible. This would converge the multiple CCTV intake points and allow all dispatch systems to have access to first-hand information feeds.
7. Review opportunities for sharing data within existing frameworks, such as the Community Safety Dashboard, to utilize the shared data to allow further development of shared metrics.
8. Prepare a Facilities Adjustment Strategy for accommodating an Integrated Call Evaluation and Dispatch Model that will:
  - Identify spatial and functional requirements to accommodate proposed operational model, taking into account anticipated growth in demand;
  - Assess capacity and suitability of current facilities;
  - Examine potential options including co-location variations, renovations, and new construction;
  - Evaluate relative costs and merits of the options and identify preferred option; and
  - Obtain approval to proceed with preferred option.



## 7.2 POTENTIAL SUPPORT FOR ACTION ITEMS

### 7.2.1 FUNDING

Other than the 9-1-1 levy, there are currently no Canadian or Provincial grants dedicated to communication infrastructure and/or multi-sector integration opportunities. There are, however, a number of programs that might potentially consider an application for capital/operating/support funding and services. These include:

- **Municipal Sustainability Initiative:** Edmonton's allocation of this fund is based on litres of taxable gas road-use gasoline and diesel fuel sold in Alberta. It covers numerous potential projects including: *"Fixed central communications and computerized information management hardware and software that is integral to the delivery of police services, fire services, emergency services and ambulance services."* It has a capital and an operating component.
- **Infrastructure Canada: Smart Cities Challenge** is an initiative that realizes outcomes for residents, empowers communities to innovate, forges new partnerships and networks and enables scalable and replicable opportunities across Canada. The primary support is not capital/operating dollars but assistance through information sharing, advisory and capacity building with the focus on smart technologies, data ownership, data management, privacy and security.
- **The Federal Gas Tax Fund in Alberta:** Alberta's fund for 2021-2022 is \$255,121. An eligible project would be *"broadband and connectivity"*. It covers capital funding only.
- **Loans to Local Authorities:** The Government of Alberta provides eligible municipal, regional, health and education authorities with financing for capital projects. The loan is provided over a period of time with established interest rates and payment terms.
- **Alberta Community Partnership:** The program helps municipalities by providing support for regional collaboration and capacity building initiatives. The 2021/22 budget commitment is \$25.4 million.



# APPENDIX A

## GLOSSARY OF TERMS

INTEGRATED CALL EVALUATION AND DISPATCH BUSINESS CASE



GLOSSARY

24/7 Crisis  
Diversion

A collaborative partnership with:

- Boyle Street Community Services
- Canadian Mental Health Association (211 program)
- HOPE Mission
- REACH Edmonton

There are also stakeholders from:

- Edmonton Police Service
- Alberta Health Services Emergency Medical Services

This program dispatches crisis diversion teams around the clock, 365 days a year. They respond to people who are in distress and vulnerable on the streets of Edmonton.

Anti-racism<sup>1</sup>

Anti-racism is usually structured around conscious efforts and deliberate actions to provide equitable opportunities for all people on an individual and systemic level. It can be engaged by acknowledging personal privileges, confronting acts and systems of racial discrimination, and/or working to change personal racial biases.

Call Evaluation

Part of the intake process. The call evaluation component includes processing the request for service using the organizational policies, procedures to determine appropriate response.

Crisis

Any event or period that will lead, or may lead, to an unstable and dangerous situation affecting an individual, group, or community.

Crisis Diversion

1. Providing assistance in a diverse and respectful manner while reducing the need (impact) for traditional emergency services (police, fire, EMS).
2. A REACH program

Complex Needs<sup>2</sup>

A complex needs client is a person who would benefit from enhanced coordination due to the presence of one or more of the following:

- there is a specific client or community safety need for which there is a limited generic service response available .

<sup>1</sup> Definition taken from Safer for All - CSWB Task Force Report - March 30, 2021, Edmonton, AB

<sup>2</sup> Definition taken from Service provision framework: Complex needs - March 2020, Victoria State Government, Australia.



## GLOSSARY

- due to high-risk behaviours, complexity and/or multiplicity of the client's support needs, additional resourcing, coordination and/or expert input is required to stabilise and continue service provision.
- the development of a targeted support response to the client requires shared problem-solving, decision-making, planning and independent expert input.

Continuum of Service

Identifies different service delivery models to provide specially designed support to a diverse and potentially vulnerable population.

Deployment

The "dispatch" and service response for an organization.

Emergency

A situation that poses an immediate risk to health, life, property, or environment.

GBA+<sup>1</sup>

Standing for "gender-based analysis plus", it is an analytical process used to assess how diverse groups of people of all genders may experience policies, programs and initiatives. The "plus" in GBA+ acknowledges that GBA goes beyond biological (sex) and sociocultural (gender) differences. We all have multiple identity factors that intersect to make us who we are; GBA+ considers many other identity factors, such as race, ethnicity, religion, age and mental or physical disability.

Inclusivity<sup>1</sup>

The practice or policy of providing equal access to opportunities and resources for people who might otherwise be excluded or marginalized, such as those belonging to racial or sexual minority groups.

Intake

The process of answering a call for service be it received by text, telephone, email or in person.

Interoperable

The ability to work in a collaborative model for response/ deployment enabled by the ability to share data, information and communications.

Measurable

The ability to collect and analyze information and content to evaluate degree of success in achieving desired goals, objectives and to support decision making.

Model vs system

A model is a framework that outlines a high-level structure to achieve an outcome, whereas a system is series of defined detailed processes to achieve an outcome.

Non-Emergency

A situation that does not pose an immediate risk to health, life, property, or environment.



## GLOSSARY

Onview	An incident discovered by a responder in person.
Person in Need Calls <sup>1</sup>	<p>Calls that have to do with people needing assistance, including:</p> <ul style="list-style-type: none"><li>• A call about an intoxicated person.</li><li>• A check on a person's welfare.</li><li>• A concern about a person's mental health.</li></ul>
Post Event	After the initial event response has been completed.
Resource	Refers to the people and equipment that provide support and services within an organization.
Response	The pre-defined reaction to a request or need for service.
Risk	Risk is the chance or probability that a person will be harmed or experience an adverse effect if exposed to a hazard.
Risk Assessment	Risk Assessment is a systematic process of evaluating the potential risks that may be involved in a reported situation.
Scalable	The ability of an organization, system, model, or function that describes its capability to cope and perform well under an expanding or contracting workload or scope.
Sustainable	The capacity to evolve in a responsive, resilient and robust manner over time with sufficient funding and resources to maintain the desired service levels.
Triage	See Call Evaluation.
Unconscious bias <sup>1</sup>	Prejudice or unsupported judgments in favor of or against one thing, person, or group as compared to another, in a way that is usually considered unfair. Many researchers suggest that unconscious bias occurs automatically as the brain makes quick judgments based on past experiences and background. As a result of unconscious biases, certain people benefit and other people are penalized.



LIST OF KEY ACRONYMS			
AED	Automated External Defibrillator	HUoS	Heavy Users of Service
AFRRCS	Alberta First Responder Radio Communication System	ICT	Information, Communication & Technology
AHS	Alberta Health Services	MCPs	Medical Control Protocols
CAD	Computer Aided Dispatch	MFR	Medical First Response
CoE	City of Edmonton	NG911	Next Generation 911
CSB	City Standards Branch	OLMC	Online Medical Consultation
EFRS	Edmonton Fire Rescue Service	PACT	Police and Crisis Response Team
EMR	Emergency Medical Responder	ProQA	
EMS	Emergency Medical Services	PSAP	Public Safety Answering Point
EMT	Emergency Medical Technician	SFA	Standard First Aid
EMT-P	Paramedic	ECC	Emergency Communications Centre
EPS	Edmonton Police Service	ECO	Emergency Communications Officer
HELP	Human-centred Engagement and Liaison Partnership Unit	EOC	Emergency Operations Centre



# APPENDIX B

INTERVIEWED STAKEHOLDERS

INTEGRATED CALL EVALUATION AND DISPATCH BUSINESS CASE



## APPENDIX B – INTERVIEWED STAKEHOLDERS

The table below lists the interviews completed to date. These have provided the information available in Appendix C.

STAKEHOLDER GROUP		
Community Standards and Neighborhoods	Boyle Street Community Services	REACH Edmonton Council
Community Standards and Neighborhoods - PO Section	Hope Mission	Canadian Mental Health Association (CMHA) (2-1-1)
Community Standards and Neighborhoods - PO Section Dispatch	EPS - Data and BI	Community Safety Dashboard
Community Standards and Neighbourhoods - Citizen Services	EPS - Value and Impact Division	CSU - 52 EPS Call Evaluators
AHS - Protective Services	EPS - Value and Impact Division	EPS - Chief Innovation and Technology
AHS - EMS - Dispatch	EPS - IT Business Unit	EPS – Police Communications Branch
AHS - EMS - Operations	EPS - OICC	EPS - Community Response Groups (PACT, HUoS, HELP)
AHS- AMH	ETS - Dispatch	3-1-1 Edmonton
Edmonton - Community Safety and Well-being Initiative	ETS - Bus Operations	Edmonton Fire Fighters Union (EFFU)
Edmonton Transit Service - Control Centre	EFRS - Technology	EFRS - Emergency Communications Centre



# APPENDIX D

## CURRENT CALL FLOW DIAGRAMS

INTEGRATED CALL EVALUATION AND DISPATCH BUSINESS CASE



# APPENDIX D - CURRENT CALL FLOW DIAGRAMS

The following section provides an overview of the current call management workflow for each service. Each service typically follows a workflow consisting of an intake, deployment (consisting of notification and on-site intervention phases) and post-event phase.

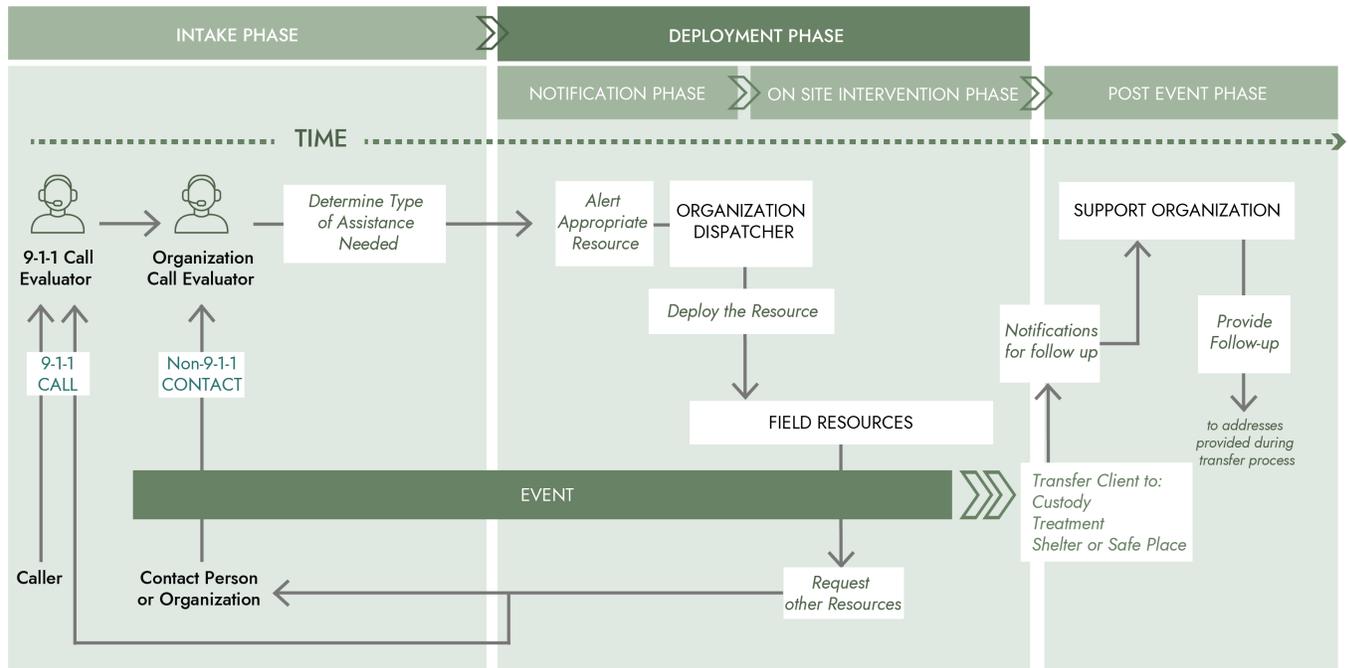


Figure 1: Event Management Process - General Context

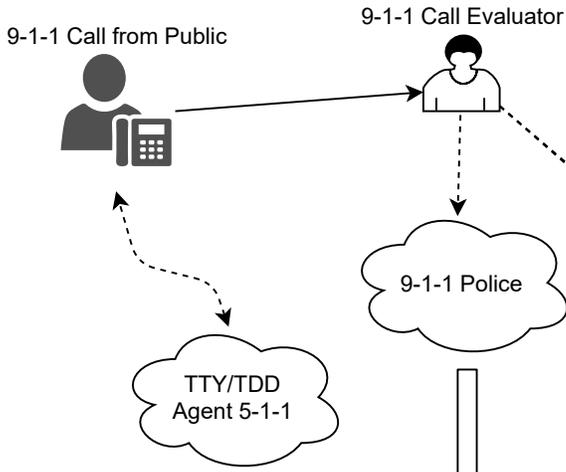
Agency-specific workflow diagrams have been developed for:

- Edmonton Police Service (EPS)
- Edmonton Fire Rescue Services (EFRS)
- Edmonton Transit Service (ETS)
- Community Standards Branch
- Alberta Health Services - Emergency Medical Services (EMS)
- Alberta Health Services - Addictions and Mental Health (AMH)
- Edmonton 3-1-1
- 24/7 Crisis Diversion Program (REACH)
- CMHA/2-1-1 Edmonton
- Hope Mission

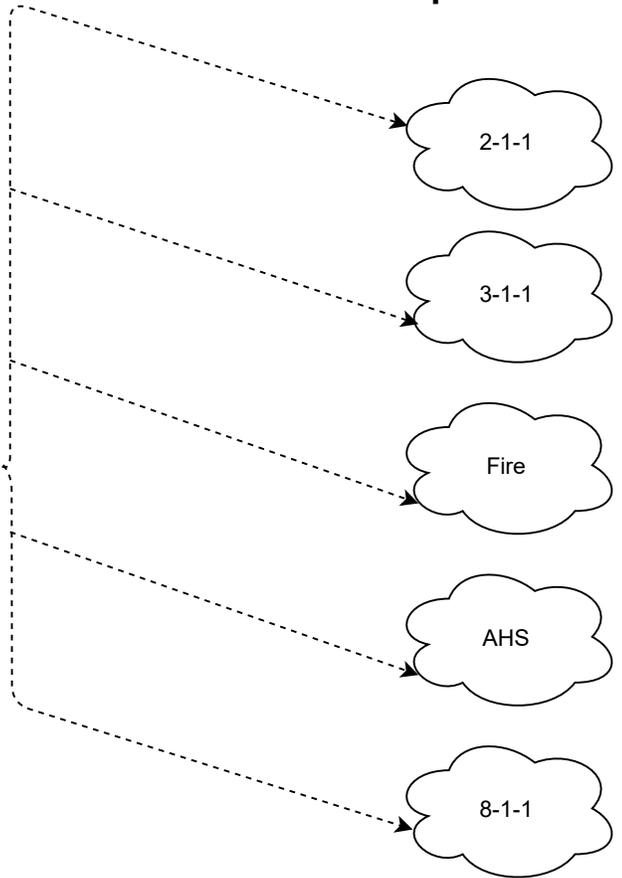
# EPS Call Management Flow

## 9-1-1 Intake Stage

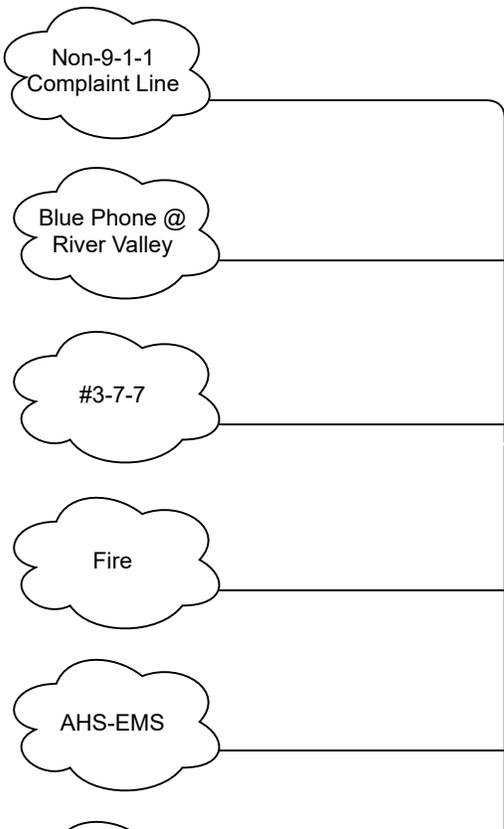
### 9-1-1 Intake



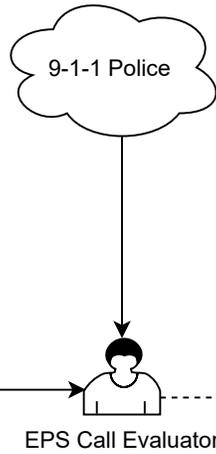
### 9-1-1 External Output



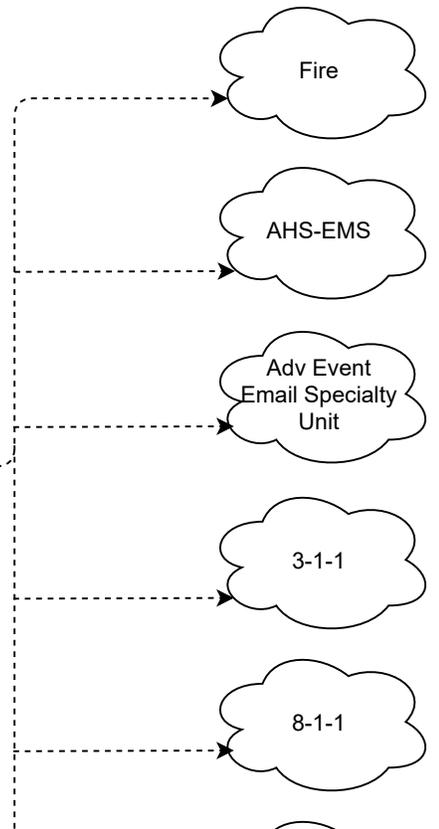
### Call Intake

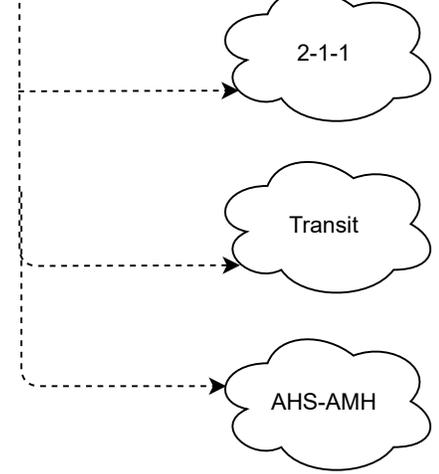
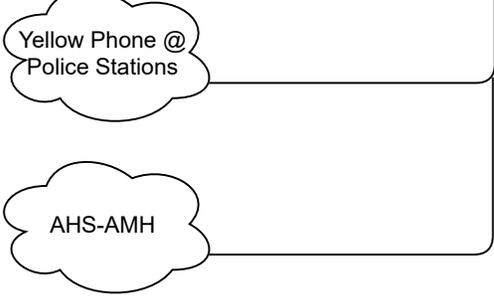


## Police Intake Stage



### Call Output

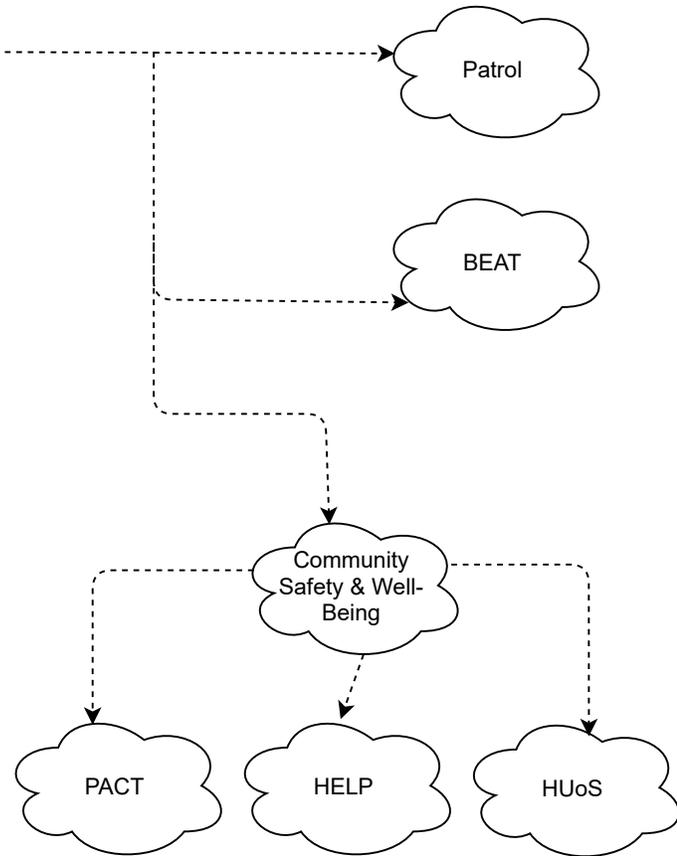
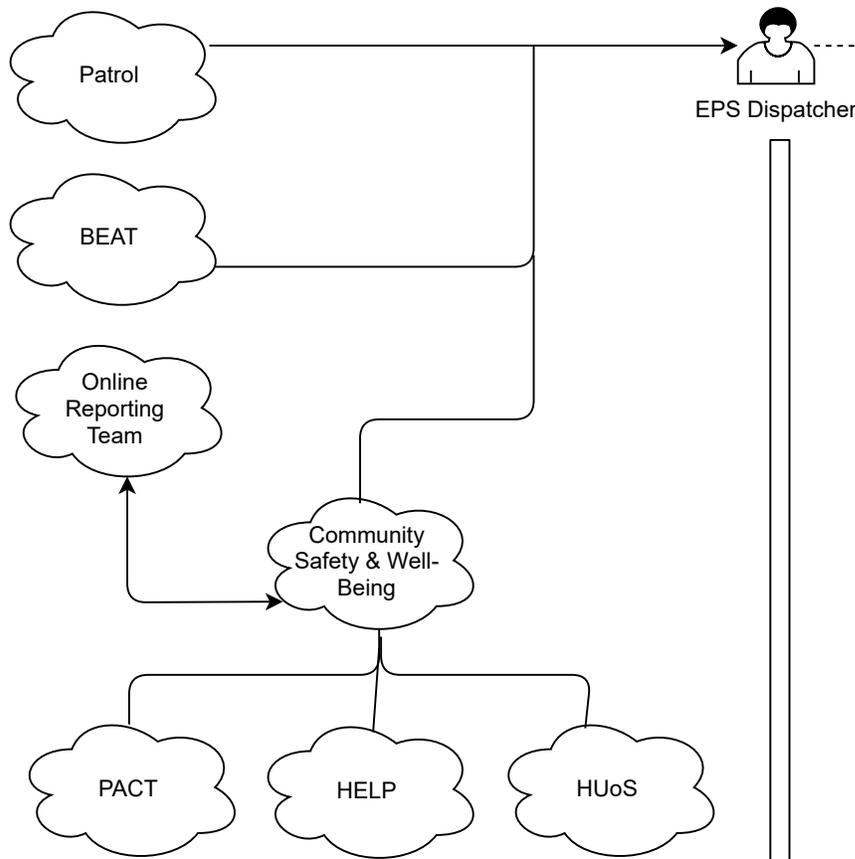




**Call Response**

**Response Stage**

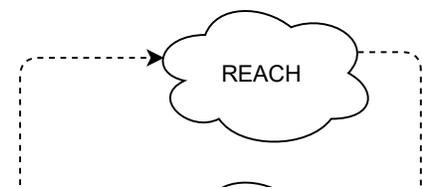
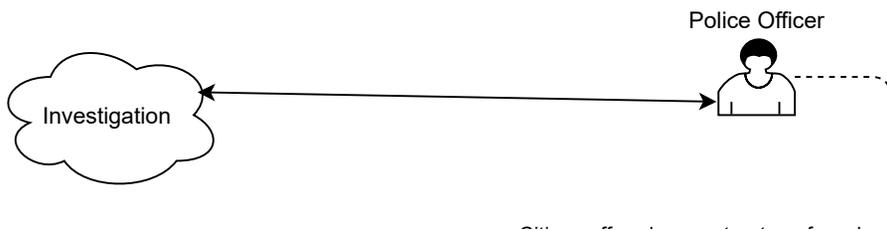
**Call Output**

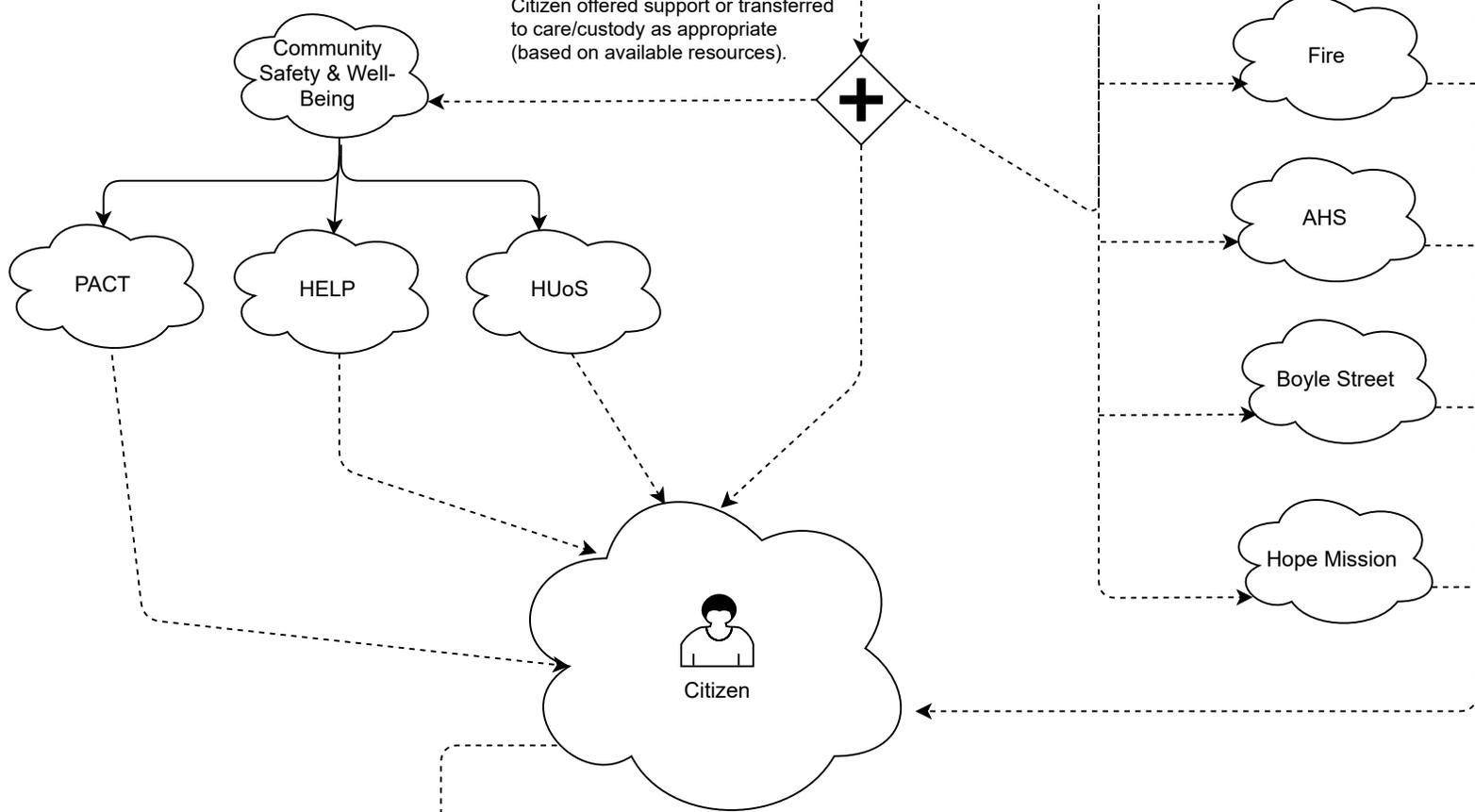


**On Scene Stage**

**Response Input**

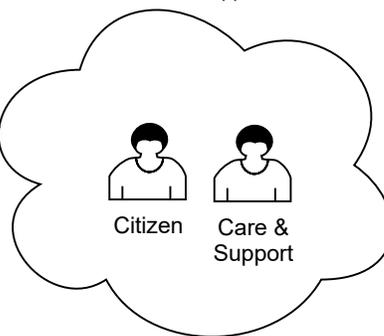
**Call Output**





## Follow Up Stage

Appropriate organization follows up with citizen to provide ongoing support.

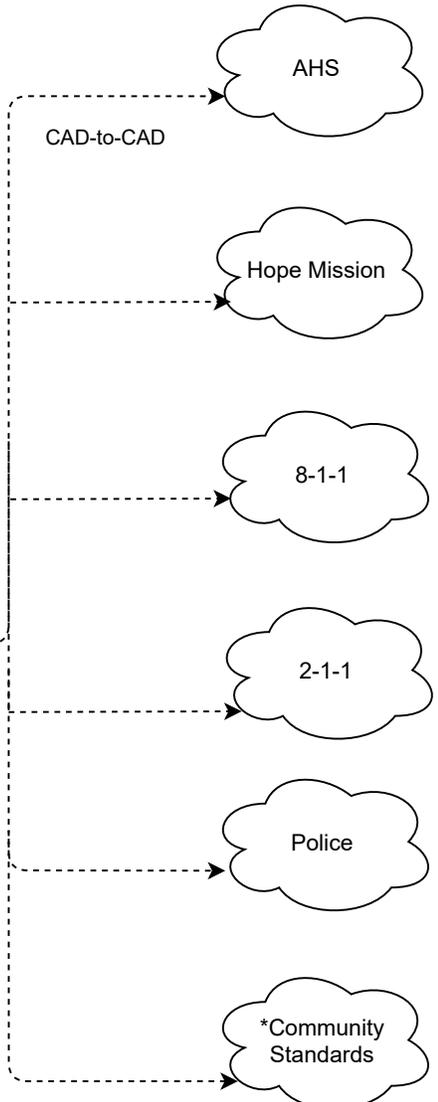
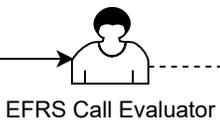
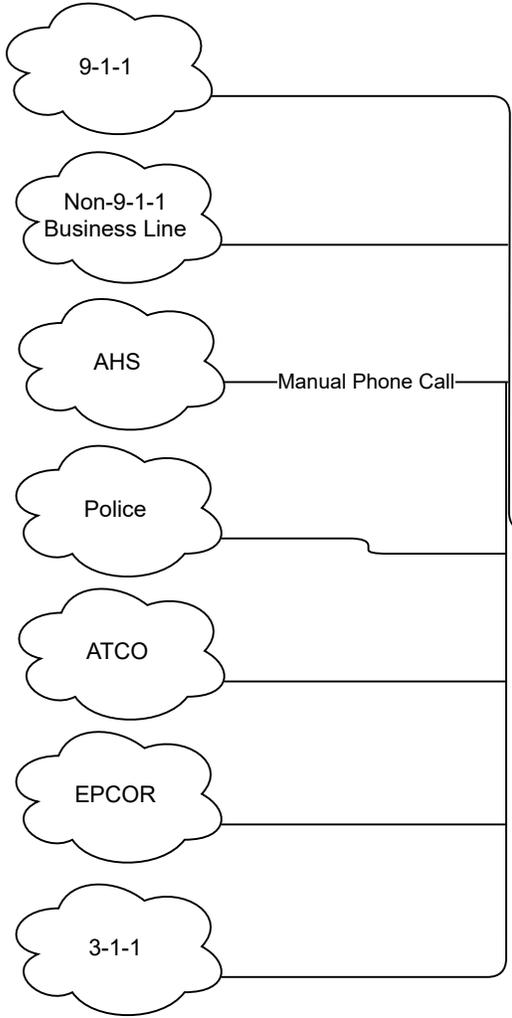


# EFRS Call Management Flow

## Call Output

### Call Intake

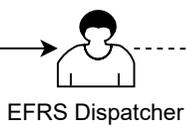
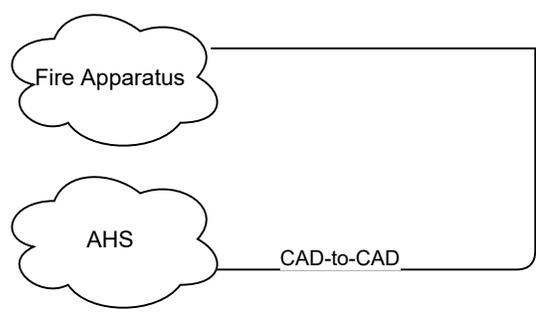
### Intake Stage



### Call Response

### Response Stage

### Call Output



### On Scene Stage

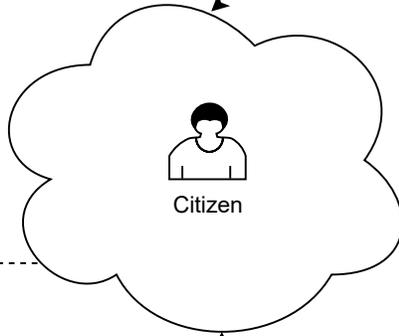
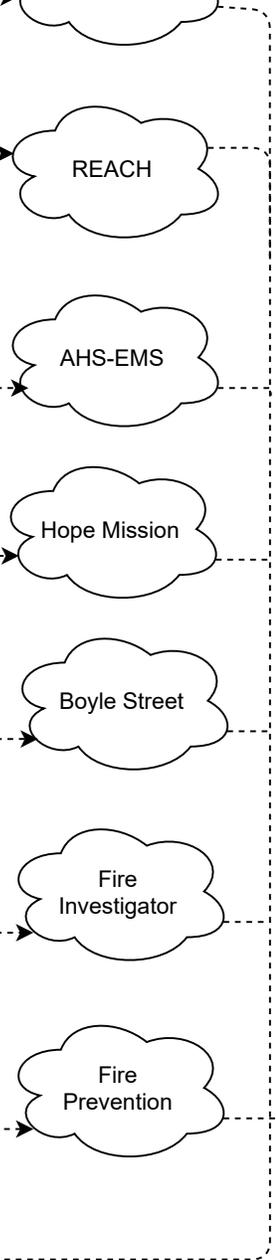
### Call Output





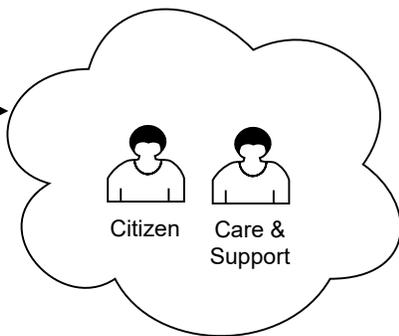
EFRS Crew

Citizen offered support or transferred to care as appropriate (based on available resources).



### Follow Up Stage

Appropriate organization follows up with citizen to provide ongoing support.



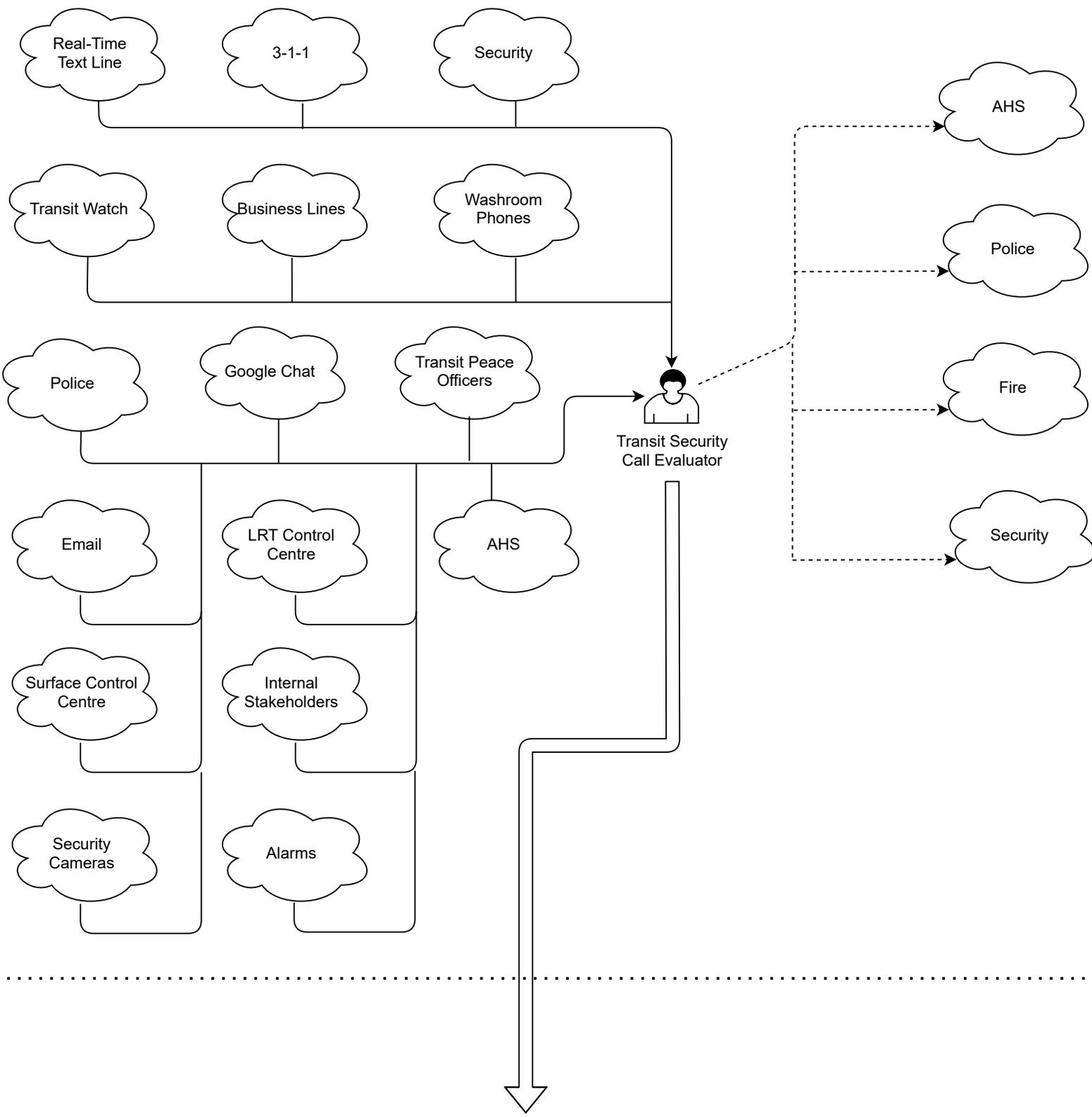
\* Community Standards includes Commercial Vehicle, Park Rangers, Churchill Team, and Animal Control Officers

# Transit Call Management Flow

## Intake Stage

### Call Intake

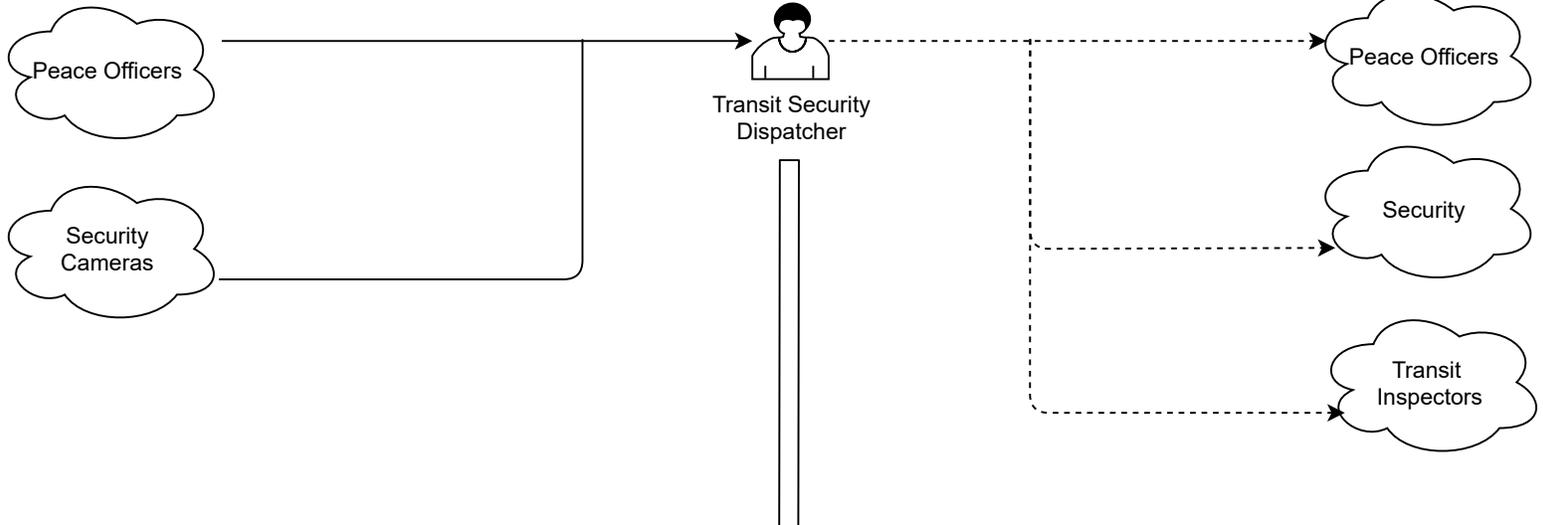
### Call Output



## Response Stage

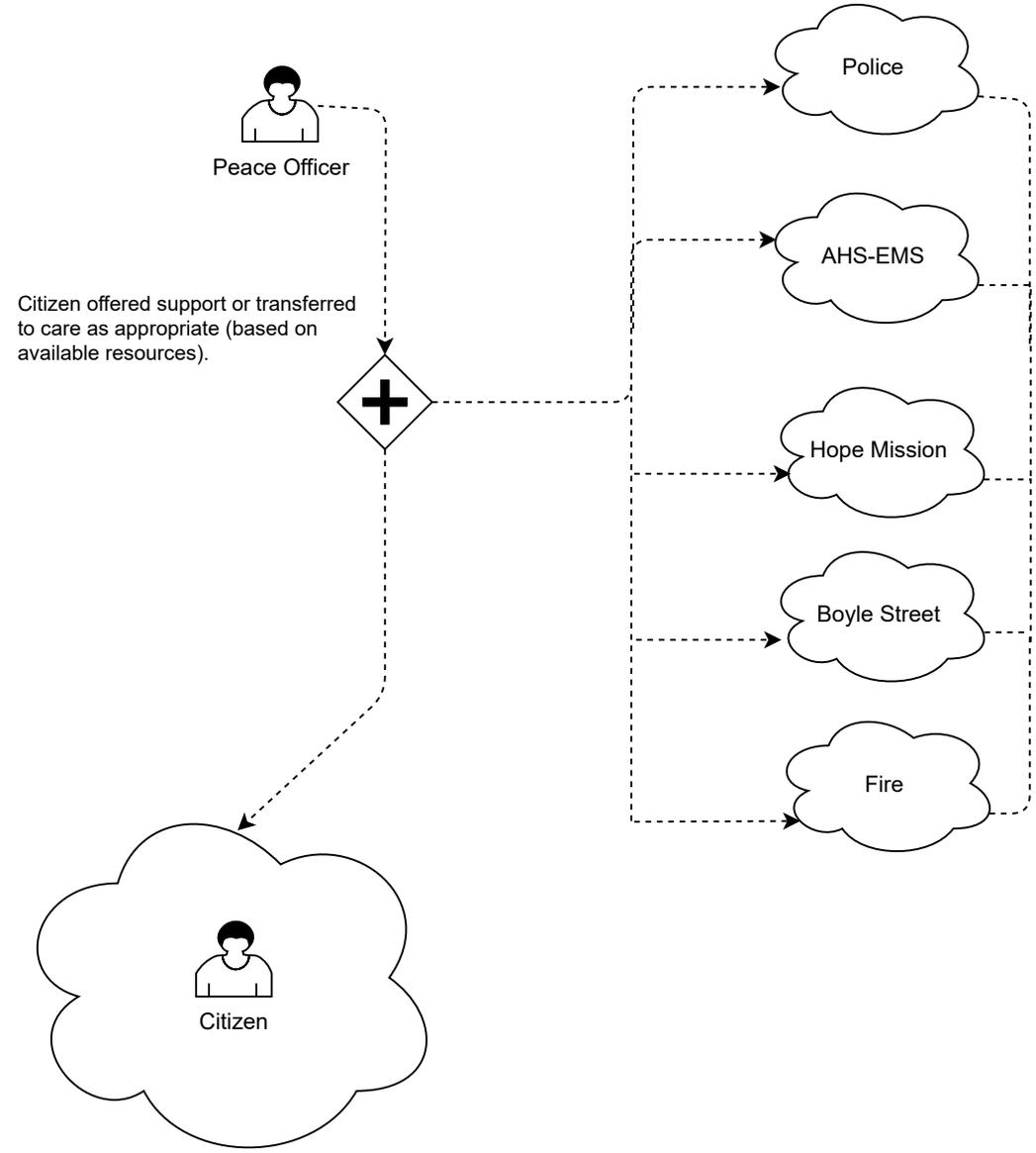
### Call Response

### Call Output

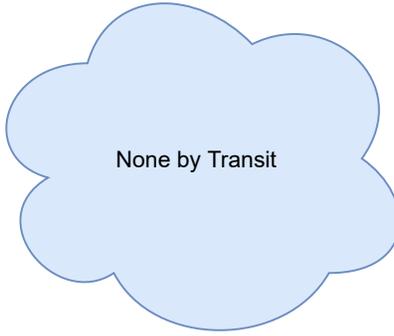


**On Scene Stage**

**Call Output**



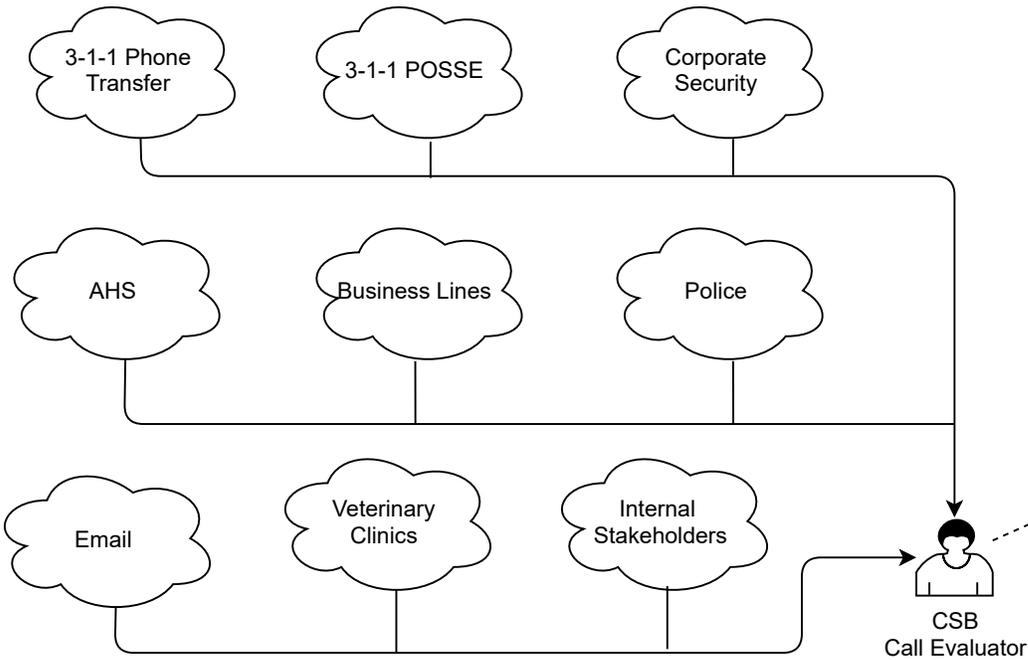
# Follow Up Stage



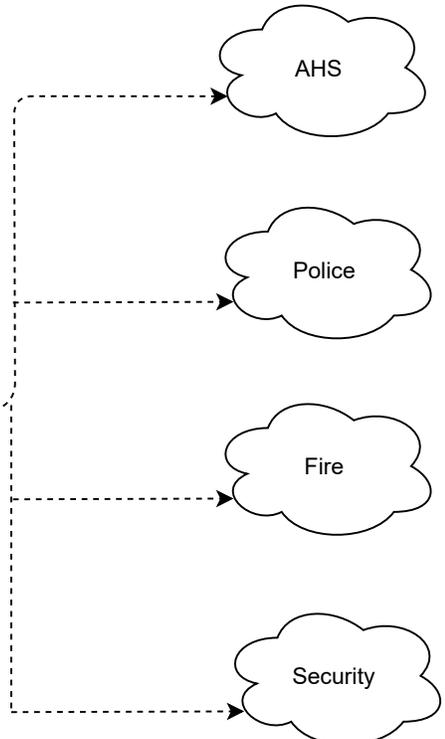
# CSB Call Management Flow

## Intake Stage

### Call Intake



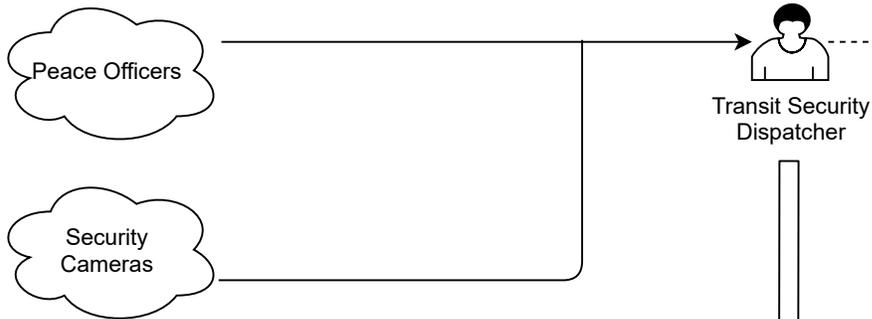
### Call Output



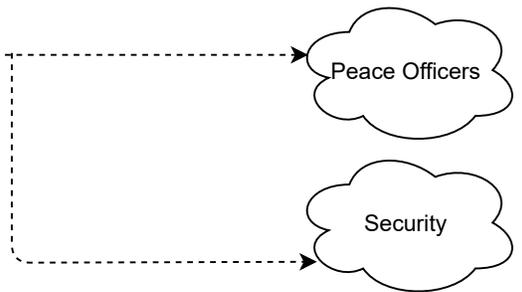


## Response Stage

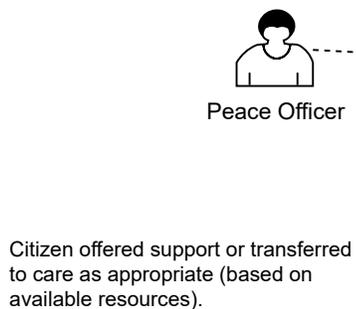
### Call Response



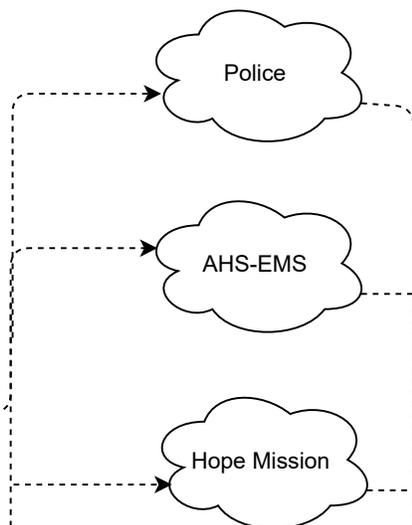
### Call Output

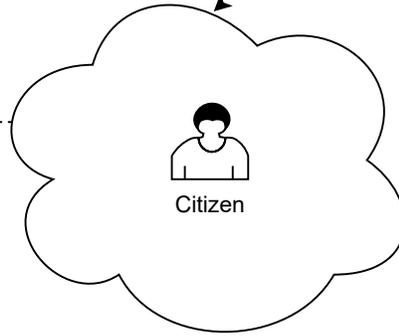
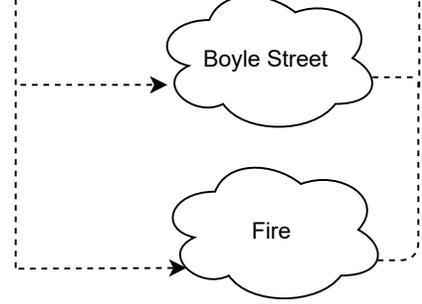


## On Scene Stage



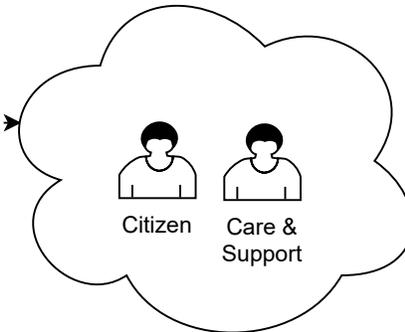
### Call Output





## Follow Up Stage

Appropriate organization follows up with citizen to provide ongoing support.

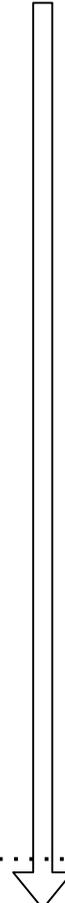
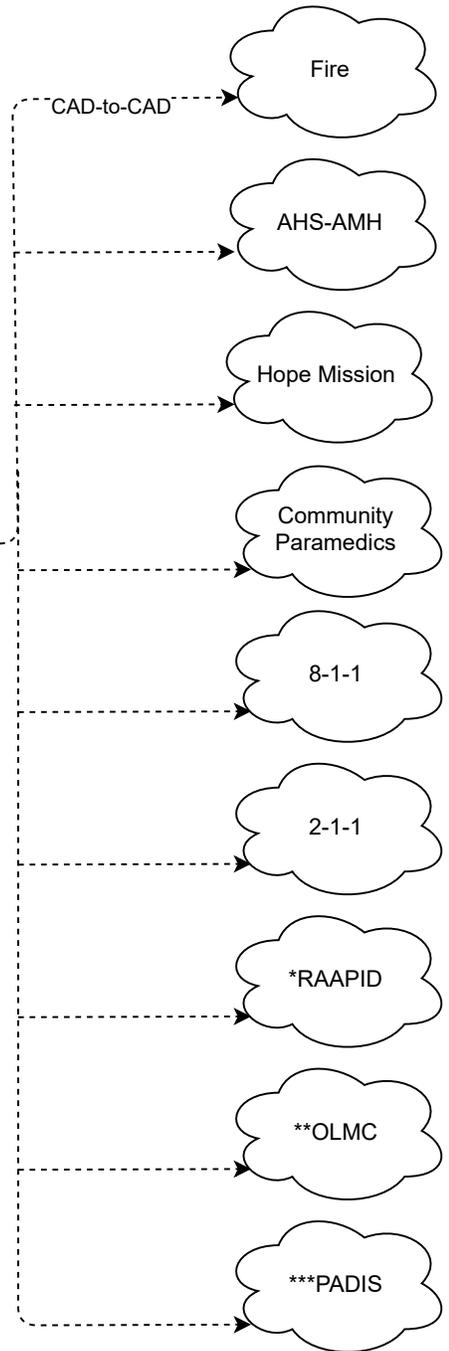
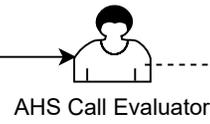
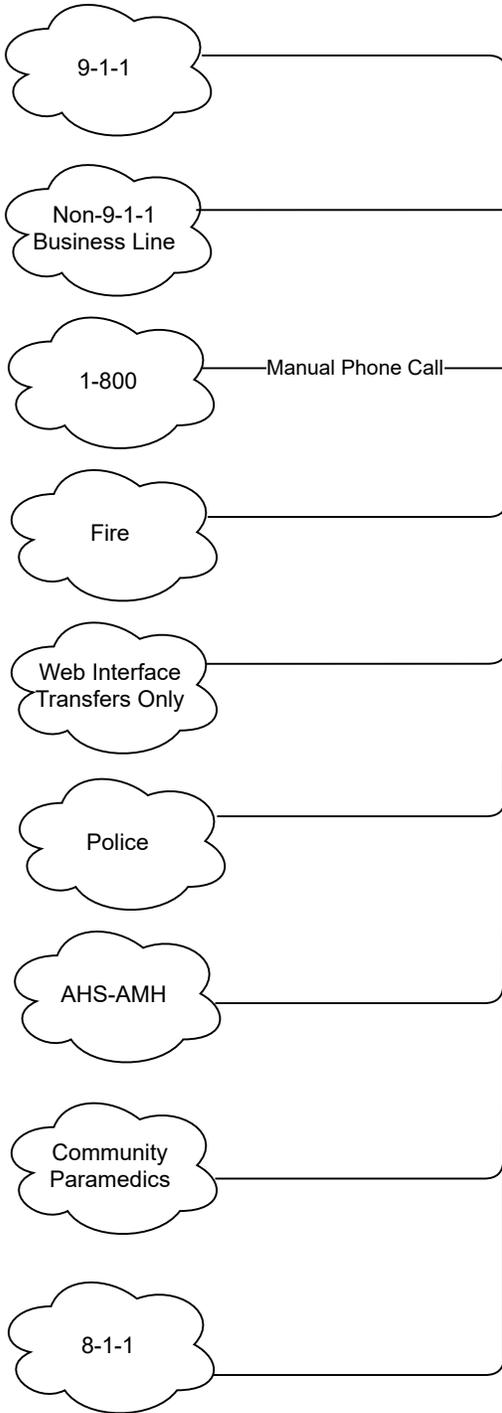


# AHS - EMS Call Management Flow

## Call Output

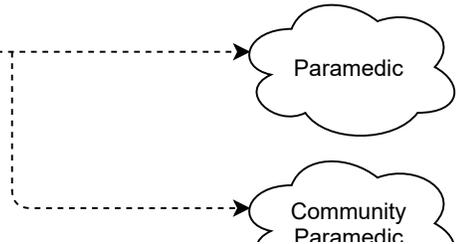
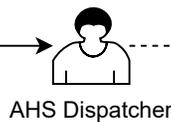
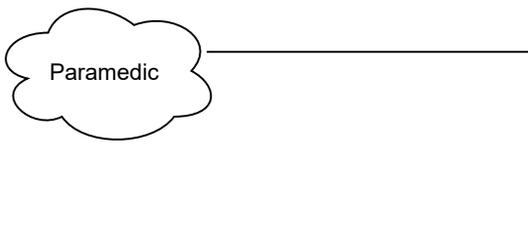
### Intake Stage

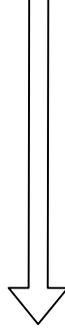
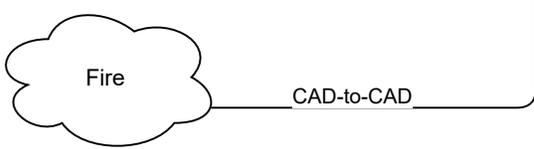
#### Call Intake



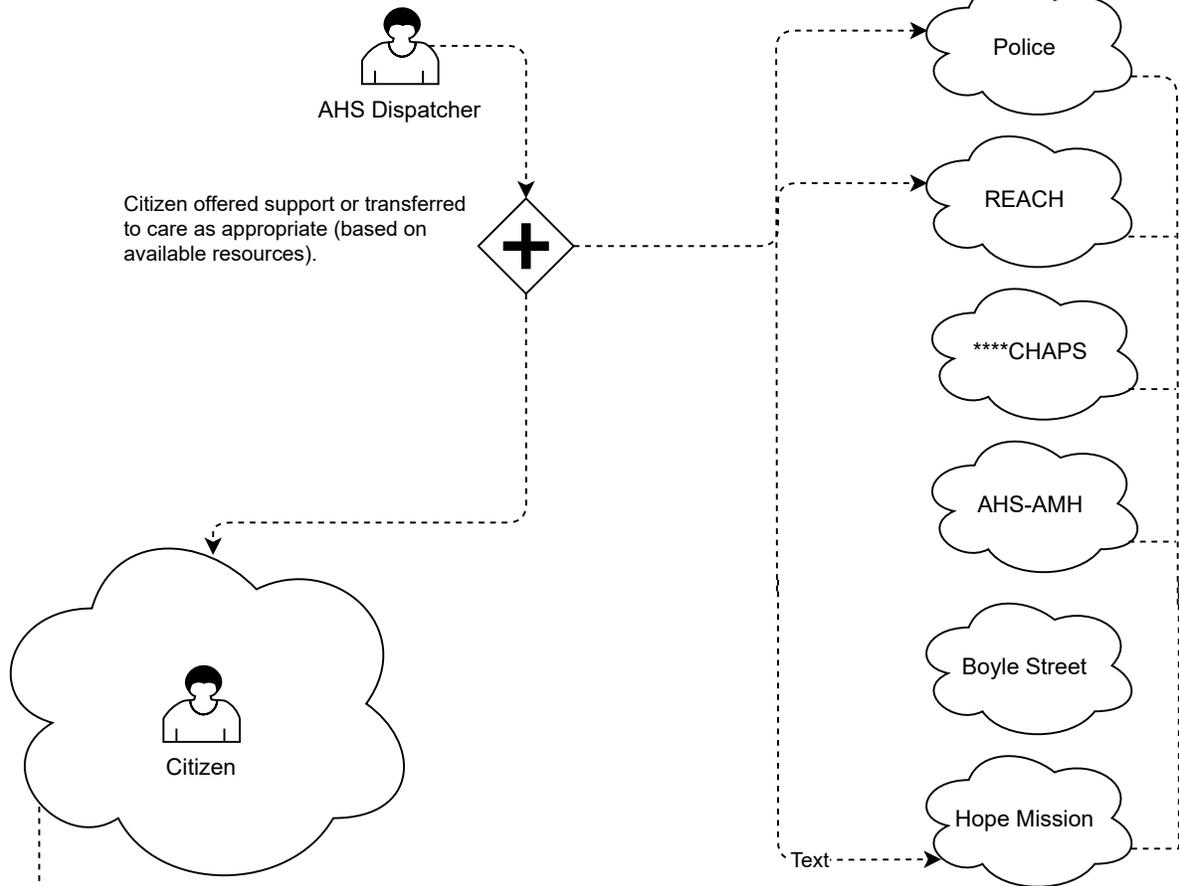
#### Call Response

### Response Stage

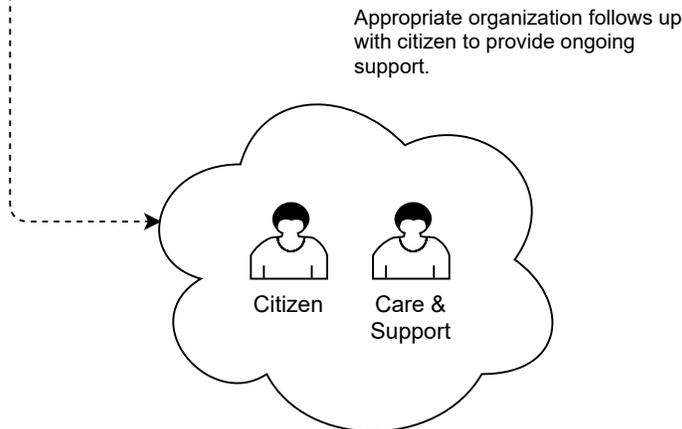




## On Scene Stage



## Follow Up Stage



# Glossary

\*RAAPID - Referral, Access, Advice, Placement, Information & Destination

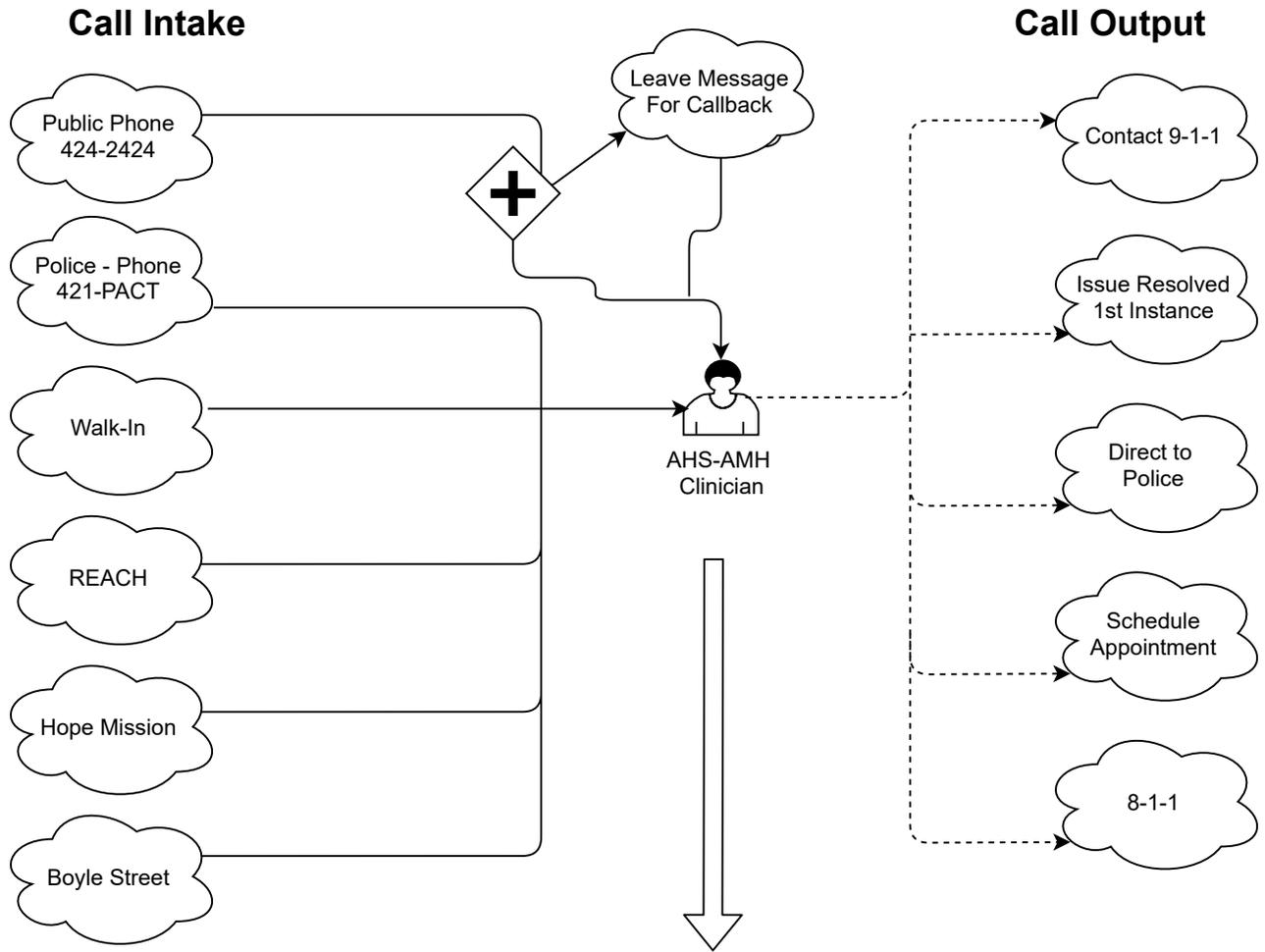
\*\*OLMC - Online Medical Consultation

\*\*\*PADIS - Poison & Drug Information (Poison Control)

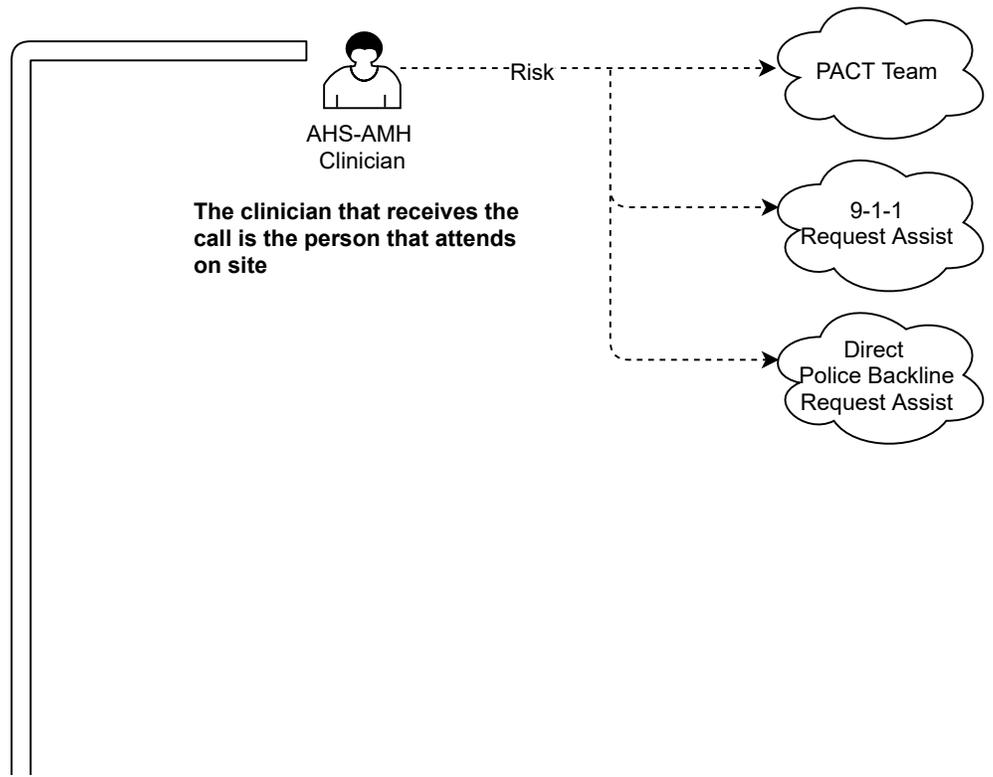
\*\*\*\*CHAPS - Community Health and Pre-Hospital Support Program

# AHS-AMH Call Management Flow

## Intake Stage

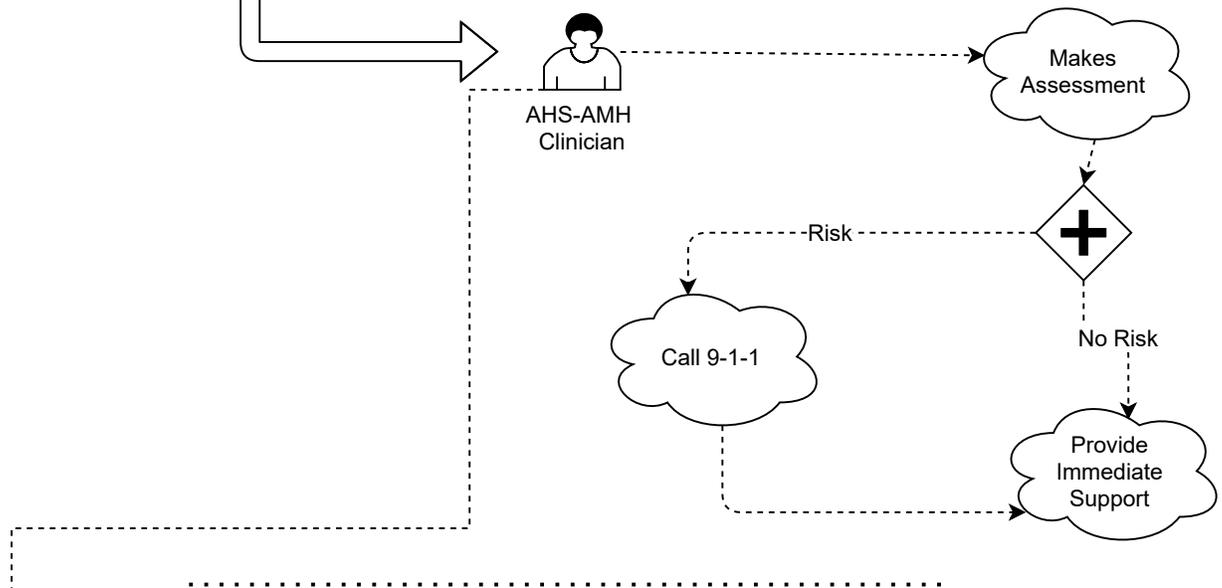


## Response Stage



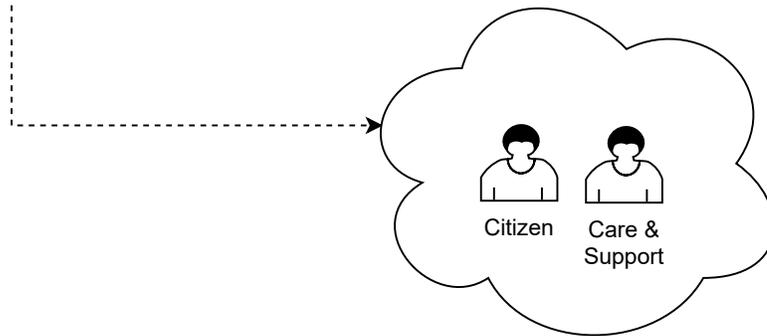
## On Scene Stage

## Call Output



## Follow Up Stage

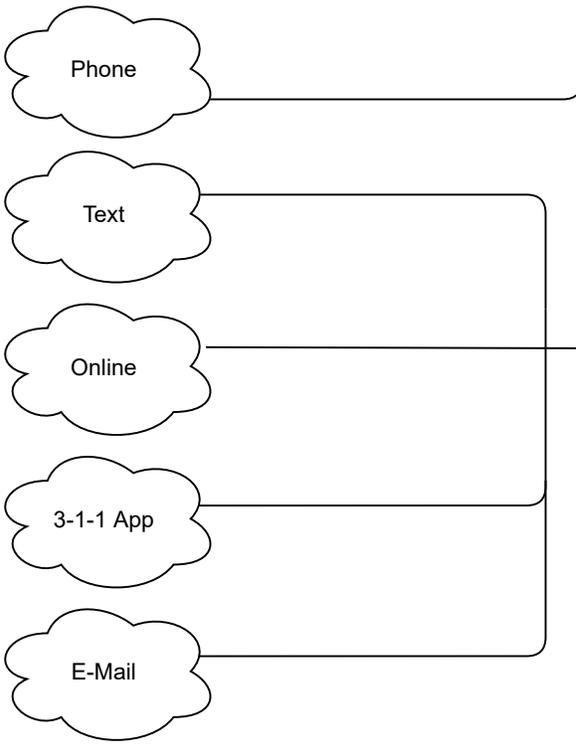
Appropriate organization follows up with citizen to provide ongoing support.



# 3-1-1 Call Management Flow

## Intake Stage

### Call Intake



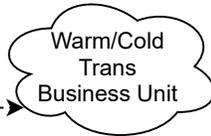
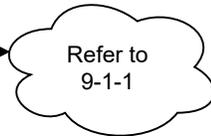
0700hrs - 1900hrs



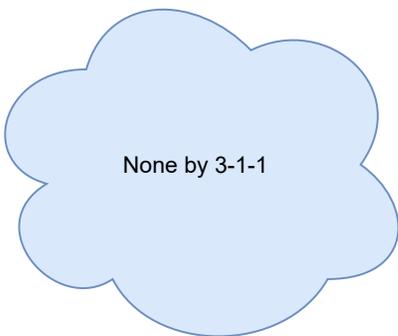
3-1-1 Call Evaluator

1900hrs - 0700hrs

### Call Output

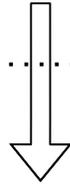


## Response Stage



## On Scene Stage

None by 3-1-1



Follow Up Stage

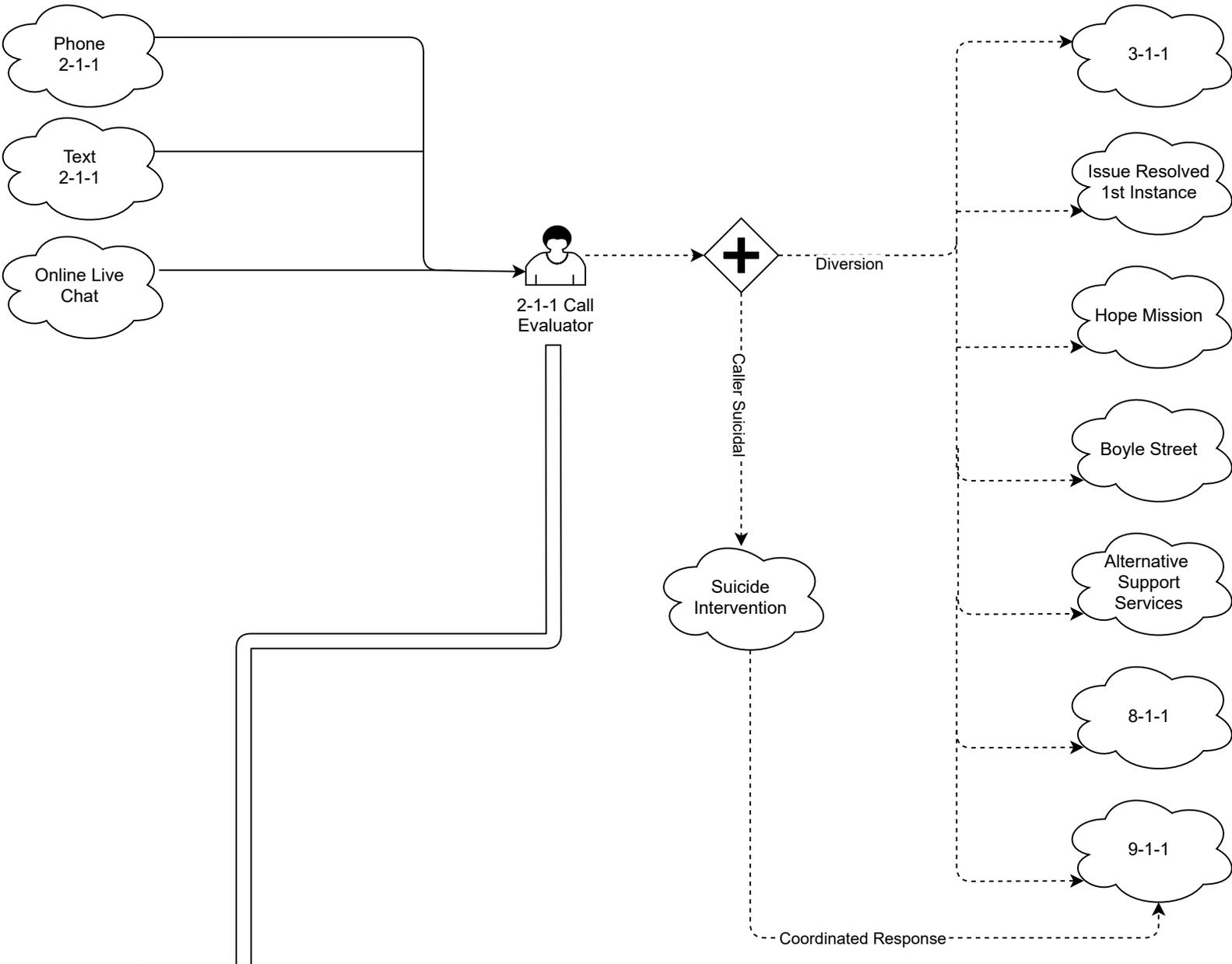
None by 3-1-1

# 2-1-1 Call Management Flow

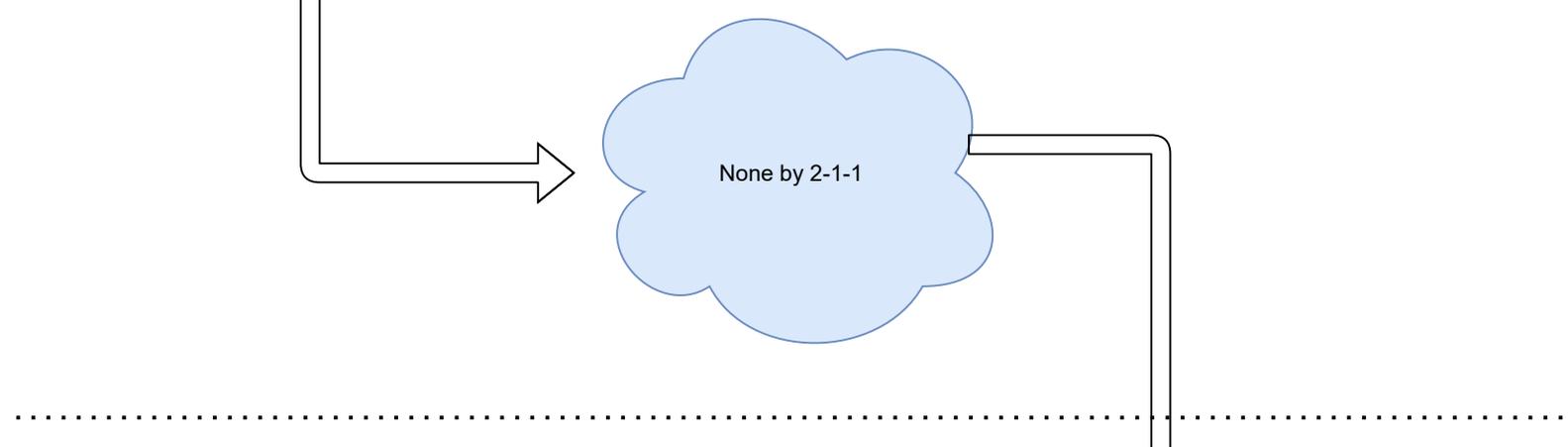
## Intake Stage

### Call Intake

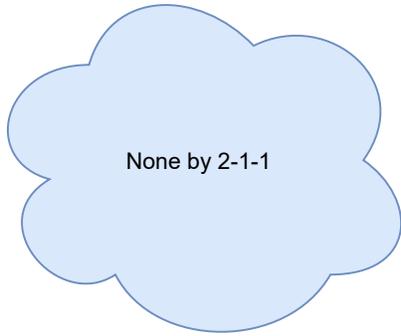
### Call Output



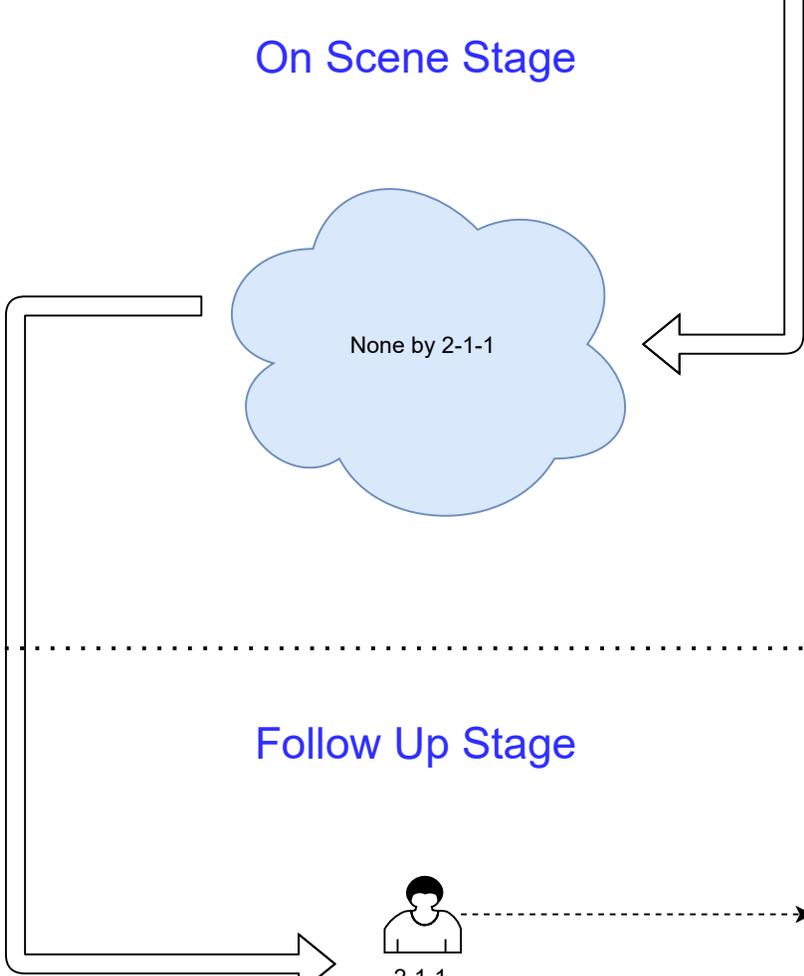
## Response Stage



# On Scene Stage



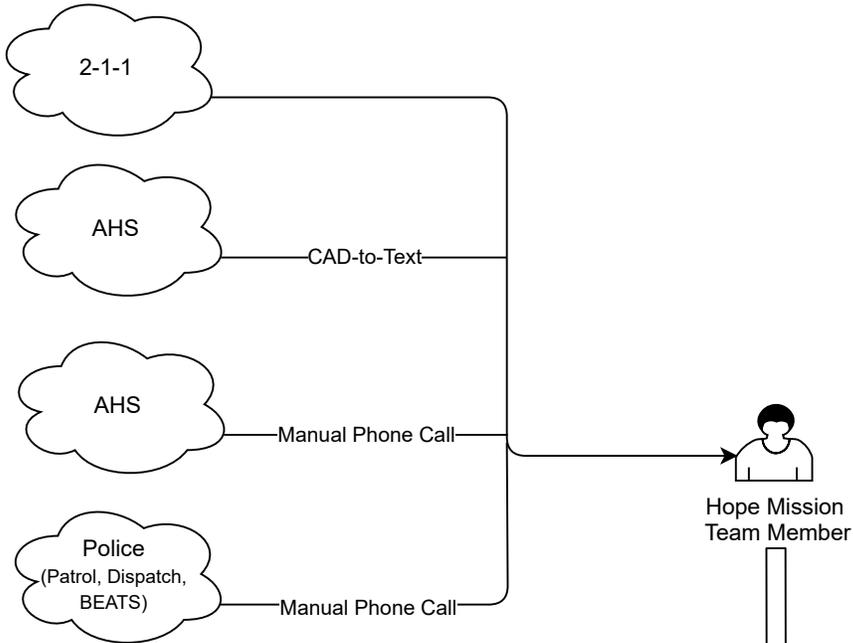
# Follow Up Stage



# Hope Mission Call Management Flow

## Intake Stage

### Call Intake



Hope Mission Team Member

---

## Response Stage

Hope Mission Team

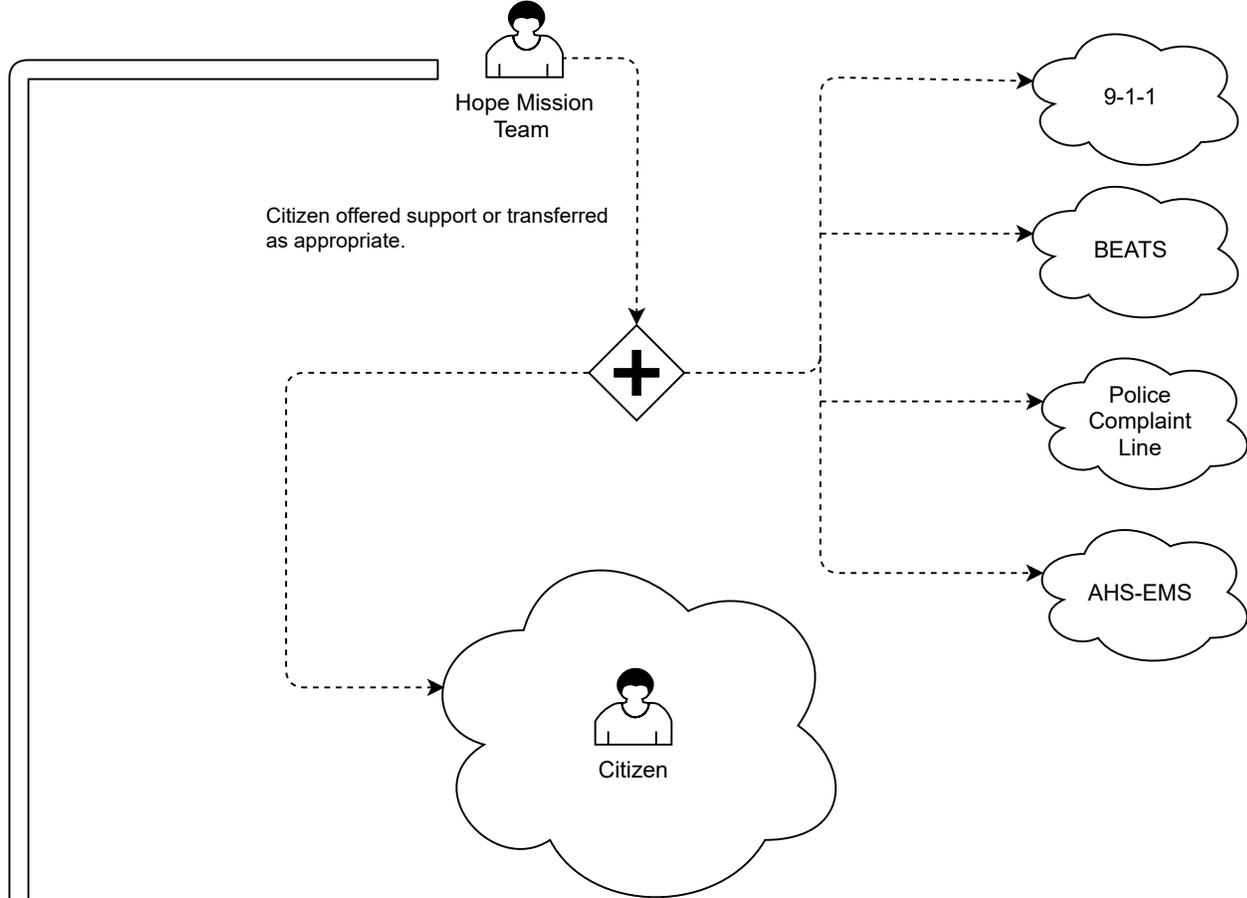
### Call Output



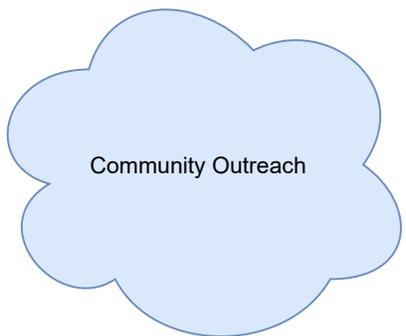
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## On Scene Stage

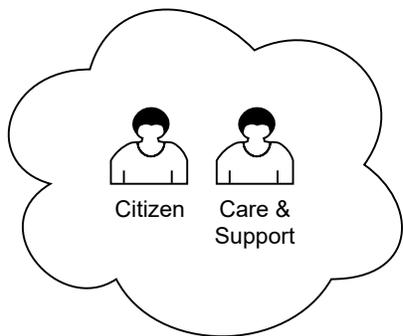
### Call Output



**Follow Up Stage**



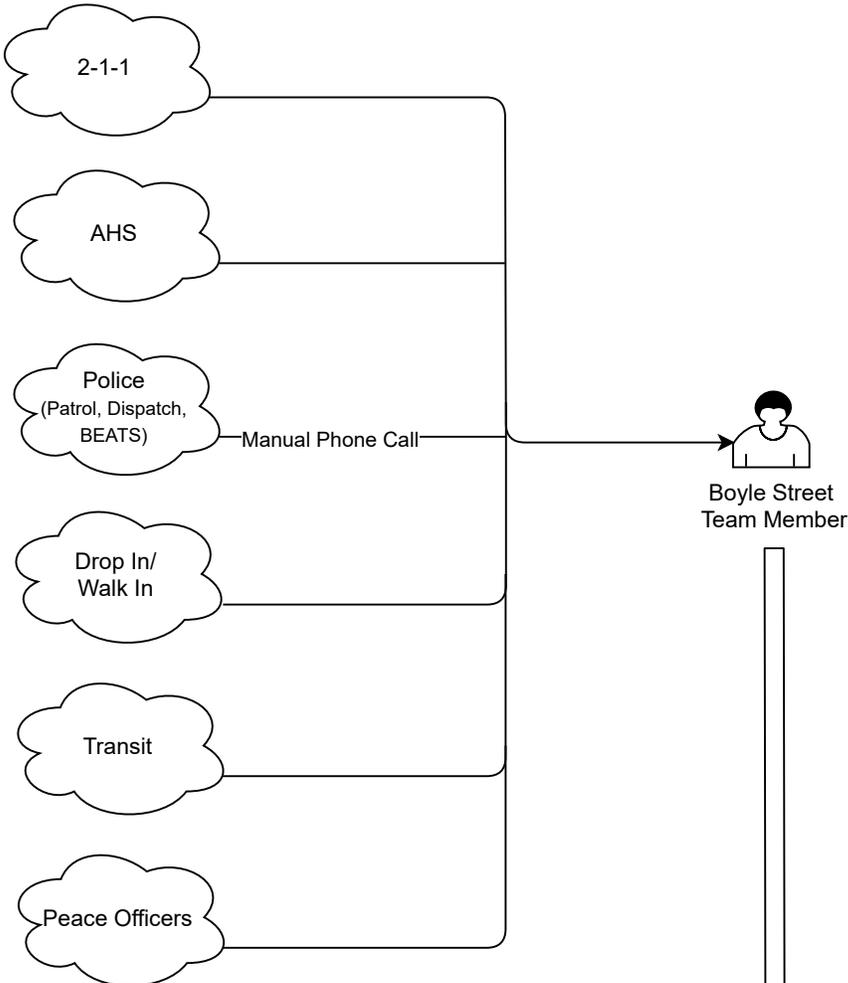
**Review data to determine if citizen has obtained help needed.**



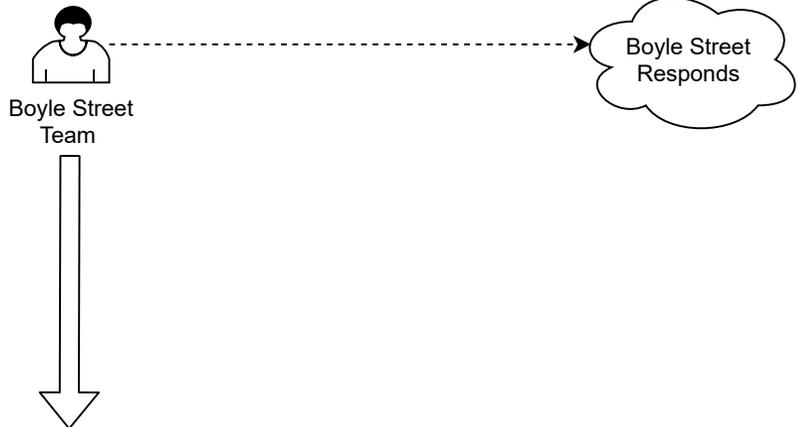
# Boyle Street Call Management Flow

## Intake Stage

### Call Intake



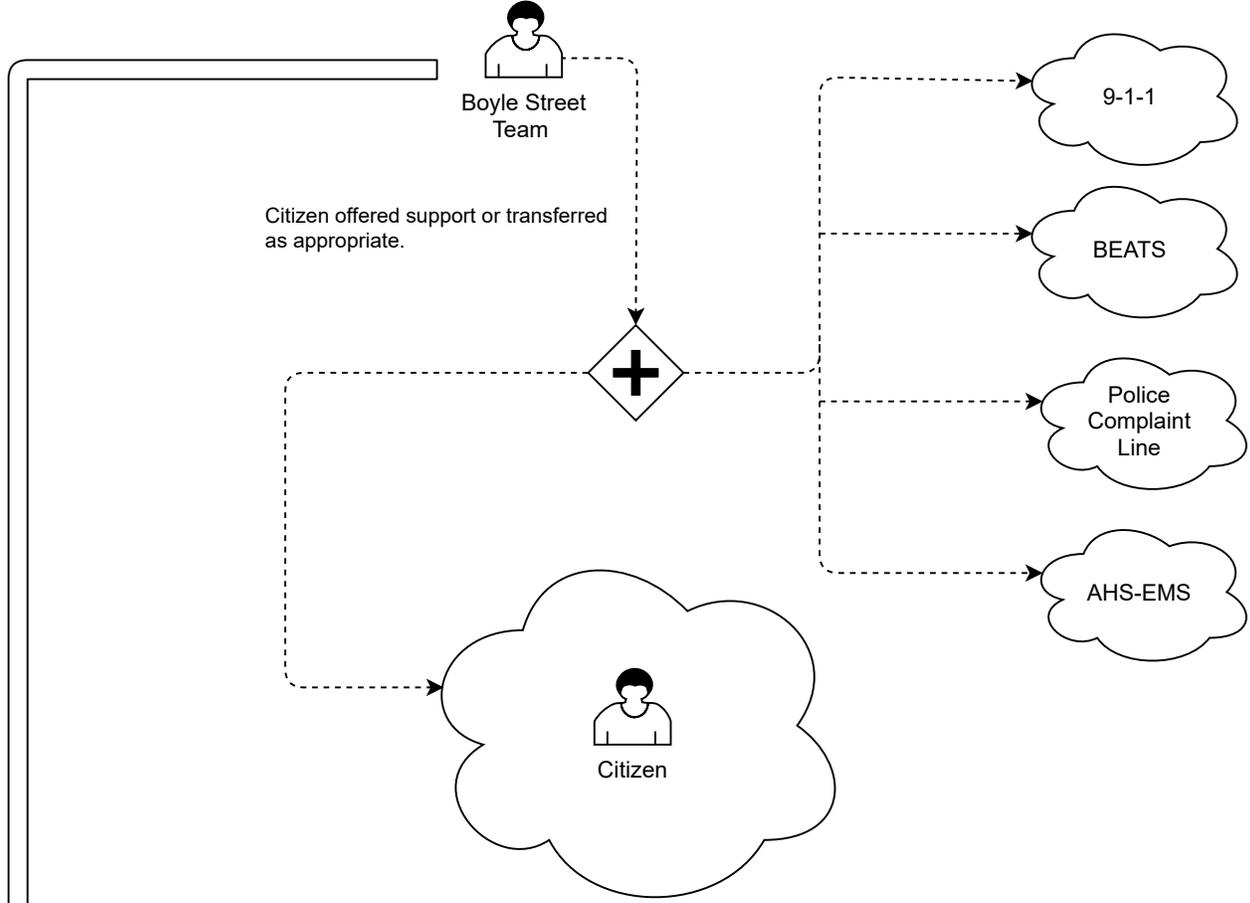
## Response Stage



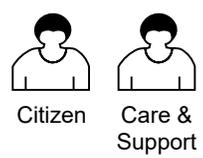
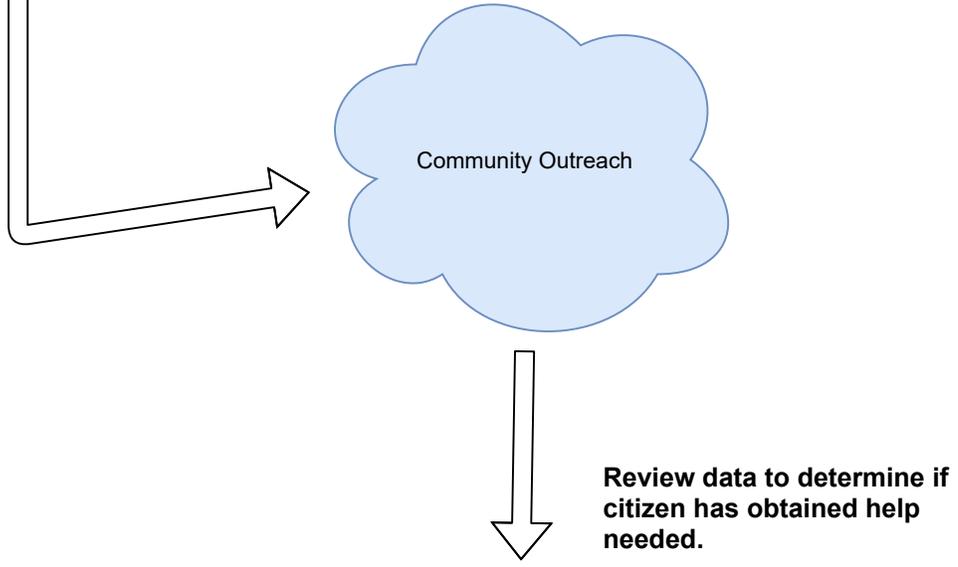
### Call Output

## On Scene Stage

### Call Output



**Follow Up Stage**





# APPENDIX E

DOCUMENTATION REVIEW

INTEGRATED CALL EVALUATION AND DISPATCH BUSINESS CASE



## APPENDIX E - DOCUMENTATION REVIEW

The following documents were reviewed and used to inform this working paper.

GENERAL	
City of Edmonton, City Plan (2020).	Mental Health Related Calls for Service and Associated Crimes 2019 Panel 1.
City of Edmonton, Climate Resilient Edmonton, Adaptation Strategy and Action Plan (2018). www.	City of Edmonton, CDEOC Functional Program and Business Case, Group2 Architecture Interior Design Ltd., December 20, 2013.
Council Report 8454 Joint Dispatch Centre Exploration, November 2, 2020	City of Edmonton Organizational Structure, January 18, 2021.
311 Call Centre Review, August 30, 2010, Office of the City Auditor. City of Edmonton.	City of Edmonton, EPS, and REACH. Community Safety Deployment Model Overview.
MIH Community Paramedic One Pager, Alberta Health Services.	EFRS, SOP Outside Agency Communication.
MIH Statement of Work, Alberta Health Services.	EFRS, 0007-20 Radio Interoperability.
Fire Rescue Master Plan, 2012. City of Edmonton.	EFRS, 2020 Annual Appraisal - Dispatch.
Community Safety Deployment Model (CDSM) Demand Process, October 22, 2020. Corporate Security Analytics Centre of Excellence, City of Edmonton.	Citizen Services Organizational Chart.
AHS, Emergency Medical Services, Alberta MFR Program Dispatch and Communication Processes	EFRS Organizational Chart.
City of Calgary, Community Action on Mental Health and Addiction Stewardship Group, March 17, 2021.	EFRS, Dispatch Staffing Structure.

**GENERAL**

City of Calgary, Investing in Calgary's Mental Health and Addiction Strategy, May 17, 2021.	EFRS, Outside Agency Radio Interoperability.
Social Disorder Calls for Service and Associated Crimes 2019 Panel 1.	EFRS, P.Emergency Communications Specialist_39339_2020-9-11.
Social Disorder Calls for Service and Associated Crimes 2019 Panel 2.	EFRS, Evaluated Events by RC Counts and year - Summary Evaluated.
Mental Health Related Calls for Service and Associated Crimes 2019 Panel 1.	EPS, Training Visual 21FEB19.xls.
EPS, ECOMB Organization Chart, March 2021.	EPS 21107963 Incident Performance Report.
EPS, Integration of PCB and OICC Operations Briefing Note.	EPS, ECC Daily Performance Data, March 3, 2021.

**MEDIA**

Attach the right resource: City of Edmonton exploring integrated dispatch system for better response to service calls. Edmonton Journal. November 2, 2020.	Community Action on Mental Health and Addiction Stewardship Group
Car 87 where are you? Families say Vancouver's mental health emergency team is rarely available. CBC News, February 21, 2021.	CBC News, Edmonton's planned joint-dispatch centre would improve responses to service calls. November 2, 2020.

**COMPARATIVE INTEGRATED MODELS**

City of Lethbridge, Introduction to Integrated Coordinated Access Webinar Presentation, January 21,2021.	Canadian NG 9-1-1 Coalition, NG9-1-1 Transition Roadmap for Canadian PSAPs.
Calgary Community Information Exchange.	City of Lethbridge, Corporate Progress Report, April 2020.



Community Information Exchange, San Diego.  
(<https://ciesandiego.org/>).

City of Edmonton, Smart City Strategy, 2017.

Victoria State Government, Health and Human Services, Service Provision Framework: Complex Needs, March, 2020.

Alberta Health Services, EMS Dispatch Consolidation PPT Impact Mobilizer Meeting

Small Agencies Crisis Response Survey. February 1, 2021. National Police Foundation.

Alberta 9-1-1 Standards V2.0, Appendix A to Ministerial Order No. A:002/21, January 27, 2021.

National Guidelines for Behavioural Health Crisis Care - Best Practice Toolkit, SAMHSA, 2020.

**LEGISLATION**

9-1-1 Standards, August 2018, Province of Alberta, Appendix A to Ministerial Order No. A:001/18.

Province of Alberta, Police Act, Police Service Regulations, Alberta Regulation 356/1990.

Province of Alberta, Emergency 9-1-1 Act, Statutes of Alberta 2013, Chapter E-7.5.

Province of Alberta, Police Act, Revised Statutes of Alberta 2000, Chapter P-17.

Province of Alberta, Emergency Health Services Act, Statutes of Alberta 2008, Chapter E-6.6.

Province of Alberta, Personal Information Protection Act, Statutes of Alberta 2003, Chapter P-6.5.

Province of Alberta, Freedom of Information and Protection of Privacy Act, Revised Statutes of Alberta 2000, Chapter F-25.

**MOUs**

M20 - 24 AHS BAU-FACS MOU.

MOU - 191a EPS & AHS - IC PACT extension - 0318.

MOU - 29 2018 EPS & AHS EMS Tactical Emerg Medical Support Paramedics - NA.

MOU - 189 COE Planning and Dev, EPS, AGLC and EFR.



MOU - 87 EPS & EFRS Emergency Response  
NA.

MOU - 192 EPS & EDM Fire Rescue - Helicopter -  
1022.

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MOU - 158 PSPSRS & AHS Radio Systems  
0116.

MOU - 221 EPS & AHS Forensic Assess % Comm  
Svc - 0720.

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MOU - 158a EPS & AHS Use of Pub Safe Pub  
Svc Radio Systems 0116.

MOU - 265 EPS % AHS % COE - Residential Living  
Governance Committee - 0620.



# APPENDIX F

LITERATURE REVIEW

INTEGRATED CALL EVALUATION AND DISPATCH BUSINESS CASE



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## **Municipal Call Centre Emergency and Non-Emergency Response:**

### **A Synthesis of Literature to Inform Potential Integration**

#### **1 INTRODUCTION**

Social, economic, political, technological, and environmental influences such as changing demographics, urbanization, wealth disparity, the information and communication technologies (ICT) revolution, terrorism and natural disasters have led to new and growing challenges in public administration. As public service costs steadily rise, and demands for service increase, these trends will continue to shape the expectations of citizens who seek improvement in the provision of services with a greater emphasis on accountability; truth and transparency; participative or collaborative decision-making; measurable performance; and evidence-based results. In many cases, expected improvements within the public sector have not yet materialized and there remains a need to take a closer look at how to adapt public sector performance to future needs. With the maturation and continuous evolution of digital technologies and theoretical underpinnings of Open E-Governance we are heading towards a more citizen-centric, data-driven, participatory, and performance-focused transformation of municipal services response under a smart city framework. The full implications of this new and evolving ecosystem have yet to be determined, so too, its impact on the existing built infrastructure and continuous, uninterrupted need for service. Public Safety Answering Points (PSAPs), or Emergency call centres (ECCs), are upstream in the pipeline of emergency response constituting a critical first stage that confronts many challenges in relation to effectiveness and responsiveness. This paper will look at both empirical and grey literature in determination of the potential for an integrated dispatch service within the context of smart city architecture.



## 2 SMART AND SUSTAINABLE CITIES

“Sustainability refers to the rates of the inter-related processes that keep a place such as a city region alive and healthy that must be maintained (sustained) over time without exceeding the innate, natural ability of the place and its surroundings to support the processes. This includes the ability of the surroundings to absorb the impacts of the processes their resilience.” (Neuman, 2011:100)

It has been projected that by the year 2050 the world’s population will reach 9.7 billion people, 66% of whom will live in cities<sup>1</sup>. Barrionuevo, Berrone and Ricart (2012) state that while cities occupy 2% of the planet, they account for about 70% of the world’s energy consumption and contribute significantly (75%) to greenhouse gas (GHG) emissions due to their population density, inefficiencies in their built environment, and finally, the intensity of related economic and social activities taking place within them. The form and functioning of contemporary cities are a growing source of economic, environmental, and social issues (Bibri and Krogstie, 2017; OECD; 2012). As cities become more populated, the complexity to manage these environments grows. Digital technologies, connectivity of populations and infrastructure domains, and the subsequent development of “smart cities” are often suggested as the remedy for these sustainability issues (Montes, 2020).

### 2.1 ETYMOLOGY OF “SMART CITY”

Although the notion of smart cities began almost two decades ago, “smart city” remains a rather ambiguous concept in literature (Montes, 2020; Barrionuevo, Berrone, & Ricart, 2012; Wenge et. al., 2014; van den Buuse, & Kolk, 2019; Yigitcanlar et al., 2018). Theoretical conceptualizations and practices are still in development and the concept of smart city is constantly being augmented and adjusted to modern realities (Montes, 2020; Yigitcanlar, 2017). As such, there is no consensus on the definition of smart city (Montes, 2020; Barrionuevo, Berrone, & Ricart, 2012; Wenge et. al., 2014; van den Buuse, & Kolk, 2019; Yigitcanlar et al., 2018), as expectantly, academics researching smart cities adopt the concept according to perspective of their own field of study whether that orientation be, for example, technological, economic, political, societal, or environmental (Montes, 2020; Yigitcanlar, 2017). One of the most comprehensive and

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<sup>1</sup> United Nations, Department of Economic and Social Affairs. Population Dynamics. [World Population Prospects 2019: Highlights](#). June 2019.



well-adopted definitions proposed is offered by the International Telecommunication Union (2015) and is based upon more than a hundred definitions adopted by academics, international organizations, companies, and trade associations.

“a smart and sustainable city is an innovative city that uses information and communications technologies and other means to improve living standards, efficiency of urban management and urban services and competitiveness while meeting the needs of current and future generations in the sectors of the economy, society and the environment” (International Telecommunication Union, 2015, 13).

There is little argument on the benefits of smart city and sustainable city development. Recent research has inspired an amalgamation between sustainability and smart city approaches towards the concept of “smart sustainable cities” (Geldenhuys, Brent, & de Kock, 2018). Cities can thus be understood as complex “*socio-technical systems-of- systems*” (Yigitcanlar & Kamruzzaman, 2017), and should be advanced as such by leveraging these interdependencies and interconnectedness in a holistic, long-term and sustainable manner. Long term strategic planning for the urban development of smart, sustainable cities involves a process of diagnosis, strategic development, and implementation (Barrionuevo, Berrone and Ricart, 2012; Neuman, 2011) which ultimately can be assessed in relation to an urban development maturity model such as proposed by Barrionuevo, Berrone and Ricart, (2012). Yet, a systematic review and analysis undertaken by Yigitcanlar et. al. (2019) highlights an expectation in the reviewed academic literature for cities to first become sustainable, before becoming truly smart, instead of the parallel development one would expect of such an evolution. Their research point to major challenges of smart cities in delivering sustainable outcomes as smart city policies are characterised by heavy techno-centricity; smart city practices involve many complexities; and smart city notions are conceptualised in an ad-hoc manner. The findings provide evidence that the current smart city practice fails to incorporate an overarching sustainability goal (Yigitcanlar et. al., 2019).

Perhaps the simplest definition of smart city, however, is the “*convergence of technology and the city*” (Yigitcanlar et al., 2018: 145). Although the original rationale of the smart city concept was mostly related to urban and environmental challenges, current practices are mostly unidimensional, with technology at the core (Yigitcanlar, 2016). Nam & Pardo (2014) caution that although technology is central to defining a smart city, a smart city is not simply established through utilization of technology, but instead technology is a means to enable social, environmental, economic, and cultural progress. Smart cities must be capable of sustaining such progress across the diversity of city components (Allwinkle & Cruickshank, 2011; Hollands,



2008). Yet, smart cities today are “*hubs of technological innovation as opposed to cities of sustainable development*” (Yigitcanlar et al., 2018:352), leading to criticisms by practitioners and theorists. Costa and Oliveira (2017), and Almeida, Doneda, and Moreira (2018) have highlighted the importance of moving beyond technological obsessions and Noy and Givoni (2018) argue that nowadays, smart cities are more focused more on technological profitability and the economy than on reaching actual sustainability goals. Despite numerous definitions with shifting emphasis on certain components, smart cities encompass “*the broad use of technology to gather and process information for monitoring, optimizing and managing a city*” (Montes, 2020).

## 2.2 SMART CITY FRAMEWORK DEVELOPMENT

Smart city architecture is built upon the notion that the more local governments know about their citizens, the better the creation and delivery of services to support them. The key to developing smart cities is to integrate all the domains, or information communication technologies (ICT) components - technologies that provide access to information through telecommunications (Techterms, 2010) and infrastructure and devices such as the Internet, wireless networks, computers, cell phones, and other communication mediums (Techterms, 2010) - into one holistic infrastructure. Smart city development is motivated by the desire to create operational efficiencies aimed at improving the provision and management of public services, enhancing the quality of urban life for its citizens, and increasing long-term sustainability of the infrastructure (Barrionuevo, Berrone and Ricart, 2012). Smart cities have also emerged as “strategic growth markets”, offering substantial opportunities for public service to partner with business, most especially those within the information and communications technologies (ICT) sector (Barrionuevo, Berrone, & Ricart, 2012; Kummitha, 2019; van den Buuse, & Kolk, 2019). Being “smart” is thus on the urban agenda of many cities (Nam & Pardo, 2014; Yigitcanlar & Kamruzzaman, 2018).

Technologies a smart city requires and those expected by citizens will vary by reason of geography or ideology (Barrionuevo, Berrone, & Ricart, 2012), and due to this, the proposed architectures, or frameworks, of smart cities are diverse (Wenge et. al., 2014). In development of their literature review on smart, sustainable cities of the future, Bibri and Krogstie (2017) note a diversity of smart city frameworks with the *European Smart Cities Ranking* developed by Giffinger et al. (2007) remaining “*the most widely quoted, used, and applied in the field*”. Employing the use of a six-dimension classification this framework is both a comparative tool and a monitor to assess a city’s progression toward: smart mobility, smart



environment, smart living, smart people, smart economy, and smart governance. Bibri and Krogstie (2017) identify other smart city frameworks such as those by Chourabi et al. (2012), Correia and Wuenstel (2011), and Neirotti et al. (2014) and offer examples of smart city performance assessment systems, such as those by Albino et al. (2015), Lazaroiu and Roscia (2012), and Lombardi et al. (2012). In a more recent review of literature, Montes (2020) offers an updated list of more than fifteen key dimensions on which smart city's focus and which Albino et. al (2015) represented in four common elements:

*“a networked infrastructure that enables political efficiency and social and cultural development; an emphasis on business-led urban development and creative activities for the promotion of urban growth; social inclusion of various urban residents and social capital in urban development; and the natural environment as a strategic component for the future”.*

Al-Masri, Ijeh, & Nasir (2019) add further to the theoretical development of a smart city framework by including eight factors that contribute to a smart city becoming “smarter”: management and organization, technology, governance, policy context, citizen and communities, economy, built infrastructure, and natural environment.

In Bibri and Krogstie's (2017) review they also highlight another set of frameworks and benchmarking tools developed specific to urban domains to assess the smartness of their transportation systems (e.g. Debnath et al. 2014; Garau, Masala, and Pinna 2016), urban mobility (e.g. Garau, Masala, and Pinna 2015), environment (e.g. Neirotti et al. 2014), or quality of life (e.g. Khan et al. 2015). But perhaps most importantly to our pursuit, and in addition to frameworks for smart cities generally, and smart urban domains more specifically Bibri & Krogstie (2017) provide a wide variety of smart city infrastructure studies which have been proposed by Al-Hader and Rodzi (2009); Amini, Mohammadi, & Kar, (2019); DeRen, JianJun, and Yuan (2015); Khan et al. (2012); Khan et al. (2015); Khan and Kiani (2012); Khan, Pervez and Ghafoor (2014); Kiani and Soomro (2014); and Nathalie et al. (2012). These smart infrastructures are based on internet of things (IoT) technologies and cloud computing and tend to focus on technological aspects such as big data analytics, context-aware computing, and data sensing and monitoring, but also contemplate urban management, privacy and security, or services to the public (Bibri, 2018; Dlodlo, 2016; Talari et. al, 2017).

Significant growth in ownership and usage of digital devices has sanctioned the construction of a network of all interconnected devices in a city, enabling smart object technologies to sense, monitor and react to their environment; securely process the information collected; and communicate and share the results to other



smart technologies within a networked ecosystem. The internet of Things (IoT) potential in emergency and non-emergency response is such that *“any devices and almost anything having compatibility with respect to connecting, sensing and communicating creates the perfect network for the Internet of Things (IoT)”* (Kodali & Mahesh, 2017).

Literature addresses Smart Internet of Things (IOT)-based intelligent response systems generally, as it relates to fire (Johnsaida, Rahul, & Shalini, 2018), policing (Yamin, Shalaginov & Katt, 2020; Beg et. al. 2020; Mishra, 2017;) and ambulance services, as well as those specific to processes (i.e., policing processes, Schiliro, 2019) or practices, such as hot-spot policing (e.g. policing of an urban rail transit system, Zhou, 2020) or other target location of series of incidents. Depending on specific requirements of the response system, a variety of sensors may be integrated into the system and can be manipulated within the dynamic environment (Kodali & Mahesh, 2017). Both crowd-sourced information (Anam et. al., 2019; Chen et. al., 2019; Zhang et. al., 2019; Deviatkin, Shelmanov & Larionov, 2018; Imram et. al., 2018; Zuo et. al., 2018) and the use of sensors (Kodali & Mahesh, 2017) have encouraged the utilization of technology to provide early detection (Mukhopadhyay et. al., 2020).

Roman, Zhou & Lopez (2013) provide an analysis of the applicability and viability of both centralized Internet of Things (IoT) and decentralized Internet of Things (IoT) environments as they relate to features, security, and privacy. They note the challenges of assuring interoperability, reaching a business model, and managing the authentication and authorization of entities. They conclude that although distributed IoT is beneficial and relevant to the current operating environment, they stress that both centralized and distributed approaches can coexist, providing the foundations of a full-fledged Internet of Things environment. In a study of major, or large-scale, emergency response planning, Du (2020) improves the dispatch and transportation efficiency of emergency materials under a model in which the government makes full use of Internet of Things (IoT) technology and artificial intelligence technology. A decision support platform was designed to integrate all the algorithms and principles proposed, resulting in a framework that can effectively coordinate the workflow of emergency material preparation and dispatch, helping to shorten the total time of emergency material preparation, dispatch, and transportation.

Cloud technology is also transforming the infrastructure of smart cities. Cloud computing represents a fundamental paradigm shift in the delivery of information technology services to one of *“on-demand, hyper-scale computing services”* (KPMG 2020). Most organizations are already using or in the process of exploring the potential of cloud technologies, however, it has been suggested that many struggle to



optimally move towards and persevere on cloud platforms. Cloud based e-governance systems provide many benefits to government including service performance; security; innovation; agility; and elasticity.<sup>2</sup> Cloud technology use across the public sector has the potential to include cloud-powered citizen hotlines, or machine learning for hospitals, for example.

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<sup>2</sup> See [Government of Canada Cloud Adoption Strategy: 2018 update](#). July 28, 2020, and other information about the [cloud services](#) in the federal government content.



### 3 MODELS OF PUBLIC ADMINISTRATION & THE PATH TOWARDS SMART COLLABORATIVE E-GOVERNANCE

In the earliest two theoretical models of public administration, the contribution of information and communication technologies (ICT), was not explicitly recognized (Henman, 2010). In Old Public Administration, the traditional bureaucratic approach to public administration, the objective of government was to efficiently deliver goods and services emphasizing a highly centralized, hierarchical, “command and control” system characterized by the standardization of rules, and the separation of policy making from policy implementation (Brainard & McNutt, 2010; Denhardt & Denhardt, 2007; Henman, 2010; Sangiorgi, 2015). For city managers, this “top-down model” provides abundant, systematic, and relatively inexpensive data about city activities and processes, enabling a present, on-demand form of management and governance (Kloeckl, Senn, & Ratti, 2012). De Lange and De Waal (2013) argue that top-down smart city projects typically consist of a *triple helix* of government, universities, and industry, ignoring the role of citizens as equally important agents in governance.

In the 1980s to 1990s, the New Public Management (NPM) paradigm emerged, which introduced citizens as the customers and the government as service provider responding to citizens’ needs (Brainard & McNutt, 2010; Denhardt & Denhardt, 2007; Henman, 2010; Sangiorgi, 2015). Coined by Hood in 1989, New Public Management (NPM) was a move towards a more business-oriented service delivery model especially by involving the methods of private sector players and operating under seven key principles (Hood, 1991:4): management; performance standards; output controls; decentralization; competition; private sector management; and cost reduction.

The evolution of information communication technologies (ICT) has not only changed citizen’s perceptions of time, space, and the role of government itself (Pollitt, 2011) but has also provided viable alternatives for increasing citizen access to government and improving government response to the issues of greatest concern to citizens. This involvement has paved the way for post-New Public Management (NPM) paradigms that better model coordination between government organizations; collaboration between government, citizens, and other stakeholders; and more importantly, given rise to citizen-centricity in the delivery of public services. Public organizations and governments are then increasingly adopting digital technologies to support these interactions (Goodsell, 1981 in Lindgren et al., 2019), with the aim to improve efficiency and service quality through reductions of service time, increased transparency, and integration across



organizations (Layne & Lee, 2001). This digital transformation within government and in the public sector governance context is discussed as “e-government” and “e-governance”. The World Bank (2015) states

*E-government refers to government agencies’ use of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that can transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth and/or cost reductions. (United Nations Department of Economic & Social Affairs, 2018, p. 220).*

According to Chourabi et al. (2012), management and organization of a city government and its governance while in play with other actors are key success factors for smart city initiatives. Nam & Pardo (2014:52) mirror this by stating “city government is a central actor that plays a pivotal role to lead and coordinate smart city initiatives and efforts”. The smart city model suggested by Giffinger et al. (2007) underscores these ideas of smart e-governance specifically highlighting the characteristics of participatory decision making and transparency.

The stages of modernization of operational activities within government are often linked to the larger context of globalization, and further separated and redefined by the main three functions of government: operations, policymaking, and regulation (Finger & Pécoud, 2003). From the side of the government as service provider, e-government is being deployed not only to deliver services to society, but also for efficiency purposes in the public sector, improving transparency and accountability in government functions, and cost savings in government administration. Globally, it is believed that adopting technology, especially information and communications technologies (ICT), for government operations will significantly help governments to be more effective and transparent in fulfilling their duties towards their citizens (Mahmood, 2019). It is said that the appropriate utilization of ICT in the public sector has the potential to increase citizen satisfaction, through more convenient public service, more accessible information, and better communication channels between citizens and the government (Welch, Hinnant, & Moon, 2005). Thus, e-government is often viewed as the answer to the declining trust and general attitude of citizens to the government (Mahmood, 2019; Welch et al., 2005).



Although, the concept of collaborative e-government emerged over a decade ago, e-government as both a field of inquiry and a practice has only recently moved beyond its initial focus on the digitization of traditional government services towards exploring the potentials of ICT to drive transformative change (Linders et. al., 2018; Tapscott, Williams, & Herman, 2007). Prior e-government literature highlighted the failure to harness the ideas, knowledge, and skills of the public stifling the ability of public agencies to further innovate their services and created a ceiling on digitized service delivery (Tapscott, Williams, & Herman, 2007). Most advanced governments are now well on their way to achieving this final milestone of digitization with the implementation of comprehensive and increasingly mature e-government portals (Linders et. al, 2018). With the absence of a clear conception, guidance and validated best practices in empirical research, the necessity for governments to share their experiences and lessons is imperative (Linders et. al., 2018). The United Nations 2020 ranking of the 193 UN Member States in terms of digital government<sup>3</sup>- capturing both the scope and quality of online services, as well as, status of telecommunication infrastructure and existing human capacity- shows Denmark, the Republic of Korea, and Estonia leading, followed by Finland, Australia, Sweden, the United Kingdom, New Zealand, the United States of America, the Netherlands, Singapore, Iceland, Norway and Japan (United Nations, 2020, [E-government survey](#)). According to Linders et. al (2018), traditional maturity models no longer provide extensive or sufficient guidance for what is next in e-governance. This is in part because, as e-government maturity models approach their peak, they tend to *“become both predictive and normative and their empirical accuracy declines precipitously’ as their authors move from the realm of the descriptive to the aspirational”* (Linders et. al, 2018 in review of Coursey & Norris, 2008). These ambiguous later stages of the maturity model *“provide little practical support to policymakers”* (Klievink & Janssen, 2009) on how to *“overcome the numerous and significant barriers”* to achieving this proposed *“e-government nirvana”* (Coursey & Norris, 2008).

Moving towards citizen-centric, data-driven, and performance-focused transformation has been offered as next step, and a *“bottom-up”* approach to transformative government (Linders et. al., 2015). Technological

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<sup>3</sup> The UN E-Government Survey, published by the UN Department of Economic and Social Affairs (UN DESA), is prepared over a two-year period following an established methodology. It looks at how digital government can facilitate integrated policies and services across 193 UN Member States. The Survey supports countries’ efforts to provide effective, accountable, and inclusive digital services to all and to bridge the digital divide and leave no one behind. In the report of the Secretary-General’s High-level Panel on Digital Cooperation, the E-Government Survey is recognized as a key ranking, mapping and measuring tool, supporting the digital transformation of countries.



advancements have unlocked important new possibilities for public administration that seemingly hold the potential for transformative change, including that of “Open Government” (Lathrop & Ruma, 2010; Linders, 2012), “Smart Cities” (Naphade, Banavar, Harrison, Paraszczak, & Morris, 2011; Townsend, 2013), and “Open Innovation” (Noveck, 2009). The goal of these efforts is to *move from a model of passive and static information repositories towards proactive, integrated service and information delivery coupled with data-driven personalization* (Linders et. al, 2018: S70).



## 4 EMERGENCY MANAGEMENT RESPONSE (EMR) AND EMERGENCY RESPONSE SYSTEM (ERS: ) 911 OPERATIONAL RESPONSE

Emergency medical services (EMS) is often characterized as the intersection between public health, public safety, and health care (Delbridge et. al, 1998). Emergency response requires rapid and effective cross-collaboration by an array of participants spanning different professional disciplines, often from different agencies of service (co-responders), some of whom are required to answer calls, then dispatch to an incident site using a CAD system, and finally, provide a coordinated response using existing knowledge and tools (i.e. vehicles, equipment). Coordination, collaboration, and communication are critical throughout the response engagement from the point of initial contact, to assessment, dispatch, then at the incident site itself, and beyond (Kristensen, Kyng and Palen, 2006) a process referenced as the *emergency pipeline* (Mukhopadhyay, et. al, 2020; Pettet et. al., 2020).

It is well-established in both grey<sup>4</sup> and academic literature that emergency response management can be divided into four or five interconnected, dynamic components:

- mitigation
- preparedness
- detection
- response, and
- recovery.

While it is evident that most prior academic study in emergency response management (ERM) have examined these areas independently, or as discrete units, and often as stages or levels of response, these components are inter-relational and inter-dependent “*with the output of one element serving as an input for another element*” (Mukhopadhyay et. al., 2020; Pettet et. al., 2020). Emergency response management may be thus better described as a continuous, cyclical process whereby the recovery phase of an emergency

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<sup>4</sup> The Fourth International Conference on Grey Literature (GL '99) in Washington, DC, in October 1999 defined grey literature as follows: “That which is produced on all levels of government, academics, business and industry in print and electronic formats, but which is not controlled by commercial publishers.” They may include, but are not limited to the following types of materials: technical reports, statistical reports, memoranda, market research reports, theses, conference proceedings, technical specifications and standards, non-commercial translations, bibliographies, technical and commercial documentation, and official documents not published commercially (primarily government reports and documents) (Alberani, 1990). Grey Literature also includes blogs, wikis, social networking platforms, video sharing sites, etc. See also [GreyNet International](#) and [Open Grey](#).



event leads directly back into the mitigation phase to begin preventing or minimizing the risk of a recurrent situation, or development of a similar emergency event in the future. This illustrates the critical importance of designing emergency response management (ERM) ecosystems in consideration of their inter-relational intricacies and the inter-dependent nature of these components of the emergency response (Mukhopadhyay et. al., 2020; Pettet et. al, 2020).

In the last several decades, there has been considerable attention devoted to the study of emergency incidents and the response by emergency personnel particularly as it relates to the use of statistical, analytical, and algorithmic approaches to design of emergency management systems (Mukhopadhyay et. al., 2020; Pettet et. al., 2020; Simpson & Hancock, 2009).



## 5 NON-EMERGENCY MANAGEMENT RESPONSE (NEMR) AND NON-EMERGENCY RESPONSE SYSTEM (NERS): 311 OPERATIONAL RESPONSE

A non-emergency contact program is a communication system that allows citizens to access non-emergency municipal information and services by dialing an abbreviated telephone number.<sup>5</sup> A promotional website for 311 in Akron, Ohio once described the distinction between the use of 911 and 311 as: "*Burning building? Call 9-1-1. Burning question? Call 3-1-1.*" ([Customer Service Contact Centre](#), City of Akron). The Canadian Radio-television and Telecommunications Commission (CRTC) reserved the use of 311 for non-emergency municipal services throughout Canada on November 5, 2004. The first Canadian 311 service opened in Calgary, Alberta on May 18, 2005,<sup>6</sup> and on December 16, 2008 Edmonton, Alberta began its 311 service. Many cities now also employ the use of online interfaces, Open 311 to accept 311 comments, inquiries or requests for service.<sup>7</sup> The 311 non-emergency contact programs in North America consolidates the government phone number (and also in some cases other channels) into a call centre staffed by customer service representatives whom are either civil servants or private industry employees (Chen, 2010; Reddick, 2009, 2010, 2011). Non-emergency inquiries may also demand rapid and effective cross-collaboration by an array of participants spanning different professional disciplines and from different agencies, however response is by definition non-emergency in nature, or not *mission critical* (i.e. a matter of life or death). The contact communication system in non-emergency response is one that is usually equipped with a Customer Relationship Management (CRM), a software application that allows governments to track interactions with residents and manage amounts of data and information effectively (Fleming, 2008; Richter, Cornford, & McLoughlin, 2004; Schellong, 2008). Coordination, collaboration, and communication are also critical components of response engagement under 311 services.

One of the most marked differences between emergency and non-emergency engagement becomes evident in looking at the catalyst for implementation of coordinated non-emergency response services. By 1996 non-

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<sup>5</sup> 3-1-1 in the U.S. and Canada, 1-2-0 in Seoul, Korea, 1-2-3-4-5 in Shanghai, China, 1-9-9-9 in Taipei, Taiwan, and 1-1-5 in Germany

<sup>6</sup> INFOGRAPHIC: [Ten years of 311 services in Calgary](#). By Melissa Gilligan. Global News. Posted May 21, 2015

<sup>7</sup> Edmonton's [Open 311](#) began on January 1, 2014. According to Edmonton's [311 Open Data](#) initiative, 311 responds to approximately 2 million inquiries a year.



emergency calls to 911 had reached a level that required national attention in both the United States (Holzer et. al., 2006) and in Canada. In the United States, then President Clinton challenged the Department of Justice (DOJ) to provide relief to the 911 system, and by 1997 the Federal Communications Centre (FCC) established 311 for non-emergency response (Holzer et. al, 2006). O'Byrne (2015) offers a more complex examination of the origins and causation for 311 adoption in the United States employing the use of historical narratives, a logistic regression model, and case studies from Pittsburgh, Minneapolis, and St. Louis (O'Byrne, 2015). The historical narrative approach found that the political forces of the federal government, various national organizations, and policy entities (Karch, 2007) promoted the 311 innovation to solve different problems and that 311 evolved beyond its original intent (O'Byrne, 2015). The logistic regression model approach found that there was a statistically significant relationship between 311 adoption and the variables of higher population, violent crime rate, and the mayor-council form of government (O'Byrne, 2015). The case studies revealed that the mayors played a strong role in establishing citizen service centres, or rather establishing a direct link to government service agencies, in all cities included in the study (O'Byrne, 2015). 311 systems thus emerged not only to alleviate non-emergency calls made to 911 systems, but also as a means of enhancing and creating efficiencies in citizens access to government services in a *government to citizen (G2C)*, or community-oriented government evolution (O'Byrne, 2015; Holzer et. al, 2006).

In practice, non-emergency systems such as 311 are ideal in terms of gathering performance data relevant to government service delivery for the establishment of performance metrics (Kloeckl, Senn, & Ratti, 2012). Centralization of government non-emergency services allows for government officials to monitor and categorize the volume and types of demands for service, as well as the response times to meet those demands (Holzer et. al, 2006) allowing governments to set performance standards within a department or government agency and provide citizens realistic expectations as to "*when a complaint will be addressed, a problem solved, or a service rendered*" (Holzer et. al, 2006:410).



## 6 SMART AND CONNECTED INFRASTRUCTURE PREPAREDNESS IN EMERGENCY AND NON-EMERGENCY RESPONSE

Preparedness involves creating infrastructure that enables governments, professional emergency or non-emergency response organizations, communities and individuals to anticipate and effectively respond to the impact of likely, imminent, or current hazards, events or conditions by forming policy and practices (protocols) and allocating resources, for example (Mukhopadhyay et al., 2020). Infrastructure services are provided through *“the operation of, and complex interaction between human, economic and technical systems and the environment”* (Proag, 2020).

Canadians are increasingly relying on wireless communications<sup>8</sup> as evident in that more Canadians have mobile phones (91%) than landlines (37.8%), over one third of Canadian households rely exclusively on wireless services (CRTC, CMR, 2020; CRTC, CMR: Telecommunications Overview, 2018), and mobile data traffic grew 42% to reach 1,704 petabytes in 2019 (1,704,000,000 GB) (Accenture, Investing in Canada’s Digital Infrastructure, 2020). As of December 2020, Canada has 10 LTE networks, 7 LTE-A networks, and 4 5G networks (5G Americas/TeleGeography, 5G & LTE Deployments, 2020). Long term evolution (LTE) networks, (a 4G wireless technology which delivers higher speeds than previous generations of wireless technology), are available to 99.5% of Canadians. LTE-advanced (LTE-A) networks offering even higher speeds than LTE were available to 96% of Canadians at the end of 2019, a thirteen-point increase since 2016 (CRTC, Communications Monitoring Report, 2020). Across Canada, rural 4G LTE coverage has expanded rapidly over the last decade, increasing from 35.4% in 2013 to reaching 97.4% of Canadians living in rural communities in 2019 (CRTC, CMR, 2020).

In terms of performance, Canada’s facilities-based carriers have implemented *“some of the world’s fastest and most reliable wireless networks”*, reaching every province and territory. Independent network analyst, Opensignal, describes Canada as a *“4G superpower”*, with *“few other countries better prepared than Canada to deploy 5G networks of the future.”* (Opensignal, State of Mobile Networks: Canada, February 2018). Canadian wireless subscribers enjoy the fastest average mobile download connection speeds in the world, 287% faster than the global average (Opensignal, The State of Mobile Network Experience, May

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<sup>8</sup> All data and information on Canada’s mobile wireless industry in support of this section can be accessed at Canadian Wireless Telecommunications Association (CWTA), [Facts & Figures](#)



2020). In Canada, average mobile download speeds are faster than all other G7 countries plus Australia, and over 123% faster than average download speed found in the United States (Opensignal, [The State of Mobile Network Experience](#), 2020). As of August 2020, Canada's 5G user download speed experience ranked second among countries surveyed, with average download speeds 170% faster than the U.S. and leading Germany, Australia, the UK and South Korea, (Opensignal, [Benchmarking the Global 5G User Experience](#), August 2020 – takes into account average 5G and 4G download speeds, as well as time spent connected to each technology). As the wireless industry evolves to 5G in Canada, energy used by a general 5G cell site will only be 8-15% of a similar 4G cell site. Considering 5G's substantially greater energy efficiency, it is predicted that 5G will support a thousand-fold traffic increase in the next 10 years, while the full network's energy consumption will be half the current levels (Accenture, [Accelerating 5G in Canada: The Role of 5G in the Fight Against Climate Change](#), 2020). The use of wireless technologies in high-emitting industries has enabled a reduction of approximately 10 times as much carbon as the mobile industry's own operations have generated, and the adoption of 5G could contribute an additional reduction of up to 20% of total wireless technologies enabled reduction (Accenture, [Accelerating 5G in Canada: The Role of 5G in the Fight Against Climate Change](#), 2020).

## 6.1 EMERGENCY RESPONSE INFRASTRUCTURE

Emergency 911 service was originally conceived to be a wired, or wireline (landline), telephone means to call for help during emergency situations. Mobile phones have today become an important means to receiving requests for assistance and delivering emergency response. A wireless 911 phone call can save valuable minutes otherwise required for a caller to find and access a landline phone required for emergency medical services (Tavana, Mahmassani, and Haas, 1999). The steady increase in private sector wireless subscribership (CWTA, 2020) and resulting mobile 911 use has created a need to better understand the implications of this rapidly growing and evolving system on the entire emergency response infrastructure (Horan & Schooley, 2005).

A common framework for collaborative emergency management initiatives was established in the 2017 document, [An Emergency Management Framework for Canada](#). Building on this Framework, Public Safety Canada (PSC) released the [Emergency Management Strategy for Canada: Toward a Resilient 2030](#) identifying federal, provincial and territorial priorities and providing a roadmap to strengthening Canada's ability to assess risks, prevent, mitigate, respond to, and recover from disasters. The Department



also maintains a network of partnerships with other federal government institutions, provincial and territorial emergency management organizations, first responders and voluntary organizations, and other stakeholders and communities, “supporting a whole-of-society approach to emergency management that leverages resources and capacities at all levels across the country” (Public Safety Canada, 2019). The [Emergency Services Working Group \(ESWG\)](#) of Canadian Radio-television and Telecommunications Commission (CRTC) composed of Telecommunication Service Providers, Public Safety Answering Points (PSAPs), and 911 Industry specialists, is one such stakeholder in infrastructure development. This Working Group addresses issues that relate to the provisioning of 911 services, including both the technical and operational implementation of 911 services as assigned by the CRTC, or as requested by stakeholders (CRTC, 2012).

Public Safety Answering Points (PSAPs) must continually evolve to meet the ever-changing demands of the communities they serve, from the facilities that house their operations, to the technologies and systems they employ in support of communications and collaborations. Emergency communications centres (ECCs), or public safety answering points (PSAPs), are an expensive component of any highly developed emergency management systems in terms of human resources, computer-aided dispatch (CAD), and telecommunications hardware and software (Moser et. al. 2017). It is suggested that current technology like GPS abolished the need for closeness between dispatch centres and the population they serve as evidenced by the mergers of dispatch centres which are often a result of the expensive, highly developed, complex systems required for emergency response (Moser et. al., 2017). Moser and colleagues (2017) found that the potential cost advantages achieved in a merger can improve the quality of services to the population, reducing both under-triage (too few or too slow) and over-triage, and the use of “lights and sirens” which have been attributed to the risk of accidents involving responders (Moser et. al., 2017). There is lack of evidence regarding the appropriate population size for a given geography of service provision which one would consider to be a key factor in consideration of a call centre merger (Dami, Fuchs & Hugli, 2015). Alberta Health Services has recently identified an opportunity to consolidate four contracted EMS dispatch centres into EMS managed communications centres to reduce costs ([Alberta Health Services Performance Review Summary Report](#), December 31, 2019).

Many PSAP’s in Canada and abroad are migrating toward Next Generation 911 (NG911). NG911 provides automatic display to the 911 Call Taker the caller’s location (home address or x/y coordinates) and the associated information, such as the caller’s phone number. Next Generation Core Services (NGCS) offers a critical first step in the application of Emergency Services Internet Protocol Networks (ESInets), or



broadband-enabled networks which support the transmission of video, images, and other bandwidth-intensive data files. The Canadian Radio-Television and Telecommunications Commission (CRTC) had originally required telecommunications service providers in Canada to be ready to offer a NG911 voice service (911 calls delivered over IP networks) to Public Safety Answering Points (PSAPs) by March 2021, and also identified that NG911 text messaging be available by March 30, 2022 ([NG911, 2021](#))<sup>9</sup>. The CRTC suspended these deadlines due to the COVID-19 pandemic situation, and later on September 4, 2020, a *Call for comments – Establishment of new deadlines for Canada’s transition to next-generation 9-1-1*, (Telecom Notice of Consultation CRTC [2020-3260](#)) was placed out to the public. The consultation is now closed, and new deadlines are expected to be announced.

In general, the main function of oversight is to set practice standards and generate accountabilities. Emergency medical service agencies typically deliver care according to the protocols set forth by their oversight entity, but they are also responsible for maintaining the quality of care provided by their personnel. Quality measures are most often applied at the personnel level, followed by the agency-level, then system of care level and finally, the oversight level (Taymour et. al, 2018). The Donabedian Model of quality care (1997) organizes quality measures into three categories- structure, process, and outcome. As explained by Taymour et. al. (2018), in the most basic sense, *structure* refers to the institutions and providers in which care takes place, while *process* refers to what is done to the patient, and *outcomes* are the results of this care. They further state that quality measures of all three types can be applied to any aspect of prehospital care. Peer-reviewed literature also indicates that oversight can provide the coordination necessary for quality improvement (Taymour et. al. 2018). In both the grey and peer-reviewed literature, it was found that traditional EMS quality measurement has focused almost exclusively on response times (Murphy et. al., 2016; Myers et. al., 2008). The emphasis on response times noted in the peer-reviewed literature is expected in prehospital quality measurement given the relative ease with which they can be measured and reported (Taymour et. al. 2018). In addition, response times have been found to be correlated with patient outcomes (Bohm & Kurland, 2018; Newberger & Braithwaite, 2020; Taymour et. al., 2018). Overall, Taymour et. al (2018) suggest there is a lack of research and quality measurement of the attributes of EMS systems that promote better patient outcomes, as response times may be a function of

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<sup>9</sup> See Canadian Radio-television and Telecommunications Commission, Telecom Regulatory Policy [2017-182](#) and Telecom Decision [2019-353](#) (hereafter, the NG9-1-1 framework). See also [9-1-1 Obligations of Local VoIP Service Providers in Canada, 2017](#)



factors outside the EMS system itself, such as population density and transportation infrastructure (Aringhieri, Carello & Morale, 2016). Other multiple key performance indicators (KPIs) have been identified in EMS pre-hospital care (Boyle et. al, 2018; Howard et. al., 2018; Pap et. al., 2018; Penverne et. al., 2018; Murphy et. al., 2015; Rahman et. al, 2015; NHTSA, 2009) for physician staffed EMS (Haugland et. al., 2017), and more recently, in field hospital care (Zaboli, et. al., 2018).

Technology, and more specifically ICT, is prompting change in emergency response management (ERM) policy and practice- driving new ways and means of emergency response not only within the physical “field of operations”, but most especially, in the digital, or virtual one. Emergency response is becoming increasingly technology intensive triggering an increased demand for new knowledge and skills related to innovative applications and emerging technologies. Partnerships with private industry, especially technology companies, and those in academia will increasingly be essential for leveraging technical expertise, and in the development of strategies to address emergency incidents. This new field of operations has also accelerated the modernization of training delivery in some jurisdictions and led others to use new applications to enable recruitment of new emergency management professional (Taymour et. al, 2018). It is generally acknowledged that the power of data is amplified when integrated with other data, a process made possible through technology which itself then becomes a force-amplifier (Taymour et. al, 2018) and technical expertise a form of cultural capital (Chan 2003).

The role and qualifications of various agents or participants within the EMS system vary jurisdictionally here and abroad. Emergency communication officers (ECOs) are tasked with handling incoming 911 calls, dispatching emergency response, and providing vital instructions to emergency callers when necessary. The AHS Profile of an [Emergency Communications Officer \(ECO\)](#) notes a level of professionalization with Emergency Medical Dispatch (EMD) with Medical Priority Dispatch (MPD) certification. Peer-reviewed literature addressing the emergency communication officer profession specifically is rare, and what was found was often American in orientation. For example, a study by Haight (2020) provides evidence for the professionalization and standardization of these officers, however, makes no effort to explore or note the Canadian experience. Job satisfaction and organizational commitment of emergency medical personnel were found to be associated with stronger organizational communication, improved productivity, and reduced turnover (Carriere & Bourque, 2009). The length of time an emergency medical officer has been with an agency also predicts performance on condition-specific measures such as time to intubation, proper



CPR, and increased patient survival after out-of-hospital cardiac arrest, for example (Carriere & Bourque, 2009).

In some jurisdictions there are physicians in the field, often seen to be a result of growth and standardization of EMS as an accredited, professional sub-speciality (Chappuis et. al., 2021; Haight, 2020). In looking at emergency medical service specifically, Alberta Health Services' EMS ground and air practitioners follow a set of evidence-based [Medical Control Protocols](#) ensuring a consistent standard of care province-wide. The protocols were developed by a provincial committee comprised of EMS staff, physician leadership and Alberta Health and Wellness, and have been reviewed by various specialty experts such as emergency physicians and pediatricians. Protocols are also in compliance with the [Emergency Health Services Act, c. E-6.6, 2008](#), regulation (110/2020). In addition, is a [Ground Ambulance Vehicle Standards Code, January 2021](#) containing construction and safety-related requirements for four classes of ambulances used by licensed ambulance operators in the province of Alberta.

The Alberta Health Services (AHS), Emergency Medical Services (EMS) publicly posts six EMS-specific performance measures in the form of a performance dashboard, [Quarterly Emergency Medical Services Dashboard](#), as well as providing quality measures in the form of a [Patient Experience Survey](#) and EMS response times inventory in various throughout the province of Alberta (i.e., [Edmonton zone](#)).

To meet infrastructure needs PSAPs require cost-effective solutions that integrate seamlessly into existing operations and infrastructure and enable them to protect and serve their communities without service interruption. In calculating the monetary value of response times, Jaldell, Lebnak & Amornpetsathaporn (2014) use two different time factors, *response time*, which is the time from when a call is received by the emergency medical service call-taking centre until the response team arrives at the emergency scene, and *operational time*, which includes the time to the hospital. Findings using response time indicate a significant cost efficiency with a one-minute improvement in emergency response- \$326,000 baht/per min (or \$13,659.40 CDN/ per min) total monetary value for a one-minute improvement in each dispatch. Summarized over 1 year, that was totalled to be 1.6 billion Thai baht (or \$67,024,000.00 CDN). The authors suggest that the calculated values could be used in a cost-benefit analysis of an investment reducing the response time, such as the cost of moving a station, or investing in a new system.

## 6.2 NON-EMERGENCY INFRASTRUCTURE



The earliest example of a wholistic, city-level service integration of a non-emergency call system was in December 1997, in Dallas, Texas which saw a consolidation of twenty-eight customer service numbers and seven call taking centres to accept citizens request for information and city services. The consolidated non-emergency call centre allowed citizens to call 311 to access several city services, including but not limited to: animal control; sanitation; public works and transportation; code compliance; economic development; parks; environmental and health services; housing; and water. The Dallas non-emergency system was implemented to provide citizens with easier and more efficient access to a wide range of city services (Mazerolle et. al, 2003).

Nam & Pardo (2012) study Philly311 to generate new understanding about city-level service integration and how the capabilities of 311-enabled service integration influence the city government in both client facing (external accountability, proactive engagement by volunteer liaisons and a venue for citizen engagement) and internal managerial capacities (data-driven management, internal customer-oriented service, and collaboration and partnership).

*The Philly311 contact centre serves as a front door to municipal services for residents, businesses, and visitors, the service itself enhances transparency and accountability of service delivery by empowering citizens to engage more easily in their neighborhoods and communities. Philly311 has allowed the city to gain new efficiencies and increased the effectiveness of many programs by using data captured through the 311 system to monitor performance and inform resource allocation decisions. Interdepartmental collaboration and cooperation is considered central to the ability of Philadelphia to achieve these benefits.*

Nam & Pardo (2012) note service integration is rooted in human and social delivery but has more recently been used to refer to the consolidation of government services enabled by technological advances. Streams of research pertinent to service integration within government are thus:

- a. Human and social service - In 1992, Kahn and Kamerman (1992:5) defined service integration in the context of human service integration as: *"A systematic effort to solve problems of service fragmentation" with the goal of creating a "coherent and responsive human services system"*. Service integration involves interagency efforts and activities for collaboration (Hassett and Austin, 1997; Sowa, 2008). According to Kagan (1991: 2-3), service integration is identified as further progress in the continuum of interorganizational relationships, which ranges from cooperation (personal relationships between management and staff in different organizations) to coordination (multiple



organizations work together to coordinate their services) to collaboration (multiple organizations share resources, staff, and rewards) to service integration (multiple organizations work together to provide a new package of services to their mutual clients).

- b. Shared service - In the government context, the term “shared service” denotes “a generic service that is jointly developed by public agencies and can be used many times in different business processes of various government agencies” (Janssen and Wagenaar, 2004: 32). Services, in this context, can be shared by multiple agencies to avoid the repeated development of similar functionality. Functionality of one system can also be shared and provided to other agencies. Shared services can meet a strong need to coordinate joint efforts on all levels of public administration, avoid duplication of efforts, and establish one shared “back office” (Janssen and Wagenaar, 2004: 31). Shared services promise mainly three benefits: reduced costs, improved quality of service, and fewer diversions (Bergeron, 2003: 6; Dollery and Akimov, 2008; Walsh, McGregor, Lowndes and Newton, 2008). Dollery and Akimov (2008) identified the most popular shared service functional areas in the public sector as waste management, use and procurement of physical assets, back office operations, information technologies, governance, compliance and audit services, and human resource management.
- c. E-government - Service integration in the e-government context involves e-government maturity models. Existing models that explain the evolutionary nature of e-government development commonly see integration as the most mature stage (Andersen and Henriksen, 2006; Janssen and van Veenstra, 2005; Layne and Lee, 2001; Reddick, 2004). Sophistication of e-government offerings requires systems integrated across different functions and real one-stop service for customers such as citizens and businesses (Holden, Norris, & Fletcher, 2003). The mature stage for integration enables integration in both information and service. There are three sequential stages of e-government integration (Gil-Garcia, 2012:5-7): *vertical integration* (across different levels of government), *horizontal integration* (transformation in power and development of trust and creative collaboration models), and finally, *total integration*, the most advanced stage of integration, where citizens can access all information and services using a single window or portal to services
- d. Citizen-centric service - Citizen-centred service delivery denotes “the process of bringing together and fitting together government services so that citizens can access these services in a seamless fashion based on their wants and needs. Citizen-centred service integration is a comprehensive,



concerted, and committed effort to integrated services not only across departments, governments and sectors but also across service channels (Roy and Langford, 2008). Network or governance models for integrated service delivery recognize the failure of traditional hierarchical government organizations and the inability of individual agencies to interconnect and reach out to wider community-based stakeholders (Roy and Langford, 2008: 14). The integration of citizen-centred service delivery is the way to rethinking traditional and conventional government machinery (Charih and Robert, 2004), extending beyond the mere efficient and effective delivery of services through a single web portal of government agencies. The citizen-government relationship and the government-to-government relationship may change with citizen-centred service integration.

Few studies examine the state-level application of non-emergency 311 services (Holzer et. al., 2006), and instead explore municipal models of 311 service. Holzer et. al., (2006) offer the example of a 211 system to provide all residents of New Jersey with a single, consolidated, easy to use system for information and assistance. On Oct. 3, 2002, the New Jersey Board of Public Utilities approved the use of 211 dialing for immediate information and referral access to health, human and community services and recognized the NJ 211 Partnership as *“the sole administrator of 211 in New Jersey”*. Working with various non-profit service providers, counties and state agencies, the New Jersey 211 Partnership joined together to design and implement a comprehensive statewide database. Holzer et. al. (2006) emphasizes that an integrated call response service over several jurisdictions, or number of agencies, affords a proactive, customer-centric service data tool which provides *“actionable measures of performance and problem identification for public managers”*.



## 7 DEMAND AND RESPONSE

### 7.1 EMERGENCY RESPONSE PROFILE

The formal, organized and planned emergency response is reliant on both an access number and the call-taking system. Emergency communications officers (ECOs) are tasked with the responsibility of answering all emergency calls (911); evaluating whether an emergency response is needed; triaging and prioritizing each call using the provided information and under established protocols; notifying and dispatching the appropriate responders; and, in some cases, offering pre-arrival first aid instructions (Newberger & Braithwaite, 2020; Bohm & Kurland, 2018). In addition to this, and as they move through this EMS process, ECOs continually obtain, monitor, and record crucial information given by callers including the nature and location of the emergency incident.

Historically, but less so today, 911 emergency response systems were inundated with citizen complaints and other non-emergency calls for service (Holzer et. al. 2006). Implementation of coordinated response systems has allowed government departments and agencies to address their core functions more effectively (Holzer et. al, 2006), in both emergency and non-emergency demands for service. The capacity for core service prioritization in emergency response is empirically supported in literature. The adoption of 311 service in Baltimore in October 1996 was in direct response to volume and misuse of the 911 system thus creating more opportunities for police officers to engage in community-oriented and problem-oriented policing (Mazerolle et. al, 2003). Calls for services today typically include pre-hospital emergencies, inter-facility transfers, or air ambulance requests (AHS, 2020). In some cases, these calls fall outside these parameters for service, and are more appropriately described as misuse or abuse of 911 service (Blushtein, Siman-Tov & Magnezi, 2020; Rock, 2019). Factors influencing EMS demand for service include governance, availability and type of community services, demographics, dispatch, hospital delays, non-residents, urban versus rural geographies; and vehicle mix.<sup>10</sup>

The demand for emergency services is on the rise owing greatly to the increasing number of road accidents and growing elderly population. Road traffic accidents are found to be the leading cause of death by injury, and the tenth-leading cause of all deaths globally (World Health Organization, [\*Road Traffic Injuries\*](#)). An

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<sup>10</sup> For a more detailed explanation of the impact of these factors see the Municipal Benchmarking Network Canada, [\*Emergency Medical Services \(EMS\) Service Area\*](#)



estimated 1.35 million people are killed in road crashes each year, and as many as 50 million are injured (World Health Organization, *Road Traffic Injuries*). The growth of emergency service demand can also be attributed to the prevalence of cardiovascular conditions such as cardiac arrest, stroke, and congestive heart failure. In Canada, heart disease is the second leading cause of death<sup>11</sup> after cancer, and a leading cause of hospitalization<sup>12</sup>. Also, cardiovascular disease is found to be the leading cause of death in both men and women, and heart disease occurs more often as Canadians age.<sup>13</sup> Therefore, such an increase in cardiac cases demands emergency ambulance services.

Literature notes an urban-rural divide in predictors of emergency medical service demand. Predictors of EMS demand in rural areas included population density, percentage of residents who completed up to junior high school education, accessibility of hospitals without an emergency room, and accessibility of emergency ambulance services (Wong, Lin & Lin, 2019). The only statistically significant factor predicting emergency services demand in an urban setting was percentage of people aged 65 or above (Wong, Lin & Lin, 2019). In looking at the issue of emergency ambulance services, the only determining factor for rural areas was the percentage of low-income households, whereas no predictor was found in the urban areas. Results of this study showed that the factors predicting emergency medical service demand and misuse in rural areas were more complex as compared to urban areas and, therefore, Wong, Lin & Lin (2019) caution that formulating emergency response policies for rural areas based on the results of urban studies may not be suitable.

The current COVID-19 is straining an already stressed system here and abroad.<sup>14</sup> Organizational complexity and chaos scales exponentially with the size of the incident (Kristensen, Kyng & Palen, 2006) often to a point where standard operating procedure break down (Quarantelli, 1997). Smaller-scale events are found to be more manageable though response is still improvised and adapted to the situation (Kristensen, Kyng

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<sup>11</sup> Statistics Canada. Table 102-0561 – [Health Fact Sheets. The 10 leading causes of death, 2012](#). CANSIM (death database) [Internet]. Ottawa (ON): Statistics Canada. Dec 10, 2015.

<sup>12</sup> Canadian Institute for Health Information. Inpatient Hospitalizations, Surgeries and Childbirth indicators in 2013–2014 [Internet]. Ottawa (ON): Canadian Institute for Health Information; 2015 March 5, 2015.

<sup>13</sup> [Heart disease in Canada: Highlights from the Canadian Chronic Disease Surveillance System](#). Government of Canada. July 18, 2017.

<sup>14</sup> Two recent articles: [After early pandemic dip, Hamilton paramedic calls spike](#), By Teviah Moro. Fri., Jan. 29, 2021. Hamilton Spectator. [Pandemic is pushing America's 911 system to 'breaking point,' ambulance operators say: Surging demand, financial strain are leaving ambulance corps exhausted and running out of funds](#), By William Wan. Dec. 3, 2020. The Washington Post.



and Palen, 2006). Major incident response assumes some degree of functional infrastructure (i.e., networks and power supply) however the larger the incident, the less coordinated those assessments tend to be (Kristensen, Kyng and Palen, 2006). Disaster sociologists Quarantelli and Tierney explain, the difference between small and large-scale incidents are also a matter of kind, not only degree [Quarantelli, 1983; Tierney & Quarantelli, 1989).

### 7.1.1 AHS Demand & Response

In looking at the province of Alberta's emergency response specifically, information obtained from Alberta Health Services (AHS) in 2018 show that the province would be unable to cope with a large-scale medical crisis and is currently struggling to meet day-to-day demands for service delivery (HSSA, March 20, 2018). In a news release<sup>15</sup>, the Health Sciences Association of Alberta (HSAA) provided statistics obtained under a Freedom of Information (FOIP) request that provides evidence of a system in peril.

- **19.4% increase in EMS events:** The number of EMS events increased by 19.4 per cent from fiscal year 2012/13 to fiscal year 2016/17 (the latest figures available). There were 390,511 EMS calls to tackle in 2016/17 – an increase of 63,460 from 2012/13.
- **12.7% increase in population:** The number of people living in Alberta grew by 505,293 in the same time period, to 4,475,455.
- **Only 10 more ambulances:** The total number of ambulances added to meet the increased demand is fewer than 10. AHS says on average there were 328.6 ambulances available per day in 2016/17, compared to 319.2, an increase of only 9.4 ambulances per day, or 2.9 per cent.
- **3.4% increase in number of paramedics:** The number of full-time-equivalent (FTEs) EMS workers employed by AHS has increased by 3.4 per cent to 1,873 from 1,810. However, there was a decrease of 16 paramedic FTEs from 2015/16 to 2016/17.
- **10.5% increase in front-line spending:** The budget for spending on front-line EMS services, excluding dispatch, has increased by 10.5 per cent, to \$349.9 million from \$316.7 million, a far cry from the increase in EMS events and population. The inflation rate for that period was 7.7 per cent,

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<sup>15</sup> [New statistics reveal Alberta unprepared for medical emergencies](#). National Union of Public and General Employees (NUPGE). March 22, 2018



eating up almost the entire increase in funding, meaning almost nothing to cope with increased demands

Every year, more than 5,600 EMS professionals support nearly a half a million emergency and transfer calls, both on the ground and in the air (Alberta Health Services (AHS), Emergency Medical Services EMS, 2020). E&Y released its *Alberta Health Services Performance Review Summary Report, December 31, 2019*. In the past year, EMS responded to 560,434 events, which was a 9% increase over the last three years, mirroring findings in literature of increasing demand for emergency service.

An innovative Canadian program was studied by Agarwal and colleagues (2019) examining the effectiveness of the Community Paramedicine at Clinic (CP@clinic) program and its potential in decreasing EMS calls and improving health outcomes in low-income older adults. Results of the CP@clinic review showed a significant decrease in EMS calls, decreases in blood pressure, and improvement in quality adjusted life years among older adults in subsidizing public housing, suggesting this simple program should be replicated in other communities with public housing.

Innovating practice for dealing with frequent callers both in the United States and abroad ensure the frequent caller is identified and flagged in the emergency response system (Snooks et. al., 2020; Kuek et. al., 2019; Tangherlini et. al, 2016; Scott et. al., 2014), and then a multidisciplinary approach is applied to determine the root cause of the frequent emergency system activation, to address the underlying need, whether that be access to food, healthcare, in-home support, or other (Newberger & Braithwaite, 2020). There is no definitive study demonstrating a statistically significant benefit to these types of programs (Eastwood et. al., 2019).

Triage is an essential part of delivering effective and efficient emergency care and involves the prioritizing of calls, or specifically patients according to urgency of need. The call coding system used in determination of the dispatch or deployment is based upon a questioning process, with the additional aid of situation-specific criteria that reflect the risk factors in the field of operation/trauma scene/incident scene, and in accordance with local EMS policies. Common elements of questioning include having dispatchers ask specific, scripted triage questions to determine the main complaint and patient's clinical status (Bohm & Kurland, 2018), however the common first question will be related to the location, enabling quick dispatching of the first units, while querying further details of the emergency (Ecker et. al, 2020). Answers to these questions allow dispatchers to link the call type to the anticipated resource needs based on the



information provided, a somewhat subjective decision-making process. The call is then transferred to the concerned agency by a computerized mechanism, or CAD system to dispatch a responder to the scene. If no responder is available, the call is retained in a queue and is attended once a responder is free. Each responder is located in a specific facility, or depot which are situated at various points in the spatial area. Once a responder has finished servicing an incident, they are directed back to the depot and becomes available to be re-dispatched. An aspect that plays a key role in dispatch algorithms is that if there are any free responders available when an incident is reported, one must be dispatched to attend to the incident. This constraint is a direct consequence of the bounds within which emergency responders operate, as well as the critical nature of the incidents. Incident response is further complicated by the constraint that quick and timely service is essential to minimize resulting complications of the emergency (Pettet et. al, 2020). It was found by Jaldell (2017) and others (Jaldell, Lebnak, & Amornpetchsathaporn, 2014) that the risk of fatality is a non-linear function of response time, or more appropriately, *“for a given change of response time, the increase in risk of fatality is large for a short response time, then decreases, and eventually seems to approach zero”*.

In EMS systems with multiple simultaneous requests for service, or inadequate response resources to meet the call demand at any given point-in-time, decisions must be made as to which call is most emergent, and which call is less urgent, or can be delayed (Sanko, Lane & Eckstein, 2020). Appropriate prioritization of calls is then necessary both to use limited resources effectively as well as assure that patients' needs are met in a timely fashion (Newberger & Braithwaite, 2020). Ideally, the call prioritization, as well as the response profile, follows consistent guidelines established by the oversight body (Newberger & Braithwaite, 2020). PSAP EMS response prioritization systems have been in place for decades and match patient needs to the most appropriate response units and urgency of response. While models vary, the common goal of PSAPs is to provide the most suitable, safe, and timely response to requests for service. Prioritization can address public safety concerns by reducing the number of calls responded to emergently (“lights and sirens” calls) to those which are predicted to be genuinely urgent or emergent. This approach then reduces the risk of injury to both EMS providers and the public from “lights and sirens”-related accidents and multiple responding public safety units (Newberger & Braithwaite, 2020). It is expected that EMS demand for service will continue to increase, so the ability to better match anticipated patient needs to resources is critical, since the continued expansion of EMS to keep pace with demand is not expected (Newberger & Braithwaite, 2020).



Priority dispatch accuracy is a key issue in optimizing the match between patients' medical needs and pre-hospital resources (Bohm & Kurland, 2018), but when frequent over-triage or under-triaging occurs, finite time and resources are diverted away from those in greatest need of care and the entire emergency medical services (EMS) system is strained (Bohm & Kurland, 2018; Dami et. al, 2015; Snooks et. al, 2009). There is an absent consensus on the accepted percentage of over- and under-triage for dispatch activity (Moser et. al. 2017). Measuring the performance of emergency medical dispatch implies the use of a recognized standard, though unfortunately, this is not the current state as there is no universally accepted reference standard (Bohm & Kurland, 2018) making cross-comparison of the literature between jurisdictions challenging.

There is a misperception that the existing dispatch systems and categories have an evidence-based correlation with patient acuity and outcomes, yet the evidence does not support this (Bohm & Kurland, 2018). Since the categorization is based entirely on the information from the caller, it relies on the quality of the information received, the proximity of the caller to the patient (with the patient, or a third party "drive-by" caller), the caller's ability to communicate (i.e., language barriers, etc.), and the pertinence and clarity of the questions asked by the dispatcher. Some EMS systems choose to respond to all categories in the same manner, and with the same types of units, others use the categories stratify their response profiles, as noted above. Thoughtfully created response profiles decide whether the complaint warrants a first responder, requires additional personnel (i.e., engine/pumper for cardiac arrest), an ambulance only, an EMS supervisor or leader, specialized responders (such as police, SWAT, a rescue truck for extrication, a helicopter). In this way, PSAPs can limit over-triage (too many resources) as well as under-triage (too few or too slow) responses. It also specifies the mode of response for each responding unit, either "quiet" vs. red "lights and sirens" (Newberger & Braithwaite, 2020). Well-designed response profiles that are created by the collaboration between the leadership of all the relevant responding and dispatching agencies can help assure that the patient's apparent needs are timely met, that EMS and related public safety resources are utilized appropriately, that the general public's safety is considered in the response mode and that inherently more dangerous red "lights and sirens responses" are limited (Newberger & Braithwaite, 2020).

One recent American innovation is the redirection of low acuteness 911 calls to a secondary nurse triage line (Newberger & Braithwaite, 2020). This strategy allows EMS agencies to diverge from the traditional practice that every 911 call is provided a response, regardless of how minor the caller's complaint (Newberger & Braithwaite, 2020). Rather than perpetuating this mismatch of emergency resources with



non-emergent calls, the nurse triage line provides additional medical advice and connects the caller to non-emergent resources to meet their needs (Infinger et. al., 2013). If the acuity of the call is deemed too high or otherwise inappropriate for the on-call nurse, the call is then routed back to EMS dispatch for an in-person response (Torlen et. al., 2017). To date, this strategy has yielded mixed results, with one study showing that in a call centre with an annual volume of 90,000 calls, two calls per day (on average) were appropriate for nurse-triage, with less than one patient per day (on average) successfully completing this protocol and thus avoiding in-person EMS response (Torlen et. al., 2017).

A Canadian innovation of a similar vein provided a telephone triage system which allow a caller to speak with a healthcare professional for advice and guidance on whether a problem requires an emergency department visit, primary care, or self-care at home. Telephone triage may have the potential to decrease non-urgent pediatric emergency department visits by directing callers with lower acuity problems to a non-ED care option. On July 29, 2009 the Nova Scotia (NS) Department of Health and Wellness introduced a provincial telephone triage system, Nova Scotia 811. In the year following implementation, 811 was associated with a modest decrease of 3.6% in the proportion of lower acuity visits at the IWK tertiary care pediatric ED. This study is the first to assess the impact of a regional telephone triage system on pediatric ED visits in a publicly funded healthcare system. Chappuis et. al. (2021) looked at the feasibility of dispatching and employing the use of emergency physicians in high acuity calls in Switzerland, a practice common in many European countries.

Another part of this process is determining which emergency resources should be allocated to each emergency call, rather than asking the dispatcher to make these decisions on a case-by-case basis. These predetermined response profiles or configurations link to specific call types (i.e., motor vehicle collision, illness) and which type of EMS unit (basic, advanced life support unit) and other emergency apparatus (fire, law enforcement) with the urgency of the response (e.g., routine versus emergent). While these are suggestions, in practice, they represent a base, or foundation from which the dispatcher can add resources upon information received in the call, rather than subtracting from the response profile. Once the patient's needs are identified, the pre-established units within the response profile correlating to that complaint can be dispatched. Responders are dispatched by an emergency communication officer (ECO) to the scene of the incident guided by some algorithmic approach like a CAD system. There are different dispatching



systems used worldwide<sup>16</sup>, however they all have in common several key questions or “listen” for certain “keywords” to evaluate the condition of the person in need of assistance (Bohm & Kurland, 2018; Torlen et. al., 2017). One major difference is in the approach to assessment of calls is the fixed algorithm protocol-based MPDS system often used by non-health care staff, as oppose to the criteria-based system (CBD) that provides guidelines for the call-taker with room for clinical judgment. Standardized dispatch systems that are available for querying callers, the categorization of calls, and matching the call type to the appropriate response units and priority, have been shown to improve metrics such as time to dispatch responders (Grisanti et. al. 2019). Some studies have shown significant improvement in the detection of cardiac arrest with standardization of the triage process and avoiding sole reliance on a dispatcher’s judgment (Torlen et. al., 2017). However, dispatcher consistency in following the standardized scripts remains a valid concern (Andersen et. al, 2013).

Mukhopadhyay et al. (2020) indicate that that are two key mathematical modelling approaches to a response problem. First, the planning problem can be represented as a stochastic control process<sup>17</sup>, such as a Markov decision process (MDP), which he states is particularly relevant for problems seeking to find policies for dispatch or deployment of resources (Mukhopadhyay et al., 2020). The aim here is to find an “*optimal policy (i.e., control choices for every possible state of the system) that maximizes the expected sum of rewards*”. The second approach is to directly model the planning problem as an optimization problem according to a specific measure of interest, which has been typically where prior work has focused, as in the case of emergency service response, specifically on situationally maximizing the coverage of emergency responders in a geographic parameter.

Dami et. al (2015) measured the accuracy of a Criteria Based Dispatch (CBD) system, by evaluating discrepancies between dispatch priorities’ and ambulance crews’ severity evaluations. The rates of over-triage and under-triage in our Criteria Based Dispatch (CBD) were 78% and 4.6 % respectively. An

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<sup>16</sup> Common employed types of dispatch systems are the Medical Priority Dispatch System (MPDS) (Cady, 2014), mainly used in Anglo-Saxon countries; the physician dispatch in France (Adnet & Lapostolle, 2004), National Advisory Committee for Aeronautics (NACA) seven levelled scale used in Switzerland (Dami et. al., 2015) and the Criteria-Based Dispatch (CBD) used in some European countries (Andersen et. al., 2013; Adnet & Lapostolle, 2004) as well as some North American dispatch centres. Some countries also use a dichotomized NACA scale as their reference standard (Moser et. al., 2017).

<sup>17</sup> A stochastic or random process can be defined as a collection of random variables that is indexed by some mathematical set, meaning that each random variable of the stochastic process is uniquely associated with an element in the set. Joseph L. Doob (1990). *Stochastic processes*. Wiley. pp. 46, 47.



important finding in Andersen's (2013) Danish study was that thirteen of eighteen potentially preventable deaths were associated with non-compliance with the dispatch protocol. In accordance with systems using the same EMD system, a Norwegian study by Ellensen et al. (2014) reported that the Norwegian criteria-based dispatch protocol was used on average in only 75% of emergency calls.

Chappuis et. al. (2021) caution that if there is no shared standard for assessing the severity of a patient's condition it is problematic to compare dispatch performance involving different emergency communication centres. They do suggest however, that It is possible to estimate triage performance for each symptom defined during an emergency call by measuring the sensitivities, specificities, and predictive values for each of them (Chappuis et. al. 2021). They further argue it is then possible to improve the accuracy of the discriminating questions for each symptom and thus improve the overall quality of triage.

Emergency responders must make local decisions in the absence of a comprehensive assessment of a dynamic situation or a rapidly evolving or changing context of an incident (Kristensen, Kyng and Palen, 2006). This is likely why a good ICT/information driven dispatch is important. Dynamic changes in a situation may include, for example, position of victim, professionals, vehicles and other resources making it "extremely difficult for anyone to obtain and maintain a situational overview both on superior and specific levels" (Kyng, Nielsen & Kristensen, 2006). In 2006, Kristensen, Kyng & Palen identified one of the major directions for the future was to make situational overviews technologically feasible and useful by bringing together multiple forms of data and decisions by personnel throughout an incident response. Kristensen, Kyng & Palen (2016: 169) state, *"Being able to obtain and contribute to a continuously updated situational overview on site and in the command centres could be tailored to the different professionals as well as sharable collaboratively across them"*.

Responders are well-practiced at working together with incomplete knowledge. "Overhearing" or "listening-in" as many researchers have documented (Pettersson, 2004; Pettersson, Randall & Helgeson, 2002) plays an important awareness role in coordinating activities across multiple professions working different aspects of the incident. Overhearing is the skill of listening in on shared communications, even when the communications are directed at others (Toups & Kerne, 2007). Overhearing on a shared communication channel allows emergency responders to maintain mental models of what others are doing at the incident scene and grants glimpses of the global situation, improving situational awareness (Toups & Kerne, 2007). This ability is developed over time though experience (Endsley, 1995).



Optimization is an allocation and response problem. While resource allocation and dispatch to emergency incidents evolve in highly uncertain and dynamic environments, the expectation is that response is very timely (Felder and Brinkmann 2002; Mukhopadhyay, Wang, and Vorobeychik 2018). Approaches to optimize dispatch typically focus on decision-making after an incident occurs (Toro-D'Az et al. 2013; Mukhopadhyay, Wang, and Vorobeychik 2018; Keneally, Robbins, and Lunday 2016). However, conversations and collaborations with first responders revealed that there is limited applicability of such approaches in practice due to two important reasons. First, response to incidents occurs almost instantaneously after a report is received. Although optimizing dispatch can minimize response times in the long run, time spent to optimize dispatch after incidents occur is perceived as costly in the field. Second, it is almost impossible to judge the severity of an incident from a call for service. Consequently, it is imperative for first responders to follow a “greedy” strategy and dispatch the closest available responder to incidents (Pettet et. al, 2020). An alternative approach is to periodically optimize the spatial distribution of responders *between* incidents (Pettet et al. 2020). Pettet et al. (2020) introduced this idea recently for emergency response. While there are challenges with respect to scalability of such an approach, planning between incidents is much more applicable in the field, as it does not violate constraints under which first responder operate.

Thus, the most important limitation of research on dispatch systems is the lack of consistent or universal metrics for comparison because of the large heterogeneity of dispatch systems. Literature further notes the need for data-informed strategies to identify 911 calls that present a true public safety emergency and require an immediate response, while responding to other calls in ways that do not tax limited emergency services’ resources and promote better outcomes for the people and communities involved (Newberger & Braithwaite, 2020).

## 7.2 NON-EMERGENCY DEMAND AND RESPONSE PROFILE

Demand for non-emergency municipal services fluctuates greatly with time and location, which poses multiple challenges to effective deployment of limited resources (Xu et. al., 2017). To address these challenges, some studies use a locally adaptive space-time kernel approach to model 311 requests as an *“inhomogeneous Poisson process and present an analytical framework to generate predictions of 311 demand in space and time”* (Xu et. al., 2017). Results of Xu et. al. (2017) presented predictive method of



demand indicates that it performs better than common industry practice and conventional spatial models with a comparable computational cost.

The 311 system, a type of smart city initiative, has been adopted by local governments in the United States and has been concluded to *increase “citizen-initiated contact, instigate service co-production, and improve citizen relationship management”* (Linders et. al, 2018). According to Reddick (2010), a 311 non-emergency contact centre is thought to change the organization in various ways by creating a more transparent, more accountable, more efficient, and more effective government. In many cities, a 311 program results in greater transparency about citizen demand, which was formerly either not tracked because there was no process or technology in place, or because it was hidden in departmental silos (Schellong, 2008: 132).

The changing role of citizens from customers to co-producers greatly affects how present and future governments will be designed, re-designed, and managed (Levy, 2010). The concept of co-production was originally developed by Elinor Ostrom and her research group in the 1970s to describe the phenomena of citizens contributing to the production of public goods and services (Ostrom et al. 1978; Van Eijk, Steen, and Verschuere 2017). Co-production literature has evolved around the potential relationship between citizens and frontline civil service staff (Brix, Krogstrup & Mortensen, 2020). Citizen reporting is one such form of e-participation (Hartmann, 2019; Linders et. al, 2018). The idea of crowdsourcing response from citizens during an emergency has been implemented in the past, especially in the case of disaster management, and for improving public health and safety (Besaleva & Weaver, 2016; Malhotra, 2018; Zuo et. al, 2018).

Young (2021) recently explored how integrating Open311 and Twitter affect the time required to resolve reports in San Francisco’s 311 system. Findings suggest the effects vary by technology as Open311 reports are resolved faster, while Twitter reports take longer. Effectiveness gains associated with Open311, however, diminish over time. Both technologies however, offer improvements over traditional reporting methods for resolution of service issues in historically disadvantaged communities. Gao (2017) notes prior studies highlighted the importance of adopting new technologies to co-produce 311 services, yet they failed to provide empirical evidence of the implementation.

In examining the associations between public performance, citizen participation, and citizen satisfaction Wu & Jung (2016) find that the high level of citizen participation is positively associated with citizen satisfaction, but the relationship between the participation and satisfaction is significantly mediated by perceived public



performance. The findings highlight that active citizen participation can hold public administrators accountable for performance, and the perceived public performance is positively associated with citizen satisfaction. More importantly, the positive relationship between citizen participation and satisfaction is mediated by the perceived assessment of respondents on public performance of municipal services.



## 8 MITIGATION, PREVENTION AND IMPROVEMENT OF RESPONSE THROUGH PREDICTIVE CAPACITIES

Mitigation involves understanding the “where and when” of incident occurrence to predict or forecast models in consideration of risk, and spatial, temporal and spatial-temporal aspects of incident occurrence (Mukhopadhyay et al., 2020).

The operational research foundation of emergency response management is evident in review of research from the last fifty years (Simpson & Hancock, 2009), so much so that the public sector organizations of fire, police and ambulance services have been labelled as the “cradle of operational research” (Papageorgiou, 1994). Development of statistical, analytical, and algorithmic approaches to the design of emergency response management systems (ERMS) has received particular attention (Pettet et. al., 2020), yet there has been no widespread adoption of a single emergency mitigation planning tool which integrates incident forecasting with dynamic and strategic resources allocation, and dispatch (Pettet et. al., 2020).

Governments in urban centres are increasingly adopting methods that enable smart emergency response - a combination of forecasting models and visualization tools to understand *where and when* incidents occur, and optimization approaches to allocate and dispatch responders. Emergency management needs to be automatic and utilize an autonomous processing framework to discover data and knowledge from various data sources with the aim of helping management teams make informed decisions and manage events more effectively (Sahoh & Choksuriwong, 2017). Data and information captured in the interests of emergency response is now planned for predictive detection, refocusing from traditional and reactive methods to those of proactive preventative ones (Bongiovanni & Kowalkiewicz & Townson, 2017). It has been noted that emergency incidents are generally difficult to predict due to the inherent random nature of such incidents and spatially varying factors (Shankar, Mannering, and Barfield 1995; Mukhopadhyay et al. 2017). The exponential growth of social networks, cloud computing, and the Internet of Things means that during emergency events individuals can generate, share, and reuse vast amounts of data through the application of technology (Sahoh & Choksuriwong, 2017).

As stated by Mukhopadhyay et al. (2020) emergency response management (ERM) pipelines typically use data from historical incidents (i.e. traffic patterns) and the environment, (i.e. weather, road geometry), however it is also now possible to use textual, speech and video data to extract information about the



occurrence of incidents. They further suggest these three data sources as inputs for the modelling of five components of the ERM system: 1) predictive models, for incident occurrence and severity, 2) event extraction models, to detect incidents, 3) models for environmental features, like traffic and weather, 4) allocation models, to optimize the spatial locations of responders and depots, and 5) dispatch models, to create algorithmic approaches to respond to incidents when they occur. These components are intricately linked, and the performance of each plays a crucial role in the overall performance of the ERM pipeline. Data security and privacy concerns must also be addressed before implementing any technology that enables automatic geo-localization and transmission to a third party.

## 8.1 INCIDENT PREDICTION MODELS

Emergency incidents are generally difficult to predict due to their random nature and spatial variance (Shankar, Mannering, and Barfield 1995; Mukhopadhyay et al. 2017). To mitigate the effects of incidents, it is important to understand the “where and when” of incident occurrence. Incident models form the basis of EMR and are typically designed using historical incident data, but such models often use historical environmental data as well; for example, it is common for accident prediction models to use historical traffic data. Incident forecasting is necessary to understand the likely demand of the emergency resources in each region “and forms the basis for approaches to stationing and dispatch” (Mukhopadhyay et al. 2020:4). Approaches to incident prediction have included regression models such as Poisson regression, random parameter models, Bayesian approaches and data mining approaches (Mukhopadhyay et al. 2020). Feature engineering is an equally important consideration in the design of predictive modelling and in consideration of the incident occurrence, most typically including temporal, spatial and spatio-temporal elements (Mukhopadhyay et al. 2020). An important subset within feature engineering is frequency analysis which uses the frequency of incidents in a discrete location/spatial area as a measure of the inherent risk the area possesses, forming the basis of “hotspot analysis” (Cai, 2019; Thakali, Kwon & Fu, 2015; Cheng & Washington, 2005; Eck et. al, 2005). In stressing the important role feature selection plays in developing predictive modelling, Mukhopadhyay et al., (2020:7) state:

*The accuracy of models strongly depends on the selected features, and as a result, they should be chosen strategically; including too many features may cause overfitting and erroneous prediction while missing relevant explanatory features may result in an inaccurate model.*



Hema, Gayathri, & Parameswaran (2018) propose a fully automated system design that will minimise the time gap between the occurrence of an accident and deployment of medical response by combining accident detection and emergency medical services systems.

*“The proposed design makes use of an accelerometer and a piezoelectric sensor to trigger the Arduino microcontroller, which retrieves the user’s location through the GPS. Communication between the IoT device and the database is done using a GSM/GPRS module. An Android app is designed to collect the relevant health information of the user, emergency contact information, and hospital details during initial registration”.*

Finally, incident severity plays a crucial role in planning approaches for both allocation and dispatch. Decision-makers plan to prioritize incidents with higher severity over the ones with relatively lower severity. Since it is difficult to gauge the severity of an incident based on a call for assistance, it is common in practice to dispatch the responder closest to the scene of the incident (Pettet, et. al, 2020). However, understanding spatial and temporal patterns in severity and its relationship with incident occurrence models is crucial in optimizing the allocation of responders. These authors note that while there are different definitions of severity, severity is typically categorized and studied using five levels<sup>18</sup>: 1) no-injury or just property damage, 2) possible injury, 3) non-incapacitating injury, 4) incapacitating injury, and 5) fatal (Savolainen et. al, 2011).

Incident classification in non-emergency dispatch has been provided in the ITIL/ISO 20000 Knowledge base. They provide that the first task of a Service Desk is *“Logging all relevant incident/service request details, allocating categorization and prioritization codes.”* (ITIL Service Operation: Service Desk objectives). A Service Desk needs to capture ticket data in order to enable proper staff allocation, to improve/enable Problem Management, to empower Management to create better decisions and to help build a

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<sup>18</sup> World Health Organization’s International Classification for Patient Safety: descriptions of harm severity  
*None* - Outcome was not symptomatic or no symptoms were detected and no treatment was required. *Mild* - Patient outcome was symptomatic, symptoms were mild, loss of function or harm was either minimal or intermediate but short-term and no intervention or only a minimal intervention, e.g. extra observation, investigation, review or minor treatment, was required. *Moderate* - Patient outcome was symptomatic, required more than a minimal intervention, e.g. additional operative procedure or additional therapeutic treatment, and/or an increased length of stay and/or caused permanent or long-term harm or loss of function. *Severe* - Patient outcome was symptomatic, required a life-saving or other major medical/surgical intervention, shortened life expectancy and/or caused major permanent or long-term harm or loss of function. *Death*



useful knowledge bank. ITIL says that prioritization should be a product of the [\*Impact/Urgency matrix\*](#) which conforms to the International Organization for Standardization (ISO) standard [\*ISO/IEC 20000-1:2018\*](#).

## 8.2 EVENT EXTRACTION MODELS

Incident response involves timely dispatch, or response, to incidents like accidents and medical emergencies. For decades, the pipeline depended on a human reporting the incident, after which responders were dispatched to the scene. However, with the advent of a variety of sensors available in smart cities and the vast quantity of information on social media, it is now possible to detect incidents before they are reported. The goal of event extraction is to use such data to detect the occurrence of incidents to reduce the overall time for response (Mukhopadhyay et al. 2017).

Event extraction algorithms seek to both detect the occurrence of an incident and identify as much information about an incident as possible, with a focus on specific details such as the location, time, and the agents involved (Mukhopadhyay et al. 2017). Researchers in Natural Language Processing (NLP) community have developed event ontologies to define the templates for various events which include for example, entities involved in the accident, the location of the event, and its time of occurrence (Mukhopadhyay et al. 2017). Event extraction can then be defined as *“a task to convert unstructured data into event-centred structured data based on a specific event ontology”* (Mukhopadhyay et al., 2017:8). This is greatly beneficial for first responders since it is much easier for users to manage and query structured data. Numerous devices provide for numerous sources of data, and such devices currently employed in emergency response including mobile phones, radios, bio-sensor, ambulances and fire engines with GPS, a national call alarm system, dispatch systems, and health records (Kyng, Nielsen, & Kristensen, 2006). Two categories of models for event extraction include textual information and multimedia information.

## 8.3 ALLOCATION AND DISPATCH MODELS

There are two important steps in an emergency response management (ERM) system that come into effect *after* the decision-maker gains an understanding of when and where incidents are likely to happen. These involve allocating resources (a.k.a “stationing problem”, Pettet et. al, 2020) in anticipation of incidents and secondly, dispatching resources when calls for service are received (a.k.a. “stationing problem”) (Mukhopadhyay et al., 2020). While prediction problems are primarily formulated as learning problems, allocation, and response are commonly modeled as optimization problems (Mukhopadhyay et al., 2020).



The distinction between allocation and dispatch problems can be hazy since any solution to the allocation problem implicitly creates a policy for response (Mukhopadhyay et al., 2020). Finally, allocation and prediction models are used to create dispatch models, which can be thought of as a policy that guides real-time response. Three common metrics identified by Mukhopadhyay et al. (2020) and used to allocate emergency response stations and responders include

- a. coverage (Toregas et. al, 1971; Church & ReVelle, 1974; Gendreau, Laporte & Semet, 1997), such as the Location Set Covering Problem (LSCP) and the Maximal Covering Location Problem (MCLP). The primary difference between the two is in the optimization objective. LSCP finds the least number of facilities that cover all demand nodes, while MCLP maximizes the demand covered by a given number of facilities.
- b. distance between facilities and demand locations, such as Double Standard model (DSM) (Mukhopadhyay et. al., 2019)
- c. patient survival (Erkut, Ingolfsson & Erdogan, 2008; Knight, Harper & Smith, 2012; McCormack & Coates, 2015).

Mukhopadhyay et. al., (2019) offer one final approach to formulating the allocation and response problem- to model it as a stochastic control problem, and then optimizing it over the set of control choices to maximize expected reward. The most used model in this regard is the Markov decision process (MDP) which Mukhopadhyay et. al., (2019) state have been extensively used to model the EMS dispatch process

*In such a formulation, an agent chooses an action at a given state of the system and receives a specific reward based on a pre-defined utility function. The system then transitions to a new state probabilistically. The Markovian assumption means that the subsequent state depends only on the current state and the action taken.*

A potential shortcoming of algorithmic dispatch approaches is important to consider. Moral constraints in emergency response dictate that the nearest responder be dispatched to the scene of an incident, particularly when the severity of an incident cannot be gauged from the call for service (Pettet et al. 2020). Pettet et al. (2020) create an approach to optimize over the spatial distribution of responders *between* incidents, while always dispatching the closest available responder to attend to incidents. This process is responsible for alleviating two major issues: firstly, it does not waste crucial time after an incident has occurred to optimize over which responder to dispatch, and secondly, the moral constraint of always sending the closest responder to an incident is not violated (Pettet et al. 2020).



Kyng, Nielsen & Kristensen (2006) offer that the use of challenges, lessons learned and visions for the future provide ways to bridge fieldwork and literature studies on one hand, and the emerging computer-based prototypes on the other. To move from challenges towards design and implementation, Kyng, Nielsen, & Kristensen (2006: 303) developed a set of design visions and design principles addressing these challenges. In many cases, they suggest, it is possible to change a challenge into a vision by simply 'negating' it, in some cases providing a big leap towards an actual design, while in other cases providing a description of desired state or elements of the state.

- a. **Design visions** address one or more challenges and do so in a way that directly points towards a design solution. Thus, to address the challenge of equipment being tied to individual victims and not more flexibly available, we formulated a vision around wireless medical equipment.
- b. **Design principles** address how to design in such a way that one or more challenges are met but are not visions of a design. Instead, they are essential qualities intrinsic to the design. To illustrate: to address the challenge of immediate usability, we formulated the principle of familiarity, that is the devices and systems designed for emergency response should, once deployed, be immediately usable by being familiar to the involved people.



## 9 CASE STUDIES: ALTERNATIVE COMMUNITY RESPONDER OR CO-RESPONDER MODELS

Alternative community responder or co-response models are increasingly becoming established practice in the United States, Australia, and Canada, and have become the dominant model for police in on-site mental health crisis response in the UK (Puntis et. al., 2018). Despite gaining popularity with police and healthcare workers, such models have been implemented with little meaningful investigation into efficiencies and effectiveness (Puntis et al. 2018). After a systematic review of co-responder models of police mental health ‘street’ triage, (and likely the best collated evidence to date), Puntis and colleagues (2018) conclude there is *“a lack of evidence to evaluate the effectiveness of street triage and the characteristics, experience, and outcomes of service users”*. More notably there is also *“wide variation in the implementation of the co-response model, with differences in hours of operation, staffing, and incident response”* making any inferences problematic, or at minimum debatable. In review of 26 articles, for example, they found 19 different triage models.<sup>19</sup> A sampling of agencies employing co-responder models of dispatch service within Canada, United States, Sweden, the United Kingdom and France follow.

### 9.1.1 USA: EUGENE, OREGON’S CRISIS ASSISTANCE HELPING OUT ON THE STREETS (CAHOOTS) PROGRAM (USA)

Eugene, Oregon’s Crisis Assistance Helping Out on the Streets (CAHOOTS) Program is a 30-year operational mobile crisis intervention program staffed by White Bird Clinic personnel and funded by the Eugene Police Department (EPD). CAHOOTS was developed to support the EPD by circumventing unnecessary police presence in non-criminal, low risk, 911 calls which more appropriately required a *“social service type response”*- incidents related to mental health, substance abuse, suicide threats, conflict resolution and welfare checks- by offering a variety of services such as crisis counseling, suicide prevention, conflict resolution, housing assistance and substance abuse or other resource referrals. CAHOOTS two-person teams are staffed by a medic (nurse or EMT) and crisis personnel working in collaboration with the White Bird Clinic. 911 call-takers in Eugene use the same channel to dispatch CAHOOTS and the police

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<sup>19</sup> See pages 4 and 5 within Puntis, S., Perfect, D., Kirubarajan, A., Bolton, S., Davies, F., Hayes, A., ... & Molodynski, A. (2018). *A systematic review of co-responder models of police mental health ‘street’ triage*. BMC psychiatry, 18(1), 1-11.



department, both of whom use the same radios. Program workers utilize police radios to divert calls directly from police, initiate their own interactions with persons in crisis, or respond to first responders at a scene to assist in service. Inversely, other first responders can call CAHOOTS workers to the scene of a call and then remove themselves from the scene to leave the incident response to the CAHOOTS team. Over the last several years, the demand for CAHOOTS services has increased significantly from 9,646 calls for service in 2014 to over 18,000 calls in 2019.<sup>20</sup> Furthermore, CAHOOTS diversion rates are between approximately 5% to 8% of EPD Calls For Service (CFS), and CAHOOTS calls for backup from EPD happened in only 311 instances in 2019.<sup>21</sup> The CAHOOTS program is the most widely cited alternative community responder model and is often publicized as *the* model program for non-law enforcement leading 911 response.

### 9.1.2 USA: DENVER, COLORADO'S SUPPORT TEAM ASSISTED RESPONSE (STAR) PROGRAM

Denver Police's Support Team Assisted Response (STAR)<sup>22</sup> is a mobile, person-centric, "*behavioral health crisis response initiative*" for individuals experiencing problems relating to mental health, depression, poverty, homelessness, and/or addiction issues. The service is provided through a contract between the Denver Police Department (DPD) and collaborating community groups such as Mental Health Centre of Denver, Denver Justice Project, Denver Alliance for Street Health Response, and Denver Homeless Out Loud. The STAR pilot, a model based upon the CAHOOTS program, launched June 1, 2020 utilizing a single service van staffed by a mental health clinician and a paramedic as a crisis response team. The van currently operates from 10 a.m. to 6 p.m., Monday through Friday, providing service to Denver's downtown area (central downtown area, the South Broadway corridor to Mississippi Avenue, and the temporary shelters at the Denver Coliseum and National Western Complex) both temporally and geographically defined using historical 911 data. Calls for service are dispatch through Denver's 911 centre by trained

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<sup>20</sup> [CAHOOTS](#), Eugene Police Department (EPD); White Bird Clinic. (n.d.). [CAHOOTS: Crisis assistance helping out on the streets](#).

<sup>21</sup> [CAHOOTS Program Analysis](#) (Aug. 21, 2020)

<sup>22</sup> [Caring for Denver Issues First Grants Worth About \\$2 Million](#), Maya Chiodo. February 4, 2020. See also additional news articles on this program: [Denver Police Chief Sings Praises of New STAR program](#). Law Officer, February 6, 2021. Sachs, David. [In the first six months of health care professionals replacing police officers, no one they encountered was arrested](#). Denverite. February 2, 2021; Smith, Micah. [Denver says program that diverts certain 911 calls from police to counselors has been a 'success'](#). Denver Channel. February 12, 2021; Beaty, Kevin. [A long-planned program to remove police from some 911 calls launched as Denver's streets erupted in police brutality protests](#). Denverite. June 8, 2020; See Jessica Porter, [New program diverts some 911 calls from police to a mental health team](#), "The Denver Channel, July 2, 2020..



dispatchers able to determine what constitutes a STAR response. At present, in total, there are two clinicians and four paramedics to cover the shifts for operation of this pilot. On January 8, 2021, the City of Denver, Colorado released a six-month evaluation of the Denver Police's Support Team Assisted Response (STAR) program<sup>23</sup> highlighting results, lessons learned and recommendations for future growth and research. The most remarkable outcome was that of the 748 calls responded to by the STAR team, not one required a follow-up response by the Denver Police Department (DPD) and no individuals were arrested- a breakthrough in diverting individuals away from the criminal justice system.

### 9.1.3 USA: AUSTIN, TEXAS EXPANDED MOBILE CRISIS OUTREACH TEAM (EMCOT OR MCOT)

The pilot program for Austin's EMCOT, originally known as MCOT, began in 2006 without engagement from the Austin Police Department (APD) or Austin EMS.<sup>24</sup> The program grew in 2012 because of state approved additional funding via DSRIP, or rather, a type of Medicaid waiver which compensates service providers with Medicaid funds to provide services more efficiently.<sup>25</sup> In 2013, Integral Care created the Expanded Mobile Crisis Outreach Team (EMCOT) providing a mobile mental health crisis response service to homes, schools, workplaces, or other locations within Austin.<sup>26</sup> The \$1.4M pilot program provided by Integral Care, the County of Travis' mental health authority, and in partnership with the City of Austin, was a service to be made be available to on-scene first responders to address mental health emergency calls without involving the Austin Police Department (APD), and instead by diverting to EMCOT staff who could better connect individuals in need with community-based, residential, or inpatient services, and then provide follow up services for up to a period of 90 days.

Since launching in 2013, EMCOT has been able to address calls for service without police involvement in 85% of calls dispatched to a mental health professional. More currently, Austin police were able to divert

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<sup>23</sup> [\*STAR Program Evaluation\*](#). January 8, 2021.

<sup>24</sup> [\*How Austin Handles Mental Health Emergencies. Police, EMS, and Integral Care work together to serve people in psychiatric crisis\*](#)  
BY SARAH MARLOFF, FRI., DEC. 15, 2017

<sup>25</sup> [\*Travis County program keeping people struggling with mental health out of jail could lose funding\*](#), by Pattrik Perez. Published:  
10:46 PM CDT August 7, 2018

<sup>26</sup> [\*Mobile Crisis Outreach Team\*](#) Texas Health and Human Services; and Integral Care, [\*Mobile Crisis Outreach Team\*](#)



more than 900 calls to Integral Care counselors in the ten months preceding November 2020.<sup>27</sup> In a recent shift, instead of police or EMS dispatchers fielding a mental health request, the city launched a new option for people to connect directly with an on-site mental health professional stationed at the 911 call centre.<sup>28</sup> EMCOT workers stationed at this 911 call centre employ the use of iPads, where they have the ability to take calls directly from dispatchers, or from first responders at the incident scenes.<sup>29</sup> According to a [city memo](#), the new greeting meeting this call for service is “Austin 911, do you need police, fire, EMS or mental health services?”<sup>30</sup> allowing 911 call operators to quickly divert non-police related calls that do not involve a risk to the public, or to the caller’s safety, to the most appropriate resource available, thereby enhancing the efficiency of the police service by dispatching police to those events requiring a law enforcement response. Currently EMCOT clinicians are available every day of the week for limited hours, however facilitators have hopes to expand to 24/7, 365 day a year availability.

#### 9.1.4 USA: OAKLAND, CALIFORNIA - MOBILE ASSISTANCE COMMUNITY RESPONDERS OF OAKLAND (MACRO)

In the summer of 2019, Oakland City Council commissioned the Urban Strategies Council, the Police Commission, and the Coalition for Police Accountability to develop a report on the feasibility of implementing a CAHOOTS inspired, non-police response team. The Mobile Assistance Community Responders of Oakland (MACRO) was proposed to provide mobile crisis response to 911 calls in Oakland for non-violent incidents using a mental health professional and an EMT response team as opposed to law enforcement. The 12-month pilot program received initial funding of \$1.85M through the Oakland Department of Violence Prevention (DVP), a large portion of which was made available through a \$14.3M reduction in the Oakland Department of Violence Prevention’s (DVP) budget. On March 2, 2021, the Oakland City Council unanimously decided to adopt the pilot under the oversight of the Oakland Fire

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<sup>27</sup> [Crisis counselors responding to more mental health calls in Austin](#). By Jennifer Kendall. Published November 2, 2020; [‘Austin 911, do you need police, fire, EMS or mental health services?’ APD adds mental health services to 911 answering script](#). Mari Salazar (KVUE) February 8, 2021.

<sup>28</sup> Ibid.

<sup>29</sup> [EMS will soon also employ a tool called Telehealth” and “hire two full-time and one part-time clinician who will be able to answer video calls from paramedics or crisis intervention officers](#), by: KXAN Staff, Yoojin Cho. Posted: Sep 11, 2019

<sup>30</sup> [New 911 call option offers direct mental health help that one attorney says may have saved one family’s son](#), by Tahera Rahman. KXAH. February 9, 2021



Department.<sup>31</sup> Council members also expressed a desire to have the fire department continue operating MACRO after the initial pilot period has ended, seemingly ending earlier discussions about whether the emergency-response effort should be operated by the city or by a private contractor.<sup>32</sup>

### 9.1.5 USA: PORTLAND, OREGON - PORTLAND STREET RESPONSE (PSR)

Portland Street Response (PSR) is a non-police response provided through the Portland Fire and Rescue Department to provide non-emergency response to those experiencing a mental health crisis or non-emergency medical issue by responders trained in behavioral health, crisis intervention, and medical assistance.<sup>33</sup> The program is also in its pilot phase and is currently responding only in the Lents neighborhood of Portland. Requests for service are made through 911 or the municipal non-emergency number. The Portland City Council approved the Portland Street Response implementation plan, along with a \$500,000 budget, in November 2019. The implementation plan proposes operating times of 10:00 am to 6:00 pm from Monday to Friday and would consist of one two-person team for a one-year term, with a second team joining six months into the term. Each team would be trained with a mixture of medical and crisis worker skills and would be housed in the Portland Fire and Rescue Department. Originally the pilot was intended to begin operation in spring of 2020 however the launch of the program was delayed by the COVID-19 pandemic. The City of Portland is working towards a new start date in the spring of 2021.

### 9.1.6 OTHER AMERICAN CITIES

In the wake of several highly publicized deaths of racially marginalized persons, and subsequent protests and calls for de-funding of police, several other American cities such as San Francisco, Berkley, Minneapolis, Olympia, Albuquerque, and Los Angeles, to name a few, are developing their own civilian non-police, first responder programs.<sup>34</sup> A dedicated website founded in June 2020, [dontcallthepolice.com](https://dontcallthepolice.com) offers an online directory of local, American municipal community resources available as alternatives to

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<sup>31</sup> [Oakland moves to put fire department in charge of mental health response calls, not police MACRO program would deploy paramedics and counselors to those in mental health crises](#), By Annie Sciacca. Bay Area News Group. March 3, 2021.

<sup>32</sup> [It's decided: the Oakland Fire Department will run MACRO, a new non-police emergency response program](#), by Natalie Orenstein. The Oaklandside. March 3, 2021

<sup>33</sup> [Portland Street Response \(PSR\) program](#)

<sup>34</sup> [Report of the Chief Legislative Analyst](#). Unarmed Models of Crisis Response. September 18, 2020



calling the police or 911. They address their mission as one of providing “*Community-based alternatives to police in your city*” and further state,

*“we focus on resources that provide emergency or crisis services, in order to best target the type of immediate concerns that most often lead people to call the police or 911. Every resource on our page is vetted for its policies related to law enforcement involvement. If there is any likelihood of police involvement beyond what is required by law, we clearly describe these circumstances in our listings... We believe in care, not cops, and will continue to work to support to Black and POC-led organizations working to reimagine public safety.”*

### 9.1.7 CANADA: TORONTO, ONTARIO

On June 29, 2020, Toronto City Council unanimously approved four community safety and crisis support service pilots that will test a new, non-police led approach to non-emergency, non-violent calls, including those involving persons in crisis and for wellness checks.<sup>35</sup> Historical data and information shared through 33 community roundtables provided insight for the decisions to target three geographic areas of Toronto where apprehensions under the Mental Health Act are most prevalent and calls from people in crisis are the highest including Northwest Toronto (Wards Etobicoke North, Etobicoke Centre, York Centre and Humber River-Black Creek); Northeast Toronto (Wards Scarborough Southwest, Scarborough Centre, Scarborough-Agincourt, Scarborough North, Scarborough-Guildwood and Scarborough-Rouge Park); and the Downtown East (Wards Spadina- Fort York and Toronto Centre).<sup>36</sup> A fourth pilot will specifically serve Indigenous communities and will be Indigenous-led and co-developed with Indigenous communities. All four pilots will create multidisciplinary teams of crisis workers with training in mental health and crisis intervention, de-escalation, situational awareness, and field training, and will work in collaboration with other health care providers, including community health centres and not-for-profit organizations that provide mental health and substance use services, to ensure client-centred, continuity of care after the initial intervention. Hiring, training and the development of a resource base is expected in 2021 with the goal of being fully operational from 2022 to 2025. An annual review of these pilots is also expected, which will include an

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<sup>35</sup> [\*Changes to Policing in Toronto\*](#). City Council Decision. City of Toronto. June 29 and June 30, 2020; [\*City Council unanimously approves community safety and crisis response pilots\*](#). February 2, 2021.

<sup>36</sup> Ibid.



assessment of funding requirements for future budget years as well as determinations of potential opportunities to step up the program to full capacity before 2025.

Council also approved and prioritized a review of 911's current operations and a decision to explore the feasibility of moving 911 out of the Toronto Police Service into a non-police City service allowing for the most appropriate response to a 911 call, citing the CAHOOTS program as a model.<sup>37</sup> At present, Toronto's mobile crisis response teams are not able to be dispatched directly by 911 call centres, but instead work in partnership with 211 call service as is the case in Edmonton with the 24/7 Crisis Diversion program.<sup>38</sup> The motion also requested the Province commit to funding for supportive housing and service providers for mental health, including funding to address the mental health impacts of the COVID-19 pandemic.

### 9.1.8 SWEDEN: STOCKHOLM'S PSYCHIATRIC EMERGENCY RESPONSE TEAM (PAM)

Stockholm introduced this innovative emergency ambulance response service in March 2015 after it was revealed that over 1,500 suicides and 15,000 suicide attempts are reported annually in Sweden.<sup>39</sup> The Psychiatric Emergency Response Team (PAM) was a "first of its kind" in the world, essentially a mobile "emergency response therapy room" for calls related to severe mental health or behavioral distress, with a focus on those exhibiting suicidal behavior. Each team is staffed by two specialized psychiatric nurses and a paramedic who collaborate with police, ambulance, and rescue services. During the first year PAM was implemented in Stockholm, it was requested 1,580 times, and attended to 1,254 cases, averaging 4.3 requests and 3.4 cases daily. One-third of the cases did not require any action after psychiatric assessment, and on-site crisis intervention (Bouveng, Bengtssona & Carlborg, 2017). Another metric of interest, is that the Stockholm psychiatric emergency department noticed a drop in visits the month PAM was initiated, and 70% of patients by-passed emergency departments for more appropriate care. Since 2017, the PAM has been a permanent service within the health care organization of Stockholm County. In a recent health economic evaluation of the Psychiatric Emergency Response Team (PAM), Carlborg & Sibbel (2020) found

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<sup>37</sup> *Community Crisis Support Service Pilot*. City Council Decision. City of Toronto. February 2, 3 and 5, 2021

<sup>38</sup> Ibid.

<sup>39</sup> *The world's first mental health ambulance arrives in Sweden. In Stockholm, people who suffer from mental illness are given therapy on wheels*, by John-David Ritz. Apolitical. November 20, 2017



the total cost for the PAM unit during its first two years of operation was 13.2 million Swedish kronor (SEK). Comparatively, direct savings from a health-care perspective were estimated at 2.8-5.1 million SEK, while direct savings from a societal perspective were estimated at 5.9-10.6 million SEK. Estimates of indirect savings differs depending on approach adopted: from 1.0-1.5 million SEK (friction-cost) to 52.0-103.9 million SEK (human-capital). Further, if estimates of human value are included, there are additional savings ranging from 52.3 to 82.1 million SEK.

### 9.1.9 UK: WALES, MENTAL HEALTH CRISIS CARE CONCORDAT

Mental health street triage schemes (MHST) were established in a Department of Health pilot in 2013 and an evaluation published in 2016.<sup>40</sup> The MHST model is designed to allow police and mental health practitioners to jointly attend or co-respond to a mental health incident to “*reduce use of sections 135 and 136 of the Mental Health Act 1983, and/or use of police cells, and hospitalization via the Emergency Department or acute mental health services*”.<sup>41</sup> The Welsh Government, its partners from the Police, National Health Service (NHS), the Welsh Ambulance Services NHS Trust (WAST), and Local Authorities committed to work together to improve the system of care and support for people in crisis due to a mental health condition by establishing the Mental Health Crisis Care Concordat promoting a local multi-agency arrangement which diverts people in crisis to health as opposed to police settings. Wales has a “*higher tier of EMS capability*” in the form of its health and emergency medical service, EMRTS Cymru (the Welsh Emergency Medical Retrieval and Transfer Service), which has full mobile critical care capability with onboard physicians and critical care practitioners (paramedic or nurse).<sup>42</sup> Call-handling and dispatch for WAST take place in three control rooms using a common call-handling interface MPDS v13.1 with a dispatch cross-reference table that converts MPDS codes into call priorities. The U.K. has had an eight-minute target for ambulance response time to highest-priority calls for more than 40 years.<sup>43</sup> In Wales 65% of calls for service have a resource on scene within that interval. Armed with the knowledge that a very small proportion (around 5%) of 999 calls represent immediately life-threatening complaints, and understanding that this necessitated a new and improved response, WAST became of the first U.K. ambulance services to reconfigure its service delivery

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<sup>40</sup> [Mental Health Street Triage \(MHST\) - aace.org.uk](http://aace.org.uk)

<sup>41</sup> Ibid.

<sup>42</sup> Ibid.

<sup>43</sup> StatsWales. [Emergency ambulance calls and responses to red calls, by LHB and month](#). See also [Welsh Ambulance Services NHS Trust](#)



model.<sup>44</sup> Since 2015 WAST's call prioritization system has reduced the number of places requiring the allocation of two assets, thus asset availability has improved, and crews are reaching the highest priority calls more quickly while still maintaining the UK's five levels of service prioritization model.<sup>45</sup> Prior to 2015, an average of 1.4 assets were tasked to each 999 call, but with the improvements in asset allocation this has fallen to 1.2 assets per call.<sup>46</sup>

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<sup>44</sup> *EMS Around the World: In Wales, Honesty Is the Best Policy*. Linda Dykes, MBBS. EMS World. September 2018.

<sup>45</sup> Ibid

<sup>46</sup> *EMS Around the World: In Wales, Honesty Is the Best Policy*. Linda Dykes, MBBS. EMS World. September 2018



## 10 CONCLUSION

It is generally accepted that integrated emergency and non-emergency response management has enabled municipal government agencies to address their core functions more efficiently and effectively. Response management increasingly requires a smart design framework to detect data from a variety of sources with the aim of monitoring and improving performance as well as informing resource allocation decisions. Mathematical modelling approaches are increasingly presented as an analytical framework to generate these predictions of emergency and non-emergency demand. Data sources employed as inputs for the modelling of components of emergency response management (ERM) systems specifically, have traditionally included both data from historical incidents (i.e., traffic patterns) and the environment, (i.e., weather, road geometry), but now also include use of text, speech and video data moving more fully towards predictive detection and deployment.

The majority of information found in review of response management systems has provided insight into the limitations and absence of an evidence-base including, for example, inconsistent conceptions and terminology; lack of information on police and fire dispatch services, and instead a literature base focused almost exclusively on emergency *medical* response (EMR); variation in the titles, qualifications, and roles of practitioners in response to incidents within different geographies; variance in models used in response; numerous response protocols; and, response systems using different decision criteria. The most important limitation of the research, however, is the lack of consistent or universal metrics for comparison because of the large heterogeneity of dispatch response management systems and co-response models. At present, integrations of emergency and non-emergency service response are isolated to certain geographies with a variety of governance models and are often limited to serving specific segments of a population or reducing certain types of demand for service. With the absence of a clear and universal conception of co-response, and validated best practices in empirical research, there remains more questions than answers about integration of emergency and non-emergency response and the co-response model highlighting the vital importance of international, national, and municipal governments and agencies to share their experiences and lesson learned. Until such a time as there is more knowledge sharing and rigorous study of this response management model, its appropriateness and effectiveness as a service solution is undetermined.



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# APPENDIX G

BEING THE CHANGE - SAMPLE CASE STUDIES  
INTEGRATED CALL EVALUATION AND DISPATCH BUSINESS CASE



## APPENDIX G - BEING THE CHANGE – SAMPLE CASE STUDIES

The following collection of articles were researched in order to better understand the challenges and opportunities involved in inter-organizational integration.

It's working in Eugene, Olympia, Denver: More cities are sending civilian responders, not police, on mental health calls.

<https://www.usatoday.com/in-depth/news/nation/2021/04/05/george-floyd-daniel-prude-911-mental-health-response/6819744002/>

Where Calling the Police Isn't the Only Option

<https://www.bloomberg.com/news/articles/2020-09-03/alternative-policing-models-emerge-in-u-s-cities>

Pilot program will replace NYPD for mental health 911 calls in 2 neighborhoods.

<https://www.usatoday.com/story/news/nation/2020/11/10/nypd-replaced-911-mental-health-calls-pilot-program/6234305002/>

Introducing Community Responders: How To Dispatch the Right Response to Every 911 Call

<https://www.americanprogress.org/issues/criminal-justice/reports/2021/03/11/497069/introducing-community-responders-dispatch-right-response-every-911-call/>

STAR Program Evaluation, January 2021, Denver.

[https://wp-denverite.s3.amazonaws.com/wp-content/uploads/sites/4/2021/02/STAR\\_Pilot\\_6\\_Month\\_Evaluation\\_FINAL-REPORT.pdf](https://wp-denverite.s3.amazonaws.com/wp-content/uploads/sites/4/2021/02/STAR_Pilot_6_Month_Evaluation_FINAL-REPORT.pdf)

Innovative solutions to address the mental health crisis: Shifting away from police as first responders

<https://www.brookings.edu/research/innovative-solutions-to-address-the-mental-health-crisis-shifting-away-from-police-as-first-responders/>

'We're not mental health professionals': Even police call for change in handling wellness checks

<https://globalnews.ca/news/7487758/were-not-mental-health-professionals-even-police-call-for-change-in-handling-wellness-checks/>. (With good video links)



New way of responding to mental health calls a 'game changer': police chief

<https://www.newmarkettoday.ca/local-news/new-way-of-responding-to-mental-health-calls-a-game-changer-police-chief-2817005>

Mental health workers to join OPP call centres

<https://www.thestar.com/politics/provincial/2021/03/24/mental-health-workers-to-join-opp-call-centres.html>

Diverting the Crisis Call

<http://bcm.connexontario.ca/Resource%20Library/Crisis%20Services/Diverting%20the%20Crisis%20Call%20-%20Report%20of%20the%20Crisis%20Call%20Report%20of%20the%20Crisis%20Call%20Community%20Development%20Project%20-%202006.pdf>

Crisis Call Diversion Program (CCD) - Houston

<https://www.houstoncit.org/ccd/> and <https://www.utah.gov/pmn/files/672631.pdf>

Crisis Call Diversion Program: - Austin

<http://austintexas.gov/sites/default/files/files/Overview%20-%20Mental%20Health%20Diversion%20Initiative.pdf>

Calls to Winnipeg's 911 Line Slowly Diverted Away from Police Patrol Car Response

<https://www.cbc.ca/news/canada/manitoba/winnipeg-911-calls-diversion-social-services-1.6016200>

## RESOURCES

A Guide to Implementing Police-Based Diversion Programs for People with Mental Illness

<http://www.pacenterofexcellence.pitt.edu/documents/A%20Guide%20to%20Implementing%20Police-Based%20Diversion%20Programs.pdf>

A Guidebook To Reimagining America's Crisis Response Systems

[https://www.abtassociates.com/files/Projects/PDFs/2020/reimagining-crisis-response\\_20200911-final.pdf](https://www.abtassociates.com/files/Projects/PDFs/2020/reimagining-crisis-response_20200911-final.pdf)

Behavioral Health Crisis Alternatives: Shifting from Police to Community Responses

<https://www.vera.org/behavioral-health-crisis-alternatives>



## TRAINING AND EDUCATION

Georgetown Law, Innovative Policing Program

<https://www.law.georgetown.edu/innovative-policing-program/>



# APPENDIX H

## INTEGRATED MODEL QUESTIONNAIRE

INTEGRATED CALL EVALUATION AND DISPATCH BUSINESS CASE



## Integrated Call Evaluation + Dispatch Questionnaire Police Services



*This questionnaire has been created to obtain information from Fire Rescue Services across Canada who provide service delivery to their communities using call evaluation and dispatch communications, specifically if done in collaboration or with interface to other emergency or crisis serving Mental and Community Health organizations. We are keen to hear what you have to say!*

*If you have any questions regarding the survey, please contact Holly Alyea (holly@cornerplan.com)*

*Thank you for participating.*

***PLEASE SUBMIT BY MARCH 26TH, 2021.***

NAME: \_\_\_\_\_

EMAIL: \_\_\_\_\_

AGENCY/ORGANIZATION: \_\_\_\_\_

1. What is the size of the population you serve?
2. Is your communication group the primary answering point for 9-1-1?
  - a. If yes, what level of call evaluation is performed to ensure the caller is transferred to the appropriate agency?
3. How many calls were handled by your organization in 2019 and 2020?
4. How many of those calls were diverted to other emergency or community services?

Which Service?

- a. EMS # \_\_\_\_\_
  - b. Fire # \_\_\_\_\_
  - c. Mental or Community Health # \_\_\_\_\_
  - d. Other # \_\_\_\_\_
5. How frequently are other services integrated into an incident response?  
Most (80% or more) / Some (40% to 79%) / Few (10% to 39%) / Seldom (under 10%)
    - a. EMS # \_\_\_\_\_
    - b. Fire # \_\_\_\_\_
    - c. Mental or Community Health # \_\_\_\_\_
    - d. Other # \_\_\_\_\_
  6. How many staff are involved in call evaluation ( # \_\_\_\_\_ ) and dispatch ( # \_\_\_\_\_ ) work?



7. Do you have a dedicated call evaluation and dispatch communications centre/room? YES / NO
  - a. approx. size (m<sup>2</sup>) \_\_\_\_\_
  - b. # of people \_\_\_\_\_ at capacity
8. Typically, how many teams/units do you have on the street over 24 hours?
  - a. How do your teams/units communicate with each other?
  - b. How do your teams/units communicate with other emergency or community services?
9. What software/technology is used for capturing call data? (CAD, or other Apps)
10. Do you use predictive modelling to anticipate staff workloads and event incidence?
11. Do you currently share your data? If yes, then how? Do you have formal MOUs for sharing data?
12. Are any systems in place that assist in the automatic classification of calls for service, or provide staff with recommendations or direction as to how a particular call for service should be handled?  
YES / NO
  - a. What is the name of the program? (e.g. AI, ProQA)
13. What are the main challenges to coordinating call evaluation and dispatch responses for multiple services? (co-response situations)
 

<ul style="list-style-type: none"> <li>▪ Budgets and Resources</li> <li>▪ Data Privacy Considerations</li> <li>▪ Governance</li> <li>▪ Jurisdictional Limits</li> <li>▪ Procedures/Policies</li> </ul>	<ul style="list-style-type: none"> <li>▪ Service Culture</li> <li>▪ Technical</li> <li>▪ Other _____</li> <li>_____</li> <li>_____</li> </ul>
--	---
14. What are your perceived opportunities for improving the current call evaluation and dispatch system?
  - a. What are the barriers to achieving these opportunities?
15. How can crisis intervention for marginalized and vulnerable members of the community be improved?
16. How is oversight provided to the call evaluation and dispatch functions?
17. How is your agency/organization governed and funded?
18. What was your operating budget for your call evaluation and dispatch functions or communications group in 2019 and 2020?
19. Please add any further comments regarding Integrated Call Evaluation and Dispatch if you wish. \_\_\_\_\_

## Integrated Call Evaluation + Dispatch Questionnaire



## Fire Rescue Services



*This questionnaire has been created to obtain information from Police Services across Canada who provide service delivery to their communities using call evaluation and dispatch communications, specifically if done in collaboration or with interface to other emergency or crisis serving Mental and Community Health organizations. We are keen to hear what you have to say!*

*If you have any questions regarding the survey, please contact Holly Alyea (holly@cornerplan.com)*

*Thank you for participating.*

**PLEASE SUBMIT BY MARCH 26TH, 2021.**

NAME: \_\_\_\_\_

EMAIL: \_\_\_\_\_

AGENCY/ORGANIZATION: \_\_\_\_\_

1. What is the size of the population you serve?
2. Is your communication centre the primary answering point for 9-1-1?
  - a. If yes, what level of call evaluation is performed to ensure the caller is transferred to the appropriate agency?
3. How many calls were handled by your organization in 2019 and 2020?
4. How many of those calls were diverted to other emergency or community services?

Which Service?

- a. Police # \_\_\_\_\_
  - b. EMS # \_\_\_\_\_
  - c. Mental or Community Health # \_\_\_\_\_
  - d. Other # \_\_\_\_\_
5. How frequently are other services integrated into an incident response?  
Most (80% or more) / Some (40% to 79%) / Few (10% to 39% / Seldom (under 10%)
    - a. Police # \_\_\_\_\_
    - b. EMS # \_\_\_\_\_
    - c. Mental or Community Health # \_\_\_\_\_
    - d. Other # \_\_\_\_\_
  6. How many staff are involved in call evaluation ( # \_\_\_\_\_ ) and dispatch ( # \_\_\_\_\_ ) work?



7. Do you have a dedicated call evaluation and dispatch communications centre/room? YES / NO
  - a. *approx. size (m<sup>2</sup>)* \_\_\_\_\_
  - b. *# of people* \_\_\_\_\_ *at capacity*
8. How many teams/units do you have on the street over 24 hours?
  - a. How do your teams/units communicate with each other?
  - b. How do your teams/units communicate with other emergency or community services?
9. What software / technology is used for capturing call data? (CAD, or other Apps)
10. Do you use predictive modelling to anticipate staff workloads and event incidence?
11. Do you currently share your data? If yes, then how? Do you have formal MOUs for sharing data?
12. Are any systems in place that assist in the automatic classification of calls for service, or provide staff with recommendations or direction as to how a particular call for service should be handled?  
YES or NO
  - a. What is the name of the program? (e.g. AI, ProQA)
13. What are the main challenges to coordinating call evaluation and dispatch responses for multiple services? (co-response situations)
 

<ul style="list-style-type: none"> <li>• Budgets and Resources</li> <li>• Data Privacy Considerations</li> <li>• Governance</li> <li>• Jurisdictional Limits</li> <li>• Procedures/Policies</li> </ul>	<ul style="list-style-type: none"> <li>• Service Culture</li> <li>• Technical</li> <li>• Other _____</li> <li>_____</li> <li>_____</li> </ul>
--	---
14. What are your perceived opportunities for improving the current call evaluation and dispatch system?
  - a. What are the barriers to achieving these opportunities?
15. How can crisis intervention for marginalized and vulnerable members of the community be improved?
16. How is oversight provided to the call evaluation and dispatch functions?
17. How is your agency/organization governed and funded?
18. What was your operating budget for your call evaluation and dispatch functions or communications group in 2019 and 2020?



19. Please add any further comments regarding Integrated Call Evaluation and Dispatch if you wish. \_\_\_\_\_

## Integrated Call Evaluation + Dispatch Questionnaire Police Services



*This questionnaire has been created to obtain information from Fire Rescue Services across Canada who provide service delivery to their communities using call evaluation and dispatch communications, specifically if done in collaboration or with interface to other emergency or crisis serving Mental and Community Health organizations. We are keen to hear what you have to say!*

*If you have any questions regarding the survey, please contact Holly Alyea (holly@cornerplan.com)*

*Thank you for participating.*

***PLEASE SUBMIT BY MARCH 26TH, 2021.***

NAME: \_\_\_\_\_

EMAIL: \_\_\_\_\_

AGENCY/ORGANIZATION: \_\_\_\_\_

1. What is the size of the population you serve?
2. Is your communication centre the primary answering point for 9-1-1?
  - a. If yes, what level of call evaluation is performed to ensure the caller is transferred to the appropriate agency?
3. How many calls were handled by your organization in 2019 and 2020?
4. How many of those calls were diverted to other emergency or community services?

Which Service?

- a. Police # \_\_\_\_\_
  - b. Fire # \_\_\_\_\_
  - c. Mental or Community Health # \_\_\_\_\_
  - d. Other # \_\_\_\_\_
5. How frequently were other services integrated into an incident response?  
Most (80% or more) / Some (40% to 79%) / Few (10% to 39%) / Seldom (under 10%)
    - a. Police # \_\_\_\_\_
    - b. Fire # \_\_\_\_\_
    - c. Mental or Community Health # \_\_\_\_\_



- d. Other # \_\_\_\_\_
- 6. How many staff are involved in call evaluation ( # \_\_\_\_\_ ) and dispatch ( # \_\_\_\_\_ ) work?
- 7. Do you have a dedicated call evaluation and dispatch communications centre/room? YES / NO
  - a. approx. size (m<sup>2</sup>) \_\_\_\_\_
  - b. # of people \_\_\_\_\_ at capacity
- 8. Typically, how many teams/units do you have on the street over 24 hours?
  - a. How do your teams/units communicate with each other?
  - b. How do your teams/units communicate with other emergency and community services?
- 9. What software/technology is used for capturing call data? (CAD, or other Apps)
- 10. Do you use predictive modelling to anticipate staff workloads and event incidence?
- 11. Do you currently share your data? If yes, then how? Do you have formal MOUs for sharing data?
- 12. Are any systems in place that assist in automatically classifying calls for service, or provide staff with recommendations or direction as to how a particular call for service should be handled?  
YES or NO
  - a. What is the name of the program? (e.g. AI, ProQA)
- 13. What are the main challenges to coordinating call evaluation and dispatch responses for multiple services? (co-response situations)
 

<ul style="list-style-type: none"> <li>• Budgets and Resources</li> <li>• Data Privacy Considerations</li> <li>• Governance</li> <li>• Jurisdictional Limits</li> <li>• Procedures/Policies</li> </ul>	<ul style="list-style-type: none"> <li>• Service Culture</li> <li>• Technical Governance</li> <li>• Other _____</li> <li>_____</li> <li>_____</li> </ul>
--	--
- 14. a) What are your perceived opportunities for improving the current call evaluation and dispatch system?
  - a. What are the barriers to achieving these opportunities?
- 15. How can crisis intervention for marginalized and vulnerable members of the community be improved?
- 16. How is oversight provided to the call evaluation and dispatch functions?
- 17. What is your agency/organization governed and funded?



- 18. What is your operating budget for your call evaluation and dispatch functions or communications group in 2019 and 2020??
- 19. Please add any further comments regarding Integrated Call Evaluation and Dispatch if you wish \_\_\_\_\_

## Integrated Call Evaluation + Dispatch Questionnaire Police Services



*This questionnaire has been created to obtain information from Mental & Community Health across Canada who provide service delivery to their communities using call evaluation and dispatch communications, specifically if done in collaboration or with interface to other emergency or crisis serving Mental and Community Health organizations. We are keen to hear what you have to say!*

*If you have any questions regarding the survey, please contact Holly Alyea (holly@cornerplan.com)*

*Thank you for participating.*

***PLEASE SUBMIT BY MARCH 26TH, 2021.***

NAME: \_\_\_\_\_

EMAIL: \_\_\_\_\_

AGENCY/ORGANIZATION: \_\_\_\_\_

- 1. What is the size of the population you serve?
- 2. Is your communication centre the primary answering point for 9-1-1?
  - a. If yes, what level of call evaluation is performed to ensure the caller is transferred to the appropriate agency?
- 3. How many calls were handled by your organization in 2019 and 2020?
- 4. How many of those calls were diverted to other emergency or community services?

Which Service?

- a. Police # \_\_\_\_\_
- b. Fire # \_\_\_\_\_
- c. EMS # \_\_\_\_\_
- d. Other # \_\_\_\_\_



5. How frequently were other services integrated into an incident response?  
Most (80% or more) / Some (40% to 79%) / Few (10% to 39%) / Seldom (under 10%)
  - a. Police # \_\_\_\_\_
  - b. Fire # \_\_\_\_\_
  - c. EMS # \_\_\_\_\_
  - d. Other # \_\_\_\_\_
6. How many staff are involved in call evaluation ( # \_\_\_\_\_ ) and dispatch ( # \_\_\_\_\_ ) work?
7. Do you have a dedicated call evaluation and dispatch communications centre/room? YES / NO
  - a. approx. size (m<sup>2</sup>) \_\_\_\_\_
  - b. # of people \_\_\_\_\_ at capacity
8. Typically, how many teams/units do you have on the street over 24 hours?
  - a. How do your teams/units communicate with each other?
  - b. How do your teams/units communicate with other emergency and community services?
9. What software/technology is used for capturing call data? (CAD, or other Apps)
10. Do you use predictive modelling to anticipate staff workloads and event incidence?
11. Do you currently share your data? If yes, then how? Do you have formal MOUs for sharing data?
12. Are any systems in place that assist in automatically classifying calls for service, or provide staff with recommendations or direction as to how a particular call for service should be handled?  
YES or NO
  - a. What is the name of the program? (e.g. AI, ProQA)
13. What are the main challenges to coordinating call evaluation and dispatch responses for multiple services? (co-response situations)
 

<ul style="list-style-type: none"> <li>• Budgets and Resources</li> <li>• Data Privacy Considerations</li> <li>• Governance</li> <li>• Jurisdictional Limits</li> <li>• Procedures/Policies</li> </ul>	<ul style="list-style-type: none"> <li>• Service Culture</li> <li>• Technical Governance</li> <li>• Other _____</li> <li>_____</li> <li>_____</li> </ul>
--	--
14. a) What are your perceived opportunities for improving the current call evaluation and dispatch system?
  - a. What are the barriers to achieving these opportunities?
15. How can crisis intervention for marginalized and vulnerable members of the community be improved?



16. How is oversight provided to the call evaluation and dispatch functions?
17. What is your agency/organization governed and funded?
18. What is your operating budget for your call evaluation and dispatch functions or communications group in 2019 and 2020??
19. Please add any further comments regarding Integrated Call Evaluation and Dispatch if you wish \_\_\_\_\_



# APPENDIX C

SERVICE PROFILES

INTEGRATED CALL EVALUATION AND DISPATCH BUSINESS CASE



## APPENDIX C - SERVICE PROFILES

The following section presents each of agencies or organizations involved in Edmonton's call evaluation and dispatch system. These include service profiles for:

- 1.1 Edmonton Police Service (EPS)
- 1.2 Edmonton Fire Rescue Services (EFRS)
- 1.3 Edmonton Transit Service (ETS)
- 1.4 Community Standards Branch (CSB)
- 1.5 Alberta Health Services - Emergency Medical Services (EMS)
- 1.6 Alberta Health Services - Addictions and Mental Health (AMH)
- 1.7 Edmonton 3-1-1
- 1.8 24/7 Crisis Diversion Program (REACH)
- 1.9 CMHA/2-1-1 Edmonton
- 1.10 Hope Mission
- 1.11 Boyle Street Community Services

Each agency or organization is described using the following framework:

- A. Service Profiles
- B. Governance
- C. Staffing
- D. Facilities
- E. Current Process and Workflows
- F. Technology, Data and Communication Platforms

The newly formed **Community Safety and Well-Being Task Force** was established with a mandate to initiate an inclusive relationship-based process to create recommendations for Council regarding the future of community safety and well-being in the city that are anti-racist. The Task Force is exploring options to better oversee the operations of peace officers and hold them accountable.

An effort was made to collect and analyze budget and calls for service information for each of the organizations. Many of the agencies captured this information for their overall organization but few captured the information specific to the focus of the Business Case. As a result it was agreed to look forward to the establishment of common data elements which will allow for collaboration of data amongst the organizations in a manner that will reflect a more accurate reflection of the metrics.



## 1.1 EDMONTON POLICE SERVICE (EPS)

### A. SERVICE PROFILE

The function of the EPS is to provide for protection of life and property, preservation of public peace, prevention and detection of crime, regulation of noncriminal conduct as required by law, and perform miscellaneous services incumbent upon police as a social and community agency.

The **Edmonton Police Communication Branch (ECOMB)** of the EPS is the primary Public Safety Answering Point (PSAP) for the City of Edmonton. The principal responsibilities of the Branch include:

- Answering 911 calls for assistance (primary Public Safety Answering Point – PSAP), and transfer as required to the appropriate emergency service (Police, Fire, EMS).
- Evaluating emergency and non-emergency calls for police assistance (secondary PSAP).
- Dispatching appropriate police resources when required.<sup>1</sup>

ECOMB is a crucial branch of EPS and provides services to the citizens of Edmonton and the internal stakeholders of EPS.

### B. GOVERNANCE

The EPS mandate is “To be relentless on crime and a leading partner in building community safety.” The agency’s vision is to be “A forward-thinking police service that strengthens public trust through addressing crime, harm and disorder.”

The current governance model for the Edmonton Police Service (EPS) consists of three legal entities (the partners) prescribed in the Police Act:

- the City of Edmonton<sup>2</sup> (the City and/or Council)
- the Edmonton Police Commission<sup>3</sup> (the Commission)
- and the Edmonton Police Service (the EPS)

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<sup>2</sup> Police Act Section 27(1) and 28(1)

<sup>3</sup> Police Act Section 27(1)



The City/Council<sup>4</sup> funds municipal services including the EPS. The EPS is governed by the Commission, a civilian oversight body appointed to represent the citizens of Edmonton. The Commission has the responsibility for specifying the level of police service and programs to be provided,<sup>5</sup> establishing policies providing for efficient and effective policing,<sup>6</sup> and allocating the funds.

The Edmonton Police Communications Branch reports through a Deputy Chief who reports to the Chief of Police of the EPS who reports to the Edmonton Police Commission (EPC).

The EPS has the following MOUs with other agencies:

- MOU - 29 2018 EPS & AHS EMS Tactical Emergency Medical Support Paramedics – NA;
- MOU - 158a EPS & AHS Use of Pub Safe Pub Svc Radio Systems 0116;
- MOU - 191a EPS & AHS - IC PACT extension – 0318;
- MOU - 189 COE Planning and Dev, EPS, AGLC and EFR;
- MOU - 192 EPS & EDM Fire Rescue - Helicopter – 1022;
- MOU - 221 EPS & AHS Forensic Assessment & Communications Service – 0720;
- MOU - 265 EPS % AHS % COE - Residential Living Governance Committee - 0620.

### C. STAFFING

PCB Emergency Communications Officers (ECOs) handle 9-1-1 emergency calls for Police, Fire and EMS and non-emergency calls. EPS ECOs have been staffed by sworn or retired members. They are now moving to a civilian staffing model while the EPS will maintain police oversight of the dispatch centre with appropriate police officers in supervisory roles. PCB staff are initially trained as 9-1-1 call evaluators then as EPS call evaluators and then dispatchers. Key features of the EPS PCB staffing model include:

Total Staff	Approx. 160
Supervisors	8x sergeants, reporting to Staff Sergeant
Staff Sergeant	4x, reporting to the Inspector
Inspector	1x, reporting to the Executive Director
Executive Director	1x

<sup>4</sup> Section 29(1)

<sup>5</sup> Section 29(1)

<sup>6</sup> Section 31(1)



Each shift operates with the following approximate structure:

Call Evaluators	15 to 20 call evaluators
Dispatchers	9-12 dispatchers
Shift Supervisors	2 shift supervisors supported by 1 Staff Sergeant

### D. FACILITIES

The Edmonton Communications Branch (ECOMB) operates two full redundant sites. The primary Dispatch Centre is located downtown Edmonton in EPS Headquarters. The other is located in South East Edmonton at the EPS Southeast Station. Since 2017, EPS has been running from both Centres concurrently to enhance redundancy.

### E. CURRENT PROCESSES AND WORKFLOWS

The current call management process for calls received by the EPS Emergency Communications Branch (ECOMB) is described below. A full EPS call management workflow diagram is in Appendix D.

INTAKE	EVALUATION	DISPATCH
<p>EPS receives requests for service through the following intakes:</p> <ul style="list-style-type: none"> <li>• 9-1-1 (including other agency transfers)</li> <li>• Non-Emergency Line (780-423-4567 Including 3-1-1 transfers)</li> <li>• #3-7-7 (Mobile devices)</li> <li>• Blue Phone (River Valley)</li> <li>• Yellow Phone (Police Stations)</li> <li>• Direct line for other agencies such as Transit, AHS-EMS, AHS-AMH, Fire, Hope Mission, Boyle Street</li> </ul>	<p>As the initial Public Safety Answering Point (PSAP), the EPS triage 9-1-1 calls to determine what service the caller requires.</p> <p>The call is transferred to the appropriate agency which could include:</p> <ul style="list-style-type: none"> <li>• EFRS</li> <li>• AHS-EMS</li> <li>• Referral to non-emergency</li> <li>• Referral to another service</li> </ul>	<p>The dispatcher determines the appropriate response for the event, based on the information provided in the event created by the call evaluator.</p> <p>Dispatcher notifies the appropriate police resources of the event.</p>



- Online Reporting
  - On View
  - Walk in (to stations)
- If the 9-1-1 call is determined to require a police response, the call is transferred (within the EPS Emergency Communications Centre (ECC)) to an EPS Call Evaluator. This call evaluator will use their training and the ProQA<sup>7</sup> to determine the location and nature of the event for dispatch.

Once the appropriate resources are dispatched to the event, the response can be adjusted as appropriate based on the situation found when the responding resources arrive on scene. Throughout the call management process, police officers have the ability to connect with other internal and external resources.

A follow-up response is conducted by the most appropriate resource which could be the patrol unit, or a member of the Community Services Branch teams (Beat Constables, PACT, HUoS, HELP). These teams are described further below.

Two key response initiatives implemented by the EPS are highlighted below:

**Heavy Users of Service Project**

The Heavy Users of Service (HUoS) project was established in 2013, in alignment with the EPS Violent Reduction Strategy, aimed at improving lives and reducing inappropriate use of the City’s social and emergency services. HUoS represents a collaboration of 16 community stakeholders who believe a new and unique harmonization was

**Police and Crisis Response Team**

The Police and Crisis Response Team (PACT) is an Edmonton Police Service partnership with Alberta Health Services’ Access 24/7. EPS PACT constables are paired with a mental health therapist from AHS Access 24/7, Addiction and Mental Health. The mental health therapist and the police officer from PACT work together to assess the

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<sup>7</sup> International Academies of Emergency Dispatch’s (IAED) standardized protocols



necessary to address Edmonton's most at-risk citizens.

client's mental health needs and determines the appropriate action (in line with the Mental Health Act and the Criminal Justice System) to support the client.

## F. TECHNOLOGY, DATA AND COMMUNICATIONS PLATFORMS

The EPS Emergency Communications Branch uses the following technologies to support the department:

- Hexagon CAD 9.4 (stand-alone)
- ProQA
- Agent 5-1-1
- NICHE RMS (currently under upgrade)
- Content Management system on the Intranet for SOP management
- Digital Centrex for 9-1-1
  - i. In the process of implementing IP Call Handling Q4 2021 (Solacom) and then transitioning to NG9-1-1 for Q4 2022
- Coplogic
- NICE Call logger
- Genesis
- Perimeter
- AFRRCS (Alberta First Responder Radio Communication System)<sup>8</sup>. All of the EPS radio channels are encrypted. There are talk groups configured for shared communications with other AFRRCS partners such as Transit, AHS-EMS and EFRS.

The Hexagon CAD system is within the latest version provided by the vendor. This system is a "closed" system serving EPS only. There are no interfaces to other partner agencies such as EFRS or AHS-EMS.

The EPS IT team supports all the technologies utilized by EPS ECOMB. There are 3 staff on during daytime hours and there is a 24/7 Help Desk for daytime and after hour support. The City provides base maps which are modified for CAD by the EPS Database Administrator (DBA). EPS does not

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<sup>8</sup> [Alberta Risk Responders Radio Communications System Overview, accessed March 2021.](#)



currently have enhanced GIS capabilities for CAD (until a future upgrade to ESRI). EPS does however have GIS capabilities with SAMA at the OICC. EPS has an established data warehouse which is used for reporting purposes and managed by a team of administrators. A business continuity plan is in place.

## 1.2 EDMONTON FIRE RESCUE SERVICES (EFRS)

### A. SERVICE PROFILE

Edmonton Fire Rescue Services has the following areas:

- Fire Rescue Operations
- Office of Emergency Management and Planning
- Public Safety
- Technical Service
- Training and Logistics

EFRS is responsible for the following services:

- Emergency response communications;
- Fire suppression;
- Technical rescues;
- Responses to life-threatening medical situations;
- Hazardous materials response;
- Watercraft response on the river;
- Fire prevention programs and public education initiatives; and
- Emergency management and planning.

The EFRS has been an accredited Fire Department with the Commission on Fire Accreditation International (CFAI)<sup>9</sup> since 2016.

### B. GOVERNANCE

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<sup>9</sup> Accreditation provided by the Centre for Public Safety Excellence (CPSE), <https://cpse.org/accreditation/>.



The EFRS operates with the following mandate: “Through the protection of life, property and the environment, Fire Rescue Services improves the livability of all Edmontonians. We are committed to protecting life, property and the environment.”

Within the City of Edmonton, EFRS falls under the Citizen Services Department.

Edmonton’s Fire Department began in 1892 with the creation of a volunteer fire brigade. A year later, Edmonton’s first fire hall was opened. The volunteer corps continued until a paid system was organized in 1906 with R. G. Davidson as Fire Chief. The Fire Department also provided emergency services and an ambulance was donated to the department in 1908. In 1912, due to the amalgamations of Edmonton and Strathcona, the Edmonton and Strathcona Fire Departments were combined. In 1917, the firefighters organized a union. Until 1921 the department used horse drawn apparatus to fight fires. In 1964, the Jasper Place Fire Department was amalgamated into the Edmonton Department. In 1994, the name of the department was changed to the Emergency Response Department, but the functions of the department remained essentially the same.<sup>10</sup>

Alberta does not have specific Legislation at the provincial level such as a Fire Service Act. There are municipal by-laws, the Government Municipal Act and Safety Act that govern the organization and services provide to the citizens of Edmonton.

The *Government Municipal Act* (201) describes the role of Council in establishing the necessary municipal services and the role of the chief administrative officer in appointing and managing personnel on behalf of Council, including, fire personnel.

The *Safety Codes Act*, describes, (2[1]), the obligations of government to provide fire protection and to outline rules considering safety codes under the guidance of the *Alberta Safety Code Authority*.

Under the *Government Municipal Act*, above, the Fire Chief is accountable to the CAO and to Council through periodic reporting and acquisition of funds.

The Alberta Fire Chiefs Association (AFCA) is attempting to revise the rules delineating strategies for fire protection and to introduce greater uniformity in quality of services.

The EFRS has the following MOUs with other agencies:

- 20-03-MOU-189.PDF COE Planning and Dev, EPS, AGLC and EFRS.

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<sup>10</sup> <https://albertaonrecord.ca/city-of-edmonton-fire-department#:~:text=Edmonton's%20Fire%20Department%20began%20in,Davidson%20as%20Fire%20Chief.>



- MOU-87 EPS & EFRS - Emergency Response-NA.
- MOU-192 EPS & EFRS - Helicopter-1022.
- Sharing agreements with EPS & AHS for sharing AFRRCS talk groups

### C. FACILITIES

EFRS Communications currently operate two fully redundant locations. The primary communication centre is located in the Emergency Response Communication Centre (ERCC) in downtown Edmonton. The secondary communication centre is located at Station 29. This station was originally designated as a warm back-up centre, however due to COVID-19 restrictions, this Centre has been activated on a full-time basis and is currently being used as a secondary dispatch centre. Staff are located at each centre on a daily basis.

### D. STAFFING

The Chief of Emergency Communications maintains oversight of the EFRS Communications Dispatch Centre, along with a Technical Captain, Training Captain and Day Dispatcher. The EFRS operates with a total of approximately 36 staff, organized into four platoons for 24-hour coverage.

Each platoon has:

6 Emergency Communications Specialists (call evaluators and dispatchers)  
1 Senior Emergency Communication Specialist  
1 Captain  
1 Senior Captain

All Communications Centre staff are trained and function as both call evaluators and dispatchers. A minimum of 6 staff are on duty at all times.

### E. CURRENT PROCESSES AND WORKFLOWS

EFRS Communications use the International Academies of Emergency Dispatch (IAED) Priority Dispatch system (ProQA). The branch is not accredited with IAED, however they follow the guidelines and have a quality assurance program in place. The IAED AQUA product forms part of the quality assurance process.



The current call management process for calls received by the EFRS Communications Branch is described below. A full call management workflow diagram for EFRS is included in Appendix D.

INTAKE	EVALUATION	DISPATCH
<p>EFRS receives requests for service through the following intakes:</p> <ul style="list-style-type: none"> <li>• 9-1-1 (including other agency transfers)</li> <li>• Direct line from other agencies such as Transit, AHS-EMS and EPS</li> <li>• 3-1-1, EPCOR &amp; ATCO</li> <li>• CAD to CAD interface with AHS</li> <li>• On View by units</li> <li>• Walk in (to stations)</li> </ul>	<p>EFRS is a secondary Public Safety Answering Point (PSAP)<sup>11</sup> therefore 9-1-1 calls are transferred from EPS or other 9-1-1 agencies when it has been determined that Fire is required to respond.</p> <p>If a Fire response is required, the call is transferred to a EFRS Emergency Communications Specialist (call evaluator).</p> <p>The call evaluator will use their training and the ProQA protocols<sup>12</sup> to determine the location and nature of the event for dispatch.</p>	<p>The dispatcher then determines the appropriate response for the event based on the information provided in the event created by the call evaluator.</p>

Once the appropriate resources are dispatched to the event, the response can be adjusted as appropriate based on the situation found when the responding resources arrive on scene. Throughout the call management process, responding officers have the ability to connect with other internal and external resources. Follow-up work is conducted when deemed appropriate by EFRS policies and procedures. In cases where EFRS responds with AHS, only a limited follow-up is possible due to patient confidentiality restrictions. Non-fire related events will also generate limited follow-up work.

<sup>11</sup> From the Alberta 9-1-1 Standards Appendix A to Ministerial Order No. A:001/18, Secondary PSAPs are defined as: downstream agencies to which 9-1-1 calls are transferred from a Primary PSAP via the 9-1-1 network.

<sup>12</sup> International Academies of Emergency Dispatch’s (IAED) standardized protocols



The QA process developed by EFRS Communications forms part of their daily operations. This includes the following key performance indicators:

- Dispatch responses to fire events within 30 seconds;
- Call Evaluation within 60 seconds;
- Dispatch Communication within 90 seconds.

## **F. TECHNOLOGY, DATA AND COMMUNICATION PLATFORMS**

EFRS Communications uses the following technologies to support the department:

- Hexagon CAD 9.4 (with an interface between EFRS Communications and AHS-EMS).
- ProQA
- ICO Solutions RMS
- In the process of implementing IP Call Handling Q4 2021 (Solacom) and then transitioning to NG9-1-1 for Q4 2022 Digital Centrex for 911. This new system is a collaboration with EPS, who will host and support it.
- AFRRCS (Alberta First Responder Radio Communication System), with some EFRS radio channels encrypted (but not all). Talk groups have been configured for shared communications with other AFRRCS partners such as Transit, AHS-EMS and EPS. This allows interoperability for less frequent occasions where regular operations would require sharing of talkgroups.
- NICE Call Logging System
- Locution (IP Based Automated Voice Station Alerting System)

EFRS to AHS-EMS interface enables event-based data including event location, type and event comments to be exchanged, as well as unit-based data including Automatic Vehicle Location (AVL).

The technologies used by EFRS are supported by the EFRS Emergency Systems Team and an Open City and Technology (OCT) team from the City. EFRS Emergency Systems Team consists of one manager, four Technology Specialist, one Systems Engineer and three GIS Specialists. GIS staff manage all digital and physical maps used by CAD and MPS (Mobile for Public Safety) applications (in addition to supporting other citizen services mapping requests). Four EFRS Application Support staff from the City of Edmonton OCT branch are assigned to manage the CAD system and other EFRS applications such as voice loggers, records management system, etc. Other technology infrastructure such as network, databases are supported by City corporate OCT teams.

EFRS has an established data warehouse which is used for reporting purposes and the development of performance metrics. A business continuity plan is place.



## 1.3 EDMONTON TRANSIT SERVICES (ETS)

### A. SERVICE PROFILE

ETS provides reliable, timely and safe transportation for Edmontonian. Transit service levels are based on guidelines set out in City Policy C539, Transit Service Standards. Guidelines cover operating time periods (peak, midday, and evening), walking distance to bus stops, service frequency, and route performance.

ETS is a fully integrated, progressive, easy-to-use public transit system that provides over 80 million rides each year. Transit plays an important role in city building and provides seamless connection within Edmonton and region. Focusing on three pillars: service, infrastructure and technology with link to the Edmonton police service if it's a criminal.

ETS has three sections monitoring and performing intake evaluation of calls: LRT Control, Bus Control and Transit Security Dispatch:

1. LRT Control is responsible for the safe and efficient delivery of LRT service and dispatches LRT Inspectors for calls for service that impact service.
2. Bus Control is responsible for the safe and efficient delivery of bus service. Bus Control receives calls from operators and service providers such as Fleet Services, evaluates the calls and is responsible for dispatching Inspectors for operator support and investigation or collisions, patron injuries and service delays.
3. Transit Security Dispatch is responsible for monitoring Closed Circuit Television System (CCTV), C-CURE and BMS alarms, emergency phones, panic buttons, Transit Watch phones, Text to Report, provide access to public washrooms and dispatch Transit Peace Officers.

Inputs to the ETS Control Centre include calls regarding the safety and security of the employees, passengers, public and infrastructure. The actual dispatch function handles calls for service within the scope of authorities of ETS Inspectors and contracted security officers and Provincially appointed Peace Officers. Calls range from nuisance and disorder to bylaw and provincial act breaches.

9-1-1 is accessed for any medical emergency, fire call or criminal act in progress requiring immediate response.



## B. GOVERNANCE

On January 28, 2021, the Government of Alberta approved the legal formation of a new regional commission for the Edmonton Metropolitan Region with a mandate of improving regional transit and mobility. Under the *Municipal Government Act (MGA), RSA 2000 Section 15.1 Regional Services Commissions*, must be governed by elected officials from member municipalities.

The purpose of the RTSC is: “Bringing municipal transit services together for the benefit of one region.”

The vision is: “Experience the future of mobility where you can go any place, at any time and in the way you choose.”

The mission is: “To enable a variety of sustainable mobility options that best serve our region’s people and communities.”

There are a number of strategic documents that have provided direction for public transit service design, LRT Network Plan, Transit Oriented Development Guidelines, and business planning documents. ETS does not have a comprehensive long-term strategy to guide its investment in integrated bus and LRT infrastructure.

The governance model continues to balance regional and municipal interests to enable the RTSC to make important strategic and financial decisions that benefit communities.

The conceptual transit services design, transit model, projected service hour efficiency savings and financial model demonstrate a more seamless regional network.

MOUs exist between Community Standards Peace Officers.

## C. FACILITIES

Security and Bus Control are co-located in the same Control Centre with direct contact with the LRT Control Centre located separately dedicated to the safe movement of Light Rail Vehicles.



Two Control Centres are currently located in the pedway of Churchill LRT Station and are below grade. This includes 1,500 square feet. 9 full sit/stand consoles with 6-8 monitors and an entire wall display for CCTV, Train Board and Bus Board.

There are two back up locations in separate facilities for Control - D.L. MacDonald Garage and University LRT Station. These locations are not robust and are not designed as full back up resources.

## **D. STAFFING**

There are 36 staff overall. One manager, 5 Superintendents (out of scope) to manage Bus Control and Security Control 24/7. The Transit ECO are both call evaluators and dispatchers. Dispatch is on duty includes 1 Supervisor, 2-5 Controllers, 3-4 Security Dispatchers. All work 24/7 on rotating shifts. 15 Bus Controllers. 15 Transit Security Dispatchers.

## **E. CURRENT PROCESSES AND WORKFLOWS**

Calls for service can be initiated by LRT Control, Surface Control, security guards, peace officers, Road Inspectors and Police Services, Alberta Health Services for EMS and EFRS. Historically, calls for service were probably 89% nuisances and 11% crime, including approximately 2 fire alarms per month, with 80% of calls coming from Help phone for washroom access.

There is a Transit watch line, dedicated phone line, and a dedicated text line to support real time information exchange. The majority of calls for service are over the cell phone. Transit Peace Officers focus their duties on three categories of service:

1. Calls for service
2. Hot spot deployment (predictive model)
3. Emerging issues or areas of concern

Proactive time for Peace Officers is driven by the Community Standards teams. Calls for services are dispatched by Transit Security Dispatchers.

Transit receives requests for service through the following intakes:

- EPS
- Transit Watch



- AHS
- Fire
- Text
- Cameras
- LRT Control Centre
- Surface Control Centre
- Transit Security
- Washroom Phones
- Google Chat
- Email
- Alarms
- 3-1-1
- Business Lines
- On view by units

INTAKE	EVALUATION	DISPATCH
<p>Transit receives requests for service through the following intakes:</p> <ul style="list-style-type: none"> <li>• EPS</li> <li>• AHS</li> <li>• Fire</li> <li>• Text</li> <li>• Cameras</li> <li>• LRT Control Centre</li> <li>• Surface Control Centre</li> <li>• Transit Security</li> <li>• Transit Watch</li> <li>• Washroom Phones</li> <li>• Google Chat</li> <li>• Email</li> <li>• Alarms</li> <li>• 3-1-1</li> <li>• Business Lines</li> </ul>	<p>The call evaluator will use their training and the ProQA protocols<sup>13</sup> to determine the location and nature of the event for dispatch.</p>	<p>The dispatcher then determines the appropriate response for the event based on the information provided in the event created by the call evaluator.</p>

<sup>13</sup> International Academies of Emergency Dispatch’s (IAED) standardized protocols



- On view by units

Will monitor cameras and use PA system to address any situations as appropriate. For example, if there is an individual in the act of drug use, they could use the PA to ask them to move along. If that person required medical attention, they would contact AHS through 9-1-1. Also have a direct line to 2-1-1 if required.

If it is a criminal act, they will notify both Peace Officers and EPS. This can be a duplication of efforts as not always are both required.

When not responding to incidents, Peace officers are deployed using a proactive methodology, using the Community Services Dashboard metrics to predict hot spot. Responding officers have the ability to connect with other internal and external resources.

Follow up is done when deemed appropriate by the policies and procedures. Weekly meetings with Police, Security and Peace officers to review incidents and needs.

## F. TECHNOLOGY, DATA AND COMMUNICATION PLATFORMS

The following technology, data and communication platforms are used:

- Hexagon CAD (shared system with EFRS but segregated from each other)
- ProQA
- 5000 to 7000 CCTV
- Peace Officers use Posse for RMS (Person based)
- Tableau (Business Intelligence)
- AFRRCS (Alberta First Responder Radio Communication System)<sup>14</sup>.

## 1.4 COMMUNITY STANDARDS & NEIGHBOURHOODS BRANCH (CSB)

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<sup>14</sup> <https://www.alberta.ca/alberta-first-responder-radio-communications-system.aspx#:~:text=The%20Alberta%20First%20Responders%20Radio,became%20operational%20in%20July%2C%202016.>



## A. SERVICE PROFILE

The Community Standards and Neighbourhood Branch (CSB) enhances a livable city by supporting safe properties and a civil urban society that meets the standards and expectations of communities. This is accomplished by the identification of standards, together with the education, compliance and, where necessary, enforcement initiatives required to uphold them.

CSB works directly with citizens in the neighbourhoods in which they live to promote a culture of civic engagement, build great neighbourhoods, enhance family and community capacity, coordinate service delivery, operate and maintain parks, enhance the urban forest, and invest in revitalization initiatives.<sup>15</sup>

CSB is comprised of several Peace Officer teams:

- Commercial vehicle unit
- Vehicle for hire
- General duty
- Park Rangers
- Animal Control officers
- Churchill Team (downtown)
- Info/ construction compliance team

Teams are broken into 5 quadrants of the City (North-East, North-West, South-East, South-West and Downtown). For the purposes of this report, three of these teams are considered in scope:

- General duty
  - Bylaw complaints
  - Traffic
  - Noise complaints
  - Fire pits
  - Traditional residential and commercial
  - Might liaise with the Park Rangers, Transit in the other quadrants
- City Park Rangers
  - Park ambassador
  - Homeless encampments
  - Wildlife

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<sup>15</sup> Taken from [https://www.edmonton.ca/city\\_government/city\\_organization/community-standards.aspx](https://www.edmonton.ca/city_government/city_organization/community-standards.aspx)



- Churchill Team (Downtown)
  - Churchill Square - City hall and about 2 block radius
  - Security for council, facilities and complement other security teams
  - Covering into a downtown quadrant
  - Includes working with homeless and transient citizens and coordinating support with Transit and other groups where possible

These teams are distinct from the Transit Peace Officers, who are contracted by ETS to provide services directly to Transit. CSB dispatch provides dispatch services for all the CSB Peace Officers during limited hours and after hours, dispatch services are provided by EPS. There were previously two dispatch centres for CPOs; a contracted security company dispatched the Churchill Team. They have now consolidated all CPOs, except Transit CPOs into a single dispatch centre.

Inputs to the CSB Dispatch include calls regarding the safety and security of the employees, public and infrastructure. The actual dispatch function handles calls for service within the scope of authorities of CSB Provincially appointed peace officers. Calls range from nuisance and disorder to bylaw and provincial act breaches. 9-1-1 is accessed for any medical emergency, fire call or criminal act in progress requiring immediate response.

CSB Dispatch also provides safety checks for other City business units which don't have formalized dispatch services.

## **B. GOVERNANCE**

Two streams of accountability – City and Province.

Accountable to the City for normal administrative performance and budget reporting, and to the Province under the *Peace Officers Act* with regards the accreditation and performance of the 185 Peace Officer designated staff.

With support staff, total of 200 in Branch.

Province has power to audit, however not happened since a reorgs. with the division of responsibilities, below.



Support of work of EPS and subject to approval where proposed work changes impact EPS responsibilities or may create risk. Also, EPS may need to provide back-up to CSB staff and need to ensure availability of appropriately trained personnel. E.g Traffic Enforcement...such as 'unsafe loads'.

Often a combined EPS CSB tasks such as commercial vehicle checks or Transit Safety program.

Animal Protection Team, is both provincial and criminal legislation. Also, emergency or non-emergency. calls or safety program concerning the river often require both agencies with the appropriate equipment and expertise.

### **C. FACILITIES**

CSB Dispatch is located in the Animal Care and Control Centre. Dispatch also has some staff working remotely due to COVID and insufficient space for everyone to be in the office and follow the appropriate protocols. There is not a formal back-up center per se for redundancy however there is the ability to become mobile and set up with laptops and portable/handheld radios and smartphones, as has been proven by having remote workers.

### **D. STAFFING**

The Dispatch Centre operates seven days per week from 0630am - 1000pm. They dispatch for all of the Peace Officer business units with the exception of the Transit Peace Officers. There are a total of 7 dispatchers including the Dispatch Team Lead. There are 4 dispatchers Monday to Friday and on weekends there are 3 dispatchers to cover the hours. . There is potential for these hours to be extended and one additional dispatcher added to the schedule 7 days per week. The CSB Dispatchers are both call evaluators and dispatchers.

When hiring dispatchers, CSB Dispatch looks for previous experience as a dispatcher or completion of the MacEwan University Emergency Communications and Response Certification. Training is provided for all dispatchers through an on the job format including ride-alongs with the Peace Officers.



Peace Officers can move between the business units through a standardized process where they apply to postings of available positions in the different units. Each of the units has their own schedule based on the needs of the services being provided.

- Commercial vehicle unit (Monday to Friday type hours)
- Vehicle for hire (40 hours/week - varied)
- General duty (7 days/week - varied days and evenings)
- Park Rangers (7 days/week - varied days and evenings , until 1AM )
  - There are 4 Park Rangers dedicated to homeless camps
- Animal Control officers (7 days/week - varied days and evenings)
- Churchill Team (downtown) (7 days/week - varied days and evenings)
- Info/ construction compliance team (Monday to Friday type hours)

## **E. CURRENT PROCESSES AND WORKFLOWS**

Calls for service can be initiated by 3-1-1, Peace Officers, EPS, Alberta Health Services for EMS and EFRS. The primary intake for calls for service is 3-1-1. Peace Officers focus their duties on three categories of service:

1. Calls for service
2. Hot spot deployment (predictive model)
3. Emerging issues or areas of concern

Proactive time for Peace Officers is driven by the Community Standards teams. Calls for services are dispatched by CSB Dispatchers.



INTAKE	EVALUATION	DISPATCH
<p>CSB receives requests for service through the following intakes:</p> <ul style="list-style-type: none"> <li>• 3-1-1 (Phone transfer)</li> <li>• 3-1-1 CRM or Posse Application</li> <li>• EPS</li> <li>• AHS</li> <li>• Fire</li> <li>• Business Lines</li> <li>• Stakeholders from differer areas</li> <li>• Email</li> <li>• On View by units</li> <li>• Corp Security</li> <li>• Veterinary clinics</li> </ul>	<p>The call evaluator will use their training to determine the location and nature of the event for dispatch.</p>	<p>The dispatcher then determines the appropriate response for the event based on the information provided in the event created by the call evaluator.</p>

There are two ways CSB dispatch will receive requests for service from 3-1-1:

1. If the call is received from 3-1-1 by phone transfer (higher priority), 3-1-1 will perform a warm hand-off, ensuring that the caller is connected to a CSB Dispatcher.
2. If the call is received through the 3-1-1 CRM application, the dispatcher will see it in the dispatch complaint list.

Other intakes include citizens or past clients using the dispatch email learned during a previous encounter with CSB dispatch or CPOs. Regardless of how the request for service is received, the call evaluator will use their training and protocols to determine the location and nature of the event for dispatch. As the call evaluator is also the dispatcher (vertical call model), they then determine the appropriate response for the event based on the information provided in the event created by the call evaluator.

If it is a criminal act, they will notify both Peace Officers and EPS. If other agencies are required, the CSB dispatcher will phone 9-1-1 to connect with EPS, EFRS or AHS. Emergency activations from the AFRRCS radio, for officer requiring assistance goes to CSB Dispatch and to EPS.



When not responding to incidents, Peace officers are deployed using a proactive methodology, using the Community Services Dashboard metrics to predict hot spot. Responding officers have the ability to connect with other internal and external resources as required.

Follow up is done when deemed appropriate by the policies and procedures.

CSB Peace Officers participate in the Encampment Response Committee. This committee is comprised of stakeholders from social development agencies, Transit, EPS, Park Rangers and community groups. The committee is overseen by a Steering Committee and Working Group and works collaboratively to manage encampment response protocols for the City. There are 4 Park Rangers for the City and thousands of encampments every year in the City. This encampment protocols are being extended to include Transit by integrating the working groups and workflows to ensure a consistent approach and model across all areas of the City.

## F. TECHNOLOGY, DATA AND COMMUNICATION PLATFORMS

The following technology, data and communication platforms are used:

- Access Database for CAD
- Posse for RMS (location based)
- Tableau (Business Intelligence)
- AFRRCS (Alberta First Responder Radio Communication System)<sup>16</sup>.
- Google Chat ( Municipal enforcement officers )
- Google Docs
- Google and City maps

CSB has recently acquired two licenses for Hexagon CAD through ETS. They have just started to access the system and have not fully implemented at this time.

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<sup>16</sup> <https://www.alberta.ca/alberta-first-responder-radio-communications-system.aspx#:~:text=The%20Alberta%20First%20Responders%20Radio,became%20operational%20in%20July%2C%202016.>



## 1.5 ALBERTA HEALTH SERVICES - EMERGENCY MEDICAL SERVICES (EMS)

### A. SERVICE PROFILE

Alberta Health Services (AHS) is responsible for the provision of emergency medical services (EMS) which includes ground and air ambulance services operations in Alberta.

The AHS-EMS call-taking and dispatching agency is responsible for managing 9-1-1 EMS requests and inter-facility transfers across the province.

In 2014, the Community Paramedic program was extended to Edmonton in order to improve community care and end-of-life care for patients who would normally be transported to hospital for care.

### B. GOVERNANCE

AHS-EMS operates with a mandate to: “provide a patient focused, quality health system that is accessible and sustainable for all Albertans.” The agency’s main objective is “to make the right information available to the right people at the right time across the health system, so that providers and patients across the province have access to complete information at the point of care and to learn from in the future.”

MOUs have been established with municipalities across the province to support Radio and CAD services. These include:

- CLM 204128 MOU PACT Draft EPS and AHS 2019 01 18.
- M20-024 AHS BAU-FACS MOU.
- MOU-29 2018 EPS & AHS EMS-Tactical Emergency Medical Support Paramedics-NA.
- MOU-158 PSPSRS & AHS-Radio Systems-0116.
- MOU-191(a) EPS & AHS-IC PACT extension-0318.
- MOU-221 EPS & AHS Forensic Assess & Comm Svc-0720.
- MOU-265 EPS & AHS & COE-Residential Living Governance Committee-0620.

The Alberta Government is responsible for the delivery of health care in Alberta. Alberta Health Services (AHS) was established as the delivery arm for a substantial (but not all) of health care. It is a regional health authority governed by the *Regional Health Authorities Act*, and is responsible for



administering the Alberta Health Region, which covers the entire province. The AHS-EMS dispatch model is established at a provincial level and not specific to Edmonton.

The mandate of the AHS is to:

- Promote and protect the health of the population of Alberta and work toward the prevention of disease and injury;
- Assess on an ongoing basis the health needs of Albertans;
- Determine priorities in the provision of health services in Alberta and allocate resources accordingly;
- Ensure that reasonable access to quality health services is provided in and through Alberta; and
- Promote the provision of health services in a manner that is responsive to the needs of individuals and communities and supports the integration of services and facilities in Alberta.

The scope of AHS responsibilities under the above mandate is subject to the direction of, and the resources provided by, the Minister of Health.

AHS is a corporate body consisting of a 12-member Board. The Board is accountable to the Minister (through the Board chair) and is responsible to ensure that it carries out its duties in compliance with all relevant Government policies (including the *Alberta Public Agencies Governance Act*) and *Ministerial directives including a budget, Health Plan and Board bylaws, and other legal and regulatory requirements*.

The Board must annually evaluate member performance and Board success. The Board is responsible to recruit, direct, evaluate, determine the compensation of and, if required, dismiss the Chief Executive Officer (CEO). The Vice President and Chief Operating Officer of Clinical Operations leads 7 branches including the Edmonton Zone.

There are 12 Health Advisory Councils across Alberta including the Greater Edmonton Health Advisory Council (GEHAC) serving Edmonton and surrounding rural and smaller communities. They provide a grassroots perspective and understanding of their communities' health needs as advice and feedback to the AHS. The GEHAC is a group of 15 volunteers who elect their chair. They are governed under the Amended Bylaw for Alberta Health Services Establishing Health Advisory Services (<https://www.albertahealthservices.ca/assets/wf/hac/wf-hac-bylaws.pdf>).



AHS-EMS communications and dispatch budget<sup>17</sup> has remained constant, increasing only in line with inflation.

**C. FACILITIES**

AHS operates three Dispatch Centres in the province, located in Calgary, Edmonton and Peace River. This provincial model has been in development since 2009 and has recently been implemented in 2021. The three Dispatch Centres provide redundancy for each other. To support this, each Centre uses the same shared technology systems. If one Dispatch Centre experiences high levels of service demand or experiences technical issues, calls will be automatically diverted to one of the other Dispatch Centres in the province.

**D. STAFFING**

AHS operates with a provincial dispatch model and approximately 320 staff members. Emergency Communication Operators (ECOs) are responsible for call taking and dispatching in both rural and metropolitan areas, inter-facility transfers coordination and dispatch, flight coordination and System Status Management (SSM) coordination. All ECOs hold the same qualifications. The following staffing structure provides services across the province:

Call Evaluators	23x ECOs at peak times
Dispatchers	22x ECOs at peak times
Supervisors	6x supervisors during business hours
	3x supervisors outside of business hours

AHS EMS Dispatch Centre staff are supported by the following physicians:

- a doctor (available 16 hours/day) available to staff to provide real-time consultations with paramedics responding to events.
- Transport physicians to resolve transport issues; and

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- physicians regarding cardiology program.

## **E. CURRENT PROCESSES AND WORKFLOWS**

The current call management process for calls to AHS-EMS is described below. A full call management workflow diagrams for AHS-EMS is included in Appendix D.



INTAKE	EVALUATION	DISPATCH
<p>AHS receives requests for service through the following intakes:</p> <ul style="list-style-type: none"> <li>• 9-1-1 (including other agency transfers)</li> <li>• Non 9-1-1 business line</li> <li>• 1-800</li> <li>• Direct line from other agencies such as EPS (Police) or AHS</li> <li>• CAD to CAD interface with EFRS</li> <li>• On View by units</li> <li>• 8-1-1</li> <li>• Poison Control (PADIS)</li> <li>• Walk in (to stations)</li> <li>• Community Paramedics</li> <li>• (For transfers only) Web Interface</li> </ul>	<p>AHS-EMS is a secondary Public Safety Answering Point (PSAP)<sup>18</sup> which means they are transferred 9-1-1 calls from other 9-1-1 agencies when it has been determined to be a call for AHS to respond.</p> <p>If the 9-1-1 call is determined to require AHS response, the call is transferred to AHS ECO (Call Evaluator).</p> <p>The call evaluator could also divert the call to another service for response such as:</p> <ul style="list-style-type: none"> <li>• Community Paramedics</li> <li>• 8-1-1</li> <li>• 2-1-1</li> <li>• RAAPID (Referral, Access, Advice, Placement, Information &amp; Destination)</li> <li>• OLMC (Online Medical Consultation)</li> <li>• PADIS (Poison &amp; Drug Information)</li> <li>• CHAPS (Community Health and Pre-Hospital Support Program)</li> </ul>	<p>The ECO call evaluator will use their training and the ProQA protocols<sup>19</sup> to determine the location and nature of the event for dispatch.</p> <p>The dispatcher then determines the appropriate response for the event based on the information provided in the event created by the call evaluator.</p>

Once the appropriate resources are dispatched to the event, the response can be adjusted as appropriate based on the situation found when the responding resources arrive on scene. Throughout the call management process, paramedics have the ability to connect with other internal and external resources. Follow-up work is conducted by community paramedics or other AHS programs when deemed appropriate by AHS policies and procedures. In cases where EFRS responds with AHS, only

<sup>18</sup> From the Alberta 9-1-1 Standards Appendix A to Ministerial Order No. A:001/18, Secondary PSAPs are defined as: downstream agencies to which 9-1-1 calls are transferred from a Primary PSAP via the 9-1-1 network.

<sup>19</sup> International Academies of Emergency Dispatch's (IAED) standardized protocols



a limited follow-up is possible due to patient confidentiality restrictions. Non-fire related events will also generate limited follow-up work.

The QA process developed by AHS-EMS forms part of their daily operations. The IAED AQUA product is used as part of EMS's quality assurance process. This includes ensuring key performance indicators are met, approximately 3% of calls are reviewed.

## F. TECHNOLOGY, DATA AND COMMUNICATION PLATFORMS

AHS Communications uses the following technologies to support the department:

- Hexagon CAD 9.4 (with an interface EFRS Communications and other First Medical Responders throughout Alberta)
- ProQA
- Solacom – IP Call Handling & voice logging system
- AFRRCS (Alberta First Responder Radio Communication System), with some AHS radio channels encrypted (but not all). Talk groups have been configured for shared communications with other AFRRCS partners such as Transit, EFRS and EPS.
- NICE Call Logging System

The CAD interface enables event-based data including event location and type to be exchanged, as well as unit-based data including Automatic Vehicle Location (AVL). All of Automated External Defibrillator (AED) devices throughout the province are also registered and linked to the CAD system, enabling call-takers to locate devices during the call evaluation process.

AHS uses a system called Optima “provides decision support and data visualization software and services, enabling more informed strategic and operational planning while supporting real-time critical analysis and decisions. R1 RCM is a leading provider of technology-enabled services that solve performance challenges across health systems, physician practices and emergency medical services organizations.”<sup>20</sup>

A dedicated AHS IT team support all the technologies used by AHS-EMS. This team is form of 15 technicians on duty during business hours and one members of staff one call after business hours. Technical support for the AFRRCS system is split between Alberta Government (supporting the system)

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<sup>20</sup> <https://www.r1rcm.com/optima>



and AHS IT (who support the radio equipment used as well as dispatch console, and portable/mobile radios). A business continuity plan is in place.

## **1.6 ALBERTA HEALTH SERVICES - ADDICTION AND MENTAL HEALTH (AMH)**

### **A. SERVICE PROFILE**

Addictions and Mental Health work towards a better future in mind because a community, a global population of citizens who are mentally and emotionally resilient can support themselves and those around them dealing with mental illness or addiction with effective and empowering tools. There is 24/7 open access to clinicians by phone or walk in. Objective is to stabilize people in their own identified community (so they don't need to go to the hospital).

AMH provide outreach support by going to see people in their homes or in the river valley or wherever they are. AMH started as an amalgamation of programs - a number of them were only available during business hours. Wanted to be able to provide support 24/7 - continuous basis - while linking into formal system.

AMH monitors performance (using Genesis) using the following indicators:

- Call volumes
- Demand for service
- Unanswered calls

### **B. GOVERNANCE**

Addictions and Mental Health through Alberta Health Services (AHS) is the provincial health authority that oversees and advances Alberta's mental health system. The Provincial Addiction and Mental Health portfolio is involved in numerous initiatives, including advocacy, policy advice and working



with stakeholders to improve and facilitate addiction and mental health research and services. AHS also collaborates with interprovincial, national and international partners.<sup>21</sup>

To focus appropriate services for Edmontonian so they get the best service in an appropriate time.

## C. FACILITIES

AHS-MHA has offices located within a building located in the inner city of Edmonton, near the Royal Alexandra Hospital. One floor is for clinical work to be done, where clients/care givers are seen in person (including a drop in centre). The second floor is a secure floor which only clinic staff have access to. There are back up locations should an evacuation be required.

## D. STAFFING

Staffing for AHS-MHA varies from 4 – 40 staff working in multiple shift pattern rotations within a 24-hour period. There are 6 different start times within a 24hr period. An overview of a day would be:

- There will be 8 people report to work at 8am.
  - 2 will stay at the front counter to welcome people presenting,
  - 2 will answer the calls coming in,
  - 1 will work on the referrals coming in,
  - 1 will be reporting to PACT and
  - 1 will be preparing for the scheduled visits for the day.
- At 9 am additional staff come in
  - The staff at that time, are scheduled to services based on need and acuity.

Taking into account that there are always a team of two available to go out on crisis calls when they come in.

When not required in the drop in centre area, 1 of the 2 staff to help with the phones that are ringing nonstop – or maybe based on the acuity of the referrals/scheduled visits for the day additional staff are required/pulled to support. Core staffing is always assigned to all services: which includes:

- 1) Intake

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<sup>21</sup> <https://www.albertahealthservices.ca/amh/Page2725.aspx>



- 2) Crisis
- 3) Walk-in's
- 4) Urgent Clinic
- 5) PACT
- 6) R-PACT
- 7) Stabilization

Although AHS-MHA does not have a formal dispatch centre, there is a process to take calls as they come in as well as monitoring a front desk, responding to paper and fax referrals from the community/hospitals and going out on service calls when required.

There are 8 Teams associated with PACT which can be dispatched by EPS or by AHS-AMH teams based on a risk assessment. Intake is based on a risk assessment. Risk intake is done by Clinician. Clinicians are the person that answer the phone and will respond to a call for service at someone's home or meet in the waiting room in the clinic.

The following staffed positions have been identified:

- 8 teams PAC Team (PACT) in Edmonton, 1 Police officer partnered with 1 Clinician

## **E. CURRENT PROCESSES AND WORKFLOWS**

AHS - AMH receives requests for service through the following intakes:

- Public phone # - 424-2424
- Direct calls from other agency:
  - Police (including PACT, BEATS and Patrol)
  - AHS
  - Community Paramedics
  - Peace Officers
- 421 – PACT (trying to eliminate)
- 2-1-1
- 8-1-1
- Walk in
- REACH
- Hope Mission



- Boyle Street
- Police comms line general number that goes into their dispatch.

When citizen calls, they have 2 options –

- Intake staff - will roam to see if available resource. If not, you can leave a message.
- If Crisis selected the system searches for an agent, if it cannot find an agent, it will prompt the caller to either hold on the line, or if they would like to have their call returned, they could leave a callback number. Depends on which choice they take or not it continues to hold.

Basic template for welcoming the caller and identifying who they are talking to and then they have a few questions initially to identify who the caller:

- have steps to confirm the caller vs someone calling for the client
- No script or ProQA - use a template as guide
- Intake and information calls versus a crisis call
- Many times, someone else is call on behalf to the person ask if willing to talk to us.
- Determined within the first couple of minutes, that the individual is during harming themselves, or they are threatening to hurt someone else.

AMH have protocol that they are using to determine the best response. Determines if the call requires a response or can be handled over the phone or face to face

- If no risk factors the clinician will respond or schedule a time with the client.
  - Connect Care System - have access to the calendars of all the clinicians - can determine what the need is and provide appointment times
- If there are risk factors, they will send PACT out.
- Will transfer to 8-1-1, REACH/ 2-1-1 if unable to meet client needs
- If someone is actively hurting themselves they will call 9-1-1.
  - Could also call the EPS ECOMB directly (not 9-1-1).
- Do receive calls that should go to 9-1-1 or AHS. Those calls are transferred accordingly
- PACT sit in the call centre - they share the information - needed to be a lot of education and respect in how the information should be treated
- Get calls from the police about how to support people etc. A lot think they need to solve the issue right now where that isn't always the case.



## F. TECHNOLOGY, DATA AND COMMUNICATION PLATFORMS

The following platforms are used:

- VOIP Phone system
- Genesis
- Clinicians work from laptops, and cell phones.

## 1.7 EDMONTON 3-1-1

### A. SERVICE PROFILE

Edmonton 3-1-1 is central point of contact for non-emergency municipal services. Edmonton 3-1-1 'went live' in 2008 and amalgamated approximately 19 different Call Centres into one new 3-1-1 Centre.

311 is Edmonton's non-emergency phone line for City government information and services. It provides residents, businesses and visitors with ease of access through a central point of contact for their city needs.<sup>22</sup>

Edmonton 3-1-1 provides residents, businesses and visitors with a central information point for government information and services. This includes:

- Transit information
- Program Registration
- Registering a bylaw complaint
- Language assistance (in over 150 languages)

### B. GOVERNANCE

Edmonton's 3-1-1 non-emergency phone line for City government information and services was established in 2008 as approximately 19 different call centres were merged into one 3-1-1 centre.

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<sup>22</sup> [https://www.edmonton.ca/programs\\_services/service-311-contact-centre.aspx](https://www.edmonton.ca/programs_services/service-311-contact-centre.aspx)



Only limited 3-1-1 budget was provided. In the past two years, the agency's budget has decreased slightly.

### **C. FACILITIES**

3-1-1 has one communication centre in the downtown area. 3-1-1 also operate a front counter service at the Edmonton Tower building for in-person requests. Due to the COVID-19 restrictions, the majority of staff are currently working remotely. The service is looking to adopt a hybrid model with both office and remote work in the future.

The service has access to a secondary (back-up) call centre, which has other primary functions (as a training centre and election office).

### **D. STAFFING**

The 3-1-1 service operates with a staff of 154 full time employees (FTE). The centre operates with a variable staffing model (including Full-Time, Part-Time and Temporary staff). Training for new staff members takes approximately one year. Staff are trained for all areas and inquiry types, starting placements with Transit, then Citizen Services, Parking and Bylaw.

There are 85 staff during peak time (varies based on seasonality).

### **E. CURRENT PROCESS AND WORKFLOWS**

The Centre operates with core hours of 7am-7pm seven days a week, with after-hours service available. Strong working relationships with each of the business areas they provide services for is key in effectively delivering 3-1-1 services. The service meets with each business area on a regular and on-going basis and annual sign off procedures are in place for each business process / knowledge (script). The service also has a quality assurance program in place. The following table details the process for receiving and managing 3-1-1 calls.



INTAKE	EVALUATION	DISPATCH
<p>3-1-1 receives requests for service through the following intakes:</p> <ul style="list-style-type: none"> <li>• 3-1-1 (Phone)</li> <li>• 3-1-1 App</li> <li>• Texting</li> <li>• Online (via website)</li> <li>• Email</li> <li>• Walk-in / Front Counter Service</li> </ul>	<p>Requests for service are re-directed to alternative services if necessary.</p> <p>If the request is urgent, call takers can transfer the caller to the business unit (either directly to another call-taker, or indirectly to a business area phone system).</p>	<p>3-1-1 does not dispatch units. Response to calls for services logged by 3-1-1 are managed by the relevant business unit.</p>

As the service was inaugurated in 2008, the initial call volume expectations were underestimated. This resulted in the Call Centre being overwhelmed in the early phases of its operation.

Edmonton 3-1-1 have set service delivery goals and measure them on an ongoing basis:

- Phone answering industry standard of 80% of the calls are to be answered within 60 seconds,
- Average to have live agent within 60 sec.
- measure - call handle time,
- Email 24 hours to respond, but a reply is sent immediately to verify receipt of the request.

Citizen satisfaction surveys are also conducted on an ongoing basis, with the goal to achieve an overall satisfaction level of 80% (or higher). Call centre performance is measured and monitored using the following metrics:

- First call resolution
- Abandonment (threshold of 5% of calls)
- Agent performance
- Budget (percentage within the budget)

## F. TECHNOLOGY, DATA & COMMUNICATIONS PLATFORMS

Edmonton 3-1-1 services use the following technologies to support their communications:



- SAP Customer Relationship Management (CRM) system
- Posse
- Cisco Telephony (soft phone)
- 3-1-1 App (Connected Bits)
- Kana
- Two-way interface with some other city agencies enabling transfers of data such as name, contact information, description of issue
- Cloud based technology, enabling remote working

3-1-1 also operate an open data dashboard to display the results of report questions since 2014, summarised under 29 response categories.

## 1.8 REACH - 24/7 CRISIS DIVERSION PROGRAM

### A. SERVICE PROFILE

REACH Edmonton Safety Council for Safe Communities was established in 2010 as a result of recommendations of a 25-person task force on community safety.

REACH Edmonton's mission is "To strengthen community safety in our city and region through innovative ideas, building relationships and inspiring action."

REACH's vision is "A city we are proud of, in a region which is harmonious, where all people, including the first peoples on whose lands we reside, are included, feel safe and are safe.."

Main ambition: "In one generation (25 years), significantly increase community safety in our region; increase Edmontonian' perception of safety and inclusion."

REACH has 9 mandates. One of them is to coordinate 24/7 services for the people in the highest risk, most vulnerable and the 24/7 Crisis Diversion Program falls under this mandate - *To provide comprehensive, coordinated access to 24-hour services for vulnerable citizens.* The purpose is to reduce the need for expensive medical, judicial and police interventions.

The 24/7 Crisis Diversion program was established with a mandate to divert non-emergency crisis events away from emergency services to support vulnerable Edmontonians on a 24/7 basis. The 24/7 Crisis Diversion program dispatches crisis diversion teams around the clock, 365 days year to respond to people who are in distress and vulnerable on the streets of Edmonton.



The 24/7 Crisis Diversion program's main aim is 'to provide comprehensive coordinated access to 24-hour services for vulnerable citizens. The purpose is to reduce the need for expensive medical, judicial and police interventions'.

Work with partner agencies and look at trends. Identifying gaps in service that people are asking for, such as available support outside of business hours.

Crisis diversion includes transportation, supportive conversation, providing food, water, clothing and shelter, advocating in systems. Spending time connecting and building relationships with the community is a key part of the team's work.

The program is a collaborative partnership between:

- Canadian Mental Health Association (2-1-1 program)
- Boyle Street Community Services
- HOPE Mission

Stakeholders from Edmonton Police Service and Alberta Health Services Emergency Medical Services also work closely with the program. 70% of referrals come directly through 211 on a dedicated line (#3).

Crisis diversion includes transportation, supportive conversation, providing food, water, clothing and shelter, advocating in systems. Teams spend time connecting and building relationships with the community.

REACH doesn't provide any services directly. REACH partners with organizations, businesses, community groups, and individual Edmontonians. We work together to initiate or support innovative and effective programs that promote crime prevention.

REACH does not provide any services directly. REACH partners with organizations, businesses, community groups and individual Edmontonians to initiate or support innovative and effective programs that promote crime prevention. REACH works with partner agencies to deliver the following outcomes:

- Improve communications, linkages and engagement among partners and key community stakeholders.
- Improve inter-agency collaboration and alignment for 24/7 service delivery.
- Provide a warm hand-off for frequent users of the program.
- Identify gaps in 24/7 service delivery.



- Provide data that promotes accountability, learning, improvement, sustainability and communications.
- Ensure an appropriately trained front-line crisis diversion team staff.
- Test a prototype for a connector role to improve warm hand-off practice with partners for clients experiencing complex needs.

## **B. GOVERNANCE**

REACH Edmonton operates with a mission to “inspire citizen engagement and coordinated agency action to strengthen and sustain community safety in Edmonton.”

REACH Edmonton is a community based, not-for-profit organization with a 14-member Board of Directors. There is currently one City of Edmonton representative who serves as an advisor to the Board of Directors. All Board members are volunteers.

The Board of Directors provides oversight and is responsible for REACH Edmonton’s performance. Board responsibilities include:

- Develop, approve, monitor and evaluate the board’s strategic direction including its vision, mission, core values, mandate, goals and objectives.
- Recruit and performance manage REACH Edmonton’s Executive Director.
- Develop, approve, monitor and evaluate policies, budgets and financial management practices.
- Ensure sound, ethical and legal board governance operations.
- Develop and maintain effective partnership with other organizations, community groups and Edmontonians to make Edmonton a safer city for everyone.

REACH Edmonton is a partner on the 24/7 Crisis Diversion program that diverts non-emergency crisis events away from emergency services to support vulnerable Edmontonians 24/7. 70% of referrals come directly through 211 on a dedicated line #3.

REACH has information sharing agreement with all of its partners, including those engaged with the 24/7 Crisis Diversion, Boyle Street Community Services, Canadian Mental Health Association (2-1-1), and HOPE Mission.

There are also stakeholders from the Edmonton Police Service and Alberta Health Services Emergency Medical Services.



REACH dispatches crisis diversion teams around the clock, 365 days a year. They respond to people who are in distress and vulnerable on the streets of Edmonton.

REACH Edmonton is accountable to the City of Edmonton, funders and stakeholders. 66% of its funding is received from the City of Edmonton and 20% from Provincial and Federal Governments and Agencies. The remainder of its funding is received from other grants, contributions and revenues.

An information sharing agreement has been established between all 24/7 Crisis Diversion partners.

### **C. STAFFING**

The program partners are contracted by REACH Edmonton for supervision and frontline staff service delivery.

### **D. CURRENT PROCESSES AND WORKFLOWS**

REACH does not respond to requests for service, that is performed by contract service providers.

### **E. TECHNOLOGY, DATA and COMMUNICATION PLATFORM**

REACH has developed databases and systems to provide extensive qualitative and quantitative data. The program is currently using Survey123 and ArcGIS to capture data, develop metrics and produce hotspot maps. The team is in the process of building a new app which will enable the program to share client profiles with partner agencies. This will support follow-up safety and relationship building components of their work. A dashboard has been developed to enable real-time data collection and analysis.

## **1.9 CANADIAN MENTAL HEALTH ASSOCIATION (CMHA) & 2-1-1 EDMONTON**

### **A. SERVICE PROFILE**



The Canadian Mental Health Association is a national charity that helps maintain and improve mental health for all Canadians with over 100 local, provincial and national locations across Canada serving more than 330 communities.

2-1-1 Alberta is a partnership between 2-1-1 Calgary and 2-1-1 Edmonton to deliver 2-1-1 to the communities currently served in Alberta. For community and government agencies, 2-1-1 facilitates information and referral services to community resources. The vision for 2-1-1 Alberta is: *"to have a comprehensive Information and Referral system that is accessible to all Albertans."*

Intake and triage for the mobile vans operated by Boyle Street and Hope Mission are supported through 2-1-1. REACH Edmonton is a key partner in fostering healthy and resilient communities by providing mental health, services, education resources, and crisis intervention.

Call Centre CMHA (2-1-1) is a referral service for REACH Edmonton. This includes Hope Mission and Boyle Street teams. For community and government agencies, 2-1-1 facilitates the effectiveness of front-line delivery of community services, links current and available supports to front line service providers and facilitates direct interface with clients. For emergency responders and emergency managers, 2-1-1 provides an essential communication and organizational channel for government during emergencies and is an effective crisis mitigation resource. 2-1-1 mobilizes and links available resources to emergency preparedness and recovery plans. For government planners and other decision-makers, 2-1-1 data collected from online searches and calls on community and government resources are available in real time to facilitate community and regional social planning that is responsive to local needs in a timely manner to make effective use of available resources.

2-1-1 provides intake and dispatch to the 24/7 Crisis Diversion Program via REACH through a 24/7 Contact Centre. Though not direct, dispatch 2-1-1 and the Distress Line also make frequent referrals and direct reports to police, ambulance and mental health mobile services primarily around suicide risk or mental health crisis.

2-1-1 connects the community to basic needs (food, clothing, shelter and financial support), employment resources, parenting support, counselling/support, groups health care, legal services and MUCH more, for individuals – or their family members, neighbours, friends & colleagues who are looking for help. It provides resources for:

- Anger Management
- Basic Needs
- Children
- Family Violence and Abuse



- Indigenous Peoples
- Newcomers to Canada
- Leisure and Personal Enrichment
- LGBTQ2S
- Men
- Mental Health
- Parents & Caregivers
- People with Addictions-People with Disabilities
- Pregnancy & New Parents-Seniors & Older Adults
- Women
- Youth & Young Adults at Risk

CMHA is working to reposition what they do so they are prepared to address the mental health impacts for marginalized and underserved people.

Currently, 2-1-1 is working to be the “catch all” for the 1-1 numbers, supporting the model that if it’s not an emergency then it should be a call to 2-1-1. They want to be able to provide that level of service for the community.

Service level metrics:

- 80% answered within 90 seconds.
- Average speed of answer.
- Call duration times.

## **B. GOVERNANCE**

The Canadian Mental Health Association (CMHA) is a national charity that helps maintain and improve mental health for all Canadians with over 100 local, provincial and national locations across Canada serving more than 330 communities.

CMHA’s vision is: “Mentally healthy people in a healthy society.” Its’ mission is: “As the nation-wide leader and champion for mental health, CMHA facilitates access to the resources people require to maintain and improve mental health and community integration, build resilience, and support recovery from mental illness.”



The CMHA Alberta division has a 17-member Board of Directors with 3 representatives from Edmonton. 2-1-1 Edmonton is operated and governed by CMHA - ER. The CMHA Edmonton Region (CMHA-ER) operates with a Board of 12 members.

2-1-1 is accredited in Canada, USA and Internationally.

The following budgets were identified for the previous five years:

### **C. FACILITIES**

The 2-1-1 Contact Centre is located in the CMHA Edmonton facility at #300, 10010-105 Street NW.

The Contact Centre location is on a separate floor from the main office in a dedicated space with no identifiers beyond being a CMHA private space for employees only. Currently Distress Line operations are on site at this location as well. Currently, 2-1-1 operation are being completed by remote workers in their own homes.

CMHA has a robust business continuity plan for the contact centre and agency operations. There is sufficient risk mitigation around internet and redundancies/fail over options in the event of internet or power outage within the space.

There are back up agreements with a Contact Centre in Calgary to cover off should the Edmonton system be fully shut down.

### **D. STAFFING**

Partners are contracted by REACH Edmonton for Supervision and frontline staff service delivery.

There are 35 FTE, 21 direct service provision of intake, 11.5 back up and overflow coverage as needed. Supported by 2 Team Lead, 1 Quality Assurance Coordinator and 1 Manager.

Primarily 5-day work weeks, 7.5 hour shifts. Back fill of days off by relief staff. Note: Model is currently under review. Currently, there is an occupancy rate of 60-80%.

### **E. CURRENT PROCESSES AND WORKFLOWS**



## **F. Edmonton 2-1-1 provides service for northern Alberta (Ponoka North) and Northwest Territories and Nunavut.**

- 2-1-1 receives requests for service through the following intakes:
  - 2-1-1
  - Text 2-1-1
  - Live Chat
- Phone intake using IVR phone answering system push # 1 Referral to programs, #2 Senior programs, # 3 Crisis Diversion.
- 2-1-1 Press 3 call answered by Certified resources and information referral specialties.
- Non-Scripted intake needs assessment is done on every call.
  - They are able to triage the calls the calls to the appropriate agency.
  - Many times, the caller is a family, or friend calling for the person in crisis 3<sup>rd</sup> party caller, 2-1-1 gets the DOB, Name ID the needs, 2-1-1 may do coaching or transfer to a program, the wait times are kept 3 minutes or less, depending on intake sometimes a call back follow is warranted.
- Follow up program for Suicide where the risk level appropriately, follow up day 1, week 1,
- If it's a call that is an emergency 2-1-1 will send back to 9-1-1, approx. 100 call year,
- Conduct post contact surveys both automated and in person (10%)
  - Want to see people getting services - did 2-1-1 staff understand the need was and help provide information on support.

## **G. TECHNOLOGY, DATA and COMMUNICATION PLATFORM**

- Contact Q-Virtual Contact Centre
- iCarol- Contact Management Software, primary tool for contact documentation.
  - Also the current intake into live online chat
- IVRnet- text interaction/dispatch tool
- Cloud Based Solution,
  - with data held on Canadian servers (including back up)

A new phone system is being implemented and they are in the process of updating materials, have done some improvements within their continuity plans and are working to flesh out with the new system as it allows for much more interoperability.



## 1.10 HOPE MISSION

### A. SERVICE PROFILE

Hope Mission is a not-for-profit Christian social agency with locations in Edmonton, Calgary, Red Deer and Wetaskiwin. It was founded in Edmonton in 1929 and has been serving Edmonton's homeless community with meals and critical care, addiction recovery and spiritual care, shelter and housing and kids and youth outreach services.

The mission of Hope Mission is: "Hope Mission exists to serve, strengthen and uplift men, women, youth and children through the life-changing gospel of Jesus Christ."

The leadership is under the direction of an Executive Director with 47% of its funding coming from donations, 27% from government grants, 15% from trusts and foundations and 11% in other revenues.

Partners include REACH, AHS, EFRS and other funders in the crisis diversion initiative. REACH Edmonton sets the terms of funding in contracts for this collaborative partnership. Hope Mission is funded by REACH, private donations, Hope Mission's Hope Bargain Shoppe, and in-kind from AHS for vehicles and fuel, maintenance from the City of Edmonton.

AHS medically clears the person and instead of taking them to acute care Hospital, Hope Mission will transport to shelter detox or shelter.

In 2016, Hope Mission was approached by REACH Edmonton to expand services with AHS partnership to 12-hour day model seven days a week to a 24/7. Hope Mission provides education and awareness about services and when to call 9-1-1 versus 2-1-1. They provide clothing items hygiene products and food and water warm clothing in the winter, while building relational equity and trust within the community.

### B. GOVERNANCE

Hope Mission's vision is "that men, women, youth and children who we service would come to know Jesus Christ as their personal Lord and Saviour." Hope Mission provides to the community mental wellness services, outreach programs, crisis diversion, and cultural support services.



Operate a 24/7 Rescue Van which provides emergency care for people in need. Hope Mission is client directed and client focused approach, we always want the best for that person but at the same time they have choices.

Volunteers visit people on the street, in prisons, hospitals and other agencies., Hope Mission's Bargain Shoppe provides clients with clothing, blankets and workwear while generating revenue which directly supports our programs and services.

Crisis diversion is intended to assist in diverting calls for service or additional work away from emergency services. Doing community engagement in between calls, meeting people in the community and also meeting with businesses, and other organizations.

Will respond to calls from "known" clients who use the service frequently without other emergency agencies when appropriate. In building relationships there are more situations where Hope Mission will respond without other emergency services.

## **C. FACILITIES**

Hope Mission operates multiple programs, a church, drop-in centres, shelters and housing.

## **D. STAFFING**

Hope Mission staff members are from different backgrounds, they attract a lot of younger staff members who are EMTs Paramedic or even police in training, registered social workers or working through education

Hope Mission had five teams on the road this winter for a total of 60 hours of service in a day.

Staff are trained in nonviolent crisis intervention.

## **E. CURRENT PROCESSES AND WORKFLOWS**

- Hope Mission receives requests for service through the following intakes:
  - 2-1-1



- AHS (CAD to Text notifications)
- Direct calls from other agency
  - Police (including PACT, BEATS and Patrol)
  - AHS
  - Peace Officers
  - Transit
- On view by units
- 2-1-1 Press 3 call answered by Certified resources and information referral specialties.
- 2-1-1 triage the intake calls connects with the appropriate agency.
- Agency requesting service will call one generic line that is programmed (hunt grouping) to go to the first team and if they are busy (30 seconds), it will continue to rotate through the team cell phones until someone answers
- If the call is from AHS it will come as a CAD to SMS text and then the team will follow up with a call to get details AHS.
- EPS can live transfer over to 2-1-1 dispatch if deem as inappropriate for police response more appropriate for our teams.
- When there are multiple calls for service the team will prioritize the calls based on a decision matrix:
  - what is likelihood versus severity
- If person is actively trying to harm us or themselves or acting out to get a quicker response teams will call the EPS BEATS teams directly or 9-1-1
- Surveys that we use for the different functions of our team, collect data around crisis diversion events, community engagement for meeting.

## **F. TECHNOLOGY, DATA AND COMMUNICATION PLATFORMS**

- Similar platforms and approach as 2-1-1 and REACH
- Use cell phones mostly, with access to the REACH App.
- Includes a dashboard which has been a very successful project,
  - Used to track key information that helped the staff follow a client program, housing, and support plan.
- Developing a new dashboard now for all stats and working with REACH to build new APP.
- Staff works with iPads and use apps to collect data,
- Data Geo tagged to allow for response and hot spot mapping.



## 1.11 BOYLE STREET COMMUNITY SERVICES

### A. SERVICE PROFILE

Boyle Street's mission is "to end chronic homelessness".

Boyle Street's vision is "To see that all people grow healthier through involvement in strong accepting and respectful communities".

They have over 40 programs with 8-9 different sites comprising of group living programs, and group homes for children and youth. The programs are constantly in direct communication with emergency services for our crisis diversion program. Boyle Street provides to the community mental wellness services, outreach programs, crisis diversion, cultural support services, shelters, housing and drop in services.

Outreach programs are conducted, in coordination with the City, Park Rangers, and EPS in response to homeless camps.

Calls and response times and connecting people to other services and successful handoffs and being able to find the person when they call. Boyle Street looks at calls and response times and connecting people to other services and successful handoffs. The measuring and connecting people to housing services and to mental wellness services is important, as well as providing follow up services.

### B. GOVERNANCE

Founded in 1971, Boyle Street Community Services (BSCS) is the trade name of the Boyle Street Services Society – an Alberta society and registered charity. It has nine locations across Edmonton providing youth and family support, housing and outreach and supervised consumption services to over 12,000 individuals every year.

The Vision of BSCS is: "Our vision is to see that all people grow healthier through involvement in strong, accepting communities."

The mission is: "The mission of Boyle Street Community services is to end chronic homelessness."

The mandate is: "Boyle Street Community Services has been working in the inner city of Edmonton



since 1971 to serve, support and empower people to take control of their lives and escape the cycle of poverty and homelessness.”

BSCS has a 9-member board of directors who hire and performance manage an Executive Director. 40% of its funding is provided through Provincial Government grants, 40% through Federal Government Grants and 20% through donations, fundraising, sponsorships and financing.

### **C. FACILITIES**

Boyle Street has nine different sites now in Edmonton - two hotels as a response to the COVID pandemic, a response at the convention center, 300-person capacity. Provides largest drop in facility in the city seeing 100 people a day.

### **D. STAFFING**

The following staff have been identified:

- Director of Programs
- Senior programs manager,
- Four Managers (four or five programs each)

Currently have very few volunteers due to COVID, it is all paid staff.

4 Vans used for transportation.

### **E. CURRENT PROCESSES AND WORKFLOWS**

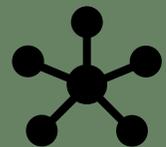
- Boyle Street receives requests for service through the following intakes:
  - 2-1-1
  - Direct calls from other agency
    - Police (including PACT, BEATS and Patrol)
    - AHS



- Peace Officers
- Transit
  - On view by units
- 2-1-1 Press 3 call answered by Certified resources and information referral specialties.
- 2-1-1 triage the intake calls connects with the appropriate agency.

## **F. TECHNOLOGY, DATA AND COMMUNICATION PLATFORMS**

- APP developed based on what Boyle Street needs were for their program.
- Boyle Street was using ETL Edmonton housing data base previously.
- SharePoint is the system they are using for collecting data.
- Phone and iPad to communicate.



# APPENDIX I

HUB MODEL OVERVIEW

INTEGRATED CALL EVALUATION AND DISPATCH BUSINESS CASE



# APPENDIX I - HUB MODEL OVERVIEW

## HUBS OVERVIEW

In the public safety function, the hub is one part of a model designed to improve a much broader set of social outcomes, including reducing crime, violence and victimization. As such, this is a model in which policing has a vital role to play, alongside others, and from which policing has much to gain.<sup>1</sup>

Typically, hubs operate at the operational level, enabling practitioners and agencies to align and support efforts to address common problems. The EPS Integrated Call Evaluation and Dispatch concept moves the hub process further upstream and could ensure incidents are immediately referred to the most appropriate agency or agencies.

## HUBS – JOINTLY-LOCATED, INTER-AGENCY FUNCTIONS

A consensus has emerged in the literature (Fine 2005, Moore 2008, McAlpine 2014) on a continuum of integration, varying from networking through tighter connections and ultimately to full integration. This continuum can be summarized as:

- Networking – informal or structured communication between autonomous agencies to build knowledge of local services and support cross referral of clients
- Co-location – sharing space and back-office functions; typically, with a lead agency
- Cooperation – sharing space plus joint projects which supplement the core services provided by the agencies in the hub
- Collaboration – significant joint projects which expand the service offering, and/or provide central intake; this requires joint governance, clear leadership and investment in the capacity of agencies to work together
- Integration – seamless service delivery in which the client is not aware multiple agencies are involved or full amalgamation in which the agencies relinquish their individual identity and autonomy to a new entity which controls the services in the hub<sup>2</sup>

Over the last four decades, social services, health, and policing agencies involved in protective services have been subject to high-profile public criticism and governmental review for failures to safeguard vulnerable individuals, most especially, children and youth.<sup>3</sup> Partnership structures of

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<sup>1</sup> Change and Innovation in Canadian Policing, Canadian Police College Discussion Paper Series. 2014

<sup>2</sup> Romeril, B. 2014

<sup>3</sup> For a sampling of key inquiries and reviews highlighting the need for a different approach to child protection see the following: Victoria. Protecting Victoria's Vulnerable Children Inquiry, Cummins, P. D., Scott, D., & Scales, B. (2012). Report of the protecting Victoria's vulnerable children inquiry (p. 178). Melbourne, VIC: Department of Premier and Cabinet. Tonmyr, L., Ouimet, C., & Ugnat, A. M. (2012). A review of findings from the Canadian Incidence Study of Reported Child Abuse and



varying degrees have been evident between such agencies for decades, however, progress towards jointly located multi-agency centers with local authority have been slow to develop despite the recognition that such a response is required to improve protection of vulnerable persons.

Only recently has there been evidence of coordinated “one-stop-shop” interventions in projects in the United Kingdom, United States, Australia, and Canada.<sup>4</sup> Identified as Hubs or CORs (Center of Responsibility) in Canada, these centers aim to bring together agencies such as children’s services, police, health, and education to offer multiparty, confidential risk assessment screening, collated information research and exchange, joint decision-making, and coordinated case management and referral. Dunne and Finalay (2016) highlight these hub’s ability to facilitate more effective safeguarding management by identifying risks at the earliest possible point and responding with the most effective interventions, all while promoting collaborative professional work and information exchange.

Early literature on co-located multi-agency safeguarding almost exclusively addresses women and children in domestic violence situations (Stanley, 2015; Stanley and Humphreys, 2014; Stevens et al., 2016; Joseph et al., 2015; Thomas, 2013). One of the earliest jointly located, multi-agency services was the Family Justice Centers in San Diego, California, which located prosecutors, police, civil legal advocates, and community-based advocates in one place to provide comprehensive services to victims of domestic violence (EMT Associates, 2013). An evaluation of eight of these centers found that women came with multiple needs, and the majority of these women used between 1.3 and 4.4 types of services, the most common being legal and advocacy/support (EMT Associates, 2013). Barry et al. found that these multi-agency centers may be particularly appropriate for rural families who can access a range of services in one trip into their closest municipality.

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<sup>4</sup> Also known as Multi-Agency Safeguarding Hubs (MASHs) in the United Kingdom; Risk and Concern Management Hubs in Scotland; San Diego, California’s Family Justice Centers



Adult safeguarding in such hubs is the subject of increasing attention in England especially, but also internationally (Graham et al., 2016; Stevens et al., 2016; Farquharson, 2016). Examples in recent years include integrated adult offender management services (Disley et al. 2016; Dyer and Biddle, 2016; Evans, 2016), and evidence of partnering fire and rescue service, adult social care, health, and the police to support the aging and elderly (Dalziel and Willis, 2015).

## MULTI-AGENCY RISK ASSESSMENT CHALLENGES

Stanley and Humphreys (2014) outline challenges inherent in early cross-collaborative initiatives in relation to multi-agency risk assessment and management in domestic violence situations which have implications for reporting and referral, namely, identification of the primary client and focus of the risk assessment; the collection of information to inform risk assessment; the position of the child and family within risk assessment assess with or to the clients; and finally, who is “risk assessed and managed”, and at what stage or point does this take place in the response. Their review emphasizes how outcomes are reflective of the process of information gathering, and of the data collection for risk assessment and management.

*Risk assessments are only as good as the information that informs them, but different agencies collect and rely on different bodies of information; this information is gathered in varying contexts and different tools are used to sort and structure it. Integrating different data-sets and contrasting sources of information is one of the key arguments for interagency collaboration and communication in the field of child protection, but the extent to which different organizations draw on differently constructed and constituted forms of information is often under-recognized in practice. (Stanley and Humphreys, 2014, p.80)*

Equally troublesome as the context of information gathering is the time-frame within which risk assessment takes place. Stanley et al. (2010) states the immediacy of the police assessment is rooted in the incident itself, in contrast to social services which works over a longer timeframe to contain risk over time. Additionally, risk assessment tools used by these agencies, though sharing some commonalities, differ.

*There are also differences in whether such tools have been developed as actuarial tools to predict and judge future risk, or whether they were conceived as tools to assist decision-making, based on risk factor analysis but not tested, validated or designed to provide measurable risk assessments. Moreover, the same risk factors may be interpreted differently by different services. (Stanley and Humphries, 2010, p. 80)*

While many studies point to information exchange as the key component of multi-agency risk assessment, Stanley and Humphreys (2014) emphasize that differences in client focus and collation of information suggest divergent practice amongst professionals with respect to information



exchange protocols. Traditionally these communication issues have been attributed to concerns about confidentiality and freedom of information, however, Golden, Aston, and Durbin (2011) state that interagency information sharing is freed from concerns by designating the jointly located multi-agency team as a 'sealed intelligence hub' (p. 2) where information can be collated and released from the agencies' databases, and used to inform risk assessment with protocols covering its dissemination outside the hub. Luckock, Barlow and Brown (2015) note achieving reliability and legitimacy in these safeguarding relationships at the service level is dependent upon the integrity of the dialogue facilitated in each individual case.

In Banks, Dutch, and Wang's (2008) evaluation of a co-location initiative in the United States, domestic violence advocates in child welfare teams acted to bridge gaps between systems and highlighted the value of 'institutional empathy' in coming to an understanding of inter-professional and inter-agency differences. In a similar psychoanalytical examination, Madembo (2015) studied these unconscious, "beneath the surface" processes to determine whether an understanding and consideration of the emotional and the unconscious processes in organizations is the missing link in strengthening multiagency partnership working in safeguarding and protecting vulnerable children and their families. The research confirmed the presence of unconscious processes at work which centered on individual and organizational defenses, revealing that

*multi-agency partnerships are often the context for a range of complex interactions between and amongst individual, professional and organizational aspects of working together....that collaborative structures need to foster boundary negotiation capabilities in order to sustain the survival of the partnerships... (and) traditional organizational and professional roles and general government prescriptions also need to adapt to new and challenging social problems and come up with context specific solutions.*

In 2015 Joseph et al. noted the prevalence of this change in terminology from "multi-agency, multi-professional" to "inter-agency and inter-professional", signifying a move from recognizing the multiple professions involved in co-location to an emphasis on the relationships involved (inter).

The implementation of the multi-agency hubs has created a cultural and organizational shift due in part to co-location and the recognition that a collaborative multiagency shared objective is the best practice for safeguarding of vulnerable individuals. Increasingly, these hubs are being used as an instrument for acquiring and entrenching the specialized skills and knowledge amongst team members in this process of risk assessment and management.

Hood, Gillespie & Davies (2016) attempt to develop a concept of inter-professional expertise, complete with theoretical frameworks and models of skill acquisition, to aid practitioners in becoming more proficient at collaborating to manage child safeguarding issues. Evidence by Joseph et al (2016) corroborates this "state of play" and further offers to identify inter-professional



and inter-agency education and training resources with key performance indicators to enable later evaluation and monitoring. Knowledge performance indicators (KPIs) aimed at defining and measuring the progression towards organizational and inter-organizational goals include:

Pre-qualifying KPIs relating to the attributes that health and social care graduates and police probationers should acquire on qualification are:

- Recognize inter-agency working and professional expertise in relation to public protection
- Demonstrate awareness of public protection legislation and the issues of concern
- Analyze challenging situations with client groups and consider solutions using team approaches
- Analyze effective collaborative practice, evaluating his/her future contribution to working this way

Initial post-qualifying KPIs for professionals working with the public

- Recognize and understand the police and partner agencies' roles in public protection legislation
- Explain his/her role and responsibilities clearly to other agencies and discharge them to the satisfaction of those others
- Work flexibly across organizational boundaries facilitating information sharing and cooperation for joint assessments and shared decision making
- Identify the constraints of one's own roles, responsibilities and competence recognizing the need for further training

Specialized post-qualifying KPIs for professionals working with clients requiring support and protection:

- Work effectively with other agencies to review processes, effect change, improve standards, solve problems and strive to resolve conflict amongst professionals.
- Work collaboratively to engage with team members who are not operating appropriately with public protection legislation. appreciating differences, misunderstandings, ambiguities, shortcomings and unilateral change in another profession
- Operationalize interdependent relationships, sharing information, alerting one another to changing client situations and developing trust and respect for different professional expertise
- Work effectively across boundaries, facilitating positive experiences at interagency case conferences, meetings, and networking
- Identify the need for specialized training, making recommendations for the content and scope of future interagency training.



Literature in regards to this organizational and managerial strategy is only in its infancy, and primarily originates from the UK. The evidence that is available on jointly located multi-agency hubs is primarily in the form of process evaluations and models as seen above, and has only recently begun to address efficiency and costing outcomes to any significant end (Stevens, 2016). For example, a recent audit of decision-making made by a multi-agency team over a twelve-month period found performance graded at 85.8% (as either good or outstanding). Where service response was found to be inadequate (3.5%), cases could be rectified within the week of the audit (Dunne and Finalay, 2016).

Costing is another matter, as Thomas (2013) points out that costs can fall differently on different partners. Holmes et al.(2012) concurs that these interagency groups and structures can require considerable resourcing, but states this may be justifiable if the accuracy of assessments improves as a consequence of the increased amount and range of information available to inform decisions, and if more vulnerable individuals receive appropriate, timely, high-quality interventions. Easton et al. (2010) cautions that while there is some evidence of positive outcomes from such systems, we might be concerned that risk assessment is being prioritized at the expense of risk management, since on its own risk assessment does not support individuals, achieve change or provide interventions.

A recently released example of Saskatchewan educators linking with hub initiatives details how local leaders, community health, and social services have mobilized for collective action to support communities and populations at risk (Salm et al., 2016). Inspired by similar ingenuities in Scotland, leaders designed and pioneered a comprehensive school-linked, community-based service to address the specific needs, problems, and opportunities of these Saskatchewan residents. Both “the Hub” and “the Centre of Responsibility” (COR) serve as intermediaries for services provision and policy coordination and change, removing the burden previously placed solely on these educators. The lessons learned for other leaders are detailed in the report, as well as procedures for confidentiality protections and the community linkage strategies that were developed for educators and schools.



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# APPENDIX K

## RISKS AND RISK MITIGATION

INTEGRATED CALL EVALUATION AND DISPATCH BUSINESS CASE



RISK	ORGANIZATIONS INVOLVED / AFFECTED	MITIGATION
Insufficient staff to address anticipated demand	24/7 Crisis Diversion (REACH)	Establish data collection (baseline and ongoing) and monitoring of service quality and changes, assess staffing loads and requirements, bring to Steering and Working groups to assess impact and resolution.
	24/7 Crisis Diversion (BOYLE STREET)	
	24/7 Crisis Diversion (HOPE MISSION)	
	AHS – AMH	
	Edmonton 3-1-1	
Inadequate information to effectively fulfil an integrated role	AHS – AMH	Develop list of required information, review constraints imposed by related legislation, and submit to Working Group and Steering Committee for prospective development of MOUs.
	EPS	
	EFRS	
	ETS	
	Edmonton 3-1-1	
	CSB	
<p>Inaccurate assessment of incident at intake resulting in:</p> <ul style="list-style-type: none"> <li>· Delayed attendance of EMS / EPS / EFRS / ETS</li> <li>· Danger to attending staff / personnel</li> </ul> <p>Inaccurate assessment of incident and location (e.g. Park System) at intake resulting in:</p> <ul style="list-style-type: none"> <li>· Delayed attendance of personnel</li> </ul>	24/7 Crisis Diversion (REACH)	Accurate intake processes, by incident types, developed by Working Groups and Steering Committee with tipping points clearly established; information regarding location history/individual made available; training of intake and organization personnel; ongoing assessment of evaluation and service quality.
	24/7 Crisis Diversion (BOYLE STREET)	
	24/7 Crisis Diversion (HOPE MISSION)	
	EPS	
	EFRS	
	ETS	
	AHS – EMS	
Reliance upon non-City organizations to actively become engaged in the integration process.	COE	Development of an MOU with roles and responsibilities clearly delineated and funding considered.
Public fails to understand the new integration processes.	COE	An essential element of the Integration process is the development of information packages for media, the public, and organization staff regarding the changed processes and the service benefits and ongoing public engagement.
Inability to accurately assess the value of the integration initiatives.	COE	Establish governance process to oversee implementation and development of elements, data collection (baseline and ongoing) and monitoring of service quality and changes, seek public, user and stakeholder input.
Perceived differences between the role of the Organization Board / Council + City Directors / Police Commission / AHS Provincial Board / CMHA Board and the role of governance of the integration process.	24/7 Crisis Diversion (REACH)	Development of an MOU with roles and responsibilities clearly delineated.
	24/7 Crisis Diversion (BOYLE STREET)	
	24/7 Crisis Diversion (HOPE MISSION)	
	CMHA – 2-1-1	
	AHS – AMH	
	AHS – EMS	
	EPS	



RISK	ORGANIZATIONS INVOLVED / AFFECTED	MITIGATION
	COE	
<p>With focus upon more appropriate use of social service skills and experience of personnel vs. attendance of police, greater potential for personnel to interact with violent offenders.</p>	24/7 Crisis Diversion (REACH)	<p>Appropriate training of personnel in de-escalation skills. Provide to attending personnel information regarding violent history or access to weapons - based upon MOU addressing sharing of information.</p>
	24/7 Crisis Diversion (BOYLE STREET)	
	24/7 Crisis Diversion (HOPE MISSION)	
	ETS	
	CSB	
	AHS – EMS	
	AHS – AMH	
CMHA – 2-1-1		
<p>Inability to provide 24/7 coverage requires alternative organization involvement.</p>	Edmonton 3-1-1	<p>Establish data collection (baseline and ongoing) and monitoring of service quality and changes, assess staffing loads and requirements, bring to Steering and Working groups to assess impact and resolution. In the interim, MOUs to address service gap.</p>
<p>Potential loss of income from 9-1-1 levy.</p>	EPS	<p>Establish data collection (baseline and ongoing), budgeting and monitoring of service quality and changes, bring to Steering and Working groups to assess impact of changes in cost/revenue and resolution. In the interim, MOUs to address service gap.</p>

# APPENDIX L

MOU and Legislation Summary

INTEGRATED CALL EVALUATION AND DISPATCH BUSINESS CASE



**WHO'S INVOLVED**

MOU	Edmonton Police Service (EPS)	Edmonton Fire Rescue Service (EFRS)	City of Edmonton (CoE)	Alberta Health Services (AHS)- Emergency Medical Services (EMS)	Alberta Health Services (AHS) - Addictions and Mental Health	Alberta Gaming and Liquor Commission	Ministry of JSG + ML	24\7 Crisis Diversion (BOYLE STREET)	24\7 Crisis Diversion (HOPE MISSION)	24\7 Crisis Diversion (REACH)	Community Standards Branch	Edmonto Transit Service	Canadian Mental Health Association (CMHA) 211	<b>Scope</b>
MOU 189 COE Planning and Dev, EPS, AGLC, and Edm Fire Rescue	x	x	x			x								Defines <b>Public Safety Compliance Team</b> duties and jurisdiction.
CLM 204128 MOU PACT Draft EPS and AHS 2019 (Draft)	x			x										Defines <b>Police and Crisis Team</b> duties and jurisdiction.
MOU-29 2018 EPS & AHS EMS – Tactical Emerg Medical Support Paramedics - NA	x			x										Defines purpose and objectives of TEMS program and nature of working relationship
MOU-87 EPS & EFRS – Emergency Response – NA	x	x												Details the responsibility of EPS and EFRS members in context of serious collision sites.
MOU-158a EPS & AHS – Use of Pub Safe Pub Svc Radio Syst-0116	x		x	x										Agreement regarding the use of an EDACS trunked mobile radio system by AHS
MOU-191(a) EPS & AHS-IC PACT extension	x			x										Agreement to extend previous agreement.



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MOU-192 EPS and Edm Fire Rescue Helicopter	x	x												<i>Articulates arrangements for use of Edmonton Police Service helicopter by the Edmonton Fire Rescue Services.</i>
MOU-221 EPS & AHS Forensic Assess & Comm Svc	x	x												<i>Defines purpose and objectives of the <b>strategic alliance</b></i>
MOU-265 EPS & AHS & COE – Residential Living Governance Committee	x		x	x			x							<i>Define roles and responsibilities of City, AHS, EPS, and GOA in the Residential Living Governance Committee</i>
Sharing Agreements with AFRRCS for sharing AFRRCS talk groups	x	x	x	x							x	x		<i>All agencies using AFRRCS</i>
MOUs exist between Community Standards Peace Officers and ETS											x	x		<i>Service delivery MOU</i>



# APPENDIX J

NIEM OVERVIEW

INTEGRATED CALL EVALUATION AND DISPATCH BUSINESS CASE



## APPENDIX J - NIEM OVERVIEW

Data standards, such as NIEM, are very useful, in principle, as they theoretically allow information from diverse agencies or sources to be,

- amalgamated to increase the depth of individual data records, or
- correlated so that a single query about an individual or “object” in the database in general can return several potential hits.

These ‘hits’ can then either be viewed separately or combined into a higher-level result.

The use of the same data standard (such as NIEM) and then making the information available to other agencies via query, can be superior in context-sensitive or privacy-sensitive agencies, as the organization may only wish to allow limited access to its full data set. The organization can either create a database “view” to which it publishes those legally and policy-acceptable data elements, or just extract a subset of the entire dataset which can then be shared with the other integrated partners. This allows wary agencies (for example, as was mentioned in interviews, those who do not trust the police use of sensitive data) to participate to the level they feel comfortable.

This is, essentially, the approach used by the current Police Information Portal (PIP), first conceived and proposed by the Vancouver Police circa 1999, where many police agencies across Canada can decide to “publish to the PIP” and push only acceptable (in their terms) data elements to the centralized database for incidents, victims, suspects, or witnesses. All police agencies can query the PIP but will get “hits” only based on information which each individual organization has chosen to publish within the terms of an information sharing MOU.

So, a data standard such as NIEM is a very good idea. Ideally, every organization would use the same standard and set up their databases so that they follow NIEM’s recommended information scheme (data division and layout). This would potentially allow all agencies to share all data. This is similar to all computers on the Internet using the TCP/IP data communications standard. It allows a web site to be visited by a Mac, a PC, or a mobile phone. It allows email from one type of computer or version of operating system to be sent and received by any other user also using TCP/IP.

However, the problem with such data standards is that most agencies have a somewhat inadequate understanding of the complexity of these standards, and, consequently, the standards related to sharing may be incomplete, unwieldy or of limited practicality. However, even given the possible limitations, having a standard is better than having none.

Another issue is that disparate agencies will often have different understandings as to the meaning of data, how to determine its veracity, and how data elements relate to one another. For example, the legal standards used by police or AHS, may not be understood or supported by, say, a fire department that may care less about the accuracy of, or access to, recorded information concerning individuals. AHS may have a different understanding or approach to data-linking parties to one another than police, or many other similar



convolutions of what data relationships may or may not be valid. For example, if police use this data to link people and identify a suspect, then that may not be acceptable to another organization. Likewise, the police may miss a linkage between suspect/victim because it was not perceived as relevant nor recorded by another non-police organization. Alternatively, a community organization which possesses confidential family or addiction related information on a client may have reservations concerning access by other agencies.

Thus, in the use of approaches such as NIEMS, there will always be a caution factor, and a need on the part of integrated agencies for wariness and consideration of where a particular piece of information originated, its veracity, and its degree of confidentiality.

The use of data standards such as NIEM will have significant overhead costs for implementation and maintenance as the sharing standards change over time, as will individual organization policies of what data can be captured, how it can be stored, and how it can be shared. The standards are always in flux and the costs in keeping an organization's dataset in compliance as the standard evolves must be considered. In addition, it is laudable and essential to integration that a common data standard is adopted for the Integration project. However, as planning progresses it should be remembered that using a common data standard is significantly different from being on the same vendors system.

# APPENDIX N

9-1-1 Levy

INTEGRATED CALL EVALUATION AND DISPATCH BUSINESS CASE



## SUBSIDIES FROM THE 9-1-1 PROVINCIAL LEVY<sup>1</sup>.

*Bill 56: the Local Measures Statutes Amendment Act, 2021* will deliver job-creating capital funding for municipalities and provide additional funding to 9-1-1 centres to help promote economic recovery and enhance safety systems.

1-1 centres will receive funding to upgrade outdated systems and improve the delivery of emergency call answering services to Albertans. This would place Alberta's centres on the same technological platforms as all other centres across Canada, and increase operational efficiency between centres when answering emergency calls.

Once completed in 2024, the updates would allow:

- Albertans the ability to text 9-1-1 in situations where they cannot call
- Enhance location accuracy for emergency calls
- Calls to be transferred seamlessly from one centre to another using the same technology
- *Bill 56* will involve amendment to two pieces of legislation, the *Local Government Fiscal Framework Act* and the *Emergency 9-1-1 Act*. The first is, primarily, outlining the financial commitments. The *Emergency 9-1-1 Act* will impact Edmonton in a more direct, operational, way.
- Update 30-year-old systems to align with federally-mandated technology upgrades
- Broaden the act to include secondary 9-1-1 centres so they are able to apply for funding generated by the wireless levy
- Increase the wireless 9-1-1 levy from 44 cents to 95 cents to help pay for the federally mandated technology modernizations, expected to cost \$41 million annually
- Outline requirements for 9-1-1 centres to comply with Canadian Radio-television Telecommunications mandated changes
- Create administration section of the Standards to include requirements for record management and staff training practices
- Emergency 9-1-1
- Alberta's 9-1-1 centres will spend an additional \$41 million per year to modernize and meet the federally mandated Next Generation 9-1-1 (NG9-1-1) technology standard by March 30, 2024.
- Currently, the 9-1-1 levy charges cellphone users 44 cents per month.
- An increase of 51 cents will make the monthly levy total 95 cents.
- Municipalities pay for about half the 9-1-1 costs. The remaining costs are funded through wireless and landline 9-1-1 levies.
- Primary 9-1-1 centres receive calls directly from the public and determine the nature of the emergency, caller location and what emergency service is required. Secondary centres evaluate the caller's needs and dispatch emergency services accordingly. Currently, agencies that operate secondary 9-1-1 centres pay for all 9-1-1 costs. The new 9-1-1 Standards will apply to all primary and secondary 9-1-1 call centres in Alberta and include sections on cybersecurity requirements and timelines for call centres to upgrade to the new 9-1-1 technology.

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<sup>1</sup> Abridged from Ministry of Municipal Affairs, website.



- The 9-1-1 levy funds about half of emergency call centre costs while municipalities pay the rest. In 2018-19, the City of Edmonton's emergency call centre received \$3.5 million from the provincial levy.
- If passed, Bill 56 will take effect upon proclamation.
- The *Local Government Fiscal Framework Act* would come into effect on April 1, 2021. The 9-1-1 levy would come into effect on September 1, 2021.

AHS, EPS and EFRS have representatives on the AEAA which liaises with the AMEA regarding the changes in levy funding and legislation.



# APPENDIX M

HEALTH INFORMATION ACT AND REGULATION

INTEGRATED CALL EVALUATION AND DISPATCH BUSINESS CASE



# APPENDIX M - HEALTH INFORMATION ACT AND REGULATION

## DEFINITIONS

1 (k) “health information” means one or both of the following:

- (i) diagnostic, treatment and care information
- (ii) registration information

1 (p) “individually identifying”, when used to describe health information, means that the identity of the individual who is the subject of the information can be readily ascertained from the information

1 (t) “record” means a record of health information in any form and includes notes, images, audiovisual recordings, x-rays, books, documents, maps, drawings, photographs, letters, vouchers and papers and any other information that is written, photographed, recorded or stored in any manner, but does not include software or any mechanism that produces records

1 (u) “registration information” means information relating to an individual that falls within the following general categories and is more specifically described in the regulations:

- (i) demographic information, including the individual’s personal health number
- (ii) location information
- (iii) telecommunications information
- (iv) residency information
- (v) health service eligibility information
- (vi) billing information

1 (w) “use” means to apply health information for a purpose and includes reproducing the information, but does not include disclosing the information

## PURPOSES OF ACT

2 The purposes of this Act are

- a) to establish strong and effective mechanisms to protect the privacy of individuals with respect to their health information and to protect the confidentiality of that information
- b) to enable health information to be shared and accessed, where appropriate, to provide health services and to manage the health system



- c) to prescribe rules for the collection, use and disclosure of health information, which are to be carried out in the most limited manner and with the highest degree of anonymity that is possible in the circumstances

## DISCLOSURE TO PROTECT PUBLIC HEALTH AND SAFETY

37.3 (1) A custodian may disclose individually identifying health information referred to in subsection (2) without the consent of the individual who is the subject of the information to a police service or the Minister of Justice and Solicitor General where the custodian reasonably believes

- a) that the information relates to the possible commission of an offence under a statute or regulation of Alberta or Canada, and
- b) that the disclosure will protect the health and safety of Albertans

(2) A custodian may disclose the following information under subsection (1):

- a) the name of an individual
- b) the date of birth of an individual
- c) the nature of any injury or illness of an individual
- d) the date on which a health service was sought or received by an individual
- e) the location where an individual sought or received a health service
- f) whether any samples of bodily substances were taken from an individual
- g) information specified in section 1(1)(i)(ii) about a health services provider who provided a health service to an individual referred to in subsection (1)

## HEALTH INFORMATION REGULATION

1 (b) “emergency response dispatch services” means the following dispatch services provided by an emergency response services dispatcher:

- (i) receiving requests for emergency response services;
- (ii) in response to a request,
  - (A) gathering information,
  - (B) evaluating the request,
  - (C) providing assistance, and
  - (D) dispatching and supporting emergency response services

1 (c) “emergency response services” means services dispatched by an emergency response services dispatcher in response to an emergency and includes ground ambulance services, air ambulance services, fire services and police services;