



**WATERLOO REGIONAL POLICE SERVICE**

## **FINAL REPORT**

# **911 COMMUNICATIONS CENTER NEEDS ASSESSMENT FOR WATERLOO REGIONAL POLICE SERVICE**

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**APEXPRO CONSULTING INC.**

**JUNE 10, 2022**

# APEXPRO CONSULTING INC.

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30 KARL CRT., THORNHILL ON L4J 8H7 CANADA

June 10, 2022

Mark Crowell  
Deputy Chief  
Administration and Member Services  
Waterloo Regional Police Service  
200 Maplegrove Road  
Cambridge, ON N3H 5M1

Dear Deputy Chief Crowell:

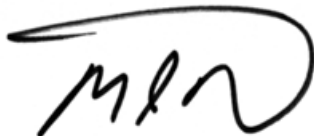
## 911 COMMUNICATIONS CENTER NEEDS ASSESSMENT FOR WATERLOO REGIONAL POLICE SERVICE

It is with great pleasure that we submit our Final Report on the above project. Our main findings are summarized below.

- The 911 communications function is well managed by WRPS. This notwithstanding, the primary 911 center (Maplegrove) operates beyond capacity and cannot readily accommodate additional call volume growth or newly evolving service requirements including NG 911.
- In our opinion, the primary 911 center needs to be replaced at the earliest, if essential 911 communications and service quality are to be maintained. The emergency backup 911 center also needs to be relocated.
- Preferred locations for new primary and backup 911 centers, floor space estimates, and order of magnitude costs, are presented in the report.

Thank you for giving us the opportunity to work on this most interesting assignment.

APEXPRO CONSULTING INC.



Marvin Rubinstein  
President

Enc.

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## Acknowledgements

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Bryan Larkin	Chief Of Police, WRPS
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## Executive Summary

The investigation under this consulting engagement is set out comprehensively in the body of the report. Principal findings and recommendations are summarized below.

### E.1 Project Objectives

WRPS, on behalf of Region of Waterloo, retained ApexPro Consulting Inc. to carry out a needs assessment of the Region's 911 communications center requirements, with the following as principal deliverables.

- 1) Investigate current and future 911 communications center requirements
- 2) Investigate costs to expand / replace both the primary and backup 911 centers.
- 3) Recommend preferred locations for both the primary and backup 911 centers.

### E.2 Context

WRPS and Region of Waterloo have advocated for over 25 years, for eventual consolidation of 911, police, fire, and ambulance dispatch into a fully integrated public safety communications system. It may be several more years before consolidation may eventually be achieved.

The primary 911 center (Maplegrove) needs to be replaced at the earliest, if essential 911 communications and service quality are to be maintained. The main reasons for this are discussed on the following page (under the heading "current challenges").

The emergency backup 911 center also needs to be relocated. The current premises (134 Frederick St., Kitchener) are at end-of-life, and ROW is actively pursuing prospective new occupants.

### E.3 Current Strengths

The 911 communications function is well managed by WRPS. Communications staff are well-trained. Service quality is assured by rigorous training and proactive performance monitoring.

911 communications is supported by ROW's recently implemented Motorola P25 public safety voice radio system. The radio system is entirely IP-based with advanced call processing capabilities designed to meet the needs of public safety agencies. Mission-critical reliability is assured by the system's fault-tolerant architecture and built-in redundancies.

911 communications is also supported by a leading-edge Hexagon CAD with interfaces to critical systems including radio and Niche records management. The CAD is used on a shared basis by members of PRIDE.

Mission-critical 911 systems are well maintained by WRPS Facilities and IT personnel. 911 service continuity is assured by built-in redundancies including backup generators, dedicated HVAC, and uninterrupted power supply (UPS).

Safety and security is assured by on-site lighting, camera coverage, entry intercom system, locked (card access) entries, and visitor screening.

## E.4 Current Challenges

The above notwithstanding, the primary 911 center (Maplegrove) needs to be replaced at the earliest, if essential 911 communications and service quality are to be maintained. The five (5) main reasons for this, are as follows.

1. The center operates beyond capacity. It cannot readily accommodate additional call volume growth.
2. Additional workstations are currently needed but cannot be added due to existing spatial constraints.
3. The center also cannot readily accommodate newly evolving service requirements including NG 911. NG 911 is a federally “mandated” replacement of the 30+ year-old Canadian 911 network by March 4, 2025.
4. The center is over 25 years old, and its design is acutely outdated relative to contemporary best practices, e.g.:
  - Not AODA compliant. Overcrowded.
  - Communications workstation footprint of 90 SF versus contemporary of 150 to 160 SF. Crowding (and noise) is worse at shift change.
  - Climate variations within the center must be monitored daily.
  - No natural lighting. Relatively dark. Not conducive to 12-hour shifts.
  - Workstations are ergonomically friendly, but consoles require update.
  - No on-site training room. No in-center meeting rooms.
  - Also deficient in office space, files and supplies storage, kitchen, break area, quiet room, and lockers for personal belongings storage.
5. Existing spatial constraints are impeding WRPS’ ability to implement two integral extensions to 911 communications, a Real Time Operations Center (RTOC) and Major Incident Support Center (MISC).

The purpose of an RTOC is to provide a law enforcement agency with the ability to capitalize on a wide and expanding range of technologies, including video streaming and social media, for efficient and effective policing.

RTOC should be situated immediately adjacent to the 911 center, not on a separate floor as is currently the case. RTOC should also be augmented with a fully outfitted MISC capable of accommodating the personnel required to manage a major emergency incident.

## E.5 911 Service Demand Drivers

Listed below are the principal drivers of 911 service demand growth.

- Population growth
- Federally mandated migration to NG 911 by March 2025
- Video streaming and other leveraged technologies
- Community-based mental health crisis response initiatives
- 911 communications (dispatch) services for PRIDE.

These service demand drivers, and their potential impacts on 911 center resourcing, are discussed in the body of the report.

## E.6 Potential 911 Center Sites

The needs assessment investigated the following potential 911 center sites.

### 1. Expansion within WRPS headquarters (Maplegrove)

This scenario was discarded because of existing spatial constraints within the existing building.

### 2. Relocation to alternative regional premises

Discussed multiple region-owned buildings with ROW Facilities Management. All facilities but one - 99 Regina St., S. (Waterloo) - were discarded, either due to insufficient space, or concerns over reliable connectivity to public safety voice radio system.

99 Regina St., South, was retained as a potential backup 911 center site following discussions with ROW Facilities Management, in which they advise that up to 30,000 SF can be made available on floors 4 and 5 of the building.

### 3. Construction of a new purpose-built facility

The following 3 locations were shortlisted as candidate sites on which to construct a “new build” option, for either a primary or backup 911 center. (a) new build co-located at WRPS headquarters campus (Maplegrove); (b) new

build in the vicinity of WRESTRC; and (c) new build near Baden Tower in Township of Wilmot.

## E.7 Communications Center Scenarios

The needs assessment investigated 6 communications center scenarios.

Exhibit E.1: Communications Center Scenarios

Scenario / Components	Primary 911 Center				Backup 911 Center	
	P1	P2	P3	P4	B1	B2
	Core	Core + PRIDE	Core + PRIDE + SFCC	Core + PRIDE + SFCC + KFD	New Build	99 Regina St., S.
Sized to accommodate ROW long-term growth (2051)	√	√	√	√	√	√
Includes RTOC & MISC	√	√	√	√	√	√
Includes NG 911	√	√	√	√	√	√
Includes community-based mental health crisis response initiatives	√	√	√	√	√	√
Includes dispatching for PRIDE	x	√	√	√	x	x
ROW Service First Call Center (SFCC) is co-located on premises	x	x	√	√	x	x
Kitchener Fire “main” dispatch is co-located on premises	x	x	x	√	x	x

All scenarios (primary and backup) include the following core elements: growth-driven service demand, RTOC and MISC, NG 911, and community-based mental health crisis response.

Scenarios P2-P4 includes dispatching for PRIDE. Scenarios P3 and P4 include co-location with the Region’s Service First Call Center (SFCC). Scenario P4 includes co-location with fire dispatch managed by Kitchener Fire (KFD).

Scenario B1 assumes construction of a new purpose-built facility. Scenario B2 assumes use of an existing ROW-owned building (99 Regina St., South, Waterloo). This scenario was developed following discussions with ROW Facilities Management, in which they advise that up to 30,000 SF can be made available on floors 4 and 5 of the building.

In the context of this investigation, co-location is intended to mean ... all groups to occupy the same facility, but each continues to operate as an independent entity with their own staff, work areas, and amenities.

Co-location of ground ambulance dispatch (i.e., the Central Ambulance Communications Center managed by Ministry of Health) is excluded from the investigation.

## E.8 Floor Space Estimates and Costs

Order of magnitude costs for each site/scenario are presented in Exhibit E.2.

Cost for a new primary 911 center at WRESTRC and Baden ranges from \$50 M (Sc. P1) to \$70 M (Sc. P4), whereas the cost at Maplegrove campus is lower, ranging from \$45 M to \$65 M.

The lower cost of a new build at Maplegrove is attributed to the following:

- Lower floor space requirement of about 2,000 SF, by leaving CAD at WRPS HQ and connecting to the new build by fiber.
- Lower technology costs by using the existing underground fiber line infrastructure (i.e., the existing dedicated fiber lines for CAD and radio).

Cost for a new backup 911 center at 99 Regina is about \$20 M, i.e., about one-half the cost of a “new build” (\$40 M).

Exhibit E.2: Floor Space Estimates and Costs (in \$M)

	GROSS SF	PRIMARY 911 CENTER		
	Full Build Out 2051	Maplegrove	WRESTRC	Baden Tower
		New Build	New Build	New Build
<b>P1: Core</b>	28,100	\$45	--	--
	30,100	--	\$50	\$50
<b>P2: Core + PRIDE</b>	31,450	\$50	--	--
	33,450	--	\$55	\$55
<b>P3: Core + PRIDE + SFCC</b>	33,950	\$55	--	--
	35,950	--	\$60	\$60
<b>P4: Core + PRIDE + SFCC + KFD</b>	45,450	\$65	--	--
	47,450	--	\$70	\$70

	GROSS SF	EMERGENCY BACKUP CENTER		
	Full Build Out 2051	99 Regina, S.	WRESTRC	Baden Tower
		Renovation	New Build	New Build
<b>B1: New Build</b>	26,000	--	\$40	\$40
<b>B2: 99 Regina St.</b>	17,000	\$20	--	--

Cost estimates are rounded to the nearest \$5 M.

Main assumptions on which the cost estimates are based, are listed below.

- Costs include construction, furnishings, and technology.
- Costs are in 2022 dollars. HST and other applicable taxes are excluded.
- Floor space requirements and construction costs are for full build out (2051).
- Furnishings and technology costs are based on resourcing requirements in 2031. This accounts for NG 911 (go live in 2025) and short-term growth beyond the go live date.
- Assumed cost for “new build” construction is \$800 per SF. Assumed cost for “renovation” of the 99 Regina St. South building is \$400 per SF.
- Assessment assumes that the new primary center will be outfitted with new workstations and communications consoles. Workstations and consoles currently at Maplegrove will be transferred to the new backup center.
- Furnishings and technology costs for SFCC and KFD are excluded.
- Figures include cost estimates for building technology infrastructure, i.e., Bell 911 trunk, fiber lines, network connections, licenses, UPS, firewall infrastructure, and security and access control.
- Figures include 10% for design and 15% for contingency.
- Figures include salaries (and benefit) costs for WRPS / ROW staff who will be dedicated to project implementation.
- Backup center and primary 911 center are assumed to house the same number of communications workstations. Assessing call taking workload relative to NENA standards may reduce the backup 911 center workstation requirements. Such analysis is excluded.

## E.9 Site Selection Criteria

Site selection criteria that were adopted for this assessment are listed below. Site findings are summarized in the body of the report (Exhibit 10.2).

- Floor Space
- Radio Connectivity
- Disaster Relief Fiber (Radio)
- CAD Connectivity
- Hazards / Operational Conflicts
- Best Practice Features
- Employee Commuting & Parking
- Safety and Security
- Value Added
- Cost

## E.10 Preferred Location for Primary 911 Center

For the primary 911 center, the assessment favours a new build co-located at WRPS campus (Maplegrove), mainly for the reasons below.

- Ample space for a 2-storey building of up to 50,000 SF
- Co-located adjacent to the primary radio tower guarantees reliable connectivity to ROW's mission critical public safety voice radio system
- Lower cost option (about \$5 M less)
  - No land cost. Property is owned by ROW.
  - Lower floor space requirement (and construction costs) by leaving CAD at WRPS HQ and connecting to the new build by fiber
  - Lower technology costs by tapping into existing fiber trunks
- Operational benefits to having 911 center (including RTOC and MISC) on campus adjacent to WRPS HQ.

## E.11 Preferred Location for Backup 911 Center

For the backup 911 center, the assessment favours the existing ROW-owned building at 99 Regina St., S. (Waterloo), mainly for the reasons below.

- Significantly lower cost option (\$20 M vs. \$40 M for new build).
  - No land cost. Building is owned by ROW.
  - Renovation costs less than new build
  - 17,000 SF vs. 26,000 SF for new build. No need for meeting rooms, mechanical area, loading area, or secure main entry / reception, beyond those in the existing building.
- Ample space on floors 4 and 5 for a backup 911 center
- Readily accessible by public transit including the ION rapid transit line
- Nearby light use rail spur does not appear to be an obstacle. Nearby water pumping station also does not appear to be an obstacle.
- Access to the building's existing meeting rooms (on a shared basis with other building tenants).
- Use of on-site amenities including workout area (gym) and change rooms.
- *Connectivity to the Region's public safety voice radio system needs to be investigated / confirmed by a professional with radio expertise.*

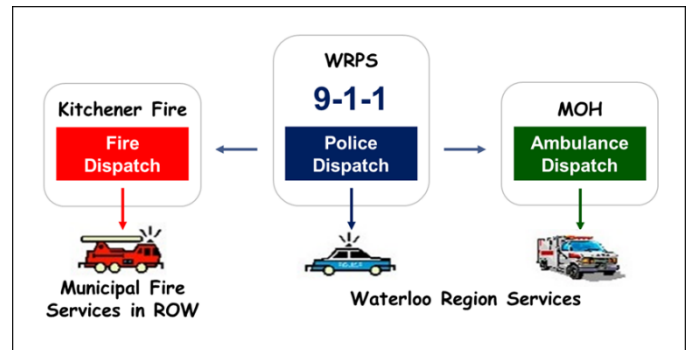
# 1 Introduction

## 1.1 Context

Waterloo Regional Police Service (WRPS) manages 911 communications for Region of Waterloo (ROW), from a communications center situated in WRPS headquarters, at 200 Maplegrove Road, Cambridge.

911 call-taking and police dispatch functions are carried out by WRPS communications personnel. Calls requiring a Fire response are routed to an off-site fire dispatch center managed by Kitchener Fire Department. Calls requiring an ambulance response are routed to an off-site Central Ambulance Communications Center (CACC) managed by Ministry of Health.

WRPS, ROW elected officials, senior management, and public safety leaders have for over 25 years advocated for eventual consolidation of 911, police, fire, and ambulance dispatch, into a fully integrated public safety communications system; this, to improve response times, interoperability, and coordination. <sup>1</sup>



Consultant reports including those by Kimball (2014), ApexPro (2017 & 2019), and Pomax (2021) have repeatedly reinforced the proposed consolidation as an appropriate course of action.

It may be several more years before consolidation may eventually be achieved.

However, for the reasons discussed in the body of this report, the primary 911 center (Maplegrove) needs to be replaced at the earliest, if essential 911 communications and service quality are to be maintained.

The emergency backup 911 center also needs to be relocated. The current premises (134 Frederick St., Kitchener) are at end-of-life, and ROW is actively pursuing prospective new occupants.

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<sup>1</sup> Chronology of events and actions supporting eventual consolidation of emergency communications in ROW, is appended at Appendix A.

## 1.2 Project Objectives & Scope

WRPS, on behalf of Region of Waterloo, retained ApexPro Consulting Inc. to carry out a needs assessment of the Region's 911 communications center requirements, with the following as principal deliverables.

- 1) Investigate current and future 911 communications center requirements (i.e., to accommodate service demand growth, and NG 911).
- 2) Investigate costs to expand / replace both the primary and backup 911 centers. Cost considerations to include land, construction, furnishings, and technology.
- 3) Recommend preferred locations for both the primary and backup 911 centers. Location options to include expansion within WRPS headquarters; relocation to alternative regional premises; or construction of a new purpose-built facility.

The needs assessment is based on planning and operational data supplied by the clients; on-site surveys of the existing primary and emergency backup 911 centers; survey of alternative regional premises and vacant lands; and prior research including previous surveys of several contemporary 911 centers (Appendix B).

ApexPro acknowledges the law enforcement officers and civilian employees of WRPS, and Region of Waterloo staff, whose participation, assistance, and insights contributed to the successful completion of this engagement.

## 2 Maplegrove 911 Communications Center

### 2.1 911 Center Layout

The 911 center floor layout is shown in Exhibit 2.1.

The floor area of the center totals approximately 3,200 SF, of which 1,565 SF is dedicated to the communications floor call taking/dispatching functions.

In addition to the communications floor, the center also features a Staff Sergeant office, an office for communications training staff, telephone server room, switchboard room, small break room (kitchenette), and sitting area.

The communications floor is situated roughly 12 inches above a concrete sub-floor. Supervisor workstation is situated on a platform (elevated about 8 inches). The floor to ceiling height within the communications area is about 9.7 feet about the room's periphery, and 11.5 feet in the center of the room.

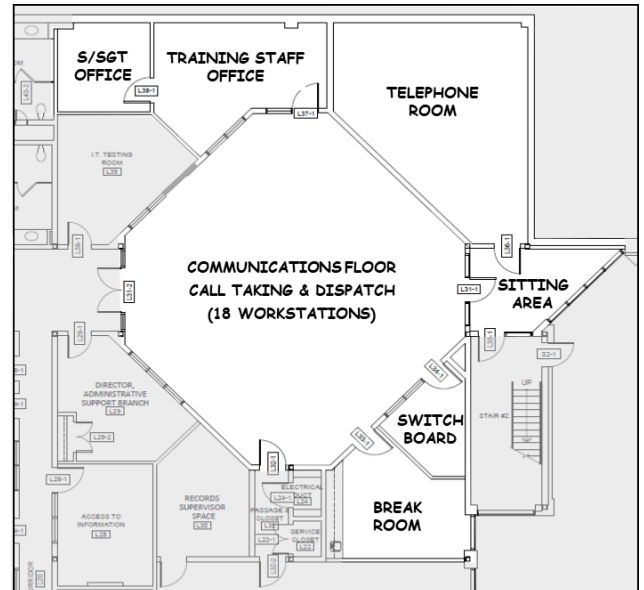
The communications workstations layout is shown in Exhibit 2.2 (next page).

The communications floor is equipped with 18 workstations: 9 that are outfitted for call taking; 4 workstations that are outfitted w' radio consoles for dispatching; 4 workstations that can be used for both call taking and dispatch; and a workstation for the Supervisor.

The Supervisor's workstation is outfitted for 911 and non-urgent call taking, and for radio dispatching. However, it is seldom used for such purposes.

The training staff's office, adjacent to the communications floor, is equipped with two (2) additional workstations. Both are call taking capable. <sup>2</sup>

Exhibit 2.1: Communications Center

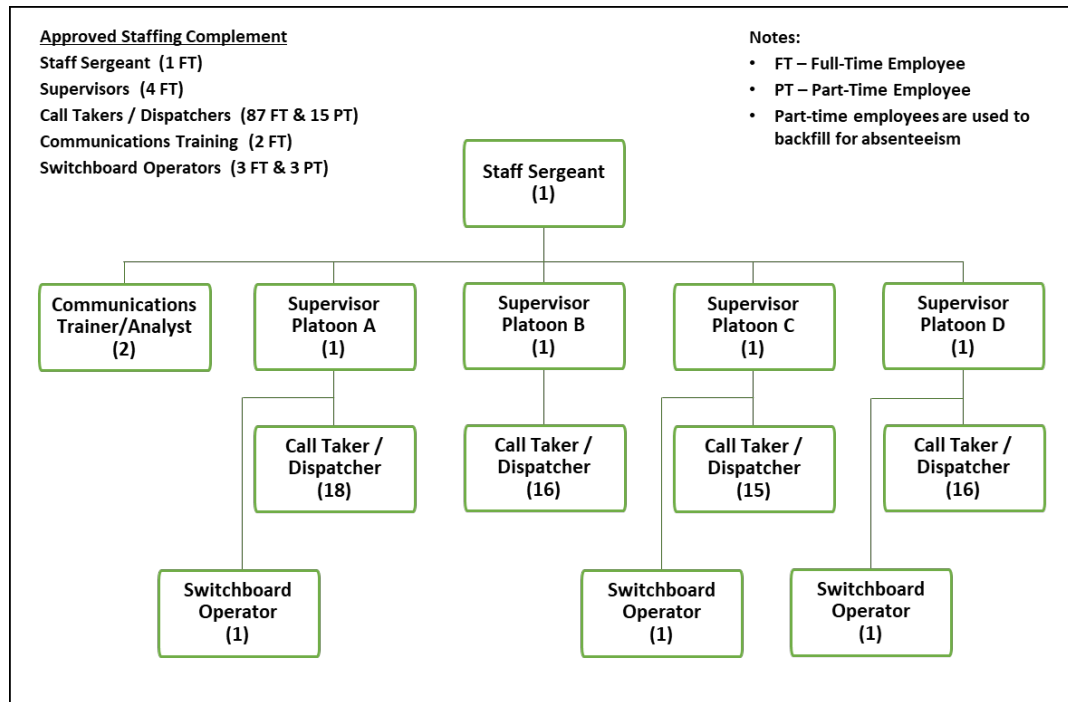


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<sup>2</sup> One workstation is also outfitted with radio for dispatching. However, the radio console will soon be relocated to the emergency backup center.



### Exhibit 2.3: Existing Communications Staffing



### Call Taker / Police Dispatcher

WRPS call takers are responsible for answering 911 calls (and non-urgent calls) and routing the caller to the correct emergency service. Calls requiring a police response are assigned to on-site WRPS dispatchers. Calls requiring a Fire response are routed to an off-site fire dispatch center managed by Kitchener Fire Department. Calls requiring an ambulance response are routed to an off-site Central Ambulance Communications Center (CACC) managed by Ministry of Health.

WRPS dispatchers are responsible for dispatching the closest, available, and most appropriate police resource. Also, to provide in-the-field officers with support, and to coordinate allied emergency responders when their services are needed. WRPS dispatchers carry out these functions using ROW's recently upgraded Motorola public safety voice radio network, and leading-edge computer aided dispatch (CAD) system by Hexagon (formerly Intergraph).

WRPS call takers and dispatchers work the same shifts as Supervisors (12-hour shifts, with shift changes at 7:00 am and 7:00 pm).

The approved number of call takers / dispatchers is 87 full-time and 15 part-time. However, due to supported leaves and position vacancies, the number currently available for shift assignments is 65 full-time and 4 part-time.

## Communications Training Staff

There are 2 full-time communications training staff: a Communications Trainer and a Training Analyst. These staff are responsible for staff training, performance analysis, and quality control of the communications function. Communications training staff work a 40-hour week.

## Switchboard Operator

Switchboard, which is staffed by one operator per shift, is responsible for answering non-emergency calls. Switchboard is staffed weekdays from 7:00 am to 11:00 pm, and on weekends from 9:45 am to 10 pm. Outside these hours, non-emergency calls are redirected to communications floor personnel by an automated attendant.

## 2.3 Communications Training

Service quality is assured by a rigorous communications training program involving group sessions, individual instruction, and mentoring.

Group training is held at the Frederick St. backup center. The backup center can accommodate groups of up to 8 students per session. There are about 3 to 4 group training sessions a year.

Individual instruction and mentoring take place at Maplegrove communications center.

New hires are initially trained as call takers. Over time, they are cross trained to also serve as dispatchers. Currently, 62% of all communicator staff are fully cross trained as call takers and dispatchers. WRPS' target is to fully cross-train all communicator staff.

Training is also provided for staff progression to *acting* Supervisor, and subsequently for progression to full-time Supervisor.

Techniques used to inform / update staff of changes to CAD, radio, operating protocols et al, include group training sessions and training bulletins. Techniques used for skills retention, include rotating call-taker and dispatcher assignments by shift.

## 2.4 Communications Systems & Other Technology

911 communications is supported by ROW's recently implemented Motorola P25 public safety voice radio system. The radio system is entirely IP-based, with advanced call processing capabilities designed to meet the needs of public safety agencies.

911 communications is also supported by a leading-edge Hexagon CAD with interfaces to critical systems including: e-911, GIS/mapping, GPS/AVL, Radio consoles, mobile wireless mapping, data, and messaging, text/alphanumeric paging, and Niche records management.

The CAD is used on a shared basis by members of the PRIDE co-operative which includes WRPS, Kitchener Fire, and the Guelph, Brantford, Stratford, and South Simcoe police departments.

Mission-critical 911 communications systems are well maintained by WRPS Facilities and IT personnel (analysts, programmers, and technicians) whose expertise includes software applications, business systems, data security, fiber optic networks, radio, and mobile workstations.

911 service continuity is further assured by multiple built-in redundancies including backup generators, dedicated HVAC, uninterrupted power supply, and disaster relief fiber-optic data lines (as described further in Section 5).

## 2.5 Safety and Security

Safety and security of the premises (including access, egress, and parking) is assured by on-site lighting, camera coverage, entry intercom system, locked (card access) entries, and visitor screening.

## 2.6 Communications Workload

Exhibit 2.4 shows recent call volume trends for WRPS 911 communications.

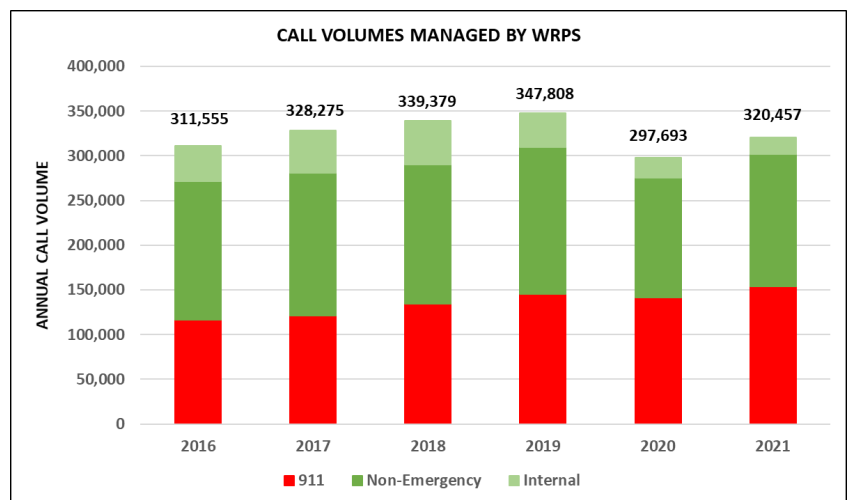
Incoming calls for service increased at about 3.7% per annum between 2016 and 2019.

They decreased in 2020 due to COVID-19.

In 2021 they rebounded prominently, reaching a total volume of 320,457 for the year.

About 50% of the incoming calls are 911 emergency calls; 45% are non-emergency calls; and 5% are internal calls.

Exhibit 2.4: Call Volumes Managed by WRPS



911 emergency calls go directly to the floor of the 911 communications center (at Maplegrove) where they are answered by a WRPS 911 call taker.

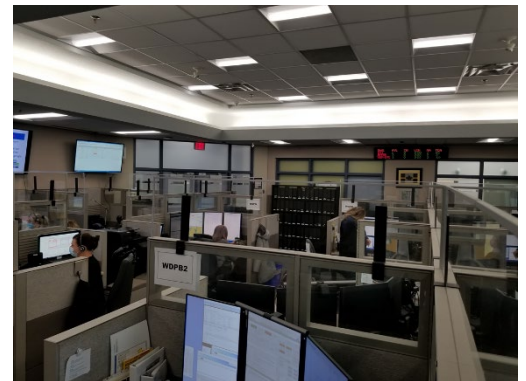
Non-emergency calls (10-digit phone line calls) are answered by a switchboard operator, or an automated attendant. Calls requiring an emergency services response are routed to a WRPS 911 call taker / dispatcher.

Internal calls are calls from in-the-field WRPS officers who are calling the 911 center for one of many reasons including, to inform of change in status, to request call support, etc.

## 2.7 Work Environment Challenges

Presented below are the work environment challenges at the primary 911 center (Maplegrove).

1. The center operates beyond capacity. It cannot readily accommodate additional call volume growth.
2. Additional workstations are currently needed but cannot be added due to existing spatial constraints.
3. The 911 center also cannot readily accommodate newly evolving service requirements including NG 911. NG 911 is a federally “mandated” replacement of the 30+ year-old Canadian 911 network by March 4, 2025.
4. The center is over 25 years old, and its design is acutely outdated relative to contemporary best practices. <sup>4 5</sup>
  - Not AODA compliant. <sup>6</sup> Overcrowded.
  - Communications workstation footprint of 90 SF versus contemporary of 150 to 160 SF. Crowding (and noise) is worse at shift change.
  - Climate variations within the center must be monitored daily.
  - No natural lighting. Relatively dark. Not conducive to 12-hour shifts.



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<sup>4</sup> Best practices are intended to mean operating structures, business processes, or outcomes measurement systems that have been validated through experience or shown to function well (or reliably) when measured against peers.

<sup>5</sup> Refer to Appendix C for photos of contemporary communications centers (Niagara and Halton).

<sup>6</sup> Accessibility for Ontarians with Disabilities Act (AODA)

- Workstations are ergonomically friendly, but consoles require update.
- No on-site training room. No in-center meeting rooms.
- Also deficient in office space, files and supplies storage, kitchen, break area, quiet room, and lockers for personal belongings storage.

## 2.8 911 Operating Estimates

911 operating estimates are summarized in Exhibit 2.5. The total annual expense is approximately \$13.5 M, which includes:

- Communications account budget (2022) of \$12.1 M which was provided by WRPS Finance.
- IT staff support of \$0.8 M which was provided by WRPS IT.
- Technology replacement of \$0.6 M. Technology replacement expenses were estimated by ApexPro using an assumed 7-year replacement cycle. The figure includes allowances for replacement of all existing workstation consoles situated in both the primary and backup 911 centers. It also includes an assumed 20% allowance for replacement of licenses, switches, and other related components.

The estimated operating expense excludes refurbishing costs (i.e., for facilities and furnishings).

Exhibit 2.5: 911 Operating Estimates

	911 Operating Estimates (\$ M)		
	2021 Budget	2021 Actual	2022 Budget
<b>Communications Account</b>			
Communications Staffing	\$11.8	\$10.9	\$12.0
<u>Communications Operating</u>	<u>\$0.1</u>	<u>\$0.1</u>	<u>\$0.1</u>
<b>Subtotal</b>	<b>\$11.9</b>	<b>\$11.0</b>	<b>\$12.1</b>
<b>IT Support Estimates</b>			
IT Staff Support	\$0.8	\$0.8	\$0.8
<u>Technology Replacement</u>	<u>\$0.6</u>	<u>\$0.6</u>	<u>\$0.6</u>
<b>Subtotal</b>	<b>\$1.4</b>	<b>\$1.4</b>	<b>\$1.4</b>
<b>Total</b>	<b>\$13.3</b>	<b>\$12.4</b>	<b>\$13.5</b>

### 3 RTOC & MISC

#### 3.1 Real Time Operations Center (RTOC)

WRPS recently implemented a Real Time Operations Center (RTOC) at Maplegrove headquarters. The RTOC is an integral extension of 911 communications, intended to serve as a regionalized hub for managing risk by:

- Monitoring calls and reallocating front-line and investigative resources to meet real-time changing demands and staffing needs across the Region,
- Leveraging technology to increase situational awareness,
- Overseeing unplanned major events and critical calls, and
- Providing actionable intelligence to field operations.<sup>7</sup>

In addition, the RTOC ensures complex TAMS timecard compliance reviews are completed regularly to reduce potential errors or historical edits that could have a financial impact both on the Service and its members.<sup>8</sup>

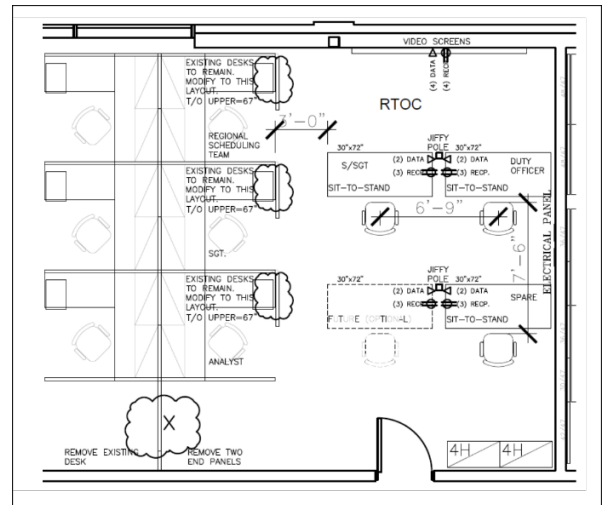
As an integral extension of 911 communications, the RTOC should be situated immediately adjacent to the 911 center. However, due to spatial constraints, the RTOC is located one floor above the 911 center. It occupies about 580 SF. The floor layout and major furnishings of the RTOC are shown in Exhibit 3.1.

#### Current Best Practices

The mission of a Real Time Operations Center (RTOC) is to provide a law enforcement agency with the ability to capitalize on a wide and expanding range of technologies for efficient and effective policing.<sup>9</sup>

RTOC models vary among law enforcement agencies, in terms of personnel decisions, technology choices, and chain of command.

Exhibit 3.1: Recently Implemented RTOC



<sup>7</sup> Source: WRPS Proposed 2022 Budget Information Package, November 2021.

<sup>8</sup> TAMS stands for Time and Attendance Management System

<sup>9</sup> Source: "The Mission of a Real Time Crime Center", Bureau of Justice Assistance, US Department of Justice.

Regardless, functional responsibilities are relatively consistent, as below.

RTOC leverages a wide and expanding range of technologies including video streaming, social media, and business intelligence systems; and uses these technologies, and the operational intelligence derived there from, to efficiently, effectively, and decisively:

- Co-ordinate frontline and investigative resources
- React to emergency incidents with proactive emphasis on officer, citizen, and community safety
- Provide frontline and investigative resources with real-time analytical intelligence and investigative support
- Manage emergency incidents and threats in real time.

Police video streaming sources include in-vehicle and body-worn cameras, also cameras used by air support and remote piloted drones. Other video feed sources may include roadside and other cameras managed by public sector organizations, and cameras installed at public assembly premises, i.e., shopping malls, theatres, arenas, and stadiums. Agreements for the use of these feeds are generally established in advance.

On-site management of the RTOC should rest with a law enforcement officer having authority to make actionable decisions, i.e., of Inspector rank or higher.

RTOC should be staffed round-the-clock (per the 911 center). Each platoon would typically be staffed with an Inspector, staff sergeants, and a data analyst. Additional expertise should be available on standby; this to be drawn from pre-established law enforcement and civilian talent pools that include social media, and business intelligence expertise.

IT personnel should also be available (round-the-clock standby) to support the resident technology systems.

### 3.2 Major Incident Support Center (MISC)

A team effort is often required to manage a major emergency incident (i.e., law-enforcement officers, allied emergency and health care responders, civilian analysts, elected officials, and others).

It is not unusual, during a major emergency incident, for the numbers assembling on site to exceed 10-15, or more persons. These individuals require a dedicated workspace, with access to one or more meeting rooms, in which to manage the emergency incident.

The dedicated workspace, which in this document is referred to as a Major Incident Support Center (MISC), should be outfitted with telephones,

workstations, computers, video monitors, voice radio communications, and business intelligence systems, for use by the persons assembled.

### 3.3 Design Features Adopted by this Investigation

It is generally acknowledged that establishing and outfitting an RTOC is an evolving process that will change over time, as lessons are learned, and as new resources and technologies become available. In this context, one may safely assume that the RTOC recently implemented by WRPS will evolve over time in terms of both mission and design.

For such reasons, this investigation of ROW's 911 communications needs adopts the features of a "more mature" RTOC, as basis for planning.<sup>10</sup> The features are listed below.

- RTOC to be situated immediately adjacent to the 911 center.
- RTOC to be augmented with a Major Incident Support Center (MISC) with adjoining large meeting room to serve as emergency operations center (EOC) during major emergency incidents.
- MISC to be situated reasonably close to the 911 center and RTOC; but not so close as to hinder the operations therein.
- Floor area assumptions: RTOC floor area of up to 1,000 SF (of net floor space). MISC floor area of up to 1,800 SF (of net floor space). These spaces to accommodate communications workstations, analyst stations, meeting room, and equipment and supplies storage, as appropriate.
- RTOC workstation assumptions: At least 4 workstations. All to be outfitted with telephones and desktop computers. Two (2) to also be outfitted with voice radio communications, CAD, and control over multiple video feeds.
- MISC workstation assumptions: Up to 10 workstations. All to be outfitted with telephones and desktop computers. Six to eight to also be outfitted with voice radio communications, CAD, and control over multiple video feeds.
- Both RTOC and MISC to be outfitted with business intelligence software, and wall mounted video screens of assorted sizes.

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<sup>10</sup> Design features are based on the RTOC managed by York Regional Police Services (YRPS), which was implemented over 5 years ago, and has since evolved. ApexPro has adjusted some features for planning purposes.

## 4 Emergency Backup 911 Center

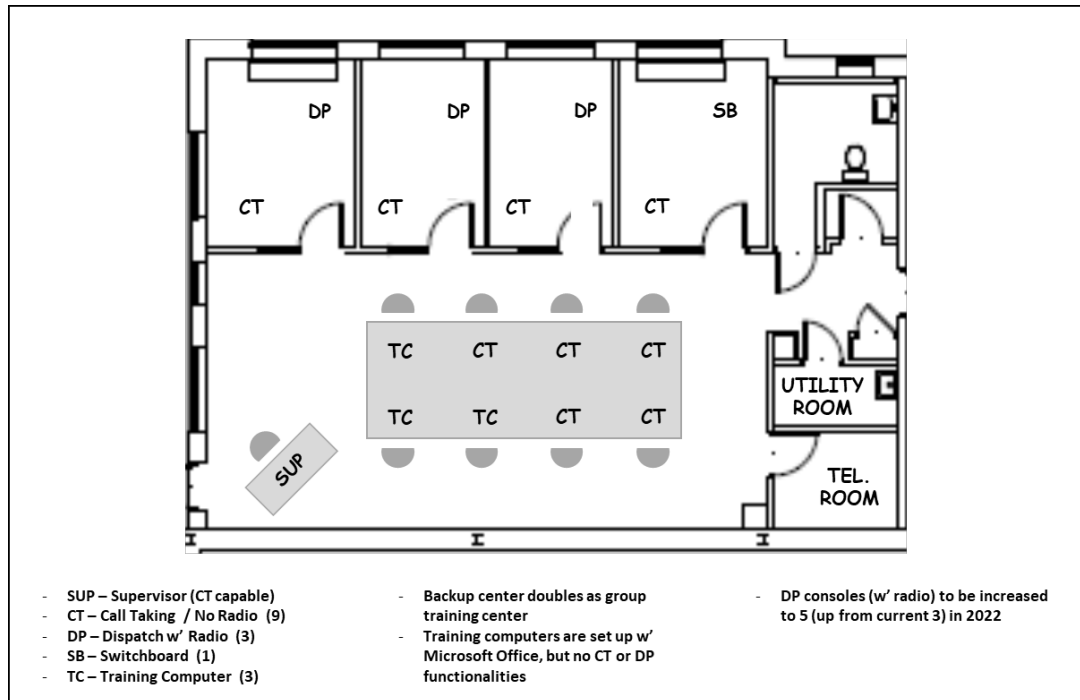
The emergency backup 911 center needs to be relocated to an alternate, secure off-site location. The current premises (134 Frederick St., Kitchener) are at end-of-life, and ROW is actively pursuing prospective new occupants.

Presented below is a brief description of the existing emergency backup 911 center.

The layout of the existing emergency backup 911 center is shown in Exhibit 4.1. The floor area is about 1,800 SF. The major features include four offices, telephone server room, utility room, washroom, and an open floor that doubles as both communications floor and group training center for WRPS communications staff.

The floor of the backup center is poured concrete. It is not a raised floor. The floor to ceiling height is about 8 feet.

Exhibit 4.1: Emergency Backup Center



The emergency backup center is equipped with 17 workstations:

- 9 workstations for call taking (no radio)
- 3 workstations for dispatching (w’ radio)
- Supervisor workstation capable of taking calls
- A switchboard to handle incoming 10-digit non-emergency calls
- 3 training computers that are not set up for live call taking or dispatch.

The default setting for software applications at the backup center (e.g., CAD and Niche records management) is live mode. The applications are taken off-line for group training and subsequently, are restored to live mode once the training session is complete.

Procedures for emergency backup center operations require WRPS IT to notify Bell when communications services at the primary 911 center are disrupted, and request that they temporarily route 911 calls to the back up center. WRPS IT is also responsible to notify Bell when the primary center's communications capabilities are restored.

Procedures also require that the shift Supervisor transport 4 portable radios to the backup center; this, to augment the center's limited radio dispatching capability (i.e., 3 radio outfitted workstations). One portable radio is set to WRPS north division operations, two others are set to WRPS central and south. Shift Supervisor uses the fourth portable radio to monitor ongoing events.

Since the backup center doubles as group training center, WRPS communications staff are familiar with / at ease operating from this location.

Additional experience operating at the backup center is gained during major events, i.e., homecoming, St. Patrick's Day. For events such as these, WRPS staffs both the primary and backup communications centers. Backup center staffing during these events typically includes a minimum of 2 call takers and 2 dispatchers.

Equipment at the backup center is tested periodically (at roughly 5 to 6-week intervals). The communications trainer is responsible to test and confirm that workstations are functioning properly. IT staff are responsible for testing phones and recording equipment.

Approved plans for fiscal 2022 include increasing the number of desktop radio consoles at the backup center, by an additional 2 consoles (to a total of five). One of the additional consoles will be a new purchase. The other will be relocated from the training staff office at Maplegrove.

## 5 Critical Systems Infrastructure

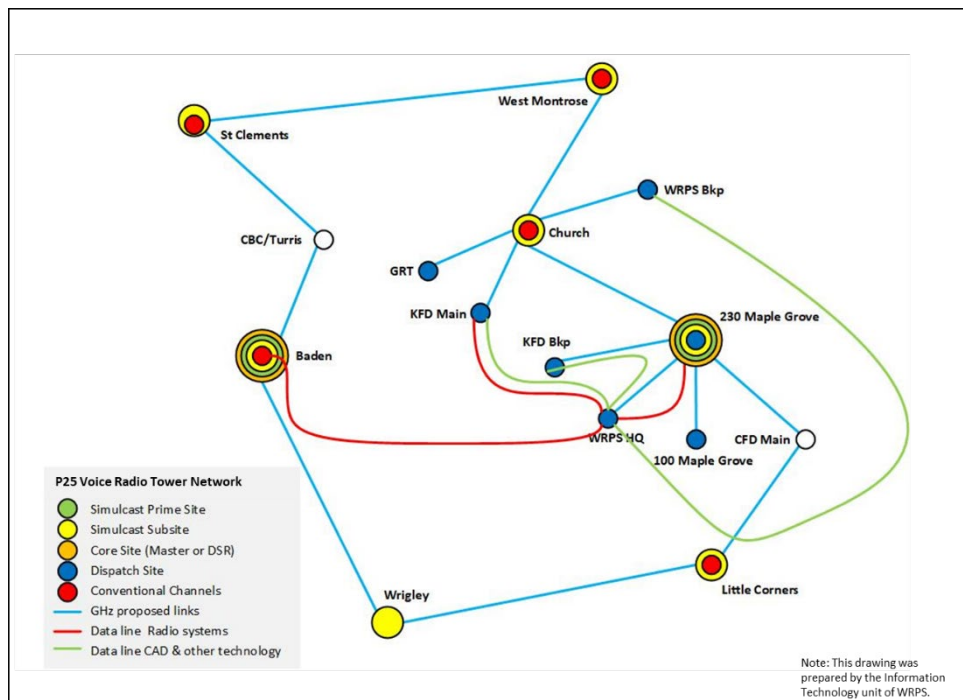
### 5.1 Motorola P25 Voice Radio

911 communications is supported by ROW's recently implemented Motorola P25 public safety voice radio system. The radio system is entirely IP-based with advanced call processing capabilities designed to meet the needs of public safety agencies.

Exhibit 5.1 shows the tower and fiber network infrastructure that supports voice radio communications. The infrastructure includes 9 voice radio network towers. Primary radio tower is situated at 230 Maplegrove. Primary backup radio tower is at Baden (in Wilmot Twp). Other towers are located at West Montrose, St. Clements, CBC/Turris, 81 Church St (Kitchener), CFD headquarters, Little Corners, and Wrigley.

All locally based emergency communications centers (both primary and backup) are tied to at least one radio tower, either by direct sight line or by way of a microwave hop workaround.

Exhibit 5.1: Radio Tower Network



Mission-critical reliability is assured by the system's fault-tolerant architecture and built-in redundancies. Connecting each radio tower to the adjacent two (via microwave) is one such feature. Should a tower fail, then by design, one of the

adjacent two towers will endeavor to pick up the load and preserve geographic coverage (as may be feasible) until the damaged tower is repaired.

This feature is represented by the lines in blue. The closed network formed by these lines is loosely referred to as the “voice radio ring”.

As an additional fail-safe, dedicated fiber optic data lines (shown in red) connect Maplegrove 911 to the primary radio tower (230 Maplegrove), to Kitchener Fire main dispatch, and to the primary backup radio tower (Baden). If the radio tower (at Maplegrove) fails, Maplegrove 911 center still maintains connectivity to the radio system by way of these fiber data line connections.

## 5.2 Computer Aided Dispatch (CAD)

911 communications is also supported by a leading-edge Hexagon CAD with interfaces to critical systems including radio and Niche records management.

The CAD, which resides at Maplegrove HQ, is used on a shared basis by members of the PRIDE co-operative which includes WRPS, Kitchener Fire, and the Guelph, Brantford, Stratford, and South Simcoe police departments.

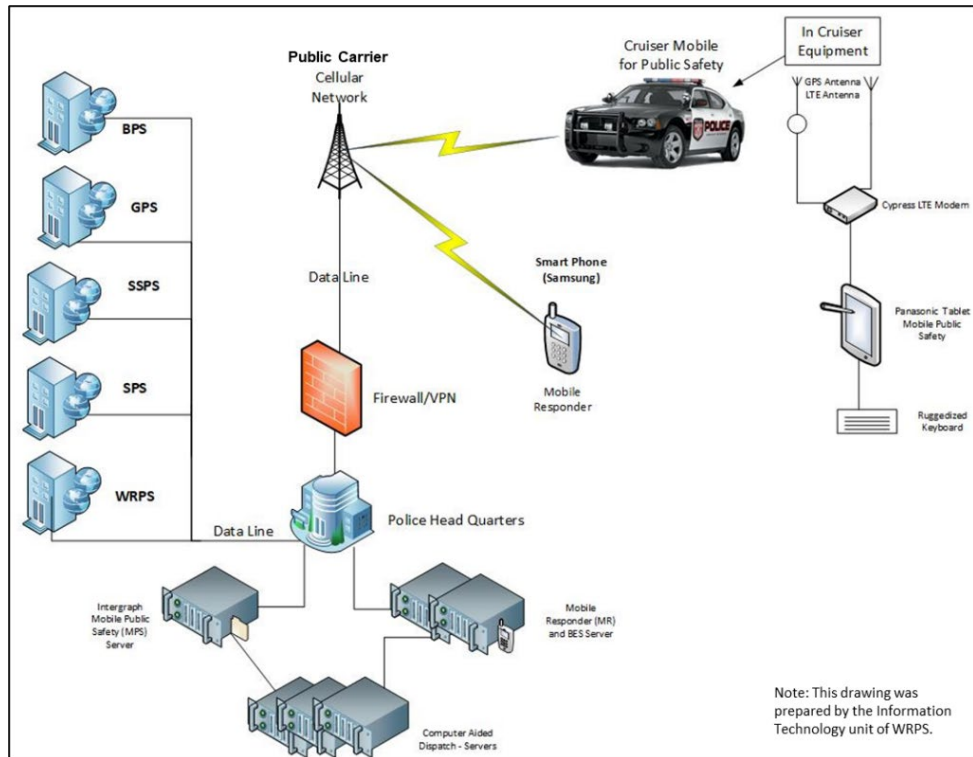
Dedicated fiber optic data lines shown previously in Exhibit 5.1 (in green) connect the CAD at Maplegrove HQ to WRPS backup (Frederick), to Kitchener Fire main dispatch, and to Kitchener Fire backup dispatch.

For security, all data transmissions are encrypted by the CAD network.

The police mobile environment within PRIDE is shown in Exhibit 5.2 (next page). The police mobile environment relies on public carrier cellular networks (Bell & Rogers).

WRPS IT advises that ROW has outstanding public carrier cellular network coverage.

Exhibit 5.2: Police Mobile Environment



### 5.3 911 Service Continuity Provisions

911 service continuity provisions are summarized in Exhibit 5.3 (next page). They include backup generators, dedicated HVAC, and uninterrupted power supply.

Exhibit 5.3: Services Continuity Provisions for 911 Communications

	PRIMARY 911 CENTER (MAPLEGROVE)	EMERGENCY BACKUP CENTER (FREDERICK ST.)
<b>Electric Utility Power</b>	<p>Energy+ Inc. delivers electricity to the primary center (Maplegrove). Power is fed from one substation (single power feed).</p> <p>For service continuity, the primary center relies on a backup generator and large UPS bank (as below).</p>	<p>Kitchener-Wilmot Hydro Inc. delivers electricity to the emergency backup center. Power is fed from 2 substations (dual power feeds).</p> <p>Backup center is also equipped with a backup generator and small UPS units (as below).</p>
<b>Backup Generator</b>	<p>Primary center is equipped with a “diesel-powered” backup generator.</p> <p>Plans underway, to replace the current backup generator with a “natural gas-powered” backup generator system in 2023.</p>	<p>Emergency backup center is equipped with a “diesel-powered” backup generator.</p>
<b>Uninterrupted Power Supply (UPS)</b>	<p>Primary center is equipped with a large UPS bank.</p>	<p>Communications workstations at the backup center are individually equipped with small UPS units.</p>
<b>Telephone</b>	<p>Primary center is served by a single telephone trunk for administration, and incoming 911 and non-emergency calls.</p> <p>Diverse routing is currently the 2 separate locations (primary and backup).</p>	<p>Emergency backup center is served by a single telephone trunk for administration, and incoming 911 and non-emergency calls.</p> <p>Diverse routing is currently the 2 separate locations (primary and backup).</p>
<b>HVAC</b>	<p>Maplegrove headquarters is equipped with an HVAC system that is dedicated to the 911 communications center.</p> <p>Plans underway to implement full redundancy, i.e., a 2<sup>nd</sup> HVAC system which will mirror the first.</p>	<p>Emergency backup center relies on the building’s HVAC system.</p>

	<b>PRIMARY 911 CENTER (MAPLEGROVE)</b>	<b>EMERGENCY BACKUP CENTER (FREDERICK ST.)</b>
<b>Motorola P25 System (Voice Radio)</b>	<p>Maplegrave 911 center has direct sight line to the radio tower at Maplegrave.</p> <p>Dedicated fiber optic data lines connect Maplegrave 911 to the primary radio tower (230 Maplegrave), to Kitchener Fire main dispatch, and to the primary backup radio tower (Baden). This, as shown previously in Exhibit 5.1.</p> <p>If the radio tower (at Maplegrave) fails, Maplegrave 911 center still maintains connectivity to the radio system by way of these fiber data line connections.</p>	<p>The backup center has direct sight line to the Church St. radio tower.</p> <p>Given the radio system's fault-tolerant architecture and built-in redundancies, the likelihood that both the Maplegrave tower and Church St. tower fail simultaneously, is exceptionally low.</p>
<b>Hexagon CAD System (Data/Text)</b>	<p>Dedicated fiber optic data lines shown previously in Exhibit 5.1 connect the CAD at Maplegrave HQ to WRPS backup (Frederick), to Kitchener Fire main dispatch, and to Kitchener Fire backup dispatch.</p> <p>For security, all data transmissions are encrypted by the CAD network.</p> <p>The police mobile environment relies on public carrier cellular networks (Bell &amp; Rogers). WRPS IT advises that ROW has outstanding public carrier cellular network coverage.</p>	<p>Dedicated fiber optic data line connects the emergency backup center (Frederick) to the CAD at Maplegrave HQ.</p>

## 6 Service Demand Drivers

Listed below are the principal drivers of 911 service demand growth.

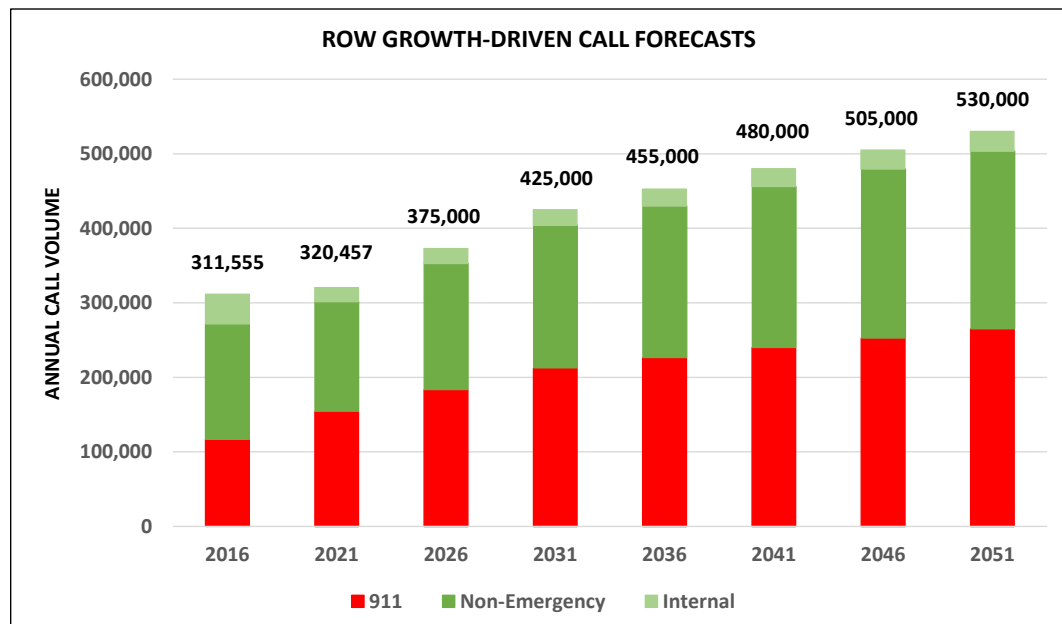
- Population growth
- Federally mandated migration to NG 911 by March 2025
- Video streaming and other leveraged technologies
- Community-based mental health crisis response initiatives
- 911 communications (dispatch) services for PRIDE.

These service demand drivers, and their potential impacts on 911 center resourcing, are discussed below.

### 6.1 Growth-Driven Service Demand

Exhibit 6.1 presents a 30-year forecast of 911 service demand growth for ROW. ApexPro developed this forecast using the following population projections extracted from the Ministry of Municipal Affairs' *Places to Grow Growth Plan for the Greater Golden Horseshoe*: 624,000 residents in 2021, 742,000 by 2031, 835,000 by 2041, and 923,000 by 2051.<sup>11</sup>

Exhibit 6.1: Growth-Driven Service Demand Forecast



<sup>11</sup> This investigation's use of the *Places to Grow Growth Plan* population projections is consistent with the approach taken by other planning initiatives commissioned by WRPS, including the 2018 "Facilities Master Plan" by WalterFedy Architects.

Service demand is forecast to increase steadily, in pace with population growth, to a volume of 530,000 incoming calls for service in 2051.

The call breakdown is not expected to vary appreciably from the current split, with 911 emergencies running at about 50% of total, non-emergency calls at 45%, and internal calls at 5%.

Exhibit 6.2 presents the projected 911 communications resourcing requirements that correspond to the growth-driven call forecasts. These projections were also developed by ApexPro.

The projected staffing requirement for 2031 is 151. For 2041 it is 168, and for 2051 it is 179.

The primary 911 center (Maple Grove) is currently outfitted with 18 communications workstations. The projected growth-driven requirement for 2021 is 19 workstations; however, the additional workstation cannot be accommodated due to existing spatial constraints.

The projected growth-driven requirement for 2031 is 25 communications workstations. For 2041 it is 28, and for 2051 it is 30 communications workstations.

**Exhibit 6.2: Growth-Driven 911 Communications Requirements**

	2021	PROJ D GROWTH DRIVEN REQ TS		
	APPROVED	2031	2041	2051
<b>Call Volume</b>	<b>320,457</b>	<b>425,000</b>	<b>480,000</b>	<b>530,000</b>
<b>Staffing Requirements</b>				
Staff Sergeant	1	1	1	1
Supervisors	4	4	4	4
Call Taker / Dispatchers (full-time)	87	96	108	116
Call Taker / Dispatchers (part-time)	15	34	38	41
Switchboard (full-time)	3	6	6	6
Switchboard (part-time)	3	6	6	6
<u>Trainers</u>	<u>2</u>	<u>4</u>	<u>5</u>	<u>5</u>
<b>Total</b>	<b>115</b>	<b>151</b>	<b>168</b>	<b>179</b>
<b>Workstation Requirements</b>				
Supervisor Workstation	1	1	1	1
<u>Call Taker/ Dispatcher Workstations</u>	<u>17</u>	<u>24</u>	<u>27</u>	<u>29</u>
<b>Total</b>	<b>18</b>	<b>25</b>	<b>28</b>	<b>30</b>
<b>Switchboard Desks</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>

## 6.2 911 Resourcing Requirements w' NG 911

NG 911 is a federally “mandated” replacement of the 30+ year-old Canadian 911 network that is intended to provide better location accuracy for calls, more ways to contact 911 (text, photo, and video streaming), greater interoperability with other agencies, and improved responder and community safety. CRTC requires NG 911 network providers to be operable by March 4, 2025.

*“Canadians depend on the provision of reliable and effective 9-1-1 services to seek help in an emergency. As technology and consumers’ needs evolve, so do consumers’ expectations related to 9-1-1 services.*

*In the coming years, telecommunications networks across Canada, including the networks used to make 9-1-1 calls, will continue to transition to Internet Protocol (IP) technology. This will enable Canadians to access new, enhanced, and innovative 9-1-1 services with IP-based capabilities, referred to as next-generation 9-1-1 (NG9-1-1) services.*

*Canadians could stream video from an emergency incident, send photos of accident damage or a fleeing suspect, or send personal medical information, including accessibility needs, which could greatly aid emergency responders.”*<sup>12</sup>

WRPS, on behalf of ROW, is actively implementing the requisite NG 911 technology, targeting to have it in place by mid-to-late 2024 (i.e., at least 3 to 6 months in advance of the federally mandated go live date of March 4, 2025).

ApexPro consulted with WRPS IT on the potential impacts of NG 911, as they pertain to future emergency communications services demand.

WRPS IT suggest that the 911 call taking workload could increase by up to 30%, for the following reasons. 911 centers typically receive between 3 and 5 voice telephone notifications for a major occurrence. With the advent of text messaging the number of notifications is likely to be higher. Also, text exchanges can take up to 3 times longer than a voice call. Staffing, training, and quality assurance requirements could increase proportionately.

ApexPro has adopted the above suggestion of 30% as an upper end estimate to account for the impacts of NG 911 on future communications services demand.

ApexPro’s forecasts of future 911 communications requirements, with NG 911, are shown in Exhibit 6.3 (next page).

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<sup>12</sup> Source: Telecom Regulatory Policy, CRTC 2017-182, June 1, 2017

### Exhibit 6.3: Forecast 911 Communications Requirements w' NG 911

	2021	PROJECTED REQUIREMENTS w' NG 911		
	APPROVED	2031	2041	2051
<b>Call Volume</b>	<b>320,457</b>	<b>425,000</b>	<b>480,000</b>	<b>530,000</b>
<b>Staffing Requirements</b>				
Staff Sergeant	1	1	1	1
Supervisors	4	4	4	4
Call Taker / Dispatchers (full-time)	87	108	124	136
Call Taker / Dispatchers (part-time)	15	38	43	48
Switchboard (full-time)	3	6	6	6
Switchboard (part-time)	3	6	6	6
<u>Trainers</u>	<u>2</u>	<u>5</u>	<u>6</u>	<u>7</u>
<b>Total</b>	<b>115</b>	<b>168</b>	<b>190</b>	<b>208</b>
<b>Workstation Requirements</b>				
Supervisor Workstation	1	1	1	1
<u>Call Taker/ Dispatcher Workstations</u>	<u>17</u>	<u>27</u>	<u>31</u>	<u>34</u>
<b>Total</b>	<b>18</b>	<b>28</b>	<b>32</b>	<b>35</b>
<b>Switchboard Desks</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>

The reader is reminded that the above figures are total resourcing requirements accounting for service demand growth and NG 911.

With NG 911, the anticipated communications staffing requirement for 2051 is 208 (29 higher than the growth-driven requirement of 179 shown previously in Exhibit 6.2), and the anticipated communications workstations requirement for 2051 is 35 (5 higher than the growth-driven requirement of 30 shown previously in Exhibit 6.2).

## 6.3 Video Streaming

Law enforcement departments are leveraging a wide and expanding range of technologies, including video streaming, to effectively co-ordinate front-line and investigative resources.

Video streaming sources include in-vehicle and body-worn cameras, cameras mounted on aircraft and remote piloted drones, and video feeds managed by public and private sector organizations.

ApexPro discussed the use of video streaming with WRPS IT. General view is that the RTOC will continue to leverage an expanding range of video feeds but that large scale video streaming will not be introduced into the 911 center.

## 6.4 Community-Based Mental Health Crisis Response

The mental health community has highlighted the need for diverse responses to individuals suffering from a mental health crisis.

WRPS, in collaboration with ROW PHSS and others, is pursuing multiple initiatives that are intended to improve the way that mental health related calls for service are handled. The initiatives (described briefly below) share the following common goal: to ensure individuals suffering from a mental health crisis of better health outcomes by providing the most appropriate community-based crisis response at the time of need.

### Integrated Mobile Police and Crisis Team (IMPACT)

Launched in 2021, IMPACT is a joint undertaking by WRPS and the Canadian Mental Health Association Waterloo Wellington (CMHA WW). It also involves Guelph Police, Wellington OPP, and the University of Guelph Campus Community Police.

It consists of 3 mobile teams, staffed with MHA clinicians, that operate across the Region seven days a week, generally between the hours of 9 am and 11 pm.

Any WRPS Officer (or 911 Communicator) can request that an MHA clinician attend a call for service. Requests that are made by police officers in-the-field are channeled through the 911 center.

IMPACT is transforming the way mental health related calls for service are handled by providing a collaborative, immediate and comprehensive crisis response for individuals and their families. Where appropriate, IMPACT will also provide police officers with post-traumatic support.

### Crisis Call Diversion Pilot Project

WRPS has received provincial funding to implement a “Crisis Call Diversion” pilot project. The funds will be used to co-locate a crisis response coordinator, with specialized training in mental health crisis response, in the 911 call center.

If a 911 call taker determines that the caller is experiencing a non-emergent mental health-related issue that may benefit from a non-police response, they will transfer the call to the resident crisis response coordinator.

Crisis response coordinator will be responsible to rapidly assess, and respond effectively and compassionately, to the caller’s needs. This, potentially to include immediate crisis intervention and connecting the caller to additional community-based crisis response services appropriate to the callers needs.

By diverting non-emergent mental health-related calls to a crisis response coordinator, this initiative will also directly benefit 911 communications, in that

911 call takers/dispatchers will be freed up to deal with emergency incidents requiring a police response.

### Mobile Crisis Team

WRPS is participating with ROW PHSS, ROW Corporate, and ROW Paramedic Services, to design and launch an additional crisis support service for individuals suffering from a mental health crisis. The proposed initiative is expected to be launched later this year.

The initiative, which is based on a recommendation put forward by ROW's Anti-Racism Advisory Working Group, will establish an in-the-field mobile crisis team (an outreach resource) that will routinely check on individuals known to be suffering from mental health issues, e.g., repeat callers for assistance, homeless encampments, etc.<sup>13</sup> As currently envisaged, a Crisis Response Coordinator co-located in the 911 center, will serve as principal communications officer for the mobile crisis teams.

### Assumptions Adopted by this Investigation

- 911 center will serve as principal communications hub for these (and like) initiatives.
- Crisis Response Coordinator(s) will be co-located in the 911 center.
- They will require 1-2 workstations, each to be outfitted with telephone, computer, CAD, and portable radio.

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<sup>13</sup> ROW Press Release (Dec 15, 2021): ROW Plan and Budget for 2022 includes implementing the recommendations of the Anti-Racism Advisory Working Group, including "launch an alternative crisis support service for mental health".

## 6.5 Estimated Dispatch Requirements for PRIDE

PRIDE (Police Regionalized Information Data Entry) is a cooperative involving WRPS; Guelph, Brantford, Stratford, and South Simcoe police departments; and City of Kitchener Fire (which is responsible for all fire dispatching in ROW).

As illustrated by Exhibit 4.1 (next page), PRIDE members manage their own dispatch centers, deploying their organization's emergency responders using a common computer aided dispatch (CAD) system, on a shared basis.

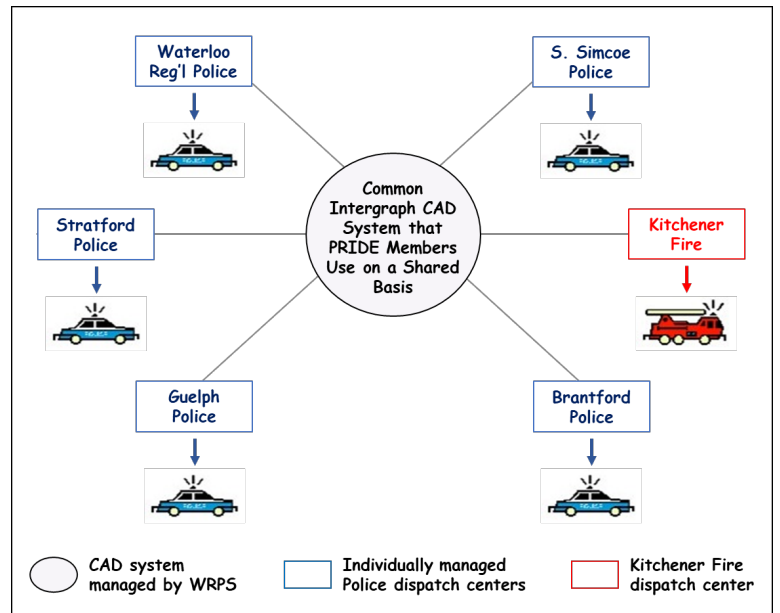
The CAD (manufactured by Hexagon / formerly Intergraph) is housed at WRPS headquarters. WRPS is accountable (on behalf of PRIDE) for the integrity and security of the resident CAD, and interconnected network devices.

The systems are managed and maintained by WRPS IT personnel whose expertise includes software applications, business systems, data security, fiber optic networks, radio, and mobile workstations.

WRPS IT is also responsible for database management to ensure up-to-date mapping and consistency of mission critical information.

Advantages afforded to members of PRIDE are listed below.

Exhibit 6.4: PRIDE Cooperative



- Autonomy over their own call-taking and dispatching operations.
- Reliable and resilient CAD and other technologies (with built-in emergency backup), managed round-the-clock by dedicated WRPS IT personnel.
- Coordinated data management ensures regular, consistent, and timely mapping and mission critical information updates.
- Large cost savings. Members don't have to implement, staff, operate, or maintain costly individual CAD systems.
- Costs on a shared basis are lower for each member. Hence, there's greater willingness by members to invest periodically in requisite systems upgrades.

Given current trends to consolidate common public sector services, WRPS anticipates:

- a) That PRIDE membership is likely to expand over time. WRPS has already received several enquiries. PRIDE members are currently working on a business plan that will address the question of future expansion.

General view is that, even if PRIDE membership were to expand, the 911 communications center should not be adversely impacted. Albeit WRPS IT would require additional staffing to manage the expanded operation.

- b) That one or more PRIDE members may ask WRPS to consider taking on their organization’s dispatch function. ApexPro was asked to briefly assess the potential implications vis-à-vis additional dispatch resourcing requirements.
- Dispatch centers managed by Brantford, Stratford, and South Simcoe police departments are secondary PSAP’s. They are included in this assessment.
  - Guelph police department’s dispatch center is a primary PSAP. It is excluded from this assessment.
  - Service demand is based on recorded CAD events for 2021. Future service demand growth is assumed to keep pace with that of ROW.
  - Presented below are preliminary estimates of dispatch requirements for PRIDE. Going forward, these estimates will need to be refined.

**Exhibit 6.5: Preliminary Dispatch Estimates for PRIDE**

	DISPATCH REQUIREMENTS FOR PRIDE			
	2021	2031	2041	2051
<b>Call Volume</b>				
Stratford	25,000	33,000	38,000	41,000
Brantford	52,000	68,000	78,000	86,000
S. Simcoe	<u>26,000</u>	<u>34,000</u>	<u>39,000</u>	<u>43,000</u>
Total	103,000	135,000	155,000	170,000
Call Taker/ Dispatcher Workstations	7	11	11	12
Call Taker / Dispatchers (full-time)	28	44	44	48
Call Taker / Dispatchers (part-time)	10	15	15	16
Training Staff	1	2	2	2
Switchboard Operators (full-time)	1	1	2	2
Switchboard Operators (part-time)	1	1	2	2

Includes NG 911

## 7 Potential 911 Center Sites

The needs assessment investigated the following potential 911 center sites.

1. Expansion within WRPS headquarters (Maplegrove)

This option was discarded because of existing spatial constraints within the existing building.

2. Relocation to alternative regional premises

ROW Facilities Management identified the following regional facilities, where space could potentially be made available: 134, 150 and 200 Frederick Street (Kitchener); 20 Weber Street (Kitchener); 150 Main Street (Cambridge); and 99 Regina Street South (Waterloo).

All facilities (except for 99 Regina) were discarded from consideration, either by way of review or discussions with ROW Facilities Management, mainly for the following reasons: insufficient space, or concerns over reliable connectivity to public safety voice radio system

99 Regina St., South, was retained as a potential backup 911 center site following discussions with ROW Facilities Management, in which they advise that up to 30,000 SF can be made available on floors 4 and 5 of the building. A map showing the site's location is appended at Appendix G, Exhibit G.2.

3. Construction of a new purpose-built facility.

The following 3 locations were shortlisted as candidate sites on which to construct a "new build" option, for either a primary or backup 911 center.

a) New build co-located at WRPS headquarters campus (Maplegrove).

A map showing the site's location is appended at Appendix G, Exhibit G.3. As illustrated therein, there is ample space on campus to accommodate a 2-storey building of up to 50,000 SF.

b) New build in the vicinity of WRESTRC

Waterloo Region Emergency Services Training Center (WRESTRC) is located on a large tract of land situated on the south side of Erbs Road in Wilmot Township (immediately to the west of its jurisdictional boundary with City of Waterloo). The location is shown in Appendix G, Exhibit G.4.

The property, much of which is owned by ROW, currently houses WRESTRC (including administration and emergency services training building, multiple burn buildings for fire training, and an emergency vehicle operations course for emergency personnel driver training). The property also houses a newly built (2020) Regional Paramedic Services headquarters / fleet center.

Given the current on-site occupants, one might generally describe the property as an evolving emergency services campus.

Surrounding lands to the north, south, and west are mainly agricultural. An inactive land fill (that is currently capped) and a methane capture and co-generation plant is situated to the east of the property. A stone quarry is situated about 0.5 km to the south.

c) New build near Baden radio network tower.

Baden Tower is a 291 metres (958 ft) television transmission tower located near the community of Baden, in the Township of Wilmot. The location is shown in Appendix G, Exhibit G.5.

Baden Tower also serves as primary backup tower for ROW's mission critical P25 public safety voice radio network.

The tower sits on top of Baden Hill which, at an elevation of about 430 metres (1,400 ft), is one of the highest elevations in the Region. The tower can be seen from practically anywhere in the Township of Wilmot. Potential communities within direct line of sight of Baden Tower (i.e., potential candidate sites for a 911 center) include Baden, New Hamburg, Luxemburg, Petersburg, Philipsburg, and St. Agatha.

## 8 Communications Center Scenarios

The needs assessment investigated the 6 communications center scenarios shown in Exhibit 8.1.

All scenarios (primary and backup) include the following core elements: growth-driven service demand, RTOC and MISC, NG 911, and community-based mental health crisis response.

Scenarios P2-P4 includes dispatching for PRIDE. Scenarios P3 and P4 include co-location with the Region’s Service First Call Center (SFCC). Scenario P4 includes co-location with fire dispatch managed by Kitchener Fire (KFD).

Scenario B1 assumes construction of a new purpose-built facility. Scenario B2 assumes use of an existing ROW-owned building (99 Regina St., South, Waterloo).

In the context of this investigation, co-location is intended to mean ... all groups to occupy the same facility, but each continues to operate as an independent entity with their own staff, work areas, and amenities.

Co-location of ground ambulance dispatch (i.e., the Central Ambulance Communications Center managed by Ministry of Health) is excluded from the investigation.

Exhibit 8.1: Communications Center Scenarios

Scenario / Components	Primary 911 Center				Backup 911 Center	
	P1	P2	P3	P4	B1	B2
	Core	Core + PRIDE	Core + PRIDE + SFCC	Core + PRIDE + SFCC + KFD	New Build	99 Regina St., S.
Sized to accommodate ROW long-term growth (2051)	√	√	√	√	√	√
Includes RTOC & MISC	√	√	√	√	√	√
Includes NG 911	√	√	√	√	√	√
Includes community-based mental health crisis response initiatives	√	√	√	√	√	√
Includes dispatching for PRIDE	x	√	√	√	x	x
ROW Service First Call Center (SFCC) is co-located on premises	x	x	√	√	x	x
Kitchener Fire “main” dispatch is co-located on premises	x	x	x	√	x	x

## 9 Floor Space Estimates and Costs

### 9.1 Floor Space Requirements - Primary 911 Center

Floor space estimates for the primary 911 center are presented in Exhibit 9.1. Figures shown are for full build out 2051. Assessment details and floor area estimates at 10-year intervals (2021, 2031, 2041 and 2051) are appended at Appendix E.

Exhibit 9.1: Floor Space Estimates – Primary 911 Center

<i>Scenario</i>	P1 Core	P2 Core + PRIDE	P3 Core + PRIDE + SFCC	P4 Core + PRIDE + SFCC + KFD
COMMUNICATIONS CENTER	7,000	8,800	8,800	8,800
TRAINING AREA	2,900	3,150	3,150	3,150
RTOC & MISC	2,800	2,800	2,800	2,800
COMMON SUPPORT	3,650	4,000	4,000	4,000
MEETING SPACE	650	650	650	650
INFORMATION TECHNOLOGY	1,750	1,750	1,750	1,750
SECURE ENTRY	750	750	750	750
MECHANICAL	2,000	2,000	2,000	2,000
GROSS UP (40%)	8,600	9,550	9,550	9,550
<b>WRPS TOTAL SQ. FT. (GROSS )</b>	<b>30,100</b>	<b>33,450</b>	<b>33,450</b>	<b>33,450</b>
SFCC	0	0	2,500	2,500
KITCHENER FIRE (CO-LOCATED)	0	0	0	11,500
<b>BUILDING TOTAL SQ. FT. (GROSS )</b>	<b>30,100</b>	<b>33,450</b>	<b>35,950</b>	<b>47,450</b>

#### Commentary

The above figures assume construction of a new purpose-built facility and therefore include floor area provisions for secure entry/reception, mechanical room, loading area, etc.

The above figures apply to new builds at locations other than Maplegrove campus. Potential floor space savings of about 2,000 SF if the new build is constructed at Maplegrove campus. This, by leaving CAD at WRPS HQ and connecting it to the new build by fiber.

If a decision is made to have the backup 911 center double as training center (as is the current practice), then the above figures for the primary center would be lower by about 2,000 SF.

Scenario P4 assumes co-location with KFD’s “main” fire dispatch. The floor area estimate for fire dispatch is taken from the Pomax 2021 report.<sup>14</sup> That document estimates that fire dispatch, as stand-alone, will require 8,835 SF net space (11,046 SF gross) by 2041. ApexPro increased this figure by 3% to reflect 2051.

If Scenario P4 were based on co-location with KFD’s “backup” fire dispatch, then the figure shown would be lower by about 4,000-6,000 SF.

## 9.2 Floor Space Requirements - Backup 911 Center

Floor space estimates for the backup 911 center are presented in Exhibit 9.2. These figures are also for full build out (2051). Assessment details and floor area estimates at 10-year intervals (2021, 2031, 2041 and 2051) are appended at Appendix E

Exhibit 9.2: Floor Space Estimates - Backup 911 Center

<i>Scenario</i>	<b>B1 New Build</b>	<b>B2 99 Regina St. S.</b>
COMMUNICATIONS CENTER	7,000	7,000
TRAINING AREA	400	400
RTOC & MISC	2,800	2,800
COMMON SUPPORT	3,200	2,200
MEETING SPACE	700	0
INFORMATION TECHNOLOGY	1,800	1,800
SECURE ENTRY	700	0
MECHANICAL	2,000	0
GROSS UP	7,400	2,800
<b>TOTAL REQ'T SQ. FT. (GROSS )</b>	<b>26,000</b>	<b>17,000</b>

### Commentary

Backup center and primary 911 center are assumed to house the same number of communications workstations. Assessing call taking workload relative to

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<sup>14</sup> A Review of Fire and Police Communications and Dispatch in Waterloo Region, Pomax Consulting, November 2021.

NENA standards may reduce the backup 911 center workstation requirements. Such analysis is excluded from this investigation.

Backup 911 center is assumed to exclude co-locations with SFCC or KFD.

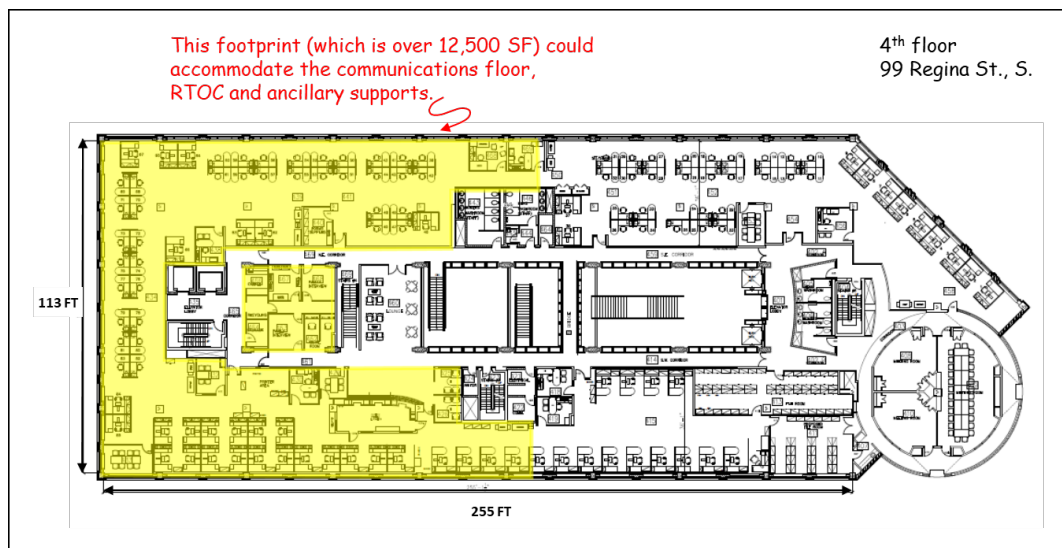
Backup 911 center is also assumed to exclude dispatch for PRIDE. If this were included, then the center's footprint would need to be about 2,000-2,500 SF larger.

Assessment assumes a gross up of 40% for new build (Scenario B1), and a lower gross up of 20% for renovations at the existing 99 Regina St. building (Scenario B2).

Waterloo Facilities Management advises that up to 30,000 SF can be made available on floors 4 and 5 of the building at 99 Regina St. S. (i.e., up to 15,000 SF per floor).

From a spatial perspective, this accommodation provides ample space for a backup 911 center, with the communications floor, RTOC, and ancillary supports located on one floor (as illustrated in Exhibit 9.3); and training staff space, MISC and IT support located on another.

### Exhibit 9.3: Potential Backup Center Footprint



## 9.3 Order of Magnitude Costs

Order of magnitude costs for each site/scenario are presented in Exhibit 9.4 (next page).

Cost for a new primary 911 center at WRESTRC and Baden ranges from \$50 M (Sc. P1) to \$70 M (Sc. P4), whereas the cost at Maplegrove campus is lower, ranging from \$45 M to \$65 M.

The lower cost of a new build at Maplegrove is attributed to the following:

- Lower floor space requirement of about 2,000 SF, by leaving CAD at WRPS HQ and connecting to the new build by fiber.
- Lower technology costs by using the existing underground fiber line infrastructure (i.e., the existing dedicated fiber lines for CAD and radio).

Cost for a new backup 911 center at 99 Regina is about \$20 M, i.e., about one-half the cost of a “new build” (\$40 M).

Exhibit 9.4: Order of Magnitude Costs (\$ M)

	GROSS SF	PRIMARY 911 CENTER		
	Full Build Out 2051	Maplegrove	WRESTRC	Baden Tower
		New Build	New Build	New Build
<b>P1: Core</b>	28,100	\$45	--	--
	30,100	--	\$50	\$50
<b>P2: Core + PRIDE</b>	31,450	\$50	--	--
	33,450	--	\$55	\$55
<b>P3: Core + PRIDE + SFCC</b>	33,950	\$55	--	--
	35,950	--	\$60	\$60
<b>P4: Core + PRIDE + SFCC + KFD</b>	45,450	\$65	--	--
	47,450	--	\$70	\$70

	GROSS SF	EMERGENCY BACKUP CENTER		
	Full Build Out 2051	99 Regina, S.	WRESTRC	Baden Tower
		Renovation	New Build	New Build
<b>B1: New Build</b>	26,000	--	\$40	\$40
<b>B2: 99 Regina St.</b>	17,000	\$20	--	--

Cost estimates are rounded to the nearest \$5 M.

Main assumptions on which the cost estimates are based, are listed below. Additional costing details are presented in Appendix F.

- Costs include construction, furnishings, and technology. Cost of land is excluded.
- Costs are in 2022 dollars. HST and other applicable taxes are excluded.
- Floor space requirements and construction costs are for full build out (2051).

- Furnishings and technology costs are based on resourcing requirements in 2031. This accounts for NG 911 (go live in 2025) and short-term growth beyond the go live date.
- Assumed cost for “new build” construction is \$800 per SF. Assumed cost for “renovation” of the 99 Regina St. South building is \$400 per SF.
- Assessment assumes that the new primary center will be outfitted with new workstations and communications consoles. Workstations and consoles currently at Maplegrove will be transferred to the new backup center.
- Furnishings and technology costs for SFCC and KFD are excluded.
- Figures include cost estimates for building technology infrastructure, i.e., Bell 911 trunk, fiber lines, network connections, licenses, UPS, firewall infrastructure, and security and access control.
- Figures include 10% for design and 15% for contingency.
- Figures include salaries (and benefit) costs for WRPS / ROW staff who will be dedicated to project implementation.
- Backup center and primary 911 center are assumed to house the same number of communications workstations. Assessing call taking workload relative to NENA standards may reduce the backup 911 center workstation requirements. Such analysis is excluded.

## 10 Preferred 911 Center Sites

### 10.1 Site Selection Criteria

A principal objective of this needs assessment is to recommend preferred locations for an expanded primary 911 center, and for an emergency backup 911 center.

Site selection criteria that were adopted for this assessment are listed below.

The criteria were assembled from the following sources: NENA Public Safety Answering Point Site Selection Criteria Information Document (2018); best practice surveys of contemporary emergency communications centers; and suggestions presented by WRPS personnel responsible for facilities management and IT.

- *Floor Space*: Site's capability to accommodate requisite floor space
- *Radio Connectivity*: Reasonable assurance of reliable connectivity to the Region's public safety voice radio system
- *Disaster Relief Fiber (Radio)*: Need for additional dedicated fiber (for radio).
- *CAD Connectivity*: Need for additional dedicated fiber (for CAD).
- *Hazards / Operational Conflicts*: Site's potential vulnerabilities to natural or man-made hazards, and mitigation strategies
- *Best Practice Features*: Capability to accommodate best practice features
- *Employee Commuting & Parking*: Employee accessibility to the site by auto and public transit
- *Safety and Security*: Site's existing access-control, and safety and security features (or site's capability to incorporate requisite requirements)
- *Value Added*: Identify additional features of relevance to the investigation.
- *Cost*: This to include cost of land, construction, furnishings, and technology.

### 10.2 Assessment of Potential 911 Centre Sites

The shortlisted sites (Maple Grove campus, WRESTRC, Baden Tower, and 99 Regina) are assessed using the above-listed site selection criteria.

The assessment is presented in Exhibit 10.1 (beginning on the next page).

Exhibit 10.1: Assessment of Potential 911 Center Sites

Maplegrove Campus	WRESTRC Campus	Baden Tower Area	99 Regina St., S.
New Build (primary 911 center)	New Build (primary or backup 911 center)	New Build (primary or backup 911 center)	Renovation of Existing Building (backup 911 center)
<b>Floor Space</b>			
Ample space on campus to accommodate a 2-storey building of up to 50,000 SF (for an all inclusive primary 911 center)	Likely to be several properties in the area that can accommodate a 2-storey building of up to 50,000 SF (for an all inclusive primary 911 center)	Likely to be several properties in the area that can accommodate a 2-storey building of up to 50,000 SF (for an all inclusive primary 911 center)	Waterloo Facilities Management advises that up to 30,000 SF can be made available on floors 4 and 5 of the building. This is more than ample space for a backup 911 center.
<b>Radio Connectivity</b>			
<p>Currently, the primary 911 center and the primary radio tower are co-located (with direct sight line) at Maplegrove campus. This assures 911 communications of reliable mission critical connectivity to ROW's public safety voice radio system.</p> <p>The same would apply to a new primary 911 center at Maplegrove campus, adjacent to the primary radio tower.</p>	<p>CBC/Turris voice radio tower is situated in a rural field about 2 km to the north of WRESTRC. There is an unobstructed line of sight between WRESTRC campus and the tower.</p> <p>This will assure a 911 center at WRESTRC of reliable mission critical connectivity to the Region's public safety voice radio system.</p>	<p>An unobstructed line of sight extends for several kilometers in all directions from Baden Tower.</p> <p>A 911 center situated within the general environs of Baden tower would be assured of reliable mission critical connectivity to the Region's public safety voice radio system.</p>	<p>Connectivity to the Region's public safety voice radio system needs to be investigated / confirmed by a professional with radio expertise.</p>
<b>Disaster Relief Fiber (Radio)</b>			
As shown in Exhibit 5.1, Maplegrove 911 is connected by underground fiber to the primary radio tower (230 Maplegrove), to Kitchener Fire main dispatch, and to the primary backup radio tower (Baden).	Disaster relief fiber lines like those in Exhibit 5.1 will need to be included in the critical infrastructure supporting a new primary 911 center at WRESTRC.	A new primary 911 center at Baden tower will benefit from the existing fiber connections to the primary radio tower (230 Maplegrove) and to Kitchener Fire main dispatch (per Exhibit 5.1).	Does not apply to scenario involving a new backup 911 center at 99 Regina.

Maplegrove Campus	WRESTRC Campus	Baden Tower Area	99 Regina St., S.
New Build (primary 911 center)	New Build (primary or backup 911 center)	New Build (primary or backup 911 center)	Renovation of Existing Building (backup 911 center)
A new primary 911 center at Maplegrove campus will benefit from these existing lines.	Does not apply to scenario involving a new backup 911 center at WRESTRC.	Does not apply to scenario involving a new backup 911 center at Baden.	
<b>CAD Connectivity</b>			
<p>If CAD is relocated to a new primary 911 center at Maplegrove campus, then the existing underground fiber lines to Kitchener Fire main dispatch, and Kitchener Fire backup dispatch, will need to be extended.</p> <p>CAD may be maintained at WRPS HQ and connected to a new 'on-campus' primary 911 center by fiber. In this case, new fiber connections to KFD (main or backup) will not be needed.</p> <p>New fiber connection will also be needed to any future relocation of WRPS backup dispatch.</p>	<p>If CAD is maintained at WRPS HQ, a new underground CAD fiber connection to WRESTRC will be needed. This applies to both WRESTRC scenarios (as primary or backup 911 center).</p> <p>If CAD is relocated to a new primary 911 center at WRESTRC, then new underground CAD fiber connections to Kitchener Fire main dispatch, and Kitchener Fire backup dispatch, will be needed. A new fiber connection to any future relocation of WRPS backup dispatch will also be needed.</p>	<p>If CAD is maintained at WRPS HQ, a new underground CAD fiber connection to Baden will be needed. This applies to both Baden scenarios (as primary or backup 911 center).</p> <p>If CAD is relocated to a new primary 911 center at Baden, then new underground CAD fiber connections to Kitchener Fire main dispatch, and Kitchener Fire backup dispatch, will be needed. A new fiber connection to any future relocation of WRPS backup dispatch will also be needed.</p> <p>Fiber routings to Baden may be longer than those to sites situated in / closer to more urban settings (i.e., Maplegrove, WRESTRC, and 99 Regina).</p>	<p>A dedicated underground CAD fiber connection to WRPS backup at 99 Regina will be needed. This applies to all primary 911 center scenarios (i.e., CAD maintained at Maplegrove HQ or CAD relocated to a new primary 911 center).</p> <p>It is understood that 99 Regina is already serviced by Region of Waterloo's fiber network. It may be feasible to utilize ROW fiber network to connect to CAD.</p>
<b>Hazards / Operational Conflicts</b>			
<p>Red Cross parks 4 shipping containers on the former test track at Maplegrove.</p> <p>If a new 911 center is to be built on the former test track (as per Appendix G, Exhibit G.3), then</p>	<p>An inactive land fill (that is currently capped) and a methane capture and co-generation plant is situated to the east of WRESTRC (per Appendix G, Exhibit G.4).</p>	<p>None identified; albeit this should be confirmed in conjunction with any future property search.</p>	<p>Surrounding land uses include a rail spur line and William Street pumping station.</p> <p>The spur line is a relatively light use rail line servicing about 4-5 companies in Woolwich Twp. It</p>

Maplegrove Campus	WRESTRC Campus	Baden Tower Area	99 Regina St., S.
<p align="center"><b>New Build</b> (primary 911 center)</p>	<p align="center"><b>New Build</b> (primary or backup 911 center)</p>	<p align="center"><b>New Build</b> (primary or backup 911 center)</p>	<p align="center"><b>Renovation of Existing Building</b> (backup 911 center)</p>
<p>alternate arrangements for container storage will have to be made. WRPS should be able to find alternate space on campus.</p>	<p>Since WRESTRC is a large tract of land, situating a new 911 center at a distance from the plant (as per the Paramedic Services HQ) may be feasible. This, and other mitigations, would need to be confirmed.</p>		<p>carries 4-5 train movements per week (about 900 railway cars annually), mainly in the evening and at night. <sup>15</sup></p> <p>Situated 420 feet to the north and separated from 99 Regina by an above grade multi-level parking garage (and given the relatively light rail traffic) the rail spur does not appear to be an obstacle.</p> <p>William Street pumping station, situated immediately to the south of the building, is also not an obstacle; this, according to a 2016 Environmental Assessment, which investigated possible impacts to public health and safety. <sup>16</sup></p>
<p><b>Best Practice Features</b></p>			
<p>As a new build, it should be relatively simple to incorporate best practices into the primary 911 center design.</p>	<p>As a new build, it should be relatively simple to incorporate best practices into the 911 center design.</p>	<p>As a new build, it should be relatively simple to incorporate best practices into the 911 center design.</p>	<p>As a renovation of an existing building, it will not be feasible to include all best practice features (i.e., raised floor).</p> <p>If a primary 911 center were being considered, then this would be a shortcoming. Since the subject is a backup 911 center (for occasional</p>

<sup>15</sup> Source: ROW Corporate Resources Report “CR-RS-14-029/E-14-074”, May 27, 2014.

<sup>16</sup> “William Street and Strange Street Water Supply Systems Class Environmental Assessment Environmental Study Report”, prepared for ROW, by XCG Consultants with Associated Engineering and D.C. Damman and Associates, September 2016. Refer to pages 60-63.

Maplegrove Campus	WRESTRC Campus	Baden Tower Area	99 Regina St., S.
New Build (primary 911 center)	New Build (primary or backup 911 center)	New Build (primary or backup 911 center)	Renovation of Existing Building (backup 911 center)
			short-term use), this is not considered significant.
<b>Employee Commuting &amp; Parking</b>			
Campus commute is mainly by car, but employees are accustomed to it. Ample on-site parking	Commute would also be mainly by car. Center’s design should be able to incorporate ample on-site parking.	Commute would also be mainly by car. Center’s design should be able to incorporate ample on-site parking.  Time spent commuting to Baden tower area (i.e., a relatively long commute) would be a drawback.	99 Regina is readily accessible by public transit including the recently built ION rapid transit line.  For those commuting by car, parking will be an issue. There’s relatively little on-site parking. Nearby parking lots will require employees to pay for parking.
<b>Safety and Security</b>			
Safety and security features at current HQ (including access, egress, and parking) include lighting, camera coverage, entry intercom system, locked (card access) entries, and visitor screening.  As a new build project, it should be relatively simple to incorporate similar features into a new 911 center.	As a new build, it should be relatively simple to incorporate high-level safety and security into a new 911 center.	As a new build, it should be relatively simple to incorporate high-level safety and security into a new 911 center.	Safety and security features at 99 Regina include lighting, camera coverage, locked (card access) entries, on-site security personnel, staffed ground floor reception, and visitor screening.
<b>Value Added</b>			
Operational benefits to having 911 center, RTOC, and MISC on campus adjacent to WRPS headquarters.	Potential to increase “rural patrol” presence in Wilmot Township (by co-locating rural patrol administration and command,	Potential to re-institute “rural patrol” presence in Wellesley Township (by co-locating rural patrol administration and command,	Smaller overall floor footprint. No need for separate mechanical area, loading area, or separate secure main entry / reception.

Maplegrove Campus	WRESTRC Campus	Baden Tower Area	99 Regina St., S.
New Build (primary 911 center)	New Build (primary or backup 911 center)	New Build (primary or backup 911 center)	Renovation of Existing Building (backup 911 center)
<p>Lower floor space requirement of about 2,000 SF, by leaving CAD at WRPS HQ and connecting to the new build by fiber.</p> <p>Lower technology costs by using the existing underground fiber line infrastructure (i.e., the existing dedicated fiber lines for CAD and radio).</p>	<p>either in the same building, or in an adjacent on-site facility).</p>	<p>either in the same building, or in an adjacent on-site facility).</p>	<p>Backup 911 center will have access to the building's existing meeting rooms (on a shared basis with other building tenants).</p> <p>Center's employees will have use of the building's existing amenities which include workout area (gym) and change rooms.</p>
<b>Cost – Land</b>			
<p>No land cost. Property is owned by ROW</p>	<p>Cost of land will need to be confirmed.</p> <p>No cost if property is owned by ROW. Additional cost if property must be purchased from 3<sup>rd</sup> party.</p>	<p>Cost of land will need to be confirmed.</p> <p>No cost if property is owned by ROW. Additional cost if property must be purchased from 3<sup>rd</sup> party.</p>	<p>No land cost. Building is owned by ROW</p>
<b>Cost - Construction</b>			
<p>Construction cost for a new primary 911 center at Maplegrove campus ranges from \$28 M (Sc. P1) to \$45 M (Sc. P4).</p>	<p>Construction cost for a new primary 911 center at WRESTRC ranges from \$31 M (Sc. P1) to \$48M (Sc. P4).</p> <p>Construction cost for a new backup 911 center is estimated at \$27 M.</p>	<p>Construction cost for a new primary 911 center at Baden ranges from \$31 M (Sc. P1) to \$48M (Sc. P4).</p> <p>Construction cost for a new backup 911 center is estimated at \$27 M.</p>	<p>Construction cost for a new backup 911 center at 99 Regina is estimated at \$9 M.</p> <p>This is 1/3 the construction cost of a “new build” backup 911 center.</p>
<b>Cost - Furnishings</b>			
<p>Cost to furnish a new primary 911 center is \$2 to \$3 M (w' slight savings if CAD is maintained at WRPS HQ).</p>	<p>Cost to furnish a new primary 911 center is \$2 to \$3 M.</p> <p>Cost to furnish a new backup 911 center is about \$1 M.</p>	<p>Cost to furnish a new primary 911 center is \$2 to \$3 M.</p> <p>Cost to furnish a new backup 911 center is about \$1 M.</p>	<p>Cost to furnish a new backup 911 center is about \$1 M.</p> <p>This cost estimate excludes furnishings for SFCC &amp; KFD.</p>

Maple Grove Campus	WRESTRC Campus	Baden Tower Area	99 Regina St., S.
<p align="center"><b>New Build</b> (primary 911 center)</p>	<p align="center"><b>New Build</b> (primary or backup 911 center)</p>	<p align="center"><b>New Build</b> (primary or backup 911 center)</p>	<p align="center"><b>Renovation of Existing Building</b> (backup 911 center)</p>
<p>These cost estimates exclude furnishings for SFCC &amp; KFD.</p>	<p>These cost estimates exclude furnishings for SFCC &amp; KFD.</p>	<p>These cost estimates exclude furnishings for SFCC &amp; KFD.</p>	
<p><b><i>Cost - Technology</i></b></p>			
<p>Cost to outfit a new primary 911 center at Maple Grove campus is \$17 to \$18 M.  This estimate excludes cost to outfit SFCC &amp; KFD.</p>	<p>Cost to outfit a new primary 911 center at WRESTRC is \$19 - \$20M.  Cost to outfit a new backup 911 center is about \$13 M.  These estimates exclude cost to outfit SFCC &amp; KFD.</p>	<p>Cost to outfit a new primary 911 center at Baden is \$19 - \$20 M.  Cost to outfit a new backup 911 center is less than \$13 M.  These estimates exclude cost to outfit SFCC &amp; KFD.</p>	<p>Cost to outfit a new backup 911 center at 99 Regina St., South, is about \$12 M.  This estimate excludes cost to outfit SFCC &amp; KFD.</p>

### 10.3 Assessment Summary

The assessment presented on the prior six pages is summarized below, in Exhibit 10.2.

For the primary 911 center, the assessment favours a new build co-located at WRPS campus (Maplegrove). For the backup 911 center, the assessment favours the existing ROW-owned building at 99 Regina St., S. (Waterloo). The preferred 911 center locations are discussed further in Sections 10.4 and 10.5.

Exhibit 10.2: Assessment Summary

	PRIMARY 911 CENTER			EMERGENCY BACKUP CENTER		
	Maplegrove	WRESTRC	Baden Tower	99 Regina, S.	WRESTRC	Baden Tower
	New Build	New Build	New Build	Renovation	New Build	New Build
Floor Space	Green	Green	Green	Green	Green	Green
Radio Connectivity	Green	Green	Green	Grey	Green	Green
Disaster Relief Fiber (Radio)	Green	Yellow	Blue	Grey	Grey	Grey
CAD Connectivity	Green	Blue	Yellow	Green	Blue	Yellow
Hazards / Operational Conflicts	Green	Grey	Grey	Green	Grey	Grey
Best Practice Features	Green	Green	Green	Green	Green	Green
Employee Commuting / Parking	Green	Green	Yellow	Blue	Blue	Yellow
Safety and Security	Green	Green	Green	Green	Green	Green
Value Added	Green	Blue	Blue	Green	Blue	Blue
Cost - Land	Green	Grey	Grey	Green	Grey	Grey
Cost - Construction	Green	Blue	Blue	Green	Orange	Orange
Cost - Furnishings	Green	Blue	Blue	Green	Green	Green
Cost - Technology	Green	Blue	Blue	Green	Blue	Blue
Overall Ranking (1 - highest)	1	2	3	1	2	3



### 10.4 Preferred Location for Primary 911 Center

For the primary 911 center, the assessment favours a new build co-located at WRPS campus (Maplegrove), mainly for the reasons below.

- Ample space for a 2-storey building of up to 50,000 SF
- Co-located adjacent to the primary radio tower guarantees reliable connectivity to ROW’s mission critical public safety voice radio system
- Lower cost option (about \$5 M less)

- No land cost. Property is owned by ROW.
- Lower floor space requirement (and construction costs) by maintaining CAD at WRPS HQ and connecting to the new build by fiber
- Lower technology costs by tapping into existing fiber trunks
- Operational benefits to having 911 center (including RTOC and MISC) on campus adjacent to WRPS HQ.

## 10.5 Preferred Location for Backup 911 Center

For the backup 911 center, the assessment favours the existing ROW-owned building at 99 Regina St., S. (Waterloo), mainly for the reasons below.

- Significantly lower cost option (\$20 M vs. \$40 M for new build).
  - No land cost. Building is owned by ROW.
  - Renovation costs less than new build
  - 17,000 SF vs. 26,000 SF for new build. No need for meeting rooms, mechanical area, loading area, or secure main entry / reception, beyond those in the existing building.
- Waterloo Facilities Management advises that up to 30,000 SF can be made available on floors 4 and 5 of the building. This is more than ample space for a backup 911 center.
- 99 Regina is readily accessible by public transit including the recently built ION rapid transit line.
- Nearby light use rail spur does not appear to be an obstacle. Nearby water pumping station also does not appear to be an obstacle.
- Backup 911 center will have access to the building's existing meeting rooms (on a shared basis with other building tenants).
- Center's employees will have use of the building's existing amenities which include workout area (gym) and change rooms.
- *Connectivity to the Region's public safety voice radio system needs to be investigated / confirmed by a professional with radio expertise.*

## Appendix A: Consolidated Emergency Communications for ROW

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## Appendix A: Consolidated Emergency Communications for ROW

Set out below is the 25-year chronology of events and actions supporting eventual consolidation of 911, police, fire, and ambulance emergency communications in ROW.

- 1996: Regional dispatch services are discussed in the context of local government reform. Kitchener Fire assumes responsibility for dispatching Waterloo Fire, and for all fire dispatching north of Highway 401.
- 1998-99: Area Chiefs undertake and present the findings of a road tour of multiple, consolidated dispatch services.
- 2001: September 11 terrorist attacks elevate awareness to improve interoperability of communications between emergency responder agencies.
- 2007-09: A Dispatch Model Working Group is formed. PSTG Consulting reviews options for decreasing emergency services response times.
- 2012: Transportation Safety Board releases its report on a fatal 2011 helicopter crash, which includes recommendations for improving inter-agency communications in the Region
- 2014: A feasibility report by L.R. Kimball Consulting concludes that full integration of emergency dispatch services in Waterloo Region is feasible; albeit governance, labour, funding, and cost-sharing are challenges that need to be addressed. Kimball also concludes that, although MOHLTC is not prepared to participate, significant benefits can still be achieved by consolidating 9-1-1 with police and fire dispatch.
- June 2014: A recommendation to implement a common technology platform for Police and Fire dispatch is tabled at an All-Council Meeting. The recommendation is supported, as the first step forward in establishing a fully integrated emergency dispatch centre.
- 2015-16: Kimball performs a functional review of fire CAD, which concludes that all fire CAD capabilities can be retained, or enhanced, if fire migrates on a shared basis, to WRPS' CAD platform.
- 2016: Waterloo Region's 10-Year Paramedic Services Master Plan supports migration over time, to a fully integrated emergency dispatch system.
- 2017: On behalf of WRPS and the fire departments of Kitchener, Cambridge, and Waterloo, ApexPro Consulting Inc. develops an implementation plan and timetable for transitioning fire dispatch to the PRIDE CAD platform managed by WRPS.
- 2018: WalterFedy Architects prepare a Facilities Master Plan for Waterloo Regional Police Service. The plan assumes that a consolidated police and fire emergency communications center will be included in a new Central Division facility at 200

Frederick St., Kitchener. The existing 911 center at WRPS headquarters will remain as backup facility.

- March 25, 2019: Kitchener Fire assumes responsibility for dispatching all fire departments in Region of Waterloo. Before this date, Kitchener Fire dispatched fire departments north of Highway 401, and Cambridge Fire dispatched fire departments to the south.
- April 24, 2019: Kitchener Fire transitions to the PRIDE CAD platform managed by WRPS. The CAD, manufactured by Hexagon (formerly Intergraph), is managed by WRPS.
- May 2019: On behalf of WRPS, ApexPro Consulting Inc. investigates the feasibility for establishing a consolidated communications center (for 911; police, fire, and ambulance dispatch; and ROW 311 services) at the new Central Division facility, 200 Frederick St., Kitchener (former provincial courthouse building). The investigation concludes that the available space will accommodate only 911, and dispatch for police and Fire.
- October 2019: Motorola undertakes a voice radio system feasibility review for the new Central Division facility (at 200 Frederick St). Initial outcomes identify a requirement for full re-design of the voice radio perimeter tower system, and for a large tower on the building's roof. Also, that the new communication centre would not be operational until the review is complete (minimum 2 to 3 years). Considering these findings (and the above findings by ApexPro), an informed decision is made to not move 911 Communications to 200 Frederick.
- 2021: Pomax Consulting reviews the future provision of fire and police communications/dispatch in Waterloo Region, within the broader context of NG 911. The review reinforces prior recommendations for consolidating emergency services communications stating that this model "offers the greatest potential for cost savings, makes best use of staff resources, and strategically positions the region and municipalities to provide service to other municipalities and entities".
- December 2021: Fire/Police Dispatch Review Steering Committee (a regional / municipal committee) meets to review the Pomax report. The Committee requests WRPS/Fire to jointly follow up on the potential cost savings and efficiency improvements identified in the consultant's report.

## Appendix B: Data Sources

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## Appendix B: Data Sources

### Reports

- *Places to Grow Growth Plan for the Greater Golden Horseshoe*, Ministry of Municipal Affairs, May 2017 (updated August 2020).
- *Public Safety Answering Point (PSAP) Consolidation Feasibility Report for Region of Waterloo*, L.R. Kimball Consulting, May 2014.
- *Implementation Report: Common Technology Platform for Police and Fire Dispatch in Region of Waterloo*, ApexPro Consulting Inc., April 2017.
- *Waterloo Regional Police Service Facilities Master Plan*, WalterFedy Architects, February 2018.
- *Planning for a New & Expanded Public Safety Communications Center in Waterloo Region*, ApexPro Consulting Inc., May 28, 2019.
- *A Review of Fire and Police Communications and Dispatch in Waterloo Region*, Pomax Consulting, November 2021.

### On-Site Surveys of Communications Centers (by ApexPro).

- 911 Communications, Halton Regional Police Services (2018) <sup>17</sup>
- 911 Communications, Niagara Regional Police Services (2016)
- 911 Communications, York Regional Police Services (2014)
- 911 Communications, City of Barrie Police Services (2019) <sup>18</sup>
- OPP Emergency Communications, London Ontario (2019) <sup>19</sup>
- Integrated Emergency Services, Halifax Nova Scotia (1999)
- Public Safety Communications, Calgary Alberta (2006)
- E-Comm, Vancouver British Columbia (1999)
- Denver 911, Denver Colorado (2007)
- Bureau of Emergency Communications, Portland Oregon
- Public Safety Communications, Fairfax County Virginia (2009)

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<sup>17</sup> Dates shown refer to year of construction / implementation. Some are approximations.

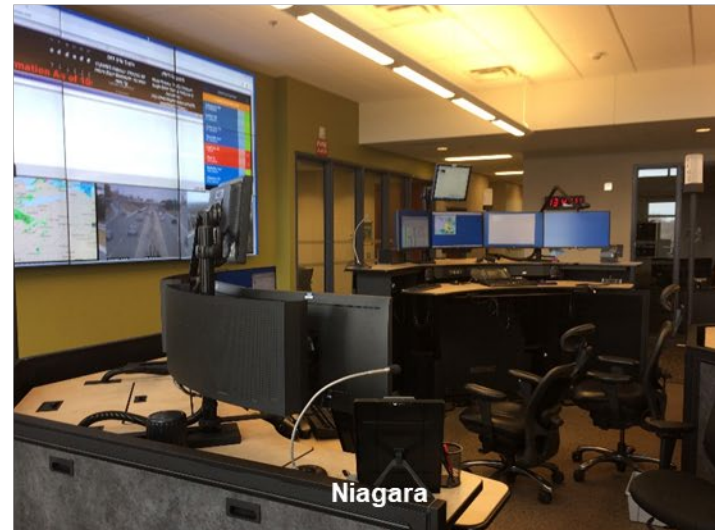
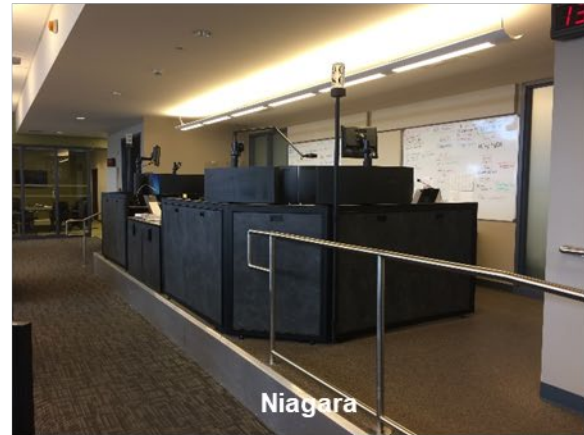
<sup>18</sup> On-site survey of the new facility under construction.

<sup>19</sup> Meeting with OPP at a location adjacent to the new facility under construction.

## Appendix C – Photos of Contemporary Communications Centers

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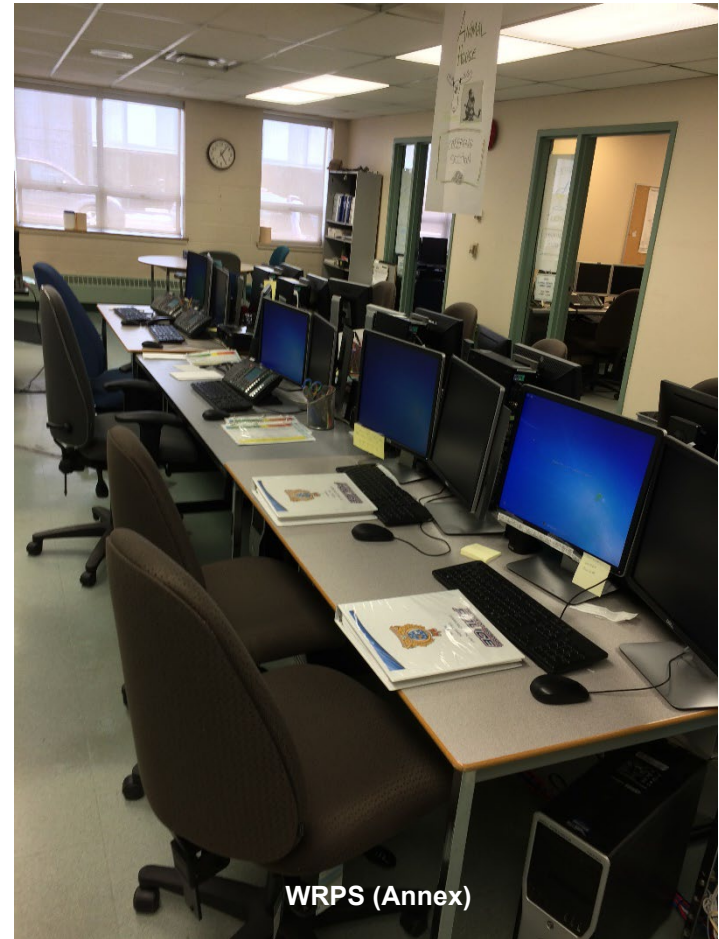
**Exhibit C.1: Best Practices - Floor Layouts**



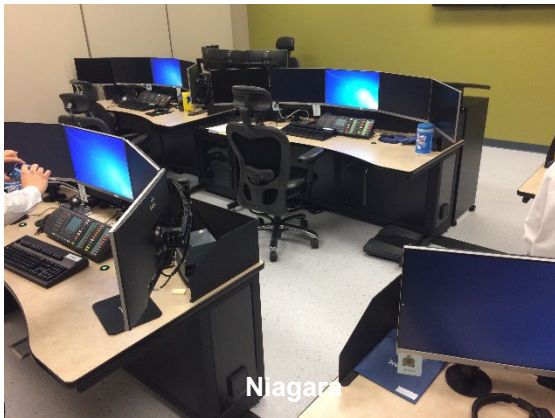
**Exhibit C.2: Best Practices - Training Room**



Niagara



WRPS (Annex)



Niagara

**Exhibit C.3: Best Practices - Supports**



Breakroom (Maplegrove)



Meeting Room (Niagara)



Breakroom (Niagara)



Server Room (Halton)

## Appendix D – Service First Call Center (SFCC)

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## Appendix D: Service First Call Center (SFCC)

ROW Service First Call Center (SFCC) was established in 2012 as a region-wide centralized call handling centre to provide the public with quick and consistent responses to frequently asked questions through one easily recognized telephone number.

SFCC uses Customer Relationship Management software (CRM) specifically designed to support call-center call taking functions.

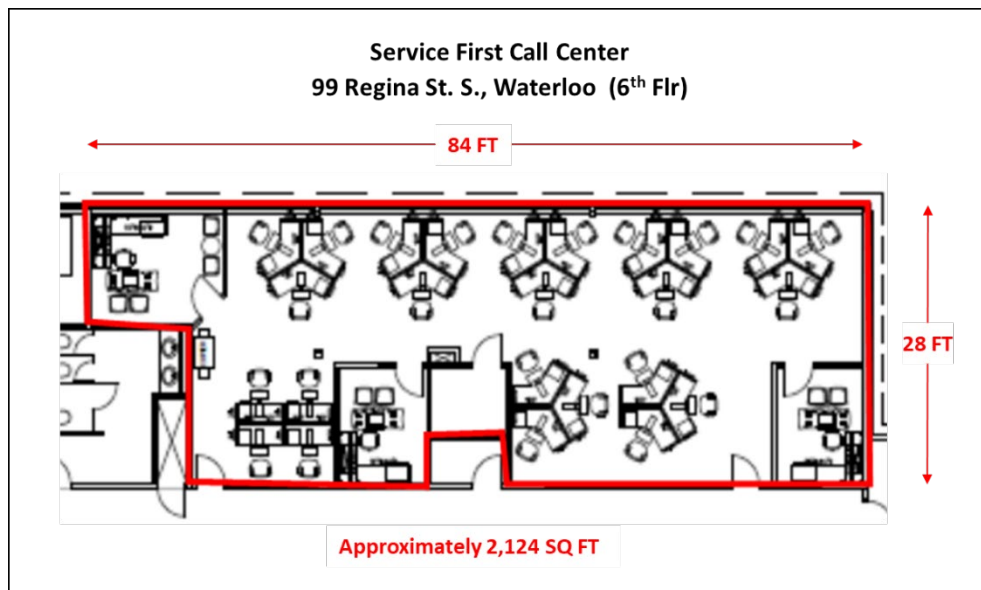
In 2021 SFCC responded to 350,000 to 375,000 incoming requests for information (up from 325,000 pre-covid).

SFCC customer service representatives (CSR) address most routine service requests on first contact. Questions that they cannot answer are transferred to the appropriate department for more in-depth information.

The center was relocated to the present location on the sixth floor, 99 Regina St., South, Waterloo in late 2019. The former location was 131 Goodrich Dr., Kitchener.

- Center is roughly 84 feet by 28 feet (per Exhibit D.1). Total floor area is about 2,124 SF.
- Has natural lighting (windows). Standard office ceiling height. There's no raised floor.
- Center includes 25 CRM-outfitted workstations, 3 offices and an IT (server) closet.

Exhibit D.1: Service First Call Center



- SFCC staffing consists of:
  - 3 Supervisors (each with their own office)
  - 35 CSR's (about 50% are full-time / rest are part-time), and
  - Manager (operates from an office on the main floor, and from ROW headquarters (150 Frederick St., Kitchener).
- Service is available 24/7, albeit the center is only staffed on day shifts, from 7 am to 6 pm. Evenings and at night, CSR's work only from home.
- Each day shift is staffed with about 15 CSR's. Day shift staffing is split between:
  - The 6<sup>th</sup> floor call center
  - Ground floor reception desks at the following Regional facilities: 99 Regina Street South, Waterloo; 150 Frederick St., Kitchener; and 150 Main St., Cambridge
  - Staff working from home.

Employees of the center have access to a gym and change rooms, which were in place for building tenants prior to the SFCC move. Washrooms are situated outside, but immediately adjacent to the center.

Back up operations: SFCC staff can work remotely (i.e., from home). This provides good backup for their operations at 99 Regina.

SFCC center is outfitted with 25 workstations but is staffed by only 15 staff per shift. There appears to be available capacity for future growth.

## Appendix E – Estimated Floor Area Requirements (2021 to 2051)

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Space Description	Unit Sq. Ft.	2021		2031		2041		2051	
		Units	Total Sq. Ft.	Units	Total Sq. Ft.	Units	Total Sq. Ft.	Units	Total Sq. Ft.
<b>WRPS</b>			<b>25,172</b>		<b>27,986</b>		<b>29,218</b>		<b>30,100</b>
<b>COMMUNICATIONS CENTER</b>			<b>4,435</b>		<b>5,935</b>		<b>6,535</b>		<b>6,985</b>
Staff Sergeant Office	130	1	130	1	130	1	130	1	130
Supervisor Workstation	150	1	150	1	150	1	150	1	150
Call Taker Workstations (current)	150	9	1,350	9	1,350	9	1,350	9	1,350
Dispatcher Workstations (current)	150	4	600	4	600	4	600	4	600
Call Taker / Dispatcher Workstations (current)	150	4	600	4	600	4	600	4	600
Communicator Workstations (growth)	150	1	150	6	900	8	1,200	10	1,500
Communicator Workstations (NG911)	150	0	0	3	450	4	600	5	750
Crisis Response Coordinator Workstations	150	1	150	2	300	3	450	3	450
Switchboard Workstations	150	1	150	2	300	2	300	2	300
Small Meeting Room	130	1	130	1	130	1	130	1	130
Ready (Shift Change) Room	225	1	225	1	225	1	225	1	225
Quiet Rooms	100	2	200	2	200	2	200	2	200
Files Storage	250	1	250	1	250	1	250	1	250
Chair Corral & Supplies Storage	250	1	250	1	250	1	250	1	250
Copier Work Area	100	1	100	1	100	1	100	1	100
Application Software & Screens									
<b>TRAINING AREA</b>			<b>2,375</b>		<b>2,635</b>		<b>2,765</b>		<b>2,895</b>
Training Staff Office Space (current)	130	2	260	2	260	2	260	2	260
Training Staff Office Space (growth)	130	1	130	2	260	3	390	3	390
Training Staff Office Space (NG911)	130	0	0	1	130	1	130	2	260
Training Staff Workstations	0	3	0	5	0	6	0	7	0
Training Room	110	16	1,760	16	1,760	16	1,760	16	1,760
Training Room Workstations	0	16	0	16	0	16	0	16	0
A/V App's, Screens & Control	75	1	75	1	75	1	75	1	75
Training Supplies Storage	150	1	150	1	150	1	150	1	150
<b>RTOC &amp; MISC</b>			<b>2,800</b>		<b>2,800</b>		<b>2,800</b>		<b>2,800</b>
Communicator Consoles (RTOC)	250	2	500	2	500	2	500	2	500
Staffed Desks (RTOC)	125	2	250	2	250	2	250	2	250
Outfitted Desks (MISC)	75	8	600	8	600	8	600	8	600
Office Desks (MISC)	75	2	150	2	150	2	150	2	150
EOC (MISC)	750	1	750	1	750	1	750	1	750

**Exhibit E.1**

**Primary 911 Center**

**Sc. P1: "Core"**

A/V Control	100	1	100	1	100	1	100	1	100
Reference Library	150	1	150	1	150	1	150	1	150
Equipment Storage / Staging	150	1	150	1	150	1	150	1	150
Closets / Coats / Storage	50	1	50	1	50	1	50	1	50
Copier Work Area	100	1	100	1	100	1	100	1	100
Application Software & Screens (RTOC)									
Application Software & Screens (MISC)									
<b>COMMON SUPPORT</b>			<b>3,200</b>		<b>3,450</b>		<b>3,600</b>		<b>3,650</b>
Kitchen / Vending	200	1	200	1	200	1	200	1	200
Break Area / Lounge	400	1	400	1	400	1	400	1	400
Washrooms	100	2	200	2	200	2	200	2	200
Work Out Area	450	1	450	1	450	1	450	1	450
Lockers (personal / half-height)	5	130	650	180	900	210	1,050	220	1,100
Showers/Change/Washroom (Male)	350	1	350	1	350	1	350	1	350
Showers/Change/Washroom (Female)	350	1	350	1	350	1	350	1	350
Showers/Change/Washroom (Universal)	350	1	350	1	350	1	350	1	350
Housekeeping / Janitorial	250	1	250	1	250	1	250	1	250
<b>MEETING SPACE</b>			<b>650</b>		<b>650</b>		<b>650</b>		<b>650</b>
Conference Room	500	1	500	1	500	1	500	1	500
Meeting Room (small)	150	1	150	1	150	1	150	1	150
<b>INFORMATION TECHNOLOGY</b>			<b>1,750</b>		<b>1,750</b>		<b>1,750</b>		<b>1,750</b>
IT Technicians	150	3	450	3	450	3	450	3	450
Server Room	1,300	1	1,300	1	1,300	1	1,300	1	1,300
<b>SECURE ENTRY</b>			<b>750</b>		<b>750</b>		<b>750</b>		<b>750</b>
Entry / Lobby / Reception / Security	300	1	300	1	300	1	300	1	300
Meeting Room (small)	150	1	150	1	150	1	150	1	150
Washrooms (Universal)	100	2	200	2	200	2	200	2	200
Coat Room	100	1	100	1	100	1	100	1	100
<b>MECHANICAL</b>			<b>2,020</b>		<b>2,020</b>		<b>2,020</b>		<b>2,020</b>
Mechanical	800	1	800	1	800	1	800	1	800
Loading Area	100	1	100	1	100	1	100	1	100
Electrical / Main Power Dist'n	300	1	300	1	300	1	300	1	300
UPS / Emergency Generator	400	1	400	1	400	1	400	1	400
Telecom & Security	300	1	300	1	300	1	300	1	300
Fire Suppression	120	1	120	1	120	1	120	1	120

**Exhibit E.1****Primary 911 Center****Sc. P1: "Core"**

<b>GROSS UP FROM NET (40%)</b>			<b>7,192</b>		<b>7,996</b>		<b>8,348</b>		<b>8,600</b>
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**ASSUMPTIONS**

- Sized to accommodate ROW long-term growth (2051)
- Includes RTOC & MISC
- Includes NG911
- Includes community-based mental health crisis response initiatives

Space Description	Unit Sq. Ft.	2021		2031		2041		2051	
		Units	Total Sq. Ft.	Units	Total Sq. Ft.	Units	Total Sq. Ft.	Units	Total Sq. Ft.
<b>WRPS</b>			<b>27,111</b>		<b>31,101</b>		<b>32,347</b>		<b>33,474</b>
<b>COMMUNICATIONS CENTER</b>			<b>5,485</b>		<b>7,585</b>		<b>8,185</b>		<b>8,785</b>
Staff Sergeant Office	130	1	130	1	130	1	130	1	130
Supervisor Workstation	150	1	150	1	150	1	150	1	150
Call Taker Workstations (current)	150	9	1,350	9	1,350	9	1,350	9	1,350
Dispatcher Workstations (current)	150	4	600	4	600	4	600	4	600
Call Taker / Dispatcher Workstations (current)	150	4	600	4	600	4	600	4	600
Communicator Workstations (growth)	150	1	150	6	900	8	1,200	10	1,500
Communicator Workstations (NG911)	150	0	0	3	450	4	600	5	750
Communicator Workstations (PRIDE)	150	7	1,050	11	1,650	11	1,650	12	1,800
Crisis Response Coordinator Workstations	150	1	150	2	300	3	450	3	450
Switchboard Workstations	150	1	150	2	300	2	300	2	300
Small Meeting Room	130	1	130	1	130	1	130	1	130
Ready (Shift Change) Room	225	1	225	1	225	1	225	1	225
Quiet Rooms	100	2	200	2	200	2	200	2	200
Files Storage	250	1	250	1	250	1	250	1	250
Chair Corral & Supplies Storage	250	1	250	1	250	1	250	1	250
Copier Work Area	100	1	100	1	100	1	100	1	100
Application Software & Screens									
<b>TRAINING AREA</b>			<b>2,505</b>		<b>2,895</b>		<b>3,025</b>		<b>3,155</b>
Training Staff Office Space (current)	130	2	260	2	260	2	260	2	260
Training Staff Office Space (growth)	130	1	130	2	260	3	390	3	390
Training Staff Office Space (NG911)	130	0	0	1	130	1	130	2	260
Training Staff Office Space (PRIDE)	130	1	130	2	260	2	260	2	260
Training Staff Workstations	0	4	0	7	0	8	0	9	0
Training Room	110	16	1,760	16	1,760	16	1,760	16	1,760
Training Room Workstations	0	16	0	16	0	16	0	16	0
A/V App's, Screens & Control	75	1	75	1	75	1	75	1	75
Training Supplies Storage	150	1	150	1	150	1	150	1	150
<b>RTOC &amp; MISC</b>			<b>2,800</b>		<b>2,800</b>		<b>2,800</b>		<b>2,800</b>
Communicator Consoles (RTOC)	250	2	500	2	500	2	500	2	500

**Exhibit E.2**

**Primary 911 Center**

**Sc. P4: "All Inclusive"**

Staffed Desks (RTOC)	125	2	250	2	250	2	250	2	250
Outfitted Desks (MISC)	75	8	600	8	600	8	600	8	600
Office Desks (MISC)	75	2	150	2	150	2	150	2	150
EOC (MISC)	750	1	750	1	750	1	750	1	750
A/V Control	100	1	100	1	100	1	100	1	100
Reference Library	150	1	150	1	150	1	150	1	150
Equipment Storage / Staging	150	1	150	1	150	1	150	1	150
Closets / Coats / Storage	50	1	50	1	50	1	50	1	50
Copier Work Area	100	1	100	1	100	1	100	1	100
Application Software & Screens (RTOC)									
Application Software & Screens (MISC)									
<b>COMMON SUPPORT</b>			<b>3,405</b>		<b>3,765</b>		<b>3,925</b>		<b>4,000</b>
Kitchen / Vending	200	1	200	1	200	1	200	1	200
Break Area / Lounge	400	1	400	1	400	1	400	1	400
Washrooms	100	2	200	2	200	2	200	2	200
Work Out Area	450	1	450	1	450	1	450	1	450
Lockers (personal / half-height)	5	130	650	180	900	210	1,050	220	1,100
Lockers (PRIDE)	5	41	205	63	315	65	325	70	350
Showers/Change/Washroom (Male)	350	1	350	1	350	1	350	1	350
Showers/Change/Washroom (Female)	350	1	350	1	350	1	350	1	350
Showers/Change/Washroom (Universal)	350	1	350	1	350	1	350	1	350
Housekeeping / Janitorial	250	1	250	1	250	1	250	1	250
<b>MEETING SPACE</b>			<b>650</b>		<b>650</b>		<b>650</b>		<b>650</b>
Conference Room	500	1	500	1	500	1	500	1	500
Meeting Room (small)	150	1	150	1	150	1	150	1	150
<b>INFORMATION TECHNOLOGY</b>			<b>1,750</b>		<b>1,750</b>		<b>1,750</b>		<b>1,750</b>
IT Technicians	150	3	450	3	450	3	450	3	450
Server Room	1,300	1	1,300	1	1,300	1	1,300	1	1,300
<b>SECURE ENTRY</b>			<b>750</b>		<b>750</b>		<b>750</b>		<b>750</b>
Entry / Lobby / Reception / Security	300	1	300	1	300	1	300	1	300
Meeting Room (small)	150	1	150	1	150	1	150	1	150
Washrooms (Universal)	100	2	200	2	200	2	200	2	200
Coat Room	100	1	100	1	100	1	100	1	100
<b>MECHANICAL</b>			<b>2,020</b>		<b>2,020</b>		<b>2,020</b>		<b>2,020</b>

**Exhibit E.2**

**Primary 911 Center**

**Sc. P4: "All Inclusive"**

Mechanical	800	1	800	1	800	1	800	1	800
Loading Area	100	1	100	1	100	1	100	1	100
Electrical / Main Power Dist'n	300	1	300	1	300	1	300	1	300
UPS / Emergency Generator	400	1	400	1	400	1	400	1	400
Telecom & Security	300	1	300	1	300	1	300	1	300
Fire Suppression	120	1	120	1	120	1	120	1	120
<b>GROSS UP FROM NET (40%)</b>			<b>7,746</b>		<b>8,886</b>		<b>9,242</b>		<b>9,564</b>
<b>CO-LOCATIONS</b>			<b>14,000</b>		<b>14,000</b>		<b>14,000</b>		<b>14,000</b>
SFCC			2,500		2,500		2,500		2,500
KFD MAIN DISPATCH			11,500		11,500		11,500		11,500
<b>TOTAL</b>			<b>41,111</b>		<b>45,101</b>		<b>46,347</b>		<b>47,474</b>

**ASSUMPTIONS: "SCENARIO 4 - ALL INCLUSIVE"**

**1. Primary Center Requirements: "Core"**

- Sized to accommodate ROW long-term growth (2051)
- Includes RTOC & MISC
- Includes NG911
- Includes community-based mental health crisis response initiatives

**2. Primary Center Requirements: "Core + PRIDE"**

- Includes core requirements (Scenario 1)
- Includes dispatching for PRIDE (Stratford, Brantford, and S. Simcoe police)

**3. Primary Center Requirements: "Core + PRIDE + SFCC"**

- Includes core requirements (Scenario 1)
- Includes dispatching for PRIDE (Scenario 2)
- ROW Service First Call Center (SFCC) is co-located on premises

**4. Primary Center Requirements: "Core + PRIDE + SFCC + Kitchener Fire"**

- Includes core requirements (Scenario 1)
- Includes dispatching for PRIDE (Scenario 2)
- Includes SFCC (Scenario 3)
- Kitchener Fire "main" dispatch is co-located on premises

Space Description	Unit Sq. Ft.	2021		2031		2041		2051	
		Units	Total Sq. Ft.	Units	Total Sq. Ft.	Units	Total Sq. Ft.	Units	Total Sq. Ft.
<b>WRPS</b>			<b>21,399</b>		<b>24,213</b>		<b>25,263</b>		<b>25,963</b>
<b>BACKUP COMMUNICATIONS CENTER</b>			<b>4,435</b>		<b>5,935</b>		<b>6,535</b>		<b>6,985</b>
Staff Sergeant Office	130	1	130	1	130	1	130	1	130
Supervisor Workstation w' radio - (2022)	150	1	150	1	150	1	150	1	150
Workstations - Call Taking (current)	150	9	1,350	9	1,350	9	1,350	9	1,350
Workstations - Dispatch (soon - 2022)	150	4	600	4	600	4	600	4	600
Call Taker / Dispatcher Workstations (current)	150	4	600	4	600	4	600	4	600
Communicator Workstations (growth)	150	1	150	6	900	8	1,200	10	1,500
Communicator Workstations (NG911)	150	0	0	3	450	4	600	5	750
Crisis Response Coordinator Workstations	150	1	150	2	300	3	450	3	450
Switchboard Workstations	150	1	150	2	300	2	300	2	300
Small Meeting Room	130	1	130	1	130	1	130	1	130
Ready (Shift Change) Room	225	1	225	1	225	1	225	1	225
Quiet Rooms	100	2	200	2	200	2	200	2	200
Files Storage	250	1	250	1	250	1	250	1	250
Chair Corral & Supplies Storage	250	1	250	1	250	1	250	1	250
Copier Work Area	100	1	100	1	100	1	100	1	100
Application Software & Screens									
<b>TRAINING STAFF OFFICE SPACE</b>			<b>130</b>		<b>390</b>		<b>390</b>		<b>390</b>
Training Staff Office Space (current)	130	0	0	0	0	0	0	0	0
Training Staff Office Space (growth)	130	1	130	2	260	2	260	2	260
Training Staff Office Space (NG911)	130	0	0	1	130	1	130	1	130
Training Staff Workstations	0	1	0	3	0	3	0	3	0
<b>RTOC &amp; MISC</b>			<b>2,800</b>		<b>2,800</b>		<b>2,800</b>		<b>2,800</b>
Communicator Consoles (RTOC)	250	2	500	2	500	2	500	2	500
Staffed Desks (RTOC)	125	2	250	2	250	2	250	2	250
Outfitted Desks (MISC)	75	8	600	8	600	8	600	8	600
Office Desks (MISC)	75	2	150	2	150	2	150	2	150
EOC (MISC)	750	1	750	1	750	1	750	1	750
A/V Control	100	1	100	1	100	1	100	1	100
Reference Library	150	1	150	1	150	1	150	1	150
Equipment Storage / Staging	150	1	150	1	150	1	150	1	150
Closets / Coats / Storage	50	1	50	1	50	1	50	1	50

**Exhibit E.3**

**Backup 911 Center**

**Sc. B1 "New Build"**

Copier Work Area	100	1	100	1	100	1	100	1	100
Application Software & Screens (RTOC)									
Application Software & Screens (MISC)									
<b>COMMON SUPPORT</b>			<b>2,750</b>		<b>3,000</b>		<b>3,150</b>		<b>3,200</b>
Kitchen / Vending	200	1	200	1	200	1	200	1	200
Break Area / Lounge	400	1	400	1	400	1	400	1	400
Washrooms	100	2	200	2	200	2	200	2	200
Work Out Area	450	0	0	0	0	0	0	0	0
Lockers (personal / half-height)	5	130	650	180	900	210	1,050	220	1,100
Showers/Change/Washroom (Male)	350	1	350	1	350	1	350	1	350
Showers/Change/Washroom (Female)	350	1	350	1	350	1	350	1	350
Showers/Change/Washroom (Universal)	350	1	350	1	350	1	350	1	350
Housekeeping / Janitorial	250	1	250	1	250	1	250	1	250
<b>MEETING SPACE</b>			<b>650</b>		<b>650</b>		<b>650</b>		<b>650</b>
Conference Room	500	1	500	1	500	1	500	1	500
Meeting Room (small)	150	1	150	1	150	1	150	1	150
<b>INFORMATION TECHNOLOGY</b>			<b>1,750</b>		<b>1,750</b>		<b>1,750</b>		<b>1,750</b>
IT Technicians	150	3	450	3	450	3	450	3	450
Server Room	1,300	1	1,300	1	1,300	1	1,300	1	1,300
<b>SECURE ENTRY</b>			<b>750</b>		<b>750</b>		<b>750</b>		<b>750</b>
Entry / Lobby / Reception / Security	300	1	300	1	300	1	300	1	300
Meeting Room (small)	150	1	150	1	150	1	150	1	150
Washrooms (Universal)	100	2	200	2	200	2	200	2	200
Coat Room	100	1	100	1	100	1	100	1	100
<b>MECHANICAL</b>			<b>2,020</b>		<b>2,020</b>		<b>2,020</b>		<b>2,020</b>
Mechanical	800	1	800	1	800	1	800	1	800
Loading Area	100	1	100	1	100	1	100	1	100
Electrical / Main Power Dist'n	300	1	300	1	300	1	300	1	300
UPS / Emergency Generator	400	1	400	1	400	1	400	1	400
Telecom & Security	300	1	300	1	300	1	300	1	300
Fire Suppression	120	1	120	1	120	1	120	1	120
<b>GROSS UP FROM NET (40%)</b>			<b>6,114</b>		<b>6,918</b>		<b>7,218</b>		<b>7,418</b>
<b>TOTAL</b>			<b>21,399</b>		<b>24,213</b>		<b>25,263</b>		<b>25,963</b>

**ASSUMPTIONS: BACKUP 911 CENTER - NEW BUILD**

- Backup center to house the same number of communications workstations as in the primary 911 center
- Backup center does NOT double as training center
- Training staff to have office space at backup center
- Includes RTOC & MISC
- Includes NG911
- Includes community-based mental health crisis response initiatives
- Excludes dispatching for PRIDE
- Excludes SFCC and Kitchener Fire dispatch

Space Description	Unit Sq. Ft.	2021		2031		2041		2051	
		Units	Total Sq. Ft.	Units	Total Sq. Ft.	Units	Total Sq. Ft.	Units	Total Sq. Ft.
<b>WRPS</b>			<b>12,978</b>		<b>15,390</b>		<b>16,290</b>		<b>16,890</b>
<b>BACKUP COMMUNICATIONS CENTER</b>			<b>4,435</b>		<b>5,935</b>		<b>6,535</b>		<b>6,985</b>
Staff Sergeant Office	130	1	130	1	130	1	130	1	130
Supervisor Workstation w' radio - (2022)	150	1	150	1	150	1	150	1	150
Workstations - Call Taking (current)	150	9	1,350	9	1,350	9	1,350	9	1,350
Workstations - Dispatch (soon - 2022)	150	4	600	4	600	4	600	4	600
Call Taker / Dispatcher Workstations (current)	150	4	600	4	600	4	600	4	600
Communicator Workstations (growth)	150	1	150	6	900	8	1,200	10	1,500
Communicator Workstations (NG911)	150	0	0	3	450	4	600	5	750
Crisis Response Coordinator Workstations	150	1	150	2	300	3	450	3	450
Switchboard Workstations	150	1	150	2	300	2	300	2	300
Small Meeting Room	130	1	130	1	130	1	130	1	130
Ready (Shift Change) Room	225	1	225	1	225	1	225	1	225
Quiet Rooms	100	2	200	2	200	2	200	2	200
Files Storage	250	1	250	1	250	1	250	1	250
Chair Corral & Supplies Storage	250	1	250	1	250	1	250	1	250
Copier Work Area	100	1	100	1	100	1	100	1	100
Application Software & Screens									
<b>TRAINING STAFF OFFICE SPACE</b>			<b>130</b>		<b>390</b>		<b>390</b>		<b>390</b>
Training Staff Office Space (current)	130	0	0	0	0	0	0	0	0
Training Staff Office Space (growth)	130	1	130	2	260	2	260	2	260
Training Staff Office Space (NG911)	130	0	0	1	130	1	130	1	130
Training Staff Workstations	0	1	0	3	0	3	0	3	0
<b>RTOC &amp; MISC</b>			<b>2,800</b>		<b>2,800</b>		<b>2,800</b>		<b>2,800</b>
Communicator Consoles (RTOC)	250	2	500	2	500	2	500	2	500
Staffed Desks (RTOC)	125	2	250	2	250	2	250	2	250
Outfitted Desks (MISC)	75	8	600	8	600	8	600	8	600
Office Desks (MISC)	75	2	150	2	150	2	150	2	150
EOC (MISC)	750	1	750	1	750	1	750	1	750
A/V Control	100	1	100	1	100	1	100	1	100
Reference Library	150	1	150	1	150	1	150	1	150

**Exhibit E.4**

**Backup 911 Center**

**Sc. B2 "99 Regina St., S."**

Equipment Storage / Staging	150	1	150	1	150	1	150	1	150
Closets / Coats / Storage	50	1	50	1	50	1	50	1	50
Copier Work Area	100	1	100	1	100	1	100	1	100
Application Software & Screens (RTOC)									
Application Software & Screens (MISC)									
<b>COMMON SUPPORT</b>			<b>1,700</b>		<b>1,950</b>		<b>2,100</b>		<b>2,150</b>
Kitchen / Vending	200	1	200	1	200	1	200	1	200
Break Area / Lounge	400	1	400	1	400	1	400	1	400
Washrooms	100	2	200	2	200	2	200	2	200
Lockers (personal / half-height)	5	130	650	180	900	210	1,050	220	1,100
Housekeeping / Janitorial	250	1	250	1	250	1	250	1	250
<b>MEETING SPACE</b>			<b>0</b>		<b>0</b>		<b>0</b>		<b>0</b>
<b>INFORMATION TECHNOLOGY</b>			<b>1,750</b>		<b>1,750</b>		<b>1,750</b>		<b>1,750</b>
IT Technicians	150	3	450	3	450	3	450	3	450
Server Room	1,300	1	1,300	1	1,300	1	1,300	1	1,300
<b>SECURE ENTRY</b>			<b>0</b>		<b>0</b>		<b>0</b>		<b>0</b>
<b>MECHANICAL</b>			<b>0</b>		<b>0</b>		<b>0</b>		<b>0</b>
<b>GROSS UP FROM NET (20%)</b>			<b>2,163</b>		<b>2,565</b>		<b>2,715</b>		<b>2,815</b>
<b>TOTAL</b>			<b>12,978</b>		<b>15,390</b>		<b>16,290</b>		<b>16,890</b>

**ASSUMPTIONS: BACKUP 911 CENTER - 99 REGINA ST., S.**

- Backup center to house the same number of communications workstations as in the primary 911 center
- Backup center does NOT double as training center
- Training staff to have office space at backup center
- Includes RTOC & MISC
- Includes NG911
- Includes community-based mental health crisis response initiatives
- Excludes dispatching for PRIDE
- Excludes SFCC and Kitchener Fire dispatch
- Assumes access to the building's existing workout area, change rooms, meeting rooms, mechanical area, loading area, etc.
- No need for separate secure main entry / reception
- Requires less gross up for renovation of existing building / used 20%

**Exhibit E.4**

**Backup 911 Center**

**Sc. B2 "99 Regina St., S."**

Backup center, RTOC, and common supprts on one floor	11,862
Traing staff space, MISC, and IT Support on another floor	<u>5,028</u>
Total	16,890

## Appendix F – Cost Estimate Details

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Space Description	Unit Sq. Ft.	2031		2051		ORDER OF MAGNITUDE COSTS			
		Units	Total Sq. Ft.	Units	Total Sq. Ft.	Construction	Furniture	Technology	TOTAL
<b>WRPS</b>			<b>28,658</b>		<b>30,772</b>	<b>\$24,617,600</b>	<b>\$1,643,300</b>	<b>\$10,112,000</b>	<b>\$36,372,900</b>
<b>COMMUNICATIONS CENTER</b>			<b>5,935</b>		<b>6,985</b>	<b>\$5,588,000</b>	<b>\$847,300</b>	<b>\$3,615,000</b>	<b>\$10,050,300</b>
Staff Sergeant Office	130	1	130	1	130	\$104,000	\$3,500	\$5,000	
Supervisor Workstation	150	1	150	1	150	\$120,000	\$30,000	\$200,000	
Call Taker Workstations (current)	150	9	1,350	9	1,350	\$1,080,000	\$270,000	\$450,000	
Dispatcher Workstations (current)	150	4	600	4	600	\$480,000	\$120,000	\$800,000	
Call Taker / Dispatcher Workstations (current)	150	4	600	4	600	\$480,000	\$120,000	\$800,000	
Communicator Workstations (growth)	150	6	900	10	1,500	\$1,200,000	\$180,000	\$750,000	
Communicator Workstations (NG911)	150	3	450	5	750	\$600,000	\$90,000	\$375,000	
Crisis Response Coordinator Workstations	150	2	300	3	450	\$360,000	\$7,000	\$120,000	
Switchboard Workstations	150	2	300	2	300	\$240,000	\$7,000	\$10,000	
Small Meeting Room	130	1	130	1	130	\$104,000	\$3,500		
Ready (Shift Change) Room	225	1	225	1	225	\$180,000			
Quiet Rooms	100	2	200	2	200	\$160,000	\$7,000		
Admin Files Storage	250	1	250	1	250	\$200,000	\$5,000		
Chair Corral & Supplies Storage	250	1	250	1	250	\$200,000	\$4,300		
Copier Work Area	100	1	100	1	100	\$80,000		\$5,000	
Application Software & Screens		1				\$0		\$100,000	
<b>TRAINING AREA</b>			<b>2,635</b>		<b>2,895</b>	<b>\$2,316,000</b>	<b>\$257,500</b>	<b>\$925,000</b>	<b>\$3,498,500</b>
Training Staff Office Space (current)	130	2	260	2	260	\$208,000	\$7,000	\$10,000	
Training Staff Office Space (growth)	130	2	260	3	390	\$312,000	\$7,000	\$10,000	
Training Staff Office Space (NG911)	130	1	130	2	260	\$208,000	\$3,500	\$5,000	
Training Staff Workstations	0	5	0	7	0	\$0			
Training Room	110	16	1,760	16	1,760	\$1,408,000			
Training Room Workstations	0	16	0	16	0	\$0	\$240,000	\$800,000	
A/V App's, Screens & Control	75	1	75	1	75	\$60,000		\$100,000	
Training Supplies Storage	150	1	150	1	150	\$120,000			
<b>RTOC &amp; MISC</b>			<b>2,800</b>		<b>2,800</b>	<b>\$2,240,000</b>	<b>\$314,000</b>	<b>\$5,455,000</b>	<b>\$8,009,000</b>
Communicator Consoles (RTOC)	250	2	500	2	500	\$400,000	\$60,000	\$400,000	
Staffed Desks (RTOC)	125	2	250	2	250	\$200,000	\$7,000	\$40,000	
Outfitted Desks (MISC)	75	8	600	8	600	\$480,000	\$240,000	\$1,000,000	
Office Desks (MISC)	75	2	150	2	150	\$120,000	\$7,000	\$10,000	
EOC (MISC)	750	1	750	1	750	\$600,000			
A/V Control	100	1	100	1	100	\$80,000			
Reference Library	150	1	150	1	150	\$120,000			
Equipment Storage / Staging	150	1	150	1	150	\$120,000			
Closets / Coats / Storage	50	1	50	1	50	\$40,000			

**Exhibit F.1**

**Primary 911 Center**

**Sc. P1: "Core"**

Copier Work Area	100	1	100	1	100	\$80,000		\$5,000	
Application Software & Screens (RTOC)		1				\$0		\$3,000,000	
Application Software & Screens (MISC)		1				\$0		\$1,000,000	
<b>COMMON SUPPORT</b>			<b>3,450</b>		<b>3,650</b>	<b>\$2,920,000</b>	<b>\$145,000</b>	<b>\$0</b>	<b>\$3,065,000</b>
Kitchen / Vending	200	1	200	1	200	\$160,000	\$15,000		
Break Area / Lounge	400	1	400	1	400	\$320,000	\$3,000		
Washrooms	100	2	200	2	200	\$160,000	\$5,000		
Work Out Area	450	1	450	1	450	\$360,000	\$20,000		
Lockers (personal / half-height)	5	180	900	220	1,100	\$880,000	\$72,000		
Showers/Change/Washroom (Male)	350	1	350	1	350	\$280,000	\$10,000		
Showers/Change/Washroom (Female)	350	1	350	1	350	\$280,000	\$10,000		
Showers/Change/Washroom (Universal)	350	1	350	1	350	\$280,000	\$10,000		
Housekeeping / Janitorial	250	1	250	1	250	\$200,000			
<b>MEETING SPACE</b>			<b>650</b>		<b>650</b>	<b>\$520,000</b>	<b>\$23,500</b>	<b>\$12,000</b>	<b>\$555,500</b>
Conference Room	500	1	500	1	500	\$400,000	\$20,000	\$12,000	
Meeting Room (small)	150	1	150	1	150	\$120,000	\$3,500		
<b>INFORMATION TECHNOLOGY</b>			<b>1,750</b>		<b>1,750</b>	<b>\$1,400,000</b>	<b>\$40,500</b>	<b>\$105,000</b>	<b>\$1,545,500</b>
IT Technicians	150	3	450	3	450	\$360,000	\$10,500	\$45,000	
Server Room	1,300	1	1,300	1	1,300	\$1,040,000	\$30,000	\$60,000	
<b>SECURE ENTRY</b>			<b>750</b>		<b>750</b>	<b>\$600,000</b>	<b>\$15,500</b>	<b>\$0</b>	<b>\$615,500</b>
Entry / Lobby / Reception	300	1	300	1	300	\$240,000	\$7,000		
Meeting Room (small)	150	1	150	1	150	\$120,000	\$3,500		
Washrooms (Universal)	100	2	200	2	200	\$160,000	\$5,000		
Coat Room	100	1	100	1	100	\$80,000			
<b>MECHANICAL</b>			<b>2,500</b>		<b>2,500</b>	<b>\$2,000,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$2,000,000</b>
Mechanical area, loading area, electrical/main power distribution, UPS/emergency generator, telecom, security, fire suppression									
<b>GROSS UP FROM NET (40%)</b>			<b>8,188</b>		<b>8,792</b>	<b>\$7,033,600</b>	<b>\$0</b>	<b>\$0</b>	<b>\$7,033,600</b>
<b>TECHNOLOGY INFRA. FOR BUILDING</b>						<b>\$0</b>	<b>\$0</b>	<b>\$4,075,000</b>	<b>\$4,075,000</b>
<b>SUB-TOTAL</b>			<b>28,658</b>		<b>30,772</b>	<b>\$24,617,600</b>	<b>\$1,643,300</b>	<b>\$14,187,000</b>	<b>\$40,447,900</b>
10% DESIGN						\$2,461,760	\$164,330	\$1,418,700	\$4,044,790
15% CONTINGENCY (Construction)						\$3,692,640	\$246,495	\$2,128,050	\$6,067,185
PROJECT IMPLEMENTATION						\$300,000	\$300,000	\$900,000	\$1,500,000
<b>TOTAL</b>			<b>28,658</b>		<b>30,772</b>	<b>\$31,072,000</b>	<b>\$2,354,125</b>	<b>\$18,633,750</b>	<b>\$52,059,875</b>

ASSUMPTIONS: "SCENARIO 4 - ALL INCLUSIVE"

1. Primary Center Requirements: "Core"

- Sized to accommodate ROW long-term growth (2051)
- Includes RTOC & MISC
- Includes NG911
- Includes community-based mental health crisis response initiatives

2. Primary Center Requirements: "Core + PRIDE"

- Includes core requirements (Scenario 1)
- Includes dispatching for PRIDE (Stratford, Brantford, and S. Simcoe police)

3. Primary Center Requirements: "Core + PRIDE + SFCC"

- Includes core requirements (Scenario 1)
- Includes dispatching for PRIDE (Scenario 2)
- ROW Service First Call Center (SFCC) is co-located on premises

4. Primary Center Requirements: "Core + PRIDE + SFCC + Kitchener Fire"

- Includes core requirements (Scenario 1)
- Includes dispatching for PRIDE (Scenario 2)
- Includes SFCC (Scenario 3)
- Kitchener Fire "main" dispatch is co-located on premises

LAND COSTS

- Excluded

CONSTRUCTION COSTS

- Assumed unit capital cost for construction (per square foot): \$800
- Construction costs are based on full build out (2051) floor area requirements.
- In 2022 dollars.
- Excludes HST and/or other applicable taxes.
- Assumes center to go operational in late 2024 at the earliest.
- Figure aligns with low end estimate by Pomax, i.e., they assumed \$800 to \$1,100 per SF for a new build police and emergency communications center
- For comparison, unit capital cost for new Central Division (at f' courthouse) is estimated at under \$600 per SF
- 10% for design and 15% contingency for construction are per S2 Architects figures

FURNISHINGS COSTS

- Furniture costs are based on 2031 requirements (which includes NG 911 and provides for short-term growth).
- In 2022 dollars.
- Excludes HST and/or other applicable taxes.
- Work station for 911 communicator \$30,000
- Training room work station \$15,000
- Office furniture (desk, chair, chair mat & bookcase/filing cabinet) \$3,500

**Exhibit F.1**

**Primary 911 Center**

**Sc. P1: "Core"**

- 12' boardroom table (@ \$1,000/ft) w' 16 chairs (@ \$300 each) and side table (@ \$3,200)	\$20,000
- Kitchenette w' cupboards, counter, fridge & small appliances	\$15,000
- Admin filing (5 * 5 drawer laterals @ \$1,000)	\$5,000
- Quiet room recliner	\$3,500
- Shelving for supplies storage	\$2,500
- Cost of an entry locker	\$400
- Chair coral (assume 6 spare chairs @ \$300 each)	\$1,800
- Break area furniture (assume 2 recliners, table & chairs)	\$3,000
- Washroom	\$2,500
- Workout area (assume 3 major plus incidentals)	\$20,000
- Showers/change room	\$10,000
- Server room cabinetry	\$30,000
- Entry lobby (reception desk, couch & chairs)	\$7,000

**TECHNOLOGY COSTS**

- Technology costs are based on 2031 requirements (which includes NG 911 and provides for short-term growth).
- In 2022 dollars.

- Excludes HST and/or other applicable taxes.

- Communicator console w' CAD	\$50,000
- Communicator console w' CAD & radio	\$200,000
- Future consoles - growth, NG911, PRIDE, (50% w' radio)	\$125,000
- Crisis response coordinator console w' portable radio	\$60,000
- Training room console	\$50,000
- Switchboard	\$5,000
- Copier	\$5,000
- Applications software & screens (comm center)	\$100,000
- Large meeting room	\$12,000
- Office software setup	\$5,000
- Training room A/V App's, Screens & Control	\$100,000
- RTOC Console	\$200,000
- MISC consoles (50% w' radio)	\$125,000
- Applications software & screens (RTOC)	\$3,000,000
- Applications software & screens (MISC)	\$1,000,000
- IT Technicians	\$15,000
- Server room	\$60,000

WRESTRC	Maplegrove (CAD at HQ)	Bayden
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**TECHNOLOGY INFRASTRUCTURE FOR BUILDING**

- Redundant Bell 911 Trunk (2 substation feeds)	\$4,075,000	\$2,075,000	\$3,575,000
- CAD Fiber Lines	\$1,000,000	\$500,000	\$1,000,000
- Radio Fiber Lines	\$1,000,000	\$250,000	\$1,000,000
- Network Connections, Switches & Licenses	\$1,000,000	\$250,000	\$500,000
	\$300,000	\$300,000	\$300,000

**Exhibit F.1****Primary 911 Center****Sc. P1: "Core"**

- UPS for Comm. Center & Phone System	\$200,000	\$200,000	\$200,000
- Firewall Infrastructure	\$75,000	\$75,000	\$75,000
- Security & Access Control	\$500,000	\$500,000	\$500,000
<b>PROJECT IMPLEMENTATION (WRPS / ROW STAFF)</b>			
- Construction (salary & benefits - 1 person for 24 mon's)	\$300,000		
- Security & Furnishings (salary & benefits - 1 person for 24 mon's)	\$300,000		
- Technology (salary & benefits - 3 persons for 24 mon's)	\$900,000		

Space Description	Unit Sq. Ft.	2031		2051		ORDER OF MAGNITUDE COSTS			
		Units	Total Sq. Ft.	Units	Total Sq. Ft.	Construction	Furniture	Technology	TOTAL
<b>WRPS</b>			<b>31,773</b>		<b>34,146</b>	<b>\$27,316,800</b>	<b>\$2,005,500</b>	<b>\$11,497,000</b>	<b>\$40,819,300</b>
<b>COMMUNICATIONS CENTER</b>			<b>7,585</b>		<b>8,785</b>	<b>\$7,028,000</b>	<b>\$1,177,300</b>	<b>\$4,990,000</b>	<b>\$13,195,300</b>
Staff Sergeant Office	130	1	130	1	130	\$104,000	\$3,500	\$5,000	
Supervisor Workstation	150	1	150	1	150	\$120,000	\$30,000	\$200,000	
Call Taker Workstations (current)	150	9	1,350	9	1,350	\$1,080,000	\$270,000	\$450,000	
Dispatcher Workstations (current)	150	4	600	4	600	\$480,000	\$120,000	\$800,000	
Call Taker / Dispatcher Workstations (current)	150	4	600	4	600	\$480,000	\$120,000	\$800,000	
Communicator Workstations (growth)	150	6	900	10	1,500	\$1,200,000	\$180,000	\$750,000	
Communicator Workstations (NG911)	150	3	450	5	750	\$600,000	\$90,000	\$375,000	
Communicator Workstations (PRIDE)	150	11	1,650	12	1,800	\$1,440,000	\$330,000	\$1,375,000	
Crisis Response Coordinator Workstations	150	2	300	3	450	\$360,000	\$7,000	\$120,000	
Switchboard Workstations	150	2	300	2	300	\$240,000	\$7,000	\$10,000	
Small Meeting Room	130	1	130	1	130	\$104,000	\$3,500		
Ready (Shift Change) Room	225	1	225	1	225	\$180,000			
Quiet Rooms	100	2	200	2	200	\$160,000	\$7,000		
Admin Files Storage	250	1	250	1	250	\$200,000	\$5,000		
Chair Corral & Supplies Storage	250	1	250	1	250	\$200,000	\$4,300		
Copier Work Area	100	1	100	1	100	\$80,000		\$5,000	
Application Software & Screens		1				\$0		\$100,000	
<b>TRAINING AREA</b>			<b>2,895</b>		<b>3,155</b>	<b>\$2,524,000</b>	<b>\$264,500</b>	<b>\$935,000</b>	<b>\$3,723,500</b>
Training Staff Office Space (current)	130	2	260	2	260	\$208,000	\$7,000	\$10,000	
Training Staff Office Space (growth)	130	2	260	3	390	\$312,000	\$7,000	\$10,000	
Training Staff Office Space (NG911)	130	1	130	2	260	\$208,000	\$3,500	\$5,000	
Training Staff Office Space (PRIDE)	130	2	260	2	260	\$208,000	\$7,000	\$10,000	
Training Staff Workstations	0	7	0	9	0	\$0			
Training Room	110	16	1,760	16	1,760	\$1,408,000			
Training Room Workstations	0	16	0	16	0	\$0	\$240,000	\$800,000	
A/V App's, Screens & Control	75	1	75	1	75	\$60,000		\$100,000	
Training Supplies Storage	150	1	150	1	150	\$120,000			
<b>RTOC &amp; MISC</b>			<b>2,800</b>		<b>2,800</b>	<b>\$2,240,000</b>	<b>\$314,000</b>	<b>\$5,455,000</b>	<b>\$8,009,000</b>
Communicator Consoles (RTOC)	250	2	500	2	500	\$400,000	\$60,000	\$400,000	
Staffed Desks (RTOC)	125	2	250	2	250	\$200,000	\$7,000	\$40,000	
Outfitted Desks (MISC)	75	8	600	8	600	\$480,000	\$240,000	\$1,000,000	
Office Desks (MISC)	75	2	150	2	150	\$120,000	\$7,000	\$10,000	
EOC (MISC)	750	1	750	1	750	\$600,000			
A/V Control	100	1	100	1	100	\$80,000			
Reference Library	150	1	150	1	150	\$120,000			

**Exhibit F.2**

**Primary 911 Center**

**Sc. P4: "All Inclusive"**

Equipment Storage / Staging	150	1	150	1	150	\$120,000			
Closets / Coats / Storage	50	1	50	1	50	\$40,000			
Copier Work Area	100	1	100	1	100	\$80,000		\$5,000	
Application Software & Screens (RTOC)		1				\$0		\$3,000,000	
Application Software & Screens (MISC)		1				\$0		\$1,000,000	
<b>COMMON SUPPORT</b>			<b>3,765</b>		<b>4,000</b>	<b>\$3,200,000</b>	<b>\$170,200</b>	<b>\$0</b>	<b>\$3,370,200</b>
Kitchen / Vending	200	1	200	1	200	\$160,000	\$15,000		
Break Area / Lounge	400	1	400	1	400	\$320,000	\$3,000		
Washrooms	100	2	200	2	200	\$160,000	\$5,000		
Work Out Area	450	1	450	1	450	\$360,000	\$20,000		
Lockers (personal / half-height)	5	180	900	220	1,100	\$880,000	\$72,000		
Lockers (PRIDE)	5	63	315	70	350	\$280,000	\$25,200		
Showers/Change/Washroom (Male)	350	1	350	1	350	\$280,000	\$10,000		
Showers/Change/Washroom (Female)	350	1	350	1	350	\$280,000	\$10,000		
Showers/Change/Washroom (Universal)	350	1	350	1	350	\$280,000	\$10,000		
Housekeeping / Janitorial	250	1	250	1	250	\$200,000			
<b>MEETING SPACE</b>			<b>650</b>		<b>650</b>	<b>\$520,000</b>	<b>\$23,500</b>	<b>\$12,000</b>	<b>\$555,500</b>
Conference Room	500	1	500	1	500	\$400,000	\$20,000	\$12,000	
Meeting Room (small)	150	1	150	1	150	\$120,000	\$3,500		
<b>INFORMATION TECHNOLOGY</b>			<b>1,750</b>		<b>1,750</b>	<b>\$1,400,000</b>	<b>\$40,500</b>	<b>\$105,000</b>	<b>\$1,545,500</b>
IT Technicians	150	3	450	3	450	\$360,000	\$10,500	\$45,000	
Server Room	1,300	1	1,300	1	1,300	\$1,040,000	\$30,000	\$60,000	
<b>SECURE ENTRY</b>			<b>750</b>		<b>750</b>	<b>\$600,000</b>	<b>\$15,500</b>	<b>\$0</b>	<b>\$615,500</b>
Entry / Lobby / Reception	300	1	300	1	300	\$240,000	\$7,000		
Meeting Room (small)	150	1	150	1	150	\$120,000	\$3,500		
Washrooms (Universal)	100	2	200	2	200	\$160,000	\$5,000		
Coat Room	100	1	100	1	100	\$80,000			
<b>MECHANICAL</b>			<b>2,500</b>		<b>2,500</b>	<b>\$2,000,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$2,000,000</b>
Mechanical area, loading area, electrical/main power distribution, UPS/emergency generator, telecom, security, fire suppression									
<b>GROSS UP FROM NET (40%)</b>			<b>9,078</b>		<b>9,756</b>	<b>\$7,804,800</b>	<b>\$0</b>	<b>\$0</b>	<b>\$7,804,800</b>
<b>CO-LOCATIONS</b>			<b>14,000</b>		<b>14,000</b>	<b>\$11,200,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$11,200,000</b>
SFCC			2,500		2,500	\$2,000,000	\$0	\$0	
KFD MAIN DISPATCH			11,500		11,500	\$9,200,000	\$0	\$0	
<b>TECHNOLOGY INFRA. FOR BUILDING</b>						<b>\$0</b>	<b>\$0</b>	<b>\$4,075,000</b>	<b>\$4,075,000</b>

**Exhibit F.2**

**Primary 911 Center**

**Sc. P4: "All Inclusive"**

<b>SUB-TOTAL</b>			<b>45,773</b>		<b>48,146</b>	<b>\$38,516,800</b>	<b>\$2,005,500</b>	<b>\$15,572,000</b>	<b>\$56,094,300</b>
10% DESIGN						\$3,851,680	\$200,550	\$1,557,200	\$5,609,430
15% CONTINGENCY (Construction)						\$5,777,520	\$300,825	\$2,335,800	\$8,414,145
PROJECT IMPLEMENTATION						\$300,000	\$300,000	\$900,000	\$1,500,000
<b>TOTAL</b>			<b>45,773</b>		<b>48,146</b>	<b>\$48,446,000</b>	<b>\$2,806,875</b>	<b>\$20,365,000</b>	<b>\$71,617,875</b>

**ASSUMPTIONS: "SCENARIO 4 - ALL INCLUSIVE"**

**1. Primary Center Requirements: "Core"**

- Sized to accommodate ROW long-term growth (2051)
- Includes RTOC & MISC
- Includes NG911
- Includes community-based mental health crisis response initiatives

**2. Primary Center Requirements: "Core + PRIDE"**

- Includes core requirements (Scenario 1)
- Includes dispatching for PRIDE (Stratford, Brantford, and S. Simcoe police)

**3. Primary Center Requirements: "Core + PRIDE + SFCC"**

- Includes core requirements (Scenario 1)
- Includes dispatching for PRIDE (Scenario 2)
- ROW Service First Call Center (SFCC) is co-located on premises

**4. Primary Center Requirements: "Core + PRIDE + SFCC + Kitchener Fire"**

- Includes core requirements (Scenario 1)
- Includes dispatching for PRIDE (Scenario 2)
- Includes SFCC (Scenario 3)
- Kitchener Fire "main" dispatch is co-located on premises

**LAND COSTS**

- Excluded

**CONSTRUCTION COSTS**

- Assumed unit capital cost for construction (per square foot): \$800
- Construction costs are based on full build out (2051) floor area requirements.
- In 2022 dollars.
- Excludes HST and/or other applicable taxes.
- Assumes center to go operational in late 2024 at the earliest.
- Figure aligns with low end estimate by Pomax, i.e., they assumed \$800 to \$1,100 per SF for a new build police and emergency communications center
- For comparison, unit capital cost for new Central Division (at f' courthouse) is estimated at under \$600 per SF
- 10% for design and 15% contingency for construction are per S2 Architects figures

## FURNISHINGS COSTS

- Furniture costs are based on 2031 requirements (which includes NG 911 and provides for short-term growth).	
- In 2022 dollars.	
- Excludes HST and/or other applicable taxes.	
- Work station for 911 communicator	\$30,000
- Training room work station	\$15,000
- Office furniture (desk, chair, chair mat & bookcase/filing cabinet)	\$3,500
- 12' boardroom table (@ \$1,000/ft) w' 16 chairs (@ \$300 each) and side table (@ \$3,200)	\$20,000
- Kitchenette w' cupboards, counter, fridge & small appliances	\$15,000
- Admin filing (5 * 5 drawer laterals @ \$1,000)	\$5,000
- Quiet room recliner	\$3,500
- Shelving for supplies storage	\$2,500
- Cost of an entry locker	\$400
- Chair coral (assume 6 spare chairs @ \$300 each)	\$1,800
- Break area furniture (assume 2 recliners, table & chairs)	\$3,000
- Washroom	\$2,500
- Workout area (assume 3 major plus incidentals)	\$20,000
- Showers/change room	\$10,000
- Server room cabinetry	\$30,000
- Entry lobby (reception desk, couch & chairs)	\$7,000

## TECHNOLOGY COSTS

- Technology costs are based on 2031 requirements (which includes NG 911 and provides for short-term growth).	
- In 2022 dollars.	
- Excludes HST and/or other applicable taxes.	
- Communicator console w' CAD	\$50,000
- Communicator console w' CAD & radio	\$200,000
- Future consoles - growth, NG911, PRIDE, (50% w' radio)	\$125,000
- Crisis response coordinator console w' portable radio	\$60,000
- Training room console	\$50,000
- Switchboard	\$5,000
- Copier	\$5,000
- Applications software & screens (comm center)	\$100,000
- Large meeting room	\$12,000
- Office software setup	\$5,000
- Training room A/V App's, Screens & Control	\$100,000
- RTOC Console	\$200,000
- MISC consoles (50% w' radio)	\$125,000
- Applications software & screens (RTOC)	\$3,000,000
- Applications software & screens (MISC)	\$1,000,000
- IT Technicians	\$15,000
- Server room	\$60,000

**Exhibit F.2**

**Primary 911 Center**

**Sc. P4: "All Inclusive"**

	WRESTRC	Maplegrove (CAD at HQ)	Bayden
<b>TECHNOLOGY INFRASTRUCTURE FOR BUILDING</b>	<b>\$4,075,000</b>	<b>\$2,075,000</b>	<b>\$3,575,000</b>
- Redundant Bell 911 Trunk (2 substation feeds)	\$1,000,000	\$500,000	\$1,000,000
- CAD Fiber Lines	\$1,000,000	\$250,000	\$1,000,000
- Radio Fiber Lines	\$1,000,000	\$250,000	\$500,000
- Network Connections, Switches & Licenses	\$300,000	\$300,000	\$300,000
- UPS for Comm. Center & Phone System	\$200,000	\$200,000	\$200,000
- Firewall Infrastructure	\$75,000	\$75,000	\$75,000
- Security & Access Control	\$500,000	\$500,000	\$500,000
<b>PROJECT IMPLEMENTATION (WRPS / ROW STAFF)</b>			
- Construction (salary & benefits - 1 person for 24 mon's)	\$300,000		
- Security & Furnishings (salary & benefits - 1 person for 24 mon's)	\$300,000		
- Technology (salary & benefits - 3 persons for 24 mon's)	\$900,000		

Space Description	Unit Sq. Ft.	2031		2051		ORDER OF MAGNITUDE COSTS			
		Units	Total Sq. Ft.	Units	Total Sq. Ft.	Construction	Furniture	Technology	TOTAL
<b>WRPS</b>			<b>24,885</b>		<b>26,635</b>	<b>\$21,308,000</b>	<b>\$836,300</b>	<b>\$6,952,000</b>	<b>\$29,096,300</b>
<b>BACKUP COMMUNICATIONS CENTER</b>			<b>5,935</b>		<b>6,985</b>	<b>\$5,588,000</b>	<b>\$307,300</b>	<b>\$1,365,000</b>	<b>\$7,260,300</b>
Staff Sergeant Office	130	1	130	1	130	\$104,000	\$3,500	\$5,000	
Supervisor Workstation w' radio - (2022)	150	1	150	1	150	\$120,000	\$0	\$0	
Workstations - Call Taking (current)	150	9	1,350	9	1,350	\$1,080,000	\$0	\$0	
Workstations - Dispatch (soon - 2022)	150	4	600	4	600	\$480,000	\$0	\$0	
Call Taker / Dispatcher Workstations (current)	150	4	600	4	600	\$480,000	\$0	\$0	
Communicator Workstations (growth)	150	6	900	10	1,500	\$1,200,000	\$180,000	\$750,000	
Communicator Workstations (NG911)	150	3	450	5	750	\$600,000	\$90,000	\$375,000	
Crisis Response Coordinator Workstations	150	2	300	3	450	\$360,000	\$7,000	\$120,000	
Switchboard Workstations	150	2	300	2	300	\$240,000	\$7,000	\$10,000	
Small Meeting Room	130	1	130	1	130	\$104,000	\$3,500		
Ready (Shift Change) Room	225	1	225	1	225	\$180,000			
Quiet Rooms	100	2	200	2	200	\$160,000	\$7,000		
Files Storage	250	1	250	1	250	\$200,000	\$5,000		
Chair Corral & Supplies Storage	250	1	250	1	250	\$200,000	\$4,300		
Copier Work Area	100	1	100	1	100	\$80,000		\$5,000	
Application Software & Screens		1		1		\$0		\$100,000	
<b>TRAINING STAFF OFFICE SPACE</b>			<b>390</b>		<b>390</b>	<b>\$312,000</b>	<b>\$10,500</b>	<b>\$15,000</b>	<b>\$337,500</b>
Training Staff Office Space (current)	130	0	0	0	0	\$0	\$0	\$0	
Training Staff Office Space (growth)	130	2	260	2	260	\$208,000	\$7,000	\$10,000	
Training Staff Office Space (NG911)	130	1	130	1	130	\$104,000	\$3,500	\$5,000	
Training Staff Workstations	0	3	0	3	0	\$0			
<b>RTOC &amp; MISC</b>			<b>2,800</b>		<b>2,800</b>	<b>\$2,240,000</b>	<b>\$314,000</b>	<b>\$5,455,000</b>	<b>\$8,009,000</b>
Communicator Consoles (RTOC)	250	2	500	2	500	\$400,000	\$60,000	\$400,000	
Staffed Desks (RTOC)	125	2	250	2	250	\$200,000	\$7,000	\$40,000	
Outfitted Desks (MISC)	75	8	600	8	600	\$480,000	\$240,000	\$1,000,000	
Office Desks (MISC)	75	2	150	2	150	\$120,000	\$7,000	\$10,000	
EOC (MISC)	750	1	750	1	750	\$600,000			
A/V Control	100	1	100	1	100	\$80,000			
Reference Library	150	1	150	1	150	\$120,000			
Equipment Storage / Staging	150	1	150	1	150	\$120,000			
Closets / Coats / Storage	50	1	50	1	50	\$40,000			
Copier Work Area	100	1	100	1	100	\$80,000		\$5,000	
Application Software & Screens (RTOC)		1				\$0		\$3,000,000	
Application Software & Screens (MISC)		1				\$0		\$1,000,000	

**Exhibit F.3**

**Backup 911 Center**

**Sc. B1: "New Build"**

<b>COMMON SUPPORT</b>			<b>3,000</b>		<b>3,200</b>	<b>\$2,560,000</b>	<b>\$125,000</b>	<b>\$0</b>	<b>\$2,685,000</b>
Kitchen / Vending	200	1	200	1	200	\$160,000	\$15,000		
Break Area / Lounge	400	1	400	1	400	\$320,000	\$3,000		
Washrooms	100	2	200	2	200	\$160,000	\$5,000		
Work Out Area	450	0	0	0	0	\$0			
Lockers (personal / half-height)	5	180	900	220	1,100	\$880,000	\$72,000		
Showers/Change/Washroom (Male)	350	1	350	1	350	\$280,000	\$10,000		
Showers/Change/Washroom (Female)	350	1	350	1	350	\$280,000	\$10,000		
Showers/Change/Washroom (Universal)	350	1	350	1	350	\$280,000	\$10,000		
Housekeeping / Janitorial	250	1	250	1	250	\$200,000			
<b>MEETING SPACE</b>			<b>650</b>		<b>650</b>	<b>\$520,000</b>	<b>\$23,500</b>	<b>\$12,000</b>	<b>\$555,500</b>
Conference Room	500	1	500	1	500	\$400,000	\$20,000	\$12,000	
Meeting Room (small)	150	1	150	1	150	\$120,000	\$3,500		
<b>INFORMATION TECHNOLOGY</b>			<b>1,750</b>		<b>1,750</b>	<b>\$1,400,000</b>	<b>\$40,500</b>	<b>\$105,000</b>	<b>\$1,545,500</b>
IT Technicians	150	3	450	3	450	\$360,000	\$10,500	\$45,000	
Server Room	1,300	1	1,300	1	1,300	\$1,040,000	\$30,000	\$60,000	
<b>SECURE ENTRY</b>			<b>750</b>		<b>750</b>	<b>\$600,000</b>	<b>\$15,500</b>	<b>\$0</b>	<b>\$615,500</b>
Entry / Lobby / Reception	300	1	300	1	300	\$240,000	\$7,000		
Meeting Room (small)	150	1	150	1	150	\$120,000	\$3,500		
Washrooms (Universal)	100	2	200	2	200	\$160,000	\$5,000		
Coat Room	100	1	100	1	100	\$80,000			
<b>MECHANICAL</b>			<b>2,500</b>		<b>2,500</b>	<b>\$2,000,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$2,000,000</b>
Mechanical area, loading area, electrical/main power distribution, UPS/emergency generator, telecom, security, fire suppression									
<b>GROSS UP FROM NET (40%)</b>			<b>7,110</b>		<b>7,610</b>	<b>\$6,088,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$6,088,000</b>
<b>TECHNOLOGY INFRA. FOR BUILDING</b>						<b>\$0</b>	<b>\$0</b>	<b>\$2,575,000</b>	<b>\$2,575,000</b>
<b>SUB-TOTAL</b>			<b>24,885</b>		<b>26,635</b>	<b>\$21,308,000</b>	<b>\$836,300</b>	<b>\$9,527,000</b>	<b>\$31,671,300</b>
<b>10% DESIGN</b>						<b>\$2,130,800</b>	<b>\$83,630</b>	<b>\$952,700</b>	<b>\$3,167,130</b>
<b>15% CONTINGENCY (Construction)</b>						<b>\$3,196,200</b>	<b>\$125,445</b>	<b>\$1,429,050</b>	<b>\$4,750,695</b>
<b>PROJECT IMPLEMENTATION</b>						<b>\$300,000</b>	<b>\$300,000</b>	<b>\$900,000</b>	<b>\$1,500,000</b>
<b>TOTAL</b>			<b>24,885</b>		<b>26,635</b>	<b>\$26,935,000</b>	<b>\$1,345,375</b>	<b>\$12,808,750</b>	<b>\$41,089,125</b>

**ASSUMPTIONS: BACKUP 911 CENTER - NEW BUILD**

- Backup center to house the same number of communications workstations as in the primary 911 center

## Exhibit F.3

## Backup 911 Center

## Sc. B1: "New Build"

- Backup center does NOT double as training center
- Training staff to have office space at backup center
- Includes RTOC & MISC
- Includes NG911
- Includes community-based mental health crisis response initiatives
- Excludes dispatching for PRIDE
- Excludes SFCC and Kitchener Fire dispatch

### LAND COSTS

- Excluded

### CONSTRUCTION COSTS

- Assumed unit capital cost for construction (per square foot): \$800
- Construction costs are based on full build out (2051) floor area requirements.
- In 2022 dollars.
- Excludes HST and/or other applicable taxes.
- Assumes center to go operational in late 2024 at the earliest.
- Figure aligns with low end estimate by Pomax, i.e., they assumed \$800 to \$1,100 per SF for a new build police and emergency communications center
- For comparison, unit capital cost for new Central Division (at f' courthouse) is estimated at under \$600 per SF
- 10% for design and 15% contingency for construction are per S2 Architects figures

### FURNISHINGS COSTS

- Furniture costs are based on 2031 requirements (which includes NG 911 and provides for short-term growth).
- In 2022 dollars.
- Excludes HST and/or other applicable taxes.
- Communicator workstations existing 18 to be transferred from Maplegrove to Backup \$0
- Work station for 911 communicator \$30,000
- Training room work station \$15,000
- Office furniture (desk, chair, chair mat & bookcase/filing cabinet) \$3,500
- 12' boardroom table (@ \$1,000/ft) w' 16 chairs (@ \$300 each) and side table (@ \$3,200) \$20,000
- Kitchenette w' cupboards, counter, fridge & small appliances \$15,000
- Admin filing (5 \* 5 drawer laterals @ \$1,000) \$5,000
- Quiet room recliner \$3,500
- Shelving for supplies storage \$2,500
- Cost of an entry locker \$400
- Chair coral (assume 6 spare chairs @ \$300 each) \$1,800
- Break area furniture (assume 2 recliners, table & chairs) \$3,000
- Washroom \$2,500
- Workout area (assume 3 major plus incidentals) \$20,000
- Showers/change room \$10,000
- Server room cabinetry \$30,000
- Entry lobby (reception desk, couch & chairs) \$7,000

**Exhibit F.3****Backup 911 Center****Sc. B1: "New Build"****TECHNOLOGY COSTS**

- Technology costs are based on 2031 requirements (which includes NG 911 and provides for short-term growth).

- In 2022 dollars.

- Excludes HST and/or other applicable taxes.

- Communicator consoles existing 18 to be transferred from Maple Grove to Backup	\$0
- Communicator console w' CAD	\$50,000
- Communicator console w' CAD & radio	\$200,000
- Future consoles - growth, NG911, PRIDE, (50% w' radio)	\$125,000
- Crisis response coordinator console w' portable radio	\$60,000
- Training room console	\$50,000
- Switchboard	\$5,000
- Copier	\$5,000
- Applications software & screens (comm center)	\$100,000
- Large meeting room	\$12,000
- Office software setup	\$5,000
- Training room A/V App's, Screens & Control	\$100,000
- RTOC Console	\$200,000
- MISC consoles (50% w' radio)	\$125,000
- Applications software & screens (RTOC)	\$3,000,000
- Applications software & screens (MISC)	\$1,000,000
- IT Technicians	\$15,000
- Server room	\$60,000

**TECHNOLOGY INFRASTRUCTURE FOR BUILDING**

\$2,575,000

- Redundant Bell 911 Trunk (2 substation feeds)	\$1,000,000
- CAD Fiber Lines	\$500,000
- Radio Fiber Lines	\$0
- Network Connections, Switches & Licenses	\$300,000
- UPS for Comm. Center & Phone System	\$200,000
- Firewall Infrastructure	\$75,000
- Security & Access Control	\$500,000

**PROJECT IMPLEMENTATION (WRPS / ROW STAFF)**

- Construction (salary & benefits - 1 person for 24 mon's)	\$300,000
- Security & Furnishings (salary & benefits - 1 person for 24 mon's)	\$300,000
- Technology (salary & benefits - 3 persons for 24 mon's)	\$900,000

Space Description	Unit Sq. Ft.	2031		2051		ORDER OF MAGNITUDE COSTS			
		Units	Total Sq. Ft.	Units	Total Sq. Ft.	Construction	Furniture	Technology	TOTAL
<b>WRPS</b>			<b>15,390</b>		<b>16,890</b>	<b>\$6,756,000</b>	<b>\$767,300</b>	<b>\$6,940,000</b>	<b>\$14,463,300</b>
<b>BACKUP COMMUNICATIONS CENTER</b>			<b>5,935</b>		<b>6,985</b>	<b>\$2,794,000</b>	<b>\$307,300</b>	<b>\$1,365,000</b>	<b>\$4,466,300</b>
Staff Sergeant Office	130	1	130	1	130	\$52,000	\$3,500	\$5,000	
Supervisor Workstation w' radio - (2022)	150	1	150	1	150	\$60,000	\$0	\$0	
Workstations - Call Taking (current)	150	9	1,350	9	1,350	\$540,000	\$0	\$0	
Workstations - Dispatch (soon - 2022)	150	4	600	4	600	\$240,000	\$0	\$0	
Call Taker / Dispatcher Workstations (current)	150	4	600	4	600	\$240,000	\$0	\$0	
Communicator Workstations (growth)	150	6	900	10	1,500	\$600,000	\$180,000	\$750,000	
Communicator Workstations (NG911)	150	3	450	5	750	\$300,000	\$90,000	\$375,000	
Crisis Response Coordinator Workstations	150	2	300	3	450	\$180,000	\$7,000	\$120,000	
Switchboard Workstations	150	2	300	2	300	\$120,000	\$7,000	\$10,000	
Small Meeting Room	130	1	130	1	130	\$52,000	\$3,500		
Ready (Shift Change) Room	225	1	225	1	225	\$90,000			
Quiet Rooms	100	2	200	2	200	\$80,000	\$7,000		
Files Storage	250	1	250	1	250	\$100,000	\$5,000		
Chair Corral & Supplies Storage	250	1	250	1	250	\$100,000	\$4,300		
Copier Work Area	100	1	100	1	100	\$40,000		\$5,000	
Application Software & Screens		1		1		\$0		\$100,000	
<b>TRAINING STAFF OFFICE SPACE</b>			<b>390</b>		<b>390</b>	<b>\$156,000</b>	<b>\$10,500</b>	<b>\$15,000</b>	<b>\$181,500</b>
Training Staff Office Space (current)	130	0	0	0	0	\$0	\$0	\$0	
Training Staff Office Space (growth)	130	2	260	2	260	\$104,000	\$7,000	\$10,000	
Training Staff Office Space (NG911)	130	1	130	1	130	\$52,000	\$3,500	\$5,000	
Training Staff Workstations	0	3	0	3	0	\$0			
<b>RTOC &amp; MISC</b>			<b>2,800</b>		<b>2,800</b>	<b>\$1,120,000</b>	<b>\$314,000</b>	<b>\$5,455,000</b>	<b>\$6,889,000</b>
Communicator Consoles (RTOC)	250	2	500	2	500	\$200,000	\$60,000	\$400,000	
Staffed Desks (RTOC)	125	2	250	2	250	\$100,000	\$7,000	\$40,000	
Outfitted Desks (MISC)	75	8	600	8	600	\$240,000	\$240,000	\$1,000,000	
Office Desks (MISC)	75	2	150	2	150	\$60,000	\$7,000	\$10,000	
EOC (MISC)	750	1	750	1	750	\$300,000			
A/V Control	100	1	100	1	100	\$40,000			
Reference Library	150	1	150	1	150	\$60,000			
Equipment Storage / Staging	150	1	150	1	150	\$60,000			
Closets / Coats / Storage	50	1	50	1	50	\$20,000			
Copier Work Area	100	1	100	1	100	\$40,000		\$5,000	
Application Software & Screens (RTOC)		1				\$0		\$3,000,000	
Application Software & Screens (MISC)		1				\$0		\$1,000,000	

Exhibit F.4

Backup 911 Center

Sc. B2: "99 Regina St."

<b>COMMON SUPPORT</b>			<b>1,950</b>		<b>2,150</b>	<b>\$860,000</b>	<b>\$95,000</b>	<b>\$0</b>	<b>\$955,000</b>
Kitchen / Vending	200	1	200	1	200	\$80,000	\$15,000		
Break Area / Lounge	400	1	400	1	400	\$160,000	\$3,000		
Washrooms	100	2	200	2	200	\$80,000	\$5,000		
Lockers (personal / half-height)	5	180	900	220	1,100	\$440,000	\$72,000		
Housekeeping / Janitorial	250	1	250	1	250	\$100,000			
<b>MEETING SPACE</b>			<b>0</b>		<b>0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>INFORMATION TECHNOLOGY</b>			<b>1,750</b>		<b>1,750</b>	<b>\$700,000</b>	<b>\$40,500</b>	<b>\$105,000</b>	<b>\$845,500</b>
IT Technicians	150	3	450	3	450	\$180,000	\$10,500	\$45,000	
Server Room	1,300	1	1,300	1	1,300	\$520,000	\$30,000	\$60,000	
<b>SECURE ENTRY</b>			<b>0</b>		<b>0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>MECHANICAL</b>			<b>0</b>		<b>0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>GROSS UP FROM NET (20%)</b>			<b>2,565</b>		<b>2,815</b>	<b>\$1,126,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,126,000</b>
<b>TECHNOLOGY INFRA. FOR BUILDING</b>						<b>\$0</b>	<b>\$0</b>	<b>\$2,225,000</b>	<b>\$2,225,000</b>
<b>SUB-TOTAL</b>			<b>15,390</b>		<b>16,890</b>	<b>\$6,756,000</b>	<b>\$767,300</b>	<b>\$9,165,000</b>	<b>\$16,688,300</b>
<b>10% DESIGN</b>						<b>\$675,600</b>	<b>\$76,730</b>	<b>\$916,500</b>	<b>\$1,668,830</b>
<b>15% CONTINGENCY (Construction)</b>						<b>\$1,013,400</b>	<b>\$115,095</b>	<b>\$1,374,750</b>	<b>\$2,503,245</b>
<b>PROJECT IMPLEMENTATION</b>						<b>\$225,000</b>	<b>\$225,000</b>	<b>\$675,000</b>	<b>\$1,125,000</b>
<b>TOTAL</b>			<b>15,390</b>		<b>16,890</b>	<b>\$8,670,000</b>	<b>\$1,184,125</b>	<b>\$12,131,250</b>	<b>\$21,985,375</b>

ASSUMPTIONS: BACKUP 911 CENTER - NEW BUILD

- Backup center to house the same number of communications workstations as in the primary 911 center
- Backup center does NOT double as training center
- Training staff to have office space at backup center
- Includes RTOC & MISC
- Includes NG911
- Includes community-based mental health crisis response initiatives
- Excludes dispatching for PRIDE
- Excludes SFCC and Kitchener Fire dispatch
- Assumes access to the building's existing workout area, change rooms, meeting rooms, mechanical area, loading area, etc.
- No need for separate secure main entry / reception
- Requires less gross up for renovation of existing building / used 20%

Backup center, RTOC, and common supprts on one floor	11,862
Traing staff space, MISC, and IT Support on another floor	<u>5,028</u>

**Exhibit F.4**

**Backup 911 Center**

**Sc. B2: "99 Regina St."**

Total	16,890
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**LAND COSTS**

- Excluded

**CONSTRUCTION COSTS**

- Assumed unit capital cost for construction (per square foot): \$400
- Construction costs are based on full build out (2051) floor area requirements.
- In 2022 dollars.
- Excludes HST and/or other applicable taxes.
- Assumes center to go operational in late 2024 at the earliest.
- Figure aligns with low end estimate by Pomax, i.e., they assumed \$800 to \$1,100 per SF for a new build police and emergency communications center
- For comparison, unit capital cost for new Central Division (at f' courthouse) is estimated at under \$600 per SF
- 10% for design and 15% contingency for construction are per S2 Architects figures

**FURNISHINGS COSTS**

- Furniture costs are based on 2031 requirements (which includes NG 911 and provides for short-term growth).
- In 2022 dollars.
- Excludes HST and/or other applicable taxes.
- Communicator workstations existing 18 to be transferred from Maple Grove to Backup \$0
- Work station for 911 communicator \$30,000
- Training room work station \$15,000
- Office furniture (desk, chair, chair mat & bookcase/filing cabinet) \$3,500
- 12' boardroom table (@ \$1,000/ft) w' 16 chairs (@ \$300 each) and side table (@ \$3,200) \$20,000
- Kitchenette w' cupboards, counter, fridge & small appliances \$15,000
- Admin filing (5 \* 5 drawer laterals @ \$1,000) \$5,000
- Quiet room recliner \$3,500
- Shelving for supplies storage \$2,500
- Cost of an entry locker \$400
- Chair coral (assume 6 spare chairs @ \$300 each) \$1,800
- Break area furniture (assume 2 recliners, table & chairs) \$3,000
- Washroom \$2,500
- Workout area (assume 3 major plus incidentals) \$20,000
- Showers/change room \$10,000
- Server room cabinetry \$30,000
- Entry lobby (reception desk, couch & chairs) \$7,000

**TECHNOLOGY COSTS**

- Technology costs are based on 2031 requirements (which includes NG 911 and provides for short-term growth).
- In 2022 dollars.
- Excludes HST and/or other applicable taxes.
- Communicator consoles existing 18 to be transferred from Maple Grove to Backup \$0
- Communicator console w' CAD \$50,000

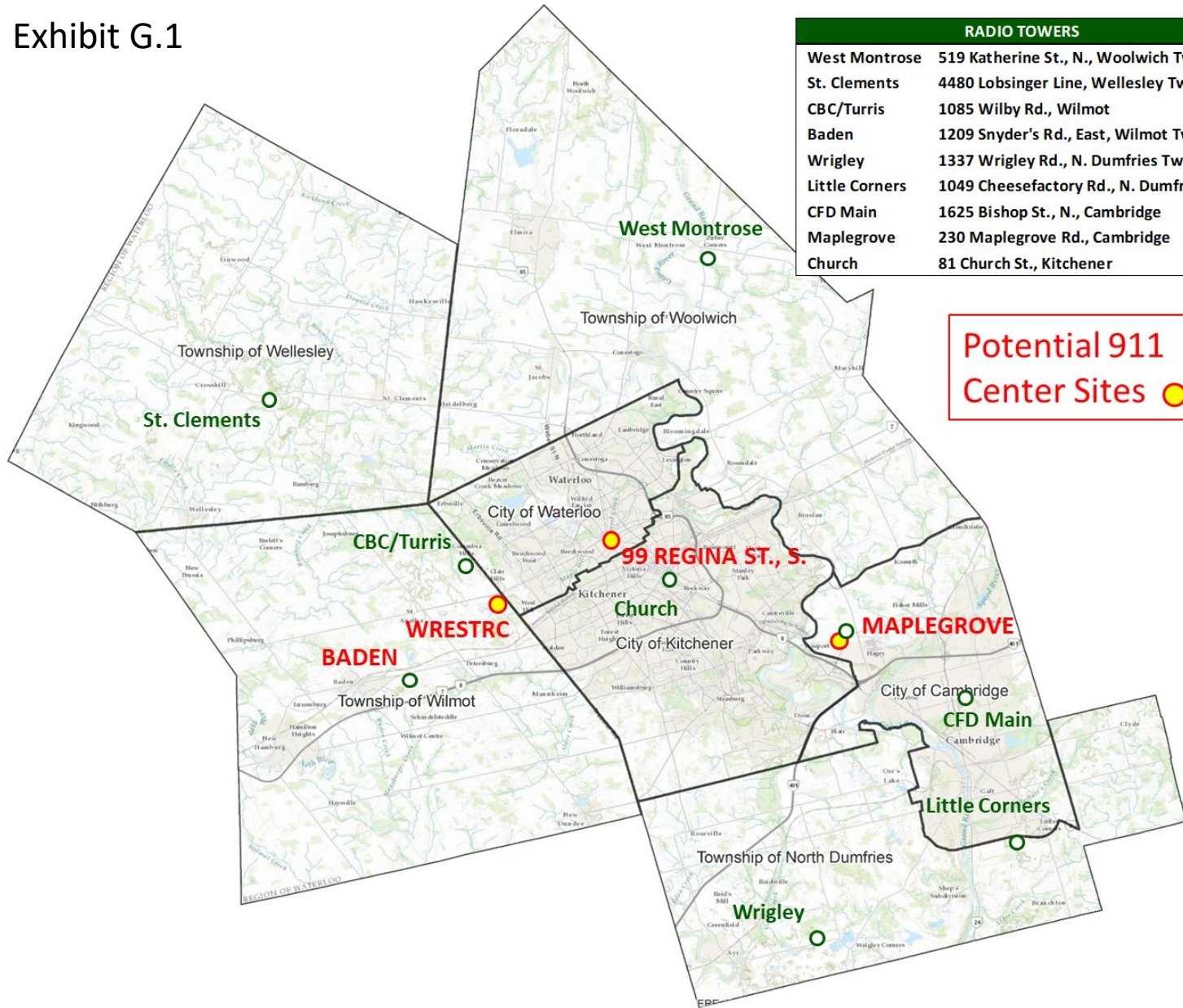
**Exhibit F.4****Backup 911 Center****Sc. B2: "99 Regina St."**

- Communicator console w' CAD & radio	\$200,000
- Future consoles - growth, NG911, PRIDE, (50% w' radio)	\$125,000
- Crisis response coordinator console w' portable radio	\$60,000
- Training room console	\$50,000
- Switchboard	\$5,000
- Copier	\$5,000
- Applications software & screens (comm center)	\$100,000
- Large meeting room	\$12,000
- Office software setup	\$5,000
- Training room A/V App's, Screens & Control	\$100,000
- RTOC Console	\$200,000
- MISC consoles (50% w' radio)	\$125,000
- Applications software & screens (RTOC)	\$3,000,000
- Applications software & screens (MISC)	\$1,000,000
- IT Technicians	\$15,000
- Server room	\$60,000
<b>TECHNOLOGY INFRASTRUCTURE FOR BUILDING</b>	<b>\$2,225,000</b>
- Redundant Bell 911 Trunk (2 substation feeds)	\$1,000,000
- CAD Fiber Lines	\$250,000
- Radio Fiber Lines	\$0
- Network Connections, Switches & Licenses	\$300,000
- UPS for Comm. Center & Phone System	\$200,000
- Firewall Infrastructure	\$75,000
- Redundant HVAC for Server Room	\$100,000
- Redundant HVAC for Mechanical Room	\$200,000
- Security & Access Control	\$100,000
<b>PROJECT IMPLEMENTATION (WRPS / ROW STAFF)</b>	
- Construction (salary & benefits - 1 person for 18 mon's)	\$225,000
- Security & Furnishings (salary & benefits - 1 person for 18 mon's)	\$225,000
- Technology (salary & benefits - 3 persons for 18 mon's)	\$675,000

## Appendix G – Potential 911 Center Sites

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# Exhibit G.1



RADIO TOWERS	
West Montrose	519 Katherine St., N., Woolwich Twp
St. Clements	4480 Lobsinger Line, Wellesley Twp
CBC/Turris	1085 Wilby Rd., Wilmot
Baden	1209 Snyder's Rd., East, Wilmot Twp
Wrigley	1337 Wrigley Rd., N. Dumfries Twp
Little Corners	1049 Cheesefactory Rd., N. Dumfries Twp
CFD Main	1625 Bishop St., N., Cambridge
Maplegrove Church	230 Maplegrove Rd., Cambridge
Church	81 Church St., Kitchener

Potential 911 Center Sites 

**99 REGINA ST., S.**

Exhibit G.2: 99 Regina St., S.



Exhibit G.3: Maplegrove Campus



Exhibit G.4: WRESTRC



# Exhibit G.5: Baden Tower

