

The Regional Municipality of York

Committee of the Whole
Community and Health Services
November 5, 2020

Report of the Commissioner of Community and Health Services

Update: 10-Year Paramedic Services Resources and Facilities Master Plan

1. Recommendations

The Regional Clerk circulate this report to the local municipalities for information.

2. Summary

This report provides information on development of the Paramedic Services Resources and Facilities Master Plan and Phase 1 Results of the Demand and Capacity Study.

Key Points:

- In [September 2012](#), Council approved the York Region Emergency Medical Services 10-Year Resources and Facilities Master Plan. This plan identified optimal station locations, staffing and vehicle requirements over the next 10 years to meet the needs of the Region's growing population. The plan was updated in 2016 and extended to 2026 to ensure that accurate long-term planning informed business and capital plans. The current update will extend the plan to 2031 and will build upon previous plans to include a more comprehensive assessment of paramedics, support staff and infrastructure needs to meet growing demand.
- Development of the updated Master Plan is a five phase process beginning with Phase 1 - Demand and Capacity Study. The study identifies future station locations and infrastructure required by 2031 to meet legislated and Council approved response times and ensure each local municipality has appropriate ambulance coverage to meet future demand
- In 2031, Paramedic Services is forecasted to respond to 163,606 incidents, an increase of 119% over 2021 levels, largely driven by seniors
- In addition to the three new stations and two replacement stations identified in the current Master Plan, the demand and capacity study identified one new response station in the Town of Georgina would be required by 2031 to meet forecasted demand
- Progress reports will be brought forward to Council throughout each phase of development of the Master Plan

3. Background

Paramedic Services has been working with experts in emergency services to develop and update its 10-year Resources and Facilities Master Plan

Paramedic Services uses multi-year plans to guide decision making on the allocation of personnel, vehicles and station locations for York Region, to maintain a high level of service and meet response time standards.

Since 2011, York Region Paramedic Services has been working with Operational Research in Health Limited (the consultant) to plan for the future demands of emergency services in the Region while supporting response time performance. They are emergency services consultants based in the United Kingdom with a wide range of local and international experience in emergency services modeling ranging across Europe, the Middle East, Australia, Canada and the United States of America.

In [September 2012](#), Council approved York Region Emergency Medical Services 10-Year Resources and Facilities Master Plan to 2021. The Plan identified that a total of 23 stations, along with 5,716 ambulance total hours of coverage and 840 rapid response hours of coverage per week would be required by 2021.

In 2016, the Demand and Capacity Study component of the 10-Year Resources and Facility Master Plan was updated to extend it to 2026. At that time, resources needed by 2026 included three new stations and two replacement stations (for a total of 27 stations), along with 8,148 total hours of ambulance coverage and 420 rapid response unit hours of coverage per week.

The current update extends the plan to 2031 and will build upon previous plans to include a more comprehensive assessment of paramedics, support staff and infrastructure needs to meet growing demand.

The methodology used has been proven to accurately plan for growth trends

Historic demand analysis (analysis of the entire cycle of the 9-1-1 response from when the ambulance is dispatched to when the ambulance is clear of the hospital and ready to respond to another 9-1-1 request) combined with historic geographic analysis (location data, travel times, and time on task for each call) has informed the simulation phase of the study. Using future demand modelling — a proprietary simulation model software — the consultant is able to mimic Paramedic Services' current service profile and predict future demand under a variety of scenarios to identify the resources and station locations required to meet response times and community needs.

Previous Master Plan updates have successfully used this simulation model to accurately reflect demand and place the Region's stations in the right locations to meet the needs of residents.

4. Analysis

Development of the Master Plan is a five phase process beginning with the Demand and Capacity Study

Updating the master plan is a five phase process taking place between 2021 and 2031 that identifies key milestones for responding to population growth across the Region. The updated plan will build upon the two previous plans to include a more comprehensive assessment of paramedics, support staff and infrastructure needs to meet growing demand.

The Master Plan, when fully developed, will identify:

- Paramedic Response Stations required to 2031
- Ambulance and Rapid Response vehicles needed to 2031
- Paramedic staffing resources required to 2031

The Master Plan will be developed over five phases beginning with the Demand and Capacity Study in Phase 1. The remaining phases will inform planning for resources and infrastructure up to 2031, including identifying gaps in the level of back-end supports required to maintain frontline operations and fleet capacity, supervisory structures to support staff, and proposed capital and operational costs to include in the Region's 2023 to 2027 Multi-Year Budget. Council will be updated on the outcomes of each phase. Each phase is explained below.

- **Phase 1, 2020: Demand and Capacity Study** – This foundational study considers data such as regional demographics, road networks, historical 9-1-1 calls and usage to forecast the demand for ambulance services from now to 2031. The study also identifies resources needed up to 2031 to meet demand and incorporates feedback from other Region departments, York Regional Police, local municipal fire chiefs and the Ministry of Health Field Office
- **Phase 2, 2021: Development of the Master Plan Components** - Uses the Demand and Capacity study results to develop fleet and staffing subplans, and to identify growth-related infrastructure needs which will inform the Region's next development charge background study and bylaw update
- **Phase 3, 2022: Operating and Capital Finance Strategy** - Paramedic Services' business and capital budgets will be developed to support the Plan up to 2031
- **Phase 4, 2022: Council Approval of the Final Master Plan** – Approval of the Paramedic Services' service delivery model, as well as the capital finance strategy and 2023 to 2027 operating budget
- **Phase 5, 2023-2031: Implementation** - Execute resources identified in the master plan to meet 9-1-1 response demand

Demand and capacity study methodology is aimed at achieving balanced response times across York Region

Planning for paramedic resources and facilities includes the requirement to meet legislated and Council-approved response times. Response times are based on the Canadian Triage Acuity Scale (CTAS), a five-level tool used to assess the severity of a patient's condition and the need for timely care set by the Ministry of Health and municipalities under the *Ambulance Act* as set out in Table 1.

The response time targets described in Table 1 were set in 2012 by Council. Cardiac arrest and CTAS 1 targets are legislated by the Ministry of Health; the remainder were set by York Region. While response time targets have not changed since 2012, as dispatch modernization occurs, there may be opportunity to lengthen response time targets for lower priority patients in order to improve system capacity and respond efficiently to most critical patients, which could help reduce growth that would otherwise be required to address increased service demand.

Table 1
Canadian Triage Acuity Scale Response Time Requirements

Category and Examples	Target response time from Dispatch to arrival on scene	Targeted percentage to meet response times (%)
Sudden Cardiac Arrest Absence of breathing, pulse	Community Target: Arrival of any person equipped with an AED within 6 minutes Set by the Ministry of Health	60%
CTAS 1 - Includes sudden cardiac arrest or other major trauma	8 minutes Set by the Ministry of Health	75%
CTAS 2 - Chest pain, stroke, overdose	10 minutes Set by York Region*	80%
CTAS 3 - Moderate pain or trauma	15 minutes Set by York Region*	90%
CTAS 4 - Minor trauma, general pain	20 minutes Set by York Region*	90%
CTAS 5 - Minor ailments, repeat visits	25 minutes Set by York Region*	90%

***Note:** In [September 2012](#), Council adopted the *York Region Emergency Medical Services Response Time Performance Plan 2013*, which identified targeted response times from Dispatch to arrival on scene.

When a call comes into a Central Ambulance Communication Centre, the dispatcher determines the call's priority level, ranging from Priority 1 to Priority 4. Priority 4 responses are classified as Life Threatening and include the most serious patients such as cardiac arrests, chest pain, strokes and trauma as noted in Table 1. Depending on the severity of the patient, certain patients may be triaged by dispatch as Priority 3 or Priority 4.

The Demand and Capacity Study addresses the disparity in achieving response times of eight minutes or less to Priority 4 calls across the Region due to geographic conditions (such as urban versus rural, station locations, road locations, traffic conditions) and resources (such as staffing levels and ambulance availability due to call volumes and hospital offload times). The Study uses modelling intended to achieve equitable response times where paramedics respond to Priority 4 patients in eight minutes or less 75% of the time Region wide (on average) and ensure an eight minute or less response time in each local municipality 70% of the time.

Detailed data analysis included planned development, new roads, travel times and population growth

Data from the Ambulance Dispatch Reporting System was included in the modelling to understand the demand placed on Paramedic Services, the usage of resources deployed, and the response performance achieved within York Region. A 21-month data sample (from January 1, 2018 to September 30, 2019) was collected to examine and analyze trends in demand and performance. Also used were regional population forecasts of the expected number of residents in York Region from 2020 to 2031, broken down by local municipality, gender and age group, historic analysis of 9-1-1 demand and 2011 census data (note: this is the most current census data available at this time; the analysis will be reviewed when the 2016 census data and populations are available).

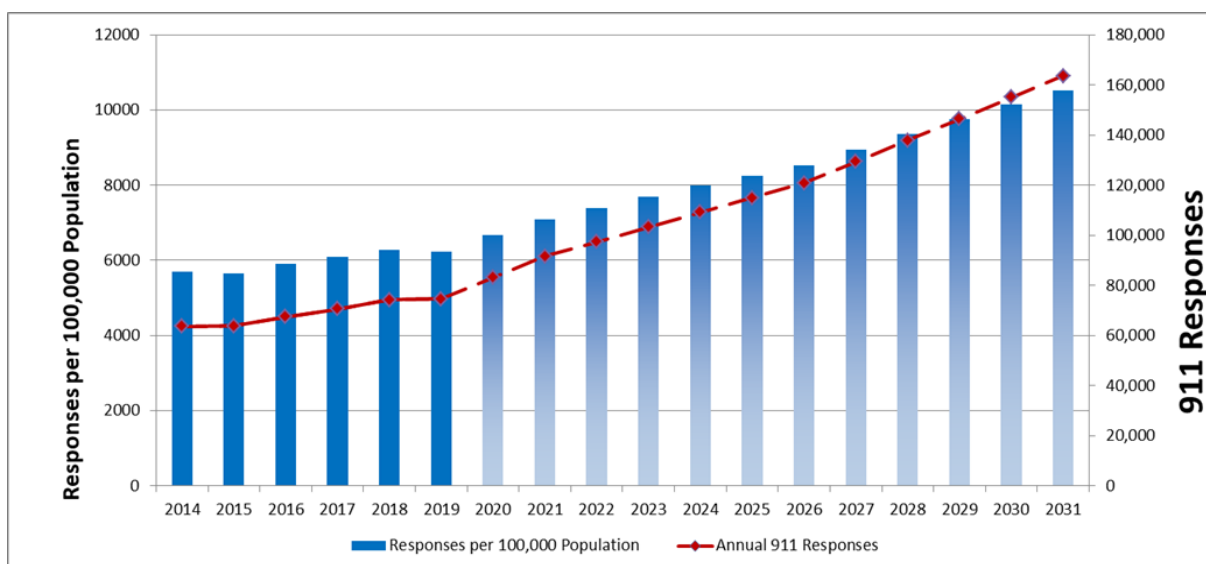
In 2031, Paramedic Services is forecasted to respond to 163,606 incidents, an increase of 119% over 2021 levels, largely driven by seniors

As shown in Figure 1, in 2031, Paramedics are expected to respond to 163,606 incidents compared to 74,623 in 2021. This represents an average annual increase of 6.8%.

Increased demand is expected due to anticipated population growth (20% increase between 2021 and 2031), and growth in the seniors' population (increased share of the Region's population from 17% in 2021 to 22% in 2031). This will result in increased call volumes from seniors with complex needs.

The Region's rural areas are forecast to have the largest overall increase in incidents between 2021 and 2031 on a percentage basis (85% in the Town of East Gwillimbury; 61% in the Town of Georgina; and 41% in the Township of King); however the majority of the incidents are expected to occur within the urban municipalities.

Figure 1
Forecasted 9-1-1 Service Demand in York Region



Source: York Region Long Range Planning and Data Analytics and Visualization Services

Regional planning forecasts for the completion of new housing developments were included in the modelling. By 2031, new developments forecasted for the cities of Markham and Vaughan will add an estimated 72,100 and 76,200 new residents, respectively. New population areas are also forecasted to add new residents in the City of Richmond Hill (33,700), the Town of East Gwillimbury (38,100) and the Town of Georgina (10,500) from 2021 to 2031 as noted in Table 2.

Table 2
Estimated Population Increase by Municipality 2021 to 2031

Municipality	Population/Year		
	2021	2026	2031
Town of Aurora	64,512	69,514	74,852
Town of East Gwillimbury	39,617	53,275	77,758
Town of Georgina	51,734	56,640	62,242
Township of King	28,990	32,048	34,771
City of Markham	386,698	425,334	458,786
Town of Newmarket	92,549	97,054	100,843
City of Richmond Hill	224,827	241,745	258,503
City of Vaughan	351,747	383,379	427,932
Town of Whitchurch-Stouffville	52,944	59,040	62,012
Total York Region	1,293,618	1,418,029	1,557,699

Source: York Region Long Range Planning and Data Analytics and Visualization Services

The refreshed modelling validated the remaining new and replacement stations identified in the current master plan, and identified the need for one new response station in the Town of Georgina by 2031

Based on modelling, the Phase 1 study has provided high level forecasting of the need for response stations and weekly ambulance hours to meet the changing and growing demand across the Region. The following resources will be required in order that York Region Paramedic Services can continue to meet performance targets up to 2031:

- The existing 27 stations identified in the previous master plan are appropriately placed to meet 9-1-1 response demand
- The temporary station 85 Richmond Hill South in the City of Richmond Hill should be retained as a permanent station
- Paramedic Response Stations #32 Maple in the City of Vaughan and #20 Ballantrae in the Town of Whitchurch-Stouffville require replacement since both spaces are leased, and do not meet the needs for future growth
- Locations of the three new stations planned for construction by 2026 based on the prior master plan were re-verified, as they are in growth and high demand areas (see Attachment 1):
 - Cachet Woods in the City of Markham
 - Highway 7 and Weston Road, Vaughan
 - Jane and Teston in the City of Vaughan
- One new station is needed in the Town of Georgina (south end of Keswick) to meet forecast demand in that growing area. Paramedic Services will also investigate co-location opportunities with the Town of Georgina Fire Services.

The stations identified in this Study, as well ambulances added to existing stations will meet the forecasted demand of 8,736 (a difference of 3,024 hours from 2021) weekly ambulance hours by 2026 and 11,148 (a difference of 5,436 from 2026) weekly by ambulance hours 2031.

Service innovations will be further explored and developed to mitigate future 9-1-1 service demands and resource requirements

Phase 2 of the Plan will use the Demand and Capacity study results to develop fleet and staffing subplans, and to identify growth-related infrastructure needs which will inform the Region's next development charge background study and bylaw update. In addition, with support of a working group comprised of corporate and community partners, in this phase resources and partnerships needed to implement the Plan to 2031 will be identified.

Resource needs to respond to future service demands will be significant. Development Charges from new housing developments will help with financial sustainability of the service.

Other opportunities to help make the service more sustainable financially, while also improving customer service, will be explored to improve coordination between emergency

health service partners and scale up local innovations to help mitigate the demand for emergency paramedic services, and to connect clients to appropriate community resources.

Examples of service innovations the Region has already implemented or are planned that reduce service demand (and costs) are described in the next sections.

Programs currently offered by York Region Community Paramedics help avoid 911 calls

- CP@Clinic/ CP@Home – This is an evidence-based collaborative program conducted in partnership with McMaster University where Community Paramedics provide programs in seniors housing buildings and in clients' homes. As of October 2019, approximately 70 clients were served through 505 in-person visits
- The Emergency and Transitional Housing Program – This program provides regular clinic hours at emergency housing (homeless shelter) locations and/or homeless drop-in centers across York Region where paramedics provide clients with primary health assessments, health coaching and education, health care system navigation, influenza vaccination and human service referrals where appropriate. As of October 2019, approximately 80 clients were seen at six clinics
- The palliative care program with support of the Canadian Partnership Against Cancer and The Canadian Foundation for Healthcare Improvement – This program aims to train all paramedics in the principles of palliative care and community resources to assist palliative care patients in crisis in their homes, and reduce paramedic transports to Emergency Departments when appropriate. Similar programs in other Provinces have demonstrated a greater than 50% reduction in Emergency Department transports

Partnerships within the Community and Health Services Department have improved the effectiveness and efficiency of Paramedic Services, such as its collaboration with Public Health for data sharing regarding opioids, outbreaks, and emergency planning for infectious disease outbreaks, and most recently, supporting Public Health with the COVID-19 emergency response (e.g. community based COVID-19 testing and participating in the Universal Influenza Immunization Program this Fall).

New Provincial Patient Care Model Standards could reduce transports to hospital

With the introduction of new Patient Care Model Standards as part of the amendments to the *Ambulance Act* and Regulation 257/00, staff continue to work with the Ministry of Health and sector partners on implementation of 'treat and release' and 'treat and refer' programs. These programs would permit paramedics to assess patients on the scene of a 9-1-1 response and make a decision on whether the patient could be treated on scene or referred to another health care resource for ongoing care, rather than having to transport the patient to the Emergency Department. When implemented, these programs could improve the efficiency of paramedic services by addressing lengthy ambulance offloading times and treating patients in the community without the need for transport to the Emergency Department, maximizing the time ambulances are available in the community to respond to 9-1-1 calls.

Anticipated improvements to medical dispatch technologies could improve efficiencies, and reduce the number of ambulance hours that would otherwise be required

Examples of improvement include:

- A new mobile data application implemented in 2019 that connects a Computer Aided Dispatch platform to both the in-vehicle tablet and the paramedics' iPhones in all York Regional ambulances, providing paramedics with automatic information updates, real time data on patient condition and navigation to 9-1-1 responses and saving time and reducing errors.
- The anticipated new Medical Priority Dispatch System. The new dispatch system will provide a new medical triage algorithm that will enable better differentiation and triage of emergencies and ensure that the patient receives the most urgent care in the appropriate time frame with the resources available. As reported to Council in [2019](#), the current dispatch system results in a level of response that may be beyond what the emergency warrants, and results in an inefficient use of resources. Changes to the dispatch system have been delayed due to the COVID-19 pandemic. To date, no revised timeline has been provided by the Ministry of Health.

Efficiencies may also result from new and enhanced collaboration and coordination with other health care partners

Examples include:

- The Memorandum of Understanding approved by Council in [October 2009](#) with the Region's three hospitals through significantly improved transfer of care times, from about 60-90 minutes before the MOU to about 30 minutes currently. Faster transfer times help get ambulances back in service faster. Paramedic Services continues to track off-load times and regularly meets with local hospitals to ensure transfer of care times continue to be met
- Collaborative emergency planning and co-location opportunities with local fire services can increase cost efficiencies and ensure high quality care for residents. For example, shared station locations can help to reduce capital and operating costs of paramedic response stations
- Partnerships with Ontario Health Teams in York Region, as described in the [September 2019](#) council report, to improve out-of-hospital care, strengthen the coordination of care, and integrate paramedics into the broader health care system and reduce 9-1-1 calls, especially for seniors
- The proposed York Region Mental Health and Addictions Hub submitted for approval to the Ministry of Health in Spring 2019 if approved, would provide 24/7 access to life saving treatment and ongoing integrated care through connections to appropriate community and social services; and break the typical cycle of patient transfers to Emergency Departments by police or paramedic services responding to a 9-1-1 call, leading to reduced emergency department visits and more efficient use of multi-system resources

The Phase 2 working group will also support scenario planning, analyze best practices, population and demand growth projections, determine staff and leadership requirements, and consider strategies and innovations that can address and mitigate future 9-1-1 service demands and resource requirements.

5. Financial

The Master Plan Phase 1 Demand and Capacity Study was managed within the 2019 and 2020 Council approved operating budgets. There will be operational and capital costs required to implement the final Master Plan, which will be brought forward to Council in 2022. Growth-related infrastructure required to implement the final Master Plan may be funded from development charges. These infrastructure needs would inform the Region's next development charge background study and bylaw update.

6. Local Impact

Staff continue to procure land parcels for future stations across the Region to ensure paramedic services has the infrastructure needed to meet growing demands in the local municipalities. Paramedic Services will continue to work with municipal partners to provide the best possible emergency response and optimize the use of resources. This work will also support opportunities to improve coordination between emergency health service partners and scale up local innovations to adequately address service needs across the region.

7. Conclusion

Over the next 10 years, use of Paramedic Services is projected to increase by 119% due primarily to the need for paramedic care by a growing and aging population. Increased demand puts pressure on the Region's Paramedic Services resources and the need for effective resource planning. The Master Plan Phase 1 Demand and Capacity Study provides Paramedic Services with a detailed understanding of current operations and provides insight into the resources needed to build capacity required to meet legislated and Council approved response times and future service demands to 2031, and indicates the level of innovation that will be needed to ensure continued financial sustainability of the service.

Progress reports will be brought forward to Council throughout each phase of development of the Master Plan. The final 10-Year Paramedic Services Resources and Facilities Master Plan will be presented to Council for approval in 2022.

For more information on this report, please contact Lisa Gonsalves, General Manager, Paramedic and Seniors Services at 1-877-464-9675 ext. 72090. Accessible formats or communication supports are available upon request.

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October 16, 2020

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Attachment (1)