SUPERIOR NORTH EMS

2021-2030 Paramedic Services Master Plan

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Submitted to:

City of Thunder Bay/SNEMS

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1.0 Executive Summary

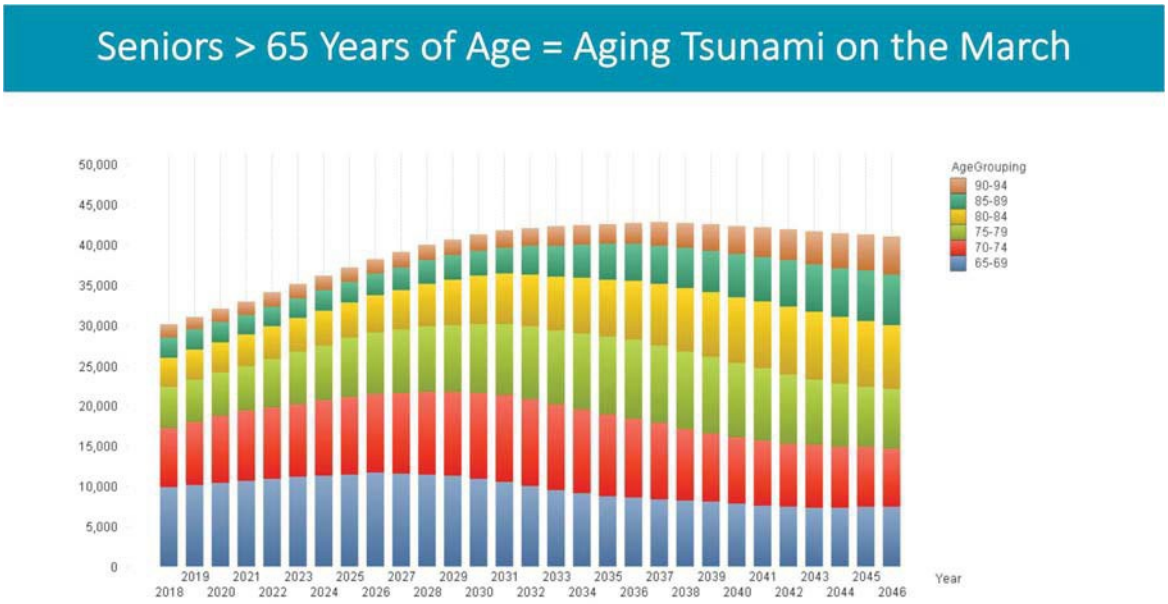
Superior North Emergency Medical Service (SNEMS) is committed to patient-centric, evidence supported delivery of paramedic services within the City of Thunder Bay and across the District. The challenges facing SNEMS are complex and significant. Solutions set out in this Master Plan are not incremental - they are in fact transformational. Transformational change at SNEMS is required to safeguard pre-hospital patients in the post-COVID era where the City of Thunder Bay and District municipal funders face tight budgets and finite resources.

The 2021-2030 SNEMS master plan has been prepared according to the following overriding patient-centric principle:

> *SNEMS must deploy its finite resources in a rational and responsible manner that safeguards the greatest possible number of current and future pre-hospital patients - regardless of where they reside in Thunder Bay or the District.*
>
> *SNEMS is obligated to consider "best efforts" mitigation of any potential adverse impacts on existing communities/populations in the course of its evidence-based deployment of resources.*

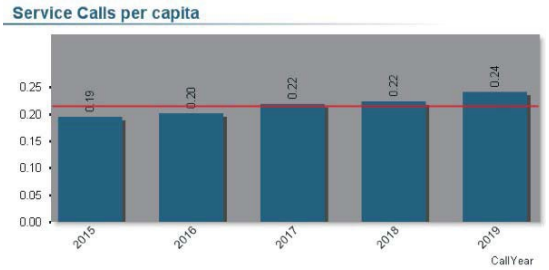
1.1.1 A Significant Master Plan Challenge: Forecast Growth in Call Volumes

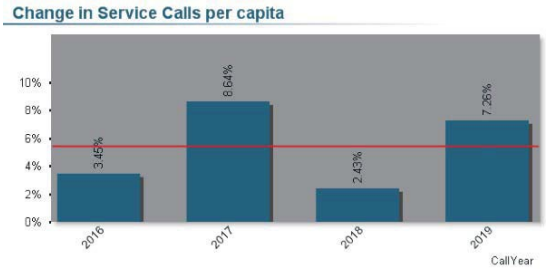
The City of Thunder Bay and the surrounding District will experience a no-growth population from 2021 to 2030. However the "aging tsunami" imbedded in the existing population will drive SNEMS call volumes across the coming decade.



SNEMS call volumes will also be significantly impacted by growth in the public's willingness to call 9-1-1. This propensity to call 9-1-1 is growing by almost 6% annually.

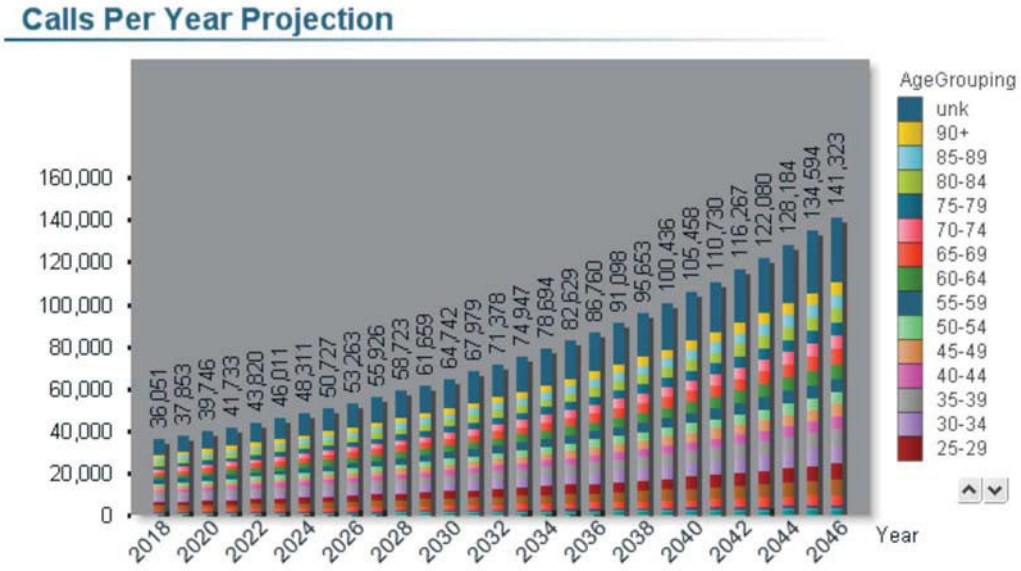
Growing Likelihood to Call 911 Driving Demand Forecast





Taken together the aging tsunami and growing willingness to call 9-1-1 generated the following "base case" call demand forecast for SNEMS. Between 2021 and 2030 calls will increase by almost 6% annually.

Base Case Forecast: Projected Service Requests/Calls



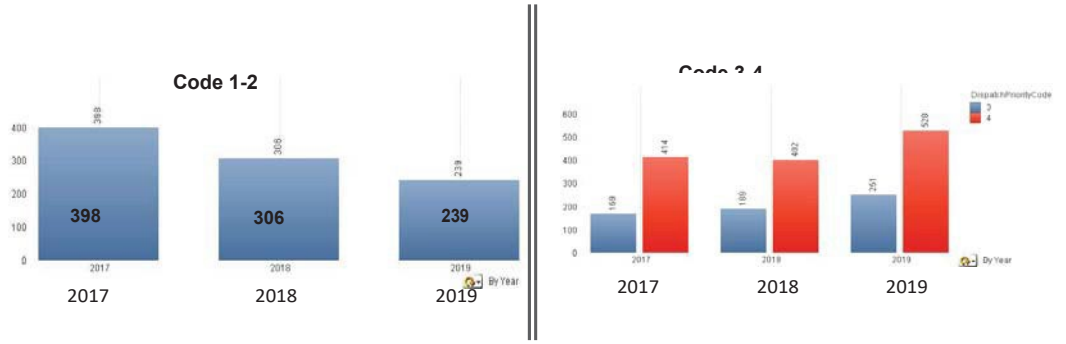
1.1.2 SNEMS Analytics

The 2021-2030 SNEMS Master Plan included a detailed package of City SNEMS and District SNEMS analytics charts. SNEMS analytics data trends have informed the Findings/Recommendations featured in this Master Plan. The SNEMS analytics package should be reviewed carefully in its entirety when considering Master Plan Recommendations, however the following highlights are noteworthy.

City SNEMS system busyness levels (UHA) have been stabilized by two decisive actions: removing Code 1-2 non-urgent patient transfers from the City SNEMS workload. and adding ambulance vehicle hours of service every couple of budget years. Stable levels system of busyness (despite annual call volume growth) have led to acceptable average Code 4 emergency response times. By 2019 “Code Zero” levels of ambulance system overload had been brought under control. The key leave-behind: additional vehicle hours of service will be required in the first half of the Master Plan to keep the growing City SNEMS call volume “pot” from boiling over.

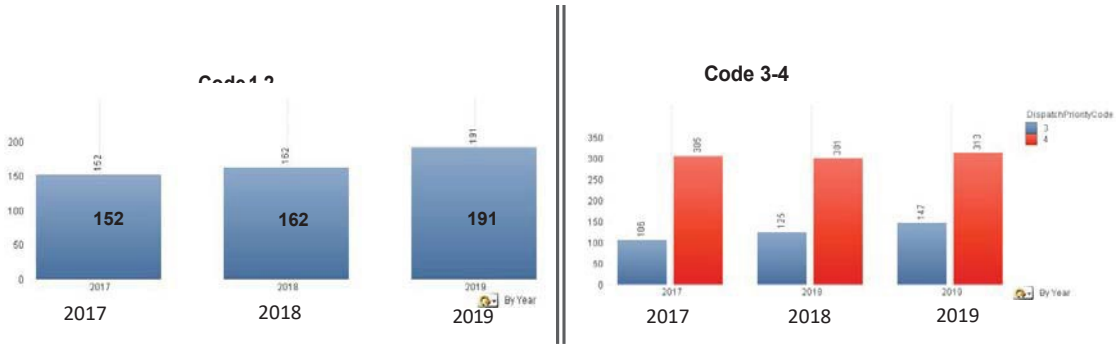
In the District, the focus for transformational change is on the north shore twinned stations of Nipigon/Red Rock and Schreiber/Terrace Bay. The analytics for the 4 north shore bases demonstrate that Code 1-2 transfer work is significant - restricting the ability of SNEMS to implement significant/ positive operational restructuring.

Nipigon-Red Rock : Code 1-4 Call Volumes (2017-2019)



- Does not include up-coded 3 Non-urgent Transfers

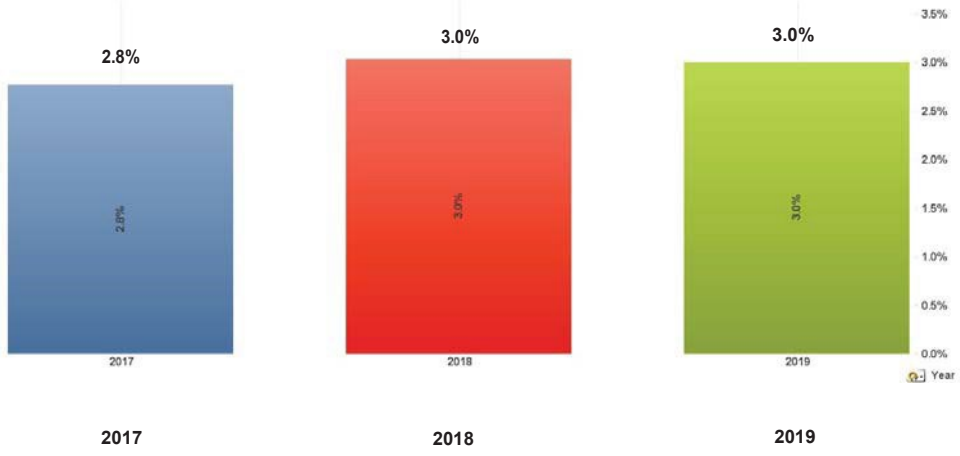
Schreiber-Terrace Bay: Code 1-4 Call Volumes (2017-2019)



- Does not include up-coded 3 Non-urgent Transfers

The Beardmore station also presents a significant restructuring opportunity. Beardmore system busyness (UHA) data documents the low workload/patient impacts associated with the sub-optimal deployment of this 12-hour ambulance resource. Additional Beardmore analytics confirm the station is not performing well from a value-for-money perspective.

Beardmore System Busyness – Unit Hour Activity (2017-2019)



1.1.3 SNEMS & FirstNations

SNEMS is honoured to provide pre-hospital 9-1-1 emergency response and other supportive pre-hospital health care services to First Nations communities across the District.

The SNEMS Armstrong station is 100% funded by senior levels of government because it primarily delivers services to First Nations. The Nakina station meets/surpasses the Armstrong First Nations workload precedent required to secure 100% senior government funding. Nakina's First Nation territory calls represent 77% of the total 2017-2019 call volume. While not meeting the Armstrong First Nations workload precedent, the Longlac station delivers almost 2/3 of its total 2017-2019 call volume to First Nations territory calls.

First Nations Community Support by SNEMS

Station	All Calls*	Station Area FN Calls	% FN Calls	All FN Calls	% FN Calls
Longlac	1618	905	55.93	1005	62.11
Armstrong	1585	950	59.94	1154	72.80
Nakina	630	464	73.65	485	76.98
Beardmore	287	91	31.70	106	36.93

*2017-2019 combined

Beyond issues associated with "fair share" funding arrangements, SNEMS is embracing an evolving opportunity to work with the Nishnawbe Aski Nation (NAN) as they work towards the creation of their own paramedic service.

1.1.4 Functional Review of District Stations

As a core component of this Master Plan, an updated operational assessment was completed for each District station and associated residences. Only 2 of the 14 District stations are owned by the City with SNEMS responsible for maintenance. The balance of the stations depend on landlords maintaining them to acceptable standards. While three District stations approach full compliance with regulatory/functional ambulance station requirements, four others will require replacement in the first half of the Master Plan's 10-year timeframe. One station replacement has been successfully completed with the Conmee-to-Kakabeka Falls transition. The Kakabeka Falls station has been built by the Municipality of Oliver-Paipoonge and leased to SNEMS. This municipal leaseback option should be utilized for the remaining station replacements.

1.1.5 2021-2030 Master Plan Recommendations & Implementation Road Map

The following tables set out the 2021-2030 Master Plan Recommendations across a series of themes/categories.

Summary of District Recommendations & Timeframes

Recommendation	DO NOW /DO SOON 2021-25	DO LATER 2026-30
A Restructured Non-Urgent Transfers Model		
• Secure funding and establish north shore hospital partner	2021	
• Prepare operational plan/route schedule + secure multi-patient vehicle	2021	
• Roll-out operational patient transfer system	2022	
Rationalized Deployment of Vehicle Hours (North Shore Twinned Bases)		
• Confirm twinned stations round the clock staffing plan	2021	
• Execute new round the clock staffing plan	2022	
North Shore Twinned Base Consolidations		
• Implement schedule contained in recommendation	2021-23	
Beardmore Restructuring		
• Confirm leave-behind solution	2021	
• Re-deploy Beardmore 12-hour unit and implement leave-behind solution	2022	
• Decommission station	2022	
First Nations Funding and Collaboration Opportunities		
• Advocate for Nakina/Longlac enhanced Provincial funding model	2021-22	
• Support NAN paramedic/community paramedicine initiative	2021-23	
District Stations 10-Year Replacement Plan		
• Implement schedule contained in recommendation	2021-24	
• Make provisions for additional station replacements as required		2026

Summary of City Recommendations & Timeframes

Recommendation	DO NOW /DO SOON 2021-25	DO LATER 2026-30
New Vehicle Hours		
• Prepare 5-year resourcing plan featuring two additional 12-hour units • Execute 5-year resourcing plan with timing of new units determined by SNEMS Chief	2021 2021-25	
Ramping Up Community Paramedicine		
• Prepare multi-year community paramedicine business plan • Execute community paramedicine business plan • Revise community paramedicine business plan based on initial results	2021 2021-25	 2026-30
Maximizing Alternative Pathways		
• Secure community/agency alternate pathway partnerships • Design and execute specific alternate pathway initiatives • Evaluate initiatives and continue to deliver/identify alternate pathway opportunities	2021-22 2022-25	 2026-30

SNEMS Annual Report Card & Business Plan Performance Targets

Recommendation	DO NOW /DO SOON 2021-25	DO LATER 2026-30
Select new Key Performance Indicators (KPIs) and Design Annual Report Card		
• KPI selection (City + District) • Set KPI performance targets (City + District) • KPI report card to Council	2021 2022 2023	
Third Party SNEMS Performance Review/Progress Evaluation		
• Execute third party review/evaluation	2023	

1.1.6 Moving Forward

This evidence-based 2021-2030 Master Plan puts-forward a series of transformational recommendations. The recommendations are supported and informed by analytics and data. Stakeholder consultation was not central to the development of evidence-based transformation. The urgent need for change precluded meaningful consultation by SNEMS.

However, moving forward stakeholder consultation on *implementing* transformational change will be essential. The following stakeholder consultation priorities are set out to engage SNEMS stakeholders on the path forward.

Implementation Priority – Engaging Health System Stakeholders

Health system stakeholders will be essential partners in securing necessary funding and operational support in both the District and the City. SNEMS looks forward to engaging health system partners and colleagues in the coming years.

Implementation Priority – Engaging First Nations

SNEMS is committed to delivering appropriate paramedic services to First Nations communities and patients in the City and across the District. While First Nations have not been consulted at the front end of the transformation process, their counsel and insights will be actively sought as SNEMS moves forward to implement positive change. In particular, SNEMS will work with First Nations to explore culturally appropriate community paramedicine opportunities.

SNEMS will also commit to collaboration with the Nishnawbe Aski Nation (NAN) on their journey to establish their own paramedic/community paramedicine service.

Implementation Priority – Rebuilding SNEMS with District Partners

District municipalities will be valued partners in delivering new, revitalized SNEMS stations across the District. SNEMS looks forward to station replacement joint ventures on the north shore and beyond.

2.0 Introduction & Methodology

2.1 Towards an Adaptable SNEMS Master Plan

Superior North Emergency Medical Service (SNEMS) is committed to patient-centric, evidence supported delivery of paramedic services within the City of Thunder Bay and across the District.

Building on the progress achieved via its first Strategic Plan, SNEMS is now embarking on a ten-year master planning process. For SNEMS, successful master planning is not about producing a static document featuring rigid "must do" actions. Master planning is a nimble process that addresses strategic priorities in a changing and evolving service delivery landscape. Securing desired patient care results via the SNEMS master plan will not be a straight-line proposition. The 2021-2030 Paramedic Services Master Plan will be a living document that adjusts course as the circumstances and challenges facing SNEMS change.

This initial version of the SNEMS master plan has been driven by system performance data and evidence. The master plan is also a values driven planning tool - patient centric principles have informed resource allocation decisions and restructuring recommendations.

The challenges facing SNEMS are complex and significant. Solutions set out in this Master Plan are not incremental - they are in fact transformational. Transformational change at SNEMS is required to safeguard pre-hospital patients in the post-COVID era where the City of Thunder Bay and District municipal funders face tight budgets and finite resources.

2.1.1 Impact of the COVID Pandemic

The preparation of the SNEMS 2021-2030 master plan has been impacted/shaped by the COVID pandemic. Initial work on the SNEMS master plan in early 2020 preceded the COVID lockdown. As the initial wave of the pandemic progressed, SNEMS pivoted all available resources to focus on core service delivery and the battle against COVID 19. SNEMS leadership put its master plan work on hold - an entirely appropriate decision under the circumstances.

The Performance Concepts Consulting master plan team proceeded with a "deep dive" into SNEMS performance analytics and call volume demand forecasting during the 3-month pause to battle COVID. Performance Concepts executed this "deep dive" analytics work online in collaboration with SNEMS long time "data stewards" InterDev Technologies.

During the summer of 2020 SNEMS leadership were able to reengage in master plan production and the Performance Concepts team was able to execute necessary fieldwork in Thunder Bay and the District - while adhering to all recommended infection control/social distancing/mask protocols.

While the COVID pandemic complicated the production of the SNEMS 2021-2030 master plan, the final product has not been compromised. SNEMS and City of Thunder Bay staff have exhibited grit and perseverance in the development of the master plan. The Performance Concepts team has been honoured to support SNEMS in this undertaking while SNEMS continues to serve on the frontlines in the battle against the COVID 19 pandemic.

2.1.2 Master Plan Principles

The challenges facing SNEMS are both myriad and complex. Establishing strategic priorities and driving transformational change in an organization is never easy. Competing priorities for finite resources must be recognized and triaged using evidence-based, rational analysis.

The 2021-2030 SNEMS master plan has been prepared according to the following overriding patient-centric principle:

> *SNEMS must deploy its finite resources in a rational and responsible manner that safeguards the greatest possible number of current and future pre-hospital patients - regardless of where they reside in Thunder Bay or the District.*
>
> *SNEMS is obligated to consider "best efforts" mitigation of any potential adverse impacts on existing communities/populations in the course of its evidence-based deployment of resources.*

2.1.3 Team-Based Approach to Building the SNEMS Master Plan

The City of Thunder Bay has established a master planning *Oversight Team* consisting of the following City staff change management leaders:

- General Manager - Development & Emergency Services Department
- Chief - Superior North EMS
- General Manager - Corporate Services & Long Term Care and City Treasurer
- Manager - Realty Services

Within SNEMS the Chief has created a *Paramedics Working Group* to provide advice/feedback on the operational aspects of the master plan. SNEMS Managers, Supervisors, City medics and District medics sit on the Working group.

The City's master plan *Oversight Team* and the Performance Concepts project team have briefed representatives of the City and District SNEMS bargaining units on the issues and potential recommendations being considered during the preparation of 2021-2030 SNEMS Master Plan.

2.2 SNEMS Master Plan Context

The 2021-2030 SNEMS Master Plan has not been prepared in a vacuum. The following realities have shaped the environment/context within which the master plan has been developed. These realities have also informed the specific set of transformational recommendations/action items set out in the plan.

2.2.1 Post-COVID Financial Realities

Before the COVID pandemic, Ontario was already the world's largest sub-sovereign debtor jurisdiction. The COVID-19 pandemic has already derailed the Province's $21 Billion deficit forecast update from March 2020. The Province has now confirmed a deficit of $38.5 Billon for the current year.

The COVID-19 New Abnormal: Crushing Senior Government DEBT Loads

- The Province forecast a 2020-21 deficit of $21 BILLION in March
- The Fraser Institute predicted the deficit will be $29 BILLION (April 2020)
- The Province's independent Financial Accountability Officer has predicted a $41 BILLION deficit (May 2020)
- Province has now confirmed $38.5B deficit for this year (August 2020)

- Provincial-Municipal financial arrangements are likely to be negatively impacted in the short/medium term
- Key Question: Is SNEMS ready to embrace significant change to buffer upcoming fiscal turbulence?

Traditional Provincial-Municipal financial arrangements are likely to be negatively impacted in the short/medium term by the added impacts of COVID debt load. While a pre-COVID SNEMS master plan might have envisioned incremental progress, a post-COVID SNEMS master plan will need to consider transformational change. Provincial funding solutions going forward will be increasingly difficult to secure, and a demonstrated willingness to consider transformational change may well be a pre-requisite for securing strategic infusions of Provincial funds.

2.2.2 Asset Management Pressures and Ontario Reg 588/17

The Province has mandated a sustainable asset management model for phased adoption across the Ontario municipal sector. By 2023, Ontario municipalities must implement the following asset management model/components:

1. Comprehensive asset inventory.
2. Asset condition ratings.
3. Measurable asset preservation service levels (i.e. asset quality to be maintained overtime).
4. Sustainable life-cycle asset management maintenance/capital program.
5. Sustainable rehab/replacement financial plan to maintain service levels & implement life-cycle program.

An Additional Pressure: O. Reg. 588/17 ASSET MANAGEMENT

- **By 2023 the Province has mandated ALL municipalities as follows:**
  1. **Establish asset inventories + condition ratings**
  2. **A life cycle/service level assessment needs to be completed for each facility/asset class**
  3. **Municipalities will have to budget for timely replacement of assets according to their life cycles**

- **Decisions over municipal sector asset/facility replacement can no longer be deferred (Including EMS bases)**
- **Decisions are imminent (by 2023)**

O Reg 588/17 mandates “good government” sustainable asset management practices and accountable stewardship of taxpayer-funded public assets. Municipalities will no longer be able to “kick the can down the road” by eroding asset quality over time in order to avoid politically or financially difficult life-cycle capital funding commitments.

Much work remains to be done across Ontario municipalities (including Thunder Bay and District municipalities) to meet the mandated requirements of Regulation 588/17 by the fast-approaching 2023 deadline.

The 2021-2030 SNEMS Master Plan will need to secure compliance with O. Reg. 588/17 mandates and deadlines.

2.3 SNEMS 101 – Governance, Funding & Operations

2.3.1 City Council Governance Role

The City of Thunder Bay Council has the legislated authority/accountability for SNEMS governance, budgeting and operations. This accountability applies within the boundaries of the City and across the entire District. District municipal Councils do not have legislated/official input into SNEMS governance, service levels, or budgets.

2.3.2 SNEMS Funding Model

The property tax funded portion of SNEMS operating costs is apportioned among the City and District municipalities based on their relative ability-to-pay. The ability-to-pay formula uses a given municipality's percentage of taxable weighted assessment to establish that same municipality's share of the SNEMS property tax supported budget.

There is no "benefits received" component to the SNEMS cost-sharing formula. For example, the location of a SNEMS station based inside or outside a given municipality has no impact on that municipality's relative share of the SNEMS tax supported budget.

Current SNEMS Budget Apportionment

2019 Levy Payments based on 2019 Weighted Assessments and 2019 Approved Budget

			11,920,793	A	B
			2018 Levy		
	Weighted Assessment	(%)	Estimated Total Levy	Quartely Billing	
City of Thunder Bay	13,645,177,258	81.02%	9,658,682	2,414,671	
Town of Greenstone	638,570,906	3.79%	452,010	113,002	
Town of Marathon	149,126,822	0.89%	105,559	26,390	
Township of Conmee	63,786,065	0.38%	45,151	11,288	
Township of Dorion	45,895,796	0.27%	32,487	8,122	
Township of Gillies	37,094,756	0.22%	26,257	6,564	
Township of Manitouwadge	51,582,996	0.31%	36,513	9,128	
Township of Neebing	320,264,059	1.90%	226,698	56,674	
Municipality of Nipigon	93,831,029	0.56%	66,418	16,604	
Township of O'Connor	68,471,636	0.41%	48,467	12,117	
Township of Oliver & Paipoonge	780,023,069	4.63%	552,136	138,034	
Municipality of Red Rock	42,172,731	0.25%	29,852	7,463	
Township of Schreiber	42,935,180	0.25%	30,391	7,598	
Municipality of Shuniah	745,633,810	4.43%	527,794	131,948	
Township of Terrace Bay	116,379,309	0.69%	82,379	20,595	
District Municipalities			**2,262,111**	565,528	
Total	16,840,945,422	100%	**11,920,793**	2,980,198	0

The costs for SNEMS ambulance resources (and overheads) positioned inside the City of Thunder Bay represented 50% of the 2019 SNEMS property tax supported operating budget.

The ability-to-pay SNEMS apportionment formula apportions 81% of the required property tax revenues to the City of Thunder Bay.

In 2019, City of Thunder Bay taxpayers covered the entire cost of the City SNEMS supported budget. City of Thunder Bay property taxpayers also funded an estimated $2.8 million of SNEMS operations across the District.

2.3.3 Distinct City and District Labour Forces

While SNEMS is a single organization imbedded within the City of Thunder Bay, it delivers pre-hospital paramedic services using two distinct pools of paramedics. There is a standalone pool of full time and part time City paramedics. There is also a standalone pool of full time and part time District paramedics. Each pool of paramedics belongs to their own distinct bargaining unit.

The differences in City versus District work locations, patient care challenges, and work environments has contributed to the existence of two distinct City and District frontline paramedic cultures.

This silo-based delivery model is unique among Ontario paramedic services. It creates a whole series of operational, deployment and service delivery challenges for SNEMS leadership. The inflexibility of the City/District paramedic silos makes it more difficult to address on-the-road staffing gaps that are in turn creating measurable patient care risk.

Many of the District paramedics are “suitcase medics” that reside in Thunder Bay but travel to remote stations across the District for the duration of their shifts. This reality compounds the challenges of securing predictable/adequate on-the-road staffing at multiple District stations.

2.3.4 Implications for the Master Plan

Thunder Bay City Council has the sole authority to approve/implement the recommendations included in the SNEMS 2021-2030 Master Plan.

From a funding perspective, Council will need to balance City of Thunder Bay taxpayer interests with the patient care requirements within the City and across the District.

Improving SNEMS flexibility to deploy its valued/skilled paramedics across the currently City and District resourcing silos will be an important factor in securing consistent levels of on-the-road deployed vehicle hours for patient care.

2.4 Methodology: An Evidence-Based Approach

SNEMS staff and the Performance Concepts team have successfully collaborated in the midst of the COVID pandemic to execute the following master planning methodology across 2020.

2.4.1 SNEMS System Performance Analytics

Performance Concepts has prepared a SNEMS analytics profile to provide a historical snapshot of SNEMS workload and performance.

The analytics profile contains a brief set of integrated SNEMS (City + District) workload indicators. The majority of the analytics profile provides a deeper dive into the standalone City and District delivery models. In the District, the focus is on selected areas/SNEMS bases that are impacted by recommended service delivery transformation.

The analytics profile covers call volumes, response times, system busyness and code zero trends across 2015-2019. COVID has skewed 2020 performance data, and therefore it is not considered in this master plan.

2.4.2 Service Demand Forecast

The Performance Concepts team has prepared a service demand forecast that extends well beyond the ten-year time horizon of this 2021-2030 master plan. The demand forecast is calculated using a mix of Ministry of Finance population projections for the Thunder Bay CMA (Census Measurement Area) and SNEMS patient count data sorted by age cohorts. The demand forecast calculation engine addresses aging tsunami demographic realities and the expanding propensity of the public to call 911 for assistance. Outputs from the demand forecast model include the following base case outputs:

- Annual paramedic calls up to 2046
- Annual paramedic required vehicle hours of work (time-on-task) up to 2046

A revised scenario for projected calls and vehicle hours of work has also been developed to reflect demand reductions that could be generated by upscaled community paramedicine and alternate pathways.

2.4.3 Internal SNEMS Consultations

Performance Concepts has executed wide ranging interviews with SNEMS management, supervisors and an assortment of staff with specialized roles/support functions.

Performance Concepts has also executed SNEMS-wide online surveys of paramedics (using Mentimeter.com) to explore workplace and system performance improvement opportunities.

The SNEMS Chief created a Master Plan advisory committee to provide counsel and feedback over the course of master plan production. This committee has provided periodic feedback to the Chief and the Performance Concepts team at critical points in the master planning process.

2.4.4 Evaluation of District Bases (Asset Management Compliance)

Performance Concepts has conducted an on-site District-wide functional evaluation of SNEMS stations. This evaluation was conducted under SNEMS staff oversight and met all COVID infection control protocols. The results of this functional evaluation have informed the sustainable asset management recommendations contained in this master plan.

2.4.5 First Nations Service Delivery Opportunities

A number of District bases provide paramedic services to primarily First Nations patient populations. The cost of paramedic services delivered by these District bases merit modified/enhanced senior government funding. The master plan addresses funding fairness for bases serving First Nations.

This master plan also addresses efforts currently underway by the sovereign Nishnawbe Aski Nation (NAN) to develop its own paramedic service. SNEMS and the Performance Concepts team have engaged with NAN representatives to initiate ongoing collaboration around building/transitioning to a NAN paramedic service that would function across communities currently served by SNEMS.

2.4.6 "As Should Be" Restructuring and Resourcing – City SNEMS

Evidence supported recommendations have been developed to ensure the City SNEMS model is deployed/resourced across the 10-year master planning horizon to secure targeted response times, maintain appropriate levels of system busyness, and effectively manage Code Zero unit availability impacts.

2.4.7 "As Should Be" Restructuring and Resourcing – District SNEMS

Evidence supported recommendations have been developed to ensure the District SNEMS model is restructured/transformed in order to deploy/deliver reliable paramedic services launched from a rationalized set of functionally appropriate bases.

2.4.8 SNEMS Organization Design

Performance Concepts has collaborated with the Chief to develop an "As Should Be" re-designed SNEMS management/leadership structure. The structure addresses the need for logistics/support upgrades - a must-have catch-up requirement to keep pace with frontline service growth that has occurred since the 2012 SNEMS strategic plan was approved and largely implemented.

2.4.9 Implementation Roadmap

An implementation Road Map has been developed based on the following phasing:

- A *Do Now/Do Soon* phase that extends across the first 5 years of the master plan
- A *Do Later* phase that extends across the second 5 years of the master plan

A 3rd party progress assessment and master plan refresh are also recommended for Q4 2022 in order to maintain transformation momentum.

3.0 SNEMS Stakeholder Consultations

3.1 Dialogue with SNEMS Superintendents & Support Staff

Performance Concepts has executed interviews/dialogue sessions with a wide range of SNEMS superintendents and providers of specialized support/logistics functions. Themes from these diverse and wide-ranging conversations are highlighted below:

Internal Communications:

- Staff at all levels have consistently identified the need for improved communications across SNEMS. Input from staff is not always dealt with in a consistent fashion across the City and District services or across distinct stations.

- Staff agree that excellence in communication is required to push back against a silo-based culture in SNEMS caused by geographic separation of staff/bases.

Who Does What:

- There is a consensus that roles and responsibilities across SNEMS are blurred. There is a need for focused accountability about exactly who is responsible for a range of support/logistics and specialized functions. At the same time, these same roles require cross-trained staffing backup and coverage. Job descriptions are reported to be out of date and in need of a refresh. According to feedback, standard operating procedures are not well understood, and reporting hierarchies are not always clear.

Workload:

- Staff consistently report that workload capacity across SNEMS is being strained to the limit, and that unanticipated absences of staff result in cascading service delivery problems.

General Administration:

- There is a consensus that admin functions have not always been viewed as an organizational priority. Expanded frontline resources have provided extra pressure on administrative staff. Leadership team direction does not always flow through a single communication channel and direction can sometimes feel contradictory when coming from multiple sources.

Staffing:

- SNEMS staff all understand there is a serious disconnect between the necessary rostered shifts and the ability of SNEMS to fill these shifts. SNEMS has a significant an ongoing problem getti ng the required vehicle hours of service on the road. There is a constant/grinding workload associated with filling shifts.

Mental Health:

- Staff report that SNEMS needs a dedicated Psychologist and structured programs so medics with mental health issues are not left to their own devices. Many staff believe there is nobody to advocate for them in the system.

City/District Divide

- City and District SNEMS feature two distinct cultures driven by divergent work circumstances and reinforced by the existence of two collective agreements. Each culture is distinctly unsympathetic to the challenges faced by the other. In the case of the District, staff report the culture differs internally across widely separated stations. SNEMS is not viewed as a cohesive organization by its frontline medics.

Sick Time:

- Staff report that patterned sick time is tolerated (no repercussions).

SNEMS Vision:

- Staff are unable to align their work with a SNEMS patient-centric vision of service delivery because the entire organization is mired in “reaction mode” trying to keep its head above water. Structural changes are needed to get on track.

Headquarters:

- Staff report that SNEMS single-start HQ is showing multiple signs of overflow due to staffing growth. No lockers and not enough room for the vehicles.

3.2 Frontline Paramedic Surveys

Two distinct on-line Mentimeter.com surveys were conducted to secure feedback from City and District paramedics. With some participants only completing select questions, it was difficult to determine the exact breakdown of City/District participants. An estimated 51 City medics completed the majority of survey questions, as did 37 District medics - for a total of at least 88 survey respondents across SNEMS. More full-time than part-time medics completed both surveys.

The full survey results are documented in Appendix A. A summary of the survey responses follows:

- With regards to Fleet and Equipment, all responding medics feel that SNEMS vehicles are reasonably up-to-date, and that the equipment provided is appropriate. Similarly, vehicles are generally seen as well stocked and "ready-to-go" with the right supplies. While District medics feel they have adequate time to check vehicles at the beginning of each shift, City medics strongly disagreed.

- Surprisingly, District medics generally feel better trained and able to maintain their skills than City medics:

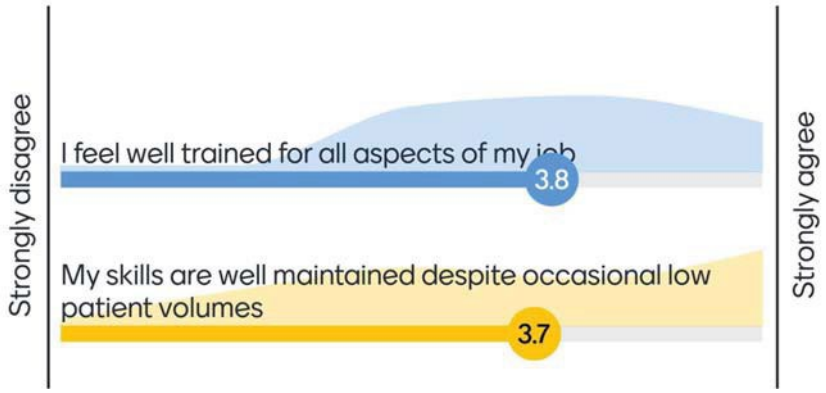


Figure 1 - District responses re: Training/Skills

- City medics feel significantly less safe while on duty and are less aware of the supports available to them for mental wellness. City paramedics agree that the public/patients often confuse their uniforms with those of the Police.

- In the District, stations are generally seen as sub-par from a functional and comfort point of view, with medics agreeing that they base their shift selection location on the quality of station more often than by the shift pattern or expected workload.

- City medics strongly agree that the "single start" Headquarters is getti ng crowded as SNEMS staffing has grown but are neutral on whether supply and logistics have kept up with growth.

City medics also do not feel that vehicle cleaning requirements are, for the most part, cutti ng into calls during their shift.

- Both City and District medics strongly feel that SNEMS have insufficient frontline coverage to staff all shifts and call-ins and felt they could not always get time off when needed. City medics strongly feel they cannot count on getti ng off-shift on-time.

- District staff feel they enjoy a nice balance of calls and breaks. As expected, City staff report having more than enough work to do during a shift. Breaks are hard to guarantee, with City staff feeling "run off their feet" much of the time.

- With regards to Staff-Management Relations, both City and District staff feel that management does not understand their concerns, are not trying to improve SNEMS performance or address problems. City medics feel less aware of the SNEMS operational and patient care priorities, and whether these priorities have been explained to them:

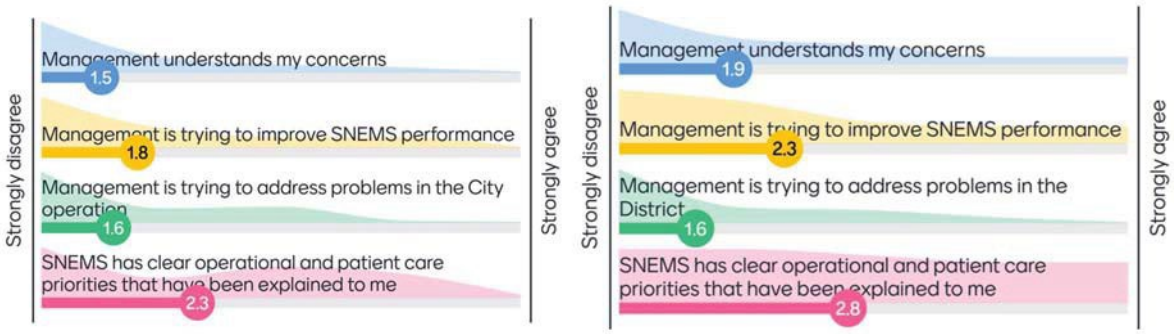


Figure 2 – City (left) and District (right) Responses show similar results

- City medics strongly agree that more has to be done to address hospital offload delays, ramp-up Community Paramedicine, utilize alternate pathways, and add more vehicle hours to deal with Code Zeroes. District staff support modernizing District bases and eliminating low-priority Code 1-2 transfers on the North Shore, as well as securing additional funding for bases serving primarily First Nation communities.

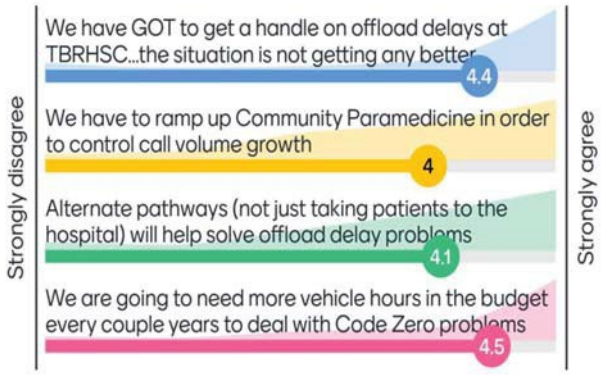
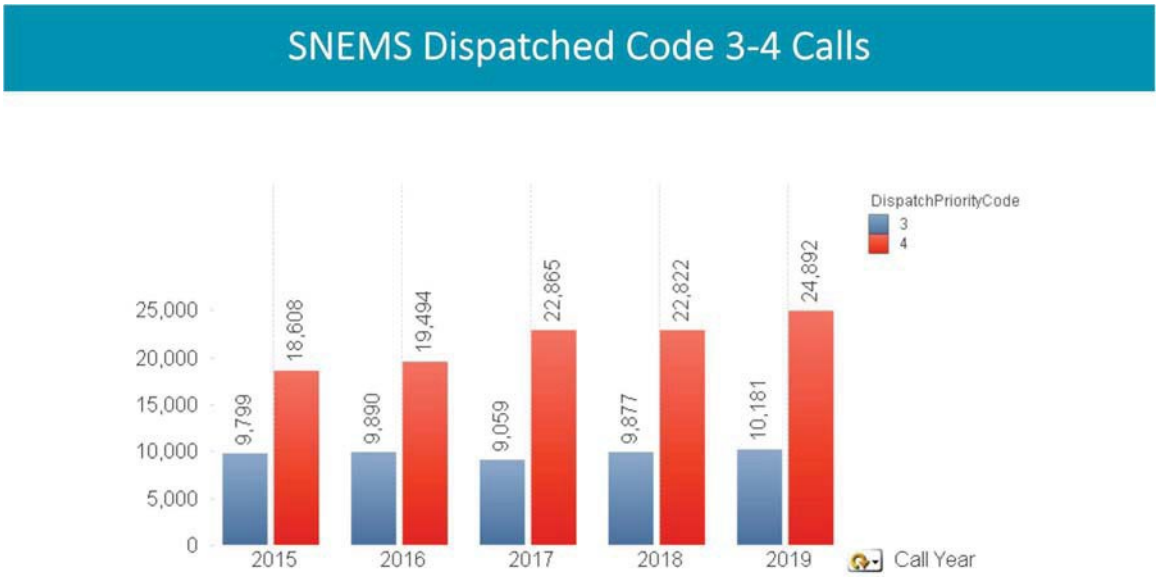


Figure 3 - City Restructuring

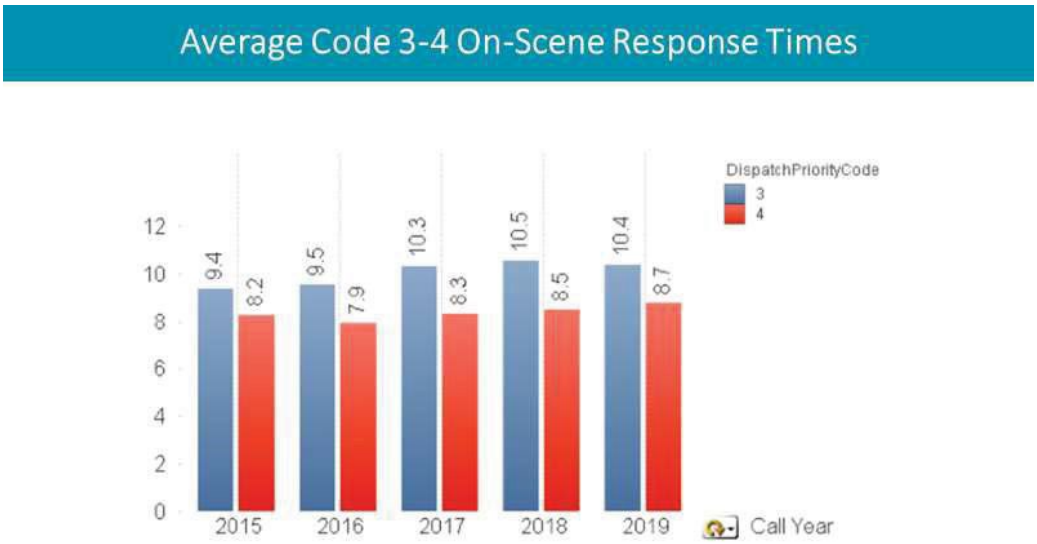
4.0 SNEMS System Performance Analytics

4.1 System-wide SNEMS Analytics

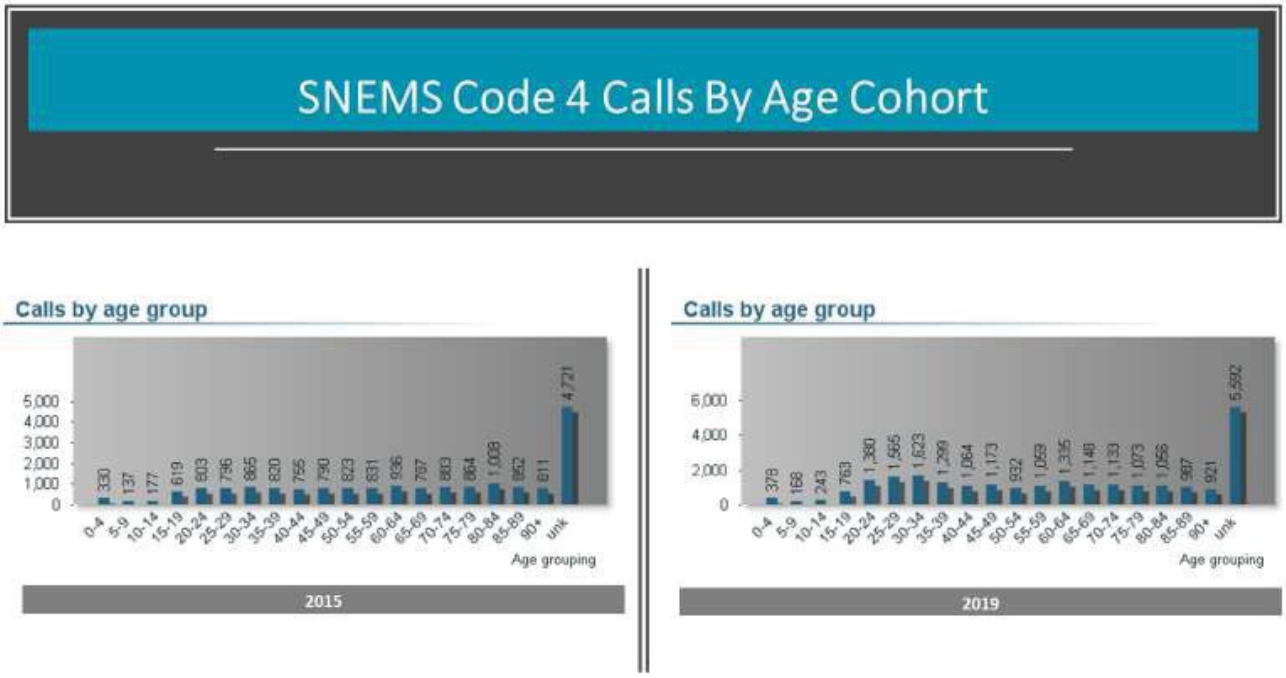
The following profile of summary level SNEMS workload data and response time metrics informs the 2021-2030 SNEMS Master Plan's overall change management narrative. Each analytics chart/table is supported by a brief factual narrative statement.



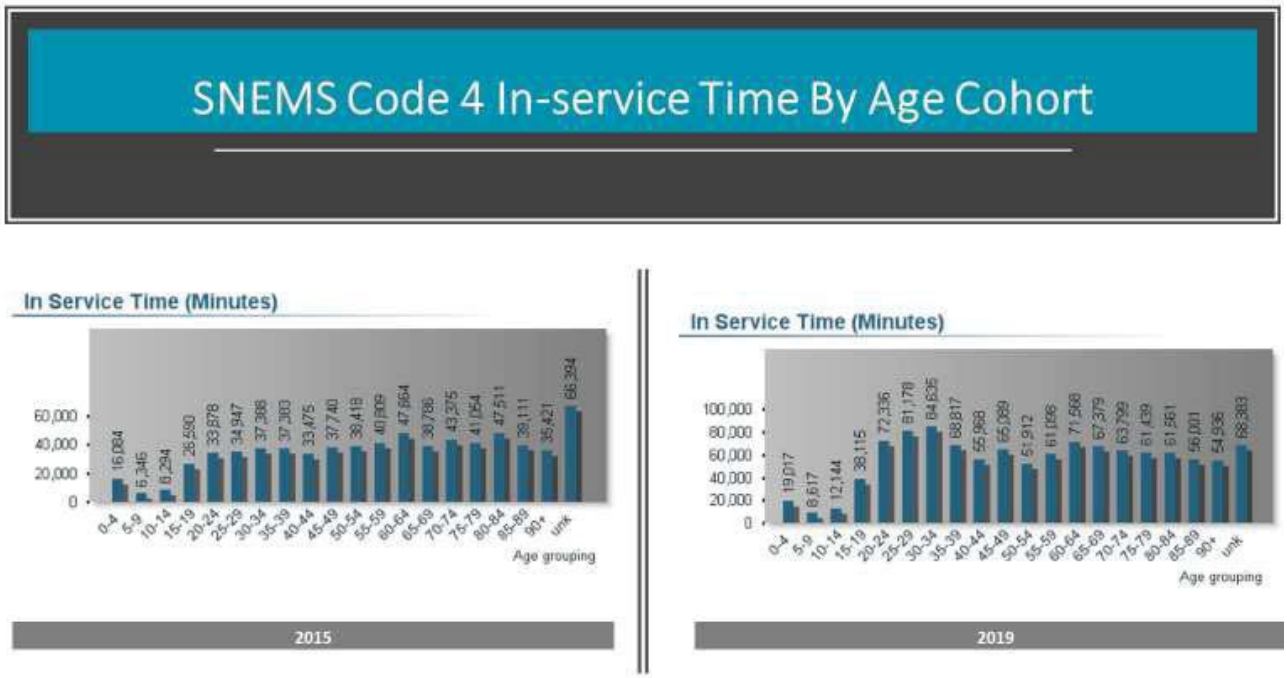
Despite no confirmed growth in the City/District population served, SNEMS has experienced moderate growth in dispatched Code 3 "urgent" calls and significant growth in Code 4 "emergency" calls. Dispatched Code 4 emergency call volumes in 2019 have increased by 34% compared to 2015.



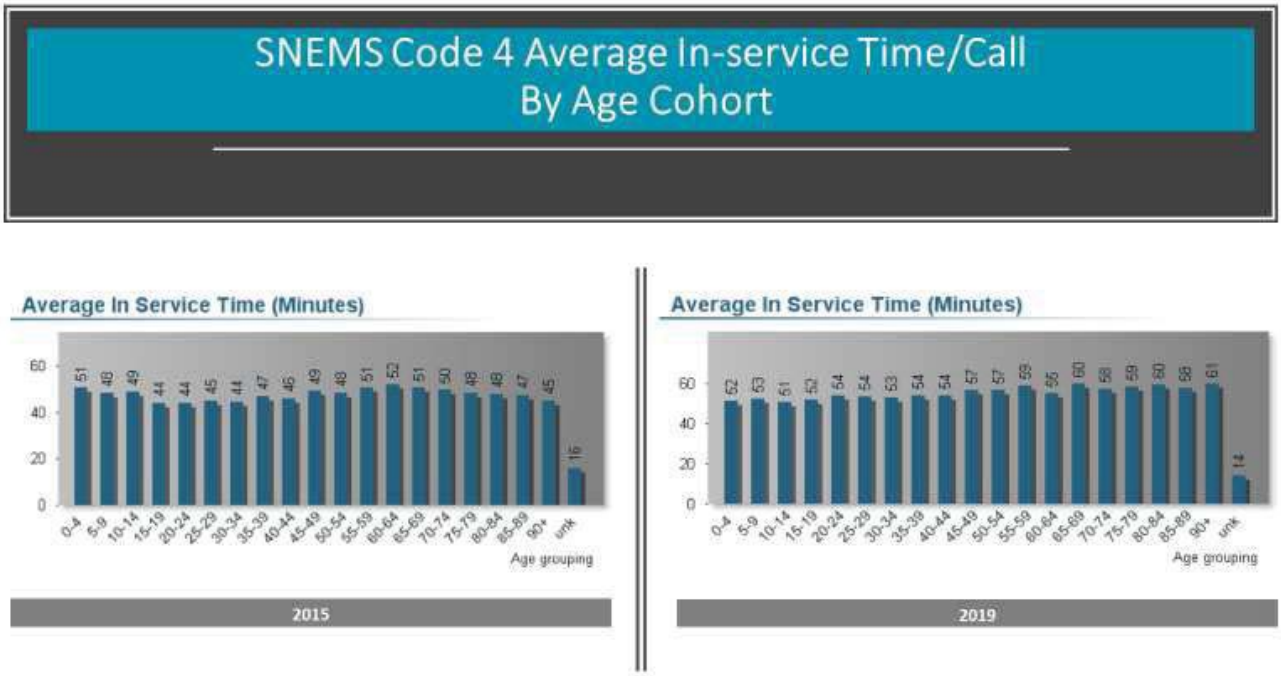
Despite significant growth in call volumes, SNEMS average on-scene Code 4 (emergency) response times have held steady across 2015-2019. Additional vehicle hours of service added across the 2015-2019 period were essential to maintain SMEMS Code 4 response times.



When disaggregated by age cohorts, SNEMs Code 4 calls are relatively heavily in senior citizen age cohorts > 65 years of age. By 2019 the calls in these senior citizen age cohorts had increased significantly over 2015 levels.



In-service time for Code 4 calls clustered in the senior citizen > 65 years of age cohorts had increased significantly by 2019 compared to 2015. In 2015 4,087 hours of in-service time was spent caring for patients > 65 years old versus 6,085 hours in 2019 - a 49 percent increase.

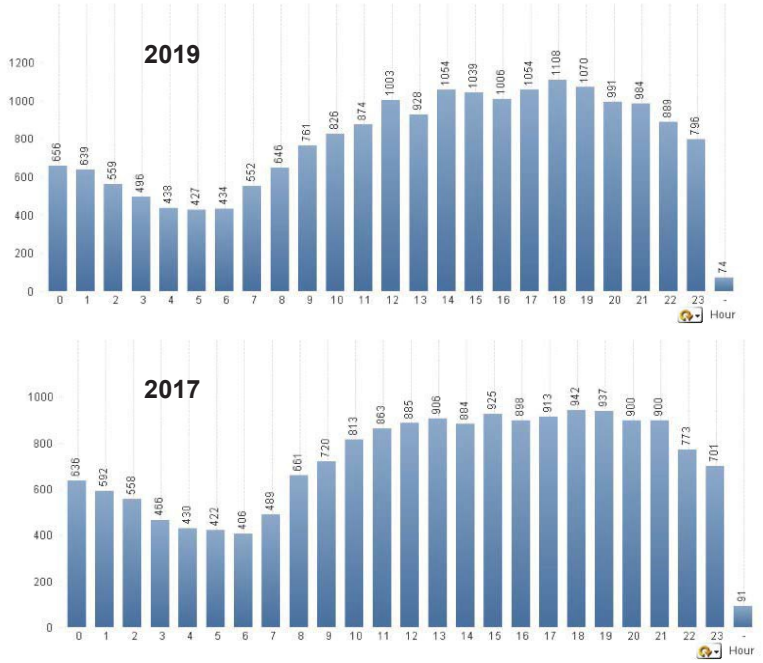


Average in-service time per call for patients > 65 years old had increased significantly by 2019.

4.2 City Model Analytics

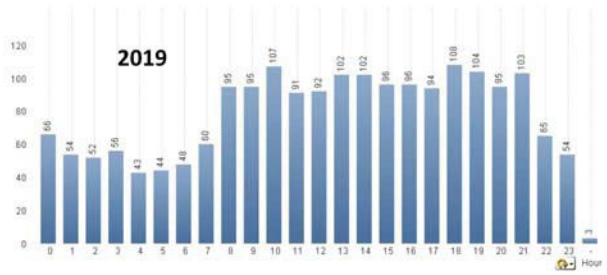
The following profile of City SNEMS system performance analytics has informed the recommendations put forward in the SNEMS 2021-2030 Master Plan. Each analytics chart/table is supported by a brief factual narrative. A summary of observations/Findings will be offered at the conclusion of the analytics profile.

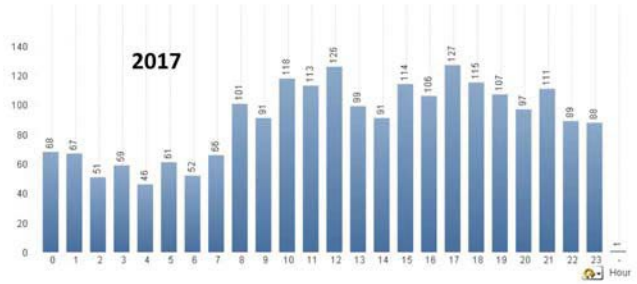
Dispatched Code 4 Calls by Hour of Day



While the distribution pattern of calls across the day are the same, the volume of City SNEMS dispatched Code 4 calls in 2019 are markedly higher than 2017 for every hour of the day.

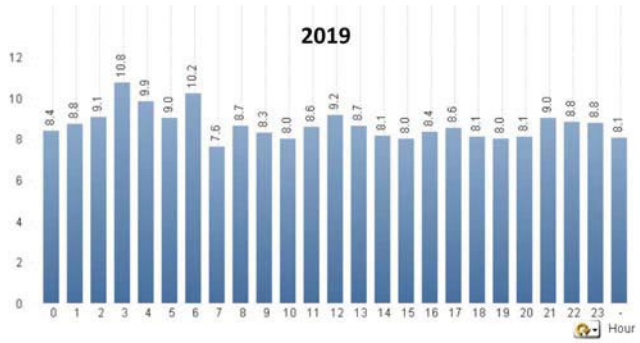
Code 4 Return Calls by Hour of Day

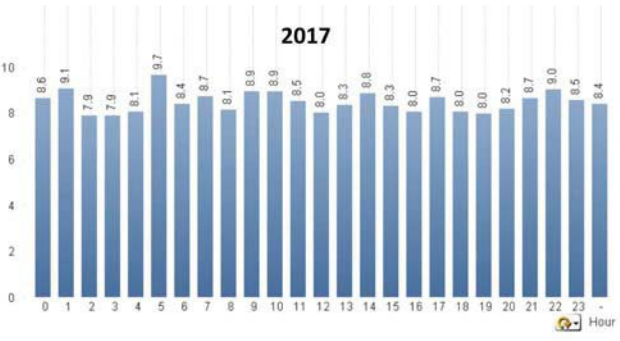




Code 4 “Lights and Siren” return trips to hospital represent a consistent 10% to %12 percent of Dispatched Code 4 calls. This pattern of Code 4 Returns is typical of Ontario ambulance systems.

Dispatched Code 4 Average Response Time by Hour of Day

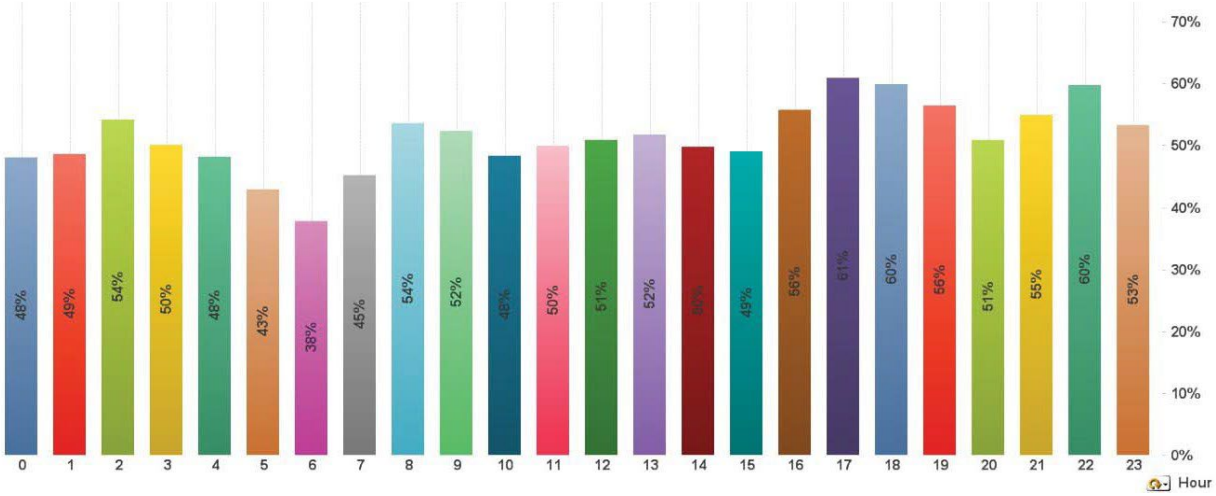




Code 4 Return average on-scene response times are stable across time of day between 2017-2019.

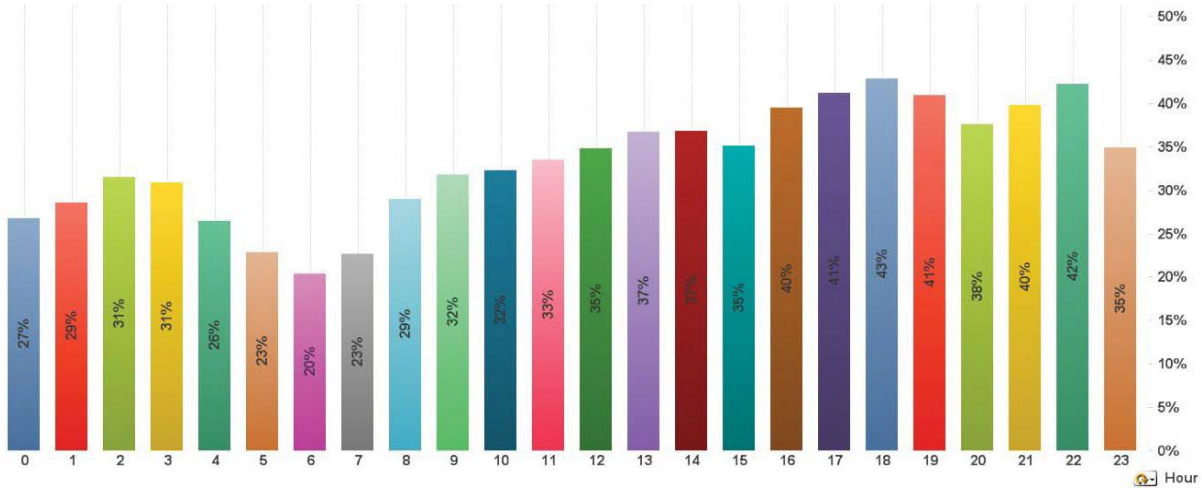
City SNEMS System Busyness (Unit Hour Activity)

After shedding significant Code 1-2 transfers workload after 2015, City SNEMS system busyness (Unit Hour Activity or UHA) has been stabilized in the 32% to 35% range. The addition of vehicle hours of service was required to secure stable UHA in the face of significant call volume growth across 2016-2019.



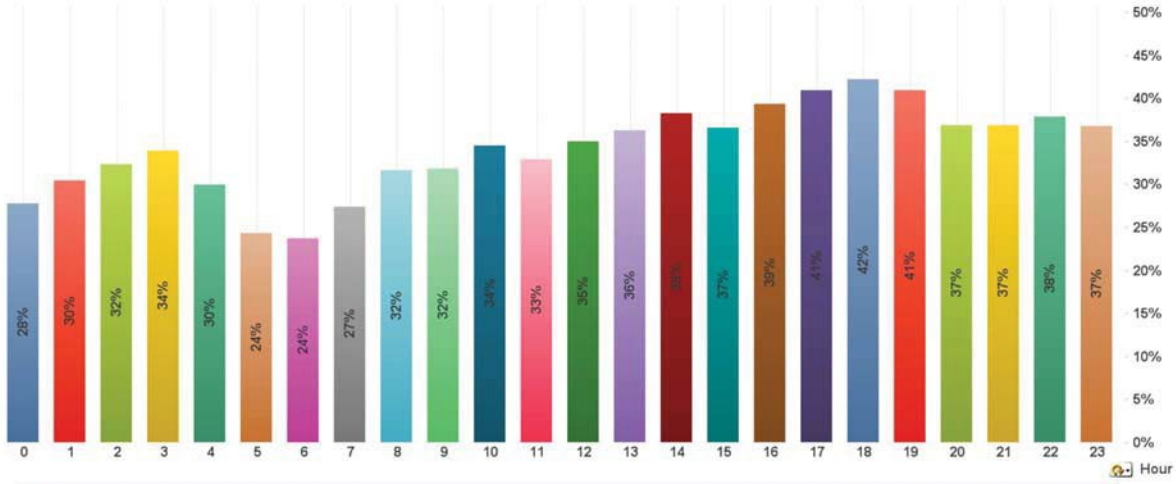
2015 System Busyness (UHA) by Hour of Day

2015 system busyness by hour of day reflected a City SNEMS in workload crisis. Structural reform was urgently needed in the form of non-urgent Code 1-2 transfer work being redeployed to provincially funded non-paramedic contractors.



2017 System Busyness (UHA) by Hour of Day

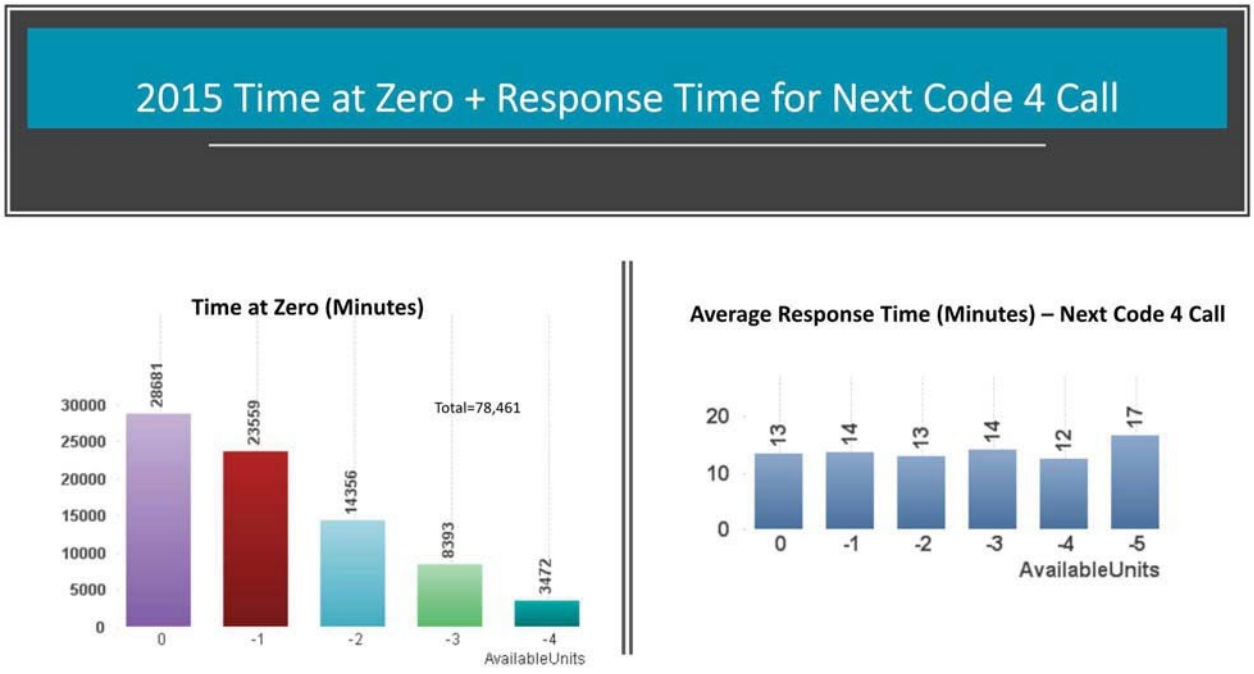
By 2017 City SNEMS UHA levels at peak workload hours of the day had stabilized. Peak UHA levels below 45% reflect a very busy (but probably sustainable) paramedic workload.



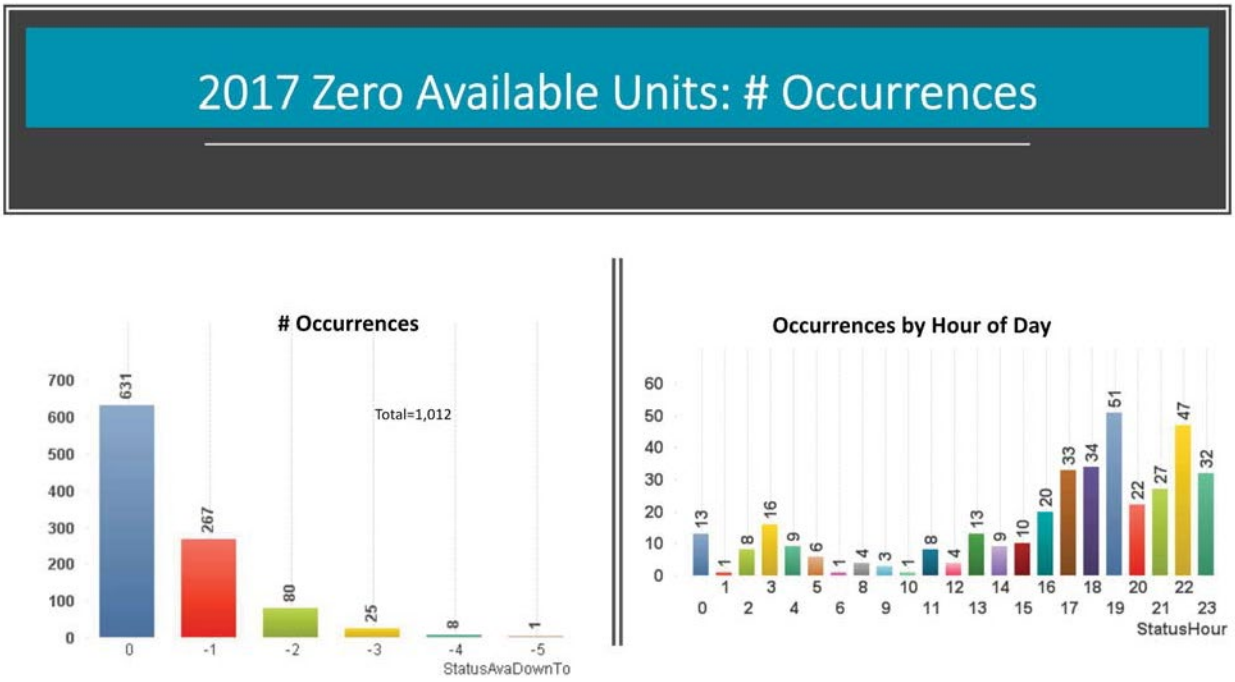
2019 System Busyness (UHA) by Hour of Day

Stable City SNEMS UHA at peak workload hours of the day remained stable in 2019 - hovering around 40% or lower. Investments in additional vehicle hours of service were/are paying off.

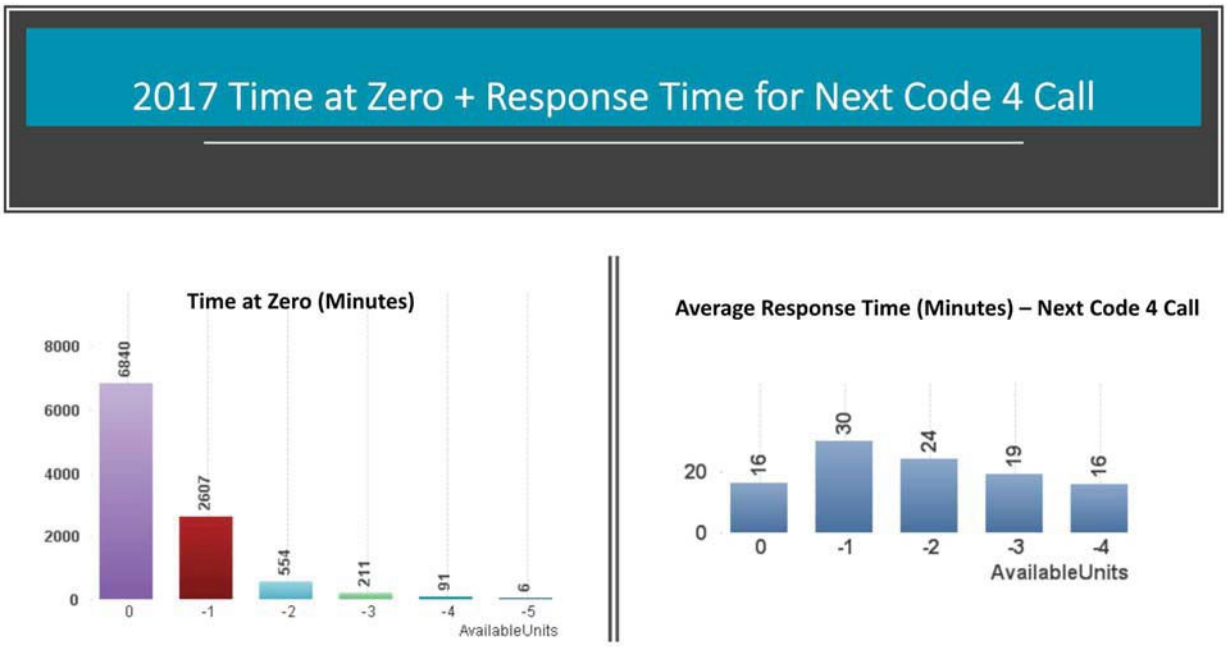
In 2015 the incidence of zero-available-units was approaching crisis levels. Ambulance availability shortages were endemic across all hours of the day.



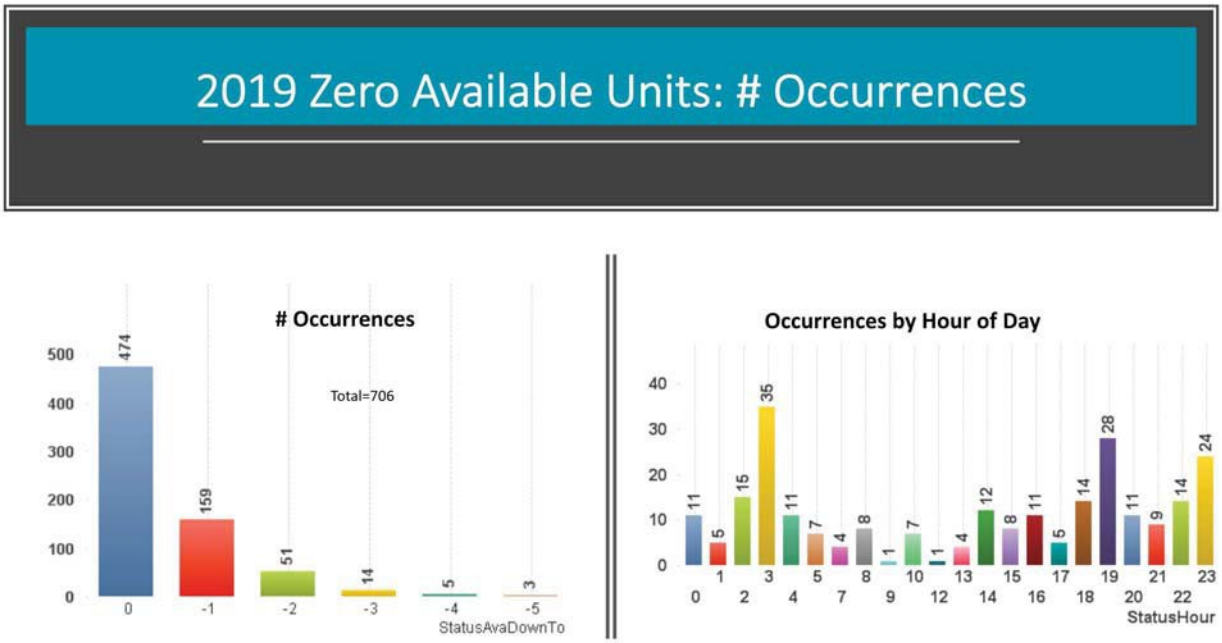
In 2015 the equivalent of 54 calendar days were spent at zero-available unit levels. Code 4 calls happening when City SNEMS was at Code Zero featured measurably eroded response times compared to SNEMS Dispatched Code 4 averages below 9 minutes.



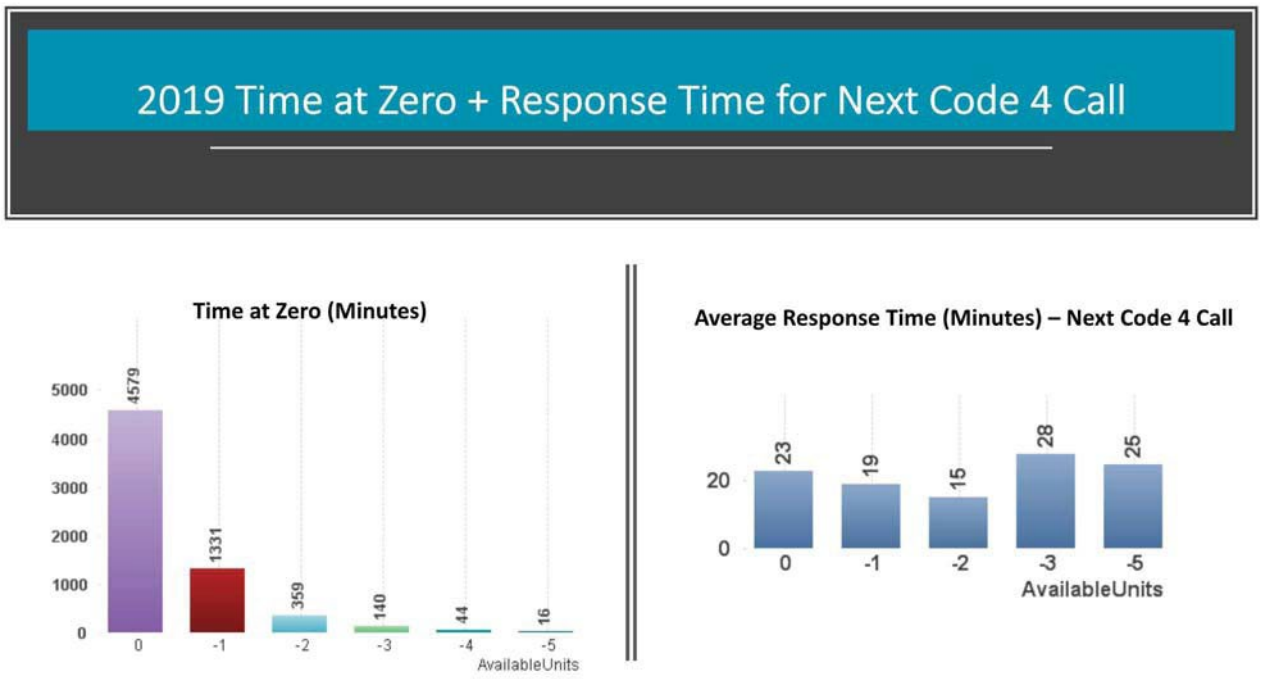
By 2017 the incidence of Code Zero shortages had decreased significantly. Ambulance units previously occupied with Code 1-2 work could now respond to Code 3-4 calls.



By 2017 time at Code Zero equated to a total of 7 calendar days - a huge improvement over 2015 crisis levels. Next Code 4 call response times are deeply concerning - significant risk factor.



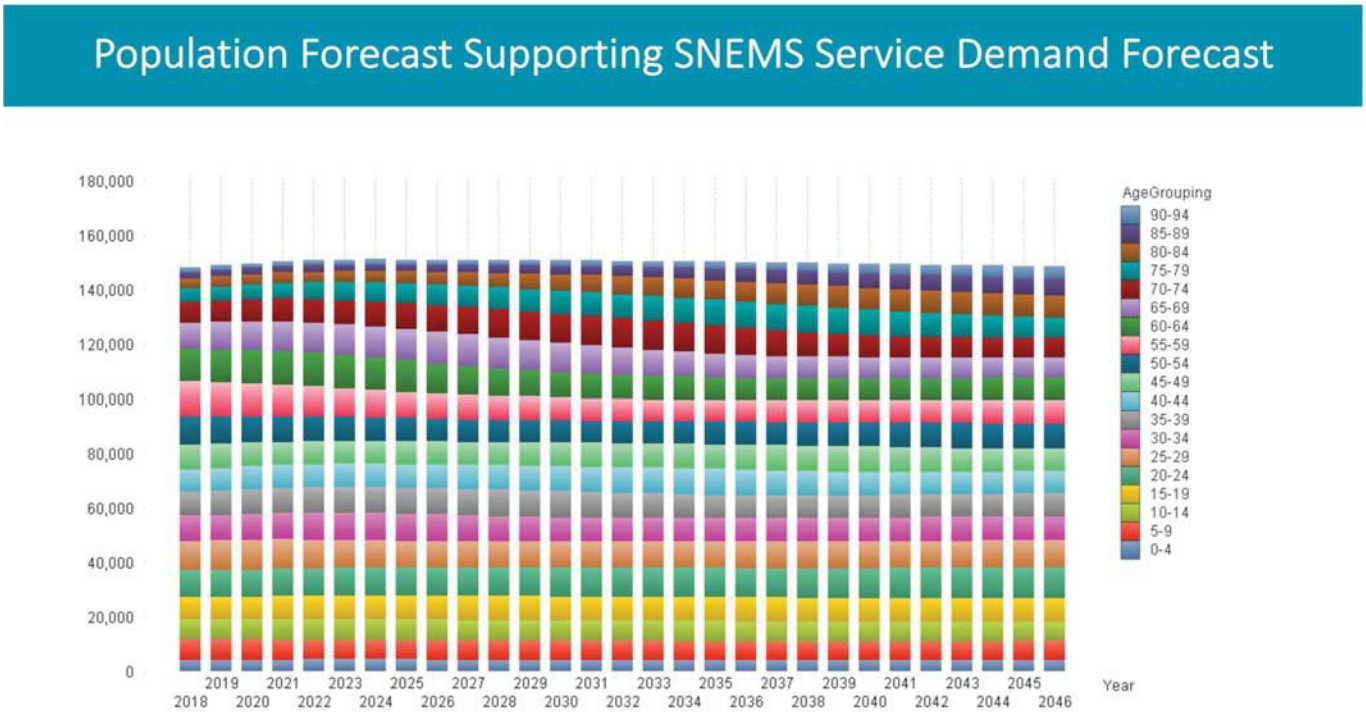
2019 Code Zero occurrences continued the downward trend from 2015 crisis levels and were also lower than 2017.



By 2019 time at Code Zero equated to a total of 4.5 calendar days - a significant improvement over 2017 levels. Next Code 4 call response times (when at Code Zero) continue to be deeply concerning.

4.3 SNEMS Demand Forecast (Base Case Scenario)

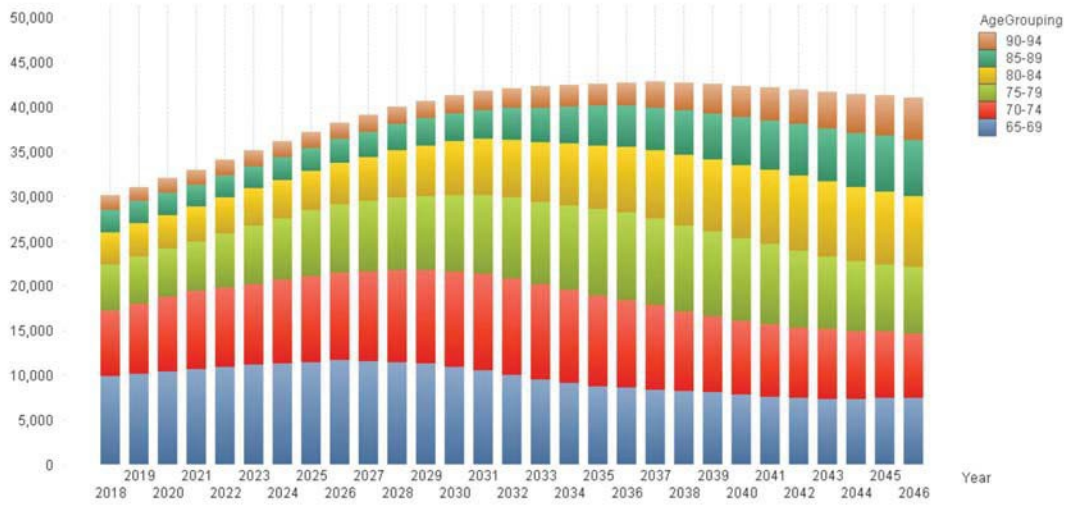
This demand forecast (base case) sets out the daunting call volume and time-on-task challenges facing SMEMS without implementing significant system restructuring. Attention will be focussed on the 2021-2030 period of the long-term forecast. The first 10-years of the forecast mirror the time horizon of the master plan and they are more likely/dependable to unfold as presented, compared to the out-years beyond the next decade. The demand forecast contains a significant caveat. The First Nations population residing in Thunder Bay and the District is not accurately reflected in the 2016 census. A recent study suggests this uncounted First Nations population is approximately 20,000 people. Moving forward, SNEMS should collaborate with First Nations researchers to update the demand forecast to better reflect the actual First Nations population.



The Ontario Ministry of Finance population projections for the Thunder Bay CMA are a key ingredient and the data backbone of the demand forecast. The Province predicts a flat no-growth population across 2021-2030.

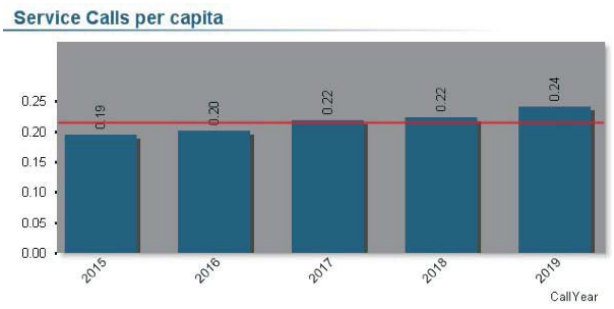
However, the senior citizens >65 age cohorts of the Thunder Bay CMA population are going to experience significant growth (see chart below). This aging tsunami is a demographic certainty as baby boomers join these > 65 years old population cohorts. The much-discussed aging tsunami is affecting health care across Ontario. SNEMS will not be exempt from the service demand impacts of the aging tsunami.

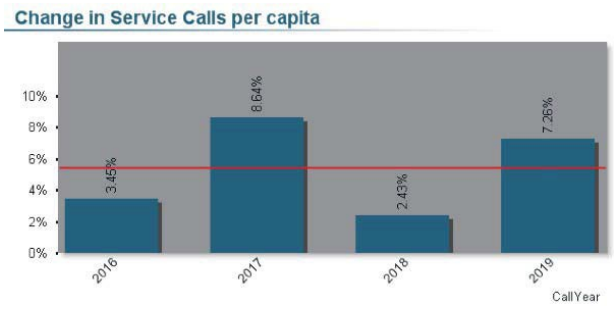
Seniors > 65 Years of Age = Aging Tsunami on the March



Beyond the aging tsunami, an even more profound service demand driver is becoming increasingly apparent. Across all age cohorts, the public is becoming increasingly likely to request services by calling 9-1-1 (see table below). Service requests per capita have increased steadily (5% +) across 2015-2019.

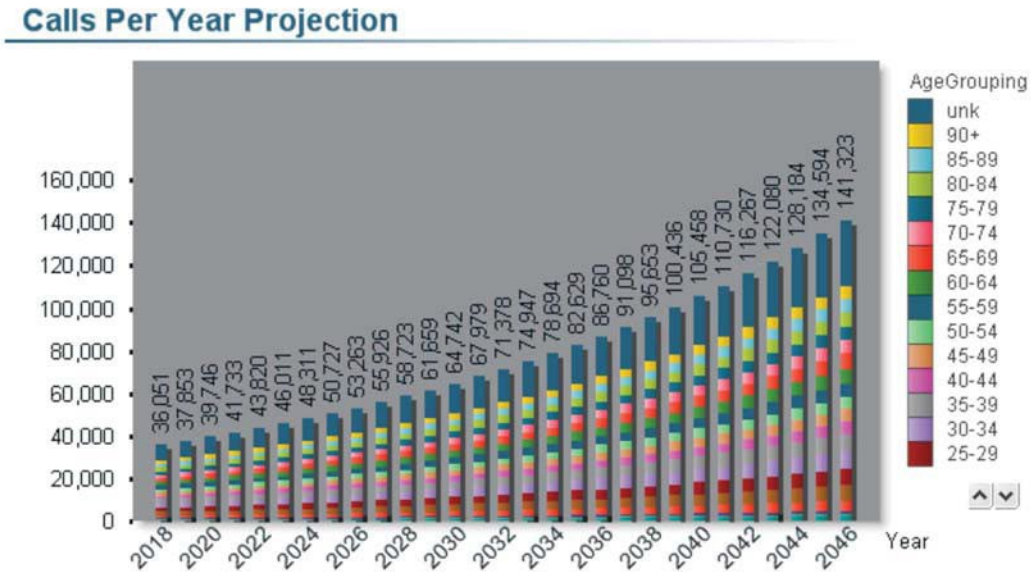
Growing Likelihood to Call 911 Driving Demand Forecast





The base case forecast of SNEMS calls is set out in the chart below. This forecast accounts for the impacts of the aging tsunami as well as the impact of increasing public willingness to call 9-1-1 for assistance. The 2021 to 2030 period is both instructive and daunting from a budget/service delivery perspective. Forecast service requests/calls in 2021 are 41,733. By 2030 at the end of the master planning time horizon, forecast service requests/calls have increased to 64,742. This represents an increase of 23,009 calls over ten years - an increase of 55%. A Thunder Bay property tax base experiencing no significant growth in taxable assessment cannot absorb the budget impacts generated by the annual 5-6 percent call volume increases featured in the base case demand forecast.

Base Case Forecast: Projected Service Requests/Calls



Base Case Forecast: Percentage Change in Service Requests/Calls

4.4 Community Paramedicine and Alternative Pathways

4.4.1 Re-imagining Paramedicine

The traditional municipal approach of adding ambulance vehicle hours of service to deal with increasing call volumes is not sustainable in the medium to long term. Although population growth in the Thunder Bay region is flat, the "aging tsunami" and an increasing propensity to call 9-1-1 by all age cohorts, continues to drive both call volumes and "time on task".

The 5.5%+ projected annual increases in SNEMS call volume (base forecast) across the next decade and beyond is not sustainable. Thunder Bay taxpayers cannot afford to add a $500,000 12-hour ambulance crew every second year with no end in sight. Can we reimagine new ways of doing business?

4.4.2 Dispatch Enhancements

For many years, Ontario ambulance calls have been prioritized using a computerized triage tool called Dispatch Priority Card Index (DPCI). This tool was developed by the Ministry of Health and Long-Term Care. DPCI uses extremely cautious algorithms for assessing patient condition - more than 70% of 9-1-1 requests for ambulance service are dispatched at Code 4 lights and siren status. Confirming the overly cautious nature of the DPCI algorithm, when paramedics arrive on-scene and evaluate the patient, only 10% of these dispatched Code 4 calls are deemed "life threatening" and return to hospital with lights and siren. With at least 70% of total calls classified as Code 4 emergencies, ambulance resourcing must be maximized to ensure targeted on-scene response times can be achieved. The opportunity to queue less serious calls and focus on truly life-threatening calls is being missed

The Ministry of Health and Long-Term Care is presently converting its communications centres from DPCI to the Advanced Medical Priority Dispatch System (AMPDS), long felt to be the worldwide gold standard in ambulance call triaging. AMPDS allows communicators to more sensitively categorize the call by chief complaint and set a determinant level ranging from **Alpha** (minor) to **Echo** (immediately life-threatening) relating to the severity of the patient's condition. The AMPDS system also uses the determinant **Omega** which may be a referral to another service or other situation that may not actually require an ambulance response. In the Niagara Region EMS communications centre, AMPDS triaged calls may be referred to a nurse in the dispatch centre for further assessment, health advice, referral, etc. Only a small number of calls are dispatched "hot" (with lights and siren), and lower priority triaged calls can be queued until an ambulance is available. Fewer lights and siren responses culminate in safer roads and more availability for true emergency calls.

4.4.3 Propensity to Call 9-1-1

A unique factor driving call volume growth regardless of population growth and aging, is the propensity to call 9-1-1. Whether driven by better awareness through media of emergency services available, prevalence of higher risk activity such as non-prescription drug use, or an "I want it now" mentality, the

number of ambulance calls per capita has been steadily climbing. Propensity to call is increasing at a rate often exceeding that of population growth and the aging tsunami In an effort to reverse this problematic trend, ongoing “Make the Right Call” 9-1-1 media campaigns are essential to re-educate the general public.

4.4.4 Community Paramedicine

A number of other innovations are showing promise on a smaller scale, and need to be ramped up significantly to make a difference:

“**Community paramedicine**” is an umbrella term that describes a more proactive and preventive approach to care provided by expanded scope paramedics. Most recently, COVID-19 highlighted the potential of Community Paramedics through critical roles at assessment clinics and assisting during staffing shortages at long term care facilities in crisis.

The concept of community paramedicine is quite broad in scope, allowing individual paramedic services across Ontario to develop programs that best meet the needs of their health care populations. During more “normal” times, three potential benefits of community paramedicine are as follows:

- Chronic disease management and injury prevention
- Reduced calls to 9-1-1 and transport to hospital for non-urgent patients
- Providing appropriate follow-up care for high-risk patients without hospital readmission

Community paramedics can aid in routine immunization, disease management and injury prevention by helping patients manage chronic diseases such as diabetes and hypertension. Simple home checks to verify compliance with prescription medications, assessing blood pressure, oxygen saturation and blood sugar, as well as confirming safety of the home environment can go a long way towards keeping patients out of hospital. Utilizing remote monitoring technology to assist with self-monitoring and alerting paramedics when values move out of normal range, ensures proactive action can be taken with the patient’s family physician before symptoms escalate and there is a need to go to hospital. Point-of-care blood testing will soon compliment the community paramedic’s skill set.

A number of studies have shown significant reduction in paramedic calls for those patients enrolled in community paramedicine programs. A group of Ontario medically complex “high EMS users” reduced their 9-1-1 activation by 24%. Remotely monitored Ontario patients reduced 9-1-1 activation by 26% and transportation to the emergency department by 31%. Rural Nova Scotia ambulance users reduced annual trips to emergency departments by 40%. Residents in an Ontario high-risk social-housing setting showed a 19% reduction in EMS calls to their housing complex.

Two additional initiatives in the Niagara Region show significant potential as well. Activities of their Falls Intervention Team (paramedic and occupational therapist) have resulted in a 3.8% reduction in calls for

falls among seniors in 2020, compared to the two previous years of increasing falls (9.4% and 14.2% respectively. Transports to hospital of these fall patients were reduced by 6.3%. Further, the Niagara EMS Mental Health and Addictions Response Team (paramedic and mental health nurse) has generated a 6.9% reduction in transport of mental health patients to Emergency Departments, despite an 8.1% increase in the number of calls.

The potential for innovation is considerable. As noted earlier, initiatives can and should be customized to local needs and capabilities.

With specific regard to SNEMS, the difference between City and District paramedic operations should be noted. District paramedics for the most part, operate at low utilization levels and have the capacity to conduct community paramedicine visits without additional costs or impacting emergency response. City paramedics on the other hand, are highly utilized for emergency coverage and have little excess capacity for community paramedicine. Dedicated community paramedics are necessary to provide these services in the City. SNEMS has a good head start with 100% provincially funded CP programs already providing:

- Remote Patient Monitoring
- Chronic Disease Management
- Emergency Department Admission Avoidance
- Home & Community Care

While hesitation exists for municipal Council/paramedic services to take on expanded funding responsibilities for ongoing primary health care initiatives, the above noted studies demonstrate that injecting lower-cost community paramedicine interventions has the potential to significantly reduce the ongoing growth in higher cost traditional ambulance services.

It is not unreasonable to expect a 20-30% reduction in forecast ambulance call volumes once a customized mix of community paramedicine programs are scaled up appropriately. A strong business case can be made for community paramedics reducing the future cost of traditional ambulance service.

4.4.5 First Nations

Poor social determinants of Health in First Nation communities such as overcrowded housing, high unemployment and unsafe drinking water, contribute to poorer health outcomes. In addition to a disproportionate prevalence of mental health problems and addiction disorders, the rate of chronic diseases such as diabetes, hypertension, renal disease and cancer is markedly elevated when compared to the general population. First Nation populations that live in remote areas have limited access to healthcare, other than local health centres. The travel distances faced by First Nations patients can result in delays in accessing care or unmet needs for preventative and primary care services.

Across the Thunder Bay District, SNEMS supplies a currently underutilized professional health care resource that can provide home-based care beyond 9-1-1 emergency response. Three SNEMS District

stations (Armstrong, Longlac and Nakina) currently deliver a majority of their 9-1-1 responses on First Nations territory. When not involved in emergency response, medics at these bases can be utilized in regular home monitoring of clients with chronic disease. Approximately 10% of the First Nation population is considered to have chronic disease significant enough to require home care and monitoring.

While community paramedicine research among First Nation communities is scant, SNEMS can expect some reduction in 9-1-1 call activation, but more importantly better health care at little or no additional cost to taxpayers.

4.4.6 Alternate Pathways

Traditionally, paramedics were required to transport all patients to a hospital emergency department. Recent legislative change now allows for transport to alternative destinations instead. Paramedics can now transport patients directly to an alternative facility that is most appropriate for their complaint (e.g. a sobering centre or mental health facility) rather than funneling all patients through a crowded emergency department. Not only do patients benefit from more timely and appropriate care, but ambulances are not tied up on hospital "offload delays" and freed up more quickly for emergency service.

4.4.7 Assess, Treat-and-Release or Assess-and-Refer

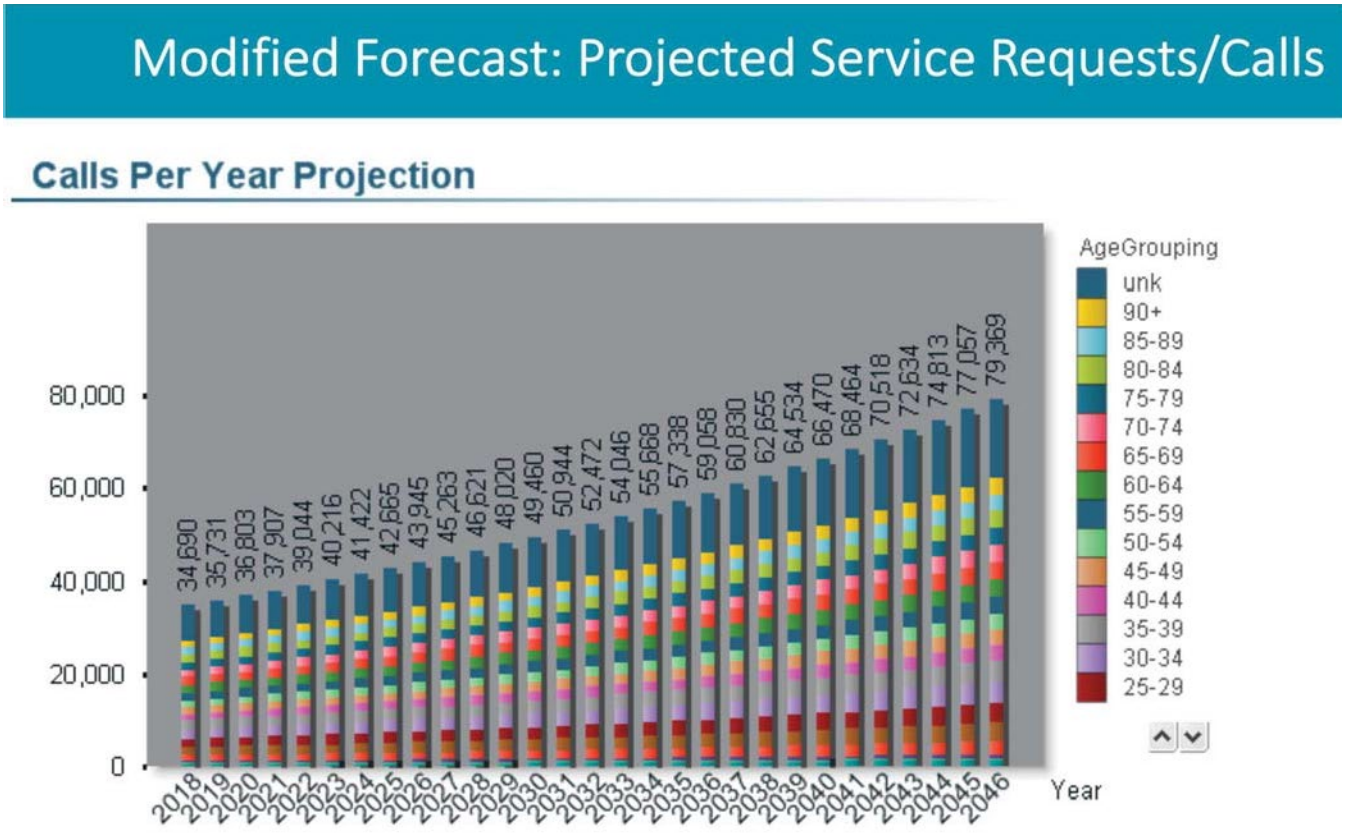
Similarly, not every patient needs to be transported at all. Unless a patient refused care, Provincial legislation previously required any patient who requested an ambulance to be transported to hospital. Formalization of protocols will provide paramedics with the following options:

- Allow paramedics to assess patients at the scene, provide needed care and then release the patient
- Allow paramedics to assess the patient and determine they are safe to refer to their GP or clinic (providing a transportation chit if necessary)

These options can/will quickly free up ambulance resources to re-engage in delivering emergency services.

4.5 Revised Demand Forecast

This modified demand forecast has been prepared to document the mitigation impacts of AMPDS, community paramedicine, and alternate pathways. The forecast attempts to model the demand mitigation of approximately 30 percent across the forecast. It is unlikely that the structural reforms required to secure a 30 percent demand mitigation can be achieved in the first five years of the 2021-2030 master planning horizon. Therefore, the likely net impact on demand across the 2021-2030 Master Plan will be significantly less - likely impacting only years 6-10 of the planning horizon.



The projected call volumes in the modified scenario for 2030 are 49,460. This is more than 15,000 fewer calls than the base case forecast of 64,742 service requests/calls in 2030. Annual call volume increases in the modified forecast run between 3.6% to 3.7% compared to 5.5% + in the base case.

Modified Forecast: Percentage Change in Service Requests/Calls

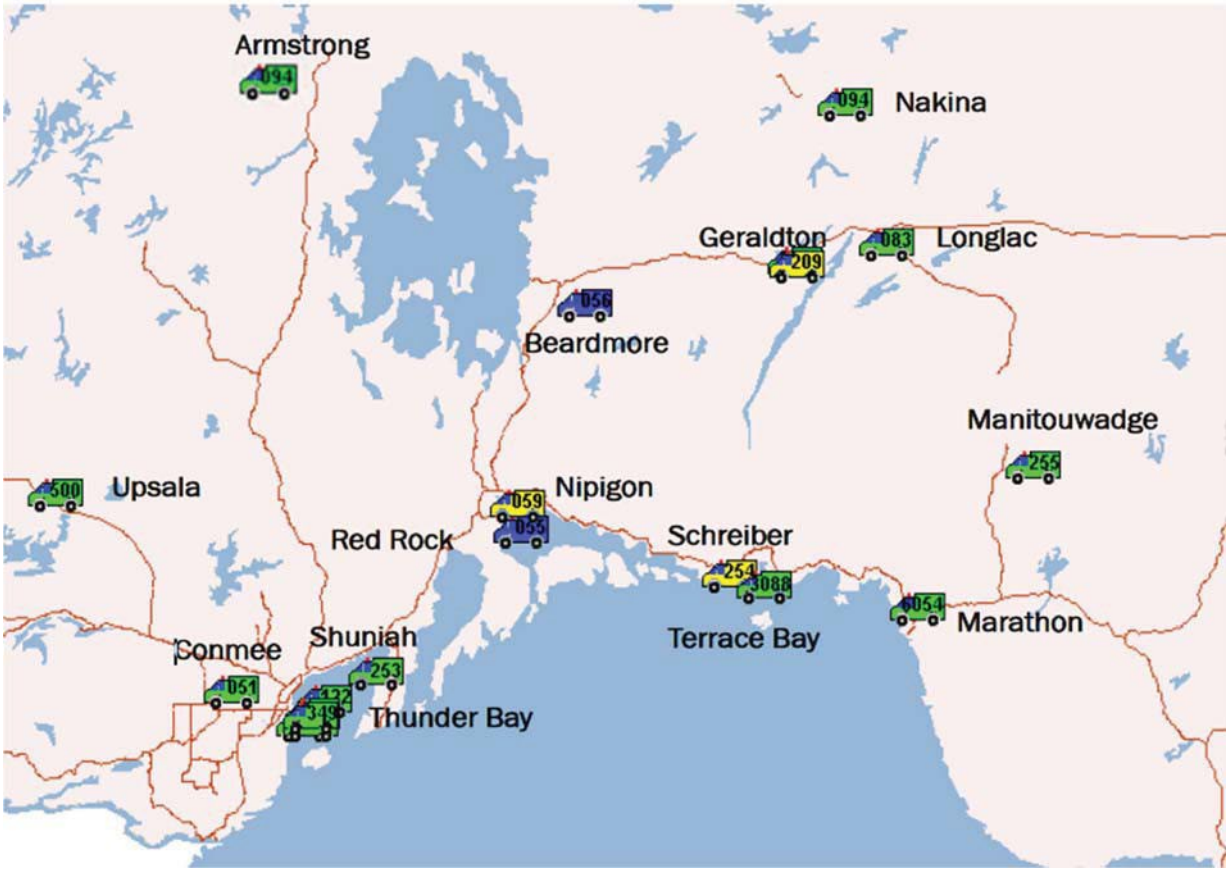
Performance Concepts believes that a hybrid demand path (a mix of the two demand forecast scenarios) is the most likely outcome across the 2021-2030 master planning horizon. The first 5-years of the master plan workload will more strongly reflect the “base case” call volume forecast, while the final 5 years should migrate towards the “modified” scenario if core master planning recommendations are successfully implemented.

5.0 SNEMS District Model

District analytics have only focussed on District bases that are central in the restructuring recommendations set out in the 2021-2030 Master Plan. These bases are as follows:

- Nipigon & Red Rock twinned bases
- Schreiber & Terrace Bay Twinned bases
- Beardmore

As was the case with City SNEMS, a brief factual narrative supports each analytics chart/table.

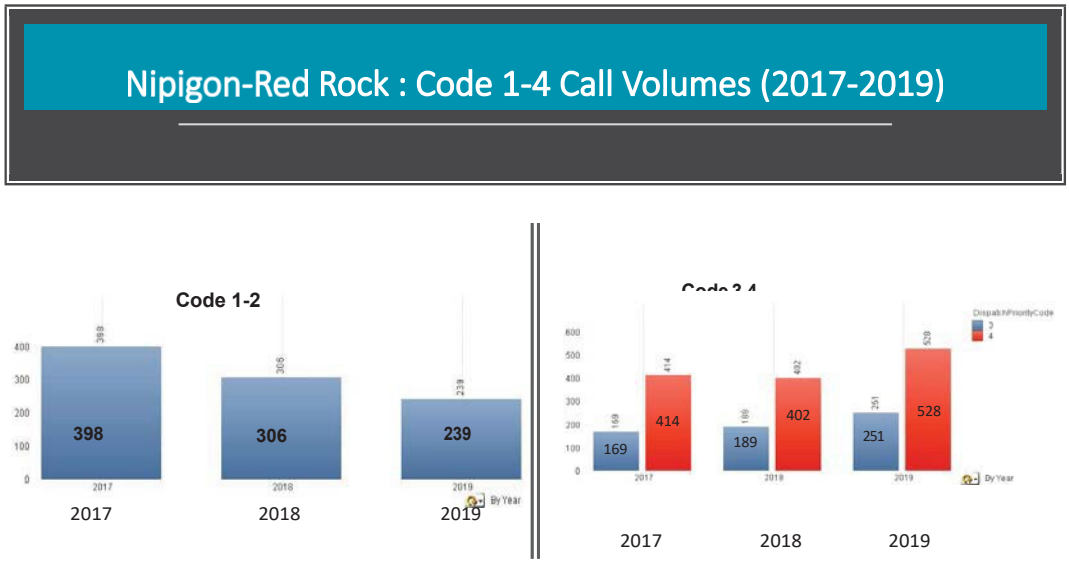


5.1 Analytics Overview - Twinned Bases on North Shore (Nipigon/Red Rock + Schreiber/Terrace Bay)

District analytics have only focussed on District bases that are central in the restructuring recommendations set out in the 2021-2030 Master Plan. These bases are as follows:

- Nipigon & Red Rock twinned bases
- Schreiber & Terrace Bay twinned bases
- Beardmore

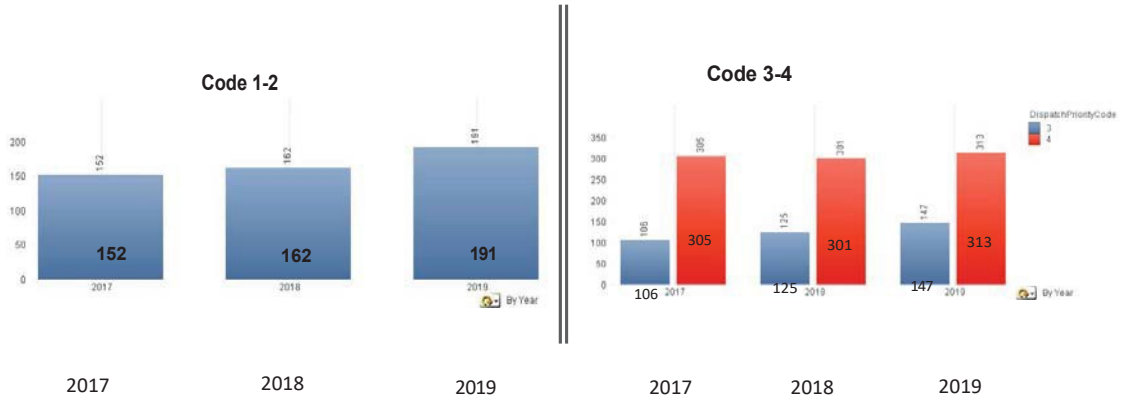
As was the case with City SNEMS, a brief factual narrative supports each analytics chart/table.



- Does not include up-coded 3 Non-urgent Transfers

Nipigon-Red Rock delivers a significant amount of non-urgent transfers (Code 1-2 plus difficult-to-calculate up-coded Code 3 calls). These calls pull one of the two twinned ambulances out of their emergency response catchment area virtually every day of the Monday-Friday work week. While Code 1-2 calls are on the decline, dispatched Code 3-4 combined workload has increased significantly in 2019.

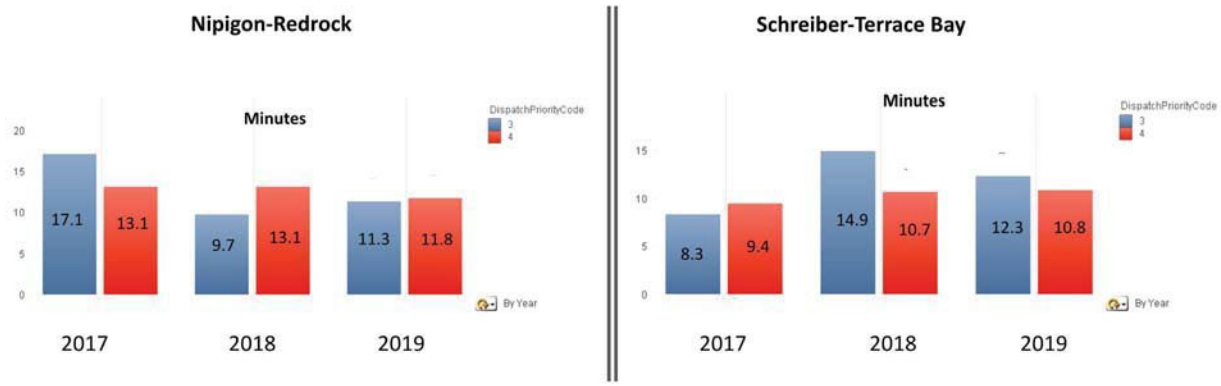
Schreiber-Terrace Bay: Code 1-4 Call Volumes (2017-2019)



- Does not include up-coded 3 Non-urgent Transfers

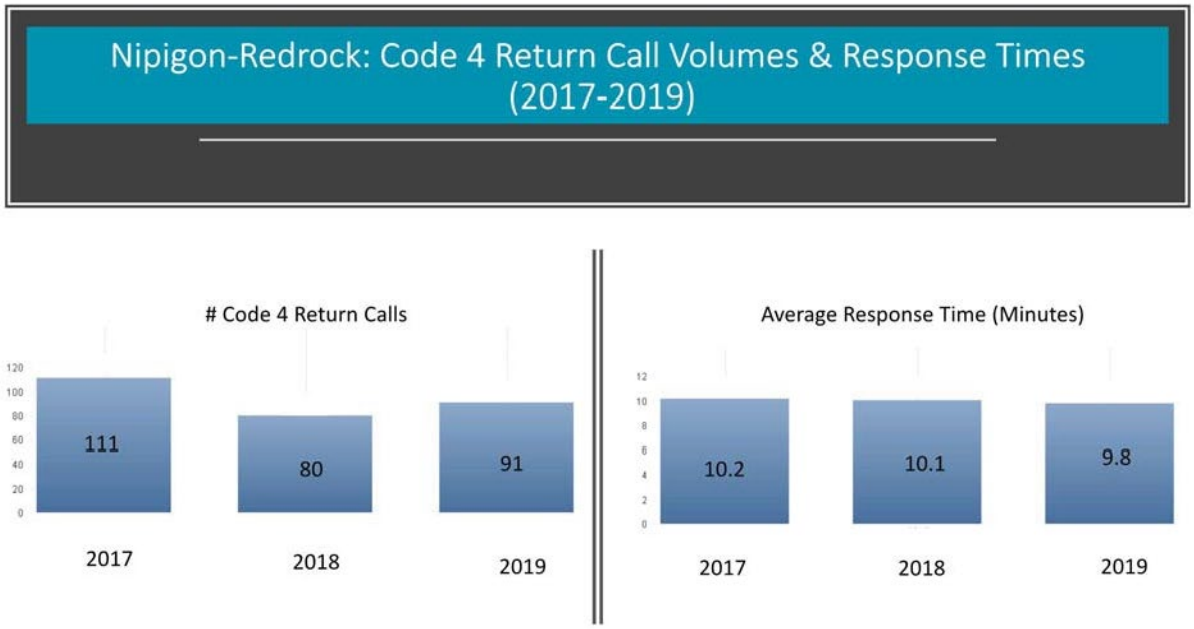
Schreiber-Terrace Bay delivers a significant amount of non-urgent transfers (Code 1-2 plus difficult-to-calculate up-coded Code 3 calls). These calls pull one of the two twinned ambulances out of their emergency response catchment area most days of the Monday-Friday work week. Dispatched Code 3-4 combined workload has been relatively stable across 2017-2019 while Code 1-2 calls have increased.

Dispatched Code 3-4 Average Response Times (2017-2019)

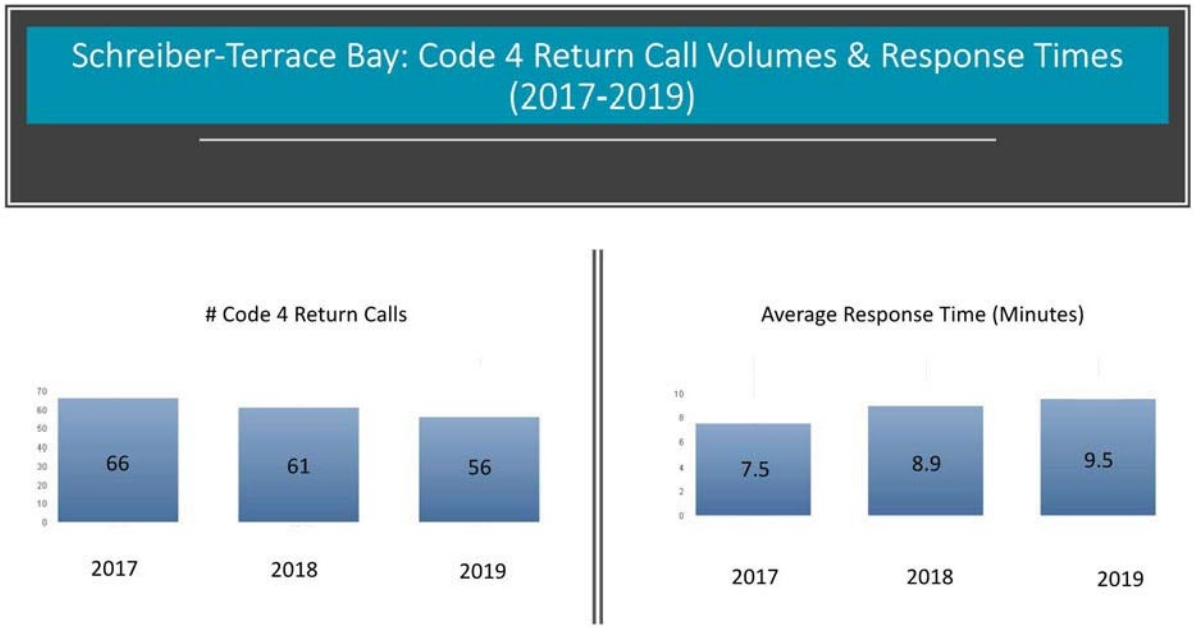


The dispatched Code 4 on-site average response are stable/acceptable across the two “twinned” north

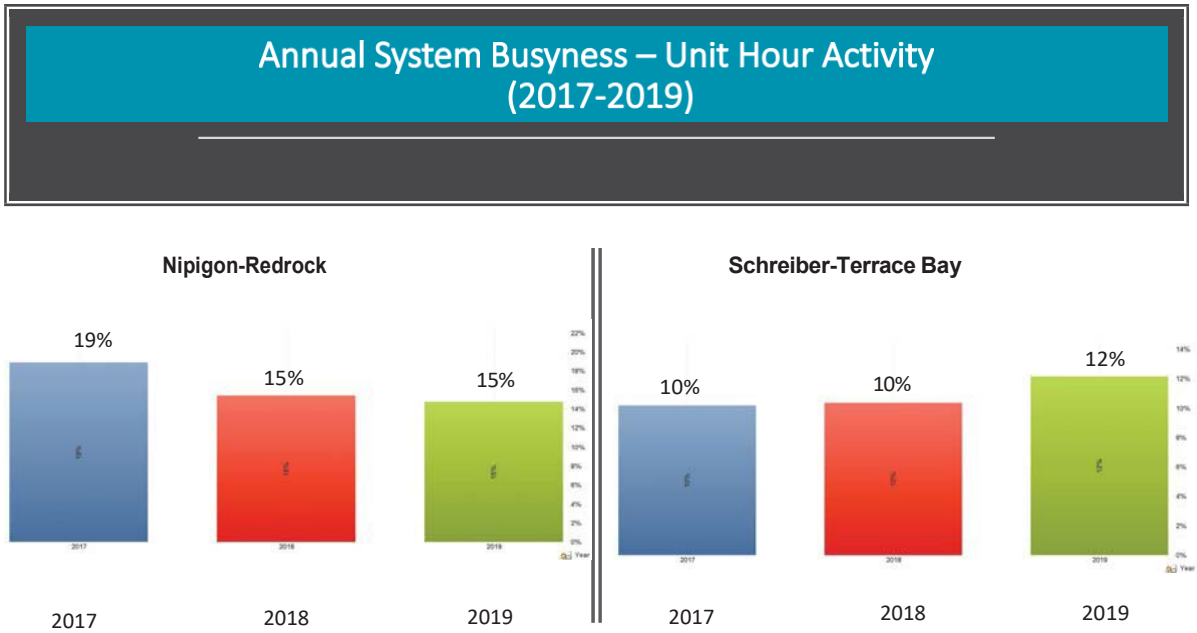
shore emergency coverage catchment areas covered by the 4 bases.



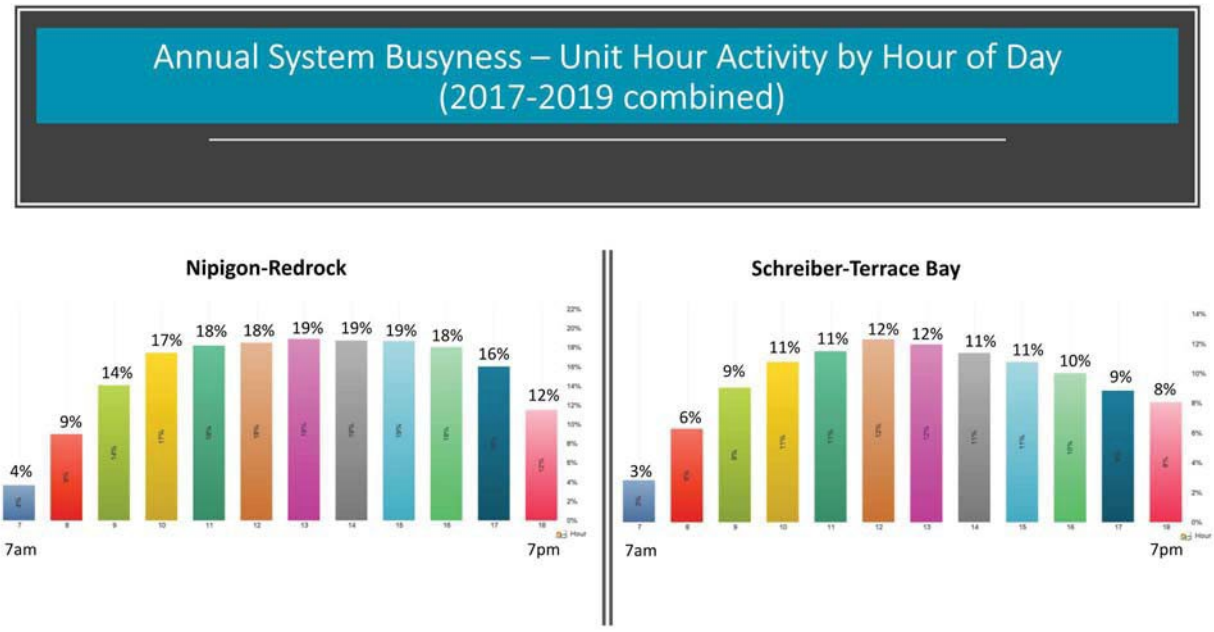
Code 4 “Lights and Siren” Return volumes and their average response times are stable/acceptable across 2017-2019.



Code 4 “Lights and Siren” Return volumes are stable. While Code average response times for Return calls are increasing, they continue to be faster that the response times for the broader pool of Code 4 dispatched calls.

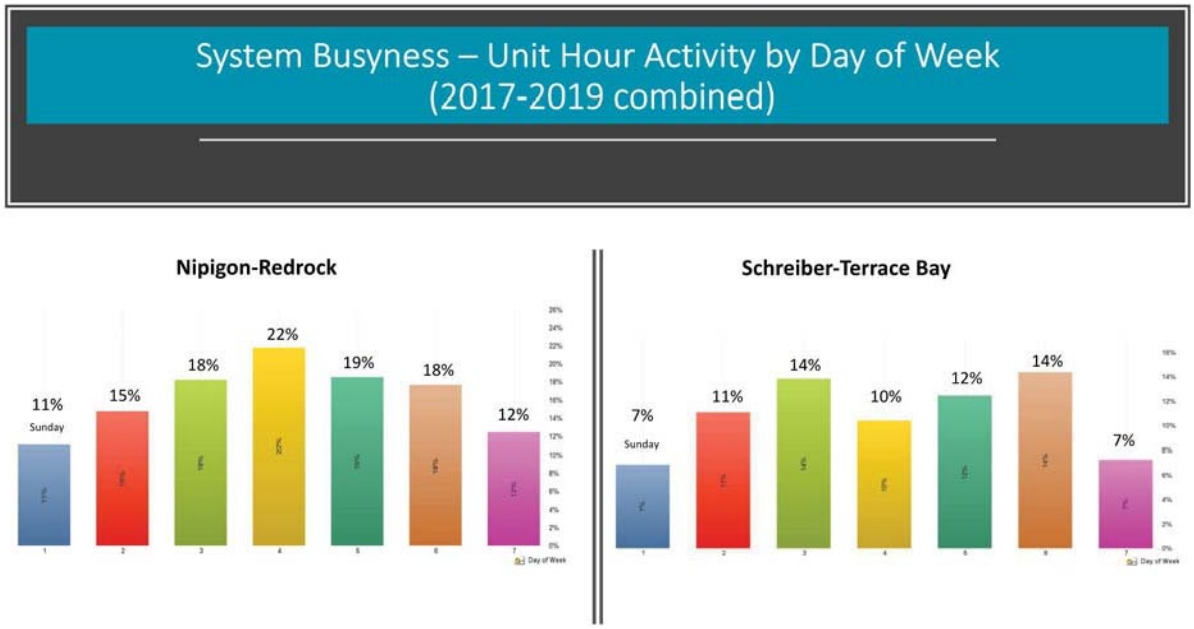


The 4 twinned north shore bases feature system busyness levels ranging from 12% to 15% in 2019 for their combined Code 1-4 call volumes workload.



System busyness (UHA) peaks during the mid-day hours when Code 1-2 workload and Code 3-4 workload is being executed in parallel. UHA drops off during hours when Code 1-2 transfer work is not

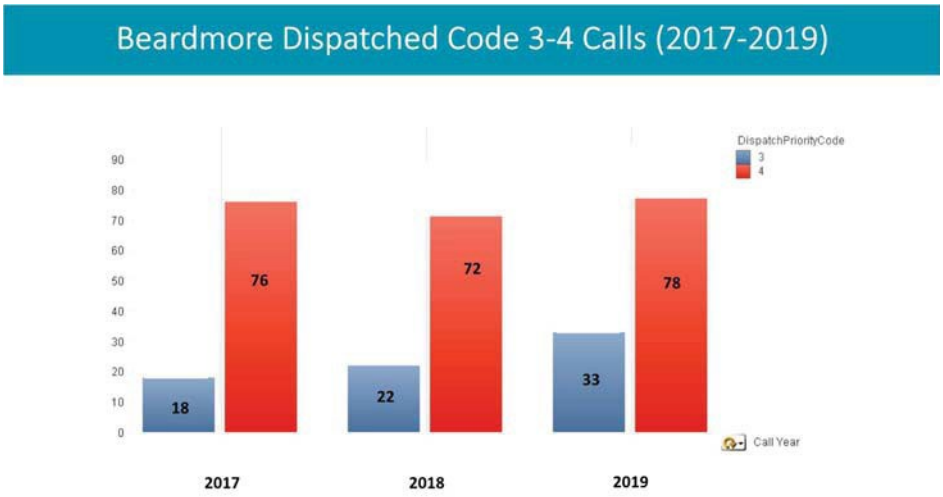
typically executed.



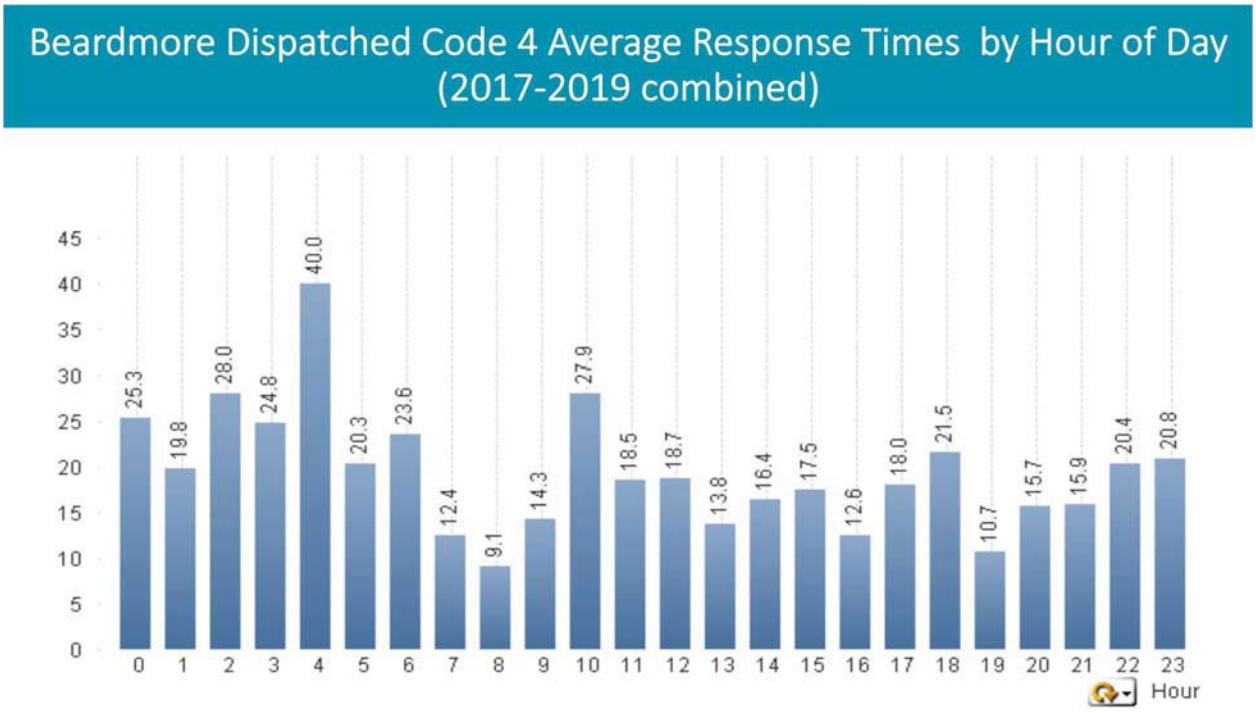
Monday-Friday feature the highest levels of system busyness since these are the days the majority of Code 1-2 long-haul transfers into TBRHSC take place.

5.2 Analytics Overview - Beardmore Base

The Beardmore base has an operating budget of more than $800,000 for a 12-hour ambulance unit. Beardmore executed fewer that 80 dispatched Code 4 calls annually between 2017 and 2019. In 2019 this equated to a Code 4 response executed every 4.7 deployed shifts.

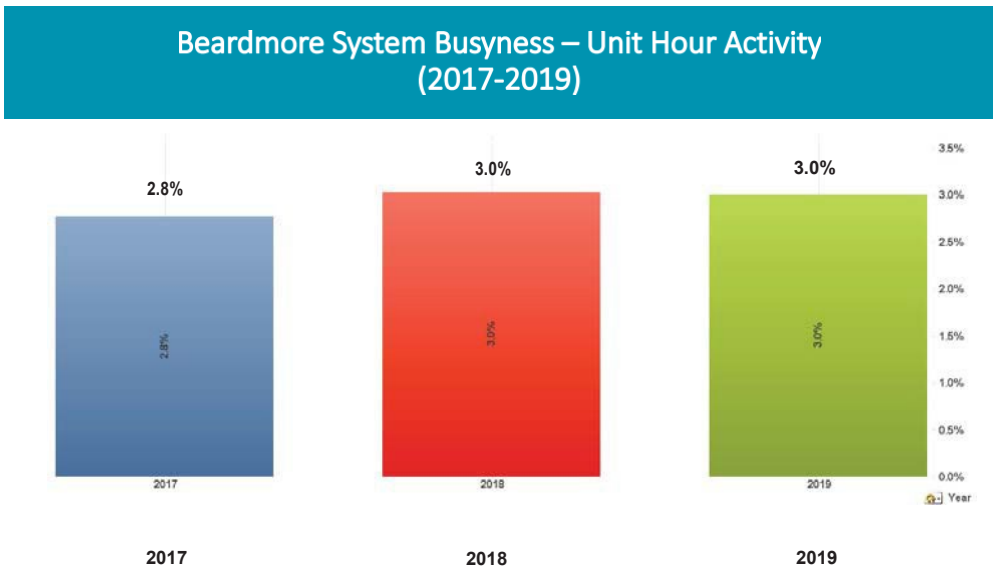


It was necessary to combine 3-years of Beardmore Dispatched Code 4 data to build-out this hours-of-day call volume chart. There are not enough call data points across 2017-2019 to generate a meaningful pattern.

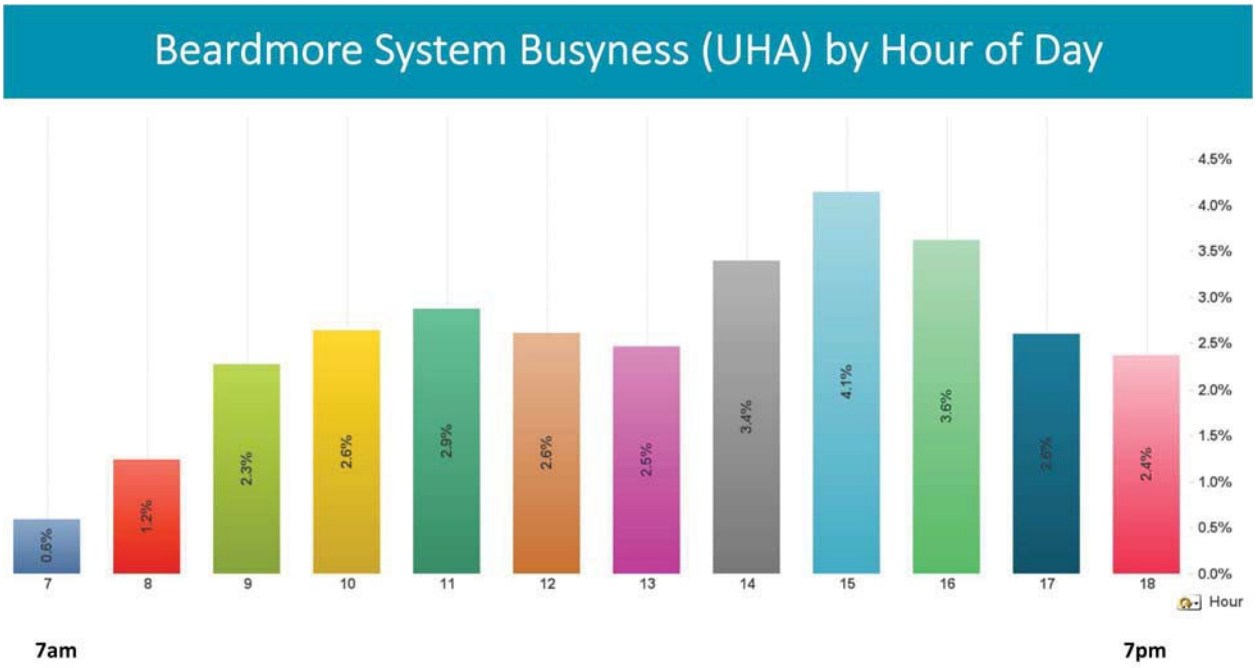


Code 4 response times fluctuate by hour of day due to the small number of calls (with varying response times) in any given hour.

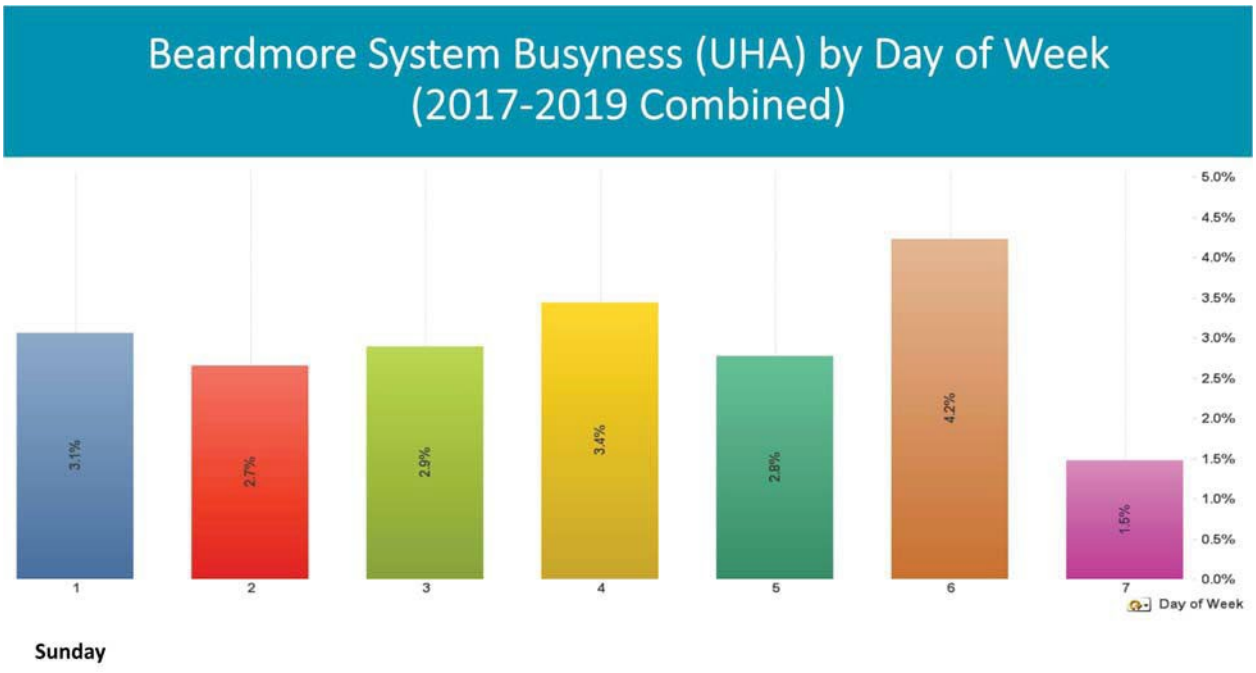
Code 4 Returns are the truly serious emergency calls. Unlike the Dispatched Code 4 calls, Code 4 Returns occur once a paramedic has put eyes on a patient and evaluated their condition. This patient evaluation is conducted using the Canadian Triage and Acuity Scale (CTAS). CTAS 1-2 are the most serious and generate an immediate Code 4 Return to hospital priority. Across 2017-2018 only three CTAS 1 patients received a Code 4 Lights and Siren Return to hospital by Beardmore. In 2019 there were only 11 patients treated by Beardmore that were evaluated as CTAS 2-3. In 2019 Beardmore executed a Code 4 Lights and Siren Return every 33 days (about once a month).



Only 3% of the budgeted/deployed Beardmore vehicle hours were engaged in Code 1-4 call volume work. The other 97% of the budgeted hours were deployed but not utilized.



Peak busyness by hour of day at the Beardmore does not exceed 4.5% UHA.



Peak busyness by day of week at the Beardmore base does not exceed 4.2% UHA.

5.3 District Base Functionality Review

5.3.1 SNEMS District Station Condition Assessments

A series of SNEMS station condition assessments were conducted by various engineering firms across 2011-2012. A summary of those engineering assessments appears in Appendix B. Various SNEMS stations have undergone renovations as a result of those assessments.

As a core component of preparing the 2021-2030 Master Plan, Performance Concepts carried out a District stations assessment tour between August 10th -13th 2020. Accompanied by a SNEMS Deputy Chief, Performance Concepts Senior Associate John Prno executed an updated operational assessment of each District station and associated paramedic residence(s). A summary of these District station assessments follows, based on operational "best practices". The following functional checklist was used to evaluate each District station:

- Appropriate Exterior Signage
- Drive-thru Bays
- Secure access, e.g., keypad entry
- Adequate space to walk around each stored vehicle and to unload stretcher from the rear of the vehicle
- Adequate floor drain and interceptor capability
- Water Resistant Surfaces in vehicle wash areas
- Smoke Detectors/Carbon Monoxide Monitors
- Emergency Lighting
- Emergency Exit Signage
- Emergency Generator
- Eyewash Station
- Adequately sized powered Overhead Door(s) with safety stop and manual release
- Time to full door open of less than 20 seconds
- Electrical Vehicle Plug-in(s) that prevent cord from crossing garage floor
- Garage Ventilation and Exhaust controlled by Carbon Monoxide/Nitrogen Dioxide monitors
- Separate Individual Sleeping Rooms
- Separate Washrooms and Showers each with Ventilation Fans
- Kitchen with fridge, freezer, stove/oven, microwave
- Laundry facilities
- Sufficient number and size of Staff Lockers
- Sufficient Secure Storage for medical supplies
- Adequate Staff Parking

5.3.2 Shuniah Station

The Shuniah Station is a combination of i) a leased partial single bay located in Shuniah Fire and Emergency Services Hall #1 and ii) a leased commercial trailer located behind the Fire Hall. The following functional observations have been documented:

- The ambulance bay is not drive-thru
- Space in the fire hall is extremely limited, with no room behind the ambulance to remove the stretcher or properly clean the vehicle without moving the vehicle outside
- There is no floor drain in the bay used for the ambulance, requiring water to be squeegeed into the next bay during washing.
- Although ventilation and exhaust fans exist, they are not controlled by Carbon Monoxide/Nitrogen Dioxide monitors.
- Emergency power is provided by a fixed natural gas generator that is limited to providing power to the fire hall itself.
- The staff trailer has a lounge, two small bedrooms and a single washroom.

5.3.3 Armstrong Station

The Armstrong station is a SNEMS-owned, unique renovation of a previous structure that now consists of two separate buildings: a 2-bay garage and a crew quarters building. The following functional observations have been documented:

- Ambulance bays are not drive-thru
- Emergency power to the entire station is provided by a fixed diesel generator
- A Radon gas control system is in place
- Space in the vehicle bays is limited, with no room behind the ambulance to remove the stretcher
- Overhead door opening time is slightly slower than ideal at 23 seconds.
- The garage floor condition is severely deteriorated
- There is a single washroom in the crew quarters, but no shower as sleeping quarters are provided off-site.

Overnight accommodations are provided in two SNEMS-owned houses located at #4 and #6 Northern Drive, less than a kilometer from the station. Both are 2-bedroom houses with the expected living room, kitchen, single washroom and shower. Neither house has central air conditioning, relying instead on portable floor units. Wood siding, trim and shingles on the houses require attention. The house located at 4 Northern Drive has a clothes washer on-site as well as employee-owned fitness equipment.

5.3.4 Red Rock Station

The Red Rock station is a small single-bay structure leased from the Nipigon hospital. The following functional observations have been documented:

- Ambulance bay is not drive-thru
- Pavement condition is fair
- Emergency power is provided by a portable gasoline generator which presently does not work
- Water level in the floor drain is high, but this is likely due to delayed interceptor cleaning amid COVID-19
- The Stop button on the garage door control is not functional
- Medical supplies are limited as this station restocks at Nipigon

Overnight accommodations are provided 301-30 Frost St. - a leased 2-bedroom apartment in a 3-story walk-up apartment building less than 1 km from the station. There are no laundry facilities (these are available at the station) and there is only one washroom/shower. The front walk area is in poor condition.

5.3.5 Nipigon Station

The Nipigon station is a two-bay, 2,080 sq ft structure leased from the Nipigon hospital. The following functional observations have been documented:

- Ambulance bays are not drive-thru
- An additional bay is presently required to hold the PRU at the station
- Pavement requires some repair
- Emergency power is provided to a limited number of red outlets through the hospital generator
- Space in the vehicle bays is limited with no room behind the ambulances to remove stretchers
- Sleeping quarters are provided inside the station - a single bedroom and a futon in the lounge area. No laundry facilities are provided. Crews utilize laundry facilities at the Red Rock station

5.3.6 Schreiber Station

The Schreiber station is a single bay in a privately-owned commercial complex, with crew quarters located on the second floor in a public area of the building. The following functional observations have been documented:

- Ambulance bay is not drive-thru
- There is no emergency generator/backup power
- There is no central air conditioning, relying instead on portable floor units
- There is a single washroom/shower
- There is a dangerous foot gap in the fire escape stairway
- Sleeping quarters are provided inside the station - a futon in a bedroom/office and lounge furniture

5.3.7 Terrace Bay Station

The Terrace Bay station is a two-bay structure leased from the Terrace Bay hospital. The following functional observations have been documented:

- Bays are not drive-thru
- Space in the vehicle bays is limited with no room behind the ambulances to remove stretchers
- The front of the apron is deteriorating and requires repair
- There is no emergency generator/back-up power
- Garage ceiling paint is peeling due to water damage
- There is no central air conditioning, relying instead on portable floor unit
- Sleeping quarters are provided inside the station - a futon in a bedroom/office and a second bedroom

5.3.8 Marathon Station

The station is a three-bay structure leased from the Marathon hospital. The following functional observations have been documented:

- Bays are not drive-thru
- Winter tires are stored between bays
- Overhead door opening time is slightly slower than ideal at 22 seconds
- Emergency power is provided by a portable generator with plug-in located on the deck
- There is no central air conditioning, relying instead on a window unit
- Sleeping quarters are provided inside the station - a bed in the lounge and a second bedroom

5.3.9 Manitouwadge Station

The Manitouwadge station is a three-bay two-storey structure leased from the Manitouwadge hospital. The following functional observations have been documented:

- Bays are not drive-thru
- Small round floor drains are utilized instead of traditional trench drains
- There is central air conditioning, but it needs to be supplemented with a portable floor unit
- Emergency power is provided by an aging portable generator
- Sleeping quarters are provided inside the station - two bedrooms. Lockers and washrooms are located on the lower level of the station. The lower level training room also contains employee-owned fitness equipment

5.3.10 Longlac Station

The Longlac station is a two-bay structure leased from the Municipality of Greenstone. The following functional observations have been documented:

- Bays are not drive-thru
- Pavement is heaving in front of the bay doors
- Linoleum is torn and lifting
- Emergency power is provided by a portable generator
- Sleeping quarters are inside the station - a lounge and a second bedroom

5.3.11 Nakina Station

The Nakina station is a one-bay drive-thru structure attached to the community health centre and leased from the Municipality of Greenstone. The following functional observations have been documented:

- Bay doors are 10’ high which is the lower limit of acceptability
- Gas monitors are protected from moisture by a garbage bag
- Pavement has typical breakdown due to weather and front requires masonry repairs
- Emergency power is provided by a portable generator
- There is a single washroom/shower. Sleeping quarters are provided inside the station - two bedrooms

5.3.12 Geraldton Station

The Geraldton station is a SNEMS-owned three-bay structure. The following functional observations have been documented:

- Bays are not drive-thru
- Emergency power is provided by a fixed natural gas generator
- Individual washrooms/showers (as well as a separate handicapped washroom) are available.

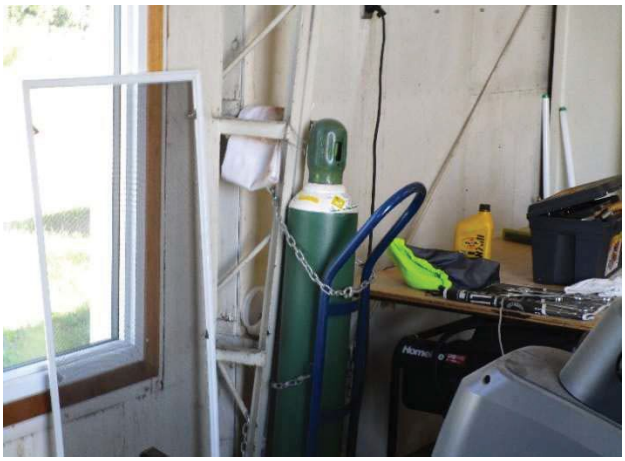
Well-equipped overnight accommodations are provided at 1202 Main St., less than 1 km from the station. This leased three-bedroom apartment on the second floor of a private home includes two bathrooms.

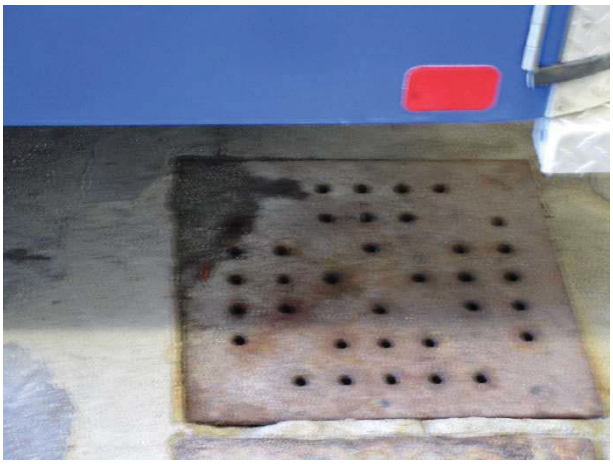
5.3.13 Beardmore Station

The Beardmore station is a combination of a single bay structure leased from the Municipality of Greenstone and a leased commercial trailer located behind the station. The following functional observations have been documented:

- A portion of the station is sealed off due to mould issues
- Bay is not drive-thru
- Floor drain is inadequate in size
- Oxygen cylinder securement is ad-hoc at best
- Emergency power is provided by a portable generator
- There is no central air conditioning, relying instead on a portable floor unit
- There are two unisex washrooms/showers.

Overnight accommodations are provided in the leased trailer located behind the station. There are two bedrooms and an unused central area. Air conditioning is provided by two wall AC units. There is no washroom in the trailer.





5.3.14 Upsala Station

The Upsala station is a single bay structure attached to the health centre and leased from the Upsala Volunteer Ambulance Association. The following functional observations have been documented:

- There is no pavement
- Ambulance bay is not drive-thru
- Floor drain is inadequate in size
- Gas monitors are protected from moisture by a garbage bag
- Emergency power is provided by a fixed diesel generator
- A water purification system is in place that provides water for both the station and health centre
- There is no central air conditioning, relying instead on portable floor units
- Laundry equipment is located in the health centre
- There is a single washroom and separate shower. Sleeping quarters are provided inside the station - two bedrooms.

5.3.15 Conmee Station

The Conmee station is a combination of a single bay (leased in a shared two-bay Conmee Fire Department out-building) plus a leased commercial trailer that comprises the crew quarters. The following functional observations have been documented:

- There is no pavement
- Ambulance bay is not drive-thru
- Floor drain is inadequate in size
- There are no Nitrogen Dioxide/Carbon Monoxide monitors
- An exhaust fan exists but seems manually controlled and undersized. We were unable to confirm its acceptable functioning during our visit.
- There is no emergency generator or back-up power at this site
- There is a single washroom/shower
- Sleeping quarters are provided through two bedrooms in the trailer

5.3.16 Summary of District Stations Functional Assessment

While currently "functional", *there is no District station that meets all the regulatory/functional requirements for a sustainable paramedic service in Ontario*:

- 13 stations lack drive-thru bays
- 6 have inadequate air conditioning
- 6 have a single washroom/shower
- 4 have insufficient room indoors to remove the stretcher from the ambulance
- 4 have either a non-working or no emergency generator
- 4 have inadequate floor drainage in the garage bay
- 2 have inadequate garage ventilation and/or Carbon Monoxide/Nitrogen Dioxide monitoring
- 2 have slower than ideal garage door opening times
- 1 has a garage door barely meeting the minimum acceptable size
- 1 has a portion of the station sealed off for mould issues
- 1 has a dangerous foot gap on the fire escape

Only three stations: (Geraldon, Longlac and Manitouwadge) approach full compliance. Four other stations (Shuniah, Schreiber, Beardmore and Conmee) are in need of replacement in the first half of the Master Plan's 10-year timeframe. The balance of stations all require significant attention, and perhaps replacement in the second half of the Master Plan. Only the Conmee station currently has a plan for replacement. Ongoing station maintenance is the responsibility of the existing station landlords (typically not SNEMS). There may well be an annual operating budget impact for SNEMS associated with station replacements and/or refurbishments.

The overnight accommodations required for SNEMS suitcase medics that are provided on-site are for the most part "bare bones", making adaptive reuse of previous offices to meet fire regulations. One District station has no washroom in the sleeping trailer used. Three stations feature off-site owned/rental accommodations. Only one of these housing sites has separate washroom facilities.

5.4 District Restructuring – Setti ng Up the Dominoes

5.4.1 District Staffing Concerns

Maintaining compliance with an approved staffing pattern normally requires providing an adequate number of full-time medics to fill the normal schedule, supplemented by sufficient part-time medics to fill shift vacancies caused by full-time staff taking vacation, stat holidays and sick time. For the most part ambulance services implement this model via the 20% factor (i.e. one additional full-time equivalent of part-timers for every four full-time paramedic). Longer term absences can be addressed through an adequate part-time staffing pool - or by full-time "float" paramedics that step into schedule vacancies for the duration of the absence. In an urban paramedic system such as the City SNEMS, short notice absences (e.g., illness during a shift) are normally filled quickly with a part-time paramedic arriving to resolve any down staffing within an hour.

SNEMS District staffing is disproportionally affected by a number of complicating factors such as travel time to the worksite, distance and the on-call nature of overnight operations at most bases. A task as simple as replacing a paramedic who is ill at work, can result in down staffing for much of a shift before an available paramedic can be found and travel to the station.

"Suitcase" Medics

The ideal approach to supporting northern remote communities is to have medics live in the community that they work in. This situation is broadly beneficial - with medics supporting local businesses and paying local property taxes. This ideal reality does not exist for SNEMS. While there are a number of locally residing paramedics, many of those working in the District prefer to reside in or near Thunder Bay. This results in SNEMS schedules designed to accommodate long "suitcase medic" commutes to the worksite - where paramedics living in Thunder Bay travel to a District station and reside there for 4 to 7 days depending on the particulars of the schedule.

District schedules require paramedics to be "on-duty" for part of a given day and then "on-call" for the remainder of the day. In practical terms this means medics must reside at or near the District station to maintain after-hours response times. To address difficulties in obtaining short-term accommodations for suitcase medics, SNEMS has provided space in District stations to serve as bedrooms, or where space does not allow, has rented or purchased off-site accommodations for paramedics to use. The quality of these accommodations has an impact of willingness of staff to work in particular District station locations (see District Station functional assessments in this plan).

"Rest Breaks"

The District staffing model is designed to provide on-site "on-duty" coverage in a station during the portion of the 24-hour day when 9-1-1 calls are most likely to occur. During the remainder of the day, medics are "on-call" and wear a pager to alert them to 9-1-1 calls. When paged, medics respond to the

station in a timely manner and complete the call. Provincial regulations mandate an 8-hour "rest break" before these "on-call" paramedics can begin a regular "on-duty" shift. For example, an overnight call that ends at 4 am would require "rest" until noon later that day regardless of the dayshift being scheduled to begin at 7am. During these rest periods, 9-1-1 emergency coverage is usually provided by the next nearest emergency vehicle from another station.

5.4.2 District Down-staffing Analysis

Down-staffing is the inability to maintain compliance with the approved staffing pattern. Down-staffing can be either partial (one member of the ambulance crew is not available perhaps due to illness) or full (both members of the ambulance crew are not available due to a mandated rest break). Where partial down-staffing occurs, the remaining paramedic provides "first response" emergency care to the patient until a transporting ambulance arrives on-scene.

During 2019, an estimated 1,597 hours of full down-staffing (mostly due to rest breaks) occurred across the District. This full down-staffing service delivery interruption represented the equivalent of 133 twelve-hour shifts with District stations unstaffed.

There was an estimated 9,572 hours of full + partial down-staffing across the District during 2019 - equivalent to 798 twelve-hour shifts without required staffing in place. This District total compares to 542 hours or 45 twelve-hour shifts down-staffed in the City SNEMS operations in 2019. By station, Armstrong has the most significant number of down-staffs, but service delivery is less impacted than other stations due to its 24-hour on-duty coverage. The following table provides detailed estimates of down-staffing by District station for 2019.

	Full Down-staffing Hours	Partial Down-staffing Hours	Combined Down-staffing Hours
Armstrong	378	2118	2496
Beardmore	192	729	921
Conmee	221	650	871
Geraldton	20	182	202
Longlac	111	698	809
Manitouwadge	9	113	122
Marathon	31	79	111
Nakina	16	289	305
Nipigon	162	701	863
Red Rock	40	264	304
Schreiber	65	402	467
Shuniah	161	907	1068
Terrace Bay	127	254	381
Upsala	64	588	652
TOTAL	1597	7975	9572

Table 1 - 2019 Down-staffing Hours by Station

5.5 First Nations Enhanced Funding and Partnership Opportunities

SNEMS is honoured to provide pre-hospital 9-1-1 emergency response and other supportive pre-hospital health care services to First Nations communities across the District.

The Armstrong station is already funded at a 100% level by senior levels of government. That funding model was the result of previous evidence-based advocacy undertaken by SNEMS. The table below documents the fact that across 2017-2019 72.8% of Armstrong calls responded to patients on First Nations land.

The Armstrong precedent is clear - if 100% senior government funding was appropriate for the Armstrong station due to the 73% call volume threshold for First Nation communities, then that same threshold should apply to other SNEMS stations.

The table below also demonstrates that the Nakina station meets/surpasses the Armstrong First Nations workload precedent required to secure 100% senior government funding. Nakina's First Nation territory calls represent 77% of the total 2017-2019 call volume.

While not meeting the Armstrong First Nations workload precedent, the Longlac station delivers almost 2/3 of its total 2017-2019 call volume to First Nations territory calls. Enhanced funding beyond the standard 50/50 cost sharing with the Province would appear to be worthy of discussion/consideration for a base with a strong majority of First Nations calls.

First Nations Community Support by SNEMS

Station	All Calls*	Station Area FN Calls	% FN Calls	All FN Calls	% FN Calls
Longlac	1618	905	55.93	1005	62.11
Armstrong	1585	950	59.94	1154	72.80
Nakina	630	464	73.65	485	76.98
Beardmore	287	91	31.70	106	36.93

*2017-2019 combined

Beyond issues associated with "fair share" funding arrangements, SNEMS is embracing an evolving opportunity to work with the Nishnawbe Aski Nation (NAN) as they work towards the creation of their own paramedic service. Mr. Ovide Mercredi (NAN Health Transformation Lead & Negotiator) has called upon the Governments of Ontario and Canada to support the implementation and provision of Paramedic Services and Community Paramedicine in NAN Communities.

SNEMS Chief Gates and the Performance Concepts team have met with Mr. Mercredi and the NAN technical team tasked with building a NAN Paramedic and Community Paramedicine program. The NAN

team is in the process of building a business case to secure a paramedic/community paramedicine service. The introduction to the NAN business case includes the following powerful statement:

> *"Fundamental to the equal application of lawful standards, guidelines, and services in First Nation communities it is unacceptable that NAN communities do not have timely access to Paramedic Services. All residents of Ontario are entitled to equal and equitable application of standards and Paramedic Services."*

Superior North EMS and Performance Concepts have been asked to participate in the refinement of the evolving NAN business case. Chief Gates and Performance Concepts President Todd MacDonald are personally and professionally committed to the NAN project- including the potential transfer of SNEMS assets to NAN where appropriate.

The SNEMS 2021-2030 Master Plan will allocate staff time/capacity as required to support NAN as this important initiative moves forward.

6.0 District SNEMS Recommendations

6.1 A Restructured Non-Urgent Transfers Model

6.1.1 Recommendation

SNEMS should secure/deploy ongoing Provincial funding to implement a scheduled/routed non-urgent patient transfer system across the north shore of the District. This model should employ an appropriately configured multi-patient transfer vehicle(s). A scheduled/dependable multi-patient transfer vehicle will ensure north shore patient procedures at Thunder Bay Regional Health Sciences Centre (TBRHSC) can be coordinated/scheduled based on the timing of the ride - as opposed to arranging ad-hoc rides based on an arbitrary appointment time.

The new north shore non-urgent patient transportation solution system should be coordinated/overseen by a north shore hospital. The new system should not include paramedic staffing/trip provision. Provincial funding received by SNEMS should be used to create a service delivery contract with the selected hospital - essentially a pass-through funding model. Annual results reporting should be a feature of the service delivery contract.

A mandatory outcome of the new non-urgent patient transportation system should be the elimination of dispatched Code 1-2 long-haul transfers to TBRHSC by SNEMS units at the Nipigon, Red Rock, Schreiber and Terrace Bay stations.

6.2 Rationalized Deployment of Vehicle Hours (North Shore Twinned Bases)

6.2.1 Recommendation

Once the north shore non-urgent patient transportation model is operational, the current simultaneous daytime deployment of four 12-hour SNEMS vehicles across the Nipigon, Red Rock, Schreiber and Terrace Bay stations should be rationalized.

The Nipigon/Redrock and Schreiber/Terrace Bay 12-hour vehicles should be "stacked" to provide round-the-clock emergency coverage. This stacked deployment will eliminate the need for after-hours on-call paramedics. It will also eliminate down-staffing service gaps created by mandatory "rest period" provisions in the collective agreement.

The result will be consistent on-the-road Nipigon-Redrock and Schreiber-Terrace Bay 24-hour coverage. Suitcase medic staffing stability on the north shore will be improved, and on-the-road paramedic availability will better reflect SNEMS rostered staffing commitment to north shore communities and the traveling public.

6.3 North Shore Twinned Base Consolidations

O Reg 588/17 will require municipalities across Ontario to develop a plan for timely/appropriate replacement of assets that have reached the end of their useful life. Thunder Bay/SNEMS need to comply with this asset management mandate. The current twinned configurations of the Nipigon/Redrock and Schreiber/Terrace Bay north shore stations is a product of commendable local volunteerism that built these stations decades ago - well before the Province assigned land ambulance delivery responsibility to municipalities. There is no viable business case/asset management strategy that supports the replacement of the existing four stations under O Reg 588/17.

6.3.1 Recommendation

Two new SNEMS ambulance stations should be constructed to replace the existing twinned north shore stations - Nipigon/Redrock and Schreiber/Terrace Bay. The two new stations should accommodate the current number of ambulances deployed from the existing four stations.

The replacement station for Nipigon/Redrock should be located close to the existing Nipigon station in order to provide timely support to the catchment area currently covered by the Beardmore station. This master plan makes no recommendation for the location of the station to replace the Schreiber/Terrace Bay stations.

Both new stations should be designed by SNEMS, owned and built by District local municipalities or First Nations. SNEMS should occupy the stations as a long-term lease tenant. The long-term lease should cover the construction and maintenance costs of the new bases over their projected life cycle. The Province will cover 50% of the capital costs for these replacement stations.

This reconfigured two-station model avoids approximately $4 million in station replacement capital costs associated with a status-quo replacement scenario under O Reg 588/17 for the four existing stations.

6.4 Beardmore Restructuring

The following overarching principle appears at the beginning of this master plan:

> *SNEMS must deploy its finite resources in a rational and responsible manner that safeguards the greatest possible number of current and future pre-hospital patients - regardless of where they reside in Thunder Bay or the District.*
>
> *SNEMS is obligated to consider "best efforts" mitigation of any potential adverse impacts on existing communities/populations in the course of its evidence-based deployment of resources.*

The Beardmore station analytics profile makes it clear that the current deployment of a 12-hour ambulance does not meet a value-for-money test, nor is it consistent with the above noted master plan principle. The Beardmore ambulance delivers 8,760 paramedic hours that generate a 3% level of system busyness (UHA).

6.4.1 Recommendation

The existing Beardmore ambulance station should be de-commissioned, and the 12-hour staffed ambulance should be redeployed. The Beardmore unit delivers 8,760 paramedic hours of service annually. 9-1-1 patient transport will be maintained by SNEMS ambulances deployed at Nipigon and Geraldton.

There are two viable redeployment options for the Beardmore 8,760 paramedic hours:

1. ***Redeploy the Beardmore medic/vehicle hours to City SNEMS in order to address ongoing service demand pressures documented in the SNEMS demand forecast.*** Consistent with this Master Plan's patient-centric approach, the Beardmore redeployment would provide much needed paramedic services to a significant number of future City patients.

2. ***Redeploy the Beardmore medic/vehicle hours across the District in a pattern designed by the SNEMS Chief.*** The objective would be to reduce down-staffing risk at selected SNEMS District bases - caused by the combination of overnight standby and "rest time" provisions in the collective agreement.

SNEMS/City Council should proceed with implementation of one of these viable re-deployment options as per the timing set out in the master plan's Implementation Roadmap.

6.4.2 Recommendation

SNEMS should deploy a single paramedic/Paramedic Response Unit (PRU) in Beardmore as leave-behind mitigation for the closure of the Beardmore station. This leave-behind paramedic resource should be staffed ten hours per day/five days per week. This equates to 2,600 annual paramedic hours. The scheduling of the leave-behind medic/PRU should include the days of the week where the existing community health centre is closed. The community health centre in Beardmore currently operates Monday-Thursday. The net result would be 7 days/week healthcare coverage for Beardmore and close by First Nations communities. The medic/PRU would deliver a mix of 9-1-1 emergency coverage and coordinated community paramedicine as part of the community health team.

This recommendation must be implemented in seamless coordination with the Beardmore station closure and the re-deployment of the existing 12-hour Beardmore vehicle.

On a net basis (implementing both of the above recommendations) the 6,160 paramedic hours leaving the Beardmore area represent 257 12-hour ambulance shifts - or 4.9 shifts per week.

6.5 First Nations Funding and Collaboration Opportunities

6.5.1 Recommendation

Consistent with the Armstrong 100% funding precedent already agreed to by the Province, Thunder Bay City Council and the SNEMS Chief should engage with the appropriate Ministers/senior staff to secure an enhanced funding model for the Nakina and Longlac stations that primarily serve First Nations communities.

6.5.2 Recommendation

City Council and SNEMS should endorse/support the Nishnawbe Aski Nation initiative to create a NAN paramedic/community paramedicine service. The SNEMS Chief should be directed by Council to advise/support NAN on the design and resourcing of the new paramedic/community paramedicine service. SNEMS should report back to City Council at an appropriate time on the potential transfer of SNEMS assets to NAN for purposes of service delivery continuity across communities currently serviced by SNEMS stations and ambulances.

6.6 District Stations 10-Year Replacement Plan

Station recommendations will fall into two categories. The first category is a schedule of required station replacements. The second category is a schedule of required major rehabilitation projects at existing stations. Station replacement capital costs can be funded in part by reduced operating spending on ad hoc suitcase medic accommodation.

6.6.1 Recommendation

Four stations are slated for replacement: Shuniah, Schreiber, Beardmore and Conmee. The sequence of replacement supports the District transformation recommendations included in this Master Plan.

STATION REPLACEMENT PLAN	2020	2021	2022	2023	2024	2025	2026-2030
New **Kakabeka** Station							
Nipigon/Red Rock site selection and Station design							
Schreiber/Terrace Bay site selection and Station design							
Nipigon/Red Rock construction							
Schreiber/Terrace Bay construction							
Decommission **Beardmore** Station							
Shuniah site selection and Station design							
Upsala site selection and Station design							
Shuniah construction							
Upsala construction							

*Estimated station replacement costs of $2 M per station…total $8 M across four years. Avoided "status quo" capital costs total $6 M across four years. Timing assumes District municipal agreement.

6.6.2 Recommendation

In addition to minor repairs and upgrades noted in the Facilities Condition Assessment, a series of more significant infrastructure upgrades are required at the following remaining stations:

STATION	ASSET UPGRADES
Armstrong	Garage floor rehabilitation
Marathon	Installation of an in-situ standby generator to provide emergency power
Manitouwadge	Installation of an in-situ standby generator to provide emergency power
Longlac	Installation of an in-situ standby generator to provide emergency power
Nakina	Installation of an in-situ standby generator to provide emergency power

* A miscellaneous capital project of $200,000 can address minor repairs and upgrades plus the five significant upgrades noted above.

7.0 City Recommendations

7.1 New Vehicle Hours

7.1.1 Recommendation

In order to mitigate the service demand pressures documented in the master plan's demand forecast, SNEMS should develop a Do Now/Do Soon five-year resourcing plan that features the addition of two 12-hour ambulance resources plus vehicles. These additional 12-hour units/vehicles are going to be necessary to manage system busyness levels (UHA) and control the problematic impacts of Zero Available Units on "Next Code 4 Call" response times.

City Council may choose to re-deploy the Beardmore Station 12-hour unit to City SNEMS in order to supply one of the two required units in the five-year resourcing plan.

7.2 Ramping Up Community Paramedicine

7.2.1 Recommendation

Without delay, SNEMS should prepare a multi-year community paramedicine business plan to ensure the scaled-up Provincial funding maximizes potential opportunities to "bend the curve" of the expected call volumes put forward in the 2021-2030 Master Plan's 10-year (base case) demand forecast.

7.3 Maximizing Alternate Pathways

7.3.1 Recommendation

Without delay, SNEMS should pursue community/agency partnerships to build Alternate Pathway capacity/service channels that will "bend the curve" of the expected call volumes put forward in the 2021-2030 Master Plan's 10-year (base case) demand forecast.

"Alternate pathways" refers to facilities and/or programs for patient care that do not generate a trip to hospital by an ambulance. By avoiding these unnecessary trips to hospital, patients can be connected more efficiently with appropriate care, and ambulances are freed up to provide timely emergency response for appropriate calls.

8.0 Annual SNEMS Report Card & Business Plan Performance Targets

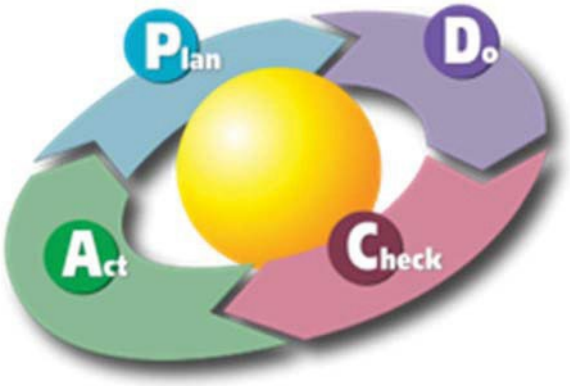
8.1.1 Recommendation

SNEMS should expand its currently mandated response time performance plan to include other key paramedic system performance metrics.

Expanded City SNEMS system performance targets/metrics should address system busyness, hospital offload delay, and a Code Zero profile. Measurement of community paramedicine/alternate pathways impacts is also appropriate.

Expanded District SNEMS system performance targets should address down-staffing service delivery interruptions and community paramedicine work volumes delivered by existing deployed paramedics.

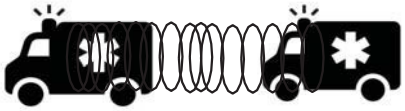
SNEMS performance targets/results reports should be integrated with the City's annual budget process. The result should be a Results Based Management Plan-Do-Check-Act continuous improvement business planning cycle.



8.1.2 Recommendation

A third party SNEMS performance review/progress evaluation should be undertaken in year 3 of the master plan to provide Council with an update on the impact of Do Now/Do Soon recommendations. This performance review/progress evaluation should be data driven and informed by the recommended performance metrics set out in this master plan.

9.0 Modernizing SNEMS Org Design & Labour Relations



The SNEMS Staffing "Slinky"

SNEMS priority in recent years has rightly been delivering adequate paramedic resources "on the road' to address call volume pressure, hospital offload delays and Code Zero risk. However, as the forward-facing section of the ***SNEMS staffing "slinky"*** has stretched forward, its support/logistics tail-end has lagged behind. A delayed investment in necessary supervision and support staff is now required to keep the ***SNEMS staffing "slinky"*** moving forward in sequence. Performance Concepts has designed a multi-year staffing plan and organization re-design to address this challenge.

The SNEMS organization re-design changes/options supporting the 2021-2030 Master Plan are contained in a confidential addendum. The SNEMS Chief has received this addendum and will be advancing appropriate staffing proposals and organization re-design as part of the annual budget process.

10.0 Implementation Roadmap

10.1 Relentless Focus on Execution

Initiating significant change to achieve improved organizational performance is always hard. It requires a relentless focus on the execution of a well-designed Implementation Roadmap.

The Performance Concepts team has created a carefully phased roadmap; balancing a quick/timely pace of change with a recognition that capacity limitations need to be realized/respected.

The Roadmap is phased across the following two time periods: **Do Now/Do Soon** (2021-25) and **Do Later** (2026-2030).

10.2 District Recommendations

Recommendation	DO NOW /DO SOON 2021-25	DO LATER 2026-30
A Restructured Non-Urgent Transfers Model		
• Secure funding and establish north shore hospital partner	2021	
• Prepare operational plan/route schedule + secure multi-patient vehicle	2021	
• Roll-out operational patient transfer system	2022	
Rationalized Deployment of Vehicle Hours (North Shore Twinned Bases)		
• Confirm twinned stations round the clock staffing plan	2021	
• Execute new round the clock staffing plan	2022	
North Shore Twinned Base Consolidations		
• Implement schedule contained in recommendation	2021-23	
Beardmore Restructuring		
• Confirm leave-behind solution	2021	
• Re-deploy Beardmore 12-hour unit and implement leave-behind solution	2022	
• Decommission station	2022	
First Nations Funding and Collaboration Opportunities		
• Advocate for Nakina/Longlac enhanced Provincial funding model	2021-22	
• Support NAN paramedic/community paramedicine initiative	2021-23	
District Stations 10-Year Replacement Plan		
• Implement schedule contained in recommendation	2021-24	
• Make provisions for additional station replacements as required		2026

10.3 City Recommendations

Recommendation	DO NOW /DO SOON 2021-25	DO LATER 2026-30
New Vehicle Hours		
• Prepare 5-year resourcing plan featuring two additional 12-hour units • Execute 5-year resourcing plan with timing of new units determined by SNEMS Chief	2021 2021-25	
Ramping Up Community Paramedicine		
• Prepare multi-year community paramedicine business plan • Execute community paramedicine business plan • Revise community paramedicine business plan based on initial results	2021 2021-25	 2026-30
Maximizing Alternative Pathways		
• Secure community/agency alternate pathway partnerships • Design and execute specific alternate pathway initiatives • Evaluate initiatives and continue to deliver/identify alternate pathway opportunities	2021-22 2022-25	 2026-30

10.4 SNEMS Annual Report Card & Business Plan Performance Targets

Recommendation	DO NOW /DO SOON 2021-25	DO LATER 2026-30
Select new Key Performance Indicators (KPIs) and Design Annual Report Card		
• KPI selection (City + District) • Set KPI performance targets (City + District) • KPI report card to Council	2021 2022 2023	
Third Party SNEMS Performance Review/Progress Evaluation		
• Execute third party review/evaluation	2023	

11.0 Conclusion

This evidence-based Master Plan puts-forward a series of transformational recommendations. The recommendations are supported and informed by analytics and data. Stakeholder consultation was not central to the development of evidence-based transformation. The urgent need for change to mitigate patient risk precluded meaningful and time consuming front-end stakeholder consultation. Consistent with patient centric master planning principles, data and evidence determined the "What" storyline of the 2021-2030 Master Plan.

However, moving forward stakeholder consultation on *implementing* the Roadmap's transformational change will be essential. The following consultation priorities will require engagement with SNEMS stakeholders on the equally important "How" implementation storyline of the Master Plan.

11.1 "How" Implementation Priority – Engaging Health System Stakeholders

Health system stakeholders will be essential partners in securing necessary funding and operational support in both the District and the City. SNEMS looks forward to engaging health system partners and colleagues in the coming months and years. A prime example is the start-up of a North Shore non-paramedic non-urgent patient transfer system. Funding for this important District transformation "domino" from the LHIN is firming up and progress appears imminent. "How" consultations will work out the operational details between SNEMS, North Shore health system actors and a potential patient transportation contractor.

11.2 "How" Implementation Priority – Engaging First Nations

SNEMS is committed to delivering appropriate paramedic services to First Nations communities and patients in the City and across the District. While First Nations have not been consulted at the "What" front end of the transformation process, their counsel and insights will be actively sought as SNEMS moves forward to implement positive change. In particular, SNEMS will work with First Nations as valued partners to explore culturally appropriate community paramedicine opportunities, and secure 100% senior government funding for District stations meeting the Armstrong precedent for primarily serving a First Nations patient population.

SNEMS will also commit to ongoing collaboration/dialogue with the Nishnawbe Aski Nation (NAN) on their journey to establish their own paramedic/community paramedicine service.

11.3 "How" Implementation Priority – Rebuilding SNEMS with District Partners

District municipalities will be valued partners in delivering/building new, revitalized SNEMS stations across the District. SNEMS looks forward to station replacement joint ventures on the North Shore and beyond.

SNEMS is also committed to dialogue when it comes to implementing/scheduling a leave-behind Paramedic Response Unit/community paramedicine resource after Beardmore closes. “How” questions can focus on expanding weekly coverage at the Beardmore community health centre.