
Subject: Ambulance Chassis Review

Report to: Public Health & Social Services Committee

Report date: Tuesday, November 5, 2019

Recommendations

1. That Regional Council **RECEIVE FOR INFORMATION** the following report pertaining to PHD 04-2018 Sole Source EMS Fleet Purchase revised.

Key Facts

- PHD 04-2018 authorized staff to proceed with the sole source purchase of the 2018 annual ambulance replacement built upon the existing chassis used by Niagara EMS for the previous six years
- A staff recommendation was also endorsed to complete a review of the current ambulance chassis and to assess alternative certified platforms. This review would inform staff and Council on a recommended strategy for a preferred ambulance chassis for the next several years
- In November 2018, ApexPro Consulting was awarded the contract for the chassis review. The review included comparison of Niagara EMS with 18 EMS peers.
- The review concluded that the Sprinter (Diesel) platform used by Niagara EMS has the lowest lifecycle cost of available certified ambulance platforms: 28% lower than the Ford E350, 41% lower than the GM3500, and 106% lower than the Ford E450.
- The complete ApexPro report is available as an attachment to this report.
- Niagara EMS staff are working with Procurement staff to purchase the 2019 annual ambulance replacement through a competitive bid process, but informed by the ApexPro review.

Financial Considerations

Since the introduction of the Sprinter chassis in 2012, Niagara EMS has realized considerable savings as detailed in Table 1. In 2012 and through each subsequent year to 2016, previous Ford E350 diesel chassis ambulances were replaced with the Sprinter diesel chassis ambulances through attrition.

Averaging a replacement cycle of eight ambulances per year, the entire fleet was transitioned to the Sprinter chassis by the end of 2016.

Table 1 shows that even with a 40% *increase* in the amount of kilometers traveled by the growing fleet year over year, total fuel consumption has nonetheless steadily *decreased*. Despite fluctuating fuel prices, the cost per kilometer has also declined.

In addition, the non-fuel fleet cost have not increased at the same rate as the growth of the fleet size due to lower maintenance and non-fuel operating costs realized by the Sprinter platform.

Year	Vehicles	Type	Km Travelled	Litres	L/100km	Total Cost/km	Fleet Cost/km (excluding fuel)
2011	36 ambulances	36 Ford	1,792,407	423,799	21.0	\$0.49	\$0.23
2012	37 ambulances	9 Sprinters 28 Ford	2,017,603	428,387	21.2	\$0.46	\$0.21
2013	37 ambulances	17 Sprinters 20 Ford	2,276,152	435,053	19.1	\$0.44	\$0.20
2014	40 ambulances	25 Sprinters 15 Ford	2,339,606	417,814	17.9	\$0.45	\$0.20
2015	41 ambulances	37 Sprinters 4 Ford	2,377,149	417,164	17.5	\$0.44	\$0.25
2016	41 ambulances*	41 Sprinters	2,503,792	418,985	16.7	\$0.37	\$0.21

Table 1 – total km travelled in relation to fuel consumed and associated fleet costs
 *additional two Ford E450 specialty transport unit ambulances

Analysis

To assess if the diesel chassis should remain the preferred and recommended option, cost comparison for gas chassis was completed. Table 2 illustrates the cost for each manufacturer chassis only. The addition of an air ride suspension improves patient safety, reduces patient pain and discomfort, improves safety of care provided by paramedics, includes an anti-roll safety system, and also provides the ability for the ambulance to lower the rear portion of the ambulance to assist with the height of people and equipment entering and exiting the ambulance.

Manufacturer	Base Cost	Air Ride Suspension	Total Cost
Sprinter Chassis V6 diesel	\$44,137	Included	\$44,137
Ford E350 V10 gas	\$29,868	\$9-12,000 for either fluid or air suspension	\$39,868
GM 3500 V8 gas	\$39,539	\$9-12,000 for either fluid or air suspension	\$49,539

Table 2 – cost comparison of chassis with air ride suspension

Industry best practise across North America is that ambulances should be decommissioned after a 54-month of life due to patient safety concerns, risk of breakdowns, and increasing maintenance and operating cost. The Region has incorporated a best practice of selling ambulances that are decommissioned after this lifespan through Government Surplus Auctions (govdeals.com). This best practice is supported by the Apexpro review. In 2017, this was the first year in which several of the first generation Sprinter ambulances were made available for auction. The typical yield for the previous Ford diesel ambulances was \$5-\$10,000. The yield for the Sprinter diesel ambulances was \$18-\$22,000 making the Sprinter a more favourable asset at end of usable life.

Over the past five years, Niagara EMS has developed an ambulance platform on the Sprinter MX152A Type 3 chassis that in comparison to previous Ford E350 chassis has provided the Service with increased safety for both the providers and patients, improved environmental impact through decreased emissions utilizing Diesel Exhaust Fluid (DEF), decreased fuel consumption, decreased cost through the lower fuel consumption, decreased maintenance costs, and increased resale value.

The first generation of Sprinter ambulances (2012) were supplied by Crestline Ambulance through an approved tender process. The next six generations of Sprinter ambulances (2013-2018) were supplied by Demers Ambulance, also through an approved tender process. Currently, only one of the two ambulance manufacturers who are certified by the province of Ontario to build ambulances make this chassis available for purchase and delivery. This is Demers Ambulance as confirmed in Appendix 2. The original certification of the Sprinter ambulance manufactured by Crestline has since expired and they do not offer an Ontario certified ambulance on a diesel platform. Crestline has also been acquired by Demers Ambulance.

Each year the service replaces approximately 20% of its fleet based on the attrition rate of ambulances at end of life. In the absence of a purchasing agreement since 2017 and an updated review of available chassis on the market that continued during the first part of this year, the ambulances typically ordered in 2019 have been delayed, meaning, the service is behind in our annual replacement cycle and using aged vehicles that exceed the industry best practice benchmark. The risk associated with an aging fleet is related to patient safety, increased maintenance and operating cost, and reduced reliability.

The lifespan of an ambulance is assessed primarily through continuous monitoring of an increased frequency of unscheduled maintenance.

As the ambulance reaches these thresholds, risk increases with associated increased chance of breakdown and therefore increased patient risk and financial risk. Given the urgent and life-saving nature of the services provided by Niagara EMS, reliability of ambulance performance is imperative for its potential to impact on patient outcomes.

Today, Niagara EMS chassis of choice is diesel due to dependability and fuel efficiency. Further benefits of the current diesel platform include:

- Diesel engines withstand the hard driving conditions endured by ambulances
- Based on industry experience, over a five-year period it is anticipated that there would be more mechanical repairs with a gas chassis
- Almost zero emissions with DEF
- OEM parts comparison (high volume) shows the Mercedes chassis parts to be slightly less expensive than a Ford chassis and less expensive than a GM chassis.

Additional benefits specific to the Sprinter chassis include:

- Tighter steering radius
- Much quieter engine
- No black smoke
- Air ride suspension
- Anti-roll stability control feature
- Added cab space
- Fuel economy
- Longer service intervals

Alternatives Reviewed

Recognizing that the automotive industry is continuously evolving, Niagara EMS is continuously searching for ways to improve overall service delivery including the choice of ambulances. This was the basis of the updated review of platforms recently completed. The review recommended continuing with Demers Ambulances' Sprinter platform.

It is important to commit to a specific platform for a period of time to ensure standardization with the fleet for optimal efficiencies in maintenance, logistics, and both provider and patient safety in creating a consistent working environment for paramedics. Should an alternative platform be determined to be desirable in the future, extensive planning for the transition would be necessary, and a multi-year timeline would be needed to execute the transition.

Relationship to Council Strategic Priorities

The operation of a standardized fleet of ambulances that provide the best economic return on investment throughout the life cycle supports the Council Strategic Priority of Sustainable and Engaging Government through continuous improvement of ambulance design that promotes innovation and optimal cost-efficiencies. This program also adds value to the area of Responsible Growth and Infrastructure Planning as we expect to travel additional distances as the service changes and grows in the years ahead requiring our fleet be evaluated against environmental protection through areas such as reducing our carbon footprint.

Other Pertinent Reports

PHD 04-2018 Sole Source EMS Fleet Purchase revised

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