



Report To: DSB Finance Committee

From: Michael Maclsaac, Chief of EMS
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Re: EMS Vehicle Capital Reserve – Issue Report

RECOMMENDATION

Manitoulin Sudbury District Service Board, EMS Department is seeking approval for two actions related to the capital purchase of ambulances and associated stretchers for the service. Firstly, the EMS Department is seeking approval to migrate from the purchase of Type 3 (E series modular ambulance) with diesel engines to the purchase of Type 3 gasoline powered ambulances. Secondly, the EMS Department is seeking approval to migrate from the manual Ferno stretcher system to a self-loading power stretcher system as part of the purchase of each new ambulance.

Executive Summary

Manitoulin Sudbury District Service Board purchases ambulances each year from one of two vendors; Crestline Coach Limited, or Demers Ambulance. In 2011, the service switched from the Ford E 350 chassis to General Motors Express 3500 chassis as Ford stopped production of their diesel engines. Both vendors have advised DSB that neither Ford nor General Motors will manufacturer Diesel engines for the aforementioned Chassis' after the 2016 year. For that reason, unless the DSB determines a need to change ambulance chassis to the Mercedes Sprinter design, there will be a necessity to purchase gasoline-powered vehicles. With the above rationale considered, and given the additional rationale surrounding capital outlay and maintenance costs, the recommendation is to migrate to gasoline-powered ambulances beginning in the 2016 year.

The evolution of lifting adjuncts for paramedics has recently accelerated through the design and rollout of power assist cots with a self-loading mechanism. These products decrease the risk of acute and cumulative injury to paramedics as a direct result of the activity of lifting. Migration to such a self-loading stretcher system is something that the service asserts will reduce the incidence of occupational paramedic injury. The estimated twelve to fourteen-year life cycle of these new systems will allow for recycling of the system to a second ambulance, thus reducing the cyclical capital cost to be spread over the purchase for two ambulances (50% costing per vehicle).

History

The utilization of diesel ambulances in the province of Ontario was something instituted in the early 1990s by the Ministry of Health and Long Term Care (MOHLTC), as the agency responsible for ambulance service delivery, when the MOHLTC migrated from Dodge to Ford chassis'. The rationale for the move to diesel ambulances was related to vehicle life cycles, fuel costing and significant vehicle idling. Immediately following service downloading to Upper Tier Municipalities (UTM) and Direct Delivery Agencies (DDA), services started to review the importance of continuing the utilization of diesel ambulances, running a comparative analysis to gasoline-powered ambulances. Several UTMs/DDA have migrated from diesel powered ambulances to gasoline powered ambulances since service download. Rationale for such a change includes the reduced capital outlay, the reduced maintenance costs, mitigated impact of new legislation surrounding diesel emissions, and improved comfort for employees and patients. In Northern Ontario, a sampling of eight other services revealed that seven had migrated to gasoline-powered ambulances.

The concept of self-loading stretcher systems has no longstanding historical relevance. The product is new, and ties a power cot system to a vehicle mounted loading system to reduce the physical requirements for paramedics. The load limitations of the system also mitigate the necessity for bariatric systems as the self-loading systems have load capacity that the manual cots do not have. In Northern Ontario, a sampling of eight other services revealed that seven had migrated to power cot systems, and five had included the self-loading aspect of the solution.

Objectives

The purpose of this report is to allow for migration of the ambulance design from the current diesel powered ambulance to gasoline-powered ambulances, and to allow for migration of ambulance stretcher systems from the manual Ferno Proflex cots, to a power cot with self-loading capacity. The entire concept will be migratory, and will commence in 2016, with project completion by year-end 2022.

Current Issues

The use of diesel-powered ambulances, as discussed earlier, is a legacy issue that dates to a period where the MOHLTC purchased ambulances. The need for diesel ambulances has been determined to be less efficient, given the capital outlay, and operational costs associated to preventative maintenance and repairs.

The use of manual cot systems increases incidences of cumulative injury events with health care workers, including paramedics. Most health care organizations have introduced a near zero lift protocol for their workers, and Paramedic Services are now evolving to introduce similar products intended to mitigate injury events related to the controlled aspects of lifting. An assessment of WSIB claims related to the EMS Department, since early 2008 has revealed 91 claims. A total of 39 (42.8%) WSIB claims directly relate to either lifting of the stretcher, or an injury directly related to the manual stretcher use. These two factors are the leading cause of WSIB claims for DSB EMS Department. While the impact of these injuries has had limited impact on New Experimental Experience Rating (NEER) costs, there have been significant workplace accommodations that have a causal relationship to the use of manual stretcher systems.

Year	WSIB Lost Time (hours)	Modified Work (hours)	Modified Backfill Costs (\$)
2009	156	120	\$3,801
2010	285	64	\$2,073
2011	36	0	\$0.00
2012	804	0	\$0.00
2013	840	364	\$12,562
2014	182	2,354	\$83,049

The Regional Municipality of York has reported a 63% reduction in injuries directly related to the use of manual stretcher systems since their wholesale migration to the self-loading stretcher solution. The City of Greater Sudbury completed a fleet wide migration to the Stryker self-loading solution in early 2015. Since implementation of the system, the service has reported no occupational injuries related to the use of stretchers. Similar reports suggest a significant reduction in occupational injuries resulting from lifting and loading of patients with a manual stretcher system. Given the potential injury reduction, a migration to the self-loading option is a positive opportunity.

Most recently, the Joint Health and Safety Committee has put forth a recommendation that the employer consider the self-loading stretcher system as a measure to mitigate occupational injuries directly related to the use of manual stretcher systems, and to address the potential of commutative strain injuries that compound by use of manual stretcher by paramedic staff.

Comparator Services

A review of our Northern counterparts has revealed the following in terms of a transition to both gas vehicles and power stretcher/self-loading systems.

DSSAB/CMSM	Diesel or Gas	Self-loading Stretcher Systems
Algoma	Migrating to Gas	No power cots
Nipissing	Gas	Yes, trialing power cots in 2016
City of Greater Sudbury	Gas	Yes, Self-Loading Stryker System
Sault Sainte Marie City	Diesel	Yes, Self-Loading Stryker System
Timiskaming	Gas	Yes, Self-Loading Stryker System
Thunder Bay City	Gas	Yes, Self-Loading Stryker System
Kenora	Migrating to Gas	Yes, Self-Loading Stryker System
Rainy River	Migrating to Gas	Yes, Self-Loading Stryker System
Cochrane	Migrating to Gas	Yes, power cots only. No self-loading system.
Parry Sound	Migrating to Gas	Yes, power cots only. No self-loading system

Funding Parameters

The capital purchase of ambulances is based upon the current life cycle at 7 years. The service utilizes the capital reserve for vehicle purchases and the process requires an annual contribution (in 2015) of \$402,939 to the reserve. The capital differential between diesel and gasoline powered ambulances is \$132,842 for diesel powered ambulances, and \$116,470 for a gasoline powered ambulance (\$16,372). For the purchase of three ambulances, the total capital savings would equal \$49,116.

The preventative maintenance costs associated with the migration to gasoline is estimated to be significantly lower than with diesel ambulances. An assessment from one DSB vendor suggests each preventative maintenance Service would be approximately \$190 less for a gasoline ambulance. With an average number of preventative maintenance services each year equaling five, the service would realize a reduction of nearly \$1,000 of annual preventative maintenance costs. This would translate to \$7,000 for a seven-year life cycle. Upon completion of the migration process, the total annual savings related to preventative maintenance programs would be \$21,000.

The vendor clarified that a migration to gasoline-powered ambulances would also result in a decrease in repair costs of similar amounts each year. As such, the DSB could apply an additional \$1,000 of savings in repairs to see a total savings of \$42,000 annually once the migration to gas is complete in 2022.

Costs associated with migration to a self-loading stretcher system would be an expense not currently expressed in the capital reserve. Recapitalization costs for the current stretcher system is set at \$4,579 annually. Additionally, the migration to a gasoline ambulance would result in an annual savings of approximately \$49,116 when compared to diesel purchases, and an estimated reduction of \$6,000 in the purchase year for a reduced maintenance cost. The cost to introduce a self-loading stretcher system would see a capital shortfall of \$75,306 in the first year and lessor annual loses in subsequent years until the eighth year. In year eight, there is a \$102,997 surplus (with subsequent annual surpluses) as no new self-loading stretcher systems will be required until 2030.

As noted above the life cycle of the self-loading stretcher system is expected to allow for repurposing of the devices into the second 7-year round of vehicle purchases, meaning that in years seven through twelve, there would be increased savings. Additionally, an expected reduction in occupational injuries related to the use of manual stretcher systems would result in a decrease in workplace accommodations that have historically approached \$70,000. As such, the potential for migration to a self-loading stretcher solution could be revenue neutral.

The details of the overall costs related to the migration to gasoline-powered engines in conjunction with the additional costs of migrating to a self-loading stretcher system are listed the table below. Understand the 7-year transition ends in the year 2022 with the amounts

noted in 2023 reflecting the savings once the self-loading stretcher system has been implemented. Please note that the details in this table are purely related to costs and do not reflect the current state of the EMS Vehicle reserve (which is dealt with later within this document).

7-Year Cycle Diesel	2016	2017	2018	2019	2020	2021	2022	2023
Diesel Vehicles	398,524	406,494	414,624	422,917	431,375	440,002	448,802	457,779
Residual Value (trade in) 5K/ unit	-15,000	-15,000	-15,000	-15,000	-15,000	-15,000	-15,000	-15,000
Annual Cost Diesel	383,524	391,494	399,624	407,917	416,375	425,002	433,802	442,779
7-Year Cycle Gas	2016	2017	2018	2019	2020	2021	2022	2023
Gas Vehicles	349,409	356,397	363,525	370,796	378,211	385,776	393,491	401,361
Residual Value (trade in) 5K/ unit	-15,000	-15,000	-15,000	-15,000	-15,000	-15,000	-15,000	-15,000
Annual Capital	334,409	341,397	348,525	355,796	363,211	370,776	378,491	386,361
Maintenance & Stretcher Savings	(10,579)	(16,579)	(22,579)	(28,579)	(34,579)	(40,579)	(46,579)	(46,579)
Annual Cost Gas	323,830	324,818	325,946	327,217	328,632	330,197	331,912	339,782
Annual Reduction with Gas	59,694	66,676	73,678	80,700	87,742	94,806	101,890	102,997
Additional Cost of self-loading stretcher	135,000	137,700	140,454	143,263	146,128	149,051	152,032	0
Additional Annual Expense	(75,306)	(71,024)	(66,776)	(62,563)	(58,386)	(54,245)	(50,142)	102,997

EMS Vehicle Reserves

In order to accomplish the migration from Diesel to Gas Ambulances and incorporate the self-loading stretcher, the proposed 2016 EMS Vehicle Reserve needs to be reviewed. The EMS Vehicle Revolving Reserve is based on a seven-year replacement cycle for all EMS vehicles. There will be no change to the seven-year cycle as staff have been assured by the vehicle manufactures that the gas engine can last seven years. The manufactures were also asked to provide evidence that EMS gas Ambulances met or exceeded the seven-year life cycle and based on the information provided, staff are satisfied that no change is required to the seven-year life cycle.

In the 2015 budget, the DSB contribution to this reserve was \$402,939. Based on the reserve plan within 2015 budget the contribution to the EMS Vehicle Reserve for 2016 was to increase by \$10,000 to \$412.939 or 2.5%. In order to purchase three new Ambulances with a full self-loading stretcher system the contribution will need to be \$33,000. This results in an additional expense of \$23,000 or 5.7% to the capital reserve. Starting with the 2017 budget year and moving forward the increase the reserve is set at 3% per year.

Based on the increased costs for EMS modified work and modified backfill in 2014 and 2015, it could be argued that the introduction of the self-loading stretchers will minimize future stretcher lifting injuries and reduce or at least curtail any future increases in modified work and/or modified backfill. To capitalize on decreases in modified work costs during the 7-year migration, the placement of the self-loading units will be based upon highest possible benefit. In addition, further cost savings on WSIB would be realized once the changeover to self-loading stretchers is complete. The following table reflects the necessary planned contributions to the vehicle reserve over the course of the 7-year migration period with the 8th year once again reflecting the position once full migration has taken effect.

EMS Vehicle Reserve								
Cost Per Ambulance Unit plus 2% increase	159,978	163,177	166,441	169,770	173,165	176,629	180,161	132,073
Year	2016	2017	2018	2019	2020	2021	2022	2023
Ambulance Purchases (3 per year)	479,934	489,532	499,323	509,310	519,496	529,886	540,483	396,220
ERV Purchases	48,952	49,931	0	51,948	52,987	0	0	56,230
Revenues for Vehicles (trade-in)	-15,000	-15,000	-15,000	-15,000	-15,000	-15,000	-15,000	-15,000
Total Expenditure Per Year	513,886	524,463	484,323	546,258	557,483	514,886	525,483	437,451
Reserve Balance Beginning of Year	336,747	258,800	183,354	161,519	91,624	24,794	15,281	10,332
Transfer to Reserve Current Year	435,939	449,017	462,488	476,362	490,653	505,373	520,534	536,150
Reserve Balance End of Year	258,800	183,354	161,519	91,624	24,794	15,281	10,332	109,031

Conclusion

The migration to gasoline-powered ambulances, on a seven-year cycle is estimated to allow for an overall cost savings through reduced chassis price, reduced preventative maintenance and reduced repair costs.

The migration to a self-loading stretcher system while incurring additional expenses up front is expected to reduce incidents of both acute and cumulative Paramedic injuries. Such injury reductions will have both direct and indirect benefits to the DSB. The benefits will be financial in nature due to reduced lost time, reduced NEER payments (or increased potential rebates), while reducing accommodation costs for occupationally injured employees. The injury reductions will also result in improved employee wellness and engagement. The opportunity for concurrent migration to both gasoline powered ambulances and self loading stretcher systems allows for a much reduced capital outlay up front while allowing for greater savings in the future. It is for these reasons that the recommendation is to transition to gasoline powered ambulances in conjunction with the migration to a self-loading stretcher system.