

Spring Lake Park Fire Department Memorandum

To: Clark Arneson, Blaine City Manager
Blaine City Council
Jim Ericson, Mounds View City Administrator
Mounds View City Council
Barb Nelson, Spring Lake Park City Administrator
Spring Lake Park City Council

From: Nyle Zikmund, Fire Chief
Garrett Parten, Operations Chief
Lt. Dan Anderson, Truck Committee Chair

Re: Fire Apparatus Purchase

Date: October 5, 2011

Background:

As part of the department's 5/10 year Capital Budget plan, Engines 8, 4, and 11 were scheduled to be replaced in 2011, 2012 and 2013. Councils delayed the 2011 purchase and accelerated the 2013 purchase in order to acquire all three engines through a more efficient equipment bond sale.

All three engines were purchased in 1991 from proceeds obtained via a voter approved bond referendum. All three were manufactured by Toyne Fire Apparatus located in Breda, Iowa. Engines 11 and 8 carried 750 gallons of water while Engine 4, which was housed at the east station (4), carried 1,000 gallons. All three have 1250 gallon per minute pumps and, other than the tank capacities, are identical. Engine 11 is currently the front line engine at the City Hall Garage. Engine 4 was taken out of service due to rust, a leaking water tank, and reliability issues related to the electronic ignition and transmission. Engine 8 also has reliability issue and has become the reserve at Station 2. Engine 5, formerly the reserve engine at Station 2, has been moved to Station 3 as the front line engine. Both Stations 1 and 2 have newer engines purchased in conjunction with the bond sale for construction of Station Three.

Engines 8, 4, and 11 have served the department well but have come to the end of their useful service. Only one of the five vendors involved in the bid process have expressed interest in taking them in on "trade." Based on a search of used fire apparatus web sites and the department's own experience, the value of Engines 4, 8, and 11 is under \$10,000 each and realistically, half of that.

Once the decision was made to move forward with the simultaneous purchase of three replacement engines, Blaine Finance Director Joe Huss coordinated the effort amongst the three cities with Blaine agreeing to issues equipment bonds. The Blaine Council approved the bond sale at the September 15th Council meeting. The bond sale, which also includes funds to replace the existing air/light truck and a chief's vehicle, is scheduled for October 20, 2011. The settlement of the bond will occur shortly after.

Budget:

Based on research of equipment manufacturers and a determination of department needs, a budget of \$400,000 per apparatus was established which includes the base truck, change orders, and loose equipment. The committee established a change order budget of 2% (approximately \$7000) and a loose equipment budget of \$35,000 which includes new rescue tools and power unit (Jaws of Life) at a cost of \$26,900. The remaining \$358,000 would be for the purchase of the chassis, power train, drive train, pump, utility box, lighting, and generator.

Houston Galveston Area Consortium (HGAC):

During their research, the committee discovered a public purchasing consortium based in the Houston, Texas area that has pre-bid fire trucks. Vendors that are successfully added to the HGAC bid list have sufficiently met all Minnesota statutory bidding requirements. The Blaine Council and the department have taken the necessary steps enabling them to purchase from the HGAC.

Truck Committee Parameters:

An engine committee was formed and chaired by Lt. Dan Anderson, one of the department's full time staff. Other members included Operations Chief Garrett Parten, Battalion Chief Doug Nelson, Station Four Captain Izzy Diaz, Station Three Senior Captain Brian Zuchowski, firefighter Gerry Rud from City Hall, and the department's mechanic, Fire Motor Operator Mike Vacco.

The committee was given the following parameters : The committee would recommend for purchase a fire engine (chassis, power train, drive train, pump, water tank, utility box, generator, lighting), loose equipment, change orders, training, and delivery fees with a total cost not to exceed \$400,000 per vehicle. This effectively limits the cost of the engine to a range of \$350,000 to \$370,000. Additionally, the maximum tank size was set at 500 gallons with a minimum pump capacity of 1250 gpm. As compared to the two newer engines at Stations 1 and 2, the 3 replacement engines were required to be shorter in overall height, have a shorter wheel base, be shorter overall length, and have a lower hose bed height. These new comparative requirements were set to improve firefighter safety, reduce long range operation and repair costs, and to ensure that all three engines could be housed at Station 4 which has a height restriction of 126 inches. The committee was to seriously consider commercial chassis in the effort to achieve all of established parameters.

Vendors:

The truck committee invited proposals from the following vendors based on the department's past apparatus ownership, state bidding laws, and the department's research

- Toyne – Breda, Iowa
- Rosenbauer/General – Wyoming, Minnesota
- Custom Fire Apparatus – Osceola, Wisconsin
- Pierce Manufacturing – Oshkosh, Wisconsin
- E-1 – Ocala, Florida

This list of vendors was provided the parameters and asked to provide shop drawings, prices, customer references, and if available, demonstration units for the committee.

Toyne has been less than responsive and thus, dropped from the analysis. Pierce was initially priced too high but to be considered but lowered their price considerably once the third truck was added to the purchase.

Truck Specifications:

The committee provided the following specifications to the vendors; water tank size of 500 gallons, 1250 gpm pump, hose carrying capacity of 600' of hydrant line, 200' of pre-connected 2.5" hose, 400' of loose 2.5" hose, and three (3) 200' dedicated 1 ¾" pre-connected hose lines; maximum overall length of 31' 6", overall height not to exceed 10'6", hose bed height to be as low as possible, minimum engine horsepower of 350HP, crew cab seating of 5, and a wheelbase shorter than that of Engines 1 and 2.

This combination of parameters provides sufficient guidance allowing each manufacture to prepare specifications based on their strengths while assuring the department specific goals are met. The specific reasons/rational for each item is:

Tank Size – Based on experience, the department is returning to 500 gallons of onboard water. The department operated with 500 gallon tanks from 1944 until 1991, nearly 50 years. All officers were confident that the hydranted area of the fire district, the department's level of response, and the degree of training warranted a return to a smaller tank. This enables numerous reductions in the truck from the overall size to component parts such as brakes, transmissions, and engines.

Pump and Hose – Remain the same, we still need the same flow from the pump and reach with the hose.

Maximum vehicle length – The department's last two trucks are 35' long making them difficult to maneuver, dangerous to be around, and more costly. A reduction of the water tank and focus on carrying essential gear results in an overall 11% reduction in truck size without a reduction in efficiency or effectiveness.

Overall Vehicle Height – Station Four has height limitations. Over time, the three new engines trucks may rotate from station to station. The newer engines at Stations 1 and 2 are both 129" tall and would not fit in Station 4 without modification to the building.

Hose Bed Height – Of vital importance is the height of the hose bed which needs to be as low as possible for firefighter safety and deployment efficiency. The department suffered its most severe lost-time injury last year due to a hose coupling striking a firefighter on his calf as it came out of the hose bed. He was on medical leave for over 5 months.

Engine Horsepower – Experience has taught that insufficient horsepower eventually results in overheating and catastrophic engine failure. The department seeks to ensure adequate engine power to guarantee adequate performance during pumping operations and a reduction of wear and tear over time.

Cab Size – The size of the Cabs remains the same, however, most of the department's cabs seat six while the specification was for five.

Wheelbase – A shorter wheelbase increases the maneuverability of the Engine. Given the high number of manufactured home parks, cul-de-sacs, and certain town home developments with narrower streets, it is critical to emergency response and fire suppression efforts to maneuver the engines efficiently.

Commercial Chassis:

Custom Fire Apparatus and E-1 provided shop drawings and/or demonstration commercial chassis units to the committee. Provided with this memo is a chart/graph depicting the dimensions which detail trucks with commercial chassis. This data clearly demonstrates that the commercial chassis cannot meet the department's parameters. Furthermore, the hose bed height is unacceptable at 85 or more inches from the ground.

The department's mechanic expressed significant concerns specific to maintenance and repair issues related to engine access and electrical systems being substandard and inadequate. He also noted commercial chassis are not designed to last twenty or more years and as such, do not include wiring chases and reinforcements needed in future years to accommodate new technologies.

Driver and passenger access into a commercial cab is higher and smaller than a custom chassis. The height and limited door frame size reduces firefighter safety. Room in the cab is limited resulting in constricted movement and reduced storage. In addition, the commercial chassis interior is not designed for industrial use and is highly susceptible to premature damage and wear.

Finally, the price of the commercial chassis is essentially the same as a custom. The reduction in the chassis cost is lost when sufficient length is added to the truck to accommodate the department's equipment. Eagan Fire Department recently took delivery of a Pierce built on a Peterbilt chassis at the price at \$381,641.

After giving serious consideration to commercial chassis, the committee opted not to pursue one in its recommendation.

The Options:

The E-1 was the second lowest price at \$355,000 including prepay discounts for the chassis. Their price includes a light tower valued at \$3,000. However, the truck is longer, the wheelbase is longer and the hose bed height is unacceptable at 85 inches.

Rosenbauer's price is \$362,000 and includes the prepay discount on the chassis and inclusion of the light tower. While the Rosenbauer has the lowest height and a slightly shorter wheelbase, the hose bed height is less desirable and the cabinet storage space is considerably less than the Pierce due to the size of the pump.

Custom's price for a custom chassis engine is \$363,000 including prepay discounts on the chassis and inclusion of the light tower. It is the most expensive of the custom chassis options, and an overall length of 371" and a hose bed height of 76". Custom did bid a commercial chassis at \$313,000 which is appealing at first glance. However, the cabinet space was insufficient and the hose bed was at an unacceptable height of 86". The changes necessary for the Custom commercial chassis bid to meet all of the parameters would drive the price up considerably.

Recommendation:

The committee is recommending for purchase the apparatus from Pierce Manufacturing. The truck specifications are:

Height – 10' - 5" or 125 inches (second lowest of all vendors)

Length – 30' - 8" or 368 inches (shortest of all vendors)

Hose Bed – 67 inches (lowest of all vendors)

Wheel base – 14' 8 or 176 inches (third shortest of all vendors)

Water Tank – 500 Gallons (same as all vendors)

Pump – 1500GPM (Pierce Brand Pumper Under Cab or PUC) all others 1250GPM

Engine – Cummins ISL; 450HP, 1250 foot pounds torque, others 450 except Custom at 400HP

Price - \$352,500 each with prepay discount of (full payment due with order)

The Pierce Pump Under Cab (PUC) features the most accessible and maintenance friendly apparatus on which the department's mechanic has worked. This will result in measurable time savings during the biannual preventative maintenance. While a 1250GPM pump is sufficient, larger pump capacity does not increase the overall size and is included for the simple reason as the company only builds this pump for this truck.

The department's experience with the one Pierce we owned (Engine 2 at Station 2) was excellent and they are considered an industry leader in quality and innovation which matches the department's experience.

Acceptance of this recommendation would place delivery of the new Engines sometime in late June or early July 2012.