Apparatus Replacement Schedule Proposal
January 2017

The Apparatus and Equipment Committee has committed many hours to develop a comprehensive plan for apparatus replacement. This plan provides for current and future departmental needs by accounting for the following items: budgeting, repair, maintenance, and vehicle history. This plan was originally presented in 2015. At that time, no action was taken. Since then, some of the plan has been revisited and modified.

Best Practices

This first proposal of this document was drafted after several fire agencies were contacted to inquire about their plan for the replacement of their fleet. Essentially, most agencies adopt a plan based on either miles/hours or **years of service.** Additionally, industry journals have written extensively on this topic.

Although more difficult to initiate, experience **(cost of ownership)** is proving to be the best model for justifying purchases of apparatus and staff vehicles.

Cost of Ownership Model

The cost of ownership model includes vehicle purchase, upgrading, annual service, tires, testing, increased component failure due to lack of use or excessive use, etc. Additionally, there is the cost of travel and time to repair facilities. This model is a reliable and efficientway of planning for replacement.

The alternative to the cost of ownership model is the **years of service** model. Many agencies consider this model adequate for predicting when their fleet is expected to wear out or become obsolete. NFPA 1901 outlines a years of service model however, it does allow the authority having jurisdiction (AHJ) to consider the cost of ownership. It does state that risk outweighs the benefit of using apparatus as front line after the 15-year mark.

The fire district relies on years of service as our guide for vehicle replacement. This model is sufficient for the most part. We are trying to track the cost of ownership more accurately than we have in the past. It takes time to obtain sufficient data for this model.

Years of Service Model

Managing the hours and miles of the fleet is important when using the years of service model so that an apparatus does not wear prematurely or an apparatus does not become obsolete before it wears out. Some of our current fleet have many years of service and little use and some of them are relatively modern but have many miles and hours.

Considering that emissions and safety technology are developing rapidly, new systems are available in modern equipment that were not available when we purchased previous vehicles. The newest generation of vehicles includes systems such as clean burning emissions, hybrid operations, SRS, stability controls, improved braking and handling, etc. Systems such as these add value by reducing the impact on the environment plus improving passenger and public safety. Unfortunately, they also add complexity and expense to the vehicle. NFPA 1912, outlines the requirements for upgrading an apparatus. This standard applies to front line and reserve apparatus.

Vehicle Replacement Recommendations

Fire District vehicles fall into these logical categories:

Custom Cab:pumpers
Commercial Cab, support: air rig, rehab,
Commercial Cab, light: squad, brush,
Light Passenger response: Battalion Chief, TRT, rescue
Light Passenger, administrative: Honda, Expeditions, Interceptors
Trailers: LPG Fire Training Prop, flatbed

Based on district use and following the industry standard for **years of service,** the committee recommended vehicles be replaced as follows:

This was the chart and replacement schedule recommended in the 2015 draft.

Custom Cab Pumpers	**20 years: 15 years front line, 5 years reserve**
Commercial Cab Support	**25 years**
Commercial Cab Light	**20 years: 10-year front line, 10 years reserve – 15 years total if only used front line**
Light Passenger Response	**10 years front line, 5 years light passenger administrative**
Light Passenger Admin	**15 years or 100,000**
Trailers	**25 years**
Other Support Equipment	**Based on individual need**

However, we are seeing a significant increase in the use of the apparatus. This schedule will need to be re-worked. Industry standards recommend a 10-year service period for first line and a 5-year service period for reserve. Here is the new recommendation.

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Comparison

6-45 (E63) – This engine was put into service early 2016. In just over a year, this apparatus has 15,853 miles and 1,328 hours.

6-09 (E67) – This engine was put into service in 2006. In 11 years, this apparatus has 96,975 miles and 8,900 hours.

APPARATUS	MILEAGE PER YEAR	HOURS PER YEAR
6-45	15,853	1,328
6-09	8,815	809

These numbers are very concerning. We are seeing a pattern where the mileage and hours per year have doubled since 2006.

The Transition

While years of service replacement model is a reasonable means to budget and replace vehicles, it fails to fully account for the replacement needs of the fire district. It is believed that a far better process for replacement is based on vehicle value to cost of ownership. This process also allows for the District to more accurately budget for repair and replacement and provides a means to make informed decisions about costly components when purchasing vehicles. It automatically triggers early retirement and extends service life based off actual cost. The district can and should consider both models when making apparatus decisions.

Immediate Recommendations

1. Remove R61 from the fleet. When R61 was purchased it already greatly exceeded the years of service model. This vehicle is a 2003 model and has 225,423 miles. This vehicle falls into the Light Passenger Response category. Using the model that would put the vehicle at 10 years – front line service and 5 years – Light Passenger Administrative. There is no need to utilize it as a Light Passenger Administrative vehicle. Either way it is at the 15-year mark and the miles are excessive.

When this vehicle was purchased, it was no longer an in-service vehicle at North Country EMS. This department had retired it based on years of service and cost of ownership. It was also purchased to transport training equipment and not as an emergency response. Somehow it has morphed into a front-line emergency response vehicle.

The following is a breakdown of the cost ownership of R61. These items need to be addressed to ensure the safety and reliability of this apparatus to be response capable.

RESCUE 61 – Cost of Ownership

- Cost of maintenance – Annual maintenance costs can be expected around $500

- Cost of insurance – Annual insurance runs approximately $400 (liability, collision, comprehensive, Excess Liability, etc....), with an agreed upon value for the vehicle of $25,000 (contents included in separate insurance coverage with VFIS). When district initially pursued receipt of the vehicle, it was not planned to be used as a response vehicle; however operational use was later modified to accommodate Level – 0 usage when incident necessitated a response

- Tires – Replacement of all tires is necessary at a cost of $2,226.

- Air Leveling Switch – this device has been repaired several times since the district has owned the vehicle and will cost $600.

- Coolant, Hoses and Belts must be replaced at a cost of $1,100.

- Lose Body panel(s) will cost $250.00 to repair.

- No Smoke installation will cost $8,800.

- Engine Installation if required will cost $16,000.

- Transmission Overhaul if required will cost $3,600.

- Mobile Radio Purchase and Install will cost $5,300.

Miscellaneous Information

- Mannequin OOS – this older training prop is in poor working condition, and has been sold to NWRTC. The main reason for acquiring the vehicle to start with was for caring the training prop from station to stations within the district and county.

- Medical 02 Bottles aren't mounted and should be securely mounted.

- Mileage is 225,423 miles and as far as the district knows is the original miles. There is no hour meter on the vehicle, however is utilizing miles to hour conversion ration like other units, it is expected that it would be around 1,000,000 ~~miles~~ hours on the engine.

- Lack of storage – vehicle must store a vast number of medical supplies, kits, LifePak and medications (which must be stored in a controlled heat/cool environment). Vehicle storage in truck bay and shop is at a premium, and therefore to store it outside (cold or heat sensitivity), much of the contents of the vehicle must be pulled and stored in areas outside of the truck bay, and that space is hard to find.

- This vehicle has only responded one time in the last year and after a review of the response, it was not warranted under the current policy.

- Total Anticipated Costs based upon information provided previously is: $38,776. The cost of ownership has exceeded the vehicles value.

2. Remove 6-24 (C64) from service and replace. This vehicle was purchased in 2001. It is 16 years old and has 110,807 miles. This vehicle was scheduled for replacement last year however, with the addition of administrative staff it has been kept in service to bridge a gap. The vehicle is getting to the point where it is needing more service and the service will exceed the value. It has met both the recommended years of service and mileage for a Light Passenger Admin vehicle. The value of the vehicle is about $1500.00.

Recommend replacement with a Ford Interceptor – identical to the other Light Passenger Admin vehicles. The estimated cost of this replacement – fully equipped for emergency response is approximately $33,000.