Fire Apparatus Replacement Plan

2018-2032

Abstract

To maximize fire fighter capabilities in using fire apparatus and minimize risk of injuries, it is important that fire apparatus be equipped with the latest safety features and operating capabilities. In the last 10 to 15 years, much progress has been made in upgrading functional capabilities and improving the safety features of fire apparatus. Apparatus manufactured prior to 1991 usually included only a few safety upgrades required by the 1991 edition of the NFPA fire department apparatus standards and other fire apparatus standards. Because the changes, upgrades, and fine tuning to NFPA 1901, *Standard for Automotive Fire Apparatus,* since 1991 have been truly significant, especially in the area of safety, fire departments should seriously consider the value (or risk) to fire fighters of keeping pre-1991 fire apparatus in first-line service.

A scheduled apparatus replacement plan improves the process of vehicle replacement and allows for planning of funding sources. The framework for this plan is based on a previous replacement plan submitted in 2014. It has been updated to reflect the current needs of each department and expanded to 15 years to show a replacement pattern for most vehicles in the fleet. The goal of this plan is to ensure that heavy fire apparatus are replaced when necessary to maintain a safe, reliable, and innovative fleet and do so in a cost-efficient manner. The plan does not include replacing Brush Trucks and other Support Vehicles. The departments have decided that they will replace these trucks in-house on an as-needed basis.

It is a generally accepted fact that fire apparatus, like all types of mechanical devices, have a finite life. The length of that life depends on many factors, including vehicle mileage and engine hours, quality of the preventative maintenance program, quality of the driver training program, whether the fire apparatus was used within the design parameters, whether the apparatus was manufactured on a custom or commercial chassis, quality of workmanship by the original manufacturer, quality of the components used, and availability of replacement parts, to name a few. In the fire service, there are fire apparatus with 8 to 10 years of service that are simply worn out. There are also fire apparatus that were manufactured with quality components, that have had excellent maintenance, and that have responded to a minimum number of incidents that are still in serviceable condition after 20 years. Factors influencing apparatus replacement are age, mileage, cost per mile, and overall condition of the vehicle. The greatest weight in this plan is placed on age and mileage.

Carroll County has three primary fire departments that cover the majority of our county. The replacement of apparatus throughout the years has been a combination of the individual departments purchasing, or at various periods, the departments have requested the Board of Supervisors to purchase needed apparatus.

The care and maintenance of the trucks has been the responsibility of the individual departments; therefore, this effort has had varying degrees of success due to tight budgets leaving little funds to maintain apparatus through an organized maintenance program. The county should for future stability, consider contracts with trained qualified fire apparatus technicians to insure the proper maintenance and longevity of the fleet is properly maintained.

The next few pages of this document will provide a few definitions for how fire apparatus fit in to an operation and a quick overview of the fire stations and the recommended placement of the apparatus. The document includes a replacement plan schedule for the next 15 years; however, the first five (5) years of a replacement plan is the realistic view for replacement and is the most critical for consideration. Each department fleet is broken down with factors to include the year, type, manufacturer, life expectancy, age, purpose and other factors that are to be considered when recommendations are made for replacement.

Definitions

Fire Apparatus: Term used to describe vehicles of varying types and sizes that fulfil different roles or functions during fire and rescue operations.

Class A Pumper: This term is used to describe an apparatus meeting that criterion for a pumper truck that can be used to fight fires in structures or other types of fires requiring larger volumes of water.

Tanker Truck: This term is used to describe an apparatus that supplies water to other trucks or drop tanks during fire operations. If provided with a pump, this type of truck usually does not have high volume pumps.

Tanker/Pumper: This term is used to describe an apparatus that supplies water to other trucks or drop tanks during fire operations. However, the pumps are usually large enough that the truck could be used to fight fires just as you would be able to with a Class A Pumper. These trucks could have access issues do to the weight of the truck where a Class A Pumper would work better. It is recommended this type of truck be purchased versus just a standard Tanker due to its versatility and ability to support other pumpers with water supply.

Fire/Rescue Class A Pumper: This term is used to describe a specially designed fire apparatus that is used for multi-operations including fire suppression, vehicle extrications and other light rescue operations. It reduces the need to have multiple trucks responding on certain calls reducing cost ultimately for a department.

Brush Truck: This term is used to describe usually a smaller fire vehicle that is used for woods and brush fires. They are much lighter than larger apparatus and can access areas much easier than larger apparatus. They carry smaller high pressure pumps and less water, but are a very effective tool, especially in this area due to the terrain encountered during fires.

Crash/Rescue: This term is used to describe different styles of trucks used in various rescue operations. These operations can include vehicle accident extrication, building collapse, confined space rescues and other specialized rescue operations.

Utility/Support Units: This term is used to describe different styles of trucks used in various ways to assist prior to, during, and after emergencies. They may carry equipment, supplies and personnel for emergency operations. They also are used to pull trailers and other devices.

Support Unit: This term is used to describe various styles of vehicles used to provide support during an emergency. The vehicles can range from automobiles, trucks to tractors. Most of the uses for this plan are for providing transportation for personnel to emergencies, training and mutual aid.

GPM: This term is used for describing the amount of water flow volume capability of a particular pump installed on an apparatus.

NFPA: The National Fire Protection Association (NFPA) is a non-profit organization that utilizes its membership to develop standards for fire and life safety. The document includes standards for the construction and safety features used on fire apparatus and other equipment used by the fire service. NFPA also covers thousands of other standards that relate to fire and life safety. These standards are generally the nationally accepted standards and processes and can be legally binding in certain situations.

ISO: The Insurance Service Office/Commercial Risk Services is an organization that generally rates communities on their ability to provide a level of fire protection. The rating for many residential properties can affect the amount of insurance paid by a home owner in a coverage area. For the purposes of this document, this process only considered that we maintain the current ISO ratings in each fire response area. However, older apparatus that fall within the replacement recommendation of NFPA may receive deficiency points for future ISO ratings if not replaced.

Department Overview

The Fire Departments have been very helpful in obtaining the information needed for this replacement plan. Apparatus review surveys were prepared for each vehicle in the departments fleets. These surveys considered many factors that affect the effective operation of a fleet of fire apparatus. The survey is based upon nationally excepted practices. A copy of this survey review sheet is included in this document showing the criteria used to assist in determining the recommendations for this plan.

Laurel Fork Volunteer Fire Department (LFVFD)

LFVFD operates from two (2) stations both located off of Highway 58. The department currently has a Tanker that has been out of service. They do not have a back-up when one of the two pumpers is out of service. A Tanker/Pumper (high priority) needs to be purchased to support with enough water for the simplest structure fire and for back up when an Engine is being repaired. You will note that this is the first truck to be replaced according to the plan. The department has accepted a bid from a manufacturer and we plan take delivery early in 2018. The department has just enough apparatus, if a desire to improve the ISO rating in the future, then other improvements will be need. The department will need to maintain the following apparatus:

Station #1: 1 – Class A Pumper, 1- Tanker/Pumper, 1- Brush Truck, 1 – Crash/Rescue, 1 – Support vehicle.

Station #2: 1 – Class A Pumper, 1 – Brush Truck

Hillsville Volunteer Fire Department (HVFD)

HVFD operates from three (3) stations with on located on Fulcher Street (Station #1), one located near the airport (Station #2), one located on Double Cabin Road in Dugspur (Station #3). This fleet appears to be the newer of the fleets in Carroll County. However, there are trucks that exceed the recommended standards for age of vehicles. It is recommended a Fire/Rescue Class-A Pumper be purchased for the department to replace one of the current pumpers that has high maintenance cost and has reached the maximum recommended age. This truck is designed to be used to transport extrication equipment and other equipment that can be used during vehicle accidents and has multiple uses especially in use on I-77. The Fire/Rescue Class A Pumper will eliminate the need for a Crash Truck and this unit can be re-purposed as a Haz-Mat truck which is something that is needed and can be used county-wide. This plan will allow the HVFD to maintain is current ISO rating as it relates to fire apparatus. The department needs to maintain the following apparatus:

Station #1: 1 – Class A Pumper, 1- Fire/Rescue Class A Pumper, 1 -Tanker/Pumper, 1- Brush Truck, 1 – Haz-Mat Truck, 1 – Utility/support, 1 – Support vehicle

Station #2: 1 – Class A Pumper, 1- Tanker/Pumper, 1- Brush Truck, 1 – Utility/Support

Station #3; 1 – Class A Pumper, 1 – Brush Truck

Cana Volunteer Fire Department (CVFD)

CVFD operates from four (4) stations with one located near Highway 52 south (Station #1), near Flower Gap and Pipers Gap Road (Station #2), near Wards Gap Road and Mt. Bethel Rd (Station #3), and within the Cascades neighborhood off of the Parkway (Station #4). The fleet has a number of older apparatus in the fleet that will need to be replaced. There are two, Class-A Engines that cannot pass pump test and due to age, these need to be replaced. However, it should be noted, this plan is recommending that we eliminate one (1) of these Engines, replacing both Engines with a Fire/Rescue Class-A Pumper. This type of truck is designed to be used to transport extrication equipment and other equipment that can be used during vehicle accidents and has multiple uses especially in use on I-77. To maintain its *6/9* ISO rating, the department will need to maintain following apparatus:

Station #1: 1 - Class A Pumper, 1 - Fire/Rescue Class A Pumper, 1 - Tanker/Pumper, 1 - Brush Truck, various support and utility vehicles.

Station #2: 1 – Class A Pumper, 1 – Brush Truck

Station #3: 1 – Class A Pumper, 1 – Tanker/Pumper, 1 – Brush Truck

Station #4: 1 – Class A Pumper

Laurel Fork Volunteer Fire Department

Unit	Year	Make	Model	VIN	Mileage	Type	Pump Size	Tank Size	Status	Condition
Engine 1	1991	International	4400 4x2	7334	23,979	Class A Engine	1250	1000	In-service	Fair
Engine 2	2006	International	4400 SBA 4x2	1897	14,953	Class A Engine	1250	1000	In-service	Excellent
Tanker 3	2001	International	4400 SBA 4x2	7484	224,734	Pumper/Tanker	250	1200	OOS	Poor
Brush 4	1991	Ford	F-350 4x4	6995	13,601	Brush Truck	Unk	300	In-service	Fair
Support 5	1992	Ford	E series 4x4	9691	21,051	Crash Truck	n/a	n/a	In-service	Good
Support 6	1988	GMC	Suburban 1500	2885	45,989	Support	n/a	n/a	In-service	Fair
Crash 7	2009	Dodge	5500 4x4	8873	5,229	Squad/Foam	Unk	250	In-service	Excellent
Brush 9	1974	International	Loadstar 1600	9720	23,522	Brush Truck	250	750	OOS	Poor

Hillsville Volunteer Fire Department

Unit	Year	Make	Model	VIN	Mileage	Type	Pump Size	Tank Size	Status	Condition
100	2009	GMC	5500 4x4	0418	18,095	Mini-Pumper	750	250	In-service	Excellent
101	2002	Ferrara	Inferno	0122	33,506	Class A Engine	1250	1000	In-service	Very Good
102	2009	International	4300	5092	11,874	Tanker/Pumper	1500	2000	In-service	Excellent
104	2003	Ford	F350	8846	21,842	Brush Truck	250	250	In-service	Very Good
106	2003	Sterling	Custom	9612	22,881	Class A Engine	1250	1000	In-service	Very Good
107	2000	Kenworth	Rescue	9936	26,403	Crash Truck	n/a	n/a	In-service	Very Good
108	1999	Ford	F350	5240	25,869	Brush Truck	250	250	In-service	Very Good
109	2006	International	7400	4866	20,683	Tanker/Pumper	1000	2500	In-service	Excellent
110	1996	HME	Custom	8338	23,000	Class A Engine	1500	1250	In-service	Fair
111	1990	Chevrolet	3500	1458	39,536	Support	n/a	n/a	In-service	Fair
U-1	2015	Dodge	5500 4x4	5971	3,085	Support	n/a	n/a	In-service	Excellent
C-2	2003	Chevrolet	Blazer	4488	n/r	Support	n/a	n/a	In-service	Very Good
L-1	2012	Quint	Ladder	3903	26,154	Ladder	unk	unk	In-service	Excellent

Cana Volunteer Fire Department

Unit	Year	Make	Model	VIN	Mileage	Type	Pump Size	Tank Size	Status	Condition
Engine 1	1999	American LaFrance	Custom	7169	33621	Class A Engine	1500	1000	In-service	Good
Engine 2	1988	Chevrolet	Kodiak	260	27755	Class A Engine	1000	1000	In-service	Fair
Engine 3	2007	Frieghtliner	n/a	4491	16256	Class A Engine	1250	1500	In-service	Excellent
Engine 4	2007	Freightliner	n/a	4490	12352	Class A Engine	1250	1500	In-service	Excellent
Engine 5	1979	GMC	C-70	6701	42365	Class A Engine	750	750	In-service	Poor
Engine 6	1980	Chevrolet	C-70	698	NR	Class A Engine	750	750	OOS	Poor
(old) Brush 7	1989	Chevrolet	3500	5031	42639	Brush Truck	250	250	In-Service	poor
Brush 7	2017	Dodge	5500	2888	15	Brush Truck	250	300	In-service	Excellent
Brush 8	2012	Dodge	5500	5880	2765	Brush Truck	300	300	In-service	Excellent
Brush 9	1995	Ford	F350	3313	147280	Brush Truck	250	300	In-service	Fair
Tanker 10	1984	GMC	n/a	2926	136025	Tanker	n/a	Unk	In-service	Poor
Tanker 11	2010	International	Workstar	6200	5141	Pumper/Tanker	250	1000	In-service	Excellent
Extrication 15	2000	Ford	SuperDuty	5053	14819	Crash Truck	n/a	n/a	In-service	Very Good
Support 18	2011	Dodge	3500	9002	12545	Support	n/a	n/a	In-service	Excellent
Support 20	1997	Chevrolet	Suburban	1631	138958	Support	n/a	n/a	In-service	Excellent

Capital Replacement of Fire Apparatus (Heavy plus Brush Trucks)

		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total	Age
2001	LFVFD Tanker (Tanker 3)	375,000															375,000	17
1991	LFVFD Fire/Res Class A Pumper (Eng 1) (Crh 7)							650,000									650,000	33
1996	LFVFD Brush Truck (Brush 4)					100,000											100,000	25
1974	LFVFD Brush Truck (Brush 9) **																n/a	-
2006	LFVFD Class A Pumper (Eng 2)											450,000					450,000	21
1996	HVFD Fire/Rescue Class A Pumper (110) (107)**		650,000														650,000	23
2009	HVFD Mini-Pumper 4x4 (100)																n/a	-
2002	HVFD Class A Pumper (101)								450,000								450,000	23
2003	HVFD Brush Truck (104)												100,000				100,000	26
2003	HVFD Class A Pumper (106)										450,000						450,000	24
2006	HVFD Tanker Pumper (109)														350,000		n/a	25
2009	HVFD Tanker Pumper (102)																n/a	-
1999	HVFD Brush Truck (108)					100,000											100,000	23
1979	CVFD Fire/Rescue Class A Pumper (E-5) (E-7)**		650,000														650,000	40
2017	CVFD Brush Truck (B-7)																n/a	-
2010	CVFD Tanker Pumper (T - 11)													350,000			350,000	20
1984	CVFD Tanker Pumper (T - 10)				350,000												350,000	37
1988	CVFD Class A Pumper (E-2)						450,000										450,000	35
1995	CVFD Brush Truck (B-9)					100,000											100,000	27
2007	CVFD Class A Pumper (E-3)															450,000	450,000	25
2007	CVFD Class A Pumper (E-4)																n/a	-
1999	CVFD Class A Pumper (E-1)									450,000							450,000	27
	Totals	**375,000**	**1,300,000**	**0**	**350,000**	**300,000**	**450,000**	**650,000**	**450,000**	**450,000**	**450,000**	**450,000**	**100,000**	**350,000**	**350,000**	**450,000**	**6,475,000**	

This plan does not add any apparatus to fleet and reduces fleet by 3 vehicles.

Plan includes all department apparatus except Support and Utility Vehicles.
Departments will replace Support and Utility Vehicles in house as needed using their own funds.

AVG/yr 431,667 AVG age 27

Vehicles above with no action would be replaced beyond this 15 year window.

** LFVFD - If Engine 2 and Crash 7 are replaced with one Rescue Pumper, then Crash 7 could be repurposed as a Brush Truck.
** HVFD - If 110 and 107 are replaced with one Rescue Pumper, then 107 could be repurposed as a Haz-Mat Truck to be used by all departments.
** CVFD - Replacing E-5 and E-6 with one Rescue Pumper will reduce the number of pumpers by one. Extrication 15 will remain in service as a secondary crash truck for station 2.