Engine Replacement Justification 2024

Industry Guides

For fire apparatus replacement, local best practice utilizes a 10/10 method. The fire apparatus' 20 year life cycle would be in frontline status for 10 years and then placed in reserve status for 10 years. The Town's vehicle replacement policy states a fire apparatus life span should be 20 years. It also states, "front-line life span of the Engine is 15 years and has a reserve lifespan for an additional five years".

National Fire Protection Association (NFPA) states that frontline apparatus should be moved to reserve status after 15 years of service and placed in reserve status. NFPA also states apparatus over 25 years old should be replaced.

The 2020 Community Risks Assessment: Standard of Cover for Westlake Fire-EMS Department states that the life expectancy for an engine is 20 years (Figure 1). It is important to note that age is *not* the only factor for evaluating serviceability and replacement. Vehicle mileage and hours on engines must also be taken into consideration.

Figure 1

Vehicle	Life Expectancy
Utility	15
Engine/Pumper	20
Ladder Truck	25
Attack/Brush	20
Ambulance	10

A common tool utilized in the industry to evaluate vehicle replacement is listed in Figure 2.

Figure 2

Evaluation Components	Points Assignment Criteria
Age:	One point for every year of chronological age, based on in-service date.
Miles/Hours:	One point for each 10,000 miles or 1,000 hours.
Service:	1, 3, or 5 points are assigned based on service-type received (e.g., a pumper would be given a 5 since it is classified as severe duty service).
Condition:	This category takes into consideration body condition, rust interior condition, accident history, anticipated repairs, etc. The better the condition, the lower the assignment of points.
Reliability:	Points are assigned as 1, 3, or 5, depending on the frequency a vehicle is in for repair (e.g., a 5 would be assigned to a vehicle in the shop two or more times per month on average; while a 1 would be assigned to a vehicle in the shop an average of once every three months or less.

Point Ranges	Condition Rating	Condition Description
Under 18 points	Condition I	Excellent
18–22 points	Condition II	Good
23–27 points	Condition III	Consider Replacement
28 points or higher	Condition IV	Immediate Replacement

Current Condition

Currently, we have two fire engines. The 2003 model (21 years old) is our reserve engine, while the other engine is a 2015 model (9 years old) in frontline status.

Engine #1401 (21 years old)

Age:	2003	21
Miles/Hours:	10,253hrs./116,119miles	11
Service:	Pumper	5
Condition:	Average condition	3
Reliability:	Average Reliability	3
Total Points:	-------	**43**

The point value illustrates: Immediate Replacement

While repair costs have been manageable, the larger concern is the availability of parts. Numerous times we have encountered challenges related to replacement of broken parts that have simply worn out. Additionally, and equally concerning is the out of service (OOS) time and frequency related to difficult repairs. OOS time creates challenges when the frontline apparatus goes OOS for repair at the same time. At that point, we have no other engines for structural firefighting and vehicle extrication.

Benefits to funding and Consequences to Not funding
Benefits: Purchasing a fire engine will improve safety, improve operational effectiveness with a more reliable and dependable fleet, and secure current costs or financing.

Consequences: As reserve unit ages, fleet costs will naturally increase with more downtime associated with necessary repairs and routine maintenance—sometimes because of parts obsolescence. Regardless of its net effect on current apparatus costs, the deferral of replacement purchases unquestionably increases future replacement spending needs and may impact overall operational capabilities impacting safe and efficient use of the apparatus.

Important Notes

Manufactures have reported the lead time for delivery of any engine is approximately 24 months to 40 months. With that in mind, ordering this fall would allow us to receive the engine in late 2026 or late 2027, which would position us better with a new apparatus and a well-maintained backup engine.

Inflation costs are increasing at a rate of approximately eight percent and purchasing now would provide overall savings due to securing the current price.

Recommendations
Based on the age and condition, industry best practice, and nationally recognized standards, we are seeking to replace the 2003 engine and place the 2015 engine in reserve status.

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