DATE: October 21, 2024

TO: Honorable Mayor and Members of the City Council through City Manager

FROM: Jeff Schach, Fire Chief
David Catalinotto, Senior Management Analyst

SUBJECT: Resolution Authorizing the Purchase of a Pierce Enforcer Type 1 Fire Engine with Lithium Battery System and Idle Reduction Technology from Golden State Fire Apparatus through Sourcewell Cooperative Purchasing Program and Authorizing the City Manager to Execute all Documents Necessary to Complete the Purchase

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RECOMMENDATION

It is recommended that the City Council adopt the attached Resolution authorizing the purchase of a Pierce Enforcer Type 1 Fire Engine with lithium battery system and idle reduction technology from Golden State Fire Apparatus through Sourcewell Cooperative Purchasing Program and authorizing the City Manager to execute all documents necessary to complete the purchase.

BACKGROUND

In order to ensure emergency fleet reliability, resiliency, and surge capacity, the Fire Department attempts to maintain a fleet schedule that places fire engines in front-line status for 10 years to be followed by an additional reserve lifespan of at least 5 years, totaling at least 15 service years. Petaluma's front-line engines put on approximately 10,000 road miles per year; in a 10-year time frame, fire engines acquire approximately 100,000 road miles. These are hard miles, mostly on city streets with multiple start/stops, on/offs, and road miles are far more impactful on a heavy fire engine chassis and components than on a light passenger vehicle with the same amount of road miles. Additional wear is placed on the motor and other mechanical components during long periods while at idle on emergency scenes to power emergency lighting and while running at high RPM's when pumping water at a fire. Initial quality of construction, call volume, and road conditions all have an impact of a fire engine's lifespan. It is around this 10 year/100,000-mile timeframe that fire engines require an exponentially higher number of repairs and out-of-service time.

The fire engine at Petaluma's Fire Station 3 is currently model year 2016 and has approximately 70,000 miles. New fire engine build times are 45-48 months; therefore, a fire engine ordered today will be delivered no earlier than July 2028, by which time the engine will have been in service for more than the recommended maximum of 10 years as a front-line vehicle. A new engine also will need to be outfitted with equipment needed to respond to emergency incidents.

DISCUSSION

The City's previous economic conditions had created an inability to replace fire engines at the ideal intervals. Since 2016, however, we have started to catch up: of our three front-line fire engines, one is a 2018, one a 2023, and the fire engine planned to be replaced is a 2016 model with about 70,000 miles. This unit will join the 2006 fire engine with over 140,000 miles as a second reserve, with the other current reserve engine - from 2005 - to be declared surplus and auctioned.

To meet Council goals of reduced reliance on carbon producing vehicles, many fire engine manufacturers were researched. There are currently three manufacturers that have developed electric-powered fire engines. Two of these fire engines do, however, have a back-up diesel generator when needed to charge batteries when the fire engine is run for extended amounts of time for either driving or pumping water during a fire.

A large and reputable fire engine manufacturer, Pierce Manufacturing, is the first fire engine manufacturer to offer a hybrid-style option for new apparatus that consists of being powered by a standard diesel engine, but it has a bank of lithium batteries that are used instead of the motor to power lights and other equipment while on an emergency scene. This is referred to as "idle reduction technology" which shuts down the diesel motor and uses stored battery power when not driving or pumping water. Pierce offers this technology in its Enforcer product line. Our 2023 model is an Enforcer with idle reduction, and its performance so far has met expectations.

Pierce Manufacturing also recently began offering the Volterra line of parallel-electric drive train fire apparatus. This apparatus operates independently in either all-electric or internal combustion engine modes, operating as an all-electric vehicle under normal operations and utilizing internal combustion only for backup power in extended emergency operations. This means that the Volterra requires installation of electric vehicle charging infrastructure, which Petaluma's fire stations do not yet have. The Pierce Volterra Type 1 Engine also has a considerably higher price than the Pierce Enforcer Type 1 Engine given the newness of its technology; a base model costs at least $2.3 million.

The European company, Rosenbauer, also now offers electric-powered fire engines (with backup diesel generator) for the North American market. Rosenbauer's RTX fire engine is similar in size to a standard fire engine but has a non-traditional and futuristic appearance. There are currently two in service in the United States, both in southern California: one for the Los Angeles City Fire Department and the other for Rancho Cucamonga Fire District. More locally, Menlo Park Fire Department had considered ordering one but did not, mainly due to the price being roughly 50% more than that of a traditional diesel-powered fire engine.

Finally, REV Fire Group - which includes the Ferrara, E-ONE, and other fire apparatus brands - offers the Vector all-electric fire engine. This fire engine relies completely on battery power. The first Vector was delivered to the Mesa (Arizona) Fire and Medical Department at the end of 2023. When the purchase was made in 2021, Mesa officials estimated that the Vector cost about $400,000 more than a conventional diesel fire truck.

The Fire Department has concerns about its readiness to purchase an electric-powered fire engine. As of now, we do not have charging infrastructure at any of our stations, and installation requires significant staff time and could cost upwards of $200,000. Additionally, we sometimes send our Type 1 engines out of county on strike-team assignments. We will be unable to send an electric-powered Type 1 engine out of county until there is widespread charging infrastructure throughout the state, which could take many years from now. We also are concerned about using such a new technology for one of just three front-line engines. Unlike a larger fire agency such as Los Angeles City Fire, which has more than 100 engines, we have just three front-line and two reserve Type 1 fire engines. If there are ongoing maintenance issues with one of our engines, the operational impacts will be more significantly felt.

In the next 5-10 years, we expect to have the capacity to add a third reserve engine. In addition, we will add charging capacity to our stations as we renovate and replace them, a process that we recently have started. Over time, more data on performance and reliability of electric-powered fire engines also will be available. Reaching these milestones will better position us to purchase an electric-powered fire engine in the future.

The City of Petaluma is a member of the Sourcewell Cooperative Purchasing Program (Formerly National Joint Powers Alliance), which provides the City the opportunity to access competitively awarded, nationally leveraged cooperative purchasing contracts. Purchase of specialized equipment provides better prices on state and national cooperative lists since local vendors do not sell this type of specialized equipment. Participating in this competitively bid and awarded statewide purchasing program complies with the Petaluma Municipal Code, Section 4.04.100 (Cooperative purchasing programs) and 2 Code of Federal Regulations Part 200 (Uniform Guidance for Federal Awards), which supports the purchases of supplies and equipment made under a cooperative purchasing program with the State, County, or other public agencies that have been competitively bid and awarded.

Staff recommends purchasing a second Pierce Enforcer Type 1 Fire Engine with idle reduction technology. The price for this fire engine is $1,232,006.27 under the Sourcewell Cooperative Purchasing Program and is based on competitive bidding conducted by Sourcewell, with a bid awarded to Golden State Fire Apparatus. Golden State Fire Apparatus has met all the specifications for the Pierce Type 1 fire engine under the Sourcewell cooperative purchasing program. This price includes sales tax as well as consortium pricing and pre-payment discounts. New fire engines are custom built at the time of order and currently take 45-48 months to complete. An approval of up to $1,300,000 is intended to cover potential changes during the build that may become necessary.

PUBLIC OUTREACH

This agenda item appeared on the City's tentative agenda document on October 7, 2024 which was a publicly noticed meeting.

COUNCIL GOAL ALIGNMENT

By purchasing a fire engine with the idle reduction system, from the only manufacturer with idle reduction technology, and from the only domestic manufacturer with an all-electric fire engine, this proposed action supports City Council goals, and in particular: "Our Environmental Legacy," Objective 1 – "Preserve and Protect Petaluma's Environment with Smart and Efficient Use of Resources." Workplan Item #42: "Find ways for City operations to reduce greenhouse gas emissions, conserve water, decrease waste, and minimize use of fossil fuels and investigate and pursue options for carbon sequestration." Furthermore, the Blueprint for Climate Action, currently in draft form, contains implementation action to "Continue to expand and promote an EV motor pool, including electric bicycles, for employees to conduct City business" – this purchase represents an incremental step in that EV fleet direction.

CLIMATE ACTION/SUSTAINABILITY EFFORTS

Pierce's idle-reduction technology incorporates lithium-ion batteries that are put into use when the engine is parked at an emergency scene, with lights and other equipment running, but demand is low enough that the diesel engine will turn off automatically and the apparatus will remain powered by the stored battery energy. This is currently the closest version to a hybrid fire engine on the market today. Fire engines remain at idle on the majority of emergency calls to power radios and emergency lights. At the majority of incidents, minimum idle time is 15 minutes per incident, and the Petaluma Fire Department runs more than 8,000 incidents each year. This equates to approximately 2,000 hours of engine idle per year which equates to 1,600 gallons of diesel fuel per year used while at idle.

This "idle reduction technology" is available in one current Petaluma fire engine. Once a second fire engine with this technology is put into service, the Fire Department estimates total economic and environmental savings of over 1,000 gallons of diesel fuel per year.

ENVIRONMENTAL REVIEW

The proposed action is exempt from the requirements of the California Environmental Quality Act (CEQA) in accordance with CEQA Guidelines Section 15378, in that replacing a Fire Engine does not meet CEQA's definition of a "project," because the action does not have the potential for resulting in either a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment, and because the action constitutes organizational or administrative activities of governments that will not result in direct or indirect physical changes in the environment. Relatedly, if the proposed action did constitute a project under CEQA the action is exempt under the common-sense exemption, CEQA Guidelines Section 15061(b)(3) as the replacement vehicle with "idle reduction technology" will reduce emissions and CEQA Guidelines Section 15301 as the operation of a public mechanical equipment involving negligible or no expansion of use.

FINANCIAL IMPACTS

The Pierce Fire Engine cost is not to exceed $1,300,000. The Fiscal Year 2024/25 budget includes a $1.0 million appropriation for purchasing the engine, funded by a transfer of Measure H sales tax revenue into the Vehicle and Equipment Replacement Fund. A budget adjustment will be brought forward in conjunction with the mid-year budget adjustment for the additional $300,000 utilizing additional Measure H sales tax revenue.

Staff also anticipates spending an additional $350,000 for outfitting upon arrival of the engine, making spending on outfitting likely to occur in 2027 at the earliest. Spending on outfitting will be budgeted at that time.

ATTACHMENTS

1. Resolution
2. Pierce Quote and Proposal from Golden State Fire Apparatus