



FLEET OPERATIONAL REVIEW REPORT

APRIL 2017

MERCURY



TABLE OF CONTENTS

Table of Contents.....	1
Executive Summary.....	2
Introduction	5
Overview of Current Fleet Operations.....	6
Fleet Management Information System.....	7
Fleet Financing.....	8
Public Works Department Overview	8
Shop Costs	8
Parts Room	9
Fuel	9
Vehicle Disposal	9
Police Department Overview	9
Police Department Operations.....	10
Fire Department Overview	11
Fire Department Operations	11
Budget and Financial Information	12
Consolidated Budget	13
Centralization Feasibility.....	14
Fleet Replacement Plan	20
Principles of Effective Fleet Replacement	22
Recommended Replacement Cycles	26
Replacement Plan.....	26
Baseline Replacement Plan	27
Smoothed Fleet Replacement Plan	29
The Case for Fleet Renewal	31
Financing Fleet Replacement Costs.....	31
Outright Purchase with Ad Hoc Annual Appropriations of Cash	32
Reserve Fund and Charge-Back System	32
Debt Financing and Leasing.....	33
Conclusions	34

EXECUTIVE SUMMARY

In 2015, the City of Salinas contracted with Mercury Associates, Inc. (Mercury), North America's largest fleet management consulting firm, to evaluate its fleet operations and provide recommendations to improve its efficiency and service levels, and identify opportunities to reduce and contain costs, including the feasibility of centralizing the City's fleet operations and development of a long-term fleet replacement plan. The following report outlines Mercury's findings and recommendations from this assessment, which we believe to be accurate and valid as of April 2017.

The City operates a fleet of 390 vehicles and pieces of equipment, which includes 130 units assigned to the Police Department (SPD), 50 units assigned to the Fire Department (SFD), and the remaining 210 units assigned to the Public Works Department (the Public Works Department). An additional 200 pieces of miscellaneous equipment, such as trailers and small landscaping equipment are also found throughout these City departments as well. In 2014, the City spent approximately \$2.3 million in fleet operating and maintenance costs, which is exclusive of capital expenditures associated with fleet replacement.

Four City departments are currently involved in some aspect of its fleet operations. The Purchasing Department maintains a master asset inventory and coordinates the replacement of equipment as necessary. The Public Works Department operates the City's main garage and provides some fleet management services to other departments. The Fire Department manages its own fleet and performs maintenance on these assets at its Fire Station #1 facility, as well as outsourcing work to commercial vendors and on rare occasion to the Public Works Department. The Police Department manages its own fleet, but leverages the Public Works Department and commercial vendors to perform maintenance and repair services.

Under the City's current mode of operation, there are no clear lines of responsibility between departments for managing its fleet assets; there is not a citywide fleet management information system that contains data and costs associated with owning and operating the fleet; and there is no clear strategy to optimize the performance of its fleet operations.

Centralization Feasibility

The City's current decentralized approach is not optimal and is unusual for an organization of its size. Silos of independent fleet operations are inherently inefficient, because they produce obvious duplication of effort and fail to capture economies of scale. Centralizing fleet operations in the City would result in lower costs and should also produce improved service levels due to consistent management practices.

We recommend that all fleet management and maintenance functions be centralized within the Public Works Department. The City will need to make investments in its fleet program to ensure success. The Public Works Department will require new positions (Fleet Manager, Parts Specialist, and Fleet System Analyst), a new fleet management information system, and the current fleet budgets and positions from the Police and Fire Department. Additional funding increases from current levels will likely be required, at least until better management practices and economy of scale produce downstream savings. Additionally, the City should take the following steps to institute fleet operations best management practices:

- Establish the fleet program as an internal services fund with a system of fully burdened charge-back rates to recover the costs of services it provides to its customers;

- Develop a Fleet Advisory Board comprised of primary stakeholders (the Public Works Department Operations, Police, Fire, and Finance). Service Level Agreements (SLAs) should be established with all fleet customers as well;
- Develop a system of key performance indicators to track and report essential fleet information such as fleet availability, shop turn-around time, and cost performance.

Fleet Replacement Plan

After decades of lean budgets, the City's fleet is old. An old fleet has consequences for costs, the efficiency of work crews who rely on vehicles to do their jobs, safety, and environmental responsibility. Increasing funding for fleet replacement is crucial. All other fleet improvement initiatives cited in this report will not be successful unless the City renews its fleet.

The average age of all the vehicles in the fleet (15.4 years) exceeds standard industry practice for government fleets of 8 to 10 years (we have recommended an average replacement criteria of 9 years for Salinas). In general, the average age of a fleet should be around 50% of the replacement criteria. For example, if the target replacement cycle for police patrol cars is five years, then the average age of all patrol cars should be 2.5 years (provided that the data set is statistically relevant). With an average age of more than 15 years, it would take the City more than 30 years to replace the vehicles in the fleet at least once. This gives City of Salinas the dubious honor of having one of the oldest government fleets among the more than 500 clients we have served.

With the replacement cycles we are recommending, 325 assets – roughly 86% of all the vehicles in the City's fleet – will meet or exceed recommended replacement cycles in the first year of the plan (FY 2016-17). The estimated replacement cost of all the vehicles in the fleet is \$24.6 million. With our recommended cycles vehicles will be replaced on average every 9 years. To comply with this fleet-wide weighted average replacement cycle the average annual capital outlay for vehicle purchases would need to be \$2.7 million. However, this figure does not address the backlog in funding needs that has built up over the years. In other words, the City needs to average \$2.7 million per year in fleet replacement funding to keep the fleet current *after* it has replaced the 86% of the fleet that is currently due or overdue for replacement.

Like many government jurisdictions we have worked with, the City has not kept up with renewing its fleet. Underfunding became an acute problem during the recent recession years and now the City is facing a crippling backlog in replacement funding requirements. It took the City many years to develop the large backlog in spending requirements that currently exists and it would be impractical for the City to try to catch up in one year even if it had the financial means to do so. Consequently, the plan we have developed would eliminate the backlog over several years by allocating a steady spending level around \$3.5 million each year for the first five years and the replacement of an average of 59 units per year. Details on the recommended replacement plan can be found in a later section of this report. We will also provide the City with an MS Excel Workbook with the final version of our report that shows vehicles slated for replacement in each year of the plan.

Operating a very old fleet is costing the City excess money – both in hard dollars and in indirect costs. The old fleet is undoubtedly causing employees to be less productive as unreliable vehicles must be frequently driven to the shop rather than to work. The size of the fleet is likely larger than it needs to be as departments have secured extra vehicles to act as backups and spares so they can survive the increased

unreliability of front-line vehicles¹. The older vehicles populating the fleet also use more fuel and emit more pollution because 1) standards for emissions and fuel economy were lower a decade or more ago when many vehicles were purchased and 2) the fuel and emission control systems of vehicles degrade over time. Finally, older vehicles are not as safe as new ones for the simple reason that they lack many of the advanced safety features that are standard with new cars such as:

- Passenger and side curtain airbags,
- Antilock brakes,
- Traction control,
- Stability control,
- Rearview cameras.

Achieving the benefits of fleet renewal and sustaining these benefits over time will require, in our opinion, that the City change its approach to replacing its fleet. One way to incentivize users to follow good fleet management practices is to confront them with cost of having vehicles at their disposal.

Given the magnitude of the backlog in fleet funding requirements, we believe the City will have little choice but to pursue a debt financing option. This option will make fleet renewal more affordable and, therefore, more likely to be sustained.

Based on our analysis and from our experience with many other fleets, we are confident that increasing fleet replacement spending so that our recommended replacement cycles can be followed will be of significant benefit to the City regardless of the method of funding chosen. Moreover, the indirect costs of fleet reliability, operational disruptions, and fleet safety are hard to quantify but are no less important to the City.

¹ Clients we have assisted to right-size their fleets in concert with fleet renewal have achieved fleet size reductions ranging from 5% to 10%. In 2012, we assisted the State of California cut the size of its light-duty fleet by more than 14%.

INTRODUCTION

This report presents Mercury Associates, Inc.'s (Mercury) assessment of fleet operations for the City of Salinas (City). The primary tasks associated with the project included:

- Task 1: Develop Understanding of Current Fleet Operations
- Task 2: Assess Centralization Feasibility
- Task 3: Develop Replacement Plan

The primary study methodologies we employed in conducting this project were as follows:

- **Written Information Request.** We begin all program evaluation projects by providing the client with a detailed checklist specifying the types of documentary material (e.g., organization charts, policy and procedure statements, etc.) and quantitative data (e.g., work order and parts transaction data, vehicle meter readings, revolving fund revenues and expenditures, etc.) we would like to review in evaluating fleet management practices and costs.
- **Site Visits and Interviews.** Our project team visited a number of City locations to view fleet facilities, interview mechanics, assess maintenance practices, review information systems, and observe fleet operations in action. We also conducted interviews with various fleet program stakeholders including the Public Works Department, Police and Fire Departments to assess current practices.
- **Performance Measurement and Benchmarking.** Data availability permitting, we employ quantitative performance measurement techniques in every best management practices review we conduct, interpreting the resulting performance statistics using suitable internal and industry benchmarks. In addition to serving as a valuable diagnostic tool that helps us home in on potential problem areas and avoid devoting unnecessary time and attention to areas in which current practices are strong, performance measurement adds objectivity and consistency to our evaluation, and hence, credibility to our findings and conclusions. For this project, we analyzed available financial and performance data for the City fleet. Where data was not available, we developed benchmarks based on interviews, observations, and on our years of experience in the industry.
- **Business Process Mapping and Gap Analysis.** The other key method we used to evaluate fleet management practices and identify opportunities to improve quality and lower costs was process mapping and gap analysis. This involves ascertaining; 1) if and how specific management and operating processes are formally defined; 2) the soundness of their design – e.g., their logic, thoroughness, compliance with applicable regulations, responsibility and authority for execution, and so forth; 3) their consistency with industry best practices; and 4) the nature of their actual execution, which is a function of how they are communicated (e.g., through a policy and procedure manual) and how employees are held accountable for following them.

We gained these insights primarily from the review of documentary material such as policy and procedure statements and the conduct of interviews and focus group sessions with employees of the fleet management, fleet user, and associated support organizations. In order to ensure that we covered each functional area of vehicle and business management thoroughly, we employed a detailed, 60-page *Process and Practice Review Checklist* that allows us to gauge the soundness

of current practices in each area of endeavor. This typically is the most labor-intensive, but also the most revealing, aspect of any fleet management program review or efficiency study.

- **Vehicle Statistical Reference System.** In evaluating key aspects of a fleet services organization, we use an analytical technique based on the Vehicle Statistical Referencing System (VSRS), which was introduced several decades ago by the U.S. Air Force. This technique allows us to compare statistics from diverse fleets by converting vehicle and equipment types to their equivalent in terms of the level of effort required to maintain a standard passenger sedan - which is used as a baseline and given a value of 1.0 Vehicle Equivalent Units (VEUs). By statistically reducing a fleet to its equivalent in terms of sedans, we can make reasonable, standards-based comparisons with the fleet operations of other organizations that have very different compositions.

A fleet of one hundred patrol cars², which are rated at 2.5 VEUs each, constitutes a fleet of 250 VEUs. The number of mechanics/technicians required to maintain this fleet is more than a fleet of 100 sedans, but far less than a fleet of 100 dump trucks. The following graphic illustrates how this technique works:

Figure 1: Relative VEUs



These VEU assignments help to identify many fleet-related issues, including staffing levels and cost competitiveness. Many of the comparative calculations, conclusions and recommendations found in this document can be traced back to the VSRS.

OVERVIEW OF CURRENT FLEET OPERATIONS

Any plan for future organizational change and improvement must be based on a clear picture of where the organization is starting. Documenting the current “as is” state of our clients’ fleet operations is also the first step for any of our consulting engagements. Therefore, in this first task of our proposed project with the City we will focus on developing a thorough understanding of the City, its organizational culture, management philosophy, politics, finances, etc. We will also document current fleet management

²VEU values are based on our work with hundreds of fleets across North America.

activities including staffing, budgets, primary business processes, the rationale for current policies and programs, etc.

The City has approximately 400 rolling stock vehicles. The Salinas Police Department (SPD) has 130 units, Salinas Fire Department (SFD) has 50 units, and the Public Works Department (DPW) has approximately 210 units.

The Public Works Department does some maintenance and repair for the SPD including specialty work such as outfitting new vehicles and installing specialized equipment. The Monterey County shop does installation on all radios and other communications equipment.

In 2003, the City's workforce was cut by 20% and then an additional 25% was cut in 2008. Staff has worked a four-day week for the past five years, which just ended June 30, 2015.

Below we outline the current status of various aspects of the City's fleet operations beginning with the Fleet Management Information System (FMIS).

FLEET MANAGEMENT INFORMATION SYSTEM

- The Public Works Department has *Squarerigger, Inc.'s* Vehicle Tracker as its fleet management information system. SPD and SPD do not use the system.
- Even though the Public Works Department pays an annual license fee for support and updates, the software is several versions behind.
- The system has never been fully implemented and the Public Works Department does not use most aspects of the system.
- Some, but not all, of the City's vehicles have been entered into the system. Finance keeps a separate vehicle list in MS Excel that was offered as a more accurate list of assets (although there are limited data fields and attributes in Finance's list)
- The Public Works Department does try to enter all new assets including the original purchase price and date. However, not much information about vehicles is entered into the database, including no detailed specifications or warranty information
- While the Public Works Department does open work orders, only the date/time opened, service code, and date time closed are entered.
- Details and costs related to labor, parts, or sublet vendor data is not tracked on work orders. Tracking historical fleet transactions and costs is the primary role of a fleet management information system and it is unclear why the City has not used its system for this purpose.
- Labor time is noted on daily time cards and labor is charged to back to the customer organization.
- Parts are also charged to customers when they are purchased. Parts taken from stock are not charged (the stock is small) and Police buys their own parts which are stocked on a dedicated shelf in the shop.
- Nobody really knows how to use the system. Training was provided when the system was purchased 15 years ago but none since.
- Preventive Maintenance (PM) is not tracked in the system but managed manually.
- There are no KPIs tracked – downtime is not a part of the overall process.
- No standard reports are run.
- There are two terminals available to mechanics in the shop area to use for input of repair data.

FLEET FINANCING

The City operates on a fiscal year that ends June 30th. Each year the Public Works Department’s Maintenance Superintendent prepares a budget for all fleet operations based on the previous year’s budget. It is approved by the Finance Department. Over the past eight to ten years there has been little funding for new vehicle acquisition due to the economic downturn. All new vehicles are purchased using the General Fund, not from user department’s budgets. New purchases must be approved by the City Council, even if it is a replacement vehicle. There are not any set replacement parameters for fleet vehicles. The City purchases from either the state contract or from a local dealer. To support local dealers and offer them an opportunity to get City business, the City can purchase vehicles locally if the price from the dealer is within 10% of state contract pricing.

PUBLIC WORKS DEPARTMENT OVERVIEW

- The shop was built in 1964 and has had little in the way of updating.
- The shop has six work bays, but one is used for storage/break table. Having a worker break area in the shop does not meet with approved standards.
- There is also a machine/weld shop without doors as well as a wash bay.
- Shop layout is:

Storage	LD Lift	Storage		LD Lift		Machine and Weld Shop	Wash Bay
Break Table	LD Lift						

- Attached to the left side of the shop are also offices, a parts room, a tool room, and an oil room. There is a second-floor mezzanine used for storage.
- There are roll up doors on the first six bays. Doors are narrow at 12’wide and 14’ high. Tractor and dump trucks fit, but just barely
- There is a 2-ton bridge crane that runs the length of the shop.
- There are three light-duty (10k to 14k) lifts and one set of heavy-duty portable lifts.
- Lighting is marginal. There are only 10 light standards in the shop. Skylights help, but the shop is dark in the winter and working at night would be difficult.
- There is a small service truck that is used an average of three times per week to handle things such as dead batteries and broken hoses.
- The City owns all tools used in the shop.
- Special tools and equipment are in good condition, including two scan tools.
- Reconfiguration of the shop would yield an additional four work bays (clear two half bays of tools and equipment to a shipping container that could be purchased and located outside the shop) and move the picnic table upstairs to clear the left most bay.

SHOP COSTS

The City does not have an actual chargeback rate system to assess the fleet user departments for all the costs associated with the maintenance and repair of vehicles. Costs for parts are charged directly to the

appropriate department at the same price paid by the Public Works Department. The process for doing the chargeback is handled in the shop. Labor is charged to the user department by coding time cards with the appropriate organization number. Charges are based on mechanic salaries and benefits. There is no assessment for things like shop overhead, management or other costs. The shop supervisor approves parts invoices, applies the department codes before forwarding on to accounting for payment.

PARTS ROOM

The parts room is open and unattended. Many years ago, there was a parts position that was subsequently eliminated during budget cuts. There are no written policies or procedures that could be provided for review. The City does not have vendor contracts or agreed upon prices for parts. Most parts are ordered as needed by the shop supervisor. He is responsible for most activity in the shop including pricing comparisons from vendors. Same and/or next day delivery is usually available from the local parts dealer. Invoices are approved by shop supervisor and sent to accounting for payment. A few parts and other supplies are kept in stock such as coolants, oil and air filters, some hoses and wiper blades, etc. Since these parts were charged to a department when they were acquired, no inventory count is taken.

FUEL

The City does not currently have any gasoline or diesel fuel tanks that it operates. Fuel is obtained through “Gas Boy” fuel cards at two commercial Cardlock fueling stations in the City managed by Pacific Pride. One at the airport, the other on Abbott Street. Fuel cards are assigned to drivers, not vehicles. Reporting provided is not helpful as it does not allow for identifying how much fuel each vehicle receives (thus internal controls are weakened and any potential fraud almost impossible to catch). Gas Boy could be integrated with Vehicle Tracker, the FMIS used by the Public Works Department, but the data is not integrated.

VEHICLE DISPOSAL

Written policies and procedures for disposal of vehicles do not exist. Disposal of any vehicle asset must be approved by the City Council. The current process for disposing of the assets at the end of their useful life has been to sell them to a “pick and pull” type of business, similar to a junk yard. This process is used because vehicles are not identified for replacement until they are no longer repairable and are not suitable for auction or other types of resale. Vehicles are often parked at the Public Works Department shop for months and used for spare parts. There has not been an auction in over 10 years. Proceeds from any sale are put in the general fund and not returned to the user group. These funds are not tracked.

POLICE DEPARTMENT OVERVIEW

Salinas Police Department has approximately 130 vehicles, 46 are patrol, 7 trailers, 5 motorcycles and 4 scooters. The remainder of the vehicles are used by detectives or other department personnel. Two people are assigned to monitor fleet maintenance and are responsible for ensuring the vehicles are kept in operable condition. They are not mechanics, but do sometimes perform small repair tasks such as replacing light bulbs and fuses. The major job functions for these two positions include:

Equipment Inventory Technician

- Writes specifications for police vehicles
- Assist with development of replacement criteria
- Buys parts for both internal shop and external shops that provide services to SPD
- Selects outside repair shops using specific criteria:
 - Honesty

- Quality
- Location
- Pricing
- Negotiates pricing
- Keeps inventory list

Senior Vehicle Maintenance Assistant

- Schedules repairs with the Public Works Department shop/dealers/outside vendors;
- Takes vehicles to the shops for repairs;
- Performs small repairs (light bulbs, fuses, etc.);
- Notifies drivers about upcoming preventive maintenance via email

POLICE DEPARTMENT OPERATIONS

As with all City departments, budget restrictions have limited vehicle acquisition and vehicles are kept in service until no longer feasible to repair. The fleet is quite old, with an average age of just over 10 years. It was stated that typical mileage for patrol vehicles is 3,800 miles per month. However, based on the odometers provided in the inventory, the 32 vehicles shown as patrol vehicles average only 1534 monthly miles. There are 15 new vehicles on order which are expected to be delivered this fiscal year. The plan is to dispose of the worst vehicles in the SPD fleet. It became possible to obtain these new vehicles due to an increase in funding, mainly from a tax initiative that was passed by the voters last year.

Patrol vehicles are outfitted with partitions, light bars, data terminals and radios. The passive hardware is installed by the Public Works Department shop. The Public Works Department shop does not charge SPD for the work performed. The electronics and wiring of the light bars are handled by the Monterey County shop because of the expertise of the technicians. The cost for the County shop is \$120 per hour. The total time for outfitting a patrol vehicle is reported to be 30 hours (a breakdown of how many hours for each shop was not available). The SPD has looked into using other service providers but has not found any within a reasonable distance of the City.

No written policies and procedures were provided governing any aspects of the fleet maintenance operation. It is our understanding that these do not exist. The computer tracking software that the City acquired more than 10 years ago is not used by the SPD. Basic vehicle records are kept by the technicians. Preventive maintenance is currently scheduled every 4,000 miles for patrol vehicles and every 4 months for other vehicles. Drivers are notified via email to schedule the PM Service. The Department does not keep any spare vehicles for use while vehicles are being serviced.

Most of the servicing and repairs are also conducted by the Public Works Department shop. Outside vendors are used for miscellaneous repairs that the Department or the Public Works Department shop chooses to contract out. The Department orders and provides many parts and tires for all of its vendors, including the Public Works Department shop.

Fuel is obtained at two Cardlock fueling locations managed by Pacific Pride. Department fuel use is monitored by the Public Works Department. No complaints about having only two locations have been noted. The Public Works Department maintains an agreement with fuel vendor for access to their supply tanks, across the street from the Public Works Department corporation yard at any time, and especially in cases of emergency or disaster. Additionally, the Cardlock station at Airport Boulevard has been

outfitted by the Public Works Department with an isolation-transfer switch and connections to allow hookup of City emergency generators to power the system in case of power failure.

FIRE DEPARTMENT OVERVIEW

The Fire Department repairs all fire vehicles at Station #1. It is staffed by five firemen/mechanics and one senior fireman/mechanic. Staff works on vehicles part-time and we estimate these six positions represent 2 full-time equivalent mechanic positions (\$133,000 in salary and benefits). However, SFD staff told us that fire fighters average only 3 hours per day on fleet maintenance activities. The firemen who are responsible for maintaining the engines get an extra 10% premium pay. The senior firefighter gets a 12.5% pay differential for performing these additional duties. Heavy repairs are sent to vendors. The shop space is clean, modern, and well-organized.

One reason for the SPD performing repairs is they think that the Public Works Department garage cannot handle the additional work due to space limitations. It was also stated they believe that SPD would not get top priority for repairs so they would be without equipment at times. The SPD had a budget request that was approved in the FY 2016 Budget to create a 40-hour Fire Mechanic Position, however, we did not see any funding for the position.

FIRE DEPARTMENT OPERATIONS

Vehicles are maintained at intervals of six months for oil changes, 12 months for complete review and repair of any items requiring service. The fleet records are not computerized, written records are kept for all repairs and each vehicle has a folder/binder. The designated staff members perform all repairs except for heavy repairs, some warranty and mandated safety inspections. Repairs are performed in the firehouse or in the drive/parking lot behind the station. SFD uses a management system called "Manager Plus" for asset tracking. Ladders are inspected annually by a certified outside vendor.

The designated staff is also responsible for ordering and maintaining commonly needed parts. All parts are secured in a parts room and written records are kept. SFD staff stated they can usually get parts locally if not in their stock.

Fuel is also procured through contract with the Pacific Pride Cardlock vendor because the six fire stations have no fuel facilities. The SPD has plans to install six above-ground emergency fuel tanks for the stations.

BUDGET AND FINANCIAL INFORMATION

Public Works Department – The Public Works Department’s adjusted 2015-16 budget for its Vehicle and Equipment Maintenance Division (5340) is \$748,522, which is detailed in Illustration 1. This amount does not include any fuel or facility costs. Additionally, costs were not included that would accurately reflect the administrative support (e.g., supervision, budget and finance support) provided by other Department personnel to its Vehicle and Equipment Maintenance Division. Thus, the budget numbers cited in Illustration 1 are not comprehensive and understate the fully burdened cost of the Department’s fleet operations.

**Illustration 1: 2015-16 Budget for the Public Works Department
Vehicle and Equipment Maintenance Division (5340)**

Budget Line Item	Amount
Employee Services	\$569,941
Office Supplies and Materials	\$0
Buildings, Vehicles, Equipment, and Supplies	\$78,001
Small Tools and Equipment	\$5,500
Clothing and Personal Equipment	\$14,500
Books and Publications	\$200
Maintenance Services	\$73,200
Training, Conferences, and Meetings	\$1,000
Insurance and Bonds	\$6,180
Total	\$748,522

Police Department – The Police Department’s adjusted 2015-16 budget for its Maintenance Services Unit (4037) is \$594,312, which is detailed in Illustration 2. This amount does not include any fuel or facility costs. Additionally, costs were not included that would accurately reflect the administrative support (e.g., supervision, budget and finance support) provided by other Department staff to its Maintenance Services Unit. Thus, the budget numbers cited in Illustration 2 are not comprehensive and understate the fully burdened cost of the Department’s fleet operations.

The Police Department’s budget for its Maintenance Services Unit’s (4037) Employee Services is \$380,550, which includes funding for four employees. However, only two of these employees are assigned to fleet duties, so the budget reflected in Illustration 2 is half of the adopted budget amount (i.e., \$380,550 x 50% = \$190,275). The line item budget for Buildings, Vehicles, Equipment, and Supplies also included funding for both facilities maintenance and vehicle maintenance. Expenditures related to facilities maintenance were deducted from the total line item budget (i.e., \$200,000 - \$15,000 = \$185,000).

Illustration 2: 2015-16 Budget for Police Department Maintenance Services Unit (4037)

Budget Line Item	Amount
Employee Services	\$190,275
Office Supplies and Materials	\$200
Buildings, Vehicles, Equipment, and Supplies	\$185,000
Small Tools and Equipment	\$0
Clothing and Personal Equipment	\$500
Books and Publications	\$0
Maintenance Services	\$221,000
Training, Conferences, and Meetings	\$0
Insurance and Bonds	\$3,912
Total	\$600,887

Fire Department – The Fire Department’s adjusted 2015-16 budget for its Fleet Operations (4560) is \$290,969, which is detailed in Illustration 3. This amount does not include any fuel or facility costs. Additionally, costs were not included that would accurately reflect the administrative support (e.g., supervision, budget and finance support) provided by other Department staff to its Fleet Operations. Thus, the budget numbers cited in Illustration 3 are not comprehensive and understate the fully burdened cost of the Department’s fleet operations.

Illustration 3: 2015-16 Budget for Fire Department Fleet Operations (4560)

Budget Line Item	Amount
Employee Services	\$133,098
Office Supplies and Materials	\$0
Buildings, Vehicles, Equipment, and Supplies	\$98,500
Small Tools and Equipment	\$3,000
Clothing and Personal Equipment	\$0
Books and Publications	\$0
Maintenance Services	\$45,000
Training, Conferences, and Meetings	\$10,000
Insurance and Bonds	\$1,371
Total	\$290,969

The total 2015-16 fleet budget for the City’s fleet (i.e., the Public Works Department, Police Department and Fire Department) is \$1,633,803. Again, this total is exclusive of fuels and lubricant budget line items, as well as support resources provided by non-fleet personnel within each department; which significantly understates the City’s cost of operating its fleet

VEHICLE FUELS AND LUBRICANTS

Vehicle Fuels and Lubricants are managed as a separate line item within City budgets, because each department pays for its purchases directly. The 2015-16 Adopted City Budget has an allocation of \$762,700 spread throughout various City Departments for Vehicle Fuels and Lubricants as detailed in Illustration 4.

Illustration 4: 2015 – 2016 City Vehicle Fuels and Lubricants Budgets by Department

City Departments	Amount
Public Work Department	\$153,600
Police Department	\$375,000
Fire Department	\$112,200
Enterprise Operations	\$119,700
Miscellaneous Departments	\$2,200
Total	\$762,700

CONSOLIDATED BUDGET

The City’s fleet maintenance expenditures are primarily centralized in three departments within its 2015-16 adopted operating budget.

- the Public Works Department Vehicle and Equipment Maintenance Division (5340)
- Police Department Maintenance Services Unit (4037)
- Fire Department Fleet Operations (4560)

Illustration 5: Consolidated Budget

Budget Line Item	Public Works Department (5340)	Police Department (4037)	Fire Department (4560)	Enterprise Operations	Miscellaneous Departments	Line Item Total
Employee Services	\$569,941	\$190,275	\$133,098	\$0	\$0	\$886,739
Office Supplies and Materials	\$0	\$200	\$0	\$0	\$0	\$200
Buildings, Vehicles, Equipment, and Supplies	\$78,001	\$185,000	\$98,500	\$256,100	\$0	\$361,501
Small Tools and Equipment	\$5,500	\$0	\$3,000	\$0	\$0	\$8,500
Clothing and Personal Equipment	\$14,500	\$500	\$0	\$0	\$0	\$15,000
Books and Publications	\$200	\$0	\$0	\$0	\$0	\$200
Maintenance Services	\$73,200	\$221,000	\$45,000	\$0	\$0	\$339,200
Training, Conferences, and Meetings	\$1,000	\$0	\$10,000	\$0	\$0	\$11,000
Insurance and Bonds	\$6,180	\$3,912	\$1,371	\$0	\$0	\$11,463
Vehicle Fuels and Lubricants	\$153,600	\$375,000	\$112,200	\$119,700	\$2,200	\$762,700
Total	\$902,122	\$975,887	\$403,169	\$375,800	\$2,200	\$2,659,178

Illustration 5 provides a consolidated view of these Department’s budgets for fiscal year 2015-16, which totals \$2,659,178 when considering budget allocations for the Department of the Public Works Department, Police Department, Fire Department, Enterprise Funds, and other miscellaneous departments within the City. It is important to note that the City’s budgeting practice of combining funding for Buildings, Vehicles, Equipment, and Supplies within a single line item makes it rather challenging to discern costs that are fleet related. The City’s budget would be clearer if these costs were segregated into separate budgetary line items for Vehicle Maintenance Supplies and the other for Building Maintenance Supplies. This would help to reflect each program’s (fleet maintenance and building maintenance) full cost of delivering goods and services and be transparent to user departments.

CENTRALIZATION FEASIBILITY

In this area of the report we assess opportunities for consolidation between the various independent fleet programs operated by the City – from additional collaboration to complete centralization.

Philosophical Underpinnings. Without fleet users, there would be no need for fleet organizations (or fleet consultants for that matter). Thus, the key objective in examining the organization of fleet management functions is to determine what type of structure will yield net improvements in service effectiveness and/or cost control for the City as a whole, always keeping in mind that fleet customer service considerations should take precedence over cost reduction and other considerations because it is customer needs that dictate the need for vehicles and fleet management endeavors in the first place.

A clear best practice for general fleet management programs, and a dominant trend over the past twenty years or so, is the consolidation of fleet management functions into one centralized service organization. Traditionally, it was believed that the effectiveness or responsiveness of a fleet management organization is highly correlated to its proximity to the fleet users it served. The result of this belief was the creation of numerous independent fleet management programs within a municipality, each serving the purported unique needs of its own group of customers relying on its presumably specialized skills and knowledge.

Increasingly, however, it has come to be recognized that many if not most fleet user needs can be met more cost effectively through a consolidated approach to fleet management. The trend in the fleet industry clearly is toward more rather than less consolidation of fleet management functions. The move toward consolidation can be traced to the increasing cost and complexity of fleet management endeavors over the last 20 years or so and a simultaneous increase in emphasis on governmental efficiency –

particularly in the face of competition from contract providers of fleet management services. In short, the complexity of fleet management today often produces significant economies of scale, which often can be captured only through collective effort.

User departments, while generally supportive of the cost savings that a centralized fleet program promises, tend to be concerned that such a program will be overly bureaucratic, command rather than support oriented, and not adequately responsive to their fleet related needs. They also are concerned that quality and responsiveness to internal customers might suffer and that service priorities will not meet their needs. These concerns can be addressed by involving users in management of the fleet program through an advisory board, instituting appropriate customer service protocols, implementing an effective and transparent cost charge-back system, and developing effective performance measurement and reporting procedures.

Most organizations of the City of Salinas' size have developed a centralized fleet management program. In fact, it is our experience that nearly all of the cities in California with a similar population and scope of operations have centralized fleet operations.

Current Issues

In Salinas, one of the causes for the lack of fleet program centralization has been chronic underfunding of the central fleet organization (i.e. the Public Works Department). While all City departments have endured budget reductions over the past decade, reductions have been less for the Police and Fire departments. This is a normal course of affairs for a municipality where emergency services are generally prioritized.

In the case of fleet operations, the Police and Fire Departments have been able to largely maintain services levels despite budget restrictions. During this period, the Public Works Department has not been so fortunate and has experienced several staff reductions and funding cuts that have materially degraded the organization's ability to provide services to its customers.

Under current conditions, it is not surprising that the Police and Fire Departments require convincing that their fleet service needs would be better met by the Public Works Department under a consolidated approach rather than continuing to operate on their own. Absent changes and investments by the City, we would be hard pressed to disagree with this perspective. However, we do believe that Salinas would be best served from a city-wide perspective by a more coordinated and centralized approach to fleet management.

Returning to the central issues involved in assessing the feasibility of consolidating fleet management functions for Salinas: Will consolidation improve service levels across all departments? We believe that the answer is yes. Will consolidation produce economies of scale that lower fleet costs? We believe the answer is yes to this question also.

Silos of independent fleet operations are inherently inefficient because they produce obvious duplication of effort and fail to capture economies of scale. Centralizing fleet operations in the City would certainly lower costs and should also produce improved service levels as consistent management practices are applied across current organizational barriers.

Effective management of a fleet requires an integrated approach that recognizes the interrelationships between the various asset, maintenance, and business management activities that define the field of fleet management. In short, a centralized organizational model where a single, professional fleet manager is

given full responsibility for the City's fleet, and held accountable for achieving defined results needs to be initiated. This would provide a significantly better platform for optimizing fleet operations than the current fractionalized organization.

Development of a centralized support fleet management program will enable the City to leverage core competencies, capture economies of scale, reduce duplication of effort, and link related functions such as "fleet replacement planning" to "fleet maintenance". Centralization of all fleet activities within the fleet management organization will enable a holistic approach to this business, provide for the development of consistent policies and practices, and foster improvements through a more systematic approach to management of the City's fleet assets.

The primary advantage of a centralized approach will be improved management of the entire City fleet which will result in higher service levels. Higher service levels equate to lower fleet downtime, quicker repair turn-around time, and more reliable and safe vehicles. A centralized fleet organization will also allow greater recognition of fleet-wide performance and costs.

If fleet activities are centralized, the next issue is which organization is best positioned to manage consolidated fleet operations? The Public Works Department is the logical home for centralized fleet services because its fleet operation has a Citywide focus and is an Internal Service Fund. Police or Fire are certainly capable of managing the City's fleet, but as line departments focused on emergency services it would be inappropriate for these organizations to degrade their focus on core-mission activities by managing an enterprise-wide support service.

While the Public Works Department is the most obvious choice to manage a centralized fleet, as previously mentioned the organization has not always been able to meet its obligations to provide excellent service to its customers due to resource limitations. Consequently, the City must design and implement a centralized fleet model that both generates economies of scale and meets the service needs of line departments – particularly Police and Fire, which have placed a premium on funding fleet operations to support their emergency service activities. The City also needs to make improvements in basic fleet management by adopting industry best practices for managing a fleet (such as better tracking of costs and other historical data, charging fully-burdened costs back to the consumers of fleet services, establishing key performance metrics, better parts management, etc.

We believe that the best solution for the City is to place centralized fleet operations in the Public Works Department. The position of Fleet Manager should be established to direct fleet operations. Governance of the centralized fleet program should be a shared responsibility between a Fleet Advisory Board (policy and strategic issues agreed to be primary stakeholders) and the Public Works Department (day-to-day management). Maintenance services should continue to be provided at the current two physical locations. Commercial vendor services should be limited which will lower unit costs and leverage investments in facilities and staff.

The Internal Service Fund model of charging customers for goods and services consumed is consistent with best practices in the fleet industry. Fully burdened rates that reflect the actual costs of the fleet organization will improve accountability and behavior of fleet users as clear price signals are sent rewarding good driving actions and decisions, and charging more for bad behavior.

Recommended Organization

The Most Efficient Organization (MEO) for management of Salinas' fleet will combine resources from the Public Works Department, Police Department, and Fire Department. Accordingly, we recommend that the City centralize fleet operations and pursue some outsourcing of services around the margins to meet peak demands and specialty service requirements. Our specific recommended organizational and business model changes in order to capture economies of scale, synergies, and efficiencies include:

1. Consolidate fleet operations under a single organization and chain of command to capture economies of scale, eliminate duplication of effort, and improve internal controls and management capabilities. Silos of independent single purpose maintenance operations are inherently inefficient.
2. Note that staff currently working on fire trucks would likely not continue to do so because of their status as fire-fighters. However, the Public Works Department's mechanics are fully capable of working on fire trucks as the chassis of these vehicles are similar to any heavy truck, the water systems are similar to hydro-vac trucks currently in the fleet, and electrics/communication systems are similar to police cars that the Public Works Department already maintains. Consequently, there will be no loss of expertise in the maintenance of emergency vehicles. Rather, service will improve because when there is a peak in fire truck maintenance demands other mechanics will be available to pitch in. Conversely, when fire truck maintenance demands fall off, mechanics can perform work on other heavy-duty vehicles thus benefiting the entire City. Moreover, for about the same money the SFD will receive up to 16 hours per day in mechanic resources (two positions) rather than the three hours per day (0.4 FTE) it now gets with its own staff.
3. Create a new position of Fleet Manager to lead the consolidated organization. The person hired for this position should be experienced with fleet asset management, the production and use of management information, replacement planning and life-cycle cost analysis, fuel management, and other fleet management activities beyond fleet maintenance operations.
4. Outsource body shop, vehicle upfitting, machine shop, and most tire services. Outsource other specialty services so the fleet maintenance operation can focus on PM services, which are the basic "blocking and tackling" skills required from a successful fleet garage.
5. Hire a Fleet Parts Specialist to manage parts supply and inventory activities.
6. Charge all costs back to fleet users to improve cost recognition and control.
7. Develop a Fleet Advisory Board comprised of major fleet users. The purpose of creating an Advisory Board is to give the major customers who rely on vehicle services an active role in running the fleet business. Board members will provide perspectives, experiences and talents that will enable the centralized fleet organization to improve operations, foster collaboration, and to increase the satisfaction of all stakeholders.

The Board should approve policy recommendations, review financial performance, and monitor achievement of production and customer service goals. Examples of specific responsibilities are provided below:

- Approve significant policy initiatives such as the annual business plan, budget request, charge-back methodology, changes in operations such as shop hours, staffing levels, etc., and the annual equipment replacement plan.
 - Review and approve service levels, priorities and performance. Monitor achievement of performance goals and commitments as contained in customer service agreements.
 - Participate in the annual performance evaluation of key staff such as the Fleet Manager.
 - Act as a communications link between fleet services and major customers.
8. Develop detailed Service Level Agreements. A clear understanding of the needs and concerns of customers is critical to effectively running a fleet services organization. The lack of a formal customer communication infrastructure can limit a fleet organization's ability to quickly revise its service practices to keep pace with changes in its customers' service needs. Relevant information may be lost or misinterpreted if communicated only through informal channels.

One way to improve customer communications and relations is through the development of detailed service agreements. These agreements should include a description of service procedures, price and billing procedures, repair priorities, repair authorization limits, performance standards, contact persons, and customer responsibilities. The agreements provide customers with a better understanding of the range of services offered by a fleet organization and how to access these services. They also establish a clear understanding of how performance should be judged; define specific customer responsibilities, and the limits of stakeholder authority.

9. Acquire a new fleet management information system and establish a new position of Data Analyst to act as fleet system administrator. This position will be responsible for providing stakeholders with actionable management information and reports to support data driven decisions to optimize fleet operations.
10. Develop a performance management system. Implementation of a system of meaningful key performance measures is one of the most important management initiatives that a fleet services organization can pursue. Without a performance management program, it is impossible for such organizations to prove the value of their services to stakeholders and decision makers, and to gauge the degree that their programs and initiatives are successful. Performance measurement allows an organization to:
- Reduce reliance on subjective judgment and speculation;
 - Track performance against standards and benchmarks;
 - Home in on areas of the organization that require improvement; and
 - Track trends over time.

Following is the most efficient organization (MEO) that we are recommending. Note that the organization assumes the City will fund fleet renewal as discussed in the next section of this report. If this is not the case, then three additional mechanic positions would be required.

Illustration 6: Recommended Staffing Levels

Position	Public Works Department Shop			Fire Department Station #1	Total Positions
	Administration	1st Shift	2nd Shift	1st Shift	
Fleet Manager	1	0	0	0	1
FMIS Administrator/Analyst	1	0	0	0	1
Fleet Parts Specialist	1	0	0	0	1
Crew Supervisor – Maintenance	0	1	0	0	1
Working Supervisor	0	0	1	0	1
Mechanic II	0	3	1	2	6
Mechanic I	0	2	1	0	3
Total	3	6	3	2	14

Note that the MEO has five additional positions than are currently filled and includes a number of new position titles. In our opinion, consolidating maintenance operations and creating the right positions to manage a modern municipal fleet operation are necessary if the City is serious about optimizing its fleet program.

The cost of the new positions should be offset by reductions in expenditures to outside vendors and salary savings. In other words, existing budget resources from the Public Works Department, Fire Department, and Police Department should cover the costs of the new positions associated with the recommended staffing levels defined in Illustration 6. The new staffing levels involves transferring one position (but funding for two FTEs) and associated budget from the Fire Department, two positions and associated budget from the Police Department, six positions from the Public Works Department, and creation of four new positions. Additionally, there are three new positions recommended under Administration (i.e., Fleet Manager, Parts Specialist, and Fleet System Administrator) and one net additional mechanic position. Reclassification of existing positions from Police and Fire Departments to mechanics may also be required.

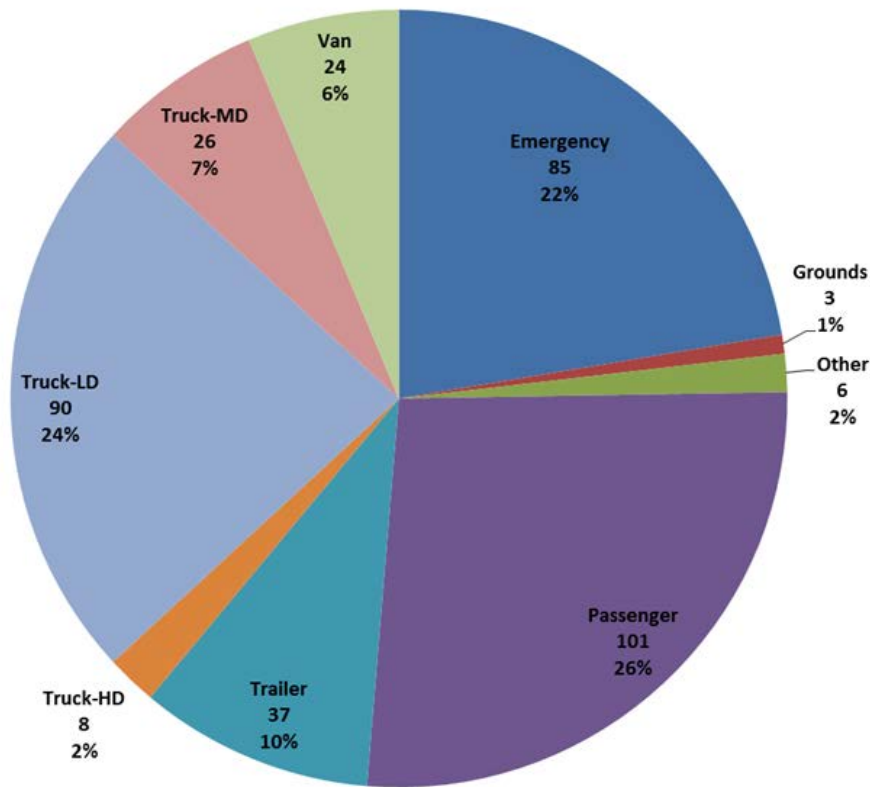
Note that the above is a conceptual fleet staffing level and a detailed budget will need to be established that conforms to the City’s salary and benefit schedule, union contracts, and human resources regulations. Position descriptions for new positions will also need to be established. Additionally, it is noteworthy to highlight that fleet management information system (FMIS) administrators / data analysts are in extremely high demand and are difficult to find due to the niche nature of fleet technologies. The City may find that outsourcing this role to a 3rd party is the most practical and cost effective approach to addressing this operational need.

FLEET REPLACEMENT PLAN

In this section of the report we cover our assessment of current fleet replacement practices, the age of the fleet, the adequacy of historical funding levels, and associated procedures related to fleet replacement.

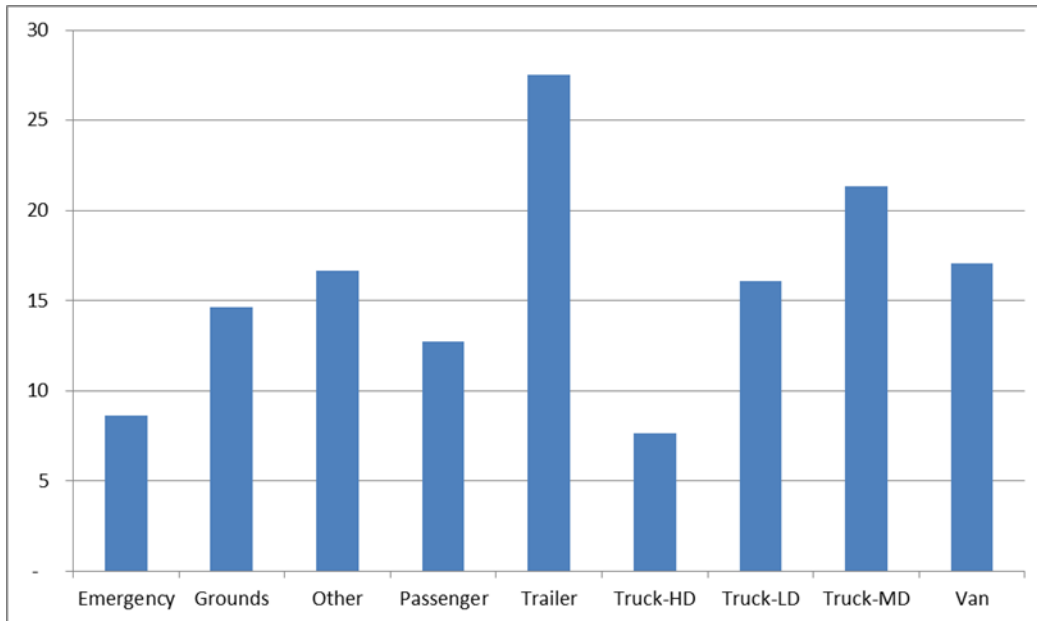
The City operates a fleet of 390 vehicles and pieces of equipment, which includes 130 units assigned to the Police Department (SPD), 50 units assigned to the Fire Department (SFD), and the remaining 210 units assigned to the Public Works Department (the Public Works Department). For purposes of this assessment we had sufficient information to model replacement for 380 units. The fleet includes vehicles from standard passenger sedans to complex sewer cleaning vehicles and equipment from trailers to fire pumpers. For purposes of this study we classified the City’s fleet by equipment type, which is summarized in Illustration 7.

Illustration 7: Composition of the City’s Fleet by Class



The overall average age of the fleet as of October 1, 2015 is 15.4 years. A breakdown of the average age of the City’s fleet by class is shown in Illustration 8.

Illustration 8: Average Age of the City’s Fleet by Class



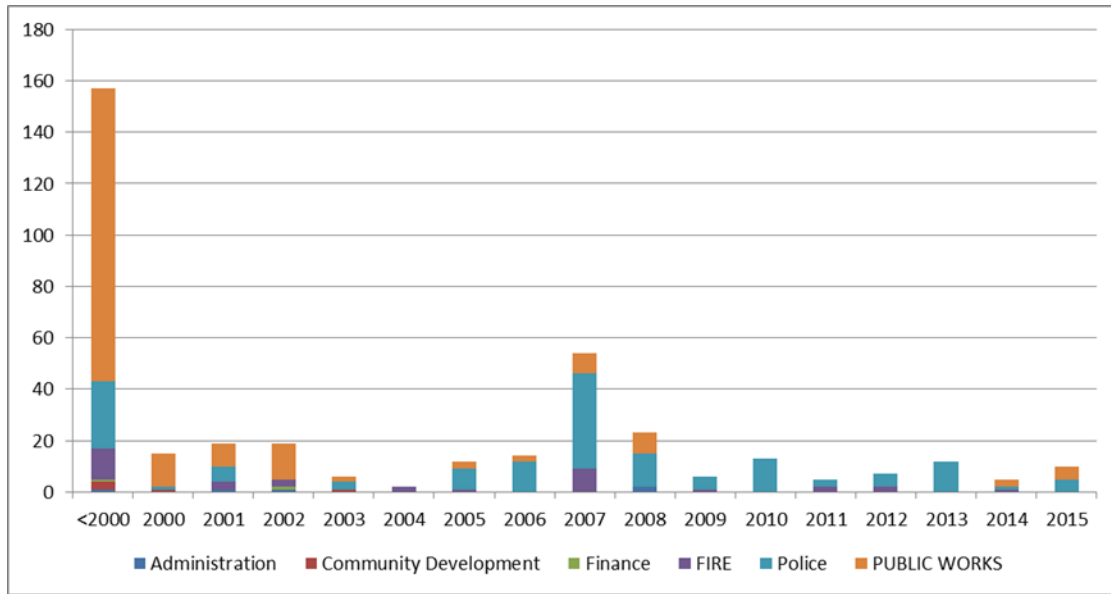
While most of the departments have vehicles, the majority of assets are clearly assigned to the Public Works Department, Police Department, and Fire Department. Illustration 9 presents the distribution and average age of fleet assets by City department.

Illustration 9: Fleet Statistics by Department

City Department	Asset Count	Average Asset Age
Administration	5	12.9
Community Development	5	17.1
Finance	2	20.0
Fire	36	13.7
Police	151	9.8
Public Works Department	181	20.3
Total	380	15.4

The average weighted age of all the vehicles in the fleet (15.4 years) exceeds the current recommended average replacement criteria for units (9.0 years). In general, the average age of a fleet should be around 50% of the replacement criteria. For example, if the target replacement cycle for all ¾-ton pickup trucks is 8 years, then the average age of all ¾-ton pickup trucks should be 4 years (provided that the data set is statistically relevant). Illustration 9 presents the distribution of the fleet by model year and the number of assets in each bracket.

Illustration 10: Distribution of City Fleet by Model Year and Department



As indicated in Illustration 10, 60% of the City’s fleet assets are 10 years of age or greater. Moreover, the average age of the City’s entire fleet is 15.4 years, which places the de facto fleet replacement cycle at 30.8 years (i.e., double the average age of the fleet).

PRINCIPLES OF EFFECTIVE FLEET REPLACEMENT

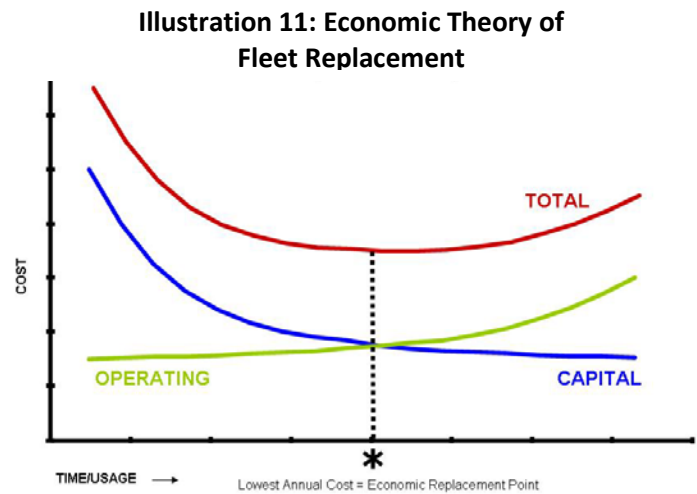
Before discussing our evaluation of the City’s fleet replacement cycles and practices, it is useful to review the major components of an effective fleet replacement program. This provides the philosophical and analytical framework that our project team used as the point of departure for conducting this evaluation.

The five key components of an effective fleet replacement program are:

1. Empirically validated vehicle *replacement cycle guidelines* that identify when specific types of fleet assets generally should be replaced so as to minimize their life cycle costs (i.e., total cost of ownership).
2. A long-term fleet *replacement plan* that pinpoints anticipated replacement dates and costs of individual assets based on the application of recommended replacement cycles and quantifies year-to-year, fleet-wide replacement costs and future variations therein.
3. A *capital financing* approach that facilitates securing sufficient funds each year to acquire replacement vehicles in accordance with the established and updated replacement plan by making such funding requirements smooth, predictable, and, to the fullest extent possible, invulnerable to competition from other capital funding requests.
4. A short-term replacement prioritization and earmarking process for designating specific vehicles and pieces of equipment to be replaced in the coming fiscal year.
5. A budgeting and funding process that enables fleet user organizations to secure the amount of funds needed each year to execute the replacement plan based on the selected financing approach.

Determination of Optimal Vehicle Replacement Cycles

Vehicle replacement guidelines should be based on the economic theory of optimal vehicle replacement, which is illustrated graphically in the figure to the right. As a vehicle ages, its capital cost diminishes and its operating cost increases. The combination of these two costs produces a U-shaped total cost curve. Ideally, a vehicle or piece of equipment should be replaced around the time the rise in annual operating costs begin to outweigh the decline in annual capital costs – that is, when the two cost curves intersect and the total cost curve begins to turn upward.



The total cost curve is different for every type of vehicle and, indeed, for every individual vehicle of a given type. This variability is caused by differences in the design and engineering of different types of vehicles, in operating environments, in the quality of care vehicles receive, and a variety of other factors. In recognition of this fact, most organizations develop recommended replacement cycles for a class or type of vehicles, which will approximate the optimal replacement cycle for most of the units in that particular class. Historically this was most often accomplished in an informal manner based on discussions with mechanics and drivers, and a comparison of replacement cycles with peer organizations.

Best practice fleet organizations develop these cycles empirically using optimal replacement cycle analysis (ORCA) techniques. This analytical approach involves modeling the stream of costs associated with acquiring, operating, and disposing of a particular type of vehicle or piece of equipment over a range of potential ages or replacement cycles, and identifying the cycle that will result in the lowest total cost of ownership.

To determine the minimum cost cycle, the equivalent annual cost (EAC) of each cycle is computed and compared. The EAC of a capital asset such as a vehicle, also referred to as a capital recovery factor, is a uniform dollar amount, expressed in nominal dollars, the sum of whose payments for a given replacement cycle is equivalent to the net present value costs of that asset over the course of that cycle. It is a useful metric for comparing the costs of alternative replacement cycles (i.e., streams of future costs of different durations) for an asset in order to determine which cycle results in the lowest cost.

What is most important about an ORCA approach is that it moves replacement cycle decision making to a data-centered model. In our experience, even the best-educated or well-intentioned individuals in an organization may believe cost savings or avoidance opportunities exist where they do not, in fact, exist. Further bias against a particular approach may lead a decision maker to recommend a more costly one. For example, vehicle maintenance supervisors are aware of the impact that replacement cycles have on their garage staff. Changing cycles in a way that would significantly decrease the amount of maintenance work required may color the way they view such options. In the absence of hard data, it is not difficult to make almost any approach sound more cost effective. However, the answer to the question “Is there objective data that supports the replacement cycles used?” is most often no.

Optimal replacement cycle cost analyses are valuable for examining the “hard” capital and operating costs associated with alternative replacement cycles for a given type of vehicle. It is important to note, however, that there often are other costs, some more easily measured than others, which are also impacted by an organization’s replacement cycle decisions. These include items such as:

- Unmanageability of repair costs
- Increasing vehicle downtime and its impact on fleet size
- Service disruptions
- Reduced employee productivity
- Reduced employee safety
- Reduced public safety
- Higher greenhouse gas emissions

Decision makers who assume that cutting replacement purchases is a good way to help balance the budget need to understand that such cuts may not only transfer fleet costs from the capital to the operating side of the general ledger, but may also actually increase the total cost of the fleet. Regardless of its net effect on current fleet costs, the deferral of replacement purchases on a regular basis unquestionably leads to an older fleet with significant downtime at best, and at worst the inability to provide services due to unreliable transportation. Delaying replacement also increases future replacement spending needs, often resulting in growing and increasingly unmanageable fleet replacement backlogs.

Replacement Planning

The second component of effective fleet replacement program calls for a long-term fleet *replacement plan* that projects future vehicle replacement dates and purchase costs associated with the use of a stated set of replacement cycles. It quantifies year-to-year, fleet-wide replacement costs and future variations therein, allowing for effective long-term planning and budgeting.

A key benefit of a long-term replacement plan is its ability to help fleet managers educate decision makers as to the magnitude of fleet replacement costs and the inherent annual peaks and valleys in such costs over time. It specifically helps fleet management organizations and their customers address two misconceptions held by many nonprofessionals that often are major factors behind an organization’s failure to devote enough funds to fleet replacement, which is the primary impediment to, in turn, replacing vehicles and equipment in a timely manner.

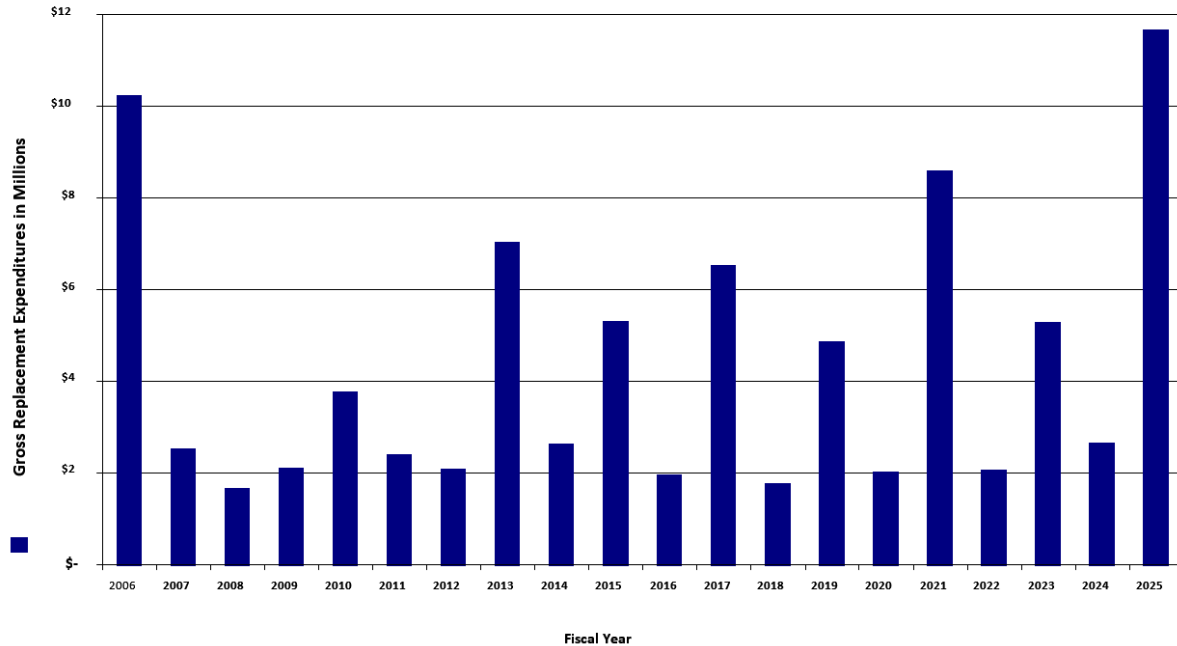
One of these misconceptions is the belief that fleet replacement costs are quasi discretionary and that there is no compelling reason to fill 100% of the requests for fleet replacement funds that line organizations make each year. The other is the belief that it is not necessary to vary to any significant degree the amount of funds devoted to fleet replacement spending from year to year.

A good fleet replacement planning process not only quantifies the costs of replacing the fleet over the long term so that management and budget decision makers can see that this is a significant, recurring cost of doing business. It also illustrates the consequences of under-funding replacement expenditures by translating spending shortfalls into future spikes in, and backlogs of, replacement spending needs.

Replacement Financing, Budgeting and Funding

Items 3 and 5 from our list of essential elements of an effective replacement program pertain to the manner in which an organization finances fleet replacement (i.e., vehicle and equipment acquisition) costs. The best fleet replacement plans are of no value without the annual funding required to implement them. Illustration 12 provides an example of annual replacement costs over a period of 20 years of a government fleet of about 600 vehicles and pieces of equipment³.

Illustration 12: Sample Fleet Annual Replacement Plan Acquisition Costs



As can be seen, year-to-year fleet replacement spending requirements are quite volatile with peaks and valleys of varying magnitude occurring routinely throughout the 20-year period. The first year is very high, reflecting a backlog of vehicles requiring replacement. Note that projected replacement costs in 2013 are over three times more than those in 2008. This unevenness is common in virtually all mixed-vocational fleets.

Even during good economic times, securing sufficient funds to replace vehicles and equipment in a timely manner is a challenge for many organizations. In our experience, the vulnerability of fleet replacement funding in most organizations stems less from a lack of appreciation of the importance of vehicles or of the need to replace them on a regular basis, and more from a lack of willingness to commit sufficient funds to fleet replacement. This reluctance is greatly impacted by the large numbers of vehicles that may need to be replaced in some years and the inability of certain capital financing approaches to effectively deal with the resulting replacement spending needs that are inherently uneven from year to year.

Most organizations, particularly in the public sector, do not have a good mechanism for accommodating year-to-year changes in spending requirements when the source of funds (i.e. tax revenues) for such expenditures is relatively static. The solution to this problem lies in pursuing one of two courses of action: eliminating the volatility in fleet replacement spending requirements, or eliminating the volatility in replacement funding requirements. While annual volatility in the replacement cost of a fleet (i.e.,

³ This fleet is used for illustrative purposes only but is consistent with most governmental fleet operations.

spending requirements) can be managed to a certain extent over the short term – say three to five years – it cannot be completely eliminated in a fleet comprised of many different types of vehicles. The year-over-year volatility of replacement funding requirements, on the other hand, can be managed quite well, depending on the method used to finance fleet replacement costs. There are essentially three ways to finance fleet capital costs: cash, savings, and debt.

Replacement Prioritization

Item 4 from the list of effective fleet replacement program requirements indicates the need for a short-term replacement prioritization and earmarking process for designating specific vehicles and pieces of equipment to be replaced in the coming fiscal year. This process takes us from the data-driven model of a long-term fleet replacement plan, to the real-world review of vehicles proposed to be replaced in a given year.

Because a fleet replacement plan and the replacement cycle guidelines for different types of vehicles on which it is based derive from cost and other information for the “average” or “typical” vehicle or piece of equipment of each type, they do not fully take into account the unique characteristics of each asset in a fleet. The long-term replacement plan should serve to identify which assets are candidates for replacement each year, not which assets will definitely be replaced each year. These candidates should be scrutinized using criteria that are not limited to age and life-to-date miles or hours of use. A replacement prioritization process includes reviewing a vehicle’s application and use to determine if it will be required long term. It also reviews the application and condition of the vehicle, identifies the type of replacement unit required and prioritizes vehicles on the replacement list for use in order/delivery cycling. Best practice organizations use a scoring system to set priorities. The system incorporates values for factors or attributes that are unique to each vehicle, including current utilization level; front-line or backup assignment status; recent repair history and pending repair/refurbishment costs; perceived reliability, suitability, and safety; and ease of replacement.

RECOMMENDED REPLACEMENT CYCLES

Conducting optimal replacement cycle analyses for all classes of vehicles in the City’s fleet would be unreasonably costly and so was not included the scope of this project. However, since we have worked with dozens of government fleets on replacement planning projects, we can use the results of these projects as a starting point to identify replacement cycles for vehicles that reflect current thinking from leading organizations on when vehicles should be replaced. Note that these cycles are those that we developed in concert with our clients over the past decade rather than a simple list of replacement criteria used by other fleets. As such, these cycles may differ from those that the City has gathered in past surveys.

REPLACEMENT PLAN

A good fleet replacement planning process not only quantifies the cost of replacing the fleet over the long term so that management and budget decision makers can see that this is a significant, recurring cost of doing business. It also illustrates the consequences of under-funding replacement expenditures by translating spending shortfalls into future spikes in, and backlogs of, replacement spending needs.

In order to further evaluate the City’s fleet replacement practices, we quantified the long-term replacement costs of the fleet using our proprietary computer program *CARCAP™ (Capital Asset Replacement Cost Analysis Program™)*. We used this program to develop fleet replacement plans included in this report and to analyze various costs and other outcomes associated with their implementation. This program allows us to project the remaining life, future replacement dates, replacement costs, residual

values, ages, book and fair market values, and book and effective depreciation costs of each individual *asset* in a fleet.

CARCAP™ generates a replacement plan by 1) comparing the current age and odometer or hour meter reading of each individual asset in the fleet against recommended replacement criteria in age, miles, or engine hours for that type of asset; 2) projecting when each asset will reach each applicable criterion or threshold for replacement; and 3) estimating the purchase price of the asset in the year in which it will reach whichever threshold comes first.

The specific steps we followed to determine the replacement costs of the City’s fleet were the following:

1. Obtained a detailed inventory of all fleet assets;
2. Assigned every asset in the inventory to a specific vehicle category or class;
3. Developed analysis parameters (e.g., recommended replacement cycles in months and miles) for each asset class;
4. Applied these parameters to the fleet inventory to develop a “baseline” fleet replacement plan that predicts the future replacement dates and costs of every individual asset in the fleet over the next 10 years; and
5. “Smoothed” the baseline plan to obtain a more realistic replacement plan capable of being implemented.

BASELINE REPLACEMENT PLAN

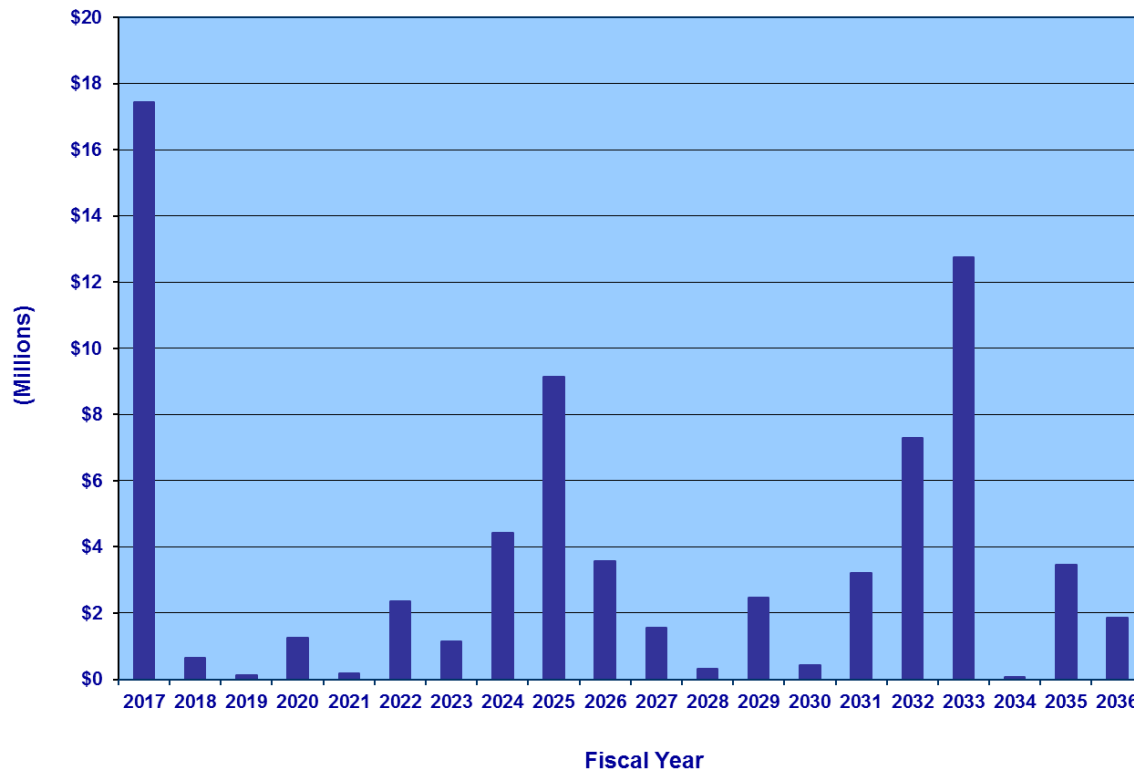
The *Baseline Replacement Plan* projects future replacement dates and costs for each asset in the City’s fleet (380 units) over a 20-year planning period using the recommended replacement cycles developed in the first task of this project.

Base assumptions for the development of the baseline and subsequent fleet replacement plans include:

- Fiscal year is July 1 through June 30 of each year;
- Annual inflation rate for new vehicles will be 3%
- While we recommend proceeds from auctions be reinvested in the fleet program to partially offset new vehicle purchases, for purposes of the plan, since its use is primarily as a budget planning tool, all costs are gross and do not assume any offsetting auction revenues;

Illustration 13 provides the results of Mercury’s baseline fleet replacement plan for the City’s fleet, which includes the funding requirements for its assets based on the recommended equipment lifecycles.

Illustration 13: City’s Baseline Fleet Replacement Plan with Recommended Cycles



As can be seen from the fleet replacement plan results presented above in Illustration 13, there is a backlog of vehicles in need of replacement, where “backlog” is defined as the number and replacement cost of units in the first year of a replacement plan that meet or exceed the recommended age for replacement. In the fleet, 325 assets – roughly 86% of all the vehicles in the City’s fleet – will meet or exceed recommended replacement cycles in the first year of the plan. The estimated replacement cost of these vehicles (in 2015 dollars) is \$17.4 million. The table below in Illustration 14 summarizes key statistics gleaned from the City’s baseline fleet replacement plan.

Illustration 14: Baseline Fleet Replacement Plan Key Statistics

Statistical Measure	City's Current Measure
Total number of assets in replacement analysis	380
Number of asset classifications	51
Current mean asset age (years)	15.4
<i>De facto</i> average replacement cycle (years)	30.8
Weighted average recommended replacement cycle (years)	9
Average asset purchase price (2015 dollars)	\$64,755
Gross fleet replacement cost (2015 dollars)	\$ 24.6 M
Average annual fleet replacement spending requirement	\$ 2.7 M
Average annual replacement expenditures (2010-15)	\$ 0.5 M
Current replacement backlog	\$ 17.4 M
Number of assets that exceed recommended replacement criteria	325
Percentage of assets that exceed recommended criteria	86%

The estimated replacement cost of all the vehicles in the fleet is \$24.6 million. With our recommended cycles vehicles will be replaced on average every 9.0 years. To comply with this fleet-wide weighted average replacement cycle the average annual capital outlay for vehicle purchases would need to be \$2.7

million. However, this figure does not address the backlog in funding needs that has built up over the years. In other words, the City needs to average \$2.7 million per year in fleet replacement funding to keep the fleet current *after* it has replaced the 86% of the fleet that is currently due or overdue for replacement.

SMOOTHED FLEET REPLACEMENT PLAN

Even if the City had the financial means to do so, we would *not* recommend that it attempt to replace 86% of the assets in its fleet in a single year. There are a number of reasons for this including the logistical challenges of making it happen, the potential impact on services during an exchange of vehicles and equipment of this magnitude, and recurring spikes in future replacement costs that would result from the fact that many of the vehicles replaced in the first year of the plan would come due for replacement simultaneously in future years.

To address all of these issues, we developed a Smoothed Renewal Plan for the fleet reflecting the vehicles that we recommend the City actually replace over the next several years based upon the application of our recommended replacement criteria. The resulting replacement costs of the fleet under this Smoothed Renewal Plan are depicted in the graph below.

This plan includes the same purchase price and inflation rate assumptions as the Baseline Replacement Plan with the exception that we manually adjusted the initial replacement dates of many units in the fleet so that the total replacement costs in years 1 through 8 are spread relatively evenly across the years.

While there are still some peaks and valleys in this replacement plan, it is more consistent in the early years of the plan. All subsequent analysis for the purposes of evaluating alternative financing approaches uses the smoothed fleet replacement plan.

Illustration 15: City’s Smoothed Fleet Replacement Plan with Recommended Cycles

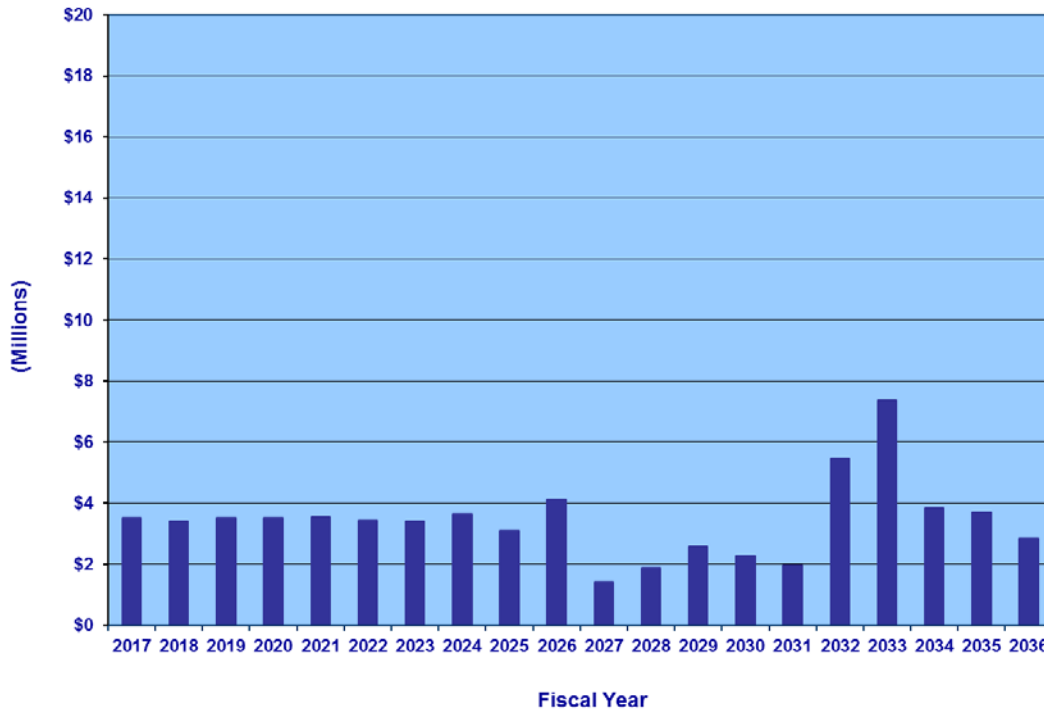


Illustration 15 presents a smoothed fleet replacement plan under which the City would realize a steady spending level approximately \$3.5 million each year for the first five years of the plan and replace an average of 59 units per year. As a comparison, the City has spent an average of \$0.5 million over the last six years on its fleet replacement, which is documented in Illustration 16 below.

Illustration 16: City’s Historical Fleet Replacement Funding

Fiscal Year	Fleet Replacement Funding
2010	\$334,036
2011	\$1,138,632
2012	\$253,415
2013	\$311,212
2014	\$125,374
2015	\$1,082,299

As shown in Illustration 17 below, the fleet will continue to age if the City only appropriates \$0.5 million per year to replace vehicles while the average age will drop dramatically under our proposed fleet renewal plan.

Illustration 17: Status Quo versus Smoothed Replacement Plan for 5-Years

Fiscal Year	Assets Replaced		Funding Level		Average Fleet Age	
	Status Quo	Renewal	Status Quo	Renewal	Status Quo	Renewal
2016 - 2017	16	53	\$0.53	\$3.51	14.2	11.5
2017 - 2018	9	86	\$0.53	\$3.41	14.5	8
2018 - 2019	14	95	\$0.48	\$3.50	14.3	4.5
2019 - 2020	14	22	\$0.53	\$3.51	14.2	4.5
2020 - 2021	10	38	\$0.51	\$3.54	14.4	4
Total	63	294	\$2.58	\$17.47	N/A	N/A

Over the five-year period, the Smoothed Plan would replace 77% of vehicles in the fleet whereas the Status Quo (assuming a \$0.5 million annual spend) would replace only 17% and leave the rest of the fleet to continue to age and deteriorate. The obvious question is “Why should the City spend so much more money on fleet replacements?” What follows is a discussion about the costs of not replacing the fleet in budgetary numbers.

THE CASE FOR FLEET RENEWAL

In Principles of Effective Fleet Replacement section of this report we discussed the impact of fleet replacement, which holds that there is a point in time where keeping vehicles in service longer costs rather than saves an organization. These costs are not all economic in nature. As mentioned previously, these costs can come in the form of service disruptions, reduced employee productivity, reduced safety, and higher greenhouse gas emissions.

As the vehicle ages, it will be prone to breakdowns. These breakdowns will increase the repair costs and decrease productivity. Also, as the vehicle is kept longer, advances in technology will be missed. These missed technologies can include safety features and improvements in fuel economy and emission reduction.

While calculating changes in the total cost of ownership (TCO) and emission reduction for the City under our recommended fleet renewal plan was beyond the scope of this project, we typically see a 5% to 10% reduction in direct costs over ten years. We also see a 1% per year decrease in fuel economy each year a vehicle is kept.

Though an economic comparison is the most appropriate way to calculate the benefits of fleet renewal, we recognize the fact that compelling economic arguments for taking a particular course of action are largely irrelevant if they cannot be reconciled with fiscal realities. For most government jurisdictions this means that strategies that are clearly beneficial to employees and taxpayers over the long term must still be affordable in the short term. Otherwise, they simply will not be pursued. To this end, we next turn our attention to a discussion of various capital financing methods.

FINANCING FLEET REPLACEMENT COSTS

Local government entities such as the City of Salinas generally use one (or a combination) of methods for financing fleet capital costs:

- Purchase with cash using funds appropriated on an ad hoc (year-to-year) basis;

- Purchase with cash accumulated in a sinking or reserve fund, usually accompanied by a cost-charge back system that collects funds from fleet user organizations incrementally to defray the costs of the fleet assets they use;
- Purchase with funds borrowed from financial institutions (e.g., an equipment loan, a master “lease-purchase” agreement, a line of credit, etc.) and/or investors (e.g., certificates of participation, general obligation bonds, etc.); and/or
- Leasing from a fleet leasing company, the financing arm of a vehicle/equipment manufacturer; and/or another type of financial institution, such as a bank.

There are advantages and disadvantages to each of these approaches, several of which are discussed below.

OUTRIGHT PURCHASE WITH AD HOC ANNUAL APPROPRIATIONS OF CASH

We refer to the use of annual, ad hoc appropriations of cash to finance the replacement of fleet assets as a “pay-before-you-go” approach. By this, we mean that the entire capital cost of replacing each asset in the fleet is paid at the beginning of the asset’s service life.

The advantages and disadvantages of the cash financing approach can be summarized as follows.

Advantages

- This is an approach that is widely used in the public sector; therefore it is generally accepted in all branches of government and by the public. It is the simplest of the capital financing methods to administer.
- There is no out-of-pocket interest expense. This can be a real advantage from a fiscal perspective but not necessarily from an economic one. Specifically, unless an organization has cash in excess of its needs, using cash to pay the full purchase prices of vehicles before they are used is not “free.” The cost of using cash in such a manner involves the opportunity that is lost to use the cash to other organizational priorities that might yield a higher “return” or, at a bare minimum, to earn interest on the cash by investing it.

Disadvantages

- The use of this financing approach almost always leads to sub-optimal replacement decision making. This results from the inherent conflict, described earlier, between short-term budget making and vehicle total cost of ownership minimization, which requires a long-term perspective. If the marginal cost of replacing a vehicle is the full purchase price of a new vehicle, repairing an old vehicle will almost always be cheaper in fiscal terms than replacing it.
- If no cost charge-back system or other incremental payment method exists, the ongoing cost of having a vehicle at the disposal of an organization is not apparent to vehicle users, leading to the inefficient deployment and utilization of fleet resources. Fleet users experience little economic benefit in disposing of underutilized or unneeded vehicles whose original purchase price they view as a sunk cost.

It is our experience that the cash financing approach is the least effective method for financing the replacement of fleet assets over the long term.

RESERVE FUND AND CHARGE-BACK SYSTEM

Although replacement *spending* requirements under a reserve fund approach are identical to those required if cash financing is used, replacement funding requirements are different. This is because using a reserve fund permits vehicles’ capital costs to be paid for incrementally (after a vehicle is first added to

the fleet; the first-time purchase of a vehicle must be paid up front under this financing approach). That is, each year users are charged for a portion of the vehicle's replacement cost (i.e. depreciation plus a replacement surcharge) and this is put into "savings" to pay for the replacement vehicle when the time comes.

The advantages and disadvantages of the sinking fund financing approach are summarized as follows.

Advantages

- Replacement funding requirements (i.e., fiscal impacts) do not fluctuate significantly from year to year because using a reserve fund permits the capital costs of vehicles to be paid for incrementally. Smooth, predictable funding requirements increase the likelihood that sufficient funds will be made available to replace all vehicles in a timely manner because the annual budget process is never "blindsided" by unexpectedly large appropriation requests.
- Reserve funds are often less of an annual target for decision makers who sometimes equate requests for capital appropriations with discretionary or quasi-discretionary spending needs.
- Payment of regular charges for the use of each vehicle in the fleet encourages fleet user organizations to pay attention to how many and what types of vehicles they need to meet their business needs (in contrast to the cash financing approach where the ongoing costs of having assets at their disposal are largely ignored because they are perceived of as having been one-time expenses that, by definition, occurred in the past).

Disadvantages

- This financing method requires rigorous and administratively complex fund management procedures, including the proper development and application of charge-back rates, to ensure that reserve fund inflows and balances are sufficient to meet replacement spending outflows. Failure to do so leads to depleting the fund balance or building up unnecessarily large fund balances.
- The cash in a reserve fund is susceptible to being diverted to meet other spending needs or simply not used, usually out of an overabundance of caution, when budget dollars get tight.
- Financing fleet growth to meet new programmatic needs is somewhat expensive because it requires that funds be appropriated to the user agency both for the entire purchase price of the new asset(s) and for the payment of the first year's replacement charges for the asset(s).

Despite these drawbacks, reserve funds are far superior to the cash financing approach in terms of sustaining replacement programs in the public sector and they work well for many government jurisdictions.

DEBT FINANCING AND LEASING

Like a reserve fund, debt financing allows organizations to spread the capital costs of fleet replacement purchases over the service lives of the vehicles in the fleet. However, rather than accumulating cash in a reserve fund to pay for replacement vehicle purchases, this approach involves borrowing money and repaying it after vehicles have been placed in service.

The primary advantages and disadvantages of the debt financing and leasing approaches are summarized as follows.

Advantages

- As with a sinking fund, debt financing and leasing allow organizations to spread out the capital costs of fleet replacement purchases over the service life of the vehicles in the fleet. This eliminates most of the year-to-year volatility in replacement funding requirements, and reduces the likelihood that fleet replacement spending will be subordinated to other priorities and needs, particularly during lean budget years.
- Allows the cost of money (i.e., interest charges) to be passed on appropriately to all programs.
- If loan or lease payments are made by fleet user agencies directly or via an internal cost charge-back system, greater attention to vehicle selection and utilization will occur. This results in fleet size and composition that is better attuned to actual fleet user agency operating needs and, hence, lower overall fleet costs.

Disadvantages

- As indicated above, the use of debt creates competition for the use of statutorily (and often politically) limited borrowing capacity with capital improvement project funding needs that usually enjoy stronger political support than does the routine replacement of vehicles.
- One of the perceived drawbacks of debt financing is the cost of borrowing money; i.e., real or imputed interest charges. There is no question that interest charges increase the total capital cost of a vehicle. However, to the extent that debt financing enables an organization to replace vehicles that it otherwise would keep in service for excessive periods of time, interest payments may actually result in lower vehicle total cost of ownership.
- It may be difficult to change back to a sinking fund or cash financing approach once an organization has committed to debt or lease financing.

CONCLUSIONS

Like many government jurisdictions we have worked with, the City has in the past not kept up with renewing its fleet. Underfunding became an acute problem during the recent recession years and now the City is facing a crippling backlog in replacement funding requirements.

Operating a very old fleet is costing the City money – both in hard dollars and indirect costs. The old fleet is undoubtedly causing employees to be less productive as unreliable vehicles must be frequently driven to the shop rather than to work. The size of the fleet is likely larger than it needs to be as departments have secured extra vehicles to act as backups and spares so they can survive the increased unreliability of front-line vehicles⁴. The older vehicles populating the fleet also use more fuel and emit more pollution because 1) standards for emissions and fuel economy were lower a decade or more ago when many vehicles were purchased and 2) the fuel and emission control systems of vehicles degrade over time. Finally, older vehicles are not as safe as new ones for the simple reason that they lack many of the advanced safety features that are standard with new cars such as:

- Passenger and side curtain airbags,
- Antilock brakes,
- Traction control,

⁴ Clients we have assisted right-size their fleets in concert with fleet renewal have achieved fleet size reductions ranging from 5% to 10%. In 2012, Mercury assisted the State of California cut the size of its light-duty fleet by more than 14%.

- Stability control,
- And rearview cameras.

Achieving the benefits of fleet renewal and sustaining these benefits over time will require, in our opinion, that the City change its approach to replacing its fleet. One way to incentivize users to follow good fleet management practices is to confront them with cost of having vehicles at their disposal.

Given the magnitude of the backlog in fleet funding requirements, we believe the City will have little choice but to pursue a debt financing option. This option will make fleet renewal more affordable and, therefore, more likely to be sustained.

Based on our analysis and from our experience with many other fleets, we are confident that increasing fleet replacement spending so that our recommended replacement cycles can be followed will be of significant benefit to the City regardless of the method of funding chosen. Moreover, the indirect costs of fleet reliability, operational disruptions, and fleet safety are hard to quantify but are no less important to the City.