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# Introduction

In accordance with the City Auditor's 2003-04 Audit Workplan, we have audited the utilization of metered equipment and the replacement process of the Fleet Management Division (FMD) of the General Services Department (GSD). We conducted this audit in accordance with generally accepted government auditing standards and limited our work to those areas specified in the Scope and Methodology section of this report.

The City Auditor's Office thanks the GSD, Budget Office, and department staff who gave their time, information, insight, and cooperation during the audit process.

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## Background

The FMD is responsible for managing the City's fleets. The FMD provides acquisition, maintenance, and repair services for vehicles and equipment used in the general fleet, special funded fleet, and the San José Police Department (SJPD) and San José Fire Department (SJFD). The general fleet refers to the City of San José (City) vehicles and equipment that the General Fund supports, excluding emergency vehicles such as SJPD vehicles and SJFD fire apparatus.

In February 2003, the City Auditor completed the first report relating to vehicle replacements entitled, "An Audit of the Fleet Management Division of the General Services Department's Vehicle Replacement Program." In this report, we identified significant savings associated with reductions in vehicle purchases, weaknesses in the administration, and problems with the City's vehicle additions process. As a result of our findings, we identified over \$30 million in actual and potential savings from reduced vehicle purchases and available Fund 552 balances for 2001-02 through 2004-05.

This report is the City Auditor's second report on the FMD and is on metered equipment. The City Auditor's Office will issue additional reports on the utilization and replacement of transport vehicles and heavy trucks in the near future. Metered equipment differs from other types of equipment in that its use is tracked in hourly increments as opposed to miles. Hourly measures are more appropriate for metered equipment because its use tends to be stationary instead of being driven on roads.

## Utilization & Replacement Of Metered Equipment

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Thus, metered equipment captures usage information any time the engine is switched on. Common types of metered equipment include mowers, forklifts, and loaders<sup>1</sup> as shown below.



Metered equipment serves a variety of uses throughout the City. For example, the street repair crews at the Department of Transportation (DOT) use both loaders and rollers to repair damaged roads. The Environmental Services Department (ESD) uses loaders and bulldozers at the Water Pollution Control Plant (WPCP) to maintain the effluent ponds. The Parks, Recreation, and Neighborhood Services Department (PRNS) uses mowers and tractors to manage and maintain our local parks.

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### **Audit Objective, Scope, And Methodology**

Our audit objective was to evaluate the use of metered equipment and the effectiveness of the FMD's equipment replacement process. More specifically, we 1) reviewed the FMD database and auction sales information, 2) analyzed equipment utilization rates, and 3) compared the data collected to that of other like organizations and jurisdictions. The scope of our audit included analyzing utilization and replacement information from 1998 through 2003.

During our audit, we used the FMD's equipment database and also contacted the user departments to gather and document all relevant equipment information. In addition, we selected a

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<sup>1</sup> "Loaders" includes both loaders and backhoes.

sample group of equipment to physically inspect and observe in actual operation. During these visits, we also gathered utilization data and documented which equipment had metering devices and which did not. We gathered data for the equipment that had meters and updated our equipment database accordingly. By so doing, we were able to analyze the latest and most accurate equipment information available.

In June 2002, the FMD upgraded its database software to a Windows-based program called Fleet Anywhere. Given the newness of the database, we determined that the GSD required additional time to establish the system before we could perform testing on the adequacy of controls over data entry, including passwords, approvals, and database access.

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**Major  
Accomplishments  
Related To This  
Program**

In Appendix B, the Director of General Services informs us of the Fleet Management Division's recent accomplishments.

## **Finding I**

### **By Using Its Metered Equipment More Efficiently, The City Can Potentially Realize About \$3.5 Million In Economic Benefit**

As of June 2003, the City of San José had 265 pieces of metered equipment that are oftentimes very expensive to purchase, operate, and maintain. However, we found that the City is not using its metered equipment in the most cost-effective manner possible. We based our conclusion on the following:

- The City does not have utilization standards to manage the efficient use of its metered equipment;
- Most of the City's metered equipment is severely underutilized;
- The City does not conduct utilization assessments to identify low-use equipment that could be considered for retirement, reassignment, or added to an equipment pool; and
- The City's practice is to provide departments with their own piece(s) of metered equipment rather than pooling.

As a result, the City 1) maintains an oversized fleet of underutilized metered equipment; 2) incurs excessive costs to maintain and operate the City's metered equipment fleet; and 3) has not promoted the efficient use of City resources. In our opinion, the City Manager should designate the Fleet Management Division (FMD) of the General Services Department as the City entity that has the authority and responsibility to administer the City's fleet of metered equipment. In addition, the FMD, in conjunction with the City Manager's Office and other City departments, should develop appropriate management controls for identifying and removing unnecessary metered equipment from the City's fleet. By so doing, we estimate that the City can potentially reduce its metered equipment inventory by as many as 107 units and realize about \$3.5 million in economic benefit. Of this \$3.5 million in economic benefit, \$2.8 million could be realized over the next two years and the remaining \$.7 million could be realized over the next 3 to 13 years.

**The City Has 265 Pieces Of Metered Equipment**

As of June 2003, the City of San José had 265 pieces of metered equipment. The equipment was grouped into equipment types by using the FMD's assigned class codes as shown in Exhibit 1.

**Exhibit 1 Number And Type Of City Metered Equipment As Of June 30, 2003**

<b>Equipment Type</b>	<b>Number Of Equipment</b>
Road Graders	2
Dozers	4
Rollers	9
Sweepers-PKL/Lawn	10
Forklifts	25
Tractors	28
Mowers	33
Loaders	34
Scooters	120
<b>Total</b>	<b>265</b>

Many pieces of equipment are very expensive to purchase, operate, and maintain. For example, some loaders cost over \$300,000 to purchase and average thousands of dollars in maintenance cost per year. Accordingly, the City must establish policies and procedures that insure that the purchase of such equipment is the most cost-effective option.

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**The City Does Not Have Utilization Standards To Manage The Efficient Use Of Its Metered Equipment**

Utilization standards are necessary to help determine the need to add, replace, or remove equipment from a fleet. However, the City has not developed or implemented utilization standards to help manage the City's fleet of metered equipment. Without utilization standards there can be no assurance that City equipment is used efficiently.

In 2001, the FMD hired a consultant to assist them in developing utilization standards and an appropriate replacement schedule. Although the consultant was unable to produce cost-effective minimum utilization standards, he suggested using as a starting point the "non cost-effective" minimum utilization standards shown in Exhibit 2.

**Exhibit 2 Consultant’s Recommended Minimum Use Standards For Metered Equipment**

<b>Equipment</b>	<b>Annual Minimum Use Standards</b>
Dozer	360 Hours
Forklift	240 Hours
Grader	360 Hours
Loader	360 Hours

To satisfy the levels of utilization shown in Exhibit 2, equipment would only need to be used on average 20 to 30 hours per month.

Although the consultant did not provide specific use levels for all types of City equipment, we applied the 360 hours per year standard to equipment that appeared to be used the most, and the 240 hours per year standard to equipment that appeared to serve a more limited function. Specifically, in addition to the consultant’s recommended standards, we applied the 360 hours per year standard to tractors and the lesser 240 hours per year standard to rollers, mowers, scooters, and sweepers.

**Exhibit 3 Summary Of The Percentage Of Metered Equipment Used Less Than 360 Or 240 Hours Per Year**

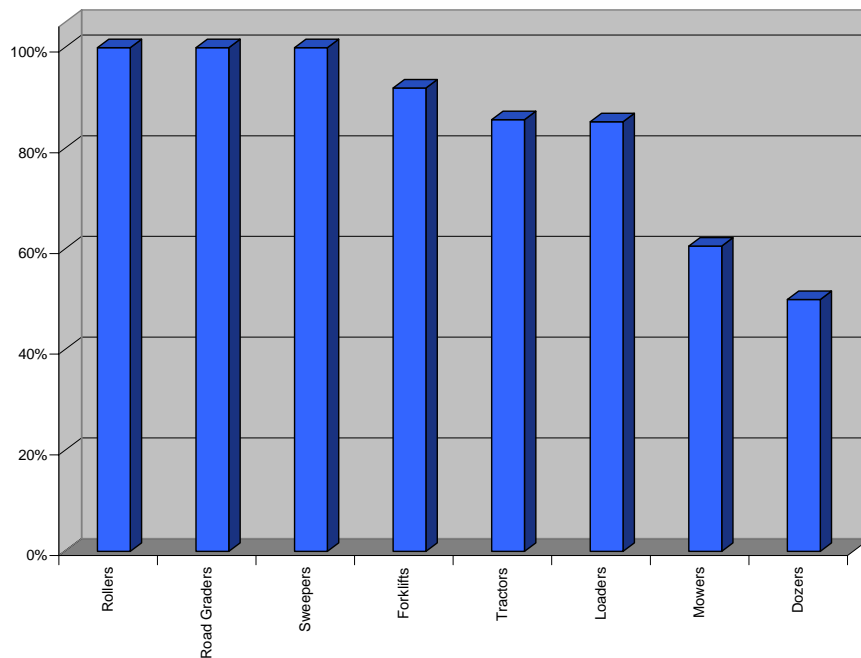


Exhibit 3 is a summary of the percent of the City's metered equipment that was used less than 360 or 240 hours per year. As shown above, most of the City's metered equipment was used less than the 360 or 240 hours per year standard. We should note that 100% of the City's rollers, road graders, and sweepers are used less than the minimum utilization standards.

In our opinion, the lack of utilization standards hinders the City's ability to effectively manage its metered equipment fleet.

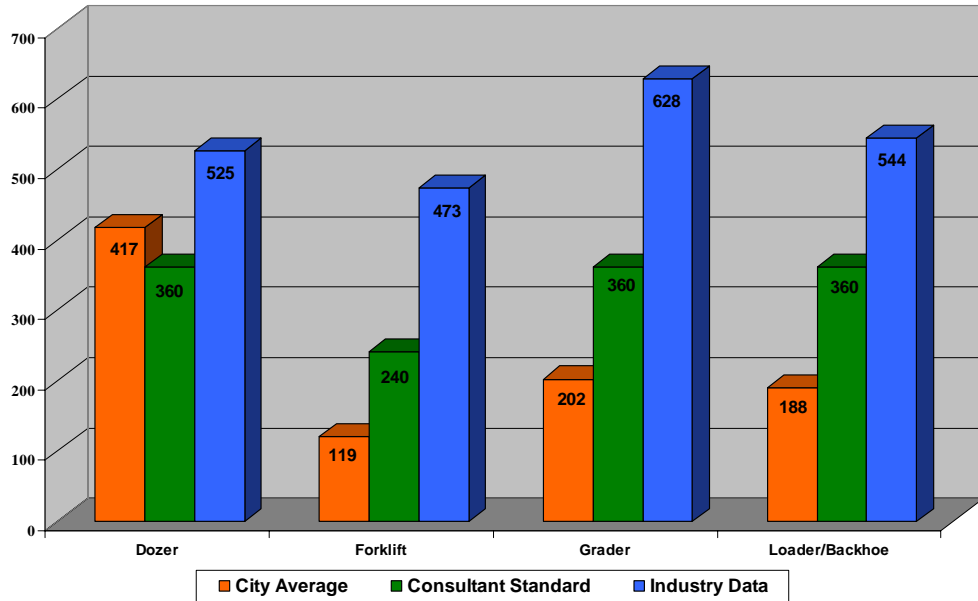
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**Most Of The City's  
Metered  
Equipment Is  
Severely  
Underutilized**

Prior to analyzing the utilization of the City's metered equipment fleet, we benchmarked several private industry sources and documented how they used their equipment. When considering whether or not to purchase a new piece of equipment, private industry determines what the appropriate usage level must be in order to justify purchasing the equipment. By first determining what the appropriate use level is, the purchaser can ensure that the acquisition of a piece of equipment constitutes the most cost-effective means of meeting the fleet's needs before the acquisition occurs. Additionally, the fleet managers will be less likely to acquire equipment needlessly if they are able to identify at what point purchasing a piece of equipment is more economical than other options such as pooling or leasing equipment.

Exhibit 4 is a comparison of the City's average annual usage of several types of metered equipment to both the consultant's suggested minimum annual usage and private industry annual average usage.

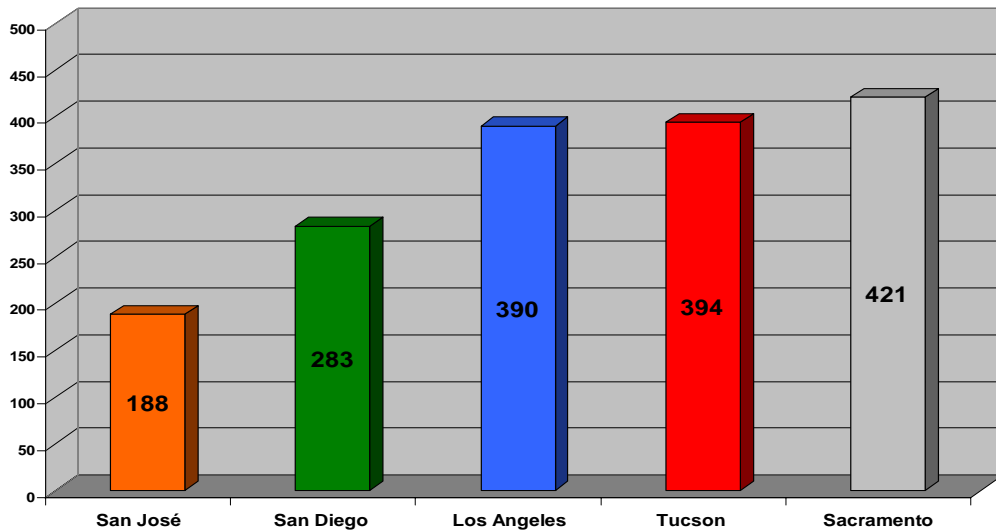
**Exhibit 4 Comparison Of The City’s Average Annual Usage Of Selected Metered Equipment To The Consultant’s Suggested Minimum Annual Usage And Private Industry Annual Average Usage**



As shown above, with the exception of dozers, the City’s average annual usage is far below the consultant’s suggested minimum annual usage standard and private industry’s annual average usage.

We also compared the City’s annual usage of loaders to the California cities of San Diego, Los Angeles, and Sacramento, as well as Tucson, Arizona. We compared loaders’ usage because they are common pieces of equipment in city fleets. Once again, we found that all of the 4 cities we surveyed for comparison purposes used their loaders more per year than San José and 3 of these 4 cities used their loaders more than twice as much per year as shown in Exhibit 5.

**Exhibit 5 Comparison Of The City Of San José's Average Annual Usage Of Loaders To Other Like Cities**



We also found that all of the City departments with metered equipment are underutilizing their metered equipment. For example, the Parks, Recreation, and Neighborhood Services Department (PRNS) used a 1997 loader an average of only 19 hours per year (about 1.6 hours per month). The Environmental Services Department (ESD) used a 1994 forklift an average of only 46 hours per year (about 2.8 hours per month). The Airport used a 2001 tractor an average of only 66 hours per year (about 5.5 hours per month). To better quantify the severity of the City's metered equipment underutilization, we calculated the average annual use for the equipment that we identified as falling below minimum use standards. Exhibit 6 summarizes those instances where City departments are using metered equipment less than the minimum annual hourly use standard.

**Exhibit 6      Summary Of Those Instances Where City  
Departments Are Using Metered Equipment Less  
Than The Minimum Annual Hourly Use Standard**

<b>Type Of Equipment</b>	<b>Minimum Annual Hourly Use Standard</b>	<b>Average Annual Hourly Use For Equipment Used Below The Minimum Use Standard</b>	<b>Percentage Below The Minimum Annual Hourly Use Standard</b>
Rollers	240	160	33%
Forklifts	240	99	59%
Mowers	240	126	47%
Sweepers-PKL/Lawn	240	68	71%
Road Graders	360	202	44%
Dozers	360	264	27%
Tractors	360	85	76%
Loaders/Backhoes	360	136	62%

As shown above, in those instances where City departments are using metered equipment less than the minimum annual hourly standard, they are significantly below that standard. For example, departments were using 15 of the 34 loaders and 14 of the 28 tractors less than 100 hours per year (8 hours per month).

When we met with the departments to discuss their underutilization of metered equipment, they conceded that the fleet had grown and was underutilized in part because they did not feel that the FMD could fully meet their needs. By having their own fleets of metered equipment, departments have been self-managing their individual equipment needs. This strategy has led to an oversized and costly fleet of metered equipment which lacks the structure and controls needed to run a cost-effective and efficient equipment fleet.

The City departments and the FMD acknowledge that having each department self-manage its metered equipment fleet can lead to fleet management problems such as excessive equipment and underutilization. However, according to the FMD, it does not have the authority to establish and implement cost-effective utilization standards for the City's metered equipment.

We recommend the City Manager:

**Recommendation #1:**

**Officially designate the Fleet Management Division as the City entity that has the authority and responsibility to administer the City's fleet of metered equipment. (Priority 2)**

We also recommend the Fleet Management Division:

**Recommendation #2**

**Develop and consistently implement cost-effective utilization standards for the City's fleet of metered equipment. (Priority 2)**

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**The City Does Not Conduct Utilization Assessments To Identify Low-Use Equipment That Could Be Considered For Retirement, Reassignment, Or Added To An Equipment Pool**

Utilization assessments are an important tool for effective fleet management. When performed properly, a utilization assessment can create an accurate snapshot of the state of the equipment fleet. In addition, a utilization assessment may identify opportunities to streamline the size and composition of the fleet through equipment reductions, reassignments, and increased sharing of equipment. A utilization assessment should address

- The frequency and purpose of equipment use;
- The age and condition of the existing fleet; and
- Possible alternatives to current equipment assignments.

According to the Manual of California City and County Best Fleet Management Practices and Performance Measures, utilization data should be monitored through exception reporting and the results should be reported to the departments. An annual summary with recommendations should be performed during the budgetary process and coordinated with City budget analysts. However, the FMD has not conducted utilization assessments to identify equipment whose retention is questionable.

During our analysis, we identified several pieces of equipment in the City's inventory that had substantial decreases in utilization. For example, the GSD has used a rotary mower an average of 351 hours per year during its 16 years in service. However, during the last four years, the GSD has used the

mower an average of only 81 hours per year. The ESD has used a loader an average of 537 hours per year during its 17.5 years in service. However, during the last two years, the ESD has used the loader an average of only 199 hours per year. The Airport has used a tractor an average of 288 hours per year during its 18.4 years in service. However, over the last four years, the Airport has used the tractor an average of only 14 hours per year.

We also identified several examples of equipment with low utilization and higher cost. For example, the Department of Transportation (DOT) has a loader with a replacement cost in excess of \$300,000 that it used on average only 120 hours per year (about 10 hours per month) over the past 3 years. During the same time period this loader also incurred over \$35,000 in repairs and maintenance. The GSD has a forklift with an estimated replacement cost of \$37,000 they used only 1 hour during a 2-year period. However, this forklift also incurred over \$4,700 in repair and maintenance costs during the same period. This forklift effectively cost the City \$4,700 for 1 hour of use, not including depreciation costs for 2 years. The DOT also has a lawn mower that has an estimated replacement cost of \$11,000 that was used less than 6 hours over the past 2 years. However, this mower still incurred over \$1,000 in repairs and preventative maintenance over the same period.

In our opinion, the FMD should identify equipment that is not meeting minimum utilization standards for possible reassignment or retirement.

We recommend that the Fleet Management Division:

**Recommendation #3**

**Ensure the City has complete and current utilization information for all of the equipment in its inventory. (Priority 2)**

**Recommendation #4**

**Conduct frequent utilization assessments to identify equipment for retirement, redeployment, or inclusion into an equipment pool. (Priority 2)**

**The City's Practice Is To Provide Departments With Their Own Piece(s) Of Metered Equipment Rather Than Pooling**

Pooling is the shared use of a vehicle or equipment by multiple individuals or departments. Fleet management may use pooling as a tool to maximize utilization and insure efficient use. However, the FMD pool does not contain any metered equipment. Instead, the FMD assigns all metered equipment to individual departments and programs. The FMD also allows departments to manage the use of their equipment and merely encourages departments to share their metered equipment.

In the June 2003 Budget Message, the Mayor directed the Manager to "...work with the City Auditor to develop a strategy for all City departments owning these vehicles to share the cost of purchasing and maintaining this equipment."

Establishing a centrally-controlled metered equipment pool would reduce the number of pieces of metered equipment and improve metered equipment utilization levels. Since many City departments use the same type of metered equipment, pooling such equipment would also allow the City to leverage funding from multiple funds including the General Fund, as well as the Airport, Treatment Plant Operating, and Water Utility funds. The FMD can establish a metered equipment pool because many of the City departments that use the same equipment are located at the same facilities. In addition, departments can transport most of the City's metered equipment throughout the City on trailers as shown in the images below.



When we presented City departments with the idea of pooling metered equipment, some departments expressed concerns over the FMD's ability to appropriately manage a large City pool. These departments were concerned that an FMD-managed metered equipment pool would not provide equipment in a timely manner. However, running an effective pool is not the sole responsibility of the FMD. In order for a City pool to be successful, it will require the support and assistance of the City Manager's Office, the FMD, and all departments that use metered equipment. The FMD will need to evaluate the programmatic needs of City departments and establish a metered equipment pool to meet those needs. In addition, departments will have to coordinate and plan their work schedules to facilitate the use of a City pool. According to the FMD, establishing a City pool of metered equipment will present many challenges. For example, the FMD will have to win the confidence of the City departments that a pool of metered equipment will be able to meet their needs during critical or time-sensitive periods. In addition, the FMD will need to identify any additional resources it may need to manage a metered equipment pool. However, we believe having an available pool of metered equipment is critical for the efficient management of the City's metered equipment fleet.

Other government jurisdictions also support and advocate the use of equipment pools. The United States Department of the Interior Bureau of Land Management (BLM) advises that, whenever possible, local fleets should be pooled to ensure the maximum use of the fleet. According to the Manual of California City and County Best Fleet Management Practices and Performance Measures, a centralized motor pool should be used "...to minimize the size of the fleet and the number of permanent assignments in the fleet..." They also promote pooling equipment across departments and agencies in a municipal organization. Fleet managers may even contract for pool units with rental equipment firms for vehicles and equipment that are used infrequently, or for back-up units.

The FMD's own consultant recommended in February 2002 "...that the use of vehicle and equipment pools be expanded and that a formal policy and procedures be implemented for customer departments..." However, as of September 2003, the FMD has not produced any policies or procedures to promote metered equipment pools.

In addition, because the FMD does not pool metered equipment it has had to rent metered equipment, even though similar equipment is available within the City's currently underutilized fleet. For example, the City owns 34 loaders, of which 86% are used less than the consultant's non cost-effective utilization standard of 360 hours of use per year. Of the 34 loaders, departments use 5 of them on average less than 20 hours per year. Nonetheless, between July and December 2002, the City rented loaders from Hertz on 13 separate occasions to accommodate the City's limited use needs.

We recommend that the Fleet Management Division:

**Recommendation #5**

**Develop a proposal to establish and operate a City pool of metered equipment. (Priority 2)**

**Recommendation #6**

**Establish an equipment pool to address the needs of the City's low-use equipment and develop a formal policy for using and maintaining such a pool. (Priority 2)**

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**The City Can  
Reduce Its Metered  
Equipment By As  
Many As 107 Units**

The City's metered equipment fleet has become unnecessarily expensive and is larger than needed. In an effort to address some of the problems presented in this audit, we analyzed the fleet to identify underutilized and costly equipment that could potentially be removed from service. We targeted the oldest and most costly equipment for retirement consideration. In our opinion, the City can potentially retire 107 pieces of metered equipment. Doing so would allow the City to avoid replacement costs in excess of \$3 million. Additionally, by retiring this equipment, the City could potentially avoid over \$220,000 in annual maintenance costs and receive over \$250,000 in auction revenue. In total, the City could potentially realize about \$3.5 million in economic benefit by removing 107 pieces of aged, costly, and underutilized metered equipment as detailed in Exhibit 7.

**Exhibit 7      Estimated Potential Economic Benefit From Retiring  
Underutilized And Costly Metered Equipment**

<b>Description</b>	<b>Number Of Equipment To Remove</b>	<b>Avoided Annual Maintenance Cost</b>	<b>Estimated Avoided Replacement Cost</b>	<b>Estimated Auction Revenue</b>	<b>Total Savings</b>
Graders	1	\$5,012	\$207,600	\$1,270	\$213,883
Rollers	3	\$10,035	\$171,032	\$12,394	\$193,461
Mowers	5	\$15,722	\$119,914	\$6,688	\$142,324
Sweepers	7	\$8,042	\$184,975	\$24,121	\$217,138
Forklifts	10	\$30,951	\$374,428	\$7,673	\$413,051
Tractors	17	\$48,531	\$400,658	\$86,243	\$535,432
Loaders	19	\$64,305	\$1,144,663	\$106,967	\$1,315,935
Scooters	45	\$39,733	\$435,960	\$9,260	\$484,953
<b>Total</b>	<b>107</b>	<b>\$222,330</b>	<b>\$3,039,231</b>	<b>\$254,616</b>	<b>\$3,516,176</b>

\*Figures are rounded to the nearest dollar.

We should note that of the metered equipment we identified for retirement, 76% have met or will meet in the next 2 years, the FMD's replacement guideline of 15 years in service. The remaining pieces of metered equipment will meet the 15-year guideline over the next 3 to 13 years. This subject is discussed in greater detail in Finding III of this report.

In order to arrive at our estimated potential economic benefit in Exhibit 7, we calculated the age, average yearly maintenance cost, and the average yearly use for all metered equipment we identified. We used this information to form a list of the oldest and costliest equipment in the City's fleet which could be considered for retirement. Our next step was to determine the City's total hourly needs per equipment type. This was accomplished by adding the average yearly use for all equipment within an equipment type. The sum of the average yearly use produced the total City need in terms of total fleet hours. We divided the total hours by the minimum use standards shown in Exhibit 6. Doing so, gave us an estimated equipment need assuming all equipment retained is used at the minimum use standard. The difference between the current City fleet use and our estimated fleet need provided us with an estimated number of equipment to remove from service as shown in Exhibit 7.

However, we must note that we did take care in trying to adjust for City needs that could require the purchase and retention of unique pieces of equipment such as stripers, chippers, and dozers. In addition, we recognized the fact that some

equipment such as forklifts, does not easily lend itself to frequent transfer from place to place, and we thus allowed for the retention of at least one piece of equipment per location.

Our last step was to calculate the potential economic benefit that would be produced if the number of unnecessary equipment we identified was removed from service. Our avoided annual maintenance cost was a summation of the annual maintenance cost of the equipment we identified as potential retirements. To calculate the estimated avoided replacement costs, we used a combination of recent purchase values adjusted for inflation, and the FMD’s estimated replacement values. Lastly, we calculated the estimated auction revenue by taking the estimated replacement value and depreciating it 20 percent per year over its time in service. In our opinion, our estimate of the potential economic benefit from retiring underutilized and costly metered equipment is conservative.

In addition to reducing the overall cost of the metered equipment fleet, retiring the 107 pieces of metered equipment would also significantly reduce the average age of the fleet as shown in Exhibit 8.

**Exhibit 8 Estimated Fleet Age Reduction By Retiring Underutilized And Costly Metered Equipment**

<b>Equipment Type</b>	<b>Current Average Age Of The Fleet</b>	<b>Number Of Recommended Retirements</b>	<b>Average Age Of Equipment Retired</b>	<b>Average Age After Recommended Retirements</b>	<b>Average Age Percent Reduction</b>
Graders	21	1	24	19	13%
Rollers	9	3	16	5	41%
Mowers	6	5	14	5	24%
Sweepers	10	7	12	5	44%
Forklifts	16	10	22	12	24%
Tractors	10	17	13	6	43%
Loaders	11	19	15	6	45%
Scoters	12	45	16	7	39%

Retiring the 107 aforementioned pieces of equipment would result in the City retiring the oldest and most costly underutilized metered equipment. However, the FMD should analyze the City’s fleet of metered equipment to determine the optimal cost-effective fleet size.

Accordingly, we recommend that the Fleet Management Division:

**Recommendation #7**

**In conjunction with the City Manager's Office and City departments analyze the City's fleet of metered equipment to determine the optimal cost-effective fleet size. (Priority 2)**

**CONCLUSION**

The City's metered equipment is significantly underutilized. In our opinion, the City Manager should designate the FMD as the City entity that has the authority and responsibility to administer the City's fleet of metered equipment. In addition, the FMD needs to establish written cost-effective utilization standards for metered equipment and apply those standards to identify opportunities to reduce the fleet and pool the remaining pieces of equipment for Citywide use. Furthermore, the FMD should analyze the City's fleet and conduct frequent utilization assessments to ensure that the City's fleet continues to be utilized effectively and efficiently. In order to accomplish these changes, the FMD will need to make certain that its database has complete and current information. This will ensure that the City is using its costly metered equipment as economically and efficiently as possible and could potentially produce about \$3.5 million in economic benefit for the City of which \$2.8 million could be realized over the next two years and the remaining \$.7 million could be realized over the next 3 to 13 years.

**RECOMMENDATIONS**

We recommend that the City Manager:

**Recommendation #1 Officially designate the Fleet Management Division as the City entity that has the authority and responsibility to administer the City's fleet of metered equipment. (Priority 2)**

We recommend that the Fleet Management Division:

**Recommendation #2 Develop and consistently implement cost-effective utilization standards for the City's fleet of metered equipment. (Priority 2)**

We recommend that the Fleet Management Division:

- Recommendation #3**      **Ensure the City has complete and current utilization information for all of the equipment in its inventory. (Priority 2)**
- Recommendation #4**      **Conduct frequent utilization assessments to identify equipment for retirement, redeployment, or inclusion into an equipment pool. (Priority 2)**
- Recommendation #5**      **Develop a proposal to establish and operate a City pool of metered equipment. (Priority 2)**
- Recommendation #6**      **Establish an equipment pool to address the needs of the City's low-use equipment and develop a formal policy for using and maintaining such a pool. (Priority 2)**
- Recommendation #7**      **In conjunction with the City Manager's Office and City departments analyze the City's fleet of metered equipment to determine the optimal cost-effective fleet size. (Priority 2)**

## Finding II

### The Environmental Services Department's Water Pollution Control Plant Appears To Have An Excessive Number Of Scooters

As of June 2003, the City of San José had 120 scooters in its fleet, of which the vast majority is located at the Environmental Services Department (ESD) Water Pollution Control Plant (WPCP). Our analysis of the scooters and other vehicles at the WPCP indicates that the WPCP has more scooters than necessary. We based our findings on the following:

- The WPCP's scooter utilization is lower than the minimum use standards used for similar metered equipment and
- When compared to similar treatment plants, the WPCP had a third more scooters and other vehicles per employee.

In order to more effectively manage the WPCP scooter fleet, the FMD should determine an appropriate utilization level and adjust the WPCP fleet size accordingly. The FMD should also install hour meters on those pieces of equipment at the WPCP without meters and track utilization.

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#### The WPCP Has The Vast Majority Of The City's Scooters

The WPCP has 94 (78%) of the City's 120 scooters. The image below depicts typical scooters which are used to transport employees throughout the WPCP.



**The WPCP's Scooter Utilization Is Lower Than The Minimum Use Standards Used For Similar Metered Equipment**

As with all types of equipment, it is critical to have accurate and up-to-date use information in order to appropriately manage the City fleet. However, we found that of the 94 scooters located at the WPCP, 47 (50%) did not have the metering devices necessary to track utilization. Furthermore, of the 47 scooters that did have metering devices installed, 41 (87%) were utilized less than the minimum use standard of 240 hours per year. In fact, the average use for these 41 scooters was only 90 hours per year.

We also compared the use of the WPCP scooters to the scooters at the San José Airport. Like the WPCP, the Airport has 7 scooters that it uses to transport employees short distances to and from their work areas. However, unlike the WPCP, the Airport's scooters accumulate on average over twice the number of hours per year as the WPCP's scooters as shown in Exhibit 9.

**Exhibit 9 Comparison Of Scooter Use At The WPCP To San José Airport**

Department	Hours Per Year
South Bay, CA (WPCP)	128 <sup>2</sup>
San José Airport	305

Appropriate utilization is critical for the efficient management of a fleet. We found questionable utilization at the WPCP which warrants further analysis. As with other equipment, the City needs to establish cost-effective minimum utilization standards to promote the efficient use of scooters.

**When Compared To Similar Treatment Plants, The WPCP Had A Third More Scooters And Other Vehicles Per Employee**

The WPCP occupies about 170 acres and treats roughly 120 million gallons per day (MGD) of effluent. There are 145 employees at the WPCP that conduct technical work and are the primary users of the scooters. The WPCP technical staff uses scooters primarily to transport themselves and their tools to and from their worksites. Scooter assignments for the WPCP operations personnel are distributed as shown in Exhibit 10.

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<sup>2</sup> We excluded two scooters because we concluded their meters may not be accurately recording their usage. These two scooters had abnormally high usage. When we questioned ESD staff, they were unable to provide a reason for the abnormally high use.

**Exhibit 10 Summary Of Scooter And Other Vehicle Assignments At The WPCP For Plant Operations**

	Basis Of Scooter Assignment		Total Number Of Scooters And Other Vehicles
	Pool	Individual Employees	
Plant Operations			
Electric Shop		7	7
Instrumentation & HVAC		10	10
Maintenance		2	2
Mechanics		23	23
Operations	16		16
Paint Shop		8	8
Power and Air	7		7
<i>Total Scooters</i>	23	50	73
Sedans, Trucks And Vans			28
<b>Total Scooters And Other Vehicles</b>			<b>101</b>

In addition to the scooters, WPCP operations personnel also have 28 sedans, trucks and vans available for their use. In total, the WPCP operations has 73 scooters and 28 sedans, trucks and vans to transport its 145 employees. In addition, the WPCP operations assign 50 of the 73 scooters to individual employees. This means that only the designated employees assigned to these 50 scooters can use them.

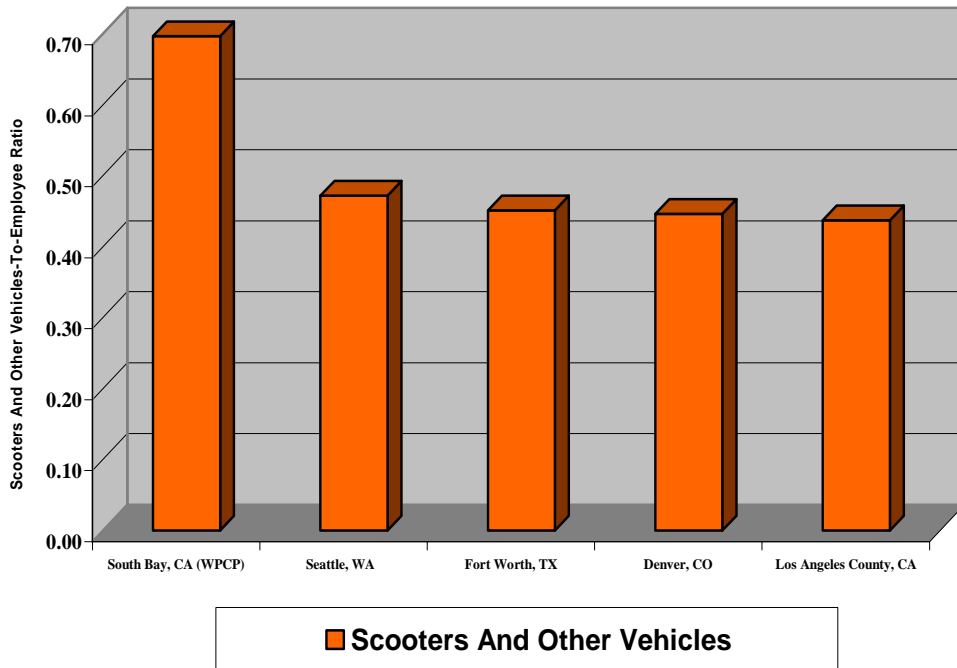
We compared the employee-to-vehicle ratio of the WPCP to similar treatment plants in Seattle, Washington (WA); Fort Worth Texas, (TX); Denver, Colorado (CO); and Los Angeles County, California (CA). We selected these plants for comparison because they shared similar critical qualities such as size, capacity, ability to produce energy, and being a recipient of the EPA National Operations and Maintenance Excellence Award (OME) for large advanced plants as shown in Exhibit 11.

**Exhibit 11 Commonalities Of The Chosen Treatment Plants**

Service Area	Acres	MGD	Energy Producer	OME Award Recipient
South Bay, CA (WPCP)	170	120	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Seattle, WA	95	115	<input type="checkbox"/>	<input type="checkbox"/>
Fort Worth, TX	136	166	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Denver, CO	200	150	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Los Angeles County, CA	215	350	<input checked="" type="checkbox"/>	<input type="checkbox"/>

As shown in Exhibit 12 below, the WPCP has about .70 scooters and other vehicles per employee while the plants we surveyed have from .44 to .47 scooters and other vehicles per employee. In other words, the WPCP would have to reduce its complement of 73 scooters by 24 scooters to bring it in line with the highest vehicle-to-employee ratio of the plants we surveyed.

**Exhibit 12 Comparison Of The WPCP’s Scooters And Other Vehicles-To-Employee Ratio To Other Similar Treatment Plants**



In addition to the 101 scooters and other vehicles, the WPCP has assigned 21 scooters to non-operations personnel. Unlike WPCP operations staff, which uses the scooters to transport tools and equipment to and from worksites, non-operations plant personnel use the scooters merely for transportation purposes. The distribution of scooters for non-operations is shown in Exhibit 13.

**Exhibit 13 Summary Of Scooter Assignments To Non-Operations**

<b>WPCP Non-Operations Groups</b>	<b>Total Number Of Scooters Assigned To Non-Operations</b>
ESD	
Administration	8
Environmental Services Building (ESB)	6
GSD	5
Stores	1
Training	1
<b>Total</b>	<b>21</b>

We also found that in addition to the scooters shown above, many of the non-operations groups had other vehicles available to them as well. This raises additional questions regarding their need for scooters. For example, the administration group has 13 sedans and trucks to transport them within and outside the plant. In addition, the Environmental Services Building (ESB) has six scooters assigned to them even though most of the ESB personnel have been moved from the WPCP to offices near McCarthy Ranch. The only ESB personnel remaining at the plant are located at the laboratory and conduct their work primarily within the laboratory building. Therefore, laboratory personnel now have no real need for scooters. Furthermore, as shown above in Exhibit 13, GSD staff at the WPCP has 5 scooters and 6 trucks available to them, while the Stores group has the use of one scooter and 3 trucks.

According to WPCP officials, the plant has a higher scooter and other vehicles-to-employee ratio because it is a large advanced plant. This advanced technology, which includes the ability to produce energy, is staff intensive. Additionally, the WPCP assigns the majority of its scooters to the plant’s technical staff. The WPCP officials also believe that having a large fleet of scooters is preferable to having a large fleet of trucks or sedans because scooters are cheaper to purchase, less expensive to

maintain, and are environmentally friendly. Finally, the ESD noted that due to the potential of having to evacuate the plant during chlorine- or sulfur-related emergencies, scooters were necessary to get everyone to safety.

Although scooters may be less expensive to purchase and maintain than full-size vehicles, having 94 scooters at the WPCP appears to be excessive. As shown in Exhibit 12, similar treatment plants are able to function with a third less scooters and other vehicles-per-employee. Additionally, technical staffs at these treatment plants share scooters and other vehicles and sometimes these plants provide employees with alternative modes of transportation, such as bicycles, to travel the short distances between buildings. We also reviewed the ESD's current WPCP Emergency Response And Evacuation Plan to determine the importance of scooters during an evacuation. The plan states that, "Personnel should move to evacuation assembly sites by means of electric carts and bicycles or on foot. When it is necessary to use a motor-driven vehicle, drive at the same rate as the electric carts." Thus, scooters are not the only means available to safely evacuate WPCP personnel during an emergency.

We recommend that the Fleet Management Division:

**Recommendation #8**

**Review the number of scooters and other vehicles at the Water Pollution Control Plant for possible reductions and consolidation and install hour meters on those pieces of equipment without meters and track utilization.  
(Priority 2)**

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**CONCLUSION**

When compared to similar treatment plants, the WPCP has a third more scooters and other vehicles-per-employee. In our opinion, the FMD needs to analyze and evaluate the scooters and other vehicle needs of the WPCP and adjust the fleet accordingly. In addition, the FMD should install hour meters on those pieces of equipment at the WPCP without meters and track utilization.

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**RECOMMENDATION**

We recommend that the Fleet Management Division:

**Recommendation #8    Review the number of scooters and other vehicles at the Water Pollution Control Plant for possible reductions and consolidation and install hour meters on those pieces of equipment without meters and track utilization.  
(Priority 2)**

## **Finding III**

### **The Fleet Management Division Needs To Develop Appropriate And Effective Equipment Replacement Policies And Procedures For Metered Equipment**

The FMD is responsible for ensuring cost-effective equipment replacement practices. To ensure that the City of San José's (City) resources are efficiently used, the FMD should replace City equipment using consistent and appropriate criteria. However, we found that the FMD has not developed or implemented a consistent metered equipment replacement policy. In addition, the FMD does not generally perform mechanical assessments on metered equipment that is being considered for replacement.

As a result, the City has accumulated an aged and costly metered equipment fleet. In our opinion, the FMD should develop and implement an appropriate Citywide metered equipment replacement policy. By so doing, the FMD will help ensure that the City has the right number, type, and age of metered equipment.

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#### **The FMD Has Not Developed Or Implemented A Consistent Metered Equipment Replacement Policy**

Cost-effective replacement standards are essential for efficient fleet management. However, the FMD has not developed or implemented a consistent replacement policy for metered equipment. The FMD has a metered equipment replacement guideline of 15 years in service. However, the FMD has not followed this guideline consistently. This lack of an official metered equipment replacement policy has resulted in 1) the FMD assessing metered equipment replacements on a case-by-case basis, 2) inconsistent equipment replacements, and 3) an aged equipment fleet that is costly to maintain and operate.

According to FMD staff, prior to the vehicle purchasing freeze, they developed the City's replacement list by reviewing the previous year's vehicle replacement list to identify any vehicles or equipment that had not been replaced. The FMD also added to the replacement list vehicles and equipment that were removed from service due to major mechanical failure or accidents. The FMD then created a tentative replacement list which it distributed to the user departments for input. The departments reviewed the list and provided feedback to the FMD. The FMD then ranked the vehicles and equipment,

giving the highest priority to those that were out-of-service, followed by those with the highest maintenance cost. Lastly, the FMD ranked replacement candidates based on equipment age, mileage/hours, and mechanical assessments.

However, we found that the FMD did not consistently follow its own 15-year equipment replacement guideline. In fact, of the 33 retired pieces of equipment we were able to identify, 17 (52%) were removed from service prior to having completed 15 years in service. Moreover, some of the equipment that was removed from service had been in service for as little as 6 years. Conversely, we also identified equipment that had been in service for as long as 37 years. Such disparity is further evidence of how low utilization coupled with the lack of an official replacement policy can lead to inconsistent metered equipment replacements.

The FMD’s current 15-year replacement guideline for metered equipment does not take into consideration the total hours incurred on the equipment. However, some agencies and organizations use the total hours accumulated as a measure to identify equipment for replacement. Industry publication Grounds Maintenance recommends that as a general rule, one should project the lifetime hours for gas engines at 100 hours of life per horsepower, and diesel engines at 125 hours of life per horsepower. Specifically, smaller equipment, such as mowers, with engines rated at between 20 and 100 horsepower should have a useful life between 2,000 and 7,500 hours.

A United States Department of the Interior Bureau of Land Management (BLM) study found that, industry-wide, the average life for construction equipment is between 6,000 and 16,000 hours as shown in Exhibit 14.

**Exhibit 14 BLM Industry-Wide Economic Life For Construction Equipment**

<b>Equipment</b>	<b>Industry-Wide Economic Life Total Hours</b>
Skid Steer Loader	6,000
Agricultural Tractor	8,000
Tractor/Loader/Backhoe	8,000
Forklift, rough Terrain	9,300
Excavator, Tracked	9,200
Articulated Loader	11,000
Forklift, Industrial	11,200
Crawler Bulldozer	12,120
Motor Grader, Articulated	15,850

An Arizona State University (ASU) College of Engineering and Applied Sciences study confirmed the BLM’s findings. Specifically, the ASU study found that the average useful life for metered equipment was between 9,500 and 16,000 hours as shown in Exhibit 15.

**Exhibit 15 ASU Average Useful Life For Metered Equipment**

<b>Equipment</b>	<b>Total Hours</b>
Rollers	9,500
Wheel Loaders	12,300
Crawler Dozers	12,500
Graders	14,300
Scrapers	16,100

The FMD has not established useful life criteria for its own metered equipment replacement process. When we analyzed the FMD’s auction data we found that most of the equipment the FMD retired was removed from service prior to having accumulated 6,000 total hours. In fact, 30 of the 31 pieces (97%) of retired equipment for which total use data was available were retired from service prior to accumulating 6,000 total hours. Thus, it appears that the FMD has retired many pieces of metered equipment from City service that still had a substantial amount of useful life remaining.

Our office is currently working with GSA in developing replacement standards for transport vehicles. In our opinion, the FMD should include metered equipment in its current efforts to develop replacement standards for transport vehicles.

We recommend that the Fleet Management Division:

**Recommendation #9**  
**Include metered equipment, regardless of funding source, in its current efforts to develop and consistently implement a cost-effective replacement policy for transport vehicles, which incorporates repair costs and a minimum useful life. (Priority 2)**

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**The FMD Does Not Generally Perform Mechanical Assessments On Metered Equipment That Is Being Considered For Replacement**

Although mechanical assessments are part of the FMD's replacement guidelines, we found that the FMD did not perform any mechanical assessments on the 19 pieces of metered equipment that the City auctioned off during 2001-02. A mechanical assessment would have documented the condition of the equipment prior to its removal and would have indicated why the vehicle needed to be replaced. Accordingly, the lack of mechanical assessments may have caused the City to auction equipment that did not need replacement.

By not incorporating mechanical assessments into the equipment replacement process, the FMD replaced some equipment that may have been in good mechanical condition. Likewise, the FMD may have overlooked equipment in poor mechanical condition. Numerous organizations, including the California Department of Consumer Affairs and the American Automobile Association, recommend the use of mechanical assessments to ascertain the condition of vehicles and the cost to repair any problems. Some recommendations instruct the evaluator to

- Perform an engine compression test;
- Perform a contamination diagnosis of oil and fluids;
- Check fan and belts, electronic system, power steering, air conditioner, and transmission; and
- Check cooling system, braking system, and suspension.

Furthermore, the Manual of California City and County Fleet Management Practices and Performance Measures, details best management practices to help local governments improve their fleet management. According to this manual, vehicle evaluations should be performed on vehicles considered for replacement. These evaluations should include an analysis on whether the vehicle should be retained, replaced, or repaired. In our opinion, the FMD should consistently follow its own prescribed guidelines to conduct a comprehensive written mechanical assessment on each vehicle considered for replacement.

We recommend that the Fleet Management Division:

**Recommendation #10**

**Consistently follow its own prescribed procedure to conduct a written comprehensive mechanical assessment on all equipment considered for replacement. (Priority 2)**

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**CONCLUSION**

The Fleet Management Division of the General Services Department needs to improve their administrative controls over the City's metered equipment fleet to ensure that the FMD replaces only those pieces of metered equipment that are economically justified and programmatically required. In addition, the GSD should develop and implement an appropriate Citywide metered equipment replacement policy.

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**RECOMMENDATIONS**

We recommend that the Fleet Management Division:

**Recommendation #9 Include metered equipment, regardless of funding source, in its current efforts to develop and consistently implement a cost-effective replacement policy for transport vehicles, which incorporates repair costs and a minimum useful life. (Priority 2)**

**Recommendation #10 Consistently follow its own prescribed procedure to conduct a written comprehensive mechanical assessment on all equipment considered for replacement. (Priority 2)**

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