City of Charlottesville

Fleet Maintenance Study

Report

October 4, 2017

The Novak Consulting Group

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October 4, 2017

Paul Oberdorfer
Director of Public Works
City of Charlottesville
305 4th Street NW
Charlottesville, VA 22903

Dear Mr. Oberdorfer:

We are pleased to provide you with this Fleet Maintenance Study report. This report includes observations and recommendations designed to improve the overall effectiveness and efficiency of the City's Fleet Management Division.

The recommendations contained in this report are based on input and information provided by staff and key stakeholders, as well as our team's research and knowledge of industry standards and best practices that are appropriate for the City.

We are confident that the recommendations included in this report will augment the Division's ability to provide quality fleet management services to the City of Charlottesville organization. Implementing these recommendations will require careful coordination and attention from the Division's leadership as well as support from Department leadership and City administration.

Thank you for the opportunity to work with the City of Charlottesville on this project.

Sincerely,

Michelle Ferguson
Organizational Assessment Practice Leader

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Executive Summary

As an internal service provider, the City of Charlottesville's Fleet Management Division is responsible for serving customer departments by maintaining their fleet of vehicles and equipment. More than any other internal service, fleet maintenance service providers must compete with private sector providers that are also capable of delivering these services. This creates a unique operating environment for the Fleet Management Division.

While external vendors can provide basic fleet maintenance services, many organizations continue to have in-house fleet operations. This is often due in part to an external vendor's inability to provide high-level fleet management, which involves taking a leadership role in maintaining and managing the organization's fleet.

The Fleet Management Division is at a crucial juncture as significant quality, cost, and customer service challenges are making customers reconsider their use of the City's internal fleet maintenance operation. In addition, the Division is not serving as a leader when it comes to the City's fleet. The Division's reactive approach to fleet management, as evidenced by the lack of policies or procedures to guide future fleet decisions, has led to a growing, difficult-to-maintain, and non-standardized fleet.

Significant changes are necessary to enhance the level of service provided to Fleet Management Division customers and to transform the role of the Division in managing the City's fleet. First, the City must take steps to aggressively and consistently manage the size and composition of its fleet. Once the size of the City's fleet is addressed, the focus will shift toward implementing policies and processes to proactively and collaboratively manage the size and composition of the City's fleet going forward, while ensuring Departments have access to the units they need to safely and effectively perform their work.

The Division also needs to take steps to improve the internal operations of the function. Although the current staffing level is adequate, the specializations and certifications of the mechanics are not aligned to the needs of the City's fleet. In addition, the Division's parts inventory is not completely cataloged and contains both items that are no longer needed and items that are obsolete. The Fleet Manager will be responsible for transforming the Division into a customer-focused leader within the City organization; the upcoming transition at the management level of the Division offers an opportunity for this role to be revised and expanded.

The purpose of the recommendations contained in this report is to guide the Fleet Management Division in making the changes necessary to create an effective, customer-oriented, proactive manager of the City's fleet. The following table summarizes those recommendations.

Table 1: Summary of Recommendations

Number	Recommendation
1	Implement targeted fleet right-sizing initiatives.
2	Adopt a Charlottesville fleet utilization target.
3	Purchase and implement a fleet and fuel management work order system.
4	Develop monthly fleet and fuel management reports for departments.
5	Implement a centrally-managed, utilization-based preventive maintenance scheduling process.
6	Utilize the Fleet Management System to accurately track and report wrench time per fleet unit.
7	Develop wrench time and shop productivity targets.
8	Adjust the fleet rate calculation methodology.
9	Utilize fleet and fuel management system to capture all government-wide fleet ownership costs.
10	Realign mechanic specializations and certifications.
11	Implement a skill-based career ladder for Mechanics.
12	Adopt a formal tool allowance policy and review schedule.
13	Continue efforts to implement an accurate inventory and warehouse management program for parts and adopt policies and procedures.
14	Work with the City's Finance Department to simplify the parts procurement process.
15	Implement a barcoding system.
16	Create a Fleet Advisory Committee.
17	Begin conducting an annual customer satisfaction survey.
18	Clarify City-wide take-home vehicle policy to enhance consistency and limit use of take-home vehicles for non-operational purposes.
19	Expand utilization of the Equipment Replacement Fund.

Introduction and Methodology

In 2016, the City of Charlottesville retained the services of The Novak Consulting Group to conduct an organization-wide Efficiency Study. Following the completion of that study, the Department of Public Works hired The Novak Consulting Group in April 2017 to evaluate its fleet maintenance operation. The purpose of this study was to assess the workload and operations of the Fleet Management Division and identify opportunities to improve efficiency and effectiveness that will support or enhance the Division's ability to meet the service expectations of its customers.

To accomplish these tasks, The Novak Consulting Group interviewed Division leadership and staff. A focus group was also conducted with customers and stakeholders who utilize Fleet Management services, including representatives from the following departments: Police, Sheriff, Fire, Utilities, Public Works, Transit, Parks and Recreation, Neighborhood Development Services, and Social Services. The Novak Consulting Group also requested and received data from the Division related to its fleet inventory, structure, operations, practices, procedures, and workload. In addition, questionnaires regarding the use of particular vehicles were also completed by customer departments. This information was analyzed to determine the strengths as well as opportunities for enhancing the efficiency and effectiveness of the Division.

This process has resulted in a series of recommendations that will enable the Division to efficiently and effectively meet the needs of the City of Charlottesville organization.

Overview of the Fleet Management Division

The Fleet Management Division is responsible for maintaining the City's vehicles and equipment and for providing recommendations on the purchase of new or replacement vehicles and equipment. The Fleet Management Division currently maintains an inventory of 664 fleet units, including 481 vehicles (such as passenger cars, trucks, and vans) and 183 pieces of equipment. It should be noted that the City's fleet of vehicles has increased by 16% since 2004.[1] The current fleet inventory is summarized in the following table by unit class type.

Table 2: Fleet Inventory Summary

Unit Class	Number of Units
Backhoes, Loaders, Trenchers	32
Bucket Trucks	3
Dozers, Scrapers, Pavers	2
Dump Trucks	25
Fire Trucks/Apparatus	10
Forklifts	1
Medium and Heavy-Duty Trucks	18
Motorcycles	6
Non-pursuit Police Field Vehicles	38

[1] Based on the Fleet Assessment completed by the Fleet Manager in 2004, which recommended the disposal of 23 units

Unit Class	Number of Units
Other Motorized Equipment (ATVs, floor sweepers, chippers, etc.)	86
Passenger Car (non-police)	47
Pickups, Vans, and other Light Trucks	211
Police Field Vehicles	69
Refuse Trucks	7
Roller	1
School Buses	3
Sewer Trucks	5
Street Sweepers	5
Tractor	9
Trailers	47
Transit Buses	39
TOTAL	**664**

The Fleet Management Division is housed in the Department of Public Works and staffed by 11 full-time equivalent (FTE) employees: Fleet Manager, Parts Manager, Auto Service Coordinator, Auto Mechanic I, and seven Auto Mechanic IIIs. The Fleet Manager oversees the operation of the repair shop and the fuel system, providing the Division with leadership and managerial support. The Parts Manager is responsible for procuring, storing, and dispensing the Division's inventory of parts. This position also backfills for the Auto Service Coordinator position. The Auto Service Coordinator provides administrative support to the Division.[2] This position assigns tasks to the Auto Mechanics, administers the preventive maintenance program, coordinates repairs not completed in-house, and completes other administrative tasks, many of which involve the City's Enterprise Resource Planning system, known as SAP. This position also backfills for the Parts Manager. The Auto Mechanic IIIs are responsible for repairing and maintaining all City vehicles. One Auto Mechanic III provides paint and bodywork services. However, it should be noted that, at the time of this writing, the paint and bodywork functions were being eliminated, but the Auto Mechanic III position is being retained. Two of the Auto Mechanic III positions specialize in school bus repair and maintenance while the other four positions work on the balance of the City's fleet. The Division's organizational chart is shown in the following figure.

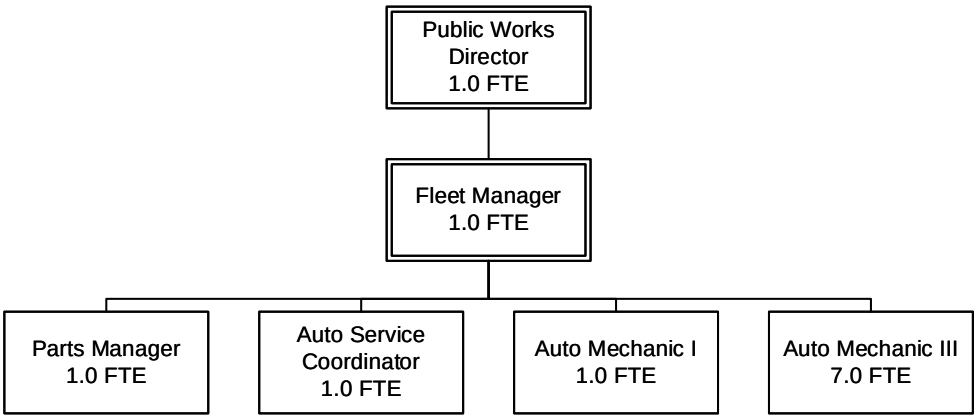

Figure 1: Fleet Management Division Organizational Structure

[2] It should be noted that the classification of this position is being changed to provide the Division with managerial support in the absence of the Fleet Manager.

The Division's staffing level has remained relatively constant in recent history, decreasing by 8% between FY 2013 and FY 2017. The following table includes the Division's historical staffing level. The reduction in FY 2014 is the result of the elimination of the City Wash Facility and an Auto Service Aide related to that operation.

Table 3: Fleet Management Division Historical Staffing Levels, FY2013-FY2017

	FY 2013 Actuals	FY 2014 Actuals	FY 2015 Actuals	FY 2016 Actuals	FY 2017 Adopted Budget	Percent Change
FTEs	12.0	11.0	11.0	11.0	11.0	-8%

Fleet Management Division operations are supported by two funds. Fleet maintenance operations are supported by an Internal Service Fund (the Fleet Management Fund), which does not include any fuel or capital costs. Internal Service Funds support operations which primarily provide services and support to other City departments. These funds are used to account for the goods and services provided by one department to other departments or agencies on a cost-reimbursement basis. A separate fund (Equipment Replacement Fund) is used for equipment purchases.

The Fleet Management Division's total budget decreased by 63% between FY 2013 and FY 2017. However, this decrease is primarily due to changes in the fuel operation portion of the budget. Fuel revenues and expenditures have decreased in recent years as the price of fuel has decreased. In addition, the City does not include fuel sales in the budget (only projected fuel markup revenue is included), which gives the appearance the fuel budget decreased significantly between FY 2016 and FY 2017. If the fuel budget remained constant between FY 2016 and FY 2017, the fuel operations budget would have decreased by 49% between FY 2013 and FY 2017, and the Division's total budget would have decreased by only 32% rather than 63%.

While the fuel portion of the budget has decreased in recent years, the fleet maintenance portion of the budget has increased by 2%. Overall, the fuel operation subsidizes[3] the fleet maintenance operation, which does not break even. The following table summarizes the Division's revenues and expenditures between FY 2013 and FY 2017.

Table 4: Fleet Management Division Historical Revenues and Expenditures, FY2013-FY2017

	FY 2013 Actuals	FY 2014 Actuals	FY 2015 Actuals	FY 2016 Actuals	FY 2017 Adopted Budget	% Change
Fleet Maintenance						
Revenues	$719,737	$840,531	$913,051	$895,609	$931,000	29%
Expenses	$934,508	$933,309	$934,532	$964,151	$950,372	2%
Fleet Maintenance Net	**($214,771)**	**($92,778)**	**($21,481)**	**($68,542)**	**($19,372)**	**-91%**
Fuel						
Revenues	$2,030,011	$1,964,592	$1,457,174	$915,253	$121,000	-94%
Expenses	$1,785,127	$1,796,407	$1,400,716	$905,990	$44,800	-97%
Fuel Net	**$244,884**	**$168,185**	**$56,458**	**$9,262**	**$76,200**	**-69%**

[3] The fuel markup has decreased in recent years: 18.5% in 2014, 15% in 2015, 10% in 2016, and 5.5% in 2017.

As can be seen in the following figure, which shows the Division's historical combined fleet maintenance and fuel revenues and expenditures, the Fleet Management Division collected more revenue than it expended for the last five years except for FY 2016.

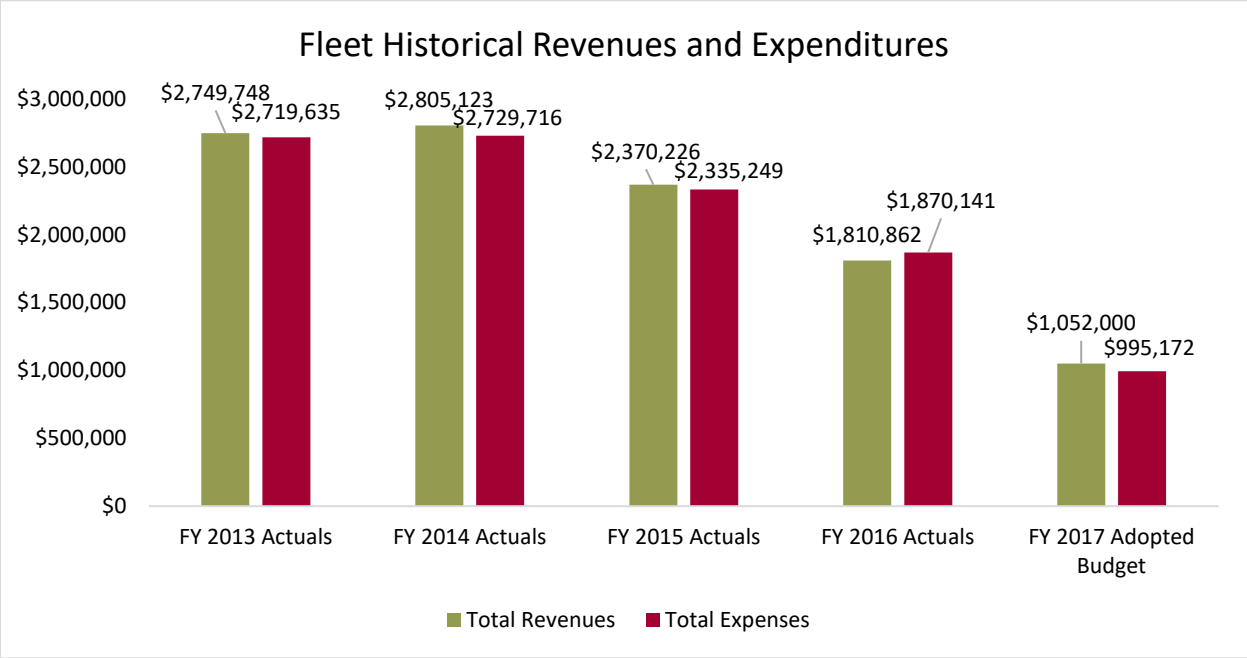

Figure 2: Fleet Management Division Historical Revenues and Expenditures, FY2013-FY2017

Analysis and Recommendations

The fact that fleet maintenance services are also provided by the private sector creates a unique operating environment for in-house fleet operations. Jurisdictions typically decide to provide fleet maintenance services in-house because of a mix of factors: quality, ability to prioritize, cost, and customer service. The City of Charlottesville has provided fleet maintenance services for many years, and the Fleet Management Division is staffed by long-tenured employees. However, significant quality, cost, and customer service issues exist that threaten the entire operation.

The Novak Consulting Group facilitated a focus group with the Division's largest customers, including the Police, Sheriff, Fire, Parks & Recreation, Neighborhood Services, Social Services, and Transit Departments. Quality, turnaround time, cost, preventive maintenance, and customer service were the main issues raised during this discussion. Customers noted that, because technology is advancing so quickly and mechanics do not receive ongoing training, the quality of repair and maintenance services is unacceptable. As a result, some customers have started using outside vendors. In addition, customers voiced concerns that they were expected to be responsible for ensuring their vehicles receive preventive maintenance on time. Customers noted that the Fleet Management Division was often slow, leaving their vehicles out of commission for prolonged periods of time. Services provided by the Division were described as expensive by the focus group, and customers recounted stories of unclear billing practices and times when they felt they were overcharged. When they asked the Fleet Management Division for more detail regarding the completed repairs, they were told that detailed invoices were not available.

During the focus group, each customer was asked to provide three words that describe the Fleet Management Division. The word cloud in the following figure summarizes the description provided by the Division's stakeholders.

Figure 3: Word Cloud of Stakeholder Experience with the Fleet Management Division

In addition to the issues raised by customers, the Division is not proactively managing the City's fleet. The only aspect of the City's fleet that is somewhat proactively managed is vehicle replacement via the City's five-year vehicle replacement plan; however, fleet decisions are decentralized and policies are not in place to guide decision makers. As a result, the Division is responsible for maintaining many different vehicle makes and models. Additionally, staff report that preventive maintenance is not completed on time because the system, SAP, is not properly configured and therefore does not alert staff when maintenance is due.

The recommendations in this report aim to put the Fleet Management Division on a path toward becoming a customer-focused fleet maintenance operation that can efficiently and effectively meet the needs of the City organization.

Fleet Utilization

The size, composition, and condition of a local government's fleet and equipment inventory has a significant influence on operational effectiveness and the cost of program delivery. If City personnel have ready access to the tools, vehicles, and equipment (units) they need to perform their work, they are better able to efficiently and effectively deliver services to the public. Ultimately, the first goal of an effective fleet management program is to ensure that these resources are available.

However, there is also a tendency, for the fleet to slowly grow – in both the size and quantity of the units. This is especially evident in organizations like the City of Charlottesville that have traditionally operated under a decentralized fleet management approach where departments have a large amount of discretion in the number, type, and specifications of units they utilize. Departments are often reluctant to surplus units that they infrequently use because they want to have access to the equipment when they need it. For the same reason, they are often reluctant to share low utilization units with other departments. This is an understandable perspective as each department is expected to effectively manage its programs. However, such an approach can be expensive.

A local government's vehicle and equipment inventory represents a significant cost, some of which may be hidden from the bottom line of departmental operating budgets. In addition to fuel and maintenance expenses, each unit, regardless of utilization, must be insured by the City. Additionally, "over-spec'ing" vehicles – purchasing vehicles or equipment with more capacity than is required for the intended work – can lead to unnecessary fuel inefficiency and more significant emissions into the environment.

A lack of vehicle and equipment standardization creates inefficiencies in fleet maintenance. For these reasons, it is important for governments to aggressively and consistently manage the size and composition of its fleet. This is best accomplished through a broader fleet management program that works collaboratively with operating departments to proactively manage the fleet while also ensuring that Departments have access to the units they need to perform their work. This will require several key management system improvements in the Fleet Management Division. Those improvements are recommended in the Fleet Management section of this report. However, it is also appropriate to assess the existing fleet to determine if immediate opportunities exist to adjust fleet size or composition to better pair with current operating requirements or to realize costs savings.

RECOMMENDATION 1: Implement targeted fleet right-sizing initiatives.

To conduct an initial utilization analysis, The Novak Consulting Group had to determine a utilization threshold. A utilization threshold is the minimum floor at which a vehicle or equipment unit is considered to be efficiently utilized. This was a delicate task, as many variables are affected by raising or lowering the average annual mileage or hours of a City vehicle or piece of heavy equipment. For example, as a utilization threshold increases, vehicles are driven more and may break down sooner. They also may not be as available, in the case of pooled vehicles, when employees need them on short notice. Conversely, as a utilization threshold decreases, the total fleet size becomes bloated, and City capital and staffing resources become tied up in physical assets that are not truly needed.

Based upon research of utilization thresholds of other organizations, The Novak Consulting Group determined that there is no one standard. Several Federal agencies require a minimum utilization for standard sedan vehicles of 8,000 miles a year (with a preferred utilization of 12,000). The Commonwealth of Pennsylvania requires a minimum utilization of 6,000 miles a year for its permanently assigned vehicles. However, as jurisdictional areas decrease and the number of short, but still important, "in town" trips increase, utilization thresholds must be adjusted accordingly. Municipal utilization thresholds tend to average between 3,000 and 6,000 miles per year, with varying ranges for heavy equipment. For example, the City of Durham, North Carolina has established a threshold of 3,000 miles a year, or 300 hours a year for heavy equipment. The City of Palo Alto, California has determined that any unit used less than 2,500 miles per year is automatically eliminated from the fleet, while those vehicles utilized less than 5,000 miles per year must be justified by the relevant operating manager. These examples are not intended to reflect a specific best practice target, but rather to illustrate that targets vary widely from one agency to another.

To reflect a conservative initial approach, The Novak Consulting Group applied a two-tiered analytical methodology. First, using inventory and usage data provided by the City of Charlottesville for the existing fleet inventory of 664 units, The Novak Consulting Group identified all the vehicles and equipment that were utilized less than 5,000 miles per year in 2016. This represents a conservative figure for the City of Charlottesville. The City is approximately 10 square miles, and the City's 481 vehicle units are utilized an average of 6,275 miles per year. Therefore, a 5,000-mile utilization threshold is a conservative initial filter. This utilization filter identified a list of 232 vehicles and equipment that qualified for further analysis and investigation, representing approximately 35% of the total fleet size. Those units are summarized by Department in Appendix A.

Once this initial filter was applied, available usage data for these 232 units targeted for further analysis was assembled into departmental fleet questionnaires. These questionnaires, which were completed by departmental fleet liaisons, were designed to gather additional utilization information related to the function and use of units, seasonal requirements, vehicle pooling, and overnight vehicle storage location. These questionnaires allowed The Novak Consulting Group to assess fleet right-sizing opportunities while also taking into account specific operational needs.

It is important to note that this initial filter does not represent a list of "underutilized" vehicles but rather represents a conservative threshold for further investigation. Moreover, the City was unable to provide hours-based usage data for equipment and instead provided mileage estimates. Equipment tends to be used over a small geographic area, but for many hours, which limits mileage for these units. Of the 232 units identified for further investigation, 28%, or 65 units, were pieces of equipment, such as backhoes, boring machines, and brine machines. Of the 167 vehicles identified through the initial utilization filter, 69 were operated less than 2,500 miles per year and 24 were operated less than 1,000 miles per year.

The Novak Consulting Group's analysis of the available utilization data as well as departmental questionnaires indicates that many of the City's vehicles and equipment appear to be well-utilized or serve an important operational need. However, several initial opportunities for fleet right-sizing, pooling, and resource sharing exist, as summarized in the following section. Appendix A provides a detailed list of the 232 fleet units previously described. The following table summarizes those units by unit category and utilization threshold.

Table 5: Summary of Fleet Units Targeted for Utilization Analysis

Fleet Units	2,501 to 5,000 miles	Less than 2,500 miles	Total
Equipment	3	62	65
Vehicle	98	69	167
TOTAL	**101**	**131**	**232**

Police Department Motorcycles

The Police Department maintains an inventory of six motorcycles, including four Harley Road King street motorcycles and two Yamaha Dirt Bikes. The Harley Road Kings are relatively well-utilized, with annual mileage ranging from 3,000 to 4,200 miles per year and utilization of approximately 245 days per year, weather permitting. By comparison, the two Yamaha Dirt Bikes are utilized less than 600 miles per year, and are primarily used during special events such as bike and foot races. Given the limited and specialized use of these vehicles, it is appropriate to consider consolidating or eliminating the Yamaha Dirt Bikes from the City's fleet.

Police Field Vehicle

The Police Department maintains a 2014 Dodge Charger as a police field vehicle that is operated approximately 750 miles per year. This vehicle should be considered for elimination from the fleet. However, it will be important to engage with the Police Department to ensure that sufficient reserve field vehicles will remain available. In addition, it is appropriate for the Fleet Management Division and Police Department to begin evaluating the possibility of converting 1:1 police field vehicle assignments into a shared unit approach, whereby several officers utilize one field vehicle over a 24-hour period.

Public Works Public Service Heavy Duty Dump Trucks

The Public Service Division maintains an inventory of six heavy duty dump trucks that are operated less than 5,000 miles per year, including three 2016 Freightliner dump trucks. The Freightliner dump trucks are utilized for hauling material and spoils to and from job sites, and are operated less than 600 miles per year. The remaining three 1992 Chevy dump trucks are defined as snow removal vehicles and are operated between 1,600 and 2,300 miles per year. Based on this utilization data, and considering the offsetting seasonal requirements for vehicle use (Freightliners are heavily used, primarily in warmer months while the Chevy Dump Trucks are used primarily in winter), it is appropriate to consider consolidating this pool of heavy duty dump trucks. Based on the age and condition of the Chevy dump trucks, it may be appropriate to replace two 1992 Chevy dump trucks with the two 2016 Freightliners as a means to increase utilization. It is important to note, however, that this must be evaluated against snow plow route and equipment requirements for Public Services Division crews.

Social Services Sedans

The Social Services Department maintains two Ford administrative sedans that are utilized 435 and 200 miles per year. These are pool vehicles used for client and family visits and for meetings throughout the state. Given the low utilization, it is appropriate to consolidate these two vehicles as one pool vehicle or,

as an alternative, eliminate both vehicles and rely upon mileage reimbursement as a means to compensate individuals who use their personal vehicles for site visits.

Utilities Gas Work Orders and Gas Meters
The Utilities Gas Division maintains two Ford F-250 pick-up trucks that are utilized 666 and 527 miles per year. These trucks are used by service techs to service gas work orders and set gas meters. Given the low utilization of these vehicles, it is appropriate to consider consolidating the two trucks into one unit or developing a sharing arrangement with other divisions in Utilities or Public Works. For example, the GIS Division of the Utilities Department utilizes a Ford SUV for mapping initiatives and operates the vehicle less than 2,500 miles per year. The function of this vehicle could be expanded to include gas work orders and meter servicing.

Utilities Gas Service Pool Vehicles
The Gas Service Division of the Utilities Department maintains two Ford Sport SUV pool vehicles that are used for GIS mapping and as administrative pool cars. The vehicles are operated 2,400 and 3,600 miles per year. Given the relatively low utilization of these vehicles, it is appropriate to consider consolidating the two pool vehicles into one unit.

Utilities Wastewater Jetting Vehicles
The Wastewater Division of the Utilities Department maintains one light duty and one heavy duty truck that are used to jet and clean sewer mains. The light-duty truck (a Ford F550) is utilized approximately 700 miles per year, which is a low utilization rate. It is appropriate to consider eliminating the light-duty truck from the fleet. However, this should only be implemented if operational requirements allow the City's wastewater conveyance infrastructure to be effectively serviced by the heavy-duty sewer truck alone.

Site-Based Consolidation of Pool Vehicles
The review of the utilization data available indicates that many operating divisions have access to their own administrative or pool vehicles regardless of whether they share physical space with other departments. For example, the Fleet Maintenance, Gas Environmental Administration, and Water Divisions each have access to assigned administrative pool cars yet they share the same facility. The Division should move toward a site-based administrative pool car model that assigns one pool car to each City site, to be shared by all departments and divisions who operate from the location. An additional central motor pool can be maintained by the Fleet Management Division as a resource for those who require transportation to special events, training, conferences, or other periodic work-related functions. In the alternative, employees should also be able to utilize personal vehicles, where appropriate, and request a mileage reimbursement for City-related business.

Transit Skid Steers
The Transit Department maintains an inventory of two Bobcat skid steers that are utilized for lot and bus stop maintenance. The skid steers are utilized 31 and 61 miles per year, which is a low utilization rate. It is appropriate to consider consolidating these two skid steers.

Heavy and Specialty Equipment Pooling
The City maintains an inventory of heavy equipment that is useful in a wide range of applications. This equipment includes 12 backhoes, six loaders, four skid steers, two aerial trucks, one claw truck, three excavators, one forklift, and six tractors. This equipment is often utilized heavily during peak seasonal periods, but rarely utilized during other portions of the year. As a result, annual utilization is often low for

this type of equipment. For example, the average annual mileage on a City backhoe is just 275 hours per year. This equipment is also spread among five divisions: the Maintenance Division of the Parks and Recreation Department; the Public Services Division of the Department of Public Works; and the Gas, Wastewater, and Water Divisions of the Utilities Department. Each division has ownership of the equipment and determines when, and under what conditions, the equipment is shared.

Though this equipment is theoretically available to be shared, in practice, pooling and sharing resources rarely occurs. In some cases, there is good reason to maintain discrete, divisional access to a resource. For example, it makes sense for Parks and Recreation to have ready access to a skid steer to load and distribute mulch. However, this dedicated access should be considered on a seasonal, or peak period basis, rather than a permanent division unit assignment. Therefore, it is appropriate to consider consolidating specialty and heavy equipment into a centrally managed heavy equipment pool administered by the Fleet Management Division.

These fleet right-sizing initiatives represent preliminary steps that can be taken to adjust the size and composition of the City's fleet. While these recommendations do not contain adjustments that would potentially negatively impact operations, each initiative must be vetted with impacted departments before implementation. The following table summarizes the vehicles and equipment referenced in the previously summarized initiatives.

Table 6: Summary of Vehicles/Equipment Targeted for Right-sizing Initiatives

Department/Division	Vehicle ID	Make and Model	Vehicle Type
City Police Department	20002908	Yamaha Dirt Bike	Motorcycle
City Police Department	20002909	Yamaha Dirt Bike	Motorcycle
City Police Department	20003151	2014 Dodge Charger	Police Field Vehicle
Public Works Public Service	20003296	16-Freightliner Dump	Heavy Duty Dump
Public Works Public Service	20003297	16-Freightliner Dump	Heavy Duty Dump
Public Works Public Service	20003295	16-Freightliner Dump	Heavy Duty Dump
Public Works Public Service	20000106	92 Chevy Dump	Heavy Duty Dump
Public Works Public Service	20000022	92 Chevy Dump	Heavy Duty Dump
Public Works Public Service	20000109	92 Chevy Dump	Heavy Duty Dump
Social Services	20003327	Ford Taurus	Administrative Sedan
Social Services	20003216	Ford C-Max	Administrative Sedan
Transit	20002553	Bobcat	Skid steer
Transit	20002554	Bobcat	Skid steer
Utilities Gas	20003260	Ford 250 truck	Pick-Up Truck
Utilities Gas	20003261	Ford 250 truck	Pick-Up Truck
Utilities Gas Env Admin	20003068	Nissan Leaf	Administrative Sedan
Utilities Gas Service	20003238	Ford Sport Utility, 4 WD	SUV
Utilities Gas Service	20003245	Ford Sport Utility, 4 WD	SUV
Utilities Stormwater	20002765	Toyota Prius	Administrative Sedan
Utilities Wastewater	20003162	Ford F550	Pick-Up Truck
Utilities Wastewater	20002892	Sterling sewer truck	Sewer Truck

RECOMMENDATION 2: Adopt a Charlottesville fleet utilization target.
As previously noted, a unit utilization target or threshold is the minimum floor at which a vehicle or equipment unit is considered to be efficiently utilized. If a unit does not meet that threshold, it is evaluated for elimination from the fleet. The City of Charlottesville currently does not have a utilization target and so does not have a policy basis to benchmark fleet right-sizing. As a result, the Fleet Management Division has not engaged in recurring, proactive efforts to manage fleet size and limit fleet creep – the incidence of gradual fleet growth over time. Furthermore, it has largely been up to operating departments to determine which vehicles to eliminate from the fleet.

There are many different approaches to establishing utilization thresholds and, as has previously been discussed, there is no standard best practice. Many agencies establish a simple baseline mileage or hour threshold for unit utilization while some jurisdictions consider mileage, hours, and number of work days utilized to provide a measure that takes into account seasonal and important incidental utilization. Further still, some agencies develop specific utilization targets by vehicle class (e.g., passenger car, backhoe) to provide a more nuanced assessment approach. For example, the Colorado Department of Transportation calculates the average utilization of each vehicle class to determine the average percent of use based on their asset life cycle. Any vehicle achieving less than 50% of the class average is subject to removal from the fleet.

Regardless of the approach employed, it is important to establish targets that are reflective of the community. Experience relative to these targets should be monitored proactively by the Fleet Management Division. If a unit is not meeting target utilization thresholds, fleet personnel should engage with the operating department in question to discuss alternative models, such as leasing, motor pool access, or unit sharing as a means to operate with a more efficient fleet footprint.

Though a fleet utilization target and the recommended fleet right-sizing steps are appropriate to consider, the most significant impact on right-sizing the fleet is for the Fleet Management Division to begin working proactively with operating departments to monitor utilization and develop cost-effective solutions to meet operating needs while limiting fleet growth. To accomplish this task, significant improvements in fleet management processes, technology, and customer communications practices are warranted. The following section details key fleet management system and process improvements necessary to reach that goal.

Fleet Management

The most significant issue impacting the Fleet Management Division is the disconnect between customer expectations and the capacity of the Fleet Management Division to meet those expectations. Interviews with fleet customers reflect frustration with the quality and timeliness of repairs and concern over the lack of access to important data regarding fleet utilization and cost. Several factors contribute to these issues, including access to functional fleet management technology, limited mechanic training, and lack of an intentional structure to define and manage customer expectations. The recommendations in this section are intended to begin addressing these issues and maximizing the value of fleet maintenance work performed by the Division.

RECOMMENDATION 3: Purchase and implement a fleet and fuel management work order system.
Currently, the Fleet Management Division utilizes the City's Enterprise Resource Planning system (SAP) as the primary mechanism to track fleet usage data for the City. The benefit of utilizing this system is that, as the broader enterprise software for the City, it integrates vehicle asset inventory information with the financial, asset management, and risk management data stored in SAP. This is useful from an aggregate financial management perspective; however, SAP has several critical disadvantages when analyzed within the context of daily fleet management needs. Specifically, SAP does not have a user-friendly mechanism to manage preventive and reactive fleet management work orders; there is no integrated mechanism to track vehicle and equipment usage and proactively schedule preventive maintenance; and the process of developing fleet and fuel management reports is cumbersome and typically requires the help of IT staff. These deficiencies lead to several practical problems, described below.

Fleet managers and departments do not have ready access to the data and information necessary to make informed decisions regarding fleet utilization and replacement. For example, it is difficult to efficiently monitor the total operating cost and downtime of a unit as a means to prioritize vehicle replacements. Currently, central and departmental fleet managers must utilize an interval date-based, rather than utilization-based, scheduling system for preventive maintenance. This means that preventive maintenance is often not completed at appropriate times, which can have a significant negative impact on the lifecycle of a unit. In addition, the cumbersome nature of the SAP system as a fleet management tool requires a significant labor commitment of Fleet Manager and Auto Services Coordinator time for data entry, analysis, and reporting.

One of the most commonly applied methods to monitor, analyze, and control fleet expenditures is to implement an electronic fleet and fuel management system that tracks the utilization characteristics and life cycle costs of maintaining a vehicle. In a 2011 survey conducted by Government Fleet Magazine, 87% of public sector fleet managers reported utilizing some sort of electronic fleet management system.

Development of a centralized fleet and fuel management system will allow the City to maintain a central inventory of vehicles/equipment and, using system analytical tools, regularly analyze both ownership costs and utilization. An integrated fleet and fuel management system will also allow the City to better manage preventive maintenance programs and workload by monitoring vehicle mileage and automatically scheduling preventive maintenance, identify and analyze high-cost vehicles, develop reports for regulatory compliance, monitor vehicle use and fuel consumption, and establish vehicle replacement cycles. The system will also allow the City to more effectively implement vehicle and equipment pooling alternatives by providing an electronic unit reservation module.

Once integrated inventory data is established, it can be compared to projected asset lifecycles (an analytic feature of many fleet management systems) and utilization-based replacement cycles can be developed. This will better equip the City to centrally evaluate organizational fleet needs and evaluate financing options that can be used to keep its fleet within lifecycle targets. A basic fleet management system can be purchased for approximately $25,000, with the price increasing as analytical and reporting features are added. It should be noted that the FY 2018 budget includes funds for the purchase of an automated fuel system and an integrated fleet management system.

RECOMMENDATION 4: Develop monthly fleet and fuel management reports for departments.
The Fleet Management Division does not currently provide customer departments with any routine reports. Customers are instead expected to access data regarding fleet repairs through SAP, where they can select any date range and pull the following information for all repairs completed on their vehicles:

parts used, mechanic assigned, and explanation of the repairs that were completed. However, customers are unable to easily identify utilization information or cost information for specific units or in aggregate for the department. This fundamentally limits the utility of the information available to decision makers and weakens their ability to make informed, proactive decisions regarding fleet size, composition, or replacement.

Implementation of a fleet and fuel management system will allow the Fleet Management Division to begin tracking and analyzing a wide range of data and information regarding fleet units. The following data points are widely available and accessible in most fleet and fuel management systems and represent what should be actively tracked for each department.

Table 7: Summary of Fleet Management Indicators

Fleet Management Indicators	Purpose
Unit Utilization – the number of miles or hours that a unit is operated presented monthly, year-to-date, and compared to prior years. Determined by mileage and hours data collected during each fueling session.	• Illustrates the frequency with which the unit is operated • Serves as an indicator to identify and surplus underutilized units • Identifies seasonal use patterns by unit type, and provides the necessary data to assess equipment pooling options on an ongoing basis
Unit Life Cycle Costs – the monthly, annual, and total life-cycle cost of a unit including labor and parts.	• Provides an indicator of the cost of a unit that can be compared to the cost of acquiring or leasing a new unit
Fuel Usage and Fuel Efficiency – the total volume of fuel used and the average efficiency (miles or hours) per gallon of fuel used.	• Provides an indicator of fuel efficiency that can be considered when evaluating replacement or replacement dates • Serves as a trend line indicator of fuel efficiency • Allows the Department to monitor and restrict the incidence of fuel theft
Unit Downtime – the number of days a unit is out of service due to mechanical issues by month, year-to-date, and over the life cycle of a unit.	• Identifies unit downtime due to repairs as an indicator of lost operational productivity and a data point to consider when determining whether to replace a unit
Maintenance Cycle – the number of days required to repair a unit by maintenance type, measured from the point of Fleet Division intake to the point of repair. Data should be categorized by scheduled preventive maintenance and reactive/emergency repairs.	• Serves as an efficiency and service level outcome measure of the Fleet Management Division
Repeat Repairs – the number of re-repairs required for emergency or reactive repairs.	• Serves as an outcome measure to assess the effectiveness of Fleet Management Division repairs

This data should be centrally tracked by the Fleet Management Division and provided to customer departments monthly. Data points then should be used as mechanisms to monitor and communicate fleet utilization and cost information and to assess and improve Fleet Management Division performance.

RECOMMENDATION 5: Implement a centrally-managed, utilization-based preventive maintenance scheduling process.

For most governments, fleet/equipment services impact the delivery and cost of nearly every service provided to the public and impact the productivity of nearly every employee; support emergency services making the difference for every citizen in the City; and support maintenance of infrastructure, which helps support the local economy and quality of life.

Three primary approaches to vehicle/equipment maintenance exist. All three are important.

1. **Reactive Maintenance** is the process of addressing maintenance issues in response to vehicle/equipment breakdown.
2. **Preventive Maintenance** is a systematic method of planned, proactive vehicle inspection along with servicing and repairs performed at specific intervals, according to manufacturer-specified timelines. The focus of a preventive maintenance program is to prevent system failures and prolong the useful life of a vehicle/equipment. It requires systematic inspection, detection, and correction of failures either before they occur or before they develop into major defects.
3. **Predictive Maintenance** is similar to preventive maintenance but instead of completing maintenance activities on a set schedule, they are completed in response to regular condition assessments of the vehicle/equipment. This process requires systematic inspection, detection, and correction of failures before they occur.

Each approach is necessary, but there are advantages and disadvantages associated with each, as summarized in the following table.

Table 8: Summary of Vehicle/Equipment Maintenance Approach Advantages and Disadvantages[4]

Maintenance Approach	Advantages	Disadvantages
Reactive Maintenance	• Requires fewer staff	• Increased cost due to unplanned downtime of equipment • Increased labor cost if overtime is needed • Cost of repair is high • Inefficient use of staff resources

[4] United States Department of Energy. Operations & Maintenance Best Practices: A Guide to Achieving Operational Efficiency, August 2010

Maintenance Approach	Advantages	Disadvantages
Preventive Maintenance	• Cost-effective • Flexibility allows for periodic schedule adjustment • Increased life-cycle • Reduced equipment or process failure • Average of 12 – 18% cost savings over reactive maintenance	• Catastrophic failures are still likely to occur • Labor intensive • Includes performance of unneeded maintenance • Potential for incidental damage when completing unneeded maintenance
Predictive Maintenance	• Increased life cycle and availability • Allows for preemptive corrections • Decrease in equipment and process downtime • Better product quality • Estimated 8 to 12% savings over preventive maintenance program	• Increased investment in diagnostic equipment • Increased investment in staff training

Many communities primarily rely on reactive maintenance, but this has a cost. It can result in increased downtime causing unproductive delays in City operations and, often, reactive repairs are more expensive. In addition, reliance on reactive repairs will typically decrease the useful life of a unit. Effective preventive and predictive maintenance, however, prolongs the useful life of a unit and delays the wear out period where failure rate and vehicle/equipment downtime increases dramatically. For example, an effective preventive and predictive maintenance program can extend useful life of a unit by 20%. The following figure illustrates the potential impact of each maintenance approach on the useful life a unit.

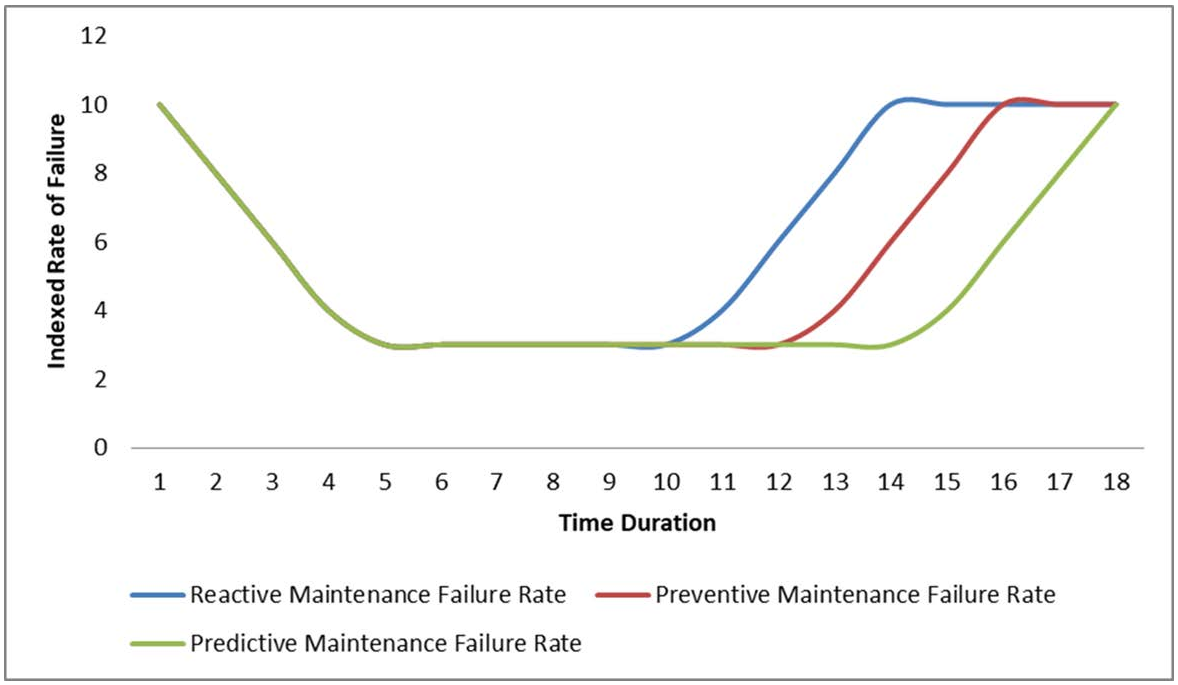

Figure 4: Vehicle/Equipment Failure Rate by Maintenance Approach

Each maintenance approach is necessary, but the goal is to emphasize preventive and predictive maintenance. A predictive maintenance approach is one that relies heavily on operators to conduct regular mechanical inspections and so requires a time commitment from operating departments as well as a heavy training commitment from the City. This kind of approach is also difficult to achieve in a non-specialized organization, such as the Fleet Management Division, that maintains a wide range of vehicle and equipment types to meet its many program demands. Though a predictive maintenance approach offers the greatest opportunity to prolong asset life, a hybrid approach, with an emphasis on preventive maintenance is most appropriate for Charlottesville.

There are two approaches to preventive maintenance scheduling – schedule-based and utilization based. The City currently utilizes a schedule-based system: departmental fleet managers are provided with an annual schedule and are expected to schedule maintenance at the allotted time. This approach is typically used in fleet shops that do not have access to robust fleet management work order systems and, more specifically, fuel systems that are capable of efficiently monitoring unit utilization. It converts manufacturer's maintenance recommendations into scheduled intervals that allow mechanics to space workload over time. This has the benefit of making sure that preventive maintenance does occur while limiting maintenance bottlenecks. However, the schedule-based approach has two significant limitations, described below.

First, a decentralized approach to maintenance scheduling means that unit preventive maintenance is inconsistently scheduled from department to department and target dates are often missed. This has a detrimental effect on unit life cycle. Second, the most significant factor impacting vehicle condition and the need for maintenance is utilization. Units can be utilized with varying degrees of intensity depending on season and the fluctuations of departmental workload. For example, a heavy-duty dump truck in Parks and Recreation may be used heavily during the summer months but infrequently used during the winter months. This necessitates more frequent maintenance during the summer which may not comport with evenly-spaced maintenance intervals of a schedule-based system.

By contrast, a utilization-based preventive maintenance approach is based on actual vehicle/equipment utilization (e.g., miles, operating hours, and/or age), as derived from readings collected through the fueling system and integrated with the fleet management/work order system. This allows the preventive maintenance scheduling process to be managed centrally by the Fleet Management Division and limits the frequency and duration of time units are operating beyond manufacturer recommended maintenance intervals.

Though a utilization-based approach can create an uneven work schedule for mechanics, it provides the greatest opportunity to maximize the life of the fleet. The recommended implementation of an integrated fleet and fuel management system will allow the Fleet Management Division to implement a centralized utilization-based approach to preventive maintenance.

Staffing and Structure

The Fleet Management Division is staffed with 11 FTEs including the Fleet Manager, Auto Services Coordinator, Parts Manager, and eight Auto Mechanics, one who specializes in bodywork. In addition, the Fire Department and the Parks and Recreation Department each staff a mechanic position. The Fire Department Mechanic is responsible for general preventive maintenance on fire apparatus and fleet vehicles, though most significant maintenance for fire apparatus is contracted. The Parks and Recreation Mechanic primarily services the operation's site-based equipment, such as mowers and vehicles, though the Fleet Management Division still provides some maintenance services to them. This equates to a total of 10 mechanics across the City. These mechanics are responsible for servicing a total of 664 vehicles and pieces of equipment.

There are several methodologies that can be applied to assess whether the staffing levels are appropriate to manage the fleet inventory. The National Fleet Management Association (NFMA) recommends a ratio of between 1:60 and 1:100 mechanics per unit as a general guideline. This guideline provides a high-level benchmark that must be considered within the context of fleet condition, age, and diversity (e.g., the varying types and classes of units in a fleet). The City's current ratio of mechanics to units is 1:66, which is within the appropriate benchmark range, considering Charlottesville's significant fleet diversity. However, there are more sophisticated approaches available to assess mechanic staffing needs as sufficient data becomes available.

The most practical and accurate method to determine mechanic staffing needs is to convert the unique maintenance workload experience of a fleet shop into Maintenance Repair Units (MRUs). This is a process of indexing the maintenance and repair requirements of vehicle classes relative to the repair needs of a baseline vehicle such as a passenger car. For example, a street sweeper, which is a high-maintenance item, may have an MRU of 15, which indicates that a street sweeper has 15 times the maintenance requirements of a passenger car, which has an MRU of one. These MRUs can then be converted to Vehicle Equivalent Units (VEUs), which enables comparison with other fleet operations. This methodology serves to reflect the varying maintenance requirements associated with different unit classes, and allows for a complex and diverse fleet, such as that in Charlottesville, to be converted into realistic workload estimates.

RECOMMENDATION 6: Utilize the Fleet Management System to accurately track and report wrench time per fleet unit.

To properly calculate MRU by unit class for a local government, it is necessary to calculate the number of maintenance hours (wrench time) per unit and to then develop an average annual maintenance hours

estimate by unit class (e.g., annual maintenance hours required per backhoe, per heavy duty dump truck). Unfortunately, reliable and consistent data was not available in the SAP system to accurately assess MRUs for the fleet. It is appropriate for the City to begin tracking this data as soon as possible, not only as a mechanism to fully understand workload and staffing requirements, but to improve transparency and information sharing with customer departments.

Though this data was not readily available for Charlottesville, The Novak Consulting Group applied MRUs derived from mechanic labor hours by class in a benchmark local government with an operating model similar to the City of Charlottesville. Applying the comparison MRUs to the City of Charlottesville's fleet inventory converts the 664 actual units in Charlottesville to approximately 1,303 VEUs. Both the MRU index by vehicle class and VEU conversion are summarized in the following table.

Table 9: Benchmark VEU Conversion

Unit Class	Number of Units	MRU Index	Vehicle Equivalent Units
Backhoes, loaders, trenchers	32	2.5	86.4
Bucket Trucks	3	3	9.6
Dozers, scrapers, pavers	2	3.5	7.6
Dump Trucks	25	4	100
Fire Trucks/Apparatus	10	0	0
Forklifts	1	0.5	0.9
Medium and Heavy-Duty Trucks	18	3.5	64.8
Motorcycles	6	0.75	5.4
Non-pursuit Police Field Vehicles	38	1	38
Other motorized equipment (ATVs, floor sweepers, chippers, etc.)	86	0.5	51.6
Passenger car (non-police)	47	1	47
Pickups, vans and other light trucks	211	1.5	316.5
Police Field Vehicles	69	1.5	103.5
Refuse Trucks	7	7	51.1
Roller	1	3.5	3.5
School Buses	3	4.5	14.4
Sewer Trucks	5	4	19
Street Sweepers	5	14	70
Tractor	9	1.5	12.6
Trailers	47	0.2	28.2
Transit Buses	39	7	273
TOTAL	**664**	**64.95**	**1,303.1**

Utilizing the same benchmarking information, it is estimated that approximately 12.5 hours of mechanic labor hours are required per VEU. Applying this labor hour benchmark to the City of Charlottesville's VEU conversion indicates that approximately 16,288 labor hours per year are required to maintain the City's fleet inventory.

Based on labor hour and leave data estimates provided by the City, each mechanic is estimated to have approximately 1,325 hours of wrench time available per year. With 10 mechanics, including the Fire Department and Parks and Recreation mechanic, this equates to 13,250 available labor hours per year. Based on benchmarking VEU data, this indicates a potential mechanic labor hour deficit of 3,038 hours, or approximately 2.3 FTE. However, it is important to emphasize that this assessment is based on benchmark VEU information. Currently, data defining the wrench time/labor hours expended per fleet unit is not reliably tracked and, as a result, it was not possible to develop an accurate VEU inventory for the City. The implementation of a fleet and fuel management system will allow the City to begin tracking this data reliably and determine the staffing requirements associated the existing fleet size. In addition, fleet staffing needs should also be evaluated after implementing an improved mechanic training and certification program that will allow the City to more efficiently manage the maintenance and repairs for the current fleet.

RECOMMENDATION 7: Develop wrench time and shop productivity targets.
As discussed above, the Fleet Management Division does not have access to accurate information depicting the number of labor hours, or wrench time, applied per fleet unit in the City. As a result, it was not possible to determine actual fleet shop productivity rates. The recommendations detailed above will provide a basis to collect and analyze this information internally going forward. With access to this information, it is appropriate to establish and measure productivity targets for mechanics.

The current fleet rate billing methodology assumes a 100% productivity rate for mechanics and includes reasonable assumptions for administrative time and shop clean-up. Taking this methodology into account, the Division assumes that 75% of available labor time be dedicated to actual wrench time – effort applied to fleet unit maintenance. This is an appropriate target and assumption and should be converted into specific performance targets for shop mechanics. Success in meeting these targets should be measured in the fleet management system and utilized as a performance measurement tool to increase and maintain shop productivity.

RECOMMENDATION 8: Adjust the fleet rate calculation methodology.
In Fiscal Year 2017, the Fleet Management Division charged a shop labor rate of $64 per hour for all fleet repairs. The Novak Consulting Group benchmarked the fleet labor rates of four local car dealerships to determine how the City's rates compare. The labor rates for those dealerships ranged between $95 per hour and $105 per hour, which is a significant difference. This difference is attributable to two primary factors.

First, though salary and benefit information for these shops was unavailable, it is likely that they pay more than the City. Second, the City does not account for profit in its billing rate. In addition to these two factors, the City does develop a separate billing calculation for administrative overhead, which is a best practice that illustrates the cost of administration compared to direct fleet maintenance costs. It is recommended that the Fleet Management Division adjust its methodology to reflect a fully burdened labor rate that takes these factors into account.

To calculate the fully burdened labor rate, it is first necessary to calculate the direct labor rate for each mechanic. The direct labor rate is the hourly salary and benefit rate for each mechanic adjusted to reflect non-productive time. It is calculated by dividing the total salary and benefit cost for each mechanic by the number of billable hours available. The number of available billable hours is calculated by subtracting leave and training time from the number of annual hours scheduled to work. The City currently completes this task as an element of their present methodology.

It is then necessary to assemble indirect costs including the cost of administrative support (e.g., HR, IT, and management), facility costs (e.g., utilities, facility depreciation, and maintenance), fuel system operations cost, and other support costs. Indirect direct costs are divided by direct costs (labor, technology, etc.) to develop an overhead rate that is applied to the fully-burdened labor rate calculation. These overhead costs should also include the salary and benefit rates of Fleet Management Division staff who are not mechanics (e.g., the Fleet Manager), as well as administrative overhead time associated with executive management staff.

The last major element required to calculate a fully-burdened labor rate is the target rate of profit. Because the City is a local government, there is no profit imperative. However, it is important that the operation is self-sufficient. It is reasonable to build in a small rate of profit into the labor rate to prepare for contingencies and fund system and process improvements.

This labor rate should be evaluated and adjusted annually to reflect costs and ensure that the Fleet Management Division is self-sufficient.

RECOMMENDATION 9: Utilize fleet and fuel management system to capture all government-wide fleet ownership costs.

The City of Charlottesville fleet management function reflects both centralized and decentralized characteristics. The Fleet Maintenance Division is responsible for maintaining most of the City's fleet inventory; however, some departments maintain their own equipment and maintenance contracts. For example, the Fire Department and Parks and Recreation Department each staff their own mechanics and maintain most of their fleet inventory. Data regarding departmental maintenance practices is not readily available to the Fleet Management Division.

Regardless of the maintenance approach, it is important for the Fleet Maintenance Division to have a clear picture of the age, cost, condition, and utilization rates of the total fleet inventory. Centralized access to this information is critical to allow the City to holistically evaluate the cost and replacement implications of a department's fleet and to identify opportunities or efficiencies such as unit standardization, pooling, or other fleet adjustments. As such, it is appropriate for all departments who maintain an internal fleet management function to begin tracking all their fleet maintenance activities and costs in the recommended fleet and fuel management system.

Training and Compensation

As was previously mentioned, fleet maintenance jobs become increasingly complex as technology advances. Stakeholders overwhelmingly agreed that the Fleet Management Division's mechanics are undertrained. In order to improve customer service, the Division will need to take a more intentional approach to the alignment of specializations and training of employees to the City's fleet. The recommendations in this section will support the Division's efforts in this area.

RECOMMENDATION 10: Realign mechanic specializations and certifications.

The mechanics in the Fleet Management Division have, over time, developed specializations. For example, one mechanic is a body technician and two mechanics are specialized in bus maintenance. They also maintain some certifications such as state inspection certifications, chemical spill training, and fork lift operator certifications. Though these are useful, it is important to align certifications and specializations with the practical needs of the organization. For example, while it may be useful to have staff with

experience in body repair, that is largely a contracted service and does not represent the most effective focus of a Fleet Management Division Mechanic.

Given the size and complexity of the City of Charlottesville's fleet, it is appropriate for the City to also begin elevating the training and certification levels of mechanics to better pair with the fleet composition and customer service expectations. The Auto Service Excellence (ASE) mechanics certification is the most significant certification and continuing education program available to mechanics. To become ASE certified, an automotive technician must demonstrate expertise in a target area (e.g., Automobile and Light Truck) and maintain that expertise through ongoing training and re-testing every five years. There are over 40 ASE certification test series, ranging from transit buses to hybrid/electric vehicles. The specialization and certification targets that are appropriate for Charlottesville should take into account three key factors described below.

First, it is necessary to consider fleet VEUs by unit class. For example, though the City maintains a fleet of only seven transit buses, the maintenance commitment required for such buses equates to approximately 273 VEU. This in turn indicates that if the Division chooses to maintain these buses in-house, then at least two mechanics with the appropriate specialization are required. This leads to the second factor – contracting. The Division's contracting approach also dictates certification needs. If the Division chooses to contract for specialty work, such as transit bus or fire apparatus maintenance, then the need to maintain those specialty certifications is diminished. The third factor is strategic direction. As the City determines its fleet equipping strategy, it is necessary to assess training and certifications necessary to service that strategy. For example, if the City chooses to move toward a more energy efficient fleet by opting for hybrid, electric, or Compressed Natural Gas (CNG) vehicles, it will be necessary to train in-house staff on those technologies so as to maximize the utility of the fleet. As a result, the certification composition target should be reviewed and adjusted on at least an annual basis to reflect changes in fleet strategy.

When considering the current fleet composition and contracting model, there are four initial ASE certifications that should be pursued in the Fleet Management Division. As a baseline, it is appropriate to target that at least 75%[5] of fleet mechanics (8) maintain at least a baseline ASE certification in Auto Maintenance and Light Repair (G1 test series). This will provide the baseline skill set necessary to meet preventive maintenance targets and provide the intentional training framework to maintain expertise as vehicle technology evolves. Light trucks, vans, and SUVs comprise approximately 24% of the estimated VEUs in the City, and passenger cars including police vehicles, make up approximately 12% of estimated VEUs. The ASE Automobile and Light Truck certification (A test series) is an appropriate certification to target for this workload. Based on VEU, three mechanics should be targeted for certification in this area. This will allow the Division to manage workload but also dedicate specific mechanics to priority areas, such as public safety. Approximately 22% of the estimated VEUs represents transit and school buses. As such, the Transit Bus and/or School Bus certification (H series) is an appropriate training target. Based on VEU workload, approximately two mechanics should be targeted for this specialization. Approximately 13% of estimated VEUs consist of medium and heavy-duty trucks, as well as specialty trucks such as street sweepers and refuse packers. The Medium-heavy Truck certification series (T series) is also appropriate to consider. Approximately two mechanics should be targeted for this certification.

It is also appropriate for the Fleet Management Division to eliminate the in-house body and paint shop function. The Division currently dedicates a mechanic to body shop work; however, this limited in-house

[5] ASE Recommended Best Practice

capacity does not provide sufficient resources to complete production work. In addition, there are significant regulatory and environmental impact management requirements associated with operating a body and paint shop. Given these considerations, it is appropriate for the Division to begin contracting for all body and paint repair work and to convert the body technician position into a mechanic position.

The following table summarizes the ASE certification target as well as the number of mechanics that should be targeted for certification, based on current benchmark VEU inventory and contracting.

Table 10: Mechanic Certification Targets

ASE Certification	Training Target
Auto Maintenance and Light Repair	8 Mechanics
Automobile and Light Truck	3 Mechanics
Transit/School Bus	2 Mechanics
Medium and Heavy Truck	2 Mechanics

Pursuing these certifications will meet several significant objectives. It will ensure that the mechanics are properly trained to effectively and efficiently maintain the City's fleet. It will also provide a framework with which to structure an intentional training plan, which is described in the next recommendation. These improvements will serve to fundamentally improve the quality of maintenance and the relationship between customer departments and the Fleet Management Division. In addition, the specialty training required to achieve these certifications will better equip the Fleet Management Division to implement a robust predictive inspection program, which will further serve to advance the life cycle of the fleet beyond a strict preventive maintenance program.

RECOMMENDATION 11: Implement a skill-based career ladder for Mechanics.
Currently, fleet maintenance and repairs are completed by seven Auto Mechanic IIIs and one Auto Mechanic I. The Auto Mechanic I is responsible for completing routine maintenance and body repairs on automotive equipment while the Auto Mechanic IIIs are responsible for performing more skilled repair and maintenance work on automotive and heavy equipment.

Employees are unable to move up through the salary range as evidenced by the fact that no employee has reached the midpoint (not even the first quartile) of the salary range, despite the Division having very tenured employees (some exceeding 30 years with the City). While the City of Charlottesville has made cost of living adjustments, these serve to adjust the entire salary range upward and therefore do not address this issue. These compression issues will increase once these long-tenured employees begin to retire and are replaced by new, less-tenured employees.

It is recommended that the Division implement a skill-based career ladder for mechanics to provide employees an opportunity to move through the pay band while also encouraging professional development.

The City should update the Auto Mechanic III job description, distinguishing it from the Auto Mechanic I and Auto Mechanic II job descriptions. To progress from an Auto Mechanic II to an Auto Mechanic III, a combination of tenure and skill attainment should be required. Employees should be an Auto Mechanic II for a minimum of three to five years before promotion and must attain ASE Certification. Additionally, employees should have to demonstrate skills in predetermined core areas. For example, an employee would start as an Auto Mechanic I, completing routine maintenance activities. Before getting promoted

to an Auto Mechanic II, an employee would need two years of experience in the diagnosis, repair, and maintenance of gasoline and diesel-powered equipment, as an Auto Mechanic II would be responsible for mechanical and minor overhauls on a wide variety of diesel, gasoline, and electric or alternative fuel powered equipment. Before getting promoted to an Auto Mechanic III, an employee would need three years of experience in the diagnosis, repair, and maintenance of gasoline, diesel, or alternative fuel powered equipment, including electronic systems, hydraulic systems, transmission, and combination engine overhaul, as an Auto Mechanic III would be responsible for performing skilled mechanical work in the maintenance, repair, and major overhaul of a wide variety of diesel, gasoline, electric, and fuel powered equipment.

Implementation of this recommendation will require a phased approach as individuals currently in a position may not possess the skills required. All future hires should be subject to the new requirements, and management should work with existing employees to develop individualized training plans that will enable them to gain the skills necessary to meet the new expectations by a target date. In addition, it will be necessary to allow mechanics to attend training courses on City time and for the City to pay for training, which is not the current practice. The support of management will be critical to implement this recommendation.

RECOMMENDATION 12: Adopt a formal tool allowance policy and review schedule.
In the fleet maintenance industry, it is standard practice for mechanics to supply their own tools as a condition of employment. This practice ensures that tools are treated with respect and encourages accountability. Specialty tools are typically provided by the organization and shared by the mechanics. To reimburse mechanics for the use of their tools, many organizations pay a tool allowance. According to the American Public Works Association (APWA), there are two common methods of establishing a tool allowance. The first method is based on a percentage of the retail value for the tools required for a specific position. The second method is to determine a fixed dollar amount.

City of Charlottesville mechanics receive an annual $300 tool allowance in exchange for furnishing their own tools. However, a formal tool allowance policy is not in place. It is recommended that the Division adopt a formal tool allowance policy to ensure staff have the appropriate tools to service the City's fleet. In addition, as part of the policy development process, it is recommended that the amount of the tool allowance be reviewed to ensure it enables mechanics to purchase the tools necessary to service the City's changing fleet.

Parts Inventory and Warehouse Management

Fleet operations must keep an inventory of parts on hand to service the organization's fleet in a timely manner. Typically, in order to service vehicles and equipment in a timely manner, a stock of commonly used parts (filters, lights, etc.) is maintained in addition to a stock of difficult-to-procure parts required by emergency equipment (snow plows, etc.). While having an inventory of parts available in-house is a best practice in the industry, the inventory stored by the Fleet Management Division is disorganized and contains parts that are no longer needed or are obsolete.

The reason the Division's inventory is in its current state is five-fold. First, the City of Charlottesville maintains an excessively diverse fleet of vehicles and equipment. Therefore, stocking parts for each make requires the Fleet Management Division to carry a significant amount of inventory. Second, Charlottesville does not have many local suppliers, so it is often expedient to stock parts rather than wait for them to be shipped. Third, the Division has not fully implemented a parts management program (SAP) to track which

parts have been purchased and which have been used on vehicles. This has resulted in parts being ordered even though they may already be sitting on the shelf in the store room. Fourth, the Division has not had policies in place regarding which parts should be stocked and which are reasonable to order on an as-needed basis. Therefore, rather than only stocking commonly used and emergency parts, the Division maintains a larger inventory. Finally, policies are not in place to guide disposal of parts when equipment is disposed of or to prompt disposal of obsolete or spoiled parts (i.e., rubber parts that have been stored beyond their useful life).

The recommendations in this section involve enhancing the Division's parts inventory and warehouse management practices in order to service the City's fleet more efficiently.

RECOMMENDATION 13: Continue efforts to implement an accurate inventory and warehouse management program for parts and adopt policies and procedures.
Since the new Parts Manager was hired in October 2016, the Division has been working toward completing an accurate inventory of the parts it currently stores. This is a significant task as it involves identifying and logging parts that are still useful and disposing of parts that are obsolete or spoiled. Recently, the Fleet Management Division disposed of a large number of items stored in its inventory that had become obsolete. Still, staff estimates that only approximately one third of the parts currently stored in the parts room are tracked in SAP.

Just In Time (JIT) inventory management is a concept based on the idea that no activity should take place in the supply chain until it is actually needed. Rather than storing materials in inventory in anticipation of a need, the order occurs so that material arrives when it is needed. JIT inventory management is more prevalent in the private sector than it is in the public sector due to the sporadic nature of much of the work done by public organizations. In addition, the limited number of suppliers in Charlottesville makes JIT inventory management even more difficult in practice. Therefore, to avoid unnecessary delays in servicing or repairs, it will be necessary to maintain an inventory of certain parts.

According to the National Institute of Governmental Purchasing (NIGP), "the objective of a sound inventory and warehouse management program is to minimize the funds invested in inventory and to minimize operating costs while optimizing the amounts of supplies available to the various service delivery systems of the organization."[6] In order to limit investment in inventories, spoilage, and obsolescence, the Fleet Management Division must implement an accurate and aggressive inventory and warehouse management program. The *APWA Public Works Management Practices Manual* recommends public works organizations manage their inventory of parts, which includes using a program to track inventory, marking items stored as inventory, and developing procedures for disposing of parts. A well-designed and documented inventory program will establish the necessary controls while enabling the Division to efficiently and effectively meet the needs of its customers.

Many local government fleet organizations have started contracting out their parts inventory and warehouse management programs. However, because supply is limited within the Charlottesville area, this likely is not an option for the Fleet Management Division. However, this may be a desirable option in the future. As long as the Division is providing parts management services in-house, it should continue efforts already underway to eliminate obsolete items from its inventory and enter all remaining items into SAP. While the Division currently utilizes SAP, it may be more efficient to leverage the inventory module of a fleet-specific system.

[6] *Warehousing and Inventory Control*, NIGP 2016

In addition to ensuring an accurate parts inventory is in place, the Division must adopt policies and procedures to guide the Parts Manager in administering the Division's inventory. These policies should provide direction regarding which parts should be stocked and which should be ordered on demand, reorder points for each part type, a schedule for purchases based on seasonal workload (e.g., sweeper brushes, snow plow blades), disposal procedures, and other important issues. Implementation of these policies and procedures will minimize the administrative burden placed on staff while maintaining improved customer service levels. Ultimately, implementation of these measures, combined with further standardization of the City's fleet over time, will decrease and simplify the Division's inventory.

RECOMMENDATION 14: Work with the City's Finance Department to simplify the parts procurement process.

The Parts Manager is responsible for ordering all necessary parts for the City's fleet and maintaining the Division's inventory. Approximately 95% of parts are ordered online (from one vendor). Every time an order is placed, the Parts Manager is required to go through the City's purchase order process. Although the Parts Manager tries to consolidate orders as much as possible, this still requires a significant portion of the Parts Manager's time.

To minimize the administrative burden placed on the Division, the Fleet Manager and Parts Manager should meet with the Accounts Payable and Procurement and Risk Management Divisions of the Finance Department to discuss opportunities for simplifying the procurement and payment processes. For example, the Procurement and Risk Management Division allows City departments to enter into open contracts for goods and services. Departments that purchase materials, supplies, or services on a regular basis establish annual or multi-year contracts with suppliers or professional service companies, greatly improving the efficiency of the purchasing process. Firms compete for the contract, which maintains competitiveness in the process. Ultimately, this practice provides an efficient way for departments to obtain frequently purchased goods and services. Entering into such contracts would provide the Division with the opportunity to negotiate additional benefits, such as discounted prices and shipping costs as well as agreements to buy back obsolete parts. It should be noted that the Transit Department's fleet maintenance operation should be provided access to such contracts as well.

RECOMMENDATION 15: Implement a barcoding system.

To improve inventory accuracy by reducing human error, it is recommended that the Division implement a barcoding system to track items and appropriately assign them to repair orders. Such systems are included in many fleet management systems. Barcoding systems use reflective light technology to scan barcoded items and transmit data through the computer system. To implement this technology, the following equipment will be necessary: barcode reader, hand-held device, scanner, software package, and label printer. It should be noted that The Novak Consulting Group also recommended that the Warehouse Function implement a barcoding system. These efforts should be coordinated.

Leadership and Management

High performing, accredited fleet management functions are able to assume a leadership role in managing the organization's fleet. This includes proactively engaging in the vehicle specification and procurement processes, planning for future fleet needs, leveraging data and IT systems, developing written documentation of fleet-related policies and procedures, managing the function's performance, and developing employees. At the highest level, fleet functions operate as stewards for the City while still working to meet the needs of customer departments.

In addition to implementing the operational recommendations already discussed, the following recommendations are necessary to enhance the Division's focus on the customer and clarify City-wide policies that impact the fleet.

RECOMMENDATION 16: Create a Fleet Advisory Committee.
Transforming the Fleet Management Division into a customer-focused organization will require Division management to remain in touch with customer departments. To create and maintain a connection with customer departments, it is recommended that a Fleet Advisory Committee be created. It should be noted that a Fleet Advisory Committee is being included in the 2017 Fleet Operations Manual that will be implemented in 2018.

The Fleet Advisory Committee should be composed of representatives from fleet customer departments, including Police, Sheriff, Fire, Utilities, Public Works, Neighborhood and Development Services, Social Services, and Transit. The Committee should convene on a recurring basis – usually quarterly – with the Fleet Manager. The purpose of the Committee will be to oversee the utilization program and replacement prioritization process, monitor fleet management system performance, identify and resolve customer service issues, and review fleet requests prior to budget development. The use of fleet advisory committees is a common best practice employed as a mechanism to maintain collaborative, productive working relationships with fleet customers, and proactively manage fleet size and composition.

RECOMMENDATION 17: Begin conducting an annual customer satisfaction survey.
Once the Fleet Management Division has implemented the recommendations in this report aimed at improving the quality of services provided, it is recommended that the Division conduct an annual customer satisfaction survey.

The results of the annual survey should be shared with Division staff, and time should be spent discussing the results in a collaborative, productive manner. Division leadership should then work with staff to identify the steps necessary to improve customer satisfaction. This should be a true exercise in employee participation; many of the ideas for continuous improvement will likely come from the employees themselves.

RECOMMENDATION 18: Clarify City-wide take-home vehicle policy to enhance consistency and limit use of take-home vehicles for non-operational purposes.
There are several reasons an organization may choose to begin providing take-home vehicles to employees. First, an employer may offer take-home vehicles as a form of compensation to employees as they are considered a fringe benefit. Second, rather than reimbursing an employee for mileage on their personal vehicle, an employer may offer take-home vehicles to certain employees who are expected to respond to emergencies and are frequently called back to work. In this case, the City benefits because employees who respond directly from home can respond more quickly than if they had to return to headquarters to pick up a vehicle. However, take-home vehicle programs can be expensive and expose the organization to additional risk.

In 1999, the City of Charlottesville implemented a take-home vehicle program. To implement this initiative, the City purchased approximately 25 used vehicles from the City of Richmond. Since that time, the number of take-home vehicles has grown to 122, with the Police Department assigning the most take-home vehicles, followed by the Utilities Department, Fire Department, Sheriff's Office, Department of Public Works, and City Manager's Office.

Drivers of more than half of the assigned take-home vehicles reside outside city limits. On average, vehicles are driven approximately 15 miles to work (one way), with some driven as many as 78 miles (one way). The following table summarizes the number of take-home vehicles by department and the average annual distance driven.

Table 11: City-wide Take Home Vehicle Summary

Department	Number of Take-Home Vehicles	Number Residing Outside City Limits	Average of Annual Commute Mileage
Police	85	45	7,500
Utilities	15	9	5,277
Fire	10	6	5,958
Sheriff	7	4	3,966
Public Works	3	2	9,240
City Manager	2	0	653
TOTAL	**122**	**66**	**6,828**

Section seven of the City's Vehicle Use Policy relates to take-home vehicles. The policy states that, "For any City vehicle to be regularly taken home, the authorized driver's Department Head must submit written justification to the City Manager, including an outline of the duties which require transportation other than normal working hours and showing the need for such an assignment." Beyond this section of the City's Vehicle Use Policy, little guidance is provided regarding take-home vehicles. For example, employees are not required to reimburse the City for personal use of their take-home vehicle and there are no limitations on the distance an employee can live from the City.

The vague nature of the City's policy has resulted in departments adopting their own policies that provide more specific guidance. The Novak Consulting Group was unable to obtain copies of each department's take-home vehicle policy; only the Utilities and Fire Departments responded to the request for additional information about department-specific take-home vehicle policies. The Utilities Department only provides take-home vehicles to employees who are expected to respond to after-hours emergencies and require specialized equipment to do so. The Fire Department provides take-home vehicles to the Fire Marshals and the five top command staff, all of which are technically on call every day of the year. Additionally, some information about the Police Department's policy was provided during employee interviews. All Sergeants and above are provided take-home vehicles, as are Evidence Technicians and specialized positions. In addition, Patrol Officers are eligible for cars after three years of service if they live within City limits and five years of service if they live outside City limits.

Overall, the department-specific policies that were available are in line with the City's policy, as they assign vehicles to employees who require transportation outside of normal working hours. The exception is the Police Department's treatment of take-home vehicles as a tenure-based benefit for Patrol Officers; this does not align with the City's policy.

Take-home vehicles can be a valuable benefit for employees. Therefore, before limiting this benefit, the financial implications for employees must be considered. Assuming the IRS's 2017 standard mileage rate of $0.53 per mile and average annual commute mileage data provided by the Department of Public Works, the total value of this benefit equates to approximately $441,511 per year. This is an average benefit of $3,619 per take-home vehicle. In departments where take-home vehicles have been treated as a benefit,

employees will need to be compensated accordingly. It should also be noted that take-home vehicles are considered fringe benefits, and employees must be taxed accordingly.[7]

While a valuable benefit to employees, take-home vehicle programs can cost more to the City than the benefit is worth to employees. This is because the City assumes additional risk by having a take-home vehicle program. For example, while exact information is not available, the Procurement and Risk Management Division estimates that 32 take-home vehicle accidents have occurred in the last three fiscal years. It is estimated that these incidents cost the City between $85,000 and $100,000 in losses. Therefore, in some instances it might be financially prudent to simply compensate employees rather than provide take-home vehicles and expose the City to greater liability and financial risk.

To limit the cost and liabilities associated with the take-home vehicle program and to ensure the intent of the City's take-home vehicle policy is consistently applied across the organization, it is recommended that the City revise its policy. As part of this policy revision process, it is recommended that the City limit the use of take-home vehicles, ensuring assignments are based only on operational need and are cost effective. The revised policy should clearly articulate the criteria for assigning a take-home vehicle and establish a process for reviewing department justifications. The policy should also establish an acceptable commute distance (such as within City limits or a certain radius around the City), rules and expectations for employee use of take-home vehicles especially during off-duty hours, and reimbursement procedures for personal use of a take-home vehicle (i.e., mileage tracking, reimbursement). The expectation should also be set that the costs of providing a take-home vehicle (ownership, maintenance, and operation) are to be compared with the cost of reimbursing employees' personal mileage or utilizing pool vehicles, with the most cost-effective option for meeting the operational need being selected.

Fleet Replacement Funding Model

The issues and recommendations detailed above are designed to create fundamental improvements in the fleet management and maintenance process. They are intended to establish the systems necessary to proactively manage the size and composition of the City's fleet and elevate the quality and consistency of service provided by the Fleet Maintenance Division to customer departments. However, as the recommendations are implemented and service consistency is improved, it is also appropriate to consider opportunities to create greater centralization in the fleet management and replacement process.

RECOMMENDATION 19: Expand utilization of the Equipment Replacement Fund.
Under the current operating model, fleet replacements are funded and managed through two primary mechanisms: the Equipment Replacement Fund (ERF) and departmental operating budgets. The Equipment Replacement Fund is designed as an internal funding mechanism for General Fund Departments. The ERF is funded through an annual transfer from all General Fund departments, the amount of which is determined based on a three to five-year projection of replacement needs, historical replacement practices, and annual funding limits. Departments that are funded through enterprise fund revenue, or have access to other restricted funds, primarily use their operating budgets to purchase their fleet units. The use of an internal service fund to support fleet replacement needs and smooth the cost of replacement from year to year is a best practice; however, the ERF structure and fleet unit replacement process does not capitalize on this best practice to the greatest degree available. There are several challenges with the current approach.

[7] Internal Revenue Service. *Publication 15-B, Employer's Tax Guide to Fringe Benefit*. 2017. https://www.irs.gov/pub/irs-pdf/p15b.pdf

The first and most significant challenge relates to resource availability. During the annual budget process, the City reviews three to five-year unit replacement projections to determine funding needs for the ERF. However, the ERF is funded on a year to year basis, and does not function as a sinking fund. A sinking fund is designed to create consistent contributions from participating departments on a year in and year out basis and to build a balance that can help mitigate the impact of fluctuating fleet replacement expenses. A sinking fund balance grows in years in which contributions to the fund exceed outlays and shrinks in years in which purchases and/or payments exceed contributions. The development of a fund balance helps to make fleet replacement requirements smooth, predictable, and resilient against budgeting decisions that require some replacement purchases to be deferred.

As an example, consider a Fire Department's fleet replacement needs. The cost of a new ladder truck can exceed $1.5 million. Fiscal Year 2017 ERF funding totaled $1.2 million. Under the current ERF approach, if a ladder truck were replaced, there would be no more resources available for other fleet replacements in that year. This would only compound replacement needs and anticipated expenses in out years. Under a sinking fund model, the Fire Department would make regular recurring contributions into the sinking fund based on a formula that takes into account the anticipated replacement cycle, depreciation, and anticipated growth in replacement costs. With this approach, departmental fleet replacement budgets are leveled from year to year and reflect the value of their existing fleet. It also allows the City to meet replacement needs for all departments, while absorbing the budget implications of fluctuating replacement needs.

The second challenge associated with the current fleet replacement funding approach is that it shields the City's fleet users from recognizing the fixed costs of the fleet assets they maintain. A department's ERF contribution is based largely on historical fleet expenses which do not reflect the cost of maintaining and replacing a department's current fleet structure. This funding approach results in a lack of access to consolidated information relating to fleet unit operating and maintenance cost. This restricts departmental access to the data that could drive the cost-effective assignment and use of vehicles and equipment in departments.

The third challenge associated with the current approach is that departments who have access to enterprise or restricted fund revenue do not utilize the ERF as a unit replacement mechanism but rather use their operating budgets to fund replacements as needed. This not only limits the funding available to the ERF, but it excludes some departments from the requirements to justify their fleet unit replacements within the context of utilization targets and the strategic direction of fleet management. For example, it limits the ability of the Fleet Management Division to evaluate more effective financing options for unit classes, to determine pooling and unit sharing options, and to cull underutilized units from the fleet. This also limits the ability of the Fleet Management Division to create unit standardization.

As these departments scope and select vehicles and equipment, they do not consider the maintenance capacity of the Fleet Management Division. As a result, there is widespread diversity in the make, model, and specifications of like vehicles across departments. Standardization, where possible, allows a fleet shop to develop expertise and competency in specific unit types, which creates a more efficient fleet management operation.

It is widely considered a best practice to implement a sinking fleet replacement fund such as that described above. Doing so in Charlottesville would require several significant actions. First and most significant, it would require the City to make a sizeable initial investment in the ERF. The Fleet

Management Division reports that the ERF is currently underfunded by approximately $6 million based on near term replacement costs. To mitigate this, the City or individual departments would need to provide sufficient funding to the ERF to buy replacements for each of its vehicles, and then Departments would need to begin making periodic payments into the fund so that money is accumulating for the future replacement of the participating vehicles.

This would not only require a significant one-time investment through the issuance of debt or the transfer of cash reserves, but would require the Fleet Management Division to "purchase" all units from departments and assume ownership responsibility. Under this model, departments would lease their vehicles and equipment from the ERF. Departments would make monthly lease payments, based on their fleet size, anticipated replacement expenses, and depreciation. This would centralize the fleet management and replacement process, allow for tighter control of fleet creep and standardization, limit fleet replacement costs for the City, and create the structure necessary to make sure that necessary fleet replacement can be pursued in a timely fashion. However, it would also require a fundamental change in the City's historical practice.

It is clear that the City should pursue this funding approach to heighten its ability to meet replacement demand. However, it also clear that first there are fundamental improvements that must be made in the fleet maintenance and management process. The first priority is to make these improvements and, as the service quality and consistency offered by the Division improves, begin pursuing a broader centralization initiative.

Conclusion

This Fleet Maintenance Study was undertaken to increase the efficiency and effectiveness of the City of Charlottesville's Fleet Management Division. The Fleet Management Division exists in a unique operating environment as it must be able to compete with private sector vendors that can provide fleet maintenance services. However, opportunities exist for the Fleet Management Division to meet the needs of its customer departments while adding value by proactively managing the City's fleet needs.

The Fleet Management Division faces significant quality, cost, and customer service challenges. The City's fleet has not been proactively managed and, as a result, systems are not in place to enable preventive maintenance to be completed on time. Because of a lack of policies about replacement standards, the Division is expected to maintain a wide range of vehicle makes and models. This is further exacerbated by the fact that underutilized vehicles have not been addressed. Today's fleet of vehicles and equipment is more complex, and staff need adequate training to effectively service the fleet. These challenges require both internal and external changes to enable the City's Fleet Management Division to transform into the effective, customer-oriented, proactive fleet management function the City requires.

The recommendations included in this report will require dedicated attention and support from Department Public Works management and City leadership. Implementation of these recommendations will take time and hard work to be successful. However, pursuing these opportunities will build upon the strengths of the Division's dedicated staff and result in a more efficient and effective fleet management operation.

Appendix A – Vehicles and Equipment Operated Less Than 5,000 Miles Per Year

Table 12: Vehicles and Equipment Operated Less Than 5,000 Miles Per Year

Department/Division	SAP ID	Vehicle Make/Model	Unit Type
City Fire Department	20003214	2015 FORD-EXPLORER-1FM5K8AR3FGC68581	Administrative Sedan
City Fire Department	20000676	Pierce Fire Engine	Engine
City Fire Department	20003032	Pierce Tower Ladder	Ladder Truck
City Fire Department	20000685	American LaFrance Ladder Truck	Ladder Truck
City Fire Department	20002953	2010 SUBARU	SUV
City Fire Department	20002894	Ford	Brush Truck
City Fire Department	20002770	GMC	HAZMAT unit
City Fire Department	20003217	2015-FORD-F150-1FTEW1EF1FFB14196	Pick-Up Truck
City Fire Department	20003026	11 FORD P/U--165843L--1FT8W3C63BEC30865	Pick-Up Truck
City Police Department	20003058	2012HarleyRoad King	Motorcycle
City Police Department	20003060	2012HarleyRoad King	Motorcycle
City Police Department	20003061	2012HarleyRoad King	Motorcycle
City Police Department	20003059	2012HarleyRoad King	Motorcycle
City Police Department	20002909	Yamaha Dirt Bike	Motorcycle
City Police Department	20002908	Yamaha Dirt Bike	Motorcycle
City Police Department	20003100	2012 Ford F350	Pick-Up Truck
City Police Department	20003195	2015 Ford Utility	Police Field Vehicle
City Police Department	20001209	2001 Ford Crown Vic	Police Field Vehicle
City Police Department	20003203	2015 Ford Utility	Police Field Vehicle
City Police Department	20003151	2014 Dodge Charger	Police Field Vehicle
City Police Department	20003255	2016 Ford Explorer	SUV
City Police Department	20003244	2016 Ford Explorer	SUV
City Police Department	20002922	2009 Ford Escape	SUV
City Police Department	20003211	2015 Chevrolet Tahoe	SUV
City Police Department	20002848	Chevy Express	Van
City Police Department	20003067	2013 Nissan Leaf	Administrative Sedan
City Police Department	20002809	2007 Chevrolet Express	Administrative Sedan
City Police Department	20003269	Ford E450	Pick-Up Truck
City Police Department	20003017	Ford F550	Pick-Up Truck
City Sheriff	20003172	14-FORD-FUSION-184009L-3FA6POLU6ER339069	Administrative Sedan (Hybrid)
City Sheriff	20002877	08 CHEV:152014L--1GCHG35K781215925	Van
Fleet Maintenance	20002758	Toyota Prius	Administrative Sedan (Hybrid)

Department/Division	SAP ID	Vehicle Make/Model	Unit Type
Fleet Maintenance	20001529	Dodge	Pick-Up Truck
Fleet Maintenance	20001148	GMC	Pick-Up Truck
Fleet Maintenance	20000112	GMC Jimmy	SUV
Neighborhood Development Services	20002312	Chevy Impala	Administrative Sedan
Neighborhood Development Services	20001551	2000 Chevy Impala (Trade in)	Administrative Sedan
Neighborhood Development Services	20001316	2002 Chevrolet Cavalier	Administrative Sedan
Neighborhood Development Services	20000312	2005 Pontiac Grand Am	Administrative Sedan
Neighborhood Development Services	20001370	2003 Chevy Impala	Administrative Sedan
Neighborhood Development Services	20002820	Toyota Prius	Administrative Sedan (Hybrid)
Neighborhood Development Services	20003130	Ford Escape	SUV
Neighborhood Development Services	20003156	Ford E-150 (The Shuttle Bus)	Van
Neighborhood Development Services	20001313	Chevrolet Cavalier	Administrative Sedan
Neighborhood Development Services	20002822	Toyota Prius	Administrative Sedan
Neighborhood Development Services	20003143	2014 Impala	Administrative Sedan
Parks and Recreation Maintenance	20001257	03 GMC DUMP:115164L--1GDJC34183E243333	Heavy Duty Dump
Parks and Recreation Maintenance	20001221	98 CHEV DUMP:84159L--1GBKC34J2WF073143	Medium Duty Dump
Parks and Recreation Maintenance	20000253	97 CHEV DUMP:31905L--1GBKC34J9VJ112175	Medium Duty Dump
Parks and Recreation Maintenance	20002884	08 FORD DUMP-152010L--1FDXW47R58ED92847	Medium Duty Dump
Parks and Recreation Maintenance	20001249	00 GMC DUMP:48296L--1GDKC34J7YF491756	Medium Duty Dump
Parks and Recreation Maintenance	20001243	00 GMC DUMP:48295L--1GDKC34J1YF490196	Medium Duty Dump
Parks and Recreation Maintenance	20000239	97 FORD DUMP:84098L--1FDKF37H3VEA95552	Medium Duty Dump
Parks and Recreation Maintenance	20000264	96 CHEV DUMP:24885L--1GBKC34J2TJ111026	Medium Duty Dump
Parks and Recreation Maintenance	20002232	04 FORD P/U:116191L--2FTRF17214CA29590	Pick-Up Truck
Parks and Recreation Maintenance	20003088	13 CHEV--173375L--1GCNKPE0XDZ122285	Pick-Up Truck

Department/Division	SAP ID	Vehicle Make/Model	Unit Type
Parks and Recreation Maintenance	20001220	04 FORD P/U:121181L--1FTPF18Z34CA35247	Pick-Up Truck
Parks and Recreation Maintenance	20001246	04 FORD P/U:116192L--2FTRF17254CA29589	Pick-Up Truck
Parks and Recreation Maintenance	20000262	02 CHEV P/U:111314L--1GCHK24U12Z329701	Pick-Up Truck
Parks and Recreation Maintenance	20002972	10 FORD--160227L--1FTMF1CW7AKE21323	Pick-Up Truck
Parks and Recreation Maintenance	20003250	16 FORD F250 194160L 1FD7X2B62GEB00018	Pick-Up Truck
Parks and Recreation Maintenance	20003002	11 FORD P/U--163081L--1FTRF3B61BEB32828	Pick-Up Truck
Parks and Recreation Maintenance	20000204	98 JEEP 4 DR:160239L--1J4FJ28S5WL203525	SUV
Parks and Recreation Maintenance	20001248	00 FORD VAN:48792L--1FBSS31L3YHB71436	Van
Parks and Recreation Maintenance	20003273	2016 FORD VAN 197336L 1FTYR2CM2GKB28628	Van
Parks and Recreation Maintenance	20003042	11 DODGE--166086L--2D4RN4DG5BR795548	Van
Parks and Recreation Maintenance	20000218	97 GMC VAN:48271L--1GTFG25M0V1097439	Van
Parks and Recreation Maintenance	20003043	11 GMC VAN--166083L--1GJW7PFGXB1186414	Van
Parks and Recreation Maintenance	20001222	04 DODGE VAN-117325L-1D4GP24R94B594566	Van
Parks and Recreation Maintenance	20000309	03 TOYOTA SDN:115179L-JT2BK18U130073164	Administrative Sedan
Parks and Recreation Maintenance	20000255	90 CHEV TRK:55493L--1GBJ7H1JOLJ202894	Aerial Truck
Parks and Recreation Maintenance	20002636	BACKHOE 80: 2118	Backhoe
Parks and Recreation Maintenance	20003103	12 JOHN DEERE--1T0310SKKCE234136	Backhoe
Parks and Recreation Maintenance	20003118	13-FORD--177170L--1FDEE3FS3CDB24581	Bus
Parks and Recreation Maintenance	20003117	12-FORD--177171L--1FDFE4FS9CDB35613	Bus
Parks and Recreation Maintenance	20002719	03 VRMR BC1800A: 1VRN1312731003044	Chipper
Parks and Recreation Maintenance	20000219	93 GMC DUMP:84407L--1GDM7H1J4PJ512668	Heavy Duty Dump
Parks and Recreation Maintenance	20003020	10 BOBCAT--A3L939849	Loader
Parks and Recreation Maintenance	20002601	KUBOTA 4WE TRACTOR/LOADER: 52654	Loader

Department/Division	SAP ID	Vehicle Make/Model	Unit Type
Parks and Recreation Maintenance	20003276	16 FORD F250 197345L 1FD7X2B61GEC90359	Pick-Up Truck
Parks and Recreation Maintenance	20003279	16 FORD F150 1FTMF1EF6GKE99193	Pick-Up Truck
Parks and Recreation Maintenance	20003039	11 FORD---166076L-- 1FDUF5HT3BEC95883	Pick-Up Truck
Parks and Recreation Maintenance	20003280	16 FORD F150 1FTMF1EF8GKE99194	Pick-Up Truck
Parks and Recreation Maintenance	20003272	16 FORD F250 196675L 1FT7X2B64GEC90327	Pick-Up Truck
Parks and Recreation Maintenance	20002936	10 CAPTOR SWEEPER--1000031014	Street Sweeper
Parks and Recreation Maintenance	20003219	2015-TENNANT-M30-SWEEPER-4570	Street Sweeper
Parks and Recreation Maintenance	20002993	10 KUBOTA--21052	Tractor
Parks and Recreation Maintenance	20002607	JOHN DEERE TRACTOR	Tractor
Parks and Recreation Maintenance	20002718	95 DEERE 5300: LV5300E431523	Tractor
Parks and Recreation Maintenance	20002610	JOHN DEERE 2WD TRACTOR	Tractor
Parks and Recreation Maintenance	20000229	96 JD 310D TRACTOR:T0310DA816343	Tractor
PW Facilities Development	20000308	00 JEEP 4 DR:48276L-- 1J4FF28S4YL225598	SUV
PW Facilities Development	20002821	08 TOYOTA-144863L-- JTDKB20U183300299	Administrative Sedan (Hybrid)
PW Facilities Development	20003113	13 TOYOTA--176783L-- 3TMLU4EN5DM114110	Pick-Up Truck
PW Facilities Maintenance	20001372	04 FORD P/U:117333L-- 2FTRF17294CA89116	Pick-Up Truck
PW Facilities Maintenance	20002796	07 CHEV P/U:129726L-- 1GCDT14E778221885	Pick-Up Truck
PW Facilities Maintenance	20003115	13 FORD--177155L--- 1FTRF3BT5DEA93038	Pick-Up Truck
PW Facilities Maintenance	20001513	2004 CHEVY P/U	Pick-Up Truck
PW Facilities Maintenance	20002797	07 CHEV VAN:129725L-- 1GCGG25V771206317	Van
PW Facilities Maintenance	20001528	03 CHEV VAN:115153L-- 1GCHG35U331156348	Van
PW Facilities Maintenance	20002907	09 FORD VAN-157253L-- 1FTNE14W19DA79812	Van
PW Facilities Maintenance	20002800	07 CHEV VAN:129730L-- 1GCGG25V671204011	Van

Department/Division	SAP ID	Vehicle Make/Model	Unit Type
PW Facilities Maintenance	20001530	03 CHEV VAN:115152L--1GCHG35U231156034	Van
PW Facilities Maintenance	20002905	09 FORD-157254L--1FTWF30599EB12074	Pick-Up Truck
PW Facilities Maintenance	20003034	11 CHEV--166057L---1GCWGFCA4B1165639	Pick-Up Truck
PW Public Service	20003040	12 FRTLINER--166078L--1FVHC7DV4CHBH5580	Heavy Duty Dump
PW Public Service	20003202	2015-FRTLINER-187472L-1FVHG3DVXFHGL1751	Heavy Duty Dump
PW Public Service	20001019	02 GMC DUMP:182250L--1GDM7H1C62J516263	Heavy Duty Dump
PW Public Service	20002883	08 FORD 450 DUMP-152011L--1FDXW47R18ED92845	Medium Duty Dump
PW Public Service	20003254	16-CHEV PICKUP	Pick-Up Truck
PW Public Service	20003180	15-FORD-F450-184876L-1FDUF4HT2FEB05104	Pick-Up Truck
PW Public Service	20000045	94 CCC: 55574L--1CYCCP48XSYO41538	Trash Truck
PW Public Service	20000025	95 CRNE CRRIER:55588L-1CYCCP488ST041540	Trash Truck
PW Public Service	20000094	95 CCC:84327L--1CYCCP488ST041537	Trash Truck
PW Public Service	20000083	95 CCC:77923L:--1CYCCP48XST041541	Trash Truck
PW Public Service	20003256	NEW TRASH TRUCK	Trash Truck
PW Public Service	20002872	08 ISUZU REF-149794L--4GTK7F1B28F700181	Trash Truck
PW Public Service	20000097	95 CCC:84155L--1CYCCP481ST041539	Trash Truck
PW Public Service	20001039	03 DODGE VAN: 115143L-1D4GP25393B190434	Van
PW Public Service	20003171	14-FREIGHTLINER-184008L-WDYPF1CC2E5871070	Van
PW Public Service	20001001	00 NEW HOLLAND 575E:31020721	Backhoe
PW Public Service	20002990	10 CASE--580SM--NAC532107	Backhoe
PW Public Service	20003298	16-CASE BACKHOE 580	Backhoe
PW Public Service	20000109	92 CHEV DUMP:84325L--1GBM7H1J2NJ104448	Heavy Duty Dump
PW Public Service	20000022	92 CHEV DUMP: 84329L-1GBM7H1J5NJ104377	Heavy Duty Dump
PW Public Service	20000106	92 CHEV DUMP:77942L--1GBM7H1J8NJ104499	Heavy Duty Dump
PW Public Service	20001086	03STRLIN MIX:116177L--2FZAAMAK13AL09030	Heavy Duty Dump

Department/Division	SAP ID	Vehicle Make/Model	Unit Type
PW Public Service	20003295	16-FREIGHTLINER DUMP	Heavy Duty Dump
PW Public Service	20003297	16-FREIGHTLINER DUMP	Heavy Duty Dump
PW Public Service	20003296	16-FREIGHTLINER DUMP	Heavy Duty Dump
PW Public Service	20003089	12 CASE--NCF215999	Loader
PW Public Service	20003094	12 BOBCAT---AG3N12858	Loader
PW Public Service	20003123	13 BOBCAT --ATF212126	Loader
PW Public Service	20002789	06 FREIGHTLINE:149766L-1FVACYDC06HW69043	Pothole Patcher
PW Public Service	20002971	10 DYNAPAC ROLLER --10000307K0A004225	Roller
PW Public Service	20000030	SCREEN MACHINE 107C:D107C-SC-JJ1113	Screen Machine
PW Public Service	20002798	07 STERLING 129729L--49HAADBV87DX61636	Street Sweeper
PW Public Service	20002991	10 UD/ELGIN--163055L--JNAPC81L4AAF80075	Street Sweeper
PW Public Service	20000076	98 WACKER DPU 5045 H	Tamper
PW Public Service	20002766	06 TOMAHAWK:136711L:1A9HF15276D561027	Thermo Melting System
PW Public Service	20002941	06 INT-157332L-1HTMPAFPX6H165235	Vacuum Truck
PW Public Service	20002891	08 STERLING-- 141535L--2FZHAWBS58AY0958	Vacuum Truck
PW Schools Maintenance	20003192	2015-FORD-F350-186201L-1FDRF3B64FEB61810	Pick-Up Truck
PW Schools Maintenance	20003007	11 FORD P/U--163082L--1FTRF3BT2BEB42046	Pick-Up Truck
PW Schools Maintenance	20003008	11 FORD P/U--163077L--1FTRF3BT4BEB42047	Pick-Up Truck
PW Schools Maintenance	20002994	11 FORD HYB--163072L--1FMCU5K38BKA56891	SUV
PW Schools Maintenance	20003069	12 NISSAN--165995L--JN1AZOCP1CT018757	SUV
PW Schools Maintenance	20003167	2014-GMC VAN-183513L-1GTZ7UCG9E1169163	Van
PW Schools Maintenance	20002810	07 CHEV VAN:144854L--1GCHG35U671251492	Van
PW Schools Maintenance	20003174	2014-GMC VAN-184020L-1GTW7FCGXE1156369	Van
PW Schools Maintenance	20003191	2015-FORD-F350-185800L-1FDRF3B68FEB61809	Pick-Up Truck
PW Schools Maintenance	20003278	16 CHEVY 3500 197344L 1GB3KYCG3GZ210147	Pick-Up Truck
Social Services	20002970	Toyota Prius	Administrative Sedan
Social Services	20002346	Chevrolet Impala	Administrative Sedan

Department/Division	SAP ID	Vehicle Make/Model	Unit Type
Social Services	20003216	Ford C-Max	Administrative Sedan
Social Services	20003327	Ford Taurus	Administrative Sedan
Transit	20003213	Ford	Pick-Up Truck
Transit	20003300	Dodge	SUV
Transit	20002554	Bobcat	Skid steer
Transit	20002553	Bobcat	Skid steer
Transit/Pupil	20002987	Thomas	School Bus
Transit/Pupil	20002986	Thomas	School Bus
Transit/Pupil	20002988	Thomas	School Bus
Transit/Pupil	20003087	Thomas	School Bus
Utilities Gas	20003301	Freightliner dump truck	Heavy Duty Dump
Utilities Gas	20003041	Freightliner dump truck	Heavy Duty Dump
Utilities Gas	20002844	GMC dump truck	Heavy Duty Dump
Utilities Gas	20003073	TEREX AMIDA LIGHT TOWER	Light Tower
Utilities Gas	20003262	Ford 250 truck	Pick-Up Truck
Utilities Gas	20003028	Ford F250	Pick-Up Truck
Utilities Gas	20002762	GMC truck	Pick-Up Truck
Utilities Gas	20001149	Chev3500 truck	Pick-Up Truck
Utilities Gas	20003209	Ford F450	Pick-Up Truck
Utilities Gas	20002852	Ford truck	Pick-Up Truck
Utilities Gas	20003290	Chev3500 truck	Pick-Up Truck
Utilities Gas	20003259	Ford Sport Utility, 4 WD	SUV
Utilities Gas	20003287	Jeep Compass Sport Utility, 4 WD	SUV
Utilities Gas	20003027	11 HONDA--165844L--19XFA4F53BE000957	Administrative Sedan
Utilities Gas	20002967	Ford Sedan, Compact Hybr	Administrative Sedan (Hybrid)
Utilities Gas	20001168	98 INGERSOLL RAND P185WJD:291359	Air Compressor
Utilities Gas	20001124	INGERSOLL RAND 185CFM	Air Compressor
Utilities Gas	20001181	01 INGERSOLL-RAND P185	Air Compressor
Utilities Gas	20001183	01 INGER-RAND P185WJD-4FVCABAAX1U321652	Air Compressor
Utilities Gas	20003246	2015 AIRMAN PDS1855 B4-6E10385	Air Compressor
Utilities Gas	20003106	12 KUBOTA--30984	ATV
Utilities Gas	20002808	07 JOHN DEERE TRACHOE:FF027DX224578	Backhoe
Utilities Gas	20002853	08 CAT BACKHOE:OHLS07202	Backhoe
Utilities Gas	20001110	02 NEW HOLLAND LB75:31035263	Backhoe
Utilities Gas	20003021	10 CAT BACKHOE/LOADER---DJL01258	Backhoe
Utilities Gas	20000103	94 AMITA DETOUR LIGHT:DL815-FA-DKD/4	Detour Light

Department/Division	SAP ID	Vehicle Make/Model	Unit Type
Utilities Gas	20003228	2015 - 303.5E2 CAT EXCAVATOR - 0JWY00199	Excavator
Utilities Gas	20003229	2015 - 303.5E2 CAT ESCAVATOR 0JMY00201	Excavator
Utilities Gas	20003227	2015 - 305E2 CAT EXCAVATOR - H5M00385	Excavator
Utilities Gas	20000147	91GMC TC7HO42:77918L--1GDL7H1JXMJ500094	Heavy Duty Dump
Utilities Gas	20003154	13-CAT-924K-OPWR02328	Loader
Utilities Gas	20003261	Ford 250 truck	Pick-Up Truck
Utilities Gas	20003260	Ford 250 truck	Pick-Up Truck
Utilities Gas	20002713	05 JOHN DEERE EXCAVATOR-FF027CXCCC081	Skid steer
Utilities Gas	20000261	01 GEHL-SKID LOAD SL4635: 302406	Skid steer
Utilities Gas	20002787	06 AMPAC TRENCH ROLLER:5YDXL1.11X3N	Tamper
Utilities Gas	20001199	99 JOHN DEERE 4500:LV45P253380	Tractor
Utilities Gas	20001186	DITCHWITCH 5700 TRENCHER	Trencher
Utilities Gas	20001175	01 DITCHWITCH 1820:1T4425	Trencher
Utilities Gas Distribution	20002750	Ford F450 (deadlined)	Pick-Up Truck
Utilities Gas Distribution	20002745	Ford F450	Pick-Up Truck
Utilities Gas Distribution	20002828	International boring truck	Boring Machine
Utilities Gas Distribution	20002829	07 JET TRAC:CMWJ30ATJ70000009	Hole Driller
Utilities Gas Distribution	20002904	09 BARRETO TRENCHER-TK0167	Trencher
Utilities Gas Env Admin	20003068	Nissan Leaf	Administrative Sedan (Hybrid)
Utilities Gas Service	20003245	Ford Sport Utility, 4 WD	SUV
Utilities Gas Service	20003238	Ford Sport Utility, 4 WD	SUV
Utilities Stormwater	20002765	Toyota Prius	Administrative Sedan (Hybrid)
Utilities Wastewater	20003302	Freightliner dump truck	Heavy Duty Dump
Utilities Wastewater	20001109	GMC dump truck	Heavy Duty Dump
Utilities Wastewater	20003090	13 CHEV--174468L--1GB3KZC81DF113346	Pick-Up Truck
Utilities Wastewater	20001137	GMC 3500 truck	Pick-Up Truck
Utilities Wastewater	20002855	08 CAT BACKHOE:HLS07453	Backhoe
Utilities Wastewater	20003162	Ford F550	Pick-Up Truck
Utilities Wastewater	20003070	Ford F450	Pick-Up Truck
Utilities Wastewater	20000155	00 GODWIN PUMP CD150M:9921163-59	Pump
Utilities Wastewater	20002892	Sterling sewer truck	Sewer Truck
Utilities Water	20002919	Ford Sedan, Compact Hybrid	Administrative Sedan (Hybrid)

Department/Division	SAP ID	Vehicle Make/Model	Unit Type
Utilities Water	20001191	Chev3500 truck	Pick-Up Truck
Utilities Water	20002117	Ford Sport Utility, 4 WD	SUV
Utilities Water	20003258	Ford Sport Utility, 4 WD	SUV
Utilities Water	20003247	2015 AIRMAN PDS1855 B4-6E10378	Air Compressor
Utilities Water	20003248	2015 AIRMAN PDS1855 B4-6E10382	Air Compressor
Utilities Water	20000962	04 ASPHALT ZIPPER AZ-360:	Asphalt Zipper
Utilities Water	20003092	12 JOHN DEERE--1T0310SKCCE231385	Backhoe
Utilities Water	20003091	12 JOHN DEERE--1T0310SKCCE231367	Backhoe
Utilities Water	20003045	11 HURCO VAC--1R9H21617BP303026	Vacuum Truck
Utilities Water	20000128	00 TRAV-L-VAC TLV-300:00-1190	Vacuum Truck