

CITY OF CHATTANOOGA

FLEET STUDY

INTRODUCTION

The City of Chattanooga requested that the University of Tennessee's Municipal Technical Advisory Service (MTAS) conduct a study of the city's fleet operations. The scope of the study included:

- Researching, studying and presenting a detailed organizational and financial approach for a centralized fleet operation that is fully cost accounted.
- Researching, studying and presenting a detailed organizational and financial approach for a centralized fleet management program, where fleet management owns all equipment and leases to user departments.
- Determining the appropriate fleet size, considering factors such as city population, size of work force, geographical size of the city, and type of work applications.
- Evaluating maintenance operations including preventative maintenance programs, compliance with state and federal regulations and size of maintenance staff.
- Evaluating the potential for outsourcing specific fleet functions for all departments and the potential for outsourcing certain maintenance operations.

METHODOLOGY

In conducting this study MTAS reviewed many forms, documents and reports provided by the Fleet Maintenance Department. MTAS conducted numerous interviews

with department supervisors and with the department's primary customers. Customers included both City of Chattanooga departments and other public entities. These interviews were conducted to gain a basic understanding of the cost, organization, personnel, equipment, facilities, and training involved in operating the city's vehicle maintenance program. All the persons interviewed gave generously of their time. MTAS sincerely appreciates their input and cooperation.

STUDY PURPOSE AND TIME FRAME CHANGE

In mid-June, 2002, MTAS was notified by the city that the study would be needed by the first week in July. At the same time, MTAS was coping with funding uncertainties due to the state's budget problems. Given these circumstances, this report will not specifically address each point outlined in the introduction. Rather, this report focuses on the central issue impacting the city fleet operations – centralized fleet management.

In addition, the report lists numerous findings and specific recommendations for improvement. MTAS regrets the need to limit the scope of the study, but we believe the recommendations in this report, if implemented, will assist in improving fleet operations.

CENTRALIZED FLEET MANAGEMENT

The City of Chattanooga is an entity of "one" dedicated to the purpose of providing a variety of services to its citizens. Those services range from protection (fire and police) to basic health services (wastewater collection, wastewater treatment, solid waste collection and solid waste disposal). The average citizen is not familiar with the structure of government and how the city employees and departments interact with each other. He/she simply expects the potholes to be patched, to have a police car or fire engine respond when called and to see the garbage disappear when it is placed at the curb. Residents expect these tasks to be accomplished as economically as possible. They expect taxes and fees to be as low as possible. These expectations are conceptual because the average citizen has no idea what it should, or does, cost to provide city services.

It is the job of city government – elected officials and staff – to deliver city services as cost effectively as possible. This study does not focus on the tax rate or revenue side, but on the cost of providing services. In service delivery both line functions and support functions are involved. Line functions actually deliver the service to the citizen (police officer, firefighter, street worker). Support functions (purchasing, finance, fleet maintenance, etc.) support line staff. How effectively line staff and support staff work together is dependent to a great extent on organizational structure.

All factors (sufficient funds, facilities, management commitment, staff commitment, etc.) can be operating at the highest level, but without the correct organizational structure, optimum efficiency and effectiveness cannot be obtained. In most instances, a streamlined organization delivers service with a high degree of efficiency and effectiveness. This has been clearly demonstrated in Finance, where one accounting system and one group of employees perform accounting for all city departments. It is also evident in Purchasing, where one group of employees handles all of the major “buying” for all city departments. Both of these examples maximize the resources for the highest return.

Fleet operation uses a streamlined approach for some functions, but not for others. With the exception of traffic engineering, all fleet maintenance is consolidated under the Fleet Maintenance Department. This was no small accomplishment! In addition, the Fleet Maintenance Department has become an *internal service fund* and is zeroing out the costs of its operations through charges to other departments (in the city and other agencies). Both of these actions were supported by recommendations MTAS made in its study in 1992.

However, even with these successes, the city’s fleet operation is not streamlined, and fleet “management” is only a concept. To illustrate these points, let’s review some of the basic functions involved in fleet maintenance. Begin with the acquisition of a fleet item (vehicle or piece of equipment). The current process flows as follows:

1. A user department, in relative isolation (little to no consultation with other user departments), determines its need for a new vehicle or piece of equipment. This may be an addition or a replacement. Consideration may, or may not, have been given to the needs of other departments. Frequency of use may, or may not, have been considered. Discretion rests with the user department.
2. Next, the user department submits a request to administration/council.
3. Administration/council either approves or disapproves the request.
4. If approved, user department, in consultation with purchasing, develops specifications and requests bids. The fleet manager, or his designee, may, or may not, be involved in the specifications development. Standardization may, or may not, have been considered. Multi-purpose use of a piece of equipment may, or may not, have been considered. Again, discretion rests heavily with the user department.
5. Bids are received, evaluated and a recommendation for purchase is made. The fleet manager, or his designee, may, or may not, have been involved in the evaluation.

The end result can be the acquisition of a vehicle or piece of equipment that was not needed because it would be more practical to borrow from another department or rent the item when needed. The equipment may be either undersized or oversized for the job. The procedure outlined above goes against efforts to standardize. It allows for purchase of vehicles and equipment that may not be the highest performer or best buy for the price. In essence the evaluation may be made on emotion (the operator likes John Deere or Ford, etc.) rather than on objective analysis. Thus a fragmented and costly vehicle/equipment acquisition process may be replicated many times throughout the entire city government.

Another example is the process of disposal (surplus) and fixed asset inventory. In the current process:

1. A user department, in relative isolation (little to no consultation with other user departments), determines its need to surplus a vehicle or piece of equipment. An objective performance evaluation by fleet maintenance may, or may not, occur. Consideration may, or may not, have been given to the needs (possible transfer) of other departments. Discretion rests with the user department.
2. The user department notifies purchasing of its intent to surplus (auction) the vehicle or piece of equipment.
3. The item is auctioned, or not auctioned, depending on the user department.
4. Based on direction from the user department, the item is removed from the inventory lists of: (1) purchasing, (2) fleet maintenance and (3) the user department. With the potential for three different inventory lists, there is a high degree of probability that the lists do not match.
5. Item was not auctioned and appears on fleet maintenance's fueling logs.

The outcomes of this process could be good: equipment that is not usable by any other department is sold at the optimum time and is properly removed from the city's fixed assets records and the inventory logs of the user department, purchasing and fleet maintenance; or the equipment is transferred to another department where its optimum life can be extended and all inventory records are properly updated accordingly. Or the outcome could be poor: equipment is kept long past its optimum performance life; equipment that would have optimum life remaining with another department is sold; and equipment that is designated for sale is not sold, but is taken off inventory list(s).

This process encourages poor decision-making and is almost certainly costing the city money by either repairing “junk” or by selling equipment that still has a useful life with another department. In addition, discrepancy in what has sold, or not sold, has resulted in differences in inventory counts between user departments, fleet maintenance and purchasing. In one instance, a department’s own count report did not match its own inventory. The end result is that the city does not know precisely what it owns.

A final illustration is the state of confusion that exists regarding:

1. “Returns” (items brought back because the first or second repair did not fix the problem);
2. The rates that fleet maintenance charges for labor and fuel;
3. The “mark-up” that fleet charges on parts;
4. The time lost by user departments in taking items in for repair; and
5. The continual hassle fleet maintenance goes through in getting drivers/operators to adhere to the preventative maintenance schedule.

PRIMARY RECOMMENDATION

These problems can be mitigated to some extent by implementation of the other recommendations of this report. **However, the optimum approach to streamlining fleet operations is to convert the Fleet Maintenance Department to a Fleet MANAGEMENT Department.** This approach would centralize ownership and maintenance of all city vehicles and equipment in the City of Chattanooga Fleet Management Department (FLEET). User departments may be reluctant to give up “ownership” of their respective fleet. But, they need to realize that their fleet and the

fleet of every user department comprises the city's fleet. It is the city's prerogative to determine how that fleet is structured. More importantly, it is the city's responsibility to manage the citizens' tax dollars to achieve the highest efficiency possible without endangering or lessening the effectiveness of service delivery. Negative impacts to service delivery is a common argument given by user departments when their control of certain assets or functions are challenged.

Benefits of centralized fleet management include:

1. The ability to obtain the optimum usage of every vehicle and piece of equipment and thereby reduce the size of the city's fleet. By having full ownership, FLEET can decide the best time to surplus a vehicle or piece of equipment either because of its operating cost or its retail value. As the centralized owner, FLEET would also be able to determine if a vehicle or piece of equipment could be used by another department versus being surplus. Furthermore, by having full ownership, all questions and confusion regarding fleet size would be eliminated.
2. The ability to obtain maximum standardization in specification development. This would result in the development of one set of specifications for sedans, one set of specifications for backhoes, etc. It would ensure each set of specifications received the highest level of development expertise the city could obtain internally, and in many cases, externally. Decisions on equipment acquisition would be made on an objective analysis versus driver/operator preference.
3. The ability to internalize the current repair cost issues in terms of returns, labor rates and parts mark-up through renting or leasing the vehicles and equipment to the user departments on a fixed rate basis. Lease rates for each respective type of vehicle or piece of equipment could be based on (1) a fixed annual amount, (2) a fixed monthly amount, (3) a fixed hourly rate, (4) a rate per mile or (5) some combination of the above.

4. The ability to alleviate the budget confusion and uncertainty for user departments.
Eliminate nagging questions like “Did I budget enough for repairs? Will that truck or backhoe make it until the next budget? Will I get funding for a new one?”
5. The ability to mitigate external communication problems and focus solely on the internal communication problems.
6. The ability to maximize the benefit of a “reserve” fleet, with minimum resources.
FLEET would, where appropriate, be able to either develop an internal reserve fleet of sedans, pickups, police cruisers, backhoes, etc., or to secure an external rental option depending on which option is more cost efficient. With a reserve fleet, FLEET would be able to virtually eliminate user departments’ lost production time due to equipment failure.
7. The ability for the city to have a centralized focus in pride of ownership of its fleet, thereby keeping it clean, painted and in good operating order.
8. The ability to develop a city-wide fleet replacement fund. The fund should be business-oriented -- i.e. develop an approach in which an initially capitalized fund would be replenished and expanded through annual amortization of vehicles and equipment. This amortization fund would be managed and paid by FLEET, but the cost would be recouped from the user departments through lease and/or rental payments.

IMPLEMENTATION

If MTAS’s recommendation of centralized management is accepted, implementation will take time and further study. First, the implementation should be incremental -- focusing on one department or division at a time. The current fleet maintenance department does not have the tools in place to move to a city-wide fleet

management structure and will need time to organize and obtain those tools. By phasing implementation a department at a time, FLEET would be able to try new initiatives and eliminate mistakes without affecting the total city organization. Implementation steps would include:

1. Identify 2 or 3 well-operated Fleet Management programs and study their operations in detail. Possible programs to consider are located in the cities of Louisville, Kentucky; Little Rock, Arkansas; Lexington, Kentucky; and Greensboro, North Carolina. By emulating the success of these or similar programs, the City of Chattanooga would be able to accelerate its program.
2. Develop an operations and procedures manual. This will explain and govern the FLEET program. This would include policies that govern the Fleet Management Department and also govern the user departments in such items as driver/operator requirements (vehicle/equipment operation, maintenance checking (oil, brakes, coolant, etc.) and preventative maintenance). This is a critical step and should be in place before any actual transfer of fixed assets occurs. Without this in place, FLEET's chances of success are minimal.
3. Conduct a detailed inventory of the fleet of the first department. Inventory would include a detailed analysis of each vehicle, including current life, expected life, maintenance history and replacement cost.
4. Once the inventory has been completed, review in detail the vehicle/equipment needs of the first department and reach consensus on those needs with the department and with the city administration.
5. Establish the framework of an equipment replacement fund utilizing the information obtained in steps 3 and 4.

6. Utilize the maintenance history and the equipment replacement fund information to establish lease rates for the department.
7. Modify the existing maintenance software or acquire new software that gives FLEET full fleet management capability.

OTHER FINDINGS

The following findings are items that can be addressed without creating a Fleet Management Department, but they would be more effectively addressed if such a department were created. These findings are presented in no order of priority and each has a corresponding recommendation in the same order.

Returns

Returns or rejections refer to vehicles or equipment being brought back to fleet maintenance because the problem was not fixed the first time. Fleet maintenance staff indicated that overall returns are not a significant problem. In fact, most shop supervisors estimated a two percent return rate. No records are kept on returns by fleet maintenance, and the customer is not generally charged for returns. The city's computer software has the capability to track returns, but fleet maintenance decided to disable this function in order to avoid customer complaints about being charged for returns. Fleet maintenance believes that it is better to treat returns as if they never occurred than to be accused of charging departments for returns.

If a part fails, especially a part that has been installed and is brought back to the shop as a return, it is likely under warranty. Lee Smith, Inc., the parts vendor, guarantees parts for one year. The labor performed to fix a return is charged to indirect salaries and is not charged to the individual department. Fleet maintenance believes that vehicle returns for additional repair work are comparable to the return rate in the private sector.

It appears from customer interviews that the 12th Street garage has higher returns than the Amnicola garage. This could be attributed to: (1) the nature of the equipment; (2) inadequately trained mechanics (only 20% of the mechanics at the 12th Street garage are certified, although an additional five mechanics were to be certified by January 2003); (3) the difficulty of repairing old and worn out equipment; or (4) intermittent problems – (For example a car is brought in for missing. A shop mechanic drives the vehicle and cannot get the vehicle to miss. The mechanic does a diagnostic check, and diagnostics do not show any problems). Sometimes it takes two or three returns and the attention of a highly experienced mechanic to isolate, identify, and correct intermittent type problems. It is significant that returns appear to be greater on older equipment, on electronics and with hydraulic systems. Here the problems are more complex, and solutions require highly trained mechanics. Staff interviews revealed that several of the older mechanics at the 12th Street garage are close to retirement and have no incentive to learn changes in the job necessitated by product improvements and newer diagnostic equipment. This could well be a leading factor in excessive returns at the 12th Street garage.

It is not possible to determine with any degree of accuracy, in the absence of return records, the cost to the city for returns. It is clear, from staff interviews, however, that indirect labor cost is included in the productivity measure. It is also clear, based on MTAS's interviews with customers that customers believe that returns are a significant problem, and are due to fleet maintenance's inability or unwillingness to get it right the first time. This is probably an exaggerated perception, but it is an issue that must be addressed. Staff "estimated" the return rate to be somewhere between 2 and 7 percent. If the estimate is accurate and the labor for returns is not charged to the user, then returns are costing Fleet between \$50,000 and \$200,000 annually.

Specifications

Developing specifications is an important management tool for effectively managing a fleet of vehicles. Currently specifications for vehicles and equipment are developed in city departments. The fleet manager is sometimes asked to assist in developing the specifications, but department heads make the ultimate decision concerning specifications. It is through development of specifications that standardization is achieved in parts. It is understandable that standardization is not a priority for separate departments. Departments want a vehicle that will perform, and they have no reason to be concerned about buying vehicles and equipment that will allow fleet maintenance to (1) lower parts inventory, (2) increase the proficiency of mechanics, (3) decrease cost, or (4) increase time for equipment availability. There is little question that a mechanic who works on the same kind of vehicles or equipment can become much more proficient than a mechanic who works on 15 different types of vehicles. Although standardization has largely been obtained in the fleet of marked police cars, it has been due more to the lack of vendor competition than anything else. Ford's Crown Victoria has been the only full-size police cruiser available for quite some time. That lack of competition is not true in other vehicles and pieces of equipment and the end result is the city owning, operating and "maintaining" backhoes made by almost every vendor available.

Disposal (surplus)

The ultimate "formal" decision to dispose of particular vehicles and equipment is made by the city council. However, each department determines, usually based on its own criteria, as well as the availability of funds to purchase a replacement vehicle, the basis for recommending that city council declare the property surplus and authorize its sale or disposal. Fleet Maintenance may, or may not, be involved in the decision-making process. When a department determines that a vehicle is beyond usefulness, a letter is sent to purchasing stating that the vehicle is no longer useful. Purchasing sends the request to city council, and when it is declared surplus, purchasing notifies the user department to deliver the vehicle to the auction. Upon sale, the proceeds are deposited in

the general fund, for all vehicles and equipment (except Head Start vehicles where federal regulations require that proceeds remain with Head Start).

There is no systematic chain of events, with accountability, for disposing of vehicles and equipment. Apparently when departments are notified by purchasing to sell vehicles at auction, there is no consistent follow-up to ensure that the vehicles are indeed sold. MTAS's interviews revealed that some staff believe when vehicles are declared surplus and ordered sold, they are not always sold. Vehicles may be retained to cannibalize for parts or used for other departmental purposes.

Fragmentation in the decision-making and documentation process creates the potential for abuse, and may be a contributing factor in the increasing size of the city's vehicle fleet.

Preventive Maintenance

Preventive maintenance (PM) is performed by fleet maintenance at both of its garages. At the Amnicola garage there are only three types of PM. The first type is level "A," and it is primarily for oil changes, checking fluids-brake fluid, antifreeze, wiper fluid, and the air filter. The second type is level "B," which includes the checks done in level "A" plus rotating tires and checking and servicing brakes, if necessary. The third, and final level of PM, is "C," and this includes the checks in PM "A" and "B" plus changing transmission filter and fluid. The schedule for PM on light trucks and sedans at the Amnicola garage is:

A	4,000 miles
B	8,000 miles
C	24,000 miles

Fleet maintenance allows the driver the flexibility of coming in within 500 miles before and 500 miles over the miles scheduled. If the driver does not bring the vehicle in,

fleet maintenance notifies the supervisor. In conducting PM, fleet maintenance mechanics use a checklist for all city vehicles.

At the Amnicola garage one bay is designated for PM. PM is the highest priority, and mechanics are frequently pulled from other repair work to conduct PM. At times, five or six bays have mechanics performing PM. The goal of the garage is to do PM “A” in 30 minutes. It never takes longer than one day to perform PM “B” and “C.” The Amnicola garage does not schedule PM visits and does not, therefore, know how many vehicles will be brought to the garage for PM on any given day. One mechanic is assigned to each bay to perform PM.

PM at the 12th Street garage is generally done every six months. Exceptions are automated garbage trucks (they are serviced every Wednesday) and street sweepers. Some equipment is serviced every 30, 60, 90, or 120 days depending on the type of equipment. Fleet records indicate:

- PM for public works vehicles accounts for four (4) percent of the mechanic’s time.
- 42 percent of the mechanic’s time is spent on repairs to hydraulics.
- 26 percent of the mechanic’s time is spent on cooling systems.
- 13 percent of mechanic’s time that is spent working on police vehicles is for PM.
- In the Parks and Recreation Department, PM is 23 percent.
- In Human Services, PM is 17 percent.

The 12th Street mechanics have more experience working on hydraulics and cooling than mechanics servicing other city vehicles.

In reviewing the charges for PM, fleet maintenance has made the effort to ensure that the charge to the customer is competitive with private industry charges for similar services. A PM “A” charge includes three tenths (0.3) of an hour for labor, even if it costs more than this for labor. The charge for PM “B” is for one and one-half (1.5)

hours. PM “C” is charged for two (2) hours. All charges are based on \$45 per hour for labor and cost plus 25 percent for parts, fluids, and filters.

Predictive maintenance is an important part of preventive maintenance. It is a valuable fleet maintenance tool, because it uses vehicle and equipment history to determine when a part is most likely to fail. If, for example, brake pads wear out at 20,000 miles, mechanics would replace these parts automatically at or near this mileage. If the transmission on a particular sedan frequently fails at 80,000 miles, mechanics would replace or rebuild at 85 to 90 percent of life expectancy for the part. Chattanooga’s fleet maintenance shops understand predictive maintenance, but it seems, based on interviews with city personnel, that many department heads and division heads do not understand the value of predictive maintenance. Several division heads indicated that it would be helpful for fleet maintenance to provide them with a list for each vehicle showing predictive maintenance events so that this information could be used in preparing budget estimates. Predictive maintenance helps to reduce road breakdowns and equipment failures.

Communications

Communications both within Fleet Maintenance and with its customers may be improving, but it still has a long way to go. Employees do not understand fleet’s charging policies, its parts acquisition contract, and other operational policies.

This same lack of clarity exists between fleet and its customers. Communication may be occurring between the top echelon of fleet and the user departments, but it certainly is not filtering down to the operational level. Examples of lack of communication are evident by the lack of understanding employees (and even supervisors) have regarding charges, returns, scheduling and fleet’s relationship to the other departments within the city. Some user departments look upon fleet as a “profit center” and do not understand why it is not “free” the way it was before. There is also a lot of misunderstanding regarding returns and whether user departments are charged for the return. Very few users know or understand the rate structure.

Productivity

Both garages operate on a flat rate system with the Amnicola garage using Mitchell's Flat Rate manual almost exclusively and 12th Street garage using a combination of flat rate manuals where possible and actual experience averages where flat rate information does not exist. In both cases flat rate time is what is counted as work time or productive time. It is calculated by taking total Available Hours, less Hours Off (vacation, sick leave, holidays, etc.) which equals Input Hours (does not include shop clean up time or repair work on shop items) divided into Output Hours (flat rate hours plus hours for cleaning up the shop, repair work on shop items, retrieving parts or removing parts from salvage vehicles or equipment) equals productivity. Those mechanics that can work faster than flat rate run a high productivity percentage and those that can't run a low percentage. Percentages vary greatly. Some mechanics consistently go over 100%; others are consistently in the 40 and 50 percent range.

Overall and individual productivity has increased over the last three years and shows indications of continued improvement. This growth has been enhanced through more accurate record keeping, placing an emphasis on productivity, providing both general and specific training, reorganization efforts in Fleet Maintenance and finally through simple peer pressure. Productivity is not tied to pay either in a positive or negative sense. Although it is discussed during the employee's annual performance review, Fleet does not have the tools to reward or punish an employee for their production rate. No production benchmarks have been established at this time. If and when established, benchmarks may be internal versus an industry standard.

The Amnicola garage's productivity rate is consistently 12 to 18 percentage points higher than the 12th street garage. Part of the difference may be attributable to the type of equipment each garage services; or part of the difference may be attributable to fewer certified mechanics at the 12th Street garage. However, these explanations are somewhat questionable because some of the higher paid mechanics have some of the lowest production rates. Whatever the explanation, low mechanic productivity is costing the city substantial dollars.

Pay Structure and Recruitment

Although these are two separate issues, one greatly impacts the other, so they have been combined. The city's overall pay structure for fleet maintenance when combined with the city's benefit plan and job security may be competitive with the private sector. However, that competitiveness doesn't really take hold until a mechanic has reached the Mechanic III classification. For an apprentice, this is okay, but for an experienced mechanic this poses a problem. The city's current practice is to start all mechanics at the beginning of the pay grade, without any consideration of a lateral entry. This makes it very difficult to recruit experience, which in turn affects productivity and ultimately the cost of operations.

Training

The skill level of mechanics is a problem. At the Amnicola garage, 17 of 20 mechanics are ASE certified. However, there are only 5 of 24 mechanics certified at the 12th Street Garage. More training is being done and the 12th Street garage expects to have a total of 10 certified mechanics by the end of this year. That is still less than half of the mechanics working in that garage. This problem is further compounded because the policy of attending training and gaining certification is a voluntary choice on the part of the mechanic.

Charges for Labor, Parts and Fuel

The current charge for labor is \$45 per hour and this is factored on either the amount of time spent on the job or the amount of time allowed for the job based on the flat rate manual. Forty-five dollars per hour is competitive with the private sector, but it is substantially more than the highest paid mechanic makes (\$20.69/hour). This difference often leads user departments, and in some cases fleet maintenance personnel, to claim that fleet maintenance is making a "profit." This claim really reaches a crescendo when user departments and staff discuss the cost of parts. The system's current contract with Lee Smith is structured to provide the city a discount for using

Smith, but fleet maintenance in turn marks up that discount by 25%. Sometimes the resulting price is higher than the local parts stores are charging -- especially, if they are running discount specials. Sometimes the price is lower than the local parts stores. Fuel is the other charge item and the mark-up on it is approximately 30%. The current retail or pump price is \$1.35 per gallon. This price is set annually for budgetary purposes both for fleet maintenance and for the user departments. It is a safe setting for the user departments, because they can calculate their usage times the rate and know it will not change during the year. On the other hand, fleet maintenance sets the annual price and hopes costs do not increase because fleet will have to absorb the difference. The current \$1.35 rate is competitive with the retail market.

All these charges are designed to fully zero out the cost of operating the fleet maintenance department and appear to be doing an adequate job. Even though the fleet maintenance service is a monopoly, its costs and ultimately its prices should be competitive with the private sector. Based upon our study, the labor rate appears to be competitive and if the flat rate manual or a similar facsimile is followed, its application will also be competitive. MTAS did not do actual price comparisons on individual parts, but understand that the contract award to Lee Smith was a competitive process. However, such contracts are awarded on a long-term basis, and the competitiveness of the contract may wane as the contract nears its end. That is why it is important for fleet maintenance to always be knowledgeable of market prices. The price for fuel is set on an annual basis and the current price for mid-level gasoline appears to be competitive with the private sector. The difference is the private sector price fluctuates and in times of market glut, it may be much lower than the fleet maintenance price, but it will also remain stable when the market price is soaring. For budgetary purposes the fuel price seems to be competitive, but more importantly it is stable.

Electronic Management System

The department uses Ron Turley Associates (RTA) fleet management software. The software features several modules and it is compatible with bar coding equipment. RTA's features include capability to track: user identified maintenance, exception

reports for maintenance and operation costs, parts inventory control, automatic parts reorder, replace/repair decisions, vehicle history, vehicle class analysis, mechanic productivity, buy/sale decisions, fuel tax reporting, fuel cost reporting, warranty tracking, oil cost reporting, road call reporting, etc. Fleet does not have or use all the capabilities available. The software does not meet all the needs the department has for reports. The manager reports that he spends two days per month compiling management reports, and he uses other software (such as spreadsheets and word processing) to aid in report preparation.

Cost Centers (PM, Repairs Sedans/Light Trucks, Repairs Fire Apparatus, Repairs Trucks/Equipment, Fabrication)

Just as fleet maintenance needs to monitor its rates to stay competitive, it also needs to monitor the various services it provides. During interviews with both internal and external customers, MTAS received overall good reviews of fleet maintenance's various services. Some were more positive than others, and some received a fair amount of criticism. Except in the case of returns, most of the criticism focused on price or turn around time. The latter complaint was especially true of preventive maintenance, but MTAS has already made recommendations to address this issue. On the positive side, the Fire Department was complimentary of the service of fire apparatus and related equipment (pumps, etc.), and everyone was complimentary of the fabrication work and the cost savings when compared to the private sector. Such compliments are heartening, but it doesn't lessen the need to monitor. Fleet Maintenance's records system allows fleet maintenance to factor the percentages for the work it does for any department. Fleet's reports consider the work and costs for tires, road services, PM, engine work, electrical work, hydraulics, heating and A.C systems, brakes, light systems and accident/body work (fabrication). Fleet maintenance's records allow it to provide this information to the user department on an annual periodic basis.

Fleet Maintenance knows what it is charging the user department, but does it have an accurate figure on what a selected service is costing? In essence is the work it performs on any of the services noted above cost effective? In some instances, such as

PM, cost effectiveness is not the critical factor, but it is a thorough review of the vehicle or piece of equipment, especially when performing a PM “A” or “B.” However, in other services cost effectiveness could be the critical factor and the true cost of the service should be captured in order to make the proper evaluation. With an enhanced fleet management software system, this should not be difficult.

Fleet Count

One of the points in the scope of this study was to determine appropriate fleet size. This has not been accomplished. In fact, it has been deferred until a determination is made on the principle recommendation. MTAS needs to point out the fact that the city has changed its car assignment policy and therefore, it is gradually reducing the size of its administrative car fleet. If the primary recommendation is not accepted, MTAS will be glad to complete the fleet count part of this study.

Vehicle/equipment inventory lists are maintained by: (1) purchasing, (2) fleet, and (3) user departments. MTAS examined the various lists and found:

- Different vehicle counts appear on lists maintained by purchasing, fleet and user departments. Thus no one knows the actual number of vehicles owned by the city. As an example, the police department’s list was compared to the finance department’s list. The police department has 20 vehicles/equipment that are not on the finance list. The finance list has 91 vehicles/equipment that are not on the police list.
- Even differences in vehicle counts were encountered within the same department. For instance, the police department’s comprehensive listing of vehicles indicated a total of 567 trucks and cars, but the police department’s Fleet Services Summary of February 2002 showed 549 trucks and cars.
- A large percentage of vehicles in use are assigned for “Take Home.” In the police department, over 50% of cars are on “Take Home” status.

- A large percentage of vehicles are 1997 models or older. In the police department, it is over 60%.

RECOMMENDATIONS

Returns

Several steps can be taken to alleviate some of the problems surrounding the issue of returns. In no order of priority they include the following:

1. The work order process should be strengthened to provide a detailed description of the problem with the vehicle or piece of equipment. This should be developed by the mechanic and/or shop supervisor. A copy of the work order should be provided to the driver/operator.
2. A strong customer service approach should be paramount in this process. Without question, some of the returns can be attributed to old equipment and to warranties. But, in all probability, some can be attributed to mechanic error. Regardless of the reason, a strong customer service approach will not attribute the problem to the customer, without thorough and complete documentation.
3. A new work order should be developed on returns, but should be attached to or include the information from the original work order. The shop supervisor should definitely be involved in all return work orders.
4. If the return is due to parts warranty, then the part should be replaced and the labor should be charged to indirect costs. However, a separate category or record should be maintained on all returns and it should capture the costs both for parts and labor. If warranties are excessive, the issue should be raised with the parts supplier(s) at the end of the year.

5. Regarding productivity, if the return is a true return and is due to parts, the mechanic's time should be credited to his production. If the return is due to the mechanic, then the mechanic's time should be subtracted from his/her production. The shop supervisor should have the final word on production calculations.

Specifications

Specification development should be both a global and team effort. It should be global in that the city would develop specifications for 4-door sedans, pickup trucks, backhoes, etc., that would be used by every department in the city. It would be a team effort in that every set of specifications would be developed by a team composed of representatives from each affected department, in addition to a representative from purchasing and the fleet manager or his representative. The end result of this effort would be a "city" set of specifications for each type of vehicle or piece of equipment that meets the needs of all user departments, while at the same time maintaining consistency in quality and standardization.

Disposal (surplus)

Disposal of surplus property (or at least the accounting of this transaction) has led to significant differences in the inventory of vehicles and equipment. Currently there are inventories maintained in fleet maintenance, purchasing and the user departments. In some instances, these inventories do not match. MTAS recommends a master inventory be maintained in purchasing or by whoever maintains the city's fixed assets records. All requests and/or decisions for disposal of a vehicle or piece of equipment should be a joint decision between the user department and fleet maintenance. Once the decision to surplus is made and approved by purchasing, ownership of the vehicle or piece of equipment should be transferred to fleet maintenance and it should be removed from the department's inventory. Even though fleet maintenance would own the equipment, it would not be removed from fleet maintenance's inventory until it was sold and fleet maintenance received authorization from purchasing. Purchasing would not remove the item from its inventory "current fixed asset records" until it receives a copy of the title

transfer, a sales slip, or evidence the vehicle or piece of equipment was being salvaged. Such evidence would include a statement from fleet maintenance regarding the salvage status of the vehicle or piece of equipment. Purchasing's inventory would be controlling. Both the respective user department or fleet maintenance would be held accountable for any discrepancies in their respective inventory.

Preventive Maintenance

Scheduling PM's at both the Amnicola and 12th street facility is mandatory in order to maximize production both for PM's and for other repair activity. By scheduling all PM's, Fleet Maintenance can control the PM process instead of the process controlling fleet maintenance and therefore maximize the efficiency of the PM process. Scheduling is also a great device to maximize customer service. It minimizes the amount of time the driver/operator will lose in obtaining service thereby minimizing frustration and enhancing the production of the user departments.

Although a physical facility change might not be possible, strong consideration should be given to installing a pit at the Amnicola facility and upgrading the one at 12th Street. Although they use only one mechanic on the pit at 12th Street, a pit at Amnicola would allow two PM mechanics to work at the same time in performing PM. This would minimize the time it takes to do an "A" PM and thereby minimize the time on "B" and "C" PM's also.

Dedicating two mechanics full-time to working exclusively on PM will enhance PM production and should also enhance production on other repairs.

A greater emphasis should be placed on PM at the 12th Street Garage. It is acknowledged that the type of equipment is a factor, but tighter adherence to PM and PM scheduling by both the user department and fleet maintenance should show a benefit.

Communicate the benefits of predictive maintenance to all user departments. Explain how it functions and how it saves money. Restructure the “billing” process to clearly distinguish predictive maintenance items and costs. Such billing could also use a reference code that would trigger software to print the replacement standard on the item being replaced, i.e. brake pads every 20,000 miles, etc.

Communications

Time and effort should be allocated to working with staff to develop a mission statement and possibly a strategic plan for Fleet Maintenance. Such an effort would put all fleet employees on the same page in understanding the mission and purpose of Fleet Maintenance. In addition, an operations manual should also be developed. This manual would contain a full explanation of fleet’s operation including organizational structure, services provided, employee listing, procedures, rates. It should also contain an introduction that clarifies fleet’s place in the city structure, why it exists and its purpose, which is not to be a “profit center.” It will be easy to take this recommendation lightly or to completely dismiss it, but to do so, would be to miss one of the most critical problems with fleet’s operation. The poor, and in some cases total lack of, communication either causes or compounds many of fleet’s problems.

Productivity

The way fleet calculates flat rate does not arrive at a “true” or net production rate. This is due to the inclusion of non flat rate time in the output hours. The non flat rate items (cleaning up the shop, repair work on shop items, retrieving parts or removing parts from salvage vehicles or equipment) should be subtracted from the input hours and then complete the calculation as outlined above. Ultimately production needs to be connected to pay with a connected production and pay structure that works in ranges and allows the employee to determine how much they will earn. Extensive assistance efforts would need to be provided in the way of training, continuous review of the production structure

elements (flat rate system), especially for the 12th Street Garage and in facilities design or operational practices to assist the mechanics in improving their production.

Once this program was put into place, new or modified benchmarks should be established with the aim of affecting job retention. If a mechanic could not achieve the minimum production levels, he/she would not be retained.

Pay Structure and Recruitment

MTAS recommends that the city revisit its salary plan on a 3 to 4 year basis and that it be upgraded annually to account for inflation. MTAS also recommends that the city rethink its policies regarding lateral entry. This recommendation is true for all functions of the city, not just fleet maintenance. As the city's work force continues to age and retirements occur, the city's need to recruit experience will continue to increase. Recruiting experienced and certified mechanics is possible if the city allows for lateral entries and thereby places recruits in the pay system, based on their experience and skill (certification) level, versus starting everyone at the entry level.

Training

Becoming fully staffed with all mechanics holding one or more ASE certifications should be an attainable goal for fleet maintenance. Working with untrained and uncertified mechanics is too costly. Develop an aggressive training schedule and establish certification goals. Training and certification should be mandatory. The current voluntary environment should be abandoned. If financial incentives will accelerate the full certification timetable, they should be considered and implemented. At some point Fleet maintenance should make certification either a condition of hiring or job retention.

In its 1992 study, MTAS raised the issue of whether or not the mechanics had the basic learning skills that would enable them to fully embrace the training being offered. If this is unknown, Fleet Maintenance should consider doing an assessment of basic

education skills before developing and aggressively pushing a training schedule. There are many alternatives for the mechanics to obtain these basic skills.

Charges for Labor, Parts and Fuel

The charges that fleet maintenance is using to cost out its operations appear to be doing a relatively good job. In fiscal year 2001, with a gross volume of business of \$8,187,340, fleet maintenance had a net income loss (after depreciation) of \$122,812 or one and one-half percent (1.5 %). Through February of fiscal year 2002, fleet shows a positive net income of \$24,519. An adjustment in labor rates may be part of the reason for this improvement. Rates will always have to be monitored and adjusted when the city is operating an Internal Service Fund. As stated in the finding, fleet maintenance rates should always be competitive. If fleet is as competitive as it appears, but the department is still losing money or is showing only a modest net income, then the focus should turn to the efficiency of the department's operations. MTAS did not do a detailed analysis, but the department's indirect salary and benefit cost is 43% of the department's total salary and benefit costs. Part of this indirect expense is management/supervision and support personnel (clerical and parts), but part of it also is tied back to production and non-chargeable work. Cleaning the shop, parts retrieval, and salvaging surplus parts is indirect costs, but so is labor that exceeds the flat rate schedule and presumably labor that is spent on legitimate returns (wasn't fixed the first time).

To address this concern MTAS first recommends that the department review its non-chargeable practices, i.e. shop cleaning, parts retrieval, and salvaging surplus parts and utilize the cheapest means of completing those tasks. Hire or designate a custodian and/or parts runner who is not a mechanic. Adhere to the recommendations regarding returns and establish penalties for the respective mechanics on legitimate returns. Secondly, MTAS recommends the department review the recommendations regarding production. Any mechanic that is producing at a rate of 40%, 50% or even 60% is not just costing fleet maintenance in its attempt to zero out its costs, but is costing the city in

its delivery of services. A private firm could not tolerate this level of production and survive. Why should it be tolerated by the taxpayer?

Electronic Management System

Electronic fleet management systems should be judged on functionality, technology, cost, service and vision for the future. The system should be easy to use; it should track and report on inventory, vehicle, use, maintenance, fuel consumption, repairs, parts and all associated costs. The system must provide management with information to maximize fleet use and control costs. Consideration should be given to compatibility with other city departments.

There are many different types of fleet software, with varying capabilities, on the market. Before deciding if different software should be purchased or if the current system should be upgraded, MTAS recommends that a needs assessment should be conducted by the city's information technology staff. Decide what information should be captured and how it will be used. Electronic management system decisions should be made after implementation of centralized management (if accepted).

The main goals of any fleet management system are to provide management information to: improve efficiency, decrease downtime and in-service breakdowns, reduce inventory, lower ownership cost and avoid waste. The software selected should provide detailed vehicle information such as: downtime, percentage of downtime, total miles traveled, cost/mile of fuel. It should be able to provide information on mechanics' efficiency and productivity. It should track parts inventory and have the capability to track/analyze direct and indirect labor costs. It should be linked to purchasing.

Cost Centers (PM, Repairs Sedans/Light Trucks, Repairs Fire Apparatus, Repairs Trucks/Equipment, Fabrication)

MTAS recommends developing cost centers for the various services fleet maintenance provides and/or for the various types of equipment it repairs. Special emphasis should be placed on capturing the cost for fire apparatus repairs and fabrication costs. The latter may need to be divided between true fabrication and body repair when damage due to an accident is involved. MTAS is not making this recommendation from a point of encouraging fleet maintenance to abandon any service it is currently providing, but rather to evaluate the true cost of the service versus the revenue it generates. In some instances, outsourcing a service might prove to be cost effective. In other instances, expanding fleet maintenance's service area might be advantageous. Fleet maintenance provides fire apparatus service to the county's volunteer units. This might be extended to some of the other cities within the area unless there are problems with liability insurance. Fleet does fabrication work (actual rebuilt) for the ambulance service. This also might be extended to other areas. Neither of these suggestions is offered with the idea of the city forcing its way into the private market, but rather as a means of providing a hard to obtain service to its neighbors. Adding workload in these specialized areas might enhance the cost efficiency of a service area and thereby impact its cost effectiveness.

Fleet Count

Even though MTAS is waiting on a determination on the principal recommendation of this study, before proceeding further on this part of the study, MTAS acknowledges that there are many issues regarding fleet count and the discrepancies in count and some of those were addressed in the principal recommendation. One issue that needs further clarification is the use of confiscated cars by the police department. Any car or piece of equipment that is used by city departments should be processed through the city's system as an asset. If improvements are made to a vehicle, it should be improvements to a city asset. No vehicle should be allowed to fuel, without a P number and no vehicle should be given a P number unless it is recorded by Purchasing or Finance as a fixed asset.

Furthermore, when the determination is made to surplus the vehicle its ownership and physical possession needs to be transferred to fleet maintenance.

CONCLUSION

While the City of Chattanooga's Fleet Maintenance Department is effectively servicing the city's fleet, neither Fleet Maintenance nor the other city departments are efficiently or effectively **managing** the city's fleet. The principal recommendation of this study is to expand the city's centralized fleet maintenance department to a centralized fleet management department. In addition to giving the fleet management department "ownership" of the city's fleet, it would also make that department **responsible** for streamlining the functions related to fleet management. MTAS believes that the fleet department should have the responsibility to determine fleet size, maximize fleet utilization, and acquire and dispose of the city's fleet as well as the responsibility to maintain and repair vehicles and equipment

The study also identifies many other findings and makes recommendations addressing each of those findings. Those recommendations are:

- Reduce returns and make the process less burdensome for user departments;
- Standardize specifications while meeting the needs of user departments;
- Make the disposal process more systematic and accountable;
- Make preventative maintenance a higher priority;
- Improve communication within the department and with user departments through a structured process;
- Improve mechanics' productivity;
- Improve pay structure and recruitment;
- Require training and certifications for mechanics;
- Improve effectiveness through improved monitoring of costs and improvements in productivity;

- Improve the department's electronic management system;
- Account for operational costs through establishing cost centers;
- Centralize fleet inventory and gain control of fleet records.