

## NASHVILLE ELECTRIC SERVICE FLEET MANAGEMENT

### **Introduction**

The Nashville Electric Service (NES) fleet management and maintenance program currently employs thirty-two full time equivalent employees (FTEs). These individuals maintain 539 equipment items, ranging from sedans to heavy trucks.

Organizationally, NES fleet management and maintenance is part of the NES Department of Procurement and Administrative Services. The NES fleet management and maintenance facility is part of the NES central campus. Operations are housed in a separate garage to the rear of the administration building and at two other shop locations.

The NES budget for the 2001-2002 fiscal year related to fleet management and maintenance is slightly over \$3,000,000.

### **Executive Summary**

In general, we found the Nashville Electric Service fleet management program to be the best in the Metro Nashville Government. Management was responsive to and supportive of TCI's visit. The items listed below will be commented on in the body of the report.

### **More specifically:**

- The Fleet Manager is a thorough professional, as evidenced by his past presidency of a fleet managers group.
- The organization has a strategy, targets, and a tracking mechanism. Goals and job tasks are defined for all positions.
- NES has developed an innovative tire program that is providing significant savings and better service.
- TCI believes that an active preventative maintenance (PM) program is the key to good fleet management. NES maintains such a program.
- In spite of the pro-active PM program, maintenance of the fleet was inconsistent among the three shop locations. It is our judgment that the Donelson center does a more thorough job of maintaining their fleet. A detailed inspection of 21 vehicles revealed some safety and operating defects. TCI noted 49 operating defects and 5 safety defects. The vehicle condition at Donelson was better than the Central and West centers.

- TCI calculated several key measures or metrics. While overall results were satisfactory, the measures that track productivity show room for improvement. For example, TCI believes that an appropriate target for cost per vehicle would be \$4,500. NES is currently spending \$5,627 per equivalent maintenance unit.
- Overall, the performance of the parts area is satisfactory. On the other hand TCI's opinion is that this area is overstaffed. The reporting relationship of parts room personnel is shared between Procurement and Materials Management, but not Fleet Management. This contributes to the inefficiency.
- According to management, the shop foremen are tied to the computer doing too much data entry. Their time could be better utilized if those responsibilities were transferred to parts employees, who have available time.
- NES runs a motor pool for the use of staff personnel that do not have assigned vehicles. This pool is well organized and well used.
- Reports are prepared and posted in prominent locations. These reports track the goals of the organization. TCI recommends that only the key, "critical few" goals be tracked.
- NES has an aggressive and creative approach to fleet replacement. They are open to trying different vehicle life strategies, and making changes if the strategy does not work.
- NES fleet management and maintenance uses FLEETMAINT to process its work orders. This is a server-based system that interfaces with the NES mainframe systems. Solid progress has been made in developing management reports.

**Summary of Financial Implications:**

Listed below are some potential annual savings:

- Better utilization of parts personnel – ½ person saved .....\$25,000
- Reduction of administrative person .....\$40,000
- Gradual reduction of mechanic staff .....up to \$80,000

Management should strive to identify other cost savings through additional performance measures and improved parts management.

## 1.1 Overview of Nashville Electric Service Fleet Management

As previously mentioned, the NES fleet management and maintenance group is headquartered behind the main NES administration building. This facility supports the Central operating center. Two garages are located at the other NES operating centers – West and Donelson.

The space used for repair operations at the Central center consists of 8,000 square feet. This area includes 10 bays and overhead doors. The adjacent building contains space for offices, parts storage, a training room, lockers, overflow repair bays, and a paint bay. The West and Donelson centers have one to two bay facilities.

NES fleet management and maintenance operates five days per week. Maintenance operations commence at 6:00am and end at 12:00pm. These hours are designed to allow maintenance to take place while certain vehicles are not operating. This is helpful from the users' standpoint.

The fleet inventory totals 539, and the median age for equipment is 1997. Assets range from a large light vehicle fleet to heavy trucks. Also included are 127 pieces of wheeled equipment, such as trailers, which have complicated attachments. Equipment inventory will be further discussed in **Section 1.7, Fleet Assets and Replacement**.

The equipment maintenance shop is currently staffed with 18 mechanics, four helpers and four working foremen.

## 1.2 Management Issues/Policies and Procedures

TCI finds that NES Fleet Management is well managed and had impressive programs to ensure good fleet utilization. We would consider this a management “Best Practice”. In addition the fleet has a low (less than 2%) downtime rating.

The Fleet Manager has a good grasp of the concepts of fleet management. The organization is goal driven, and results are measured in detail.

NES Fleet Management recently instituted a tire management program with a supplier. This program has shown excellent savings and a probable improvement in response time.

The organization is dedicated to managing the operation using a computerized information system. They are utilizing FLEETMAINT effectively. The NES fleet management group operates a motor pool for the use of NES staff. The pool of 30-35 cars is well run, and data is kept to ensure that the pool is well used.

NES Fleet Management is interested in continuing to improve their performance. They were open and ready to share both information and opportunities for improvement. As TCI pointed out areas for improvement, management responded quickly.

TCI queried NES management about the possibility of combining meter-reading functions with other utilities. NES management felt that they were going in the right direction of new technologies. These new technologies will eliminate the manual reading of a meter. NES indicated that they would be happy to work with other agencies on this type of technological solution.

NES fleet management is very active in targeting and measuring results. Information is prepared, tracked and shared within the organization. TCI applauds this practice, but believes that the reports and targets should be targeted to the most critical factors.

- (1) **Current Situation:** **Precision of Management Reporting, Goals and Targets**
- Finding:** NES Fleet Management has a good grasp on the goal setting and reporting process. TCI suggests that the list of goals should be prioritized and reduced.
- Recommendation:** Using this report, NES goals, and their experience, management should determine the critical areas for measurement. Some key measures captured by larger fleet operations include:
- Downtime:**  
The number of vehicles **out of service** at a given point in time divided by the number of vehicles in the fleet, expressed in percentage format. A goal would be 6-8%.

**Utilization (labor):**

The amount of direct, billable time recorded by service employees compared to the total amount of time available for work expressed in a percentage format. A reasonable target is 75%.

**Turn-around Time:**

The elapsed time beginning when a vehicle (or equivalent) is delivered to a maintenance facility for repairs or servicing and ending when the repairs or servicing is completed and the user is notified that repairs are completed (typically expressed as <8 hours; > 24 hours; 24 to 48 hours; and > 48 hours). TCI expects to see 70% of the repairs complete within 2 days.

**Repeats/Come-backs:**

Instances where repairs to vehicles, machinery or equipment were not made in a satisfactory manner, necessitating a second request for repairs for a similar labor code.

**Preventative Maintenance (PM) vs. Corrective Maintenance:**

The ratio of job orders for vehicles, machinery or Equipment that are written for scheduled maintenance as opposed to job orders that are written for corrective or unscheduled repairs, divided by the total repairs and expressed as a percentage. A percent in excess of 50% indicates that the PM program is effective and reducing unexpected and untimely breakdowns.

**Preventative Maintenance Compliance:**

The percentage of on-time arrivals for scheduled preventative maintenance (PM), expressed as within 3 days or 500 miles of the scheduled maintenance date or mileage interval.

**Cost Per Piece of Equipment:**

Annual department costs divided by the number of vehicles. A reasonable goal for the NES fleet would be \$4,500 per vehicle. This goal reflects the impact of the complexity of the NES equipment.

**Vehicles per Mechanic:**

The number of mechanics should be divided into total equipment. A reasonable goal for the NES fleet would be 33 vehicles per mechanic.

**Cost Implications:**

None. Systems are in place to provide this data. NES currently measures PM compliance very well. TCI recommends that measures be added for average cost per piece of equipment, as well as measures of PM and repair quality.

**1.3 Maintenance Metrics**

As mentioned in the previous section, a key element in responsive fleet management and maintenance is the use of management reports and metrics to measure performance. Over the years, TCI has developed certain metrics and standards that are useful benchmarks. It is useful to track these measures on a historical basis.

TCI examined the work orders contained in the FLEETMAINT system for the year to date. The fleet management staff is well versed in extracting the data from the system and its database. They were very supportive.

We obtained the following results.

In terms of **downtime**, the NES group performs very well. The system calculation is 2%. This is much better than the expected norm of 6-8%. In addition most of the PM's are performed overnight. This means that many of the vehicles undergoing preventative maintenance have zero downtime.

TCI's calculation for **utilization** of mechanics resulted in 66 percent. Time for the helpers or foremen was not included. Helpers, we are told, **do not** record time on mechanic work orders. NES should strive to increase utilization to a 75% level. In terms of **throughput**, the shop averages 27 work orders per day. There are 18 individuals performing full-time duties on a day-to-day basis, a ratio of less than two work orders per mechanic. Both of these measures indicate that labor utilization could be improved.

The NES maintenance group does not measure **turnaround**, or other measures of service time. All observations indicate that performance in this area would be excellent.

TCI did not find precise data to allow us to measure **repeat service calls**. This measure and other types of service history analysis would help detect parts unreliability and help detect parts warranty claims.

Our review of **preventative versus corrective maintenance** showed that 38% of the work orders generated were for preventative maintenance. TCI would expect to see at least 50% of maintenance effort directed towards the preventative side. As the quality of PM inspections improve, this percent should increase.

**Section 1.6, Financial Information** lists the costs for the maintenance function. The **cost per vehicle** calculation is shown in the following table. Note that units have been added to the 539 vehicles to give consideration to the other 120 on-board attachments maintained by NES.

**Table 1: NES Fleet Management  
Cost Per Vehicle Calculations**

<b>Budgeted Fleet Costs less fuel</b>	<b>Number of Vehicles and Attachments</b>	<b>Cost Per Unit</b>
\$3,033,000	539	\$5,627

In our opinion this cost is high. The fleet is relatively stable and conditions of operation are consistent. Over 50% of the equipment is light vehicles and trailers. TCI would set a short-term goal of \$4,500, and would expect this cost per unit to continue to drop.

The NES equipment inventory contains 539 items plus the 120 on-board attachments. This inventory is further defined in **Section 1.7, Fleet Assets and Replacement**.

The shop utilizes 18 individuals who perform mechanical functions on a full time basis. The staff also includes four helpers and four working foremen. The helpers spend very little time working directly on vehicles. The working foreman spend 25% of their time working directly on vehicles.

TCI considers the equipment item to mechanic ratio to be an important measure of productivity. Table 2 estimates a target for mechanic staffing at NES. The table yields a target for mechanics of 16. Once NES implements the recommendations of this report, the number of mechanics could be reduced through attrition.

**Table 2: NES Fleet Management  
NES Mechanic Staffing Estimate**

Type of Equipment	Number of Items	Ratio Items to Mechanics	Number of Mechanics Estimated
Light vehicles	260	70 to one	4
Trucks and cranes	152	16 to one	10
Other items	127	75 to one	2
<b>Total</b>	<b>539</b>	<b>33</b>	<b>16</b>

- (2) **Current Situation:** **No Measures of Repeat Service or Service History**
- Finding:** NES does not measure repeat repairs or review service history by type of repair.
- Recommendation:** Monitor service history and repeat repairs.
- Cost Implications:** No cost to implement. Systems are already in place. Savings will be obtained in the future from improved parts usage, reduced downtime, and warranty recovery.
- (3) **Current Situation:** **No Measures of Service Time or Throughput**
- Finding:** NES does not measure throughput.
- Recommendation:** Monitor and report shop throughput.
- Cost Implications:** No cost to implement. Systems are already in place.
- (4) **Current Situation:** **Potential Overstaffing**
- Finding:** Measures of cost, utilization and vehicles per mechanic indicate that NES Fleet Management is overstaffed.
- Recommendation:** Freeze all hiring. Evaluate workload of all administrative jobs. Free up shop foremen to spend more time on the garage floor.
- Cost Implications:** This will reduce cost. Each personnel reduction should save \$40,000 per year in salary and benefits. TCI believes that eventual annual savings in the administrative and shop floor areas could be approximately \$80,000.

#### 1.4 Information System

Timely and accurate management and maintenance information is an essential ingredient in successful fleet management and maintenance. Today's best fleet management and maintenance information packages provide barcode data entry on a real time basis and allow quick access to both current and historical data that is needed by technicians and management for proper decision-making.

NES is employing the FLEETMAINT software to monitor maintenance and to produce work orders. TCI has worked with this system before and has found it to be a reasonable alternative. The management and staff have done an excellent job of developing reports that augment the reports included in this package.

FLEETMAINT is a server-based system. NES operates most of its software in a mainframe environment. While there are interfaces between the systems, some duplication of data entry is required. This is most true between the parts system and FLEETMAINT. The NES systems groups are working on improving the interface.

As TCI builds the requirements for a Metro-wide system solution, NES needs should be considered so that NES could use the new software package if they choose.

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| <b>(5) Current Situation:</b> | <b>Systems Interface Improvements</b>   |
| <b>Finding:</b>               | Data entry must be duplicated when parts are issued. A systems project is underway to improve this. |
| <b>Recommendation:</b>        | Continue efforts to integrate existing systems.   |
| <b>Cost Implications:</b>     | None.   |

## 1.5 Inventory Management

The parts area in NES fleet maintenance is located adjacent to the garage area. The space, lighting, and shelving are appropriate for this parts function.

The NES parts organization that supports Fleet Management is unusual in terms of organization. The parts group serves fleet management but reports to two different organizations – Materials Management and Procurement. Both of these organizations use this parts room as a training ground.

The overall parts operation does not report typical performance measures to Fleet Management. Some of the measures calculated by TCI look favorable. For example, the inventory averages \$135,000, and consists of 950 items. This compares favorably to parts purchases of \$706,000, and indicates that inventory turns five times. TCI also calculated a parts fill rate, based on the information available. The fill rate was 80%, indicating that a part was available 80% of the time that a mechanic requested one. This is above average performance considering the mixed fleet.

On the other hand three employees are dedicated to the operation on a full time basis. The mixed reporting relationship creates some inefficiency from a labor standpoint. For example, the buyer located in the parts area only buys seven items per day. The stock keepers process less than three transactions per hour. Given the size and dollar values of the transactions, TCI suggests that these individuals could be given added duties. Greater labor utilization might occur if Fleet Management were to supervise this area.

In addition, this unusual reporting relationship has inherent inefficiencies and an associated lapse of control that defeats the purpose of assigning this work across three functions. Each involved department tends to work separately therefore losing any benefit that could be gained through streamlining the processes of part request, part dispensing, and part repair order posting.

Shop foremen dedicate much time (two-four hours per man per day) opening, posting, and processing repair work orders. Much of this work could be seamlessly incorporated into the parts room operation.

Contracts are often not utilized. In their place the buyer calls three authorized sources for prices. Again, this process may not be effective from a labor utilization standpoint.

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| <b>(6) Current Situation:</b> | <b>Parts Operation Inefficient</b>   |
| <b>Finding:</b>               | The current method of operating, while strong in some areas, is not efficient in terms of labor utilization.                                 |
| <b>Recommendation:</b>        | Review the process. Redesign the reporting relationships so that work can be shared. Consider some type of matrix organization if necessary. |
| <b>Cost Implications:</b>     | The opportunity exists to save at least ½ of a full time equivalent position.  |

NES maintains their own fuel network, providing fuel at all three centers. Because of their responsibilities as a power supplier, they are implementing the use of bio-diesel and ethanol as required by the federal government.

NES is in the process of installing the Petro-Vend system that automatically captures vehicle number and mileage. According to users, this has made the re-fueling process faster.

When salvaging vehicles and parts, the NES participates in the Tennessee Valley Authority (TVA) auction. The new on line salvage process used by Metro may provide a faster turnaround.

**(7) Current Situation: Use of TVA Salvage Process**

**Finding:** NES is currently using the TVA auction.

**Recommendation:** Investigate the Metro on line surplus property auction process. Consider moving the light equipment to this option as a starting point.

**Cost Implications:** This should improve cash flow and reduce salvage cost.

**1.6 Financial Information**

For the fiscal year ended June 30, 2001, NES Fleet Management had actual expenses of \$3,033,000. This does not include \$559,000 spent for fuel, and capital spending of \$3,130,000.

The annual budget includes components as follows:

- Labor Related Expenditures .....\$1,510,000
- Wrecker Service .....15,000
- Outside Repair .....758,000
- Automotive Parts.....706,000
- Other .....44,000

One significant impact on the last fiscal year's expense was a sharp increase in fuel costs. Annual fuel costs rose from \$380,000 to \$560,000, because of price increases.

## 1.7 Fleet Assets and Replacement

TCI reviewed the equipment inventory. Table three shows the age of the fleet:

**Table 3: NES Equipment Aging**

Type of Equipment	Number of Items	Median Age
Light vehicles	260	1997 (4)
Trucks and cranes	152	1995 (6)
Other items	127	1996 (5)
<b>Total</b>	<b>539</b>	

NES management has done an excellent job in fully utilizing their fleet. The very low downtime percent previously mentioned verifies this.

The practice of maintaining a manual log of unused equipment has been useful in keeping the fleet at an efficient level, and the timely preventative maintenance practices help keep the fleet operating.

NES is also to be commended for their continual evaluation of replacement thresholds. They continually try different approaches to replacement, based on actual repair experience.

## 1.8 Maintenance Operations

Management and supervision of this fleet are cognizant of accepted modern maintenance practices and procedures. Supervision demonstrated a hands on approach and also immediately addressed identified exceptions. Our recommendations and suggestions were properly discussed, challenged, and appreciated.

Supervision had not audited completed repairs frequently enough to hold mechanics accountable to the highest quality workmanship. Our mechanical audit results **surprised** supervision and management, but they initiated a series of **positive** action steps. TCI inspected 21 vehicles in conjunction with the shop supervisors. On the 21 vehicles, we observed 5 safety defects and 49 operating defects.

### **Preventative Maintenance**

Preventative maintenance schedules are well developed and in compliance. Preventative maintenance formats are custom designed for each vehicle type, and these formats are generally followed. Preventative maintenance quality and documentation are not good for all mechanics. TCI found too many inconsistencies between PM sheet documentation and actual vehicle audits.

Essential PM checkpoints have been ignored resulting in excessive road calls, jump-starts, and cost. Supervision held immediate mechanic training and instruction meetings with all mechanics as a result of these findings. Our sense of the situation was that those meetings were successful and timely. We firmly recommend that supervision schedule several preventative maintenance inspection audits per week to ensure quality compliance.

### **Vehicle Condition**

Vehicles maintained by each of the three garages were audited for safety, repair quality, and readiness. We identified many exceptions that should have been corrected on past inspections or recent driver pre-trip or post-trip inspections. Battery terminals are not properly serviced, we found oil leaks, drive belts are not changed timely and small repairs are allowed to become larger. TCI found one vehicle with a defective and leaking air brake hose. One vehicle was even shorting out, causing sparks to fly across a garage floor covered with oil and other fluid spills.

The situation can be quickly improved by combining mechanic accountability and driver training in recognizing and reporting defects. Several vehicles are dispatched with visible accident damage. We recommend that all accident repairs be completed prior to dispatch whenever possible. Detailed lists of vehicle defects were left with management, and the appended photographs illustrate examples of vehicle condition.

### **Replacement Parts and Supplies**

TCI learned that replacement parts quality was sometimes poor. We reviewed examples of successive repeat repairs due to premature parts failure. Repeat repairs are costly and severely interrupt field operations. Repeat labor costs are not recovered from the poor quality parts suppliers. We could not ascertain whether warranties were honored for actual parts cost.

Further questioning revealed that fleet management had not taken all necessary steps to remove various under performing vendors from the approved lists due to the paperwork involved. This is a result of the previously mentioned problem with the parts function organization.

The use of original (OEM) replacement parts would provide greater vehicle reliability. In the long run, costs would also be decreased. Parts purchasing must reflect the total costs of parts life and down time.

The nature and mission of the NES fleet is such that only the highest quality repair parts should be used. Anything less compromises the vehicle and brings associated safety and productivity concerns into the fleet operation.

We were advised that component outside repair costs are averaged. For example, if three radiators are repaired at an outside shop the total invoice is divided equally among the radiators regardless of each amount. This practice leads to inaccurate unit cost reporting. We also learned that vehicle batteries were expensed more than once if they were reissued after being recharged.

NES began outsourcing its tire service and replacement programs twenty months ago. An outside vendor is handling all tire problems. The program has provided significant cost reductions. NES estimates of the cost savings are shown below.

**Table 4: NES Tire Program  
Cost Savings  
December 1, 1999-August 8, 2001**

<b>Cost Item</b>	<b>Estimated Costs if NES Services Tires</b>	<b>Actual Costs with Tires Outsourced</b>	<b>Savings</b>
Labor	\$180,227	\$74,442 *	\$105,785
Vehicle	28,545	(Vendor supplies vehicle)	28,545
Tire Inventory	18,894	(Tire inventory sold to supplier)	18,894
<b>Total</b>	<b>\$227,666</b>	<b>\$74,442</b>	<b>\$153,224</b>

\* Actual vendor bills

The vehicle and inventory costs listed above are one time savings. Related ongoing savings could be determined by calculating the cost of capital savings, rather than just the capital costs of the vehicle and the tire inventory. Labor cost savings are recurring.

- (8) Current Situation: No Checking of PM Inspections**
- Finding:** The shop supervisor or working foremen do not review inspections on a regular basis. When TCI and the shop supervisor inspected vehicles, a number of defects were detected.
- Recommendation:** Develop a quality control program to check performance. Ensure that reasonable and valid sampling occurs.
- Cost Implications:** None.
- (9) Current Situation: Poor Parts Quality and Cost Tracking**
- Finding:** The emphasis on low bid cost causes NES to purchase poor quality parts. This in turn creates added repair costs and equipment failure. Costs are not correctly tracked and analyzed.
- Recommendation:** Mark and track replacement parts. Correctly quantify parts costs and labor related to parts replacement. Pursue all warranty opportunities. Delete poor quality vendors and parts from the list of vendors. Purchase OEM parts whenever possible.
- Cost Implications:** Although not readily quantifiable, this will eventually reduce repair and operating costs.
- (10) Current Situation: Vehicles Operating With Appearance and Repair Defects**
- Finding:** Vehicles are operating with obvious body damage. Operator inspection and checklist usage is not prevalent.
- Recommendation:** Stress operator responsibilities with user management. Review operator checklists and training.
- Cost Implications:** None.

- (11) Current Situation:** **Inconsistent Repair Quality Process**
- Finding:** While repair and PM work is generally good, performance is not consistent.
- Recommendation:** Free up shop foremen to do more inspection. Use the existing checklists for re-training and inspection. Have mechanics review the checklist to insure relevance and understanding. Set mechanic goals for PM quality performance.
- Cost Implications:** Should reduce costs by eliminating road calls and corrective repairs.
- (12) Current Situation:** **Working Foremen Too Involved in Entering Data**
- Finding:** NES working foremen spend several hours each day entering work order data.
- Recommendation:** The minimum entry requirements would be simply to initiate the work order. Other data could be entered by others on the staff. A project is underway to pass parts information from the materials system to FLEETMAINT. The importance of this improvement needs to be stressed.
- Cost Implications:** Costs should be reduced. The working foremen are probably the least efficient choice of positions to be entering this data. It is not in their core competency. Parts or administrative personnel should have better skills in data entry and fewer interruptions. If this results in reducing mechanic staff, the results will be significant.

## **1.9 Mechanic and User Feedback**

TCI held discussions with users of NES vehicles and shop mechanics. The users were generally satisfied with the fleet and the service provided by Fleet Management. Users were pleased with the recent outsourcing of tire repair, and believed that this was providing better service.

Since the preventative maintenance inspections generally take place at night, there were no barriers involved in providing vehicles for PM's as mentioned previously. The users also observed that the fueling system had speeded up dispensing significantly.

The user group was generally pleased with the age and condition of the fleet. They understood the reasons for a review of new equipment requests and had no problem with replacement planning. One user did suggest that he would like more input into the specifications for new equipment.

Our discussions with a sub set of the mechanics indicated a generally good level of satisfaction. The mechanics believe that their organization was improving each year. They were pleased by the recent improvements in the facility and in shop tools. Management had recently approved a tool allowance that was appreciated. The biggest complaint was parts management. They felt that the parts room should be under the control of fleet management, and felt that the current arrangement caused too much turnover of personnel.

The mechanics would be interested in ASE certifications, if NES would provide more financial recognition for the certifications. During our audit the garage was undergoing a vendor training session. This was well received by the group, but the mechanics would like more training.

**(13) Current Situation:**

**User and Staff Feedback**

**Finding:**

No organized process appeared to be in place to obtain feedback from staff or users.

**Recommendation:**

Develop some type of feedback process. Monthly meetings with staff and quarterly meetings with users are one possible solution. Key staff members should be involved in the user meetings.

**Cost Implications:**

None.

**(14) Current Situation:**

**Training for Mechanics**

**Finding:**

Mechanics appreciate the current training opportunities, but feel that more vendor training should be offered.

**Recommendation:**

Allocate 40 hours per year to mechanic training. Develop a formal plan. Discuss plans with vendors and mechanics.

**Cost Implications:**

None.