

# Fleet Optimization Matrix – Executive Report



CITY OF WEST ALLIS – PUBLIC WORKS DEPARTMENT | AUGUST 2016



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Dear Dave,

Thank you for the opportunity to consult with you and your team as we explore opportunities to improve your transportation operations within the West Allis Department of Public Works (DPW). The purpose of this assessment process is to identify and target critical transportation functions for possible changes that can lead DPW toward excellence and optimum efficiency in your transportation functions. Since you are a governmental agency, profit is not an applicable consideration however the stewardship of how you use public funds certainly is. Although the unique nature of the DPW operations along with the variety of types of equipment and your past data tracking systems present limitations on optimizing your resources, we will identify inefficiencies that could represent substantial savings in both time and expense.

In general, our overall impression of your transportation functions within the DPW are that they were past needs that have simply evolved into certain functions/processes used to meet today's demands. There is no strategic planning or formal operating procedures that describe performance expectations or accountability. All of the mechanics interviewed took pride in being able to perform the job they were assigned and were all particularly proud of the fact that they could creatively solve and even fabricate equipment solutions in house to meet any and all challenges presented. Everyone was admirably focused short term on doing a good job to service the transportation needs of the other divisions with the DPW and is evident by interviews conducted of the other divisions. You have invested in excellent employees and I'm sure that this has allowed you to have the success you have had. Unfortunately, in this response there is very little attention given to cost or time. You are not operating at optimum efficiency. To do this we will look at several "out of the box" ideas on how you could improve.

In management, good decisions are based on good data. There is not good historical data. Vehicle repair and performance data is entered in the City's financial software, SunGard. The data analysis and reporting capabilities of this software, as currently implemented, are insufficient for proper fleet management, in our opinion. The available reports are not typically used other than for sporadic exception reporting. For the purposes of this assessment, we found the format was not in a usable or suitable format when first reviewed. The reports were very cumbersome to access, download and sort. For this assessment we sorted approximately 42,000 work orders in just the "parts and labor" file; all data extremes on both the low and high sides were purged to capture relevant historical vehicle performance and repair data. These reports were used for this assessment; however, they often did not agree with management's separate set of data and/or identify common historical trends which should be normally expected.

We did discover the current system's data entry process is very manually driven and concerns over the accuracy of the data became evident. Some of the larger discrepancies discovered in our analysis of the data records included:

- ▶ Unit 41: 43,266 miles in 2015 on only 76 gallons of fuel
- ▶ Unit 43: 128,764 miles in 2015 on only 350 gallons of fuel
- ▶ Unit 202: \$116,170 in part charges in 2015 with only 946 miles
- ▶ Unit 1860: \$4,559,999 in part charge in 2014

Based on the data provided no one had noticed these errors. Fortunately, they were obviously data entry errors and were removed from our analysis along with hundreds of other entries that were obviously unreliable. However, the fact that these errors were not discovered led us to believe that perhaps nobody is using these reports, thus the data in these reports. The result is someone is spending a significant amount of time entering this data which is not being utilized by DPW. This data entry energy needs to be redirected to a data base that can be used.

This is identified as one of the major opportunities for improvement during this assessment. **It is impossible to effectively manage without access to the accurate data.** Benchmarks typically useful to compare performance and even generate forecasts for capacity requirements were not as reliable.

In summary, current utilization of information systems is inadequate for productive and efficient fleet operation and maintenance due to the following:

1. Information is entered in numerous locations
2. Information entry seems sporadic
3. Numerous data entry errors were found indicating the data is not being reviewed
4. Scope of data entry is limited
5. The ability to pull useful information retrieval from what is entered is poor

There is widespread belief among interviewees that the capabilities of the current system to support the Fleet Division is inadequate and the internal support to implement a dedicated fleet management system would be lacking. However, it is unclear whether the information gaps could be addressed by greater utilization of capabilities of the current system or if a totally new fleet management software is necessary. Both the SunGard vendor along with the West Allis IT department have the capability to write custom reports for data extraction.

There are several maintenance software programs that can be purchased or a specific IT development effort could be initiated to create the necessary reports. An internal suggestion was an “Enterprise Asset Management Software” program called AssetWorks. This program is designed for a fleet such as West Allis’ with many different types of specialty equipment and includes program features geared toward governmental agencies. Other fleet management software systems include Dossier Systems and TMW, both commonly used in the commercial transportation arena. Both of these vendors also include some type of specialization for governmental or recycling/refuse entities. One commonality Schenck has discovered with governmental agencies with their own fleet divisions are they typically have insufficient maintenance software mainly due to cost and budget constraints. The decision process with the implementation of a new fleet management software system would be:

1. Identify your needs and wants
2. Integrate software with other current systems
3. RFP for the cost and choose the best product within those parameters

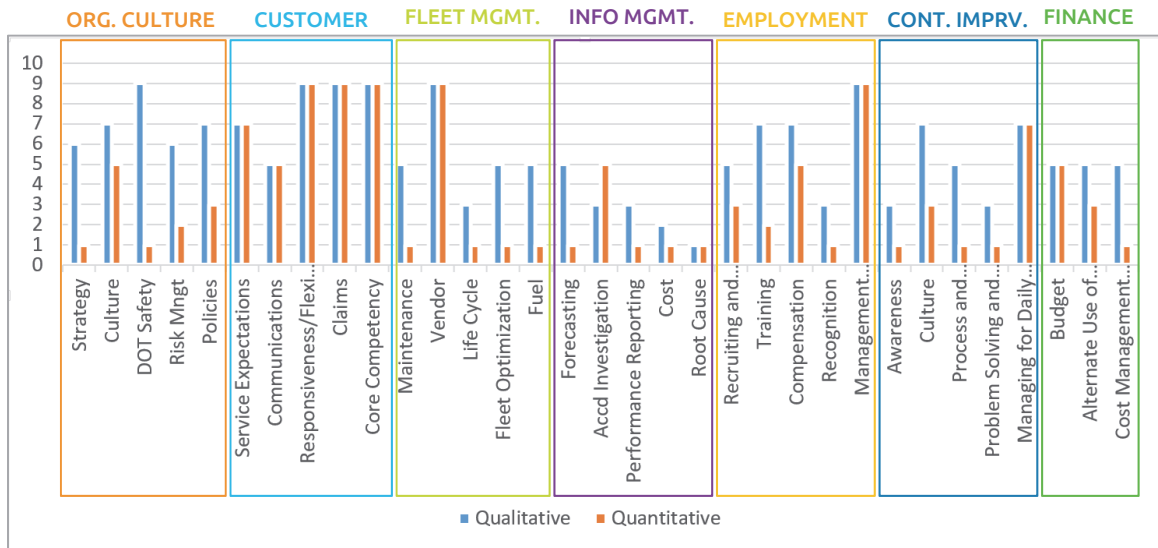
Please note, a lack of information systems acumen among Fleet Division staff would be a significant impediment to either improving utilization of the current system or implementing a new fleet management system. We recommend that a separate IT project be conducted to identify the key parameters necessary for a new fleet management software and or the time and effort necessary to complete an internal development on the current system.

During this assessment, DPW was evaluated in seven core operational areas we have called **foundations**. Within these foundations we then assessed specific **attributes** that are critical to the support and or effectiveness of these foundations. The foundations and attributes are as follows:

Foundations	Attributes
<b>Organizational Culture</b>	<ul style="list-style-type: none"> <li>▶ Strategy</li> <li>▶ Culture</li> <li>▶ DOT Safety</li> <li>▶ Risk Management</li> <li>▶ Policies</li> </ul>
<b>Policies Customer Relations</b>	<ul style="list-style-type: none"> <li>▶ Service Expectations</li> <li>▶ Communications</li> <li>▶ Responsiveness/Flexibility</li> <li>▶ Claims</li> <li>▶ Core Competency</li> </ul>
<b>Fleet (Vehicle) Management</b>	<ul style="list-style-type: none"> <li>▶ Maintenance</li> <li>▶ Vendors</li> <li>▶ Life Cycle</li> <li>▶ Fleet Optimization (Utilization)</li> <li>▶ Fuel</li> </ul>
<b>Information Management</b>	<ul style="list-style-type: none"> <li>▶ Forecasting</li> <li>▶ Accident Investigation</li> <li>▶ Performance Reporting</li> <li>▶ Cost Management</li> <li>▶ Root Cause Support</li> </ul>
<b>Employment Management</b>	<ul style="list-style-type: none"> <li>▶ Recruiting and Retention</li> <li>▶ Training</li> <li>▶ Compensation</li> <li>▶ Rewards and Recognition</li> <li>▶ Management Interaction</li> </ul>
<b>Continuous Improvement</b>	<ul style="list-style-type: none"> <li>▶ Awareness</li> <li>▶ Culture</li> <li>▶ Process and Productivity Improvement</li> <li>▶ Problem Solving</li> <li>▶ Managing for Daily Improvement</li> </ul>
<b>Finance Management</b>	<ul style="list-style-type: none"> <li>▶ Budget</li> <li>▶ Alternate Use of Capital</li> <li>▶ Cost Management</li> </ul>

Each of these attributes were rated both qualitatively and quantitatively. You were asked to rate DPW on how you thought DPW was performing (qualitatively) on a scale of one to nine (one being not good and nine being world class). During the assessment we assigned a quantitative score based on the available data and observations made during the process. On the surface, we consider a significant difference between and qualitative and quantitative measures as the first indication of a potential opportunity for improvement. This allowed us to focus on these areas more quickly.

BELOW IS THE OVERALL SCORING:



ASSESSMENT OBSERVATIONS

Below is a brief summary of the issues we discovered during this assessment, some being more serious and costly than others. In the next section of this report we will dwell on the more significant and costly issues identified.

ORGANIZATIONAL CULTURE (FOUNDATION AVERAGE – QUALITATIVE = 7; QUANTITATIVE = 2.4)

Strategy	No stated strategy or vision other than to perform a good job
Culture	Relatively good employee culture but all verbal, not documented
DOT Safety	Minor accidents were high relative to national benchmarks ( <b>58 accidents per million miles versus an industry standard of 3.7 per million miles – 20 out of 28 were preventative</b> ). High risk area. CDL driver pre-employment drug testing did not meet the DOT standards.
Risk Management	Training was rare and not mandatory except for harassment classes. Mandatory OSHA training has not been done. Safety Committee reviewed all accident but occasionally (2 out of 14 accidents in 2015) ruled “no fault” on preventable accidents. Several drivers have experienced multiple accidents with no progressive discipline.
Policies	No written performance expectations in policies. No performance accountability or procedures training.

CUSTOMER RELATIONS (FOUNDATION AVERAGE – QUALITATIVE = 8.2; QUANTITATIVE = 8.2)

We agree with you on your perception of your level of service to the other city departments. Your service is exceptional! Your unwritten mission is to provide the best possible service at the most efficient use of city resources and funds. The only down side to your service is that it is done with little regard for efficiency other than to stay within the budget.

FLEET (VEHICLE) MGMT. (FOUNDATION AVERAGE – QUALITATIVE = 5.4; QUANTITATIVE = 2.6)

Maintenance	Cost per mile for trucks is over \$.80/mile overall. National transportation benchmarks are \$.10/mile. Even similar PTO equipped fleets will run as high as \$.49/mile. This is purely a high level indicator but it does indicate a potential problem. We will pursue this in detail later in
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this report. Admittedly this indicator has several unique circumstances that must be considered. Mechanic ASE certification is at 63% versus a national average of 50%. This is a huge factor when considering quality of work.

Vendors	The Fleet division rarely uses outside vendors and when they are used, a good partnership has been cultivated. Considering DPW's possible excess-capacity environment, vendors are not needed. In some cases outside vendors may be able to provide a positive ROI.
Life Cycle	There is no intentional life cycle plan. Life cycle planning is targeted at retiring vehicles after the cost of repairs exceeds the cost to replace them. This process is dependent upon good data and forecasting. Neither of which is feasible with the present capabilities. In theory, the targeted life cycle provides the ability to project required maintenance capacity and expenses. Presently this is done intuitively based on historical needs. This is a significant deficiency.
Fleet Optimization	Given DPW's unique equipment needs, their limited geographic range and the specialization requirements for many of their vehicles, traditional utilization benchmarks are not applicable. For example, it is not uncommon for vehicles similar to DPW's to run 50K-150K miles per year. The best utilized vehicles at DPW may run 9,000 miles with an average of only 3,800 miles per vehicle. Rather than use traditional benchmarks however, Fleet's own mileage records identify several vehicle which have minimal miles when compared to their own vehicles. Observations, interviews along data indicate these underutilized vehicles represent excess vehicles. We will pursue this later in the report. Even though there is insufficient data to prove, the fact Fleet was able to function for much of 2015 with being down two mechanics, little overtime, and little outsourcing indicates they also may have excess manpower.
Fuel	DPW's average MPG is 3.56. Given the combination of large and small vehicles, it is reasonable to expect a MPG in excess of 8 MPG fleet wide. This will be addressed later in this report.

**INFORMATION MANAGEMENT (FOUNDATION AVERAGE – QUALITATIVE = 2.8; QUANTITATIVE = 1.8)**

Organizational IT support for DPW is non-existent. This is a huge improvement opportunity. DPW will never be able to optimize until relevant vehicle data is collected and formatted into a usable format. Data from Finance for this assessment was not formatted to be usable unless it could be screened and sorted into pertinent fields.

**EMPLOYMENT MANAGEMENT (FOUNDATION AVERAGE – QUALITATIVE = 6.2; QUANTITATIVE = 4.0)**

Recruiting and Retention	Management has personally created a positive work environment which tends to minimize the effect of the opportunities listed in this foundation. Recent changes in retirement benefits (ACT 10) has reduced one of the most significant historical employee benefits.
Training	There is no active internal training programs for either skill or safety improvements. Mechanics have not been trained on performance expectations. Outside ASE certification is encouraged and supported.
Compensation	Pay is lower than experienced mechanic positions on the open job market. Unless this is corrected it will affect the ability to attract qualified mechanics in the future. Undoubtedly it was a factor in the difficulty in hiring your most recent mechanic position.
Rewards and Recognition	Other than a rarely used annual meeting recognition there is no formal rewards or even recognition for good performance.
Management Interaction	Good interaction and open door policy.

**CONTINUOUS IMPROVEMENT (FOUNDATION AVERAGE – QUALITATIVE = 3.8; QUANTITATIVE = 2.6)**

Awareness	Management has begun the process to get trained in LEAN practices. Implementation of any CI principles has not been initiated.
Culture	Nobody is aware of what is meant by continuous improvement.
Process & Productivity Improvement	Other than good work ethics, this is nonexistent.
Problem Solving	Everyone is very proud of their creative solutions but those are not a result of any CI effort or training. There are no systematic problem solving methods used.
Managing for Daily Improvement	Same as above. This attribute represents huge potential savings (>20%) and will be addressed later in this report.

**FINANCE MANAGEMENT (FOUNDATION AVERAGE – QUALITATIVE = 5; QUANTITATIVE = 3)**

Budget	DPW lives by a traditional budget which has little change from previous years (historical in nature). In-depth analysis into budget variances from year to year may or may not be reviewed due to data restrictions.
Alternate Use of Capital	There are no formal ROI justification done for new capital expenditure. All new equipment is based on requests from the departments it serves and budget allowance.
Cost Management	Even though the annual budget is met, the costs of doing business at DPW is substantially higher than would be normally expected.

As you can see, there are substantial improvement opportunities in six of the seven foundation topics but significant opportunities are available in the Organizational Culture, Fleet (Vehicle) Management, Information Management, Employment Management and Continuous Improvement foundations.

**OPPORTUNITIES IDENTIFIED WITH SIGNIFICANT POTENTIAL FOR IMPROVEMENTS:**

**1. SAFETY PROGRAMS**

- ▶ West Allis is not subject to the Federal Motor Carrier Safety Regulations except that all drivers of vehicles with a GVWR/GCWR of over 26,000 lbs. must have a valid current CDL license and must be subject to all of the DOT’s Alcohol and Drug Testing requirements.

After speaking to the city’s HR department, it was discovered that the required pre-employment testing done for all West Allis CDL drivers was a standard city employee testing procedure (10 panel) and **did not meet the DOT testing procedures as listed in CFR 40 & 382.301**. Ironically, the Aurora random testing program used in your department was administered and filed correctly. In the future, DOT pre-employment test procedures must be used for all CDL licensed drivers. Although the risk of enforcement by DOT is low, the possibility of a lawsuit is high if an incident were to take place. The result would be a plaintiff’s lawyer easily showing **your drivers were not qualified to drive**.

There were 28 accidents/incidents recorded for 2015 which when using the 481,947 miles driven by all divisions, translates to **58 accidents per million miles. National transportation benchmarks show that 3.7 accidents per million miles are normal**. Your accident rate is 156% higher than expected. Out of these 28 accidents, **eight of these drivers have had more than ten accidents during their career with the city including four whom have more than twenty**.



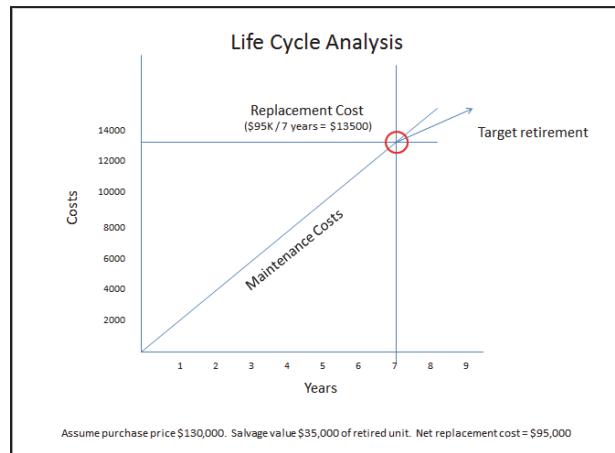
Your safety committee is reviewing all of these accidents and does appropriately counsel and suspend repeat offenders; however, progressive discipline is rarely moving past counseling and a suspension. A small accident is a large accident that did not quite happen. In industry, **several of these drivers would be disqualified as a driver unless they receive mandatory defensive driving training.** Usually those with more than three preventable accidents of any value in any three year period would be terminated. This is a serious safety risk. Drivers who are lacking sufficient skills to avoid minor accidents will not be prepared to avoid the large accident someday.

Incidentally, five accidents on or after 12/28/15 are still pending action by the safety committee. This is way too long to be effective in preventing a repeat accident. The other function of a safety committee in addition to the preventable determination is to conduct a root cause analysis and take prompt action to correct the cause of this accident before there is a repeat. There is no evidence of any root cause analysis or corrective action.

- ▶ Your workplace safety programs are also weak. There was only one mandatory training session in 2015 on harassment. One mechanic attended a fire extinguisher class but none of the other employees attended additional training. OSHA has over 40 mandatory training programs. Eleven of these have mandatory training, none of which were have been offered.
- ▶ There were a few policies which generally were “canned” templates designed simply to meet policy requirements. There are no performance or accountability expectations and progressive discipline was not described. A policy which is well written will function as the script from which work is conducted and the “conditions for employment.” If not followed, continued employment could be in jeopardy. Crisper productivity and accountability can be implemented with a rewrite and associated training on the new productivity standards.

## 2. VEHICLE MAINTENANCE AND UTILIZATION

- ▶ Vehicle maintenance and utilization is the foundation that has the most potential savings. If we applied a high maintenance, hard use, PTO operation’s performance to DPW’s 2015 results, the total maintenance cost would have been \$187,600 [481,000 miles @ \$.39/mi] compared to Fleet’s 2015 actual maintenance costs of \$380,908. Although it isn’t realistic that all of the difference could be saved, it represents **a potential savings of \$293,411 per year.** 2015 totals include 8,271 hours of labor and \$156,369 in parts. Your Class 7 trucks had 39% of your total part costs (Unit #1013 @ \$22K and Unit #1008 @ \$14K) but only has 15% of your total fleet vehicles.
- ▶ There is a significant difference between the mechanic hours available (2,000 hours / mechanic x 10 mechanics = 20,000 hours) versus the 8,271 hours which were recorded on your work orders (source of this data). **There are over 11,000 mechanic hours that are unaccounted in 2015.** 57% of your maintenance cost is for labor. If we use a high CPM projection of \$.50/mi for 2016 and projecting the miles and vehicles will be similar, we estimate your 2016 maintenance costs to be ≈ \$240,000. If 57% of this cost is for labor then your labor allocation would be 5,483 hours. This translates to 3 full time mechanics needed. If we include an additional full time mechanic for servicing the fire equipment (no data) and the present mechanic for the small engine repair, you will still have 5 extra mechanics on paper. During the initial interview process, we learned that due to a difficult hiring process, your mechanic staffing was short 1 full time person all of 2015 and you had another mechanic off for several months for workers comp. **Your service did not suffer!** Based on data in the “parts and labor” file, it appears that you have excess mechanics – **do not replace the recent retired mechanic and let attrition eliminate one additional mechanic slot. This will save \$150,000/year plus benefits and with good management you will not experience serious service failures.**
- ▶ The foundation for any maintenance program is a strategic life cycle plan. A vehicle’s life cycle is determined when the projected repair costs exceed the net replacement cost. Typically this is between 5-7 years (10-12 years for refuse). This is a delicate balance to optimize the salvage value while still preventing large repair expenses associated with keeping the vehicle too long.



The records for the historical parts and labor cost for vehicles at DPW did not follow the expected aging trends – the data produced were straight line graphs. Unreliable data and unusual demands for repairs more than likely explain the unusual cost trends. As a vehicle ages we expect to see incremental increases in repair costs. Rather than use the above life calculations, for this assessment we identified low utilization vehicles as excess equipment then selected high maintenance vehicles as retirement candidates regardless of age. Note, the average age of the trucks in the present West Allis fleet is 11 years (Class 8 refuse – 9 years; Class 8 – 14 years; Class 7 – 10 years; Class 4 – 10 years; Class 3 – 17 years; Class 2 pickups – 7.5 years; Class 1 cars/SUV – 7.6 years).

- ▶ The average nationwide annual mileage for refuse trucks is 25,000 miles being used 5 days a week @ 9-10 hours per day. DPW’s average miles per truck per year is only 4,225. This is only a 17% utilization rate using the national refuse average. **Conduct a utilization study to explore how to increase their utilization.** This might include consolidation of routes, more driver hours or extra shifts, less trucks, single driver operation, etc.
- ▶ The average life cycle for refuse trucks is 10-12 years with a 2-3 extra year flex to optimize salvage value. A purchase price of a refuse truck can easily exceed \$200K but will hold a high salvage value (maybe \$90K) after 10 years if the market can be found. In the DPW fleet:
  - Units 854 and 855 are both at 10 and 11 years respectively and Units 815, 813, 812, 811 and 810 are all long overdue.
    - Unit 855 is running at over \$4.97 per mile (\$1.37 is DPW’s refuse average) and should be retired.
    - Units 813 and 812 are both high cost vehicles at \$4.16/mi and \$6.67/mi respectively @ 996 and 994 miles per year.
    - All three of these trucks are used as spares or unintended use duty (i.e. picking up brush). **Units 855, 813 and 812 had 833, 996, and 944 miles in 2015 respectively. DPW cannot afford to have expensive specialty vehicle sitting idle. Sell them and NO DO NOT REPLACE THEM. These vehicles costed \$13,632 in 2015 – eliminate at least that expense.**
  - The average miles per truck for the Class 8 vehicles were only 1,910 miles for the whole year. Some of these vehicles are specialty vehicles that are necessary but cannot be used for much else. However when we consider that similar trucks in industry would be running 30-50K per year, this poor utilization is an indicator of excess trucks. Units 2831, 1496, 1030, 905 and 864 all had less than 1,000 miles @322, 448, 461, 637, 975 respectively. **If we retire Units 2120, 1853 and 864 we would eliminate half of the entire maintenance costs (\$43,232) for Class 8 vehicles in 2015. DO NOT REPLACE THEM.**
  - Class 7 average age of 10 years is comparable to expected lifecycle—maybe a little high. They are averaging 4,200 miles per year and averaged 3.2 mpg. They should be averaging 20-30K per year and have a mpg of between 5-12

mpg. The average repair cost for Class 7 vehicles was \$1.27 cpm versus norm of \$.08-.10/mi. Repair costs are excessive and fuel mileage is at least 4 mpg lower than expected. If repairs and mileage were normal for your fleet you would **save \$32K in fuel and over \$100K in repairs. Three vehicles exceeded \$3.00 per mile (Units 1008, 1013 and 2833) and should be replaced. Place idle limiters on all of these vehicles.**

- Class 4 vehicles are small light duty trucks (large pickups). They are averaging only 3,400 miles per year (national norm 20K) and their fuel mileage averages 8.9 mpg (national norm 7-12 mpg). Unit 214 ran 257 miles in 2015. Unit 207 is high maintenance at \$1.64 cpm. You spent \$6,500 on Unit 214 for only 257 miles (\$25/mi). **Retire Units 207 and 214 and DO NOT REPLACE THEM.**
- Class 3 vehicles are the oldest of your fleet at an average of 17 years and are averaging only 2,100 miles per year and 7.8 mpg. Units 1860, 220, 202, 200, 118, 110, 107, 101, 87, and 1 all averaged less than 800 miles for the year – Units 118, 107 and 101 averaged less than 300 miles. In 2015 you spent \$8,500 to maintain these vehicles for only 5,800 miles total. Obviously for this class vehicle, the repair costs are not as significant as the larger trucks therefore if you have a specialty vehicle that is rarely used it would be better to keep it than purchase a new one. **Retire and do not replace Units 1860, 220, 202, 200, 118, 110, 107, 101, 87 and 1 unless an ROI justifies keeping them.** Save \$8,500 per year in maintenance costs.
- Class 2 vehicles are averaging 4,100 miles per year and 8.62 mpg. These are small to medium duty pickups; they should be averaging up to 22 mpg. By improving the mpg on these vehicles even up to 17 mpg you would save \$15,000 per year. **Initiate a fuel savings program and place idle limiters on these vehicles. Get rid of Unit 44 and do not replace it.**
- Class 1 (cars and SUVs) are averaging 4,300 miles per year and only 15 mpg. You have two 13 year old vehicles **(Units 49 and 177) both of which are cost significant repair costs (\$3,263 and \$1,246 in 2015). Replace them.**
- ▶ In theory, once we identify a reasonable maintenance cost trend per vehicle, we can then forecast the need for maintenance and the necessary capacity to deliver the expected repairs. In addition, with reliable parts history per vehicle we could begin predictive maintenance by using a probability of failure factor. Spec'ing the vehicles to reduce component failure is a common practice but we need to know what parts are high frequency failures. Your present operating procedures and records do not allow you to be this progressive but this should be a reasonable goal for future years.
- ▶ In the maintenance business there are two Key Performance Indicators that help measure shop productivity – unscheduled work and vehicle down time.
  - Unscheduled maintenance is undesirable. If a truck is properly serviced during regular preventive maintenance intervals it should be rare that it will require repairs in between these intervals.
    - Fleet uses a PM intervals based on gallons of fuel purchased. (i.e. PM every 300 gallons for refuse trucks, 240 gallons for Class 8 large trucks, etc.). According by this schedule and the truck fuel purchases, Fleet should have performed 579 PMs during 2015. A standard PM should not take more than 3 hours and if we assume an average parts charge per PM at \$200, the total parts and labor cost of a PM would be approximately \$275 per PM [3 x \$25/hr. + 200]. At 579 PMs Fleet should have spent \$160K on PMs in 2015. The maintenance expense was \$383,305. When comparing projected to actual an extra \$223K in maintenance was spent.
    - Not all of the above \$223K was unplanned. The transportation industry averages \$.10 per mile for truck repairs. Hard use vehicles equipped with a power take-off (PTO) might run at \$.39/mi. At 481K miles the benchmark repairs using a hard use vehicle would be \$187K.
    - It is estimated that you are spending **\$50,000+ per year on undesirable unscheduled “quick fix” work.** This work that will interrupt a mechanic’s normal work. One mechanic interviewed estimated that he spends about 10-20% of his time on quick fixes. Another mechanic said he spends about 1.5 hours per day or about 20% of his time as well. If we assume that every mechanic spends 20% of his time on these unscheduled repairs, Fleet is wasting 3,600 hours per year [(2,000 x .20) x 9 mechanics]. This is not counting

the half hour lost each time a mechanic has to restart the original job. **At \$25 per hour this is a \$90,000 waste.**

- There were a large number of repair jobs in process at any given time. This was supported by interviewees as generally being the case. Reasons given included, waiting for parts and getting pulled off one job to take care of a “quick fix” job. Fleet’s average **downtime** on every vehicle repaired is **1.81 days** out of a sample of 2,100 work events (removing excessive downtimes from the average). An average downtime for vehicle repairs should be between 1-2 days. There were 383 vehicle with down time over two days and 168 vehicles down for over a week. All of the mechanics admitted that they often have 3-4 trucks in the process of repair. They stated that the two reasons for the downtime was the above “quick fixes” or **waiting for parts**. Long downtimes are usually waiting for parts. When we consider how expensive these vehicles are, the lost time of a broken down vehicle can be huge. In the transportation business it is estimated that it costs the carrier up to \$6,000 per day and some of your vehicles are more expensive than industry might have. Fleet does not have the lost revenue aspect but no doubt you have added extra vehicles to use during the wait time. In Lean terms, these high levels of Work in Process (WIP) are a red flag. For the Fleet Division, high WIP is a significant contributor to long repair in process times, as supported by the data, and poor flow as witnessed by interviewee’s desire for a larger work place. Interestingly, long repair in process times have not resulted in customer dissatisfaction, presumably because there is enough spare equipment to cover the customer Division’s needs.
- After talking to several mechanics, the parts issue seemed to be extreme. Interviewees reported having the right parts and supplies on hand for PM work, but repair parts inventory and procurement seems to be a factor contributing to long repair times and high levels of WIP. One interviewee reported it’s not uncommon for repair parts to be at a dealer 20 minutes away, but taking all day to get the part because it is collected on a once daily parts run.
- The parts room does not stock critical parts and the responsiveness to get parts is slow. Inventory control and management is a science now with modern parts tracking and bar coding. Your parts room is still working with systems used in the mid-1960s – it is in desperate need of an upgrade. **We recommend that an inventory project be initiated to upgrade the parts room and solve the extended down time for repairs.**
- ▶ Note that alternate fuels have proven to be applicable for city vehicles, even refuse vehicles. Natural gas vehicles will require a \$1-2M investment in a fueling station and the vehicles will cost an additional \$20K-\$30K per vehicle. However they may deliver a 40% reduction in fuel consumption. In your fleet that would save about \$86,000 per year. Assuming a \$2M increase in purchase prices and a \$2M fueling station. It would take a 46 year payback. The City of Milwaukee received a grant and has some NG vehicles in operation. Apparently the board was very involved. Although it cannot be cost justified it may be at least exploring with Milwaukee. Hybrid vehicles actually may have a better ROI.

### 3. INFORMATION MANAGEMENT

- ▶ As discussed on page one of this report, the major hurdle preventing the Fleet Division from optimizing your fleet in several areas (utilization, down time, parts inventory, PMs, fuel mileage and spec’ing) is the need for improved ability to utilize data to make decisions. There is widespread belief among interviewees that the capabilities of the current system to support the Fleet Division is inadequate, and there is support to implement a dedicated fleet management system. Management’s suggestion, **AssetWorks**, looks as good as any. It is unclear whether the information gaps could be addressed by greater utilization of capabilities of the current system. The current system vendor does have capability to write custom reports, and the West Allis IT department has capability to write reports as well. The challenge with any software program is to enter data correctly and to learn how to use all of its features that apply. In the assessor’s opinion, a lack of information systems acumen among Fleet Division staff would be a significant impediment to either improving utilization of the current system or implementing a new fleet management system. Improved data utilization enabling good management control could deliver analysis that could save Fleet 20%-30% of your total costs every year. **Based on your maintenance costs in 2015, a potential of \$100,000 per year in savings is available however it may require additional administrative support.**

Other fleet management software systems include Dossier Systems and TMW, both commonly used in the commercial transportation arena. Both of these vendors also include some type of specialization for governmental or recycling/refuse entities. The key with the a new fleet management software system would be figuring out the needs and wants of the system, integration of the software with other current systems along with the system cost and pick the best product in those parameters. **We recommend that a separate IT project be conducted to identify the key parameters necessary for a new fleet management software and or the time and effort necessary to complete an internal development on the current system.**

#### 4. EMPLOYEE MANAGEMENT

- ▶ Everyone appeared to thoroughly enjoy working for Fleet and recognized the value of their team relationships. With no turnover events in 2015, there is not much to critique. The only concern expressed by all of those interviewed was the affect that Act 10 had on their retirement.
- ▶ The most significant opportunity in employee management was the rarity of employee training. The only training that any of them could remember was a harassment class that was mandatory and not particularly enlightening. There has not been any internal performance related training. Performance was not tracked sufficiently to determine if there was a training need. However, all were encouraged to work on and receive their ASE certifications. Seven out of eleven mechanics are certified, which is a large percentage.
- ▶ Compensation was average when combined with better than average benefits received, resulting in a more than competitive overall compensation package. Mechanics are hard to find and it may be necessary to offer additional incentives such as a sign on bonus to attract top quality mechanics. Performance bonuses and some form of activity based pay tied directly to quality and productivity could raise take home pay to an attractive level with a Fleet payback in improved productivity.
- ▶ A glaring deficiency in your employee relations is the almost total disregard for any form of recognition or reward. Everyone appreciates personal recognition for a job well done or particularly an extra effort. None of those interviewed could recall the last time they were recognized by management. There is an annual opportunity to be recognized for a special effort but it is rarely used. This would be so easy and inexpensive and will always deliver a positive effect.

#### 5. CONTINUOUS IMPROVEMENT / OPERATIONS MANAGEMENT

##### Physical work space

- The physical work place is hindering productivity. Numerous interviewees expressed the desire for a “more modern” or “larger” facility. However, when questioned further about how a more modern facility would help them, none could state specific reasons. Most interviewees cited insufficient room to work, a lack of bays and issues moving equipment through the facility as the reasons for needing a larger facility.
- Traffic flow into the oil & lube area and maintenance bays is restricted, requiring operators to make sharp right angle turns with large vehicles. This requires moving vehicles around wasting time and breaking up work flow.
- In the assessor’s observations, a lack of work place organization is hindering productivity and raising potential safety concerns. There was an extremely high level of clutter present in most of the Fleet Division’s work areas. Division employees are accustomed to this, and don’t seem to see it as a hindrance.
- Numerous safety issues were observed, such as steel bars hanging out the back of a pickup truck into an aisle way, tripping hazards in work areas. Again, Division employees have adapted and have learned to look out for safety issues, as evidenced by a low incident rate. However, this may present a greater risk for new employees. Also, there was some indication that minor injuries not requiring immediate medical attention are not getting reported.
- Most work areas had unusually high levels of dust and dirt, as compared to other similar work places.
- Lighting was insufficient in some areas.
- There were some specific positive aspects of workplace organization present:

- Marked aisle ways in the truck bays
- Tire chocks to prevent loaders from parking in aisle way; chocks are brightly painted for visibility
- Tool boards present in some areas
- Color coded fluid containers; on a negative note, there was no color code chart present in the area
- No interviewees recognize lack of work place organization, cleanliness, or lighting as a detriment, even when specifically asked.
- In the assessor’s opinion, the lack of workplace organization, cleanliness, and safety concerns may be a detriment to hiring mechanics from private industry.

### Fabrication Area

- The fabrication area seems to be a particular source of pride for the Fleet Division. Fabrication employees are highly skilled, creative, and motivated workers.
- In terms of clutter, organization, potential safety concerns and poor material flow, the fabrication area is among the worst of the Fleet Division areas. Compared to most commercial fabrication shops, the workplace is extremely uncondusive to productivity. It is a testament to the resourcefulness and personal safety consciousness of fab area employees that they are able to function at all.
- Hindrances to productivity do not seem to be a concern, as there are no measures of productivity for the fabrication area, and workers in the area have adapted to the way it is.
- There is certainly not a lack of local commercial fabrication shops where this work could potentially be contracted. In the assessor’s opinion, there are distinct advantages to maintaining in-house fabrication capability, however that may not always be the best option. All fabrication jobs should be subjected to an ROI analysis.

### Fleet Tools

- There appeared to be three main locations for Fleet tools.
  1. The secure tool shop holds several lockers containing specialty tools used for specific tasks or specific vehicles. These are all stacked in their plastic containers without any sort of labeling or organization. There doesn’t appear to be an inventory list for this tool shop.
  2. The area reserved for larger tool equipment has no organization. Accessing a tool requires shifting, moving, and unstacking other items depending on where it is located within the area. A number of these items are covered in the filth of use, having not been cleaned before being returned to storage.
  3. The quantity of tools in the small engine shop seemed excessive given the number of equipment pieces that were being serviced during our observation. This was supported by the clutter and subsequent grime that was observed around and even concealing some of the tools.

### Metrics

- No operational metrics were observed or described by interviewees.
- Without relevant operational metrics in place, there is no objective way to judge the productivity and efficiency of an operation, and no incentives to improve it. It is analogous to playing a game without keeping score.

### Scheduling

- Shop Lead does all scheduling for the Fleet Division. He maintains a balance between PM’s and repair work. The Lead Man maintains the schedule in his head and with personal notes. No systematized scheduling tools are utilized (i.e. computerized scheduling system, Excel spreadsheet, visual scheduling boards).

## 6. FINANCE

- ▶ Similar to other governmental agencies or divisions of governmental agencies Fleet is strictly working off of a budget prepared using historical data with some minor, if any, inflation measures. Fleet is very resourceful at utilization of the resources and funds provided to them which was evident through interviewees’ comments and pride in their work. The

issue at hand is that the annual budget is prepared using this historical data which has no productivity measures in place to verify if the data is on par with industry norms. Based on the quantitative data collected in comparison with industry analysis and trends the total repairs and maintenance costs for Fleet are 20-30% higher than baseline. By using this data year after year in budget calculations the annual budget starts to become inflated until funds are pulled back from certain divisions.

The one root cause of this inflation of budget amounts stems from inefficiencies. An inefficient fleet management system impairs management's ability to manage the productivity of workers, predictive maintenance costs and with other measurements on real time basis to assist in leaning out actual expenses to meet budget. More use of a quality fleet management system will not only assist in the daily operations but also in the annual budget requirements.

Secondly, Fleet does not have a formalized return on investment calculation and standards when it comes to large capital improvements. This calculation would assist in providing details for additional budget funds or retaining allocated budget funds for capital expenditures which may necessary during the budgeting process. Again data to make these necessary calculations would be entered and tracked in an appropriate fleet management system.

Finally, looking over the annual budgets provided by management for the Fleet Division we are drawn to the line item "rentals." In our conversations we determined this amount was a charge back amount for the vehicles owned by the Fleet Division however used by the other divisions of DPW. This amount is added to the budget as a credit (expense offset) to the Fleet Division. The concern with this amount is how it is calculated. This amount is communicated to Fleet during the budget process but the question should be is it an accurate number. Normally in industry this rental amount is based on fair-market-value (FMV) rent of a similar piece of equipment if it was to be rented from a third-party. This FMV rent is based on type and age of the equipment rented. Based on this amount staying relatively consistent from year to year there seems to be minimal involvement in this calculation (no consideration to new equipment added etc.). There is an opportunity for the Fleet Division in obtaining this calculation or at least determine how the rental charge back is calculated to determine if this is a reasonable amount or if the other divisions are using the equipment on the Fleet Division's cost.

### RECOMMENDATION SUMMARY:

1. **Correct your pre-employment drug testing process** to immediately begin using the DOT's Part 382.301 and Part 40 procedures.
2. Establish strict accident performance standards and **conduct mandatory defensive driving training annually. Drivers with multiple accidents must be reassigned to non-driving positions.** Schedule ride-alongs in the progressive disciplinary process.
3. Implement effective OSHA compliance program including pertinent programs and mandatory training.
4. **Draft new policies and procedures which specifically list performance expectations as well as rewards and consequences. Train everyone on the "conditions for employment."** This will establish accountability and crispness in your management control process.
5. Develop and implement a plan to make better use of information to improve fleet management. This plan should include:
  - Identification of information gaps
  - Develop robust processes for collection and entry of data
  - Developing a deeper understanding of the capabilities of the current systems
  - Identify methods to improve data utilization using existing tools, i.e. Excel

- Investigate fleet management software as a potential replacement for existing systems
  - In the assessor’s opinion, to merely implement new software without a complete information plan would not result in improvements for the Division.
6. **Establish a life cycle plan and begin to catch up. Retire the 19 vehicles listed above and do not replace them. Replace the other 5 listed.** Purchase new vehicles specifically targeted with universal components and longevity. Install idle limiters on all vehicles as soon as possible to improve MPG.
  7. **Reduce unscheduled repairs to only “safety defects” or major breakdown situations.** Create a “quick fix” bay during times when drivers are coming and going to catch necessary repairs as needed. **Redesign the PM program into a time period rather than fuel consumption.** View an unscheduled repair as a PM failure. Place priority into the PM program and minimize having your mechanics interrupted.
  8. **Down time of vehicles in process of repair must be reduced. Conduct an inventory system assessment to establish a world class inventory control process.** There needs to be an urgency to deliver requested parts within a specific time period (i.e. if not in stock it will be found and delivered with 2 hours).
  9. **Increase your vehicle utilization!** Schedule drivers on staggered shifts to utilize equipment more effectively. Utilize underutilized but necessary equipment intentionally on alternate duty; keep the wheels rolling.
  10. **Reduce excess mechanic capacity by not replacing a fabrication slot and continue to let attrition eliminate one additional slot.** The recommendations in this study plus good management will reduce the need for maintenance accordingly.
  11. **Design an intentional recognition and reward program.** Ensure that a manger notices and personally thanks employees on good work and especially performance above the norm.
  12. **Focus on process improvements** designed to reduce out of service times for repairs, and reduce the number of jobs in process. Factors to improve may include:
    - Assessment of procurement and inventory management systems and processes
    - Analysis of critical spare parts
    - Scheduling methods
    - Implement metrics for time out of service
  13. **Assess the layout of the entire facility** to identify opportunities to improve flow.
  14. **Implement performance metrics** for the Fleet Division.
  15. Consider **flexing some mechanics work schedules** to enable some PM’s to be done in non-core hours.
  16. If the Fleet Department is to maintain in-house fabrication capabilities, it is strongly recommended that the **layout and organization of the Fab area be improved** to commercial standards. In the assessor’s opinion, this can be done within the existing facility.
  17. While the lack of **workplace organization** is a significant hindrance to productivity, the amount of time and effort necessary to make a significant improvement would be substantial.
  18. **Develop a more comprehensive Preventive Maintenance system**, including evaluation of critical spare part needs.
  19. Implement a **standardized return-on-investment (ROI) calculation** and metrics to assist in providing detail on necessary capital expenditures and why or why not they fall into the current budget cycle.
  20. Work with all other divisions/department necessary to **determine how the rental charge back is being calculated** and if the other divisions are being charged accordingly. Determine if the Fleet Division can take ownership of this annual calculation.



21. Use recommendations above to help **make the annual budget a future/predictive** looking process with efficiencies instead of historical in nature.

Your mission is to deliver excellent service to your departments as efficiently as possible. Repeating historical trends and procedures simply compounds past inefficiencies. Change can be difficult but very rewarding. For DPW, profitability is not a concern but good stewardship of city funds is. In business, waste is anything the customer is not willing to pay for. At DPW, the waste identified represents huge savings for the city. There is no doubt that it will require crisper performance expectations and standards followed by solid management control and accountability. We are proposing that DPW significantly change the way you are doing business and strive for creative out of the box solutions to historically wasteful practices. All of your employees are proud of their ingenuity. Apply that same zeal to a world class department and you all will be proud.

All of us at Schenck are excited to watch this process develop over the next few months.

Feel free to call or e-mail anytime if you have any questions or need help with solutions.

Sincerely,

Doug Bengson  
Manager – Operations Consulting

Jeff Simon, MBA  
Consultant

Paul Westberg, CPA  
Tax Manager



# Appendix

[WWW.AFDC.ENERGY.GOV/DATA/10310](http://WWW.AFDC.ENERGY.GOV/DATA/10310)

