

# County of Bucks

**GENERAL SERVICES DIVISION**

## **Vehicle Maintenance Report**

**Peter McElroy, Asset Manager  
July 11, 2011**



At the request of the Bucks County Board of Commissioners, this report provides a comprehensive overview of the county vehicle maintenance services provided by the Bucks County General Services Division.

Information and budgetary documentation contained within this report has been obtained through the Bucks County Finance Department in conjunction with records maintained by the General Services Division. Staff members from General Services and various other county departments have also contributed to this report.



## History of County Vehicle Maintenance

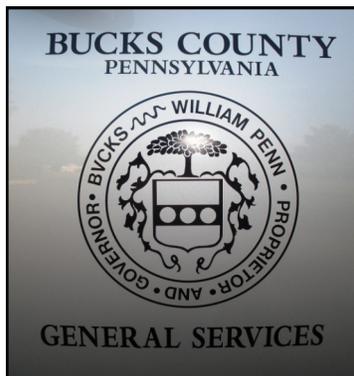
Prior to December of 2009, the County of Bucks utilized outside vendors to provide maintenance and repair services to the majority of the county fleet. With the exception of vehicles assigned to Public Works and Parks & Recreation, county departments relied on contracted maintenance facilities to keep all vehicles properly maintained. Public Works vehicles were maintained by “in-house” mechanics at separate facilities located at the county’s central warehouse and others at various county park locations as outlined below:

Location	No. of Mechanics	No. of Assigned Vehicles	Ratio of Mechanics to Vehicles
Peace Valley Park	1	5	1:5
Core Creek Park	1	8	1:8
Silver Lake Park	1	4	1:4
Tinicum Park	1	5	1:5
Central Warehouse	2	60	1:30

Aside from vehicles assigned to Public Works, the safety and reliability of over 140 county-owned vehicles from 19 separate departments rested solely with outside vendors.

Three (3) maintenance vendors were awarded contracts on a two (2) year basis to service county vehicles in the upper, middle and lower regions of the county. Contracted rates for specific vehicle services were maintained throughout the two-year term. These services included: oil changes, safety checks, state inspections, wheel alignments, tune-ups and other basic maintenance. Hourly labor rates were also contracted for repairs and services not specified in the contract.

Each county department managed their fleets individually and sent vehicles to their assigned service vendors at their own discretion. Specified services were performed on vehicles and billed to their respective departments by invoice. If requested, vendors would contact a department if additional repairs or services were needed. In some cases, departments would authorize vendors to perform any additional repairs or services they deemed warranted when a vehicle was in for service without initial notification.



## General Service's Vehicle Maintenance Initiative

A review of the operational efficiency and employee utilization at the county's satellite maintenance facilities, as well as an analysis of the individual department past practices for contracted maintenances led General Services to expand its capabilities and assume maintenance responsibilities for the entire county vehicle fleet at the end of 2009. General Services had major concerns related to the overall safety and reliability of vehicles maintained by out-of-house vendors. The maintenance initiative's goal was to cut costs, improve efficiency and better maintain the county's vehicle fleet without sacrificing services.



General Services Maintenance Facility at the Central Warehouse



G.S. mechanics Al Schmitt, Ed Mitchell & Rob Vespe with vehicles awaiting service at warehouse maintenance facility

In preparation for servicing the entire county fleet, General Services closed operations at its four (4) satellite maintenance facilities in the county's parks and relocated their limited equipment and personnel resources to the county's primary maintenance facility at the central warehouse. Without increasing staffing levels, the four (4) mechanics stationed at the satellite facilities were relocated to work alongside the two (2) mechanics already stationed at the warehouse facility. To maximize employee utilization, the six (6) mechanics were assigned to two shifts in order to accommodate vehicle service Monday through Friday, from 7:30 a.m. to 11:30 p.m.

The service capacity of the central warehouse maintenance facility was expanded, allowing the two shifts of mechanics to service the entire fleet. An additional service bay was renovated with in-house resources, bulk oil tanks were supplied free of charge by our oil vendors and a mobile maintenance vehicle was created to provide roadside assistance and to service grounds equipment on-location at the county's parks. In addition, fleet management software was purchased and implemented to coordinate scheduling and document vehicle service. Altogether, by effectively utilizing in-house labor and resources, General Services gained the capacity to service the entire county fleet for under \$18,000. The sale of a paintbooth and other items removed as part of the service by renovation offset the overall cost of the restructuring by over \$7,500.00.



G.S. mechanic Keith Kostick performs maintenance on a county tractor

On December 1, 2009, General Services put its maintenance initiative into action and assumed the responsibility for maintaining the entire 224-vehicle county fleet.



G.S. mechanics Kyle Rousset & Norm Blumberg perform a "safety inspection" on a county vehicle

## Maintenance Initiative Results



G.S. mechanic Rob Vespe completes an annual state inspection on a county vehicle

The advantages to centralized vehicle maintenance and fleet management were immediately evident after the implementation of General Service's Maintenance Initiative. The centrally coordinated approach by General Services has allowed for better oversight and maintenance of the fleet, while improving the services originally provided by the outside vendors.

Since General Services assumed responsibility for the entire fleet, countless repairs resulting from previous substandard maintenance were identified and resolved. Dozens of overdue oil changes and state inspections were rectified and many vehicles were found to have deficiencies that were previously undiagnosed by the county's out-of-house service vendors. In addition, the 1:37 mechanic to vehicle ratio produced by the restructuring insures a solid familiarity with the 224-vehicle fleet and will help maintain vehicle reliability.

Each fleet vehicle has been placed on a preventative maintenance program based on its type and specific use. On average, each vehicle is scheduled for preventative maintenance every 3-4 months and no vehicle goes longer than six (6) months without a checkup. In addition, each vehicle receives a complete "safety inspection" that inspects the entire vehicle for deficiencies whenever brought in for service. These safety inspections diagnose and rectify potential issues with vehicles before they become major problems. General Service's mechanics do not release vehicles back to their drivers until they are 100% road-worthy and trouble-free.



Vehicles from General Services, Corrections and Park Rangers at the Central Warehouse Maintenance Facility



G.S. mechanics Kyle Rousset & Keith Kostick perform routine maintenance on vehicles from the Department of Corrections

The addition of our mobile mechanic and maintenance vehicle has insured continued service for grounds equipment in the county's parks and has added the security of having an on-call service resource to respond to any vehicle problems in the field. The mobile mechanic has responded to numerous calls since its inception ranging from simple tire changes to on-site mechanical repairs, all while maintaining the hundreds of pieces of grounds equipment throughout the county. The convenience of this resource has not only helped keep our fleet on the road and prevented many costly towing services, but also prevented any negative impact on everyday park operations from the restructuring.

The county's ability to monitor and document each vehicle's maintenance history has also been greatly enhanced by the restructuring. General Service's mechanics can access any county vehicle's service history by using our fleet software system and make preparations for future service needs. All repairs and services are now electronically documented and stored for future reference. Maintenance is tracked and General Service's staff notifies departments when routine maintenance and annual state inspections are due for their assigned vehicles.

Employees from all county departments now have the ability to drop their county vehicles off for service at the county's Central Warehouse and utilize General Service's carshare program that operates from the same location. In conjunction with use from vehicle service, the carshare resource was utilized 794 times during 2010, compiling 69,331 miles driven. After fuel and related costs, the carshare program saved the county approximately **\$26,000.00** in mileage reimbursements during 2010.



Two of the various carshare vehicles available for use while vehicles from outside departments are being serviced



G.S. mechanic Ed Mitchell replaces front brakes on a Sheriff vehicle

The convenience of our revised maintenance procedures, in conjunction with timely repairs made by our maintenance team has garnered much praise from departments. Repeated compliments on quick turn-around times and the high level of service, especially from departments with large numbers of vehicles, have highlighted the benefits of the restructuring. As Sheriff Edward "Duke" Donnelly stated in a letter commending General Service's maintenance of Sheriff vehicles on April 28, 2011, "the turnaround time to get our vehicles back is unbelievable."

Along with improved service and convenience, the restructuring has allowed General Services the capability to service the entire fleet and hundreds of pieces of grounds and maintenance equipment at lower costs than have ever been spent before. High-quality, manufacturer-certified parts are delivered to our facility from local suppliers at wholesale costs and tires are purchased at state-contracted prices. Semi-synthetic motor oil, purchased in bulk at rates well below the price of the conventional oil used by the vendors, is now standard for every oil change.



G.S. mechanics Rob Vespe and Al Schmitt perform a tune-up on a General Services vehicle

Our resources have eliminated the excessive labor charges and costly service rates that departments have been accustomed to in the past. Departments are now charged only for the parts and materials used to service their vehicles. Costs for standard services such as oil changes, brake replacements, tune-ups and fluid exchanges have also been reduced. Across the board, the county's fleet is being better maintained at lower costs than ever before.



G.S. mechanic Al Schmitt writes an annual inspection certificate for a county vehicle

## Cost Analysis

In total, **918** vehicle services including **582** oil changes were completed by General Service’s mechanics during 2010. The services included all repairs along with routine maintenance including oil changes, annual state inspections and safety checks. The total cost of all these services, including parts, oil and accessories was **\$132,116.66**, or **\$36,083.34** under the 2010 fleet-wide maintenance budget.

Below you will find the departmental breakdown for vehicle maintenance costs for contracted vendors from 2007 to 2009 compared to the costs for services rendered through General Services “in-house” maintenance during 2010. General Service’s labor expenses during 2010, like those from 2007-2009 have not been included until an exact way to gauge labor expenses is developed. As shown in the chart below, vehicle maintenance expenses in 2010 decreased by a total of **\$43,074.06** from 2009.

### Vehicle Maintenance Costs by Year

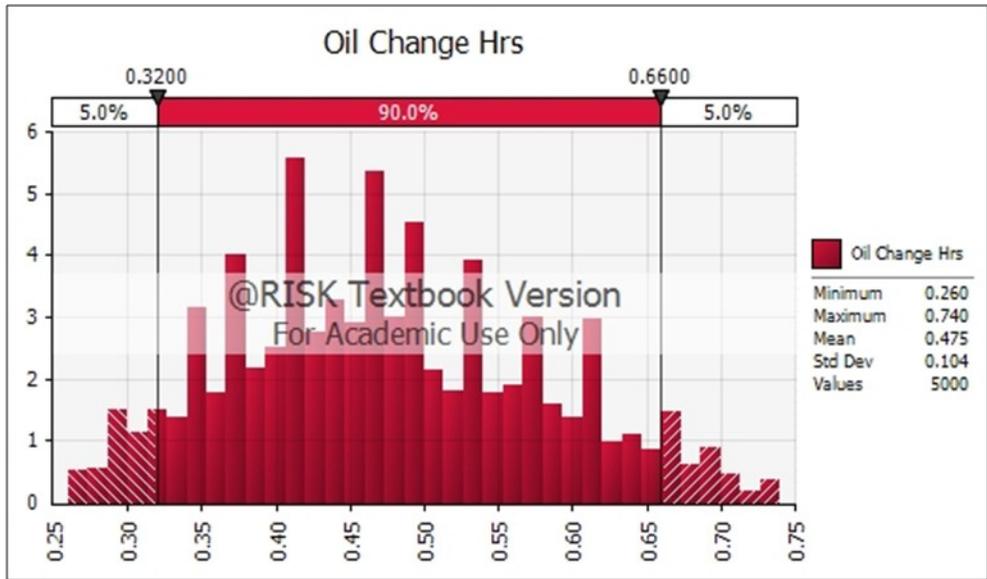
Department	2007	2008	2009	2010
Adult Probation	998.57	580.70	27.00	447.26
Area on Aging	163.72	0.00	13.49	155.29
Cons. Protection	124.64	830.85	2,430.93	1,786.80
Communications	5,349.95	2,299.72	4,060.68	1,668.26
Coroner	5,722.81	1,627.97	976.56	5,706.23
Corrections (Including Youth Center)	18,695.61	32,826.68	21,360.18	8,623.24
District Attorney	7,172.52	9,359.41	7,133.76	9,097.72
Domestic Relations	2,024.81	42.54	250.00	1,219.91
Emergency Mgt.	1,920.86	1,183.59	2,912.86	3,191.25
Emergency Health Services	160.00	311.87	125.00	33.44
Fire Marshall	3,025.79	2,842.84	4,255.41	2,278.33
Hazmat	1,650.99	2,482.81	2,452.46	1,848.34
Health	1,054.12	918.64	2,450.30	848.91
Juvenile Probation	1,207.33	5,574.11	7,029.29	7,770.30
Nesh. Manor	0.00	177.15	364.93	908.30
Security	9,587.84	11,704.00	4,638.68	3,348.11
Sheriff	42,252.41	38,362.80	48,682.50	15,653.96
Information Technology	522.78	399.46	0.00	0.00
Training Center	N/A	N/A	N/A	1,504.32
<b>Total</b>	<b>\$101,634.75</b>	<b>\$111,525.14</b>	<b>\$109,164.03</b>	<b>\$66,089.97*</b>

*Note: For the purposes of this report, costs from vehicles assigned to General Services are not included.*

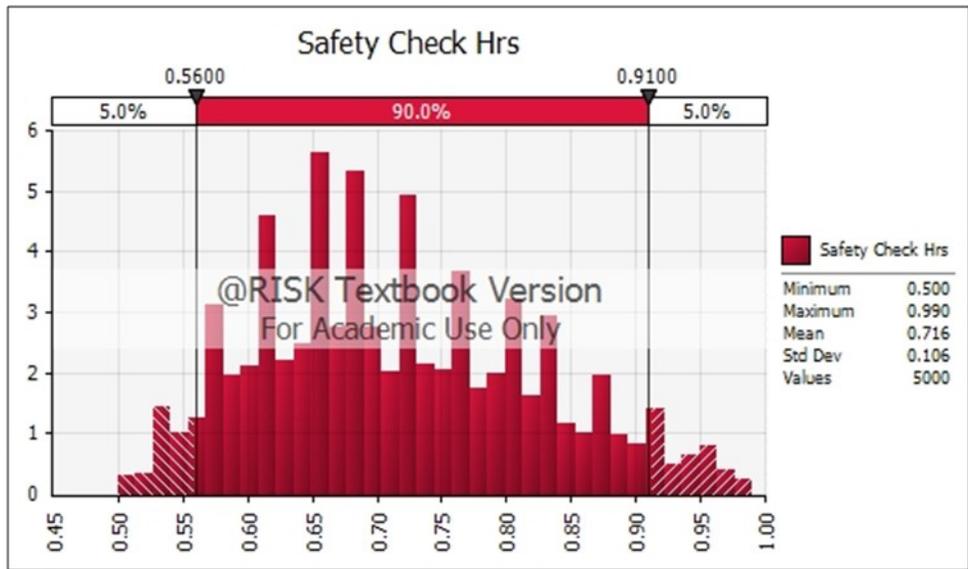
*\* Body shop repair costs resulting from accidents included.*

In addition, a review was conducted for the individual services completed on county vehicles by General Service’s mechanics during the first half of 2010. Estimated costs for the same services by the county’s maintenance vendors from the previous year were then produced and compared to costs from 2010. As shown by the spreadsheet entitled “Vehicle Maintenance Cost Comparison that is included with this report, the county would have incurred an additional **\$28,701.61**(est.) in maintenance costs during the first six (6) months of 2010 if contracted maintenance services were still utilized.

Using statistical simulation modeling for oil changes, safety checks and inspections we determined the following probability distributions over 5,000 oil changes and safety checks. The results were based on triangular distributions using a minimum oil change time of 15 minutes, a maximum oil change time of 45 minutes, with most oil changes taking 25 minutes, and a minimum safety check time of 30 minutes, a maximum safety check time of one hour, with most safety checks taking 40 minutes. The graphs below illustrate the results of the simulation model and also provide estimates of costs associated with the labor for oil changes and safety checks for the year based on salary and fringes of approximately \$79,900 per year.



There is a 90% probability that the time spent on oil changes falls within the 19.2 minute (.32 hrs) to 39.6 minute (.66 hrs) range. The mean time spent on oil changes is 28.5 minutes (.48 hrs).



There is a 90% probability that the time spent on safety checks falls within the 33.6 minute (.56 hrs) to 54.6 minute (.91 hrs) range. The mean time spent on oil changes is 43.0 minutes (.72 hrs). By applying an hourly labor cost for the County to the oil change and safety check times we are able to determine the following costs associated with each service.

	<b>Total Cost</b>	<b>Oil Change Hrs.</b>	<b>Safety Check Hrs.</b>	<b>Oil Labor \$</b>	<b>Safety Labor \$</b>
Minimum	\$29.19	0.26	0.50	\$9.99	\$19.21
Maximum	\$66.46	0.74	0.99	\$28.43	\$38.03
Average	\$45.76	0.48	0.72	\$18.25	\$27.51
StdDev	\$8.05	0.10	0.11	\$3.98	\$4.07
5th Percentile	\$33.80	0.32	0.56	\$12.29	\$21.51
95th Percentile	\$60.31	0.66	0.91	\$25.35	\$34.96

It is important to point out that the six mechanics that currently service all 224 County vehicles in the fleet were being paid during the 2007-2009 timeframe when all service for non-Public Works vehicles was being sent to outside vendors. For comparison purposes of service costs between outside service vendors and General Service's mechanics, we consider the salary cost for the mechanics a sunk cost for investment purposes. The salary costs were being incurred by the County in both scenarios. We have chosen not to include labor in our service cost analysis for this very purpose.

The conclusion of our cost analysis is that by centralizing vehicle maintenance and using in-house mechanics for servicing the entire fleet, the real cost savings to the County becomes the difference between what was previously paid to outside service vendors and the cost of the parts for existing county personnel to complete the vehicle service. Something that we have attempted to quantify for the purposes of this report but were unable to put a price tag on, is the convenience and dependability factor of having County personnel a phone call away to provide critical service to the entire fleet of vehicles and equipment to minimize any downtime that would normally arise from calling an outside company.

**Without the employees below, the success of our maintenance initiative would not be a reality.**

**Their hard work, dedication and commitment to service have set a new standard for county vehicle maintenance and have made our achievements during the past year possible.**

**Gerald Anderson**

Director of Operations

**Warren (Jay) McQuaid**

Operations Manager

**Norman Blumberg**

Lead Mechanic

**Kyle Rousset**

Mechanic

**Keith Kostick**

Mechanic

**Edward Mitchell**

Mechanic

**Albert Schmitt**

Mechanic

**Robert Vespe**

Mechanic