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CITY OF OXFORD
FLEET MANAGEMENT REVIEW

JULY 6, 2000

EXECUTIVE SUMMARY

Introduction

In an effort to optimize police fleet management efficiencies and reduce operating costs, City of Oxford management met with the Auditor of State's Office in October 1999 to discuss a performance review. The Auditor of State's Office was subsequently contracted to conduct a review of selected police fleet management issues.

The overall objectives of this review include assessing current fleet management policies and procedures and alternative policies and procedures to develop recommendations for improving fleet management operating efficiencies. The major areas evaluated in the review include fleet size, assignment of vehicles and vehicle maintenance. For purposes of this review, existing staffing levels and shift configurations were assumed to be acceptable and were not modified.

To assist in evaluating the City's operations, three cities, Athens, Bowling Green and Kent, were selected as peers because of comparable police department size and the proximity of a university of the approximate enrollment of Miami University. Additionally, other benchmark criteria or suggested procedures relating to police fleet management was researched. This additional information was assessed and is used in this report, where applicable, to assist in evaluating the City's operations or to support recommendations for improvement.

The following sections provide a summary of the results of this review and detailed information on the audit objectives, scope and methodology.

Summary of Project Results

Background

The Oxford Police Department (OPD or department) provides law enforcement services to the City of Oxford, whose population ranges from 8,000 to 22,500 when Miami University is in session. As of April 2000, OPD consisted of 41 total employees, 28 of which are sworn officers, plus four additional vacant part-time police officer positions. At this time, OPD operated with a fleet size of 30 total vehicles, which consisted of 17 marked vehicles, 5 unmarked vehicles and 8 other vehicles. The other vehicles include a motorcycle, pickup truck used for animal control activities and six special vehicles obtained through seizure/forfeiture which are used for surveillance duties and spare uses as needed. OPD operates three shifts for its police officers, with the second and third shifts overlapping for a six-hour period (9:00 p.m. to 3:00 a.m.), given the large concentration of bars, entertainment venues and off-campus housing located with the City of Oxford's boundaries and jurisdiction.

Take-Home Vehicle Policy

The City of Oxford implemented a take-home vehicle policy in 1997 for OPD vehicles. As of April 2000, all 15 sworn officers, who met the eligibility requirements, participated in the take-home vehicle program, representing a 100 percent participation rate. The broad eligibility criteria contained within OPD's existing policy currently extends take-home benefits to five officers that reside outside the City limits. The current fleet size allows for both single vehicle assignments for the 15 eligible officers and pool or shared use vehicle assignments for the remaining 13 police officers.

The department considers the implementation of the take-home policy an integral component of its Community Oriented Policing philosophy. Community oriented policing is intended, among other things, to enhance the visibility of marked police vehicles, enable rapid mobilization of officers in the event of an emergency, heighten the level of security felt by residents in those neighborhoods where vehicles are parked, lower maintenance costs and place responsibility and accountability for vehicles upon individual police officers. Although this program has been in place for several years, the department has not implemented procedures to track statistics to identify tangible or quantitative benefits or outcomes associated with the take-home vehicle program, such as arrests, citations, off-duty calls for assistance or accidents compared with the pool/shared use assignments.

Fleet Operations

OPD purchases new vehicles via State of Ohio Department of Administrative Services (DAS) contracts, which allows the department to procure model police vehicles at favorable rates. Local vendors are utilized to outfit and equip new vehicles at an additional cost. The department has basically followed a practice of purchasing three new police vehicles per year, subject to budgetary allocations, except for two recent years where funding was not allocated for new vehicles.

Current fleet replacement practice is not linked to specific replacement criteria such as age or miles, although the department's goal is to eventually achieve a maximum fleet age of eight years. The lapses in annual fleet replacement purchases, combined with the fleet size needed to fully implement and equip the existing take-home vehicle program, contribute to OPD's older fleet. The operation of an older fleet with high odometer mileage (10 vehicles in excess of 100,000 miles), has led OPD to experience higher annual maintenance expenditures.

The City of Oxford does not currently maintain and track comprehensive maintenance and operational costs in total or by police vehicle. As a result, some costs are available in City service garage records while other costs are recorded in the accounting system. Additionally, the City has not implemented procedures to track and analyze historical maintenance or operational costs for take-home vehicles compared with the pool/shared use assignments. Consequently, the data used to develop the analyses for the following scenarios were specifically compiled for this review from available City records and is limited to fiscal year 1999.

Fleet Management Options

In general, when managing public fleets, many professional fleet managers balance a wide range of qualitative and quantitative factors, including city policies, community desires, budgetary considerations, vehicle age, mileage, vehicle life-cycle costs (maintenance, operational and replacement costs and resale value) and manufacturer warranty coverage. As a result, one-size-fits-all fleet management models and practices do not readily exist.

Instead, an optimal fleet management plan requires a replacement schedule developed according to city-specific factors, combined with a proactive and consistent preventive maintenance program. The fleet management policy adopted by the governmental entity, which should address take-home versus pool/shared use vehicles, is a local decision that should be based upon a thorough evaluation of quantitative factors, such as fleet replacement and maintenance costs, and qualitative factors pertaining to service delivery.

The following table presents a comparative annualized life-cycle analysis of fleet management costs associated with the current situation and four selected fleet assignment options, all of which are based upon 1999 maintenance and operational costs. In addition, related one-time costs to update the existing police vehicle fleet to the optimal replacement schedule associated with each of the options presented are included. Scenarios 1 and 2 incorporate a vehicle take-home component while Scenarios 3 and 4 revolve around a pool/shared use vehicle structure. These scenarios represent viable and accepted options and were developed based upon discussions with professionals in the fleet management industry, as well as based upon consideration of the operational and financial condition specific to the City of Oxford. The methodology used for the life-cycle analysis represents a possible model the City could use to explore other variations of the scenarios presented in determining fleet management and assignment practices.

Summary of Comparative Analysis of Various Fleet Management Scenarios

	Current situation with eight-year replacement (no changes)	*Scenario 1* Existing Policy with five-year replacement	*Scenario 2* Revised Eligibility Policy with five-year replacement	*Scenario 3* Pooled with five-year replacement	*Scenario 4* Pooled with three-year replacement
Total number of cars needed for operations (1)	24	24	22	17	17
Proposed Reduction to Fleet	**0**	**0**	**2**	**7**	**7**
Number of cars that exceed age criteria in 1999	5	12	12	12	12
Number of cars that need to be replaced/purchased	5	12	10	5	10
One-time Conversion Cost	**$138,280**	**$331,872**	**$276,560**	**$138,280**	**$276,560**
Annualized Costs					
Maintenance	$33,170	$28,194	$34,381	$36,905	$30,393
Operating	$22,692	$22,692	$23,576	$23,596	$23,596
Annualized replacement/purchase	$82,968	$132,749	$121,686	$94,030	$156,717
Annualized resale revenue	($600)	($26,568)	($24,354)	($18,819)	($46,954)
Net Annualized Cost	**$138,230**	**$157,067**	**$155,289**	**$135,712**	**$163,752**

Note 1: The total number includes cars needed for daily routine operations. Of the 30 vehicles, the four seized vehicles used for special operations, the pickup truck and motorcycle are not included.

Conclusion

Public policy decisions regarding police fleet management to better guarantee the public safety of citizens are local decisions that are the responsibility of City Council. These policy decisions require the consideration of both quantitative and qualitative factors, as well as allowing for community input. Additionally, the selection of a fleet management strategy should take into account projected financial resources and the City's overall goals and objectives. Ideally, because the department has not implemented procedures to track statistics to identify tangible or quantitative benefits or outcomes associated with the take-home vehicle program, a more comprehensive external evaluation should be first conducted to determine if benefits are being realized and how well the policy achieves stated programmatic goals and objectives. This evaluation could supplement the results of the department's 1997 citizen survey by providing additional data on the impact of the policy. The results of this evaluation would assist Council in determining the appropriate policy for Oxford.

If City Council decides to continue with a vehicle assignment policy that supports a community oriented policing philosophy, the current situation under an eight-year replacement schedule is the most cost-effective. However, an eight-year replacement schedule would result in the oldest fleet

age among the options and would have the greatest exposure to long-term unpredictable costly component repairs that occur outside of the warranty coverage, as well as minimal resale potential. If resources are available to support other options, a maximum of a five-year replacement schedule is considered more desirable for public fleets than an eight-year schedule, according to professionals in the fleet management industry. Although somewhat more costly, scenario 2 (limited eligibility policy with adoption of a five-year replacement schedule versus the current eight-year schedule) represents a more preferred practice in the fleet management industry. This structure would require revising the existing vehicle take-home policy to restrict eligibility to only those officers residing within City boundaries.

If City Council decides to eliminate the vehicle take-home program and rely upon a pooled concept for police vehicle management and assignment, scenario 3 (pooled with a five-year replacement schedule) is the most cost-effective. Although the annualized costs are similar to the current situation, Scenario 3 allows for more predictable maintenance costs but implementation of scenario 3 would require elimination of the vehicle take-home program and loss of benefits associated with community oriented policing. The annualized costs of the current situation and scenario 3 are comparable, in part, because under the current structure, higher total purchase/replacement costs for a 24-vehicle fleet are spread out over eight years, while lower total purchase/replacement costs for a 17-vehicle fleet would be spread out over a five-year span.

The comparative annualized life-cycle analysis of the current situation and the four fleet assignment/replacement options presented are based upon fiscal year 1999 data specifically compiled for this review from available City records. The 1999 data reflects costs associated with a fleet that includes a significant number of vehicles with high odometer mileage. The City could reasonably expect lower annual expenditures than those assumed for this analysis with a newer fleet as it proceeds with upgrading to the desired fleet composition. The extent to which the City could expect to realize costs lower than those illustrated above will depend upon factors such as the vehicle assignment policy chosen, implementation of a dedicated preventive maintenance program, prevailing resale market conditions during fleet replacement periods, and potential modification of procedures associated with equipping new vehicles for patrol.

The following is a more detailed discussion of the current situation and four selected fleet assignment options. Additional information on these options, including a listing of pros and cons associated with these fleet management structures, is contained within the **Fleet Management Options** section of the following report as well as in the **Appendix**.

Current Situation

The current situation assumes the City would continue to operate under its existing vehicle assignment policy and would rely upon the present fleet size of 24 police vehicles for normal operations. The fleet size allows both single vehicle assignments for eligible officers and pool or

shared use vehicle assignments for the remaining police officers. There is the potential of a need for a larger fleet size in the future if additional existing or new hire officers meet eligibility criteria for a take-home vehicle.

The fleet composition under the current situation allows the City to provide community oriented policing benefits and has the lowest one-time fleet conversion costs to update the fleet to the department's existing eight-year replacement criteria. Additionally, the City would have the flexibility of rotating vehicles between the two assignment types, which would more evenly distribute miles driven to maximize the manufacturer's warranty coverage. As previously discussed above under the table, the net annualized cost to maintain this structure is comparable to Scenario 3, which represents a pool vehicle assignment with a five-year replacement schedule.

Scenarios 1 and 2 (Take-home combined with pool/shared use)

Scenario 1 mirrors the existing take-home policy and fleet size of 24 police vehicles but would operate under a five-year replacement schedule as opposed to eight years. Scenario 2 involves a policy revision which would limit eligibility to only those officers residing within City boundaries and would also operate under a five-year replacement schedule. The associated fleet size would be 22 police vehicles, a potential reduction of two vehicles. Both scenarios would allow for single vehicle assignments for eligible officers and pool or shared use vehicle assignments for the remaining police officers.

The five-year replacement schedule was chosen because a three to five year replacement schedule is considered more desirable for public fleets than an eight-year schedule, according to professionals in the fleet industry. With a newer fleet, maintenance costs can be better controlled and predicted and benefits can be realized from resale of the vehicles. Corresponding three-year replacement scenarios are not presented because, given the larger fleet size, capital costs to annually upgrade to and maintain such a fleet composition would be significantly higher than the other scenarios presented.

The scenario 1 structure would allow the City to provide community oriented policing benefits but has the highest one-time fleet conversion cost of the options. Scenario 2 would also allow the City to provide community oriented policing benefits but has the second highest one-time fleet conversion costs of the options. The net annualized cost to maintain either structure is comparable. As with the current situation analysis, the City would have the flexibility of rotating vehicles between the two assignment types to more evenly distribute miles driven. There is the potential of a need for a larger fleet size in the future if additional existing or new hire officers meet eligibility criteria for a take-home vehicle.

Scenarios 3 and 4 (Pool/shared use)

These scenarios eliminate the vehicle take-home program included in the prior alternatives and, instead, rely upon a pooled or shared concept for police vehicle management and assignment. The associated fleet size under both scenarios is an estimated 17 vehicles, a potential reduction of seven vehicles. The estimated fleet size of 17 vehicles accommodates expected maximum vehicle needs given current staffing levels to allow the department to provide optimal service levels. A potential may exist to incrementally reduce the fleet size, dependant upon changes in current operations.

Scenario 3 uses a five-year replacement schedule while scenario 4 uses a three-year replacement schedule. The replacement schedules were chosen because a three to five year replacement schedule is considered more desirable for public fleets than an eight-year schedule, according to professionals in the fleet industry. With a newer fleet, maintenance costs can be better controlled and predicted and benefits can be realized from resale of the vehicles. Given the expected higher annual miles driven under a pool structure, a three-year replacement schedule maximizes the manufacturer warranty with minimal additional costs by reducing exposure to costly component repairs that occur outside of the warranty coverage.

Under scenario 3, the City would experience the lowest one-time fleet conversion costs and the lowest estimated net annualized cost of the four options. Scenario 4 represents the youngest fleet with the potential for the highest resale value but has the second highest one-time fleet conversion costs because of the need to upgrade the current older fleet to a significantly newer fleet. In addition, the net annualized cost for scenario 4 is the highest of the four options, due to the significant capital needs associated with maintaining a newer fleet. Although a pool/shared use structure would result in the smallest fleet, there would be a loss in the degree of operational readiness and emergency mobilization and other benefits associated with a take-home vehicle program. Additionally, the City may need to address vehicle parking and storage issues.

Other Considerations

In the course of conducting the project, other opportunities for enhancing current policies and operations regarding fleet management and assignment at the City of Oxford were identified. One area revolves around management analysis of fleet operations. Currently, it is difficult to properly support vehicle assignment, rotation and replacement decisions due to the lack of comprehensive, reliable vehicle maintenance, operational and repair data. The City needs to implement a cost accounting methodology and associated procedures to help track and manage these types of costs in total and by individual vehicle. Comprehensive vehicle maintenance, operational and repair costs should be compiled annually, at a minimum, and used as a basis for calculating ratios such as cost per mile and cost per vehicle as well as identifying trends. This management information should then be used to make and support vehicle assignment, rotation and purchase/replacement decisions. The effective use of recently purchased fleet management software can facilitate these functions. This

software includes a fleet management system that appears to contain modules relating to vehicle repair, fuel and expense activity and work orders that can assist in efficiently tracking and compiling maintenance, operational and repair data.

Additionally, the City needs to ensure adequate resources (personnel and financial) are dedicated to implementing and maintaining the fleet management policy adopted and purchase/replacement strategy chosen. Lapses in consistently upgrading the fleet can result in an older-than-desired fleet composition, which will increase costs and negatively affect operational effectiveness. The diligent use of a well-designed preventive maintenance program is an integral component of keeping maintenance and repair costs to a minimum. The City should consider supplementing its existing preventive maintenance program by considering certain proactive measures used by other public service fleet managers, such as low cost engine oil analysis, to aid in early detection of major component failure and minimizing vehicle downtime.

Objectives and Scope

The overall objective of this project was to conduct a performance review of selected areas of operations relating to the management of the City of Oxford's police fleet. Specific objectives of this performance review include the following:

- Assess current fleet management policies and procedures
- Research alternative fleet management policies and procedures
- Identify opportunities for improving fleet management operating efficiencies

The major areas evaluated in the review include fleet size, assignment of vehicles and vehicle maintenance. For purposes of this review, existing staffing levels and shift configurations were assumed to be acceptable and were not modified.

Planning for the performance review began in October 1999. The actual performance review was conducted primarily during the months of January 2000 through April 2000. Draft reports were discussed with the staff and management of the City.

Methodology

To complete the performance review, the auditors gathered and assessed a significant amount of data pertaining to the City of Oxford, conducted interviews with various individuals within the City of Oxford and assessed information from the peer agencies as well as from professionals in the fleet management industry. The methodology is further explained below.

Use of previous studies, reports and other data sources

In evaluating the various performance review areas, the City of Oxford was asked to provide any previous studies or analyses already prepared on the subject areas. In addition to reviewing this information, the auditors spent a significant amount of time gathering and reviewing other pertinent documents or information. Examples of the studies, reports and other data sources which were reviewed include the following:

- City of Oxford policies and procedures
- City of Oxford financial reports
- Oxford police fleet vehicle maintenance, labor, fuel and insurance records
- Union contracts for Oxford police officers, sergeants and lieutenants
- City of Oxford internal report - "Fleet Management and Take Home Car Program Assessment"

- International Association of Chiefs of Police study - "Policing Oxford in the Twenty-First Century"
- National Association of Fleet Administrators (NAFA) "Fleet Focus" newsletters
- Law and Order Magazine
- Federal Bureau of Investigation Uniform Crime Report
- Ohio Department of Administrative Services (DAS) 2000 Law Enforcement Automobiles Term Contract
- Edmunds Vehicle Resale Guide
- United States Department of Justice Response Center

Interviews and Discussions

Numerous interviews and discussions were held at many levels and with groups of individuals involved internally and externally with the City. These interviews were invaluable in developing the overall understanding of the City's fleet management operations and in some cases, were useful sources in identifying concerns and in providing recommendations to address these concerns. Examples of the organizations and individuals that were interviewed and surveyed include the following:

- City of Oxford employees, including police department and city garage employees
- Representatives of peer city police departments (Athens, Kent and Bowling Green)
- The Ohio Department of Administrative Services (DAS), Ohio Department of Public Safety and State of Ohio Highway Patrol
- Representatives and members, National Association of Fleet Administrators (NAFA), Law Enforcement Group (LEG)
- General Motors, Specialty Vehicles Division and vehicle marketing consultants
- United States Department of Justice Response Center

Benchmark Comparisons with Other Agencies and Other Research

Three cities, Athens, Bowling Green and Kent, were selected as peers to the City of Oxford for this review. These cities were selected because of comparable police department size and the proximity of a university of the approximate enrollment of Miami University. Police fleet management policies and practices at these peer cities were evaluated to provide comparisons to the City of Oxford. The information was gathered primarily through interviews with peer city personnel and analyses of information provided by the peers.

Certain other research yielded benchmark criteria or suggested procedures relating to police fleet management. This additional information was assessed and is used in this report, where applicable, to assist in evaluating the City's operations or to support recommendations for improvement.

Police Fleet Management

Background

The Oxford Police Department (OPD) provides law enforcement services to the City of Oxford (City), comprising approximately 8,000 year round non-student residents and an additional 14,500 student residents (8,000 off-campus and 6,500 on-campus) during the months that Miami University is in session. The Oxford Police Department comprises 41 total employees, 28 of which are sworn officers (as of April 2000), and four additional vacant part-time police officer positions eligible for federal funding.

The department has crafted mission and vision statements and a set of values to help guide its strategic direction and purpose. The mission statement of the Oxford Police Department states:

> The Division of Police shall endeavor to promote a personalized, proactive partnership between police and the Oxford community to reduce fear and the incidence of crime, and to solve contemporary problems with the goal of improving the quality of life for all.

The vision statement of the Oxford Police Department states:

> Based on earned trust and confidence, coupled with the highest standards of professionalism and accountability, we envision a police division that totally embraces its values and is committed to working in partnership with our citizens to continually improve the quality of life in Oxford.

Oxford is an incorporated city of 5.7 square miles contained within 36.0 square miles of the unincorporated Township of Oxford. **Table 2-1** provides a general overview of the City of Oxford in comparison to peer police departments which also operate in similarly sized university town settings.

Table 2-1:
Total Square Mileage and Crime Rate Indexes of Peer Cities

City	Total Square Miles of City	Crime Rate Index of City [1]
Oxford	5.7	731
Athens	8.3	572
Bowling Green	9.4	1,110
Kent	8.7	1,050
Peer Averages	**8.0**	**866**

Source: City of Oxford Police Department, Athens Police Department, Bowling Green and Kent City Planning Departments (April 2000) and the Federal Bureau of Investigation (FBI) 1998 Uniform Crime Report (UCR).
Note: Peer averages include the City of Oxford Police Department.
[1] The Crime Index portrays the number of index crimes in a year per 100,000 people. Index crimes are categorized as the following: murder, non-negligent homicide, manslaughter, forcible rape, robbery, and aggravated assault, as well as the property crimes of burglary, larceny-theft, motor vehicle theft and arson. The crime rate is used to understand the effectiveness of the police. The UCR is compiled by police departments, voluntarily submitting the number of index crimes in the City for the year.

Other than the City of Oxford, Oxford Township also comprises the Village of College Corner whose size is less than one square mile. The Miami University geographic boundaries cross both the City of Oxford and the Village of College Corner. Both the Township and the University operate separate police departments.

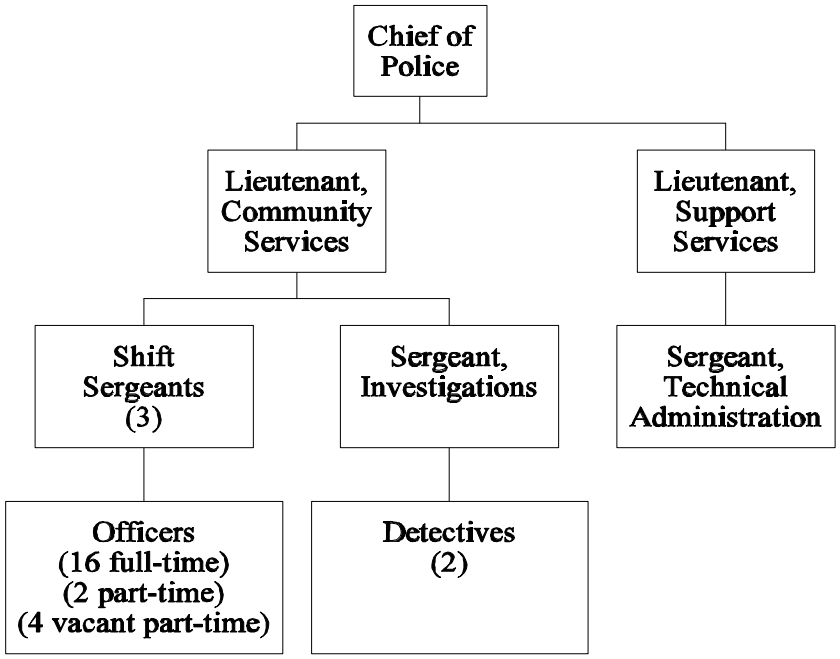
The City and the University each operate autonomous 24-hour police departments, each responsible for its own geographic jurisdiction. The Miami University Police Department comprises approximately 27 sworn police officers and 88 non-sworn civilian employees. Other than a mutual aid agreement allowing for mutual calls for assistance between the departments, there is no overlapping provision of service between the two departments.

The Oxford Township Police Department comprises four sworn officers - one police chief, one sergeant and two full-time police officers, and a few part-time police officers. Since the Township does not operate a 24-hour department, calls for service and investigations during un-staffed time periods are handled by the County Sheriff's department. However, as the Township relies on City dispatch services, historical practice and courtesy provide for the City of Oxford to dispatch its own officers to Township calls for service when Township officers are unavailable and it is determined that a County Sheriff officer cannot respond promptly. City of Oxford police officers basically perform a first-responder function and only remain on the scene until a county sheriff officer arrives. City of Oxford police officers do not provide any other public safety services for Township areas.

Organizational Chart

The chart below illustrates the organizational structure of the City of Oxford Police Department.

Chart 2-1: Police Department



Source: Oxford Police Department
Note 1: There are various civilian staff within the police department who perform public safety communications, parking and record-keeping functions. These civilian staff were excluded in the organizational chart and analyses within this review because they are not assigned vehicles.
Note 2: The organizational chart is as of April 2000.

Staffing

Table 2-2 below illustrates staffing levels by position for all sworn police officer positions for the Oxford Police Department and the peer police departments.

Table 2-2: Number of Sworn Officers Per Department

Title	Oxford	Athens	Bowling Green	Kent	Peer Averages
Chief	1	1	1	1	**1.0**
Deputy Chief	0	0	1	0	**0.3**
Captain	0	1	0	2	**0.8**
Lieutenant	2	6 [3]	3	5 [7]	**4.0**
Sergeant	5	0	6 [5]	4 [8]	**3.8**
Police Officers	18 [1]	16 [4]	30 [6]	22	**21.5**
Detective Bureau	2 [2]	3	3	6	**3.5**
Canine	0	2	0	3	**1.3**
Total Number of Sworn Officers	**28**	**29**	**44**	**43**	**36.0**

Source: City Police Departments (April 2000) and International Association of Chiefs of Police.
Note: Peer averages include the City of Oxford Police Department.
[1] Total includes 16 full-time police officers and two part-time (approximately 36 hours per week) police officers. One part-time police officer is designated as a School Response Officer (SRO) who is assigned to the Talawanda Middle School. The SRO performs basic patrol duties when school is not in session. The other part-time police officer is currently on personal leave. The department also identifies four additional vacant part-time police officer positions not included in the above totals, which are positions eligible for federal funding.
[2] Other than one permanent Sergeant assigned to the Investigative Section, two staff detective positions in this section are filled by police officers on a six-month rotating basis.
[3] Includes four Lieutenants that are assigned to supervisory patrol duties, one assigned to supervisory investigative duties and one administrative lieutenant.
[4] This includes 14 police officers assigned to patrol duties, one police officer assigned to Drug Abuse Resistance Education (D.A.R.E.) duties and one police officer assigned to court officer duties. Does not include part-time reserve patrol officers who may work eight to ten hours per week as needed.
[5] This includes five Sergeants that are assigned to supervisory patrol duties and one who is assigned to supervisory investigative duties.
[6] Includes 23 police officers assigned to basic patrol duties, three assigned to Community Services, one assigned to property room/court officer duties and one D.A.R.E. officer. Total also includes two law enforcement technicians assigned to primary duties of parking and animal control, each possessing limited police powers.
[7] Includes three Lieutenants that are assigned to supervisory patrol duties, one assigned to supervisory investigative duties and one administrative lieutenant.
[8] This includes three Sergeants assigned to supervisory patrol duties plus one who is assigned to supervisory investigative duties.

The Oxford Police Department's total of 28 sworn police officers is the lowest as compared to the peer average of 36 total sworn police officers, ranging from 29 total sworn officers at the Athens Police Department to 44 total sworn police officers at the Bowling Green Police Department. OPD's lower staffing level corresponds to the City of Oxford's smaller geographic area as compared with the peer cities as demonstrated previously in **Table 2-1**. **Table 2-3** provides a further analysis of OPD's geographic manpower coverage in comparison to its peer departments.

Table 2-3: Staffing Ratios and Figures

	Oxford	Athens	Bowling Green	Kent	Peer Averages
Total number of sworn officers [1]	28	29	44	43	36.0
Total square miles of City	5.7	8.3	9.4	8.7	8.0
Total number of sworn officers per square mile	4.9	3.5	4.7	4.9	4.5
Total City population (year-round and student)	22,500	23,000	28,500	27,000	25,250
Ratio of sworn officers to total City population (year-round and student population)	1 per 804	1 per 793	1 per 648	1 per 628	1 per 718
Total number of Police Officers [2]	18	18	30	25	22.8
Total number of Police Officers per square mile	3.2	2.2	3.2	2.9	2.8
Ratio of Police Officers to total population (year-round and student population)	1 per 1,250	1 per 1,278	1 per 950	1 per 1,080	1 per 1,139

Source: City Police Departments (April 2000) and International Association of Chiefs of Police.
Note: Peer averages include the City of Oxford Police Department. All peer cities include universities which maintain separate police departments for campus calls for service.
[1] Includes the positions of Police Chief, Deputy Chief, Captain, Lieutenant, Sergeant, Police Officer, Detective and Canine Patrol Officer as applicable.
[2] Includes police officers assigned to patrol duties, including canine officers. Does not include the positions of Police Chief, Deputy Chief, Captain, Lieutenant, Sergeant and Detective.

Although OPD operates the smallest police department compared with the peer police departments, OPD provides a higher percentage of sworn officers per square mile than the peer average in both categories, the total number of sworn officers and the number of police officers per square mile, but has the lowest ratio among the peers of officers per the total City population, which includes both year-round and student populations.

OPD's basic patrol police officers and their direct supervisors (three Sergeants), work four consecutive 10-hour shifts followed by three consecutive days off, while the remainder of the department works traditional shifts. OPD operates three shifts for its police officers, with the second and third shifts overlapping for six hours during the peak demand for service hours of 9:00 p.m. to 3:00 a.m. This allows for the highest staffing levels to respond to peak calls for service during the overlap hours, given the large concentration of student bars, entertainment venues and the large concentration of off-campus housing located within the City of Oxford's boundaries and jurisdiction. To meet the operational demands associated with a university setting, days off are assigned so that the optimal number of officers are on-duty during the peak demand days of Friday and Saturday. Athens and Kent also employ targeted manpower assignment methods directed at peak demand periods, while Bowling Green employs three equal size shifts.

Table 2-4 provides a comparison against the peers by fleet size and composition as well as by total staffing as previously shown in **Table 2-3**.

Table 2-4: Vehicle and Staffing Levels and Ratios

	Oxford	Athens	Bowling Green	Kent	Peer Average
Total number of sworn officers	28	29	44	43	**36.0**
Total Vehicles	30	16	28	26	**25.0**
Marked Vehicles	17	9	17	14	**14.3**
Unmarked Vehicles	5	6	6	12	**7.3**
Other Vehicles	8 [1]	1 [2]	5 [3]	0	**3.5**
Number of All Categories of Sworn Police Officers per Marked and Unmarked vehicles	1.3	1.9	1.9	1.7	**1.7**

Source: City Police Departments (April 2000) and International Association of Chiefs of Police**.**
Note: Peer averages include the City of Oxford Police Department.
[1] Other vehicles includes a motorcycle, a pickup truck and other special vehicles obtained through seizure by forfeiture which are used for surveillance duties and spare uses as needed.
[2] Includes a D.A.R.E. vehicle.
[3] Includes a prisoner transport vehicle, an animal control vehicle, a parking enforcement vehicle, a surveillance vehicle and a D.A.R.E. vehicle.

Oxford Police Department maintains the largest total fleet of 30 vehicles compared to the peer department average of 25 vehicles. OPD experiences the lowest ratio of sworn officers to marked and unmarked vehicles of 1.3 as compared with the peer average of 1.7 sworn officers per marked and unmarked vehicles. This is partly due to OPD's dedicated take-home program and wide range of eligibility criteria (see **Policies and Procedures** section). Additionally, as discussed in the subsequent **Policies and Procedures** section and shown in **Table 2-5**, while OPD is the only department among the peers which has implemented a dedicated take-home vehicle policy based on Community Oriented Policing philosophies, the peers' employ various practices permitting certain levels of take-home vehicle use. **Table 2-5** demonstrates that peers take-home usage ranges from four vehicles at Athens, 14 officers at Kent (only those officers assigned to duties that are subject to 24 hour call-in, no basic patrol officers), to 24 total officers at Bowling Green involving a variation of take-home use where one vehicle is shared between two officers (City residents).

Policies and Procedures

The City of Oxford Police Department implemented a take-home vehicle policy in 1997 for division vehicles subject to eligibility criteria. The policy was approved by the City manager and police chief as an acceptable practice for police fleet management. Under the take-home vehicle policy, eligible police officers are assigned a vehicle for 24-hour use. The department considers the implementation of a take-home vehicle policy an integral component of its Community Oriented Policing philosophy. The following excerpt from the department's 1997 Fleet Management and Take-Home Car Program Assessment report captures the desired philosophy and related outcomes:

> The benefits have been demonstrated here as elsewhere; as with any new program, how far reaching these benefits may be remains to be fully realized. It is not often that a city is able to provide a better service to its citizens and save money in the process. The increased police service available to the citizens of Oxford should continue as the Police Division enacts its Community Oriented Policing philosophy. Traditional policing allowed officers to come to work, perform the necessary duties and go home while remaining anonymous and detached from the people they served; community policing encourages and even demands that officers become a visible and integral part of their neighborhood and city. The take-home vehicle program promotes this relationship with the citizens and saves the taxpayers money; a true benefit indeed for all residents of Oxford.

The goals of the take-home vehicle program, as identified by the Oxford Police Department and outlined in its 1997 Fleet Management and Take-Home Car Program Assessment report, include the following:

- Increase the number of police vehicles available for response to crime scenes and other urgent calls without purchasing additional cars.
- Increase the visibility of marked police cars, providing crime deterrence and more frequent contact with the public.
- Increase the visibility of police officers within the City, thereby demonstrating the Division's ability to respond to calls when needed.
- Enhance the Division's ability to summon off-duty officers in cases of emergency and have them report directly to the site where they are needed.
- Enable prompt availability of equipment for rapid mobilization of officers in the event of an emergency.
- Provide improved maintenance and appearance of vehicles by placing that responsibility and accountability on individual officers.
- Increase life expectancy and lower maintenance costs for Division vehicles.

- Enhance the Division's implementation of Community Oriented Policing by increasing the visibility and availability of police cars in the neighborhoods.
- Heighten the level of security felt by residents of those neighborhoods where police cars are parked.

While the department has been proactive in implementing a new and innovative policing strategy such as the take-home vehicle component of its community oriented policing practices, the department has not implemented procedures to track statistics that could identify tangible or quantitative benefits or identify outcomes achieved for take-home policy officers, such as arrests, citations, off-duty calls for assistance, accidents or maintenance and operational costs compared with traditional pool assignments (See **Recommendations** section for suggestion for related outcome evaluation). However, the department did conduct a survey in 1997 to gauge community response to the take-home vehicle program. Survey results from 86 returned surveys of 172 (50 percent) issued surveys reported by the Oxford Police Department include the following responses:

- 78 percent - less likely chance of a burglary
- 77 percent - less likely chance of a theft
- 74 percent - less likely chance of a violent crime
- 73 percent - overall safer feeling of safety on the street

As of May 2000, all 15 police officers of the total 28 sworn police officer department, who are eligible according to existing criteria, participate in the take-home vehicle program. The criteria for take-home vehicle eligibility are specified in the following department policy:

> Take-Home status for Community Oriented Policing will be determined by the following criteria:
>
> - Any officer who has successfully completed the field training program and living within the City of Oxford (currently includes five police officers assigned to patrol duties).
> - Any officer who has successfully completed the field training program and living within Oxford Township (currently includes one police officer assigned to patrol duties and one part-time police office (works less than 40 hours per week) designated as the School Resource Officer (SRO) who is assigned to Talawanda Middle School when school is in session).
>
> Take-Home status for those officers designated as responders (investigators, crime scene technicians, canine - none currently, supervisors) will be determined by the following criteria:

- **!** Any officer assigned a marked vehicle and living within a five-mile radius of police headquarters (currently includes one lieutenant - City of Oxford resident, one sergeant - City of Oxford resident and one sergeant - Oxford Township resident).
- **!** Any officer assigned an unmarked vehicle and living within a ten-mile radius of police headquarters (currently includes the police chief - Oxford Township resident, one lieutenant - City of Oxford resident, two sergeants - City of Oxford residents and one police officer temporarily assigned to the detective unit - Hamilton resident).

Responders are identified as officers most likely to be frequently called in for service on a 24-hour basis.

As previously stated, the Oxford Police Department currently experiences a 100 percent participation rate in the take-home vehicle program with all 15 eligible police officers participating according to the criteria identified above. **Table 2-5** further categorizes the assignment of these 15 take-home vehicles as compared with the peer departments.

Table 2-5: Use of Vehicle Take-Home Policy and Practices

	Oxford	Athens [3]	Bowling Green [4]	Kent [5]
Total Number of Eligible Sworn Officers participating in program	15	4	24	14
Eligible Command and Supervisory Officers Participating in Program	7	1	4	4
Eligible Patrol Police Officers Participating in Program	7 [1]	3	19	3
Eligible Detectives participating in program	1 [2]	0	1	7

Source: City Police Departments (April 2000)

[1] Includes one part-time (less than 40 hours per week) police officer designated as a School Response Officer (SRO) who is assigned to the Talawanda Middle School. The SRO performs basic patrols duties when school is not in session.

[2] Two staff detective positions are filled by basic patrol police officers who are assigned to investigative duties on a six-month rotating basis. A police officer not eligible for a take-home vehicle while assigned to patrol duties may be eligible for a take-home vehicle while temporarily assigned to detective duties.

[3] The Athens Police Department does not have a take-home vehicle policy. According to practice, only the Police Chief, two canine officers and one D.A.R.E officer are assigned a vehicle.

[4] The Bowling Green Police Department does not have a take-home policy. According to practice, only the Commander of the Operations Bureau is assigned a single-use vehicle. However, the department utilizes a pooled fleet where two officers working separate shifts share one vehicle. Participating officers pick up and drop off the vehicle at their homes rather than at City parking lots. The vehicles can only be parked at the homes of those officers living within the City limits. Current participants include 19 (City residents) of 23 total police officers assigned to basic patrol duties (12 vehicles), 3 of 4 patrol sergeants (two vehicles) and 1 of 3 detectives(one vehicle).

[5] The Kent Police Department does not have a take-home vehicle policy. According to practice, only three canine officers, two administrative lieutenants and those police officers assigned to various duties in the detective unit (all are subject to 24-hour call-in) are assigned vehicles. These members of the detective unit comprise nine total officers - five investigators/detectives, one drug task force detective, one D.A.R.E. officer/detective, one Lieutenant and one Sergeant.

The Oxford Police Department is the only department among the peers to have adopted an official policy for take-home vehicles according to a generous range of eligibility criteria. However, data in **Table 2-5** demonstrates that the peers employ a range of practices for officers performing varied functions and/or according to residency limits. An overview of peer practices relating to take-home vehicle usage includes:

- In Athens, take-home practices are limited to the Police Chief, two canine officers and one D.A.R.E. officer, comprising four vehicles. A take-home policy or practice has not been implemented as there are no basic patrol officers currently residing within the Athens City limits.
- Bowling Green follows a practice where two officers working different shifts are assigned to one vehicle. Given limited City parking space, only officers residing within the City limits are permitted to pick up and drop-off their assigned vehicles at their homes. Officers residing outside the City can drive their personal vehicle to the City home of the other officer in order to exchange vehicles. Participation includes 19 of the total 23 police officers assigned to basic patrol (12 vehicles), 3 patrol sergeants (two vehicles), 1 detective (one vehicle) and the Commander of the Operations Bureau (one vehicle), comprising 16 total vehicles. Though designed to address City parking limitations, the program does provide similar benefits of community presence and crime deterrence as stated in Oxford's written policy.
- Kent provides take-home vehicles only to those officers assigned to duties subject to 24-hour call-in as follows: two administrative lieutenants, nine members of the detective bureau and three canine officers, comprising 14 total vehicles. A take-home policy has not been implemented since less than one-fourth of basic patrol officers reside within the City limits.

The department's ability to supply a vehicle for all eligible officers is the result of the department maintaining the necessary fleet size that allows single vehicle assignments for the 15 eligible officers and allows pool or shared use vehicle assignments for the remaining 13 police officers. Although the current fleet size supports 100 percent take-home program participation, the department identified its preferred ranking, prior to the current policy implementation, using the previously discussed eligibility criteria, in the event supply conditions dictated as follows:

- Any police officer assigned to responder duties (investigators, crime scene technicians, canine - none currently, supervisors) living within a five-mile radius of police headquarters is assigned a marked vehicle.
- Any police officer assigned to responder duties (investigators, crime scene technicians, canine - none currently, supervisors) living within a ten-mile radius of police headquarters is assigned an unmarked vehicle.
- Any police officer assigned to patrol duties who has successfully completed the field training program and living within the City of Oxford.
- Any police officer assigned to patrol duties who has successfully completed the field training program and living within Oxford Township.

Although never employed due to the existence of the necessary fleet size for eligible officers, this ranking places a higher priority on the previously discussed responder duties versus the Community Oriented Policing related assignments of basic patrol. The rankings and policies also appear to give

preference to some officers residing outside of the City of Oxford. OPD and the City of Oxford may need to review and revise the current prioritized policy rankings as necessary depending on future budgetary considerations, fleet condition and size or implementation of various alternative fleet utilization policy options discussed in the subsequent **Fleet Management Options** section.

Summary of Fleet Operations

Purchasing

The Oxford Police Department has followed a practice of purchasing three new police vehicles per year subject to City of Oxford budgetary allocations. However, funding was not provided for the traditional annual purchase of three vehicles in 1993 and 1998. Current fleet replacement practice is not linked to specific replacement criteria such as age or miles, although the department's goal is to eventually achieve a maximum fleet age of eight years as a result of lower mileage associated with the take-home vehicle policy combined with continued annual replacements of three vehicles. The lapses in annual fleet replacement purchases, combined with the resulting older fleet needed to fully implement and equip the existing take-home vehicle program, help contribute to the high average fleet maintenance costs identified in 1999 summary data presented in **Table 2-7**, summarized from the related detailed summaries in **Table 2-11** and **Table 2-12** located in the **Appendix** of this review. The department also supplements its marked and unmarked vehicle fleet with vehicles seized from forfeitures as a result of criminal prosecutions, which are used for special uses such as surveillance, some take-home assignments and spares.

The Oxford Police Department purchases new police vehicles via the State of Ohio, Department of Administrative Services (DAS) negotiated contract prices. OPD has delayed the anticipated order of Model Year 2000 vehicles until the completion of this review. Vehicle model year 2000 law enforcement vehicles currently available at favorable rates include the following:

Table 2-6: State of Ohio DAS Police Vehicle Purchase Options

Manufacturer/Model	Description	Manufacturer Standard Warranty	DAS Negotiated Contract Price
Ford Crown Victoria Police Interceptor	Full Size Police Special, Rear Drive, Four Door, Eight Cylinder	3 Years/ 36,000 Miles	$20,156
Chevrolet Impala	Full Size Police Special, Front Wheel Drive, Four Door, Six Cylinder	3 Years/ 36,000 Miles	$18,642
Dodge Intrepid	Full Size, Non-Pursuit, Front Wheel Drive, Four Door, Six Cylinder	3 Years/ 36,000 Miles; 5 Years/ 100,000 Anti-Corrosion	$18,544

Source: DAS Term Contract 2000 Law Enforcement Automobiles, Index No. GDC-50-E, Item 1, Item 2 and Item 3.

In addition to the DAS negotiated contract cost identified in **Table 2-6** above, the department also incurs a cost of approximately $7,500 per vehicle to prepare and properly equip a newly purchased

vehicle for service. Installation is performed by local vendors and consists of the following itemized costs as identified by the department:

- **!** Safety Systems (installation of light bar, strobe light package with shelf and partition, siren switch and controls, shotgun mount, cables, breakers) - $3,239.
- **!** Mobilcomm (radio equipment) - $1,180.
- **!** Mobilcomm (console and rear seat with barrier) - $2,893.
- **!** RandyMan Graphics (outside vinyl striping, numerics, etc.) - $135.

It should be noted that the above cost of approximately $7,500 is based on the installation of all new equipment. This cost could be considerably less if certain equipment is removed upon vehicle disposal or sale and refitted for use in other vehicles or sold in the marketplace. Potential savings or cost avoidance, depending on remaining useful life or market value, condition and maintenance, could involve above items such as light bars, strobe light packages, shotgun mounts, and radio equipment. Also, the potential adoption and implementation of alternative, shorter fleet replacement schedule options as discussed in **Table 2-8** and **Table 2-9** in the **Fleet Management Options** section, which would result in the maintenance of a newer fleet, could require the department to reassess the costs and benefits of installing the costly console and rear seat barrier system identified above. This basically consists of the removal of the manufacturer-installed rear seat equipment and replacing it with a self-contained rear seat module intended to facilitate safer transport of prisoners and allow for easier clean-up and de-contamination of the area. The avoidance of this cost, combined with the reuse or sale of existing equipment upon removal, could potentially offset annual vehicle fleet replacement costs (See the **Recommendations** section for additional discussion).

Vehicle Replacement and Maintenance

As discussed previously, the Oxford Police Department's current fleet replacement practice is not linked to specific replacement criteria such as age or miles, although the department has identified its goal to eventually achieve a maximum fleet vehicle age of eight years as a result of lower mileage associated with the take-home vehicle policy, dependent upon continued annual replacements of three vehicles (**Table 2-8**, **Table 2-9** and the **Recommendations** section containing a discussion of potential fleet replacement and management options). In the interim, the department has successfully identified enough vehicles to assign to all eligible take-home officers and all remaining shared vehicle officers, although this fleet presently includes five vehicles which exceed eight years of age and four additional vehicles currently at eight years of age. As a result of this higher fleet age, the department experiences higher overall maintenance and operational expenses as presented in **Table 2-7** in this section, summarized from more detailed fleet vehicle data presented in **Tables 2-11** and **Table 2-12** in the **Appendix** of this review.

In general, when determining fleet replacement criteria, many professional fleet managers balance a wide range of qualitative and quantitative factors including city policies, community desires and values, budgetary considerations, vehicle age, mileage, vehicle life-cycle costs (maintenance, operational and replacement costs and resale value) and manufacturer warranty coverage. As a result, a one-size-fits-all fleet replacement schedule model does not readily exist. Instead, an optimal fleet management plan requires the selection and implementation of a replacement schedule ranked according to city-specific factors, combined with the application of proactive and consistent fleet management skills. In light of these realities which are unique to public safety fleet management, mileage criteria generally followed by other public safety fleet managers for replacement decisions can range from 40,000 to 100,000 miles depending on funding; expected resale value and market conditions; and fleet age and condition expectations.

Many professional public safety fleet managers replace their fleets according to selected criteria which maximize the application of the manufacturer's warranty coverage period of 3 years/36,000 miles. This practice is centered on the goal of reducing exposure to unpredictable and costly non-warranty coverage component repairs, such as engine or transmission repairs, thereby effectively limiting maintenance and repairs only to those items not covered by warranty. These primarily consist of lower cost oil changes, tires and brake repairs. Fleet managers maximize the value of the manufacturer's 3 year/36,000 mile warranty by rotating vehicle assignment among officers as needed, based on criteria such as age, miles, maintenance expenditures and anticipated replacement schedules, as well as by ensuring the existence of an effective and proactive preventive maintenance program.

In addition to financial realities, public policy and community values, expected resale value often plays a key role in fleet management decision-making. The existence of a favorable resale value, combined with an effective preventive maintenance program, can contribute to a department's ability to operate a newer and overall lower cost fleet and can help offset future fleet replacement costs. Options commonly used by public safety fleet managers for police vehicle resale include the use of auto dealers for trade-in credit, auto brokers, auctions and/or direct sale to other police departments. Decision analysis relating to resale value and market conditions should also consider the general rule of thumb that public safety vehicles experience two sharp depreciation drops, once after the initial purchase and later near or after the psychological mileage plateau of 50,000 miles. As a result, professional fleet managers generally include the desire or expectation of resale value as a tool in fleet management and replacement decision-making.

Although the practices of the Ohio State Highway Patrol do not provide a concrete benchmark for fleet assignment and policy decisions relevant to the Oxford Police Department given disparate fleet use and mileage, its ongoing fleet disposal and replacement practices do provide a useful illustration of actual results realized by the application of consistent replacement criteria and its associated resale efforts. Ohio State Highway Patrol vehicles (also Ford Crown Victoria Police Interceptors) generally are replaced at three years and/or 80,000-90,000 miles. In its practice, the Highway Patrol assigns two specific vehicles to three officers (one officer per vehicle per shift), which allows for alternate

vehicle rotation aiding preventive maintenance scheduling between shifts without service disruption, and thereby extending vehicle life to three years according to anticipated high annual mileage. The Department of Administrative Services (DAS) auctions these vehicles throughout the year, but first makes the vehicles available to other public entities at 60 percent of the current blue book retail value. Recent examples of sale prices received for model year 1997 retired vehicles have ranged from $6,200-$6,500.

The preceding discussions regarding general fleet vehicle replacement decision-making should be considered while analyzing key fleet maintenance and operational data presented in the following discussion and related tables. **Table 2-7** presents OPD's key fleet maintenance and operating data, based on current policy and practices, specifically developed and compiled during this review from available 1999 data. Prior to proceeding with the analysis and review of data contained in **Table 2-7**, it should be noted that this data ideally would have been supplemented by additional years of historical fleet vehicle data. However, fleet management weaknesses pertaining to existing cost accounting methodology did not readily allow access to complete fleet maintenance and operational data. As a result, efforts during this review were directed toward the compilation of the best available data for the year 1999 to aid in meaningful analysis (See related suggestions for improvement in the **Recommendations** section of this review).

The City of Oxford does not currently maintain and track comprehensive maintenance costs in total or by police vehicle. For example, there is not one area where complete and comprehensive costs for police vehicle maintenance and repair can be obtained and analyzed. Part of this is due to the fact that all police vehicle work is not coordinated through the garage so work done by outside vendors is not captured by vehicle by the City service garage. Maintenance and repair costs for the work performed by the City service garage is manually tracked by police vehicle by the City service garage staff. However, the only costs tracked are direct labor and parts; benefits and administrative overhead are not tracked. Similarly, while various expenses related to police vehicle maintenance are recorded in the accounting system, total costs or costs by vehicle cannot be obtained from the accounting system. As a result, some costs associated with police vehicle maintenance and repairs are available in City service garage records while other costs are recorded in the accounting system. While the parts used for police vehicles are charged to the police department budget, the labor costs and overhead associated with the repair work performed by the City service garage mechanics are not currently charged back to the police department.

For purposes of analysis, **Table 2-7** includes direct labor and a 18 percent benefit factor; overhead and administrative costs were not included in the analysis due to their minimal nature. Costs for 1999 repairs obtained from the accounting system which could not be directly attributed to a specific vehicle were allocated across the entire fleet on a weighted basis. The **Recommendations** section of this review identifies potential improvements in cost accounting methodology which could help the City better track and manage its fleet maintenance and repair costs.

Table 2-7 represents a summary of individual fleet vehicle data found in **Table 2-11** and **Table 2-12** in the **Appendix** of this review.

Table 2-7: Summary of 1999 Police Fleet Maintenance & Operating Data

		Non Take-Home Assignments				
	Take-Home Vehicles	**Single Assignment Vehicles**	**Pool Vehicles**	**Total**	**Seized Vehicles**	**Grand Totals**
Number of Vehicles in 1999	13 [2]	4	7	11	4	28 [3]
Total Mileage (odometer)	707,000	155,000	582,000	737,000	353,000	1,797,000
Average Mileage (odometer)	54,385	38,750	83,143	67,000	88,250	64,179
Total Annual Miles Driven	71,000	34,000	101,000	135,000	14,000	220,000
Average Annual Miles Driven	5,462	8,500	14,429	12,273	3,500	7,857
Total 1999 Annual Maintenance & Operating Cost [1]	$21,729	$6,534	$27,591	$34,125	$3,504	$59,357
Average 1999 Annual Maintenance & Operating Cost	**$1,671**	**$1,634**	**$3,942**	**$3,102**	**$876 [4]**	**$2,120**
Total 1999 Annual Maintenance Cost	$12,738	$2,553	$17,875	$20,428	$2,578	$35,744
Average Total 1999 Annual Maintenance Cost	**$980**	**$638**	**$2,554**	**$1,857**	**$645**	**$1,277**
Total 1999 Annual Operating Cost	$8,991	$3,981	$9,716	$13,697	$925	$23,614
Average Total 1999 Annual Operating Cost	**$692**	**$995**	**$1,388**	**$1,245**	**$231**	**$843**
Average Age of Vehicles (years)	4.1	3.8	5.9	5.1	10.3	5.4

Source: Oxford Police Department, Auditor-of-State generated maintenance and operating data.

[1] The 1999 total annual maintenance and operating cost includes City service garage maintenance and repair (labor, benefits and parts), outside vendor maintenance and repair, fuel and insurance. Maintenance costs comprise City service garage maintenance and repair (labor, benefits and parts) and outside vendor maintenance and repair. Operating costs include fuel and insurance.

[2] As of April 2000, the number of vehicles and officers in the take-home program increased to 15.

[3] The 28 vehicles in the above table do not include a 1996 Dodge pick-up that is driven by a civilian for parking and animal control duties, a 1997 Kawasaki motorcycle and three vehicles that were disposed of during 1999.

[4] Seized vehicles obtained by forfeiture proceedings are used for surveillance duties and as a result incur lower miles and operating costs than vehicles in the general fleet which support take-home and non take-home assignments.

For the Oxford Police Department, the low amount of annual miles driven by its officers, as demonstrated in **Table 2-7,** helps contribute to its ability to operate an older fleet, compared with higher annual mileage departments. Annual average miles driven for all vehicles is approximately 7,857 average miles, ranging from 5,462 average miles for vehicles assigned to the take-home program, to 12,273 combined average miles for non-take-home vehicle assignments (8,500 average miles - single assignment vehicles, 14,429 average miles - shared /pool vehicles). However, the operation of an older fleet with higher odometer mileage (10 vehicles in excess of 100,000 miles) has led OPD to experience higher annual maintenance expenses (not including operational expenses), ranging from an annual average of $980 for take-home vehicles to an annual average of $2,553 for the shared/pool vehicles. Take-Home vehicles, representing 46 percent of the total fleet and featuring the majority of recently purchased vehicles, account for only approximately 36 percent of the total maintenance and operational costs, while the non-take-home assignment pool vehicles, representing only 25 percent of the fleet size, account for approximately 46 percent of total maintenance and operational costs.

Individual data presented in **Table 2-7**, as summarized from detailed fleet vehicle data in **Table 2-11** and **Table 2-12** in the **Appendix** of this review, provide a useful and relevant basis for analyzing the various options and fleet management scenarios discussed in the following **Fleet Management** section, as well as providing a valuable template or model for future ongoing fleet management and decision-making purposes.

Fleet Management Options

Each of the police fleet management scenarios presented in this section are compared with the current management practices and policies according to annualized maintenance and operational costs, as well as police fleet replacement capital costs. **Table 2-8** presents a comparative annualized life-cycle analysis of fleet management costs associated with the current situation and four selected fleet assignment options, all of which are based upon 1999 maintenance and operational costs. Also, **Table 2-9** identifies the related one-time capital costs required to immediately update the police vehicle fleet according to the replacement schedule associated with each of the options presented. The four scenarios selected for comparison to the City's current police fleet practices represent viable and accepted options for management of Oxford's police fleet. The analyses contained in this section include the following fleet assignment and policy scenarios based on actual 1999 fleet costs where applicable:

- The current policy consisting of take-home vehicle assignments for eligible officers according to existing eligibility criteria combined with pool/shared vehicle assignments for the remaining non-eligible officers (based on an eight-year fleet replacement schedule).
- The current policy stated above adjusted according to a five-year replacement schedule (as opposed to the current eight year replacement schedule).
- A revised take-home vehicle eligibility policy limiting take-home vehicle eligibility criteria to sworn officers living within the City limits according to a five-year fleet replacement schedule.
- A revised policy which implements pooled/shared vehicle assignments with a five-year replacement schedule.
- A revised policy which implements pooled/shared vehicle assignments with a three-year replacement schedule.

Table 2-8: Summary of Comparative Life-Cycle Analysis of Various Fleet Management Scenarios

	Current situation with eight-year replacement (no changes)	***Scenario 1*** **Current Policy with five-year replacement**	***Scenario 2*** **Revised Eligibility Policy with five-year replacement**	***Scenario 3*** **Pooled with five-year replacement**	***Scenario 4*** **Pooled with three-year replacement**
Total existing or estimated number of cars needed for operations (1)	24	24	22	17	17
Total number of cars used for operations in 1999 (1)	24	24	24	24	24
Proposed reduction to fleet	**0**	**0**	**2**	**7**	**7**
Estimated Annualized Costs per replacement plan					
Maintenance (2)	$33,170	$28,194	$34,381	$36,905	$30,393
Operating (3)	$22,692	$22,692	$23,576	$23,596	$23,596
Annualized replacement/purchase (4)	$82,968	$132,749	$121,686	$94,030	$156,717
Annualized resale revenue (5) (6)	($600)	($26,568)	($24,354)	($18,819)	($46,954)
Net Annualized Cost	**$138,230**	**$157,067**	**$155,289**	**$135,712**	**$163,752**

[1] The total number includes cars needed for daily routine operations. Of the 30 vehicles in the police fleet, the four seized vehicles used for special operations, the pickup truck and motorcycle are not included.

[2] Maintenance costs comprise City service garage maintenance and repair (labor, benefits and parts) and outside vendor maintenance and repair. The total annual maintenance cost was determined by multiplying the annual maintenance cost per car by the number of vehicles in that assignment category. The annual maintenance cost per car was $980, $638 and $2,554 for take-home, single assignment and pool/shared cars, respectively. These figures are reflected in **Table 2-7**.

[3] Operating costs include fuel and insurance. The total annual operating cost was determined by multiplying the annual operating cost per car by the number of vehicles in that assignment category. The annual operating cost per car was $692, $995 and $1,388 for take-home, single assignment and pool/shared cars, respectively. These figures are reflected in **Table 2-7**.

[4] This figure was calculated by multiplying the number of total cars by the annualized replacement/purchase cost per car. The total cost to replace/purchase one marked car consists of a base price of $20,156 (through the State contract) and $7,500 to equip the vehicle (using a local vendor). The annualized replacement/purchase cost per car is the total replacement/purchase cost ($27,656) divided by the number of years the vehicle is expected to be utilized, which is either eight, five or three years, depending upon the scenario.

[5] This figure was derived by multiplying the number of total cars by the annualized resale revenue per car. The annualized resale revenue per car is the resale value per car divided by the number of years the vehicle is expected to be utilized, which is either eight, five or three years, depending upon the scenario. The resale value for the current situation replaced at eight years is limited to an estimated salvage value of $200 per vehicle as provided by the department, as resale values for vehicles above eight years cannot reliably be predicted as newer vehicles. The resale value per car for scenario 1 through 4 is calculated at 60 percent of the retail market value, which is based upon the model year and total projected ending mileage, adjusted downward for any excess mileage.

[6] The number of vehicles associated with the annualized resale revenue equates to the following for each scenario presented: Current situation - three vehicles annually; scenario 1 - five vehicles; scenario 2 - five vehicles; scenario 3 - four vehicles; scenario 4 - six vehicles.

Table 2-8 demonstrates the net annualized fleet management costs for each scenario, independent of the applicable one-time conversion costs, while **Table 2-9** demonstrates the one-time total conversion costs required to immediately update the fleet according to corresponding replacement age selected for each scenario (three, five or eight-year replacement cycles). Both of these tables represent data summarized from **Table 2-13** presented in the **Appendix** of this review containing the complete detailed comparative life-cycle analysis performed for each scenario. These scenarios build upon the existing vehicle assignment plan, which appears to have been reasonably determined by the

department to meet its current operational needs according to full implementation of the existing take-home eligibility criteria.

Table 2-9: Summary of Comparative Analysis of One-Time Fleet Conversion Costs of Various Fleet Management Scenarios

	Current situation with eight-year replacement (no changes)	***Scenario 1*** **Current Policy with five-year replacement**	***Scenario 2*** **Revised Eligibility Policy with five-year replacement**	***Scenario 3*** **Pooled with five-year replacement**	***Scenario 4*** **Pooled with three-year replacement**
Total number of cars needed for operations (1)	24	24	22	17	17
Total number of cars used for operations in 1999 (1)	24	24	24	24	24
Proposed reduction to fleet	**0**	**0**	**2**	**7**	**7**
Number of cars that exceed age replacement criteria in 1999	5	12	12	12	12
Number of cars that need to be replaced/purchased	**5**	**12**	**10**	**5**	**10**
One-time Conversion Cost Options to Update the Fleet Per Replacement Plan Age					
Total one-time conversion cost to update fleet per applicable replacement criteria (2)	**$138,280**	**$331,872**	**$276,560**	**$138,280**	**$276,560**
Number of years to implement according to historical three cars per year replacement schedule (3)	1.7	4.0	3.3	1.7	3.3
Annual expenditure associated with historical three cars per year replacement schedule (4)	$82,968	$82,968	$82,968	$82,968	$82,968
Additional funding required to fund one-time conversion costs	$55,312	$248,904	$193,592	$55,312	$193,592

[1] The total number includes cars needed for daily routine operations. Of the 30 vehicles, the four seized vehicles used for special operations, the pickup truck and motorcycle are not included.
[2] Represents annualized replacement cost spread over the applicable eight, five or three-year replacement schedule.
[3] Represents time period to update fleet according to corresponding eight, five or three-year replacement period in relation to the City's historical annual practice of purchasing a maximum of three vehicles per year.
[4] The total cost to replace/purchase one marked car consists of a base price of $20,156 (through the State contract) plus $7,500 to equip the vehicle (using local vendors).
[5] Represents the remaining amount of the total one-time conversion cost to update the fleet in excess of the City's historical annual practice of purchasing a maximum of three vehicles per year.

When considering the benefits and total cost associated with each individual scenario, it should be noted that the conservative estimates presented were based on best-available data. The **Vehicle Replacement and Maintenance** discussion in the previous **Summary of Fleet Operations** section identified existing weaknesses in the capturing and tracking of fleet repair and expenses which limited

the precision of some of the data used in the various fleet management scenarios presented in **Table 2-8**. In addition, given the age of the current fleet and its higher average annual maintenance costs, the City could reasonably expect lower annual expenses than those assumed for this discussion and illustration as it proceeds with gradual fleet replacement (three, five or eight-year replacement cycles). The extent that the City could expect to realize costs lower than those illustrated in **Table 2-8** will depend upon factors such as the replacement cycle and related assignment policy chosen, budgetary considerations, prevailing resale market conditions during fleet replacement periods, as well as the implementation of a dedicated and proactive preventive maintenance program. Suggested preventive maintenance practices, such as engine oil specimen analysis and monitoring of hours of use in addition to miles driven to determine service intervals, are discussed in the **Recommendations** section of this review.

The department's ability to identify and cultivate potential customers in the used police vehicle marketplace could also positively impact the conservative estimates of resale values for each scenario in **Table 2-8**. The department enjoys a great deal of flexibility to obtain more favorable resale proceeds than the conservative market estimates used to determine annualized costs, given the manageable size of the fleet, expected annual turnover, and the desirability of a low mileage and well-maintained fleet to potential customers. The department should consider potential resale customer sources such as dealers, brokers, auction and direct sales to other departments. Also, the department should take advantage of its recently obtained membership with National Association of Fleet Administrators (NAFA), in particular the Law Enforcement Group (LEG), for identifying potential customers. In addition, the department should also contact the Ohio Department of Administrative Services (DAS) to help identify and contact other public safety or private sector buyers that routinely buy State of Ohio Highway Patrol used vehicles through direct purchase or by DAS auction.

For analysis purposes, the following assessments of the fleet management scenarios should be considered in the context of the two separate illustrations in **Table 2-8** and **Table 2-9**. A common assumption to remember across all scenarios is that incremental reductions in fleet repair and maintenance expenses should be realized upon the full recycling of the fleet according to three-year, five-year or eight-year replacement criteria. The ability to consistently maintain a fleet according to age criteria more favorable than the existing fleet age, should be supplemented by a proactive preventive maintenance program. This would allow the department to supplement routine maintenance with services that could potentially minimize costly component repairs, especially those occurring outside of warranty coverage, thereby increasing the value of the warranty and further limiting costly maintenance outlays.

Current Situation

The current policy consisting of take-home vehicle assignments for eligible officers according to existing eligibility criteria combined with pool/shared vehicle assignments for the remaining non-eligible officers (based on an eight-year fleet replacement schedule).

With the current take-home policy, the City would continue to rely on the present fleet size of 24 police vehicles (comprising 13 take-home vehicles and 11 non-take-home vehicles - 7 pooled/shared assignments and 4 single assignments). This total and subsequent scenario totals do not include a motorcycle, pick-up truck and other seized and/or surveillance vehicles. Ideally, the City would need to update the present condition of the fleet according to the identified fleet replacement age criteria of eight years.

Scenario 1

The current policy stated above adjusted according to a five-year replacement schedule (as opposed to the current eight-year replacement schedule).

This proposed scenario mirrors the current take-home policy and fleet size of 24 total police vehicles as described above except for a reduction in the fleet replacement schedule from eight years to five years. Ideally, the City would need to update the present condition of the fleet according to the identified fleet replacement age criteria of five years.

Scenario 2

A revised take-home vehicle eligibility policy limiting take-home vehicle eligibility criteria to sworn officers living within the City limits according to a five-year fleet replacement schedule.

This scenario retains the community policing benefits associated with the current policy, except it involves a policy revision which would effectively limit eligibility to only those officers residing within the boundaries of the City of Oxford. Currently five of the fifteen sworn officers participating in the take-home program reside outside of the City of Oxford as permitted by existing eligibility criteria. This scenario would result in a conservative fleet reduction estimate of at least two less vehicles to 22 total police vehicles (10 total vehicles assigned to take-home officers - 5 for patrolmen, 3 for sergeants, 1 for a lieutenants, and 1 for the police chief; 12 total vehicles assigned to pooled/shared vehicle officers - 8 for patrolmen, 2 for the detective bureau, 1 for patrol sergeants and 1 for community services lieutenant) as compared with the previously discussed policy scenarios. Ideally, the City would need to update the present condition of the fleet according to the identified fleet replacement age criteria of five years.

Scenario 3

Replace with pooled/shared vehicle assignments with a five-year replacement schedule.

This scenario represents a departure from the community policing benefits of the current take-home policy concept and instead returns to a completely pooled or shared concept for the management and

assignment of the police vehicle fleet. This scenario would result in a conservative fleet reduction estimate of at least seven less vehicles to 17 total vehicles. The 17 vehicles include 10 for patrolmen and the school response officer (10 pooled vehicles including 2 spares), 3 for the detective bureau (potentially eligible for take-home or spare uses since all are needed for one shift), 2 for sergeants performing supervisory patrol duties (pooled vehicles as needed across all shifts), 1 for the community services lieutenant and 1 for the police chief (both potentially available for take-home or spare uses). Ideally, the City would need to update the present condition of the fleet according to the identified fleet replacement age criteria of five years.

Scenario 4

Replace with pooled/shared vehicle assignments with a three-year replacement schedule.

The scenario mirrors the concepts and fleet size (17 total police vehicles) of the pooled or shared concept described above except that this scenario relies on the operation of a fleet with a three-year replacement cycle. Ideally, the City would need to update the present condition of the fleet according to the identified fleet replacement age criteria of five years.

Table 2-10 lists selected pros and cons the City should consider in its decision-making process associated with potential policy changes for its police vehicle assignment policy. The police vehicle fleet management scenarios presented in this section are for discussion and illustration purposes only, and should not be considered a finite representation of options available to the City of Oxford.

Table 2-10: Pros and Cons of Fleet Management Options

Option	Pros	Cons
The current policy consisting of take-home vehicle assignments for eligible officers according to existing eligibility criteria combined with pool/shared vehicle assignments for the remaining non-eligible officers (based on an eight-year fleet replacement schedule)	Potential benefits of Community Oriented Policing philosophy such as additional 24 hour community presence, crime deterrence and other benefits identified in this review Voluntary participation level in Community Oriented Policing-based policy of all eligible officers Lowest one-time conversion cost to update fleet Second lowest estimated net annualized costs Realize a higher degree of readiness and emergency mobilization associated with take-home policy Assumed higher level of vehicle care, accountability and maintenance for take-home vehicles versus pooled vehicles	Need to maintain larger fleet size (24 vehicles) to meet existing eligibility criteria; potential need for future larger fleet if additional existing or new hire officers meet take-home eligibility criteria Oldest fleet age among options; most reliant of all options on a vigilant preventive maintenance program to limit costs and extend life Greatest exposure to long-term, unpredictable maintenance costs for costly component repairs (outside of manufacturer warranty period) given an eight-year fleet replacement age Difficult to measure qualitative and quantitative policy benefits Broad eligibility criteria extends benefits to non-Oxford residents Assume little or no resale value

Option	Pros	Cons
Scenario 1 **The current policy stated above adjusted according to a five-year replacement schedule (as opposed to the current eight-year replacement schedule)**	Maintains all assumed Community Oriented Policing benefits identified above and in this review Newer more reliable fleet; more predictable annual repair costs Can reliably assign and expect resale value to help offset future costs Realize a higher degree of readiness and emergency mobilization associated with take-home policy Assumed higher level of vehicle care, accountability and maintenance for take-home vehicles versus pooled vehicles	Need to maintain larger fleet size (24 police vehicles) to meet existing eligibility criteria; potential need for a future larger fleet if additional or new hire officers meet eligibility criteria Highest one-time fleet conversion cost of all options Second highest estimated net annualized costs Difficult to measure qualitative and quantitative policy benefits Broad eligibility criteria extends benefits to non-Oxford residents
Scenario 2 **A revised take-home vehicle eligibility policy limiting take-home vehicle eligibility criteria to sworn officers living within the City limits according to a five-year fleet replacement schedule**	Limits Community Oriented Policing benefits to City of Oxford residents Reduced fleet size (estimated 22 police vehicles); more predictable annual repair costs Can more reliably assign and expect resale value to help offset future costs Realize a higher degree of readiness and emergency mobilization associated with take-home policy Assumed higher level of vehicle care, accountability and maintenance for take-home vehicles versus pooled vehicles	Second highest one-time fleet conversion cost of all options Would lose Community Oriented Policing benefits associated with those officers no longer eligible

Option	Pros	Cons
Scenario 3 **Replace with pooled/shared vehicle assignments with a five-year replacement schedule**	Lowest one-time conversion cost to update fleet Lowest estimated net annualized costs of all options Represents lowest fleet size needs (tie, estimated 17 total police vehicles) Can more reliably assign and expect higher resale value to help offset future costs than with an eight-year replacement schedule	No benefits of Community Oriented Policing philosophy such as additional 24 hour community presence, crime deterrence and other benefits identified in this review Potential drop in police officer morale Lose degree of readiness and emergency mobilization associated with take-home policy Potential vehicle and parking storage issues Potential for less vehicle care, accountability and maintenance for pool vehicles
Scenario 4 **Replace with pooled/shared vehicle assignments with a three-year replacement schedule**	Can more reliably assign and expect highest resale value of all options to help offset future costs Represents youngest fleet Represents lowest fleet size needs (estimated 17 total police vehicles) Represents most potential for lowest net annualized costs upon full implementation given newer fleet under warranty coverage and less exposure to outside of warranty costly component repairs	No benefits of Community Oriented Policing philosophy such as additional 24 hour community presence, crime deterrence and other benefits identified in this review Highest estimated net annualized costs Second highest one-time fleet conversion costs of all options Potential drop in police officer morale Lose degree of readiness and emergency mobilization associated with take-home policy Potential vehicle and parking storage issues Potential for less vehicle care, accountability and maintenance for pool vehicles

The following **Recommendations** section discusses optimal scenarios, dependent upon the City's ultimate policy preference, involving either a variation of the current combination take-home and pooled vehicle policy or an alternative pooled/shared vehicle policy.

Recommendations

Selection of a Vehicle Assignment Policy

The City should select its desired police vehicle assignment policy chosen among the scenarios, or variations of these scenarios, presented in Table 2-8 and Table 2-9. The selected vehicle assignment policy should be supplemented with proactive preventive maintenance practices.

Public policy decisions regarding police fleet management to better guarantee the public safety of citizens are local decisions that are the responsibility of City Council. These policy decisions require the consideration of both quantitative and qualitative factors (see subsequent outcome evaluation recommendation in this section), as well as allowing for community input. Additionally, the selection of a fleet management strategy should take into account projected financial resources and the City's overall goals and objectives.

The **Fleet Management Options** section of this review presents the current and other potential police vehicle fleet management scenarios. The analyses contained in the section include the following fleet assignment and policy scenarios based on actual 1999 fleet costs:

- The current policy consisting of take-home vehicle assignments for eligible officers according to existing eligibility criteria combined with pool/shared vehicle assignments for the remaining non-eligible officers (based on an eight-year fleet replacement schedule).
- The current policy stated above adjusted according to a five-year replacement schedule (as opposed to the current eight year replacement schedule).
- A revised take-home vehicle eligibility policy limiting take-home vehicle eligibility criteria to sworn officers living within the City limits according to a five-year fleet replacement schedule.
- A revised policy which implements pooled/shared vehicle assignments with a five-year replacement schedule.
- A revised policy which implements pooled/shared vehicle assignments with a three-year replacement schedule.

The methodology used for these life-cycle analyses represents a model the City could use to explore other variations of the scenarios presented in determining police fleet management and assignment practices. **Table 2-8** of the **Fleet Management Options** section presents a comparative annualized life-cycle analysis of fleet management costs associated with the scenarios, while **Table 2-9** identifies the related one-time costs required to immediately update the police vehicle fleet according to the replacement schedule associated with each of the options presented. In addition, **Table-2-10** identified key pros and cons associated with each policy scenario presented for the City to consider.

Optimal fleet management public policy requires a replacement schedule developed according to city-specific factors, resulting in a public policy decision based upon a thorough evaluation of quantitative factors, such as fleet replacement and maintenance costs, and qualitative factors pertaining to service delivery and outcomes. However, two preferred scenarios emerge for the City to consider based on net annualized operational costs and conversion costs required to immediately update the fleet according to specific replacement criteria. The final choice is dependent upon the fleet management policy ultimately adopted by the City. Both of these preferred scenarios, involving a variation of a take-home policy or the alternative pooled or shared use vehicle policy, include the following:

Take-Home Combined with Pooled Vehicles(Current Situation)

If City Council decides to continue with a vehicle assignment policy that supports a community oriented policing philosophy, the current situation under an eight-year replacement schedule emerges as the most cost-effective in terms of net annualized operational costs (**Table 2-8**) and one-time fleet conversion costs (**Table 2-9**). The current situation assumes the City would continue to operate under its existing vehicle assignment policy and would rely upon the present fleet size of 24 police vehicles for normal operations. The fleet size allows both single vehicle assignments for eligible officers and pool or shared use vehicle assignments for the remaining police officers. Additionally, the City would have the flexibility of rotating vehicles between the two assignment types, which would more evenly distribute miles driven to maximize the manufacturer's warranty coverage. However, there is the potential of a need for a larger fleet size in the future if additional existing or new hire officers meet eligibility criteria for a take-home vehicle.

It should be noted that, although somewhat more costly than the current situation, scenario 2 (limited policy under a five-year replacement schedule) represents a more preferred practice in the fleet management industry by limiting exposure to outside of warranty repairs and improved resale value associated with maintaining a newer fleet. This structure would require revising the existing vehicle take-home policy to restrict eligibility to only those officers residing within City boundaries, as well as revising the vehicle replacement schedule from eight years to five years. Scenario 2 is more costly than the current situation, with a significantly higher conversion cost (**Table 2-9**) that would be required to update the current older fleet according to a five-year replacement schedule.

Pooled Vehicle Concept (Scenario 3)

If City Council decides to eliminate the vehicle take-home program and rely upon a pooled concept for police vehicle management and assignment, scenario 3 (pooled with a five-year replacement schedule) is the most cost-effective. Under scenario 3, the City would experience the lowest one-time fleet conversion costs and the lowest estimated net annualized cost of the four options. Both the net annualized cost (**Table 2-8**) to maintain this structure and the one-time fleet conversion costs (**Table 2-9**) required to update the fleet are comparable to the current take-home vehicle situation discussed above, which represents a combined take-home and pool vehicle assignment with an eight-year

replacement schedule. The associated fleet size under scenario 3 is an estimated 17 vehicles, a potential reduction of seven vehicles. The estimated fleet size of 17 vehicles accommodates expected maximum vehicle needs given current staffing levels to allow the department to provide optimal service levels. A potential may exist to incrementally reduce the fleet size, dependant upon changes in current operations. Although a pooled/shared use structure would result in the smallest fleet, there would be a loss in the degree of operational readiness and emergency mobilization and other benefits associated with a take-home vehicle program. Additionally, the City may need to address vehicle parking and storage issues.

Supplemental Preventive Maintenance and Fleet Management Measures

Regardless of the fleet management policy ultimately selected by the City, preventive maintenance measures employed by proactive fleet managers in both the public and private sector should be incorporated into Oxford's existing preventive maintenance practices. These suggestions include the following:

- Implement an additional preventive maintenance component involving a chemical analysis of fluid specimens (lubricant, coolant and fuel analysis) at scheduled intervals of 3,000 to 6,000 miles. For a nominal fee of approximately $10 per specimen sample, this analysis is an effective management tool providing trend analysis, troubleshooting and suggested preventive maintenance scheduling. The analysis provides suggested service during maintenance inspections, helps minimize costly component repairs or failures through early detection, increases the value and application of manufacturer warranties, minimizes or eliminates fleet downtime, as well as provides an additional safety measure for passengers. According to a leading vendor, customers include the fleet managers of Ohio police fleets of various sizes such as Cleveland, Columbus, Dayton, Toledo, Rocky River, Independence and Cardington, among others in Ohio and nationwide.
- Incorporate the monitoring of hours of vehicle use to determine preventive maintenance scheduling in addition to the traditional miles driven factor. Given the heavy wear experienced by police vehicles caused by constant stop-and-go engine idling on a daily basis, combined with the relatively low annual miles driven by Oxford's fleet, considerable time could pass and potential excessive component wear or failure could occur prior to a miles-only based preventive maintenance schedule. Currently, the department schedules and performs routine preventive maintenance at intervals of 3,000 miles. The department should also include hours of use as an additional factor in determining service intervals. Discussions with professional fleet managers suggest an appropriate interval of at least 250 hours of use. This could be determined through the installation of individual hour meters or as simply as manual monitoring.

The City should also take full advantage of the benefits and services associated with the department's recently obtained membership with the National Association of Fleet Administrators (NAFA), in

particular, the Law Enforcement Group (LEG). Services available to members include articles and publications; access to NAFA's Fleet Information Resource Center, member business and services directory; local and national conferences and seminars; surveys; as well as peer networking. A key feature includes access to electronic bulletins from more than 400 law enforcement fleet managers, including advance notification of potential parts, equipment failures or safety defects from members that have detected high incidents of repairs, replacement or failure, and the ability to query members for assistance or even to help identify potential fleet resale customers nationwide.

In addition to using NAFA resources to help identify potential resale customers or used vehicle brokers nationwide, the City could also contact the Ohio Department of Administrative Services (DAS) to help identify and contact other public safety or private sector buyers (most likely from the taxi industry) that routinely buy State of Ohio Highway Patrol used vehicles through direct purchase or by DAS auctions.

If the City selects a consistent fleet replacement schedule resulting in the operation of a newer fleet than the current fleet, the City could potentially realize incremental savings or cost avoidance related to the approximate $7,500 currently spent to equip a new vehicle for service upon delivery from the manufacturer. The operation of a newer police fleet could potentially allow the City to reuse and reinstall certain vehicle safety equipment, depending on remaining useful life or market value, condition or adaptability to new vehicles. Also, if the City moves toward maintaining a newer fleet, the City may consider reassessing the costs and benefits of installing the specialized and costly console and rear seat equipment as identified in the **Summary of Operations** section of this review. However, the City should weigh potential safety concerns for officers, passengers or the public, associated with any equipment modifications.

The City of Oxford should conduct an outcome evaluation to determine how well the existing take-home policy is achieving stated programmatic goals and benefits.

An outcome evaluation will help the City determine the impact or extent to which the stated programmatic goals of the take-home vehicle assignment policy are being achieved since implementation. While the department has been proactive in implementing a new and innovative policing strategy such as the take-home vehicle component of its community oriented policing practices, the department has not implemented procedures to track statistics that could identify tangible or quantitative benefits or identify outcomes achieved for take-home policy officers (including those participating officers residing within and outside of the City limits). Possible outcomes include arrests, citations, off-duty calls for assistance, accidents or maintenance and operational costs compared with traditional pool assignments. In addition to determining the extent of intended benefits and goals of the new policy, an outcome evaluation could also identify and test for unintended policy consequences or policy outcomes.

This evaluation could supplement the results of the police department's 1997 citizen survey by providing additional data on the impact of the policy and the ratio of benefits to costs in order to justify a decision to continue, expand or terminate the current fleet management policy. Ideally, the City could partner externally with the appropriate department at Miami University in Oxford (e.g., social science researchers) to assist with the necessary research and evaluation efforts. In addition, the City could also contact the Ohio Board of Regents, the state body charged with the oversight and coordination of Ohio's public institutions of higher education, or could contact the Association of Independent Colleges and Universities, representing a majority of Ohio's private institutions of higher education, to assist with the identification of appropriate research organizations experienced in conducting similar program research and evaluations. Also, another option would be for the City to engage the International Association of Chief's of Police to study the policy. This organization performed an operational review for the City in June 1997, however, this review did not address fleet management and replacement options.

If the results of an external evaluation favor continuation of a variation of the current combined take-home and pooled vehicle concept and the City decides to continue this policy, the City should consider revising the department's written policy which identifies the preferred ranking of eligible officers according to rank and duty criteria. The department created this criteria prior to the full implementation of the current vehicle assignment policy in the event vehicle supply conditions or budgetary decisions dictate the temporary or permanent reductions in the assignment of take-home vehicles to eligible officers. Although never employed due to the existence of the necessary fleet size for eligible officers, this ranking places a higher priority on the previously discussed responder duties versus the Community Oriented Policing related assignments of basic patrol (See related discussion in the **Policies and Procedures** section of this review).

The City of Oxford should implement a cost accounting methodology and associated procedures to help track and manage police vehicle maintenance and repair costs in total and by vehicle.

Tracking and Managing Comprehensive Police Vehicle Data

Proper tracking and managing of police vehicle maintenance costs is an integral part of fleet management. Comprehensive maintenance and repair information can provide a sound basis for operational decisions. This information can be used for the following activities:

- Identifying police vehicles that have high maintenance and repair costs, which could indicate underlying problems such as improper maintenance
- Identifying trends in maintenance costs over time
- Identifying police vehicles that should be considered first for replacement, due to high annual maintenance costs

- Budgeting appropriate amounts for operational expenditures for future years
- Evaluating cost components to determine high-cost areas, which could prompt investigation of cost-reduction strategies

Including all relevant costs is also important in ensuring the analysis provides meaningful information. The City of Oxford should consider including the following types of costs related to police vehicle maintenance and repair:

- City service garage direct labor and associated benefits costs
- City service garage overhead and administrative costs
- City service garage parts costs
- Outside vendor labor and parts costs
- Fuel costs
- Vehicle insurance

To implement procedures to facilitate tracking and management of police vehicle maintenance and repair costs, the City should consider the following suggestions.

Coordination of Police Fleet Maintenance and Repair Work

Preventive maintenance and repair work for all police vehicles should be handled and coordinated by the City service garage. This will allow the City service garage staff to maintain maintenance costs by vehicle that includes work performed by the City service garage as well as work contracted to outside vendors. If the City service garage cannot handle specific maintenance or repair work and the work is performed by an outside vendor, labor and parts data for the work done on that particular police vehicle should be provided to the City service garage staff. This maintenance data (in-house and outside vendor labor and parts) should form the basis of the annual police fleet total maintenance costs discussed below.

Annual Compilation of Department Maintenance and Repair Data

Comprehensive maintenance and repair data should be compiled annually on the police vehicles for review and analysis by the police department and the City. The maintenance and repair costs by vehicle that are tracked by the City service garage should be included in the total cost per vehicle. The costs of fuel and insurance costs should also be included in the total cost per vehicle.

The annual compilation of total maintenance cost and cost per vehicle, coupled with other accurate vehicle information such as annual mileage, will allow for the calculation of operational ratios and statistics such as cost per mile and will allow for determinations in trends. This management information can then be used to review the efficiency of maintenance operations and facilitate decisions regarding vehicle purchase and replacement. These functions should be easily performed

through the effective use of recently purchased fleet management software. The City's recent purchase of public safety technology included a fleet management component that appears to contain necessary and basic modules such as equipment and parts inventory, vehicle repair, fuel and expense activity and work orders, which should assist the City in the proper tracking and analysis of maintenance and operational data.

Use of Internal Service Fund

An internal service fund could be established for the City service garage in the accounting system. All operating costs of the City service garage would be captured in the internal service fund, including labor, parts and overhead. As work was performed, appropriate costs associated with the work would be charged to the other department via the accounting system. The establishment of an internal service fund would not, however, negate the need for procedures to track and manage all maintenance and repair costs.

Appendix

Table 2-11: 1999 Vehicle Assignment and Maintenance & Operating Data by Vehicle

	Car #	Year	Model	Mileage (odometer)	Age (years)	Annual Miles Driven	Total 1999 Annual Maintenance & Operating Cost
Take-Home Vehicles							
1	111	1994	Ford Crown Victoria	60,000	5.0	4,000	$3,436.00
2	115	1996	Ford Explorer	23,000	3.0	7,000	$3,098.85
3	118	1990	Ford Crown Victoria	107,000	9.0	7,000	$2,310.61
4	122	1991	Ford Crown Victoria	110,000	8.0	4,000	$1,491.36
5	128	1999	Ford Crown Victoria	2,000	0.0	2,000	$376.41
6	129	1999	Ford Crown Victoria	3,000	0.0	3,000	$511.60
7	130	1999	Ford Crown Victoria	3,000	0.0	3,000	$638.42
8	133	1996	Chevrolet Caprice	29,000	3.0	8,000	$1,844.93
9	134	1996	Chevrolet Caprice	21,000	3.0	4,000	$1,577.42
10	137	1997	Ford Crown Victoria	26,000	2.0	7,000	$1,758.49
11	138	1997	Ford Crown Victoria	29,000	2.0	13,000	$1,514.62
12	161	1989	Oldsmobile	148,000	10.0	8,000	$1,906.37
13	165	1991	Ford Explorer	146,000	8.0	1,000	$1,263.83
			Totals	**707,000**	**53.0**	**71,000**	**$21,728.91**
			Averages	**54,385**	**4.1**	**5,462**	**$1,671.45**
Other Vehicle Assignments							
Single Assignment - Non Take-Home							
1	112	1989	Chevrolet Celebrity	100,000	10.0	14,000	$2,466.58
2	113	1996	Ford Crown Victoria	32,000	3.0	9,000	$1,772.05
3	125	1999	Ford Crown Victoria	9,000	0.0	8,000	$1,374.90
4	139	1997	Ford Crown Victoria	14,000	2.0	3,000	$920.72
			Subtotals	**155,000**	**15.0**	**34,000**	**$6,534.25**
			Subtotal Averages	**38,750**	**3.8**	**8,500**	**$1,633.56**

	Car #	Year	Model	Mileage (odometer)	Age (years)	Annual Miles Driven	Total 1999 Annual Maintenance & Operating Cost
Pool/Shared Assignment							
1	110	1992	Ford Crown Victoria	120,000	7.0	15,000	$4,178.30
2	114	1996	Ford Crown Victoria	29,000	3.0	10,000	$3,022.90
3	120	1992	Ford Crown Victoria	119,000	7.0	28,000	$5,108.22
4	123	1992	Ford Crown Victoria	100,000	7.0	7,000	$2,894.03
5	124	1992	Ford Crown Victoria	100,000	7.0	12,000	$3,767.50
6	126	1994	Ford Crown Victoria	67,000	5.0	12,000	$5,828.81
7	127	1994	Ford Crown Victoria	47,000	5.0	17,000	$2,790.93
			Subtotal	**582,000**	**41.0**	**101,000**	**$27,590.69**
			Subtotal Averages	**83,143**	**5.9**	**14,429**	**$3,941.53**
			Totals	**737,000**	**56.0**	**135,000**	**$34,124.94**
			Averages	**67,000**	**5.1**	**12,273**	**$3,102.27**
Special Use (Seized) Vehicles							
1	162	1992	*****	54,000	7.0	9,000	$969.48
2	163	1989	*****	166,000	10.0	3,000	$1,756.63
3	164	1982	*****	67,000	17.0	2,000	$390.81
4	166	1992	*****	66,000	7.0	0	$386.61
			Totals	**353,000**	**41.0**	**14,000**	**$3,503.53**
			Averages	**88,250**	**10.3**	**3,500**	**$875.88**
			Grand Totals	**1,797,000**	**150.0**	**220,000**	**$59,357.38**
			Averages	**64,179**	**5.4**	**7,857**	**$2,119.91**

Source: Oxford Police Department, Auditor-of-State generated maintenance and operating data.
Note 1: The 28 vehicles in the above table do not include a 1996 Dodge pick-up that is driven by a civilian for parking and animal control duties, a 1997 Kawasaki motorcycle and three vehicles that were disposed of during 1999.
Note 2: The 1999 total annual maintenance and operating cost includes City service garage maintenance and repair (labor, benefits and parts), outside vendor maintenance and repair, fuel and insurance. Maintenance costs comprise City service garage maintenance and repair (labor, benefits and parts) and outside vendor maintenance and repair. Operating costs include fuel and insurance.
Note 3: As of April 2000, the number of vehicles and officers in the take-home program increased to 15.

Table 2-12: 1999 Detailed Maintenance & Operating Data by Vehicle

	Car #	Year	Mileage (odometer)	Maintenance		Operating		Total Maintenance & Operating Cost
				City Service Garage	Outside Vendor Work	Gasoline	Insurance	
Take-Home Vehicles								
1	111	1994	60,000	$2,136.77	$433.19	$554.04	$312.00	$3,436.00
2	115	1996	23,000	$641.55	$1,414.67	$621.63	$421.00	$3,098.85
3	118	1990	107,000	$1,102.46	$319.79	$576.36	$312.00	$2,310.61
4	122	1991	110,000	$361.43	$485.47	$332.46	$312.00	$1,491.36
5	128	1999	2,000	$18.99	$148.89	$208.53	$0.00	$376.41
6	129	1999	3,000	$76.46	$144.17	$290.97	$0.00	$511.60
7	130	1999	3,000	$155.29	$154.18	$328.95	$0.00	$638.42
8	133	1996	29,000	$280.42	$501.72	$677.79	$385.00	$1,844.93
9	134	1996	21,000	$688.43	($28.54)	$532.53	$385.00	$1,577.42
10	137	1997	26,000	$283.62	$682.95	$403.92	$388.00	$1,758.49
11	138	1997	29,000	$255.22	$68.87	$802.53	$388.00	$1,514.62
12	161	1989	148,000	$345.53	$908.65	$404.19	$248.00	$1,906.37
13	165	1991	146,000	$293.12	$864.24	$106.47	$0.00	$1,263.83
Totals			**707,000**	**$6,639.29**	**$6,098.25**	**$5,840.37**	**$3,151.00**	**$21,728.91**
Averages			**54,385**	**$510.71**	**$469.10**	**$449.26**	**$242.38**	**$1,671.45**
Maintenance/Operating Totals				**$12,737.54**		**$8,991.37**		
Maintenance/Operating Averages				**$979.81**		**$691.64**		

	Car #	Year	Mileage (odometer)	Maintenance		Operating		Total Maintenance & Operating Cost
				City Service Garage	Outside Vendor Work	Gasoline	Insurance	
Other Vehicle Assignments								
Single Assignment - Non Take-Home								
1	112	1989	100,000	$811.32	$866.37	$505.89	$283.00	$2,466.58
2	113	1996	32,000	$577.91	$81.13	$728.01	$385.00	$1,772.05
3	125	1999	9,000	$36.57	$39.46	$876.87	$422.00	$1,374.90
4	139	1997	14,000	$82.87	$57.54	$392.31	$388.00	$920.72
Subtotals			**155,000**	**$1,508.67**	**$1,044.50**	**$2,503.08**	**$1,478.00**	**$6,534.25**
Subtotal Averages			**38,750**	**$377.17**	**$261.13**	**$625.77**	**$369.50**	**$1,633.56**
Maintenance/Operating Subtotals				**$2,553.17**		**$3,981.08**		
Maintenance/Operating Subtotal Averages				**$638.29**		**$995.27**		
Pool/Shared Assignment								
1	110	1992	120,000	$2,286.15	$433.55	$1,146.60	$312.00	$4,178.30
2	114	1996	29,000	$1,089.90	$473.76	$1,074.24	$385.00	$3,022.90
3	120	1992	119,000	$2,108.25	$2,147.43	$540.54	$312.00	$5,108.22
4	123	1992	100,000	$523.33	$1,386.58	$672.12	$312.00	$2,894.03
5	124	1992	100,000	$2,192.93	$53.33	$1,209.24	$312.00	$3,767.50
6	126	1994	67,000	$3,583.95	$635.87	$1,296.99	$312.00	$5,828.81
7	127	1994	47,000	$512.34	$447.21	$1,519.38	$312.00	$2,790.93
Subtotals			**582,000**	**$12,296.85**	**$5,577.73**	**$7,459.11**	**$2,257.00**	**$27,590.69**
Subtotal Averages			**83,143**	**$1,756.69**	**$796.82**	**$1,065.59**	**$322.43**	**$3,941.53**
Maintenance/Operating Subtotals				**$17,874.58**		**$9,716.11**		
Maintenance/Operating Subtotal Averages				**$2,553.51**		**$1,388.02**		
Totals			**737,000**	**$13,805.52**	**$6,622.23**	**$9,962.19**	**$3,735.00**	**$34,124.94**
Averages			**67,000**	**$1,255.05**	**$602.02**	**$905.65**	**$339.55**	**$3,102.27**
Maintenance/Operating Totals				**$20,427.75**		**$13,697.19**		
Maintenance/Operating Averages				**$1,857.07**		**$1,245.20**		
Special Use (Seized) Vehicles								

	Car #	Year	Mileage (odometer)	Maintenance		Operating		Total Maintenance & Operating Cost
				City Service Garage	Outside Vendor Work	Gasoline	Insurance	
1	162	***	54,000	$332.97	$161.16	$163.35	$312.00	$969.48
2	163	***	166,000	$9.50	$1,334.16	$164.97	$248.00	$1,756.63
3	164	***	67,000	$0.00	$353.91	$36.90	$0.00	$390.81
4	166	***	66,000	$120.58	$266.03	$0.00	$0.00	$386.61
Totals			**353,000**	**$463.05**	**$2,115.26**	**$365.22**	**$560.00**	**$3,503.53**
Averages			**88,250**	**$115.76**	**$528.82**	**$91.31**	**$140.00**	**$875.88**
Maintenance/Operating Totals				**$2,578.31**		**$925.22**		
Maintenance/Operating Averages				**$644.58**		**$231.31**		
Grand Totals			**1,797,000**	**$20,907.86**	**$14,835.74**	**$16,167.78**	**$7,446.00**	**$59,357.38**
Averages			**64,179**	**$746.71**	**$529.85**	**$577.42**	**$265.93**	**$2,119.91**
Maintenance/Operating Totals				**$35,743.60**		**$23,613.78**		
Maintenance/Operating Averages				**$1,276.56**		**$843.35**		

Source: Oxford Police Department, Auditor-of-State generated maintenance and operating data.

Note 1: The 28 vehicles in the above table do not include a 1996 Dodge pick-up that is driven by a civilian for parking and animal control duties, a 1997 Kawasaki motorcycle and three vehicles that were disposed of during 1999.

Note 2: The City Service Garage maintenance and repair costs consist of mechanic labor costs (salary and benefits) and parts costs. The mechanics' hourly rate of $16.09 was used to determine salary costs and a 18 percent benefit figure (provided by City) was applied to total salary costs for purposes of this analysis.

Note 3: Outside vendor work represents maintenance and repair performed by outside vendors. Because these costs are not tracked by the City by vehicle, vendor invoices above $100 were assigned to individual vehicles, where identifiable. Remaining costs were prorated across all vehicles based upon odometer mileage.

Table 2-13: Detailed Comparative Life-Cycle Analysis of Various Fleet Management Scenarios

	Current situation with eight-year replacement (no changes)	***Scenario 1*** **Existing Policy with five-year replacement**	***Scenario 2*** **Revised Policy with five-year replacement**	***Scenario 3*** **Pooled with five-year replacement**	***Scenario 4*** **Pooled with three-year replacement**
Fleet Size					
Total number of cars needed for operations (1)	**24**	**24**	**22**	**17**	**17**
Total number of cars used for operations in 1999 (1)	24	24	24	24	24
Proposed reduction to fleet	**0**	**0**	**2**	**7**	**7**
Maintenance and Operating Annual Cost Savings from fleet reduction	$0	$0	$4,240	$14,840	$14,840
Replacement/Purchase of Vehicles					
Total number of cars needed for operations (1)	24	24	22	17	17
Number of cars that exceed age criteria in 1999	5	12	12	12	17
Number of cars that need to be replaced/purchased	**5**	**12**	**10**	**5**	**10**
Total cost to replace one marked vehicle (2)	$27,656	$27,656	$27,656	$27,656	$27,656

	Current situation with eight-year replacement (no changes)	***Scenario 1*** **Existing Policy with five-year replacement**	***Scenario 2*** **Revised Policy with five-year replacement**	***Scenario 3*** **Pooled with five-year replacement**	***Scenario 4*** **Pooled with three-year replacement**
One -time Conversion Cost Options					
Three cars per year replacement					
Total conversion cost	$138,280	$331,872	$276,560	$138,280	$276,560
Number of years to implement	1.7	4.0	3.3	1.7	3.3
Cost per year	$82,968	$82,968	$82,968	$82,968	$82,968
Two-year total replacement					
Total conversion cost	$138,280	$331,872	$276,560	$138,280	$276,560
Number of years to implement	2.0	2.0	2.0	2.0	2.0
Cost per year	$69,140	$165,936	$138,280	$69,140	$138,280
One-year total replacement					
Total conversion cost	$138,280	$331,872	$276,560	$138,280	$276,560
Number of years to implement	1.0	1.0	1.0	1.0	1.0
Cost per year	$138,280	$331,872	$276,560	$138,280	$276,560
Mileage					
Take-home annual mileage per car	5,500	5,500	5,500	N/A	N/A
Single assignment annual mileage per car	8,500	8,500	N/A	N/A	N/A
Pool/shared annual mileage per car	15,000	15,000	15,000	15,000	15,000
Take-home total mileage per car during life cycle	44,000	27,500	27,500	N/A	N/A
Single assignment total mileage per car during life cycle	68,000	42,500	N/A	N/A	N/A
Pool/shared total mileage per car during life cycle	120,000	75,000	75,000	75,000	45,000

	Current situation with eight-year replacement (no changes)	***Scenario 1*** **Existing Policy with five-year replacement**	***Scenario 2*** **Revised Policy with five-year replacement**	***Scenario 3*** **Pooled with five-year replacement**	***Scenario 4*** **Pooled with three-year replacement**
Annualized Costs					
Maintenance (3)					
Take-home total annual maintenance cost	$12,740	$10,829	$8,330	N/A	N/A
Single assignment total annual maintenance cost	$2,552	$2,169	N/A	N/A	N/A
Pool/shared total annual maintenance cost	$17,878	$15,196	$26,051	$36,905	$30,393
Total annual maintenance cost	**$33,170**	**$28,194**	**$34,381**	**$36,905**	**$30,393**
Operating (4)					
Take-home total annual operating cost	$8,996	$8,996	$6,920	N/A	N/A
Single assignment total annual operating cost	$3,980	$3,980	N/A	N/A	N/A
Pool/shared total annual operating cost	$9,716	$9,716	$16,656	$23,596	$23,596
Total annual operating cost	**$22,692**	**$22,692**	**$23,576**	**$23,596**	**$23,596**
Annualized replacement/purchase (5)					
Take-home total annualized replacement/purchase cost	$44,941	$71,906	$55,312	N/A	N/A
Single assignment total annualized replacement/purchase cost	$13,828	$22,125	N/A	N/A	N/A
Pool/shared total annualized replacement/purchase cost	$24,199	$38,718	$66,374	$94,030	$156,717
Total annualized replacement/purchase cost	**$82,968**	**$132,749**	**$121,686**	**$94,030**	**$156,717**
Annualized resale revenue (6)					
Take-home total annualized resale revenue	$200	$14,391	$11,070	N/A	N/A
Single assignment total annualized resale revenue	$200	$4,428	N/A	N/A	N/A
Pool/shared total annualized resale revenue	$200	$7,749	$13,284	$18,819	$46,954

	Current situation with eight-year replacement (no changes)	***Scenario 1*** Existing Policy with five-year replacement	***Scenario 2*** Revised Policy with five-year replacement	***Scenario 3*** Pooled with five-year replacement	***Scenario 4*** Pooled with three-year replacement
Total annualized resale revenue	**($600)**	**($26,568)**	**($24,354)**	**($18,819)**	**($46,954)**
Net Annualized Cost	**$138,230**	**$157,067**	**$155,289**	**$135,712**	**$163,752**

Note 1: The total number includes cars needed for daily routine operations. Of the 30 vehicles, the four seized vehicles used for special operations, the pickup truck and motorcycle are not included.

Note 2: The total cost to replace/purchase one marked car consists of a base price of $20,156 (through the State contract) and $7,500 to equip the vehicle (using a local vendor).

Note 3: Maintenance costs comprise City service garage maintenance and repair (labor, benefits and parts) and outside vendor maintenance and repair. The total annual maintenance cost was determined by multiplying the annual maintenance cost per car by the number of vehicles in that assignment category. The annual maintenance cost per car was $980, $638 and $2,554 for take-home, single assignment and pool/shared cars, respectively. These figures are reflected in **Table 2-8**.

Note 4: Operating costs include fuel and insurance. The total annual operating cost was determined by multiplying the annual operating cost per car by the number of vehicles in that assignment category. The annual operating cost per car was $692, $995 and $1,388 for take-home, single assignment and pool/shared cars, respectively. These figures are reflected in **Table 2-8**.

Note 5: This figure was calculated by multiplying the number of total cars by the annualized replacement/purchase cost per car. The annualized replacement/purchase cost per car is the total replacement/purchase cost ($27,656) divided by the number of years the vehicle is expected to be utilized, which is either eight, five or three years, depending upon the scenario.

Note 6: This figure was derived by multiplying the number of total cars by the annualized resale revenue per car. The annualized resale revenue per car is the resale value per car divided by the number of years the vehicle is expected to be utilized, which is either eight, five or three years, depending upon the scenario. The resale value for the current situation replaced at eight years is limited to an estimated salvage value of $200 per vehicle as provided by the department, as resale values for vehicles above eight years cannot reliably be predicted as newer vehicles. The resale value per car for scenario 1 through 4 is calculated at 60 percent of the retail market value, which is based upon the model year and total projected ending mileage, adjusted downward for any excess mileage. The number of vehicles associated with the annualized resale revenue equates to the following for each scenario presented: Current situation - three vehicles annually; scenario 1 - five vehicles; scenario 2 - five vehicles; scenario 3 - four vehicles; scenario 4 - six vehicles.