



King County

Metropolitan King County Council

King County Auditor's Office

Cheryle A. Broom, *King County Auditor*

King County Courthouse

516 Third Avenue, Room W1033

Seattle, WA 98104-3272

206.296.1655 Fax 206.296.0159

Email: KCAO.kingcounty.gov

TTY 296-1024

www.kingcounty.gov/auditor

MEMORANDUM

DATE: September 21, 2010

TO: Metropolitan King County Councilmembers

FROM: Cheryle A. Broom, County Auditor

SUBJECT: 2009 Emergency Medical Services (EMS) Levy Financial and Compliance Audit

The attached 2009 EMS Levy financial and compliance audit responds to Ordinance 15862 requesting an annual audit of the EMS Levy. The audit reviews EMS Levy fund's annual revenues, expenditures, and use of designated reserves that are identified in the council-adopted financial plan.

The audit also reviews the 2009 EMS Levy financial activities and assesses the strategic initiatives from the prior and current levy periods that are designed to achieve the regional EMS system strategic directives/objectives for improving the quality of patient care; managing the demand for high cost Advanced Life Support (ALS) services; and increasing EMS system efficiencies and containing costs. The audit also identifies potential opportunities to increase system efficiencies especially related to vehicle replacement policies.

Based on the results of the financial and compliance audit, we concluded that:

1. Overall, EMS financial operations were consistent with the council-adopted EMS Levy financial policies. However, internal controls could be strengthened to improve the accuracy of financial reporting, and the financial plan's inflator index used to forecast increases in ALS vehicle costs should be changed to a newer Bureau of Labor Statistics index developed to more closely track cost increases in trucks and ambulances.
2. Most strategic initiatives advanced the regional EMS system objectives but it was difficult to determine the extent of efficiency improvements that resulted from many strategic initiatives. Establishing project milestones and performance measures and targets is needed to better assess the performance of completed strategic initiatives, and benchmarking would be useful to identify topics that are likely to maximize system efficiencies in developing future EMS strategic initiatives.

3. ALS vehicle replacement costs could be managed more efficiently based on the results of life cycle cost analysis to optimize vehicle replacement cycles, and replacement costs can be reduced by remounting the ambulance module on new chasses.

The County Executive generally concurs with the audit's findings and recommendations, and efforts are already underway by the EMS Division, Office of Management and Budget, and Office of Finance to strengthen the EMS internal controls recommended for financial reporting. Other actions needed to implement the recommendations will be completed by year end through September 2011, while other actions related to new strategic initiatives will not be completed until January 2013 when a new EMS strategic plan is developed for the 2014 to 2019 EMS Levy period.

The King County Auditor's Office sincerely appreciates the professionalism of our independent consultant, Steve Miller of Miller & Miller, P.S., and the cooperation received from the management and staff of the Emergency Medical Services Division and Office of Management and Budget in completing the audit.

CB:SB:lo

**2009 EMERGENCY
MEDICAL SERVICES
FINANCIAL & COMPLIANCE AUDIT**



King County

Presented to
the Metropolitan King County Council
Government Accountability and Oversight Committee
by the
County Auditor's Office

Cheryle A. Broom, King County Auditor
Ron Perry, Deputy County Auditor
Susan Baugh, Senior Principal Management Auditor
Brian Estes, Senior Principal Management Auditor

Report No. 2010-01
September 21, 2010



Auditor's Office Mission

Through objective and independent audits and services, we promote and improve performance, accountability, and transparency in King County government.

Auditor's Office Vision

Our work is of the highest quality and integrity resulting in significant improvements in accountability, performance, and efficiency in county government and it promotes public trust.



The King County Auditor's Office was created in 1969 by the King County Home Rule Charter as an independent agency within the legislative branch of county government. Under the provisions of the charter, the County Auditor is appointed by the Metropolitan King County Council. The King County Code contains policies and administrative rules for the Auditor's Office.

The King County Auditor's Office provides oversight of county government

through independent audits and other studies regarding the performance and efficiency of agencies and programs, compliance with mandates, and integrity of financial management systems. The office reports the results of each audit or study to the Metropolitan King County Council.

The King County Auditor's Office performs its work in accordance with applicable Government Auditing Standards.



Audit and study reports are available on our Web site (www.kingcounty.gov/operations/auditor.aspx) in two formats: entire reports in PDF format (1999 to present) and report summaries (1992 to present). Copies of reports can also be requested by mail at 516 Third Avenue, Rm. W-1033, Seattle, WA 98104, by phone at 206-296-1655, or email us at KCAO@kingcounty.gov.

Alternative Formats Available Upon Request

TABLE OF CONTENTS

	<u>PAGE</u>	
Executive Summary	iii	
Chapters		
Chapter 1	Introduction	1
Chapter 2	2009 EMS Levy Financial Review	7
Chapter 3	EMS Strategic Initiatives	19
Chapter 4	Opportunities for Increased Efficiency	35
Exhibits		
Exhibit A	Summary of King County EMS Levy Funding by Program	2
Exhibit B	Financial Comparison of 2009 EMS Operations to Budget and Financial Plan	9
Exhibit C	Comparison of Year-End Fund Balances for Reserves and Designations to Adopted Financial Plan and Budget	11
Exhibit D	Changes in Estimated and Actual Inflatons Related to EMS Vehicle Costs	16
Exhibit E	Summary of Goals and Outcomes of 2002-2007 Strategic Initiatives	22
Exhibit F	Summary of Goals and Objectives of 2008-2013 Strategic Initiatives	24
Exhibit G	Primary Elements of Efficiency	29
Exhibit H	Performance Summary of EMS Strategic Initiatives (2002-2013)	31
Exhibit I	Performance Summary of Completed EMS Strategic Initiatives (2002-2009)	32
Exhibit J	1998-2008 Actual vs. Projected ALS Call Volume	37
Exhibit K	Vehicle Use Among King County ALS Providers 2002-2010	40
Exhibit L	EMS Peer Agency Use of ALS Vehicles in Primary and Backup Mode	42

Appendices

Appendix 1	2008-2013 Emergency Medical Services Levy Financial Plan	49
Appendix 2	2009 Adopted Emergency Medical Services Financial Plan	51
Appendix 3	Comparison of EMS 2009 Adopted Budget to the 2009 Budget Adopted In The Original 2008-2013 EMS Levy Financial Plan	53
Appendix 4	Performance Summary for Strategic Initiatives (2002-2013)	55
	List of Findings, Recommendations & Implementation Schedule	57
	Executive Response	61

Abbreviations

ALS	Advanced Life Support
BLS	Basic Life Support
CBD	Criteria Based Dispatch Guidelines
CPI	Consumer Price Index
CPR	Cardio-Pulmonary Resuscitation
EMD	Emergency Medical Dispatch
EMS	Emergency Medical Service
EMTs	Emergency Medical Technicians
JEMS	Journal of Emergency Medical Services
KCM1	King County Medic One
PPI	Producer Price Index

EXECUTIVE SUMMARY

Introduction

King County's Medic One/Emergency Medical Services (EMS) system provides internationally recognized out-of-hospital patient care, including life-saving medical assistance, to the 1.8 million residents throughout the county. The EMS System is funded principally by a voter-approved, six-year EMS Levy. The 2008 to 2013 EMS Levy provides an average of approximately \$67 million annually for advanced life support, basic life support, regional services, strategic initiatives, and other expenses. Strategic initiatives are identified in the EMS strategic plan as the drivers of system efficiencies and costs savings.

This *2009 Emergency Medical Services Financial Audit* focuses on the second year of the EMS Division's implementation of the 2008 to 2013 EMS Levy. The primary purpose of the audit is to assess the EMS Division's financial practices and compliance with the council-adopted 2009 EMS Levy policies and financial plan; review the EMS strategic initiatives funded in the prior and current levy to determine whether the initiatives achieved system efficiencies and cost savings; and identify potential opportunities to further improve EMS system efficiencies and program cost effectiveness.

General Conclusions

The audit concludes that the EMS Division managed the financial levy resources and activities in 2009 in accordance with the EMS Levy financial plan and policies. The audit includes recommendations to strengthen reporting of actual reserves and designated fund balances and a recommendation to use an alternate inflation index for estimating advanced life support (ALS) vehicle budget allocations in future EMS financial plans and annual budgets.

EMS Levy Managed in Compliance with Financial Plan and Policies

**Strategic Initiatives
Advanced EMS
Objectives for
Improved Quality,
Cost, and Efficiency of
Patient Care**

EMS is a high performance organization as reflected by the volume of programs and activities reported. The strategic initiatives advanced the EMS system objectives of improving out-of-hospital patient care, managing the growth of costly paramedic services, and achieving system efficiencies that resulted in cost savings or cost avoidance. The extent to which many strategic initiatives achieved expected efficiencies and costs savings, however, could not be consistently determined based on reported outcomes that are not clear and concise. Project plans with established project milestones and performance standards or targets were also needed to assess actual outcomes or performance improvements and to verify that actual performance was consistent with expected levels from year to year and for the duration of the levy period.

**EMS Financial Review
Findings and
Recommendations**

Summary of Findings and Recommendations

1. EMS managed its financial operations in accordance with the EMS Levy financial plan and policies. Actual revenues exceeded the adopted budget by \$1.3 million and expenditures were less than the budget by \$2.1 million resulting in a \$3.4 million positive operating variance. Budgeted contingencies of \$8.5 million were substantially unused, and the ending undesignated fund balance was \$10.8 million. This amount was \$0.3 million more than the adopted 2009 budget and well above the six percent minimum ending fund balance required by the EMS Levy financial plan.
2. Several issues were encountered in tracking fund balance reserves and designations that did not conform to internal controls standards with regard to the reliability of financial reporting. Subsequent to our initial audit testing of the reserves and designation balances, EMS was able to revise its calculations based on information derived from the

financial systems. As a result, the balances for reserves and designations are properly reflected.

The audit recommends that the EMS Division use the King County financial systems to track all reserves and designations whether included in the adopted budget or not.

**Producer Price Index
Could More Accurately
Forecast Future ALS
Vehicle Costs**

3. Inflation assumptions used for escalating the ALS standard unit costs were developed in accordance with the King County Council levy financial policies. However, the Consumer Price Index used for escalating the cost of ALS vehicles did not keep pace with actual inflation. The Producer Price Index (PPI) could more accurately forecast future ALS vehicle cost increases.

The audit recommends that the EMS Division, in collaboration with the Office of Management and Budget, consider the PPI as an alternate index for escalating the ALS standard unit cost for vehicles.

**Strategic Initiatives
Findings and
Recommendations**

4. Thirty (30) strategic initiatives were developed and largely implemented during the prior and current levy periods to advance the EMS objectives of continuous improvement in the quality of patient care, managed growth in the demand for EMS standards, and increased operational efficiencies. Significant cost avoidance and some cost savings were also achieved through the implementation of the strategic initiatives. This included cost avoidance of approximately \$49 million from 1998 to 2008 through the implementation of the revised Criteria Based Dispatch Guidelines. Select strategic initiatives also supported the regional EMS model by providing a forum for collective system planning, coordination, and decision making.

**Strategic Initiatives
Increasingly Focused
on BLS and Dispatch
Services Efficiencies**

5. In developing new strategic initiatives later in the prior and current levy cycles, EMS has become more focused on the quality of patient care. In addition, the focus of strategic initiative has increasingly shifted to basic life support (BLS) and dispatch service improvements that may have less impact on high cost ALS services. BLS and dispatch efficiencies or cost savings generally benefit local fire and dispatch agencies, which are important partners in the regional EMS system. However, renewed focus on ALS operations and cost efficiencies is important due to recent increases in demand for ALS services along with higher costs per ALS response and per capita. Shifting the scope of some initiatives to include EMS business operations would also improve the efficiency and transparency of EMS business practices.

The EMS strategic plans for both the prior and current levy also identify a subset of strategic initiatives that are specifically targeted to increasing the efficiencies and containing the cost of the EMS system.

The audit recommends that the EMS Division give greater consideration to business operations in developing new strategic initiatives to increase EMS system efficiency and improve the visibility and transparency of its business practices.

Benchmarking EMS to other peer agencies' system components and costs would be useful in identifying topics to consider in developing future strategic initiatives.

**Opportunities Exist to
Better Measure and
Improve EMS System
Efficiencies Through
Strategic Initiatives**

6. Opportunities to better measure efficiencies and cost savings are also possible by establishing appropriate performance measures to gauge the extent of EMS system improvements achieved through the strategic initiatives. Establishing annual project milestones or measures over the six-year levy cycle

and cost analysis for all new initiatives would also help promote greater EMS efficiencies and accountability in annual reporting. In addition, this would facilitate EMS system decision making that involves numerous stakeholder groups.

A renewed strategic initiative on vehicle replacement also offers opportunities for efficiencies and cost savings as ALS vehicles are currently used less than 6 EMS peers and optimum vehicle use has not been determined using life cycle cost analysis. Further, savings are possible through greater use of remounting of the ambulance module on a new ALS vehicle chassis compared to purchasing an entirely new ALS vehicle.

The audit recommends that the EMS Division develop additional performance measures to help promote greater accountability in annual reporting and facilitate decision making that involves numerous stakeholder groups as well as elected officials. Project milestones for completion of projects or project stages should be developed for initiatives with outcomes that cannot be quantified or otherwise measured. EMS should also conduct cost analysis for new initiatives with economic impacts.

The audit also recommends that the EMS Division conduct and use the results of an ALS vehicle life cycle cost analysis and increase use of remounting to optimize vehicle replacement cycles and lower costs.

Summary of Executive Response

The County Executive generally concurred with the audit findings and concurred either partially or fully with the audit recommendations. See the appendices section for the complete text of the Executive Response.

Acknowledgement

The auditor's office appreciates the assistance received by the Emergency Medical Services Division and the ALS Providers during the audit process. The auditor's office appreciates the professional services provided by Miller & Miller, P.S., in conducting the 2009 EMS Levy financial review.

1 INTRODUCTION

King County Council Mandates

EMS Levy Audit Mandates

King County Council Ordinance 15862, which adopted the EMS Levy financial policies in 2007, requires the auditor's office to conduct an annual audit of the 2008 to 2013 EMS Levy. Council Motion 13185 adopting the 2010 Auditor's Office Work Program also mandates a 2009 EMS Levy audit. The primary purpose of the audit is to review the EMS Division's financial practices and compliance with the council-adopted 2009 EMS Levy policies and financial plan. In addition, the audit assesses the EMS strategic initiatives as an important driver of EMS system efficiencies, and identifies potential opportunities to further improve EMS system efficiencies.

Background

In 1979, the Washington State Legislature authorized the use of a regional EMS levy to fund emergency medical services. Pursuant to the Revised Code of Washington (RCW) 84.52.050, King County passed six countywide levies from 1979 to 2007. The most recent six-year levy funds Medic One/EMS services from 2008 to 2013. Appendix 1 contains the EMS Levy Financial Plan attached to Ordinance 15861.

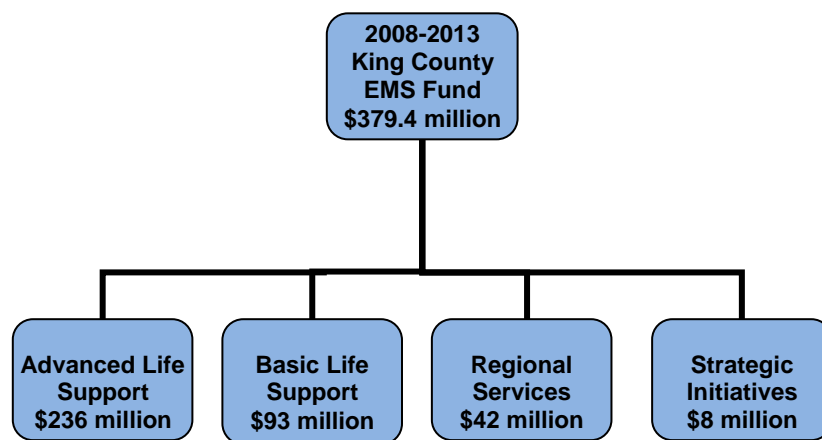
The Medic One/EMS levy is a countywide voter approved levy at a rate of \$.30 per \$1,000 on assessed property value. The EMS Levy was based on planned expenditures of approximately \$622.2 million during the six-year period. Approximately \$207.6 million was allocated directly to the City of Seattle to finance Seattle Medic One, and \$379.4 million was allocated to King County to finance four major Medic One/EMS programs shown in Exhibit A. The remaining \$35.2 million was placed in the King

County EMS Levy Fund as reserves for Seattle (\$15.1 million) and King County (\$20.1 million).

The following summarizes the portion of the EMS Levy that supports the regional county EMS system and programs, exclusive of the City of Seattle system.

EXHIBIT A

Summary of King County EMS Levy Funding by Program



SOURCE: 2009 Update of the 2008-2013 Emergency Medical Services Strategic Plan.

The EMS Levy adopted by the King County Council and approved by the voters provided an average of approximately \$63 million annually for advanced life support, basic life support, regional services, and strategic initiatives. The four programs are described in the EMS Strategic Plan as follows:

Four Major EMS Programs

Advanced Life Support (ALS) Services—Funding ALS services is the priority of the Medic One/EMS Levy. ALS service is provided by seven major paramedic providers who provide out-of-hospital emergency medical care for critical or life-threatening injuries and illnesses. ALS providers respond to approximately 30 percent of all EMS requests for services.

Basic Life Support (BLS) Services—BLS service is only partially funded by the levy. The current EMS Levy funds more than 4,500 Emergency Medical Technicians (EMTs) employed by 30 different fire districts throughout King County to help ensure standardized patient care and enhance BLS services.

Regional Support Services—Core regional Medic One/EMS programs and services support critical functions essential to providing out-of-hospital emergency care. These include uniform training of EMTs and dispatchers, regional medical control, regional data collection and analysis, quality improvement activities, and regional finance and administrative management by the King County EMS Division.

Strategic Initiatives—Strategic initiatives are new programs designed to improve the quality of Medic One/EMS services and manage the growth and costs of the system. Successful strategic initiatives are generally incorporated into Regional Support Services as ongoing core programs.

Approximately \$20.1 million of the EMS Levy revenues are allocated to contingencies and an additional \$8.5 million in reserves and designations managed by the EMS Division. Ordinance 15740 states that designated reserves (program balances) were added “to encourage cost efficiencies and allow for variances in expenditure patterns.” Appendix 2 contains a copy of the council-adopted 2009 EMS financial plan identifying the designated reserves.

EMS STRATEGIC PLAN AND STRATEGIC INITIATIVES

The Medic One/EMS 2008 to 2013 Strategic Plan is the primary policy and financial document that directs the Medic One/EMS system and the EMS Division in managing the regional system. Strategic initiatives were introduced as the fourth major EMS

EMS Strategic Initiatives and Objectives

program in the 1998 to 2003 EMS Strategic Plan. The initiatives are new programs and projects designed to achieve the following strategic directions:

- Improve EMS standards and quality of patient care.
- Manage the rate of growth in the demand for high cost ALS services.
- Increase the operational efficiency of the EMS system to help contain costs.

The EMS strategic plans for both the prior and current levy also identify a subset of strategic initiatives that are specifically targeted to increasing the efficiencies and containing the cost of the EMS system.

EMS Strategic Initiatives and Global Objectives

The strategic initiatives are also identified as one of three global objectives to ensure that the EMS system remains a regional, cohesive, medically based, tiered response system. The three global objectives are:

1. Maintaining the system as an integrated regional network of basic and advanced life support services provided by King County, local cities, and fire districts.
2. Making regional delivery and funding decisions cooperatively, and balancing the needs of advanced life support, basic life support, and regional programs emphasizing uniformity of medical care, training and quality assurance from a systemwide perspective.
3. Developing and implementing strategic initiatives to provide greater efficiencies within the EMS system through the three strategic directives identified above.

Although the focus of the individual initiatives changed over time, the three strategic objectives remained constant in guiding their development and implementation.

Strategic initiatives are funded with project lifetime budgets spanning several years or the full-term of the six-year levy. As noted above, successful strategic initiatives are incorporated into Regional Support Services as ongoing core programs. Other strategic initiatives may be completed, discontinued, or continued as strategic initiatives into the next levy cycle.

Audit Scope and Objectives

The three audit objectives established for this 2009 EMS Levy financial and compliance audit are:

1. Review the EMS Division's practices in managing the EMS Levy revenues and expenditures and in ensuring compliance with the 2009 EMS policies and financial plan. The review also addresses the EMS Division's use of restricted and designated EMS levy funds set aside in various reserve and contingency accounts. The status of the millage reduction reserve balance at the end of 2009 is also reported.
2. Assess the strategic initiatives to determine the extent to which the initiatives achieved stated objectives and improved the efficiency and cost-effectiveness of the EMS system. This review encompasses the EMS strategic directions identified above, efficiency concepts and standards, and best EMS practices identified in literature review.
3. Identify opportunities to further improve the efficiency and cost-effectiveness of the EMS system. This review considers benchmarking as a tool to help identify areas for future initiatives and presents examples of strategic initiatives that increased the efficiency and cost-effectiveness of the system while maintaining rigorous standards for patient care.

The auditor's office engaged Miller & Miller, P.S. through a competitive solicitation process to conduct the 2009 financial audit. Auditor's office staff performed strategic initiatives and efficiency reviews.

Methodology

The financial review included a comparison of the financial plan to actual results for the year ended December 31, 2009, including a comparison of revenues, expenditures, and budgets for all four EMS programs. A sample of 2009 transactions was drawn from the ALS providers, BLS providers (including the five largest providers), and the EMS Division for select regional support services and strategic initiatives programs. In addition, the budget, expenditures, funds balances, and cost escalation factors used to project costs and reserve requirements were reviewed in relation to the mandates contained in attachments to Ordinance 15861 that adopted the 2008-2013 EMS Levy.

Audit staff obtained information from interviews of EMS Division personnel, ALS program providers, and select contacts with other EMS providers to complete the analysis required to meet the audit objectives. EMS documentation reviewed and analyzed included the council-adopted, voter-approved EMS Levy and annual financial plans, strategic plans, and annual reports covering the years 1998 to 2013. Supporting King County and EMS financial reports, service contracts, and other financial records were also reviewed.

Best EMS practices and benchmarks were also researched. A peer agency survey and interviews with three vehicle manufacturers were also conducted that focused on specific EMS vehicle replacement practices and costs.

Scope of Work on Internal Controls

We assessed internal control relevant to the audit objectives. We satisfied these objectives by performing comparative analysis, testing selected transactions, and obtaining support for revenue, expenditure, and reserve balance calculations. We also reviewed relevant ordinances, financial policies, plans and procedures related to and controlling the use of EMS Levy funds.

2 2009 EMS LEVY FINANCIAL REVIEW

Chapter Summary

This chapter focuses on the second year of the EMS Division's implementation of the 2008 to 2013 EMS Levy financial plan. As mandated by County Ordinance 15862, the primary objective of the audit is to review the 2009 EMS Levy financial activities and compare the annual revenues, expenditures, and reserve and contingency balances to the amounts identified in the annual financial plan adopted by the King County Council. The financial analysis included testing a limited sample of transactions to verify that all funds were used for the purposes intended. Grants and other sources of revenues that augment the EMS Levy programs and services were also reviewed to determine the amount of the revenues and expenditures, and impact on levy supported program, reserve, and contingency fund balances.

2009 EMS Funding and Financial Plan

King County's regional EMS system is funded by a six-year levy. In 2009, the budgeted revenues were \$66,881,735 and budgeted expenditures were \$59,861,919, not including contingencies or reserves. The reserves include a millage reduction reserve used to track the unused ALS salary and wage contingency and other positive fund balances so that the council may consider a potential millage reduction in the later years of the levy. A minimum EMS Levy *End Fund Balance* of six percent of annual revenues is required. (Appendix 2 contains a copy of the adopted 2009 EMS Levy financial plan.)

Summary of Findings and Recommendations

Our results indicate that EMS managed its financial activities in accordance with the EMS Levy financial plan and policies. Actual revenues exceeded the adopted budget by \$1.3 million and

**EMS Managed Levy
Funds in Compliance
with Financial Plan and
Policies**

expenditures were less than the budget by \$2.1 million resulting in a \$3.4 million positive operating variance. EMS did not use a substantial amount of the \$8.5 million budgeted contingencies and added \$5.1 million to the millage reduction reserve. The EMS Levy ending undesignated fund balance was \$10.8 million, which was \$0.3 million more than the adopted 2009 budget and well above the six percent minimum ending fund balance required by the EMS Levy financial plan.

The audit identified several issues in tracking fund balance reserves and designations that did not conform to internal controls standards with regard to the reliability of financial reporting. Subsequent to the initial audit testing, EMS was able to revise its calculations and show a clear trail from accounting records to program/provider balances. As a result, the balances for reserves and designations are properly reflected.

The audit also found that inflation assumptions used for escalating the ALS standard unit costs were developed in accordance with the King County Council levy financial policies, but did not track closely with vehicle acquisition costs due to deflation in 2009. The audit recommends that EMS management use the King County financial systems to track all reserves and designations whether included in the adopted budget or not. The audit also recommends that EMS management, in collaboration with the Office of Management and Budget, consider an alternate Producer Price Index for tracking and escalating the annual ALS standard unit cost allocation for vehicles. The audit also recommends that EMS continue to use the revised process for showing a clear trail from accounting records to program/provider balances.

FINDING 1: USE OF EMS LEVY FUNDING CONFORMED TO 2009 ADOPTED EMS POLICIES AND FINANCIAL PLAN

The audit determined that the use of EMS Levy funding complied with the 2009 Adopted EMS Policies and Financial Plan based on a comparison of the financial plan contained in Ordinance 15861, the 2009 annual adopted budget, actual results from the King County ARMS financial system, and schedules prepared by EMS management to calculate reserves and designations.

Exhibit B below presents a summary comparing the 2009 EMS Levy operations to the 2009 adopted budget and financial plan.

EXHIBIT B					
Financial Comparison of 2009 EMS Operations to Budget and Financial Plan					
	2009 Proposed (15861)	Difference	2009 Adopted Budget	Difference	2009 Actual
BEGINNING FUND BALANCE	\$ 7,478,574	\$ 8,929,036	\$ 16,407,610	\$ 3,278,401	\$ 19,686,011
EMS REVENUES					
Taxes	64,065,620	2,136,308	66,201,928	1,190,154	67,392,082
All Other Revenues	799,358	(119,551)	679,807	130,696	810,503
EMS REVENUE TOTAL	64,864,978	2,016,757	66,881,735	1,320,850	68,202,585
EXPENDITURES					
Advanced Life Support Services:	(36,100,374)	22,503	(36,077,871)	421,071	(35,656,800)
Basic Life Support Services	(14,886,717)	(261,030)	(15,147,747)	(133,915)	(15,281,662)
Regional Services:	(6,478,134)	(473,349)	(6,951,483)	802,019	(6,149,464)
Strategic Initiatives:	(1,491,275)	(193,543)	(1,684,818)	1,055,350	(629,468)
Total Expenditures	(58,956,500)	(905,419)	(59,861,919)	2,144,525	(57,717,394)
Total Excess of Revenues Over Expenditures	5,908,478	1,111,338	7,019,816	3,465,375	10,485,191
Other Items Affecting Fund Balance	(3,856,688)	(4,660,905)	(8,517,593)	8,335,202	(182,391)
ENDING FUND BALANCE	9,530,364	5,379,469	14,909,833	15,078,978	29,988,811
TOTAL RESERVES AND DESIGNATIONS	(5,471,421)	996,416	(4,475,005)	(14,741,418)	(19,216,423)
ENDING UNDESIGNATED FUND BALANCE	\$ 4,058,943	\$ 6,375,885	\$ 10,434,828	\$ 337,560	\$ 10,772,388

SOURCE: EMS Levy 2009 Adopted Budget and Financial Plan.

EMS 2009 Ending Fund Balance \$3 Million Higher than Planned

The results indicate that the actual 2009 EMS levy revenues were higher than the 2009 adopted budget by \$1.3 million, and actual expenditures were less than the budget by \$2.1 million. Actual excess revenues over expenditures equaled \$10 million during 2009 compared to the budget of \$7 million. Factors contributing to the \$3.4 million positive budget variance included

approximately \$1.2 million in taxes above the projected amount and approximately \$1.9 million in under-spending in the regional services and strategic initiatives program areas.

Also evident from the financial comparison chart presented above is that the “Other Items Affecting Fund Balances” were substantially unused. This category is largely comprised of EMS contingencies, including the ALS Salary and Wage Contingency (\$2.2 million), and the Disaster Response Contingency (\$4.8 million), which were budgeted but not needed during 2009. The category also includes funding for the audit.

EMS largely reduced the combination of the \$3.5 million positive operating variance, the \$3.3 million positive variance in beginning fund balance, and the \$8.5 million in unused contingencies by adding \$14.8 million over the amount planned in the adopted budget to reserves and designations. These included:

1. \$0.5 million added to the reserve for encumbrances;
2. \$1 million added to designations for King County Medic One (KCM1) equipment bringing the total to \$1.8 million;
3. \$0.7 million added to designations for ALS providers bringing the total to \$2.8 million;
4. Minor changes to the Regional Support program balances bringing the total to \$2.0 million; and
5. \$5.1 million added to the reserve for millage reduction bringing the total to \$9.6 million.

EMS Levy Ending Fund Balance Well Above Six Percent Threshold Required by Adopted EMS Financial Policies

These additions or transfers (and other reserves in the budget offset by additions to provider loan balances) reduced the ending undesignated fund balance by approximately \$19 million. The ending undesignated fund balance of \$10.8 million was approximately \$0.3 million more than the adopted 2009 budget and \$6.7 million more than the original proposed 2009 budget in County Ordinance 15861. The actual ending undesignated fund

balance as a percent of annual revenue was also well above the six percent threshold established by the EMS Levy financial plan.

A more detailed comparison schedule related to the year end balances for the reserves and designations was developed based on EMS Division worksheets and is provided in Exhibit C.

EXHIBIT C
Comparison of Year-End Fund Balances for Reserves and Designations to Adopted Financial Plan and Budget

	2009 Proposed (15861)	Difference	2009 Adopted Budget	Difference	2009 Actual
RESERVES AND DESIGNATIONS					
Encumbrances	\$ (977,521)	\$ 977,521	\$ -	\$ (519,010)	\$ (519,010)
Reappropriation	(25,000)	25,000	-	-	-
Designations					
Prepayment	-	-	-	-	-
Provider/Program Balances	(1,022,900)	481,917	(540,983)	(3,735,825)	(4,276,808)
ALS Provider Loans	-	-	-	939,172	939,172
KCM1 Equipment Replacement	-	-	-	(1,811,306)	(1,811,306)
Designations from 2002-2007 Levy	-	(689,773)	(689,773)	-	(689,773)
Reserves for Unanticipated Inflation					
Diesel Cost Stabilization	(1,512,000)	-	(1,512,000)	-	(1,512,000)
Pharmaceuticals/Medical Equipment	(506,000)	-	(506,000)	-	(506,000)
Call Volume/Utilization Reserve	(488,000)	-	(488,000)	-	(488,000)
Reserves					
Medic Unit/Chassis Obsolescence	(375,000)	201,751	(173,249)	-	(173,249)
Risk Abatement	(565,000)	-	(565,000)	-	(565,000)
Millage Reduction	-	-	-	(9,614,449)	(9,614,449)
TOTAL RESERVES AND DESIGNATIONS	\$ (5,471,421)	\$ 996,416	\$ (4,475,005)	\$ (14,741,418)	\$ (19,216,423)

SOURCE: EMS Levy 2009 Adopted Financial Plan and Budget and EMS Division Financial Documents.

EMS Managed Reserves and Designations in Conformance to EMS Financial Plan and Policies

The comparison shown in Exhibit C indicated that EMS managed the reserves and designations as required by the adopted 2009 policies and financial plan. However, the audit identified issues and errors in developing a comparison related to financial reporting. Finding 2 summarizes the financial reporting issues.

FINDING 2: ISSUES WERE IDENTIFIED IN TRACKING EMS LEVY FUNDING THAT SUGGEST NEED FOR IMPROVED INTERNAL CONTROLS FOR FINANCIAL REPORTING

In developing the comparison shown in Exhibit C, the audit identified several issues in tracking fund balance reserves and designations that did not conform to internal controls standards with regard to the reliability of financial reporting. The American Institute of Certified Public Accountants Statement on Auditing Standards No. 115 paragraph .03 states that “internal control is a process—effected by those charged with governance, management, and other personnel—designed to provide reasonable assurance about the achievement of the entity’s objectives with regard to the reliability of financial reporting, effectiveness and efficiency of operations, and compliance with applicable laws and regulations.” Without an audit trail for each change in each provider balance, management may lose accountability over the reserve and designation balances. In addition, if the actual ending fund balances in reserves and designations are not accurately reported, financial decisions may be based on insufficient information.

Financial Worksheets with Program Level Detail Not Tied to Financial System

One issue identified in developing the above year-end comparison was the amounts added and certain balances used in the EMS worksheets did not tie to the county’s financial system. One factor contributing to these differences is that Excel applications and worksheets are used to perform the related calculations and presentations, because program level detailed accounts have not been established in the county financial systems. Since these financial activities are performed external to these financial systems, they do not have the same level of controls.

The audit also noted a formula error in the calculation of the millage reduction reserve that resulted in a \$5.5 million

overstatement of that reserve. However, the error is corrected in the millage reduction reserve in the financial presentation provided above and was not included in the 2010 Adopted Budget. The millage reduction reserve is used to track the unused ALS Salary and Wage contingency and other positive budget variances so that millage reduction in the later years of the levy may be considered by council. To the extent that the millage reduction reserve is overstated, the council might reduce the millage rate more than the amount necessary to fully fund the EMS programs in the later years of the levy.

All Balances for EMS Reserves and Designations Were Properly Reflected in Financial Reports

Subsequent to our initial audit testing of the reserves and designation balances, EMS was able to revise its calculations based on information derived from the financial systems. As a result, the balances for reserves and designations are properly reflected. Accrual corrections were included.

Finally, King County reports both reserves and designations in the Non-Major Special Revenue Funds, Sub Combining Balance Sheet in its Comprehensive Annual Financial Report. However, EMS reported only the 2008 reserves for encumbrances and "Reserved" for KC Medic One (KCM1) equipment replacement. The KCM1 equipment replacement is reported as a designation in the internal EMS levy financial information. The annual adopted budget lists several various reserves and designations, which indicates that the county's financial systems have the capacity to track reserves and designations.

RECOMMENDATION 1

EMS management, in collaboration with OMB, should use the King County financial systems to track all reserves and designations whether included in the adopted budget or not. Entries to the related accounts should be based on actual budget

and expenditure data, supported by underlying accounting records, and subject to standard journal entry process controls.

RECOMMENDATION 2

If EMS management continues to use Excel applications for tracking reserves and designations because the level of detail necessary for management purposes exceeds the level of detail provided by the county's financial systems, we recommend that EMS use the Excel applications as account level subsidiary ledgers that would agree to, or reconcile with, the general ledger accounts established to track fund balance reserves and designations.

**FINDING 3: INFLATION FACTORS FOR DETERMINING THE ANNUAL ALS
STANDARD UNIT COST ALLOCATIONS CONFORMED TO EMS LEVY POLICIES**

Section 12 of King County Ordinance 15861 addresses program cost allocations. The section states that allocations to support the advanced life support services and basic life support services should be made in accordance with the baseline cost and inflation assumptions contained in Attachment C to the ordinance, entitled *Inflation Assumptions and ALS/BLS Costs*. Allocations are to be adjusted proportionally based on actual inflation in the preceding year, as published by the referenced statistical agency.

**Inflation Factors Used
in Developing 2009
Budget Conformed to
Legislative Intent**

In developing the 2009 budget, EMS used inflation assumptions for escalating the 2009 ALS standard unit costs that were not the same as the actual inflation factors reported in the prior year, because the prior year's actual published inflation factors were not known until after the budget was adopted. However, EMS did use inflation factors that were consistent with the intent of Section 12 of Ordinance 15861. EMS showed the reconciliation to actual indices that were incorporated into the 2010 Adopted Budget.

As an overall test of the impact of the EMS methodology for inflating all four major program areas, we compared the budget increases from 2008 to 2009 to the factors contained in the levy documents. While some differences were noted in select program areas, the overall 2009 budget increase, including the ALS increase, was reasonable.

**FINDING 4: NEW PRODUCER PRICE INDEX WOULD MORE ACCURATELY
FORECAST FUTURE ALS VEHICLE COSTS**

During the 2008 to 2013 levy period, ALS providers began receiving an annual per vehicle unit cost allocation that included inflationary adjustments for both vehicle operating and equipment costs. ALS vehicles are scheduled for replacement every three years and then placed in a backup status for three additional years. The equipment allocation provides funding equivalent to one-third of a vehicle's replacement cost to ensure full funding of new vehicles purchased at the end of the third year.

**CPI Did Not Accurately
Track Price Increases
for ALS Vehicles**

In the case of future ALS vehicle costs, the inflator selected was a component of the Consumer Price Index (CPI), the transportation index, which was adjusted by the King County OMB to account for changes in fuel prices. The index was fairly broad, tracking numerous transportation costs such as new and

used motor vehicles; motor vehicle parts, maintenance, and fuel; and public transportation. However, due to 8.3 percent deflation in the transportation index in 2009, the vehicle replacement cost allocation did not keep pace with the actual cost of new vehicle acquisitions. Federal Bureau of Labor Statistics officials suggested the Producer Price Index (PPI) might better track producer prices for truck vehicles and would more closely align with price changes in ambulance type vehicles.

Exhibit D shows: (1) 2006 actual and later year estimates for increased vehicle costs as stated in the EMS financial plan; (2) actual changes in the transportation index through 2009; and (3) changes in a PPI truck related index more suitable to tracking changes in the future costs of vehicles such as ambulances.

EXHIBIT D							
Changes in Estimated and Actual Inflatons Related to EMS Vehicle Costs							
Inflatons	2006	2007	2008	2009	2010	2011	2012
2006 Actual/ 2007-2012 Assumed Rate of Increase in Financial Plan	7.8%	6.9%	5.8%	5.8%	5.8%	5.8%	5.8%
Actual change in transportation index (unadjusted for fuel costs) ^(a)	4.0%	2.1%	5.9%	-8.3%	n/a	n/a	n/a
Annual change in PPI for manufactured vehicles ^(b)	3.0%	2.3%	2.7%	1.8%	n/a	n/a	n/a

Notes: ^(a)CPI from Bureau of Labor Statistics, Series ID: CUUROOOOSAT.

^(b) PPI Series ID WPU141302 tracks transportation equipment, trucks and vehicles produced on a purchased chassis.

SOURCE: U. S. Bureau of Labor Statistics, EMS Levy Financial Plan.

As shown in Exhibit D, the CPI based transportation index deflated during 2009, causing the capital portion of the ALS unit allocation to decline. ALS providers were able to absorb the unanticipated reduction in 2009 revenue because carryover capital funds were available from prior years to cover recent vehicle purchase costs. But ALS providers are concerned that the CPI based transportation inflator will not fully cover the cost of purchasing future vehicles.

**Producer Price Index
More Closely Mirrored
Changes in ALS Vehicle
Costs**

Exhibit D also shows that a PPI related index more closely mirrored changes in ALS vehicle costs, although increases in the PPI for manufactured vehicles (WPU141302) was lower than the 5.09% average annual increase in EMS funded ALS vehicles purchased since 2002. A relatively new PPI created in 2008 (WPU1413029), which tracks truck equipment as well as ambulance and fire trucks specifically, could be the best PPI index to track future increases in ALS vehicle costs.

RECOMMENDATION 3

EMS management should use a PPI such as WPU1413029 that tracks truck equipment such as fire trucks and ambulances to forecast future vehicle costs and would appear to more closely approximate actual costs than the U.S. Department of Labor, Bureau of Labor Statistics, Vehicle Costs factor currently used in the EMS Levy financial plan.

**FINDING 5: EMS LEVY REVENUES WERE CONFIRMED AND APPROPRIATELY
RECORDED IN THE EMS LEVY FINANCIAL DOCUMENTS**

By far the most significant source of EMS revenue is taxes. We confirmed the recorded levy balance with the King County Treasurer. We reviewed interest earnings by using a substantive analytical test, noting the amount appears to be reasonably stated. While the remainder of revenues is immaterial, we selected some Charges for Services for audit testing. The results indicate that the Charges for Services balances were reasonably stated.

EMS-related grant revenues that were not reflected in the EMS operating results were also reviewed. Grant revenue in the amount of \$650,153 that relate to EMS activities were recorded in the Public Health (PH) fund. Since the related expenditures are also reported in the Public Health fund, there was no impact on levy supported programs, reserves, and contingency fund balances.

3 EMS STRATEGIC INITIATIVES

Chapter Summary

This audit focuses on the second year of the EMS Division's implementation of the 2008 to 2013 EMS Levy. This chapter assesses whether the strategic initiatives developed during the prior and current EMS levy cycles achieved the objectives of improving EMS system efficiencies. The review included initiatives from the prior levy cycle to ensure that a sufficient number of initiatives were complete to assess the actual outcomes. The chapter also considers opportunities to further improve EMS system efficiencies and program cost effectiveness in developing new strategic initiatives.

Consistent with the EMS strategic plans, EMS developed the strategic initiatives to enhance the existing regional support services as the core pre-hospital medical services provided to the community. Examples of service enhancements include testing a new protocol to improve patient care or reduce growth in service demand; piloting new methods to improve access to care or more cost-effective service delivery; and implementing new technologies to increase the efficiency of various EMS operations.

The EMS strategic plans for both the prior and current levy also identify a subset of strategic initiatives specifically targeted to increasing the efficiencies and containing the cost of the EMS system. EMS fiscal reviews and analyses are included in the 2002 to 2007 and current strategic initiatives targeted to increased system efficiency and cost effectiveness.

EMS funds the strategic initiatives with project life budgets spanning several years or the full-term of the six-year levy. EMS

incorporates successful strategic initiatives into Regional Support Services as ongoing core programs. Other strategic initiatives may be completed, discontinued, or continued as strategic initiatives into the next levy cycle.

Summary of Findings and Conclusions

EMS developed 30 strategic initiatives during the prior and current levy periods to advance the EMS objectives of continuous improvement in the quality of patient care, managed growth in the demand for EMS services, and increased operational efficiencies. Select strategic initiatives were also instrumental in maintaining the regional EMS model by providing a forum for collective planning and decision making. Significant cost avoidance and some cost savings were achieved by implementing select strategic initiatives.

Based on research conducted during the audit, the strategic initiatives were also consistent with best practices for out-of-hospital patient care. As reported by the Institute of Internal Medicine, the Medic One/EMS system continues to be recognized as the model to emulate in out-of-hospital care.

In developing new strategic initiatives later in the prior and current levy cycles, EMS has become increasingly focused on the quality of patient care. In addition, EMS has increased support for BLS and dispatch service improvements that may have less impact on high cost ALS services. BLS and dispatch efficiencies or cost savings generally benefit local fire and dispatch agencies.

EMS Performance Measures Would Help Promote Increased Accountability

Opportunities could be identified through benchmarking of EMS system components to achieve further improvements, efficiencies and cost savings. Shifting the scope of some initiatives to emphasize EMS business practices and system components could also improve the transparency of EMS operations.

Establishing annual project milestones over the six-year levy cycle and instituting performance measures and benefit-cost analysis for new initiatives would also help promote greater accountability in annual EMS reporting.

FINDING 6: STRATEGIC INITIATIVES CONSISTENTLY ACHIEVED REGIONAL EMS OBJECTIVES

An extensive number of strategic initiatives were developed during the current and prior levy cycles to achieve the EMS strategic objectives. Exhibit E identifies the strategic goals and achieved outcomes for the 2002 to 2007 strategic initiatives. Major themes emphasized in developing the 2002 to 2007 initiatives were:

EMS Focus on Dispatch, Technology, Training and Education, and Injury Prevention in 2002 to 2007 Levy Period

- Dispatch initiatives to: 1) revise dispatch criteria and protocols to reduce growth in the demand for and cost of ALS services; and 2) educate and train dispatchers to correct level of response to ensure excellent patient care and to enhance the efficiency and cost effectiveness of EMS dispatch services.
- Technology enhancements to improve medical/system data collection, accuracy and completeness; and to facilitate analyses of systemwide operations and EMS personnel certification through electronic means.
- Injury prevention programs and public education services to reduce injuries and manage the rate of growth in the demand for EMS services.

EXHIBIT E
Summary of Goals and Outcomes of 2002-2007 Strategic Initiatives

	Strategic Goals	Achieved Outcomes
ALS Response and Dispatch Triage Criteria	Manage Growth Contain Costs	Reduced ALS growth and avoided \$5 million in annual costs
EMD Quality Improvement	Quality of Care	Reviewed 4,080 dispatch cases
Enhanced CBD Basic Training and Continuing Education Curricula	Manage Growth Gain Efficiencies	Developed courses and problem/scenario-based training
Computer Aided Dispatch (CAD) System	Quality of Care Gain Efficiencies	Automated criteria-based dispatch guidelines
Web-Based Training for EMS Personnel/Dispatchers	Gain Efficiencies	Added eight new competency based training modules
Regional Electronic Data Collection Project	Quality of Care	Converted records to electronic format to improve access and oversight
Regional Medic One/EMS Tracking Resource Online	Gain Efficiencies	Created database to track essential personnel information
Bellevue Fall Pilot Study	Manage Growth Gain Efficiencies	Decreased fall risks by 36% for patients served
Child Passenger Seat	Manage Growth	Trained or provided car seats and/or car seat inspections for 850 clients
Pre-School Injury Prevention	Manage Growth	Developed pre-school injury awareness literature/campaign
Think Again--High School Injury Awareness	Manage Growth	Provided car safety training to teens
Financial Review of Medic One/EMS Subfunds	Not Applicable	Reviewed EMS subfunds
Paramedic/EMT Procedure and Patient Treatment	Quality of Care	Reviewed select procedures and treatment plans
Enhanced Care for Specific EMS Patients	Quality of Care Contain Costs	Created program to target diabetes and high blood pressure
Impact of State Budget Cuts on EMS System	Not Applicable	Reviewed and summarized budget impacts
Strategic Plan/Levy Planning	Not Applicable	Produced Strategic Plan

SOURCES: EMS Division Strategic Plans and Updates for 2002 to 2013; EMS Division Annual Reports for 2002 through 2009; and EMS Division Strategic Initiative summaries and documents.

As shown in Exhibit E, EMS implemented all 16 strategic initiatives during the 2002 to 2007 levy period at a cost of \$2.2 million. Four initiatives focused on dispatch initiatives; three on technology enhancements related to training and oversight; and four on injury prevention and community awareness initiatives to advance the EMS strategic objectives. Three additional initiatives focused on studies and plans, including the strategic plan, related to the regional EMS system global objectives. EMS introduces two additional strategic initiatives in the middle of the levy cycle that focused on quality of care.

**EMS Focus on Dispatch,
Training and Education,
and Injury Prevention
Continued in Current
Levy Period**

Exhibit F identifies the strategic goals and primary objectives of the 2008 to 2013 strategic initiatives. Major themes emphasized in designing the current initiatives were:

- Dispatch initiatives to better manage BLS system resources for non-emergency calls; provide incentives to increase dispatch center's compliance with dispatch standards; and promote dispatch personnel's participation in advanced medical dispatch training.
- Interactive competency based training enhancements to facilitate completion of basic training and continuing education requirements for EMTs, paramedics and dispatchers, and completion of evaluations online used to improve the quality of patient care and gain EMS system efficiencies.
- Expansion of injury prevention programs, community partnerships, and public education services to improve the quality of patient care and manage the rate of growth in the demand for BLS services.

EXHIBIT F		
Summary Goals and Objectives of 2008-2013 Strategic Initiatives		
	Strategic Goals	Primary Objectives
Better Management of Non-Emergency Calls	Quality of Care Contain Costs	Increase call transfers to nurseline; modified rapid dispatch procedures; and pilot lower-cost response unit
Dispatch Center Performance Standards	Quality of Care	Offer incentives to meet standards
Advanced EMD Training	Quality of Care	Fund dispatcher training opportunities
Criteria-Based Dispatch/CAD Integration	Quality of Care	Complete CAD integration for dispatchers
Expanded Countywide Fall Program	Manage Growth Contain Costs	Expand countywide falls program for seniors
Injury Prevention Small Grants for BLS Agencies	Quality of Care	Award grants to BLS agencies to conduct falls prevention services
Injury Prevention Community Awareness Campaigns	Manage Growth Contain Costs	Educated health care workers and developed public awareness campaign
Injury Prevention Grant Writing	Contain Costs	Hired grant writer to obtain grants for seniors
Public Access Defibrillation	Quality of Care	Completed plan, medical study, and community awareness campaign
Enhancements to Competency Based Training Online	Quality of Care Gain Efficiencies	Design new interactive EMS courses
System Enhanced Network Design	Quality of Care	Completed implementation plan
All Hazards Emergency Management	Quality of Care	Assess EMS system preparedness
EMS Efficiencies and Evaluations	Gain Efficiencies	Study potential areas of efficiencies
Strategic Plan for Next EMS Levy	Not Applicable	Prepare 2014 to 2019 Strategic Plan

SOURCES: EMS Division Strategic Plans and Updates for 2002 to 2013; EMS Division Annual Reports for 2002 through 2009; and EMS Division Strategic Initiative summaries and documents.

Cost of 2008 to 2013 Strategic Initiatives Increased to \$8 Million (281 Percent Higher)

As shown in Exhibit F, the EMS Division launched 13 of 14 strategic initiatives and fully implemented one during the first two years of the 2008 to 2013 EMS Levy. The estimated cost of fully implementing the 14 strategic initiatives during the levy period is estimated at \$8 million. This represents a 281 percent increase over the cost of the 2002 to 2007 strategic initiatives. Four initiatives again focused on dispatch enhancements; five on injury prevention and community awareness; two on technology and training enhancements to advance the EMS strategic objectives. Three additional initiatives again focused on studies and plans related to EMS disaster preparedness and the global objectives of maintaining the regional EMS system. One of the studies had not yet been initiated.

**EMS Strategic
Initiatives Also
Conformed to Best
Practices**

The EMS strategic initiatives for both the prior and current levy period were also reviewed for consistency with EMS best practices. For example, the focus of the EMS strategic initiatives on patient care and injury prevention, emergency medical dispatch (EMD), advanced technology, regional coordination and strategic planning were all consistent with current best practices identified in our audit research. Select initiatives, some of which were closely coordinated with regional medical services projects, were cited as the best practice in the literature. One example is the development of dispatcher-assisted cardio-pulmonary resuscitation (CPR) and other pre-arrival instructions to callers or patients that were pioneered by EMS. Another example is the EMS Online Training for EMTs that is now used by King County EMTs, 14,000 EMTs throughout Washington State, and the Navy (U.S. Department of Defense). EMS Online Training was also approved as a King County Executive Entrepreneurial Project and approved by the U.S. Department of Homeland Security as appropriate content for certified EMS providers.

Select strategic initiatives were also instrumental in maintaining the regional EMS model by providing a forum for collective planning, coordination, and decision making. As reported by the Institute of Internal Medicine, the Medic One/EMS system continues to be recognized as the model to emulate in out-of-hospital care.

FINDING 7: STRATEGIC INITIATIVES COULD BE STRENGTHENED THROUGH BENCHMARKING TO PROVIDE VALID PEER COMPARISONS OF EXISTING OPERATIONS AND A FRAMEWORK FOR SELECTING FUTURE INITIATIVES

King County has been a nationally and internationally recognized leader in the EMS field for more than 30 years. Stable financial support provided through the special EMS Levy is essential to sustaining its leadership position. Due to a rate increase in the

Stable Financial Support Contributed to County Leadership in the EMS Field

2008 to 2013 EMS Levy adopted by county voters in 2007, the King County regional EMS system does not face the same financial constraints that other King County agencies or other EMS providers across the country have experienced. For example, approximately one-half of the survey respondents to a Journal of Emergency Medical Services (JEMS) 2009 Salary and Workplace Survey (October 2009 publication) reported an operating budget decrease in the past 12 months. As a result, seventy percent of respondents are reevaluating their production and utilization of unit hours—a common performance measure in the EMS field and private ambulance industry.

Between 2003 and 2008, the demand for ALS services increased, the cost of ALS responses by 44 percent, and the cost per capita increased by 49 percent. Yet, in the current levy period, EMS has increasingly focused on the quality of patient care in developing new strategic initiatives despite the addition of a new Medical Quality Improvement Section in the Regional Support Services Program. Nine of the 14 strategic initiatives (or 64 percent) were developed primarily to advance the quality of patient care. Although the patient care initiatives may also help increase efficiencies, EMS did not identify any new initiatives that would specifically target improved ALS system/operational efficiencies and opportunities to contain costs.

EMS has increased its support for BLS and dispatch service improvements that may have less impact on high cost ALS services. BLS and dispatch efficiencies or cost savings generally benefit local fire and dispatch agencies, which are important partners in the regional EMS system. However, a renewed and balanced focus on ALS operations and cost efficiencies is important due to recent increases in demand for ALS services along with higher costs. It is also important because the average ALS response time rose slightly in the current levy period.

Economic uncertainty is expected to continue in King County during the next few years. According to the JEMS study, those EMS agencies that will fare the best are those that will approach the downturn as an opportunity to be proactive in reducing costs and increasing efficiencies. The strategic initiatives provide the framework for increasing efficiencies in King County, particularly if the focus can be shifted to achieving operational efficiencies through thorough analysis of operations and business practices.

Our research into best practices and benchmarking found several examples of initiatives and business practices adopted by EMS agencies that have the potential to help contain or reduce operating costs while maintaining high quality of care standards. For example, the JEMS survey and other EMS studies reported on the following initiatives:

**Numerous
Opportunities to
Improve Efficiencies
and Reduce Costs
Identified in EMS Best
Practices Research**

- Using a mixture of shifts rather than the predominant 24-hour shift, to add flexibility and provide better matching of supply to demand.
- Decreasing overtime through better staffing and scheduling based on service demand.
- Extending the life of EMS vehicles and apparatus through better maintenance and remounting (see Chapter 4 for more information on cost savings associated with remounts).
- Reducing, delaying or eliminating cost-of-living and merit increases; travel benefits; and education and training benefits.
- Reevaluating the use of technology, including clinical devices, communications, and computer-aided dispatch equipment, prior to making new investments. In some cases, existing devices and pharmaceutical treatments provide the same results at a fraction of the cost.
- Analyzing the true cost of improving patient care and system operations (e.g., improved technology also leads to increased training and equipment costs).

Fitch & Associates¹ has also developed an EMS system benchmarking tool that identifies 50 benchmarks in eight EMS operations categories. In addition to the Medical First Response, Medical Transportation, and Medical Accountability, the tool identified five other categories that are important in evaluating EMS system performance. The categories are EMS Organization Structure and Leadership; Ensuring Optimal System Value; Customer/Community Accountability; and Prevention and Education. These “other” system and service categories are important to consider when the EMS Division implements its own benchmarking survey.

**EMS Benchmarking
Study Funded in 2008
to 2013 Levy Cycle**

EMS funded a new benchmarking study as a strategic initiative targeted to improving system efficiency in the 2008 to 2013 strategic plan. This study should help inform the planning of the 2014 to 2019 EMS Levy. In response to a request for prior studies or peer comparisons, EMS provided portions of a report summarizing the results of limited peer review conducted in a prior levy period. The report had little information regarding system efficiency or cost savings and made no major recommendations for change within the EMS system. The 12-year old report no longer reflects current EMS operations.

According to EMS management, no two EMS agencies are alike. Yet, the Institute of Internal Medicine and other experts strongly encourage EMS organizations to examine and compare component systems and costs. Such comparisons provide opportunities to discover new strategies and best practices that can lead to system efficiencies. Current peer comparisons would also be a helpful resource for decision makers and other EMS stakeholders to review prior to initiating the 2014 to 2019 EMS strategic planning cycle.

¹ Fitch and Associates, an EMS and medical transportation consulting firm, conducts the annual EMS salary and workplace survey on behalf of JEMS.

RECOMMENDATION 4 In identifying potential topics for new individual strategic initiatives, the EMS Division should consider the results of planned benchmarking, and give strong consideration to operations and practices that can increase EMS system efficiency as well as improve the visibility and transparency of EMS services.

FINDING 8: STRATEGIC INITIATIVES COULD BE STRENGTHENED BY DEVELOPING STANDARDS, PERFORMANCE MEASURES AND PROJECT MILESTONES TO DETERMINE THE EXTENT OF EMS IMPROVEMENTS

The review of the 2009 EMS Levy financial activities focused on the EMS strategic initiatives due to the important objective of achieving system efficiencies and cost savings. Efficiency is an effective indicator of how well an organization uses its resources to produce goods and services. It is measured by comparing achieved productivity to a desired target or standard. In order to assess efficiencies, specific data must be available on resources invested (inputs), goods and services produced (outputs), and the rate (productivity) at which inputs are used to produce the outputs as shown in Exhibit G below.

EXHIBIT G			
Primary Elements of Efficiency			
<ul style="list-style-type: none"> ▪ Human ▪ Financial ▪ Equipment ▪ Materiel ▪ Facilities ▪ Information ▪ Energy ▪ Land 	→	<ul style="list-style-type: none"> ▪ Right Quantity ▪ Right Quality ▪ Lowest (Responsible) Cost ▪ Productive work processes 	→
			Acceptable in comparison standards of: <ul style="list-style-type: none"> ▪ Productivity ▪ Quantity ▪ Quality ▪ Level of Service

SOURCE: Office of the Auditor General of Canada, Auditing of Efficiency.

As shown in Exhibit G, specific information is required to measure efficiency. When the relevant information is provided, efficiency can then be measured by comparing achieved productivity with desired target or standard. (Productivity is generally expressed as a ratio that considers cost or time per unit of output.) Project management information is useful in establishing project milestones such as achieved vs. planned progress, completion dates vs. target dates, and resources used vs. those budgeted for difficult to measure services such as studies and plans.

**Incomplete
Information Available
to Assess Strategic
Initiatives**

With some noteworthy exceptions, such as the dispatch initiatives discussed in Chapter 4, it was difficult from reading the annual EMS reports to determine the extent to which EMS system efficiencies and cost effectiveness² were achieved for a number of strategic initiatives. EMS reports did not identify the expected outcomes for the strategic initiatives or provide thorough evaluations of many of the completed initiatives from the prior levy or prior year's reporting periods. Three challenges were encountered in the effort to measure EMS efficiencies.

The first challenge was that less than half of the strategic initiatives were developed for the purpose of gaining system efficiencies or improving cost effectiveness. As shown in Exhibit H, approximately 31 percent of the 2002 to 2007 initiatives and 64 percent of the 2008 to 2013 initiatives addressed quality of care improvements that did not have efficiency measures or targets or were not appropriate to measure from a cost effectiveness standpoint. For example, nine pilot projects were developed under a strategic initiative that evaluated paramedic and EMT procedures and treatment plans for therapeutic purposes.

² Cost effectiveness relates to a change in costs related to achieving a desired program effects or outcomes.

Exhibit H
Performance Summary of EMS Strategic Initiatives (2002-2013)

	2002 to 2007 Actuals		2008 to 2013 Budgeted	
Cost of Initiatives	\$2.2 million		\$8.0 million	
	Number of Initiatives	Percent of Total Initiatives	Number of Initiatives	Percent of Total Initiatives
Strategic Initiatives (Total) ^(b)	16	100%	14	7% ^(a)
Objective: Improved Quality of Care	5	31%	9	64%
Objective: Managed ALS Growth	6	38%	2	14%
Objective: Gained Efficiencies ^(b)	5	31%	2	14%
Objective: Contained Costs ^(b)	2	13%	4	29%

Notes: ^(a) Achieved outcomes for most 2008 to 2013 strategic initiatives will not be determined until 2013.

^(b) The number of strategic objectives achieved exceeds the number of initiatives since many were designed to achieve multiple objectives that are counted in multiple categories. All percentages were calculated based on the number of initiatives identified for the objective divided by the total number of initiatives developed in the levy period.

SOURCES: EMS Division Strategic Plans and Updates from 2002 to 2013; EMS Division Annual Reports for 2002 through 2009; and EMS Division Strategic Initiative summaries and documentation.

Performance Standards and Quantified Measures or Targets Not Developed for Many Strategic Initiatives

The second challenge in measuring performance was the absence of performance standards and quantified measures or targets in the EMS reports for approximately half of the completed initiatives for both levy periods as shown in Exhibit I below. Information necessary to determine whether the expected level of efficiency was achieved for each strategic initiative, such as detailed proposals with a delineation of inputs, was unavailable for approximately half of the completed strategic initiatives. Outcomes and outputs (e.g., number of individuals served) were often identified as indicators of successful initiatives without pre-established measures or targets even in cases where the number of individuals served was low. Although cost containment was identified as an objective for two initiatives in 2002 to 2007 and five initiatives in 2008 to 2013, the metrics and cost data needed to determine if such savings were achieved were not consistently provided. Exhibit I provides a summary of the strategic initiatives that have quantified efficiency and cost-saving measures.

EXHIBIT I

Performance Summary of Completed EMS Strategic Initiatives (2002-2009)

2002—2009 Strategic Initiatives	Efficiency Targets Established	Efficiency Targets Measured	Cost Savings Quantified	Cost Savings Measured
ALS Response and Dispatch Triage Criteria	Yes	Yes	No	No
EMD Quality Improvement	No	Yes	No	No
Enhanced CBD Basic Training & Continuing Education Curricula	No	Yes	No	No
Computer Aided Dispatch (CAD) System	No	No	No	No
Web -Based Training for EMS Personnel/Dispatchers	No	Yes	Yes	Yes
Regional Electronic Data Collection Project	No	No	No	No
Regional Medic One/EMS Tracking Resource Online	No	Yes	No	No
Financial Review of Medic One/EMS Sub funds	NA	NA	NA	NA
Bellevue Fall Pilot Study	No	Yes	No	No
Child Passenger Seat	No	No	No	No
Pre-School Injury Prevention	No	No	No	No
Think Again--High School Injury Awareness	No	No	No	No
Paramedic/EMT Procedure and Patient Treatment	No	No	No	No
Enhanced Care for Specific EMS Patients	No	No	No	No
Impact of State Budget Cuts on EMS System	NA	NA	NA	NA
Strategic Plan/Levy Planning	NA	NA	NA	NA
Injury Prevention Community Awareness Campaigns	Yes	No	No	No

Note: Achieved outcomes for the 2008 to 2013 strategic initiatives will not be fully determined until 2013.

SOURCES: EMS Division Strategic Plans for 2002 to 2007 and 2008 to 2013, and 2002 to 2009 Annual Reports.

Overlap of Multiple Strategic Initiatives Was Barrier to Assessing Efficiency Impacts

A third challenge in measuring the extent to which the strategic objectives were achieved was the practice of combining multiple initiatives and ongoing initiatives that not only spanned the six-year levy period but also multiple levy periods. For example, EMS continued and expanded the Senior Falls Program in the current levy cycle as a successful 2002 to 2007 strategic initiative. EMS expanded the falls programs due to the success of the pilot in reducing falls for a control group of seniors, yet planned to conduct a large scale study due to limitations associated with the initial falls program pilot study (e.g., small

number of participants). EMS also concurrently offered financial assistance to BLS agencies, through a separate strategic initiative, to fund qualified fall prevention activities. While EMS established broad objectives (e.g., reducing falls for seniors) for the former and current strategic initiatives, quantified measures were not developed in terms of the number of seniors expected to be served and the expected decrease in the percentage of fallers or falls. EMS has also not reported on the actual benefits achieved in relation to the EMS falls program costs.

Recent Strategic Initiatives Focus on BLS Rather Than ALS Services and Benefits

The Senior Falls Program also highlights another trend in the development of strategic initiatives: many of the initiatives focus on enhancements of earlier strategic initiatives or proven best practices rather than on new, innovative projects that significantly improve operations. As noted earlier, the focus of EMS strategic initiatives has increasingly emphasized BLS and dispatch service improvements that may have less impact on high cost ALS services.

Progress in implementing the strategic initiatives, as well as implementing ALS, BLS, and Regional Support Services, supported by the EMS Levy is reported annually by the EMS Division. EMS is a high performance organization as reflected by the volume of programs and activities reported. However, many of the actual outcomes related to the strategic initiatives are not clear and concise. Annual project milestones or target dates and focused reporting are needed to verify that actual performance is consistent with expected levels from year to year and for the duration of the levy.

As noted above, achieving EMS efficiencies and improving cost effectiveness are important EMS strategic objectives. EMS management substantially increased its investment in strategic initiatives from an actual of \$2.2 million in the prior levy period to

\$8 million budget for the current levy period. In addition, EMS invested another \$5.3 million to transition effective initiatives from the prior levy period to ongoing regional services in the current levy period.

**EMS Division Has
Expertise to Develop
Effective Performance
Measures and Targets**

EMS Division personnel have the expertise and resources to establish measures and targets, evaluate project performance, and produce reports on all aspects of the EMS program performance. EMS regularly publishes detailed reports on its medical practices and services in EMS annual reports, professional journals, and evaluations of individual medical projects. A similar level of effort is needed in developing and reporting on the performance of strategic initiatives that would help improve accountability and transparency in delivering quality EMS services.

RECOMMENDATION 5

EMS management should institute performance measures and targets to help promote greater EMS transparency and accountability in developing, implementing and reporting annually on strategic initiatives. Project milestones for completion of projects or project stages should be developed for initiatives with outcomes that cannot be quantified or otherwise measured. EMS should also conduct cost analysis for new initiatives with economic impacts.

4 OPPORTUNITIES FOR INCREASED EFFICIENCY

Chapter Summary

As noted in the last chapter, recent strategic initiatives have focused more on improved quality of care than ALS operational or system issues. While continuous improvement of quality of care is universally identified as the most important objective of EMS programs, EMS organizations are also challenged to seek opportunities to provide quality patient care more efficiently and cost effectively.

This chapter presents two examples of EMS strategic initiatives that have focused on system efficiencies. One highlights the EMS Division's implementation of the Criteria Based Dispatch Guidelines that not only dramatically improved ALS system efficiencies but also avoided significant ALS cost increases. The second example illustrates missed opportunities to achieve system efficiencies during the implementation of the vehicle replacement initiative designed to better manage a costly EMS asset—ALS vehicles. The chapter concludes with two recommendations to improve the efficiency of EMS vehicle replacement practices.

System Efficiency Example #1: Three Dispatch Initiatives Avoided \$49 Million in EMS Levy Expenses

One successful example of a strategic initiative that resulted in EMS efficiencies and cost effectiveness is the Criteria Based Dispatch (CBD) Guidelines/ALS Triage Criteria Review and Revisions. This strategic initiative was first introduced in the 1998 to 2003 strategic plan and continued into two subsequent levy periods. (CBD guidelines revisions were completed in 1996, 2000, 2003, 2007, and 2010.) The primary objective of the CBD guidelines revisions was to determine the appropriate level of patient care and institute new protocols required to avoid

unnecessary dispatches that increased the demand for ALS services. During the 1990 to 1998 period, ALS call volume increased by 9,161 calls.

Two complementary initiatives were launched along with CBD guidelines to avoid unnecessary demand on existing ALS units—the emergency medical dispatch quality improvement and the enhanced dispatcher basic training and continuing education initiatives. The dispatch quality improvement initiative involved expert review of 911 call recordings, associated dispatch and EMS records to identify issues and system-wide trends for individual training and continuing education to ensure the quality of patient care and limit risks. The enhanced CBD basic training and continuing education initiative provided dispatchers with additional medical instruction, more problem/scenario-based learning, and an opportunity to learn via web-based training curriculum. These combined initiatives successfully achieved efficiencies and avoided potential cost increases by reducing the rate of growth of ALS calls.

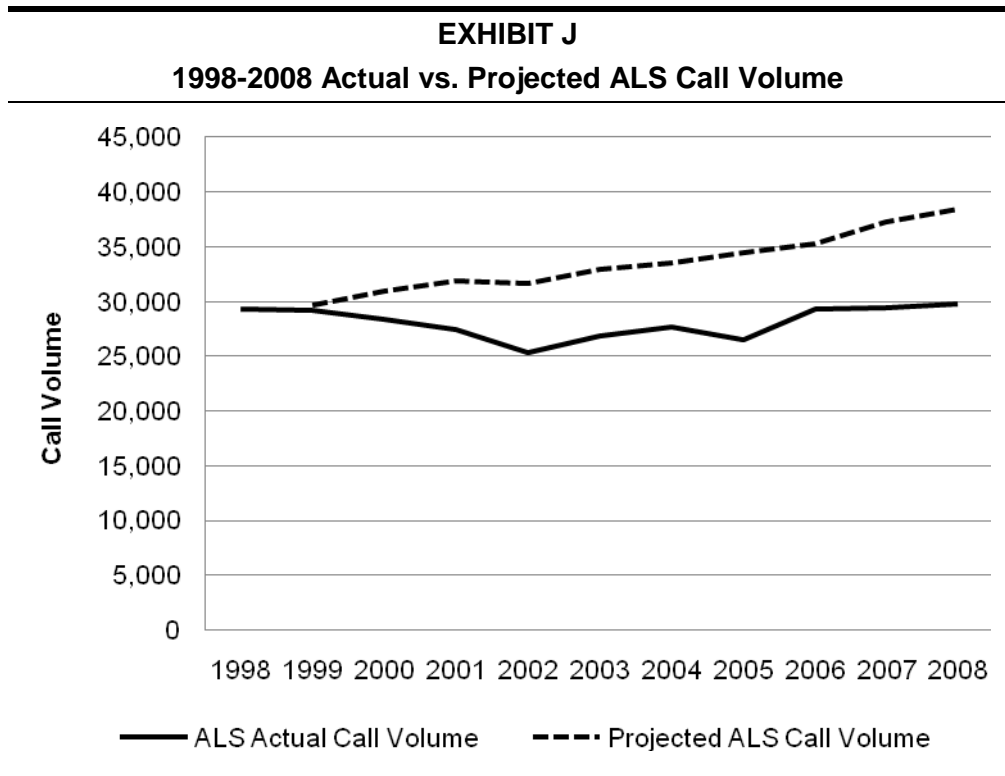
**Quantified
Performance Measures
and Integrated
Evaluation Mechanism
Contributed to Success
of CBD Initiative**

One factor contributing to the success of the initiatives was that a specific, quantified performance measure and target was established for the three initiatives: *Diminish the rate of growth in demand for EMS service to three percent growth per year*. In addition, testing and evaluation was integrated through another strategic initiative to assess dispatcher competencies that also confirmed whether the initiative was achieving the desired results.

As presented in numerous EMS annual reports, the CBD guideline revisions resulted in significant cost avoidance and surpassed expectations. The outcomes included:

- Reduced average annual increase of 5.4 percent in ALS call volume prior to the revisions to 0.77 percent per year during the ten-year period following the revisions.
- Reduced total ALS call volumes in years immediately following the revision of the CBD guidelines. For example, ALS dispatched on 32.9 percent of EMS responses in 1999 (pre-2000 revisions) and 28.9 percent of EMS responses in 2001 (post 2000 revisions).
- Average annual reduction of 910 ALS calls from 1996 to 2005.

While cost containment was identified as an outcome for the dispatch services initiatives in the strategic plans and annual report, EMS did not verify and report the avoided costs. For audit purposes, auditor’s office and EMS personnel estimated ALS costs avoided based on the reported ALS unit cost per call.



SOURCE: EMS Division ALS unit cost data and BLS call volume data, 1998 to 2008.

As shown in Exhibit J, actual ALS call volume held steady at about 29,000 calls during the ten years whereas projected call volume would have risen to over 38,000 without the reduction in call volume due to the dispatch initiatives. As a result, the EMS Division avoided an estimated average annual increase of \$4.9 million in ALS costs, or \$49 million from 1998 to 2008. Additional review and revisions of the CBD guidelines are scheduled in 2010 due to the demonstrated success of the earlier initiatives.

Additional Efficiency and Cost Effectiveness

Opportunity

**System Efficiency
Example #2:
An EMS Vehicle
Replacement
Strategic Initiative
Could Yield
Efficiencies**

The second example highlights opportunities for the EMS Division to achieve greater system efficiencies through more rigorous analysis and a businesslike approach in developing and implementing strategic initiatives. During the 1998 to 2003 levy period, the EMS Division developed a strategic initiative on ALS vehicle replacement that resulted in a policy to standardize the replacement cycle at six years. However, the criteria for replacing the vehicles were not based on a systematic analysis of vehicle use and were inconsistent with the King County Fleet Management Division's policy that requires vehicle replacement criteria to be based on life cycle cost analysis.³ Vehicle replacement guidelines comparable to those recommended below could have been developed to reduce EMS capital costs if a more thorough analytic approach had been taken focusing on opportunities for cost savings in implementing the former vehicle replacement strategic initiative.

³ King County Executive Policies and Procedures, FES 12-4 (AEP), require all agencies to prepare and submit all purchase or lease requisitions for vehicles to the Fleet Administration Division for review and processing. According to the EMS Division's contract with King County ALS providers, all equipment purchased by ALS providers above \$5,000 in value is owned by King County.

Current ALS Vehicle Replacement Policy Not Based on Life Cycle Cost Analysis

Currently, the EMS Division's ALS vehicle replacement policy calls for a six-year replacement cycle. This policy was implemented after a strategic initiative was developed during the 1998 to 2003 levy cycle that considered potential cost savings of extending vehicle life from three to five years and remounting a greater number of vehicles. An EMS oversight committee rejected the five-year extension and remounting options, citing adverse impacts on patient safety and comfort. The current policy was then adopted to fund replacement on a six-year basis: three years primary use and three years backup use. In practice, the replacement schedule was not consistently followed for new vehicle purchases due to a shortage of funds at the end of the prior levy. While the policy did consider impartial qualitative criteria, it is not based on a life cycle cost analysis of vehicle replacement.

Increased Number and Cost of ALS Vehicles Emphasizes Need to Manage Them Efficiently

Along with the population growth in King County, the number and cost of the ALS vehicles increased. The total number of vehicles funded by the EMS levy increased by 8 vehicles (73 percent) from 11 vehicles in 1995 to 19 vehicles in 2010.⁴ During the past nine years, ALS providers purchased a total of 35 new ALS vehicles as replacement or expansion units—25 vehicles in the prior levy period and 10 vehicles to date in the current levy period. Since 2002, five vehicles were also purchased with the ambulance module remounted on a new chassis. The average cost (in nominal dollars) of a new ALS vehicle rose by 49 percent from \$121,804 in 2002 to \$181,207 in 2010. The annual average cost increase over the eight year period was 5.09 percent.

⁴ The number of vehicles is different and may be greater than the number of ALS "units" which represent funding for an ALS vehicle fully staffed 24 x 7 by two paramedics. During 1995-2010 some units were only staffed for 12-hour shifts so the total number of units was less than the total number of vehicles.

Length of Time ALS Vehicles Used Varied Among Providers

To evaluate cost-effective vehicle replacement, we compared EMS vehicle use from 2002 to date to six peer EMS agencies. That analysis found that ALS vehicles were used for a longer period of time than planned—six years. During the past eight years, units were used for an average of 7.6 years with an average of 4 years as a primary vehicle and 3.8 years as a backup vehicle.⁵ ALS vehicle use was extended because funds were not available to purchase new vehicles in 2007 and 2008.

Differences were noted among vehicle replacement intervals of various ALS providers. Bellevue's vehicle usage, for example, averaged almost ten years compared to almost six years for King County Medic One. As shown in Exhibit K, variations occurred in the length of time ALS vehicles were used in a backup capacity and in vehicle mileage during primary and backup modes of operations.

EXHIBIT K					
Vehicle Use Among King County ALS Providers 2002-2010					
ALS Providers ^(a)	Primary Vehicle Use (Years)	Backup Vehicle Use (Years)	Total Vehicle Use (Years)	Primary Ending Mileage	Backup Ending Mileage
Bellevue	4.4	5.3	9.7	100,484	85,146
King County Medic One	3.4	2.3	5.7	71,155	90,000
Redmond	3.6	3.8	7.4	53,922	74,541
Shoreline	4.6	—	—	74,363	—
ALS Providers Average	4	3.8	7.6	74,981	83,229

^(a) Average use data for vehicles in backup mode is based on a limited number of vehicles because some providers were unable to locate vehicle records to provide age or mileage data on all vehicles in use since 2002. Data on backup use from Shoreline not available.

SOURCE: KCAO analysis of data supplied by ALS providers in King County. Data based on vehicle use reported for all vehicles in use since 2002.

⁵ Vashon Fire was excluded from this analysis because the type of ALS vehicles is not comparable to the Type III ambulances used by the other ALS providers.

Such variation among King County's ALS providers suggests performance metrics could promote optimum vehicle use. Also, more thorough and consistent record keeping of vehicle use at certain intervals is needed to track usage more systematically. This will provide the key information for developing performance metrics for a more rigorous analysis of optimum ALS vehicle use.

ALS Vehicle Use Compared to EMS Peers

How did King County ALS providers compare to best practices or their peers concerning ALS vehicle replacement? Based on interviews with six peer EMS agencies, three emergency medical vehicle manufacturers, and several experts with EMS professional associations, we found that no common standards for ALS vehicle replacement exist. The average length of time for ALS type ambulances use varies depending on a number of factors. Such factors include the type of service model used by the EMS agency, the region of the country, population density, nature and frequency of EMS calls, and whether the service was provided by public employees or contracted out.

Exhibit L shows a comparison of the use of ALS vehicles to the use of vehicles by three EMS peer agencies.⁶ Primary and backup vehicle use for Boston, MA and Thurston County, Washington, was generally comparable to King County's ALS providers. Total vehicle use in years was slightly longer for the peer agencies compared to the EMS Division's six years total use. However, the total mileage for primary and backup use by some peer agencies was higher than the mileage for the county's ALS providers.

⁶ These agencies represented 6 of 8 peer EMS agencies the EMS Division had used for comparison purposes in a 1998 internal study.

EXHIBIT L

EMS Peer Agency Use of ALS Vehicles in Primary and Backup Mode

EMS Peer Agency	Primary Vehicle Use (Years)	Backup Mode (Years)	Primary Ending Mileage	Backup Ending Mileage
Miami-Dade County	5 years	3 years	200,000 – 250,000	300,000
Boston, MA	3 years	2-3 years	75,000 – 85,000	100,000 – 120,000
Thurston County, WA	4 years	4 years	90,000	100,000 – 150,000
King Co. ALS Providers Average	4 years	3.8 years	74,981	83,229

SOURCE: KCAO interview with EMS peer agency.

Three other peer EMS agencies used vehicles only in a primary mode for five to six years with total mileage of at least 200,000 miles before vehicles were sold or remounted. The peer agency mileage was significantly greater than the mileage for the county ALS providers. EMS providers in Denver and Portland used vehicles in primary mode for about 200,000 miles and San Diego EMS for about 240,000 miles.

EMS Division Vehicle Replacement Policy Should Be Based on Life Cycle Cost Analysis

Variations in vehicle use by ALS providers and overall vehicle usage less than their EMS peers suggests a life cycle cost analysis would aid the EMS Division in validating the correct length of time for optimum vehicle use. Choosing the right vehicle replacement criteria is critical to minimizing costs over the lifecycle of the vehicle. Well designed vehicle replacement programs generally use life cycle cost analysis which takes into account such factors as initial purchase costs, operations and maintenance costs, downtime, salvage value, and the time value of money. Establishing a strategic initiative on vehicle replacement based on thorough analysis, including life cycle cost data, will help ensure the EMS Division has a cost-effective vehicle replacement criteria and policy.

RECOMMENDATION 6

As part of a strategic initiative on managing vehicle costs more efficiently, the EMS Division should review its vehicle replacement policy and follow King County Fleet Administration guidelines in conducting a life cycle cost analysis to determine optimum vehicle use. It should also require ALS providers to track and maintain adequate records on mileage, engine hours, vehicle usage at specified intervals, and other data necessary to conduct a life cycle cost analysis.

Vehicle Replacement Policy Should Consider Greater Use of Remounting to Lower Vehicle Costs

A strategic initiative would also be useful to consider the range of options for extending ALS vehicle life. When an ALS vehicle has reached the end of its useful life, a number of the peer EMS agencies and two county ALS providers have saved money by remounting an existing ambulance module to a new vehicle chassis instead of purchasing a new vehicle with a new module. Seattle's Medic One has remounted its new vehicles three times using its ambulance modules for a total of 15 years of service and recently extended this practice to six years of use thus increasing the use of its ambulance modules to a total of 18 years.

Savings from remounting can be significant when compared to purchasing a new vehicle. According to vehicle manufacturers, the cost of a remount of the old module on a new chassis is at least 20 to 40 percent less than the cost of a new vehicle and ambulance module. Since 2002, the average cost of purchasing a new ALS vehicle was \$141,545 versus the average cost of \$88,040 for a remount, a savings of 38 percent. Denver EMS estimated it saved \$250,000 annually by remounting instead of purchasing new vehicles each year.

Greater savings to the EMS levy would be possible if ALS vehicles were routinely remounted. Between 2013 and the end of

the next levy period in 2019, the Redmond and Bellevue ALS providers plan to purchase new vehicles at four year intervals.⁷ Shoreline and King County Medic One vehicle purchases during the same periods will be remounts. We estimate at least \$451,000 could be saved in the next levy period if Redmond and Bellevue were to remount existing ambulance modules at least once.⁸ Even more savings would result if remounts occurred more than once consistent with ALS vehicle usage by the City of Seattle and some EMS peer agencies.

The EMS Division does not have a specific policy on whether ALS providers should remount an ambulance module or purchase a new vehicle when replacing an ALS vehicle. However, the frequency and cost of remounting versus purchasing a new vehicle could be determined as part of the recommended life cycle cost analysis.

An EMS Division strategic initiative to address remounting, based on appropriate performance metrics such as life cycle cost analysis and peer benchmarking, would be helpful in developing a vehicle replacement policy that optimizes vehicle performance and cost savings. It would also demonstrate the EMS Division's commitment to managing these high cost capital assets.

RECOMMENDATION 7

The EMS Division should establish a policy requiring the remounting ambulance modules at specified intervals instead of purchasing new ALS vehicles as part of a strategic initiative on vehicle replacement. The remounting intervals should be specified in conjunction with the results of life cycle cost analysis.

⁷ Redmond and Bellevue did not remount previously because they did not believe the cost differential between a new vehicle and a vehicle remount was substantially different or they had problems with the quality of a remounted vehicle.

⁸ Savings estimate assumes Redmond purchased one new ALS vehicle in 2013, 2014, and 2015 and Bellevue purchased four new ALS vehicles in 2013. Cost of new vehicles is inflated at 5.09% per year from average cost of new ALS vehicles purchased in 2010; assumes a remount is 30% less than the cost of a new ALS vehicle.

**Benefits of
Standardizing ALS
Vehicle Design and
Group Purchasing**

A strategic initiative on vehicle replacement might also explore standardizing ALS vehicle design and group purchasing of ALS vehicles. According to the EMS Medical Director, standardization would provide greater consistency in performing patient care procedures because the design and layout of the ambulance module and placement of equipment, supplies and other apparatus would be consistent from fire agency to fire agency. This would be especially useful should a large-scale EMS response be required during a mass casualty, earthquake, or other catastrophic event. Paramedics in King County fire districts are all trained by medical staff at Harborview Medical Center and, according to the EMS Medical Director, there is about 98% congruence among King County paramedics with the protocols and procedures they use when providing emergency medical care.

Such a measure would also reduce administrative procurement costs for the individual ALS providers. ALS providers currently develop unique ALS vehicle specifications and directly contract with ambulance manufacturers. The vehicle acquisition process requires considerable ALS provider staff time to manage.

King County ALS providers were not opposed to participating in group purchases or standardizing ALS vehicle design. Some ALS providers previously participated in a group purchase with other fire agencies to lower the cost of purchasing a single vehicle. Fire officials at several King County agencies had also previously discussed vehicle standardization and group purchasing but ultimately no mechanism was established or incentive provided to partnering agencies to coordinate such a group effort. Individual fire districts also told us they were reluctant to make changes to their agencies' vehicle specifications, since EMS did not require standardization or group purchasing by ALS providers.

Thurston County previously standardized ALS vehicle design and claims that it has been cost effective and beneficial. According to Fire Chiefs from Lacey and Tumwater, vehicle standardization has lowered maintenance costs, facilitated greater uniformity in training and allowed greater flexibility in reassigning and substituting vehicles when one is down for maintenance or out of service. Also, occasionally two or all three fire districts in Thurston County respond to the same emergency call thus allowing for greater ease of use and familiarity by paramedics with the layout and location of medical equipment and supplies in the ambulance module.

Vehicle standardization could also offer the benefit of group purchasing of vehicles by the EMS Division. The EMS Division's Group Purchasing Program has reportedly produced savings with group purchases of medical equipment and supplies largely through centralizing administrative, procurement and other expenses. Such savings would likely occur through group purchasing of ALS vehicles. Increased savings might also occur by extending the group purchasing concept to BLS vehicles and including the City of Seattle Medic One in the program.

Standardizing vehicle design and adopting a group purchasing program for ALS vehicles would require time to develop and implement. EMS Division personnel would also need to be involved in such an effort to ensure a consensus is reached on vehicle standards. However, based on discussions with ALS providers, the adjustments required to reach consensus on a uniform ALS vehicle specification are not insurmountable. Accordingly, we suggest the EMS Division consider the feasibility of standardizing the ALS vehicle design, in collaboration with the ALS and BLS providers and incorporating ALS vehicle purchases into the regional group purchasing program.

APPENDICES

[Blank Page]

APPENDIX 1

2008-2013 Emergency Medical Services Levy Financial Plan (From Levy Ordinance 15861)

The EMS Levy financial plan identifies the estimated annual revenues generated from the levy, and allocates a large percentage of funds to the four EMS programs. The remaining levy revenues are distributed to a series of contingencies, reserves and designations. The financial plan also requires an undesignated fund balance equivalent to six percent of the annual revenues.

EMERGENCY MEDICAL SERVICES LEVY FINANCIAL PLAN

	2006	2007	2008	2009	2010	2011	2012	2013
	Actuals	Estimated	Proposed	Proposed	Proposed	Proposed	Proposed	Proposed
BEGINNING FUND BALANCE	10,733,241	9,296,940	6,070,111	7,478,574	9,530,365	12,298,857	13,976,201	14,467,537
REVENUES								
Property Taxes	38,112,894	39,324,543	62,349,590	64,065,620	65,813,748	67,630,570	69,508,371	71,460,527
State Grants	1,463	0	0	0	0	0	0	0
Intergovernmental Payment	278	0	0	0	0	0	0	0
Charges for Services	80,571	82,950	52,000	54,340	56,785	59,341	62,011	64,801
Interest Earnings/Miscellaneous Revenue	1,352,798	483,574	306,541	366,450	457,458	571,897	649,893	672,740
Other Financing Sources	9,059	5,040	4,503	3,567	3,179	2,831	2,621	2,457
Transfer from Current Expense Subfund	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000
EMS REVENUE TOTAL	39,932,064	40,271,107	63,087,633	64,864,978	66,706,170	68,639,638	70,597,895	72,575,526
EXPENDITURES								
Advanced Life Support Services	(27,445,965)	(27,945,082)	(34,558,361)	(36,100,374)	(37,869,114)	(40,021,655)	(42,274,793)	(45,408,597) (a)
Bellevue Fire Department	(5,719,090)	(6,210,085)	(7,368,004)	(7,602,457)	(7,870,564)	(8,237,859)	(8,631,040)	(9,048,314)
King County Medic One	(12,456,489)	(11,783,566)	(14,080,283)	(14,795,608)	(15,189,092)	(15,880,326)	(16,620,212)	(17,405,389)
Redmond Fire Department	(4,233,568)	(4,780,238)	(5,345,018)	(5,776,283)	(5,902,923)	(6,178,394)	(6,473,280)	(6,786,235)
Shoreline Fire Department	(3,659,425)	(3,759,230)	(4,840,864)	(4,689,502)	(4,919,102)	(5,148,662)	(5,394,400)	(5,655,196)
Skykomish/King County Fire District 50	(60,000)	(60,000)	(170,058)	(178,911)	(187,592)	(196,243)	(205,509)	(215,346)
Vashon Fire Department	(1,317,393)	(1,352,963)	(1,603,505)	(1,688,221)	(1,770,877)	(1,853,518)	(1,941,984)	(2,035,871) (b)
New Units/Unallocated	N/A	N/A	(907,463)	(937,900)	(1,579,607)	(2,059,465)	(2,522,081)	(3,755,693) (c)
Outlying Area Service Levels	N/A	N/A	(243,167)	(431,491)	(449,356)	(467,189)	(486,285)	(506,554) (c)
Basic Life Support Services	(9,420,513)	(9,674,868)	(14,390,254)	(14,886,717)	(15,333,319)	(15,738,118)	(16,163,048)	(16,599,450) (d)
Auburn Fire Department	(360,914)	(371,121)	(574,225)	(594,040)	(611,863)	(628,018)	(644,976)	(662,392)
Bellevue Fire Department	(1,164,786)	(1,208,884)	(1,862,757)	(1,927,035)	(1,984,852)	(2,037,257)	(2,092,268)	(2,148,765)
Black Diamond Fire Department	(48,770)	(50,087)	(63,976)	(66,184)	(68,170)	(69,970)	(71,859)	(73,799)
Bothell Fire Department	(190,302)	(201,298)	(316,243)	(327,156)	(336,972)	(345,869)	(355,208)	(364,800)
Duvall Fire Department	(110,372)	(110,372)	(145,444)	(150,463)	(154,977)	(159,069)	(163,364)	(167,775)
Eastside Fire and Rescue	(949,850)	(949,850)	(1,328,850)	(1,374,704)	(1,415,950)	(1,453,334)	(1,492,578)	(1,532,881)
Enumclaw Fire Department	(230,549)	(230,549)	(285,744)	(295,604)	(304,473)	(312,512)	(320,951)	(329,617)
Kent Fire and Life Safety	(759,340)	(775,056)	(1,190,773)	(1,231,863)	(1,268,823)	(1,302,323)	(1,337,489)	(1,373,605)
King County Fire District 2	(227,173)	(239,292)	(374,201)	(387,114)	(398,729)	(409,256)	(420,307)	(431,656)
King County Fire District 20	(106,458)	(112,317)	(164,387)	(170,059)	(175,161)	(179,786)	(184,641)	(189,627)
King County Fire District 27	(67,418)	(69,238)	(92,176)	(95,357)	(98,218)	(100,811)	(103,533)	(106,329)
King County Fire District 40	(210,667)	(210,667)	(299,191)	(309,515)	(318,801)	(327,218)	(336,054)	(345,128)
King County Fire District 44	(252,271)	(252,271)	(324,765)	(335,972)	(346,052)	(355,189)	(364,780)	(374,630)
King County Fire District 47	(18,705)	(19,210)	(23,051)	(23,846)	(24,561)	(25,209)	(25,890)	(26,589)
King County Fire District 49 (51)	(18,354)	(18,850)	(22,909)	(23,700)	(24,411)	(25,056)	(25,733)	(26,428)
King County Fire District 50	(32,348)	(33,221)	(40,921)	(42,333)	(43,603)	(44,754)	(45,962)	(47,203)
Kirkland Fire Department	(495,286)	(512,252)	(789,132)	(816,362)	(840,855)	(863,056)	(886,361)	(910,295)
Maple Valley Fire and Life Safety	(304,283)	(304,293)	(409,441)	(423,570)	(436,278)	(447,797)	(459,889)	(472,307)
Mercer Island Fire Department	(235,416)	(244,629)	(376,189)	(389,170)	(400,846)	(411,429)	(422,539)	(433,949)
Milton Fire Department	(14,104)	(14,889)	(20,320)	(21,021)	(21,652)	(22,224)	(22,824)	(23,440)
North Highline Fire Department	(271,067)	(280,748)	(404,954)	(418,928)	(431,497)	(442,890)	(454,849)	(467,131)
Northshore Fire Department	(203,896)	(211,146)	(326,232)	(337,489)	(347,615)	(356,793)	(366,427)	(376,321)
Pacific Fire Department	(36,000)	(36,972)	(51,115)	(52,879)	(54,466)	(55,904)	(57,414)	(58,964)
Pierce County Fire District 27	(1,500)	(1,500)	(1,500)	(1,500)	(1,500)	(1,500)	(1,500)	(1,500)
Redmond Fire Department	(539,880)	(574,375)	(863,640)	(893,442)	(920,248)	(944,545)	(970,050)	(996,244)
Renton Fire Department	(492,082)	(514,465)	(801,932)	(829,604)	(854,495)	(877,056)	(900,739)	(925,061)
Sea Tac Fire Department	(213,386)	(221,407)	(343,637)	(355,495)	(366,161)	(375,829)	(385,977)	(396,399)
Shoreline Fire Department	(376,181)	(380,055)	(580,829)	(600,872)	(618,900)	(635,240)	(652,393)	(670,009)
Snoqualmie Fire Department	(52,033)	(53,702)	(82,646)	(85,498)	(88,063)	(90,388)	(92,829)	(95,336)
South King Fire and Rescue	(772,172)	(787,067)	(1,210,071)	(1,251,827)	(1,289,386)	(1,323,429)	(1,359,165)	(1,395,866)
Tukwila Fire Department	(224,182)	(231,283)	(357,958)	(370,310)	(381,420)	(391,490)	(402,061)	(412,918)
Vashon Fire Department	(129,619)	(129,619)	(180,435)	(186,661)	(192,261)	(197,337)	(202,666)	(208,139)
Woodinville Fire and Life Safety District	(311,139)	(324,180)	(480,561)	(497,144)	(512,060)	(525,580)	(539,772)	(554,347)
Regional Services	(3,826,680)	(4,798,846)	(6,102,144)	(6,478,134)	(6,838,366)	(7,197,262)	(7,578,964)	(7,945,012)
Strategic Initiatives	(674,484)	(867,040)	(1,246,580)	(1,491,275)	(1,253,878)	(1,239,355)	(1,195,153)	(1,114,543)
Encumbrance Carryover	0	0	0	0	0	0	0	0
ALS Salary and Wage Contingency	0	0	(2,104,452)	(2,199,152)	(2,298,114)	(2,401,529)	(2,509,598)	(2,622,530) (e)
EMS 2002-2007 Reserves	(723)	(212,100)	0	0	0	0	0	0 (f)
Disaster Response Contingency	0	0	(3,216,379)	(4,809,156)	(5,085,682)	(5,378,109)	(5,687,350)	(6,014,373) (g)
Prior Disaster Response Underexpenditure	0	0	0	3,216,379	4,809,156	5,085,682	5,378,109	5,687,350 (h)
King County Auditor's Office	0	0	(61,000)	(64,759)	(68,360)	(71,947)	(75,763)	(79,822)
EMS EXPENDITURE TOTAL	(41,368,365)	(43,497,936)	(61,679,170)	(62,813,187)	(63,937,677)	(66,962,294)	(70,106,560)	(74,096,976)

APPENDIX 1 (Continued)

EMERGENCY MEDICAL SERVICES LEVY FINANCIAL PLAN								
	2006 Actuals	2007 Estimated	2008 Proposed	2009 Proposed	2010 Proposed	2011 Proposed	2012 Proposed	2013 Proposed
ENDING FUND BALANCE	9,296,940	6,070,111	7,478,574	9,530,365	12,298,857	13,976,201	14,467,537	12,946,087
RESERVES AND DESIGNATIONS								
Encumbrances	(977,521)	(977,521)	(977,521)	(977,521)	(977,521)	(977,521)	(977,521)	(977,521)
Reappropriation	(25,000)	(25,000)	(25,000)	(25,000)	(25,000)	(25,000)	(25,000)	(25,000)
Designations								
Prepayment	0	0	0	0	0	0	0	0
ALS Provider Balances	0	(1,022,900)	(1,022,900)	(1,022,900)	(1,022,900)	(1,022,900)	(1,022,900)	(1,022,900)
ALS Provider Loans	0	0	0	0	0	0	0	0
Reserves for Unanticipated Inflation								
Diesel Cost Stabilization	0	0	(756,000)	(1,512,000)	(2,457,000)	(2,897,541)	(2,933,280)	(1,613,304)
Pharmaceuticals/Medical Equipment	0	0	(230,000)	(506,000)	(828,000)	(1,097,000)	(877,600)	(447,576)
Call Volume/Utilization Reserve	0	0	(244,000)	(488,000)	(732,000)	(1,159,800)	(1,220,000)	(832,000)
Reserves								
Chassis Obsolescence	0	0	(375,000)	(375,000)	(562,500)	(562,500)	(562,500)	(562,500)
Risk Abatement	0	0	0	(565,000)	(565,000)	(565,000)	(565,000)	(565,000)
Millage Reduction	0	0	0	0	(1,000,000)	(1,500,000)	(2,000,000)	(2,500,000)
TOTAL RESERVES AND DESIGNATIONS	(1,002,521)	(2,025,421)	(3,630,421)	(5,471,421)	(8,169,921)	(9,807,262)	(10,183,801)	(8,545,801)
ENDING UNDESIGNATED FUND BALANCE	8,294,419	4,044,690	3,848,153	4,058,944	4,128,936	4,168,939	4,283,736	4,400,286
Fund Balance as % of Revenue	N/A	N/A	6.10%	6.26%	6.19%	6.07%	6.07%	6.06%
EXCESS OVER/UNDER 6% MINIMUM	N/A	N/A	62,895	167,045	126,566	50,561	47,862	45,754

APPENDIX 2

2009 Adopted Emergency Medical Services Financial Plan

1190 / 0830
Emergency Medical Services

	2007 Actual ¹	2008 Adopted	2008 Estimated ²	2009 Adopted	2010 Projected ³	2011 Projected ³
Beginning Fund Balance	9,403,719	6,070,111	6,243,242	16,407,610	14,909,833	19,300,301
Revenues						
* TAXES	39,505,477	60,985,715	65,263,164	66,201,928	68,684,845	70,100,231
* FEDERAL GRANTS			25,637			
* STATE GRANTS	1,439		1,644			
* INTERGOVERNMENTAL PAYMENT	236					
* CHARGES FOR SERVICES	3,110	52,000	190,761	195,040	195,040	195,040
* MISCELLANEOUS REVENUE	502,486	306,541	266,915	481,200	506,200	538,200
* OTHER FINANCING SOURCES	64,814	4,503	4,364	3,567	3,210	2,889
* GENERAL FUND TRANSFER	375,000	375,000	375,000			
Total Revenues	40,452,562	61,723,759	66,127,485	66,881,735	69,389,295	70,836,360
Expenditures						
* EMS BASIC LIFE SUPPORT	(9,674,865)	(14,390,254)	(14,390,254)	(15,147,747)	(15,552,838)	(16,019,423)
* EMS PARAMEDIC SVCS	(28,736,207)	(34,334,975)	(34,322,147)	(36,077,871)	(37,620,703)	(39,819,516)
* EMS REGIONAL SERVICES	(5,201,967)	(6,339,601)	(5,903,766)	(6,951,483)	(7,134,123)	(7,515,857)
* EMS STRATEGIC INITIATIVES		(1,361,580)	(680,132)	(1,684,818)	(1,595,569)	(1,595,912)
* EMS BUDGET CONTINGENCY		(566,717)	(565,000)	(1,009,872)	(452,594)	(471,316)
* ALS SALARY & WAGE CONTINGENCY		(2,104,452)		(2,199,152)	(2,298,114)	(2,401,529)
* DISASTER RESPONSE CONTINGENCY		(3,216,379)		(4,809,156)	(5,085,682)	(5,378,109)
* KING COUNTY AUDITOR'S OFFICE		(61,000)	(61,000)	(125,759)	(68,360)	(71,947)
* USE OF DIESEL RESERVES				(171,903)		
* USE OF CHASSIS OBSOLESCENCE/VEHICLE RESERVES				(201,751)		
Total Expenditures	(43,613,039)	(62,374,958)	(55,922,299)	(68,379,512)	(69,807,983)	(73,273,609)
Estimated Underexpenditure⁷					4,809,156	5,085,682
Other Fund Transactions						
* IMPAIRED INVESTMENT ⁶			(40,818)			
* TAXES IN FP (not included in Budget)		1,363,875		1,183,071		
Total Other Fund Transactions		1,363,875	(40,818)			
Ending Fund Balance	6,243,242	6,782,787	16,407,610	14,909,833	19,300,301	21,948,734
Reserves & Designations						
* RESERVE FOR ENCUMBRANCES	(2,331)					
* DESIGNATED FOR REAPPROPRIATION						
* DESIGNATIONS (PROGRAM BALANCES)	(1,713,719)	(327,114)	(1,259,246)	(540,983)	(300,448)	(40,621)
* DESIGNATIONS FROM 2002-2007 Levy	(892,773)		(839,773)	(689,773)	(689,773)	(689,773)
* RESERVES FOR UNANTICIPATED INFLATION ⁵		(1,230,000)	(1,230,000)	(2,506,000)	(4,017,000)	(5,154,341)
* RESERVES (CHASSIS, RISK, MILLAGE)		(375,000)	(375,000)	(738,249)	(1,925,749)	(2,425,749)
Total Reserves & Designations	(2,608,823)	(1,932,114)	(3,704,019)	(4,475,005)	(6,932,970)	(8,310,484)
Ending Undesignated Fund Balance	3,634,419	4,850,673	12,703,591	10,434,828	12,367,331	13,638,250
Target Fund Balance ⁴	3,634,420	3,742,497	3,967,649	4,012,904	4,163,358	4,250,182

Financial Plan Notes:

- ¹ 2007 Actuals are from the 2007 CAFR.
- ² 2008 Estimated is based on 2nd Quarter Report
- ³ 2010 and 2011 Projected are based on economic metrics from King County Economist
- ⁴ Target fund balance is based on 6% of annual revenues for 2008-2013 levy period.
- ⁵ Unused 2008 ALS Salary & Wage Contingency used to replenish 2009 Diesel Reserves.
- ⁶ This adjustment reflects an unrealized loss for impaired investments.
- ⁷ Estimated underexpenditure assumes prior year disaster contingency is not used.

[Blank Page]

APPENDIX 3

Comparison of EMS 2009 Adopted Budget to the 2009 Budget Adopted in the Original 2008-2013 EMS Levy Financial Plan

	2009 Proposed (15861)	Difference	2009 Adopted Budget	Difference	2009 Actual
BEGINNING FUND BALANCE	\$ 7,478,574	\$ 8,929,036	\$ 16,407,610	\$ 3,278,401	\$ 19,686,011
EMS REVENUES					
Taxes	64,065,620	2,136,308	66,201,928	1,190,154	67,392,082
All Other Revenues	799,358	(119,551)	679,807	130,696	810,503
EMS REVENUE TOTAL	64,864,978	2,016,757	66,881,735	1,320,850	68,202,585
EXPENDITURES					
Advanced Life Support Services:	Detail is not provided in Financial Plan Ordinance 15861 or Adopted 2009 Budget Ordinance 16312				
Salary and Wages					(21,802,825)
Employee Benefits					(5,447,377)
Medical Supplies and Equipment					(800,571)
Other Goods and Services					(990,242)
Dispatch					(951,148)
Vehicle Maintenance Costs					(356,451)
Equipment Allocations					(2,286,423)
Overhead					(2,343,510)
Use of Reserve					(678,253)
Subtotal Advanced Life Support Services	(36,100,374)	22,503	(36,077,871)	421,071	(35,656,800)
Basic Life Support Services	(14,886,717)	(261,030)	(15,147,747)	(133,915)	(15,281,662)
Regional Services:	Detail is not provided in Financial Plan Ordinance 15861 or Adopted 2009 Budget Ordinance 16312				
Community Programs-Dispatch					(336,708)
Community Programs-All Other					(582,885)
Training Programs					(1,085,247)
Regional Medical Direction					(689,026)
Planning & Evaluation					(921,205)
Administration					(1,093,738)
Overhead/General Support					(1,440,654)
Subtotal Regional Services	(6,478,134)	(473,349)	(6,951,483)	802,019	(6,149,464)
Strategic Initiatives:	Detail is not provided in Financial Plan Ordinance 15861 or Adopted 2009 Budget Ordinance 16312				
Community Programs-Dispatch					(388,793)
Community Programs-All Other					(166,637)
Training Programs					(57,741)
Planning & Evaluation					(16,297)
Subtotal Strategic Initiatives	(1,491,275)	(193,543)	(1,684,818)	1,055,350	(629,468)
Total Expenditures	(58,956,500)	(905,419)	(59,861,919)	2,144,525	(57,717,394)
Total Excess of Revenues Over Expenditures	5,908,478	1,111,338	7,019,816	3,465,375	10,485,191
Other Items Affecting Fund Balance	(3,856,688)	(4,660,905)	(8,517,593)	8,335,202	(182,391)
ENDING FUND BALANCE	9,530,364	5,379,469	14,909,833	15,078,978	29,988,811
TOTAL RESERVES AND DESIGNATIONS	(5,471,421)	996,416	(4,475,005)	(14,741,418)	(19,216,423)
ENDING UNDESIGNATED FUND BALANCE	\$ 4,058,943	\$ 6,375,885	\$ 10,434,828	\$ 337,560	\$ 10,772,388

[Blank Page]

APPENDIX 4

Performance Summary for Strategic Initiatives (2002-2013)

2002—2007 Strategic Initiatives	Strategic Goals	Outcomes	Cost
Dispatch Initiatives			\$735,160
<i>ALS Response and Dispatch Triage Criteria</i>	Manage Growth Contain Costs	Reduced ALS growth and avoided \$5 million in annual costs	Included Above
<i>EMD Quality Improvement</i>	Quality of Care	Reviewed 4,080 dispatch cases	Included Above
<i>Enhanced CBD Basic Training & Continuing Education Curricula</i>	Manage Growth Gain Efficiencies	Added two course to curricula and problem/scenario-based training	Included Above
Computer Aided Dispatch (CAD) System	Quality of Care Gain Efficiencies	Automated criteria based dispatch guidelines	Included Above
Web-Based Training for EMS Personnel/Dispatchers	Gain Efficiencies	Added new competency based training modules	\$545,253
Regional Electronic Data Collection Project	Quality of Care	Converted records to electronic format to improve oversight	\$149,234
Regional Medic One/EMS Tracking Resource Online	Gain Efficiencies	Created database to track essential personnel information	\$224,296
Financial Review of Medic One/EMS Subfunds	Not Applicable	Reviewed EMS subfunds	0
Injury Prevention Program			\$129,533
Belleue Fall Pilot Study	Manage Growth Gain Efficiencies	Decreased fall risks by 36% for patients served	Included Above
Child Passenger Seat	Manage Growth	Trained or provided car seats for 850 clients	Included Above
Pre-School Injury Prevention	Manage Growth	None	Included Above
Think Again--High School Injury Awareness	Manage Growth	Provided car safety training to teens	Included Above
Paramedic/EMT Procedure and Patient Treatment	Quality of Care	Reviewed select procedures and treatment plans	\$211,790
Enhanced Care for Specific EMS Patients	Quality of Care Contain Costs	Created program to target diabetes and high blood pressure	Included Above
Impact of State Budget Cuts on EMS System	Not Applicable	Reviewed and summarized budget impacts	0
Strategic Plan/Levy Planning	Not Applicable	Produced Strategic Plan	\$273,381
2008—2013 Strategic Initiatives	Strategic Goals	Primary Objectives	Projected Budgets
Emergency Dispatch Strategic Initiatives			\$2,497,544
<i>Better Management of Non-Emergency Calls</i>	Quality of Care Contain Costs	Increase calls transfers to nurseline; Modified rapid dispatch procedures; Piloted lower-cost BLS response unit	Included Above
<i>Dispatch Center Performance Standards</i>	Quality of Care	Offer incentives to meet standards	Included Above
<i>Advanced EMD Training</i>	Quality of Care	Fund dispatcher training opportunities	Included Above
<i>Criteria Based Dispatch/CAD Integration</i>	Quality of Care	Complete CAD integration for dispatchers	Included Above
Injury Prevention Initiatives			\$1,465,269
<i>Expanded Countywide Fall Program</i>	Manage Growth Contain Costs	Expand countywide falls program for seniors	Included Above
<i>Injury Prevention Small Grants for BLS Agencies</i>	Quality of Care	Award grants to 12 BLS agencies to conduct falls prevention services	Included Above
<i>Injury Prevention Community Awareness Campaigns</i>	Manage Growth Contain Costs	Educate 110 health care workers and developed public awareness campaign	Included Above
<i>Injury Prevention Grant Writing</i>	Contain Costs	Hired grant writer to obtain grants for seniors	Included Above
Public Access Defibrillation	Quality of Care	Completed plan, medical study, and community awareness campaign	\$162,980
Enhancements to Competency Based Training Online	Quality of Care Gain Efficiencies	Design new interactive EMS courses	\$1,429,348
System Enhanced Network Design	Quality of Care	Completed implementation plan	\$1,134,831
All Hazards Emergency Management	Quality of Care	Assess if EMS system preparedness	\$205,521
EMS Efficiencies and Evaluations	Gain Efficiencies	Study potential areas of efficiencies	\$648,416
Strategic Plan for Next EMS Levy	Not Applicable	Prepare 2014 to 2019 Strategic Plan	\$382,659

[Blank Page]

LIST OF FINDINGS, RECOMMENDATIONS & IMPLEMENTATION SCHEDULE

Finding 1: Use of EMS Levy funding conformed to 2009 adopted EMS policies and financial plan.

No recommendation

Finding 2: Issues were identified in tracking EMS levy funding that suggests need for improved internal controls for financial reporting.

Recommendation 1: EMS management, in collaboration with OMB, should use the King County financial systems to track all reserves and designations whether included in the adopted budget or not. Entries to the related accounts should be based on actual budget and expenditure data, supported by underlying accounting records, and subject to standard journal entry process controls.

Implementation Date: April 2011

Estimate of Impact: Tracking all EMS reserves and designations through King County's financial systems will provide greater transparency and accountability of EMS financial transactions and improve the control environment to ensure EMS Levy funds are spent for their intended purpose.

Recommendation 2: If EMS management continues to use Excel applications for tracking reserves and designations because the level of detail necessary for management purposes exceeds the level of detail provided by the county's financial systems, we recommend that EMS use the Excel applications as account level subsidiary ledgers that would agree to, or reconcile with, the general ledger accounts established to track fund balance reserves and designations.

Implementation Date: April 2011

Estimate of Impact: Tracking reserves and designations through Excel applications to account level subsidiary ledgers would facilitate reconciliation of year end EMS fund balances and ensure the accuracy and transparency of EMS financial activities.

Finding 3: Inflation factors for determining the annual ALS standard unit cost allocations conformed to EMS Levy policies.

No recommendation

Finding 4: New producer price index would more accurately forecast future ALS vehicle costs.

Recommendation 3: EMS management should use a PPI such as WPU1413029 that tracks truck equipment such as fire trucks and ambulances to forecast future vehicle costs and would appear to more closely approximate actual costs than the U.S. Department of Labor, Bureau of Labor Statistics, Vehicle Costs factor currently used in the EMS Levy financial plan.

Implementation Date: October 2010

LIST OF FINDINGS, RECOMMENDATIONS & IMPLEMENTATION SCHEDULE (Continued)

Estimate of Impact: Provide greater accuracy in estimating the cost of future ALS vehicle acquisitions.

Finding 5: EMS Levy revenues were confirmed and appropriately recorded in the EMS Levy financial documents.

No recommendation

Finding 6: Strategic initiatives consistently achieved regional EMS objectives.

No recommendation

Finding 7: Strategic initiatives could be strengthened through benchmarking to provide valid peer comparisons of existing operations and a framework for selecting future initiatives.

Recommendation 4: In identifying potential topics for new individual strategic initiatives, the EMS Division should consider the results of benchmarking and give strong consideration to operations and practices that can increase EMS system efficiency as well as improve the visibility and transparency of EMS services.

Implementation Date: 2011 - 2013

Estimate of Impact: EMS use of benchmarking and greater emphasis on business-like operations and practices will help demonstrate system efficiencies and provide greater accountability in ensuring the cost-effectiveness of EMS operations.

Finding 8: Strategic initiatives could be strengthened by developing standards, performance measures and project milestones to determine the extent of EMS improvements.

Recommendation 5: EMS management should institute performance measures and targets to help promote greater EMS transparency and accountability in developing, implementing and reporting annually on strategic initiatives. Project milestones for completion of projects or project stages should be developed for initiatives with outcomes that cannot be quantified or otherwise measured. EMS should also conduct cost analysis for new initiatives with economic impacts.

Implementation Date: 2011 - 2013

Estimate of Impact: Using performance measures/targets and cost analysis will help ensure current and future strategic initiatives are more transparent in relation to expected outcomes or performance measures and in determining the cost-effectiveness of EMS systems and protocols.

Recommendation 6: As part of a strategic initiative on managing vehicle costs more efficiently, the EMS Division should review its vehicle replacement policy and follow King County Fleet Administration guidelines in conducting a life cycle cost analysis to determine optimum vehicle use. It should also require ALS providers to track and maintain adequate records on mileage,

LIST OF FINDINGS, RECOMMENDATIONS & IMPLEMENTATION SCHEDULE (Continued)

engine hours, vehicle usage at specified intervals, and other data necessary to conduct a life cycle cost analysis.

Implementation Date: 2011 - 2013

Estimate of Impact: A new strategic initiative on ALS vehicle replacement that complies with King County Fleet Administration's vehicle replacement guidelines including life cycle cost analysis will ensure King County's EMS vehicles are operated as efficiently as possible while not compromising patient safety or comfort. A life cycle cost analysis will also ensure that King County identifies the most cost-effective option for replacing EMS vehicles.

Recommendation 7: The EMS Division should establish a policy requiring the remounting ambulance modules at specified intervals instead of purchasing new ALS vehicles as part of a strategic initiative on vehicle replacement. The remounting intervals should be specified in conjunction with the results of life cycle cost analysis.

Implementation Date: January 2013

Estimate of Impact:

Fiscal Impact: At least \$451,000 during the next EMS Levy cycle, 2014-2019.

Other impacts: A new strategic initiative on vehicle replacement that includes remounting ambulance modules at specified intervals will reduce the acquisition cost of new ALS vehicles during the remaining and future levy cycle.

[Blank Page]

EXECUTIVE RESPONSE



King County

Dow Constantine

King County Executive
401 Fifth Avenue, Suite 800
Seattle, WA 98104-1818

206-263-9600 Fax 206-296-0194

TTY Relay: 711

www.kingcounty.gov

KING COUNTY AUDITOR

SEP 01 2010

RECEIVED

September 1, 2010

Cheryle A. Broom, County Auditor
Metropolitan King County Council
516 Third Avenue, Room 1033
Seattle, WA 98104-3272

RE: Proposed Final Report – EMS Levy 2009 Financial and Compliance Audit

Dear Ms. Broom:

Thank you for the opportunity to review and comment on the proposed final report of the Emergency Medical Services (EMS) Levy 2009 Financial and Compliance Audit. This is the second of a series of EMS financial reviews to be conducted, as authorized by King County Council Ordinance #15862, on the 2008-2013 Medic One/EMS levy.

The EMS Division's financial practices and compliance were assessed by the Council-adopted levy policies and financial plan. The EMS Strategic Initiatives were reviewed to determine whether the initiatives resulted in efficiencies and cost savings. The audit identified potential opportunities for achieving system efficiencies and cost effectiveness.

I am pleased to note that the overall findings of the audit are favorable and supportive: the financial operations were managed in accordance with the EMS Levy financial plan and policies; and the Strategic Initiatives consistently achieved the regional objectives of improved patient care, managing the rate of growth, and increased operational efficiencies. Additionally, they conformed to best practices, and select initiatives were cited as best practices in the literature reviewed.

The recommendations resulting from the 2009 EMS Levy Audit are practical and reasonable, and, once implemented, will enhance the management of EMS funds and encourage additional system efficiencies. Recommendations advise strengthening the reporting of actual reserves and designated fund balances, and using a different inflation index that more closely approximates actual costs for vehicle budget allocations related to medic units in future EMS financial plans and annual budgets. Also proposed are identifying future



*King County is an Equal Opportunity/Affirmative Action Employer
and complies with the Americans with Disabilities Act*

EXECUTIVE RESPONSE (Continued)

Ms. Cheryle A. Broom
September 1, 2010
Page 2

Strategic Initiatives that focus on business practices, developing additional performance measures and/or project milestones, utilizing benchmarks, and conducting a life cycle analysis for vehicle replacements.

I agree with the intent of all the audit recommendations. However, we are limited by technical and legal issues in two recommendations. In those cases, we partially agree, yet plan to implement the intent of such recommendations.

In response to the specific recommendations in the audit, we plan to:

- Post reserves and designations in the King County accounting system;
- Implement the intent of applying a Producer Price Index (PPI) for escalating the ALS standard unit cost of vehicles;
- Consider emphasizing operations, practices, and transparency of EMS services when developing future Strategic Initiatives;
- Incorporate benchmarking into the selection, prioritization, and evaluation of new Strategic Initiatives;
- Establish additional performance measures and project milestones, and conduct cost analysis for current Strategic Initiatives; and
- Develop a proposal that focuses on managing vehicle costs for medic units, including vehicle replacement and remounting policies.

Attachment A identifies the major timelines and products connected with our response to the recommendations. Public Health - Seattle & King County, the EMS Division, and EMS stakeholders will begin work on these recommendations immediately. Their timely implementation will provide elected officials with information critical for making key EMS levy choices during the next EMS levy planning process, slated to begin late next year.

EXECUTIVE RESPONSE (Continued)

Ms. Cheryle A. Broom
September 1, 2010
Page 3

I appreciate the high level of cooperation and support between the King County Auditor's Office, Public Health and EMS Division management and staff, and the paramedic providers during the audit process. If you have any questions regarding this response, please contact Michele Plorde, Interim Director, EMS Division, at 206-263-8603.

Sincerely,



Dow Constantine
King County Executive

Attachment

cc: Ron Perry, Deputy County Auditor, King County Council (KCC)
Susan Baugh, Senior Principal Management Auditor, KCC
Brian Estes, Senior Principal Management Auditor, KCC
Fred Jarrett, Deputy County Executive
Rhonda Berry, Assistant Deputy County Executive
Sung Yang, Director of Government Relations, King County Executive Office (KCEO)
Joe Woods, Council Relations Manager, KCEO
David Fleming, M.D., Director and Health Officer, Public Health – Seattle & King County (PHSKC)
Dwight Dively, Director, Office of Management and Budget
Michele Plorde, Interim Director, Emergency Medical Services (EMS) Division, PHSKC
Cynthia Bradshaw, Finance Officer, EMS
Helen Chatalas, Program Project Manager, EMS
Caroline McShane, Deputy Director, Finance and Business Operations Division, Department of Executive Services

EXECUTIVE RESPONSE (Continued)

Attachment A

Recommendation	Agency Position	Schedule for Implementation	Comments
<p>1. EMS management, in collaboration with OMB, should use the King County financial systems to track all reserves and designations whether included in the adopted budget or not. Entries to the related accounts should be based on actual budget and expenditure data, supported by underlying accounting records and subject to standard journal entry process controls.</p>	<p>Partially concur</p>	<p>2010 year-end by April 2011</p>	<p>EMS agrees to track reserves and designations in the King County accounting system. Throughout the year, actual amounts will be posted to these accounts, and for the year-end close, estimates of actual activity (accrued expenditures) will be made and recorded.</p>
<p>2. If EMS management continues to use Excel applications for tracking reserves and designations because the level of detail necessary for management purposes exceeds the level of detail provided by the county's financial systems, we recommend that EMS use the Excel applications as account level subsidiary ledgers that would agree to, or reconcile with, the general ledger accounts established to track fund balance reserves and designations.</p>	<p>Concur</p>	<p>2010 year-end by April 2011</p>	<p>EMS is working with Finance Management Services to establish the accounts. EMS will match numbers in Excel spreadsheets to numbers posted in accounting system. General ledger account balances will be reconciled to the Excel spreadsheets.</p>
<p>3. EMS management should use a PPI such as WPU1413029 that tracks truck equipment such as fire trucks and ambulances to forecast future vehicle costs and would appear to more closely approximate actual costs than the US Dept of Labor, Bureau of Labor Statistics, Vehicle Costs factor currently used in the EMS Levy financial plan.</p>	<p>Partially Concur</p>	<p>Propose as part of 2011 Budget Process (October 2010).</p>	<p>EMS plans to implement the intent of this recommendation by using the PPI as a means of accessing vehicle reserve funds to supplement the amount in the equipment allocation. However, since the index chosen to inflate vehicles was established in an ordinance associated with the vote, the index used in the equipment allocation cannot be changed (outside of an election).</p>

EXECUTIVE RESPONSE (Continued)

Attachment A

Recommendation	Agency Position	Schedule for Implementation	Comments
<p>4. In identifying potential topics for new individual strategic initiatives, the EMS Division should consider the results of benchmarking and give strong consideration to operations and practices that can increase EMS system efficiency as well as improve the visibility and transparency of EMS services.</p>	<p>Concur</p>	<p>Assess potential efficiencies in 2011; report in annual report to KC Council due by September 1, 2011; and incorporate into the Medic One/EMS 2014-2019 Strategic Plan due in January 2013.</p>	<p>EMS agrees to apply benchmarking to any new Strategic Initiatives developed in 2011-2013 and review operations and practices in 2011 (and continuously through 2013) for potential system efficiencies and visibility or transparency improvements.</p>
<p>5. EMS management should institute performance measures and targets to help promote greater EMS transparency and accountability in developing, implementing and reporting annually on strategic initiatives. Project milestones for completion of projects or project stages should be developed for initiatives with outcomes that cannot be quantified or otherwise measured. EMS should also conduct cost analysis for new initiatives with economic impacts.</p>	<p>Concur</p>	<p>Assess current strategic initiatives in 2011; report in annual report to KC Council due by September 1, 2011; and incorporate into the Medic One/EMS 2014-2019 Strategic Plan due to KCC in January 2013.</p>	<p>EMS agrees to institute additional performance measures where appropriate and possible, develop project milestones, and conduct cost analysis for current strategic initiatives.</p>
<p>6. As part of a strategic initiative on managing vehicle costs more efficiently, the EMS Division should review its vehicle replacement policy and follow King County Fleet Administration guidelines in conducting a life cycle cost analysis to determine optimum vehicle use. It should also require ALS providers to track and maintain adequate records on mileage, engine hours, vehicle usage at specified intervals, and other data necessary to conduct a life cycle cost analysis.</p>	<p>Concur</p>	<p>Develop plan and proposal for this new Strategic Initiative and conduct analysis in 2011 with intent to incorporate into the Medic One/EMS 2014-2019 Strategic Plan due to KCC in January 2013. Analysis will include development of performance measures that EMS would require providers to track.</p>	<p>EMS plans to implement intent of recommendation during the current levy period (while analysis is being conducted) by asking agencies to prepare rigorous proposals for regional review prior to purchasing new vehicles.</p>

EXECUTIVE RESPONSE (Continued)

Attachment A

Recommendation	Agency Position	Schedule for Implementation	Comments
<p>7. The EMS Division should establish a policy requiring the remounting ambulance modules at specified intervals instead of purchasing new ALS vehicles as part of a strategic initiative on vehicle replacement. The remounting intervals should be specified in conjunction with the results of life cycle cost analysis.</p>	<p>Concur</p>	<p>Include as part of the new Strategic Initiative in #6 project plan with intent to incorporate recommendations into the Medic One/EMS 2014-2019 Strategic Plan due to KCC in January 2013.</p>	