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Audit Report

**Follow-up Audit of
EMERGENCY MEDICAL SERVICES
SERVICE DELIVERY**

August 6, 2010

Office of the City Auditor
Austin, Texas

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Date: August 6, 2010

To: Mayor and Council

From: Kenneth J. Mory, City Auditor

Subject: Follow-up Audit of Emergency Medical Services Service Delivery

I am pleased to present this report on the Follow-up Audit of Emergency Medical Services Service Delivery. The audit objective was to determine whether the recommendations issued in the 2005 Public Safety Service Delivery: Emergency Medical Services Audit were implemented. These recommendations were for Emergency Medical Services (EMS) to perform formal cost analyses of reducing the length of paramedic shifts, to lay out a project plan for shift conversion, and to develop a strategy to increase departmental data analysis capacity.

While EMS stated cost analyses were performed, management was unable to provide the documentation necessary for Office of the City Auditor (OCA) staff to audit such analysis. Without sufficient supporting documentation, OCA was unable to audit the new shift schedules and determine whether or not they were the best way to address the overtime issues identified in the original audit. In addition, EMS did not create a formal project plan, but used an acceptable, alternate approach to informally plan for the shift transition. As a result, EMS implemented a shift transition as scheduled. Finally, EMS developed and implemented a strategy to increase data analysis capacity. Since the new shift schedule was implemented, additional recommendations were not issued.

We appreciate the cooperation and assistance we received from staff in EMS during this audit.

cc: Marc Ott, City Manager
Michael McDonald, Assistant City Manager
Ernesto Rodriguez, Director, Emergency Medical Services
James Shamard, EMS Chief of Staff
John Ralston, EMS Assistant Director for Administration and Finance
Keith Simpson, EMS Communications Commander

COUNCIL SUMMARY

In August 2005, the Office of the City Auditor (OCA) completed an audit of the Public Safety Service Delivery: Emergency Medical Services. The objectives were to compare service delivery in Austin to other cities, and to determine how changes to shifts and service delivery were planned and implemented. OCA conducted a follow-up audit to determine whether Austin/Travis County Emergency Medical Services (EMS) implemented the recommendations issued in that audit. The results are presented in detail in the following report and summarized in the table below.

Recommendation (Summary)	Management Response (Summary)	EMS Reported Status¹	Status Verified by Auditors
Prior to changing shift schedules, EMS should develop formal cost analyses of the budgetary effects of reducing shift lengths, including overtime savings and staff availability.	Issued Request for Proposal (RFP) for fatigue analysis study, to include workload, overtime, injury reduction, and cost comparison between the different schedules.	Implemented	Unable to audit due to lack of sufficient support documentation
After completing a formal cost analysis, EMS should lay out a project plan for timely conversion of shifts.	Included in the RFP.	Implemented	Acceptable alternate approach used to implement
EMS should develop a formal strategy to increase data analysis capacity	The CAD system should expand planning resources. Additional personnel will have to be approved through the budget process.	Underway	Fully implemented

EMS stated cost analyses were performed, but supporting documentation of these analyses was not retained.² While there were both service and financial objectives to consider, without sufficient supporting documentation of the cost analysis, OCA was unable to audit the new shift schedules and determine whether or not they were the best way to address the overtime issues identified in the original audit. In addition, EMS did not require a project plan in the RFP, but conducted an acceptable, alternate approach to perform informal project planning. Lastly, EMS increased data analysis capacity and used outputs to make decisions for converting some EMS stations from 24-hour shifts to 12-hour shifts. Because the shift schedule transition was already implemented, OCA did not issue additional recommendations. However, several purchasing and records retention issues were observed that will be considered in future service plans.

¹ The most recent status report is from December 2008 because departments report the implementation status of recommendations to the Controller's Office for three years following the issuance of the recommendation.

² EMS performed some cost analysis after shift transition, but this did not include a cost comparison of the various shift schedule options.

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BACKGROUND

In August 2005, the Office of the City Auditor (OCA) completed an audit of Public Safety Service Delivery: Emergency Medical Services. The audit determined that reliance upon 24-hour paramedic shifts for service in the urban corridor potentially created unsafe conditions for citizens and paramedics due to paramedic fatigue. It was noted that these shifts contributed to scheduled overtime of over \$3.3 million per year and may have also increased the need for unscheduled overtime. In addition, Emergency Medical Services (EMS) had not performed a comprehensive cost analysis of the department's shift scheduling and service delivery in preparation for proposed changes to a shorter shift schedule. For example, EMS had not performed work to demonstrate alternative shift conversions would maintain service, offset other costs, and achieve relief for paramedics.

To address these findings, the audit recommended that EMS perform formal cost analyses showing the budgetary effects related to reducing the length of paramedic shifts, to include analysis of overtime savings and the likely impact on staff availability. The audit also recommended that EMS lay out a project plan for timely conversion of shifts, including tasks, deadlines, milestones, and responsible parties. Finally, the audit recommended that EMS develop a formal strategy to increase the department's data analysis capacity.

Since the original audit, EMS reduced the average workweek from 56 hours to 48 hours and initiated a hybrid scheduling system. Urban stations with higher service demand operate on 12-hour shifts, while stations with fewer calls operate on 24-hour shifts. As a result, the Emergency Services activity within EMS has increased from 280 full-time equivalent positions to 301.

OBJECTIVES, SCOPE, AND METHODOLOGY

This Follow-up Audit of Emergency Medical Services Service Delivery was conducted as part of the Office of City Auditor's FY 10 Service Plan, as accepted by the City Council's Audit and Finance Committee.

Objectives

The audit objective was to determine whether recommendations from the original audit have been implemented.

Scope

The audit focused on internal records from May 2005 through June 2010.

Methodology

To accomplish our audit objectives, we:

- reviewed results from prior audit reports and EMS recommendation status reports;
- reviewed documents, including consultant materials and EMS internal publications;
- analyzed EMS and City of Austin budget information and performance data;
- observed performance review meetings conducted by EMS management; and
- interviewed EMS management and staff.

We conducted this performance audit in accordance with Generally Accepted Government Auditing Standards (GAGAS). Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

AUDIT RESULTS

In August 2005, the Office of the City Auditor (OCA) released an audit report of Public Safety Service Delivery: Emergency Medical Services. As a result of the issues presented in this audit, OCA made three recommendations to Austin/Travis County Emergency Medical Services (EMS). In December 2008, EMS reported that two recommendations were implemented and the third was underway. The follow-up audit indicated that OCA was unable to audit one recommendation, and one recommendation used an acceptable, alternate approach to achieve the intent of the original recommendation. One recommendation was fully implemented (See Exhibit 1 below).

**Exhibit 1
Status of Prior Audit Recommendations**

Recommendation	EMS Action Plan	Status Reported by EMS ³	Status Verified by Auditors
01. Prior to instituting any alternative shift scheduling and to broaden management's options for effecting a safer and more efficient working environment, the Director of EMS should develop formal cost analyses showing the budgetary effects related to reducing the length of paramedic shifts. In addition to identifying transition costs for hiring new paramedics to achieve this, the analysis should factor in anticipated overtime savings as well as likely impact of staff availability to cover absences due to leave time and injuries.	EMS presently has an RFP out for bid for the development of long range fatigue reduction and scheduling options. This proposal will provide the Department with a blueprint for future conversions from the current 24/48 hour schedule to work schedules of shorter duration. The scope of this analysis includes employee workload issues, overtime, injury reduction, and detailed cost comparison between the different schedules	Implemented As of July 2006	Unable to audit due to lack of sufficient supporting documentation
02. After completion of formal cost analysis described in Recommendation 01, the Director of EMS should revisit the anticipated planning horizon for converting shifts and lay out a project plan for timely conversion of shifts including tasks, deadlines, milestones, and responsible parties.	Included in the Request for Proposal	Implemented as of May 2007	Acceptable alternate approach used to implement
03. With the implementation of new software systems and capabilities, the Director of EMS should evaluate the department's capability to analyze new forms of data and develop a formal strategy to increase the department's data analysis capacity.	The new CAD system recently implemented by the City should, when fully operational, provide the Department with superior planning resources. However, the personnel necessary to analyze and recommend actions based upon the data will have to be approved through the City's Budget process.	Underway as of December 2008	Fully Implemented

Source: OCA analysis and information provided by EMS to the Controller's Office

³ City Council Resolution 020110-59 requires City management to update a database of actions taken to implement audit recommendations for three years following the issuance of the recommendation.

Recommendation #1 Implementation Status Results

EMS did not perform cost analyses prior to instituting alternative shift scheduling and as a result cannot quantify the financial effect of the shift transition.

The original audit recommended EMS develop formal cost analyses, prior to initiating an alternative shift schedule, showing the budgetary effects of the scheduling change, including overtime savings, new hire costs, and staff availability. EMS responded that a consultant would be hired to perform this analysis as part of an overall assessment of employee fatigue. We reviewed the consultant's reports and found that a cost analysis was not provided (see Appendix B for a list of documents reviewed). Management stated that some operational decisions are based on factors other than cost in order to meet public safety needs and ensure employee safety, and the consultant was asked to only evaluate employee fatigue and scheduling preferences. Further review of the proposal and the award letter indicated that the consultant's work should have included cost analyses; however, EMS did not monitor and ensure the consultant provided the services requested, and we were unable to determine what expectations were communicated to the consultant due to the lack of a formal contract. The consultant was paid the full award amount of \$162,400, in a series of eight payments between December 2005 and May 2006. However, payments documented in the City's financial system do not correspond directly to specific deliverables.

EMS further stated that cost analyses were performed by the department prior to the development of the new schedule, which included a comparison of costs associated with 8, 10, and 12-hour shifts and demonstrated a reduction in overtime hours resulting from a switch to 48-hour workweeks. Management also stated that Human Resources conducted a market study of EMS compensation, and the results of this study contributed to the decision to set the workweek at 48 hours. However, management was unable to provide sufficient supporting documentation of cost analyses or the market study to OCA. Management suggested that the lack of documentation was due in part to executive-level turnover since the original audit was completed. Without sufficient supporting documentation, OCA was unable to audit the new shift schedules and determine whether or not they were the best way to address the overtime issues identified in the original audit.

We noted that after implementation of the shift transition, EMS performed some cost analysis showing the budgetary effect of both the reduction in scheduled overtime and the need to hire additional employees. Although this analysis did not include a cost comparison between the various shift options, the FY06 EMS budget reported a reduction in scheduled overtime of \$339,000 and an increase of \$1.7 million for 24 new full-time equivalents. We noted that several factors influence overtime costs, such as wage increases, changes in the definition of productive time, and additional events for which EMS provides services; however, due to the lack of supporting documentation, OCA was unable to determine the financial impact resulting from the schedule changes or whether the chosen schedule is the most cost-effective.

Recommendation #2 Implementation Status Results

Although EMS did not document a formal project plan, EMS did perform an acceptable, alternate approach to project planning.

The original audit recommended that, after completing the cost analyses, EMS should lay out a project plan for timely conversion of shifts including tasks, deadlines, milestones, and responsible parties. Management responded that this item would be performed by the hired consultant, but a project plan was not included in the consultant's proposal, and therefore, was not included in the award letter. Although EMS management stated that the department did not possess the "organizational maturity" to create a formal project plan at the time, EMS used an acceptable, alternate approach to internally identify responsible parties, assign specific project tasks, and establish deadlines and interim milestones. As a result, the transition to a 48-hour workweek was implemented in July 2006 as planned.

Since implementation of these schedule changes, EMS performance measures indicate that employee turnover and on-the-job injury rates have declined since FY06. In addition, EMS surveyed personnel earlier this year, and the majority responded that they are satisfied with their schedules and have no difficulty in getting enough sleep or performing their jobs safely and effectively (see Exhibit 2 for details). The department continues to refine shift schedules to reflect incident volumes and employee needs.

**Exhibit 2
Employee Survey Results: Shift Satisfaction**

	Percent Satisfied		Percent Reporting No Difficulty
Shift length	83.4	Getting enough sleep	72.4
Shift configuration	70.4	Getting good quality sleep	64.8
Time off between shifts	80.4	Staying alert while working	87.4
Overall schedule	64.3	Performing job safely	94.5
		Performing job effectively	94.0

Source: Employee surveys conducted by EMS

Recommendation #3 Implementation Status Results

EMS increased data analysis capacity and currently uses this analysis in making management decisions.

The original audit recommended that EMS evaluate the department's capability to analyze new forms of data and develop a formal strategy to increase the department's data analysis capacity. After reviews of internal reports and interviews with staff, we determined that EMS implemented several initiatives to increase its data analysis capacity. In 2007, EMS created a six-member unit to conduct business and research analysis. The department also has a new business intelligence tool (COGNOS) that allows staff to combine and analyze data from multiple data systems. Information from

COGNOS is used to facilitate regular performance monitoring, and EMS managers review cases in which performance targets were not met. Incident volume and distribution data, as well as unit utilization statistics, are used to make decisions with regard to deployment locations and shift lengths. Research and analysis staff trains EMS managers in how to extract and use data from COGNOS. Recently EMS implemented an Electronic Patient Care Records system to improve continuity of care and further enable performance tracking.

Observations

In the course of our audit, we identified two potential risk areas that are outside the scope of this audit but merit bringing to your attention. As discussed in the results for Recommendation #1, the City lacked a formal contract for the fatigue study, and therefore, we could not determine what deliverables were due to or paid for by the City. EMS was also unable to provide documentation of cost and market study analyses. Currently, Citywide records retention and contract management projects are or will be considered in OCA service plans.

APPENDIX A
MANAGEMENT RESPONSE



Austin – Travis County

Emergency Medical Services Department

Emergency Services, Emergency Communications, Shock Trauma Air Rescue

Preserve Life, Improve Health, Promote Safety

TO: Kenneth Mory, City Auditor
Office of the City Auditor

FROM: Ernesto Rodriguez, Director
Austin – Travis County Emergency Medical Services

DATE: August 2, 2010

SUBJECT: Management Response to Follow-up Audit

Austin – Travis County EMS (A/TCEMS) would like to thank the Office of the City Auditor for completing the follow-up audit of the Emergency Medical Services Service Delivery. We accept the fact that the Office of the City Auditor performed this follow-up audit in accordance with Generally Accepted Government Auditing Standards (GAGAS). We also realize that the goal of the follow-up audit was to obtain appropriate evidence to provide a reasonable basis for your findings and also to form conclusions based on your audit objectives.

The first recommendation of the audit asked the department to develop a formal cost analysis of the budgetary effects of reducing shift lengths, including overtime savings and staff availability. The department did provide evidence that overtime costs were reduced in the subsequent years following the implementation of the 48hr shift schedule. With the concerns of overtime costs being one of the objectives of the original audit, A/TCEMS believes that the reduction in overtime costs for the department and the city has satisfied the spirit of the goal from the original audit. Although A/TCEMS cannot produce a specific document titled "Cost Analysis" five years after the original audit, there was documentation that showed an effort by the department to analyze shift options, costs, and staff effects for 40hr, 48hr and 56hr shift options.

The second audit recommendation asked the department to lay out a project plan for the timely conversion of shifts including tasks, deadlines, milestones, and responsibilities. During the follow-up audit the department provided evidence that showed A/TCEMS internally identified responsible parties, assigned specific project tasks, and established deadlines and internal milestones. A/TCEMS accepts the status of "Acceptable alternate approach used to implement" as a completed status for this audit recommendation.

The third recommendation was for A/TCEMS to develop a formal strategy to increase data analysis capacity. This objective has been completed as noted within the audit report as being "Fully Implemented".

A/TCEMS believes that our efforts have produced the desired outcomes from the initial audit recommendations. Overall, the department maintains that in the past five years, overtime costs have decreased, injury rates have decreased, turnover rates have decreased and employee satisfaction has improved. The department has also substantially increased our data analysis capability and function at a much greater level of analysis capacity. This is evidence that the department has made significant improvements which we believe was the intent of the audit recommendations.

APPENDIX B

CONSULTANT DOCUMENTS REVIEWED BY AUDITORS

The Office of the City Auditor reviewed the following deliverables provided by the fatigue study consultant:

- Austin-Travis County EMS Fatigue Study Results – Paramedics and Commanders in Field
- Austin-Travis County EMS Fatigue Study Results – Communications Group
- Austin-Travis County EMS Survey Results Summary
- Austin Travis Communications Survey Results Summary
- Revised 24 Hour Schedule Options for Paramedics
- 24/7 Schedule Options for Communications
- Employee Survey Results
- Questionnaires used for employee surveys