April 16, 2001

The Honorable Bill Purcell, Mayor
Metropolitan Government of Nashville and
  Davidson County
Members of the Emergency Communications District
  Board of Directors
Metropolitan Courthouse
Nashville, TN 37201

Report of Internal Audit Section

Dear Mayor Purcell and Emergency Communications District Board Members:

We have recently completed a performance audit of the Metropolitan Government of Nashville and Davidson County E911 System. According to the *Government Auditing Standards* issued by the Comptroller General of the United States, "a performance audit is an objective and systematic examination of evidence for the purpose of providing an independent assessment of the performance of a government organization, program, activity, or function in order to provide information to improve public accountability and facilitate decision-making by parties with responsibility to oversee or initiate corrective action." A performance audit is different than financial statement audits, which are limited to auditing financial statements and controls, without reviewing operations and performance. In performing this audit, we retained Gartner Consulting to work under our direction. Their final report dated April 2001, *E911 System Assessment Report*, is included with this report.

Internal Audit typically addresses audit reports to and obtains responses from the department head and the board or commission overseeing the department audited or, for departments without a board or commission, the department head and the Mayor. As more fully explained in the accompanying *E911 System Assessment Report*, the E911 system is managed jointly by the Police and Fire Departments, both of which fall under the responsibility of the Mayor. As a result, this report is being addressed to the Mayor, who has the ultimate overall managerial responsibility for the E911 system, and to the Emergency Communications District Board, which has significant funding responsibilities for the E911 system.

Objectives, Scope, and Methodology

This audit represents the first comprehensive performance audit of the E911 system, which is the system that receives and dispatches citizen emergency 911 calls for police, fire and ambulance services. The E911 system operates under the Emergency Communications District Law (Tennessee Code Annotated Title 7, Chapter 86), which authorized municipalities and counties to create Emergency Communications Districts, governed by a Board of Directors. The roles and responsibilities of the nine member E911 Board include: 1) electing the method of responding to 911 calls, 2) subscribing to telephone services, 3) levying telephone service charges to fund 911 telephone service, and 4) funding E911 facilities, equipment and services. Total Emergency Communications District operating revenues and expenses for the June 30, 2000 fiscal year were $5,156,641 and $1,977,113, respectively. Additionally, the District transferred $4,200,000 to the Metropolitan Government to fund a portion of the 800 MHz radio system, which is being funded over a ten year period.

The E911 system is operated by 132 Police and Fire Department operators, dispatchers and other staff members from an emergency communication center that also houses the telecommunication and computer equipment that support the system. The combined Police and Fire Department operating budgets dedicated to the E911 system total $8,114,741 for fiscal year 2001. E911 calls during calendar year 1999 totaled 364,731, non-emergency calls totaled 751,539 and dispatches to police, fire and emergency medical personnel totaled 316,096.

The overall objectives of this performance audit were as follows:

- Review all major aspects of E911 operations, including mission and goals, telecommunications and computer configuration, organizational structure, staffing patterns and compensation, operator and dispatcher training, operational and back-up facilities, and performance measurement.
- Conduct a peer group benchmarking assessment.
- Assess the current systems, operations and technical infrastructure supporting the E911 system.
- Develop findings and recommendations for any areas where performance could be improved.

The scope of the work included all aspects of operations related to the E911 system, and the audit focused on calendar year 1999 performance results, which was the most recent full calendar year available when the work began. Certain analyses required the consideration of financial results, performance and operations outside of that time period.

The methodology employed throughout this audit was one of objectively reviewing various forms of documentation, including written policies and procedures, financial information, Board minutes and various other forms of data, reports and information maintained by the Police and Fire Departments and others. Board members, management

and administrative personnel at the E911 communication center, personnel from other Metro departments, and other stakeholders were interviewed, and various aspects of E911 operations were directly observed. Data obtained from the E911 system was analyzed, and various aspects of E911 system data and practices were compared to those of selected peers and to best practices.

We performed the audit procedures in accordance with generally accepted government auditing standards.

Findings and Recommendations

Gartner's *E911 System Assessment Report* addresses the current E911 service delivery system and the findings and recommendations in detail. Following is an overview of the findings and recommendations included in Gartner's report.

1. The E911 system should be reorganized so that there is one point of responsibility for the entire system. Currently the management of the E911 system is shared between the Police and Fire Departments, and there is no one point of overall responsibility for the E911 service delivery system. In addition to creating a potential for blame shifting in the event of a serious problem, the current organization structure is hindering the resolution of call transfer delays and is preventing a more efficient and effective use of the telecommunication and computer systems. In the current system, there is also a lower pay and benefit structure for certain Police personnel than for Fire personnel, which is lower than national industry averages and which negatively impacts recruiting and retention. Since the Police and Fire Departments both fall under the Mayor, a Director of Emergency Communications position reporting to the Mayor's Office should be created to be responsible for the entire E911 system. Additionally, all call takers should be trained to handle all types of calls in order to eliminate the need for internal transfers of fire and emergency medical calls and in order to rectify the disparity in compensation. The total financial impact of hiring a Director of Emergency Communications, getting salaries in line with industry standards, and staffing positions that have been vacant is estimated at $638,000 annually.

2. Service delivery standards should be developed and measured. There are no written performance standards, and the computer system is not being used to measure performance to the fullest extent available. This has resulted in unclear performance expectations and in an inability to measure and monitor performance. Performance standards and standard operating procedures should be developed, and the systems should be programmed to measure performance in accordance with those standards to identify opportunities for improvement. Contracting services to develop these reports would have a one-time cost estimated at $125,000.

3. E911 calls from Goodlettsville should be routed to Goodlettsville. E911 calls originating from the Davidson County part of the City of Goodlettsville are currently

routed to Metro's E911 system. Since these calls are ultimately transferred to Goodlettsville's E911 center to dispatch police, fire, or emergency medical services from Goodlettsville – often without Metro services being dispatched - the current arrangement sometimes results in unnecessary response time delays. All E911 calls originating from Goodlettsville should go to Goodlettsville's E911 center for immediate dispatch from Goodlettsville's police, fire, or emergency medical services, with Metro being notified in those instances where dispatch from Metro is also needed.

4. <u>Consideration should be given to obtaining a new primary E911 facility.</u> The current facility used for E911 operations is not adequately serving the E911 system needs. Additionally, the existing back-up facility is not adequate. Consideration should be given to building or acquiring a properly configured E911 facility and using the existing facility as a back-up facility for training and to continue to house the Mayor's Office of Emergency Management. Facility needs should be further evaluated by the Office of Facilities Planning and Construction Management and should be coordinated with the Emergency Communications District Board of Directors. The cost of a new facility, including related equipment, is estimated at $8 to $10 million.

5. <u>Security at the E911 facility should be strengthened.</u> Two situations that could compromise the security of the E911 communication center were noted. Work release inmates were used to clean parts of the facility, and occasionally the gates to the parking lot surrounding the facility were left open to accommodate large meetings. Janitorial services should be performed by Metro or contract personnel who have undergone background checks, and additional security staff should be on hand to allow cars entry to large meetings. Contracting janitorial services, instead of using inmate labor, would cost approximately $20,000 per year.

6. <u>Response times should be further studied.</u> Both Police and Fire dispatchers indicated that it was not uncommon to have no units available to dispatch. This issue was beyond the scope of this audit, and Gartner did not investigate this perception. Because this perception appeared to be common and because of the significance of this issue, additional study on response times is recommended. Such a study is estimated at $225,000.

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The Mayor's response to the audit recommendations follow this report.

We greatly appreciate the cooperation and help provided by the Police Department, the Fire Department and the Mayor's Office of Emergency Management, and by the Emergency Communications District Board of Directors.

This report is intended for the information of the management of the Metropolitan Government of Nashville and Davidson County. This restriction is not intended to limit the distribution of this report, which is a matter of public record.

Internal Audit Section

Kim McDoniel
Internal Audit Manager

Copy: Karl F. Dean, Director of Law
        Chief Stephen Halford, Fire Department
        John W. Lynch, Director of Human Resources
        David L. Manning, Director of Finance
        Eugene Nolan, Associate Director of Finance
        Jim Thacker, Director of Mayor's Office of Emergency Management
        Chief Emmett Turner, Police Department
        Metropolitan Council Audit Committee
        Richard V. Norment, Director of County Audit
        KPMG, Independent Public Accountant

April 17, 2001

Ms. Kim McDoniel
Internal Audit Manger
Metropolitan Government of Nashville and
 Davidson County
222 3rd Avenue North, Suite 701
Nashville, TN 37201

Dear Ms. McDoniel:

I have reviewed the E911 Internal Audit Report and Gartner's E911 System Assessment
Report, and I am in basic agreement with the related recommendations. The E911 system
provides our citizens with one of the most critical of government services, and the
importance of sound management practices with clear lines of responsibility and
measurable performance standards cannot be overemphasized. Additionally, the audit
recommendations surrounding salaries are consistent with the recommendations resulting
from the Mercer compensation study that was just completed.

I will call together a task force that will include representatives from the Police, Fire,
Human Resources, Finance, Information Systems and Legal Departments and instruct
that task force to develop an implementation plan to address the audit recommendations.
It would be my intention to have the recommendations implemented during the 2002
fiscal year.

Sincerely,

Bill Purcell
Mayor

Copy: Karl F. Dean, Director of Law
        Chief Stephen Halford, Fire Department
        John W. Lynch, Director of Human Resources
        David L. Manning, Director of Finance
        Eugene Nolan, Associate Director of Finance
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Gartner

Report Prepared for
Metropolitan Government of Nashville and Davidson County

E911 System Assessment Report

April 2001
Engagement: #020213650

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1. Executive Summary

1.1 Introduction

Gartner Consulting was retained by the Internal Audit Section of the Metropolitan Government of Nashville and Davidson County (Metro) to conduct a performance study of the emergency 911 delivery systems. The purpose of this study was to independently evaluate the configuration and operational effectiveness and efficiency of these critical systems.

To complete this study, Gartner Consulting conducted a series of   interviews, reviewed departmental documentation and conducted independent peer group and industry research. The results of the performance study are intended to provide Metro with an objective overview of the current operation and to make recommendations for improvement.

1.2 Background And Industry Perspective

The emergency communication center is an essential part of the entire emergency service delivery system. In almost every case, the 911 center will be a citizen's first point of contact when faced with an emergency or crisis situation. The center provides that vital link between citizen and service provider and depends on a dedicated staff to quickly, accurately and efficiently relay and maintain vital emergency response information.

In addition to the difficult nature and high stress of the work, communication center managers across the country face many unique challenges as they adopt rapidly changing technology and accommodate an increased demand for complex data analysis and response time accountability. When combined with the fact that communication centers in nearly every state currently face some of the most difficult recruitment and retention issues in recent history, the management of an efficient and effective emergency communication center becomes a challenging task, even for the most seasoned veterans.

The Metropolitan Government of Nashville and Davidson County operates a state-of-the-art emergency communications center located in southwest Nashville. The Center serves as the primary E-911 answering point for all incoming calls for Police, Fire and Emergency Medical Services throughout Davidson County. The E-911 Center facility houses Police, Fire and Mayor's Office of Emergency Management (OEM) personnel who are responsible for the delivery of these services.

2. Objectives, Scope and Methodology

The purpose of this performance study was to assess the overall effectiveness and efficiencies of the E-911 delivery system. The objectives of this study were to review and assess the following:

- Management structure and effectiveness
- Facility and equipment
- Operational procedures and guidelines
- Service delivery policy and monitoring
- Staff selection, training and retention
- Quality improvement
- Overall center performance.

The scope of the work was largely focused on the current Center operations and the call volume statistics from calendar year 1999. In calendar year 1999, the Center received 364,731 E-911 calls, 751,539 Police non-emergency calls (862-8600) and an unknown[1] number of Fire non-emergency calls from the public. Of these, 316,096 were dispatched to law enforcement, Fire or Emergency Medical Service personnel.

The methodology employed throughout this study was one of objectively comparing how the delivery of E-911 services in Metro compare to those being provided in other similar E-911 centers across the country. Additionally, Metro policy, procedures and practices were evaluated against industry best practices.

The study included a series of on-site interviews with Center staff and managers, the review of policy and procedure documentation and the completion of a peer group survey of six other public safety agencies of similar size and configuration across the country.

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[1] The actual number of fire non-emergency calls is not known because the Fire Department call takers do not log into the ACD telephone system. This issue is addressed in both the findings and recommendations of this report.

3.   Summary of Current Environment

3.1   Introduction

Metro Government currently operates a modern, state-of-the-art E-911 center out of the facility located at 2060 15th Avenue South. This facility has been used for 911 service delivery since 1978. The Center is operated and maintained jointly by Police, Fire and Office of Emergency Management personnel.

Management and supervision of primary call-taking and Police Department dispatching is the responsibility of a uniformed Police lieutenant assigned to the communications division. This lieutenant reports to the Assistant Chief of Administrative Services who is a direct report of the Chief of Police.

Management and supervision of the Fire Department call-taking and dispatch operations, including fire suppression and Emergency Medical Services, is the responsibility of an assistant chief assigned to the communications division. This assistant chief reports to the Chief of Administrative Services who reports directly to the Fire Chief.

OEM is tasked with providing Metro day-to-day and disaster communications to/from Metro departments (mitigation through recovery). It is designed to take the burden off police and fire communications, operating as the coordinator with Federal, State and City agencies including Parks, Water, Public Works, Airports, Animal Control, NES, and Gas. Management for OEM services is the responsibility of a Director who reports directly to the Mayor.

The Metro Emergency Communication District board, or 911 Board, functions under Tennessee Code Annotated Section 7-86 "Emergency Communication District (ECD)" to provide emergency communications equipment that supports day-to-day operations within the E-911 Center. This role includes management of the $5,156,641 ECD budget, technology and facility planning and state reporting of Metro allocated funds. The Board consists of nine appointed board members. One Metro Information Services (IS) representative who provides staff support to the board. In addition to its chartered functions, Metro ECD has also taken on the role of educator to the public through its public awareness campaign and award sponsorship for Metro E-911 personnel.

The Metro ECD is primarily focused on providing oversight of technology processes and the delivery of calls to the appropriate 911 facility. With the exception of providing funding for training, continued education and attendance at regional and national professional seminars, the ECD Board does not actively participate in or govern day-to-day operational matters. The Metro ECD oversight includes the management of carrier agencies and the technologies employed within the Communications Center, including hardware (computer and peripherals), software and facilities.

3.2   Service Overview

3.2.1 Mission and Goals

While both the Police and Fire Departments share a common overarching mission to provide excellent quality service, they each have missions to address the delivery of 911 services. The Police Department's mission is "to enforce the law and to protect the general public in accordance with the provisions of the Metropolitan Charter and ordinances." The Fire Department's mission is "to provide a class 6 to 9 level of fire protection services as a strong first responder emergency medical service to all residents of the General Services District outside the Urban Services District."[23]

OEM functions in a somewhat different role from Police and Fire, operating entirely within the boundaries of communication, and primarily in a support function. Its duties, as stated by Metropolitan Code 2.10.010, are the following: "to promote, coordinate and direct a comprehensive emergency management program which addresses mitigation, preparedness, response and recovery relative to disasters and major emergencies; to develop a basic emergency management plan, which shall be exercised and updated annually, in compliance with all applicable state and federal laws and regulations; to provide public information, education and promotion of mitigation activities; responsible for water activities; and other activities related to the establishment of a comprehensive emergency management program."[4] Within these functions, OEM operates in one of eight (8) Operational Conditions (OP-CON) based on primary action and necessary response.

While clearly evident that each department shares a common service delivery mission, they have not established combined written goals that pertain to the delivery of emergency 911 communications services.

3.2.2 Technology Employed

Metro uses state-of-the-art computer, radio and telephony equipment to deliver its services. This equipment is purchased and maintained using funds provided by the 911 Board. The computer and telephony equipment are used by both the Police and Fire Departments and maintained by on-site Police Department IT staff and service contracts with the equipment and software providers. The radio system is maintained by the Metro General Services division and through service contracts with the radio system provider, currently Motorola.

3.2.3 Operating Procedures

Police, Fire and OEM communications develop and maintain Standard Operating Procedures (SOPs) that are used to document and describe service delivery procedures and protocols. These documents are maintained in both electronic and hardcopy form and are incorporated into the daily operation.

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[2] "Class 6 to 9 level" refers to the ISO insurance rating. The higher the number, the better the rating.
[3] Metropolitan Charter 8.201; Metropolitan Charter 8.301, 8.302; Ordinance 077-5211
[4] Metropolitan Charter 2.10.010

3.3   Configuration

3.3.1 Computer Systems and Network

The Communications Center uses a state-of-the-art Computer Aided Dispatch (CAD) system for the entry and management of all calls for service. First installed in 1997, the Printrak CAD system has been operating reliably with only one hour and 31 minutes of total unplanned system down-time since its installation (a total system uptime of 99.996%). The CAD system provides both Fire and Police operations with all required call taking and dispatch functions. The system uses a combined database of all call data that can be used to create informational and statistical reports.

The CAD system is maintained by two Police support services staff members located at the communications center facility. Metro maintains a support services contract with the system vendor to provide 24X7 emergency support of the hardware and software. In October 2000, a major upgrade of the CAD system software was completed. This upgrade improved overall system performance, added a graphical user interface and corrected two major system issues that had caused downtime in the past.

The CAD system is configured with both a live and training system to facilitate separation of live and training data. Workstations can be configured at the time of sign-on to operate in either the training or live operations mode. The benefit of this configuration is that training workstations can be used for live operations without extensive or timely reconfiguration when necessary.

The E-911 Communications Center facility is configured with a single 10Mb Ethernet network. Each workstation is attached to a series of centrally located 10Mb shared Ethernet hubs. These hubs are attached to the Ethernet backbone, which connects to the Tandem computer-aided dispatch computer. The primary purpose and function of this network is to support the computer-aided dispatch (CAD) system.

3.3.2 Telephone Systems

The E-911 Carrier telephony is supplied by Bell South, which provides two 911 routes to the Communications Center through fifteen 911 trunk lines. The wire routes are load-balance configured to carry the entire load should one fail. Calls arriving at the E-911 Center are initially recognized by a Positron Industries Phrend System ANI/ALI controller. The Positron Controller divides the call into voice and data, routing voice to a Meridian 1Option 661c voice switch and data to the Printrak Computer-Aided Dispatch (CAD) system.

In Police operations, call distribution and queues provided by the ACD (Meridian 1 Switch) are controlled by the communications room supervisor, dependent on load and agent availability reported by the switch. In fire operations, calls are distributed to each workstation and are not delivered to individual call-takers through the ACD.

The Center also maintains three (3) active seven-digit non-emergency systems accessed via 862-8600 (Police) and 862-8585 (Fire). These calls also arrive in the Center via the Meridian Switch. In addition, the Fire Department maintains an additional administrative line (327-1300),

implemented prior to the advent of 911. Police, Fire and OEM communications also support ring-down[5] lines to organizations throughout Metro government.

These configurations are displayed in the following figures:

Figure 1.   911 Call Process

Note: Dotted lines indicate dependent actions

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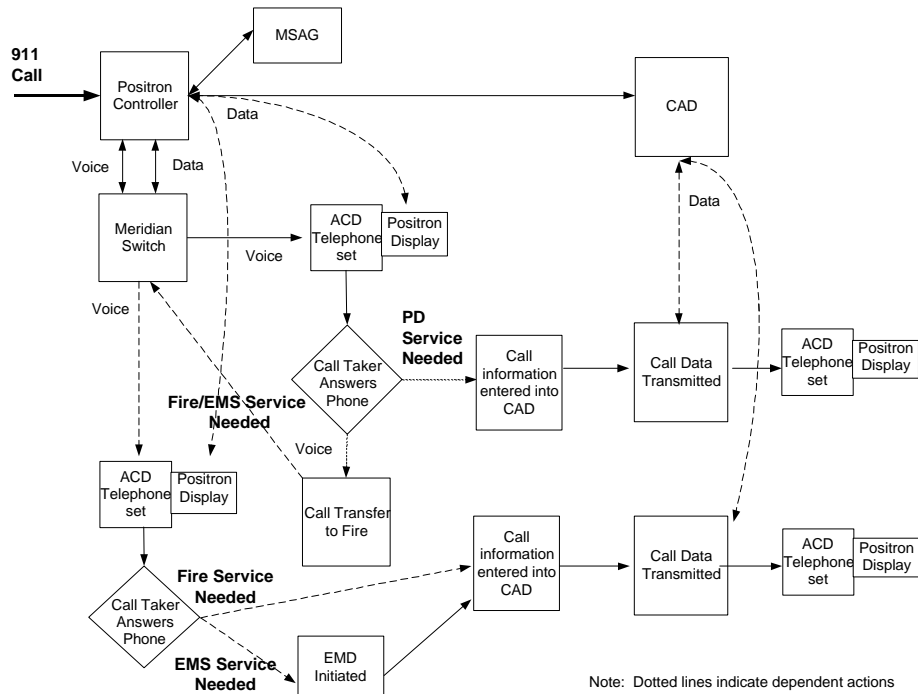
[5] Ring-Down is a direct-dial phone line dedicated to two-way communication between two agencies

Figure 2.   862-8600 Call Process

Figure 3.   862-8585 Call Process

3.3.3 Radio Systems

Dispatch services are delivered over a $26M Motorola 800 MHz Radio trunked radio system over NES-provided fiber. First operational in 1999, this system has a total of seven sites, each having 18 channels of both Simulcast A and B. The system supports voice over an 800 MHz Mutual Aid channel and 19.2 RDLAP Mobile Data channel. The Mobile Data system in
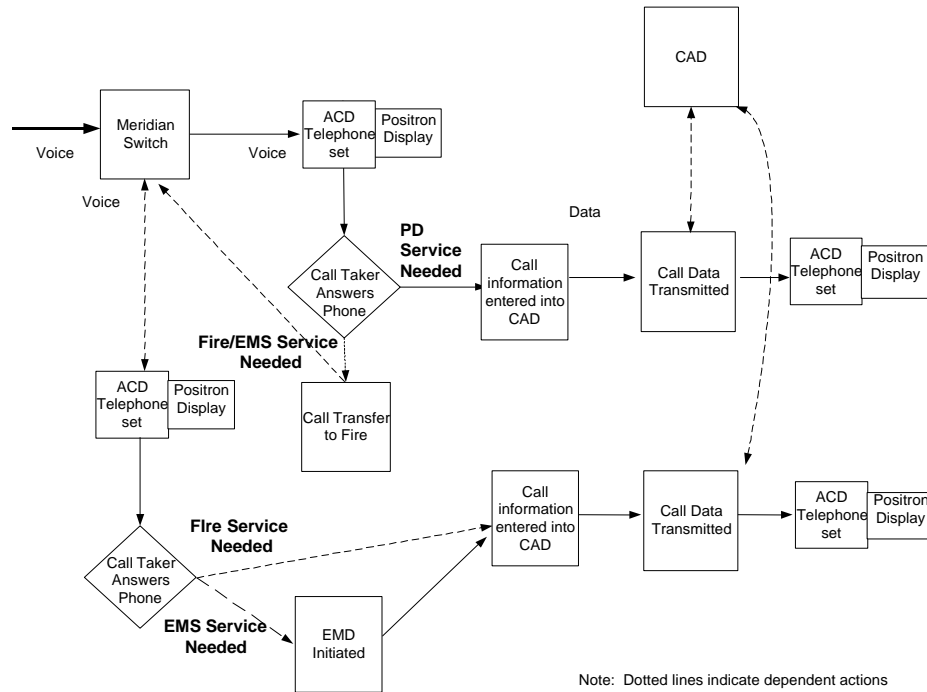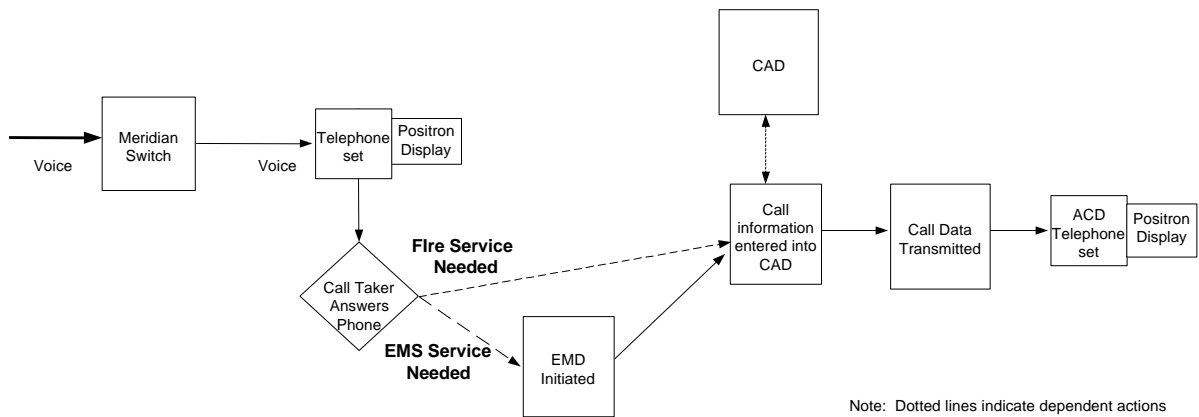
supported through a Motorola Radio Network Controller (RNC) and supports AVL global positioning (GPS) capabilities.

During the assessment period, two radio related incidents were reported. The first occurred on 7 November 2000 and resulted in the radio systems being unavailable for approximately 15 minutes and complete service being restored in approximately 80 minutes. The second incident occurred on 22 January 2001 when a server hard drive failed. This incident did not result in the system being unavailable.

The first incident was caused by an error made by a Motorola service technician during preventative maintenance repairs of the radio system database server. The second incident was caused by a hardware failure, but did not effect radio service. Each incident was reported to the radio system provider, Motorola, for investigation and resolution. Metro General Services and Motorola are currently in the process of determining the root cause and jointly developing a plan to prevent recurrence.

3.4 Facilities

3.4.1 Space and Furniture

The E-911 Center is located in a facility of approximately 45,000 square feet. This space is shared between Police, Fire and OEM personnel. The building is constructed of hardened reinforced concrete with no exterior windows.

The Police operation is configured for sixteen (16) call-taker positions, eight (8) radio dispatch positions and two (2) supervisor positions. Due to heavy workload and field unit needs, however, this configuration is scheduled to be altered to reduce the number of supervisor positions in favor of additional dispatcher workstations. Since the Police Department has no area to expand within the allocated space, workstations must be rearranged within the current radio room to accommodate any new radio or call taker positions.

The Fire Department operation is configured for four (4) call-taker/EMD positions, two (2) radio positions and one (1) supervisor position. Unlike Police communications, however, each one of these positions is configured with the capacity to support both call-taker/EMD and radio responsibilities. Fire communications supports this design to offer maximum flexibility during peak hours and crisis situations. The Fire Department currently has one room available for the expansion of radio or call taker positions.

The Office of Emergency Services' Emergency Operations Center (EOC) occupies the largest single area of space within the communications center. Located on the first floor, with a double-high ceiling, the EOC is activated in the event of major incidents or disasters and is used as a coordination and command center for local government and public safety personnel. The EOC is also used as a general meeting room and for training.

In addition to the EOC, OEM also occupies a small dispatch area with two dispatch and two back-up workstations, two large offices with a receptionist area, three smaller offices, a conference room and a kitchen area.

3.4.2 Security

The E-911 Center is a secured and locked facility. It is secured by on-site Police personnel, who monitor the facility twenty-four (24) hours per day, seven (7) days per week from a bulletproof room within the Communications Center. Access to the facility's parking area is restricted by an electric, remotely monitored and operated gate. Entrance to the E-911 Center facility is restricted by a series of electronic doors that are monitored via closed-circuit television and controlled with access keys.

Building access is authorized independently by each agency (Police, Fire and OEM). Each agency is responsible for controlling and monitoring the flow of visitors and employees in and out of the building.

3.4.3 Backup Facility

The current backup site is the Teleserve[6]/Records Division of Central Records, located at the Criminal Justice Center (CJC) in downtown Nashville. In the event of an evacuation of the primary Center, Teleserve/Records would cease day-to-day operations (investigation of car burglaries and small thefts) and this area would function as the Metro Public Safety Answering Point (PSAP) and dispatch center.

The CJC facility is currently equipped with four (4) trunked lines that can route E-911 calls from the Emergency Communications building, thus supporting up to four (4) E-911 calls at one time, as compared to the primary facility's ability to handle fifteen 911 lines. In addition, the facility is also capable of supporting 862-8600 calls, provided that the PSTN (Bell South) is notified.

All dispatch and 911 operations (police and fire) are supported by eight (8) total CAD workstations at the CJC, as compared to more than 30 workstations at the primary facility. Assuming the CAD server (located at the primary facility) is operational, these workstations will have full CAD functionality. Additional workstations can be added as needed by the system administrator using an installation CD, provided that the workstations are available. However, the effectiveness of this approach is limited, since it is time consuming and depends on the System Administrator's ability to get to the back-up facility.

Radio communications are supported at CJC through the use of portable radios brought to CJC by communication center staff members at the time of the incident. Extended stays at the back-up facility would require the installation of more permanent desktop consoles by radio service technicians.

3.5   Metro Operations

3.5.1 Metropolitan Nashville and Davidson County

Metro E-911 serves as the primary Public Safety Answering Point (PSAP) for all emergency calls received within Nashville and Davidson County.

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[6] During normal operations, this area is used by Police Department personnel to handle telephone reports.

3.5.2 City of Goodlettsville

The City of Goodlettsville lies within the boundaries of both Davidson and Sumner Counties. The City supports a fully operational Police and Fire Department with concurrent jurisdiction from Metro Police and Fire for those areas of the City that fall within Davidson County. The City of Goodlettsville serves as the Primary PSAP for all calls originating in Sumner County and as a secondary PSAP for those calls originating in Davidson County, where Metro serves as the Primary PSAP. Metro supports this configuration as a product of an agreement between Metro and Goodlettsville, Tennessee Emergency Communication District law (TCA 7-86-101), and Metro Emergency Communication District law (Bill No. 088-609) which establishes the boundaries of 911 Communications within Davidson County.

The process is designed for Metro Police dispatchers to acknowledge the location of the call at reception and transfer the call to a Goodlettsville 911 operator, except in cases of a medical emergency. In medical emergency cases, Metro Police transfer the call to Metro Fire, who perform EMD before radioing the call to a Goodlettsville ambulance.

The following figure shows the call process for Goodlettsville for Fire or Police calls originating in Davidson County.

Figure 4.   Call Process for Goodlettsville
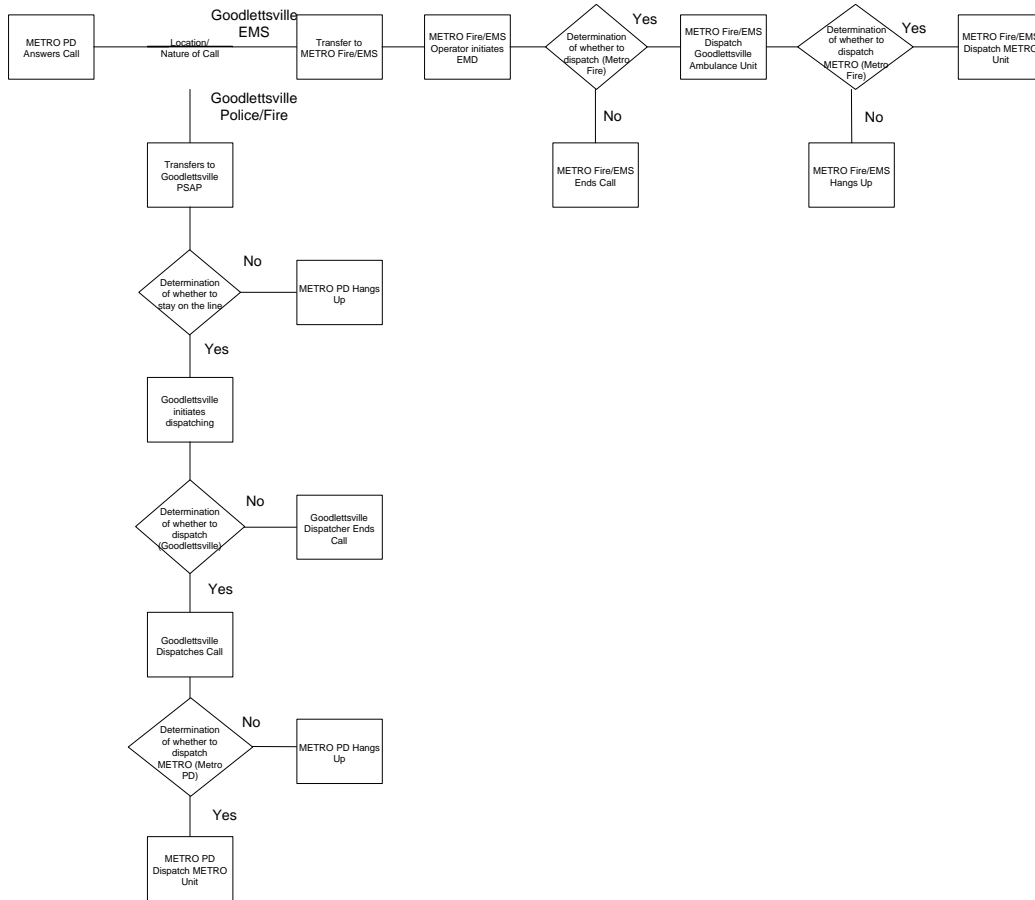
3.5.3 Cities of Berry Hill, Belle Meade and Lakewood

The cities of Berry Hill, Belle Meade and Lakewood each support a small security Police force, and no Fire force, to meet only defined day-to-day needs. Emergency operations are served by Metro, including an agreement for Metro to serve as each city's PSAP. Metro's SOP states that the E-911 Communication will answer and dispatch all calls originating from these areas.

3.6 Personnel

3.6.1 Police

3.6.1.1 Police Department Staffing

The Police Department has allocated a total staff of one hundred thirty six (136) personnel to the operation of the E-911 Center. Of this allocation, there are currently ninety-three (93) positions filled. Overall Center performance and daily operations are the responsibility of a Police lieutenant. The lieutenant is assisted by seventeen (17) operations supervisors (ECS, ECAS, ECOT), one (1) trainer and three (3) administrative and support staff. With the exception of the lieutenant, all Communications Center staffing is divided into the following categories with grade, and number of employees within that grade, attached:

- Emergency Communications Dispatcher I (GS-6, $24,290-$31,580): 17
- Emergency Communications Dispatcher II (GS-8, $29,894-$38,858): 38
- Emergency Communications Operator I (GS-5, $21,792-$28,326): 14
- Emergency Communications Operator II (GS-6, $24,290-$31,580): 5
- Emergency Communications Operator Trainee (GS-4, $19,479-$25,320): 19.

3.6.1.2 Police Department Recruitment, Retention and Compensation

Recruitment and retention of qualified E-911 dispatchers and call-takers has been problematic for the past several years. On average, Police communications have witnessed a substantial attrition rate, approximated at twenty percent (20%) per month (including Operator Trainees—GS-4). This is reflected in the distribution of staff within the department, shown below:

Table 1.   Police Department—Staff Distribution by Position and Length of Service

	10 years or more	5 to 10 years	2 to 5 years	1 to 2 years	6 months to 1 year	Less than 6 months
Emergency Dispatcher	23	11	16	5	0	0
Emergency Operator	2	2	4	0	11	19
Percentage	27%	14%	22%	5%	12%	20%

Police Communications Center staff are compensated based on pay grades and experience. The distribution of salaries is reflected in the following:

Table 2.   Police Department—Salary Distribution

	Greater than $40,000	$35,000 to $40,000	$30,000 to $35,000	$25,000 to $30,000	Less than $25,000
Emergency Dispatcher	0	13	21	14	7
Emergency Operator	0	0	2	3	33
Percentage	0%	14%	25%	18%	43%

With the exception of the sworn lieutenant in charge of operations, Police communications personnel are not on the police and fire pension plan. Police communications staff falls under the Metro General Services pension plan. The standard for delineating the plans is based on their status as sworn or civilian personnel.

In order to attract qualified staff, Metro Police and Human Resources Departments have incorporated methods beyond traditional recruiting avenues. Those of particular emphasis have included an advertising strategy focused on an expanded Web presence and the City-operated Channel 3, and the instituting of exit interview sessions to help identify particular areas of concern.

3.6.1.3   Police Department Training

All Police Department communications personnel are trained as both call takers and dispatchers. Police Department training is provided by the Training Supervisor for all Emergency Communications Operator Trainees (ECOT). Communications trainees are required to successfully complete four (4) weeks of classroom training followed by three (3) months of on-the-job training under the direct supervision of a trainer.

Once call takers have successfully completed a two-month probationary period, they are eligible to begin work as an Emergency Communications Operator I (ECOI). At the earliest possible time, the ECOI attends a forty- (40-)hour APCO Basic Certificate Course. Following this course, the ECOI is scheduled for a two-week radio dispatch course followed by several months of on-the-job training. It will typically take a new hire six months to fully complete all elements of training and be eligible to work any position (radio or telephone) without the direct supervision of a trainer.

After a Telecommunicator has completed training, they will receive between eight and sixteen hours of classroom continuing education training each year. In addition, each week one 15 minute training session is conducted during roll call to address new policies, procedures or special skills. This training is coordinated and administered by the training supervisor and given by the training staff.

3.6.2 Fire

3.6.2.1   Fire Department Staffing

The Fire Department has allocated a total staff of forty-four (44) personnel to the operation of the 911 Center. This staff support thirty-eight (38) fire companies and 12 to 17 ambulances. Of this allocation, there are currently thirty-nine (39) positions filled. Overall center performance and daily operations is the responsibility of an Assistant Chief. The Assistant Chief is supported by six Captains; two are assigned to support and four are assigned to operations as the shift supervisors.

The Fire Department supports one class of Fire/EMS dispatchers/call takers with a grade of PF-8. Each Fire/EMS dispatcher is required to be EMT-certified and sustain Fire and EMS certifications, as designated by the department. Fire Department communications center staff are divided into the following categories, with grade and number of employees within the grade, attached:

- Fire/EMS Communications Dispatcher (PF-8, $29,998-$38,908): 33

- Fire/EMS Communications Lieutenant (PF-9, $33,135-$42,972): 4

- Fire/EMS Communications Captain (PF-10, $36,489-$47,325): 6

- Fire/EMS Communications Assistant Chief (PF-12, $48,051-$62,325): 1.

3.6.2.2   Fire Department Recruitment, Retention and Compensation

Retention of qualified Fire Department dispatchers and call-takers has not historically been a major issue of concern. In fact, there has been an identified trend of qualified Police Communications personnel transferring to the Fire Department when openings are available. Due to retirements and limited attrition, however, staffing has declined during FY2000. But, as of October 2000, Communications has been allocated the necessary positions to be fully staffed. The distribution of staff within the department is shown below:

Table 3.   Fire Department—Staff Distribution by Length of Service

	10 years or more	5 to 10 years	2 to 5 years	1 to 2 years	6 months to 1 year	Less than 6 months
Emergency Dispatcher	10	10	9	2	0	0
Percentage	32%	32%	29%	6%	0%	0%

Fire/EMT Communications Center staff are compensated based entirely on experience level, as all dispatchers are qualified as PF-8. The distribution of salaries is reflected in the following:

Table 4.   Fire Department—Salary Distribution

	Greater than $40,000	$35,000 to $40,000	$30,000 to $35,000	$25,000 to $30,000	Less than $25,000
Emergency Dispatcher	0	12	17	2	0
Percentage	0%	39%	55%	6%	0%

Fire/EMS dispatchers are covered under the Metro Government Police and Fire Pension Plan.

3.6.2.3   Fire Department Training

Fire Department training is provided by the Training Captain. Prior to introduction to floor activity, all newly hired Fire Department staff are required to successfully complete four to six weeks of combined classroom and on-the-job training. This training covers all aspects of Fire communications, including: call-taking, operations and Emergency Medical Dispatch (EMD). Once this training is complete, new hires are assigned to a shift and must successfully complete a six-month probationary period. New hires are counted as part of the shift staffing level and are

expected to work independently, under the close supervision of senior staff members and shift supervisors.

All Metro Fire Communications dispatchers are required to be Emergency Medical Technician (EMT)-certified, Emergency Medical Dispatch (EMD)-certified and trained in basic telecommunications and Fire dispatch operations. Every two (2) years, staff must re-certify with an additional 24 hours of coursework consisting of lectures, ride-alongs, conferences, public education and formal classroom training. In addition to the twenty-four hours of coursework completed by all staff, two members of the communications division competed an additional eight (8) hours of the EMD-Q course in order to serve in a role of quality improvement. EMT re-certification is required to be completed every two years, with select EMD certification units transferable. Cardio-Pulmonary Resuscitation (CPR) certification is also required.

In addition to formalized training, the Department offers monthly continuing education to meet the operational needs of the staff. Examples of this type of training include instruction in the upgraded CAD system and 800 MHz radio system.

3.6.3 OEM

3.6.3.1   OEM Staffing

A staff of 13, with six dispatchers and seven program managers, supports operations. In addition, a large volunteer force assists with crisis situations beyond day-to-day operations. At present, OEM is at full staffing.

3.7   Management Practices

3.7.1 Standards and Reporting

All standards are detailed in the Standard Operating Procedures (SOPs). Individual SOPs are written for Police, Fire and OEM operations.

Management reports of Center-wide and individual performance are generated on an as-needed basis. All reports, with the exception of Emergency Medical Dispatch (EMD), are created from the support services unit. There are no standard, regularly published performance reports.

4.   Surveys and Peer Benchmark

4.1   Emergency Response Agency Satisfaction Survey

The Emergency Response Agency Satisfaction Survey was given to all Police and Fire field personnel. The intention of the survey was to measure overall satisfaction with the dispatch and communication services being provided. A total of 546 responses were returned, 526 from the Police Department and 20 from the Fire Department. The complete results of the survey are included in Appendix A.

Respondents were generally satisfied with the overall professionalism, knowledge and skills of the dispatchers and call takers in performing their duties. Most complaints centered around busy radio frequencies and associated delays in answering services requests. There was a general sense amongst the Police respondents that the dispatch center staff were overworked or too busy. Respondents were generally satisfied with the range of services and technology provided by the communications center.

Comments and suggestions for improvements received from Police personnel included:

- Decrease lag times between calls and dispatch

- Improve consistency of dispatching—calls are slow to be dispatched

- Resolve problems with transmission delays

- Hire more personnel—dispatchers too busy/overworked

- Place quality control mechanisms on dispatched calls

- Have dispatchers gather more information on calls

- Decrease dispatcher air time—problems with obtaining air time in the field

- Place light duty officers, officers injured on duty who are returning to work, and/or rotate police in communication center so they can "see" from the flip side as well as reduce staff shortage problem

- Resolve problems with calls that are either not answered or receive busy signals

- Improve the communication skills (speaking and listening) of dispatchers

- Dispatchers can be unprofessional, untrained, inaccurate. Some have bad attitudes

- Dispatchers sometimes loose track of officers

- Resolve problems with volume fluctuation and background noise

4.1.1 Gartner Observation

The comments received from the Police Department personnel were largely consistent with the findings of our study. Most comments were related to issues that arise from the current staffing shortage and busy radio frequencies. Variances in how standard operating procedures are applied

and a wide range of service level expectations were common themes. These comments underscore the gap between what the officers expect to receive and what the dispatch center provides.

4.2 Telecommunicator/Dispatcher Survey

The Telecommunicator/Dispatcher survey was given to all dispatch center staff. A total of 49 responses were returned, 14 of which were from Fire Department personnel. Stress caused by high call-volumes and low staffing are the greatest complaints among Police call takers and dispatchers. Key findings are summarized below, and complete results of the survey are included in Appendix A.

Police and Fire personnel rated job challenge and problem solving as the items they liked most about their job. Stress and personnel issues were cited as items Fire liked least, while Police personnel rated compensation and benefits as their least liked item.

Police and Fire employees both say that they are "stressed". Top causes of stress were call volume, lack of personnel and the condition of facilities (e.g., "no windows"). Individual employee morale is rated as average while the perceived overall morale at the PSAP is rated as generally low.

Initial and continuing training was rated as average by both Police and Fire. Both groups said that refresher courses or annual training on stress management, call taking/dispatching, time management should be offered.

Incentives, compensation and merit pay bonuses are rated lowest by Police and average to good by Fire.

Police and Fire both rate their equipment as average; however, they are almost evenly split when asked if they have the necessary tools to do their job.

Both Police and Fire respondents believe that the agencies are satisfied with the work done at the communications center.

Common themes cited in additional comments include:

- Lack of personnel
- Stress level too high
- Low morale
- Compensation does not match stress level
- Lack of coordination between Fire and Police
- Hard to transfer calls between Police and Fire
- Additional training should be offered
- Too many officers on radio.

4.2.1 Gartner Observation

The comments received from the communications center personnel were generally consistent with the findings of our study. Most comments were related to issues that arise from the current staffing shortage and busy radio frequencies.

Comments related to the lack of available tools to do the job are probably more related to a lack of available on-going training than they are related to the actual equipment. Gartner found the equipment to be state-of-the-art and more than capable of meeting the operational needs of the dispatch center.

4.3   Peer Agency Survey

Gartner sent surveys to ten agencies of similar size and configuration across the country. Only two surveys were returned, making it difficult to draw any meaningful conclusions. As a follow-up to the surveys, Gartner did call several of the agencies and conducted telephone interviews to discuss some of the more critical findings in this study.

The agencies that operated in a similar split management model reported the same communications and transfer delay issues between police, fire and EMS agencies. These departments said that this structure (split police, fire and EMS operations) has worked well for them and that they would not consider having it any other way. They did not generally have immediately available data that could quantify the frequency or duration of these delays when they occurred.

The agencies that operated under a unified management structure generally had better management data immediately available to quantify their performance. These agencies did not report having call transfer or communication delays between police, fire and EMS. They were convinced of the benefits of this structure and would not consider having it any other way.

The agencies with the best call processing and dispatch times[7] (according to data that was collected during telephone interviews but not verified) were generally operated under a single management structure and had well established quality assurance and continuing education programs in place. The agencies with the lowest call processing times (under 30 seconds from receipt to entry for the highest priority incidents; police, fire or EMS), used a single-tier (the first call taker could handle any type of call) call taker configuration.

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[7] This data should be considered anecdotal, as it was collected during telephone interviews and not verified. However, those agencies that operated under a single management structure seemed to be much more aware of their performance "numbers".

5. Findings

5.1 Findings Summary

- Accountability for the Entire E-911 Process
- Inconsistent Service Delivery Levels
- 911 Transfers
- Personnel
- Facilities
- Management Reporting
- Training
- Backup Facility and Redundancy

5.2 Accountability for the Entire E-911 Process

Under the current management structure, accountability for the delivery of E-911 services is shared between the Police and Fire Department managers, where each manager is responsible for their respective piece of the operation. This configuration leaves the potential for gaps in responsibility for the entire E-911 process of safely answering all calls in a timely manner and delivering the best possible service.

When service delivery questions arise, each manager (Police and/or Fire) is responsible for their individual operations and accountable to their own senior management. This structure can lead to a disconnect between agencies and increases the probability that systemic errors go undetected, reducing the likelihood of substantial long-term solutions to difficult and complex service delivery problems.

This is not a problem caused by lack of talent or dedication on the part of the individual managers, but instead is caused by the nature of the organization. Each manager is genuinely interested in and dedicated to resolving any issues that arise, but because they are not responsible for the entire process it is difficult to find systemic problems or causative factors that may cross departmental lines.

Resolution of complex service delivery problems is dependent more on the fragile interpersonal relationship between the Police and Fire Department managers than it is on management authority. The current relationship between the Center managers happens to be good, in fact according to many of those interviewed, the "best it has ever been." However, this does not address the fact that there is a very real potential for finger-pointing, blame-shifting and confusion between the center managers, particularly when two managers are in place that do not get along personally or share different service delivery philosophies or points of view.

While this type of organization (independently managed Police and Fire centers) is historically common, there is an industry trend moving towards combined management responsibility and professional independent communication center organizations. Those centers surveyed with the highest levels of performance were typically under a single management structure.

In the current structure, once a problem is identified, each manager has the authority and responsibility to implement corrective action, which will likely be different for each department. How the issue is communicated to supervisors and line staff will also be different, potentially causing ongoing confusion in the day-to-day operation.

The management configuration does not allow for a Metro-wide view of the entire E-911 process from call receipt to the dispatch of the most appropriate resources. Each manager is busy working at a tactical, day-to-day operational level and does not have the time or the directive to dedicate to developing a comprehensive vision for service delivery. The potential for serious service delivery problems being left unresolved does exist under the current management structure. Examples of unclear ownership of operational issues were found during the study that highlight this point. Three examples are detailed below.

The first example is the call transfer delay time between police and fire. Several Police call-takers and supervisors reported that they frequently experience delays in the Fire Department answering calls transferred from Police call-takers. The Fire Department reported that while this may occur on occasion due to a sudden and transient rise in call volume, it is not a frequent occurrence. This discrepancy in perception as to the frequency and underlying cause may be masking a potentially serious service delivery problem. Neither the Fire nor the Police Department has the responsibility or authority to see to its ultimate resolution. Instead, each agency is left to its own investigation and determination of corrective action. In this case, the Police Department has instituted general call-back guidelines that add time, stress and risk, and the Fire Department does not perceive a problem.

The second example is the decision to not use the CAD combined incident functionality. The CAD system is capable of creating both a police and fire incident from a single entry. This is particularly useful for incidents where both police and fire are needed (e.g., auto accident or a fire with injuries). This functionality could also be used to enter incidents directly from the police call taker positions when a fire call taker is not immediately available to answer the call (as in the case noted above), thus alerting the fire dispatch center staff that an emergency call is pending. The use of combined incident entry is a common practice in dispatch centers that dispatch for more than one service (i.e., police, fire and EMS) and is a standard feature of the CAD system.

When the CAD system was initially implemented, this functionality was being used. It was discontinued shortly after implementation at the sole discretion of the fire dispatch command staff, because it was thought to be too confusing for the fire dispatchers. This was clearly a case where additional training could have resolved any confusion and both the police and fire operations would have benefited. Instead, a "best practice" of how to use the available tools to deliver the best possible service was not adopted, simply because there was latitude and no agreement between the two managers.

A third example is the use of the ACD. The ACD system is used to route calls and to collect call statistics (e.g., length of time on the call, number of transfers, transfer time). The ACD is intended to be used by having the call taker "log-in" to a phone position to receive calls. This logging-in process enables the ACD software to route the calls to available call takers. The Fire Department has elected not to use the ACD because they say it is too difficult to remember to log in and out. By not logging-in, the center is not able to collect critical telephone duration or transfer times for fire incidents. Since there is no standard or guiding direction, this is an accepted practice.

5.3 Inconsistent Service Delivery Standards

While both the Police and Fire Department personnel show a professional interest in providing the best possible service, there is a lack of written service-level agreements or standards for Dispatch Center performance (both incident entry and dispatch). This creates a wide range of expectations among both the Dispatch Center personnel and the field management.

A service-level agreement is used to clearly state the basic service-level target in a particular area, such as call processing and dispatch times. The service-level agreement serves as the baseline from which performance can be objectively monitored.

Neither the Police nor the Fire Department has up-to-date, clearly stated service delivery goals for both call-handling and dispatch times as part of its standard operating procedures. Without these service-level agreements in place, dispatch center and field personnel are left with unclear expectations of performance. It is also difficult to accurately measure performance over time or to identify potential areas of poor performance or opportunities for improvement, without clear service-level agreements.

Another example of inconsistent service delivery is the application of Standard Operating Procedures across shifts. Field personnel often interpret policies differently from shift to shift. During focus group and individual interviews, it was reported by more than one source that field supervisors will have different interpretations of a particular policy (e.g., response level or priority), leaving the dispatch center staff and supervisors in a difficult dilemma; do they apply the policy as written or accept the authority or interpretation of the field supervisor? There is no clear policy that states who the overriding authority should be in these cases. The result of these discrepancies can be that senior management response decisions are not followed on a consistent basis across shifts, leaving response expectations unclear.

With the exception of the Emergency Medical Dispatch (EMD) quality assurance program, there is no established quality assurance program in place to routinely study and monitor performance and compliance with policy. Without this information, it is difficult to determine how frequently these policy discrepancies actually occur.

There is currently no coordination of service-level expectations within the E-911 Center between the Police and Fire Departments. Each manager is free to implement separate standards for handling calls and performing dispatch-related duties.

5.4   Lack of Available Field Units

It was reported by both Police and Fire Dispatch Center personnel that it was common to have no units available to respond to emergencies, creating response time delays. Lack of available units was reported by both Police and EMS dispatchers and supervisors, where it was not uncommon for busy dispatchers to be without units several times per shift. While this may in fact be true, this study focused on the delivery of E-911 communications service, specifically call receipt to dispatch or, as is the case of no units available, the time that field supervisors were advised that a call was pending. Because these issues are beyond the scope of this engagement, we did not attempt to gather nor did we find any evidence to support or refute this claim.

5.5   911 Transfer Process

All E-911 calls within Nashville Davidson County Metro are received first by the Police Department call-takers. Once the nature of the incident is determined, the call is either handled entirely by the Police call-taker or is transferred to the appropriate Fire or EMS call-taker. While call transfers are a common part of nearly every 911 center, three areas of concern were discovered during the study, as follows.

5.5.1 Transfers from Metro Police to Metro Fire

The call transfer process between Metro Police and Metro Fire can be time-consuming and problematic. Police call-takers reported several occurrences of calls going unanswered during the initial transfer to Metro Fire. According to Police call-takers and supervisors, this occurs at least once per shift and is not limited to periods of unusually high call volume, but also occurs during non-peak times.

Fire Department personnel assert that this is not common, and say that it only occurs during periods of high call volumes. However, Fire Department personnel can be busy with calls during non-peak times, depending on the number of simultaneous calls received at any given time. For example, three calls could be received during a non-peak time of day (e.g., 2:00 A.M.), making all fire call takers busy.

In either case, no system-related causes, such as equipment configuration or malfunction, were found that might cause or contribute to the delay. Instead, the delays seem to occur only when all Fire call-takers are busy with other calls, either during peak or non-peak times.

Neither the Police nor the Fire Department could produce data as to the actual number of delayed answers, since these events are not routinely reported to supervisors and can not be measured with the current systems. While we did observe one such delay when all fire call takers were busy , the actual frequency of delayed answers could not be determined.

This problem is made worse by the fact that the caller does not hear ringing during the transfer process. When calls are answered on the first or second ring, the caller does not perceive a delay. However, when there are several rings before the call is answered, the caller hears only silence and may think that they have been disconnected, causing them to hang up and call again.

There are no written Polices that clearly define a "delay" (e.g., how many rings are normal) or describe what action should be taken by the Police call-taker if there is a delay in the call being

answered. Call-takers and supervisors told us that they will usually disconnect and attempt the transfer again and after a period of time; the call will eventually be answered.

The actual length of the delay cannot be measured, since not all ACD times are recorded as part of the CAD incident record. The call receipt time (the time the call was first answered from the ACD by any Metro call-taker) and the subsequent ACD times (e.g. call transfer time and the time it is answered by Fire personnel) are not recorded in a manner that can be associated with a particular incident, or easily reported on. The CAD system records "Call Receipt" as the time the incident-creation process begins, which could be several seconds or minutes from the time the call is actually answered from the ACD, making it very difficult to measure the actual degree of the delay. If there was an interface between the CAD and ACD, the ACD times could be recorded as part of each CAD incident, making reports easier to generate.

Once the call is answered by the Fire Department, it is entered into the CAD system. Although Metro Police and Fire share a common CAD system, calls are entered separately by Police and Fire personnel. Incidents where both Police and Fire are needed will be entered into the CAD system twice; once by the Police call-taker and once by the Fire call-taker.

The CAD system does support combined incidents, where common incident information (such as location and incident details) is entered only once, however; this practice was suspended at the request of the Fire Department shortly after the initial CAD implementation because it was thought to be too confusing for the Fire call takers and dispatchers. This double entry process delays the entry of combined (police/fire) incidents as it requires all Fire and EMS calls for service to be answered by Fire call-takers before they can be entered into the system, even if no Fire call takers are available.

5.5.2 Transfers from Police and Fire to OEM

The Office of Emergency Management (OEM) reported that calls were frequently handled in a manner not consistent with written policy, leading to confusion and additional work for both OEM and the caller. Even though there is an SOP that states callers should be transferred directly to OEM, OEM reported that callers are often directed to hang up and call OEM directly. OEM also reported that the CAD system is not consistently utilized to report incidents. Instead, Police and Fire dispatch personnel use the telephone or ring-down lines to report incidents, causing additional work on OEM staff members.

These occurrences are not routinely reported to supervisors or documented, so the actual number could not be determined.

5.5.3 Transfers from Metro to Goodlettsville

The City of Goodlettsville operates full-service Police and Fire Departments that have response jurisdiction within the city limits. The City also staffs an Enhanced 911 Dispatch Center for the receipt of emergency calls within the City. Since the city limits are in both Davidson and Sumner counties, they are in a unique position when it comes to the handling of incoming E-911 calls.

When 911 is dialed from a telephone that is within the city limits, but in Sumner County, the call is routed directly to the Goodlettsville PSAP. When a 911 call is dialed from a telephone that is within the city limits, but in Davidson County, the call is first routed to Metro E-911, even

though Police, Fire and EMS dispatch and response will come directly from the City of Goodlettsville. It is not totally clear as to why the 911 system in Davidson County was set up this way.

The current Metro policy (Metro Police General Order No. 92-17) states that the call-taker is to transfer all calls directly to Goodlettsville once it is determined that the location of the emergency is in within the Goodlettsville city limits. However, in many cases, the Metro call-taker does not make this determination immediately, causing a delay in the call being processed by the Goodlettsville 911 Center. Instead, the Metro call-taker will first ascertain the nature of the problem. If the call is for Police services, the Metro call-taker has discretion as to whether or not to enter the call for a Metro response first, or transfer it directly to Goodlettsville. There does not appear to be any clear criteria used for making this decision. Instead it is left up to the discretion of the call taker. This determination can take anywhere from several seconds to several minutes.

For Fire and EMS calls, the Metro call-taker will either transfer the call to Metro Fire to make a response determination, since the majority of Fire and EMS calls received by Metro E-911 are outside of Goodlettsville, or will transfer the call directly to the Goodlettsville PSAP.

This manual transfer system has caused response delays, most commonly with Goodlettsville Fire and EMS. During the study period, two response delays were documented by the Goodlettsville Fire Chief and reported to Metro Fire for investigation. In both cases, the calls were first transferred by Metro Police call-takers to Metro Fire for dispatch and not directly to Goodlettsville.

The actual number of delayed transfers could not be determined, since this information is not recorded as part of the call-entry process and not routinely reported to supervisors. We were only able to examine call records of those calls brought to our attention by the Goodlettsville personnel.

5.6 Personnel

5.6.1 Industry Perspective

According to several recent articles in industry trade publications, 911 centers across the country are faced with a growing staffing crisis. Finding, training and retaining qualified dispatchers and call-takers has become even more problematic in recent years as record low unemployment shrinks the available pool of qualified workers. Less-than-desirable working conditions, shift work and low pay make it difficult to attract new workers and retain qualified ones.

A staffing shortage can be caused either by a lack of the proper number of authorized positions or by an agency's inability to fill those positions that are authorized, or a combination of both. In either case, many centers around the country are operating at levels not sufficient to consistently meet the demand. Some centers are operating at two-thirds or less authorized staff, forcing the remaining staff members to work more overtime and without adequate break time.

5.6.2 Police Department Staffing

The Police Department has a more difficult time filling vacancies and is currently operating with approximately 43 full-time vacancies. The Department reports a turnover rate of over 20 percent, well above the rates reported by the peer agencies surveyed which ranged from a low of 3 percent to a high of 10 percent. Several factors were identified that could be contributing to this situation, the combination of which makes it an even more vicious cycle and difficult to recover from.

The first is low pay. The most significant problem with recruitment and retention is historically low pay. Entry-level pay for Metro Police E-911 Center staff is 12.72 percent below the national average, according to a 1999 National Emergency Number Association (NENA) salary survey and report. This trend continues through the GS-8 pay level, Emergency Communications Dispatcher II, which is the top-level pay for Metro Police E-911 Center staff. This is $.47 above the national average range of $16.06/hour.

As is consistent with the survey results, Fire and EMS receive higher compensation. Entry-level pay for Fire and EMS is $.50 above the national average of $16.06 according to the 1999 NENA salary survey and report. This trend continues in Fire and EMS pay, including top-level pay for Fire and EMS at 10.68 percent over the national average.

When low pay and less than desirable working conditions (e.g., shift work, high stress) are combined with a national trend of low unemployment and a healthy job market competing for entry-level workers, recruitment of qualified staff is difficult.

Table 5.   Variance Between Nashville and NENA National Survey Table

Grade	Title	Nashville	National	Variance
GS4	Emergency Communications Operator Trainee	$ 10.77	$ 12.14	-11.29%
GS5	Emergency Communications Operator I	$ 12.50	$ 12.87	-2.87%
GS6	Emergency Communications Operator II	$ 13.44	$ 15.05	-10.70%
GS8	Emergency Communications Dispatcher II	$ 16.53	$ 16.06	2.93%
PF8	Fire/EMS Communications Dispatcher	$ 16.56	$ 16.06	3.11%
PF9	Fire/EMS Communications Lieutenant	$ 18.30	$ 18.97	-3.53%
PF12	Fire/EMS Communications Assistant Chief	$ 26.54	$ 23.98	10.68%

The second contributing factor is a disparity in the pension plans between Fire dispatchers and Police dispatchers. Police dispatchers are covered under the general pension plan, but fire personnel are covered under the Police and Fire Pension Plan. Under the general pension plan, normal retirement occurs when an employee's age plus credited service equals 85 (but not before age 60), and the lifetime benefit is 1.75 percent of average earnings times the years of credited service. Under the Police and Fire Pension Plan, normal retirement occurs when an employee's age plus credited service equals 75 (but not before age 53 or after age 60), and the lifetime benefit is 2 percent of earnings times the years of credited service (but not over 25 years).

A third contributing factor is the increase in workload and demands placed on call-takers and dispatchers. Radio dispatchers are often required to manage between 50 and 100 units on a single frequency during busy times, a ratio as much as 30 percent higher than those centers surveyed.

This has occurred over time as more units are added to patrol, but additional radio frequencies, or at least additional support positions are not. In addition to primary incident and unit-handling functions, dispatchers are required to complete several administrative tasks, such as making phone calls, calling tow trucks and sending administrative messages. While these are typical dispatching tasks, they are not typical in configurations where dispatchers are required to manage such a large numbers of units on a single frequency. In centers where there are high numbers of units on a single frequency, routine administrative tasks are usually handled on a secondary service channel that provides these services to a group of one or more districts. The service channel is used to off-load non-urgent traffic and requests from the primary frequencies. This heavy workload contributes to increased stress and burn-out.

A fourth contributing factor described during focus groups and evident on employee surveys was a general feeling that there is no general forum to discuss issues and concerns, especially stress management. Employees generally felt that supervisors were not available to address their individual concerns because the supervisors and lead personnel were themselves overworked due to the shortage of staff.

Efforts to recruit qualified employees has produced mixed results. Internet and local cable advertising have produced an increase in information requests, but there does seem to be a genuine lack of qualified candidates. An exit interview program has been created to help identify concerns that could be addressed to increase retention.

The allocation of staff is barely adequate to meet the current workload, even with the recent addition of 14 positions to accommodate the new Hermitage precinct. Incoming call volume has increased approximately 20 percent and police responses are up approximately 25 percent from 1999 to 2000, yet there has not been a significant increase in staff to accommodate this rise. These additional positions will be just enough to accommodate the new dispatch position (Hermitage) and will provide additional call takers, but will not be enough to satisfactorily meet the growing demands, since the baseline staffing level was low to begin with (before the addition of Hermitage).

5.6.3 Fire Department Staffing

The Fire Department has less of a staff recruitment and retention challenge than the Police Department does. The Fire Department Dispatch Center is generally viewed as a more desirable place to work, primarily because the overall compensation is better and the work environment is less demanding. The Fire Department has experienced several vacancies in the past several months, mostly due to retirement, creating seven full-time openings. These vacancies were being filled and new dispatchers were entering training at the time of the study.

The Fire Department managers have requested an increase in the number of allocated staff to meet the growing demand for EMD calls, and an overall increase in call volume. However, these positions have not been approved, due primarily to the lack of quantitative data to support the request and the absence of a clear plan as to how the additional staff would be used.

The growing call volume is also having a negative impact on the Fire Department's ability to answer incoming EMD calls in a timely manner. Since EMD has been implemented, the number

of Fire Department call takers has not significantly increased, even though there has been both an increase in the volume of calls and the time required to complete each call.

5.7 Facilities

5.7.1 Facility Configuration and Capacity

The current Dispatch Center facility does not appear capable of meeting the growing needs of the Police and Fire Departments without major expansion or renovation. There have been no major space improvements to either the Police or Fire dispatch areas or allocations since the center was first occupied by the Police Department in 1982, even though call volume has greatly increased. Today there are four additional call takers and three additional dispatch positions in the same space. Any future expansion to accommodate additional call takers or dispatchers would be impractical, if not impossible, in the current space. A large portion of the Center is used by OEM for the Emergency Operations Center and could not be made available for expanded dispatch center operations without significant improvements.

The Police Department has had to accommodate new dispatch and call-taking positions in relatively tight quarters, making the working conditions crowded. The addition of the new Hermitage Precinct has required the elimination of a backup dispatch position. Those backup responsibilities have been shifted to another dispatcher, increasing an already heavy workload. There is no space available to accommodate additional future precincts. The close working quarters in the Police operation center has caused an increase in ambient noise, making concentrated work more difficult. Background noise was cited by both field personnel and other agencies that receive call transfers (e.g., from police to fire) as a serious distraction.

Supervisors and trainers are frequently required to share counseling and monitoring space, making it difficult to effectively conduct training sessions when more than one trainee is assigned to the same shift. During interviews, staff members also commented about a history of poor air quality, absence of sufficient break areas and no windows.

While there may be opportunities within the building to expand both Police and Fire operations, this expansion would have to take place in several areas of the building, making them operationally impractical. For example, there is no one area in the building, with the exception of the OEM EOC, that could be expanded to accommodate all call-takers or all dispatchers.

5.7.2 Facility Maintenance

Facility maintenance is not uniform between the Police and Fire Departments. The Police department uses a combination of one police employee janitor and a cleaning service contractor to clean the police and common areas of the facility. The Fire Department and OEM each share a work release prisoner once a week to conduct the cleaning of the Fire and OEM areas of the facility.

The Fire Department and OEM alternate the weeks in which they will send a staff member to the correctional facility to pick up the work release trustee. The trustee is then left unsupervised to complete all cleaning duties in the Fire and OEM areas. It was reported that this was a common practice at other Fire and Metro facilities and it has not presented any serious problems in the

past. The Fire Department says that it is done purely for economical reasons, as they do not have the budget to hire contract cleaning crews.

According to the Fire Department, the work release trustees are "screened" by the program administrators and they only get "drunk drivers and non-violent offenders". There was one incident where a rape offender was sent up for a day, but this was corrected the next day and it has not happened since, according to the Fire Department. The Fire Department does have work rules when the trustees are on the premise such as the trustees are not allowed to be in the same room alone with female workers.

The Police Department expressed some degree of concern over the fact that trustees are used in the secure facility. While they said it was not common to have problems, there have been occasions where the trustees have had associates meet them at the facility to bring them lunch. This does cause concern since the trustees are not being monitored by correctional officers. The Police Department is also careful not to let trustees use or be in sensitive and secure areas, such as the radio room, but admits that they are not in a position to watch them constantly while they are on the premises.

The Police Department conducts an extensive background check on all maintenance workers hired either by the contractor or Metro and excludes those that do not successfully pass. The Police Department is confident in this process and says that it is the general practice throughout the Department.

5.7.3 Facility Security

Facility security is controlled and monitored by a 24 hour Metro Police building security force. Day to day access to the facility is tightly controlled by a series of gates and electronically controlled card-key devices. Security can be compromised during large generally meetings, usually held by OEM. During these times, the exterior gates are left open to accommodate the flow of traffic and as many as 100 guests can be in the facility at any one time.

5.8 Lack of Adequate Management Reports

Center managers and supervisors do not routinely use management reports to measure and monitor call center performance. There are no standard performance reports that are published on a regular basis, and *ad hoc* reporting capability is not readily available to managers and supervisors.

Metro does have state-of-the-art, computer-aided dispatch and reporting systems capable of generating these reports. While some call data is not captured due to system incompatibilities, the majority of required information is being collected during the incident process and could be used to generate comprehensive operational reports.

However, Metro has not dedicated the resources to creating and generating these reports. Supervisors and managers do not have the time required to establish baseline reporting needs. Staff and training time are not allocated to using information effectively to improve Center awareness and performance.

Once the reporting criteria are established, generating the reports today is a difficult and time-consuming process. The one individual who is qualified and capable of generating these reports also has the full-time responsibility of system maintenance and tuning responsibilities, often leaving reporting last on the list of priorities. Given the choice of generating reports or keeping the systems running, reports will always take a lower priority. Management reports are created on an as-needed/as-requested basis, usually in response to a specific question or investigation.

5.9 Inadequate Back-up Facility

The current back-up facility located at the Criminal Justice Center (CJC) is not capable of handling all workload requirements in the event of a building evacuation at the primary site. The current backup facility is capable of only providing minimal telephone receipt and radio functions and is not equipped for long-term emergency operations.

In the event of a complete building shut-down, where the computer systems are inoperable, all Police and Fire operations would be handled manually as there is no off-site backup for the computer aided dispatch system. Any manual process is both time-consuming and difficult to manage for an extended duration. During manual operations it is likely that service levels would dramatically decrease and delays would be inevitable.

5.10 Training

Due primarily to the staffing shortage, training of new Police Department hires is inconsistent and, at times, difficult to manage. Several trainees per shift mean crowded working conditions and little time for quality one-on-one counseling. The facility is not well equipped to accommodate the training of several new hires at once. Limited training space and CAD workstations add to the training difficulties.

Experienced personnel describe a lack of ongoing training that adequately meets the changing needs of departmental operations. It was the general perception that the disconnect between the needs of the field and the Communications Center is due largely to a lack of training of both Communications Center and field staff. Training is not used to continuously set clear expectations of performance.

The Fire Department does have a comprehensive and effective training program that incorporates classroom and on-the-job training. The only areas that may require additional training are in the use of the CAD and ACD systems. It does not appear that these systems are being utilized to the fullest extent possible, primarily due to lack of training.

There is a risk that training workstations can be inadvertently used on the live operations during training, which could result in mistakenly creating incidents on the live system. This risk is made worse by the fact that the default user sign-on is for the live system, and that the "training mode" indication is not prominent and obvious. Trainers and supervisors must pay careful attention to the sign-on procedure during training sessions to avoid potential mistakes. This risk is mitigated, but not eliminated, by the fact that trainees are not authorized to log-in to the live system until after they have completed the basic training course. Also, supervisors are trained to carefully monitor the status of each workstation at the time of sign-on.

5.11 Radio System

The failures reported during the assessment period seem to be isolated to a recurring hardware problem in the system database server. This problem is being addressed jointly by General Services and Motorola. However, these failures did highlight the need for improved procedures to address operations while the radio system is compromised or not operational.

As a result, several recommendations were made to lessen the operational impact of future database server malfunctions. These recommendations were:

- Improve the notification procedures and communications at the time of the failure between radio support staff and communications center staff.

- Improve the training of dispatchers and field personnel on the use of the radio system when it is operating in the "Failsoft" mode.

- Conduct periodic operational tests and drills of what to do in the event of a partial system failure.

- Work with Motorola to develop comprehensive contingency plans and procedures that address the possibility of a simultaneous failure of both the primary and back-up systems.

6. Recommendations

6.1 Consider Organizational Alternatives

Metro should consider an alternate management structure that clearly establishes a single point of responsibility for the delivery of all 911 and emergency communication services. While there are many organizational models, a single communications center executive that oversees both the Police and Fire operations is the most common. Those centers surveyed with the highest levels of performance were typically under a single management structure.

Metro should create a Director of Emergency Communications position that reports to the Executive Branch at the same level as the Police and Fire Chiefs. The Director would have overall responsibility for the delivery of emergency communications and 911 services. The Director would have complete operational control and autonomy from the agencies serviced. This structure creates a delineation of responsibility between the delivery of emergency communications and 911 services and operational response. It requires clear and concise service level agreements between emergency communications and the public safety agencies and allows for the greatest degree of independent responsibility.

The Director should be supported by managers who oversee police operations, fire operations, support services and training, and quality assurance programs.

Metro should consider a call taker configuration where all call takers are trained to the same level and are capable of handling any type of reported emergency within Davidson County. While this will require a higher level of initial and on-going call taker training (to support Emergency Medical Dispatch) it would eliminate the risk and delay associated with internal transfers between Police to Fire, and will help to alleviate the increasing demand of EMD calls.

Metro should consider a dispatch operations configuration where dispatchers specialize in either Police or Fire/EMS dispatch operations. The procedural differences and skills required are unique enough to support two separate and distinct specialties.

This model has several distinct advantages over the current operation. First, it squarely establishes a single point of responsibility for the entire E-911 process. Second, it combines the efforts of training and support services to leverage best practices and training initiatives across the organization. Third, it maintains the functional separation of Police and Fire dispatch expertise, while taking advantage of combined call taking, training and support services.

To implement this model, Metro will have to carefully explore the organizational implications and risks associated with changing the current structure. While several alternative organizational models exist, the Office of Emergency Management may be the most likely candidate.

Fiscal Impact: The average salary for a Director of Communications according to the NENA salary survey is $78,000. The total cost of adding this position, including benefits, would be approximately $100,000.

6.2   Develop and Publish Service-Level Standards

Metro should create service-level reports and publish those reports on a regular basis. At a minimum, Call Reaction Time (call receipt to incident entry), Call Processing Time (incident entry to dispatch) and Total Call Processing Time (call receipt to dispatch) should be reported for each employee, shift and department.

The intent of publishing these reports is to heighten overall awareness of the call center process and not to make a judgement on current performance. The nature of the reports must be informative and not punitive. In many cases, simply publishing the reports has had a positive effect on overall response times and helps to identify new opportunities for improvement.

The reports should be jointly developed by Police and Fire Department personnel using the same reporting criteria, which will require dedicated resources to agree on the content and format of the reports. These reports should be made available to the communications center staff and management on a regular basis.

Due to the limited availability of support services and supervisory staff, Metro should consider using an outside consultant working with the CAD vendor to facilitate the development of the standard reports and to aid in the programming and system set-up that they will require. To the extent possible, the reports should be created in a manner that allows them to be published on a regular basis with minimal intervention by Metro staff. This way, once the reports are created, they can be published and maintained by the existing staff.

Fiscal Impact: The fiscal impact will be limited to the consulting services required to design and initially develop these reports. Estimated cost, less than $75,000.

6.3   Closely Monitor Call Transfer Process

Until such time as the call takers are reconfigured, Metro should establish a program to closely monitor the call transfer process between the Police Department and the Fire Department. A joint task force made up of Police and Fire communications personnel should be created to examine the current transfer policy, determine the frequency and actual length of any delays, determine the most likely causes and make recommendations for improvement.

During the study, Metro should maintain detailed records of each transfer where there is a delay in answering. Where possible, the CAD system should be utilized to "flag" incidents for easy retrieval. Each reported delay should be independently reviewed to determine the length and nature of the delay. While this will be a time consuming process, it is essential to establishing the exact nature and magnitude of this problem.

The Police Department should re-examine its policy on delayed answers and set clear guidelines to be followed in the event of a delayed answer.

The Fire Department should utilize the ACD in a manner that allows for the collection of detailed call statistics so that call answer and reaction times can be accurately reported.

The Police Department should contract with the CAD system vendor and ACD vendor to develop an interface that directly links the two systems so that accurate ACD times can be captured as part of the CAD incident record. At a minimum, the answer times and a record of each transfer should be automatically recorded for each CAD incident and should be available for subsequent reporting.

Fiscal Impact: The fiscal impact of this recommendation will be limited to the initial development and implementation of an interface to the ACD. Assuming that major hardware or system software upgrades are not required to support this interface, the estimated cost is $50,000 or less.

6.4   Utilize CAD to Aid Communications Between Agencies

Metro should re-examine ways to improve communications between police, fire and OEM dispatchers and call takers by more fully utilizing the CAD messaging and combined incident functionality.

Fiscal Impact: None

6.5   Deliver E-911 Calls Directly to Goodlettsville

Metro should deliver all 911 calls within the City of Goodlettsville directly to the Goodlettsville PSAP. The fact that Goodlettsville directly receives 911 calls from its residents located in Sumner County establishes that Goodlettsville is capable of receiving these calls. It is the clear preference of both the Police and Fire Chiefs within Goodlettsville to directly receive these calls, rather than having them transferred from Metro 911.

Metro Police and Metro Fire should establish automatic or mutual aid response agreements, so that it is clear how any calls within the City of Goodlettsville will be handled in the event that Metro resources are required.

Fiscal Impact: None

6.6   Personnel

6.6.1 Create Equal Pay and Benefit Plans for Both Police and Fire

In implementing a single organizational structure as descried in Recommendation 6.1, Metro should correct the disparity in pay and benefits between the Police and Fire Department dispatch center personnel by creating a single, civilian pay and benefit structure that covers both police and fire emergency communications personnel. There is no significant difference in the actual work or working conditions that warrant the current disparity.

Fiscal Impact: See 6.5.2 below

6.6.2 Increase Police Communications Pay at Lower Levels

Metro should increase the Police Communications pay levels to at least be in line with the NENA national pay averages. This would mean at least an eleven percent (11%) increase at both the lowest level and the journey level and a three percent (3%) increase at the interim level.

Fiscal Impact: Based on the data in table 5 and assuming that salaries associated with positions currently in a GS4, GS5 and GS6 classification would be increased by 11%, 3% and 11% respectively, the financial impact of this recommendation would be approximately $110,000.

6.6.3 Increase Police Operations Staffing Levels

Metro should increase the staffing level to support operations currently staffed by the Police Department by at least ten (10) additional positions. This staffing increase is necessary to accommodate the growing call volume rate and to reduce the number of units assigned to each radio frequency (dispatch position) by making more call taker and dispatch positions available during peak periods. These positions would be used to augment staffing levels during peak periods. Metro should consider filling these positions with Police and Fire Department personnel injured in the line of duty who are medically able to return to light duty.

This estimate is based on the assumption that not all radio or call taker positions will be staffed at all times. Flexible scheduling will allow for frequencies to be combined and call taker levels to be lowered during non-peak times. At least three (3) additional call taker positions should be staffed during peak periods to accommodate the workload and give adequate break and down-time.

At least two (2) additional dispatch positions should be staffed during peak periods to relieve radio positions with an excess of fifty active units. Metro should consider the use of a support services frequency during peak times to alleviate the primary frequency dispatcher of routine service requests (e.g., phone calls, rotation tow) and NCIC inquiries.

Fiscal Impact: The ongoing Fiscal Impact of adding ten (10) additional full time staff members is approximately $340,000 per year for salaries, assuming mid-range GS-8 positions. The total cost of these positions would be approximately $428,000 including benefits. Note that this impact is on actual expenditures. The budgetary impact may not be as large, since there are currently unfilled positions.

6.7   Facilities

6.7.1 Relocate the Primary Emergency Communications Center

Metro should consider alternatives for the primary dispatch center facility. One alternative would be to relocate the primary operations for both police and fire communications to a new facility capable of handling the growing emergency communications center needs for the next ten years. The new facility should, at a minimum, be configured to accommodate 24 total call taker positions and 14 total dispatch positions (police and fire) with room available for expansion. The facility must also accommodate supervisory and support staff. The current facility could then be used as a back-up, training and EOC facility.

A second alternative would be to modify the existing facility to accommodate the required changes and to locate another site to serve as the back-up facility.

The first alternative may be preferred to modifying the existing facility for the following reasons. First, it appears that the existing facility would require major renovations, especially to the EOC to accommodate the long term needs of the communications center. Considering the open space configuration of the EOC and the hardened construction of the building interior, modifications would likely be difficult and costly. Considering the steep slope of the exterior grade add-on construction would likely be cost prohibitive.

Second, the level of major construction required would create a significant risk of service disruption during the construction period. Since this is a 24-hour operation, there will be no time when construction would not cause difficult or even dangerous working conditions. Construction noise and disruption would create an increased risk of service disruptions due to ambient noise, construction hazards and a likely increase in illness related to working conditions.

Third, the space separating police and fire does not lend itself well to combining the call taking operation. If the current facility were used, there would likely be a significant physical distance separating call-taking and radio functions. Too much separation between call takers and dispatchers is not recommended due to the close working relationship required between the two functions.

Fourth, the size and configuration of this facility does lend itself well to becoming an alternate site where OEM, telephone reporting and training could all be located. In the event of an emergency or disaster, this site could be ready for live communications center operations in a matter of minutes (see 6.6.2). This facility could serve as an adequate back-up, training and EOC site for at least 10 years. Metro should determine additional appropriate uses for the EOC.

A new facility would go a long way to improve the current working conditions and environment, making retention and recruitment easier. Poor working conditions, especially the lack of windows to the outside, cramped working area and increased ambient noise levels were all sited as major complaints of dispatch center staff members. It is now a common practice to design public safety communications centers with windows to the outside. This one architectural feature goes a long way to increasing moral and acceptance of other less desirable working conditions. Metro should carefully consider all alternative sites including both commercially available and new construction.

Fiscal Impact: While the actual Fiscal Impact is difficult to estimate before all alternatives are thoroughly studied, it is estimated that a new facility could cost between $8M - $10M. This estimate is based on the following assumptions;
a) a construction cost of approximately $200 per square foot
b) b) approximately 200 square feet per dispatch position[8], 200X40=8,000 sq. ft.;
c) c) three times the dispatch area for common area and office space, 24,000 sq. ft.;
d) d) 32,000 total sq. ft. X $200 = $6.4M; e) equipment costs of approximately $2M[9].

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[8] This estimate for construction costs of $200 per sq. ft. is based on other similar facility projects Gartner has participated in, such as City of Orlando, FL and City of San Diego, CA.

6.7.2 Establish a Back-Up/Training Center at the Current EOC Facility

Metro should establish a back-up facility that is capable of handling sustained emergency communications center operations. If Metro were to relocate the primary facility, then Metro should use the current EOC facility to support training, telephone reporting and OEM operations and as a back-up to the primary site. In this configuration, the current facility would be used on an ongoing basis and be available in the event of an unplanned outage of the primary site, natural disaster or other catastrophic emergency.

The two facilities should be connected via redundant and independent high-speed network connections (e.g., fiber, cable, microwave) so that they are both active at all times. In the event of a failure or evacuation of the primary site, the back-up facility would be active and ready to handle the entire workload. The existing 911 trunk lines should be left in place to serve as a back-up should 911 calls need to be routed to the back-up facility. This configuration would provide for adequate capacity at the back-up facility to sustain long term operations.

Metro should install an upgraded CAD server at the new facility and leave the current CAD server at the back-up site. These two servers should be configured to remain in synchronization at all times. In this configuration, the complete failure of one building would not result in a significant interruption of service.

By staffing the current site with these functions, Metro would not only continue to get beneficial use out of the facility without having to move the EOC, it also would provide these functions with the additional space that they continue to need, especially training and Teleserve. Depending on scheduling, there would be several hours during each day that the back-up facility would be staffed with personnel ready and able to take over critical dispatch and call taking functions. Since the staff located at the EOC (e.g. trainers, Teleserve) are also trained call takers and dispatchers, they could be available to take calls in the event of an activation of the back-up facility. The back-up center could also be used to staff additional call taker or dispatch personnel during planned events or when higher-than-normal call volumes are expected.

Metro should consider seeking enhancements from Printrak, the CAD system vendor, to decrease the risk of inadvertently signing on to the live CAD system during training. An enhancement should be made to the sign-on process, so there is no "default" mode (live or training), making the operator intentionally choose which mode the workstation should be signed-on to. An enhancement should be made to the user interface display, so that the user mode (training or live) is prominently and obviously displayed to the user, so that it is unmistakable which mode that the user is in at all times.

Fiscal Impact: The Fiscal Impact of this recommendation is will vary depending on the costs allocated to building the new facility. If the current communications center is used as the back-up, the costs to relocate Teleserve to this facility should be minimal.

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[9] This estimate for back-up equipment includes a new CAD server for remote redundancy and fail-over, dispatch workstations, radio equipment and telephone equipment.

6.7.3 Do Not Use Work Release Inmates to Clean the Facility

Metro should discontinue the practice of using work release inmates to clean and maintain a secure facility. The selection process should be uniform for the entire facility and include, at a minimum, a basic background check to eliminate felons or others that pose a potential risk to building security.

Fiscal Impact: The Fiscal Impact of this recommendation is approximately $20,000 per year. This estimate is for a contract custodial service to perform the custodial duties required for Fire and OEM. The Police Department currently pays approximately this amount for two cleanings per day, seven days per week.

6.7.4 Do Not Compromise Security for General Meetings

Metro should discontinue the use of the communications center facility for large general meetings. These meetings should be held at an alternate location, whenever possible. The flow of large groups through the facility is not only distracting to the operations staff, it also poses the potential risk of unauthorized persons gaining access to sensitive law enforcement information.

Metro should discontinue the practice of leaving the outside gate open as a convenience to accommodate large outside meetings. The security staff and OEM (or the meeting sponsor) should carefully coordinate and control the flow of guests in and out of the facility in a manner that is consistent with the day to day level of security.

Fiscal Impact: None

6.8 Uniformly Apply Standard Operating Procedures

Metro should closely monitor the application of Standard Operating Procedures between field and dispatch personnel across shifts. New operational policies should be implemented on a coordinated basis with field supervisors and management to avoid confusion. Discrepancies about the application of a new policy or procedure should be handled between communications and field supervisors and not between field and dispatch center staff.

Fiscal Impact: None

6.9 Further Study Resources Available to Respond

Metro should conduct a detailed study of police, fire and EMS resource allocation to determine the degree and cause of limited unit availability during peak times. This study should include a measurement of the frequency of which no units are available, the typical duration of each occurrence, and the primary causes.

Fiscal Impact: The estimated cost of this study is approximately $225,000.

6.10 Implement Recommended Radio Procedures

Metro should implement the procedures recommended by General Services to lessen the operational impact of a radio system failure. These procedures should be well-documented and addressed during training and / or operational review sessions. The procedures should be tested and practiced periodically during normal operations to ensure competency among communications center and field staff.
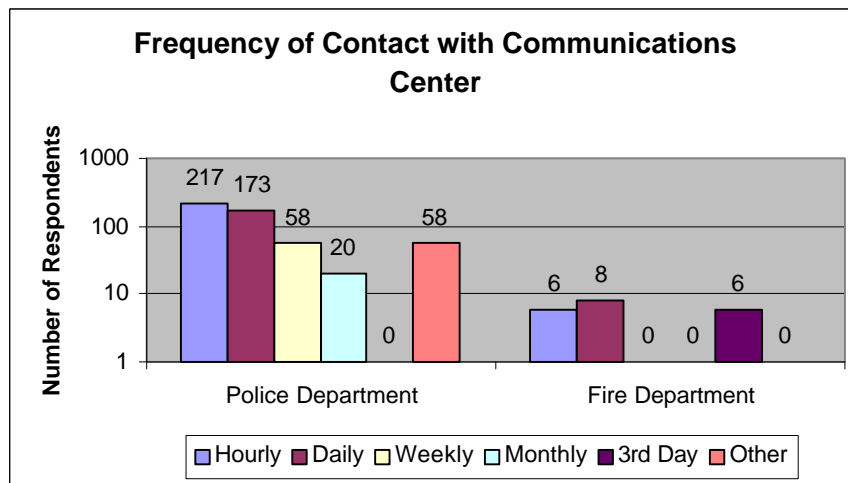
Fiscal Impact: None

Appendix

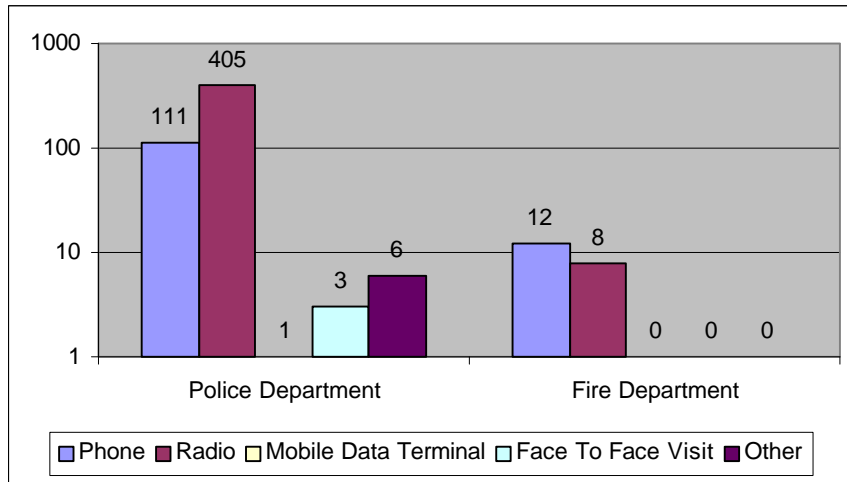**Emergency Response Agency Satisfaction Survey**

1. Please indicate the emergency response agency that you work for:

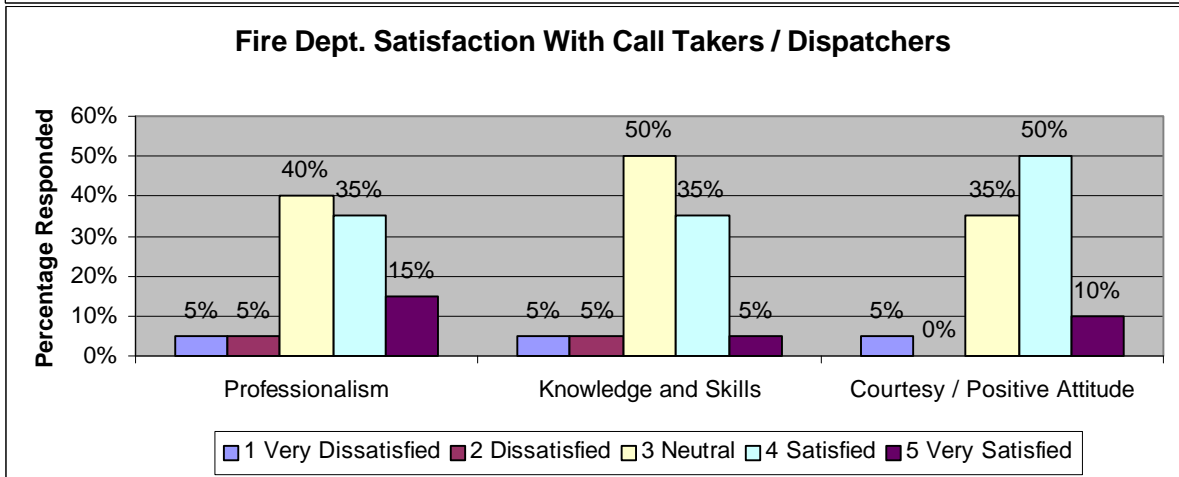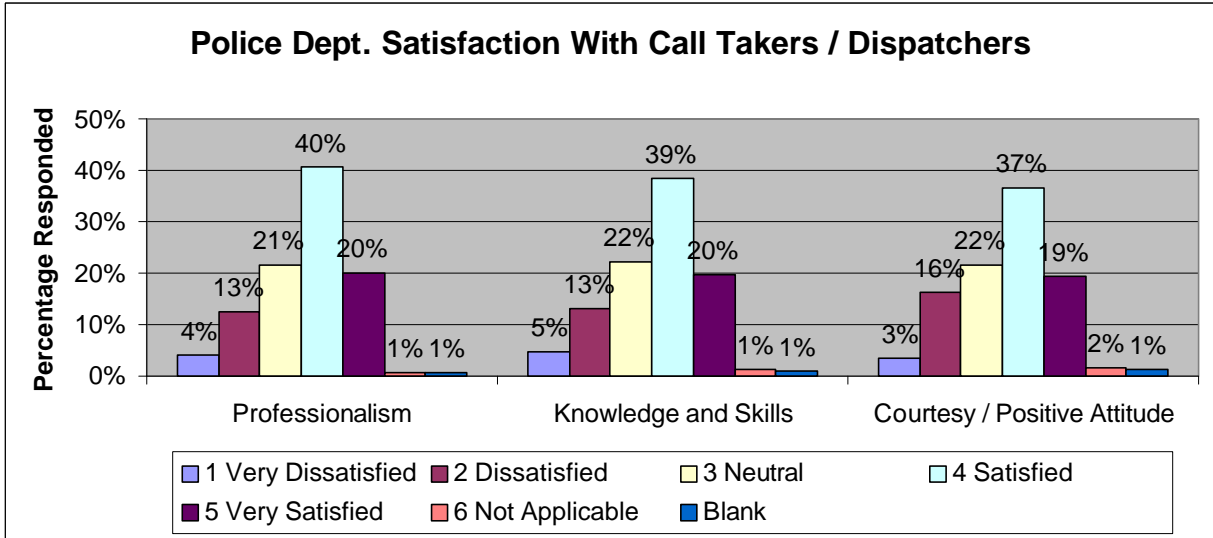   -   526 Police
    -   20 Fire

2. During the last three months, which of the following best describes your frequency of contact with the communications center?

3. Which of the following best describes your most frequent method of contact with the communications center?

4. Please rate your satisfaction with Call Takers / Dispatchers:

Police Dept. Satisfaction With Call Takers / Dispatchers

Legend: 1 Very Dissatisfied · 2 Dissatisfied · 3 Neutral · 4 Satisfied · 5 Very Satisfied · 6 Not Applicable · Blank

- Professionalism: 4%, 13%, 21%, 40%, 20%, 1%, 1%
- Knowledge and Skills: 5%, 13%, 22%, 39%, 20%, 1%, 1%
- Courtesy / Positive Attitude: 3%, 16%, 22%, 37%, 19%, 2%, 1%

Fire Dept. Satisfaction With Call Takers / Dispatchers

Legend: 1 Very Dissatisfied · 2 Dissatisfied · 3 Neutral · 4 Satisfied · 5 Very Satisfied

- Professionalism: 5%, 5%, 40%, 35%, 15%
- Knowledge and Skills: 5%, 5%, 50%, 35%, 5%
- Courtesy / Positive Attitude: 5%, 0%, 35%, 50%, 10%

5. Please rate your satisfaction with the services provided by the Com Center:

Police Dept. Satisfaction with the services provided by the Com Center

Fire Dept. Satisfaction with the services provided by the Com Center

6. Please rate your satisfaction with the performance of the technology deployed to communicate with the center:
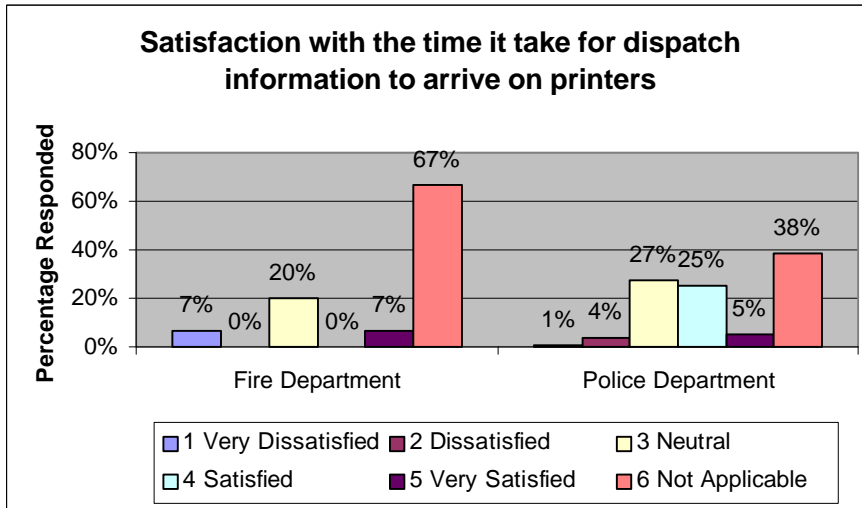

Police Dept. Satisfaction with Communications Technology

Fire Dept. Satisfaction with Communications Technology
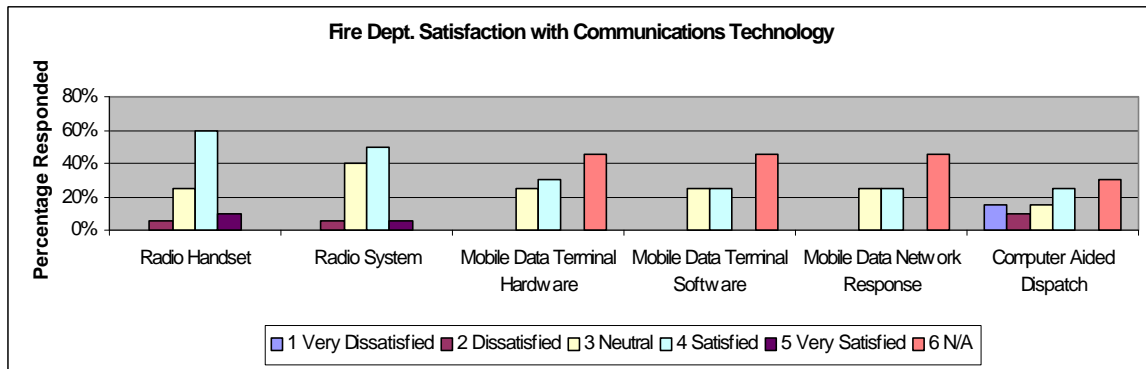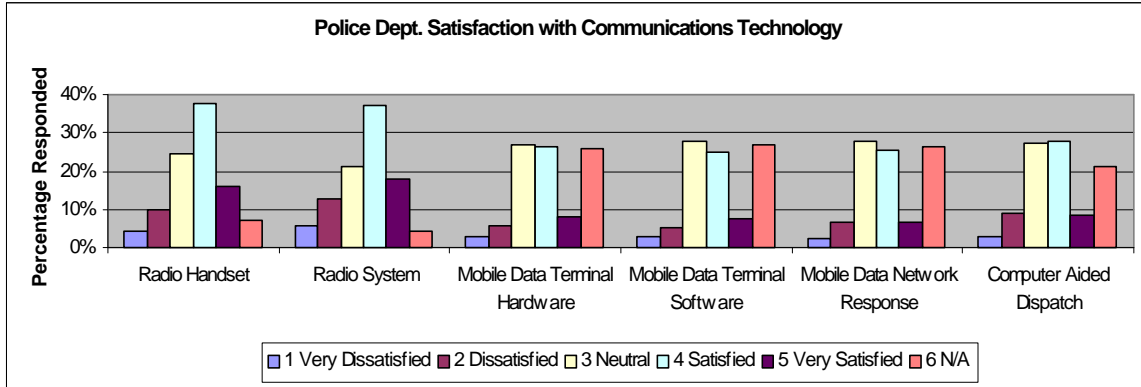
Additional Questions Specific to the Fire Department/EMS

7. Please rate your satisfaction with the time it takes the dispatch information to arrive on the printers:

8. Over the past year, what percentage of the time would you estimate that you had to leave the station without the printout of the incident information because it had not yet arrived from the Com Center?

Police: 83 respondents (443 non-respondents)

- 8: 100 percent
- 1: 90 percent
- 1: 80 percent
- 1: 70 percent
- 1: 60 percent
- 3: 50 percent
- 4: 20 percent
- 12: 10 percent
- 2: 5 percent
- 4: 2 percent
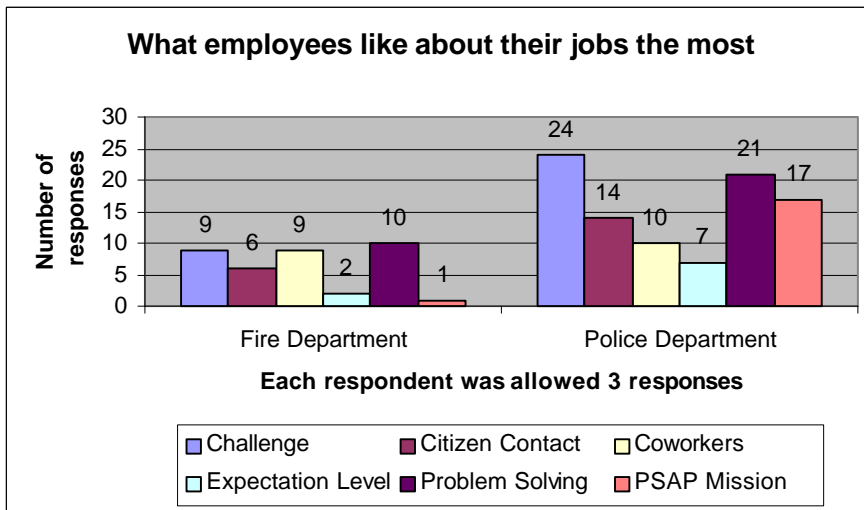- 43: 0 percent

Fire: 13 respondents (7 non-respondents):

- 12: 100 percent
- 1: 0 percent

Telecommunicator or Dispatcher Survey

Background Issues

5.   What are the top three things you like most about working for this PSAP?

6.   What are the top three things you like least about working in the PSAP?

What employees like least about their job

Each respondent was allowed three responses

Legend:
- Breaks/Hours/Shifts
- Compensation/Benefits
- Life and Death Outcomes
- Management
- Personnel Issues
- Stress
- Systems/Technology
- Focus on Productivity
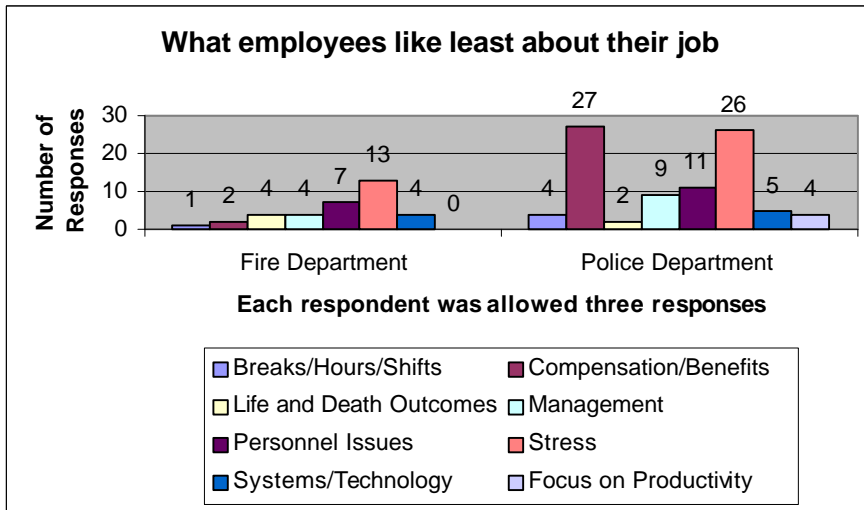
Strengths and Weaknesses of the PSAP

7.   What do you feel are the top three strengths of the communication center?

Strengths of the Communications Center

Each respondent could give three responses

Legend:
- Coordination between agencies
- Dedication
- Knowledge/Experience
- Teamwork
- Technology
- Mission Effectiveness
- Mission Efficiency

What do you feel are the top three weaknesses of the PSAP?

Communications Center Weaknesses

Number of Responses

- Fire Department: 3, 4, 4, 4, 4, 14
- Police Department: 11, 15, 8, 11, 5, 35

Fire Department   Police Department

Each respondent could give three responses

- ☐ Coordination Between Call Takers and Dispatchers
- ☐ Focus on quantity of calls
- ☐ Insufficient Training/Knowledge/Experience
- ☐ Other
- ☐ Poor Technology
- ☐ Staffing levels

8. How would you rate your overall job satisfaction?

Overall Job Satisfaction

Percentage Responded

Fire Department   Police Department

☐ 1 Low ☐ 2 ☐ 3 Average ☐ 4 ☐ 5 Extremely High

Morale/Stress

9. How would you rate your stress level?

Employee Stress Level

Fire Department: 1 Little/None 7%, 2 Some/Infrequent 0%, 3 Average 29%, 4 Stressed 50%, 5 Extremely Stressed 14%

Police Department: 1 Little/None 3%, 2 Some/Infrequent 9%, 3 Average 34%, 4 Stressed 29%, 5 Extremely Stressed 26%

- 1 Little/None
- 2 Some/Infrequent
- 3 Average
- 4 Stressed
- 5 Extremely Stressed
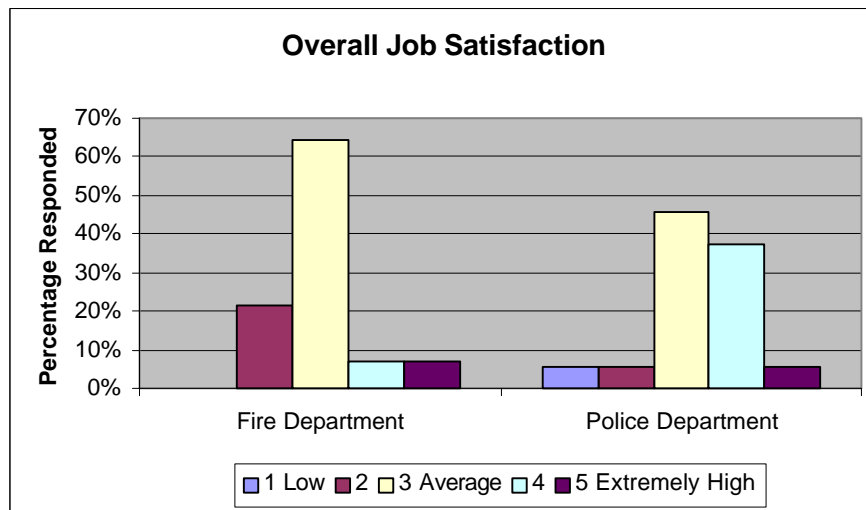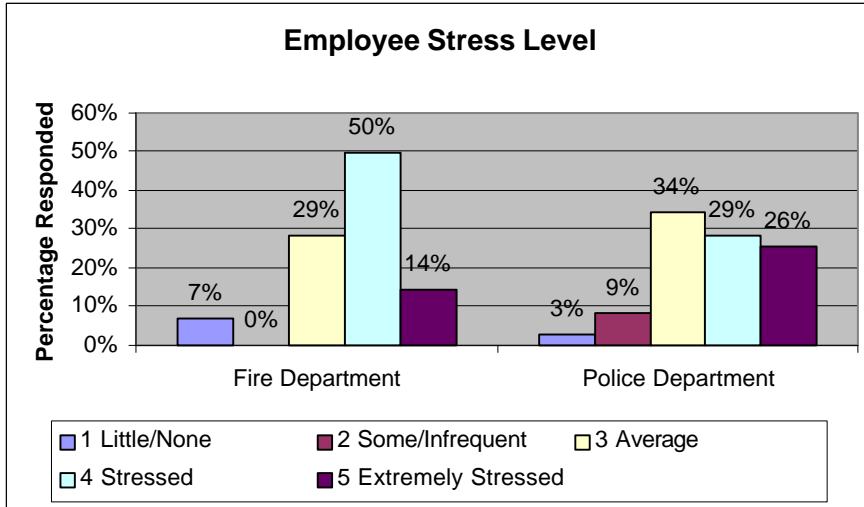
10. How would you rate the overall stress level of the PSAP?

Overall Stress at the Department

Fire Department: 2 Some/Infrequent 7%, 3 Average 14%, 4 Stressed 43%, 5 Extremely Stressed 36%

Police Department: 2 Some/Infrequent 6%, 3 Average 3%, 4 Stressed 34%, 5 Extremely Stressed 57%

- 2 Some/Infrequent
- 3 Average
- 4 Stressed
- 5 Extremely Stressed
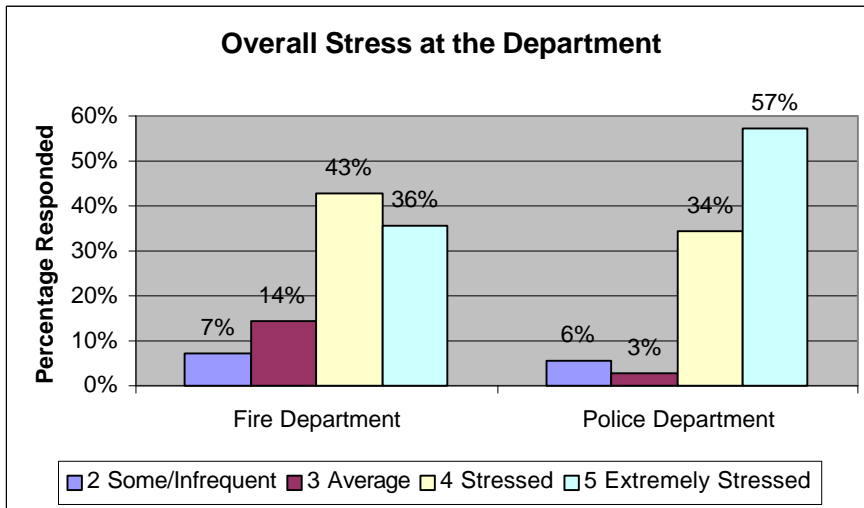
11. What are the top three causes of stress within the PSAP?

Top Causes of Stress Within the Department

Fire Department: Call Volumes/Queues Building 10, Condition of Facilities 6, Expectation Levels 1, Lack of Training 1, Management 3, Personnel Issue 10

Police Department: Call Volumes/Queues Building 21, Condition of Facilities 13, Expectation Levels 9, Lack of Training 6, Management 12, Personnel Issue 15

Respondents were allowed three choices

Legend: Call Volumes/Queues Building, Condition of Facilities, Expectation Levels, Lack of Training, Management, Personnel Issue

12. How would you rate your morale?

Employee's Morale

Fire Department: 1 Low 7%, 2 29%, 3 Average 43%, 4 21%, 5 Extremely High 0%

Police Department: 1 Low 9%, 2 23%, 3 Average 43%, 4 23%, 5 Extremely High 3%

Legend: 1 Low, 2, 3 Average, 4, 5 Extremely High

13. How would you rate the overall morale of the PSAP?

Overall Morale within the Department

Percentage Responded

- Fire Department: 14%, 57%, 29%, 0%
- Police Department: 43%, 34%, 17%, 6%

Legend: ■ 1 Low ■ 2 □ 3 Average □ 4

Career Path

14. How much do you feel your field of work is a profession?

Feeling that Employees Work is a Profession

Percentage Responded

- Fire Department: 0%, 7%, 29%, 14%, 50%
- Police Department: 3%, 6%, 18%, 32%, 41%

Legend: ■ 1 Low ■ 2 □ 3 Average □ 4 ■ 5 Extremely High

15. How would you rate your opportunity for advancement elsewhere within this PSAP?

Perceived Opportunity For Advancement in Employee's Department

Fire Department: 1 Low 14%, 2 36%, 3 Average 29%, 4 7%, 5 Extremely High 14%
Police Department: 1 Low 24%, 2 18%, 3 Average 45%, 4 12%, 5 Extremely High 0%

16. How would you rate your potential for advancement elsewhere within the organization?

Perceived opportunity For Advancement Elsewhere Within the Organization

Fire Department: 1 Low 7%, 2 36%, 3 Average 29%, 4 21%, 5 Extremely High 7%
Police Department: 1 Low 26%, 2 17%, 3 Average 40%, 4 11%, 5 Extremely High 6%
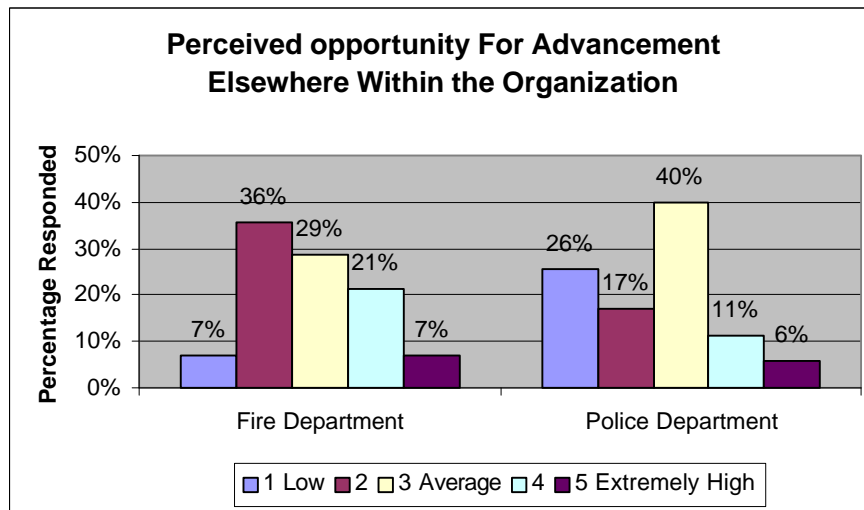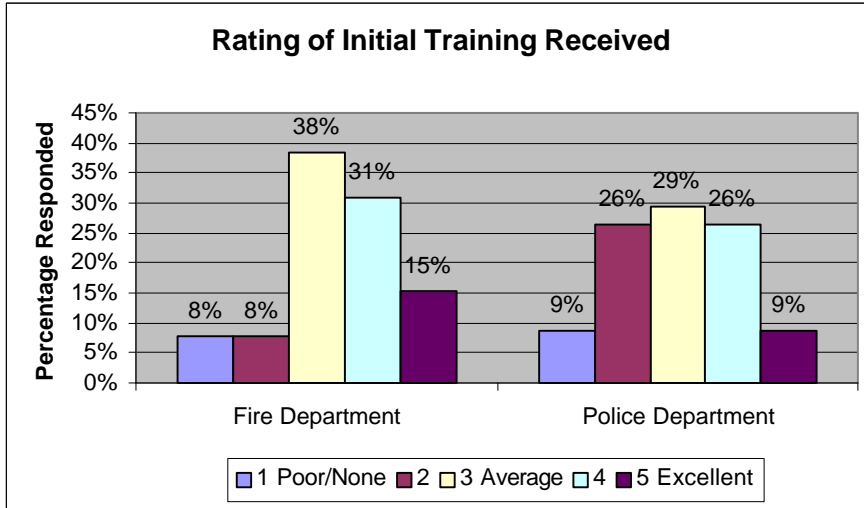
17. Are there published job postings?
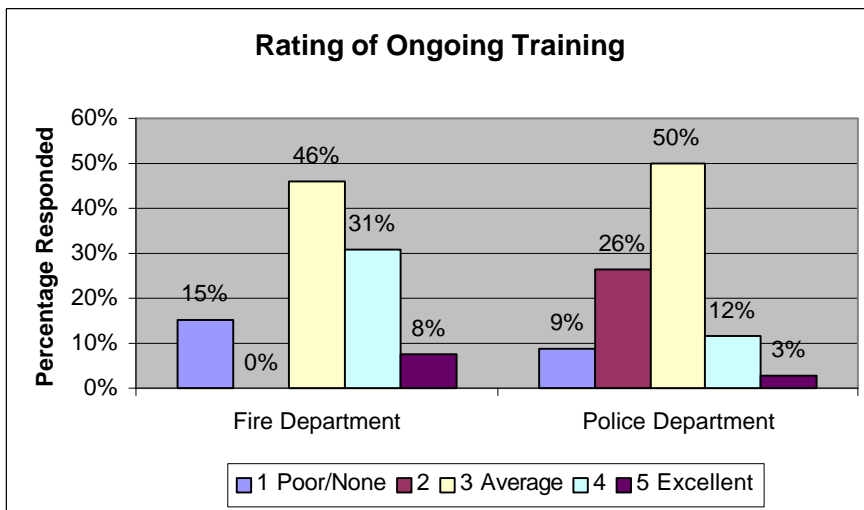
- Police Department
    - – Yes: 35
    - – No: 0
- Fire Department
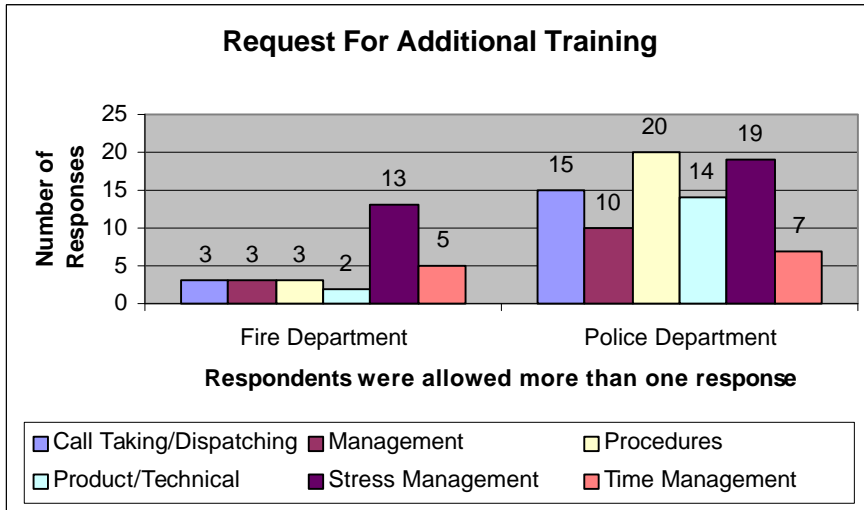   - – Yes: 12
    - – No: 2

Training

18. How would you rate the initial training you received?

Rating of Initial Training Received

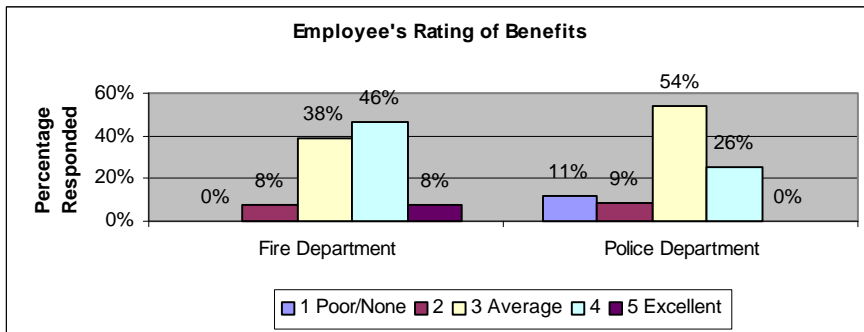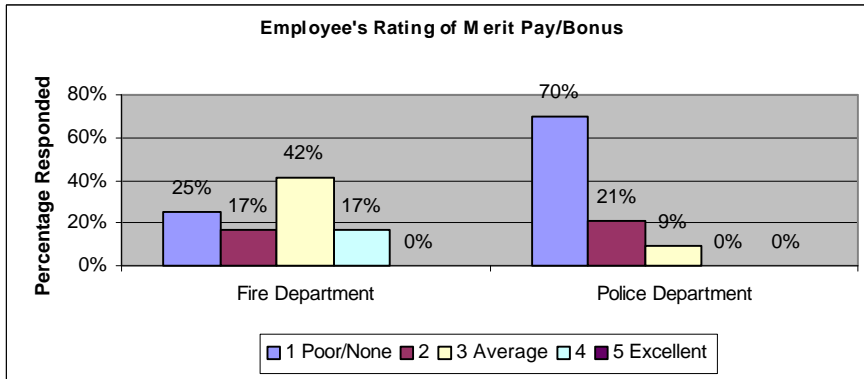19. How would you rate the ongoing (day-to-day) training you receive?

Rating of Ongoing Training

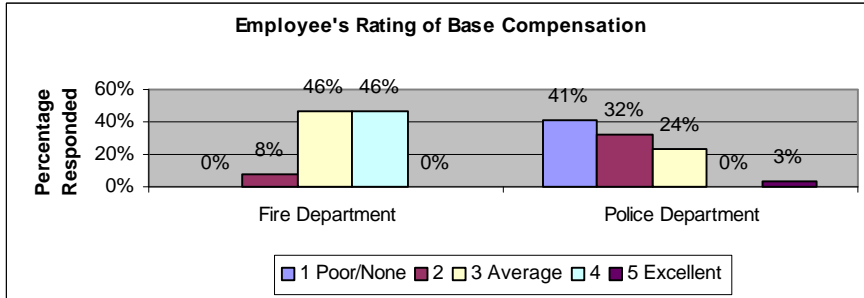20. What additional training would you like to see provided?

Request For Additional Training

Number of Responses

Fire Department — 3, 3, 3, 2, 13, 5
Police Department — 15, 10, 20, 14, 19, 7

Respondents were allowed more than one response

□ Call Taking/Dispatching ■ Management □ Procedures
□ Product/Technical ■ Stress Management □ Time Management

Incentives/Compensation

21. How would you rate the following?

Employee's Rating of Base Compensation

Employee's Rating of Merit Pay/Bonus

Employee's Rating of Benefits

Employee's Rating of Work Environment/Facilities

22. How would you rate the incentive/recognition programs within the PSAP?

Employee's rating of the Effectiveness of Incentive/Recognition Programs Within the Department

Employee's Rating of the Fairness of Incentive/Recognition Programs Within the Department

23. How would you rate the incentive/recognition programs within the organization?
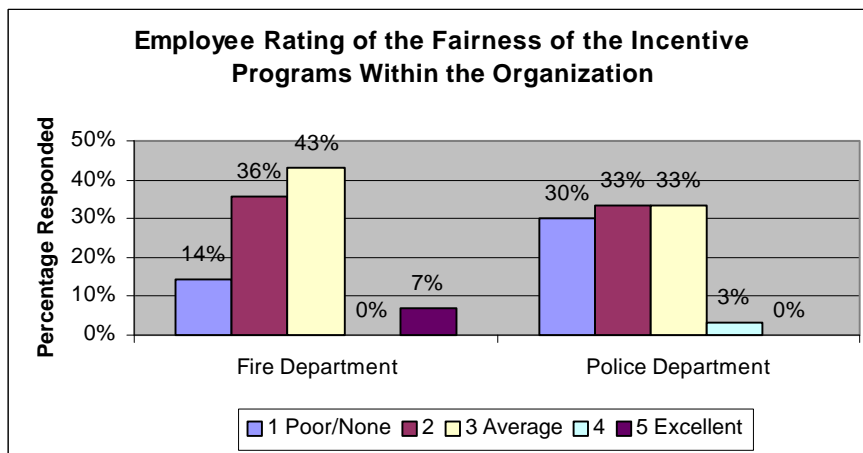
Employee Rating of the Effectiveness of Incentive Programs Within the Organization

	1 Poor/None	2	3 Average	4
Fire Department	7%	36%	50%	7%
Police Department	31%	37%	31%	0%

Employee Rating of the Fairness of the Incentive Programs Within the Organization

	1 Poor/None	2	3 Average	4	5 Excellent
Fire Department	14%	36%	43%	0%	7%
Police Department	30%	33%	33%	3%	0%

Technology

24. How do you rate your desktop workstation (PC/terminal)?

- Effectiveness: Police Department
    - 1 Poor/None: 2
    - 2: 9
    - 3 Average: 16
    - 4: 8
- Effectiveness: Fire Department
    - 2: 2
    - 3 Average: 8
    - 4: 2
    - 5 Excellent: 1
- Performance: Police Department
    - 1 Poor/None: 1
    - 2: 5
    - 3 Average: 4
    - 4: 2
    - 5 Excellent: 1
- Performance: Fire Department
    - 1 Poor/None: 2
    - 2: 8
    - 3 Average: 17
    - 4: 6
    - 5 Excellent: 1

Do you feel you have the necessary tools to do your job?

- Police Department
    - Yes: 21
    - No: 14
- Fire Department
    - Yes: 7
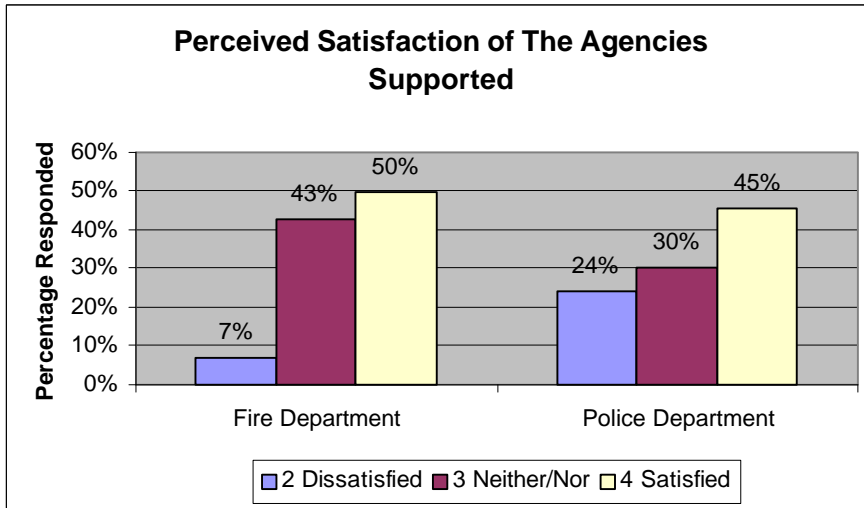   - No: 7

How would you rate your radio console?

- Effectiveness: Police Department
    - 1 Poor/None: 1
    - 2: 6
    - 3 Average: 15
    - 4: 9
    - 5 Excellent: 2
- Effectiveness: Fire Department
    - 3 Average: 10
    - 4: 4
- Performance: Police Department
    - 1 Poor/None: 2
    - 2: 6
    - 3 Average: 14
    - 4: 9
    - 5 Excellent: 1
- Effectiveness: Fire Department
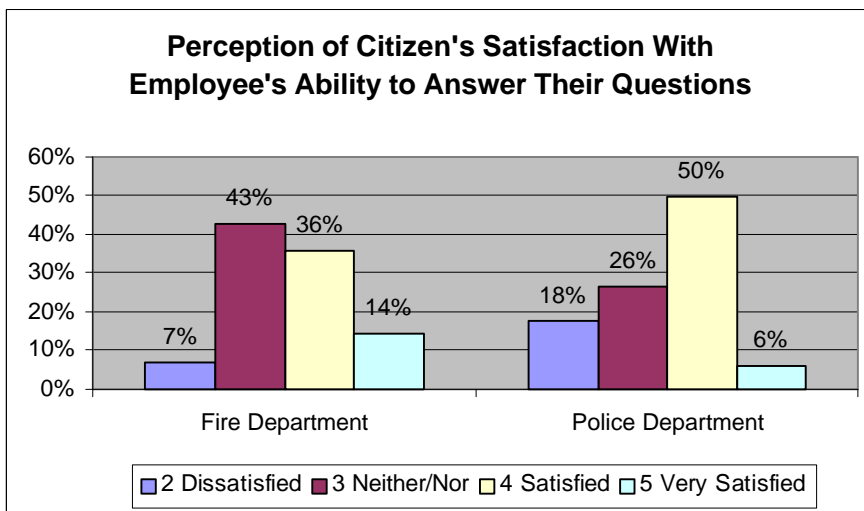   - 3 Average: 9
    - 4: 5

Do you feel you have the necessary tools to do your job?

- Police Department
    - Yes: 16
    - No: 19
- Fire Department
    - Yes: 6
    - No: 8

25. How satisfied do you feel the agencies (police, fire, etc.) are with the work done in this PSAP?

Perceived Satisfaction of The Agencies Supported

Fire Department: 2 Dissatisfied 7%, 3 Neither/Nor 43%, 4 Satisfied 50%
Police Department: 2 Dissatisfied 24%, 3 Neither/Nor 30%, 4 Satisfied 45%

Legend: ■ 2 Dissatisfied ■ 3 Neither/Nor □ 4 Satisfied

26. How satisfied do you feel the citizens are with your ability to answer their questions or help them in an emergency?

Perception of Citizen's Satisfaction With Employee's Ability to Answer Their Questions

Fire Department: 2 Dissatisfied 7%, 3 Neither/Nor 43%, 4 Satisfied 36%, 5 Very Satisfied 14%
Police Department: 2 Dissatisfied 18%, 3 Neither/Nor 26%, 4 Satisfied 50%, 5 Very Satisfied 6%

Legend: ■ 2 Dissatisfied ■ 3 Neither/Nor □ 4 Satisfied □ 5 Very Satisfied

27. How would you rate the callers' knowledge of the service offered by the PSAP?
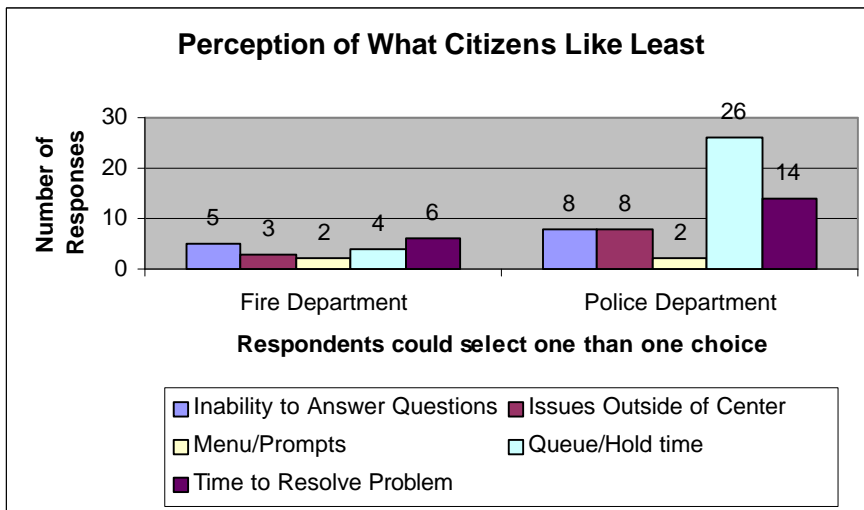
Caller's Knowledge of Services Offered
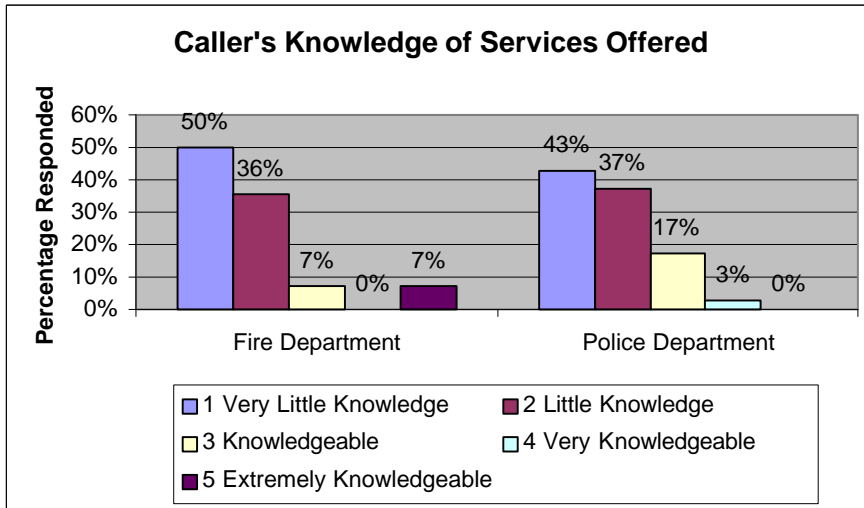
28. How satisfied do you feel the citizens are with the response time of the agencies outside of the PSAP?

Perception of Citizen's Satisfaction With Response Time
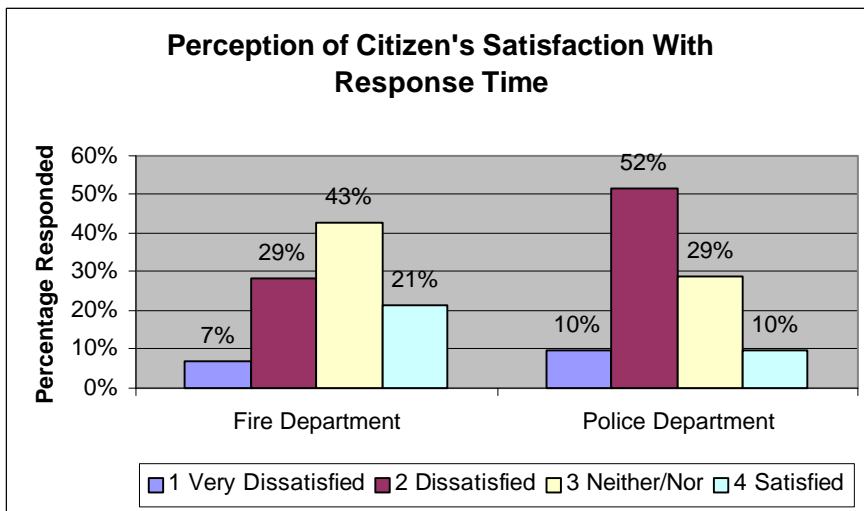
29. How satisfied do you feel the citizens are with technology they hear or interact with (i.e., prompts/menus, VRU, www, etc.) when contacting your PSAP?

Perception of Citizen's Satisfaction With the Technology They Hear or Interact With

Fire Department: 8%, 23%, 54%, 15%
Police Department: 6%, 21%, 61%, 12%

Legend: 1 Very Dissatisfied, 2 Dissatisfied, 3 Neither/Nor, 4 Satisfied
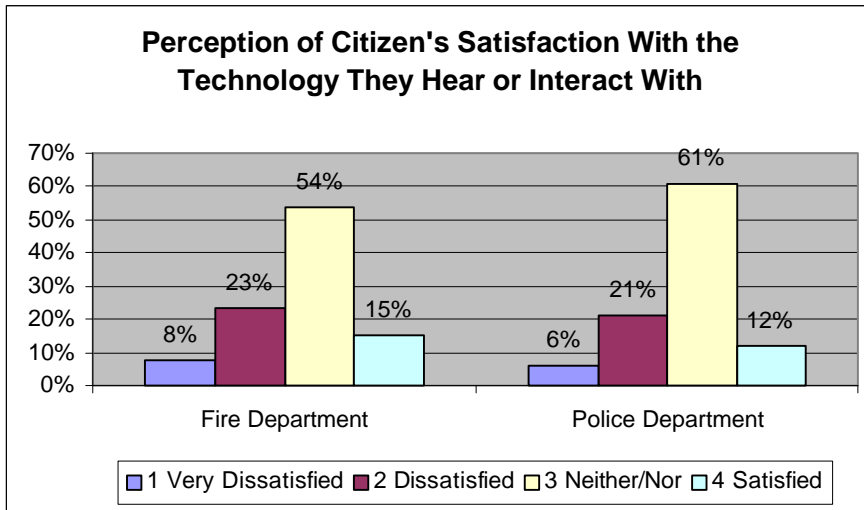
30. What do the citizens like the least when they are not satisfied?

Perception of What Citizens Like Least

Number of Responses

Fire Department: 5, 3, 2, 4, 6
Police Department: 8, 8, 2, 26, 14

Respondents could select one than one choice

Legend: Inability to Answer Questions, Issues Outside of Center, Menu/Prompts, Queue/Hold time, Time to Resolve Problem

31. What do the citizens appreciate the most when they are satisfied?

Perception of What Citizens Appreciate the Most