



**A Report to the
Audit Committee**

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Audit of the Department of Emergency Communications

March 30, 2021

Metropolitan
Nashville
Office of
Internal Audit

Audit of the Department of Emergency Communications

EXECUTIVE SUMMARY

March 30, 2021



Why We Did This Audit

The audit was conducted due to the importance of ensuring the timely delivery of emergency services to the citizenry.

What We Recommend

- Evaluate staffing needs based on call volume and available employee ratio to ensure service delivery goals related to 9-1-1 calls are met.
- Implement steps to ensure standards related to fire type calls are being met. Steps may include updating current criteria and additional training for staff.

BACKGROUND

The mission of the Metropolitan Nashville Emergency Communications Center is to serve as the vital link between the citizens and the emergency responders of Nashville and Davidson County by providing emergency and non-emergency services in a prompt, courteous, and efficient manner. The Emergency Communications Center was created in 2002 to provide “one-stop shopping” for 9-1-1 services. The Emergency Communications Center operates from both a primary site and a backup site.

The annual operating budgets for the Emergency Communications Center in fiscal years 2019 and 2020 were \$15.31 million and \$15.96 million, respectively.

OBJECTIVES AND SCOPE

The objectives of this audit are to determine if:

- 9-1-1 calls are answered in a timely manner and emergency services are dispatched appropriately.
- Performance measures are applied accurately and objectively in evaluating Emergency Communications Center performance.
- 9-1-1 center employees are properly trained to meet job expectations.
- Policies and procedures or safeguards are in place to ensure the emergency communication system is well maintained and protected from being compromised.

The scope of this audit included all activity from July 1, 2018, to June 30, 2020.

WHAT WE FOUND

The Emergency Communications Center has controls in place to ensure the timely and accurate delivery of emergency services. Policies and procedures are in place to ensure the integrity of the public safety infrastructure.

However, call response times did not meet internal performance metrics. Additionally, the call review quality control process for fire related calls, in certain aspects, were not being met.

GOVERNANCE

The Davidson County Emergency Communications Center is the core operations division within the Metropolitan Nashville Government's Department of Emergency Communications. The Director of the Department of Emergency Communications is appointed by the Mayor and is responsible for the daily operations of the department. The Metropolitan Nashville Government provides the Emergency Communications Center funding for their facility and staffing. Funding for items such as equipment, staff training, etc. are provided by the State of Tennessee's Emergency Communications District.

The Emergency Communications District is an independent State of Tennessee governmental entity that was authorized by Tennessee Code Annotated (TCA) 7-86-105 to enhance 9-1-1 emergency services throughout the state. The 9-1-1 Modernization Act establishes that a 9-1-1 surcharge fee be paid on any telephone service that can call 9-1-1. The fees are collected by the State of Tennessee and passed on to the various local Emergency Communications Districts based on a specific formula. The Davidson County Emergency Communications District was created by Metropolitan Nashville Ordinance No. 088-609. The Davidson County Emergency Communications District is made up of nine board members who are appointed by the Mayor. Each serves a four-year term. The Emergency Communications District Board oversees the use of the 9-1-1 surcharge fees that are allocated by the Tennessee Emergency Communications District. These funds must be used exclusively in the operation of the specific local Emergency Communications District.

BACKGROUND INFORMATION

9-1-1 is the nationwide primary emergency number that is designed to ensure quick response to persons calling for police, fire, or medical services. 9-1-1 calls made within the geographic boundaries of the Metropolitan Nashville Government are routed to the Emergency Communications Center which serves as the public safety answering point. The Emergency Communications Center provides both the 9-1-1 emergency number and the non-emergency number for citizens in need to call for help. More than a million calls are processed a year in the center. The center operates on a three-shift schedule to ensure 24 hours a day, 7 days a week, non-stop operation. There are 25 phone positions for call takers and 14 radio positions for dispatchers in the center when at full capacity.

The Emergency Communications Center's telecommunicators are trained to process each call based on the need of the caller and the type of request. Call information is entered into the Computer Aided Dispatching system. The Computer Aided Dispatching system keeps track of each call from when the call is received to when the responders leave the scene. There is a time stamp at each process point of the incident, and updates are made throughout the lifecycle of the call. The system has indicators on the number of calls on hold and hold times to enable management to address the issue as timely as possible.

The 9-1-1 center tracks the number of inbound calls, outbound calls, and abandoned calls using the Emergency Call Tracking System. The system allows 9-1-1 center staff to generate reports on various performance measures including call volume, call duration, and answering standards. Exhibit A lists the number of emergency and non-emergency calls received in the past two fiscal years.

Exhibit A – Emergency Communications Center Incoming Calls Statistic:

Fiscal Year	Total Incoming Calls	9-1-1 Calls	9-1-1 Calls Abandoned	9-1-1 Calls % Abandoned	Total 8600 Calls	% of 8600 Calls
2019	1,229,947	449,816	96,503	21%	780,131	63%
2020	1,131,432	412,317	54,064	13%	719,115	64%
Total	2,361,379	862,133	150,567	17%	1,499,246	63%

Source: Emergency Communications Center

The abandoned calls are those calls in the queue that were discontinued by the caller before they could be answered. Abandoned calls will be returned by an available telecommunicator later. 8600 calls are non-emergency calls from citizens and will be directed to applicable Metropolitan Nashville Government departments. Non-emergency calls make up over 60 percent of all the incoming calls.

OBJECTIVES AND CONCLUSIONS

1. *Are 9-1-1 calls answered in a timely manner and emergency calls dispatched in accordance with applicable policies and procedures?*

Generally, yes. The Emergency Communications Center established controls and procedures to ensure emergency calls are answered promptly and emergency service dispatched appropriately. A review of emergency call statistics indicates that the majority of 9-1-1 calls are answered in a timely manner. In addition, the analysis of the emergency call quality control review form showed emergency calls were dispatched in accordance with industry standards and best practices. However, proactive measures such as staffing analysis may be needed to ensure sufficient manpower to meet the increasing demand of emergency services from citizens. (See Observation A.)

2. *Are performance measures being accurately captured, tracked, and reported to appropriate parties to evaluate and manage actual performance?*

Generally, yes. Controls were in place to ensure the tracking and reporting of emergency call data is accurate and in compliance with industry standards. An analysis of the 9-1-1 calls and dispatch review indicates a high compliance rate on Metropolitan Nashville Police Department and medical calls and related dispatching. However, there was a lower compliance rate on Metropolitan Nashville Fire Department calls and related dispatching. (See Observation B.)

3. *Are 9-1-1 center employees properly trained to meet job expectations and adequately monitored to ensure proper protocols and procedures are being followed?*

Yes. Training records and certificates of 25 employees were reviewed for their applicable job requirements. All 25 employees maintained the required credentials and certifications. The Emergency Communications Center properly tracks and monitors required training according to International Academies of Emergency Dispatch standards and other related regulations.

4. *Are safeguards in place to ensure that the Computer Aided Dispatch system and 9-1-1 phone system are operating as intended and protected from being compromised?*

Yes. There are procedures covering the management and utilization of the Computer Aided Dispatch and 9-1-1 phone systems. Procedures include monitoring user activity, Computer Aided Dispatch System down time, security, and periodic testing of the phone and radio systems. In addition, a comprehensive continuity of operations guide is in place to ensure continued operations of the Emergency Communications Center during unusual or emergency situations. A third-party cybersecurity assessment report was completed in August 2020. The assessment evaluated the Emergency Communications Center systems to ensure there are no major cybersecurity issues to compromise the public safety communication needs.

AUDIT OBSERVATIONS

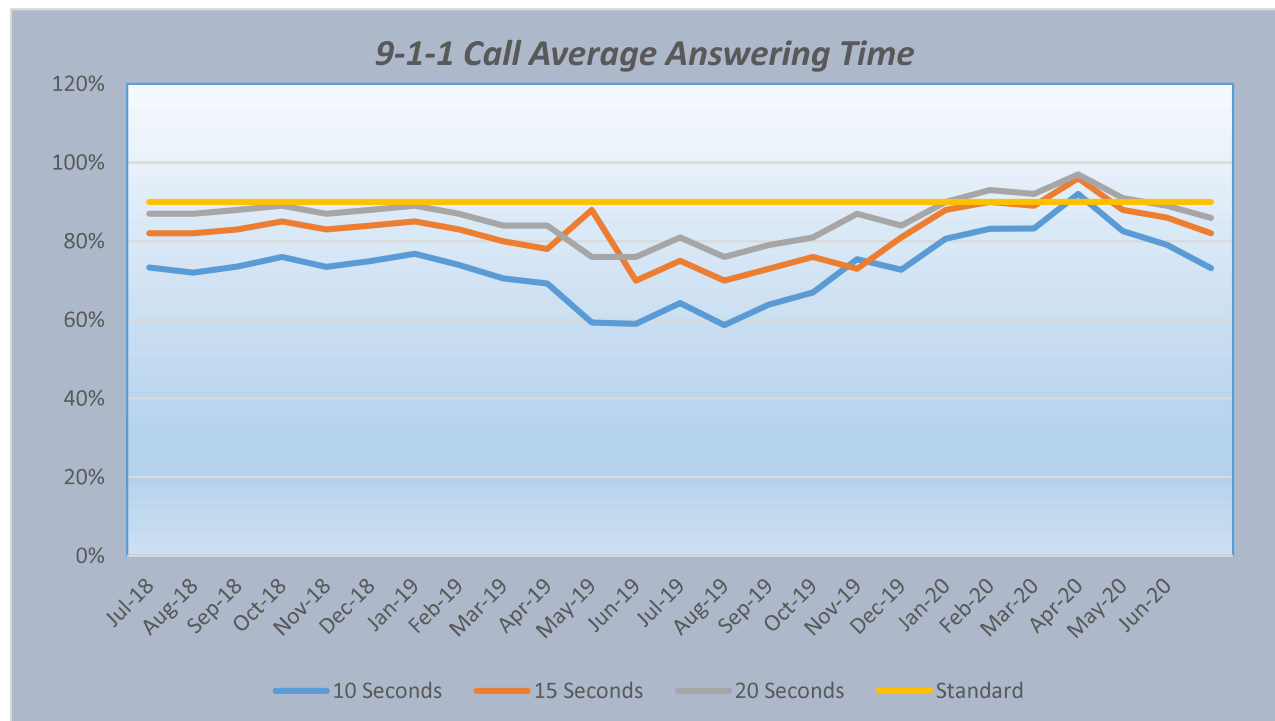
Internal control helps entities achieve important objectives and sustain and improve performance. The Committee of Sponsoring Organizations of the Treadway Commission, *Internal Control – Integrated Framework (COSO)*, enables organizations to effectively and efficiently develop systems of internal control that adapt to changing business and operating environment, mitigate risks to acceptable levels, and support sound decision making and governance of the organization. The audit observations listed are offered to assist management in fulfilling their internal control responsibilities.

Observation A – 9-1-1 Call Answering Time

The service delivery goal for Emergency Communications Center for answering 9-1-1 calls within an established time frame is not being met. The Emergency Communication Center follows industry standard NENA Call Answering Standard 56-005, which required 90 percent of 9-1-1 calls be answered within 10 seconds. The average 9-1-1 call answering time from July 1, 2018, to June 31, 2020, was about 8.88 seconds with approximately 73 percent of calls answered within 10 seconds. The cause for not meeting this metric is difficult to quantify but likely a function of staffing utilization. This ties into ensuring proper staffing levels and ensuring optimal utilization at peak times. Not meeting the service delivery goal increases the risk of more emergency needs not being met. Reevaluating and prioritizing staffing needs helps decrease this risk.

It is important to note that this standard was revised to reflect different metrics in April 2020. The name of the standard was changed to NENA Standard 020.1-2020 9-1-1 Call Answering Standard. The new standard requires 9-1-11 calls to be answered within 15 seconds 90 percent of the time and to be answered within 20 seconds 95 percent of the time. The chart below details the specific results of the Emergency Communication Center for the scope period.

Exhibit B: 9-1-1 Results to NENA Standard



Criteria:

- MENA Call Answering Standard/Model Recommendation 56-005.
- NFPA® 1221 Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems 7.4.1
- COSO, Control Activities—Principle 10—The organization selects and develops control activities that contribute to the mitigation of risks to the achievement of objectives to acceptable levels.
- COSO, Control Activities—Principle 12 – The organization deploys control activities through policies that establish what is expected and procedures that put policies into action.

Assessed Risk Rating:

Medium

Recommendation for management of the Department of Emergency Communications to:

Evaluate staffing needs based on call volume and available employee ratio to ensure the service delivery goal is achieved.

Observation B – 9-1-1 Fire Department Related Call Monitoring Process

Performance criteria used in monitoring fire related calls are, in some instances, not applicable or practical related to the objectives of the Emergency Communications Center. The Emergency Communications Center uses an in house developed standard for police dispatching on 9-1-1 calls. For fire and medical dispatching on 9-1-1 calls, the department uses the International Academies of Emergency Dispatch standard. On a monthly basis, telephone and dispatched incidents calls are randomly selected by the quality assurance reviewers to evaluate the compliance with respective standards. Based on the 2018 and 2019 annual reports, the compliance rate on police dispatching of 9-1-1 calls is above 98 percent for both 2018 and 2019. The compliance rates for fire 9-1-1 calls are 68 percent and 60 percent for 2018 and 2019 respectively. The compliance rates for medical 9-1-1 calls are 88 percent and 87 percent for 2018 and 2019 respectively.

The lower compliance rate in fire related calls is mainly due to several nonapplicable and impractical measures related to these standards. For example, specific wording must be strictly used in some instances to comply with the International Academies of Emergency Dispatch’s fire dispatch protocol. Minor variances from the wording that do not have a substantive impact on the quality of the service received are recorded as non-compliant.

Industry best practices selected by the organization that are misaligned to its operations will not reflect the true performance of the organization. Reevaluating and selecting the right industry standard will decrease this risk.

Criteria:

- Rules of Department of Commerce and Insurance Emergency Communications Board, Chapter 0780-06-02 Dispatcher Training Regulations.
- COSO, Control Activities—Principle 10—The organization selects and develops control activities that contribute to the mitigation of risks to the achievement of objectives to acceptable levels.
- COSO, Control Activities—Principle 12—The organization deploys control activities through policies that establish what is expected and procedures that put policies into action.

Assessed Risk Rating:

Low

Recommendation for management of the Department of Emergency Communications to:

Implement steps to ensure standards related to fire communications are being met. Evaluate available industry standards or best practices and adopt standards that align more closely to the operations and objectives of the Emergency Communications Center. Provide additional training, if applicable.

GOVERNMENT AUDITING STANDARDS COMPLIANCE

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our observations and conclusions based on our audit objectives.

METHODOLOGY

To accomplish our audit objectives, we performed the following steps:

- Studied applicable emergency communications laws and regulations.
- Interviewed key personnel within the Davidson County Emergency Communications Center.
- Evaluated internal controls currently in place.
- Conducted industry benchmark comparison and analysis.
- Performed analytics on 9-1-1 call statistics, call answering, and dispatching compliance rate.
- Reviewed sample selections to determine the effectiveness of internal controls.
- Considered risk of fraud, waste, and abuse.

AUDIT TEAM

Nan Wen, CPA, In-Charge Auditor

Bill Walker, CPA, CIA, CFE, Principal Auditor

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APPENDIX A – MANAGEMENT RESPONSE AND ACTION PLAN

We believe that operational management is in a unique position to best understand their operations and may be able to identify more innovative and effective approaches and we encourage them to do so when providing their response to our recommendations.

	Recommendations	Concurrence and Action Plan	Proposed Completion Date
<i>Recommendations for management of the Department of Emergency Communications to:</i>			
M	A.1 - Evaluate staffing needs based on call volume and available employee ratio to ensure the service delivery goal is achieved.	<p>Accept: The MNDEC accepts this finding, having actively worked throughout 2020 to attain compliance, complying with modifications made to existing standards and successfully completing basic training for all newly-hired personnel.</p> <p>Continuing our trend toward compliance with this service delivery goal is explained in more detail in the Acceptance Letter.</p>	May 28, 2021
L	B.1 - Implement steps to ensure standards related to fire communications are being met. Evaluate available industry standards or best practices and adopt standards that align more closely to the operations and objectives of the Emergency Communications Center. Provide additional training, if applicable.	<p>Accept: The MNDEC accepts this finding, recognizing an opportunity to align our performance operations with more broadly accepted performance standards measured by the National Fire Protection Association, within Standard 1221, specifically Chapter 7.</p> <p>To comply with these operational standards, the MNDEC is transitioning to a new guidecard vendor utilizing the Association of Public Safety Communications Officials Institute, replacing more rigid call protocols currently used from International Academy of Emergency Dispatch. This transition is explained in more detail in the Acceptance Letter.</p>	August 1, 2021

APPENDIX B – ASSESSED RISK RANKING

Observations identified during the course of the audit are assigned a risk rating, as outlined in the table below. The risk rating is based on the financial, operational, compliance or reputational impact the issue identified has on the Metropolitan Nashville Government. Items deemed “Low Risk” will be considered “Emerging Issues” in the final report and do not require a management response and corrective action plan.

Rating	Financial	Internal Controls	Compliance	Public
HIGH	Large financial impact >\$25,000 Remiss in responsibilities of being a custodian of the public trust	Missing, or inadequate key internal controls	Noncompliance with applicable Federal, state, and local laws, or Metro Nashville Government policies	High probability for negative public trust perception
MEDIUM	Moderate financial impact \$25,000 to \$10,000	Partial controls Not adequate to identify noncompliance or misappropriation timely	Inconsistent compliance with Federal, state, and local laws, or Metro Nashville Government policies	Potential for negative public trust perception
LOW/ Emerging Issues	Low financial impact <\$10,000	Internal controls in place but not consistently efficient or effective Implementing / enhancing controls could prevent future problems	Generally complies with Federal, state, and local laws, or Metro Nashville Government policies, but some minor discrepancies exist	Low probability for negative public trust perception
Efficiency Opportunity	An efficiency opportunity is where controls are functioning as intended; however, a modification would make the process more efficient			