



*Prepared for the
State of Wisconsin*

OEC/ICTAP

Office of Emergency Communications / Interoperable Communications Technical Assistance Program

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Milwaukee PSCC Assessment
March 2018

**Milwaukee, Wisconsin
Public Safety Communications Center
Operational Assessment**

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Contents

EXECUTIVE SUMMARY.....	1
INTRODUCTION.....	4
METHODOLOGY.....	5
Purpose	5
Scope	5
In-Person Interviews.....	6
On-Site Observations	6
INFRASTRUCTURE and RESOURCES.....	7
Organizations	7
Technology Systems	8
Police Department 9-1-1 Communications Center.....	11
Fire Department 9-1-1 Communications Center	13
CITY OF MILWAUKEE 9-1-1 CALL PROCESSING PROCEDURES	15
OVERVIEW/RECOMMENDATIONS.....	16
Coordination between MPD and MFD Communications Centers	16
Working Environment	19
Training.....	21
Recruitment	26
Leadership and Supervision	27
Continuity of Operations Plan (COOP)	29
CONCLUSION	30
APPENDIX A: GLOSSARY.....	31
APPENDIX B: ORGANIZATION CHARTS.....	33
APPENDIX C: STANDARDS AND RESOURCES	37

EXECUTIVE SUMMARY

(Note: The observations and recommendations included in this report are based on the information collected during the ICTAP team visit during early August 2017 and do not take into account any subsequent staffing and procedural changes made since that time.)

Subject Matter Experts (SMEs) from the Department of Homeland Security's (DHS) Interoperable Communications Technical Assistance Program (ICTAP) conducted a three-day review of the Milwaukee Police Department (MPD) and Milwaukee Fire Department's (MFD) 911/ dispatch center operations on August 1-3, 2017, to develop a general overview of their operations and to serve as the basis for this assessment and recommendations for organizational change. The scope and parameters of this assessment were based on conversations with the Policy and Communications Director of the Milwaukee Fire and Police Commission.

This document explains the methodology used to prepare this assessment; a description of current resources in the Milwaukee area; a schematic of call processing procedures; an overview of current operations; and a series of recommendations to address the issues identified.

STUDY TEAM APPROACH

During their three-day visit, it was apparent to the SMEs that the City of Milwaukee and the MPD and MFD are fully committed to provide the best service to the citizens and visitors of the city. However, both the separately managed MPD and MFD communications centers challenges are similar to many other public safety agencies around the nation, to include:

- **Duplicate Handling of 9-1-1 Calls:** Milwaukee's 9-1-1 emergency number is delivered to the MPD (primary Public Safety Answering Point (PSAP)) with the MFD serving as the secondary PSAP. Each agency operates on separate radio talkgroups and utilizes different computer aided dispatch (CAD) systems. As a result, all 9-1-1 calls are first received by MPD Call Takers who determine if the caller requires fire or medical assistance. If fire or medical assistance is needed, they transfer the call to a MFD Call Taker who again questions the caller and enters information into the MFD CAD. This requirement of having the initial 9-1-1 call handled twice for a fire or medical incident causes delays and frustration for the caller and could lead to possible delays or miscommunications of the information.
- **Staffing:** The staffing problems facing the MPD and MFD include a high turnover rate and prolonged vacancies, which are adversely impacting operational efficiency in both the communications centers. These staffing issues have, in turn, led to increased use of sick time, denial of leave requests, and increased employee costs due to overtime and continual testing and training requirements.

Milwaukee has recently changed its recruitment procedures to address the prolonged vacancies and is establishing a career ladder for civilian employees to provide advancement possibilities for all employees.

In addition to examining the call handling and staffing issues, the ICTAP team spoke extensively with Public Safety Communications Center (PSCC) staff from both agencies to assess current operations at both PSCCs and to develop recommendations intended to enhance efficiency and boost employee performance and morale.

RECOMMENDATIONS

The following is a capsulized list of the recommendations provided in the body of the document.

Coordination between MPD and MFD Communications Centers

- Eliminate duplication of effort when handling non-MPD calls by establishing a unified call taking function for both MPD and MFD calls.

Working Environment

- Implement practical and no-cost steps to boost employee morale; this will include employee recognition programs, additional training, and consistent enforcement of policies and procedures.

Training

- *MFD*: Assign an official to oversee the Fire Equipment Dispatcher (FED) training program on a full-time basis.
- *MPD*: Enhance initial training and formalize in-service training.

Recruitment

- Expand and bolster recruitment efforts through the use of community outreach programs to reach a larger audience of those looking for employment.

Leadership and Supervision

- Promote awareness of communications center roles and responsibilities and establish mechanisms for employee input.
- Ensure consistent enforcement of policies, procedures, leave rules, and disciplinary actions.

Continuity of Operations Plan (COOP)

- Develop a formal Continuity of Operations Plan for each communications center

CONCLUSION

The City of Milwaukee is facing many challenges to sufficiently staff and efficiently operate two separate PSCCs, plus deal with the daily procedural, administrative and financial challenges faced by public safety agencies across the nation. In order to accomplish their goal of providing the best service to its citizens and visitors, they must look for ways to address their current staffing, procedural, morale, and financial challenges. This report will address the challenges and provide recommendations so actions can be taken to address them.

INTRODUCTION

The City of Milwaukee requested support from the Department of Homeland Security (DHS) Office of Emergency Communications (OEC) Interoperable Communications Technical Assistance Program (ICTAP) to provide an assessment of Milwaukee's current public safety communications/9-1-1 center operations.

As the largest public safety communications facility within the State of Wisconsin, Milwaukee receives approximately 1,000,000 calls per year, which includes 400,000 9-1-1 calls, and 600,000 non-emergency calls. Currently, the MPD and MFD operate separate public safety communications centers with different operating procedures, reporting structures, and technology systems. The MPD center serves as the primary 9-1-1 PSAP for Milwaukee and the MFD serves as a secondary 9-1-1 PSAP, handling emergency medical and fire calls for service.

The City of Milwaukee is looking for short-term opportunities to support its long-term vision of enhanced interoperability and integration between the MFD and MPD communications center operations. The ultimate goal is to ensure its public safety communications/9-1-1 components offer the most effective and professional level of service possible to Milwaukee's residents and visitors.

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METHODOLOGY

Purpose

The purpose of this OEC technical assistance initiative is to provide the City of Milwaukee an operational assessment of the MFD and MPD's PSCC operations.

During its August 1-3, 2017, on-site assessment the OEC team of subject matter experts (SMEs) reviewed the following elements of the MFD and MPD operations:

- Infrastructure and Resources
- Call Processing Procedures
- Coordination between the PSCCs
- Working Environment
- Training
- Recruitment
- Leadership
- Continuity of Operations Plan (COOP)

The objective of this assessment is to provide an overview of the current state of these elements and to provide recommendations consistent with industry practices, model examples, or successful initiatives used in other jurisdictions. This report is intended to support Milwaukee's efforts of enhancing the overall effectiveness and interoperability of its critical 9-1-1 communications services across public safety jurisdictions and disciplines.

Scope

The SMEs conducted an on-site review on August 1-2, 2017 to develop a general overview (snapshot) of operations as they currently exist in the Milwaukee 911/ dispatch center. These findings are included in the high-level report that will provide options for organizational change. The project was initiated via a scoping call and follow-up calls with the Policy and Communications Director of the Milwaukee Fire and Police Commission. At the conclusion, a brief-out was held on August 3rd with the Policy and Communications Director of the Milwaukee Fire and Police Commission, the Wisconsin Statewide Interoperability Coordinator, and the Milwaukee Emergency Management Director. The brief provided a short discussion of the initial observations; including hiring practices, staffing, training, call handling procedures, and operational procedures.

The approach and methodology used by the ICTAP team in completing the research for the study required gathering statistical data; reviewing general orders, standard operating procedures and other relevant documents; interviewing stakeholders; and an on-site examination of the facility, as well as observation of the police and fire departments' dispatch/call-taking operations.

In-Person Interviews

The ICTAP team conducted interviews with personnel in the following positions:

- Police Dispatch Captain
- Fire Dispatch Manager
- Police Lieutenants and Sergeants
- Police and Fire call-takers
- Police and Fire dispatchers
- Police and Fire technical staff

The personnel, who had a range of 1 to 20 plus years of experience in their position, were asked a core set of questions, with additional questions asked based on the individual's position within the organization and in some cases to ask them to expand upon their answers. In general questions involved current practices, morale, organizational culture, organizational strengths and weaknesses, training including continuing education, general operations, operating systems, technology (CAD), records, phone and radio systems), leadership, and governance. During the interviews, a series of questions regarding facilities, operations, technology and staffing were asked to provide the ICTAP team a greater understanding of the current operations.

On-Site Observations

The SMEs also observed day-to-day activities to gain additional insight and information. They observed the communication facilities, as they relate to the capability to support current operations and determine possible changes in the future. Operations observations included call-taking, call transfers, police and fire dispatching, service level staffing, training, associated fire and police Standard Operating Procedures (SOPs), pre-arrival instructions, and mutual aid requests. In addition, the team was able to review the police CAD, the fire CAD, the 9-1-1 telephone system, the radio system and overall systems support and maintenance.

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INFRASTRUCTURE and RESOURCES

Organizations

City of Milwaukee Government

Milwaukee has a mayor-council form of government with a strong-mayor structure. The Mayor oversees the day-to-day operations of the City, with the Common Council retaining control over the City's policies and finances. A Common Council of 15 elected members, called Aldermen, represent each of City's 15 districts. The Common Council exercises all policy-making and legislative powers of the City, including adoption of ordinances and resolutions, approval of the City's annual budget, and enactment of appropriation and tax levy ordinances. The Council also has approval over the Mayor's appointments of cabinet heads who direct the daily operations of the City's departments, while the Mayor and Common Council retain control over the departmental budgets.

The City is also served by the independently elected City Attorney, Comptroller and Treasurer who are not under the oversight of the Mayor or Common Council.

All elected positions in the City of Milwaukee government serve four-year terms. The Mayor, City Attorney, Comptroller, and Treasurer are all elected on a city-wide basis. Alderpersons are elected by their wards.

Milwaukee Fire and Police Commission

The Milwaukee Fire and Police Commission is established in the City Charter and oversees all aspects of Fire Department and Police Department operations. It is comprised of seven part-time civilian Commissioners and a full-time Executive Director, who are appointed by the Mayor and approved by the Common Council

The Commission establishes overall public safety policy, while the chief of each department manages daily operations and implements the Commission's policy direction and goals. The Commission is responsible for:

- Establishing the Fire and Police Departments' recruitment and testing standards for employees
- Disciplining employees for misconduct
- Adjudicating appeals from employees disciplined by their Chief
- Independently investigating and monitoring citizen complaints

Milwaukee Fire Department

The MFD provides fire protection and emergency medical services to the City of Milwaukee, Wisconsin. The department, which had 36 fire stations at the time of the ICTAP team visit, is responsible for an area of 96.12 square miles with a population of 594,833. The agency has a total of 950 employees (839 sworn firefighters and 111 civilians), of which 600 firefighters are certified emergency medical technicians and 180 firefighters are certified paramedics. Agency apparatus includes 35 engines, 15 trucks, 12 paramedic units, and a fireboat. In 2015, the agency responded to 84,503 calls for service, with a clear majority (70,504 or 83%) being medical in nature.

The MFD has three bureaus (Operations, Emergency Medical Service, and Training/Education and Support) each headed by an Assistant Chief. The Communications Section is under the Support Bureau in the Technical Services Division.

The MFD and the Support Bureau organization charts are provided in Appendices B1 and B2.

Milwaukee Police Department

The MPD has an authorized strength of 2,000 sworn officers and 700 civilians. The city is 96.12 square miles with a population of 594,833 and served by seven patrol districts. The MPD has three bureaus (Neighborhood Patrol Bureau, Investigations & Intelligence Bureau, and the Risk Management Bureau). The Technical Communications Division is part of the Risk Management Bureau.

In 2015, the Technical Communications Division received over 853,000 calls resulting in more than 260,000 calls for service.

The MPD and the Technical Communications Division organization charts are provided in Appendices B3 and B4.

Technology Systems

The MPD and MFD 9-1-1 Communications Centers share a common 9-1-1 telephone system. The 9-1-1 telephone system consists of computer workstations at Call Taker positions containing all incoming 9-1-1 trunked lines and other 10-digit non-emergency numbers for the communications centers. The system uses an Automatic Call Distribution function to evenly and efficiently route incoming calls to available Call Takers. The 9-1-1 telephone system workstations display caller information and location for 9-1-1 calls and provides Phase II location information for wireless callers. The MPD Communications Center serves as the primary PSAP, initially answering all incoming 9-1-1 calls within Milwaukee. When necessary, calls may be transferred to the MFD

Communications Center or to other PSAPs. Calls transferred to the MFD or other PSAPs using compatible 9-1-1 telephone technology will also receive the caller identification and location information.

Neither MPD or MFD are currently configured to receive text-to-9-1-1 calls. The current 9-1-1 telephone system platform is not capable of implementing Next Generation 9-1-1 (NextGen 9-1-1) features.

Radio

The City of Milwaukee has an 18 site Harris OpenSky® radio system. This system is used by all city agencies. Both MPD and MFD have common talkgroups on the system which provides interoperability between the agencies. The system is maintained by eight radio technicians that work for the MPD IT Services Division. Staff advised that there has been discussion about the City loading some of the Milwaukee County talkgroups into the MPD and MFD radios, which will allow for greater interoperability during mutual aid situations. In addition they advised that they will also be exploring the possibility of adding the use of Wisconsin Interoperable System for Communications (WISCOM) talkgroups.

ShotSpotter

ShotSpotter is a detection system that has been installed with sensors in various locations within Milwaukee, which is designed to alert law enforcement of potential gunshots. ShotSpotter workstations are located on the main floor of the MPD 9-1-1 Communications Center and in the Communications Center supervisors' office, which is currently staffed primarily with sworn MPD sergeants. The system provides an audible and visual alert when a potential gunshot is detected, along with a location of the source. Personnel can replay the audio to hear what the system recorded and can determine whether the source was stationary or moving. Potential gunshot detection calls from the ShotSpotter system are entered into CAD and dispatched to MPD officers to investigate.

StarChase®

The MPD has deployed technology designed to mitigate hazards associated with vehicle pursuits. Certain MPD vehicles are equipped with hardware mounted to the front of a patrol vehicle which launches an adhesive canister or "dart" that attaches to the rear of the target vehicle. The dart contains a GPS tracking mechanism which, once attached to the target vehicle, continuously transmits its current location. The location of deployed darts can be monitored by MPD officers on mobile data computers (MDCs), and by workstations in the MPD 9-1-1 Communications Center. This provides the ability for MPD officers to be guided to the target vehicle location, minimizing the need for an active pursuit under hazardous traffic conditions. The replacement and rehab of darts which were deployed and recovered are the responsibility of the sergeants assigned to

the MPD 9-1-1 Communications Center. (Several interviewees advised the current pursuit policy is being debated internally and externally.)

Video Camera Monitoring

There is a side room adjacent to the MPD Communications/9-1-1 Center dedicated to the purpose of monitoring multiple video cameras placed throughout the city. Many of the cameras are owned by MPD and placed on City of Milwaukee Department of Public Works utility poles. They are connected and accessed via the City's Information Technology and Management Division fiber network. There are also several additional cameras available through a public-private partnership known as the Urban Institute Project, primarily concentrated in the south area of the city. The video camera network is continuously expanding, with an additional 60 cameras planned in the near future.

MPD officers are assigned to the camera monitoring room with access to several video monitors and the MPD Communications/9-1-1 CAD system. Officers proactively watch several camera views around the city while simultaneously checking the CAD system for high priority or other significant calls. When certain types of calls are entered into CAD for dispatch to patrol units, officers in the camera monitoring room adjust cameras to view the location of the call. Officers then update the CAD information to reflect anything they are observing via the camera views, and, where appropriate, will also play back the time period prior to the call to determine if any additional relevant information can be obtained. Information entered into each CAD call by officers in the camera monitoring room is immediately available to responding patrol units and to police dispatchers.

The City Watch System

The City Watch system is used to generate notifications to command/administrative staff and/or City representatives in accordance with established policy and procedures. Notifications are used to provide the recipients with a brief description of major incidents or significant events. Senior Emergency Communications Officer (ECO) personnel or sergeants in the MPD 9-1-1 Communications Center are responsible for obtaining the necessary information, creating the messages, and sending the notifications in a timely fashion.

Police Department 9-1-1 Communications Center

Staffing and Resources

The MPD 9-1-1 Communications Center is responsible for receiving all incoming 9-1-1 calls, and for processing law enforcement calls for service within the City of Milwaukee. Personnel in the MPD 9-1-1 Communications Center perform multiple functions and are collectively responsible for overseeing and managing MPD calls for service. Call taker and dispatcher positions are staffed by personnel classified as ECOs. Call taker positions were traditionally staffed by an ECO-I and dispatchers were classified as an ECO-II; however, there is a current initiative to cross-train all personnel and classify Call Takers as ECO-II and phase out the ECO-I position.

The following provides a short explanation of the duties of each of the positions in the MPD's Communications Center:

Call Takers

MPD Call Takers are responsible for receiving and processing all incoming telephone calls. Depending on the shift and time of day, there are normally a minimum of seven Call Takers on duty. MPD Call Takers process incoming calls in one of the following manners:

- Obtain information and enter the call into the CAD system for dispatch by the Police Department
- Transfer the caller to MFD Call Takers for fire or emergency medical response
- Transfer the caller to another jurisdiction, discipline, or agency Public Safety Communications Center for their response
- Provide caller instructions or refer calls not requiring public safety services or response to another entity

Dispatchers

MPD Dispatchers are responsible for managing police radio traffic and dispatching police service calls to MPD personnel. During each shift, there is normally one MPD Dispatcher for each of the MPD's seven districts, plus one relief Dispatcher. An additional MPD Dispatcher position is responsible for local/state/national Criminal Justice Information System database inquiries in response to requests for police officers (e.g., wanted/missing persons, vehicle information, driver license checks, stolen articles, etc.).

Differential Police Response (DPR)

DPR positions are assigned to each shift and staffed by sworn law enforcement personnel, who are typically on temporary light-duty status. Multiple DPR workstations are set up along one side wall inside of the Communications Center. DPR staffing levels vary among the three shifts. DPR personnel can assist with calls for police assistance by providing information or guidance over the phone, thus eliminating the need to dispatch an officer to the scene. Call takers initially route MPD calls for service to MPD District Dispatchers. If an MPD District Dispatcher determines that a call can be handled over the telephone, they will route the call via CAD to the DPR workstations. A DPR officer will then contact the caller, and if they can resolve the problem over the telephone, they enter the disposition into CAD and close the call. If the call requires an in-person police response, the DPR officer will route the call to the appropriate MPD District Dispatcher.

Telephone Reporting Unit (TRU)

TRU positions are responsible for handling MPD calls for service that require a police report, but can be resolved over the telephone, eliminating the need to dispatch an officer to the scene. TRU positions are staffed with Police Aides, with two to three typically assigned per shift. Calls handled by the TRU are processed in a manner similar to those assigned to the DPR. Citizens may also contact TRU personnel directly via the number on the MPD web site.

Video Camera Monitoring

There are multiple video camera feeds throughout the city from traffic intersections/roadways, significant public locations, government buildings, and from private partnerships. During each shift at least one sworn MPD officer is assigned to staff the “pole camera” room. These officers have access to multiple video monitors which they can control to view the desired feeds with pan-tilt-zoom functions. They can also replay archived footage when appropriate or upon request. These officers continually monitor a CAD workstation to view calls for service, and, when applicable, can select camera views corresponding to the caller's location. They enter their observations into CAD for the appropriate call, which can be viewed by MPD Dispatchers and by officers responding on their MDCs.

Fire Department 9-1-1 Communications Center

Staffing and Resources

The MFD 9-1-1 Communications Center is responsible for receiving and processing emergency medical services (EMS) and fire calls within the City of Milwaukee, West Milwaukee, and for other suburb fire departments in accordance with established shared services agreements. Personnel in the MFD 9-1-1 Communications Center perform multiple functions with primary responsibility for overseeing and managing EMS and fire calls for service. Personnel are classified as Fire Equipment Dispatchers (FEDs) and are cross-trained to perform all call taking and dispatch functions.

Call Processing

FEDs are responsible for receiving and processing all incoming telephone calls, plus 9-1-1 calls for EMS or Fire assistance that have been redirected from the MPD Communications Center. Roughly 85% of the calls received by the MFD Communications Center are for medical emergencies.

A minimum of three FEDs are on duty on every shift with additional personnel being assigned during scheduled events which typically generate increased caller volume. The MFD uses the following procedures to process calls for fire and medical services:

- For fire calls, a FED obtains the caller's information and enters the call into the CAD system to dispatch the needed apparatus and personnel.
- For medical emergencies, a FED questions the caller using standardized Emergency Medical Dispatch (EMD) protocols and enters the call in the CAD system for dispatch and provides pre-arrival/post-dispatch medical instructions.

Dispatch Process

Once the caller information is entered into the CAD system, EMS and fire calls are dispatched to the appropriate apparatus by a FED. FEDs are responsible for managing all radio traffic associated with EMS and fire service calls until their completion. When responding to an active fire, the FD usually assigns a dedicated FED and specific radio channel/talkgroup to monitor the associated radio traffic.

Supervision

Each shift is supervised by a Senior FED, who is responsible for directing shift personnel and overseeing all operational and administrative matters. Senior FEDs can also serve as an additional FED to relieve a staff member; to cover during an unexpected absence; or to deal with high caller volume.

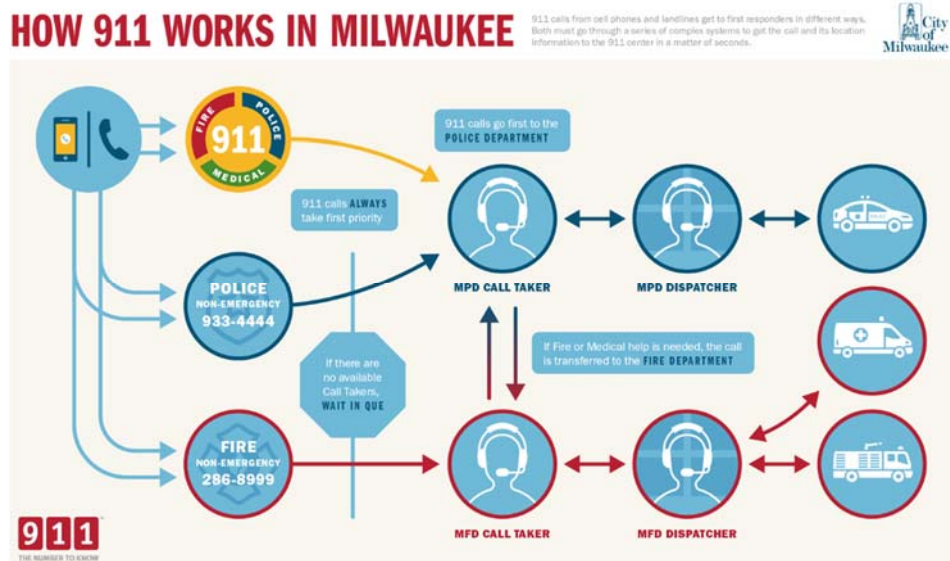
Quality Assurance (QA) Review

The EMD program requires QA reviews to ensure EMS calls are being processed appropriately and in accordance with established protocols. Senior FEDs are responsible for conducting a QA review on a specified number of the EMS calls handled during their shifts.

CITY OF MILWAUKEE 9-1-1 CALL PROCESSING PROCEDURES

MPD and MFD operate separate communications centers which are adjacent to each other through a hallway on the same floor of the MPD's 3rd District building. The MPD 9-1-1 Communications Center serves as the primary PSAP for all 9-1-1 calls within the City of Milwaukee. MPD Call Takers receive all incoming 9-1-1 calls, and process the calls in the following manner:

- **Calls for MPD:** MPD calls are entered into the MPD CAD system by the receiving Call Taker and routed to the appropriate MPD Dispatcher.
- **EMS or Fire Calls for MFD:** EMS or fire calls for MFD (or another fire rescue agency dispatched by MFD) are transferred by the MPD Call Taker to a Call Taker in the MFD Communications Center. Once connected to MFD, the MPD Call Taker drops off the line. The MFD Call Taker processes the call for EMS and/or fire response and enters it into the MFD CAD system.
- **Calls for Both MPD and MFD:** Calls requiring dispatch and response by both MPD and MFD are first received by an MPD Call Taker. The MPD Call Taker obtains initial information and then conferences the call with an MFD Call Taker. The MPD Call Taker remains on the line while the MFD Call Taker obtains information for EMS/fire response. Both Call Takers enter the call information into their respective CAD systems for dispatch. Depending on the type of call, either or both Call Takers may remain on the line to obtain additional details or until responders arrive.
- **Calls for Public Safety Agencies Outside Milwaukee:** Calls being handled by a public safety agency not dispatched by MPD or MFD are transferred to the appropriate PSAP to process and dispatch.
- **Non-Public Safety Calls:** If the caller is not requesting public safety services, they are provided with instructions, as appropriate.



OVERVIEW/RECOMMENDATIONS

Coordination between MPD and MFD Communications Centers

OVERVIEW

Effective coordination and communication between the MPD and MFD Communications Centers is absolutely essential to efficiently process the multitude of calls. The two centers most commonly communicate by telephone or by literally walking from one center to the other and communicating in person.

The most common challenges facing the MPD and MFD as they work together include:

Working a Common Incident/Event

When MPD and MFD resources are assigned to the same incident/event, incident commanders require rapid situational awareness updates and other information to make effective and timely operational/tactical decisions. Since MPD and MFD operate on separate radio channels and different CAD systems, significant information must be relayed by phone or in-person between the two communications centers. This manual relaying of information has the potential to result in delays or miscommunications. There are multiple examples when critical safety information reported by on-scene MPD personnel must immediately be communicated to MFD apparatus, and vice-versa. When either communications center is maintaining contact with a 9-1-1 caller who provides additional and significant information, it is imperative that information be quickly and manually relayed to the other communications center to update responding personnel.

9-1-1 Call Transfer Process

9-1-1 calls requesting EMS or fire response are currently answered by MPD and then transferred to MFD after the MPD Call Taker obtains basic information. MPD Call Takers do not always announce the transfer or provide the MFD FED with all the information obtained from the caller. This frequently results in confusion and/or frustration by the caller who doesn't understand the process and is being asked by a second 9-1-1 center the same questions they just answered.

In cases where both MPD and MFD resources are dispatched to the same call, callers may first be questioned by an MPD Call Taker; then transferred to an MFD FED; and finally returned to another MPD Call Taker who will ask for additional details to assist the law enforcement response.

Multiple Calls for the Same Incident

High visibility incidents such as vehicle crashes, fires, medical emergencies in public places, etc., often generate a multitude and simultaneous calls about the same incident. This can quickly overwhelm a 9-1-1 center. In these cases, MPD Call Takers answering the 9-1-1 calls will transfer the non-law enforcement calls to the MFD Communications Center. Since MFD typically has 3-4 FEDs on duty, multiple calls can quickly overburden MFD answering positions. MPD Call Takers may be attempting to transfer several calls at once into the MFD Communications Center, not realizing other MPD Call Takers are receiving calls regarding the same incident, and transferring them to the MFD. This frustrates callers who have to endure lengthy delays because all MFD FEDs are unavailable because they are busy with other callers. Improved coordination is needed to minimize delays for callers and to ensure vital information is accurately and quickly handled, to prevent frustration on the part of callers and Call Takers, and to reduce the possibility that unrelated calls may be delayed or dropped in the process.

Recommendations

The goal of any public safety communications agency is to provide its field units, residents, and visitors with effective service. This includes quick and efficient handling of calls and ensuring that both police and fire units receive all necessary information for a proper and timely response. The current process of having the initial 9-1-1 call handled twice for a fire or medical services response causes delays and frustrates the caller.

The ICTAP team offers the following short-term and long-term recommendations to reduce the duplicate handling of the 9-1-1 calls requiring a fire or EMS response:

Short-Term

- Explore methods of coordinating responses to common incidents among the two disciplines when the separate MPD and MFD Communications Centers are assigned to the same calls.
- Assess external call handling processes to improve the efficiency of the call transfer process during MFD-only calls and MPD-MFD calls.
- Consider installing a single CAD system for use by both fire and police or establish an interface between the two existing CAD systems.
- Identify and use a common radio talkgroup for PSAP- to-PSAP communication between MPD and MFD dispatch and with surrounding agencies that have mutual aid agreements.
- Consider removing services unrelated to the primary PSCC function. Many times, services are placed in the PSCC because of its 24X7 functionality. These services can place an additional workload on the PSCC staff.
 - For example, relocate the MPD's StarChase, DPR, and TRU functions.

Long-Term

Establish a unified call taking function and a common CAD to process both MPD and MFD calls. This can be accomplished by either:

- Identifying one agency as the primary PSAP to handle calls for both departments.
- Having Fire and Police Commission establish a combined PSCC with responsibility for handling call taking and dispatching for both the MPD and MFD that reports to the Commission and is independent of fire and police management.
- The Fire and Police Commission would be advised to establish a primary task group, with sub-groups, to research, recommend, and manage the process of consolidation. Sub-groups could include:
 - Governance, Leadership, Supervision
 - Human Resources
 - Finance/Budget
 - Policies and Procedures
 - Technology
 - Facility
 - Operations
 - Training

(The sub-groups should have representation of both management and employees, including the ECOs and FEDs, to promote buy-in from all parties.)

Working Environment

OVERVIEW

The working environment in both centers is heavily impacted by employee morale. While there are a few differences in each center, there is similarity in several areas, to include staffing. PSCC staffing is a consistent problem across the nation. Studies indicate that the average turnover rate in a PSCC is 17%-19% a year. The ICTAP SMEs could not obtain the exact turnover rate for the city's PSCCs; however, based on the number of vacancies, it is believed they are in line with or slightly above the national average.

The high vacancy rate places stress on the police and fire communications staffs as employees are many times required to work a second shift to cover for an employee calling in sick. This in turn can impact customer service, as the employee is tired from working the previous shift. Staffing shortages also hinder an employee's opportunity to use their approved leave. In some cases, employees will call in sick because it is the only way they can get a day off.

Both centers have experienced a heavy use of the Family Medical Leave Act (FMLA), which requires employers to provide leave under certain conditions. Staff in both PSCCs noted that this has created scheduling problems because the system is being abused. In 2016, the Fire PSCC reported that 14 of its 24 employees used FMLA leave. Statistics were not provided to the ICTAP team from the Police PSCC; however, ECOs and management believe some employees are abusing the system.

A 2012 study conducted by Northern Illinois University Professor Heather Pierce showed 9-1-1 telecommunicators have the same increased risk of developing duty-related post-traumatic stress disorder as their counterparts in law enforcement. Employees in both PSCCs spoke openly about the stress levels they are facing and believe this problem is not being addressed by management.

Police

Many employees interviewed commented on the lack of consistency from shift to shift and district to district with respect to the application of policies, to include proper clothing and sick leave regulations. ECO-IIs stated the problem includes dispatching procedures and the handling of service calls, which is confusing for personnel newly assigned to a shift and/or district.

The staff also believes discipline is applied unevenly, stating that many minor infractions are overly disciplined, which impacts new hires, since they lack call handling experience.

Employees in both centers believe the development of the career ladder program should help to address some concerns about supervision, particularly the concern that the appointment of some civilian supervisors is based on favoritism, not merit. In addition, some employees are skeptical about the promotional test and think the results are predetermined since the test is developed in-house by PSCC employees.

Recommendations:

- Consider developing a labor/management team to review and address sick leave and FMLA related issues. This team should include human resource personnel from the City who are knowledgeable regarding the FMLA.
- Consider establishing a critical stress management team comprised entirely of telecommunicators. This team could be designated as a regional asset and include telecommunicators from surrounding agencies.
- Consider developing an objective program to formally recognize employees from both PSCCs.
- Educate the public regularly and highlight the PSCC's functions and contributions to the City and its citizens and the individual achievements of PSCC staff members during National Public Safety Telecommunicators Week.
- Recognize PSCC staff members at monthly, quarterly and annual department functions and award ceremonies.
- Develop a plan to promote consistent and equal application and enforcement of rules, policies and regulations by PSCC supervisors on all shifts.

Training

OVERVIEW

MFD and MPD follow similar approaches for training, with new hires trained in groups rather than individually.

Fire Department

Following their recruitment and selection process, new FEDs are scheduled for training in groups of two, three or four (with no more than four). The training is conducted in multiple phases over several months and upon successful completion, new employees will be capable of functioning in all MFD communications center positions. The FED training takes approximately six months, and each new employee is required to serve a one-year probationary period.

The third shift Senior FED is primarily responsible for overseeing the training process, in addition to performing their normal Senior FED position duties. This Senior FED enlists other staff to assist with the training process when possible. Each trainee is assigned a primary and secondary Communications Training Officer (CTO), who receive additional compensation for their training assistance. Trainees normally work with their primary trainer and are paired with their secondary trainer when the primary is unavailable. Each trainee receives a Daily Observation Report while in training, which is prepared by his/her primary or secondary trainer.

The following elements summarize each step of the FED training process:

- **Classroom Training:** The first phase of the training consists of approximately four weeks of classroom training, to include a general orientation to the MFD and the communications center; an overview of policies/procedures, and specific focus on the Call Taker functions. The classroom training also includes “field trips” to significant locations such as MFD stations, special teams’ facilities, and various MFD bureaus. EMD and cardio-pulmonary resuscitation (CPR) certifications are also completed during the classroom training sessions.
- **On-the-Job Call Taker Training (OJT):** Following classroom training, new trainees are assigned to work six-to eight weeks with a designated Call Taker trainer. Trainees are only assigned to the first and second shifts (days and evenings) to ensure sufficient call activity and maximize the training experience. Trainees typically spend half their time on the first shift and half on the second shift. During this phase the trainees receive instruction from the trainer and monitor their trainers as they process incoming fire and medical calls. When it is deemed appropriate, the trainee begins processing incoming calls under the guidance of the trainer. Call Taker trainees are constantly evaluated during this phase and not included in determining minimum staffing requirements for each shift.

- **Assigned Solo to Call Taker Position:** After successfully completing the OJT phase, new Call Takers are assigned to a Call Taker position. Call Takers in this phase work solo and are counted when maintaining minimum shift staffing requirements. This phase lasts approximately eight weeks, allowing new Call Takers to gain substantial experience prior to beginning radio dispatcher training.
- **FED Classroom Training:** The next training phase consists of approximately three weeks of additional classroom training, focused on fire dispatch functions. Topics covered include dispatch protocols, shared services agreements with suburban fire departments, and the Mutual Aid Box Alarm System (MABAS).
- **On-the-Job FED Training:** After completing classroom training, trainees are assigned to a trainer and begin OJT as a FED. This phase lasts four to six weeks during which trainees are closely monitored, instructed, and evaluated by their trainer. FED trainees are temporarily issued a portable fire radio to monitor radio traffic and gain an understanding of the flow of the fire dispatch process.
- **Final Monitoring:** The final phase of training lasts two weeks during which the trainee functions as a completely solo FED and is closely monitored by a trainer. At the end of the two-week period, the trainee is given a final test and upon successful completion is released from training. The new FED is placed on probation for the remainder of the one-year probationary period and is tested/quizzed every few weeks until her/his probationary period is completed.
- **Manual Dispatch Training:** Training for FEDs also includes operating in a “manual mode” when the Computer Aided Dispatch (CAD) system is unavailable. Due to the current frequency of CAD downtime occurrences, the employees have become proficient operating manually in the absence of CAD.
- **Continuing Education Units (CEUs)/In-Service Training:** In-service training involves completion of sufficient CEUs to maintain EMD and CPR certifications. FEDs are authorized to do a ride-along with MFD once a year. On occasion, FEDs also have the opportunity to participate with MFD in specialized training such as high-rise incidents, active shooter situations, etc.
- **Training for CTOs and Supervisors:** Currently there is no formalized initial or on-going training program for CTOs or FED supervisory personnel. As a result, some trainers have taken it upon themselves to seek CTO training.

Recommendations:

- Consider designating a dedicated full-time staff member to oversee all aspects of the FED training program, to include new employee training, EMD certification/re-certification training, and on-going professional development/in-service training for current employees.
- Formalize the CTO program, ensuring CTOs receive initial and on-going professional development training.
- Increase use of simulation/scenario-based training, where applicable.
- Provide initial and on-going professional development training for FED supervisory personnel.
- Consider developing joint MFD/MPD training for new hires, when practical, to include training that covers common areas of responsibility.

Police Department

OVERVIEW

New MPD Communications Center personnel are required to successfully complete a multi-stage training program, to include both classroom and on-the-job (OJT) training. Employees are classified as Emergency Communications Officer 1 (ECO-I), Call Taker or Emergency Communications Officer 2 (ECO-II), Dispatcher positions.

The training program is overseen by a Technical Communications Sergeant and assisted by two senior ECOs who provide the majority of the classroom training. In addition, OJT is provided by communications center staff on the dispatch floor. The OJT trainers may have not received training in adult learning or have been certified by a regional or national training organization as a communication training officer.

During interviews the ICTAP team was informed that in the past trainers were required to attend the Association of Public Safety Communications Officials' (APCO) Communication Training Officer program. This training was discontinued due to funding issues, and trainers were provided in-house training. In many cases, trainers did not volunteer for the position, but were encouraged to serve as trainers because there was no one else to do the job.

The following elements summarize each step of the ECO training process.

- **Classroom Training:** The MPD's initial classroom training is supposed to last 40 days. However, during interviews with staff, the team was informed that this first phase of the training has been shortened to approximately four weeks to more quickly certify the increasing number of new hires. Staff was concerned that trainees were not being provided all the information they needed to be successful on the dispatch floor.

This segment includes a general orientation to the MPD and the communications center; an overview of policies/procedures, and specific focus on the Call Taker functions. It also includes training on the CAD system and the emergency (9-1-1) and non-emergency phone systems, and proper call handling procedures. All training is provided by communications center staff. Students are provided a ride-along with a patrol officer to help reinforce the type of information that the ECO needs to solicit from 9-1-1 callers.

- **On-the-Job Call Taker Training (OJT):** Following classroom training, new trainees are assigned to work with a designated Call Taker trainer for four weeks. Initially the trainee monitors the trainer as he/she handles calls, and after a short period the trainee will handle calls under the supervision of the trainer. Each day the trainer is required to prepare a daily observation report to document the incidents handled by the trainee.

- **Assigned Solo to Call Taker Position:** After successfully completing the OJT phase, the new ECO-I is assigned to a Call Taker position. Call Takers in this phase are considered solo and included in the personnel count when determining minimum staffing requirements. This phase last approximately four weeks to enable new Call Takers to gain experience prior to beginning radio dispatch training. During this phase the ECO-I receives a weekly evaluation.
- **Classroom Training:** Upon successful completion of the solo ECO-I phase, the employee begins a second six-week classroom training phase. This phase prepares the employee to be an ECO-II and focuses on the police dispatch function. Topics covered include dispatch protocols, CAD functions, and radio operations.
- **On-the-Job Dispatcher Training:** ECO-I trainees are assigned to a trainer and work as an OJT Police Dispatcher. This four weeks can be extended if the trainer believes the trainee needs additional training. Trainees begin this section of training with the trainer plugged into the same console and monitoring all transmissions. As the trainee progresses the trainer may sit at a different console or monitor through a portable radio.
- **Final Monitoring:** Upon completion of the OJT phase the ECO-I is evaluated on an intermittent basis and provided with a monthly evaluation until completion of her/his year-long probationary period.
- **Continuing Education Units (CEUs)/In-Service Training:** During interviews the ICTAP team was informed that employees receive approximately eight hours of in-service training annually. This training relates to various communication topics. Currently there is no standardized in-service training program for the ECO-I and ECO-II staff.

Recommendations:

- Monitor initial training sessions to ensure they run the full 40 days as stipulated in the MPD's SOP. Staff members interviewed indicated that their initial training sessions were condensed and shortened to accommodate the surge of new hires needed to fill the current vacancies.
- Consider having agency experts, such as Special Weapons and Tactics (SWAT), bomb squad, K-9, and other specialty units, provide an overview of their functions to the trainees, emphasizing the critical role the ECO plays in providing accurate and timely information to sworn staff.
- Develop an in-service training professional development program for all Communications Center staff members. This does not have to be a separate or stand-alone training program, but rather it can be accomplished by working with the MPD training unit to enable communication staff to attend department-wide training sessions. In addition, there are numerous free/low cost on-line training programs available from organizations, such as the Federal Emergency Management Agency (FEMA), National Emergency Number Association (NENA), and APCO.

Recruitment

OVERVIEW

The Milwaukee Fire and Police Commission is responsible for recruitment of both Milwaukee Fire Communications and the Police Technical Communication Division staff. The Commission staff administers written and oral examinations, conducts background investigations, and administers medical and drug screenings for new hires. The hiring process has taken up to nine months in the past; however, based on the efforts of the MFD and MPD to work with the Commission, the hiring process has been reduced to three months. This has improved the recruitment and hiring process, since most people cannot wait nine months for a position.

Many job recruits do not have a good understanding of the demands of the Call Taker/Dispatcher positions. They realize they will be answering calls, but do not grasp that a caller may be hysterical due to an on-going emergency involving a family member or close friend (e.g., a drowning or heart attack). They also do not understand what shift work entails and how it impacts their daily lives and their relationship with their families (e.g., it may be years before they will be able to have Thanksgiving dinner with their family). This lack of understanding contributes to the high turnover in communications centers.

Criticall® testing applications have recently been added for processing new recruits. CriteCall is software that tests Dispatcher, Call Taker, and telecommunicator applicants

to determine if they have the skills and capabilities necessary for success in a public safety communications center environment. Applicants who pass all components are placed on a list of possible candidates for use by both MFD and MPD.

Recommendations:

- Consider expanding the City's recruitment program to local high schools and armed services members about to leave active duty. A position in public safety offers a steady income and benefits, which should certainly attract high school graduates not planning to attend college. Likewise, service members, who have worked in a structured environment and are used to shift work and working under pressure, would be excellent candidates for these positions.
- Consider developing a presentation for applicants that discusses the reality of working in the PSCC, to include detailing the stress entailed in handling sensitive and time critical calls and the impact shift work can have on family life. All applicants should be required to attend a presentation of this nature and spend time observing PSCC operations.

Leadership and Supervision

OVERVIEW

Fire Department

The MFD communications section operations are directed by a Technical Services Manager (TSM). In addition to the dispatch division, the TSM is responsible for the purchase, support and maintenance of all electronic technology-based systems, applications and peripheral equipment used by the MFD.

The TSM is supported by two assistant managers, to include a dispatch manager and an IT/project manager. The dispatch manager oversees six senior dispatch positions and 18 dispatch positions, with three of the 24 positions serving as active supervisors on the dispatch floor. The dispatch manager is responsible for overseeing all personnel matters as well as other operational dispatch matters.

Employees interviewed expressed concern that field and operational management do not fully understand their functions and issue orders that make their job more difficult.

Police Department

The MPD Technical Communications Division has a staff of 217 and operates under the direction of the Risk Management Bureau Assistant Chief.

There are currently multiple levels of supervision in the MPD 9-1-1 Communications Center. Supervisors are responsible for ensuring appropriate and effective operation of the Center on a 24/7 basis. The current MPD 9-1-1 Communications Center Director is a sworn MPD member with the rank of captain.

During the course of this assessment, the City was considering hiring a civilian to replace the sworn captain as Communications Center Director. This was being done in conjunction with implementation of a career ladder in the Division, which will provide communications employees an opportunity for career advancement and, in turn, reduce the turnover and recognize civilian employees for their skills and accomplishments.

Sworn MPD supervisors are currently assigned to each shift, to include sergeants and lieutenants. The assignment of sworn MPD supervisors to the 9-1-1 Communications Center are normally non-voluntary and temporary. The depth of knowledge and level of understanding regarding Communications Center operations varies among the sworn supervisors, which is a concern to both sworn and civilian employees.

The Senior ECOs are appointed by the Captain and serve as acting civilian supervisors on each shift. Their responsibilities include: assisting with scheduling, checking people in for a shift, reviewing and prioritizing pending calls, filling in as a dispatcher, assisting with ECO training issues, fielding questions from ECOs, using the City Watch notification system, and miscellaneous tasks given by the sergeants. Since the senior ECOs are appointed this has led to some concerns regarding favoritism.

The supervisory chain of command at the shift level is as follows:

ECOs report to Senior ECOs, who report to a Sergeant, who reports to a Lieutenant.

As with fire dispatch there is concern that field and operational management do not understand the full extent of their duties and consequently issue orders that sometimes make their jobs more difficult.

Recommendations:

- Continue to develop a career path that offers civilian employees of each agency advancement within their respective PSCC.
- MPD and MFD should consider developing working groups comprised of both field and communications staff to discuss policies, procedures and operational issues impacting employees.
- Develop internal management/employee teams within the two PSCCs to discuss policies, procedures, training, and recognition programs.
- If a civilian manager is hired to replace the sworn captain, MPD management needs to reinforce his/her authority and direct both the sworn and civilian staff to abide by the chain of command.
- Provide additional training to all sworn police personnel assigned to the Police Technical Communications Division, to include call taking and dispatch procedures to enhance their understanding of the PSCC's operations and the skills and knowledge necessary to oversee and to perform their responsibilities.

Continuity of Operations Plan (COOP)

OVERVIEW

Both MPD and MFD have limited continuity of operations plans and a backup location to carry out operational needs. In discussions with staff in both centers not all employees are fully aware of the COOPs. Much of the plans are verbal in nature and not written or practiced on a regular basis.

Recommendations:

- Develop a formal COOP that addresses all operational needs.
- Review, update and test the COOP on an on-going and regular basis.

CONCLUSION

The City of Milwaukee is facing many challenges to efficiently operate and sufficiently staff its two separate PSCCs, plus deal with the daily procedural, administrative and financial challenges faced by all public safety agencies across the nation.

The immediate challenge is to eliminate the duplicate handling of fire/EMS related 9-1-1 calls, which is both time consuming and frustrating for the callers. The ICTAP team recommends the City consider the following course of action to resolve this issue:

- Establish a unified call taking function for both MPD and MFD calls and a common CAD system that captures call response times from the initial call through the time the response team arrives on the scene. This will shorten response times for calls and reduce caller frustration.

The ICTAP team also recommends that the City begin planning for a more permanent and long-term approach for handling 9-1-1 calls by taking the following steps:

- Establish a consolidated PSCC to handle MPD and MFD calls and dispatches. This long-term solution would require extensive discussion, coordination and the development of coordinated policies and training.
- As a first step in this process, the Fire and Police Commission should consider developing a plan to facilitate and execute all aspects of the consolidation process.
- The task group and sub-groups should have representation from management and line employees (e.g., ECOs and FEDs) to promote buy-in and facilitate actions during all stages of this process.

In addition to the challenges with the call handling, the report detailed concerns and provided recommended solutions regarding work environment, recruitment, training, and leadership issues. This report is intended to serve as a guidepost for the City as it looks to address these issues and to provide its citizens and visitors with the very best communications services possible.

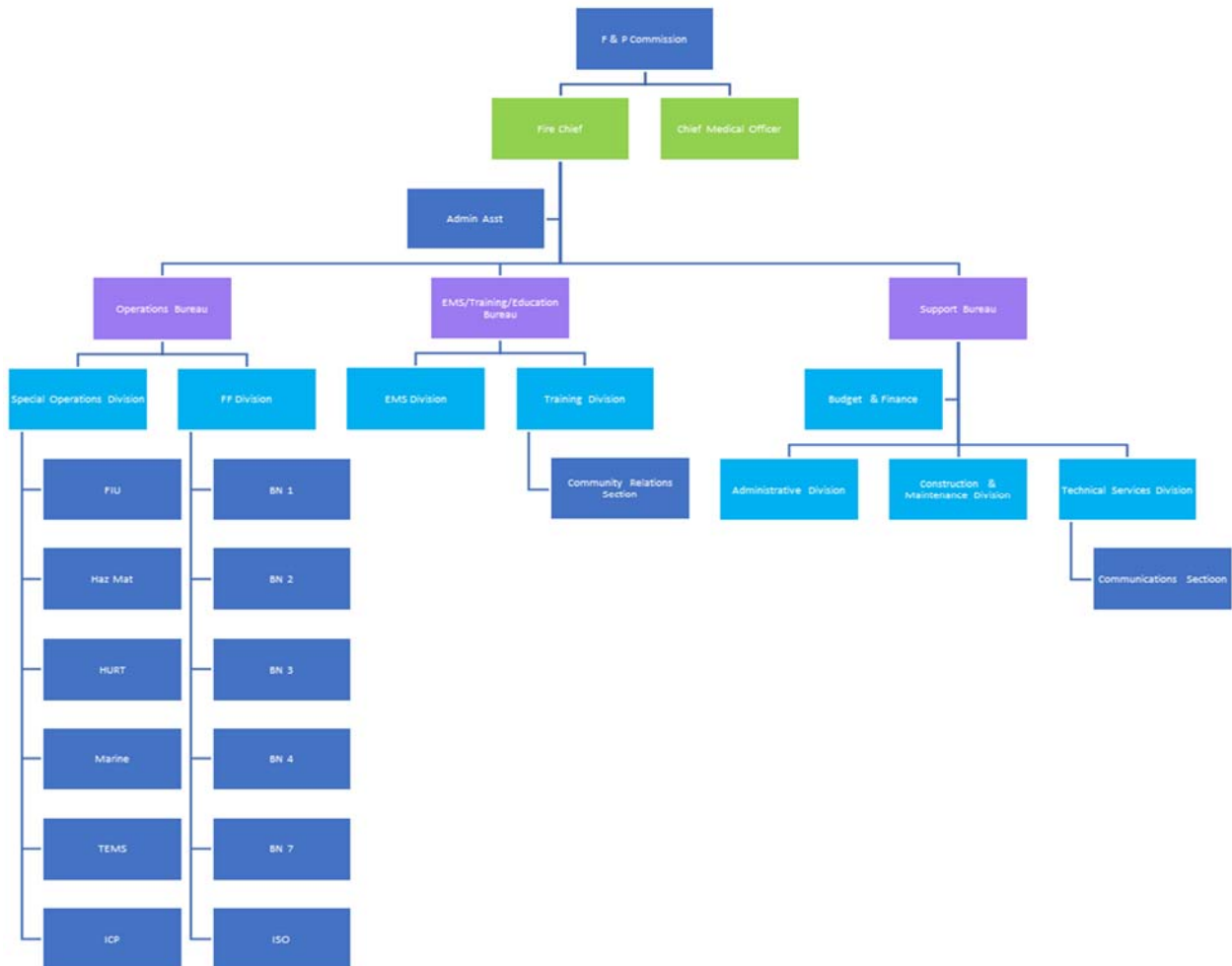
APPENDIX A: GLOSSARY

APCO	Association of Public Safety Communications Officials International
CAD	Computer Aided Dispatch
CEU	Continuing Education Units
COOP	Continuity of Operations Plan
CPR	Cardio-Pulmonary Resuscitation
CTO	Communications Training Officer
DHS	Department of Homeland Security
DPR	Differential Police Response
ECO	Emergency Communications Operator
EMD	Emergency Medical Dispatch
EMS	Emergency Medical Services
FEMA	Federal Emergency Management Agency
FMLA	Family Medical Leave Act
FED	Fire Equipment Dispatcher
ICTAP	Interoperable Communications Technical Assistance Program
MABAS	Mutual Aid Box Alarm System
MDC	Mobile Data Computer
MFD	Milwaukee Fire Department
MPD	Milwaukee Police Department
NENA	National Emergency Number Association
OEC	Office of Emergency Communications
OJT	On-the-Job Training
PSAP	Public Safety Answering Point
PSCC	Public Safety Communications Center
QA	Quality Assurance
SME	Subject Matter Expert

SOP	Standard Operating Procedure
SWAT	Special Weapons and Tactics
TRU	Telephone Reporting Unit
TSM	Technical Services Manager
WISCOM	Wisconsin Interoperable System for Communications

APPENDIX B: ORGANIZATION CHARTS

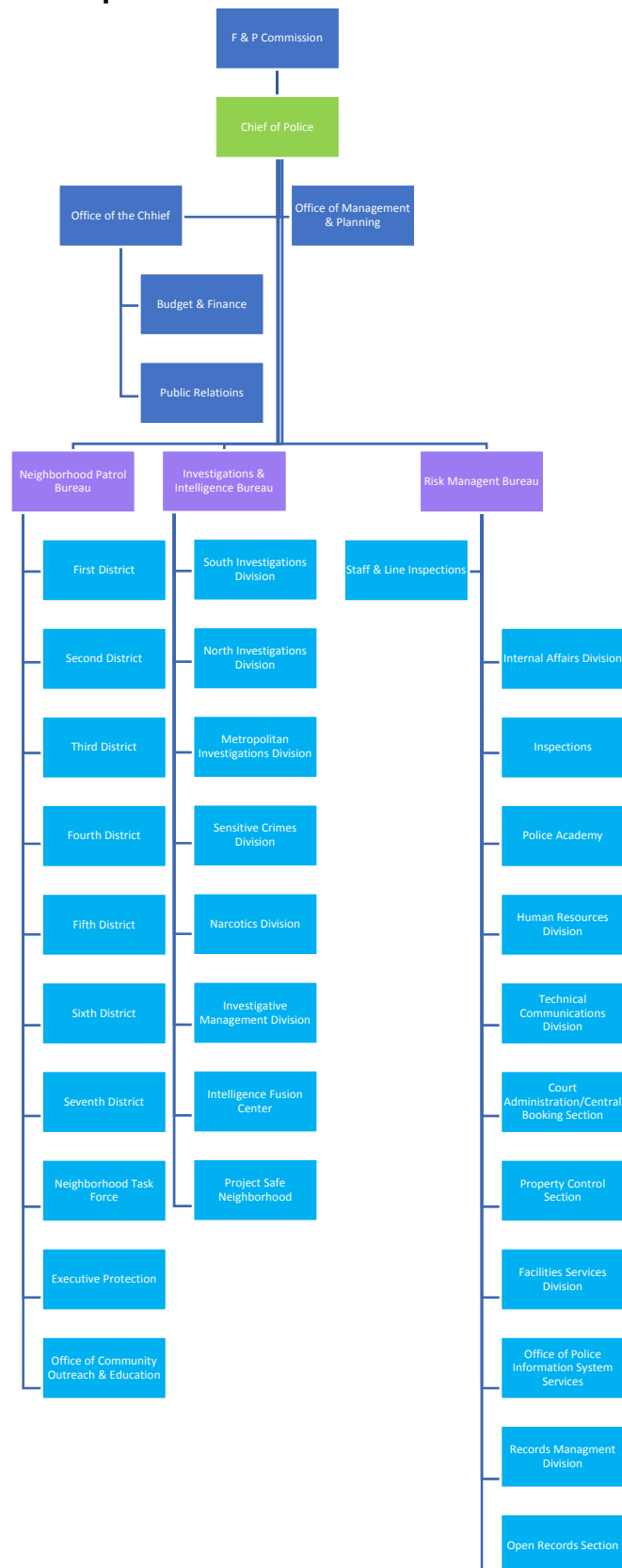
B1. Milwaukee Fire



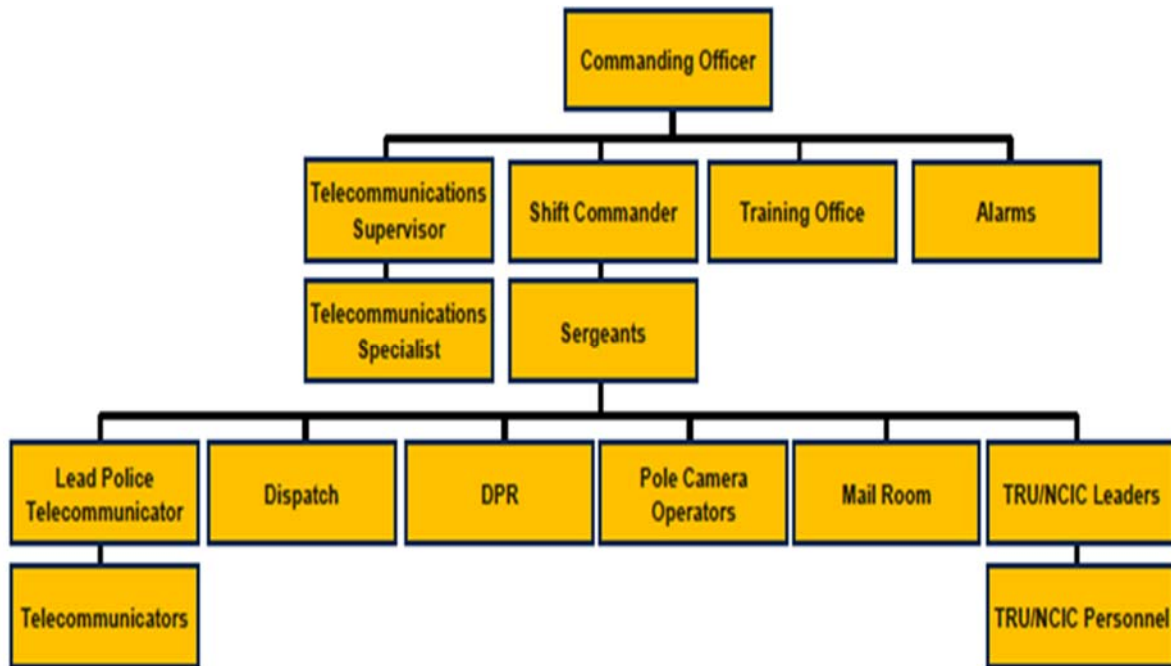
B2. Milwaukee Fire Communications



B3. Milwaukee Police Department



B4. Police Technical Communications



APPENDIX C: STANDARDS AND RESOURCES

APCO ANSI Standards

Standard for the Establishment of a Quality Assurance and Quality Improvement Program for Public Safety Answering Points

<https://apcointl.org/doc/911-resources/apco-standards/600-11071-2015-quality-assurance/file.html>

Multi-Functional Multi-Discipline Computer Aided Dispatch (CAD) Minimum Functional Requirements

<https://apcointl.org/doc/911-resources/apco-standards/584-11011-2015-multi-functional-multi-discipline-cad/file.html>

Standard Channel Nomenclature for the Public Safety Interoperability Channels

<https://apcointl.org/doc/911-resources/apco-standards/693-apco-npstc-1-104-2-2017-standard-channel-nomenclature-for-the-public-safety-interoperability-channels/file.html>

Standard for Competencies Training Requirements for Public Safety Communications Training Officers

<https://apcointl.org/doc/911-resources/apco-standards/432-competencies-training-requirements-for-public-safety-communications-training-officers.html>

Standard for Competencies Training Requirements for Public Safety Communications Quality Assurance Evaluators

<https://apcointl.org/doc/911-resources/apco-standards/431-competencies-training-requirements-for-public-safety-communications-quality-assurance-evaluators.html>

Standard for Competencies and Minimum Training Standards for Public Safety Communications Supervisors

<https://apcointl.org/doc/911-resources/apco-standards/398-core-competencies-and-minimum-training-standards-for-public-safety-communications-supervisor.html>

Standard for Competencies Training Requirements for Public Safety Communications Directors

https://apcointl.org/component/docman/?task=doc_download&gid=526&Itemid=1263

Standard for Competencies and Minimum Training Standards for Public Safety Communications Training Coordinators

<https://apcointl.org/doc/911-resources/apco-standards/399-core-competencies-and-minimum-training-standards-for-public-safety-communications-training-coordinat.html>

Minimum Training Standard for Public Safety Telecommunicators

<https://apcointl.org/doc/911-resources/apco-standards/75-minimum-training-standards-for-public-safety-telecommunicators.html>

Standard for Public Safety Technician Training

<https://apcointl.org/doc/911-resources/apco-standards/595-31071-2015-psc-technician-training.html>

Recommended Best Practices for PSAPs When Processing Vehicle Telematics Calls from Telematic Service Providers

<https://apcointl.org/doc/911-resources/723-apco-ans-1-114-1-2017-vehicle-telematics-calls.html>

Effective Practices Guide and Staffing Workbook. APCO Project RETAINS Responsive Efforts to Assure Integral Needs in Staffing

<https://www.apcointl.org/resources/staffing-and-retention/retains.html>

NENA Standards

PSAP Disaster & Contingency Plans Model Recommendation

<http://www.nena.org/?page=PSAPDisasterPlans>

PSAP Mutual Aid Standard

<http://www.nena.org/?page=MutualAidStandard>

APCO/NENA Service Capability Criteria Rating

<http://www.nena.org/?page=ServiceRatingScale>

Human Resources - Resource List

http://www.nena.org/?page=HR_ResourceList

Acute Traumatic & Chronic Stress Management

<http://www.nena.org/?StressManagement>

Hearing Standards for Public Safety Telecommunicators

http://www.nena.org/?HearingStandards_TCs

Standard for the Establishment of a Quality Assurance and Quality Improvement Program for Public Safety Answering Points

<http://www.nena.org/?page=QualityAssurance>

National Fire Protection Association (NFPA) Standards¹

NFPA 1221 Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems

NFPA 1061: Standard for Public Safety Telecommunications Personnel Professional Qualifications

¹ NFPA standards are available for purchase at the NFPA web site www.nfpa.org