



MissionCriticalPartners
Because the Mission Matters

Williamson County Emergency Communications Operational Assessment Report

Final Report

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FOR WILLIAMSON COUNTY, TEXAS

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Executive Summary

Williamson County, Texas, is one of the faster growing counties in the nation and is home to an estimated 600,000 residents. In addition, approximately 250,000 vehicles a day traverse the Interstate 35 corridor, which bisects the county. The Central Texas region has experienced tremendous growth in recent years thanks to a diverse economic environment and relatively affordable housing. The influx of businesses and residents has proved challenging to local government officials who strive to meet ever growing needs for services. Williamson County Emergency Communications (WCEC) is no exception and sought a comprehensive operational assessment that included an analysis of call volume, staffing, training, and technology systems.

Mission Critical Partners, LLC is pleased to provide this *Williamson County Emergency Communications Operational Assessment Report* to Williamson County (County). Mission Critical Partners would like to acknowledge the dedication and passion that was demonstrated by WCEC staff and leadership. We express our gratitude to the representatives from the partner agencies and County representatives who contributed their time and insight during the study.

Mission Critical Partners initiated the WCEC assessment study in early February 2018 with a project planning meeting. The project officially kicked off in early March. Mission Critical Partners conducted a series of meetings with WCEC personnel and stakeholders and spent time on several occasions observing and speaking with on-duty telecommunicators. During the assessment study, Mission Critical Partners asked individuals who participated in interviews to share their insights into current WCEC operations. The following key concerns were mentioned repeatedly throughout the interviews:

1. There appears to be a high attrition rate.
2. The communications center frequently operates at minimum staffing.
3. The use of call takers to answer 9-1-1 telephone calls would reduce the workload on dispatchers and allow them to focus on responders in the field.
4. Some radio channels seem to be overloaded with radio traffic, while others are not, creating an unbalanced workload.
5. Supervisors are often tasked with performing dispatch duties and, as a result, are unable to provide effective supervision and mentoring.

Mission Critical Partners considered these concerns when assessing WCEC operations.

WCEC is a primary public safety answering point (PSAP), providing emergency communication services to 38 entities including law enforcement agencies, fire departments, and emergency medical services (EMS) providers at the county, municipal, and district levels. WCEC has 21 workstations on the operations floor, each equipped with radio dispatch capability. Only 12 of the workstation positions are equipped to receive and manage 9-1-1 telephone calls.

During Fiscal Year (FY) 16-17, WCEC received 184,991 incoming calls. Of those, 83,840 were received on 9-1-1 emergency lines and 101,151 were received on ten-digit or administrative lines. WCEC handled a

total of 279,351 incidents for public safety services during the same period. Calls and incidents are often used interchangeably when referring to an event that requires the dispatch of first responders. Yet there is a difference. "Calls" are reflective of incoming messages or signals from the public from a wired telephone, wireless (cellular) phone, Voice over Internet Protocol (VoIP) device, text message, or other means of communicating through the telephony network or internet, as well as outgoing phone calls initiated by a telecommunicator. An incident is an event that is created in a computer aided dispatch (CAD) system, or other means of logging the activity, that may or may not require the dispatch of first responders. Not all telephone calls result in an incident being created or first responders being dispatched. Many incidents are initiated by a first responder and are not the result of a call to 9-1-1. Currently WCEC telecommunicators simultaneously handle both incoming telephone calls and maintain radio communications with the first responders in the field. They are constantly balancing the needs of the first responder with those of callers.

In the first four and a half months of FY17-18, WCEC handled: 30,654 9-1-1 calls and 36,444 administrative calls; a total of 67,098. If call volumes continue at the current pace, WCEC in FY17-18 would realize an incoming call volume of approximately 178,764. In the first five months of FY17-18, WCEC handled: 98,850 law incidents, 12,804 EMS incidents, and 13,492 fire incidents; a total of 125,146 incidents. If incidents continue at the current pace, WCEC in FY17-18 could realize total incidents exceeding 300,000. It should be noted that the majority of fire incidents are responses to medical calls where the fire departments assist responding EMS units. Fire units responding with EMS is commonplace across the country as the fire units are often more prevalent than EMS units and can reach a patient faster due to dispersions across a jurisdiction. The goal is to provide emergency medical care as efficiently as possible with a focus on patient care.

Stress has been identified as a key factor in the high turnover rate of telecommunicators. PSAPs of comparable size and level of activities to WCEC generally have individuals who are assigned as 9-1-1 call takers. These positions are dedicated to answering incoming telephone calls and entering caller information to initiate a call for service. This alleviates the needs for telecommunicators to manage radio traffic while trying to meet the needs of 9-1-1 callers on the phone. It is the professional opinion of Mission Critical Partners' consultants that 9-1-1 call answering (call take) and radio dispatch activities need to be separate responsibilities within WCEC. This will mean having dedicated call takers on each shift. The implementation of dedicated call takers should reduce the stress experienced by dispatchers attempting to multi-task critical activities.

WCEC has a current authorized strength of 70 employees, including administrative and support staff. There are 62 Texas Commission on Law Enforcement (TCOLE)-credentialed telecommunicators within the WCEC organization. Of these, 50 are assigned to regular shift work in the communications center. Many other credentialed employees fill in when necessary and are on the callback/mandatory overtime schedule.

At the time of the on-site assessment, WCEC had 14 vacant telecommunicator positions. WCEC's attrition rate is more than double the estimated national average of 13 percent. Maintaining appropriate staffing is a significant factor in reducing mandatory overtime and relieving stress among telecommunicators. WCEC leadership has indicated that resolving the root cause of the high attrition rate is a primary objective.

Based on the information provided, Mission Critical Partners recommends a complement of 12 supervisory personnel and 64 to 66 telecommunicators, a total of 76 to 78 assigned to shift work (up from 50). Supervisory personnel would breakdown as follows: four lieutenants and eight sergeant-level positions. The 66 telecommunicators would essentially breakdown as follows: 16 to 18 call takers, 28 law enforcement dispatchers, and 20 fire dispatchers. This represents a shift complement of 20 on each day shift and 19 on each night shift. This increase of 26 to 28 operational personnel is not reflective of those in support positions, such as quality assurance (QA) or training.

Mission Critical Partners recommends that WCEC strive to increase authorized strength by 24 positions, which will provide call takers on each shift. Such an increase will be a long-term commitment that will likely need to occur over more than one fiscal budget cycle. As such, Mission Critical Partners recommends an initial hiring of 12 telecommunicators, followed by another 12. Mission Critical Partners recommends that eight sergeant-level positions be created and filled when staffing allows, with the initial goal to have a sergeant-level position on each shift.

Mission Critical Partners recommends that all telecommunicators become cross-trained to support all public safety disciplines. This provides greater staffing flexibility; however, it is also recommended that the telecommunicators hired into the positions authorized to allow dedicated call takers continue in those positions without going directly to dispatch training following release from call take training. The purpose of the positions is to relieve dispatchers from answering 9-1-1 calls and if the new telecommunicators are placed into training on the dispatch positions too quickly, this will not occur.

A quality assurance/ quality improvement (QA/QI) program is an essential component of 9-1-1 communications as it can improve the level of service provided to citizens and is a best practice to improve overall PSAP performance. WCEC currently contracts most of its QA/QI reviews to two third-parties: National Q and the Denise Amber Lee Foundation. WCEC has an Education Specialist position responsible for feedback and the QA/QI program internally. Mission Critical Partners recommends the internal program is expanded to include QA/QI specialists, with QA/QI as their primary focus, not just of the trainees, but of all telecommunicators. It is imperative that some QA/QI reviews of calls and radio traffic occur internally. While both vendors are knowledgeable, they will not be as familiar with operations as internal staff. In addition, internal reviews provide the ability to immediately address any deficiencies that may be encountered. Mission Critical Partners recommends two QA/QI specialists, with an evaluation at the six-month mark to determine if a third person is needed.

Call taker and dispatch training and standards vary across the country. On January 1, 2014, Texas transitioned from a certification program to a licensure program, requiring 68 hours of training and successful passing of the state exam. Part of WCEC's training program is TCOLE's Basic Telecommunicator Course and the State Telecommunicator Licensing Exam. WCEC's training has two parts: an eight-week classroom-style training academy and OTJ training for call take and dispatch. The call take portion of OTJ is approximately four to eight weeks, depending on the employee's skill level and comprehension. Dispatch OTJ training varies upwards of eight to ten weeks.

Mission Critical Partners received surprising information during interviews: reports of the lack of information and documentation given to telecommunicator trainees; the training lacked a syllabus, agenda, learning

objectives, and personnel progress reports. From all accounts, there is/was no structure to the academy. Had it not been for one outstanding trainer, some telecommunicators would have resigned. Proper organization, structure, and attention to detail are critical in a training environment. WCEC must ensure that the academy is order and is already evaluating aspects of its training program, which is a good first step. Yet to ensure success for the future, particularly with the recommended increase in staff, Mission Critical Partners recommends the creation of an Instructional Coordinator position to oversee all aspects of training, including the academy structure, development of lesson plans and course curricula, and trainee assignments. The Instructional Coordinator position does not require telecommunicator experience, but rather knowledge of the theories, principles and techniques used to facilitate adult learning; training methodologies; and competency assessment. Mission Critical Partners believes this is an immediate need and recommends that this position be created as soon as possible. In addition, WCEC will need to increase its training capacity with additional trainers; ideally there would be at least two trainers per shift. WCEC intends to provide a stipend to those tenured employees who become trainers. Mission Critical Partners concurs with this approach.

Unfortunately, with the increased staffing recommendations, there is a lack of adequate training space within the facility. This is another immediate need. Currently, there are five auxiliary/training positions in the simulation lab. If more than five people are in training, there is not space for everyone; people would need to double up or training time would be extended as the group would need to be split. This does not provide the opportunity for everyone to learn at the same time.

Mission Critical Partners strongly recommends that WCEC expand the simulation (training) lab to eight positions. Each position should be fully equipped with CAD and radio capabilities. Currently the lab only allows for CAD training. Providing radio capability allows new telecommunicators to receive radio training as well. Expansion of the training capabilities offers a significant secondary benefit. With eight fully functioning positions, the lab can service as a back-up center for other PSAPs, allowing WCEC to receive money from the Capital Area Emergency Communications District. Additionally, the current communications center is one site on the Greater Austin/Travis Regional Radio System (GATRRS); the training lab would be a second site. If the primary communications center site were to fail, the second site could be utilized with minimal disruption to field operations. An expanded training lab will just as importantly benefit WCEC's new employees through enhanced training capabilities.

Mission Critical Partners presents numerous recommendations within this report, many having to do with staffing as well as training, continuing education, and QA, elements that are integral parts of a communications center.

Mission Critical Partners' foremost recommendations are threefold: the hiring of 12 additional telecommunicators, the hiring of an Instructional Coordinator, and the expansion of the simulation (training) lab. There are other staffing recommendations as well for WCEC to consider: eight sergeant-level positions and two QA/QI specialists. Of the current staff of 70, there are 50 "telecommunicators" assigned to shift work: 46 telecommunicators and four lieutenants. The other 20 positions represent management, leadership positions, and support personnel (as a broad classification). Mission Critical Partners acknowledges that the majority of the support positions are credentialed and work in the communications

center when needed; however, the goal is to no longer need to rely on these positions to staff the center (with the exception of the training shift specialists).

Mission Critical Partners recommends a complement of 12 supervisory personal and 64 to 66 telecommunicators, a total of 76 to 78 assigned to shift work. This is an increase of 28, at the high end. In addition, there is a need for an Instructional Coordinator and two QA/QI positions—for a total of 31 additional positions for a total staff complement of 101. Mission Critical Partners recommends 13 positions initially—12 telecommunicators and the Instructional Coordinator.

Mission Critical Partners strongly believes a restructuring of the organization is necessary and will allow WCEC to focus management and leadership in singular areas, which will serve to strengthen WCEC. In discussions between Mission Critical Partners and WCEC, there is agreement that the overarching issue is twofold: the understaffing and the resulting overextension of staff to accomplish many of the core functions needed to educate, improve, and sustain the highest level of service and care. Captains, lieutenants, and specialists are split between the role of the console-based telecommunicator and their other duties.

Mission Critical Partners believes a logical segregation is three “divisions:” technology, operations, and support (professional standards). Mission Critical Partners recommends the professional standards division be comprised of training, QA, and compliance/standard operating procedures (SOPs). A proposed organizational chart, representing a staff complement of 101, has been provided in Section 8 of this document.

With a large shift in staffing, to a complement of 101 as a long-term goal, Mission Critical Partners urges WCEC to review all recommendations and develop a strategic plan, envisioning the desired future and translating it into broadly defined goals or objectives, and the sequence of steps to achieve them. Within the strategic plan, Mission Critical Partners recommends staffing is re-evaluated once dedicated call takers have been in place for at least six months, preferably one year, and then at least bi-annually, for example in late 2019 and then again in mid-2021.

WCEC has dedicated staff that are proud of the jobs they perform. As in any organization, there are strengths that must be capitalized on and weaknesses that must be addressed. WCEC has made considerable investments in the technologies to support 9-1-1 operations and must now address staffing and the training infrastructure necessary to support the public and first responder agencies.

It will be difficult for WCEC to fulfill its mission and provide its customers with the expected level of service while continuing to sustain an attrition rate that is double the national average. Unfortunately, this is a vicious cycle that can take years to get out of, as WCEC is experiencing. Staff are overworked because staff leave, and staff leave because they are overworked, in part attributed to the operational configuration of combined call take and dispatch responsibilities.

Proper staffing is a balance between providing quality service at a reasonable personnel and financial cost. Mission Critical Partners recommends that WCEC begin planning for staff increases as well as training needs beginning with the next budget cycle, and continuing into successive budget cycles until needs are met.

Mission Critical Partners commends WCEC leadership for being proactive and taking steps to begin implementing key recommendations that are presented in this report. Mission Critical Partners is confident that WCEC will be successful in all its endeavors.

1 Introduction

Williamson County (County) is in central Texas and spans 1,118 square miles. Williamson County shares borders with the counties of Bell, Milam, Lee, Bastrop, Travis, and Burnett. The largest cities in the county include Round Rock, Georgetown, Cedar Park, Hutto, Leander, and Taylor. Portions of the city of Austin also extend into the southern portion of the county. The county is roughly bisected east and west by the Interstate 35 corridor, carrying approximately 250,000 vehicles a day.

The county has experienced tremendous population growth and is rapidly evolving from a rural to urban environment. The local economy, previously dominated by agriculture, is now being driven by the region's advances in the technology sector.

In July 2017, the U.S. Census Bureau estimated that the county's population was 547,545. This represents an increase of 124,866 or 22.8 percent since the 2010 census was conducted. Local officials report that already in 2018 the county's population has surpassed 600,000.

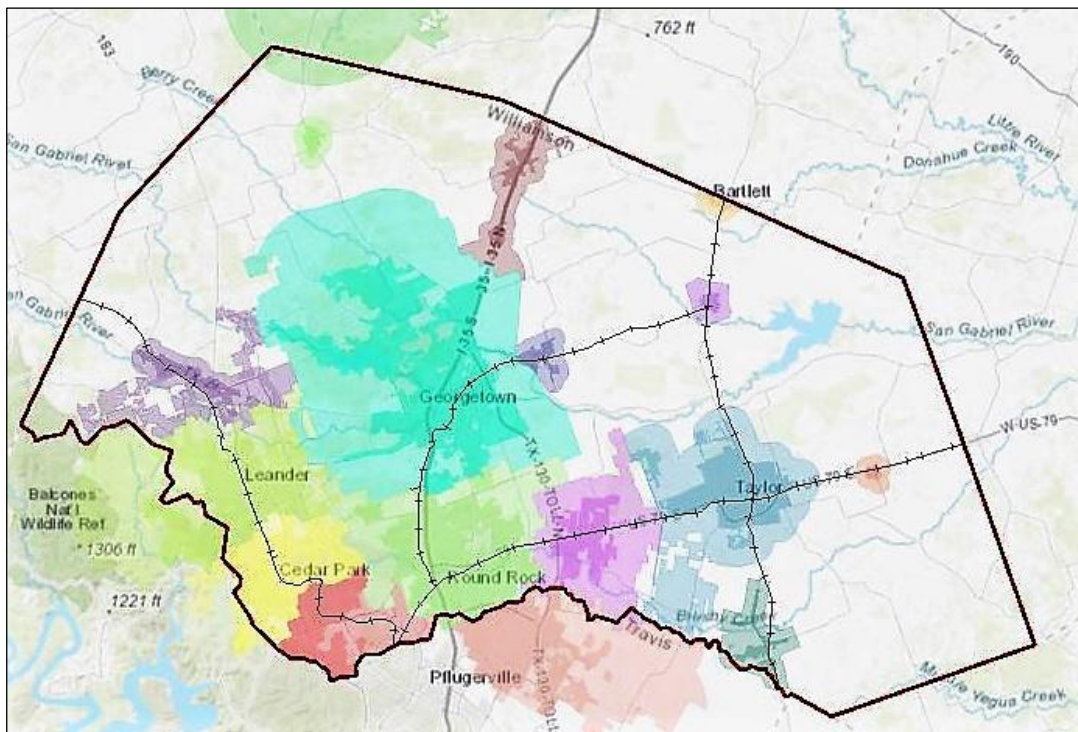


Figure 1: Williamson County Map

The Census Bureau ranked Williamson County 31 in the list of the 40 fastest growing counties in the nation. The cities of Hutto, Leander, Cedar Park, and Georgetown are included in the list of 25 fastest growing cities in Texas. The Austin-Round Rock Metropolitan Statistical Area (MSA) was recently ranked

eighth for growth in the top 25 metropolitan areas in the country.¹ According to the U.S. Department of Commerce Bureau of Economic Analysis, the Austin-Round Rock MSA had a population of 2,056,405 in 2016. The region's gross domestic product (GDP) surpassed \$119 billion in 2016.²

People relocating to Central Texas select Williamson County for the quality of life and relatively affordable housing. The county continues to experience remarkable residential development as pasturelands in the unincorporated areas of the county are converted into master planned communities. One example is the Santa Rita Ranch community near Liberty Hill in the southwest area of the county. The development spans 3,100 acres and will include 6,500 homes when completed. The Austin Board of Realtors reported that 2017 summer selling season was the strongest on record for single-family homes sales in the Austin-Round Rock MSA.³ Development is also occurring within the cities. A new 126-acre mixed-use development in the city of Cedar Park will feature high-rise condominiums, over 1,000 apartment units, hotels, retail, entertainment venues, and restaurants.

County and municipal officials are adapting to the rapid growth within the region. Local leaders must address the growing demand for services including public safety, transportation, and education while maintaining practical fiscal policies. The growth trend is expected to continue as more businesses relocate to Texas.

1.1 Williamson County Emergency Communications

Williamson County Emergency Communications (WCEC) is one of six divisions within Williamson County Emergency Services. WCEC's mission is to

Provide care and service to our community in a respectful, professional, and excellent manner.

With its vision to:

Be the absolute best at Public Safety Communications

WCEC serves as the primary PSAP for most of the public safety agencies within the county. WCEC also interacts with numerous other communications centers including those in the cities of Round Rock, Cedar Park, Georgetown, Leander, Taylor, and Austin. Table 1 provides a list of WCEC primary partner agencies.

¹ "America's Fastest-Growing Cities 2018," Forbes, February 28, 2018. Accessed May 3, 2018, Forbes.com.

² "Gross Domestic Product by Metropolitan Area," U.S. Bureau of Economic Analysis. Accessed May 3, 2018. <https://bea.gov/scb/pdf/2017/10-October/1017-gdp-by-metropolitan-area.pdf>.

³ "August 2017 Market Report." The Austin Board of REALTORS®, 19 Sept. 2017, www.abor.com/statsAug17/.

Table 1: WCEC Partner Agencies

WCEC Primary Agencies		
Williamson County Sheriff's Office	Williamson County Emergency Medical Services	Williamson County Office of Emergency Mgmt.
Williamson County Constable Precincts 1, 2, 3 and 4	Florence Fire Department (FD)	Williamson County Public Health District
Williamson County District Attorney	Hutto FD	Williamson County Hazardous Materials
Williamson County County Attorney	Jarrell FD	Williamson County Mobile Outreach Team
Williamson County Justice of the Peace Pcts. 1-4	Jollyville FD	Georgetown Medical Assist Team
Florence Police Department (PD)	Leander FD	Williamson County Corrections
Granger PD	Liberty Hill FD	Williamson County Juvenile Justice Center
Hutto PD	Sam Bass FD	Hutto Animal Control
Hutto Independent School District (ISD) PD	Taylor FD	
Jarrell PD	Coupland Volunteer Fire Department (VFD)	
Liberty Hill PD	Granger VFD	
Thrall PD	Taylor VFD	
	Thrall VFD	
	Weir VFD	

WCEC is housed in the Williamson County Emergency Services Operations Center. The facility was opened five years ago and houses WCEC, Office of Emergency Management, the Emergency Operations Center (EOC), and the Fire Marshal's Office.

The building was designed and constructed to meet mission critical standards. The structure is capable of withstanding natural hazards including tornado force winds. Access to the building is restricted to authorized

personnel with appropriate identification. The facility was found to be clean and well maintained. The operations room features ergonomic console workstations. The data and equipment spaces are clean and free of clutter and unnecessary items.

Space has been dedicated for training that includes training consoles and applications that are intended to replicate the dispatch positions. However, WCEC lacks adequate classroom training space this is needed to conduct recruit academies and continuing education courses.



Figure 2. Emergency Services Operations Center

1.2 WCEC Call and Incident Volumes

Calls and incidents represent the majority of the workload of any communications center, and are often used interchangeably when referring to an event that requires the dispatch of first responders. Yet there is a difference. “Calls” are reflective of incoming messages or signals from the public from a wired telephone, wireless (cellular) phone, Voice over Internet Protocol (VoIP) device, text message, or other means of communicating through the telephony network or internet, as well as outgoing calls by a telecommunicator. An incident is an event that is created in a computer aided dispatch (CAD) system, or other means of logging the activity, that may or may not require the dispatch of first responders. Not all calls result in an incident, and not all incidents are the result of a call. For example, a person may call requesting information that does not require response from law enforcement, fire, or EMS. As another example, a police officer may initiate a vehicle stop, which results in the creation of an incident, but was not the result of a call from a person or device.

For WCEC, call and incident volumes have fluctuated in recent years, as illustrated in the tables below. The decrease in 9-1-1 call volume and fire and EMS incidents in FY15-16 can likely be attributed, in part, to the creation of Georgetown EMS. The calls requesting medical assistance, and resulting incidents, would now be handled by Georgetown and Georgetown EMS would respond, rather than Williamson County EMS.

Table 2: Incoming Call Volume

	9-1-1	Administrative Calls	Totals
FY13-14 ⁴	87,259	100,555	187,814
FY14-15	94,857	101,004	195,861
Percent Change	8.71%	0.45%	4.28%
FY15-16	86,020	101,771	187,791
Percent Change	-9.32%	0.76%	-4.12%
FY16-17	83,840	101,151	184,991
Percent Change	-3.70%	-0.61%	-1.49%

In the first four and a half months of FY17-18, WCEC handled: 30,654 9-1-1 calls and 36,444 administrative calls; a total of 67,098. If call volumes continue at the current pace, WCEC in FY17-18 would realize an incoming call volume of approximately 178,764. This would be a decrease from FY16-17.

Table 3: Incident Volumes

	Law	Fire	EMS	Totals
FY13-14	167,968	29,082	31,141	228,191
FY14-15	183,628	31,028	35,758	250,414
Percent Change	9.32%	6.69%	14.83%	9.74%
FY15-16	193,140	27,786	30,478	251,404
Percent Change	5.18%	-10.45%	-14.76%	0.40%
FY16-17	217,309	31,417	30,625	279,351
Percent Change	12.51%	13.07%	0.48%	11.12%

⁴ WCEC's fiscal year is from October 1 to September 30.

In the first five months of FY17-18, WCEC handled: 98,850 law incidents, 12,804 EMS incidents, and 13,492 fire incidents; a total of 125,146 incidents. If incidents continue at the current pace, WCEC in FY17-18 could realize total incidents exceeding 300,000.

It should be noted that the majority of fire incidents are responses to medical calls where the fire departments assist responding EMS units. “In 1980, according to the National Fire Protection Association, the nation's 30,000 fire departments responded to 10.8 million emergency calls. About 3 million were classified as fires. By 2013, total calls had nearly tripled to 31.6 million, while fire calls had plummeted to 1.24 million, of which just 500,000 of were actual structure fires.”⁵ Portland, Oregon, notes that about 70 percent of its Fire and Rescue department's calls are medical calls, “a typical portion for most jurisdictions.” The Georgetown Fire Department, Texas, notes that nearly 80 percent of its emergency responses are for medical aid.⁶

Fire units responding with EMS is commonplace across the country as the fire units are often more prevalent than EMS units and can reach a patient faster due to dispersions across a jurisdiction. The goal is to provide emergency medical care as efficiently as possible with a focus on patient care.

2 Standards and Accrediting Organizations

Throughout the country, communications centers adopt and use industry standards and best practices to assure the effectiveness of the agency and that the best possible service is provided to citizens and first responders. Measurable standards create an objective view of 9-1-1 operations and provide for consistent interactions with the public and first responders.

Standards and best practices most often used in 9-1-1 communications centers are from the Association of Public-Safety Communications Officials-International (APCO) and the National Emergency Number Association (NENA). Also used often are National Fire Protection Association (NFPA) standards, specifically 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, and 1061, *Professional Qualifications for Public Safety Telecommunications Personnel*; and standards from the Commission on Accreditation for Law Enforcement Agencies (CALEA), particularly *Standards for Public Safety Communications Agencies*. NENA, APCO, and NFPA are each an American National Standards Institute (ANSI)-accredited standards development organization (SDO).

⁵ “Why We Need to Take the ‘Fire’ Out of ‘Fire Department’.” Governing, July 1, 2015, <http://www.governing.com/columns/smart-mgmt/col-fire-departments-rethink-delivery-emergency-medical-services.html>.

⁶ “Welcome,” Emergency Medical Services, <https://ems.georgetown.org/>.

2.1 Standards Organizations

APCO “is the world’s oldest and largest organization of public safety communications professionals and supports the largest United States membership base of any public safety association. It serves the needs of public safety communications practitioners worldwide – and the welfare of the public as a whole – by providing complete expertise, professional development, technical assistance, advocacy and outreach.”⁷ APCO has undertaken many projects over the years. Two notable projects are Project 25 (P25), the development of standards for digital telecommunications technology, and Project 33, development of a telecommunications training standard. In Project 33, APCO collaborated with NENA “to evaluate what type of standardized training programs (if any) each state had. The information gathered helped APCO build the foundation for the National Public Safety Telecommunicator Training Standard, which is the minimum standard used today.”⁸

NENA, a non-profit corporation, is dedicated to a “public made safer and more secure through universally-available state-of-the-art 9-1-1 systems and trained 9-1-1 professionals”⁹ NENA’s mission is to improve “9-1-1 through research, standards development, training, education, outreach, and advocacy.”¹⁰ NENA has several topic-specific committees that develop recommended 9-1-1 center model recommendations and/or standards and other operational information documents. NENA model recommendations/standards give 9-1-1 centers the tools needed to maintain a consistent level of service and work in relation to their peers in neighboring counties and states.

NENA 56-005, *Call Answering Standard/Model Recommendation*, states, “Ninety percent (90%) of all 9-1-1 calls arriving at the Public Safety Answering Point (PSAP) shall be answered within ten (10) seconds during the busy hour (the hour each day with the greatest call volume, as defined in the NENA Master Glossary 00-001). Ninety-five (95%) of all 9-1-1 calls should be answered within twenty (20) seconds.”¹¹ This standard is being updated and is slated to align with NFPA’s call answering standard.

WCEC has adopted the NENA standard for call answering.

NFPA has higher standards for call processing. NFPA, also a non-profit organization, “delivers information and knowledge through more than 300 consensus codes and standards, research, training, education, outreach and advocacy ...”¹² NFPA 1221, 2016 Edition, Section 7.4.1 states, “Ninety-five percent of

⁷ “About APCO,” APCO International, 2017, <https://www.apcointl.org/about-apco.html>.

⁸ “APCO Projects,” APCO International, 2017, <https://www.apcointl.org/about-apco/apco-projects.html>.

⁹ “NENA’s Mission,” National Emergency Number Association, <http://www.nena.org/?page=Mission>.

¹⁰ Ibid.

¹¹ “9-1-1 Call Answering Standard,” National Emergency Number Association,” June 10, 2006, <https://www.nena.org/?page=911CallAnswerStd>, page 8 of 12.

¹² “NFPA Overview,” National Fire Protection Association, 2017, <http://www.nfpa.org/about-nfpa/nfpa-overview>.

alarms^[13] received on emergency lines shall be answered within 15 seconds, and 99 percent of alarms shall be answered within 40 seconds.”¹⁴

NFPA further defines call processing times, which begin when the call is answered and end when dispatch starts. Section 7.4.2 states, “Apart from the call types identified in 7.4.2.2, 90 percent of emergency alarm processing shall be completed within 64 seconds, and 95 percent of alarm processing shall be completed within 106 seconds.”¹⁵

Section 7.4.2.2 states, “Emergency alarm processing for the following call types shall be completed within 90 seconds 90 percent of the time and within 120 seconds 99 percent of the time:

- (1) Calls requiring emergency medical dispatch questioning and pre-arrival medical instructions
- (2) Calls requiring language translation
- (3) Calls requiring the use of a TTY/TDD^[16] device or audio/video relay services
- (4) Calls of criminal activity that require information vital to emergency responder safety prior to dispatching units
- (5) Hazardous material incidents
- (6) Technical rescue
- (7) Calls that require determining the location of the alarm due to insufficient information
- (8) Calls received by text message”¹⁷

NFPA does not address law enforcement call processing and dispatching times, allowing the jurisdictions to establish time frames for dispatch in accordance with respective standard operating procedures (SOPs).

2.2 Accrediting Organizations

Accrediting organizations also develop standards with which agencies applying for respective accreditation must comply.

CALEA, a “credentialing authority through the joint efforts of law enforcement’s major executive associations”¹⁸ accredits law enforcement agencies and 9-1-1 communications centers. CALEA’s “accreditation program provides public safety agencies an opportunity to voluntarily demonstrate that they meet an established set of professional standards which:

¹³ NFPA 1221 defines an alarm as “a signal or message from a person or device indicating the existence of an emergency or other situation that requires action by an emergency response agency.”

¹⁴ “NFPA 1221 Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems,” National Fire Protection Association, 2016, <http://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=1221>.

¹⁵ Ibid.

¹⁶ Teletypewriter/Telecommunications Device for the Deaf

¹⁷ Ibid.

¹⁸ “The Commission,” CALEA, <http://www.calea.org/content/commission>.

- Require an agency to develop a comprehensive, well thought out, uniform set of written directives. This is one of the most successful methods for reaching administrative and operational goals, while also providing direction to personnel.
- Provide the necessary reports and analyses a chief executive officer (CEO) needs to make fact-based, informed management decisions.
- Require a preparedness program be put in place—so an agency is ready to address natural or man-made critical incidents.
- Are a means for developing or improving upon an agency's relationship with the community.
- Strengthen an agency's accountability, both within the agency and the community, through a continuum of standards that clearly define authority, performance, and responsibilities.
- Can limit an agency's liability and risk exposure because it demonstrates that internationally recognized standards for law enforcement have been met, as verified by a team of independent outside CALEA-trained assessors.
- Facilitates an agency's pursuit of professional excellence.”¹⁹

CALEA standards define what needs to be done, not how agencies are to accomplish it.

Currently no agencies served by WCEC are CALEA-accredited. However, Williamson County Sheriff's Office is in the self-assessment phase for Law Enforcement Accreditation through CALEA.

CALEA accreditation for law enforcement requires active participation from the respective communications center serving the agency as there is an entire chapter (Chapter 81) dedicated to communications.

81.1 Administration	81.2.9 Local/State/Federal CJI Systems
81.1.1 Agreements, Shared/Regional Facility	81.2.10 Alternative Methods of Communication
81.1.2 Operations Meet FCC Requirements	81.2.11 Emergency Messages
81.2 Operations	81.2.12 Misdirected Emergency Calls
81.2.1 24 Hour, Toll-Free Service	81.2.13 Private Security Alarms
81.2.2 Continuous, Two-Way Capability	81.2.14 First Aid Over Phone
81.2.3 Recording Information	81.3 Facilities and Equipment
81.2.4 Radio Communications Procedures	81.3.1 Communications Center Security
81.2.5 Access to Resources	81.3.2 Alternate Power Source
81.2.6 Victim/Witness Calls	81.3.3 Telephone System
81.2.7 Victim/Witness Requests for Information	81.3.4 Mobile/Portable Radios
81.2.8 Recording and Playback	

¹⁹ Ibid.

When the law enforcement agency is assessed for accreditation, the communications center is also assessed to ensure that the areas detailed above are in compliance with the respective standard. While compliance may be observed for many of the listed standards, others require a written directive or SOP. WCEC is working cooperatively with the Williamson County Sheriff's Office to ensure a successful outcome to its pursuit, and must maintain the necessary records to show compliance.

The Commission on Fire Accreditation International (CFAI) administers the Center for Public Safety Excellence's (CPSE's) accreditation program for fire and emergency service organizations. The mission of the CPSE, a non-profit corporation, is to "lead the fire and emergency service to excellence through the continuous quality improvement process of accreditation, credentialing, and education."²⁰ The CFAI has noted that their accreditation process provides a well-defined benchmark system to measure the quality of fire and emergency services.

While currently no fire departments served by WCEC are accredited, if they were, WCEC would have to adhere to the call answering and call processing standards established in NFPA 1221.

However, the Insurance Services Office (ISO) Fire Suppression Rating Schedule (FSRS) evaluates four primary categories of fire suppression: fire department, emergency communications, water supply, and community risk reduction. The FSRS "measures the major elements of a community's fire protection system and develops a numerical grading called a Public Protection Classification²¹ (PPC®)."²² Ten points are available for emergency communications.

Emergency reporting: ISO will credit basic 9-1-1 or Enhanced 9-1-1. Other items evaluated include E9-1-1 wireless, VoIP, and CAD.	3 points
Telecommunicators: ISO credits the performance of the telecommunicators in accordance with the general criteria of NFPA 1221, <i>Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems</i> . We also credit emergency dispatch protocols and the telecommunicators' training and certification programs.	4 points
Dispatch circuits: ISO credits the number and type of dispatch circuits in accordance with the general criteria in NFPA 1221.	3 points ²³

²⁰ "CPSE Over," Center for Public Safety Excellence, 2018, <https://cpse.org/cpse-overview/>.

²¹ PPC "is the countrywide classification system used by the Insurance Services Office (ISO) to reflect a community's local fire protection for property insurance rating purposes. The public fire protection of a city, town or area is graded using ISO's Fire Suppression Rating Schedule to develop the community's classification." <http://www.tdi.texas.gov/fire/fmppcfaq.html>.

²² "Items Considered in the FSRS," ISO Mitigation, 2018, <https://www.isomitigation.com/ppc/fsrs/items-considered-in-the-fsrs/>.

²³ Ibid.

The ISO notes:

We base our evaluations on nationally recognized standards developed by the Association of Public-Safety Communication Officials International (APCO) and the National Emergency Number Association (NENA). ISO works very closely with APCO, NENA, the National Fire Protection Association (NFPA), county coordinators, directors, and staff at the communications centers we survey. We've found that the most critical factor in responding to emergencies is telecommunicators. Having a sufficient number of well-trained telecommunicators can make all the difference when responding to an emergency, and our evaluation gives this component the weight it deserves.²⁴

Thus, fire department accreditation and ISO ratings rely on compliance of communications centers, such as WCEC, and the points awarded, respectively.

The Commission on Accreditation of Ambulance Services (CAAS) is the accrediting body for ambulance services. CAAS is an independent commission that “established a comprehensive series of standards for the ambulance service industry.”²⁵ The CAAS standards are designed to help increase operational efficiency and decrease risk and liability across the entire spectrum of the organization, often exceeding standards established at the local or state level. While CAAS does not accredit communications centers, Section 204 of the standards addresses communications centers, stating, “[e]fficient call taking, effective resource deployment, and continuous communications capabilities are required to maintain an effective EMS agency.”²⁶ There are seven applicable areas within Section 204:

- 204.01 Policies and Procedures
- 204.02 Contingency Plans
- 204.03 Preventive Maintenance
- 204.04 Training
- 204.05 Licensure
- 204.06 Communications Inter-Agency Dialogue
- 204.07 Communications Performance Improvement

Williamson County Emergency Medical Service (EMS) is an accredited agency through CAAS. Again, WCEC is an active participant and does its part to assure Williamson County EMS maintains its accreditation.

²⁴ “Emergency Communications,” ISO Mitigation, 2018, <https://www.isomitigation.com/emergency-communications/>.

²⁵ “About CAAS,” Commission on Accreditation of Ambulance Services, 2017, <http://www.caas.org/about/>.

²⁶ “Standard Summaries,” Commission on Accreditation of Ambulance Services, 2017, <http://www.caas.org/caas-standards/content-summaries>.

The International Academies of Emergency Dispatch (IAED) “is a non-profit standard-setting organization promoting safe and effective emergency dispatch services world-wide. Comprising three allied Academies for medical, fire, and police dispatching, the IAED supports first responder-related research, unified protocol application, legislation for emergency call center regulation, and strengthening the emergency dispatch community through education, certification, and accreditation.”²⁷

Entities that utilize the IAED’s internally recognized protocols, available through Priority Dispatch Corporation (PDC), can apply to become an Accredited Center for Excellence (ACE). WCEC utilizes the IAED’s emergency medical dispatch (EMD), emergency police dispatch (EPD), and emergency fire dispatch (EFD) protocols, and is pursuing accreditation for each discipline.

2.3 Protocols

The IAED defines a protocol as “a highly-defined procedure placed into a reference system...designed to lead the calltaker through a predictable, repeatable, and verifiable process for a specific situation.”²⁸ “Protocols have become an integral part of modern day, emergency dispatch operations. Protocols reduce variance, ensure a continuity of care, reduce liability, standardize response decisions, and provide a basis for performance measurement and quality improvement efforts.”²⁹

Protocols involve a set of scripted questions designed to elicit as much information from the caller as possible.³⁰ At case entry, essential information is gathered in a standardized format, including the address of the incident, the caller’s phone number and name, and the problem. Once the problem or chief complaint has been identified, questioning continues to help assess scene safety, prioritize the response, select appropriate instructions for the caller, and provide pertinent information for responders. The questions are designed to be asked verbatim and in order. Where the answer is obvious, questions may be skipped. Post-dispatch instructions are designed to ensure responders’ and the caller’s safety. If necessary, pre-arrival instructions—potentially life-saving, scripted instructions— are provided.

Several county and municipal law enforcement officials who were interviewed provided comments concerning the use of EPD. The officials stated that WCEC’s strict adherence to the EPD protocols frequently impedes effective law enforcement dispatching processes. The officials prefer that law enforcement dispatchers be afforded the flexibility to use their experience to make decision concerning the collection of information and to amend the dispatching procedures as dictated by the incident. The desire is for dispatchers to be able to circumvent the EPD protocol when needed based upon the circumstances of

²⁷ “Welcome to the Academy,” International Academies of Emergency Dispatch, <http://www.emergencydispatch.org/>.

²⁸ The National Academies of Emergency Dispatch® (2011) *Emergency Telecommunicator Course Manual*, Edition 3. Salt Lake City, Utah: Priority Press.

²⁹ “Protocol Use in Emergency Dispatch: An Evolving Standard of Care,” 9-1-1 Magazine.com, May 13, 2011, <http://dispatchingdiscussions.blogspot.com/2013/05/protocol-use-in-emergency-dispatch.html>.

³⁰ While there are numerous vendors for dispatch protocols, the terminology and information referenced is from Priority Dispatch; other vendors may have slightly differing terms and sequencing.

the call. The example most frequently cited were calls such as critical in-progress incidents that require an expedited response.

WCEC actively seeks feedback from the served agencies and plans to evaluate additional call taking tools within the next year to determine which system best serves the citizens and agencies of Williamson County.

It should be noted that the latest version of ProQA Paramount, the call taking protocol software, allows EPD questions to be removed if they do not affect the determinant response, meaning WCEC could remove some questions. This could shorten the time to dispatch points. Another option is to dispatch critical law enforcement incidents before the dispatch points established through the ProQA software. For example, after the telecommunicator receives an address and a generic chief complaint. This would be handled through an SOP that details the specific incidents or criteria that would trigger an expedited response; otherwise, WCEC would need to use the dispatch points established in the protocol. Mission Critical Partners recommends WCEC ensure the latest version of ProQA is in use, work with the law enforcement agencies to determine criteria for expedited response, and memorialize in an SOP.

3 Staffing Analysis and Key Findings

3.1 Organizational Structure

WCEC has an authorized strength of 70 employees, including administrative and support staff. WCEC's organizational chart can be found on the following page.

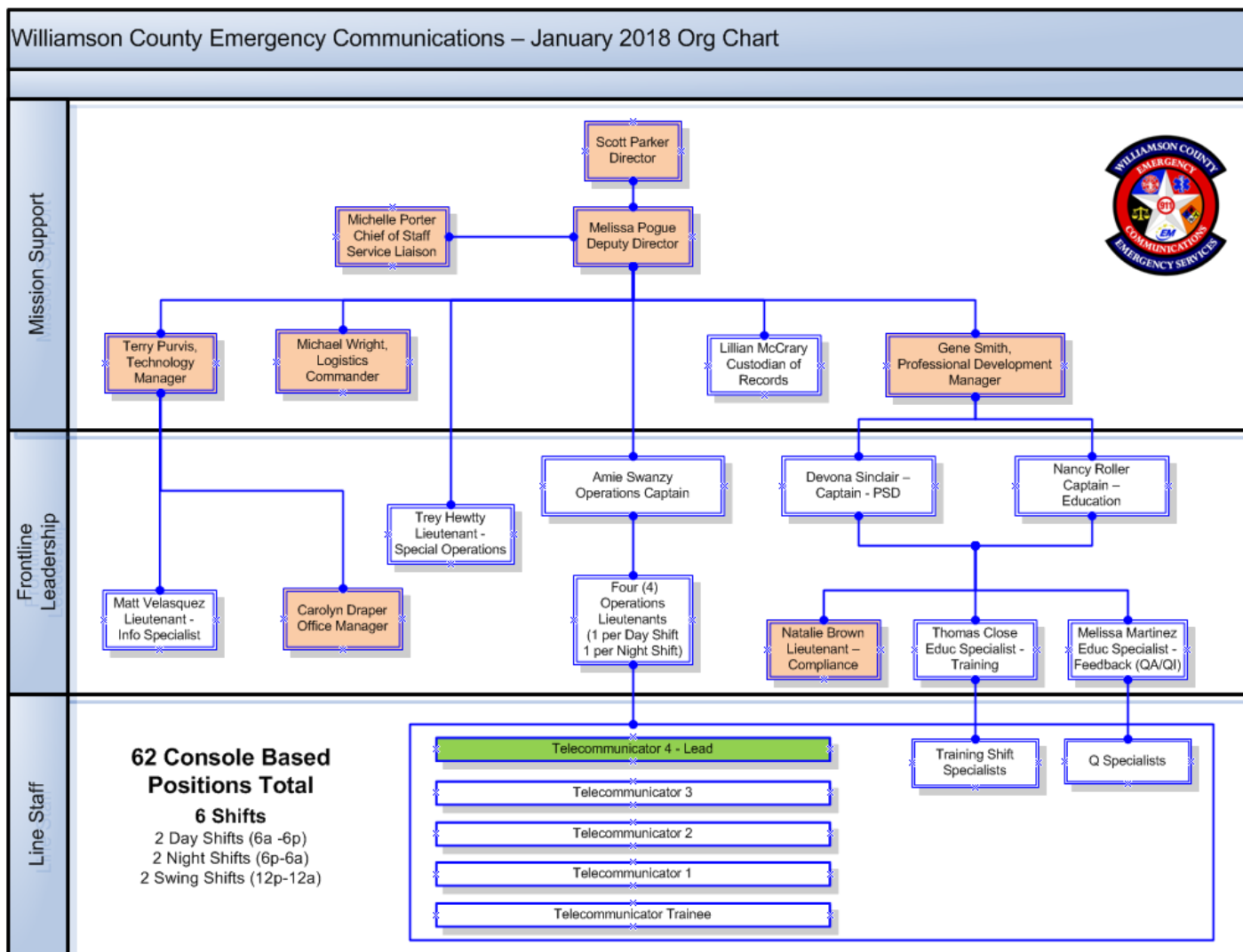


Figure 1: WCEC Organizational Chart

There are 62 Texas Commission on Law Enforcement (TCOLE)-credentialed telecommunicators within the WCEC organization. Of these, 50 are assigned to regular shift work in the communications center; 12 on each day shift, 11 on each night shift, and 2 on each swing shift. There are also training shifts. Many other credentialed employees fill in when necessary and are on the callback/mandatory overtime schedule. Those positions in tan boxes in the organizational chart above do not routinely staff console positions.

The day, night, and swing shifts work 12 hours on a two on, two off, three on, two off, two on, three off schedule. Every other weekend is a three-day weekend (Saturday through Monday).

- Day Shifts – 6:00 a.m. to 6:00 p.m.
- Night Shifts – 6:00 p.m. to 6:00 a.m.
- Swing Shifts – 12:00 p.m. to 12:00 a.m.

The four training shifts work ten hours Monday through Thursday or Tuesday through Friday. The hours are 6:00 a.m. to 4:00 p.m. and 8:00 a.m. to 6:00 p.m. The training shifts are off each weekend.

Mandatory overtime rules are in place. Those assigned to a 12-hour shift are scheduled for mandatory overtime on a rotational basis. In addition to regular duties, trainers and most leadership personnel are listed as “on-call leadership” and, as such, are subject to mandatory overtime to cover staffing shortages.

Minimum staffing in the communications center is as follows:

- Day Shift (Monday–Friday) – All positions responsible for call taking
 - Five law enforcement dispatchers
 - Two fire/EMS dispatchers
 - One expeditor (call taker)
 - Exception: 6:00 a.m. to 9:00 a.m.: four law enforcement dispatchers and two fire/EMS dispatchers only
- Day Shift (Saturday and Sunday)
 - Four law enforcement dispatchers
 - Two fire/EMS dispatchers
- Night Shift (Monday–Friday)
 - Four law enforcement dispatchers
 - Two fire/EMS dispatchers
 - One expeditor (until midnight)
- Night Shift (Saturday and Sunday)
 - Four law enforcement dispatchers
 - Two fire/EMS dispatchers

Minimum staffing requires that all dispatchers also answer incoming 9-1-1 calls.

Additional staff will work as dispatchers and call takers. When possible, the supervisor is not assigned to cover a radio or phone position.

3.2 Operational Layout

WCEC operational floor is sizable, divided into four areas: law enforcement dispatch, fire/EMS dispatch, call taking, and overflow/training. There is a separate workstation area for the on-duty lieutenant. Law enforcement dispatch is in the center of the room and is spread between two groups of four console workstations, while fire dispatch is a four-console grouping at the east end of the room. Call taking has four workstations in two rows on the west side of the room. There is an overflow grouping of four workstations in the northeast corner of the room that is can also be used for on-the-job (OTJ) training; these positions are normally not staffed and have radio capabilities only.

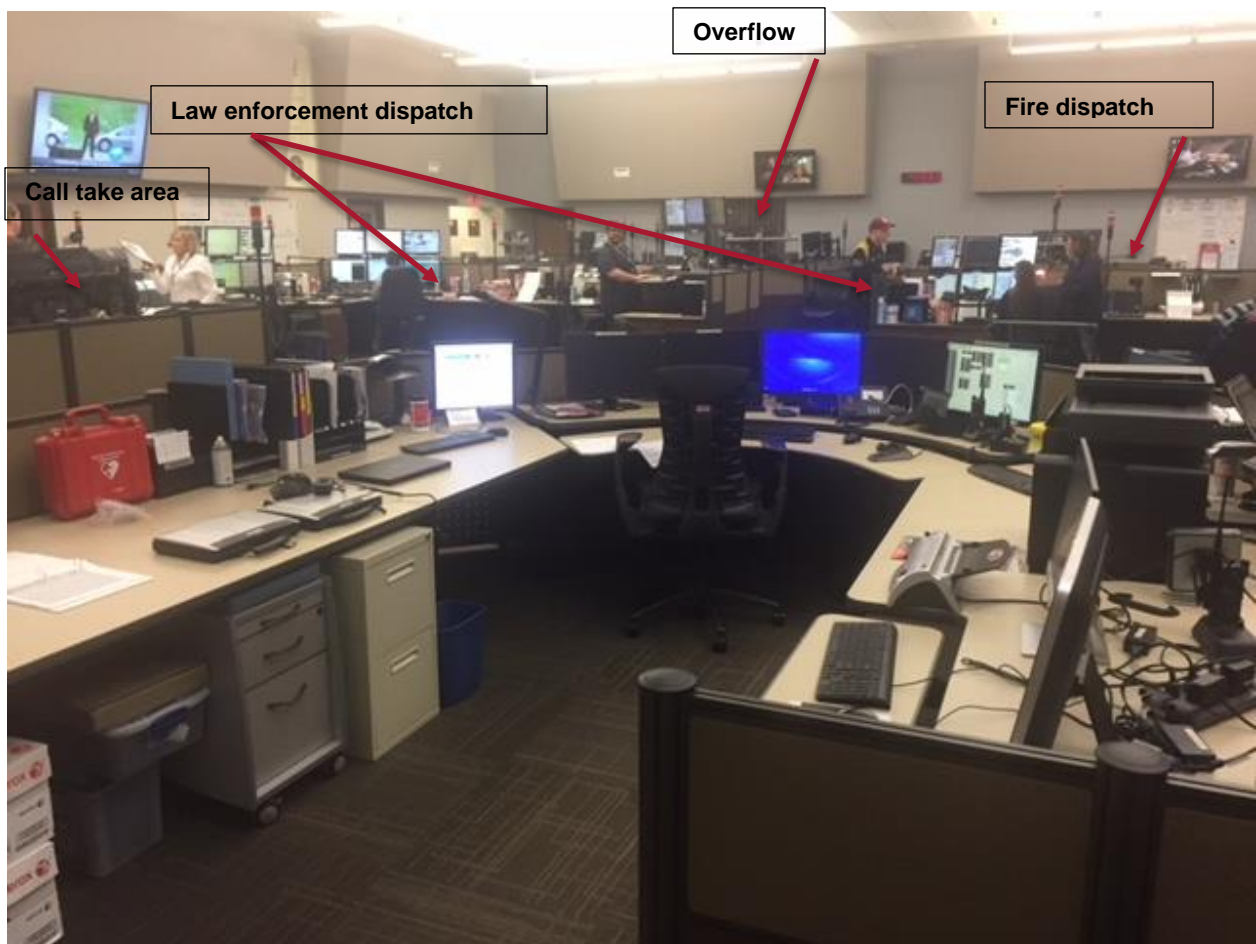


Figure 2: View from Supervisor Workstation



Figure 3: Law Enforcement Dispatch Grouping



Figure 4: Call Take Grouping and Supervisor Workstation

Law enforcement and fire positions are near each other, which allows for beneficial interaction and communication. However, the call take area is not conducive to interaction with the dispatch positions.

The lieutenants' workstation, although near the call take area, is in a position that allows them to monitor and observe the communications floor.

In total, WCEC has 21 console workstations on the operational floor. There are five auxiliary/training positions in the simulation lab, adjacent to the operations floor. Of the 21 console positions, only 12 have 9-1-1 answering capabilities.

Mission Critical Partners recommends that room layout be analyzed. When there are call takers, they are somewhat removed from dispatch staff, especially fire/EMS. While it might require some reconfiguration of the phones, the overflow/training pod area could be considered for 9-1-1 call taking, putting staff closer to the active dispatch areas.

Currently, law enforcement dispatch is divided into five and four dispatch zones depending on time of day, as indicated above.

- Day
 - W Call 1/Jail
 - W Call2/ACO
 - Traffic/SO TAC/SMT
 - Constable/JP1/PD West
 - Hutto PD/Hutto ISD PD/Hutto ACO/PD East
- Night
 - W Call1/Jail
 - W Call2/ACO
 - Traffic/SO TAC/Const/JP1/PD West/SMT
 - Hutto PD/Hutto ISD PD/Hutto ACD/PD East

The consolidation of the constable and traffic police zones at night appears to be warranted. These zones reduce their personnel count to an easily manageable number. However, the monitored law enforcement talkgroups (channels) is 23. Whether four or five dispatchers, this number of monitored talkgroups is challenging, to say the least, even more so when answering 9-1-1 calls. In an optimal situation, a 1:1 ratio of talkgroups to dispatchers is favored, or, at the maximum, a 1:2 ratio. Requiring a dispatcher to be responsible for a primary talkgroup and then monitor four or five others creates a situation where radio transmissions may be missed, and/or other errors made. This creates liability for WCEC. Each “monitored” talkgroup should be reviewed for activity and need. WCEC should meet with respective agencies and re-assign, where possible, the agencies to a primary dispatch (hailing) talkgroup, should they need to contact WCEC. Barring this, the monitored talkgroups should be significantly reduced.

The same can be said for fire/EMS dispatch. During observations, it was overwhelming for the dispatcher to monitor multiple fire ground talkgroups. Each agency appeared to have an operational talkgroup to which the agency switched after dispatch. To that end, that leaves 37 talkgroups for which dispatchers could be responsible for monitoring. With that many, it is an impossible task for WCEC dispatchers. Mission Critical Partners observed the dispatcher asking units to repeat their traffic many times because they were on another channel or had simultaneous transmissions being broadcast. Again, this creates liability for WCEC.

Mission Critical Partners reviewed push-to-talk (PTT), also known as radio traffic, data for FY16-17 and FY17-18 (from October 1, 2017, until various dates in April and May 2018). The data is shown below.

FY16-17 Total Seconds of PTT	Average Seconds per Day	FY17-18 (To April-May)	Average Seconds per Day
18,340,047.20	50,246.70	9,571,196.90	48,766.72

In FY16-17, the average PTT data equals 837 minutes or approximately 14 hours of talk time per day; for FY17-18, the average is 813 minutes or 13.5 hours of talk time per day. While PTTs on some individual talkgroups have increased, overall, there has been 25 fewer minutes of talk time in the 2017-2018 fiscal year so far. The PTT data can be found in Appendix A – Push-to-talk (PTT) Data.

This is no standard as to radio traffic loading or tasking for a dispatch position. PTT loading (radio traffic) is used to determine the number of channels required of the actual radio system. That said, Mission Critical Partners reiterates WCEC's exposure to liability with dispatchers having responsibility for multiple radio channels and answering phones. In this situation, a telecommunicator may be faced with determining which takes precedence—handling a call presenting a life-threatening situation or responding to an officer needing assistance. This is not an easy decision and could be one that exposes the agency to risks. Telecommunicators advised Mission Critical Partners that they have been instructed that their first priority is radio traffic; for a citizen, this not might be acceptable.

The primary concern is not the PTT loading, but rather the number of talkgroups for which each telecommunicator is responsible. Mission Critical Partners recommends, as noted above, that WCEC work with the served agencies to restructure the talkgroups and operational responsibilities. After call answering responsibilities have been removed from the dispatch positions, Mission Critical Partners recommends that at least annually PTT loading is examined for increases in traffic, and recommends the PTTs are assessed per hour. This will allow WCEC to determine which hours of the day are the busiest in terms of radio traffic. WCEC may find that the radio traffic is more manageable once call answering responsibility is removed and operational responsibility for talkgroups is reconfigured. If PTT loading is excessive, it may be necessary to divide some talkgroups into two.

3.3 Staffing Analysis Methodology

The primary goal of a staffing analysis is to determine whether a PSAP is appropriately staffed with the number of personnel to ensure efficient processing of emergency calls now and to determine the number of personnel that may be needed in the future, although the farther into the future one looks, the more difficult it is to predict. A staffing analysis considers projected population growth to ensure that the agency is well-positioned in its future planning efforts and that it meets the expectations of the public and its served agencies. Operational efficiency is gauged by comparing statistical data and personnel utilization to appropriate national standards.

A secondary goal of an analysis is often to assess the number of physical console positions required for PSAP operations and how many of these positions should be routinely staffed throughout the day. The number of required positions can be used to assist in programming any future facility to ensure adequate space is allotted.

Many communications centers across the country are struggling with staffing shortages. Tenured employees are retiring; others just leave for any number of reasons – shift work, the hours, child care issues, stress, and better pay in the private sector. While generally there is not a lack of applicants for open positions, the often-stringent job qualifications (i.e., background checks, drug usage) disqualify many, as do the lengthy application processes; it is not unusual for many communications centers to have processes that take upwards of six months from application to start date. Thus, communications centers often find themselves with a revolving door for staff; unfortunately, many are not able to fill the vacancies before more staff leave, creating an even larger gap.

Industry tools are available to assist communications center with determining baseline staffing requirements for call takers, dispatchers, and supervisors. APCO offers Project RETAINS³¹, developed by researchers from the University of Denver Research Institute in 2004. The RETAINS toolkit 2.0 expanded its functionalities and capabilities.³² NENA offers a Communications Center Staffing Tool, which is available through a staffing workshop or the center manager program.³³ Both tools utilize agency-specific data, such as call and incident volumes and other data, such as employee leave, to calculate baseline staffing requirements. One difference between the tools is NENA considers the workload in terms of incidents that a dispatcher can or should be able to handle at one time, whereas RETAINS does not. While this is a subjective number, the agency itself defines the parameters.

Mission Critical Partners' staffing analysis involves a multimodal approach that considers workload, volume- and coverage-based staffing, and performance metrics. Volume-based staffing calculates the number of staff required to handle the volume of the respective data, while coverage-based staffing calculates the number of personnel staff required to staff one position 24 hours a day, 7 days a week. Mission Critical Partners uses these calculations in tandem. Statistical calculations are balanced with operational logistics to identify how many personnel are needed for a communications center to achieve its performance goals while providing efficient and effective service. In addition to APCO and/or NENA tools, Mission Critical Partners uses Erlang C calculations and experience in the industry to assist in projecting the number of telecommunicators (call takers, dispatchers, and supervisors) required to efficiently answer and dispatch emergency and non-emergency calls for law enforcement, fire, and EMS agencies. Mission Critical Partners analyzes resulting data with a respective center's operational configuration to determine staffing requirements. WCEC provided statistical incident, call volume, and personnel data for review.

Many factors play a role in determining appropriate staffing levels, including available work hours, utilization, and attrition rates. Available work hours are the number of hours a telecommunicator (call takers and dispatchers) is available to work during a year. There are many sub-factors to this calculation, including leave usage; i.e., any time that the employee is away from their assigned duties. This time includes vacation, holiday, sick, and personal leave; training; military leave; and other activities.

In 2017, WCEC telecommunicators³⁴ used approximately 14,698 hours of leave; approximately 257 hours per person. This is not to say that each person used this amount of respective leave; some may have used less, some may have used more. Based on a 12-hour day, this equates to 21 days of leave per person (or 32 8-hour days). The leave usage in 2017 increased by approximately 14 hours per person; not a significant increase. According to an August 2013 U.S. Bureau of Labor Statistics publication, the average

³¹ "APCO Project RETAINS," APCO International, 2018, <https://www.apcointl.org/resources/staffing-and-retention/retains.html>.

³² RETAINS is available for a subscription. From appearances, the last update was in 2009.

³³ Both the workshop and the center manager program are available for a cost. NENA notes that the workshop is hands-on, that has "you using the Tool during the workshop to determine your center's staffing needs at a high-level. You will use a combination of facilitator-provided practice data and your PSAP's actual data to determine the staffing needs of your center." <http://www.nena.org/?page=CommCenterStaffing>.

³⁴ Those whose primary assignment is shift work.

number of paid leave days for five years of service in the private industry is 30; ten years is 34 days, while 20 years is 38 days.³⁵ Thus the 2017 leave usage in WCEC aligns with the private industry.

Utilization is a subjective number, designed to provide an estimate of the time per shift that a telecommunicator should be busy providing call handling and dispatching services.³⁶ Allotted breaks and meals (not what is actually taken) are subtracted from the shift length, as is time spent doing other work-related activities, such as filing paperwork or decompressing after a stressful incident. WCEC attempts to provide telecommunicators with a 20-minute break for every four hours worked, when staffing allows; restroom breaks are provided as needed. Meals are eaten at the workstations. In Mission Critical Partners' experience, telecommunicators may spend four to seven minutes per hour on other work-related activities. Mission Critical Partners used five minutes, with the resulting utilization (or agent occupancy rate) rate for WCEC at 84 percent. If the time spent on other activities or down-time decreases to four minutes, the utilization rate rises to 86 percent. If the allotted meals and breaks are removed from consideration, utilization rises to 92 percent. As APCO notes, "Researchers in commercial call centers report increased employee turnover and 'undesirable' agent behaviors when agent occupancy rates exceed 85 to 90% over extended periods of time." Utilization is always less than or equal to agent occupancy.³⁷

Calculating the net work hours (scheduled hours less leave) and the utilization rate, the true availability of an employee is the result. For WCEC, this is 74.1 percent. That means that a telecommunicator is scheduled to work 2,184 hours, but subtracting leave and breaks, may only work 1,618 hours during a year.

Attrition, also referred to as turnover, is a factor that must be considered. The attrition data includes the highest number of employees for a given year, as well as the number of staff that left voluntarily or involuntarily. The result is the attrition rate. The national average for recent years is estimated to be approximately 13 percent; however, Mission Critical Partners is aware of several centers whose attrition rate has been higher than 15 percent, and some upwards of 25 percent. APCO RETAINS Retention report does not have a current turnover rate, reporting 2009 data as its latest reference. In its report, APCO RETAINS identifies the national turnover rate at 17 percent for 2005 and 19 percent for 2009.³⁸ Between 2015 and 2017, WCEC's average attrition rate for telecommunicators assigned to shift work was 29.75 percent. The attrition was highest in 2016, at over 35 percent. In 2018, 12 telecommunicators have either resigned, been terminated, or transferred. In the last four fiscal years, 50 telecommunicators—the total

³⁵ "Paid leave in private industry over the past 20 years," Bureau of Labor Statistics, August 2013, <http://www.bls.gov/opub/btn/volume-2/paid-leave-in-private-industry-over-the-past-20-years.htm>.

³⁶ Utilization should not be confused with agent occupancy. Utilization is the total time an employee is at work and able to do their respective tasks, such as call take and dispatch. (This would not occur on breaks, for example.) Occupancy is the actual time at work busy on assigned tasks. This link (<http://www.thinkhdi.com/~media/HDI Corp/Files/Library-Archive/Insider%20Articles/agent-occupancy.pdf>) provides good information.

³⁷ Rumburg, Jeff. "Metric of the Month: Agency Occupancy," MetricNet®, 2013.

<http://www.thinkhdi.com/~media/HDI Corp/Files/Library-Archive/Insider%20Articles/agent-occupancy.pdf>.

³⁸ According to the APCO RETAINS Retention document, the comparison rates were derived from Project RETAINS Study I and the RETAINS Next Generation Study.

assigned to shift work—have left WCEC. It is staggering to think that the equivalent of one’s total workforce has turned over in four years.

WCEC’s attrition rate is more than double the estimated national average. Retention is not just a problem seen in Williamson County; it is a crisis in many communications centers across the country. Mission Critical Partners has made some recommendations further in this report that WCEC could implement to attempt to address this problem.

Staffing calculations should also consider performance metrics. Performance metrics measure the operational efficiency of a PSAP with targeted goals and established standards. Mission Critical Partners uses performance metrics and national standards to ascertain how staffing may be positively or negatively affecting PSAP operations.

The most common metric involves the average time it takes a PSAP to answer its incoming emergency calls. PSAPs typically try to align their call answering goals to either NENA³⁹ or NFPA⁴⁰ standards. WCEC has adopted the NENA standard—90 percent of all 9-1-1 calls answered within ten seconds during the busy hour. From October 1, 2017, to May 1, 2018, cumulatively, the busiest hour was 18:00 (6:00 p.m.). WCEC answered 91.46 percent of incoming calls in less than ten seconds. However, at 17:00 (5:00 p.m.), the next busiest hour, WCEC fell short, answering 88.22 percent within ten seconds. Only one other hour, 15:00 (3:00 p.m.), had less than 90 percent of 9-1-1 calls answered within ten seconds; all other hours show statistics above 90 percent.

Another metric is the abandoned call rate. Every center will experience abandoned calls; the goal is to keep them as low as possible. There are many reasons for abandoned calls, including those who realized they have misdialed. When staff members are on another line, incoming calls cannot be answered right away. Regardless of the reason, this creates additional work as staff must try to re-establish contact with the caller to determine if there is an actual emergency. There is no industry metric for a “normal” number of abandoned calls. In Mission Critical Partners’ experience, an abandoned call rate of 8 percent or less is ideal and attainable when a center is appropriately staffed. MetricNet, a performance benchmarking company in McLean, Virginia, for information technology (IT) and call centers, suggests an abandoned call rate of 4 percent to 7 percent⁴¹; while their focus is on the service industry, not the 9-1-1 industry, there is a correlation between the two. Both industries are answering calls from the public in response to their stated mission or objective. Over the last three years, WCEC’s abandoned call rate has fluctuated from 4.72 percent to 4.99 percent to 3.91 percent most recently. Considering the center has been operating primarily without dedicated call takers, this is to be commended.

The value of any resulting staff projections is dependent upon the accuracy of the data and statistics provided by the PSAP.

³⁹ NENA: 90 percent of 9-1-1 calls answered within 10 seconds during the busy hour and 95 percent 9-1-1 calls answered within 20 seconds

⁴⁰ NFPA: 95 percent answered within 15 seconds and 99 percent answered within 40 seconds

⁴¹ “Call Abandonment Rate,” MetricNet, May 23, 2012, <http://www.metricnet.com/call-abandonment-rate>.

3.4 Staffing

As noted previously, 46 telecommunicators and four lieutenants are assigned to shift work in the communications center, even though 62 staff maintain credentials. The staffing portion that follows addresses the call take, dispatch, and supervisory needs within the center, and is based on the authorized strength of 50.

WCEC was designed to operate in a horizontal configuration, i.e., with a division of responsibilities between the call take and dispatch functions. In a horizontal center, dispatch is not delayed while information is gathered from the caller. Unfortunately, increasing workloads and agency demands have outpaced staffing and this is no longer feasible. Thus, WCEC primarily operates in a vertical configuration, with call take and dispatch both performed by the telecommunicators. A telecommunicator handles a call from beginning to end, and at the same time is responsible for dispatching first responders and monitoring radio traffic. In a vertical configuration, the telecommunicator may be faced with determining which takes precedence—handling a call presenting a life-threatening situation or dispatching responders to a potentially life-threatening incident. This is not an easy decision and could be one that exposes the agency to risks. While many smaller centers operate in this configuration, as call and incident volumes do not necessitate the need for horizontal operations, WCEC is not a small center. Analyzing call and incident data will assist in determining an appropriate operational configuration based on available data.

Currently WCEC staffing rarely provides for more than one dedicated call taker, referred to as an expeditor, which is only required in minimum staffing Monday through Friday. With the day shifts at 12, one being the lieutenant, and perhaps a 30 percent attrition rate, staffing could be at eight, which just covers the positions necessary (five law enforcement dispatchers, two fire/EMS dispatchers, and one call taker). If someone is on leave or out sick, the available staffing decreases, resulting in the lieutenant or support staff potentially filling in to meet minimum staffing requirements. The same holds true for night shift, but with only 11, one being the lieutenant. Staffing could be at seven (four law enforcement dispatchers, two fire/EMS dispatchers, and one call taker until midnight). If someone is on leave or out sick, there may be no call taker, even when the swing shift is on-duty.

Currently it appears that more emphasis is placed on staffing dispatch positions rather than call take, which should be the initial focus, as a citizen's first contact with emergency services is through the person answering the phone. Again, this is due to increasing workloads and agency demands.

3.4.1 Call Takers

As noted earlier, in FY16-17, WCEC processed the following:

	9-1-1	Administrative Calls	Totals
FY16-17	83,840	101,151	184,991

Abandoned and outbound calls added 3,402 and 72,651 calls to the workload, respectively.

To determine the staffing needed to handle the incoming call volume, calls can be parsed by the hour of the day and evaluated with Erlang C calculations. The average incoming 9-1-1 calls per hour are derived from FY16-17 data. The averages per hour are consistent with data from FY15-16.

The goal is to answer 90 percent of all 9-1-1 calls, during the busy hour, within ten seconds. The average processing time is 149 seconds.

Table 4: 9-1-1 Call Handling

Average Handling Time (s)	149 seconds	
Reporting Period	60 minutes	
Required service level	90.00%	
Target answer time (secs)	10 seconds	
Shrinkage	0%	26%

Hour of Day	Incoming 9-1-1 Calls	Telecommunicators Needed	With Shrinkage
0:00	6	2	3
1:00	4	2	3
2:00	4	2	3
3:00	3	2	3
4:00	3	2	3
5:00	3	2	3
6:00	5	2	3
7:00	8	2	3
8:00	10	2	3
9:00	10	2	3
10:00	11	2	3
11:00	11	2	3
12:00	12	2	3
13:00	13	3	4
14:00	13	3	4
15:00	14	3	4
16:00	14	3	4
17:00	15	3	4
18:00	16	3	4
19:00	13	3	4
20:00	12	2	3
21:00	11	2	3

Hour of Day	Incoming 9-1-1 Calls	Telecommunicators Needed	With Shrinkage
22:00	9	2	3
23:00	7	2	3

At the busiest hour (18:00 or 6:00 p.m.), 16 9-1-1 calls are received, on average. This yields a traffic intensity of 0.66 Erlangs, requiring three telecommunicators.

$$\text{Erlangs} = (\text{Incoming calls} * \text{Average Handling Time} / 3600) * (60 / \text{Period of Time})$$

$$\text{Erlangs} = (16 * 149 / 3600) * (60 / 60)$$

$$\text{Erlangs} = (2384 / 3600) * 1$$

$$\text{Erlangs} = .66 * 1$$

$$\text{Erlangs} = 0.66$$

Once the Erlangs are calculated, the number of positions needed to ensure a P.01 grade of service are assigned to the respective Erlang. A P.01 grade of service means that no more than one call in 100 is blocked.

Erlangs	.46	.87	1.36	1.91	2.50	3.13	3.78	4.46	5.16	5.88	6.61	7.35	8.11
Positions	3	4	5	6	7	8	9	10	11	12	13	14	15

As call volume varies, so does staffing. During many hours, only two telecommunicators are needed to answer incoming 9-1-1 calls. It should be noted that these numbers do not represent a shrinkage factor, i.e., time away from the job. With a true availability of 74 percent, the shrinkage factor is 26 percent. This increases the number of telecommunicators by one for each hour of the day. In essence, during the busy hours of the day, three people need to be seated at the consoles to answer incoming 9-1-1 calls to meet standards.

The same premise can be applied to non-emergency or administrative calls, but the parameters change as there is not a need to answer these calls with the same level of service. The parameters can be determined by the agency, but Mission Critical Partners believes 75 percent of administrative calls should be answered within one minute.

Table 5: Administrative Call Handling

Average Handling Time (s)	148 seconds	
Reporting Period	60 minutes	
Required service level	75.00%	
Target answer time (secs)	60 seconds	
Shrinkage	0%	26%

Hour of Day	Incoming Administrative Calls	Telecommunicators Needed	With Shrinkage
0:00	5	1	1
1:00	5	1	1
2:00	4	1	1
3:00	3	1	1
4:00	4	1	1
5:00	4	1	1
6:00	5	1	1
7:00	9	2	3
8:00	16	2	3
9:00	18	2	3
10:00	19	2	3
11:00	18	2	3
12:00	17	2	3
13:00	17	2	3
14:00	17	2	3
15:00	18	2	3
16:00	17	2	3
17:00	16	2	3
18:00	15	2	3
19:00	12	2	3
20:00	10	2	3
21:00	9	2	3
22:00	8	2	3
23:00	7	1	1

The traffic intensity does not change as the parameters are closely aligned. What does change is the telecommunicators needed to answer the non-emergency calls. At the busiest hours, two telecommunicators are needed. When applying the shrinkage factor of 26 percent, the hours when two telecommunicators are needed increases to three to handle administrative calls.

When combined with the 9-1-1 call data, this would imply that seven call takers (with shrinkage) are needed during the busiest hours of the day to handle all incoming calls, dropping to four at other times. This could mean 22 telecommunicators to just answer calls—essentially six or seven assigned to each day shift and four or five to each night shift.

Erlang C calculations do not consider attrition, which will remain. Call takers are promoted to dispatch when vacancies occur, and call takers, like other staff, leave to pursue other opportunities. This must be taken into consideration when determining staff needs.

The traffic intensity for 9-1-1 calls was 0.66 Erlangs, corresponding to the need for three to four positions to handle 9-1-1 calls for a P.01 grade of service. This also translates to the need to have the positions staffed. From NENA calculations, to staff one position 24 hours a day, 7 days a week (24/7), requires 5.4 people, without attrition, as evidenced below. Hence staffing four positions, for example, 24/7 requires 21.6 people (28 with attrition); five positions, 27 people (35 with attrition).

Table 6: Call Taker Coverage

Full Time Equivalents (FTEs) for Call Taker Coverage Positions		
Position:	Call Taker	
A	1	Total number of console positions to be covered
B	24	Number of hours per day that need to be covered
C	7	Number of days per week that need to be covered
D	52	Number of weeks per year that need to be covered
E	8736	Total Hours needing coverage (A x B x C x D)
Telecommunicator Availability:		
F	1618.38	True Availability per Telecommunicator
FTEs Needed:		
G	5.4	FTE base estimate (FTE) = E / F
H	29.8%	Attrition Rate
I	7.0	FTEs required to accommodate turnover

While both Erlang C and NENA calculations consider the hours away from the console, they do not consider the number of telecommunicators that are out at any given time, it is essentially an average. However, leave usage, for example, tends to be higher during the summer months.

Mission Critical Partners does not believe 28+ telecommunicators are needed to answer calls at this time for several reasons. First, NENA calculations indicate nine call takers are needed to handle the *volume of calls*; however, the calculations do not consider call answering standards, resulting in the need for more than nine. Second, there are swing shifts that cover peak times, as well as training shifts. Third, the current staffing levels are managing to meet call answering standards without dedicated call takers (although the operational configuration is not a best practice). And fourth, increasing telecommunicator staffing by essentially 50 percent is unlikely to occur. That said, it is Mission Critical Partners' professional opinion that

call take and dispatch need to be separate responsibilities and that WCEC should operate in a horizontal configuration. This will mean having dedicated call takers on each shift.

Mission Critical Partners recommends an initial complement of 16 to 18 call takers (telecommunicators), split between the four shifts in a manner deemed appropriate by WCEC. This would essentially allow three to four call taker positions to be consistently staffed each shift. This may mean that some administrative calls do not get answered as quickly or may get placed on hold while an incoming emergency line is answered. While these calls are important, they are not as important as emergency calls; thus, the calls can have a longer ring or hold time.

Mission Critical Partners recommends call taker staffing is re-evaluated once the split has been operational for one year to determine if additional call takers (telecommunicators) are needed. While attrition is currently high, Mission Critical Partners believes addressing the current staffing issues, as well as splitting job responsibilities will naturally begin to reduce attrition. Thus, more efficiencies will be gained within operations, allowing staff to effectively handle operations without over-staffing.

In addition to incoming voice calls, WCEC also accepts text-to-9-1-1 "calls." NENA's recommendation is that staff handle no more than three text events at one time. Based on the available data, text-to-9-1-1 calls currently have no effect on workload, as evidenced below.

Table 7: Text-to-9-1-1 Volume-based Staffing

FTEs for Text to 9-1-1 Call Taker Volume Positions		
Position:	Text to 9-1-1 Call Taker	
A	62	Total Text Volume
B	3	Number of simultaneous incidents that can be handled by one Dispatcher
C	20.67	Incident Volume Adjusted (A / B)
D	0:06:00	Estimated average processing time for this position
E	10.00	Hourly Processing Capability (HPC) = 1 hour / D
	1:00:00	Hour
F	2.07	Workload in hours (W) = C / E {calls per hour handled}
Telecommunicator Availability:		
G	1618.38	True Availability per Telecommunicator
FTEs Needed:		
H	0.00	FTE base estimate (FTE) = F / G
I	29.8%	Attrition Rate
J	0.00	FTEs required to accommodate attrition

This indicates that current staff, and call takers once implemented, will be able to absorb the volume of text-to-9-1-1 calls with no difficulty.

3.4.2 Dispatchers

3.4.2.1 Law Dispatchers

As noted previously, in FY16-17, WCEC handled 217,309 law enforcement incidents.

Table 8: Incident Volumes

	Law	Fire	EMS	Totals
FY16-17	217,309	31,417	30,625	279,351

In FY16-17, 66.77 percent of the law enforcement incidents, slightly over 145,000, were self-initiated by field responders. This could include traffic stops, suspicious persons, warrant service, anything not called in by the public.

In the first five months of FY17-18, WCEC handled 98,850 law incidents; of these, 66.24 percent have been self-initiated.

On average law enforcement units spend 30 minutes 21 seconds on each incident.⁴²

NENA's calculations for volume-based staffing consider that a dispatcher can handle more than one incident at a time. In Mission Critical Partners' experience and data from other PSAPs, for fire, this is estimated to be two and EMS five or six, with law enforcement handling eight. This is a subjective number and these numbers refer to routine incidents—not major incidents. As WCEC law enforcement dispatchers also run data through Texas Law Enforcement Telecommunications System (TLETS) and National Crime Information Center (NCIC) for field units, the number of incidents has been reduced to six. Reducing the incidents to four increases the number of dispatchers required.

⁴² This equates to the processing time for telecommunicators in determining workload.

Table 9: Law Volume-based Staffing

FTEs for Law Dispatcher Volume Positions		
Position: Law Dispatcher 0600 to 1800 hours		
A	130,168	Total Law Enforcement Incident Volume from 0600 to 1800 hours
B	6	Number of simultaneous incidents that can be handled by one Dispatcher
C	21694.67	Incident Volume Adjusted (A / B)
D	0:30:21	Estimated average processing time for this position
E	1.98	Hourly Processing Capability (HPC) = 1 hour / D
	1:00:00	Hour
F	10973.89	Workload in hours (W) = C / E {calls per hour handled}
Telecommunicator Availability:		
G	1618.38	True Availability per Telecommunicator
FTEs Needed:		
H	6.78	FTE base estimate (FTE) = F / G
I	29.8%	Attrition Rate
J	8.80	FTEs required to accommodate attrition

FTEs for Law Dispatcher Volume Positions		
Position: Law Dispatcher 1800 to 0600 hours		
A	87,141	Total Law Enforcement Incident Volume from 1800 to 0600 hours
B	6	Number of simultaneous incidents that can be handled by one Dispatcher
C	14523.50	Incident Volume Adjusted (A / B)
D	0:30:21	Estimated average processing time for this position
E	1.98	Hourly Processing Capability (HPC) = 1 hour / D
	1:00:00	Hour
F	7346.47	Workload in hours (W) = C / E {calls per hour handled}
Telecommunicator Availability:		
G	1618.38	True Availability per Telecommunicator
FTEs Needed:		
H	4.54	FTE base estimate (FTE) = F / G
I	29.8%	Attrition Rate
J	5.89	FTEs required to accommodate attrition

14.69	Total Number FTE Law Dispatchers Needed
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These calculations indicate that 15 telecommunicators are needed to handle the law enforcement incident volume.

Staffing one position 24/7, as noted earlier, requires five to seven people, as evidenced below.

Table 10: Law Enforcement Coverage

FTEs for Law Dispatcher Coverage		
Position: Law Dispatcher		
A	1	Total number of console positions to be covered
B	24	Number of hours per day that need to be covered
C	7	Number of days per week that need to be covered
D	52	Number of weeks per year that need to be covered
E	8736	Total Hours needing coverage (A x B x C x D)
Telecommunicator Availability:		
F	1618.38	True Availability per Telecommunicator
FTEs Needed:		
G	5.4	FTE base estimate (FTE) = E / F
H	29.8%	Attrition Rate
I	7.0	FTEs required to accommodate turnover

Based on the total number of dispatchers needed and the coverage requirements for one position, this indicates that two positions for law enforcement, theoretically, could handle the current incident volume. Mission Critical Partners, however, does not support this few positions as there are other considerations, such as the number of frequencies being monitored, the number of field units for which each position is responsible, and particularly the fact that each dispatcher is also responsible for answering incoming calls for service and running driver's license and registrations.

Currently, law enforcement dispatch is divided into five and four dispatch zones depending on time of day, as indicated above.

- Day
 - W Call 1/Jail
 - W Call2/ACO
 - Traffic/SO TAC/SMT
 - Constable/JP1/PD West
 - Hutto PD/Hutto ISD PD/Hutto ACO/PD East
- Nights (and Saturday and Sunday Day Shift)
 - W Call1/Jail
 - W Call2/ACO
 - Traffic/SO TAC/Const/JP1/PD West/SMT
 - Hutto PD/Hutto ISD PD/Hutto ACD/PD East

There is also a TLETS teletype terminal for administrative messages. This terminal is often monitored by the dispatchers in the grouping.

Translating the above staffing patterns into coverage-based staffing needs is evidenced below.

Table 11: Law Coverage-based Staffing

FTEs for Law Dispatcher Coverage Positions		
Position:		Law Dispatcher
A	5	Total number of console positions to be covered
B	12	Number of hours per day that need to be covered
C	5	Number of days per week that need to be covered
D	52	Number of weeks per year that need to be covered
E	15600	Total Hours needing coverage (A x B x C x D)
Telecommunicator Availability:		
F	1618.38	True Availability per Telecommunicator
FTEs Needed:		
G	9.6	FTE base estimate (FTE) = E / F
H	29.8%	Attrition Rate
I	12.5	FTEs required to accommodate turnover

FTEs for Law Dispatcher Coverage Positions		
Position:		Law Dispatcher
A	4	Total number of console positions to be covered
B	12	Number of hours per day that need to be covered
C	9	Number of days per week that need to be covered ⁴³
D	52	Number of weeks per year that need to be covered
E	22464	Total Hours needing coverage (A x B x C x D)
Telecommunicator Availability:		
F	1618.38	True Availability per Telecommunicator
FTEs Needed:		
G	13.9	FTE base estimate (FTE) = E / F
H	29.8%	Attrition Rate
I	18.0	FTEs required to accommodate turnover

23.5	Total Law Dispatchers Recommended by Formula Without Attrition
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30.5	Total Law Dispatchers Recommended by Formula with Attrition
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⁴³ The 9 days to be covered equal 7 nights of night shift each week and the 2 weekend day shifts, when only 4 law positions need to be covered.

As evidenced, this requires approximately 24 people, without attrition; 31 to account for attrition. Mission Critical Partners recommends that a minimum of 28 telecommunicators be trained on law enforcement dispatch as attrition will likely never be zero.

Mission Critical Partners recommends that the operational configuration continue until dedicated call takers have been instituted on each shift. Mission Critical Partners then recommends that WCEC re-evaluate the operational configuration once the call take workload has been removed from the dispatchers. It may be possible to reduce the number of dispatch positions to more efficiently handle the workload. This may include consideration to operating the teletype position 24/7 and removing some of the administrative responsibilities, such as drivers' licenses, registration checks, and warranted persons checks from the actual dispatch positions. This would need to be discussed with the law enforcement agencies for concurrence; however, while it will be a cultural change for the agencies, it will also decrease the liability on the agency for potentially missed radio traffic or wrong information due to split responsibilities. This may also be met with resistance by dispatchers who are used to this being part of the job. Agencies across the country often switch talkgroups to handle this type of radio traffic; the dispatcher fielding the responses is just as capable of getting assistance to an officer if the need arises as the primary dispatcher. In addition, for field units with mobile data terminals, Mission Critical Partners recommends that field units take primary responsibility for running or retrieving their information, unless scene safety is an issue. This will also require discussions with the agencies for buy-in.

3.4.2.2 Fire/EMS Dispatchers

As noted earlier, in FY16-17, WCEC handled 31,417 fire incidents and 30,625 EMS incidents.

Table 12: Incident Volumes

	Law	Fire	EMS	Totals
FY16-17	217,309	31,417	30,625	279,351

In the first five months of FY17-18, WCEC handled 13,492 fire incidents and 12,804 EMS incidents, a total of 26,296 incidents. It is unusual to see fire and EMS incidents this closely aligned. For agencies that dispatch the three major disciplines, law enforcement incidents generally account for the majority of the workload, followed by EMS incidents and then fire incidents. While fire often responds with EMS on certain call types, in WCEC's case, it appears that fire responds on most EMS calls, hence the higher number of incidents, which somewhat skews actual fire event numbers.

On average fire units spend 37 minutes six seconds on each incident, while EMS units spend 59 minutes 18 seconds on each incident.⁴⁴

While fire and EMS are dispatched from a single position, Mission Critical Partners evaluated each individually.

As noted earlier, NENA's calculations for volume-based staffing consider that a dispatcher can handle more than one incident at a time. In Mission Critical Partners' experience and data from other PSAPs, a fire dispatcher can handle two incidents simultaneously, while an EMS dispatcher can handle five to six incidents. This is due to the number of units that are dispatched on true fire incidents, such as a residential fire, and that fire units are reactive, in circumstances that can change quickly.

⁴⁴ This equates to the processing time for telecommunicators in determining workload.

Table 13: Fire Volume-based Staffing

FTEs for Fire Dispatcher Volume Positions		
Position: Fire Dispatcher 0600 to 1800 hours		
A	18,819	Total Fire Incident Volume from 0600 to 1800 hours
B	2	Number of simultaneous incidents that can be handled by one Dispatcher
C	9409.50	Incident Volume Adjusted (A / B)
D	0:37:06	Estimated average processing time for this position
E	1.62	Hourly Processing Capability (HPC) = 1 hour / D
	1:00:00	Hour
F	5818.21	Workload in hours (W) = C / E {calls per hour handled}
Telecommunicator Availability:		
G	1618.38	True Availability per Telecommunicator
FTEs Needed:		
H	3.60	FTE base estimate (FTE) = F / G
I	29.8%	Attrition Rate
J	4.66	FTEs required to accommodate attrition

FTEs for Fire Dispatcher Volume Positions		
Position: Fire Dispatcher 1800 to 0600 hours		
A	12,598	Total Fire Incident Volume from 1800 to 0600 hours
B	2	Number of simultaneous incidents that can be handled by one Dispatcher
C	6299.00	Incident Volume Adjusted (A / B)
D	0:37:06	Estimated average processing time for this position
E	1.62	Hourly Processing Capability (HPC) = 1 hour / D
	1:00:00	Hour
F	3894.88	Workload in hours (W) = C / E {calls per hour handled}
Telecommunicator Availability:		
G	1618.38	True Availability per Telecommunicator
FTEs Needed:		
H	2.41	FTE base estimate (FTE) = F / G
I	29.8%	Attrition Rate
J	3.12	FTEs required to accommodate attrition

7.79 Total Number FTE Fire Dispatchers Needed		
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Table 14: EMS Volume-based Staffing

FTEs for EMS Dispatcher Volume Positions		
Position: EMS Dispatcher 0600 to 1800 hours		
A	18,344	Total EMS Incident Volume from 0600 to 1800 hours
B	5	Number of simultaneous incidents that can be handled by one Dispatcher
C	3668.80	Incident Volume Adjusted (A / B)
D	0:59:18	Estimated average processing time for this position
E	1.01	Hourly Processing Capability (HPC) = 1 hour / D
	1:00:00	Hour
F	3626.00	Workload in hours (W) = C / E {calls per hour handled}
Telecommunicator Availability:		
G	1618.38	True Availability per Telecommunicator
FTEs Needed:		
H	2.24	FTE base estimate (FTE) = F / G
I	29.8%	Attrition Rate
J	2.91	FTEs required to accommodate attrition

FTEs for EMS Dispatcher Volume Positions		
Position: EMS Dispatcher 1800 to 0600 hours		
A	12,281	Total EMS Incident Volume from 1800 to 0600 hours
B	5	Number of simultaneous incidents that can be handled by one Dispatcher
C	2456.20	Incident Volume Adjusted (A / B)
D	0:59:18	Estimated average processing time for this position
E	1.01	Hourly Processing Capability (HPC) = 1 hour / D
	1:00:00	Hour
F	2427.54	Workload in hours (W) = C / E {calls per hour handled}
Telecommunicator Availability:		
G	1618.38	True Availability per Telecommunicator
FTEs Needed:		
H	1.50	FTE base estimate (FTE) = F / G
I	29.8%	Attrition Rate
J	1.95	FTEs required to accommodate attrition

4.85 Total Number FTE EMS Dispatchers Needed

As mentioned previously, fire and EMS are dispatched from the same dispatch position and respond together on many incidents. Thus, it is likely that many of the incidents are “duplicates,” i.e., representative of the same event. However, whether taken singularly or together, the incident volume indicates that WCEC is on the cusp of needing two physical positions responsible for dispatching events.

As noted earlier, staffing one position 24/7 requires 5.4 people, without attrition. The fire volume-based staffing indicates that six people are needed, with no attrition, to handle the incident volume. The addition of some EMS incidents clearly depicts the need for two dispatch positions. Mission Critical Partners is cognizant that many incidents, after dispatch, switch to a tactical or operational talkgroup, but this alone does not negate the need to separate dispatch into two positions.

Each agency appeared to have an operational talkgroup to which the agency switched after dispatch. To that end, that leaves 37 talkgroups for which dispatchers could need to monitor. With that many, it is an impossible task for WCEC dispatchers. Mission Critical Partners observed the dispatcher asking units to repeat their traffic many times because they were on another channel or had simultaneous transmissions being broadcast. This creates liability for WCEC.

Many centers today have fire and EMS dispatch separated by discipline, or, when dispatched almost as a singular entity on multiple incident types, as is done by WCEC, divided into geographic zones with a dispatch talkgroup for contacting the communications center and tactical channels for active fire scenes. For WCEC, this could be an East/West or North/South configuration.

In addition to true dispatch positions, tactical positions are also necessary, in alignment with national standards. NFPA Standard 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, Section 7.3.2, which states “When requested by the incident commander, a telecommunicator shall be dedicated to the incident and relieved of other duties within the communications center.”⁴⁵ Explanatory material for this section states,

*The issue of communication capabilities and/or failures is cited by the National Institute for Occupational Safety and Health (NIOSH) as one of the top five reasons for fire fighter fatalities. The importance of an assigned telecommunicator for specific incidents is a critical factor in incident scene safety. The assignment process should be outlined in specific SOPs within each agency represented in the communications center. This assignment process is further assisted when a command/communications vehicle is being staffed at the incident scene.*⁴⁶

A tactical channel could be assigned to East and one to West in the above configuration, for example. The majority of incidents would not require switching to a tactical talkgroup. Most radio traffic could remain on the main dispatch (hailing) talkgroup. Suspected fires or other incident with multiple fire units would switch to the respective tactical channel after dispatch, where the assigned telecommunicator would handle the incident.

⁴⁵ “NFPA 1221 Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems,” National Fire Protection Association, 2016, <http://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=1221>.

⁴⁶ Ibid.

The individual operational talkgroups in use today could still be utilized for routine business but would not be monitored by WCEC. To contact dispatch, a unit would need to be on the main dispatch channel or the respective tactical talkgroup, assigned upon dispatch to particular incidents. This type of configuration may be a change for the fire service as they are used to dispatchers listening to all radio traffic. While this is understandable, and most centers wish they had the staffing to allow it, the reality is they do not, and it is unfair to burden dispatchers with an overwhelming task that they have a difficult time achieving.

Mission Critical Partners recommends WCEC consider this option and meet with the fire services and EMS to discuss reducing the liability for the dispatchers and WCEC. If the decision is made to move forward with this, discussions will be needed to determine the criteria for when an incident is assigned a tactical talkgroup. Specific incidents could include structure fires, HazMat incidents, and entrapments, to name a few.

Mission Critical Partners recommends that a minimum of three fire/EMS positions are staffed 24/7; two dispatch positions and one tactical position. Dispatch responsibilities would be split in a logical configuration appropriate for WCEC. Mission Critical Partners also recommends alleviating the need to monitor all operational talkgroups.

Staffing three positions 24/7 requires a staff complement of 16 people with no attrition, as evidenced below.

Table 15: Fire/EMS Coverage

FTEs for Fire/EMS Coverage Positions		
	Position:	Call Taker
A	3	Total number of console positions to be covered
B	24	Number of hours per day that need to be covered
C	7	Number of days per week that need to be covered
D	52	Number of weeks per year that need to be covered
E	26208	Total Hours needing coverage (A x B x C x D)
Telecommunicator Availability:		
F	1618.38	True Availability per Telecommunicator
FTEs Needed:		
G	16.2	FTE base estimate (FTE) = E / F
H	29.8%	Attrition Rate
I	21.0	FTEs required to accommodate turnover

Ideally, staffing two tactical positions will provide the ability to meet the NFPA standard to have a telecommunicator dedicated to an incident when requested and still provide fireground operations for other incidents.

Staffing a total of four fire/EMS positions 24/7 increases the personnel requirements by six, to 22.

Mission Critical Partners recommends that, when possible, four positions are staffed during the busy hours, and three positions are staffed during the less busy times. This will require a complement of 20 fire/EMS dispatchers, and a reduction in attrition.

Mission Critical Partners recommends that WCEC in concert with the fire agencies and EMS review the medical events to which fire currently responds to determine if fire response is a necessity. It may be possible to reduce fire response to medical incidents.

The above recommendations are made with the assumption that fire and EMS will continue to be dispatched together. If WCEC elects to dispatch fire and EMS from separate positions, generally the same recommendations will apply. However, unless the medical incidents to which fire units respond are reduced, the current fire volume is still on the cusp of requiring two dispatch positions. Hence dispatching fire and EMS separately will likely require three dispatch positions and the tactical position(s). Thus, requiring a minimum of four positions to be staffed 24/7 in the fire/EMS grouping.

3.4.3 Supervision

Understanding how a PSAP performs as compared to national standards is valuable information, but it is only part of the puzzle. While many challenges can be attributed to staff shortages or operational configuration, some issues are not as intuitively obvious. Appropriate and focused supervision of operational personnel is critical. WCEC has an operations lieutenant assigned to each shift; a total of four.

NFPA 1221, Section 7.3.4 states, "Supervision shall be provided when more than two telecommunicators are on duty."⁴⁷

Annex A of NFPA 1221 provides further explanation. A.7.3.4 states, "The supervisor position(s) in the communications center are provided in addition to the telecommunicators [sic] positions. Although supervisory personnel are intended to be available for problem solving, the supervisor position is permitted to be a working position."⁴⁸

Section 7.3.4.1 states, "Supervision shall be provided by personnel located within the communications center who are familiar with the operations and procedures of the communications center."⁴⁹

Section 7.3.4.2 states, "The supervisor shall be allowed to provide short-term relief coverage for a telecommunicator, provided that the telecommunicator does not leave the communications center and is available for immediate recall as defined in the policies and procedures of the AHJ."⁵⁰

⁴⁷ "NFPA 1221 Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems," National Fire Protection Association, 2016, <http://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=1221>.

⁴⁸ Ibid.

⁴⁹ Ibid.

⁵⁰ Ibid.

WCEC currently meets portions of this standard. In interviewing staff, it is the intent of WCEC that the operations lieutenant positions are dedicated; that is, the positions should be providing oversight to personnel and not answering incoming calls or dispatching. Unfortunately, due to staffing shortages, the lieutenants almost always serve as a primary dispatcher at one of the primary radio zone positions. Although Annex A states that it is permissible to allow this, the intent of that allowance was designed for centers that are smaller, less busy and have fewer console/radio positions. When staffing allows, WCEC could permit the lieutenants to provide short-term relief and remain in compliance with the standard. However, if the lieutenant is providing relief to nine or ten people consistently, the purpose of a dedicated supervisor is being defeated.

Supervisors who routinely answer emergency calls and manage radio dispatch are not able to focus on the operational efficiency of their shift. Dedicated supervisors can:

- Instruct, guide, observe and mentor employees
- Communicate policies and strategies of management
- Facilitate control
- Provide feedback
- Serve as a motivator
- Provide coordination and direction during major emergency incidents
- Are available for problem solving
- Serve as a single point of contact for responder agencies
- Are readily able to identify areas for growth among subordinates
- Have the ability to document employees' performance for annual/periodic reviews
- Provide a narrower scope of supervision when implementing new policies and procedures
- Provide more supervision for diversified, complex tasks
- Stay current with technological changes/advancements
- Provide guidance to new employees who have less training and experience
- Provide greater knowledge of laws, procedures, and administrative processes
- Focus on the operations of the 9-1-1 center as a whole
- Focus on customer service to the public and subscriber agencies
- Allow for improved communications with management, subordinates, and responder agencies
- Spend more time with subordinates individually, on a daily basis
- Allow for operational efficiency
- Identify areas for remedial training, counseling or discipline, when appropriate
- Address issues upon occurrence, not after the fact
- Set priorities
- Allow for delegation of tasks/responsibilities

The *Standards for Public Safety Communications Agencies* (SPSCA), established jointly by the CALEA and APCO, does not specifically address staffing or supervision in a PSAP. However, both sets of standards reference utilizing Incident Command System (ICS) protocols. (CALEA Standard 46.1.2 and SPSCA Standard 7.1.2 are mandatory for accreditation.)

The Department of Homeland Security (DHS), coordinating with federal, state, and local governments established the National Incident Management System (NIMS). ICS falls under the Command and Management element of NIMS. ICS represents best practices and is the standard for emergency management across the country. ICS requires a supervisor when there are between three and seven persons performing similar functions. (The optimal span of control is five.) A manageable span of control allows supervisors to supervise and control their subordinates, while allowing for efficient communications between all parties.

Currently the composition of the shifts exceeds best practice of seven subordinates. Ideally, WCEC would have three supervisors assigned to each shift; one lieutenant with overall responsibility and then two assistants or lead telecommunicators (sergeants), based on the established hierarchy and titles. These persons would need to have the requisite authority that accompanies a supervisory position. Currently when the lieutenant is off, the policy is to allow a senior dispatcher to assume the lieutenant's duties; this person, while acting in a supervisory capacity, is still a peer. Two sergeant positions per shift would alleviate the need to pull a dispatcher from the operational floor to fill in.

Mission Critical Partners acknowledges that lieutenants may need to continue to answer incoming calls and work a dispatch position; to the extent possible, this should be limited. Once other staffing recommendations have been implemented, Mission Critical Partners recommends that the lieutenants no longer work a position. During critical incidents, the lieutenant needs to be available to assist upper management, as well as field questions from response agencies, telecommunicators, and the public. This will be difficult to accomplish if staffing a console.

Mission Critical Partners recommends WCEC create eight sergeant-level positions to serve as assistant supervisors to the lieutenant. The sergeants should rotate between serving as a dedicated supervisor in support of the lieutenant and working a console position, either call take or dispatch, to maintain skill sets. This will align WCEC with best practices for span of control, particularly if dedicated call takers are added to each shift. Four call takers per shift will raise shift strength to 15 or 16 persons, excluding the swing shift.

Mission Critical Partners acknowledges that the sergeant positions may need to be staffed in phases, with four initially being filled. When staffing is stabilized, the four other sergeant positions can be filled. If done in phases, the span of control is higher than best practice for two supervisors. However, while not necessarily ideal, telecommunicators work in a single location, and within two primary focus areas: call take and dispatch. Focused supervision from the lieutenant and a sergeant-level position on the 9-1-1 floor should alleviate any concerns. This creates a better environment than a single person with oversight responsibility.

3.4.4 Staffing Summary

Currently there are 50 telecommunicators assigned to shift work: 46 telecommunicators and four lieutenants. Based on the information provided, Mission Critical Partners recommends a complement of 12 supervisory personnel and 64 to 66 telecommunicators, a total of 76 to 78 assigned to shift work. Supervisory personnel would breakdown as follows: four lieutenants and eight sergeant-level positions.

The 66 telecommunicators would essentially breakdown as follows: 16 to 18 call takers, 28 law enforcement dispatchers, and 20 fire dispatchers. This is an increase of 26 to 28 operational personnel, not reflective of those in support positions, such as quality assurance (QA) or training.

A staffing complement of 78 would be as detailed below.

Table 16: Example for Staffing of 78 Positions

Day Shift Staffing	Staffed Positions
1 Lieutenant 2 Sergeant-level 17 Telecommunicators For ease of reference, the swing shifts have not been broken out separately.	4 call take positions 5 law enforcement positions 4 fire positions (two dispatch, two tactical)
Night Shift Staffing	Staffed Positions
1 Lieutenant 2 Sergeant-level 16 Telecommunicators	4 call take positions 4 law enforcement positions 4 fire positions (two dispatch, two tactical)

A shift of 16 to 17 telecommunicators allows for three people to be away at any given time, either for breaks or for leave, as 12 to 13 are required. In 2017, telecommunicators used 14,698 hours of leave, an average of 257 hours per person. This amount of leave is the equivalent of approximately seven full time people. To accommodate the current leave, two people each shift, on average, would need to be on leave.⁵¹ As noted, this is on average and leave usage tends to be higher during the summer months. Currently meals are eaten at the workstations. Ideally staff would be able to take a meal and breaks away from the console to allow for downtime. This staffing configuration allows for that.

That said, Mission Critical Partners realizes an increase of 52 to 56 percent will need to be approached incrementally. There are 46 telecommunicator positions, and Mission Critical Partners recommends 48 between law enforcement and fire/EMS dispatch operations. Forty-six staff will likely be sufficient for these positions for the mid-term, particularly if authorized strength is increased to include telecommunicators to staff dedicated call take positions. Based on call volume, nine is the minimum number of staff needed to handle the current call volume, without regard to call answering standards. That said, the current staffing

⁵¹ An average of 21 days per person, with a shift of 17 telecommunicators, equals 357 days. As a telecommunicator on a 12-hour shift works an average of 182 days, two people would be off as a general rule.

levels generally meet the standard but at a cost to first responders, such as often asking units to repeat their traffic. As previously noted, this presents a liability to WCEC

Mission Critical Partners recommends that WCEC strive to increase authorized strength by 24, which will accommodate call takers on each shift. Such an increase will be a long-term commitment that will likely need to occur over more than one fiscal budget cycle. As such, Mission Critical Partners recommends an initial hiring of 12 telecommunicators. These positions would not necessarily need to be hired simultaneously, but could be staggered to allow appropriate OTJ training without sacrifices due to staffing needs. Mission Critical Partners recommends that two call takers are assigned to each day and night shift, as well as each swing shift. This will provide coverage during the peak hours and will hopefully eliminate the need for dispatchers to answer 9-1-1 calls.

Mission Critical Partners recommends the hiring process for the remaining 12 positions begin once the academy begins for the newest hires, provided that the positions are authorized and supported in the budget. In all likelihood, not all new hires will be successful and having others in the pipeline can expedite the process.

Mission Critical Partners recommends that all telecommunicators are cross-trained, which provides greater staffing flexibility; however, it is also recommended that the telecommunicators hired into the positions authorized to allow dedicated call takers continue in those positions without going directly to dispatch training following release from call take training. The purpose of the positions is to relieve dispatchers from answering 9-1-1 calls and if the new telecommunicators are placed into training on the dispatch positions too quickly, this will not occur. A regular cycle for dispatch training should be implemented to ensure call take positions remain staffed.

Once the operational configuration with 12 dedicated call taker positions has been fully implemented for six months and staffing is stabilized, Mission Critical Partners recommends that WCEC review staffing levels to determine if additional telecommunicators are needed. While data currently indicates the need for additional staff, some efficiencies are likely to be gained when workload is offset and stress levels decrease. WCEC may see a reduction in leave usage, for example.

Mission Critical Partners recommends that eight sergeant-level positions be created and filled when staffing allows, with the initial goal to have a sergeant-level position on each shift. Currently WCEC cannot afford to lose telecommunicators to supervisory positions, unless the intent is to have the sergeant-level positions continue to work dispatch until such time as staffing reaches a level that they are not needed on a console on a regular basis.

3.5 Future Staffing

Predicating future staffing needs relies on statistical data, such as population changes, as well as increases or decreases in call and incident volumes. Texas as a whole has seen increases in population over the last 28 years, as has Williamson County.

Table 17: Williamson County Population Changes

Year	Population	Percent Change
1990 ⁵²	139,551	
2000	249,967	79.12%
2010	422,679	69.09%
2016 (estimate)	528,718	25.09% (from 2010)
2017 (estimate)	547,545	29.54% (from 2010)

The Census Bureau has estimated that since 2010, Williamson County's population increased 25.09 percent by 2016 and 29.54 percent by 2017. It is logical to assume that Williamson County may continue to experience growth, the question is how much. According to the November 2014 report *Texas Population Projections, 2010 to 2050*, by the Office of the State Demographer,

*All three population projection scenarios suggest the majority of Texas counties will experience continued steady population growth between 2010 and 2050. This is especially the case for suburban counties surrounding the large urban centers of Dallas-Fort Worth, Houston, San Antonio, and Austin. ... many of the large urban counties are also projected to experience growth rates of over 50 percent ...*⁵³

The report lists the top ten Texas counties with the greatest (and lowest) percent change between 2010 and 2050. Williamson County is number two in the top ten and is predicted to realize a greater than 100 percent increase in population.

⁵² Texas State Library and Archives Commission, 1990 Census: Population of Texas Counties, Arranged in Alphabetical Order, 2017, <https://www.tsl.texas.gov/ref/abouttx/popcnty1.html>.

⁵³ Potter, Lloyd B., Ph.D., and Hoque, Nazrul, Ph.D., *Texas Population Projections, 2010 to 2050*, Office of the State Demographer, November 2014, pg. 2, http://demographics.texas.gov/Resources/Publications/2014/2014-11_ProjectionBrief.pdf.

**Top 10 Texas Counties with Greatest and Lowest
Percent Change between 2010 and 2050
0.5 Migration Scenario**

County	2010	2050	Numeric Change	Percent Change
Hays	157,107	438,425	281,318	179.06
Williamson	422,679	992,814	570,135	134.89

Figure 5: Williamson County Population Growth Expectation⁵⁴

Since 2010, Williamson County has experienced a 29.54 percent population growth and, as noted, could see a population near 1 million in 2050.

Since FY14-15, the 9-1-1 call volume has decreased but the administrative call volume is consistent, less than a 1 percent difference. Law incidents have steadily risen, with fire and EMS experiencing a decline before rising.

Table 18: Incoming Call Volume

	9-1-1	Administrative Calls	Totals
FY14-15	94,857	101,004	195,861
FY15-16	86,020	101,771	187,791
FY16-17	83,840	101,151	184,991

⁵⁴ Ibid., pg. 5.

Table 19: Incident Volume

	Law	Fire	EMS	Totals
FY14-15	183,628	31,028	35,758	250,414
FY15-16	193,140	27,786	30,478	251,404
FY16-17	217,309	31,417	30,625	279,351

While fluctuations are evident, increases in call and incident volume are predicted due to the expected continued population growth in the area. Based on the current statistical data, the average number of calls per person (population⁵⁵) is 0.34 annually, while the average number of incidents per person is 0.51.

Even small increases in population may affect staffing needs. Between 2016 and 2017, Williamson County experienced an estimated 3.56 percent growth rate. If this continues for 2018, the estimated population would be 567,037; however, some estimates already place the population at over 600,000. Using current statistics, the incoming call volume could exceed 204,000 and the incident volume could exceed 306,000⁵⁶. The recommended dedicated call taker positions would be able to absorb the increase in call volume, and the current law enforcement configuration could absorb the increased call volume. Fire/EMS, which is on the cusp of needing two physical dispatch positions, supported by tactical operations, would need dispatch responsibilities to be split between two positions. This could require additional telecommunicators. It is Mission Critical Partners' opinion that the overall recommendations to increase authorized strength to 76 to 78 telecommunicators assigned to shift work *should* position WCEC well for the immediate future.

If Williamson County continues the current trend of an approximate 30 percent growth for the next seven years, the population could reach 711,800 by 2024. With current statistics, the incoming call volume would exceed 242,000. With 45 percent of incoming calls attributed to 9-1-1 currently, the 9-1-1 call volume could be 108,905. On average, this is an approximate increase of three calls per hour. As evidenced below, this is essentially the same number of staff needed for the current 9-1-1 volume.

⁵⁵ It should be noted that the population is representative of Williamson County as a whole, even though WCEC does not dispatch for the entire county geographically. Removing the non-dispatched area would raise the calls and incidents per person. However, determining where population growth is expected in the county is difficult; thus, the overall population is reflected statistically.

⁵⁶ This number differs from the earlier reference of surpassing 300,000 incidents, which is predicated on average monthly incidents, while this figure is based on incidents per person and population.

Table 20: 9-1-1 Call Handling (2024)

Average Handling Time (s)	149 seconds
Reporting Period	60 minutes
Required service level	90.00%
Target answer time (secs)	10 seconds
Shrinkage	0%

Hour of Day	Incoming 9-1-1 Calls	Telecommunicators Needed
0:00	9	2
1:00	7	2
2:00	7	2
3:00	6	2
4:00	6	2
5:00	6	2
6:00	8	2
7:00	11	2
8:00	13	3
9:00	13	3
10:00	14	3
11:00	14	3
12:00	15	3
13:00	16	3
14:00	16	3
15:00	17	3
16:00	17	3
17:00	18	3
18:00	18	3
19:00	16	3
20:00	15	3
21:00	13	3
22:00	12	2
23:00	10	2

Administrative call volume could exceed 133,000; on average, this is an approximate increase of four calls per hour. This volume requires two call takers at all times, rather than fluctuating between one or two call takers depending on the time of day.

Law enforcement events accounted for 77.8 percent of the incident volume in FY16-17. In 2024, the law enforcement incident volume could exceed 282,000, based on current statistics. This would equate to the need for four dispatch positions to handle the volume—again based on current statistics.

Table 21: Law Enforcement Volume-based Staffing (2024)

FTEs for Law Dispatcher Volume Positions		
Position: Law Dispatcher		
A	282,428	Total Law Enforcement Incident Volume from 0600 to 1800 hours
B	6	Number of simultaneous incidents that can be handled by one Dispatcher
C	47071.33	Incident Volume Adjusted (A / B)
D	0:30:21	Estimated average processing time for this position
E	1.98	Hourly Processing Capability (HPC) = 1 hour / D
	1:00:00	Hour
F	23810.25	Workload in hours (W) = C / E {calls per hour handled}
Telecommunicator Availability:		
G	1618.38	True Availability per Telecommunicator
FTEs Needed:		
H	14.71	FTE base estimate (FTE) = F / G
I	29.8%	Attrition Rate
J	19.09	FTEs required to accommodate attrition

If fire and EMS continue to be dispatched together, two dispatch positions are still needed. In the table below, incident volumes are combined and the number of incidents to be handled by one dispatcher has been averaged (2 fire + 6 EMS / 2 = 4).

Table 22: Fire/EMS Volume-based Staffing (2024)

FTEs for Fire/EMS Dispatcher Volume Positions		
Position: Fire Dispatcher		
A	80,589	Total Fire Incident Volume from 0600 to 1800 hours
B	4	Number of simultaneous incidents that can be handled by one Dispatcher
C	20147.25	Incident Volume Adjusted (A / B)
D	0:37:06	Estimated average processing time for this position
E	1.62	Hourly Processing Capability (HPC) = 1 hour / D
	1:00:00	Hour
F	12457.72	Workload in hours (W) = C / E {calls per hour handled}
Telecommunicator Availability:		
G	1618.38	True Availability per Telecommunicator
FTEs Needed:		
H	7.70	FTE base estimate (FTE) = F / G
I	29.8%	Attrition Rate
J	9.99	FTEs required to accommodate attrition

Again, the call and incident volumes are strictly projections based on current statistical data. Any number of events could impact these forecasts, such as consolidations, deconsolidation, economic downturn, financial instability of the housing market, etc. Mission Critical Partners recommends that WCEC conduct an annual staffing analysis to determine if the upswing trends continue and adjust accordingly.

Predicting staff for the long-term is not as statistically simple as it used to be. The 9-1-1 industry has already begun its transition to Next Generation 9-1-1 (NG9-1-1), which has allowed “new” media, to an industry that has been voice-centric, into the communications center. WCEC, like many other 9-1-1 centers, accept text-to-9-1-1. This has proven, to date, to have little effect on the current staffing needs. However, pictures and streaming video may soon be accepted by 9-1-1 centers. In addition, the number of devices with the capability to transmit data continually increases: body cameras, drones, smart home devices, personal and industrial sensors; the list can go on. All these devices have the potential to transmit data to a 9-1-1 center in the future—what is unknown is how this will affect staffing in the digital age. It is likely that “digital analysts,” as the Police Executive Research Forum (PERF) notes, may be responsible for analyzing the information before it is shared with responders.⁵⁷ Will these “analysts” be in a 9-1-1 center? A fusion center? A real-time crime center? How 9-1-1 centers will choose to approach the data that will be

⁵⁷ The Police Executive Research Forum published a critical issues document entitled *The Revolution in Emergency Communications* in November 2017 that looks at some of the issues that will need to be addressed for NG9-1-1. The report can be found here: <http://www.policeforum.org/assets/EmergencyCommunications.pdf>.

available, as well as the associated tasks, will be up to each agency unless a statewide approach is taken. In five years, there is a real potential that some of this information could be flowing into WCEC.

It is possible that WCEC may experience a decrease in call and incident volumes due to the various forms of data that could be presented to a telecommunicator, and the form of presentation. Technology may have developed that allows sensory devices to input data directly into a CAD incident, bypassing a call taker altogether. Citizens may be able to access incident systems to report events without speaking to a call taker. 9-1-1 personnel may be able to telework, operating from virtual PSAPs. The opportunities far exceed the industry as we know it.

As such, attempting to predict staffing needs 10 to 20 years into the future is next to impossible, particularly in this environment. There are too many unknowns. What is certain is that today's 9-1-1 operational environment will no longer be the same. "Calls," whether voice or data-infused or a Skype-type, will likely take longer to process than currently. Requirements of first responders will also evolve; while the "telecommunicator" as we know it today might change, a similar type position and responsibility seems likely, but what it really "looks like" is not yet known.

Telecommunicators currently experience stress that is related to events that they witness over the telephone and radio. The delivery of graphic images and video will lead to increased stress among 9-1-1 center staff. Consideration must be given to enhancing critical incident stress management procedures for telecommunicators and call takers.

4 Quality Assurance

A quality assurance/ quality improvement (QA/QI) program is an essential component of 9-1-1 communications as it can improve the level of service provided to citizens and is a best practice to improve overall PSAP performance. APCO provides the following definition for a QA/QI Program: "An on-going program providing at a minimum, the random case review evaluating emergency dispatch performance, feedback of protocol compliance, commendation, retraining and remediation as appropriate, and submission of compliance data to the Agency."⁵⁸ (The agency is the body that defines the roles, responsibilities, policies and procedures that direct the activity of the telecommunicator.⁵⁹)

A well-developed and defined QA/QI program ensures consistency of operations and identifies problems and corrective actions to resolve the issues. In today's 9-1-1 environment, having a QA/QI program is the recognized standard of care. Through a QA/QI program, calls are reviewed, feedback on performance is provided, and compliance with policies, procedures, standards, and best practices is ensured.

⁵⁸ "Standards to Download, *Minimum Training Standards for Public Safety Telecommunicators*, APCO International, <https://www.apcointl.org/standards/apco-standards-for-download.html>, section 1.2.22, page 14.

⁵⁹ Ibid., section 1.2.2, page 11.

When providing EMD, adherence to the structured protocol becomes critically important. “This is especially true for agencies that provide some measure of post-dispatch and/or pre-arrival instructions to callers, directing the caller to actively do something to stabilize a patient or begin to mitigate an emergency before the arrival of the dispatched first responders. Evaluating performance and compliance with protocols and procedures becomes as necessary as the provision of the protocol itself, since doing so incorrectly could wind up harming the patient or exposing the agency to liability.”⁶⁰

The IAED has established minimum case (call) review rules for agencies using its protocols, such as WCEC:

- “Agencies whose call volume is between 43,333 and 500,000 will be required to audit a percentage ranging between 3% and 1% (based on this sliding scale calculator) [sic]
- Agencies whose call volume is below 43,333 will be required to audit 1,300 cases (25 per week)
- Agencies whose call volume is below 1,300 will be required to audit 100% of their cases
- Agencies whose call volume is above 500,000 will be required to audit 1% of their cases”⁶¹

For the IAED, the annual call volume is the total number of respective calls handled through ProQA; for WCEC this is law enforcement (EPD), fire (EFD), and medical (EMD) calls. As an example, a law enforcement officer requests EMS response; this incident will not have been triaged through the 9-1-1 center; thus, a review is not warranted.

In April 2015, APCO and NENA published their *Standard for the Establishment of a Quality Assurance and Quality Improvement Program for Public Safety Answering Points* (APCO/NENA ANS 1.107.1.2015). The QA/QI process is designed to measure “the quality and performance of the service provided. This process includes, but is not limited to, the following criteria:

- Analysis of performance trends;
- Compliance to protocols and standard operating procedures;
- Customer Service;
- Optimizing the use of agency resources;
- Overall performance of each employee; and
- Reviewing the operation as a whole”⁶²

Section 5.3.1 states “The Agency shall ensure a sufficient number of case reviews are conducted for

⁶⁰ “The Numbers Game: Are Score-Based QA Systems Truly Representative of Dispatcher Performance,” 9-1-1 Magazine.com, April 2008, <http://www.9-1-1magazine.com/The-Numbers-Game/>.

⁶¹ Random Case Review Calculator,” International Academies of Emergency Dispatch, <http://www.emergencydispatch.org/AccredCalculator>.

⁶² “Standards to Download, *Establishment of a Quality Assurance and Quality Improvement Program for Public Safety Answering Points*, APCO International, <https://www.apcointl.org/standards/apco-standards-for-download.html>, page 23.

both call-taking and radio dispatch responsibilities of a telecommunicator.”⁶³ Section 5.3.1.2 further states that “PSAP agencies shall, in the normal course of business, review at least 2% of all calls for service. Where the 2% factor would not apply or be overly burdensome due to low or excessively high call volumes, agencies must decide on realistic levels of case review.”⁶⁴

CALEA requires a “documented quality checks of employees’ call taking and dispatch performance,” but does not address the percentage of reviews.

NFPA 1221 section 7.7 states, “Communications centers shall establish a quality assurance/improvement program to ensure the consistency and effectiveness of alarm processing.”⁶⁵ Explanatory material in Annex A states, “The purpose of the quality assurance program is to follow up and review calls with communications center employees, improve procedures, and make the corrections needed to improve service and response. Generally accepted statistical methods should be used when selecting calls for review.”⁶⁶

WCEC currently contracts most of its QA/QI reviews to two third-parties: National Q and the Denise Amber Lee Foundation. National Q is a service provided by Priority Dispatch that provides expert case review and reporting to align with the IAED’s case review requirements for protocol usage. According to Priority Dispatch, use of the National Q provides an objective review of the calls for service, ensuring consistency among reviews. The Denise Amber Lee Foundation offers third-party call reviews through its consulting program. The call reviews are conducted remotely by quality assurance evaluators in alignment with the APCO/NENA standard.

WCEC has an Education Specialist position responsible for feedback and the QA/QI program internally. Mission Critical Partners recommends the internal program is expanded to include QA/QI specialists, with QA/QI as their primary focus, not just of the trainees, but of all telecommunicators. It is imperative that some QA/QI reviews of calls and radio traffic occur internally. While both vendors are knowledgeable, they will not be as familiar with operations as internal staff. In addition, internal reviews provide the ability to immediately address any deficiencies that may be encountered.

In determining the amount of calls to review, each discipline is separate. For example, the law enforcement incident volume for FY16-17 was 217,309; of these, approximately 67 percent were self-initiated and would not have been processed through EPD. That leaves 71,712 incidents that could have been processed through EPD. Based on the IAED’s case review calculator, 2.876 percent of the calls would need to be reviewed, i.e., 2,062 annually, 40 a week. The case review rules would require 25 case reviews each week for fire and medical. This yields 90 total reviews a week. If WCEC were to review 90 calls a week, including

⁶³ Ibid., page 22.

⁶⁴ Ibid.

⁶⁵ “NFPA 1221 Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems,” National Fire Protection Association, 2016, <http://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=1221>.

⁶⁶ Ibid.

the associated radio traffic, excluding self-initiated calls, this exceeds the 2 percent requirement of the APCO/NENA standard.

In Mission Critical Partners' experience, one QA/QI specialist can review about 10 to 15 calls a day, with the associated radio traffic. This also allows time for review with personnel. The number of calls per day varies based on the complexity of the incidents. It is likely that two to three QA/QI specialists would be needed if WCEC were to conduct all reviews in-house. WCEC should weigh the benefits of conducting QA/QI reviews in-house to the salaries and benefits costs to hire additional staff as these positions will be over and above those needed for the operational floor.

If the QA/QI program is expanded to conduct all reviews in-house, Mission Critical Partners recommends two QA/QI specialists, with an evaluation at the six-month mark to determine if a third person is needed. This would be determined by the average number of reviews conducted by the QA/QI specialists weekly. A sample job description can be found in Appendix B – QA/QI Specialist Job Description.

Mission Critical Partners recommends that the current telecommunicator vacancies in the 9-1-1 center be filled before opening a competitive process to fill QA/QI positions. The 9-1-1 center cannot afford to operate with even fewer personnel.

WCEC is currently working toward ACE accreditation through the IAED. Achieving this goal and further development of the QA/QI program will demonstrate WCEC's commitment to accountability and quality service in handling emergency calls for service.

5 Hiring, Training, and Retention

Recruitment and retention of employees in 9-1-1 centers nationwide is a top priority. Mission Critical Partners has worked with many PSAPs over the years and, without fail, the single most consistent issue faced is staffing. To that end, selection or vetting of candidates, training and QA/QI are all critical to employee retention.

5.1 Hiring

Recruitment, selection, and hiring generally refer to the overall steps to fill a vacancy (or a new position) within an organization. Recruiting is the process of attracting and pre-screening applicants for a particular job; pre-screening may include criminal background checks, credit checks, and education and employment history verifications. Before applicants are selected, pre-screening results are reviewed, interviews conducted, short-lists developed, and conditional and/or final offers made. The processes vary from organization to organization, and often from department to department within complex organizations. WCEC explains the process and what will disqualify an applicant on its website.

Over the last three years, WCEC has run 12 applicant processes that have yielded 1,848 applicants.

Table 23: Application Processes

Year	Processes	Total Applicants	Average Applicants per Process
2015	4	611	152
2016	5	782	156
2017	3	455	151
Averages	4	616	153

The postings were often limited based on the ability to place new hires in the training academy. Recently, the job postings changed to run continually. The academy was rescheduled to accommodate twice as many candidates as is currently supported.

WCEC, like many agencies, does not have a difficult time attracting applicants. It is getting an applicant through the process that has its challenges.

WCEC employs a rigorous process to vet potential telecommunicator candidates and then screens those candidates throughout the process. The process consists of an application, several assessments to determine suitability for the work including a self-directed typing test, an interview, observation in the center, drug tests, and a psychological exam.

Candidate vetting is common in the industry yet depending on the jurisdiction can take several months to complete. In Williamson County, the process takes up to four months to complete, although Williamson County strives to complete the process in eight weeks. Mission Critical Partners is aware of some agencies whose process can take six months or longer. Unfortunately, many applicants are unable to wait months before finding a job and often accept another position prior to completing the lengthy processes.

Ideally, the process could be shortened, without degrading the quality of the vetting process. For example, with respect to prior criminal convictions, many PSAPs apply criteria imposed by the state police to qualify applicants. WCEC should follow the state police criteria and not apply more stringent elimination rules. Applying more stringent rules could eliminate many other-wise qualified applicants that have a minor violation on their record. However, WCEC must still align with the standards for licensure set forth by TCOLE for telecommunicator candidates as well as Texas Administrative Code.

Per Texas Administrative Code (Title 37, Part 7, Chapter 217.1b (12)), a psychological exam is a pre-employment requirement for a licensed telecommunicator. Psychological exams are used to assess many areas, including intelligence and aptitude, attitudes and feelings, interests, and specific abilities, skills, and knowledge. Psychological exams can screen out applicants who demonstrate mental disturbances or personality disorders that would not be suited to the restrictive environment of a 9-1-1 center. They may

also identify significant events in one's life that could preclude the person from effectively handling a call for service, such as the death of an infant or a person trapped in a fire. Psychological exams are also viewed skeptically by some, as specific behaviors may not manifest themselves during testing. In addition, a person may not realize they are affected by a tragic incident until they are confronted by a similar call.

While WCEC does have a typing requirement, speed is not a primary consideration. The use of the assessments and the credentialing process demonstrates to WCEC an applicant's proficiency with typing. WCEC provides feedback on performance and, as a trained skill, has seen improvement with employees that are initially slower than expected in typing.

Mission Critical Partners has several suggestions for WCEC to consider.

Many 9-1-1 centers conduct observation periods for applicants to provide them with some insight into the roles and responsibilities of call takers and telecommunicators. The successful completion of the step is not always an indicator as to whether someone is a fit for the position. Telecommunicators are supposed to note whether the applicant was interested and asked questions or whether they were disengaged, did they demonstrate an understanding of the nature of the work, were they bored, etc. Anecdotal information from telecommunicator trainees and experience elsewhere suggests that applicants often have no context for what they are observing. They may listen to phone calls and radio traffic, but lack understanding of the complexities of the position.

Mission Critical Partners recommends that if the medical exam does not include a hearing test, it should be implemented as part of the applicant screening process to align with NENA 54-002, *Hearing Standards for Public Safety Telecommunicators*. This standard "is a tool for PSAP managers to use in the development of minimum hearing standards for public safety telecommunicators. It defines standard hearing requirements and audiology necessary to perform the basic functions of the telecommunicator position."⁶⁷ The document is provided to assist PSAPs "in establishing Americans with Disabilities Act (ADA)-compliant hearing standards for public safety telecommunicators."

Mission Critical Partner recommends that WCEC track areas within the application process where applicants are removed from the process to determine if changes are needed, not to make the process easier, but more successful for qualified applicants.

As noted previously, WCEC does not seem to have trouble garnering interest in the open positions. Mission Critical Partners has several suggestions for enhancing recruitment efforts, however.

A truncated process should be in place for lateral hires if one is not already.

⁶⁷ "Hearing Standards for Telecommunicators," National Emergency Number Association, June 14, 2014, http://www.nena.org/?page=HearingStandards_TCs.

Mission Critical Partners suggests consideration be given to developing a video highlighting why someone would want to work for WCEC. The video could be placed on the division's website, as well as the County's, or perhaps be placed on YouTube. The video can showcase the center itself, the type of calls that occur, why staff enjoy working for Williamson County, and what the area has to offer those from outside the area, such – sports, culture, history, cuisine, etc.

Consideration could also be given to referral incentives. If a referral is hired, perhaps there is a financial reward or other perk, such as extra vacation days.

Recruiting can also take place at industry conferences, such as the Texas Public Safety Conference, NENA National and APCO's Annual Conference and Expo. Attendees at these conferences will already be "in the business." Social media also offers a recruiting outlet; this an inexpensive tactic with a greater reach.

Offering internship opportunities to high school seniors or students enrolled in technical institutions is another avenue that may be considered. This provides a realistic job preview and opens other recruitment arenas.

If authorized strength increases, there will be more opportunities to engage the public in the open positions. Highlighting the opportunities available to serve the community as a first, first responder or conducting direct public outreach may spark an interest in working for the 9-1-1 center.

For those that are hired, WCEC provides the employee an information packet that outlines the mission and vision of WCEC, the code of ethics, organizational chart, leadership phone numbers, and WCEC Way document. WCEC could consider adapting WCEC Way document for applicants. The document provides valuable information on the culture and philosophy of WCEC. If an applicant is not willing or able to live up to the expectations, s/he could withdraw from the process.

5.2 Training

Call taker and dispatch training and standards vary across the country, and often within a state from center to center. On January 1, 2014, Texas transitioned from a certification program to a licensure program, requiring 68 hours of training and successful passing of the state exam. Part of WCEC's training program is TCOLE's Basic Telecommunicator Course and the State Telecommunicator Licensing Exam.

WCEC's training has two parts: an eight-week classroom-style training academy and OTJ training for call take and dispatch. The call take portion of OTJ is approximately four to eight weeks, depending on the employee's skill level and comprehension. Dispatch OTJ training varies upwards of eight to ten weeks.

During the academy, the telecommunicator trainee learns the core functions of the job, including EPD, EFD, and EMD certification courses. Instruction also includes policies and procedures, geography, technology, incident scenarios, and skills practice.

At the time of the assessment, little information was available from the academy for review. Unfortunately, this aligns with information Mission Critical Partners received during interviews while on-site. Reports of the lack of information and documentation given to telecommunicator trainees were surprising; there was no syllabus, no agenda, no learning objectives, no progress report. From all accounts, there is/was no structure to the academy. Had it not been for one outstanding trainer, some telecommunicators would have resigned.

Proper organization, structure, and attention to detail are critical in a training environment. WCEC must ensure that the academy is order. Telecommunicator trainees should be given a training manual the first day of the academy that includes a syllabus and calendar for the entire academy. The table below provides an example of a class schedule for a four-week period for another agency.

Table 24: Sample Training Calendar

February/March 2018 Full-time Class				
Monday	Tuesday	Wednesday	Thursday	Friday
February 19	February 20	February 21	February 22	February 23
OFF	0700-1500	0700-1500	0700-1100	0700-1100
	Paperwork	ETC-Sara	Mapping-Jeff	Mapping-Jeff
	Harassment	1130-1500	1130-1500	1130-1500
	Information Technology	Units/Geography	ETC-Sara	NE Police Zone-Bill
February 26	February 27	February 28	March 1	March 2
0700-1100	0700-1100	0700-1500	0700-1500	0700-1130
South Police/PSP-Jr	Metro-Brad	ETC-Sara	ETC-Sara	Fingerprinting
				CPR
1130-1500	1130-1500			1200-1500
NW Police-Mike R	Units/Geography			Dispatch Room

February/March 2018 Full-time Class				
Monday	Tuesday	Wednesday	Thursday	Friday
March 5	March 6	March 7	March 8	March 9
0700-1100	0700-1100	0700-1500	0700-1100	0700-1130
FEMA IS 100/700	Units/Geography	CAD overview-Mike	Tours-Dave	Scenarios w/CAD
			1130-1500	
1130-1500	1130-1500		EMA Signup/Phones	1200-1500
EMA Randy	NCMEC		Unit/Geography Test	Dispatch Room
March 12	March 13	March 14	March 15	March 16
0700-1230	0700-1100	0700-1100	0700-1500	0700-1500
Scenarios w/CAD	SCOPE/JNET/NCIC	SCOPE/JNET/NCIC		LAST DAY
	Kim & Steph	Kim & Steph	Test	Review
1300-1500	1130-1300-Vicki	1130-1500	Scenarios	
Critical Call-Chris H.	1300-1500 QA - Roy	Radio Room	Review	

This calendar informs trainees of the lesson plan and provides structure. It was reported that many times during the academy, WCEC's training focus shifted daily and trainees did not know what to expect from day to day. If the schedule needs to change, trainees should be given as much notice as possible.

The training manual should offer room for expansion for documentation that is provided throughout classroom training. The example provided would ensure that the program has structure.

The National 911 Program "facilitated a project to establish universally accepted minimum training guidelines to be used for aspiring and current 911 telecommunicators, and to provide the foundation for

ongoing professional development.”⁶⁸ The guidelines were developed by a working group of industry partners, including APCO, NENA, IAED, and NFPA, as minimum training topics to be included in a telecommunicator training program. While in all likelihood Texas’ telecommunicator course covers all applicable topics, Mission Critical Partners recommends WCEC review the guidelines to ensure alignment where practical. A copy of the guideline can be found in Appendix C – National 911 Program Minimum Training Guidelines for the Telecommunicator.

WCEC should institute training markers. When a certain point is reached in the academy, trainees then observe dispatchers in the room implementing what they have just learned. This provides context. Similarly, WCEC should consider a “learn it, practice it, see it” approach. For example, the trainees would learn a new skill, such as entering an incident into the CAD system. Trainees would then practice it, and then spend time in the 9-1-1 center seeing the skill in daily operations, rather than just continuing to practice.

WCEC also needs to ensure that software in use during classroom training coincides with the versions being trained on. Recently the ProQA version on the training CAD did not match the version being taught. While frustrating, this also creates confusion. Demonstrating the practical application of skills is essential to grasping the details of the job and need to be better implemented and relevant to the lessons.

As previously noted, communication is key. Each trainee is assigned a trainer for OTJ training. Mission Critical Partners recommends that new trainees are assigned a trainer as soon as they are hired. This trainer will serve as a mentor throughout the academy, meeting weekly with the trainee. The trainer will be available for questions and offer support and guidance throughout the process. It is likely that the trainer may currently have a trainee for OTJ training, but the time requirements should not be time-consuming.

Upon successful completion of the academy, telecommunicator trainees are assigned to a trainer for OTJ training. OTJ training is distinct training from the academy, and the documentation provided was well organized and comprehensive, with numerous lesson plans and reference materials. WCEC is to be commended for the quality of the information.

OTJ training is conducted in four ten-hours shifts: Monday-Thursday 6:00 a.m. to 4:00 p.m. and 8:00 a.m. to 6:00 p.m., and then Tuesday-Friday 6:00 a.m. to 4:00 p.m. and 8:00 a.m. to 6:00 p.m.

OTJ begins with four to eight weeks of call taker training. After completing call taker training, a trainee is placed on a shift and for two months works solo in the 9-1-1 center. Mission Critical Partners and WCEC both identified that this two-month period is when many recruits resign. Obviously, this must be analyzed by WCEC to determine the issues; however, Mission Critical Partners believes a primary reason for this is that the trainee is not familiar with co-workers and therefore has no support system on a respective shift.

⁶⁸ “Recommended 911 Minimum Training for Telecommunicators,” 911.gov, 2018, https://www.911.gov/project_recommended911minimumtrainingfortelecommunicators.html.

This is further enhanced by the fact that the lieutenant is often working a position and is unable to assist the trainee.

In addition, trainees are hired to work 12-hour shifts, but spend the first eight weeks working eight-hour days Monday through Friday, before switching to ten-hour shifts four days a week (no later than 6:00 p.m.) and are then assigned to 12-hour shift work, after potentially four months, working every other weekend. And as noted previously, work load varies from day shift to night shift and on weekends. In addition, for trainees with families, this inconsistent work schedule is difficult. When trainees receive dispatch training, they are back to ten-hour shifts with no weekend work.

While Mission Critical Partners agrees that day shift is generally busier and there are more opportunities for different call types, training only during the week and before 6:00 p.m. is a disservice and does not expose the trainee to the shift work for which hired. Mission Critical Partners recommends that the training shifts be dissolved and the trainers are assigned to a specific shift, and report to the respective shift lieutenant. Trainees would then be assigned to a respective shift for training. This will have further ramifications.

Currently the trainers are not cross-trained on all dispatch positions. There are two options, the trainers become cross-trained and have primary responsibility for training on their shift or other dispatchers serve as trainers for the disciplines in which the trainer is not certified. Preference is that trainers are cross-trained, but there may be logistical obstacles to this.

Currently WCEC has an Education Specialist and four shift training specialists. As Mission Critical Partners has recommended an increase of 24 telecommunicators, five trainers are not insufficient. WCEC will need to increase its training capacity with additional trainers; ideally there would be at least two trainers per shift. WCEC intends to provide a stipend to those tenured employees who become trainers. Mission Critical Partners concurs with this approach. Mission Critical Partners recommends that the Education Specialist position remain as a support position for training and not be assigned to a shift.

This leads to another critical element within 9-1-1 centers—the development of effective training officers. Trainers must want to train and be invested in the successful of their trainees. The worst thing for a trainee is to sit with someone who has no interest in training. It is critical for a telecommunicator trainee to be taught by a positive and energetic role model who sets the stage for success. Mission Critical Partners recommends that WCEC evaluate their training officer selection process to ensure that the right telecommunicators are training, and for the right reasons. Mission Critical Partners also recommends that any telecommunicator serving as a training officer meet the core competencies and minimum training standards for communications training officers as defined by APCO.⁶⁹

⁶⁹ APCO International, Core Competencies and Minimum Training Standards for Public Safety Communications Training Officer (CTO), 2017, <https://www.apcointl.org/doc/911-resources/apco-standards/432-competencies-training-requirements-for-public-safety-communications-training-officers/file.html>.

Mission Critical Partners recommends that in addition to their trainer, trainees are assigned a mentor on their respective shift. This would allow trainees to become more comfortable with their co-workers, providing an environment where they may be more apt to ask questions and not feel isolated. As done today, training only on day shift does not afford trainees this option.

Without solid SOPs, lesson plans, and trainer requirements, the effectiveness of the training program can be diminished. WCEC needs to ensure that the academy is organized as well as the OTJ portion.

WCEC is already evaluating aspects of its training program, which is a good first step. Yet to ensure success for the future, particularly with the recommended increase in staff, Mission Critical Partners recommends the creation of an Instructional (Educational) Coordinator position to oversee all aspects of training, including the academy structure, development of lesson plans and course curricula, and trainee assignments. The Instructional Coordinator position does not require telecommunicator experience, but rather knowledge of the theories, principles and techniques used to facilitate adult learning; training methodologies; and competency assessment. Mission Critical Partners believes this is an immediate need and recommends that this position be created as soon as possible. To attract a qualified applicant, WCEC will need an adequate salary for this position. Sample job description elements can be found in Appendix D – Instructional Coordinator Job Description Elements.

Mission Critical Partners also recommends that WCEC measure the effectiveness of its training program as some vacancies are attributed to new hires not completing the academy or being unsuccessful at OTJ training. This is likely a task for the Instructional Coordinator, which will provide insight that will be helpful in restructuring the academy and OTJ program.

A four-level model for measuring the effectiveness of training programs was developed by Donald Kirkpatrick, a professor and past president of the American Society for Training and Development, in the late 1950s. While this model is older, it has been adapted and modified, withstanding the test of time. The structure is illustrated and described below. The higher the level, the more valid the evaluation.

THE NEW WORLD KIRKPATRICK MODEL

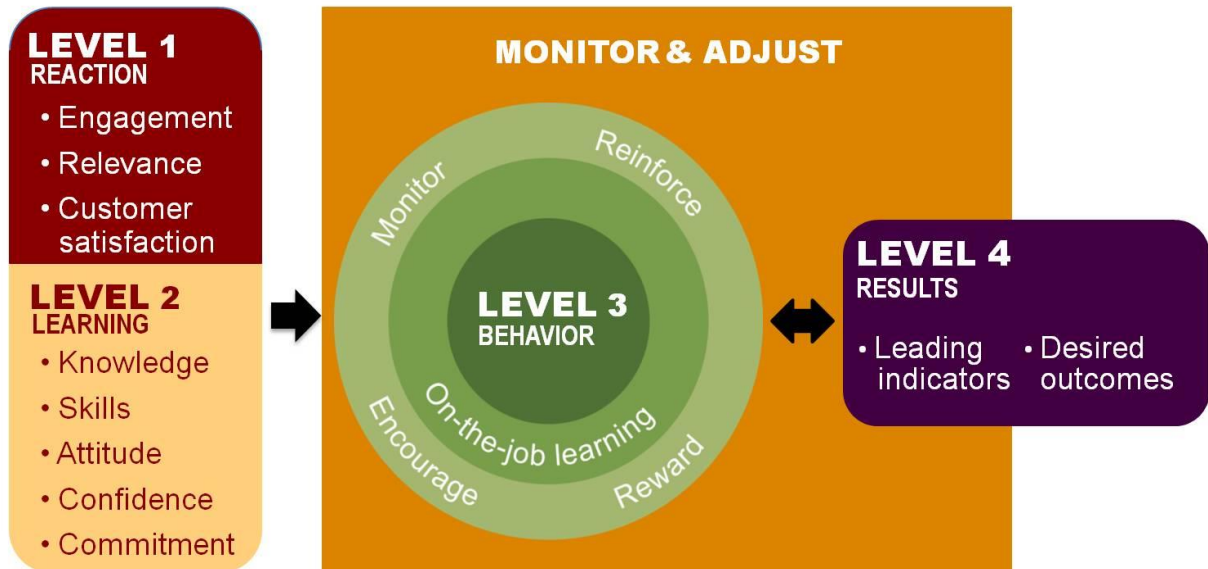


Figure 6: Kirkpatrick Model⁷⁰

- Level 1 – Reaction
 - To what degree participants react favorably to the training; the degree to which participants are actively involved in and contributing to the learning experience; the degree to which training participants will have the opportunity to use or apply what they learned in training on the job
- Level 2 – Learning
 - To what degree participants acquire the intended knowledge, skills, attitudes, confidence and commitment based on their participation in a training event
- Level 3 – Behavior
 - To what degree participants apply what they learned during training when they are back on the job
- Level 4 – Results or Effectiveness
 - To what degree targeted outcomes occur as a result of the training event and subsequent reinforcement; short-term observations and measurements suggesting that critical behaviors are on track to create a positive impact on desired results⁷¹

⁷⁰ “The Kirkpatrick Model,” Kirkpatrick Partners, <http://www.kirkpatrickpartners.com/OurPhilosophy/TheKirkpatrickModel/tabid/302/Default.aspx>.

⁷¹ “The New World Kirkpatrick Model,” Kirkpatrick Partners, <http://www.kirkpatrickpartners.com/OurPhilosophy/TheNewWorldKirkpatrickModel/tabid/303/Default.aspx>

Level 1 can include instructor and course evaluation forms or questionnaires and informal comments from the students. Level 2 could include pre- and post-testing results, reports from training officers or supervisors, or OTJ assessments. In concert with Levels 1 and 2, Mission Critical Partners also recommends that WCEC leadership meet with each academy class, either as a group or individually, to gather feedback on their experiences. This should be leadership positions not responsible for professional development, but others within the organization. For levels 3 and 4, one of the best ways to determine the degree to which telecommunicators apply what they have learned and to ensure targeted outcomes are achieved is through a QA/QI process or program as previously discussed.

Currently all telecommunicators are not cross-trained in each position; although the goal is to have all staff trained in all positions, this is not always possible due to staffing requirements. Mission Critical Partners recommends this remain a priority, as having all staff cross-trained provides the lieutenants with the most flexibility for assigning personnel on a shift.

WCEC conducts quarterly in-service training for all staff members. The TCOLE licensing requires 20 hours of continuing education annually. As all three protocols from the IAED are in use, telecommunicators are required to receive 48 hours of continuing education every two years. The APCO standards also require no less than 24 hours of continuing education annually.⁷² WCEC meets these requirements.

The continual development of staff skills is imperative to a successful organization and employee growth. The Instructional Coordination would also have responsibility for developing a sustainable continuing education program for all staff, which may include the hiring of outside instructors as many communications centers do. The exposure to the knowledge of people outside an organization is one means to ensure continued growth.

Mission Critical Partners encourages WCEC to allow leadership, and telecommunicators as appropriate, to attend outside training classes or conferences. Selection to attend should be selected based on merit and should not be the same individuals all the time. Attendance at outside events should be documented and subsequent selection rotated so that as many employees as possible have the opportunity to further their knowledge of the industry and NG9-1-1. Attendance could also serve as a “reward” for handling an extremely difficult call or event. Lack of development opportunities has been cited as a reason employees leave their jobs.

Unfortunately, with the increased staffing recommendations, there is not adequate training space. This is another immediate need. Currently, there are five auxiliary/training positions in the simulation lab. If more than five people are hired, there is not space for everyone; people would need to double up or training time would be extended as the group would need to be split. This does not provide the opportunity for everyone to learn at the same time.

⁷² APCO International, Minimum Training Standards for Public Safety Telecommunicators, 2015, pg. 18, <https://www.apcointl.org/doc/911-resources/apco-standards/75-minimum-training-standards-for-public-safety-telecommunicators/file.html>.

Mission Critical Partners strongly recommends that WCEC expand the simulation (training) lab to eight positions. Each position should be fully equipped with CAD and radio capabilities. Currently the lab only allows for CAD training. Providing radio capability allows new telecommunicators to receive radio training as well. While this expansion will require large up-front costs, there are long-term benefits. With eight fully functioning positions, the lab can service as a back-up center for other PSAPs, allowing WCEC to receive money from the District. Additionally, the current communications center is one site on the radio system; the training lab would be a second site. If the communications center site were to fail, the second site could be utilized with minimal disruption to field operations. An expanded training lab will just as importantly benefit WCEC's new employees through enhanced training capabilities.

5.3 Retention

Employee retention can be defined as an organization's ability to retain employees (expressed statistically) or efforts by an employer to keep valuable, contributing employees (strategies versus statistical outcome). And much research has been conducted in this arena as it remains a concern. In 2011, a study by AchieveGlobal, *Worldwide Trends in Employee Retention*⁷³, identified the top three reasons employees leave their jobs: insufficient compensation and benefits, lack of growth and development opportunities, and contributions not appreciated by management. The study identified that when employees leave, companies also suffer residual effects, including declining employee morale and weakening employee relationships.

Staff also leave their jobs for other reasons: perception of fairness and equitable treatment, changing expectations, and quality of supervision.⁷⁴ Each of these alone can create stress for an individual; when combined, the stress can be unhealthy for an organization. Employees are the key to any business' "health;" without employees, a business ceases to function or operates inefficiently. Public safety is no different.

While there are numerous internal factors why employees choose to leave a job, there are also external factors, namely the improving economy. Unemployment is decreasing, which means there are more opportunities for employees to opt for other careers, particularly in the private sector. In 2016, greater opportunity was cited as the number one reason people left their jobs.⁷⁵

NENA has noted that there are factors that predict retention, including:

- Center is fully staffed (all authorized positions filled)
- Number of overtime hour/month

⁷³ Manhertz, Jr., Huntley, Ph.D., "Worldwide Trends in Employee Retention: How to Keep Your Best Employees in Any Market," <http://img.en25.com/Web/AchieveGlobalInc/Worldwide%20Trends%20in%20Employee%20Retention.pdf>.

⁷⁴ "Top 10 Ways to Retain Your Great Employees," Human Resources, July 7, 2017, <https://www.thebalance.com/top-ways-to-retain-your-great-employees-1919038>.

⁷⁵ "3 Big Trends in Employee Retention Strategies to Keep the Best Talent," NextGen, May 11, 2016, <http://nextgengr.com/3-big-trends-employee-retention-strategies-keep-best-talent/>.

- Job complexity
- Hourly base pay
- Employee satisfaction with work factors (breaks, fairness, positive relationships, etc.)
- Pay matters and does make a difference in retention
- Employees who earn higher pay are from agencies with significantly higher retention rates
- Employees who were satisfied with their salary and earnings were from agencies with significantly higher retention rates that *[sic]* employees who were dissatisfied”⁷⁶

As NENA notes, pay can be a reason that PSAPs struggle to retain personnel. The United States Department of Labor, Bureau of Labor Statistics (BLS) showed that the national median annual wage for police, fire, and ambulance dispatchers in Texas was \$38,380 (\$18.45 per hour) in May 2017.⁷⁷ Table 25 depicts the average annual and hourly salary for police, fire and EMS dispatchers in metropolitan areas within the State of Texas.

Table 25: Median Wage for Dispatchers

Geographic Location	Annual Average	Hourly Average
Nationwide	\$42,020	\$20.20
Texas	\$38,380	\$18.45
Dallas - Plano - Irving	\$43,300	\$20.82
Austin - Round Rock	\$42,010	\$20.20
Fort Worth - Arlington	\$41,390	\$19.90
Houston - Woodlands - Sugar Land	\$40,910	\$19.67
San Antonio - New Braunfels	\$39,360	\$18.92
Killeen - Temple	\$34,120	\$16.40

“The median annual wage for police, fire, and ambulance dispatchers was \$39,640 in May 2017. The median wage is the wage at which half the workers in an occupation

⁷⁶ National Emergency Number Association, *Emergency Number Professional Reference Manual*, (USA: NENA, 2017), 149.

⁷⁷ “43-5031 Police, Fire, and Ambulance Dispatchers,” Occupational Employment and Wages May 2017, United States Department of Labor, March 30, 2018, <https://www.bls.gov/oes/current/oes435031.htm#top>.

earned more than that amount and half earned less. The lowest 10 percent earned less than \$25,920, and the highest 10 percent earned more than \$62,680.”⁷⁸

There is no single solution to staff retention and efforts geared toward this are slow to evolve and may take years to evaluate their effectiveness. An APCO Project Retains 2005 report states, “The strongest and best predictor of a high retention rate was having all authorized positions filled and being fully staffed.”

While communications centers cannot run as a democracy, employee involvement can be a powerful tool. Employee committees can contribute to operational efficiencies and create ongoing dialogue between management and telecommunicators on emerging issues. An idea that has been effective in other organizations is a “morale team,” which provides a forum for employees to express concerns and frustrations, and an opportunity to present solutions.

Trust needs to be fostered in management, including supervisors. Employees need to believe that their supervisors and management are competent and understand the nuances of what they do, and how they do it. To inspire confidence and make decisions that reinforce it, a leader cannot say one thing yet do something else.

Mission Critical Partners recommends that WCEC implement a comprehensive employee stress management program. The World Health Organization has called workplace stress “the health epidemic of the 21st Century” and estimates that it costs the United States up to 300 billion dollars per year.⁷⁹

NENA-STA-002, *9-1-1 Acute/Traumatic and Chronic Stress Management*, published in August 2013, says:

...risks and the costs of unmanaged stress are high for all 9-1-1 stakeholders—the 9-1-1 Telecommunicator/Dispatcher, the organization of the local PSAP, field responders who rely on dispatch personnel on scene, and for the public who depend on 9-1-1 for

Police, fire, and ambulance dispatchers typically do the following:

- Answer 9-1-1 emergency telephone and alarm system calls
- Determine the type of emergency and its location and decide the appropriate response on the basis of agency procedures
- Relay information to the appropriate first-responder agency
- Coordinate the dispatch of emergency response personnel to accident scenes
- Give basic over-the-phone medical instructions before emergency personnel arrive
- Monitor and track the status of police, fire, and ambulance units
- Synchronize responses with other area communication centers
- Keep detailed records of calls

*U.S. Department of Labor
Occupational Outlook Handbook*

<https://www.bls.gov/ooh/office-and-administrative-support/police-fire-and-ambulance-dispatchers.htm#tab-2>

⁷⁸ Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook*, Police, Fire, and Ambulance Dispatchers, April 13, 2018, <https://www.bls.gov/ooh/office-and-administrative-support/police-fire-and-ambulance-dispatchers.htm#tab-5>.

⁷⁹ “The Cost of Stress in Your Organization & What You Should Do About It,” mequilibrium, (2010-2013), <https://www.mequilibrium.com/wp-content/uploads/2013/03/3-1-13-FINAL.pdf>.

*emergency service... While non-traumatic, such commonly occurring events and work conditions still can produce stress and pose health and performance risks.*⁸⁰

This standard “provides for essential awareness of the serious risks posed by work-related stress on the mental and physical health of 9-1-1 emergency Telecommunicators/Dispatchers in their role as our first, first responders. It establishes the ‘best practice’ elements of local 9-1-1 comprehensive employee stress management programs and the expectation that such programs will be implemented by PSAPs.”⁸¹

Building an organizational culture that provides for employees’ professional needs (growth opportunities), and demonstrated appreciation and respect (listening to employees, basing rewards on performance, work/life balance options) can provide employees with good reasons to stay and will foster an environment of trust in supervisors and management as a whole.

6 Leadership Development

David Witt, a researcher with The Ken Blanchard Companies who studies employee engagement and the impact that leadership practices have on employee retention, well-being, and productivity, said, “...we’ve been looking at the connection between leadership practices, employee work passion, customer devotion, and an organization’s bottom line. What we’ve found is that there is a clear connection between the quality of an organization’s leadership practices—as perceived by employees—and subsequent intentions by employees to stay with an organization, perform at a high level, and apply discretionary effort.”⁸²

Staff are often promoted internally to a supervisory position because they are good, if not great, telecommunicators. They are then trained and/or mentored to manage administrative duties and daily tasks associated with the respective job description. Supervisory development usually includes various topics including sexual harassment, liability, diversity, and general managing practices.

The program in place at WCEC does not appear to ensure that newly promoted supervisors have the knowledge base necessary to be successful. Recently WCEC promoted three telecommunicators to supervisory roles. Most have had little supervisory training, if any. Williamson County conducts a “successful supervision” course for newly promoted employees. While this type of training is fine, it is usually not as in-depth or industry-specific as outside training provided by APCO, NENA, or other entities. Mission Critical Partners recommends that newly promoted lieutenants, and sergeants if the positions are approved, as well as those in current leadership roles, attend leadership courses to enhance their knowledge, competencies and skills. If properly executed and staff have buy-in, this should result in increased learning, achievement of goals, improved performance, and often personal satisfaction.

⁸⁰ “Acute Traumatic & Chronic Stress Management [sic,]” National Emergency Number Association, August 5, 2013, <https://www.nena.org/?StressManagement>.

⁸¹ Ibid.

⁸² “October 2013 Newsletter,” The Ken Blanchard Companies, October 2013, <https://www.kenblanchard.com/>.

Mission Critical Partners recommends that those in leadership roles within WCEC receive additional training on conflict resolution, ethics, performance management, and counseling.

WCEC has already begun to provide external training opportunities for the lieutenants. Beginning August 3, 2018, the lieutenants will participate in monthly training, which will include APCO and NENA courses that are available in the area. Mission Critical Partners commends WCEC for taking this step and focusing on personnel development.

Mission Critical Partners recommends consideration be given to implementation of a 360-degree annual performance review program for supervisors and managers. “Research shows that by collecting feedback from a variety of perspectives, especially peers and direct reports, individuals can understand how they’re seen from all points of view. They can then use this knowledge to assess the extent to which they actually exhibit exemplary leadership behaviors.”⁸³ This will assist those in management with identifying opportunities to further develop front-line leadership in ways that will positively impact operations.

7 Standard Operating Procedures

SOPs are a critical component of a communications center’s operations as they serve to reduce the possibility of human error and provide guidelines for employees to follow. The SOPs create consistency in the internal and external functions of the communications center, which is paramount when dealing with callers and emergency services personnel. The more consistent the process or procedure is from person to person, the less chance there will be for problems or issues with quality.

Well-developed SOPs provide the following:

- Guidance – provides information/direction during the course of one’s assigned duties
- Protection – provides liability protection if followed
- Accountability – to acknowledge responsibility to the public and organizations served
- Expectations – provides employees with what the organization expects of them
- Training – provides a basis for knowledge of organizational structure, operation, maintenance, etc.

The SOPs also provide a method of communication with staff. As improvements are made to operations or operational or technical processes, SOPs are updated, and each update requires new training. This provides a method to communicate the process changes to all employees. The SOPs ensure a communications center can meet the expectations of first responder agencies. The SOPs can be

⁸³ Kouzes, James M. and Posner, Barry A., *The Value of 360-Degree Feedback*, LPI®: Leadership Practices Inventory®, 2017, <http://www.leadershipchallenge.com/UserFiles/The%20Values%20of%20360-degree%20Feedback%20whitepaper.pdf>.

developed to ensure a communications center's policies and procedures align with responder agencies' while considering the requirements and limitations of the center itself.

When part of a consolidated 9-1-1 center such as WCEC, agencies should strive to align operations, and thus policies and procedures, as best they can. A communications center trying to adapt to multiple agencies' nuances has a greater exposure to liability and potentially failure. Aligning operations and standards could be approached through the various user agency boards that are established. Mission Critical Partners recommends this be a priority for WCEC in concert with served agencies.

While on-site, Mission Critical Partners learned that changes to policy are sometimes done by phone at any time of the day or night. Usually this is due to an agency wanting to update or change a response policy. Unfortunately, this type of request and subsequent acceptance is rife with problems. First, no user agency should be able to change overarching policy without a system in place for that change to be vetted and agreed upon by WCEC management and other user agencies. Second, WCEC should have an elevated stake in what it deems "allowable" or "doable." Every suggested change to an SOP must be viewed from the dispatch level to ensure that it is achievable. To that end, WCEC should have veto authority on requests that confuse and/or complicate dispatch procedures for the staff, which could expose WCEC to unnecessary liability or risk.

Currently WCEC uses a change control process intended to formalize changes to SOPs or other documents through progressive introduction. The change notices include a color scheme of green (everything on the table for discussion), yellow (almost there), and red (the SOP is complete). The changes are posted on Moodle, a learning platform in use by WCEC, with the respective header in green, yellow, or red. This provides the opportunity for all staff to provide input and feedback. After 30 days, the policy goes into effect.

While this change process is well-intended, Mission Critical Partners recommends two changes to the process. First, Mission Critical Partners agrees that staff need to be made aware of upcoming changes and that changes should occur in a controlled manner. As Rule #3 of the change control process states, "full involvement of the staff improves the solution." However, as staffing increases, "full involvement" can become unwieldy and time-consuming. Mission Critical Partners recommends the development of an SOP committee comprised of representatives from management, leadership, and telecommunicators with responsibility for developing and/or vetting new or revised policies and procedures. A smaller group will be able to engage in "healthy, constructive conversation" and take back discussions of the decisions to their peers in a timely manner. This will allow for personal representation and discussion, rather than using the Moodle platform, which is individualized. Allowing a policy to "percolate" too long before becoming official policy can create liability issues if some put into practice too soon.

Mission Critical Partners' second recommendation is to discontinue the use of Moodle for SOPs. Moodle is designed as a learning platform and is not well-suited for policies and procedures. Any changes to policies and procedures need to be discussed with those effected to ensure an understanding of the change, both why it is necessary and the expectations for staff going forward. This allows the opportunity to ask questions and have them answered and does not rely on the staff member to stay abreast of postings to Moodle. SOPs are too important to have as an afterthought.

Mission Critical Partners recommends WCEC adopt a more structured and concise SOP manual. This manual should be a living document that is updated regularly (defined in an SOP). WCEC staff advised that many policies were outdated and needed to be removed because a newer policy had supplanted it. Mission Critical Partners recommends that each SOP be reviewed to ensure its continued validity. Additionally, Mission Critical Partners recommends that the SOP manual be organized by sections, such as administrative, technology, facility, call taking, law enforcement, and fire/EMS, for example. Having a more concise SOP manual will allow staff to function in a more organized and fluid manner. Morale and efficiency will increase when dispatchers are educated to policy that does not fluctuate week to week.

Mission Critical Partners recommends that when reviewing and revising the current policies, WCEC consider the SMART approach. SMART is an acronym used to describe how objectives or other concepts, such as actions or SOPs, should be set. While there is no true consensus as to what the letters denote, a general acceptance is as follows:

- Specific
- Measurable
- Achievable
- Realistic
- Time-based

An individual standard should specify what needs to be achieved, be able to be measured as to whether the standard is met, be achievable, be realistic (can the standard be met with the resources available), and determine a time frame. Time does not necessarily need to be spelled out in each SOP. Some SOPs may require annual reports, weekly tests, or occur on a daily basis. It is important to remember that “time” can also mean trackable, tangible, or traceable.

The SMART approach is a test to be carried out after writing or updating an SOP to test its validity. Although not all standards will fit this mold, this model leaves little doubt as to what is expected.

WCEC has indicated its intent to pursue CALEA Public Safety Communications Accreditation in the near future. As CALEA accreditation is standards-centric, reviewing and revising the policies and procedures will be a step in the right direction.

8 Organizational Restructuring

Mission Critical Partners has presented numerous recommendations within this report, many having to do with staffing as well as training, continuing education, QA/QI, and SOPs, elements that are integral parts of a communications center.

Mission Critical Partners' foremost recommendations are threefold: the hiring of 12 additional telecommunicators, the hiring of an Instructional Coordinator, and the expansion of the simulation (training)

lab. There are other staffing recommendations as well for WCEC to consider: eight sergeant-level positions and two QA/QI specialists. Of the current staff of 70, there are 50 “telecommunicators” assigned to shift work: 46 telecommunicators and four lieutenants. The other 20 positions represent management, leadership positions, and support personnel (as a broad classification). Mission Critical Partners acknowledges that the majority of the support positions are credentialed and work in the communications center when needed; however, the goal is to no longer need to rely on these positions to staff the center (with the exception of the training shift specialists).

Mission Critical Partners recommends a complement of 12 supervisory personal and 64 to 66 telecommunicators, a total of 76 to 78 assigned to shift work. This is an increase of 28, at the high end. In addition, there is a need for an Instructional Coordinator and two QA/QI positions—for a total of 31 additional positions for a total staff complement of 101. Mission Critical Partners recommends 13 positions initially—12 telecommunicators and the Instructional Coordinator.

A staffing complement of 62 (assigned to shift work in the communications center) could be as detailed below.

Table 26: Example for Staffing of 62 Positions

Day Shift Staffing	Staffed Positions
1 Lieutenant 1 Sergeant-level 14 Telecommunicators For ease of reference, the swing shifts have not been broken out separately.	2-3 call take positions 5 law enforcement positions 3-4 fire positions (combination of dispatch and tactical)
Night Shift Staffing	Staffed Positions
1 Lieutenant 1 Sergeant-level 13 Telecommunicators	2-3 call take positions 4 law enforcement positions 3-4 fire positions (combination of dispatch and tactical)

A shift of 14 telecommunicators allows for two people to be away at any given time, either for breaks or for leave, as 12 are required. In this configuration, sergeant-level positions have been implemented, whose responsibility may include providing breaks. A full staff complement would be as detailed in Table 16 in Section 3.4.4, Staffing Summary.

WCEC has already indicated that the training shifts will end shortly, and with the recommendation to assign the trainers to a shift, this will increase staffing on each shift by one.

Mission Critical Partners strongly believes a restructuring of the organization is necessary and will allow WCEC to focus management and leadership in singular areas, which will serve to strengthen WCEC. In discussions between Mission Critical Partners and WCEC, there is agreement that the overarching issue is twofold: the understaffing and the resulting overextension of staff to accomplish many of the core functions needed to educate, improve, and sustain the highest level of service and care. Captains, lieutenants, and specialists are split between the role of the console-based telecommunicator and their other duties.

Mission Critical Partners believes a logical segregation is three “divisions:” technology, operations, and support (professional standards). Mission Critical Partners recommends the professional standards division be comprised of training, QA, and compliance/SOPs.

A proposed organizational chart, representing the staff complement of 101, may be found on the following page.

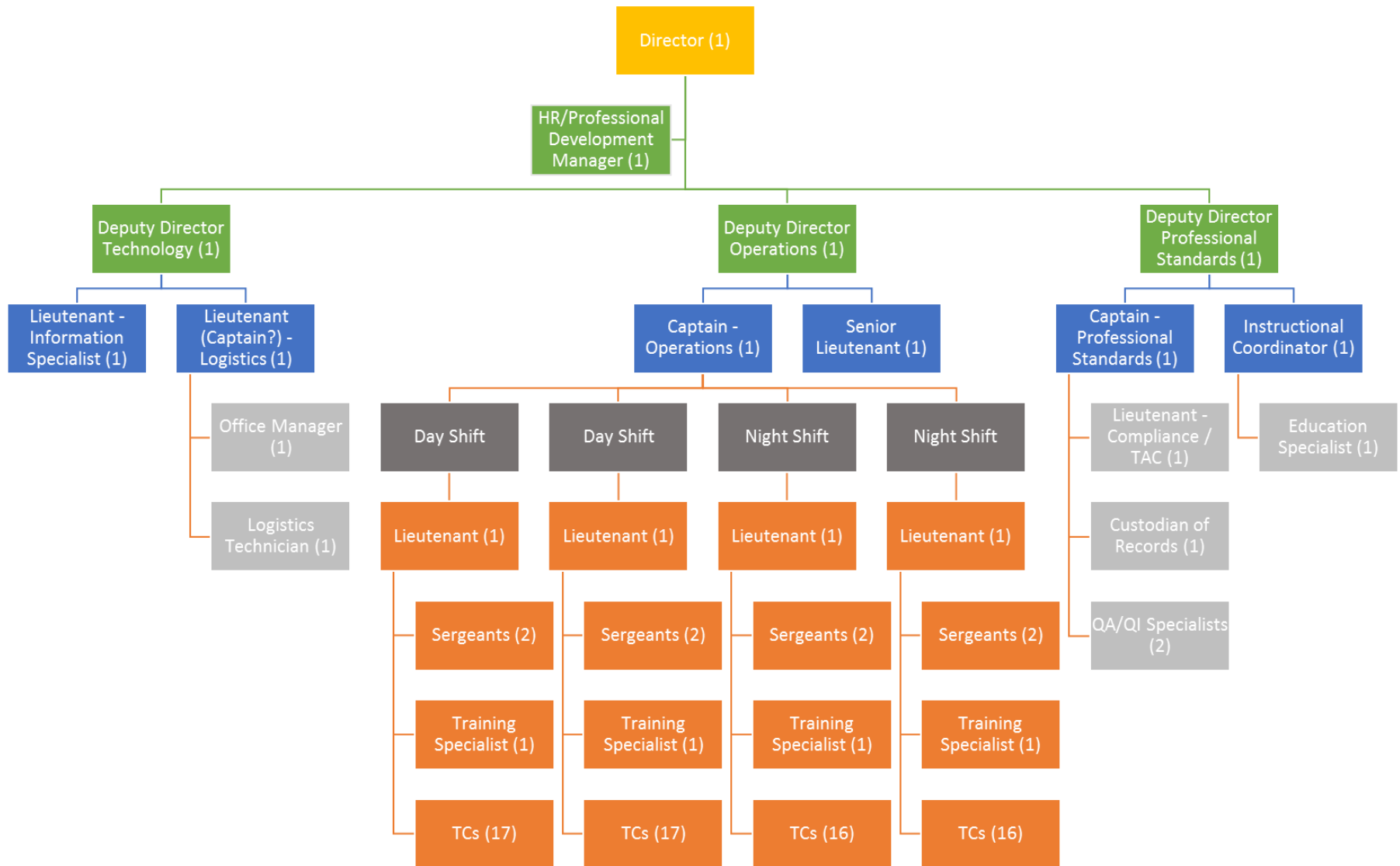


Figure 7: Proposed Organizational Chart

As stated above, Mission Critical Partners recommends WCEC restructure the organization, and suggests the proposed organizational chart be used as a starting point.

With a large shift in staffing, to a complement of 101 as a long-term goal, Mission Critical Partners urges WCEC to review all recommendations and develop a strategic plan, envisioning the desired future and translating it into broadly defined goals or objectives, and the sequence of steps to achieve them.

Priorities for staffing should be as follows:

1. Telecommunicators (12) – as soon as possible
2. Instructional Coordinator – as soon as possible
3. Shift trainers with stipends
4. QA/QI specialists
5. Continued leadership development, both short- and long-term

A priority should also be expansion of the simulation lab.

Within the strategic plan, Mission Critical Partners recommends staffing is re-evaluated once dedicated call takers have been in place for at least six months, preferably one year, and then at least bi-annually, for example in late 2019 and then again in mid-2021.

9 WCEC Technology

9.1 Technology Overview

Modern PSAPs depend upon mission critical computer applications and computer networks. Telecommunicators must be proficient in the use of CAD, Motorola dispatch radio console, geographic information system (GIS) mapping, Solacom 9-1-1 call handling system, and other applications. The 9-1-1 call handling system is now accepting text-to-9-1-1. The system capabilities will be expanded to include images and video.

This section describes the various applications that WCEC utilizes to perform their mission.

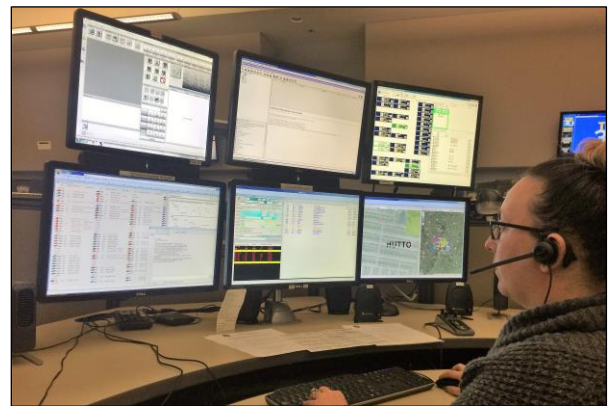


Figure 8: Dispatch Console Technology

WCEC receives IT support services from Williamson County Technology Services, Public Safety Technology Division. The availability of applications and network infrastructure are essential to providing public safety communications services. CAD and telephone services must maintain an availability of 99.99 percent or higher. IT support services must be prepared to

provide immediate response to WCEC on a 24/7 basis. Larger PSAPs typically have IT staff who either work for the communications center or are assigned to a center on a full-time basis. Mission Critical Partners understands that WCEC must submit a trouble ticket to receive IT response to a problem. Mission Critical Partners recommends that the County consider assigning IT technicians to WCEC on a full-time basis. This promotes greater familiarity with the systems and enhances relationships with personnel in WCEC. At minimum, the CAD administrator should be assigned to WCEC on a full-time basis.

9.2 Computer Aided Dispatch

WCEC utilizes the Superion ONESolution CAD, which was recently upgraded to software version 17.5.0.2209. Several CAD issues were documented by staff that the new version hopefully will remedy. These items should be thoroughly vetted to ensure compliance in the new version.

- License and registration returns do not auto-populate in CAD notes or related names/vehicles.
- There is no business verification prompting on an incorrect address.
- The business name does not always populate on CAD-to-CAD calls.
- The ProQA problem descriptor does not always transfer to CAD.
- The name candidate window is sometimes blank.
- Duplicate notes indicating an event is no longer open in legacy CAD-to-CAD.
- Active call screen colors do not match the settings.
- Law enforcement determinant codes are not aligned with the Texas Penal Code.

Many features of the CAD system are not utilized to their fullest extent. For example, the SOP feature is not used and no personnel skill sets are built out. Mission Critical Partners also witnessed the use of a large white board during a wildfire. Most of what was written on the board was capturable information that could have been placed in the comments field of the fire incident. Because CAD system records are archivable, every attempt should be made to utilize the system and its features for call history and timeline. Notes on a white board, some being important, are not being documented for audit trail history and would be lost; potentially exposing the agency to litigation. Utilizing the white board also requires another employee's attention and to some extent disrupts the dispatchers working the event.

Mission Critical Partners recommends that WCEC attempt to transition away from the white board and start using the CAD system for this type of data collection to ensure that all data is captured and time-stamped. If the white board has other purposes, dispatchers working the incident should not have primary responsibility for the data recorded.

9.3 Call Handling Equipment

The Capital Area Emergency Communications District provides the Solacom Guardian NG9-1-1 call handling equipment (CHE). Only 12 of the 21 positions in the communications center have access to the CHE. This limits the ability of WCEC to implement additional call taker positions.

Mission Critical Partners recommends that all positions be equipped with CHE. This will ensure that WCEC is able to respond to high priority events, whether planned or unplanned, such as weather conditions that can impact the center at any given time and press staff into service. The predicted population growth may impact operations in the future. CHE at each workstation would allow personnel the ability to staff any position when demand dictates. WCEC leadership will need to request the expansion of the system through the Capital Area Emergency Communications District.

9.4 Fire Station Alerting

County fire departments utilize the PURVIS Fire Station Alerting System (FSAS), version 4.6.2.2. However, not all agencies are network-connected and still rely on tone and voice announcements. The PURVIS system is activated based on the CAD units dispatched on calls. The system is expandable and WCEC should continue to ensure all version upgrades are installed when necessary.

WCEC also uses PageGate, which is a short message service (SMS) and text messaging gateway. PageGate accepts messages from various ways and sends the message via text.⁸⁴ PageGate has the capability to provide information on completed, canceled, or cleared incidents to agencies that request these notifications. WCEC is considering replacing PageGate as it does not allow for configuration of message receipt and, more significantly, allows Williamson County to be “blacklisted,” resulting in critical notification pages not being sent to responding personnel or other resources.

9.5 Mapping/Geographic Information Systems

Mapping is provided by the County’s GIS department. The GIS department utilizes Esri ArcGIS, the leader in GIS mapping.

County GIS has applied address points to most parcels in the county. However, some are not denoted and should be. While it appears that postal service rules were followed for addressing, some anomalies still occur.

Mission Critical Partners recommends that WCEC and County GIS discuss any issues with the GIS database. The importance of GIS with NG9-1-1 will be paramount and beginning now to clean and refine the data is of the utmost importance.

9.6 Records Management Systems

The Superior ONESolution CAD system shares data through an application programming interface (API) with various records management systems (RMS). The law enforcement agencies are served by a Superior ONESolution RMS. Many of the fire departments utilize FIREHOUSE Software® (now part of ESO), while several departments utilize the Emergency Reporting™ system (ERS). Williamson County

⁸⁴ PageGate, NotePage, 2018. <https://www.notepage.net/pagegate.htm>.

EMS uses ESO software as its RMS and for electronic patient care reporting (ePCR). All systems receive information from the Superior ONESolution CAD.

The law and fire RMS are hosted off-site and are managed by the Williamson County Technology Services. Issues with RMS identified by field responders should be handled within the respective agencies, unless the problem stems from the CAD system side, which should then be directed to the Public Safety Technology Division.

Representatives of the law enforcement community expressed concern regarding the security of sensitive data that is stored in the law RMS. The Sheriff's Office stated their interest in managing the RMS to enhance system security.

9.7 Radio Consoles System

WCEC is a partner in the Greater Austin Travis Regional Radio System (GATTRS). The County is assessed a monthly per-radio fee to fund the system operations. WCEC pays an annual user fee as a member of the regional communications system. WCEC uses a Motorola MCC7500 radio console system. The MCC7500 is a digital public safety-grade radio console solution that provides telecommunicators with the ability to select radio channels or talkgroups. The system also provides the ability to patch different channels together to provide greater interoperability during large-scale incidents. System upgrades are included in the Motorola upgrade agreement. The system is operating on the current release version. An upgrade to version 7.17 has been planned.

9.8 Logging Recorder

WCEC uses a NICE logging recorder, version 6.1.0.158. The system records telephone calls and radio traffic for each dispatch position. The system is currently being upgraded to include NG9-1-1 enhancements and capabilities, which will provide a more robust solution to perform voice analytics and search for spoken words. Unfortunately, at this time, NICE is unable to provide screen captures of CAD system monitors. This upgrade will be recommended once NICE has certified the solution.

10 Governance and Funding

10.1 Governance

Many communities have adopted a shared service model to provide public safety communications services. The primary goal of adopting a shared services model is to improve the delivery of emergency communications. A secondary goal is cost reduction through the efficient utilization of costly resources including software applications and radio systems.

Consolidation and colocation are the most prevalent PSAP shared services models. The consolidation model features the merger of personnel and resources from multiple agencies into a single entity. The

colocation model involves housing separate agencies in a single facility and the sharing of technology resources. The adoption of a governance structure and equitable funding scheme is a significant aspect of implementing a shared services model.

The provision of multi-discipline dispatch services presents challenges for many PSAP managers. Municipal centers serving only two agencies (police and fire) experience challenges in meeting the specific needs of each discipline. Managing the delivery of communications services to more than 30 partner agencies can be a daunting task. System managers must work closely with representatives of their partner agencies to meet user expectations. Partner agencies must adapt their operations to align with a delivery model that meets most of the needs of all users. Every partner will not experience 100 percent satisfaction with all decisions or service delivery. This is also the typical experience of users in centers that serve only two agencies.

WCEC is best described as a consolidated communications center. Rather than merging existing resources, WCEC has evolved organically based on the needs of the partner agencies. WCEC is a division within Williamson County Emergency Services. As such it falls under purview of the County Commissioners Court. The Senior Director of Emergency Services is appointed by the County Judge and all WCEC personnel are employees of Williamson County. The County owns the Emergency Service Operations Center, the physical infrastructure, and technology resources that support WCEC operations. The County does not derive revenue from WCEC operations.

Colocated systems experience an additional level of challenges that involve the ownership and maintenance of facilities, selection, and implementation of technology, human resource policies, security protocols, and allocation of space. The most important challenge involves determining an equitable allocation of maintenance and operating expenses among the partner agencies. As a County department, WCEC does not have to deal with these issues.

Combined services governance models typically include the involvement of a senior advisory entity. These may be formalized organizations such as a board of directors or a standing committee. The purpose of such an entity is to provide a voice for system users concerning system management and operations. Regardless of the structure of an advisory entity, the communications system manager must ultimately report to a single authority.

Some shared systems have created an Executive Board that has authority over the system manager. The Executive Board membership includes senior executives of the partner jurisdictions such as County Judge, Mayors, and City Managers. The Executive Board has the authority to hire the system manager. Executive Boards are frequently adopted by dispatch authorities such as those created by a joint powers agreement. The dispatch authority is a separate entity.

WCEC leadership works closely with representatives of partner agencies to ensure the delivery of the appropriate level of services. The Williamson County Dispatch Steering Committee was established to “provide general guidance and non-binding recommendations” to the WCEC Senior Director and Commissioners Court. The Steering Committee serves in an advisory capacity and does not possess supervisory authority over WCEC personnel or operations. The Steering Committee by-laws describe the

composition of committee membership. Individuals are appointed by the Commissioners Court to serve in the following voting positions:

- Commissioners Court
- Wilco Sheriff's Office/Constables
- Wilco Emergency Medical Services
- Wilco EMS Medical Director
- County Fire Chief's Association
- Non-County Law Enforcement agency (i.e. municipal)
- Non-voting members include:
 - Public Safety Technology Program
 - County Budget Office
 - County Auditor's Office

The by-laws also provide for the creation of four standing sub-committees and ad-hoc committees or task forces. The standing sub-committees are:

- Williamson County Fire Chiefs Association Communications Subcommittee
- Williamson County and Cities Law Enforcement Communications Subcommittee
- Williamson County PSAP Managers Group
- Dispatch Review Committee

The Steering Committee serves in an advisory capacity. Operational decisions are ultimately made by WCEC leadership and sanctioned by the Commissioners Court.

10.2 Funding

WCEC is a general fund department. The County does not realize revenue from services provided by WCEC. Most shared services systems have adopted a funding scheme that provides for reimbursement by partner agencies into a revenue fund.

Identifying a method of funding for a shared services communications center is a complex issue. The issue is further complicated when member agencies operate at the state, county, municipal or district level. A key goal of the funding scheme should be the fair and equitable funding of services across all partner jurisdictions. Mission Critical Partners has identified several funding models that are currently utilized in Texas. These provide cost sharing for both consolidated and colocated communications centers. The method selected should provide a level of predictability and fairness upon which all member jurisdictions can agree.

Public safety communications centers generate data that includes:

- Number of incidents
- Number of incoming calls

- Number of radio transmissions/PTTs
- Other key activities that can be documented

This data is typically used as the base to determine an average cost per activity. The following sections describe the methods commonly used to allocate costs among jurisdictions participating in a shared services communications center.

10.2.1 Population-based

The population-based cost allocation model involves assessing a share of operational costs based upon the population within each jurisdiction. Using this method, member jurisdictions would be assessed a portion of the operational cost on a per capita basis. The projected operating budget is divided by the total population of the respective jurisdictions to determine an average per person assessment. This model assumes that municipalities with larger populations will generate more activity within the center (i.e. 9-1-1 calls, incidents, etc.). However, this population bias is not necessarily accurate in all circumstances. As an example, a jurisdiction with less population but more miles of interstate highway may experience greater number of calls than an area with residential areas.

10.2.2 Activity-based

Cost assessment based upon activity is a common method that is used to fund shared services communications centers. Routine communications center activities may be tracked and documented including:

- Incoming 9-1-1 calls
- Incoming 9-1-1 and ten-digit calls
- Dispatched incidents
- Responder-initiated incidents
- Radio transmissions/PTT

Activity-based costs can be derived using two methods. The first involves tracking the activity volume associated with each member agency. The entity is assessed the cost for the provision of specific services based upon actual usage.

The second method involves averaging the volume of an activity across all participating jurisdictions or agencies. As an example, call centers document the number of 9-1-1 calls received annually. The annual operating budget can be divided by the number of 9-1-1 calls to derive a per-call cost. Each entity would then contribute a share of the cost based upon the average volume of overall system usage.

10.2.3 Maintenance of Effort

Each agency contributes an equal portion of the operating budget based upon the straight division of the total costs among all member agencies. Though rarely used, this model offers simplicity and the most

equitable distribution of costs. The governing entity must determine the basis of the cost allocation, similar to the activity-based method. In the case of WCEC, the member agencies provide mutual and automatic aid to one another without the expectation of cost recovery for the use of resources.

10.2.4 Ad Valorem-based

This method uses the tax valuation of properties located within each jurisdiction as the basis to determine the level of contribution. This method fails to account for the taxing overlay of the County and municipal jurisdictions.

10.2.5 Resource-based

This method is based upon the number of public safety resources (i.e., personnel, apparatus, stations, etc.) that each member agency possesses. This method is based upon the assumption that resources are closely aligned with activity and demands on the communications system. The regional radio system utilizes a resource-based fee schedule.

A key consideration in selecting a funding model involves the cost allocated for agencies within the primary jurisdiction such as the county. In the case of WCEC, the Williamson County Sheriff's Office is the primary recipient of WCEC services. WCEC also serves the Constable Offices, District Attorney, and other County departments.

This raises a number of issues for County officials to resolve. Would County agencies and non-County partners both pay for services? Would departmental budgets include a line item for inter-departmental transfers? Would only partners outside of County government be required to pay for services? Non-County jurisdictions may raise the concern that the center is funded by County taxes that are paid by all property owners.

Unfortunately, there is no simple solution to determining a shared services funding scheme.

11 Conclusion

WCEC has dedicated staff that are proud of the jobs they perform. As in any organization, there are strengths that must be capitalized on and weaknesses that must be addressed. WCEC has made considerable investments in the technologies to support 9-1-1 operations and must now address staffing and the training infrastructure necessary to support the public and first responder agencies.

It will be difficult for WCEC to fulfill its mission and provide its customers with the expected level of service while continuing to sustain an attrition rate that is double the national average. Unfortunately, this is a vicious cycle that can take years to get out of, as WCEC is experiencing. Staff are overworked because staff leave, and staff leave because they are overworked, in part attributed to the operational configuration of combined call take and dispatch responsibilities.

Proper staffing is a balance between providing quality service at a reasonable personnel and financial cost. Mission Critical Partners recommends that WCEC begin planning for staff increases as well as training needs beginning with the next budget cycle and continuing into successive budget cycles until needs are met.

Mission Critical Partners commends WCEC leadership for being proactive and taking steps to begin implementing key recommendations that are presented in this report. Mission Critical Partners is confident that WCEC will be successful in all its endeavors.

Appendix A – Push-to-talk (PTT) Data

Talkgroup	FY16-17 Data (in seconds)	Average Seconds per Day (365 days)	FY17-18 Data (in seconds)	Average Seconds per Day	Days of Data	Change (+ / -)
911 PRI	52,068.50	142.65	21,620.30	115.62	187	-27.04
A1 R LE	97,928.00	268.30	50,869.40	272.03	187	3.73
ACO	156,279.00	428.16	78,987.40	422.39	187	-5.77
C ADMIN	22,711.70	62.22	12,308.90	57.25	215	-4.97
C DISP	101,156.40	277.14	63,854.00	297.00	215	19.85
C FIRE 1	131,585.20	360.51	85,552.40	457.50	187	96.99
C FIRE 2	7,230.00	19.81	5,757.90	30.79	187	10.98
C FIRE 3	1,606.50	4.40	74.9	0.40	187	-4.00
C MED 1	308,881.30	846.25	167,809.30	897.38	187	51.13
C MED 2	2,506.20	6.87	2,225.00	11.90	187	5.03
C MED 3	199,285.80	545.99	106,133.90	567.56	187	21.57
S SCN 1	369.8	1.01	1,716.30	9.18	187	8.16
C SCN 2	4	0.01	9.7	0.05	187	0.04
C SCN 3	22.5	0.06	4.5	0.02	187	-0.04
CON JP	802,108.60	2,197.56	427,443.00	2,273.63	188	76.08
E ADMIN	0	0.00	0	0.00	188	0.00
E DISP	264,748.90	725.34	144,867.20	770.57	188	45.23
E FIRE 1	265,502.20	727.40	153,047.70	814.08	188	86.68
E FIRE 2	27,428.70	75.15	24,648.50	131.11	188	55.96
E FIRE 3	7,883.20	21.60	2,109.50	11.22	188	-10.38

Talkgroup	FY16-17 Data (in seconds)	Average Seconds per Day (365 days)	FY17-18 Data (in seconds)	Average Seconds per Day	Days of Data	Change (+ / -)
E MED 1	153,861.10	421.54	83,296.90	443.07	188	21.53
E MED 2	119,081.50	326.25	50,045.90	266.20	188	-60.05
E MED 3	123,265.70	337.71	56,907.90	302.70	188	-35.01
E SCN 1	1,885.00	5.16	307.2	1.60	192	-3.56
E SCN 2	233.8	0.64	41.3	0.20	202	-0.44
E SCN 3	25.9	0.07	0	0.00	192	-0.07
EMS PRI	946,392.30	2,592.86	481,250.40	2,506.51	192	-86.34
HAZ PRI	7,818.60	21.42	7,124.60	37.11	192	15.69
HUT PD ACO	68,181.90	186.80	28,637.80	148.38	193	-38.42
HUTTO PD	2,313,955.20	6,339.60	1,210,282.80	6,270.90	193	-68.71
PD EAST	473,079.40	1,296.11	281,843.60	1,460.33	193	164.22
PD WEST	753,719.30	2,064.98	472,362.40	2,373.68	199	308.70
SO SMT	23,578.10	64.60	19,260.70	96.79	199	32.19
SO TAC 1	75,979.40	208.16	46,036.30	231.34	199	23.18
SO TAC 2	15,137.90	41.47	25,874.40	130.02	199	88.55
SO TAC 3	58,947.30	161.50	32,719.90	164.42	199	2.92
SO TAC 4	225,851.40	618.77	137,348.70	690.19	199	71.42
SO TRAFFIC	747,193.90	2,047.11	344,049.30	1,728.89	199	-318.22
TAYLOR PRI	0	0.00	359.2	1.67	215	1.67

Talkgroup	FY16-17 Data (in seconds)	Average Seconds per Day (365 days)	FY17-18 Data (in seconds)	Average Seconds per Day	Days of Data	Change (+ / -)
W ADMIN	34,290.30	93.95	24,347.70	122.35	199	28.40
W CALL 1	4,531,855.40	12,416.04	2,227,668.40	11,194.31	199	-1,221.73
W CALL 2	3,403,189.30	9,323.81	1,667,356.20	8,336.78	200	-987.03
W DISP	434,305.80	1,189.88	254,213.40	1,271.07	200	81.19
W FIRE 1	221,276.70	606.24	135,633.20	678.17	200	71.93
W FIRE 2	22,767.80	62.38	12,027.00	60.14	200	-2.24
W FIRE 3	4,059.60	11.12	1,472.80	7.36	200	-3.76
W MED 1	235,432.40	645.02	154,548.50	772.74	200	127.72
W MED 2	332,023.20	909.65	169,030.60	845.15	200	-64.50
W MED 3	135,630.20	371.59	72,981.80	364.91	200	-6.68
W SCN 1	368.1	1.01	187.6	0.94	200	-0.07
W SCN 2	1,018.10	2.79	35.2	0.18	200	-2.61
W SCN 3	10.8	0.03	6.9	0.03	200	0.00
WC CID	18,700.30	51.23	371.3	1.85	201	-49.39
WC CRC1	1,879.80	5.15	661.2	3.29	201	-1.86
WC EMS EMER	5,876.20	16.10	4,458.90	22.18	201	6.08
WC HAZ EMER	243.7	0.67	5.2	0.03	201	-0.64
WC HISD COM	3,752.50	10.28	12,277.10	61.08	201	50.80
WC HISD EMER	2,581.00	7.07	1,497.40	7.45	201	0.38

Talkgroup	FY16-17 Data (in seconds)	Average Seconds per Day (365 days)	FY17-18 Data (in seconds)	Average Seconds per Day	Days of Data	Change (+ / -)
WC JAIL COM	3,244.10	8.89	1,312.40	6.53	201	-2.36
WC LE ALERT	0	0.00	0	0.00	201	0.00
WC LE1	58,687.90	160.79	31,055.40	154.50	201	-6.28
WC MOT1	275,899.40	755.89	150,802.20	750.26	201	-5.63
WC RB DISP	55,460.40	151.95	22,457.40	111.73	201	-40.22
Totals	18,340,047.20	50,246,71	9,571,196.9	48,766.72	196	-1479.99

Appendix B – QA/QI Specialist Job Description

Job Title:	QA/QI Specialist
Position Type:	Non-exempt
Job Description	
<p>Reports To: Captain – Professional Standards</p> <p>Job Purpose: To ensure WCEC is complying with quality assurance (QA) standards. To monitor and audit weekly reports to ensure standards are adhered to.</p> <p>Duties:</p> <ul style="list-style-type: none"> • Recommends remedial training for staff as necessary. • Conducts QA reviews in accordance with International Academies of Emergency Dispatch (IAED) on random samples of weekly 9-1-1 calls and radio transmissions and evaluates responses according to IAED and other industry QA standards and determines if staff is in compliance. • Evaluates, scores, and provides QA feedback to telecommunicators being monitored. Based on QA audit results, recommends and conducts remedial training to staff who fall below quality performance standards established by WCEC policy. • May investigate complaints brought by participating agencies regarding department responsiveness or technical support, if so directed. Reviews calls under question and recommends necessary action to address complaint. Recommends changes to improve standard, if warranted. Recommends actions needed to address performance issue, if necessary. • Prepares daily, weekly, monthly and quarterly QA reports to Professional Standards Captain and Shift Lieutenants. • Completes and maintains QA records for all calls and radio transmissions reviewed and evaluated. • Assists in reviewing QA standards to ensure they continue to meet "best practices" and continue to be appropriate in all situations. Ensures any recommended changes comply with NENA and APCO operating standards. • Works with the Shift Lieutenants to review performance audits for each staff member. • Works with a variety of technical equipment to accomplish performance audits including computer aided dispatch (CAD), logging recorders, and radio equipment. 	

Job Title:

QA/QI Specialist

Education/Experience Requirements:

- High school diploma or G.E.D. equivalent
- Two years customer service, communications, or dispatch experience or any equivalent combination of related education and experience

Skills/Qualifications:

- Must be certified in protocol responsibility area; for example, if responsible for EMS calls, must be EMD-certified
- Ability to listen, speak, and write articulately, and clearly
- Ability to gain an understanding of the current telecommunications organizational structure, policies, procedures, programs, practices, terminology and services
- Ability to maintain files
- Ability to accurately keyboard at 35 wpm with 100 percent accuracy
- Ability to concentrate and evaluate information
- Ability to communicate respectfully and effectively
- Ability to participate in effective teamwork by being self-motivated, accepting of assignments and by completing assignments within agreed upon deadlines
- Ability to identify problems and collect, summarize, and relay information
- Ability to demonstrate leadership qualities such as adaptability, flexibility, dependability, punctuality and accountability through quick, effective responses to change
- Ability to effectively monitor own progress and reassess, change or adjust priorities

Appendix C – National 911 Program Minimum Training Guidelines for the Telecommunicator

The training guidelines may be found on the following pages.

Appendix D – Instructional Coordinator Job Description Elements

“Instructional coordinators oversee school curriculums and teaching standards. They develop instructional material, coordinate its implementation with teachers and principals, and assess its effectiveness.

“Most instructional coordinators work in elementary and secondary schools, colleges, professional schools, educational support services, or for state and local governments. They typically work year round.”⁸⁵

Texas has one of the highest employment levels for this occupation.⁸⁶

Wage estimates⁸⁷ for this position are as follows:

National estimates for this occupation: Top

Employment estimate and mean wage estimates for this occupation:

Employment (1)	Employment RSE (3)	Mean hourly wage	Mean annual wage (2)	Wage RSE (3)
157,490	1.6 %	\$32.06	\$66,680	0.5 %

Percentile wage estimates for this occupation:

Percentile	10%	25%	50% (Median)	75%	90%
Hourly Wage	\$17.09	\$23.29	\$30.65	\$39.44	\$48.80
Annual Wage (2)	\$35,550	\$48,450	\$63,750	\$82,040	\$101,500

Another related position is Training and Development Managers. “Training and development managers oversee staff and plan, direct, and coordinate programs to enhance the knowledge and skills of an organization’s employees.”⁸⁸ The median pay for this position is \$108,250 annually.⁸⁹

Elements for an Instructional Coordinator job description can be found in the table below. WCEC can construct a relevant job description based on these elements. For example, the preferred education has several statements from which WCEC may choose.

⁸⁵ “Instructional Coordinators,” United States Department of Labor, Bureau of Labor Statistics, Occupational Outlook Handbook, May 18, 2018, <https://www.bls.gov/ooh/education-training-and-library/instructional-coordinators.htm>.

⁸⁶ “25-9031 Instructional Coordinators,” United States Department of Labor, Bureau of Labor Statistics, Occupational Employment and Wages, May 2017” Outlook Handbook, March 30, 2018, <https://www.bls.gov/oes/current/oes259031.htm#st>.

⁸⁷ Ibid.

⁸⁸ “Training and Development Managers,” United States Department of Labor, Bureau of Labor Statistics, Occupational Outlook Handbook, April 13, 2018, <https://www.bls.gov/ooh/management/training-and-development-managers.htm>.

⁸⁹ Ibid.

Instructional Coordinator Job Description Elements

Essential Duties:

- Effectively plan, organize, coordinate, carry out and evaluate assigned program goals and objectives; coordinate and evaluate the work of program participants including training specialists, agency trainers / speakers and similar
- Organize and accomplish program goals and objectives, including delegation of program tasks and responsibilities as appropriate
- Interpret and effectively apply related laws, regulations, policies and procedures
- Apply effective time management, critical thinking, problem solving and collaborative approaches to improving program services; analyze situations thoroughly, identify potential problems, find and implement effective solutions
- Establish and maintain positive and professional working relationships with managers, coworkers, other governmental jurisdictions, volunteers, and user agencies
- Effectively communicate and express ideas both orally and in writing
- Apply appropriate independent initiative, discretion, judgment and organizational skills to a variety of projects, assignments and situations.
- Understand and execute complex oral and written instructions; apply available guidelines, policies or procedures in diverse situations.
- Prepare and present written correspondence, reports and materials in clear, correct and comprehensible terms from general notes and concepts.
- Assess training needs for new and existing employees
- Identify internal and external training programs to address competency gaps
- Partner with internal stakeholders regarding employee training needs
- Organize, develop or source training programs to meet specific training needs
- Liaise with subject matter experts regarding instructional design
- Develop training aids such as manuals and handbooks
- Inform employees about training options
- Map out training plans for individual employees
- Present training programs using recognized training techniques and tools
- Facilitate learning through a variety of delivery methods including classroom instruction, virtual training, on-the-job coaching
- Design and apply assessment tools to measure training effectiveness
- Track and report on training outcomes
- Provide feedback to program participants and management
- Evaluate and make recommendations on training material and methodology
- Maintain employee training records
- Handle logistics for training activities including venues and equipment
- Establish and maintain relationships with external training suppliers
- Coordinate off-site training activities for employees
- Manage training budget
- Manage and maintain in-house training facilities and equipment

- Keep current on training design and methodology

Preferred Education:

Bachelor's Degree in Education, Education Administration or related field; 3-5 years of teaching experience, with program coordination or supervisory experience preferred; or any equivalent combination of training and experience that provides the requisite knowledge, skills, and abilities

Any equivalent combination of education, training, and experience, which provides the requisite knowledge, skills, and abilities for this job, may be substituted for evaluation at the discretion of County management

Three to four years of progressively responsible experience in adult training or education (including Communications Training Officer experience) or related coordination and facilitation of training/QA programs

5+ years of experience in Public Safety and sufficient experience to perform principal duties and responsibilities usually associated with formal classroom instruction and course design development and implementation

Skills/Qualifications:

- Knowledge of:
 - Theories, principles and techniques used to facilitate adult learning
 - Project planning and execution of principles and methods
 - Adult instructional and learning theory and principles
 - Instructional design
 - Training methodologies
 - Learning management systems
 - Competency assessment
- Proficiency in planning, designing, and developing training modules, formal workbooks, and associated class materials, organization, and interpersonal relations
- Good communication skills, both oral and written
- Demonstrated ability to work independently
- Principles, and practices of program coordination and facilitation, including planning, scheduling, monitoring, problem solving, research, record keeping and evaluations
- Modern administrative methods and procedures, correspondence and report preparation
- Application and interpretation of agency directives and procedures as well as local, state and federal laws and regulations, and industry trends and best practices
- Ability to develop computer-based training programs