CONFIRE

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CONFIRE Emergency Communications Center Staffing Analysis

Final - Draft Report

PREPARED FOR
CONFIRE JOINT POWERS AUTHORITY, CALIFORNIA
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Executive Summary

Mission Critical Partners is pleased to have partnered with CONFIRE to analyze the staffing needs of the CONFIRE Emergency Communications Center (ECC). This report provides insight into possibilities of re-structuring operational configurations and its relation to staffing requirements. CONFIRE has split operations into two physical locations, while adding new programs and services, and enhanced technology.

Recent developments that prompted this staffing study include:

- The CONFIRE ECC has an authorized staff strength of 46 ECC staff (6 call-takers, 40 dispatchers). There are seven vacancies, which accounts for 15% of the current ECC workforce allocation. Eight authorized supervisory staff, including four newly created positions, which at the time of this report, remain unfilled. A total of 11 positions are unfilled. Unfilled dispatcher vacancies are filled with existing staff who are forced to work overtime.

- CONFIRE has operationalized a second ECC in Hesperia, known as Desert ECC. This effort was due to organic growth, which out-paced the space afforded in the legacy facility in the Rialto (Valley ECC). The lack of space facilitated this split, which was dramatically compounded with the spontaneous need to expand and comply with COVID-19 pandemic safety measures. It is anticipated that this facility will continue to operate full-time indefinitely.

- CONFIRE has incorporated a (sworn) Command and Control position into its operations. Initial design has a BDC Chief Officer assigned to the Desert ECC on a 40-hour per week and on-call basis. This position's role and responsibility is to monitor and oversee the movement of BDC resources. The new position is being monitored and evaluated by the CONFIRE Operations Chiefs, to determine pitfalls and benefits before expanding its scope.

With above dynamics in mind, the premise of this report is simple. The authorized staffing numbers and measure how performance is delivered as calculated against industry call answering standards. The report details three sections:

- Current State – provides a baseline of data and a snapshot of today's current environment
- Analysis – provides findings and recommendations using staffing calculations and the operational configuration, and their alignment with the mission, standards compliance, and organizational culture.
- Future State – provides options and recommendations for the (new or) future CONFIRE ECC operational configuration and staffing requirements

CONFIRE is not unlike the majority of 911 centers across the country, as workload and growth out paces the established facility space, technology capacity and infrastructure that supports its operations. These factors, coupled with the State of California commencing its migration to next generation of 911 (NG-911)

services throughout the State, necessitates agencies like CONFIRE to make plans to prepare for and adapt to the changing nature of the emergency communications universe.

Staffing ECC's or PSAPs has been and continues to be a serious challenge industry wide. To that end, MCP addressed not just the numbers, but also the organizational structure and operational configuration of the ECC. This assessment includes observations and suggestions regarding radio configuration, staff retention, training and quality assurance and technology uses.

While MCP was narrowly focused on staffing, our broad observation of the operation finds that CONFIRE is well managed, well equipped and well situated for further progress and success and has the operational mindset to adapt to new ways of doing business.

Current State

Without the benefit of analysis, MCP found several current state practices to note and has made correlating recommendations as summarized below. Not listed in these findings are the following areas, which MCP has identified as sound and best practices in place:

- Organizational Structure: CONFIRE employs a solid organizational structure with each needed ECC operational component well represented.
- ECC Technology: CONFIRE is forward-thinking with the tools that allows maximum efficiency and proficiency for ECC staff.
- Performance: CONFIRE's recognition as achieving and maintaining international recognition as an Accredited Center of Excellence (ACE) is an exceptional accomplishment that few in the industry can attain. While call answering and call processing timeframes continue to be areas of needed improvement, the performance impediments may be more a result of staffing needs than executing duties and expectations.

A combination of staffing, operational and technology enhancements are in the summary of findings and recommendations. The full list of recommendations is in Section 10.

Current State Findings and Recommendations Summary

Current State Findings and Recommendations		
Item	**Findings**	**Recommendation(s)**
Staffing climate	The CONFIRE ECC has experienced an approximate 15-30% staffing deficit over the past four years.	Strive to achieve and maintain full staffing levels.
	Existing ECC staff must work overtime to meet (minimum) staffing requirements. Much of this is forced overtime.	It is estimated to take a minimum of two years to achieve full staffing strength; prepare ECC for an aggressive effort of

		training new staff after conducting back-to-back academies and on-the-job training.
	To maintain operational capacity CONFIRE backfills scheduled vacancies with existing staff working voluntary or forced overtime. CONFIRE employs a small contingency of extra-help staff for straight time shift coverage.	Over-hire to create a pool to backfill vacancies and minimize forced OT as attrition occurs Expand the extra-help bench to fill shift vacancies with straight time and schedule hours as part of the base schedule rather than ad-hoc sign-ups.
Organizational Structure	The Training and QA division has one full-time assistant manager and two part-time staff. There are not enough people in this unit to support the demand to aggressively recruit, select, hire, on-board and train new staff.	Entry-level training will consume this division over the next two years; the hiring process and the entry-level training efforts need to be fully supported and funded during this aggressive staffing effort.
	Academic and on-the-job training has and will continue to be in high demand	Prepare staff to adjust to the interim - organizational paradigm in new hire and training cycles. This is a critical success factor that impacts all staff. Consider a significant increase in the training stipend provided to communications training officers (CTO) during the 18-24-month period to incentivize staff engagement.
	Training instructor support is needed.	For the critical 18-24-month period, necessary temporary assignments from existing ECC staff will be needed for new hire training. If the option of hiring personnel from outside who are familiar with CONFIRE ECC's operation, this should be exercised.
Operational Configuration	CONFIRE ECC operates in a hybrid configuration (vertical and horizontal), where both call-takers and radio dispatchers answer incoming phone calls. CONFIRE ECC allocates shifts specifically for call-takers; when the call-	Integrate the vertical operational configuration and phase-in over time in order to achieve clear lines of duty and expectation. Retain personnel who are proficient at call-taking who may not be proficient at the

	takers are not on duty, radio dispatchers handle incoming calls.	essential job functions of a radio dispatcher. Schedule part-time staff to fill peak hour vacant shifts
	After-hours notifications, other dispatch functions and miscellaneous duties may be inconsistent with the ECC's mission.	Assess after-hours notifications and dispatch functions to gauge whether the notifications are part of a working call or are separate and inconsistent with CONFIRE call flow. Evaluate if non-compensated work should be part of the ECC's mission.
Shift Configuration	CONFIRE ECC operates on 12-hour shifts.	Consider flexible scheduling (hours of the day and length of shift) particularly when shortages continued to be experienced, to retain staff.

Summary of Staffing Analysis

After an examination of the CONFIRE current state, MCP was provided with data that drove staffing calculations and further study of the overall operation. To achieve optimal performance, it is projected that 25-30 additional positions at CONFIRE ECC would be necessary. However, there are areas to adjust operations that will afford efficiencies without increasing staff. It is important that the projected numbers are kept in perspective in that they are results of calculations that indicate best call taking performance without expending overtime dollars. This measurement, along with real and estimated population growth, technology changes and operational shifts, create the opportunity to re-engineer the ECC current state practice.

Future State

While the current state recommendations provide known and significant change to CONFIRE ECC, the future state focuses on exploring various operational reconfigurations that refine workload distribution and allow the organization to adopt a model that provides consistency and equity in executing ECC workload. Two models are identified and address operations during pean and non-peak load hours:

- Model A – Division of Labor and Tasks
- Model B – North / South Operations Command

These models are examined in Section 9, along with critical success factors that should be paired with implementation objectives.

The models mentioned above re-engineer the approach and business plan for the CONFIRE ECC. These plans will require wholesale changes in not only what will be done and how, but also a plan addressing the dependencies needed to be successful. The goal of these models is to coordinate the workload so that each of the centers remain clear on the mission and objectives of CONFIRE and perform seamlessly as a cohesive regional operation.

As the future operation is being designed, MCP offers the following suggestions to enhance the vision being planned for:

- Review and decide on what critical success factors (See Section 9.1) pertain to the future ECC.
- Engage employees in the future staffing models options and selection, so that they are included in decisions that will impact them.
- Streamline ECC operations by determining the feasibility of technology enhancements such as ASAP-to-PSAP and situational awareness software.

From a strategic standpoint and in support of the CONFIRE Vision, Mission and Core Values, the roadmap of the ECC's journey for the next several years can be summarized as

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An ever-changing organization, adapting to the innovations of next generation technology, increasing customer and staff engagement and satisfaction and leveraging those assets to exceed industry standards and member expectations.

Finally, there is a need for key policy and strategic commitments that are recommended that create the best path for the CONFIRE ECC:

- Alignment of operational objectives to performance expectations
- Adjust operational configuration as recommended to achieve the above
- Achieve recommendations over time

The CONFIRE ECC is well situated to accept the challenges of the journey and become a flagship emergency communications center in the State and Nation.

1 Introduction

The CONFIRE ECC is transforming legacy operations by expanding to two physical locations and enhancing operational performance including groundbreaking patient care to 911 callers. Recent developments that prompted this staffing study include:

The CONFIRE ECC has a total authorized strength of 54 full-time personnel—40 radio dispatchers, six call-takers, and eight shift supervisors. There are a total of 11 vacancies, seven of which are Calltaker/Dispatch staff. The cycle of hiring, training and the turnover of new employee has reached critical levels, as well as accepting that tenured staff will leave the organization towards retirement or other life choices.

While determining the numbers of optimal staffing levels is the focus of the report, the analysis identifies areas of efficiency and effectiveness in CONFIRE's ability to deliver quality service consistent with its mission and vision:

Our Mission: CONFIRE provides regional Fire, Rescue and EMS communications, resource coordination and technology services to enable allied agencies to meet the safety and welfare needs of all those they serve.

Our Vision: To be recognized as an exceptional Regional Emergency Communications and Information Services provider for public and private Fire, Rescue and Emergency Medical Service agencies.

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2 Methodology

Over the course of several months, MCP collected data, thoughts, and ideas on ECC operations, the division of labor, work schedules and personnel practices. The CONFIRE ECC Director and designees have been the points of contact for this project. Their assistance was instrumental in gathering comprehensive call, incident, and personnel data; their efforts are appreciated.

During this analysis, MCP focused on five factors, shown to the right, with special attention towards determining opportunities for baseline staffing in the two-site ECC model. These factors are used in MCP's proprietary *Model for Advancing Public Safety*^{SM} (MAPS^{SM}) tool, the outcome of which is a visualization of strengths and risks within the ever-expanding public safety communications ecosystem. Each MAPS is unique to a respective agency and, specifically for CONFIRE ECC, specific to staffing components.

- Operational Configuration
- Leave and Utilization
- Standards and Performance
- Breaks and Shifts
- Staffing

The MAPS tool provides stakeholders with a graphic depicting strengths and risks within a specific area of the ever-expanding public safety communications ecosystem. A sample diagram is shown below.

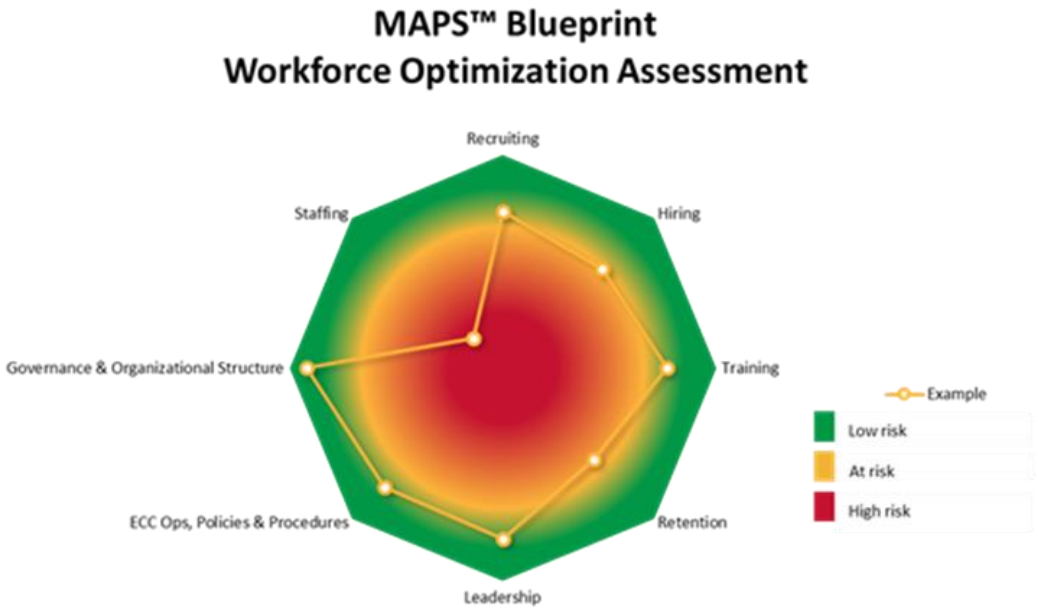

Figure 1: MAPS Sample Diagram

This visual representation should enable CONFIRE to easily discern its relation to the assessment factors. MCP's analysis using the MAPS tool demonstrates that staffing and retention are key factors that place CONFIRE at risk for achieving its stated vision and goals. Staffing in particular is in the 'high-risk' category of this assessment.

3 Background

CONFIRE is a Joint Powers Authority (JPA) in San Bernardino County, California. San Bernardino County, the nation's largest county, encompasses more than 20,056 square miles and is home to over 2.15 million residents. The CONFIRE JPA was specifically established to provide public safety communications, dispatch, computer information systems support, and geographic information systems (GIS) to member and contract agencies.

Member Agencies	Contract Agencies
Colton Fire Department	Big Bear Fire Department
Loma Linda Fire Department	Running Springs Fire District
Rancho Cucamonga Fire District	Montclair Fire Department
Redlands Fire Department	San Manuel Fire Department
Rialto Fire Department	Victorville Fire Department
San Bernardino County Fire District	Baker Ambulance
Apple Valley Fire Protection District	
Chino Valley Fire District	

Of the four fire ECCs in the county, CONFIRE serves the largest population. In total, CONFIRE member agencies operate 100+ fire stations, serving approximately 80% of the residents and businesses within San Bernardino County.

CONFIRE ECC is a secondary PSAP, defined by the Federal Communications Commission (FCC) as "a PSAP to which 9-1-1 calls are transferred from a primary PSAP."[1] CONFIRE ECC also answers ten-digit emergency and non-emergency administrative lines. CONFIRE works closely with the San Bernardino County Sheriff's Department Communications Division in maintaining the equipment and technology associated with the call-taking process.

Primary services provided by the ECC include the allocation of resources for fire, EMS[2] and rescue equipment and emergency medical call-taking, known as emergency medical dispatch (EMD). CONFIRE ECC serves as an Operational Area coordination and dispatch point under the authority of the regional

[1] "911 Master PSAP Registry," Federal Communications Commission, April 3, 2020. https://www.fcc.gov/general/9-1-1-master-psap-registry
[2] Emergency medical services

coordinator and the California State Office of Emergency Services (CAL-OES); these duties include dispatching and tracking local and state front-line and overhead resources to events in California and to states that have requested mutual aid.

Most notably, CONFIRE ECC is recognized as an Accredited Center of Excellence (ACE) for EMD by the International Academies of Emergency Dispatch (IAED). This achievement is a result of labor-intensive work in quality assurance (QA) practices. While the QA process is time-consuming, the outcome of providing staff with feedback, both subjective and objective, is a critical component of 911 operations. First accredited on September 13, 2012, CONFIRE completed a rigorous 20-point approval process and, once achieved, maintains regular QA assessments to continue superior, up to date first-level patient care, and efficient resource utilization. CONFIRE re-accredited in 2015 and 2018 and is congratulated for this continued achievement.

CONFIRE ECC operates from two locations. The Valley (Rialto) ECC occupies a leased building on a shared site with the County's Sheriff, Emergency Operations Center and, Information Services Department. The Valley ECC is equipped with 12 telephony workstations, nine of which have radio operations. All are configured with the same features and functions for continuity. The operations area is approximately 2500 square feet, with one private office.

Figure 2: CONFIRE Valley ECC

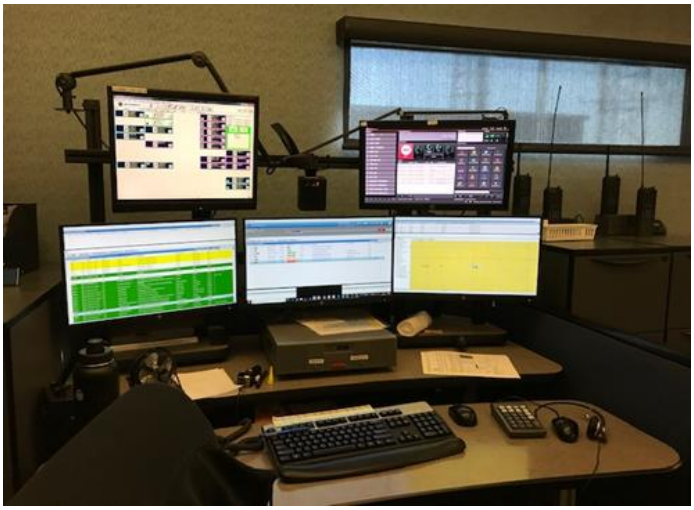

Figure 3: CONFIRE ECC Console Arrangement

The Desert (Hesperia) ECC occupies leased space in the High Desert Government Center. The CONFIRE operation shares space with the County Sheriff's Desert Communications office. The dispatch floor has 13 radio workstations with six of those capable of answering 9-1-1 calls. Additionally, there are several cubicles and two private offices available for use by CONFIRE staff.

4 Industry Standards/Best Practices and State Statutes/Rules

Throughout the country, ECCs adopt and use industry standards and best practices to assure the effectiveness of the center and that the best possible service is provided to citizens and first responders. Measurable standards create an objective view of 911 operations and provide for consistent interactions with the public and first responders. Measurable standards also create an objective measure of PSAP operations and the effectiveness and efficiency of the technologies and systems in use that assist in data driven decision-making.

Appendix A provides information on industry organizations that set standards applicable to an ECC. Adoption of, and adherence to, recognized standards provides ECC managers with the ability to assess their organization's service delivery.

5 Current State - Findings

The following data serves to level-set the information MCP gathered and provides the platform for analysis and recommendation in the succeeding sections.

5.1 Organizational Structure

As previously noted, the CONFIRE ECC has an authorized strength of 54 full-time personnel—40 radio dispatchers, six call-takers, and eight shift supervisors. ECC administrative staff include the director, communications center manager, two assistant communications center managers, and administrative support staff. CONFIRE also manages an Information Services Division comprised of 11 full-time and 2 part-time staff.

There are two telecommunicator classifications. The call-taker position is dedicated to answering incoming calls and applying medical protocols, then forwarding the incident to the dispatch queue. This classification has no radio dispatch responsibilities. Radio dispatchers perform both call-taking and dispatching functions. Both classifications are represented by the Communication Workers of America (CWA) collective bargaining unit.

Shift supervisors can perform both call-taking and dispatching duties, but this is not routine, which allows them to supervise people and operations.

The CONFIRE organizational structure is shown on the following page.

The probationary period for an entry level dispatcher trainee classification is 1,040 service hours (six months). The probationary period for an entry level call-taker trainee classification is 2,080 service hours (one year) as is the dispatcher position. Supervisory personnel have a probationary period of 1,600 hours.

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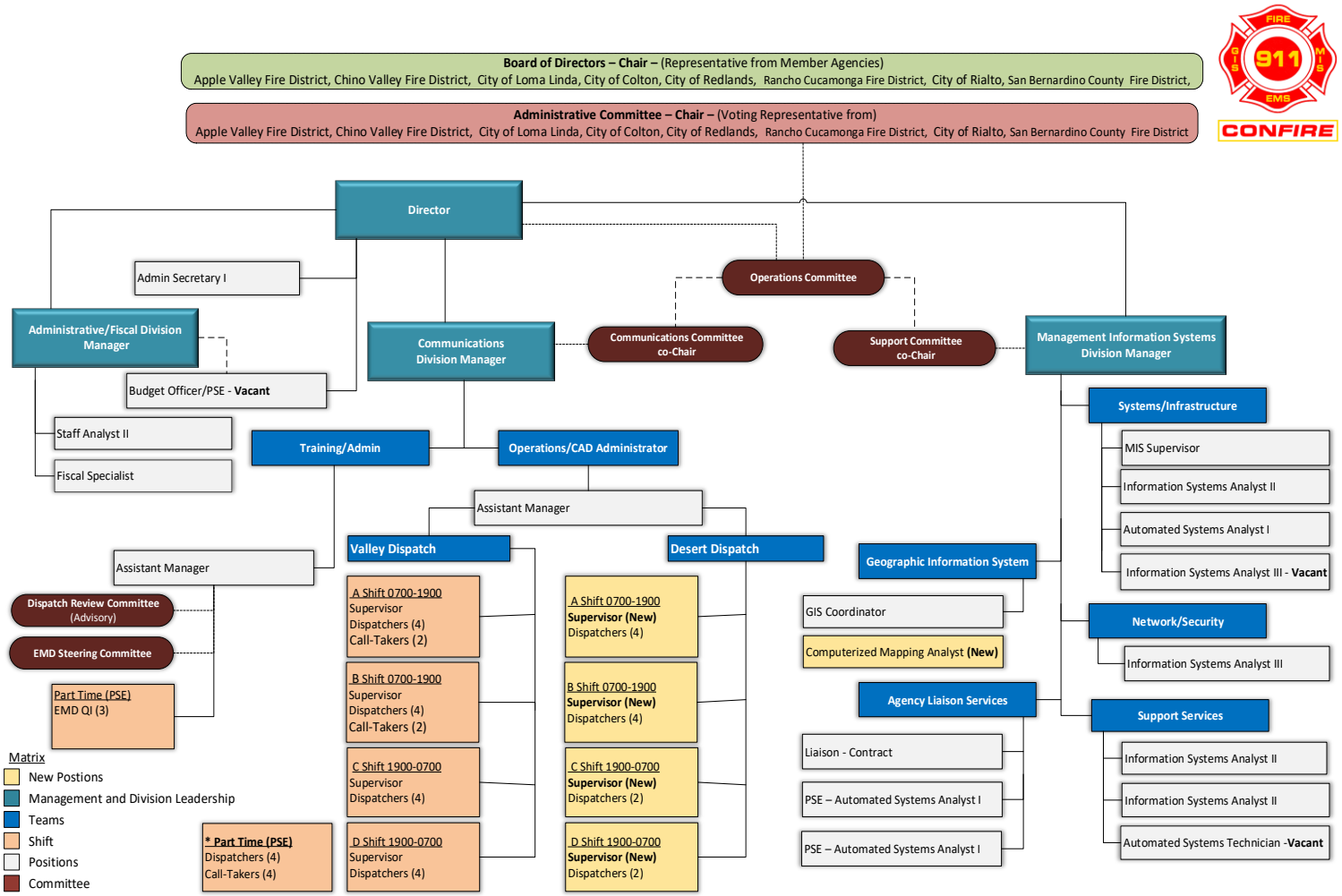
Figure 4: CONFIRE Organizational Structure



5.2 Operational Configuration

A PSAP's operational configuration is generally 'who is doing what in the dispatch center. Growth of modern PSAP's has facilitated the definition of how best to function, when more than one workstation (that answers phones and the radio) are staffed. These definitions are vertical or horizontal.

In horizontal operations, a telecommunicator performs call handling and dispatches responders. This configuration is typical in small to medium sized PSAPs.

Figure 5 – SAMPLE Horizontal PSAP Configuration

In a vertical configuration, call handling and dispatch are two distinct functions performed by different persons. This is most common in large, busy ECCs, where the number of field units is only manageable if there are no other primary duties distracting from radio traffic and status management.

Figure 6 – SAMPLE Vertical PSAP Configuration

The CONFIRE ECC configuration is combination of the two. When call-takers are on-duty, they exclusively answer incoming calls. When a call-taker is not on-duty, or incoming calls outnumber the call-takers' capacity to answer them, radio dispatchers answer phones while managing field resources and their status.

CONFIRE ECC separates radio functions into different assignments:

- The primary radio dispatcher (PRD) – validates response configuration, initiates the dispatch process and broadcasts calls and related radio traffic on the radio. The ECC is currently piloting the use of Automated Voice Dispatch announcements which pre-empts the broadcast dispatch announcement.

- Command channel dispatchers – allocates additional resource and monitors activity, tracks unit status, communicates with field units and supports incident commanders.

The CONFIRE operational configuration is shown below.

Figure 7: Current CONFIRE operational configuration

Shift supervisors are not included in the operational configuration. Their primary function is supervising staff and monitoring all operations from a console on the ECC floor.

5.3 CAL OES Fire Operational Area Coordination

The CONFIRE ECC has the role of area coordination for the CAL-OES Fire Branch, which is part of the California State Fire Mutual Aid Plan, which manages resources by breaking the state into manageable regions. San Bernardino County is Region VI, which is further broken down into north and south operations due to its size. Each fire operational area is responsible for reporting the status of area apparatus daily to the operations chief, who acts as the liaison between their area and the regional coordinator. The communications unit's responsibility, in this case CONFIRE, is to track the status and availability of all apparatus for the southern operational area so that availability is known should a deployment be received.

The ECC updates status daily on the XBO Resources Status Page and is responsible for status keeping in the CAL-OES Fire Branch's Interagency Resource Ordering Capability (IROC) system. These responsibilities are handled by a shift supervisor with assistance from the Operations Assistant Manager and are not part of the calculations for staffing. When mutual aid requests are received, a supervisor or Assistant Manager, when available, will assume the initial role and responsibility, and once initial activity has subdued, a working radio position is delegated while remaining available for routine and essential duties.

Other duties CONFIRE ECC staff perform include:

- Receive calls from citizens regarding burn permits and log burn activity into CAD
- Coordination of medical transport helicopters requested for high priority medical or mass casualty incidents

- Intermediary coordination point between medical transport assignments and regional hospitals using ReddiNet technology
- After-hours notification and dispatch for:
  - San Bernardino County Public Health
  - San Bernardino County Public Works and Flood Agency (compensated)
  - City government services for the City of Loma Linda

These additional duties equate to approximately 15,000 CAD incidents per year.

5.4 Shift Configuration

CONFIRE ECC staff work seven 12-hours shifts in a 14-day pay period. The pay period begins at midnight on a Saturday and ends at midnight on the second Friday thereafter. In a typical 80-hour pay period, ECC staff work 84 hours, which is a negotiated term between the labor group and CONFIRE management.[3]

This shift configuration is illustrated in the table below. “W” represents a workday and “O” represents an off day.

Table 1: Shift Configuration

[3] https://cms.sbcounty.gov/Portals/54/Documents/EmployeeRelations/MOUs/Fire/MOU-SBCFPD-CAO-06-27-2017-ESU%20MOU%202017-2020.pdf?ver=2017-07-05-102517-323

ECC Operations Shift Configuration														
	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
	Week 1							Week 2						
A Shift 0700-1900	O	O	W	W	O	O	W	W	W	O	O	W	W	O
B Shift 0700-1900	W	W	O	O	W	W	O	O	O	W	W	O	O	W
C Shift 1900-0700	O	O	W	W	O	O	W	W	W	O	O	W	W	O
D Shift 1900-0700	W	W	O	O	W	W	O	O	O	W	W	O	O	W
*E Shift 1100-2300	O	O	W	W	O	O	W	W	W	O	O	W	W	O
*F Shift 1100-2300	W	W	O	O	W	W	O	O	O	W	W	O	O	W

***** Designated call-taker shifts which can be filled by dispatchers

Meal and rest periods are stipulated in the Memorandum of Understanding (MOU) between San Bernardino Fire Protection District (Emergency Service Unit) and the Communication Workers of America. Specifically, it states that rest and meal periods are consistent with past practices in the ECC and that due to high call volume or other situations, breaks may not be given. Breaks are part of the paid compensation during the 12-hour work period. Due to short staffing, staff take a two 20-minute breaks, and are not capable of taking meal and relief breaks as defined.

ECC shifts are typically either 8-, 10- or 12-hour shifts, or a combination thereof. MCP recognizes that even the discussion of alternate shift configurations can bring anxiety to those who have grown

accustomed to the existing configuration. There are pros and cons for every shift configuration, as what works in one organization, may very well be more difficult for the next. For example, fire-specific ECCs have been known to work 24-hour shift configurations with staff on-duty 18 hours out of 24, with a six-hour rest period. This schedule affords staff to work 11 days a month, reducing commutes and time at work. This schedule is more an anomaly today, but still exists in some states and federal command and control centers. In general, in MCPs experience, 12-hour shifts provide a more balanced schedule as staff are on-duty 50% of the time and off-duty 50% of the time. At the employee's discretion, when they are off and can fill a vacancy, they can do so and still have days off.

On paper, this schedule provides on and off-duty balance, however, when in use, existing staff are often put in the position of having to work up to 16-hours a shift when overtime backfill and/or filling vacancy positions exist. These extended hours, coupled with a commute home, leaves little time for rest, particularly if they are scheduled to work a regular shift the next day. There are times when staff work these extended shifts a couple of time in a week. These situations can create the possibility of worker fatigue, which over prolonged periods of time, have an impact on employee wellness.

5.5 Retention

While retention and efforts towards retention are not part of the scope of this analysis, it is worth noting that few high call volume ECCs are fully staffed. APCO RETAINS identifies the national turnover rate at 17 percent for 2005 and 19 percent for 2009.[4] CONFIRE reports a three-year attrition or turnover rate of approximately 24 percent.

Challenges in hiring and selecting potential employees as well as encouraging (some) new employees to persevere through the training period are experienced nationwide. As recently as April 2020, MCP became aware that trainees across the nation were separating from their organizations due to the complex work environment, and the stress added by the COVID-19 pandemic. This example highlights that there is a myriad of reasons why people leave the workplace.

5.6 Technology

Technology use in the ECC is noted below as an overview, not an in-depth review. The purpose of this overview is to highlight the use of state-of-the-art technology (or not) and how technology drives dispatcher and/or call-taker efficiency. If an ECC uses manual systems that require more time to perform a task than an automated system, the increased time it takes to perform that task may contribute to the perceived lack of staffing in the ECC (i.e., too much to do, not enough people to do it).

CONFIRE is a technology savvy ECC and has invested a considerable amount of time and effort to maintain technologically efficient core applications.

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

Core technology includes the following:

- Motorola VESTA® – system refresh pending
    - Rapid SOS Lite Module
- CentralSquare Enterprise (Inform) Computer-aided Dispatch (CAD)
    - Automatic Vehicle Location (native to product)
    - Inform Mobile Data (native to product)
- Motorola P25 compliant 800-megahertz (MHz) trunked radio and very-high frequency (VHF) systems – 13 fire and one private ambulance talkgroups

Interfaces to the CAD system include the following:

- ImageTrend Records Management System (RMS) for EMS and fire agencies
- First Watch – data surveillance and dashboard system
- Tablet Command – mobile status keeping and incident command system
- Medical Priority Dispatch – ProQA and Aqua software
- GIS – Esri mapping solution
- Fire Station Alerting System – Westnet Internet Protocol (IP) system and legacy analog
- Pulse Point – cardio-pulmonary resuscitation (CPR) citizen alert system
- Deccan – deployment, apparatus movement and analytical software (LiveMUM in trial phase)

Third-party applications include the following:

- Active911 notification and call back software
- Alert Wildfire – camera surveillance system
- Text-to-911
- Intterra – situational status software (San Bernardino County Fire only)
- First Due – Preplanning and size-up software (Chino Fire Fire only)

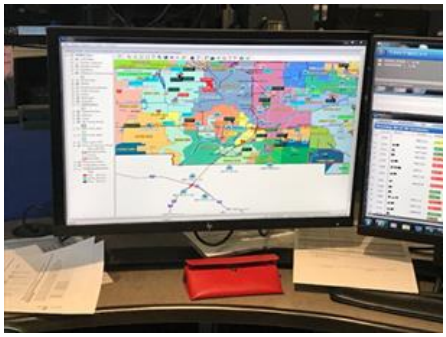


Figure 8: CONFIRE GIS Map

It should be noted that as of this report, CONFIRE and allied agencies are engaged in a CAD-to-CAD (C2C) development project with an anticipated implementation in 2021.

5.7 Training and Quality Assurance

Training

New employee training is conducted in-house. CONFIRE holds at least one academy a year, and more when the number of vacancies rise. All trainees receive both academy and on-the-job training in concurrent intervals. For Dispatchers and Dispatcher Trainees, call-taking and EMD are the starting points in training; if successful, the trainee moves to fire dispatch operations training during their first year of

probationary status. It takes one full year to train new employees, some may progress quicker, but making sure they are truly ready to work independently is the priority.

As part of the EMD QA requirements, call-takers and dispatchers receive 24 hours of medical update training a year, including CPR certification or refresh every two years. Personnel also receive approximately 12 hours of fire-specific operational training a year.

Quality Assurance

CONFIRE does an exceptional job in ensuring QA feedback is processed and provided to ECC staff. An assistant communications center manager runs the program. CONFIRE has engaged National Q to audit the necessary volume of calls to comply with accreditation standards. 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. National Q performs 50% of the audits, about 150 calls per month. CONFIRE also has one QA specialist who audits calls; a dispatcher who is certified to audit calls assists when available. In July 2020, the National Q engagement will increase to 100% of audits.

5.8 Current State - Key Observations

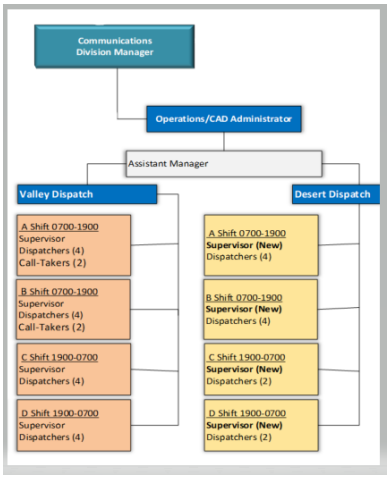
Based on findings above, the following table details key observations of the ECC's current state. The method used, identifies items to "keep, start and stop" and why and/or how these observations should remain in their status or change.

Table 2: Key Observations

Keep	Why?
Organizational Structure	Each high-level component of the operation is well represented as a priority.
Operational Configuration	The hybrid model should be seen as transitional. Adopting a vertical model should be pursued and staffing reconfiguration should begin. For periods of high vacancy rates, keeping personnel who excel at call-taking but cannot perform the essential job functions as a radio dispatcher is a benefit towards fulfilling the ECC primary job duties.
Technology on the Forefront	Provides ECC staff with efficiency and focus (when properly integrated); provides tools for data-driven decisions.
Accreditation	There are few meaningful industry certifications, IAED's data-driven protocols are a best practice.

Start	Why/How?
Shift Configuration	Look at diversifying the base 12-hour schedule, adding 8- or 10-hour overlap shifts to address varying workforce needs, i.e., different times of day/night. Alternative work schedules could increase staff retention.
Training	Assume staff vacancies for the next two years. Schedule academies back-to-back during this period, so that planning start and end dates correlate with recruitment, selection and hiring targets for hiring. Provide a referral incentive to staff to be paid when the trainee passes probation.
Staffing	Achieve and maintain full staffing at current authorized levels
Medical Helicopter Dispatch	Conduct cost/benefit analysis on whether to further develop this program to provide dedicated ECC staff when activated. This study should detail costs for services to include (dedicated) staffing or 'as-is' fees charged for service, procedural changes and flight-related technology to enhance operations.
Stop (or address)	**Why?**
After-hours Notifications	Notifications for city or governmental services that are not related to incidents or calls at hand diverts attention from the mission. Explore other options that allow employee focus and performance optimization that meets client needs.

6 Analysis and Recommendations



MCP's analysis is based on findings in relation to industry standards, best practices and general experience.

6.1 Organizational Structure

Management Overhead

On paper, the two assistant managers have few support staff. As CONFIRE continues to grow, the elasticity of the existing structure is bound to snap, as workload and responsibility outpaces an individual's ability to do the job accurately and efficiently. While the supervisor to line staff coverage is currently within traditional span of control parameters,

there could concern with the Assistant Managers ability to effectively manage a heavy project workload and the supervisory role of their respective positions.

CONFIRE should expedite filling the four new Dispatch Supervisor positions that was authorized in the FY20-21 budget. Adding these positions will improve supervisory oversight at the Desert ECC and will reduce the span of control, allowing supervisors to focus on individual and organizational performance. This will also enable the Assistant Manager of Operations to more effectively oversee all aspects of the organization.

The Assistant Manager for Training/Emergency Medical Dispatch and Employee Wellness has an ever-increasing workload with very little support staff in place to help manage the workload. The need for several back-to-back recruitments, training academies and probationary performance reviews demands reinforcement for this role. As does the pending Emergency Community Nurse System (ECNS) program and a growing need for an active employee wellness program. Assigning an individual off the dispatch floor to work in this capacity would support the Assistant Manager, while also building internal capacity for succession planning purposes.

Shift Supervision

The shift supervisors oversee, on average, 12 employees each. This is not unmanageable if the supervisor is not functioning as a call-taker or dispatcher. Supervisors should have routine and frequent communications with their subordinates, while ensuring performance standards of the individuals and shift are met. In the future, CONFIRE will need to address supervisor training, and create more of a coaching style that facilitates career development, performance enhancement, and conduct optimization. This can be accomplished by establishing a 'Lead Dispatcher' or permanent classification for the "Associate Supervisor' role in the workforce that can be the "working" element of shift supervision, while the shift supervisor maintains a broader overview of the daily work flow, including administrative, personnel, staffing and real-time 'coaching' efforts.

Recommendations

- Expedite filling the four new Dispatch Supervisor positions authorized in the FY20-21 budget.

- Develop staff position to support the Assistant Manager of Training/EMD/ Wellness. Consider a rotational position from the floor for mentoring/succession planning purposes.

6.2 Operational Configuration

The hybrid operational model currently provides CONFIRE with the flexibility it needs to remain operationally responsive. However, MCP recommends the ECC move to a strict vertical configuration will best serve CONFIRE in two important ways:

- Operational focus - when call processing and resource/incident support roles and responsibilities are clearly defined and the operational configuration is set-up to support those distinct functions, staffing levels and performance metrics can be more effectively managed. Flexibility can be built into this model to address high-call volume surges, but under normal operating conditions radio dispatchers should rarely be taking and process incoming emergency calls.

- The vertical model serves to enhance all risk operations, but with special emphasis on supporting the *EMD As Designed/ECNS* approach to call processing.

Radio Positions

The technology landscape at CONFIRE has provided opportunities for change that are progressive and assist in developing enhanced staff efficiencies:

- The new P25 digital radio system allows reconfiguration of loading radio consoles to meet changing operational needs and objectives of the ECC regardless of geography. This allows for reassignment and redistribution of radio workload.

- CONFIRE approved the installation of an Automated Voice Dispatch (AVD) system, expected to be operational by Jan 1, 2021. This technology eliminates the PRD's need to broadcast the dispatch assignment, while keeping consistency in speed, pacing and sequencing in the broadcast delivery.

In October 2020, the CONFIRE Operations Chiefs agreed to a one-year trial of assigning the command channels on an agency basis rather than geographical. This eliminates one radio dispatch position, freeing it up for call processing or other duties.

The revised radio configuration is indicated in the chart below:

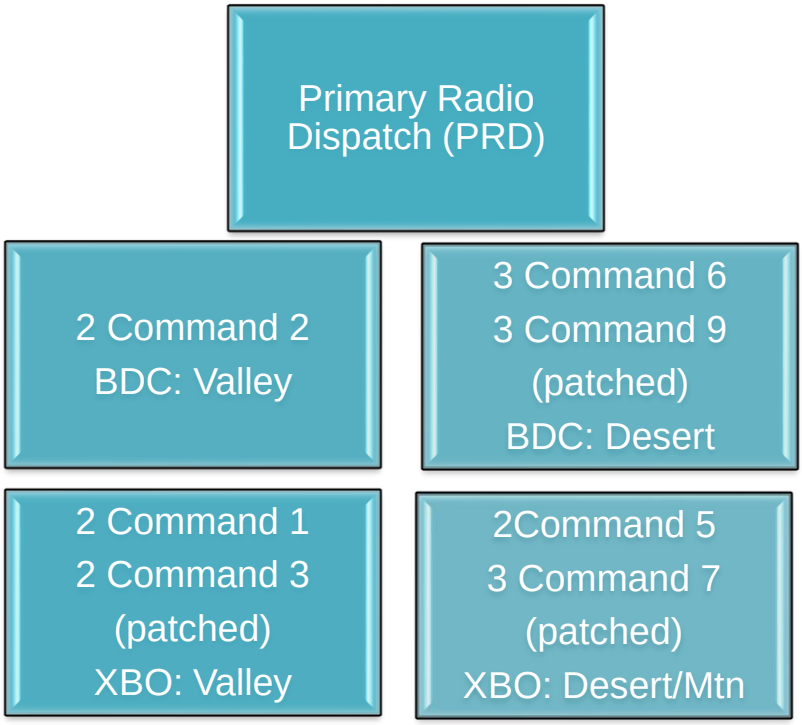


Figure 8: CONFIRE Radio Assignments

6.3 CAL OES Fire Operational Area Coordination

The XBO assignment is an important component in the overall job duties of the ECC. While the ECC dispatchers have proven their ability to execute the duties associated with fulfilling mutual aid requests and deploying and tracking resources. Given that County Fire has assigned a Chief Officer to the ECC for department operations, and perhaps, overall CONFIRE resource management, the XBO duties and management thereof, are a natural fit for ECC operations. The ECC Chief and ECC radio dispatchers partnering to address mutual aid duties when summoned, is commensurate with like organizations, such as Orange County Fire Authority, Las Angeles County Fire Department, CAL-FIRE operations and others.

Recommendation

- Define the role and responsibility of the BDC ECC Chief, and over time, explore opportunities to expand the role to include management of all CONFIRE resources and XBO duties.

Other duties

Finally, MCP recommends CONFIRE revisit the ECC business model and the other duties performed to ensure mission alignment. CONFIRE ECC staff perform several ancillary tasks that are either time consuming with no compensation or not directly related to the core mission:

- Medical Helicopter dispatching - (time consuming – non compensated)
- Burn Permit logging in CAD – (time consuming – not compensated)
- After Hours notifications – (not mission driven – minor compensation)

CONFIRE dispatches medical helicopters for the region, which is reported to be labor intensive when duties are executed. For 2019, there were 628 medical helicopter incidents dispatched and tracked. The average time on task for these calls (measured from phone pick-up to "Call Complete") was 6 min. 43 seconds**.**

While the time on task is relatively low, a dispatcher is dedicated to this activity from start to finish, taking them away from their primary assignment. The time dedicated to this task is equivalent to 70 hours of ECC time that is not monetarily compensated and time away from the ECC primary assignments.

The activity associated to this call volume relatively equivalent to call volume generated by a Rancho Cucamonga sized organization in terms of CAD incidents.

Recommendations

- Evaluate effectiveness and efficiency in radio position re-alignment as defined by the CONFIRE Operations Chiefs and if ratified, incorporate into radio configuration models
- Evaluate all additional dispatch/CAD activities to determine if these align with the overall CONFIRE mission.
- Address the medical helicopter function for cost recovery opportunities.
- Assess the burn permit function for more efficient methods to achieve tracking and notification objectives

7 Staffing

7.1 Introduction

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 and managing of emergency calls now and to determine the number of personnel that may be needed in the future; 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 the agencies it serves. Operational efficiency is gauged by

comparing statistical data and personnel utilization with appropriate national and locally adopted standards.

Industry tools are available to assist ECCs with determining baseline staffing requirements for call-takers, dispatchers, and supervisors. The Association of Public-Safety Communications Officials-International (APCO) offers Project RETAINS[5], developed by researchers from the University of Denver Research Institute in 2004. The RETAINS toolkit 2.0 expanded its functionalities and capabilities.[6] The National Emergency Number Association (NENA) offers a Communications Center Staffing Tool, which is available through the Staffing Workshop or the Center Manager Certification Program.[7] Both tools utilize agency-specific data, such as call and incident volumes, and other data, such as employee leave, to calculate baseline staffing needs. The California Office of Emergency Services 9-1-1 Branch has a tool available to ECC's through its ECaTS online call handling data analysis tools.

In addition to APCO and/or NENA tools, MCP also uses Erlang C[8] and experience in the industry to assist in projecting the number of telecommunicators required to efficiently answer and dispatch emergency and non-emergency calls for law enforcement, fire, and EMS agencies. MCP analyzes resulting data with a respective center's operational configuration to determine staffing requirements.

MCP's staffing analysis involves a multimodal approach that considers workload, volume- and coverage-based staffing, and performance metrics. Volume-based staffing calculates the number of personnel required to handle the volume of the respective data, while coverage-based staffing calculates the number of personnel required to staff a position 24 hours a day, 7 days a week (24 x 7). Coverage-based staffing is used most often as a PSAP generally has a defined operational configuration. MCP uses these calculations in tandem. Statistical calculations are balanced with operational logistics to identify how many personnel are needed for a PSAP to achieve its performance goals while providing efficient and effective service.

Additional information on the staffing analysis methodology and the statistical calculation used (including any assumptions made) can be found in Appendix B, Staffing Methodology.

7.2 Telephony Call Volume

A large amount of data is required to assure that staffing baseline calculations are accurate. To frame this section, we must identify the different intervals or benchmarks in the 911 call continuum.

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[5] "APCO Project RETAINS," APCO International, 2018, https://www.apcointl.org/resources/staffing-and-retention/retains.html.
[6] RETAINS is available for a subscription. From appearances, the last update was in 2009.
[7] Both the Workshop and the Center Manager Certification 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.
[8] The Erlang C calculator is a standard tool in the public safety industry utilized to assist emergency communications centers in determining call taker staffing needs.

There are four phases in the call processing continuum:

1. Call Answering: the time a call rings in the ECC to the time ECC staff answer.
2. Call Processing: the time a call is started in CAD to the time the call is queued for dispatch.
3. Call Dispatched: the time a call is received in the dispatch queue to the time and resources are dispatched.
4. Supplemental: the time that remains from the time of dispatch of resources to the time the call terminates.

To provide a basis of workload volume, the following tables identify workload indicators that will be referred to or will support the succeeding narrative.

Table 3: Telephony Volume Data (2019) *

CONFIRE Total Calls 2019	
911	194,779
10-digit Emergency and Non-emergency	152,832
Total Emergency calls processed	347,611
Admin Calls Inbound	132,804
Admin calls Outbound	208,938
Total Admin Calls	341,742
Total Abandoned Calls	12,398
Total Call Load	**701,751**

*excluding answering of ringdown lines and Text-to-911

The aggregate data reflects a 38.5% increase in call volume at CONFIRE over the past five years.

Table 5: Historical Five-Year Telephony Volume Data (2015-19)

CONFIRE Total Calls 2015-18	
2015	506,553
2016	578,450

2017	623,255
2018	627,702
2019	701,751

7.3 Call answering performance and compliance

CONFIRE call answering performance from 2015-2019 as measured by California Office of Emergency Services 9-1-1 Office call answering time standard of 95% of all 9-1-1 calls answered in 15 seconds or less is listed in the table below.

Table 6: Aggregation of CAL-OES Standards Compliance

CONFIRE Call Answering Time Compliance	
2015	**97.04%**
2016	**95.42%**
2017	93.26%
2018	92.91%
2019	92.39%

As shown above, CONFIRE met or exceeded the CAL-OES standard for call answering until 2017. It can be assumed that the most significant factor effecting performance was when County Fire annexed the San Bernardino City Fire Department into operations in July of 2016. The CONFIRE ECC receive some but not all staff positions requested and to date, has yet to catch up with the demand of that annexation. Compounding the annexation deficit was the addition of the Chino Valley Fire District responsibilities in 2019. While these operational additions are good public policy decisions, the need to examine the impact of the workload to existing staff is necessary as CONFIRE re-engineers service delivery.

Staffing increases have been welcomed and gradual throughout the same call volume reporting period:

Table 6: Five-year aggregation of authorized ECC positions

Authorized Staffing from 2015-2020				
	Supervisors	Dispatchers	Call-Takers	Total
2015	4	22	10	36
2016	4	22	12	38
2017	8	38	6	52
2018	6	40	6	52
2019	5	40	6	51
2020	8*	40	6	54

*added four supervisors, four each at each ECC

The above table tells a story of the earlier explanation of radio technology limitations:

- As radio volume loading on workstations in early years was inflexible, the need for more radio dispatchers became apparent.
- The addition of new member agencies required more radio dispatchers than calltakers, presumably, because radio dispatchers are trained to operate both phones and radio and radio technology was still inflexible.

Now, radio technology is flexible and provides opportunities for change and re-balancing radio and telephone answering responsibilities.

While re-balancing is necessary, it is also necessary to ensure that a complete picture of how many people it takes to staff a radio console 24 hours a day, seven days a week, to include the average time away an employee takes from staffing a console.

7.4 Coverage-based Staffing

This coverage-based staffing formula considers the time away from a post position. A post position is one that must be staffed 24-hours a day, seven days a week.

Using the staffing calculations, and based on CONFIRE personnel data, staffing one position 24 x 7 requires 5.9 telecommunicators.

When reviewing this table, it is important to note that line F, *true availability* is a calculation of the following:

- CONFIRE ECC FTEs work a shift that totals 2,184 hours worked in one year.
- Minus the average of leave hours used by individual ECC staff, leaving their shifts vacant

- Line F is an average of leave that was accrued and used by ECC staff for the last three years.
- Net availability is determined and multiplied by a utilization factor (87%). Utilization is the time, when a telecommunicator is on-duty but is away from their post, i.e., health breaks, meal breaks, making copies, etc.

Table 4: 24 x 7 Staffing (to meet coverage requirements)

Full-time Equivalents (FTEs) for requirement of one 24 x 7 console		
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	8,736	Total Hours needing coverage (A x B x C x D)
Telecommunicator Availability:		
F	470	Average Annual Leave per Telecommunicator
G	1484.23	True Availability (in hours) per Telecommunicator (F x 87% utilization factor)
FTEs Needed:		
H	5.9	FTE base estimate = E / F

If you added the number of hours backfilled by turnover (attrition) which is calculated at 24.4%, the FTE's required increases to 7.3 per 24/7 workstation.

The most revealing information in the above table is the true time that an FTE is available, versus most 911 centers authorized strength. It is not uncommon to see vacancy statistics of a 911 center and do what is necessary to fill the void. If a manager has five vacancies out of a staffing strength of 25, the strain on staff can permeate the entire organization. When the five vacancies are filled, there is a collective sigh of relief that the strain is over. However, the strain continues to be felt as backfilling vacancies in the schedule still occur. Why?

One reason may be that an entity's authorized staff strength does not accurately reflect the time that is needed to fill a post or full-time position. A post position refers to a position that must be covered 24 x 7. Post positions are unlike administrative positions. If the person who fills an administrative position is absent from work for a week, the work will accumulate until the person returns. The post position must be filled in order to do the work at hand. Therefore, when there are built-in leave hours for each post position, they must be filled, usually by existing staff, when in reality those hours should be part of the vacancy equation.

Using 1,484 hours (shown in the table above) of true availability per telecommunicator translates this way: each telecommunicator took an average of 470 hours away from the workplace that needed to be backfilled by overtime. Therefore, 21% of each telecommunicator must be backfilled by someone else.

Furthermore, extrapolating 470 hours, 50 times (authorized CONFIRE staffing strength), results in 23,500 hours of time in one year that is typically backfilled (presumably with overtime compensation). This does

not include backfilling position vacancies at the same rate. These 23,500 hours amount to approximately 11 full-time staff positions. So, the challenge is to find a number that is financially reasonable and operationally practical. To that end, the following table provides the numbers from the low (no attrition) and the high (attrition) and includes the mean number so ECC managers can visualize the middle ground when determining what staffing numbers for CONFIRE ECC are feasible.

7.5 CONFIRE Current State Staffing Requirements

The tables below identify the number of people it takes in each classification. That said, this section is by classification knowing that radio dispatchers at CONFIRE also answer phones. This calculation, however, provides the baseline of what staffing should be to:

- meet adopted performance standards
- meet workload demands
- minimize mandatory or forced overtime during high turnover and vacancy periods
- reduce shift backfill during employee leave periods

Recognizing that CONFIRE Radio Dispatchers also answer phones, merging responsibilities disturbs the utilization factor in the calculations, thus rendering the results as baseless. It is also important to note that the succeeding table differs from the previous section, where *coverage-based* staffing was used to determine the number of employees it takes to staff a 24- hour day, seven a day a week console.

7.5.1 Radio Dispatcher

Today, the seven radio dispatch positions consist of the PRD and six command channel dispatchers. The table below illustrates the formula used to determine the number of radio dispatchers needed for the current operational configuration.

Table 5: Radio Dispatchers

FTEs for Coverage		
A	6	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	52,146	Total Hours needing coverage (A x B x C x D)
Telecommunicator Availability:		
F	1,484.23	True Availability per Telecommunicator
FTEs Needed:		
G	41.2	FTE base estimate (FTE) = E / F
H	24.4%	Attrition Rate
I	51.3	FTEs required to accommodate turnover

7.5.2 Call-taker Coverage

CONFIRE schedules one call-taker shift per crew rotation, resulting in two shifts, seven days a week. Both shifts overlap the core shifts (0700-1900/1900-0700) and are scheduled near the busiest times of day from 1100-2300 (busiest times identified as 0900-2200). Filling the shifts can be a challenge. For equity purposes, CONFIRE has done an admirable job attempting to keep forced overtime at a minimum while keeping this shift filled as much as possible. The calltaker shift is filled by:

- Calltakers when available
- Radio dispatchers
- Forced overtime

Policy dictates that vacant call-taker positions are first filled by volunteer sign ups and allocated to the call taker, dispatcher and supervisor classifications in that order to fill it. The forced overtime assignment for those positions is by any rank with the lowest total overtime hours pursuant to ECC policy.

Peak and Non-Peak hours

A breakdown of 911 and emergency 10-digit calls per hour was evaluated to determine the optimal number of call-takers needed to staff each shift, as call volume is not equal throughout the day.

Peak hours	0900-2200	5 Calltakers
Non-Peak Hours	2200-0900	3.5 Calltakers

To answer non-emergency calls, which do not require the same urgency and do not have an industry standard the hours are slightly modified to reflect demand:

Peak Hours	0600-2200	2 Calltakers
Non-Peak Hours	2200-0300	1 Calltaker two call-takers

This assumes that radio dispatchers do not answer emergency lines.

7.5.3 Staff overtime

Wellness and the employers responsibility in it is critical to a productive workforce. Overtime, while welcome to some, can be an imposition to others. When its minimum to moderate, it might be manageable but when it's excessive and continuous, which is the case in many PSAP's, reform of the schedule and staffing strategies must be addressed.

The ECC staff worked 19,848 of overtime hours last year, and 17,114 hours in 2018. The two-year hourly overtime average is 18,481 hours. This equates to 8.5 full-time equivalents. Or said differently, that is 8.5 existing staff that must fill the position vacancies.

Table 6 - CONFIRE ECC Overtime - Actual **2018** Time

2018 - Overtime Assigned	Total	Percent of Annual Total
Total 2018 Overtime	18,229	100%
Total Voluntary Overtime	17,114	95.5%
Total Forced Overtime	1,115	4.5%

Table 7 - CONFIRE ECC Overtime – Actual **2019** Time

2019 - Overtime Assigned	Total	Percent of Annual Totals
Total 2019 Overtime	22,410	100%
Total Voluntary Overtime	19,848	88.5%
Total Forced Overtime	2,562	11.5%

Forced overtime is unplanned overtime hours caused by spontaneous sick leave, disability, etc. These situations are common in ECCs that have position vacancies and have staff working voluntary overtime to fill those hours, and don't chose to work the new overtime created. Supervisory and/or management staff are then left with difficult decisions to force staff to work a shift.

Below minimum staffing is the situation when unexpected vacancies occur, and all resources have been exhausted to fill it, with no avail. In this situation, the consideration of placing a supervisor on a post position or consolidating radios may be needed to meet the workload. Minimum staffing is that level that allows some shifts to go unfilled. For instance, not backfilling power or overlap vacant shifts, not backfilling supervisory vacancies, etc. Normal staffing is the level that is provides the amount of coverage that is needed to meet configuration workloads, and surge is when levels go beyond normal depending on schedule configuration overlap shifts or days.

Because this situation is more common than not, it is important to keep these issues in mind when discussing future staffing strength:

- Staffing the number of post positions (staffing a console 24 hours a day, seven days a week) should be flexible. Many ECC's practice this already but may not have it in policy. The flexibility is exercised when the ECC can reduce and increase staff according to workload, while able to maintain the expected level of service.

- Staffing levels should be institutionalized to provide expectations to both labor and field services. For example, the below table shows staffing levels that meet flexibility.

Recommendations

- Overhire – leverage overtime dollars to new positions in order to hire as many qualified candidates as possible even if it exceeds the authorized staffing strength
- Revisit minimum staffing and permitted time-off policies to minimize staffing deficits while keeping forced overtime at a minimum
- Create a pool of relief or extra-help bench by recruiting journey-level dispatchers in the region or fire recruits
- Develop a stand-by schedule per CWA MOU provision to address unplanned shortages

7.5.4 Supervisors

The span of control is a tool to determine the number of subordinates one supervisor can effectively supervise.[9] The range in the span of control ratio is three to seven or eight (according to the various textbooks). Using the three to eight span of control ratio, the theory would apply that the ninth employee exceeds the recommended span and an additional supervisor is required. In CONFIRE's current shift configuration, it is reasonable that the ninth employee (i.e., the call-taker position if filled), can be absorbed by the one supervisor. Should the recommendation of two call-takers per shift with an additional power shift staffed by a call-taker be implemented, these additional numbers would then necessitate an additional supervisor.

When supervisors take leave, depending on policy, the position should be backfilled by one of the four supervisors. This configuration is inefficient, as it requires overtime by the three supervisors who are already on a shift or must come in on their day off to fill. By using the industry calculation, 14 ECC staff would require two on-duty supervisors.

Recommendation

- Fill vacant supervisor positions by internal promotion and recruit externally for qualified candidates if necessary.

[9] NPFA 1561 – Incident Management Standards

8 PSAP/ECC Future State – Trends and Growth

Predicting staff needs for the long-term is not as statistically simple as it used to be. Current calculations rely on statistical data, such as population, as well as call volume and incident volume data. However, the 911 community already has begun its transition to Next Generation 9-1-1 (NG9-1-1), which has allowed new types of media into PSAPs that traditionally have been voice-centric. For instance, many PSAPs already accept text-to-911 calls. While this has proven, to date, to have little effect on current staffing needs, images and streaming video soon may be accepted by PSAPs. 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 continues to grow. All these devices have the potential to transmit data to a PSAP to provide situational awareness. Impacts of these technology advances must be monitored and considered to develop the required skill sets and staffing levels necessary to operate effectively.

The Command and Control function CONFIRE is developing will also require careful review and analysis to determine if staffing needs to be addressed to support that function. It is quite certain that an imbedded Command Officer in the center will eventually require some level of staff support in addition to the development of a expanded dispatch capacity and a field operations capability. These enhancements are outside the scope of this study but are mentioned to ensure they remain on the radar of CONFIRE managers as future considerations.

Additionally, the ECNS program if it is to be sustained will impact the center including potential staffing changes depending on the number of incidents that are shifted from radio dispatchers to Emergency Care Nurses. That program will likely be staffed and managed in a manner related to but separate from the regular dispatch operations.

With respect to organic growth based on populations and demographic changes the following information is presented:

The 2010 San Bernardino County Community Indicators Report[10] projects a population growth factor for the county of 28% through 2045. This growth rate would equate to a countywide population of approximately 2,784,000 in 2045 (equivalent to an approximate service area population of 2,227,000 for CONFIRE). This equals an approximate 1.12% annual growth rate.

2018 Population	Projected Growth 2020 – 2045	Persons per Square Mile (countywide)	Persons per Square Mile (Valley Region only)
2,174,938	28%	108	3,072

[10] https://www.sbcounty.gov/Uploads/CAO/Feature/Content/ComIndicatorsReport10Rev.pdf

CONFIRE's service area covers approximately 80% of the county's population, approximately 1,800,000 people. Based on this estimated population and the provided call and incident statistics, the average number of incoming calls per person is 0.28. The average number of fire/EMS incidents per person is 0.13. This information is used with projected population data to determine the potential growth that an ECC in the county could realize.

Based on a 1.12% annual population growth and the calls per person listed herein, incoming telephony call volume over the next five years could reach 522,000 (rounded to the nearest thousand); of these, 209,000 could be 911 calls (rounded). Fire/EMS incidents could reach 240,000 (rounded).

The current operational configuration and projected staffing calculations discussed herein should be able to absorb the increases in call and incident volumes without the need to staff additional workstations. However, based on yet unknown call data intake methods (i.e., drone, video, etc.), this new task time will require analysis, and how it impacts the traditional methods of call processing. Considering this factor, increasing call volume commensurate with population growth is likely to continue but exactly how that call volume will be delivered to the center is not certain.

Considering the above information, it is prudent to take a contrary view as well. It is possible that PSAPs may experience a decrease in call and incident volumes due to the various forms of data that could be presented to a telecommunicator. Technology may develop that allows sensory devices to input data from the consumer, directly into a CAD system, bypassing a call-taker altogether. Citizens may be able to access systems to report events without speaking to a call-taker. In these scenarios, call-takers may be more "data controllers" than call-takers, and a shift from entering data may be more verifying, validating and monitoring data. One thing is certain, the types of media that may be presented to a PSAP undoubtedly will affect staff in ways it does not today. PSAPs must consider such impacts to staff when making decisions for the future.

Additionally, the use of 911 for non-acute medical calls will likely decrease over time with the advent of improved methods of accessing the health care system. This may offset population driven incident volume growth. These trends will need to be monitored going forward.

9 CONFIRE - Future State

Creating a strategic vision and executing on its objectives demands flexibility in weighing what works and doesn't work for an organization and determining if organizational capacity is tolerant or has expanded outside its ability to grow and adjust to this vision. MCP has prepared several critical success factors that when considering execution of staffing adjustments, supervisions, configuration, etc, that the organization is mindful of basic principles that contribute to success.

9.1 Critical Success Factors

A. Business Plan: Risk Tolerance

Policies and procedures provide the foundation for an ECC's core services and have a direct relationship with an organization's risk exposure. Often overlooked, as emergency services expand and increases in field personnel occur, is how many field responders a radio dispatcher is responsible for at a position. This also is, at times, connected with how many primary radio frequencies or talk groups a dispatcher is responsible for as well as requirements to "monitor" secondary or emergency talk groups. Defining these thresholds in policy allows current-day operations to be monitored with the thresholds in mind, and successors understand what the business approach was at the time of policy approval.

B. Supervision

How effective supervision is in an ECC is impacted by its operational configuration. Depending on the size of the organization, it is not unusual for small ECCs to have working supervisors who are not only responsible for operational oversight by shift, or for the organization, but are simultaneously performing the functions of a telecommunicator. Typically, these positions also include authority to discipline and write performance reviews, but not always. What is also important is that the span of control for each supervisor or management position is appropriate to provide effective supervision.

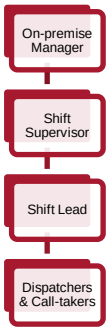

Figure 9: Proposed Supervisory Chain of Command

CONFIRE's expansion to provide exceptional service to both the call-taking process and dispatch functions will require supervision of personnel performance and operational oversight. Rarely can working supervisors do both. Both locations, if that is the path forward, will require levels of supervision, as shown below.

In this model, supervisors should have less operational focus and more personnel and performance emphasis. The operational focus is shifted to a new classification of the Lead Dispatcher. Today CONFIRE has an assignment of Associate Supervisor, which is a dispatcher who assumes supervisory responsibility in the absence of Shift Supervisor. An Associate Supervisor is paid a stipend for this assignment. The Lead Dispatcher classification is slightly different.

In this model the Shift Supervisor and Lead co-exist, instead of in the absence of. The Lead classification would be considered a promotion to the next higher classification from dispatcher. This supports retention by providing a step in the career ladder, that can also be considered as a preparatory step to the Supervisory class. In this model, Leads would be regarded as the "go to" on the shift and the point of contact for operational questions, issues, etc. that are outside of personnel issues. Leads typically do not conduct personnel performance evaluations, as their concentration is more on shift operational needs and efficiency. Additionally, the lead is present on the operations floor, allowing supervisors to achieve best practices in personnel management to include regular one-on-ones, career pathing, QA review, performance evaluations, and shift assignments/management of the operations floor.

** it is important to recognize that this function is to strictly answer emergency telephones and meet the State and industry standards, while also answering administrative and text calls. This number assumes that radio dispatchers would not be responsible for answering the phones.

C. New Classifications

As just introduced, the need for greater supervision in personnel and operational management increases under new operational models. These models also expand operations to managing the low acuity medical calls through the ECNS program. If CONFIRE proceeds with either model, the need to study the classification of Nurse Practitioner, Lead and any classification that does not exist that will support the training and QA unit, i.e., management analyst, will need to be a component of the project plan. Taking it a step further, should CONFIRE venture outside the typical ECC operation, drone pilots and coordinators that are part of the ECC staff should be considered, along with any other program that contributes to increased situational awareness.

D. Support

Regardless of the operational model chosen, as staff grows so will the demand on primary and secondary support functions.

Support positions may need to be re-calibrated as QA and training will have increased demands; operational changes and content management will need more support and liaison to client agencies will be more important.

Primary support is the parallel division in CONFIRE's organizational chart, which is the Management Information Support Division. More positions mean more maintenance of hardware and software systems, management of interfaces, third-parties, and all redundancy and back-up capabilities.

Secondary support, just as important as primary, are those duties that are carried out by all other positions in the organization that include payroll, HR, clerical, custodian of records, etc.

Recommendations

- Convert existing Dispatcher vacancies to Lead positions
- Create and experiment with two Lead Dispatcher positions for day shift
- Create support positions to training and QA by either administrative assignment from the ECC staff or hire externally in temporary capacity until full-time funding can be secured

9.2 Innovation and Pilots

CONFIRE has a vision of creating an ECC that will continue to serve the public with efficiency and effectiveness, but in a much more strategic fashion. The ECC is reengineering its scope of practice to meet growing demands, while providing data-driven decisions that result in good public policy.

9.2.1 Medical Resourcing and Deployment

In EMD, there are levels of patient acuity and corresponding senses of urgency to a field response. When a caller describes the patient condition or their signs and symptoms, the call-taker selects a pre-described determination, better known as a determinant, in the EMD protocol that categorizes the patient's status and recommends a level of response (as identified by local agencies). Choosing a determinant can take time due to varying factors such as caller focus or availability to answer questions, language barriers, etc. The determinant-based deployment process allows the call-taker to select a determinant, which then places the call information into the dispatch queue. This process can take from 90 to 180 seconds.

This process is a departure from the formerly used pre-dispatch process, which alerted crews of a generic medical call prior to the selection of a determinant. Changing the dispatch sequence allows fields crews to truly understand the level of patient acuity to which they are responding and sets the stage for other systematic ways to approach high acuity versus low acuity care. In the pre-dispatch scenario, all apparatus responded to most, if not all calls, with lights and sirens, so level of acuity and corresponding response was essentially meaningless. There are strong arguments for either call flow, which is why determinant-based deployment is currently a pilot so it can be further studied.

9.2.2 Emergency Communication Nurse System

IAED's Emergency Communication Nurse System™[11] (ECNS™) is a comprehensive nurse triage system comprised of over 200 protocols that are programmed into the Low Code software, which is designed to augment the EMD protocol system. ECNS provides alternative care when calls processed through EMD are categorized to be low acuity (determinant codes ALPHA and OMEGA). There are, however, limitations in the form of prerequisites when considering purchasing and operating this system, such as:

- ECNS can only be bought and operated by a center that has achieved EMD ACE status
- The system cannot be utilized by existing EMD-certified telecommunicators
- ECNS can only be utilized and applied by an experienced, specially trained, and ECNS-certified registered nurse

It is reported that approximately 30% of the 911 calls processed by CONFIRE for a fire response and ambulance are determined to be low acuity.

9.2.3 CONFIRE - ECHO Determinant Study - Accelerated Call Processing for high acuity medical calls

CONFIRE has been measuring performance and EMD call-processing times. The intent of this examination is to analyze the time it takes to process high acuity calls, while meeting the industry standards. The industry standard used here is NFPA 1221 – Section 7 – Operating Procedures. As previously mentioned, call answering of 15 seconds, 90% of the time has been calculated. What is further established in the regulation is the tasks included in the call processing. The 2019 Edition of NFPA 1221 – 7.4.2 states: "Call processing time shall include the time from call answer to initial notification of the responding [12]ERU(s)."

Section 7.4.3 states: "Emergency alarm processing for the highest prioritization level emergency events listed in 7.4.3.1 through 7.4.3.2 shall be completed within 60 seconds, 90 percent of the time."[13]

Section 7.4.3.1 and 7.4.3.2 list the following call types or nature of the incident as:

- Trauma (penetrating chest injury, gunshot wound), etc
- Neurologic emergencies (stroke, seizures)
- Cardiac-related events
- Unconscious/unresponsive patients
- Allergic reactions
- Patient not breathing
- Choking

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[11] https://www.emergencydispatch.org/sites/default/files/downloads/ecns/NAE_ECNS_4Pager2016_web.pdf

[12] ERU is defined as Emergency Response Units
[13] Ibid.

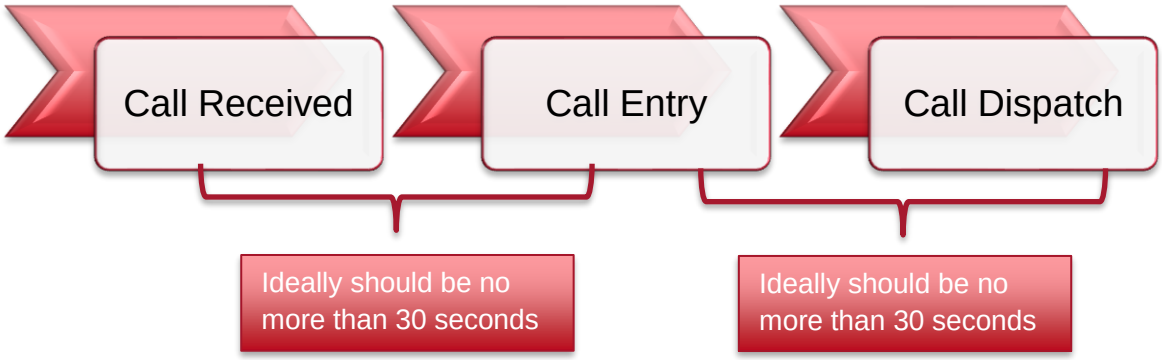
- Other calls as determined by the Agency Having Jurisdiction (AJH)
- Fire involving or potentially extending to (a) structure(s)
- Explosion
- Other calls as determined by the AHJ

CONFIRE has established a goal of a dispatch processing time of 90 seconds or less on 90% of the 911 calls received. The time interval for this goal is measured from the call received or "Pick-up" time to when the first responding resource is assigned to the call. A study of calendar year 2019 ECHO calls or those identified in the above, reveals the call processing interval, at the 90th percentile, averaged one minute, forty-eight seconds (0:01:48). During this time, calls were sent to the first responding unit prior to reaching a full EMD type code. Several circumstances can increase call processing times from over 60 seconds. The most common are language barrier, wireless caller without a dispatchable location, third party caller without needed information, etc. In terms of compliance using an industry standard, these call types can be compared against the commonly used call type in the Medical Priority Dispatch System and examined monthly as to the barriers to overcome for more expedient processing (NFPA 1221 – 7.4.1.1)

In the following scenario, call processing is broken up by task relative to the time elements expected for each interval in the continuum. There are two benchmarks involved in this process.

1) A call-taker should enter an incident that has a dispatchable location and a call type within 30 seconds. Once this task is completed, the call enters the dispatch queue. In this instance, if the PRD is busy on other calls, the call pends in queue waiting for a dispatch.

2) The dispatcher receiving the call entered, should process the call, this includes unit type recommendations, validation and launch within a 30 second interval.



80%, if not more, of calls received by CONFIRE are processed using the EMD protocols. The International Academy of Emergency Dispatch does not set call processing standards as their position is that the design of the protocols allows for the most expedient processing based on level of acuity.

It should be noted that the operational configuration at CONFIRE may play a role in the how long it takes to dispatch a call. CONFIRE's ECC workflow provides one Primary Radio Dispatch position that activates all the dispatches for all calls for service. If several calls for dispatch are in the queue, this time between call received and entry can be extended beyond the 30 second mark as not only voice dispatch is performed but tones that are activated for station and apparatus alerting transmit on the same frequency as well.

Another configuration that is not validated but suspected to process seconds faster is one where the call-taker is also the dispatcher of the resources. Call entry to dispatch can be navigated and entered without going to a dispatch que, thus, activating station alerting and all other alerting mechanisms can be activated without time delay.

To reduce call processing times, CONFIRE is currently exploring mechanisms and procedures that reduce the call handling times.

- Automatic Voice Dispatch

  This also is a pilot, enacted to shorten the task time in that dispatchers do not broadcast the call for service, they simply allow the mobile devices to alert crews of the location and call nature. These devices generally are the equipment relied upon for details of a call and location dispatched in addition to a voice broadcast. This innovative approach may soon be the start of replacing a legacy practice within CONFIRE. The broadcast in previous eras of alerting was necessary as the only mobile device was handheld portable or mobile radios (inside apparatus). This innovation reduces the dispatch queue backlog (if any) at the primary radio dispatch position by allowing the dispatcher to push the dispatch button in secession of calls received instead of having to sequence each call with a corresponding broadcast.

- "Quick Launch"

  This is intended to reduce the time from the caller's declaration that a patient is in a life-threatening status to a dispatch. For example, if caller states that the patient fell, is not conscious, and breathing status is unknown, the call bypasses the EMD protocol sequence and is quickly dispatched with a high priority field response code. This process will occur while the caller is kept on the phone for more details and to determine a potential change to patient status. In the meantime, field crews are responding to what is believed a life-threatening incident.

- Emergency rule activation for call-takers to fast track all calls during busy periods
- Improved caller location technology available on newer mobile devices and detectable by upgraded 9-1-1 call-taking equipment (CPE).

Other mechanisms also have been identified, but not in effect.

- Westnet Station Alerting Automated Voice Dispatch (AVD)

  This system provides automated text-to-speech broadcasting, if it is determined for situational awareness purposes that broadcasting is preferred over the silent dispatch approach. The First-In

Automated Voice Dispatch System™[14] (FiAVD) automatically translates the CAD dispatch data into true text to speech. FiAVD call information (units assigned to the call, incident type, address, cross streets, business name, tactical channel, etc.) is then transmitted over the station speakers and over the air to all units out of quarters.

- Automatic Call Distribution (ACD)

CONFIRE uses ACD, but without an automatic call drop function in which a call is queued to the first available call-taker, who is alerted via a beep tone in the headset, signaling they have three seconds until the call drops in their headset? This feature eliminates a call-taker's ability to select what calls they take and provides the caller with efficient service. CONFIRE administration advises that with the VESTA telephone system refresh, this feature will be available.

- Real-time Situational Awareness (Strategic Command)

Technology has provided agencies with several platforms by which to gather data pre-incident, at incident initiation, as the incident is evolving, and post-incident activity. These factors play a part in incident management, but more importantly, field safety. Technology that would assist a fire agency obtain more data as they respond, or while on-the scene, changes regularly. Some emerging technology that impacts ECCs is best aggregated at a single point, rather than coming into the ECC via various mechanisms to various people. Like their law enforcement partners, intelligence gathering at a single point in real time is valuable situational awareness information that can change approaches and response to a call. Technologies in place in various agencies across the nation include the following:

- Drone programs – Several fire agencies across the nation are implementing drone programs to increase their ability to see what is happening at a reported scene, without the advantage of being there. "By having real-time aerial pictures and info, you're able to move companies into specific locations quicker, and that can sometimes allow you to find areas that you would have never known otherwise," said LAFD Firefighter Derrick Ward of the Los Angeles City Fire Department.[15]

- Camera surveillance – One community in the CONFIRE serve area is currently using ALERTWildfire.[16] Big Bear Mountain ski resorts have provided space, power, and communication backhaul for eight ALERTWildfire cameras on their property. This type of partnership between technology and fire agencies will only proliferate, prompting monitoring and data entry updates in the ECC.

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[14] https://www.firehouse.com/stations/building-components/in-station-technology/product/21015603/firstin-by-westnet-product-of-the-day-westnet-inc-firstin-automated-voice-dispatch-firefighter-news

[15] https://www.commercialuavnews.com/public-safety/success-lafd-drone-program

[16] ALERTWildfire is a consortium of three universities -- The University of Nevada, Reno (UNR), University of California San Diego (UCSD), and the University of Oregon (UO) -- providing access to state-of-the-art Pan-Tilt-Zoom (PTZ) fire cameras and associated tools to help firefighters and first responders: (1) discover/locate/confirm fire ignition, (2) quickly scale fire resources up or down appropriately, (3) monitor fire behavior through containment, (4) during firestorms, help evacuations through enhanced situational awareness, and (5) ensure contained fires are monitored appropriately through their demise.

– Sensor data transmission – Smart technology is developing at a quick and vast rate. Firefighter wearables can transmit one's health and wellness during an event, while the same can be said for consumers having a medical event being able to relay life-safety information via a smart watch. These and many other mobile device transmissions are impacting PSAPs and ECCs globally. Aggregating this data is a key point to use data to the ECC's advantage.

These technologies and the data derived from them provide supervisory and/or Command personnel the tools needed to make safety and deployment decisions while developing strategy for sustained operations.

Recommendations:

- Complete development and implementation of EMD as Designed pilot project
- Utilize NFPA 1221 highest prioritization list as a basis for "quick launch" call types, including fire related calls.
- Develop a high and low priority call metric and measure processing times for these calls separately
- Evaluate use of automatic call drop function with the Automated Call Distribution feature of the Vesta 911 system.
- Install Alert WildFire cameras on the radio masts at both ECC locations.

9.3 Operational re-configuration

CONFIRE is exploring an operational reconfiguration, with two feasible scenarios from which to choose:

- Model A – Division of Labor and Tasks
- Model B – North / South Operations Command

These models will be examined in this section, along with what is proposed to constitute CONFIRE's success in these endeavors.

The two scenarios mentioned above re-engineer the approach and business plan for the CONFIRE ECC. These plans will require wholesale changes in not only what will be done and how, but also a plan addressing the dependencies needed to be successful. Before examining these two configurations, critical success factors have been identified in order to gauge project/program success (or not) and if more needs to be done (or not). In general, MCP's experience with the term critical success factors can be interpreted as "if you don't do these things, the project/program may fail." This would be for CONFIRE to decide, but as MCP looks towards the future, these factors are identified as those that are commensurate with best practices and in general, what is practical and prudent for a world-class ECC.

Staffing scenarios and operational input are identified below. To better understand the flexibility manager's have in radio assignments, the following table provides geographically aligned areas and the incident workload for each of those geographical zones otherwise known as Command Channels.

9.3.1 Model A – Division of Labor and Tasks

Model A characteristics include:

- Geographically split locations, separating the operational configuration into two disciplines: radio activity at the Desert ECC and Call-Taking activity at the Valley ECC.

In both centers, there is a Strategic Command Operations (SCO) position that would be staffed as needed to not only monitor and manage XBO activity but all other situation awareness tools. The SCO at the Desert ECC looks at the data presented in its various formats in order to make decisions. The data comes from the Desert and is input by the CONFIRE Information, Triage, and Watch Center (iTAC).

Model A - *Division of Labor and Tasks*

	CONFIRE COMMAND AND CONTROL CENTER - HESPERIA					
CORE DUTIES	Deploy Resources, (deployment, tracking, planning) Command & Control of XBO Area Resources, Strategic Operations Command TOTAL CALLS DISPATCHED: 238,810					
	Peak Hours 0900-2200			Base Hours 2200-0900		
Position	# of staff	Est. Volume / Divided into 2 Tours		Position	# of staff	Est. Volume / Divided into 2 Tours
PRD	1 Dispatcher	150,399 / 75,199		PRD	1 Dispatcher	85,411/42,705
Break/Surge	1 Dispatcher	-		Break/Surge	1 Dispatcher	-
West Valley	1 Dispatcher	43,577 / 21,788		West Valley & Other	1 Dispatcher	23,763 5,587 29,350
East Valley	1 Dispatcher	47,703 / 23,851		East Valley	1 Dispatcher	27,518
South Desert Mountains & Other	1 Dispatcher	13,757 3,842 17,599 / 8,799		South Desert Mountains Metro North Desert	1 Lead	6,583 17,736 4,224 28,543
Metro North Desert	1 Dispatcher	33,583 7,937 41,520 / 20,760				
Lead (Strategic Command) XBO	1 Lead			Lead (Strategic Command) XBO	1 Supervisor	
Totals	6 Dispatchers 1 Lead 1 Shift Supervisor	**150,399/75,199**		Totals	4 Dispatchers 1 Lead 1 Shift Supervisor	**85,411/42,705**

Workflow descriptions:

Calls are initiated in the Rialto Center (see next page) and calls received in the Hesperia Center. By design, public facings contact information, ie, 911, 10-digit, Text, email, social media, etc are answered at the Hesperia Center, in order to focus radio Dispatchers on time on task.

Less multi-toggling between radio and phones, allows for increased capacity at (combined) consoles, thus increasing time on task.

Alleviating the task of answering phones allows for more consolidation of work during base or low peak hours, to conserve staff.

An alternate configuration at the base shift would be to eliminate the PRD and allow each region to dispatch and track their own resources (Model: San Mateo County) This further refines resources during base or non-peak hours, leaving the break/surge or supervisor as fireground communications should a complex or large scale incident occur.

Model A - *Division of Labor and Tasks – Incident Entry*

	CONFIRE INFORMATION, TRIAGE AND WATCH CENTER - RIALTO				
CORE DUTIES	Call Answering, Call Handling (protocol call processing), Medical Call Triage (ECNS), Intelligence-gathering and Watch (monitoring)				
	Peak Hours 0900-2200		**Base Hours 2200-0900**		
Position	# of staff	Est. Volume / Divided into 2 Tours	Position	# of staff	Est. Volume / Divided into 2 Tours
	Annual Estimation	150,399/75,199		Annual Estimation	85,411/42,705
Break/Surge	*1 Calltaker		Break/Surge	*1 Calltaker	
Lead (Strategic Operations)	*1 Lead		Lead (Strategic Operations)	*1 Lead	
Calltaker	3 to 5		Calltaker	1 to 2	
Shift Supervisor	1		Shift Supervisor	*1	
Totals	3 to 5 Calltakers 1 Lead 1 Shift Supervisor		Totals	2-3 Calltakers *1 Lead *1 Shift Supervisor	

Workflow descriptions:

Calls are initiated in the Rialto Center and calls created are routed through CAD to the Hesperia Center. By design, public facings contact information, ie, 911, 10-digit, Text, email, social media, etc are answered at the Hesperia Center, in order to focus radio Dispatchers on time on task.

Less multi-toggling between radio and phones, allows for increased capacity at (combined) consoles, thus increasing time on task.

Concentrating on the task of answering phones allows for a level of expertise in call processing, optimizing call processing operations in order to meet local and industry standards.

The break relief and Lead positions can be counted as part of the basic staffing number or in addition to a base calltaker strength.

The Shift Supervisor hours can be flexed to an overlap shift if need be, if Lead is on-duty during absence

9.3.2 Model B – North and South Operations Command

The model geographically divides the CONFIRE service area. North and South operations would be individually assigned agencies that are geographically aligned to facilitate efficiency, mutual aid deployments, etc. Finding the balance between geographically aligned agencies and their respective call volume that would achieve balance for the ECC may be a challenge.

Model B - *Geographic Divisions - North and South Operations*

NORTH						
HESPERIA						
97,152 or 41% of total 2019 CAD Volume (237,807) 41% of total inbound phone volume (494,271) = 202,651						
Core Duties Deploy Resources, Call Answering Call Handling (protocol call processing), Strategic Operations Command *North* Intelligence-gathering and Watch (monitoring) Command & Control of OBX Area Resources Medical Call Triage						Concentrating on the task of answering phones allows for a level of expertise in call processing, optimizing call processing operations in order to meet local and industry standards. The break relief and Lead positions can be counted as part of the basic staffing number or in addition to a base calltaker strength. The Shift Supervisor hours can be flexed to an overlap shift if need be, if Lead is on-duty during absence. On the base shift, the Metro channel would assume the South Desert and Command channels so the Lead can provide Break Relief. South Ops is 65% of the CONFIRE inbound phone load. The Peak shift represents 65% of the total 153,358 CAD incident, leaving 35% on the base shift. Phone load assumes the same percentages. There are 321,276 inbound calls, dividing 65% or 208,829 calls on peak loads and 35% or 112,447 on the base shift.
	Peak Hours 0900-2200			Base Hours 2200-0900		
Position	Volume / 2 tours	Staff	Position	Volume / 2 tours	Staff	
PRD	65,356 / **32,678**	1 Dispatcher	PRD	31,796 / **18,010**	1 Dispatcher	
Break Relief	-	-	Break Relief	-	-	
East Valley	47,703 / **23,851**	1 Dispatcher	East Valley North Desert/ Mountains	27,518 / 13,759 4,224 31,742 / **17,983**	1 Dispatcher	
North Desert/ Mountains Strategic Command North / Break Relief	13,757/ 6,878 3,842 / 1,921 54/27 17,653 / **8,826**	1 Lead	Strategic Command North / Break Relief	54 / **27**	I Lead	
Calltakers	135,776 / **67,888**	5/5 Calltakers	Calltakers	66,875 / **33,437**	3-4 Calltakers	

SOUTH						
RIALTO						
153,358 or 65% of total 2019 CAD Volume 65% of total inbound phone volume (494,271) = 321,276						
Core Duties Deploy Resources, Call Answering Call Handling (protocol call processing), Strategic Operations Command *North* Intelligence-gathering and Watch (monitoring) Command & Control of OBX Area Resources Medical Call Triage						Concentrating on the task of answering phones allows for a level of expertise in call processing, optimizing call processing operations in order to meet local and industry standards. The break relief and Lead positions can be counted as part of the basic staffing number or in addition to a base calltaker strength. The Shift Supervisor hours can be flexed to an overlap shift if need be, if Lead is on-duty during absence. On the base shift, the Metro channel would assume the South Desert and Command channels so the Lead can provide Break Relief. South Ops is 65% of the CONFIRE inbound phone load. The Peak shift represents 65% of the total 153,358 CAD incident, leaving 35% on the base shift. Phone load assumes the same percentages. There are 321,276 inbound calls, dividing 65% or 208,829 calls on peak loads and 35% or 112,447 on the base shift.
	Peak Hours 0900-2200			**Base Hours 2200-0900**		
Position	Volume / 2 tours	Staff	Position	Volume / 2 tours	Staff	
PRD	100,562/**50,281**	1	PRD	52,796/**26,398**	1	
Break Relief		1	Break Relief		0	
West Valley	43,469/**21,734**	1 RD for **38,525**	West Valley	23,655/**11,827**	1 RD for **20,695**	
Metro	33,583/**16,791**		Metro	17,736/**8,868**		
South Desert	13,757/**6,878**	1 Lead for **9,289**	South Desert	6,583/**3,291**	1 Lead for **5,792**	
Strategic Command South (XBO and Local Govt/Air Ambulance	4,822/**2,411**		Strategic Command South / **Break Relief**	4,822/**2,411**		
Calltakers	CAD Incidents 100,562/50,281 Inbound Calls 208,829/**104,414**	5/10	Calltakers	CAD Incidents 52,796/26,398 Inbound Calls 112,447/**57,223**	3/6	

10 Recommendations

Current State Findings and Recommendations Summary

Process Recommendation

MCP recommends that ECC leadership (Chiefs, management and supervision) approve a process that allows for the comprehensive review of the following recommendations specifically developed not just for staffing adjustments, but for operational changes for now and in the future. MCP further recommends a simple process to prioritize recommendation, using criteria established by CONFIRE. For instance, resource availability to accomplish within specified timeframes, the organization's ability to fund, human capital support and implement processes. MCP understands that budgets are challenged when considering how to fund staffing requisitions; but over time, knowing that organizational goals can be accomplished, measured and complied with, the planning process to fund what it takes to be successful can begin.

A sample process to consider puts recommendations in "buckets" to start this plan:

- What can be achieved within the next two to 12 months
- What can be achieved during the "interim period" of 12-24 months
- What should be achieved looking at the longer term

Once the above process has been completed, prioritize based on acuity (need):

- (#1) Critical – a must for immediate organizational success
- (#2) Important – significant impact to the organization and will be done within timeframe established
- (#3) Long Term Initiative – is important and can be critical but is most definitely strategic when it comes to funding and needed resources to achieve success.

This process can provide high-level initiatives for future budget cycles and allow staff to engage in the development of workplace priorities and how best to accomplish them.

Content Recommendations

1. Industry Standards/Best Practices

A. Formally adopt (re-adopt) State of California Office of Emergency Services standard of answered all 9-1-1 calls within 15 seconds, 95% of the time.
B. Adopt National Fire Protection Association (NFPA) 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems* (Edition 2019), Chapter 4 as the basis for call processing benchmarks.
C. Establish separate call processing performance benchmarks for high priority and non-high priority call types.

D. Adopt goal of completing full EMD process on 90% of all ECHO calls that apply, develop metric, and reporting, ie., every month, three months, etc

2. Organizational Structure

A. Develop staff position to support the Assistant Manager of Training/EMD/ Wellness.

B. Support and fund what will be needed to accomplish an aggressive hiring process and back-to-back entry-level training efforts during two-year interim period.
   - In interim, consider a rotational position from the ECC for mentoring/succession planning purposes. If the option of hiring personnel from outside who are familiar with CONFIRE ECC's operation, this should be exercised.

C. Expedite filling the four new Dispatch Supervisor positions authorized in the FY20-21 budget.
   - Fill vacant supervisor positions by internal promotion and recruit externally for qualified candidates if necessary.

3. Operational Configuration

A. Integrate the vertical operational configuration and phase-in over time in order to achieve clear lines of duty and expectation. Define the two distinct functions of the communications operations as:
   - Call Processing (includes call taking, EMD, response configuration and initial dispatch).
   - Resource/Incident Management (includes resource status management, call reconfiguration, communications with responding and operating units, incident support (resource requests, notifications, tactical monitoring etc).
   - Staff and support each element accordingly to achieve adopt performance standards as well as each job assignment thoroughly described.

B. Assess after-hours notifications and dispatch functions to gauge whether the notifications are part of a working call or are separate and inconsistent with CONFIRE call flow. Evaluate if non-compensated work should be part of the ECC's mission. This includes the medical helicopter function for cost recovery opportunities and burn permit CAD entry for more efficient methods to achieve tracking and notification objectives.

C. Evaluate the Command and Control function. Define the role and responsibility of the BDC ECC Chief in policy, and over time, explore opportunities to expand the role to include management of all CONFIRE resources and XBO duties.

D. Evaluate and approve the Operations Chiefs radio position realignment into the recommended staffing matrix and if ratified, incorporate and codify in policy.

E. Complete development and implementation of EMD as Designed pilot project to include the creation of a list of high priority incidents (Quick launch). Utilize NFPA 1221 highest prioritization list as a basis for "quick launch" call types, including fire related calls.

F. Measure processing times for these calls separately from lower priority calls.

G. Evaluate use of automatic call drop function with the Automated Call Distribution feature of the Vesta system.

H. Determine best model for operations (Model A or B or variation thereof). Consider piloting both for specified periods and define metrics for decisions to (dis)continue. Determine if one PRD in the configuration is enough, or if two regional PRD's would best achieve standards compliance.

4. Staffing

A. Overhire – leverage overtime dollars to new positions in order to hire as many qualified candidates as possible even if it exceeds the authorized staffing strength to create a pool to backfill vacancies and minimize forced OT as attrition occurs. Recommend Consider a slow decrease in overtime and use funding to increase full-time equivalents or overhire funding.

B. Collaborate with line staff on the staffing scenarios described in this report, to ensure that employees are part of the decision and change process.

C. Expand the extra-help bench by recruiting journey-level dispatchers in the region or fire recruits and fill shift vacancies with straight time and schedule.

D. Schedule existing extra-help staff hours as part of the base schedule rather than ad-hoc sign-ups.

E. Upon achieving full staffing, revisit minimum staffing and permitted time-off policies to minimize staffing deficits and keep forced overtime hours below 5% of overall overtime hours.

F. Develop a stand-by schedule per CWA MOU provision to address unplanned shortages.

G. Consider classifying the four Lead Dispatcher positions from Dispatch classification ranks.

H. Consider rebalancing dispatcher radio assignments to calltaker assignments as radio reconfiguration and (recommended) consolidation occurs.

I. Create support positions to training and QA by either administrative assignment from the ECC staff or hire externally in temporary capacity until full-time funding can be secured.

5. Shift Configuration

A. Consider flexible scheduling (hours of the day and length of shift) particularly when shortages continued to be experienced, to retain staff.

B. Schedule part-time staff to fill peak hour vacant shifts.

6. Retention

A. Consider a significant increase in stipend to communications training officers (CTO) during interim period to incentivize staff engagement.

B. Prepare the ECC for an aggressive effort of training new staff after conducting back-to-back academies and on-the-job training cycles.

C. Retain personnel who are proficient at call-taking who may not be proficient at the essential job functions of a radio dispatcher.

7. Technology

A. Complete upgrade of Desert ECC to mirror Rialto ECC operational capability (using the same CAD

B. Request the installation of an Alert Wildfire camera on the radio masts at both ECC locations.

C. Consider enhancing dispatch performance by implementing:
- ASAP-to-PSAP alarm technology
- Situational awareness technology
- Automatic Call Distribution enhancement

8. Training and Quality Assurance

A. For the critical 18-24-month period, make temporary assignments from existing ECC staff or hire personnel from outside who are familiar with CONFIRE ECC's operation to assist in academic training. This is be temporary and increase backfill overtime but is necessary for the interim period's success.

B. Structure an aggressive hiring plan over the course of 18-months. During that time, schedule academic entry-level training every 10 weeks. Attempt to hire a minimum of six trainees per session. Five academic sessions will fill the current vacancy level of 28. If overhire is approved, six academic sessions will be needed. If a two-person washout is assumed, two additional sessions will be needed, totaling eight academic sessions over the 18-month period. This amounts to an entry-level training session every nine weeks. This structure does not address any additional positions above the current staffing strength vacancy and four-position over-hire.

C. Emphasize training for shift supervisors in: performance-based evaluations and feedback sessions, coaching, career development for subordinates, and career pathing.

11 Conclusion

The results of a staffing study can be overwhelming to digest. When agencies see what staffing they have compared to what is recommended to meet industry standards and operational best practices, the thought of needing “that” many more people can be intimidating. To put the issue in perspective, these same reactions can be felt by the ECC/PSAP staff when seeing the growth factor, absorbing increasing call volume, additional duties (i.e., ECNS or drone programs), and expanding reporting structures. If CONFIRE ECC accepts the calculations herein, a phased and graduated increase to staffing should be developed, so that strategically, the increase of staffing correlates with the increase of responsibilities.

MCP applauds CONFIRE’s vision and steps toward realizing it in the future. Changing times can be exciting when executed with well thought-out plans and inclusion of staff. MCP is happy to be able to provide this one portion of work towards your vision.

Appendix A – Industry Standards/Best Practices and State Statutes/Rules

National organizations that develop public-safety communications standards and best practices include those noted below, along with relevant standards used in staffing analyses.

Association of Public-Safety Communications Officials-International (APCO)

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."[17] APCO has undertaken many projects over the years. Two notable projects are 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."[18]

National Emergency Number Association (NENA)

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."[19] NENA's mission is to improve "9-1-1 through research, standards development, training, education, outreach, and advocacy."[20] NENA has several topic-specific committees that develop ECC-related recommendations and standards and other information documents pertaining to ECC operations. NENA recommendations and standards give ECCs 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."[21]

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[17] "About APCO," APCO International, 2017, https://www.apcointl.org/about-apco.html.
[18] "APCO Projects," APCO International, 2017, https://www.apcointl.org/about-apco/apco-projects.html.
[19] "NENA's Mission," National Emergency Number Association, http://www.nena.org/?page=Mission.
[20] Ibid.
[21] "9-1-1 Call Answering Standard," National Emergency Number Association," June 10, 2006, https://www.nena.org/?page=911CallAnswerStnd, page 8 of 12.

National Fire Protection Association (NFPA)

NFPA “delivers information and knowledge through more than 300 consensus codes and standards, research, training, education, outreach, and advocacy …”[22]

NFPA has higher standards for call processing. Also a non-profit organization, NFPA “delivers information and knowledge through more than 300 consensus codes and standards, research, training, education, outreach, and advocacy …”[23] NFPA 1221, 2019 version, states "Ninety- *[sic]* percent of events received on emergency lines shall be answered within 15 seconds, and 95 percent of alarms shall be answered within 20 seconds."[24]

NFPA further defines call processing times. Section 7.4.2 states: "Call processing time shall include the time from call answer to initial notification of the responding ERU(s)."[25] Explanatory material for this section states, in part:

> *Transfers, especially multiple transfers, have the impact of making compliance with the overall processing time standard nearly impossible. Given the life safety implications for critical incidents, PSAPs should make every effort to reduce/eliminate transfers, thereby reducing the amount of time required to answer, process, transfer, and dispatch alarms.*

Section 7.4.3 states: "Emergency alarm processing for the highest prioritization level emergency events listed in 7.4.3.1 through 7.4.3.2 shall be completed within 60 seconds, 90 percent of the time."[26]

Sections 7.4.3.1 and 7.4.3.2 provide the highest prioritization levels. These sections all represent changes from the 2016 edition.

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

NFPA 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems* (Edition 2019), Chapter 7 sets forth the standards for PSAP operations; Section 1 of Chapter 7 addresses management.

NFPA 1221, 7.1.1 states, “All system operations shall be under the control of a manager, director, or supervisor of the jurisdiction served by the system.

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[22] “NFPA Overview,” National Fire Protection Association, 2017, http://www.nfpa.org/about-nfpa/nfpa-overview.
[23] “NFPA Overview,” National Fire Protection Association, 2017, http://www.nfpa.org/about-nfpa/nfpa-overview.
[24] “NFPA 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems,” National Fire Protection Association*, 2019.
[25] Ibid.
[26] Ibid.

7.1.3 states, “Personnel in supervisory roles shall receive supervisory training as defined by the AHJ.” (AHJ is defined as the Authority Having Jurisdiction.)

7.1.4 states, “The AHJ shall be responsible for initial and ongoing training in supervisory skills of personnel in supervisory roles.”

Section 3 of Chapter 7 addresses staffing.

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.”

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.”

International Academies of Emergency Dispatch (IAED)

The IAED “is a non-profit standard-setting organization promoting safe and effective emergency dispatch services worldwide. 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 internationally recognized protocols, available through Priority Dispatch Corporation, can apply to become an ACE.

Insurance Services Office (ISO)

The ISO has established criteria for assessing and grading fire-protection agencies. The ISO’s 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 Classification.”[28]

The ISO notes:

> *“We base our evaluations on nationally recognized standards developed by the Association of Public-Safety Communication Officials International (APCO) and the*

[27] International Academies of Emergency Dispatch (IAED), “Welcome to the Academy.” http://www.emergencydispatch.org/.
[28] 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.”

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."[29]

California State Organizations

The California Governor's Office of Emergency Services (CAL-OES)

The Public Safety Communications Branch maintains the state's standards for PSAP call answering. This office administers funding for equipment and services related to the delivery and handling of 9-1-1 calls in California, which is based upon laws passed by the California State Legislature, as defined in CA Government Code, Sections 53100-53120 (known as the Warren-911-Emergency Assistance Act) and the CA Revenue and Taxation Code, Sections 41001 - 41176 (known as the Emergency Telephone Users Surcharge Act).

CAL-OES monitors compliance with its call-handling standards, which are among several mandatory PSAP and network standards documented in the State's operating manual. The statewide call-handling standards are as follows:

- Automatic location identification (ALI) format – PSAPs shall accommodate the most current ALI standard for the State of California, currently Format 04, in any equipment replacement or upgrade.

- The *9-1-1 Operations Manual*, Chapter 1 – Standards, Public Safety Answering Point (PSAP) Standards, 2. Call Answer Time Within Fifteen (15) Seconds, states "Ninety-five (95) percent of incoming 9-1-1 calls shall be answered within fifteen (15) seconds. The CA 9-1-1 Branch realizes that unpredictable spikes may occur and will take abnormalities into consideration when reviewing statistics."[30]

[29] ISO Mitigation, "Emergency Communications." (2018) https://www.isomitigation.com/emergency-communications/.
[30] "CA 9-1-1 Operations Manual," CA.gov, 2017, http://www.caloes.ca.gov/cal-oes-divisions/public-safety-communications/ca-9-1-1-emergency-communications-branch/ca-9-1-1-operations-manual.

Appendix B – Staffing Methodology

A staffing analysis is conducted to determine whether a PSAP has an adequate number of personnel to assure efficient processing of emergency calls now and/or to determine the number of personnel that may be needed in the future—although the further into the future one looks, the more difficult it is to predict. A forward-looking staffing analysis considers projected population growth to assure that the agency is well-positioned in its future planning efforts and that it meets the expectations of the public and the agencies it serves. Operational efficiency is gauged by comparing statistical data and personnel utilization to appropriate national standards.

Additionally, a staffing analysis often is conducted 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 that adequate space is allotted.

Industry tools are available to assist with determining baseline staffing requirements for call-takers, dispatchers, and supervisors. APCO offers Project RETAINS,[31] developed by 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 Certification Program (CMCP).[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 that 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.

MCP's staffing analysis involves a multimodal approach that considers workload, volume- and/or 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 required to staff a position 24 x 7, regardless of volume. MCP uses these calculations in tandem. Statistical calculations are balanced with operational logistics to identify how many personnel are needed for a PSAP to achieve its performance goals while providing efficient and effective service. In addition, MCP uses Erlang C calculations and its experience in the 911 community to assist in projecting the number of staff required to efficiently answer and dispatch emergency and non-emergency calls for law enforcement, fire, and EMS agencies. MCP analyzes resulting data with a respective center's operational configuration to approximate staffing requirements. The value of any resulting staff projections is

[31] APCO International, "APCO Project RETAINS," (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.

dependent upon the accuracy of the data and statistics provided by the PSAP. CONFIRE provided statistical data, including incident volume, call volume, and personnel data.

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 subfactors to this calculation, including leave usage (i.e., any time that the employee is away from his or her assigned duties). This time includes vacation, holiday, sick, and personal leave; training; military leave; and other activities.

In 2019, CONFIRE ECC personnel[34] used approximately 470 hours of leave per person. This is not to say that each person used this amount of leave; some may have used less, and some may have used more. Based on a 12-hour day, this is approximately 39 days of leave per person.

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.[35] Breaks and meals 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. In MCP's experience, telecommunicators may spend four to seven minutes per hour on other work-related activities. CONFIRE reported other work-related activities of approximately five minutes per hour with the resulting utilization rate of 87 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." Unfortunately, always trying to maintain utilization below 85 percent can lead to overstaffing.

Calculating the net work hours (scheduled hours less leave) and the utilization rate results in the true availability of an employee. This means that a telecommunicator is scheduled to work 2,184 hours but subtracting leave an employee may only work 1,714 hours during a year, based on leave data provided by CONFIRE and the utilization rate.

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, MCP is aware of several PSAPs 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.[36] CONFIRE reports a three-year attrition rate of approximately 24 percent.

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[34] Those whose primary assignment is shift work.
[35] 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-taking 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/HDICorp/Files/Library-Archive/Insider%20Articles/agent-occupancy.pdf) provides good information.
[36] According to the APCO RETAINS Retention document, the comparison rates were derived from Project RETAINS Study I and the RETAINS Next Generation Study.

Staffing calculations also should consider performance metrics, which measure the operational efficiency of a PSAP compared with targeted goals and established standards. MCP 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 with either NENA[37] or NFPA[38] standards.

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 telecommunicators are on another line, incoming calls cannot be answered immediately. Regardless of the reason, this creates additional work as telecommunicators must try to reestablish 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 MCP's 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 IT and call centers, suggests an abandoned call rate of 4 percent to 7 percent.[39] While their focus is on the service industry, not the 911 sector, there is a correlation between the two. Both are answering calls from the public in response to their stated mission or objective. CONFIRE's abandoned call rate is approximately 0.79 percent.

[37] 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
[38] NFPA: 90 percent answered within 15 seconds and 95 percent answered within 20 seconds
[39] MetricNet, "Call Abandonment Rate," (May 23, 2012) http://www.metricnet.com/call-abandonment-rate.