Audit of the 911 Emergency Communications Center

Report # 2019/20-05 | September 2019

911 Call Answer Times Have Improved and Are Exceeding State Standards

Quality Assurance and Disaster Preparedness Could Be Improved by Adopting Industry Best Practices



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AUDIT FACT SHEET

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RECOMMENDATIONS

We made several recommendations aimed at improving 911 Center operations. They include the following:

Monitor Key Metrics and Staffing Needs

- Continue to monitor call volume metrics to ensure State-mandated PSAP metrics are achieved.
- Consider improving the supervisor-to-dispatcher ratio to provide better supervisory coverage.
- Continue evaluating staffing needs to meet anticipated growth in call volume.
- Put payroll processing controls in place to prevent the use of duplicate pay codes.

Enhance Quality Assurance Practices

 Develop and document a continuous quality assurance program based on industry standards that includes reviewing a percentage of all calls and incorporates an evaluator calibration process.

Strengthen Disaster Preparedness

- Develop a current, comprehensive, and effective Emergency Action Plan.
- Consider modeling the emergency action plan after the NENA Communications Center/PSAP Disaster and Contingency Plans Model.
- Establish the 911 Center as a Critical Facility on Sacramento County's Local Hazard Mitigation Plan.
- Develop and implement a succession plan that will reduce the impact on the 911 Center when key personnel separate from City employment.

BACKGROUND

911 calls made within the City of Sacramento are routed to the Police Department's 911 Emergency Communications Center (911 Center), which serves as the City's Public Safety Answering Point (PSAP.) As the 911 Center is often the first point of contact during an emergency, a reliable and robust 911 service is essential to the safety and security of Sacramento's residents and visitors. The 911 Center is budgeted at approximately \$11.6 million and dispatchers handled over 840,000 emergency and non-emergency calls in 2018.

FINDINGS

Finding 1: 911 Call Answer Times Have Improved and Are Exceeding State Standards

The Governor's Office of Emergency Services (Cal OES) establishes mandatory standards with the goal of providing the fastest, most reliable, and cost-effective telephone access to 911 emergency services. These standards mandate that PSAP's answer 95 percent of incoming 911 calls within 15 seconds. This audit evaluated the extent to which the 911 Center is meeting this key metric. We found that:

- The 911 Center has increased staffing and started taking wireless calls;
- In calendar year 2018, the 911 Center answered 98 percent of incoming calls within 15 seconds;
- The 911 Center is adequately staffed with dispatchers but will need to prepare for anticipated growth in call volume;
- Improving the supervisor-to-dispatcher ratio may provide better supervisory coverage; and
- We noted inconsistencies in the application of some training incentives and uniform allowances.

Finding 2: Quality Assurance and Disaster Preparedness Could Be Improved by Adopting Industry Best Practices

Call-taking protocols provide a standardized approach to collecting information, triaging calls, and dispatching emergency responders. The adverse effects of a natural disaster or other large-scale emergency on this vital function could further compound an emergency. We recommend the 911 Center continue to improve its quality assurance and disaster preparedness practices by:

- Standardizing quality assurance procedures to align with best practices;
- Evaluating and updating business continuity and disaster preparedness procedures annually to ensure the 911 Center continues to operate during an emergency; and
- Performing succession planning to minimize the impact on the 911 Center when key personnel separate from City employment.

Introduction

In accordance with the City Auditor's 2018/19 Audit Plan, we have completed an *Audit of the 911 Emergency Communications Center*. We conducted this performance audit in accordance with Generally Accepted Government Auditing Standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

The City Auditor's Office would like to thank the Police Department for their cooperation during the audit process.

Background

9-1-1 is the nationwide primary emergency telephone number, designed to ensure quick response to persons calling for police, fire or medical services. 911 calls made within the geographic boundaries of the City of Sacramento are routed to the Police Department's 911 Emergency Communications Center (911 Center), which serves as the City's Public Safety Answering Point (PSAP).

Dispatchers answer emergency and non-emergency calls to obtain information and prioritize events. Emergency calls are entered into the Computer Aided Dispatch (CAD) system which provides information to responding officers such as the nature of the emergency, physical location, and call priority. Emergency calls for service requiring medical or fire resources are transferred to the Fire Department's Emergency Communications Center.

Non-emergency calls, made through the seven-digit non-emergency phone number, are initially routed through an automated phone tree so the caller can self-select the type of non-emergency service they would like to reach. Calls related to filing police reports are directed to the City's online reporting site. Figure 1 provides a high-level flow chart of the call answering process for emergency and non-emergency calls.

Call Process **Call Type** Response Fire Dispatcher Response **Police Emergency** Dispatcher **Police** Response Other City Services Non-**Automated Call Tree Emergency** Dispatcher Directed to Website

Figure 1: Call Handling Flow Chart

Source: Auditor generated.

Organizational Structure

The 911 Center is organized under the Police Department's Office of Operations Division and is staffed by non-sworn civilian employees. A Communications Manager oversees the center and staff, which primarily consists of dispatchers. 911 Center dispatchers take calls 24 hours per day, 7 days a week, 365 days per year and generally work four 10-hour shifts per week. Figure 2 is an organizational chart of 911 Center staffing, which includes the number of full-time equivalents (FTE's) budgeted for each position as of FY 2018-19.

Police Chief (1) **Deputy Chief** (1) Communications Manager (1) Training **Early Watch** Late Watch Support Services Coordinator Ops Supervisor Ops Supervisor Dispatcher III Dispatcher III (1) (1) (1) (1)Academy Analyst/Clerk Facilitator Dispatcher III Dispatcher III Dispatcher I/II (4)(4)(2)(1) CAD Dispatcher I/II Dispatcher I/II Sustainment (45)Dispatcher I/II (33)(1)

Figure 2: 911 Center Organizational Chart and FTE Count

Source: Auditor generated.

The Police Chief and Deputy Police Chief are sworn positions that oversee multiple areas and offices within the Police Department. The Communications Manager and below are civilian positions assigned exclusively to the 911 Center.

Figure 3 shows the number of budgeted full-time equivalent (FTE) dispatcher positions for the 911 Center over the last four years.

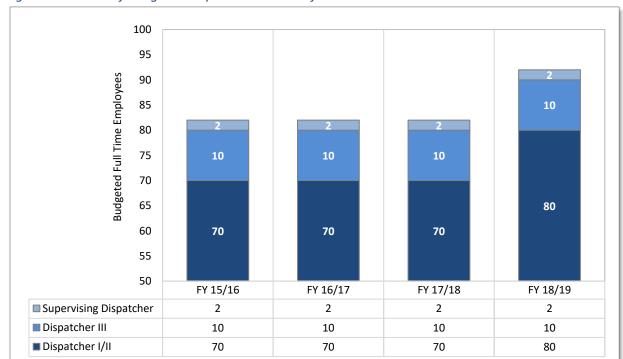


Figure 3: Number of Budgeted Dispatcher Positions for the 911 Center

Source: FY 2018/19 Approved Budget.

The two supervising dispatchers do not take calls but instead act in more of a managerial role, they are responsible for overseeing the 911 Center's personnel management, data analysis, and policy implementation. The dispatcher III positions act in a supervisory capacity for the 911 Center by supervising less-senior staff, which includes those in the dispatcher I/II positions. The dispatcher I/II positions are primarily responsible for call-taking and dispatch.

911 Center staffing remained flat from FY 2015-16 through FY 2017-18. During FY 2018-19, the 911 Center gained funding for 10 new dispatcher I/II positions.

Budget and Funding

The 911 Center is primarily funded out of the City's General Fund and is included as part of the Police Department's Office of Operations Division. Figure 4 shows the approved budget for the 911 Center over the last four fiscal years.

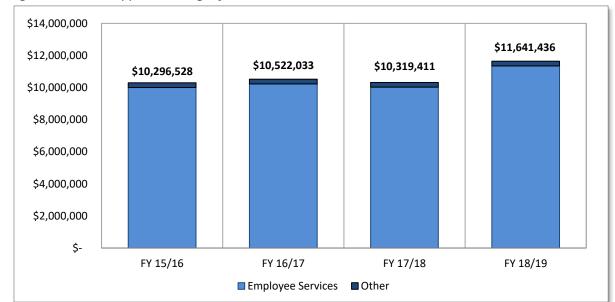


Figure 4: Annual Approved Budget for the 911 Center

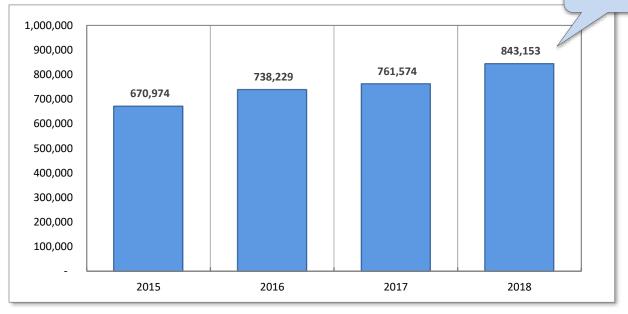
Source: FY 2018-19 Approved Budget.

Most notably, the 911 Center's budget was increased from \$10.3 million in FY 2017-18 to \$11.6 million in FY 2018-19 to fund additional dispatcher positions.

Call Volume

The 911 Center tracks the number of inbound calls, outbound calls, and abandoned calls using the California State Emergency Call Tracking System (eCaTS.) The State provides access to eCaTS in order to monitor compliance with call answering standards; it also allows 911 Center staff to generate reports on various performance measures including call volume, call duration, and answering standards. In calendar year 2018, the 911 Center handled over 840,000 calls, which included both emergency and non-emergency calls. Figure 5 shows the total number of calls handled by the 911 Center over the last four years.

Figure 5: 911 Center Total Call Volume by Calendar Year (Inbound and Outbound Calls)



Source: California State Emergency Call Tracking System (eCaTS).

Changes to Cellular (Wireless) Call Routing

In an effort to increase the efficiency of the 911 system, California Government Code Sections 8592.8 – 8592.9 require that 911 calls from wireless devices (cell phones) be routed to the jurisdiction in which the call originated and not to the California Highway Patrol (CHP), starting on January 1, 2017. To implement this directive, statewide wireless call data had to be analyzed to evaluate which PSAP calls should be routed to, based on where the calls originated. Starting in October 2017, wireless calls in zones designated under the jurisdiction of the City of Sacramento were routed directly to the 911 Center instead of going through the CHP.

The City's FY 2018-19 Approved Budget states that the Police Department "fulfilled the State of California 911 wireless routing initiative, by directing all 911 cellular calls directly to the PD 911 Center. This initiative has eliminated the unnecessary transfer delay from routing cellular calls to the California Highway Patrol communications center. This initiative will result in the [Police Department] 911 Center experiencing a call load increase of approximately 80,000 911 calls per year." The number of calls increased 10.7 percent from calendar year 2017 to 2018, likely as a result of wireless calls being routed directly to the 911 Center, instead of going to the CHP call center.

To provide some context on the amount of calls that are administrative in nature as compared to the number of emergency calls handled by the 911 Center, we developed Figure 6.

1,000,000 900,000 800,000 700,000 34% 25% 25% 600,000 25% 500,000 400,000 300,000 200,000 47% 100,000 2015 2016 2017 2018 ■ Administrative Inbound Administrative Outbound **911** ■ 10-Digit Emergency

Figure 6: Total Calls by Call Type

Source: California State Emergency Call Tracking System (eCaTS).

Based on information from eCaTS, the largest call type was administrative (non-emergency) calls which made up 63 percent of calls in calendar year 2018, followed by 911 calls, which made up 34 percent of total calls.

It is important to note that not every call results in police units being dispatched. For example, non-emergency calls to file a police report for property insurance purposes are directed to the City's online reporting form. In calendar year 2018, only about 30 percent of incoming calls resulted in a police unit being dispatched.

California Governor's Office of Emergency Services (Cal OES)

The California Governor's Office of Emergency Services Public Safety Communications (Cal OES) is responsible for oversight and support of the 911 network serving the State's 452 Public Safety Answering Points (PSAPs). Cal OES is also responsible for the administration and oversight of the State Emergency Telephone Number Account (SETNA), which provides partial funding for 911 equipment in California. In January 2016, the 911 Center received an allotment of \$635,000 from Cal OES to fund the cost of replacing their call processing system.

In September 2016, Cal OES revised the State Call Answer Time Standard to require that "Ninety-five (95) percent of incoming 9-1-1 calls shall be answered within fifteen (15) seconds."

Performance Measures

As the 911 Center's chief responsibilities are answering emergency calls from the public and dispatching law enforcement, their key performance indicators revolve around dispatcher metrics such as call answer time. According to the City's FY 2019-20 Proposed Budget, the key performance measure for the 911 Center is in line with the Cal OES standard of "Percentage of 911 Calls answered within 15 seconds." The 911 Center's target for FY 2019-20 is 95 percent. Below is an excerpt from the FY 2019-20 Proposed Budget showing historical and projected call answer metrics:

Figure 7: 911 Call Center Performance Metrics

	FY16	FY17	FY18	FY19	FY20
Key Measure	Actuals	Actuals	Actuals	Estimate	Target
Percentage of 911 calls answered within 15 seconds	83%	83%	98%	98%	95%

The faster a call to 911 is answered the faster units can be dispatched and made available at the scene of an emergency. The state standard is answering 95% of all 911 calls within 15 seconds. Call answer times are tracked by the SPD Communications Center. The projection for the remainder of FY2018/19 fiscal year is based on prior month averages. The projection for FY2019/20 is based on the state standard. Actual results will vary depending on the call volume and available staffing.

Source: FY 2019-20 Proposed Budget.

Objective, Scope, and Methodology

The objective of the *Audit of the 911 Emergency Communications Center* was to independently evaluate the performance of the 911 Center and to identify opportunities for improvement. The scope of our analysis primarily included call data from January 1, 2015 through December 31, 2018. In conducting our audit, we evaluated internal controls, interviewed 911 Center management and staff, observed inbound and outbound calls, reviewed policies, researched industry best practices, performed a staffing analysis, and assessed call data.

Finding 1: 911 Call Answer Times Have Improved and Are Exceeding State Standards

The Governor's Office of Emergency Services (Cal OES) establishes mandatory standards with the goal of providing the fastest, most reliable, and cost-effective telephone access to 911 emergency services. These standards mandate the public's proper use of 911, network infrastructure requirements, call transfers, and Public Safety Answering Point (PSAP) operations. PSAP's are required to answer 95 percent of incoming 911 calls within 15 seconds. This audit evaluated the extent to which the 911 Center is meeting this key metric. We found that:

- The 911 Center has increased staffing and started taking wireless calls;
- In calendar year 2018, the 911 Center answered 98 percent of incoming calls within 15 seconds;
- The 911 Center is adequately staffed with dispatchers but will need to prepare for anticipated growth in call volume;
- Improving the supervisor-to-dispatcher ratio may provide better supervisory coverage; and
- We noted inconsistencies in the application of some training incentives and uniform allowances.

A reliable and robust 911 service is essential to the safety and security of residents and visitors of Sacramento. In order to measure the effectiveness of this system, call answer time is a key metric used by Cal OES to determine the responsiveness of 911 Centers throughout the State. We found that the Police Department's 911 Center has increased staffing, improved answer times, and is now meeting the state-mandated call answering standard.

The 911 Center has Increased Staffing and Started Taking Wireless Calls

As noted previously, the number of calls handled by the 911 Center has been increasing. However, the number of dispatchers remained relatively constant. In August 2017, the City of Sacramento received a memo from Cal OES "to address the Sacramento City Police Department's lack of compliance with California Government Code." The memo stated that the Sacramento Police Department does not directly accept cellular 911 calls, resulting in a delay as the calls route through the California Highway Patrol (CHP). In addition, the 911 Center's answer time did not meet the Cal OES standard of 95 percent of 911 calls answered within 15 seconds. The letter warned that failure to comply with these standards could result in the State Attorney General's involvement to ensure compliance.

In an effort to address these deficiencies, the Police department submitted a request to City Council to fund 10 additional dispatcher positions. The request was approved and the 911 Center began the process of recruiting dispatchers. Figure 8 shows the actual number of

dispatchers and dispatcher recruits working in the 911 Center over the last few years, in comparison to the number budgeted. This figure excludes the 911 Center's two supervising dispatcher positions. As mentioned previously, supervising dispatchers do not take calls, but are instead responsible for the 911 Center's personnel management, data analysis, and policy implementation.



Figure 8: Dispatcher Staffing Comparison of Budget to Actual

Source: Auditor generated based on City payroll data and the FY2018/2019 Approved Budget.

Two of the budgeted dispatcher positions are currently being used for other responsibilities at the 911 Center; these include a Training Coordinator and an Academy Facilitator.

As the 911 Center began directly answering wireless calls in late 2017, instead of routing them through CHP, the number of calls was expected to increase significantly. From calendar year 2017 to 2018, there was an increase of over 80,000 calls. The figure below compares the total number of calls to the number of budgeted dispatchers.

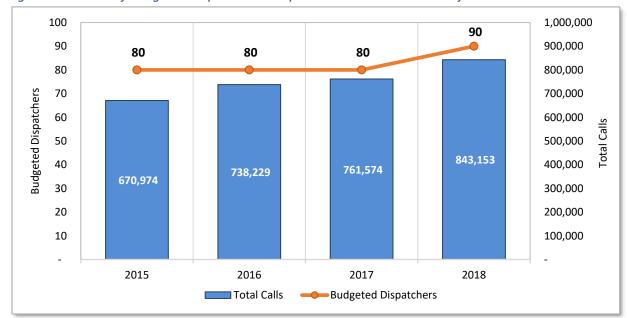


Figure 9: Number of Budgeted Dispatchers Compared to the Total Number of Calls

Source: Auditor generated based on eCaTS data and the FY2018/2019 Approved Budget.

Despite the increase in call volume, the 911 Center was able to improve call answer times.

In Calendar Year 2018, the 911 Center Answered 98 Percent of Incoming Calls Within 15 Seconds

We used the State's eCaTS system to evaluate call data for the 911 Center over the last four years. It is important to note that the current Cal OES mandatory standard of answering 95 percent of emergency calls within 15 seconds took effect in September 2016. Prior to this, emergency calls had to be answered within 10 seconds during the busiest hour of any shift. According to Cal OES, this change was made to streamline the calculation process in determining whether the standard was being met.

Figure 10 displays the percentage of emergency calls that were answered in comparison to the current 15- second standard. This figure also shows when the 911 Center began hiring additional dispatchers and when the 911 Center started to exceed the Cal OES answer-time standard.

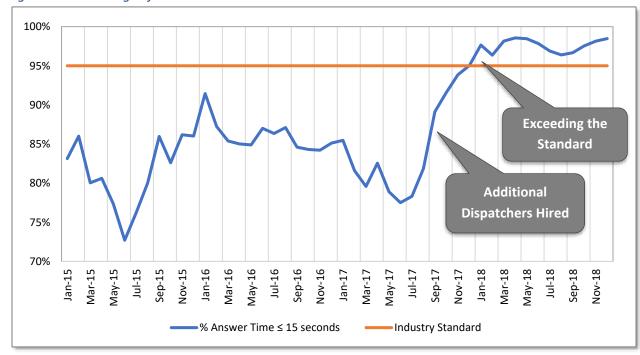


Figure 10: Percentage of 911 Calls Answered within 15 Seconds

Source: Auditor generated based on eCaTS data.

As a result of hiring additional dispatchers, the 911 Center began meeting the Cal OES call standard of answering 95 percent of calls within 15 seconds in early 2018 and continued to meet the standard throughout calendar year 2018. In support of their efforts, Cal OES recognized Sacramento Police Department's "Call Answer Time Success Story" during their March 2018 California State 911 Advisory Board meeting by highlighting the improvements in call answer time. We recommend the Police Department continue to monitor call volume metrics to ensure the 911 Center remains successful in meeting Cal OES answer time standards.

RECOMMENDATION

We recommend the Police Department:

1. Continue to monitor call volume metrics to ensure State-mandated PSAP metrics are achieved.

The 911 Center is Adequately Staffed with Dispatchers But Will Need to Prepare for Anticipated Growth in Call Volume

Dispatchers are vital to the success of the City's 911 Center. The responsibilities of a dispatcher include handling emergency calls, dispatching police units, being able to effectively manage and remain calm during crisis situations, and rapidly learning new technology. Dispatchers are highly trained to respond quickly in emergency situations and are often the

first point of contact with the Police Department when someone is experiencing an emergency.

Determining the optimal number of dispatchers and supervisors to staff a 911 Center can vary based on several factors. This includes the number of fixed positions, variations in call volume, employee retention, availability, and morale. We evaluated the 911 Center's staffing levels to determine if they were appropriate based on their responsibilities and workload.

Association of Public Safety Communications Officials (APCO) Staffing Model

APCO International is an organization of public safety communications professionals that provide public safety communications expertise, professional development, technical assistance, advocacy and outreach to benefit their members and the public. The APCO RETAINS¹ project, funded by the Department of Justice (DOJ) and performed by the University of Denver Research Institute, was developed to assist public safety communication managers with their staffing and retention concerns. Through this research project, a model was developed to support communications centers in calculating their staffing needs. This section outlines the APCO model and the process used to evaluate the staffing needs of the City's 911 Center. Due to rounding, numbers presented throughout this report may not add up precisely to the totals indicated and percentages may not precisely reflect the absolute figures for the same reason.

Net Available Work Hours

A full-time employee is traditionally based on an annual 2,080-hour work schedule. However, various types of leave are provided to employees that impact the number of hours they are available to work during the year. This includes employee benefits such as vacation, sick, and holiday leave. In order to determine the effective number of hours that an employee works in a given year, we subtracted the average leave time used by 911 Center dispatchers in 2018 from the standard 2,080-hour work schedule. Figure 11 shows the results of this exercise.

¹ Project RETAINS: *Staffing and Retention in Public Safety Communication Centers*. APCO International, 2005, https://retains.apcointl.org/pdf/Effective_Practices_Guide.pdf.

Figure 11: Net Available Work Hours

Step	# of Hours	Description	
Α	2,080	Gross Annual Hours	
В	171	Average Vacation and Holiday	
С	101	Average Sick and Injury	
D	114	Average Leave	
E	21 Average Training		
F	F 0 Average Military		
G 330 Average Lunch, Break, and Workout		Average Lunch, Break, and Workout	
Н	H 15 Average Other (Leave without Pay)		
I	752	Total Unavailable Hours = (Sum of B through H)	
J	1,328	Net Available Work Hours = (A- I)	

Source: Auditor generated based on City records.

On average, 911 Center employees used 171 hours of vacation and holiday pay and 101 hours of sick or injury leave. After subtracting the various types of leave from the total number of gross annual hours, we estimated that the average net availability per employee is 1,328 hours per year.

Turnover Rate

The turnover rate is the frequency of employee turnover due to retirement, termination, or separation by the employee. We used the APCO model to calculate the average turnover rate for dispatchers. Based on three years of historical data for dispatchers in the 911 Center, we calculated the average turnover rate to be 13 percent.

Figure 12: Employee Turnover Rate

Step	Description		2017	2018	Average
Α	Total Number of Employees at the highest staffing level for that year		78	83	79
В	Number of new hires that failed to complete the probationary period		3	3	3
С	Number of experienced employees who left for any reason		8	11	8
D	Turnover Rate = (B + C)/A	9%	14%	17%	13%
E	Retention Rate = 1- Turnover Rate	91%	86%	83%	87%

Source: Auditor generated based on City records.

The turnover rate is used to estimate the number of staff needed to cover positions that may be vacant due to employee retirement or separation.

Hourly Processing Capability

Processing capability is an estimate of the average number of calls that can be handled by dispatchers based on the average length of calls and the amount of "wrap up" time between

calls. Using historical data from the 911 Center, we developed Figure 13 which shows the average telephone busy time of an emergency call is two minutes. We estimated a one-minute wrap up time. For this exercise, we separated out emergency calls and non-emergency calls.

Figure 13: Average Hourly Processing Capability for Emergency Calls

Step	Description	Minutes
Α	Average Telephone Busy Time	2
В	Estimated Wrap Up Time	1
С	Average Processing Time = (A + B)	3
D	Average Hourly Processing Capability =60/C	20

Source: Auditor generated based on eCaTS data.

Based on this analysis, the average hourly processing capability per dispatcher is approximately 20 calls per hour. In comparison, the figure below shows the average processing time of non-emergency calls handled by the 911 Center in 2018.

Figure 14: Average Hourly Processing Capability for Non-Emergency Calls

Step	Description	Minutes		
Α	Average Telephone Busy Time	3		
В	Estimated Wrap Up Time			
С	Average Processing Time = (A + B)	4		
D	Average Hourly Processing Capability =60/C	16		

Source: Auditor generated based on eCaTS data.

In 2018, dispatchers averaged a three-minute call handle time with an estimated one-minute wrap up time. This equated to an average of 16 calls per hour for non-emergency calls. The data indicates that, on average, non-emergency calls take slightly longer to handle than emergency calls.

Fixed-Post Positions

Some positions at the 911 Center are considered "fixed-post" positions that require a person to staff the position, independent of call volume. These positions include the department's three radio dispatcher stations, which are responsible for coordinating the response of operational units directly with Police Department personnel. In order to evaluate the minimum number of staff needed to cover the three radio positions 24 hours a day, 365 days per year, we used the APCO staffing model for fixed-post positions. Figure 15 shows the results of our analysis based on the 1,328 hours of employee availability and the 13 percent turnover rate calculated previously.

Figure 15: Estimated Staffing to Cover Radio Positions

Step	#	Description
Α	3	Number of Consoles
В	B 24 Hours Per Day	
С	7	Days Per Week
D	52	Number of Weeks
E	26,208	Total Hours Needing Coverage = (AxBxCxD)
F	1,328	Employee Availability
G	20	FTE Base Estimate (= E/F)
Н	13%	Turnover Rate
1	22	Estimated Staffing Needs = G x (1+H)

Source: Auditor generated.

Based on the department's historical staffing availability and turnover rate, the department would need a minimum of 22 full-time equivalents to cover the radio positions.

Similar to radio positions, supervisor position staffing levels are not based on call volume. Supervisory positions (dispatcher III) provide support to dispatch staff by answering questions, mentoring, taking command responsibility over critical incidents, developing directives, managing employee scheduling, and enforcing policies. Figure 16 shows the estimated staffing needs based on having a minimum of one supervisor staffed in the 911 Center at all times and an additional supervisor only during the busiest hours of the day.

Figure 16: Estimated Staffing to Cover Supervisor Positions

Step	#	Description
Α	1.5	Number of Shifts
B 24 Hours Per Day		Hours Per Day
С	7	Days Per Week
D	52	Number of Weeks
E	13,104	Total Hours Needing Coverage = (AxBxCxD)
F 1,328 Employee Availability		Employee Availability
G	10	FTE Base Estimate
Н	13%	Turnover Rate
1	11	Estimated Staffing Needs = G x (1+H)

Source: Auditor generated.

We estimate the 911 Center would need approximately 11 dispatcher III positions to cover both supervisor shifts.

Improving the Supervisor-to-Dispatcher Ratio May Provide Better Supervisory Coverage

In order to evaluate supervisor staffing best practices, we performed a benchmarking study of other 911 centers to determine how many supervisors they have on staff in comparison to the number of dispatchers.

Figure 17: Benchmarking Survey of Call-Takers Per Supervisor

PSAP ID	PSAP Name	Jurisdiction/ Coverage Area	Budgeted Call-Taker FTEs	Budgeted Supervisor FTEs	Call-Taker / Supervisor Ratio
794	Long Beach Police Department	City of Long Beach	47	10	4.7
641	CHP Rancho Cordova	Auburn, Grass Valley, North Sacramento, Woodland, East Sacramento, and South Sacramento	71	12	5.9
643	CHP Stockton	San Andreas, Stockton, Amador, Tracy	25	4	6.3
904	Roseville Police Department	City of Roseville	20	3	6.7
935	San Jose Police/Fire Communications	City of San Jose	141	20	7.0
906	Sacramento City Police Department	City of Sacramento	80	10	8.0
853	Oakland Police Department	City of Oakland	74	8	9.3

Source: Auditor generated based on survey results.

Survey results indicate the City's 911 Center has a slightly higher number of dispatchers per supervisor in comparison to some of the other 911 Centers we surveyed. The higher staff-to-supervisor ratio provides less time for supervisors to adequately monitor critical events, mentor staff, develop directives, address employee scheduling and morale issues, and enforce policies. We recommend the Police Department evaluate the 911 Center's supervisor-to-dispatcher ratio to determine if it adequately addresses the department's needs.

RECOMMENDATION

We recommend the Police Department:

Consider improving the supervisor-to-dispatcher ratio to provide better supervisory coverage.

Call Volume-Based Positions

Volume-based positions are dependent on the overall activity level in the 911 Center. Using this model, the number of employees scheduled to work a given shift are determined by the projected workload. Typically, this is achieved by performing an analysis of historical workload and using the results to project expected staffing needs. Using the APCO staffing model for

volume-based positions, we used 2018 data to develop figure 18. This figure shows the 2018 total emergency call volume, average processing time, processing capability and the overall workload hours.

Figure 18: Estimated Staffing for Emergency Calls

Step	#	Description
Α	308,448	Total Call Volume (Emergency Only)
В	3	Average Processing Time
С	20	Average Processing Capability
D	15,563	Workload Hours =(A/C)
E	1,328	Net Available Work Hours
F	75%	Estimated Occupancy Rate
G	996	True Availability = (ExF)
Н	16	FTE Base Estimate = (D/G)
1	13%	Turnover Rate
J	18	Estimated Staffing Needs =H x (1+I)

Source: Auditor generated.

The estimated occupancy rate is the percent of time a dispatcher is handling calls, in comparison to the amount of time waiting for a call to come in. A 75 percent occupancy rate indicates that an employee is on the phone handling calls 75 percent of the time, with 25 percent down-time. This equates to being on the phone for 45 minutes, with 15 minutes of downtime per hour. Based on call-center best practices, agent occupancy rates can vary from 60 percent to 90 percent. However, occupancy rates on the higher end can reduce morale and lead to employee burnout, stress, and increased turnover. In our opinion, a 75 percent occupancy rate is a reasonable estimate for this analysis. We estimate the 911 Center would need 18 full-time equivalent positions to cover the incoming emergency call volume.

We also performed a similar analysis using the 2018 non-emergency call volume statistics. As mentioned previously, non-emergency calls take about a minute longer on average to process. Figure 19 outlines the results of our analysis.

Figure 19: Estimated Staffing for Non-Emergency Calls

Step	#	Description
Α	534,705	Total Call Volume (Non-Emergency Only)
В	4	Average Processing Time
С	16	Average Processing Capability
D	33,767	Workload Hours =(A/C)
E	1,328	Net Available Work Hours
F	75%	Estimated Occupancy Rate
G	996	True Availability = (ExF)
Н	34	FTE Base Estimate = (D/G)
I	13%	Turnover Rate
J	38	Estimated Staffing Needs =H x (1+I)

Source: Auditor generated.

Based on our analysis, 38 dispatchers would be needed to handle the non-emergency call volume.

Total Estimated Number of Dispatchers and Supervisors

We summarized the results of our analysis in the figure below. Radio, emergency calls, and non-emergency staffing needs are combined under the "Dispatcher" position as these responsibilities are handled by employees in the dispatcher I/II classification. Based on our analysis, approximately 90 full time employees would be needed to handle the call volume, radio consoles, and supervisor responsibilities at the 911 Center.

Figure 20: Comparison of Estimated Staffing to Budgeted Staffing

Position	Estimated Staffing	Budgeted Staffing	Difference
Supervisors	11	10	-1
Dispatchers	79	80	1
Total Employees (FTE)	90	90	0

Source: Auditor generated.

The 911 Center is currently budgeted to have 10 dispatcher III positions and 80 dispatcher I/II positions. According to our analysis, the 911 Center has the appropriate number of staff to support current call volume. However, analysis based solely on 2018 call data does not account for anticipated future growth in call volume.

Over the last four years, the 911 Center has experienced growth in the number of calls. If we project a ten percent increase call volume, which is expected to occur in the next few years based on historical trends, the number of employees required to cover the call volume

increases. Figure 21 shows the estimated staffing levels based on a ten percent increase in call volume.

Figure 21: Comparison of Estimated Staffing to Budgeted Staffing with a 10 Percent Increase in Call Volume

Position	Estimated Staffing	Budgeted Staffing	Difference
Supervisors	11	10	-1
Dispatchers	84	80	-4
Total Employees (FTE)	95	90	-5

Source: Auditor generated.

Historical trends indicate that future growth in call volume is to be expected, failure to adequately plan could result in the 911 Center no longer meeting the Cal OES answer-time standard. We recommend the Police Department continue to evaluate staffing levels needed to maintain call quality and ensure compliance with State-mandated call answer times.

RECOMMENDATION

We recommend the Police Department:

3. Continue evaluating staffing needs to meet anticipated growth in call volume.

We Noted Inconsistencies in the Application of Some Training Incentives and Uniform Allowances

The Sacramento Police Department assigns some Police Officers and Dispatchers to act as "Training Officers" and perform training duties. Under the City's labor agreements some employees in the Police Department are entitled to a monetary "Training Officer" incentive at a rate of 9.5 percent of their base pay. The labor agreements also provide a monetary uniform allowance for Supervising Dispatchers.

During our review of payroll information, we noted inconsistencies in the way some training officer incentives and uniform allowances were being administered over the last few years. Specifically, these included:

- The payroll system allows employees to earn multiple training incentives at the same time;
- One employee had duplicate incentive codes applied to all hours worked; and
- Supervising Dispatchers are receiving a higher uniform allowance than is stipulated in their labor agreement.

The estimated cost of these discrepancies is approximately \$17,000. We recommend internal controls be put in place to detect the use of incompatible training incentives and eliminate duplicate incentives, and that Supervising Dispatcher uniform allowance payments be corrected to match the terms outlined in their labor agreement. As a result of our analysis, the City's Payroll Division has already started working on implementing some of these recommendations.

RECOMMENDATIONS

We recommend the Police Department work with the Finance Department to:

- 4. Develop a process to prevent multiple training officer codes from being applied to one employee at the same time.
- 5. Develop a process to prevent duplicate incentive codes from being applied to one employee at the same time.
- 6. Bring the Uniform Allowance for Supervising Dispatchers into alignment with the labor agreement.

Finding 2: Quality Assurance and Disaster Preparedness Could Be Improved by Adopting Industry Best Practices

When an emergency call is received, dispatchers must process and prioritize the call to best preserve and protect the lives of people at the emergency and the emergency responders. Call-taking protocols provide a standardized approach to collecting information, triaging calls, and dispatching emergency responders. As the 911 Center is often the first point of contact during an emergency, it is vital that this facility continue to operate in the event of a disaster. The adverse effects of a natural disaster or other large-scale emergency on this vital function could further compound an emergency. We recommend the 911 Center continue to improve its quality assurance and disaster preparedness practices by:

- Standardizing quality assurance procedures to align with best practices;
- Evaluating and updating business continuity and disaster preparedness procedures annually to ensure the 911 Center continues to operate during an emergency; and
- Performing succession planning to minimize the impact on the 911 Center when key personnel separate from City employment.

Continuously monitoring call quality will maintain the 911 Center's high standards when communicating with the public. Regularly evaluating disaster preparedness will help to ensure the 911 Center continues to operate during a disaster. Failure to maintain high quality standards or an inability to operate during an emergency could reduce public trust in the center's operations. In alignment with industry best practices, we recommend the 911 Center continuously evaluate these areas for improvement.

Standardize Quality Assurance Procedures to Align with Best Practices

A comprehensive and effective quality assurance (QA) program supports standardized operations by continuously evaluating dispatchers and identifying areas for improvement. Sacramento's 911 Center has instituted a QA program to randomly review calls taken by newly

hired dispatchers who are still in training (normally those in the Dispatcher I classification). In addition to closely monitoring newly hired staff, supervisors also evaluate 2-4 calls per quarter, per dispatcher, on an ongoing basis. Evaluators can access audio recordings of the call as well as recordings of the computer screen activity; in that way the reviewer can hear the call and review what was entered into the Computer Aided Dispatch (CAD) system. Reviewers

Standardized quality assurance practices help ensure consistent service to the public and to emergency responders.

then use a standardized template to score the call-taker's performance in several areas. While these practices are part of a good QA program, there are additional best practices the 911 Center can incorporate into their QA process to further improve call quality.

In 2015, the National Emergency Number Association (NENA), in coordination with the Association of Public Safety Communications Officials (APCO), published a *Standard for the Establishment of a Quality Assurance and Quality Improvement Program for Public Safety Answering Points*² (APCO/NENA QA Standard). This standard defines the recommended minimum components of a QA program and suggests procedures for implementing those components. While adherence to this guidance is not required, we believe the 911 Center could strengthen their internal QA processes by incorporating some of these best practices into their program, including:

- Determining how many and which calls to review; and
- Calibrating often for consistency.

Determine How Many and Which Calls to Review

The APCO/NENA QA Standard recommends reviewing a sufficient number of cases to effectively execute a quality control program. The standard suggests reviewing two percent of all calls, including the call-taking and dispatching components. However, if the two percent factor is not realistic or overly burdensome the standard allows for agencies to decide on "realistic levels of case review." Currently, the 911 Center is not evaluating two percent of calls, as recommended by the guidance. The 911 Center should evaluate their ability to meet this best practice to determine if it is feasible, given their current call volume and staffing levels, to ensure a sufficient number of calls are being evaluated.

Calibrate Often for Consistency

Just as standardized call-taking protocols help ensure consistent service to the public, standardized reviews help ensure consistent and equitable evaluations. The APCO/NENA QA Standard recommends that management periodically assess QA calibration by having all

evaluators grade the same call (intake and dispatch); if the evaluators' scores do not match, discuss the discrepancies and ensure evaluation questions are objectively answered. Failure to periodically calibrate evaluators could result in unfair or inequitable evaluations.

The APCO/NENA QA Standard emphasizes that the purpose for having a QA program is to enable staff to be the best they can be through compliance with protocols, adherence to policies, and by providing excellent customer service. While the 911 Center has established a QA program, it appears to be limited in some areas. Expanding the program to include a percentage of all calls could

"All of the training in the world is useless if the professional telecommunicator isn't being continuously monitored and reinforced for proper procedures."

Source: APCO/NENA ANS 1.107.1-2015

² APCO/NENA. ANS 1.107.1.2015 Standard for the Establishment of a Quality Assurance and Quality Improvement Program for Public Safety Answering Points. National Emergency Number Association (NENA), 2015, https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA">https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA"

result in more consistent service to the public and responding officers. Additionally, those evaluations could provide management with data for trend analysis, compliance with standards, and customer service performance.

RECOMMENDATION

We recommend the Police Department:

 Develop and document a continuous quality assurance program based on industry standards that includes reviewing a percentage of all calls and incorporates an evaluator calibration process.

Evaluate and Update Business Continuity and Disaster Preparedness Procedures Annually to Ensure the 911 Center Continues to Operate During an Emergency

The City of Sacramento's 911 Center is a critical component of public safety and security. It is often the first point of contact during an emergency and operates as the nexus between the public and emergency responders. The adverse effects of a natural disaster or other large-scale emergency on this vital function could further compound an emergency. As noted in NENA's *Hazard and Vulnerability Guidance*³, "the potential for manmade, accidental and/or natural occurrences to prevent a PSAP from receiving, processing, dispatching and monitoring incidents places the public and first responders in danger. It is therefore incumbent on PSAP administrators to prepare for such occurrences." During our review we noted the 911 Center could improve its business continuity and disaster preparedness readiness. Specifically, we found that:

- Disaster recovery plans are incomplete and have not been recently tested;
- The 911 Center has not been identified as "critical" infrastructure; and
- The loss of key personnel could negatively impact 911 Center operations.

The City's essential 911 service should be safeguarded against emergencies and disasters. The Department of Homeland Security recognizes that emergency services, including PSAPs, are part of the nation's critical infrastructure; in other words, assets considered so vital that "their incapacitation or destruction would have a debilitating effect" on public safety, health, and security.

https://cdn.ymaws.com/www.nena.org/resource/resmgr/standards/NENA-INF-019.2-2016 Hazard A.pdf.

³ NENA-INF-019.2-216 NENA Hazard and Vulnerability Analysis Information Document. National Emergency Number Association (NENA), 2016,

Emergency Action Plans Are Incomplete and Have Not Been Recently Tested

The 911 Center is housed in its own facility, built in 2006. The City's Risk Management Division requires an Emergency Action Plan (EAP) for all facilities to help safeguard employees and visitors and minimize the damage to City assets. EAPs typically include emergency evacuation triggers and procedures, security measures, incident

Business continuity planning and disaster preparedness are essential to ensure the continuous operations of the 911 Center in the event of a disaster.

command procedures, and emergency service notifications. Facility employees designated as Emergency Action Team Members should receive annual training, and the action plan should be exercised annually, with all facility employees participating in drills. The City's Risk Management Division requires building managers to review their EAP at least annually, which includes the 911 Center building.

The EAP currently in use by the 911 Center is dated as of January 19, 2016 and appears to be an unfinished draft. This draft EAP discusses personnel actions during a variety of natural disasters and manmade incidents, and also includes some evacuation checklists. In its current draft form, however, the EAP is incomplete and references outdated information. 911 Center leadership and Risk Management further reported that the EAP has not been exercised by all staff in several years. In our opinion, the 911 Center's current emergency plans do not adequately demonstrate the 911 Center's ability to survive and operate during an emergency situation.

In September 2018, NENA published a *PSAP Disaster and Contingency Plans Model Recommendation*⁴ that provides guidance on how to enhance 911 centers' abilities to maintain operations during disaster situations. This model includes PSAP emergency and contingency plans related to:

- IT Security and Computer-Aided Dispatch (CAD);
- Electrical and HVAC Backups;
- Telephone Services and Radio Networks;
- Facility Evacuation and Relocation to Alternate Call Centers;
- Shelter-in-Place and Lockdown Procedures; and
- Return to Normal Operations.

The 911 Center provides a valuable service for the residents and visitors of Sacramento. During a large-scale disaster, the 911 Center's operations could be even more vital to the City

⁴ NENA-INF-017.3-2018 NENA Communications Center/PSAP Disaster and Contingency Plans Model Recommendation. National Emergency Number Association (NENA), 2018, https://cdn.ymaws.com/www.nena.org/resource/resmgr/standards/nena-inf-017.3-2018 disaster.pdf.

and its residents. A comprehensive, current, and effective Emergency Action Plan that incorporates elements from NENA's model guidance would help to ensure the 911 Center continues to operate when the public needs them the most.

RECOMMENDATIONS

We recommend the Police Department work with the Office of Emergency Services and Risk Management to:

- 8. Develop a current, comprehensive, and effective Emergency Action Plan.
- 9. Consider modeling the emergency action plan after the NENA Communications Center/PSAP Disaster and Contingency Plans Model.

The 911 Center Has Not Been Identified As "Critical" Infrastructure

Reducing risk to, and vulnerability of, the community by protecting critical facilities and minimizing the interruption of essential infrastructure and services is a component of Sacramento County's Local Hazard Mitigation Plan (LHMP), and restoring critical infrastructure during and after an emergency is a specific function of the City's Emergency Operations Plan. Despite PSAPs being federally recognized as critical infrastructure, Sacramento's 911 Center was not identified as a critical facility on Sacramento County's *Critical Facilities Inventory* list released in December 2016.

Including the 911 Center on the County's LHMP could further help protect it from natural hazards and other disasters and minimize the interruption of 911 services. Failing to identify the 911 Center as a critical facility in local emergency planning could result in the 911 Center not receiving priority attention for threat mitigation and disaster recovery efforts which, in turn, may result in the loss of 911 services or a delay in restoring those services during and after an emergency.

RECOMMENDATION

We recommend the Police Department work with the Office of Emergency Services to:

10. Establish the 911 Center as a Critical Facility on Sacramento County's Local Hazard Mitigation Plan.

Perform Succession Planning to Minimize the Impact on the 911 Center When Key Personnel Separate from City Employment

Continuity in leadership provides confidence and stability in operations. Thoughtful and deliberate succession planning can help to reduce the impact to 911 Center operations when key personnel separate from City employment. The 911 Center has a limited number of

management-level employees, which creates the risk that if one of these key positions are vacated, there may not be sufficiently skilled staff available to fill the gap.

In 2018, NENA published a *Succession Planning Information Document*⁵ which provides PSAP's with guidance on how to plan for changes in critical positions before the need arises. NENA's guidance states that:

"Historically, Disaster Planning for the PSAP has focused on equipment and infrastructure. While this approach is not misguided, it ignores the most important asset, the professionals who make the system work. This document will evaluate key positions and functions within the PSAP in the same manner as Contingency Plans evaluate key components. By proactively planning for key individuals to leave, for any reason, PSAP Administrators can improve overall system performance and reduce issues caused by personnel change and departure."

According to NENA, succession planning is a long-term commitment which continually requires management support in order to be successful. Part of this process requires identifying multiple positions or candidates that could begin developing the skills necessary to assume the responsibilities of higher-level positions, should the need arise. However, NENA cautions that this should be done thoughtfully, to avoid the appearance of favoritism or entitlement.

"Succession planning is essential to identify and develop staff with the potential to fill critical roles before the need arises."

Source: National Emergency Number Association (NENA).

The 911 Center's continuous operation is vital to the safety and welfare of City residents and visitors. Leadership changes have the potential to cause morale issues, loss of knowledge about historical operations, and loss of credibility. With very few individuals in high-level leadership positions in the 911 Center, we recommend the Police Department review the center's operations to identify critical positions that would adversely affect the 911 Center's operations if they were vacated and develop succession plans for those positions.

⁵ NENA Succession Planning Information Document. National Emergency Number Association (NENA), 2018, https://cdn.ymaws.com/www.nena.org/resource/resmgr/standards/NENA-INF-010.2-2018 Successi.pdf.

RECOMMENDATION

We recommend the Police Department:

11. Develop and implement a succession plan that will reduce the impact on the 911 Center when key personnel separate from City employment.

MEMORANDUM

TO: Jorge Oseguera, City Auditor

FROM: Debbie Grady, Public Safety Communications Manager

DATE: August 28, 2019

RE: Audit of the 911 Emergency Communications Center

This communication is in response to the City Auditor's Report #2019-05

- The Police Department acknowledges receipt and concurs with the findings and recommendations from the City Auditor's report.
- I would like to take this opportunity to thank the City Auditor and staff for their recommendations and for their efforts in identifying areas for improvement.
- Below please find the Police Department's response to the audit recommendations.

1. Continue to monitor call volume metrics to ensure State-mandated PSAP metrics are achieved.

Response

The Police Department will continue to collaborate with the City Manager's Analyst in providing monthly call statistics and performance measures. Additionally, call performance is reviewed on a daily basis by the Comm Center leadership team.

2. Consider improving the supervisor-to-dispatcher ratio to provide better supervisory coverage.

Response

The Police Department will be requesting to increase the supervisor positions by two. This will allow two supervisors to be on the floor for 20 hours, instead of the current 18. When one supervisor is working, QA is not completed, floor staff are not consistently monitored and during critical events tasks or department notifications can be significantly delayed.

3. Continue evaluating staffing needs to meet anticipate growth in call volume.

Response

With data showing call volume increases in every category and forecasted to continue, floor staff increases should be made to the 2021 budget process. We also assume with new housing starts as the housing becomes occupied, additional calls for service to the Police Department will be generated.

4. Develop a process to prevent multiple training officer codes from being applied to one employee at the same time.

Response

This function resides with the City's Payroll Division, which will work to put a system check in place to prevent multiple training officer codes from being applied.

5. Develop a process to prevent duplicate incentive codes from being applied to one employee at the same time.

Response

This function resides with the City's Payroll Division, which will work to put a system check in place to prevent duplicate incentive codes from being applied.

6. Bring the Uniform Allowance for Supervising Dispatchers into alignment with the labor agreement.

Response

Payroll has already corrected this. Payroll should continue to monitor changes with the labor agreements and make appropriate adjustments.

7. Develop and document a continuous quality assurance program based on industry standards that includes reviewing a percentage of all calls and incorporates an evaluator calibration process.

Response

Upon increase of the supervisor staffing, the communications center can expand the current QA system to ensure best practices are followed. Currently the communications center does not have adequate supervisor staffing to meet the suggested call review volume.

8. Develop a current, comprehensive, and effective Emergency Action Plan.

Response

This is underway. The communications center is expecting to test the plan in November when a planned power outage is initiated. The planned power outage will result in a planned relocation of the dispatch center to our backup center and will simulate an evacuation and operations off-site.

9. Consider modeling the emergency action plan after the NENA Communications Center/PSAP Disaster and Contingency Plans Model,

Response

The communications center is using NENA, APCO and our City OES division to update our plan.

10. Establish the 911 Center as a Critical Facility on Sacramento County's Local Hazard Mitigation Plan.

Response

This has partially been completed. We are confident our current City OES will ensure the 911 Center is included in the County's Plan.

11. Develop and implement a succession plan that will reduce the impact on the 911 Center when key personnel separate from City employment.

Response

In addition to the supervisor increase, an additional Supervising Dispatcher is needed to accomplish robust succession planning. Currently, the two Supervising Dispatchers (first line managers) are both within 2 years of retirement. Adding a third now, would develop a floor supervisor into a management position before the upcoming retirements.