CITYGATE ASSOCIATES, LLC
FIRE & EMERGENCY SERVICES

SAN DIEGO FIRE-RESCUE DEPARTMENT

METRO ZONE EMERGENCY COMMAND AND DATA CENTER STUDY

MARCH 1, 2017

CITYGATE ASSOCIATES, LLC

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TABLE OF CONTENTS

<u>**Table of Tables**</u>

<u>**Table of Figures**</u>

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SECTION 1—EXECUTIVE SUMMARY

1.1 INTRODUCTION

The City of San Diego Fire-Rescue Department (Fire-Rescue) engaged Citygate Associates, LLC to study and assess its Metro Zone Emergency Command and Data Center (ECDC) functions and facilities as they relate to performance and readiness, when compared to best practices within the industry. A second focus of this analysis is to determine the advantages and challenges of merging the ECDC with like agencies within San Diego County providing the same services to public safety agencies.

Since this project began in the spring of 2016, Fire-Rescue has committed both personnel and financial resources to bring about changes to the ECDC as long-term issues have been identified. Citygate wishes to recognize and commend management for proactively addressing pressing needs in a forthright manner.

This report is intended to provide management with information needed to address ECDC issues, both discovered and already known, logically and effectively. Additionally, this report is intended to outline the feasibility of how and why a future co-location and/or merger with others may assist Fire-Rescue in accomplishing its ECDC mission more cost-effectively.

1.2 KEY FINDINGS AND RECOMMENDATIONS REGARDING THE CURRENT ECDC

Throughout this report, Citygate makes key findings, and, where appropriate, specific action item recommendations. Overall, there are 12 key findings and 15 specific action item recommendations. Below, Citygate lists all findings and recommendations that relate to our review of the ECDC's functions and facilities. Additional findings and recommendations that relate to our assessment of merging the ECDC with like agencies is presented in Section 1.4. The finding and recommendation numbers refer to the sequential numbers as these are presented in Sections 3 through 7 of this report.

Finding #1: The staffing minimum of six to nine dispatchers on the dispatch floor is insufficient by any reasonable calculation to handle the incoming calls during expected peak hours and also provide adequate staffing for unplanned "surges" in call volume.

Finding #2: The ECDC has not formally adopted any performance targets for the dispatch process, other than those relating to Emergency Medical Dispatch procedures as required by the certification organization the International Academies of Emergency Dispatch (IAED).

Finding #3: The Fire Dispatch Supervisors are also responsible to answer incoming phone calls as the fourth level of backup, which removes their ability to provide supervision to the floor at various times.

Finding #4: The current ECDC facility and its security practices do not fully meet the criteria found in National Fire Protection Association (NFPA) Standard 1221 (2016 edition) with regard to security.

Finding #5: The dispatch floor does not have enough space available to add sufficient positions to handle current surge capacity. The second floor cannot be modified to handle additional consoles without displacing personnel and/or needed meeting room resources.

Finding #6: The current facility has insufficient capacity to accommodate expected growth in annual calls over the next three years by 2020. It is estimated that with current expected growth, all current consoles will be staffed on a regular basis within two years leaving no space to handle surge capacity by 2019.

Finding #7: The ECDC does not have functional access to certain Very High Frequency (VHF) radio channels that are designed to be used for regional emergencies by the agencies that contract for dispatch services, in addition to Fire-Rescue.

Finding #8: Currently, the ECDC does not have an agreement with a staffed facility that can immediately act as backup in the event that the daily functions of the ECDC become disrupted and the facility and systems unusable, as identified in NFPA Standard 1221.

Finding #9: Fire-Rescue does not regularly receive reports from the Primary Public Safety Answering Points (PSAPs) identifying the call transfer time involved in sending a caller from the Primary to the Secondary PSAP.

Recommendation #1: Citygate recommends that Fire-Rescue should research, create, and adopt a "guiding statement" specifically for the operation of the ECDC that clearly states the mission and vision for the center.

Recommendation #2: The ECDC should adopt performance measurements applicable to all call processing steps and fire unit dispatching transactions. These goals should be in accordance with the National Fire Protection Association (NFPA), International Academies of Emergency Dispatch (IEAD), Association of Public-Safety Communications Officers

International (APCO), National Emergency Number Association (NENA) and other organizations.

Recommendation #3: Based upon the call handling performance goals adopted, Fire-Rescue should strive to constantly staff the ECDC on all shifts with enough personnel to, at a minimum, effectively handle the expected call loading levels in addition to having enough capacity to accommodate surges.

Recommendation #4: Fire-Rescue should adopt policies that guide ECDC personnel to, unless facing extreme cases, limit the need for a Dispatch Supervisor to perform call taking duties, in compliance with NFPA Standard 1221, Section 7.3.4.2.

Recommendation #5: A special task force (or other similar instrument) should be formed, made up of representatives of leadership, mid-level managers in the ECDC, and labor to look at adopting realistic "Minimum, Mandated, and Return for Duty" requirements that would support the effective deployment of personnel to achieve the call processing performance goals and efficiently attend to all functions on all shifts, at all times. In addition, it is recommended that the task force review current requirements for Communications Training Officers and those who qualify for Out-of-Class Assignments (OCA) and the factors limiting participation.

Recommendation #6: It is highly recommended that ECDC personnel complete the International Association of Public-Safety Officials Project RETAINS toolkit to determine appropriate staffing levels and vacancy rates for personnel to assess and determine the average annual vacancy rate and hiring needs for the ECDC.

Recommendation #7: Fire-Rescue should take steps in the near term to increase the security of its existing ECDC facility to comply with NFPA Standard 1221. At no time should an unauthorized person be allowed access to any area but the reception desk.

Recommendation #8: Citygate recommends that Fire-Rescue begin a space needs analysis immediately for its own needs as determined by the information gathered on staffing the ECDC to appropriate levels based upon adopted performance criteria. It should then fully research all advantages and costs involved in retrofitting the existing facility,

modifying another existing building to meet current NFPA standards, or constructing a purpose-built replacement facility.

Recommendation #9: The ECDC should pursue the opportunity to allow a secure connection at each call taking and dispatch console for access to the internet, a valuable tool in determining locations by common name, latitude and longitude, or slang or uncommon place names.

Recommendation #10: The ECDC should investigate with the City's Wireless Services Division the opportunities to bring access and control of all of the existing regional Very High Frequency (VHF) mutual aid radio channels into the radio consoles at the ECDC.

Recommendation #11: Fire-Rescue should enter into discussions with either CAL FIRE or the North County Dispatch JPA, to develop an agreement of mutual support as alternative Communications Centers as required by NFPA Standard 1221.

Recommendation #12: The ECDC should immediately embark upon a project to create, document, train, and deploy an ECDC-specific "Comprehensive Emergency Management Plan" or CEMP, that serves as the detailed document that provides guidance to all ECDC personnel as to their roles and responsibilities in the event of a partial or total systems/facility outage and need to relocate as required by NFPA Standard 1221. Such a plan must become a part of the City's Continuity of Operations Plan, and be practiced regularly to become effective when needed.

Recommendation #13: Fire-Rescue should work with all of the Primary PSAP centers that forward or transfer emergency calls to the ECDC to develop an adequate reporting format to capture the data elements of each transfer, according to the performance requirements found in NFPA Standard 1221, Section 12.5.2, and determine a schedule for periodic reporting of transfer data.

San Diego Fire-Rescue has options to resolve its Metro Zone ECDC issues, which are primarily related to near term physical building capacity. The ECDC's management and support staff continues to expand to meet its needs. While some dispatchers are being hired, as described in this study, the building runs out of additional dispatch console space by 2019—which, being only two years away, is not a long time for a large government agency to site, fund, design and construct or lease a capital facility.

1.3 METRO ZONE ECDC MULTI-AGENCY MERGER REVIEW

Government agencies have sought cost control and efficiency of services long before the last national recession. The Joint Powers Authority (JPA) law in California is decades old, and there are many fire service dispatch JPAs in California. Common sense suggests that even large units of local government struggle with the costs to provide redundant, reliable services. Safe minimum levels of operating personnel, management overhead, and technology expenses are fixed, and thus can serve a larger customer demand on a regional footprint at the same cost.

To determine an agency's ideal size, appropriate staffing of divisions and functions, and the most effective use of service providers, a high-level agency review should first be performed. Such a review assesses the scope of an agency's services and requisite management and staffing configuration, technology systems and services, and facility size.

Most individual agencies, if they are healthy, typically have the needed number of line personnel and, since those positions are typically 80-90 percent of an agency's budget, a merger that cannot reduce line staff does not reduce costs immediately. Merged agencies may be able to gain cost control and future efficiencies in management team and logistical support costs, but these modest changes do not always drive changing local control into a larger partnership.

Regarding service delivery, it is important to assess whether a merged dispatch JPA may be too large or unwieldy. San Diego Fire-Rescue in Fiscal Year (FY) 2014/15, using 44.44 personnel, provided service to its 51 stations, responding to 142,288 incidents, not including dispatch contracts for four other fire departments. As a comparison to a larger agency, the County of Los Angeles Fire Department in 2015 dispatched 171 fire stations to 329,119 incidents from one command dispatch center employing 97 dispatchers. Los Angeles City, the Orange County Fire Authority, the Sacramento Regional Fire Communications JPA, and the City/County of San Francisco all operate single fire dispatch operations from one center.

The strengths and opportunities that exist with a combined JPA operation are identified below:

◆ Single technology platform with on- and off-site redundancies.

◆ Single facility meeting California Essential Facility Act and National Fire Protection Association (NFPA) standards for communications centers.

◆ Buildings with adequate space for offices, training, meetings, and future growth potential.

◆ Space for a command center / forward Emergency Operations Center for sustained major emergencies.

◆ Increased ability to recruit, train properly, and retain qualified dispatchers with an agency large enough to provide a career ladder.

◆ Field Area Operations supervision with qualified fire command officers.

◆ Succession planning and redundant staff for critically needed, specialized positions.

◆ Costs of operation spread over a large base where economic uncertainty can be smoothed over a variety of agencies and revenue sources.

◆ Assurance for the subscribers that a critical personnel, technology, or departing subscriber loss will not unreasonably disrupt quality operations.

◆ Enhanced ability to plan for and implement advanced technical solutions as needed.

1.4   KEY FINDINGS AND RECOMMENDATIONS REGARDING CO-LOCATION AND/OR MERGER

Below, Citygate lists our findings and recommendations that relate to our assessment of merging the ECDC with like agencies.

Finding #10:   Should Fire-Rescue consider any merger opportunity that would involve a new single employer, there would need to be considerable research performed on how to align base compensation, health insurance, and pension costs between the two employer systems.

Finding #11:   Given the personnel cost differences between the City of San Diego and the suburban agencies, it will take time and attention to merge to one employment structure and these issues could well distract or even stop a building co-location effort.

Finding #12:   Given the growing space pressures on the ECDC, Citygate believes San Diego does not have the typical, "do nothing" option left. Fire-Rescue and City Hall have to accept the limited term of beneficial use left in the facility and make solving the issue a top public safety priority.

Recommendation #14:   Based on our work in this study, as a first step, Citygate believes San Diego, the North County Dispatch JPA, and the County of San Diego Fire Authority with CAL FIRE should all explore a two- or three-way co-location option. Preferably, the solution results in a new building, meeting standards, that can be a public safety communications hub for the region lasting upwards of 50 years, at least as far as the chosen site is concerned.

Recommendation #15: If a co-location study does not readily present a solution, Citygate recommends the City of San Diego Fire-Rescue Department pursue prompt replacement of the Communications Center building, at a different site that can be operational by 2020.

1.5   CONCLUDING MERGER OPINIONS

There are two main reasons for a dispatch co-location or full merger given the scope of services provided: (1) immediately reducing costs, and/or (2) increasing strength and resilience against unknowns in the future by becoming larger. With the latter reason, there are eventually cost *increase* containments due to efficiencies of scale.

As Citygate found, there are pay and benefit differences between at least Fire-Rescue and North County Dispatch JPA. Other agencies have found that mergers are incentivized when major decisions have to be made, such as large capital or facility purchases or executive management replacements due to attrition.

Citygate does not find these issues impossible to overcome, but a quick full merger will not be easy and will not produce major short-term economic savings in personnel expenses. Long term, we believe a full merger would provide strength in numbers by spreading personnel costs, retention, staffing challenges, and capital costs against a much larger subscriber base.

A replacement ECDC building, with or without a co-location partner agency, could be sized for very long-term buildout, with unused space initially leased to other compatible government agencies, whose lease payments would offset part of the construction debt costs. Some of the space in the new building could be ready-to-operate backup consoles and systems for other centers not immediately in the co-location operation.

In a co-location venture, two or more agencies could co-locate while keeping personnel, management, and even some technology needs separate. Over time, personnel costs permitting a single employer JPA could emerge, but not be the immediate goal. The JPA could start to directly employ some support and analyst positions if so desired as new hires are needed.

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SECTION 2—PROJECT PURPOSE AND BACKGROUND

2.1   STUDY PURPOSE

The San Diego Fire-Rescue Department manages and operates a Secondary Public Safety Answering Point (PSAP) in an agency-owned facility. This facility is known internally as the Emergency Command and Data Center (ECDC). This type of center is commonly referred to by the public, press, and other public safety agencies as either a "Dispatch Center" or "Communications Center."

The Fire Chief and his Executive Team commissioned Citygate to conduct a complete and objective independent review of the performance of the ECDC.

The goal of the study is to provide the Fire Chief and the Executive Team with: (1) a gap analysis of the ECDC's performance when compared with other major metropolitan centers; and (2) improvements the ECDC needs to make to continue to provide services. In addition, Citygate has been asked to review the subject of a merged operation with one or more of the other fire/EMS dispatch centers within San Diego County at a high conceptual level.

Over the last 20 years, the fire service in San Diego County has taken great steps to increase the coordination between the five larger fire/EMS dispatch centers. There have been four studies completed on the subject of the benefits and issues of merged dispatch centers in San Diego County, which includes two performed by Citygate. Within the past ten years, efforts have been made to enrich and deepen the cooperative efforts between these five agencies, far beyond what is considered the "industry standard" for public safety communications centers nationwide. From sharing computer-aided dispatch (CAD) resources, to creating and deploying operational plans on mutual-threat areas, personnel from these agencies consistently work together to better serve the customers. Additionally, they have cooperated on joint training and, at times, "loaned" employees between centers to cover short-term shortages.

2.2   OUR RESEARCH PROCESS

Our Communications Center study for Fire-Rescue has reviewed conditions of and opportunities for the agency relating to the future needs of its facilities, infrastructure, and systems. The Citygate Team used focused listening and documentation review and on-site observation sessions, as necessary, to substantiate needed updates and identify the opportunities for Fire-Rescue. Our team developed a list of suggestions, including details on the challenges and advantages of each as Fire-Rescue looks toward the future.

The specific areas of concern to Fire-Rescue are:

◆   Future technology needs

◆ Future needs of physical plant, both separately and merged with other agencies

◆ Advantages of improving and strengthening processes and agreements

◆ Disadvantages of cooperative agreements

◆ Merger conceptual cost issues

◆ Political realities of a merger scenario.

2.3 USE OF BEST PRACTICES AND STANDARDS AS APPLICABLE

Citygate is well versed in the operations of public safety dispatch center operations. We have participated in the formation, operation, evaluation, and dissolution of these centers, some standalone, and some in JPAs of all types in California. Additionally, many of our consultants have rich histories prior to working for Citygate as practitioners in not only the fire service, but also in communications, dispatch, finance, and human resources fields. Citygate representatives remain in contact with clients that either have been involved with dispatch centers, or continue to operate dispatch centers, and routinely receive feedback on how they are performing, or the net effects of changes up to and including mergers and dissolutions.

Citygate consultants continue to be members of various nationwide and international organizations that set standards and practices in areas relevant to the operation of fire and EMS dispatch functions, such as the National Fire Protection Association, Association of Public Safety Communications Officers, National Emergency Number Association, and others. We understand how national standards can be applied and measured.

SECTION 3—METRO ZONE EMERGENCY COMMAND AND DATA CENTER

3.1 OVERVIEW

Fire and EMS agencies strategically rely upon a modern and functional dispatch facility. Across North America there exist two main formats for this function: a Command Center and a Communications Center. The principle difference is the presence of a fire officer in a Command Center who provides advice and insight on emergent events coming through the center, along with decision-making authority during large, multiple or regional events in the areas of resource control and technical advice. A Command Center, along with dispatching emergency responses to occurring events, is responsible for maintaining uncommitted resource levels for additional events that *may* occur.

A Communications Center usually has the same level of readiness to dispatch fire and EMS resources to one or multiple incidents; however, a fire officer is not present in the center. A Communications Center, by design, pushes certain decision-making responsibilities out to fire officers in the field. Many Communications Centers have procedures in place to bring a fire officer into the center when needed, and, in essence, transform the center into a Command Center. In San Diego County, only San Diego's ECDC and CAL FIRE/San Diego County Fire Authority's Interagency Command Center operate 24/7 as Command Centers.

Within the City of San Diego and the surrounding cities that contract with Fire-Rescue for dispatching services, the Primary Public Safety Answering Points (PSAPs) are the law enforcement agency dispatch facilities. Each of these law enforcement agencies (San Diego, Chula Vista, Coronado, National City, San Diego County Sheriff's Department (Poway and Imperial Beach), San Diego Harbor Police, and California Highway Patrol) receive the first call from the public (if dialing 9-1-1), then in-turn transfer the call to the ECDC for interrogation and processing the request for service. Each of these agencies operates modern facilities with up-to-date 9-1-1 telephone systems. Currently the only electronic data connection the ECDC has with any of the Primary PSAPs is with the San Diego Harbor Police through the Regional CAD Interoperability Project (RCIP). Without this type of connection the transfer of any information to voice phone calls is limited or information must be transferred through radio only. A telephone call from a 10-digit line to the ECDC by the public or a cooperating agency is recorded; however, location data from the caller is not available.

The ECDC maintains certification through the International Academies of Emergency Dispatch as an Emergency Medical Dispatch facility, providing callers with both medical priority dispatch triage and emergency medical pre-arrival instructions when necessary.

3.2   METRO ZONE ECDC SERVICES DESCRIPTION

San Diego's ECDC is very much like most other major urban fire/EMS dispatch centers in North America, which are created and funded to receive a request for assistance from the public and then send the closest, most appropriate resource to investigate and mitigate the problem. This may seem like an over-simplification once all facets of the operation are understood as described in this report. However, this remains the basic mission of such facilities. It becomes more complex when issues involving staffing, technology, infrastructure, and fiscal limitations are considered.

Dispatch operations require a number of trained employees to staff the center 24/7/365, and are increasingly dependent upon expensive technology to locate callers and incidents, and assign and track resources in the field until the emergency is abated. Given costs associated with technology, operation of a secure building, and personnel, the sharing of a fire and EMS dispatching burden is increasingly attractive to local and regional governments. The City of San Diego has recognized this opportunity, and has provided fire/EMS dispatching services under contract for a number of years to the following entities:

- ◆ City of Chula Vista

- ◆ City of Coronado

- ◆ City of Imperial Beach

- ◆ City of National City

- ◆ City of Poway

While there are very few legislated performance and technology requirements for fire/EMS dispatch centers within California and most other states, there are many examples of best practices along with recognized national standards such as National Fire Protection Association's Standard 1221. There are no restrictions against an agency developing and adopting reasonable performance standards and measurements for an emergency dispatch center. To that point, a measured and reported "performance matrix" is seen within the industry as the premier tool for local and regional governments to analyze how a dispatch center is performing in relation to the expectations of the public it serves.

The State of California does have construction and survivability requirements for "essential facilities" that must survive earthquakes and other natural disasters to serve the public. The ECDC is considered such an essential facility. Additionally, given the increased homeland defense standards after 9/11, the center must be secure from external threats that could stop its essential functions.

3.3   EXISTING METRO ZONE ECDC DEMOGRAPHICS

The San Diego Fire Department, as it was known from its earliest beginnings in 1889, has continuously evolved its services over time. The Department was renamed as San Diego Fire-Rescue Department in 2008 to better reflect the totality of the services it provides.

The ECDC currently provides modern dispatch services to not only Fire-Rescue, it also provides services under contract to the Fire Departments of the Cities of Chula Vista, Coronado, Imperial Beach, National City, and Poway. The ECDC is the busiest fire dispatch center in San Diego County. It also serves as the fire resources coordination point for the Metro Zone, one of four mutual aid zones in San Diego County.

The following table reflects the total number of responses dispatched by the ECDC for calendar year 2015:

Table 1—Incidents Handled in ECDC by Agency (2015)

Agency	Number of Incidents
San Diego FD	148,711
Chula Vista FD	19,626
Coronado FD	*
Imperial Beach FD	2,128
National City FD	7,202
Poway FD	3,581
Others	11,298
Total	**192,546**

*NOTE: Coronado began contracting dispatching services from ECDC in July of 2016.

3.4   METRO ZONE ECDC HISTORY

Prior to the purpose-built dispatch facility on Kearny Villa Road, the dispatch function was in a reinforced basement facility below the Headquarters and Fire Station at 1222 First Avenue, downtown San Diego for 20 years. It was in this facility that San Diego's first computer-aided dispatch (CAD) system was deployed and utilized, along with an expanded Very High Frequency (VHF) radio system.

The current ECDC building (depicted in the following graphic) was constructed 26 years ago in 1990. This building utilizes a total of 11,563 square feet in a two-story arrangement. The external footprint of this building has not changed since it was built. This facility sits within 50 feet of

two major arterial roadways and within 100 feet of Highway 163. The rate of increase in incident demand, primarily EMS, would have been impossible to predict in 1990.

Figure 1—Metro Zone ECDC – 3750 Kearny Villa Rd, San Diego

In 2002 it was decided that the ECDC should be modified into a civilianized operation, moving the fire officers out into other positions. A civilian manager was assigned as the administrator for the communications center. Beginning in 2008, after large, destructive fires in the region in both 2003 and 2007, efforts were made to return fire officers be available 24/7 within the ECDC to have subject matter experts available for command decisions in dispatch operations at all times.

Early in the first half of 2016, the Fire Chief sought to make changes to the way the ECDC was managed and performing. The civilian program manager was replaced by a Deputy Chief in charge of operations. In addition, the Fire Chief changed the name of the facility to the Emergency Command and Data Center, more reflective of its current responsibilities and assignment.

3.5   CURRENT SITUATION

The ECDC has been operating from the same two-story facility since 1991. There have been small interior modifications from its original design to accommodate functional changes; however, the second floor remains virtually the same. The center portion of this level serves as the dispatch floor, from where all call takers, dispatchers, and dispatch supervisors work. The dispatch floor is then surrounded by the reception area and offices for some of the support staff, including: the ECDC Deputy Chief; two Command Battalion Chiefs assigned to the ECDC; the

Fire Dispatch Administrator; the Training Coordinator; the Quality Assurance (QA) Coordinator; and three of the nine Information Systems Analysts. There is also a room just off the dispatch floor that is used for pre-shift meetings, new employee training, ECDC-centric meetings, Department Operations Center (DOC) operations (when needed), and serves as somewhat of an "Expanded Dispatch" operation, again when needed. The kitchen and bathrooms are also off of the dispatch floor for convenience.

The first floor of this facility is shared between the ECDC geographic information systems (GIS) staff and the City's current ambulance contractor. The ECDC maintains the computer/communications room on this floor, along with offices utilized by some Information Systems Analysts and those performing the GIS functions. There are also dormitory facilities used by the Fire-Rescue Division or Shift Commanders, who also serve in supervisory roles for the ECDC in absence of the ECDC Command Battalion Chiefs and/or the ECDC Deputy Chief. There is limited storage for the ECDC on the first floor.

The fire dispatch floor has a total of 13 console positions. In addition, there are three positions currently utilized by AMR as Ambulance System Status Controllers (SSC), maintaining coordination of the Advanced Life Support (ALS) ambulances and interfacing with the Basic Life Support (BLS) dispatch center that operates below. There is space available to add just one call taker console to the floor.

Figure 2—Metro Zone ECDC Dispatch Floor Layout (October 2016)
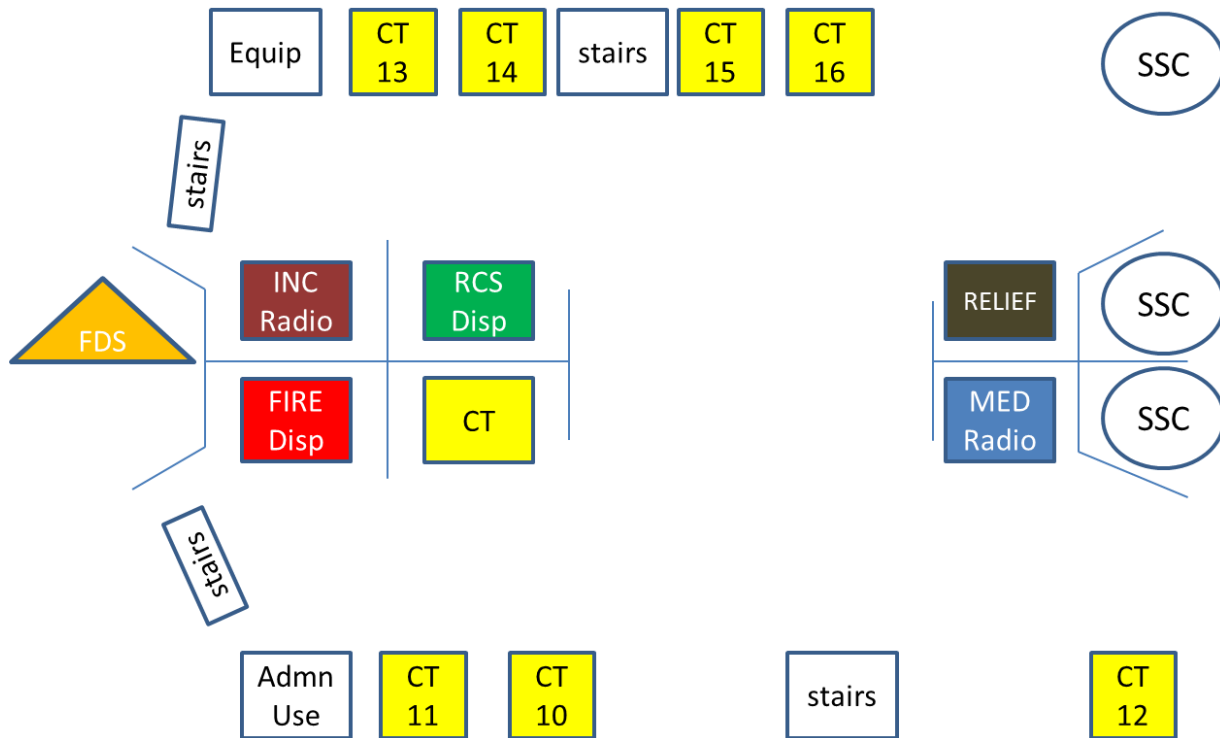
ECDC Legend:

- CT = Call Taker – Phone and CAD only, no radio; first priority CT.
- FDS = Fire Dispatch Supervisor – all functions; fourth priority CT.
- FIRE Disp = Announces all San Diego / Poway (SND/POW) Incidents, directs resources not assigned to an incident. *Does not answer incoming phones.*
- RCS Disp = Announces all Chula Vista, National City, Imperial Beach, and Coronado incidents; may also control incidents assigned to RCS Command and Tacs; third priority CT.
- MED Radio = Interacts with all SND/POW resources assigned to a medical incident. *Does not answer incoming phone calls.*
- INC Radio = Interacts with all SND/POW resources assigned to other than Medical incidents; second priority CT.
- RELIEF = Covers functions during breaks, etc. Full functionality, is second priority in CT when not covering another position.

The physical facility, while showing signs of age and needed maintenance, continues to function as originally designed.

The fire service has seen most departments, large and small, create and adopt mission and/or vision statements along with goals. This has been done as they embrace modern leadership and governance models with the intent bring clarity and focus to the agency and its employee groups alike. Both the City of San Diego and the San Diego Fire-Rescue Department have separate but coordinated mission and goals statements. The ECDC does not have a separate mission or vision identified. Without an accepted and published "vision" given by the leadership as to *how* the

ECDC is going to carry out its part of the agency's goals, confusion and doubt can follow and priorities might not always reflect the leadership directives. A guiding or vision statement can resolve this issue, as all employees can reflect upon it if there is any question about how to move forward. This statement can be particularly useful to ECDC management in planning future projects and expenditures for the agency.

Recommendation #1:	Citygate recommends that Fire-Rescue should research, create, and adopt a "guiding statement" specifically for the operation of the ECDC that clearly states the mission and vision for the center.

3.5.1 Staffing

At present, there are a total of 60 full-time employee positions designated for the ECDC. In addition, four part-time dispatchers also perform dispatch tasks as assigned. The distribution and responsibilities are as follows:

Table 2—Metro Zone ECDC Positions and Responsibilities

Position	Personnel Assigned	Function
Deputy Fire Chief - ECDC	1	Serves as ECDC Manager, reports to Assistant Chief / Business Operations
Battalion Chief	2	Provides daily oversight of ECDC operations
Planning Officer	1	Provides coordination of planning, reporting, and operations
Fire Dispatch Administrator	1	Supervises dispatch operations, the human resources function, and staffing
Emerging Technology Manager	1	Manages new technology, software, and hardware
Fire Dispatch Supervisor	4	Provides supervision of dispatchers and call takers
Training Coordinator	1	Maintains and supervises Training Program
QA Coordinator	1	Maintains and supervises QA/QI for dispatch personnel (provisional)
Emergency Medical Dispatch QA Coordinator	1	Maintains and reports Emergency Medical Dispatch QA
Fire Dispatchers	35	Performs duties as call takers and radio dispatchers
Part-time Dispatchers	4	Supplements Fire Dispatchers as needed
Info Services Analyst IV	1	Serves as Information Systems Manager
Info Services Analyst III	3	Coordinates hardware/mobile services; manages GIS services; and manages data analysis
Info Services Analyst II	6	Provides hardware/mobile services; provides GIS services; provides data analysis
Sr. Drafting Aide	1	Provides GIS Services
Administrative Aide II	1	Provides receptionist/administrative assistance
TOTAL:	64	
CONTRACT POSITIONS		
CGI	1	Provides GIS Services
CAD Manager	1	Contracts with CAD vendor
CAD Systems Engineer	1	Contracts with CAD vendor
CAD Applications Engineer	1	Contracts with CAD vendor

Determining adequate staffing plans for busy metropolitan communications centers becomes a challenge in nearly every locale due to several influences, but primarily economic limitations and the inherent low to high incoming call volumes (business coming into the center). Having sufficient numbers of trained dispatchers and supervisors to handle the highs and lows of the call volume is critical to the successful outcome of each emergency handled. Knowing what the predicted call volume is likely to be at any given hour on any given day becomes extremely important and can only be calculated when an agency fully understands the historical information on calls dispatched over time, along with accepting an established goal of what optimum performance numbers should be.

Utilizing its 39 Dispatchers and four Dispatch Supervisors, the ECDC operates four 12-hour shifts. This provides ten Dispatchers and one Dispatch Supervisor on each shift. Should additional staffing be required, the practice has been to call back off-duty personnel, or request the Training Coordinator, QA Coordinator, or the Fire Dispatch Administrator to come in.

While there is no national or regional standard for the number of dispatch consoles needed for any center, a widely used "rule-of-thumb" is often applied in the absence of a detailed analysis of call volume: one console per 10,000 incidents per year. Utilizing this figure, it would call for the ECDC to have at least 19 consoles in place and ready to be used in the busiest periods. Currently, the dispatch floor is configured to accommodate a total of only 16 consoles, of which two of those are exclusively dedicated to the System Status Controller function by the City's ALS ambulance contractor. This leaves the ECDC short of five equipped consoles using the 1:10,000 rule.

ECDC management conveyed to Citygate their concerns over current staffing levels and the absence of historical information on how this level was derived. When this study began, there were instances in which on-duty staffing in the dispatch center was allowed to be reduced to seven persons (from a maximum scheduled staffing of 11 persons, including the Fire Dispatch Supervisor) to fill the baseline console positions needed. This was done to accommodate absences for illness, training, and vacation time used, including periodic unfilled openings. The result was that the ECDC saw excessive wait times while some callers were in queue awaiting an available call taker.

To understand *how many of these consoles* need to be staffed, an in-depth assessment normally is conducted to determine the peak and slow periods, by hours and days of the week. The leadership of the ECDC, after consulting with Citygate, has started a separate study using a product published by a national dispatch center best practice advisory organization called "Project RETAINS" to determine the appropriate number of dispatchers to have at the consoles during expected peak periods.

Immediate-need staffing issues were brought to the attention of management by Citygate, and efforts were redoubled to hire for vacant dispatcher positions. Management and labor

representatives have been meeting to work out acceptable staffing levels within the center, along with exploring alternative schedules and changes to the current hiring and training practices. More work needs to be done in this area to secure a long-term solution to the staffing issues such as training time, constant staffing level for each shift and function in the center, and other issues that affect performance of the dispatchers.

ECDC staff currently monitors call volume and staffing levels regularly and reports metrics to the ECDC Deputy Chief. The "9-1-1 call in queue" times are also captured. However, Citygate found that when one or more incoming calls are in queue for a long duration (any call held in queue for 40 seconds or longer), there is not a standardized investigation at present to determine how the number of active consoles (i.e., the number of dispatchers at consoles performing call taking duties), the number of incoming calls experienced, and the type of calls reported (i.e., Emergency Medical Dispatch protocols in process) all combine to create a situation where there are not enough call takers available to answer the next ringing line, and the calls go to queue.

The ECDC employs an Automatic Call Distribution (ACD) device with a visual queue to monitor incoming and ringing lines. On many observed occasions by Citygate, an incoming phone call went unanswered for more than 59 seconds before someone was available to answer it.

To effectively determine the causation of lengthy "call-in-queue" times, a performance standard needs to be put in place to know when the threshold of unacceptable in-queue time is exceeded. NFPA 1221 *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems* in Section 7.4.1 identifies call taking performance thresholds. It states that 95 percent of incoming emergency calls must be answered within 15 seconds, and 99 percent must be answered within 40 seconds. It was observed during this study that with some regularity, during minimum staffing periods, calls could be held in queue in excess of the 40-second threshold.

Finding #1: The staffing minimum of six to nine dispatchers on the dispatch floor is insufficient by any reasonable calculation to handle the incoming calls during expected peak hours and also provide adequate staffing for unplanned "surges" in call volume.

Finding #2: The ECDC has not formally adopted any performance targets for the dispatch process, other than those relating to Emergency Medical Dispatch procedures as required by the certification organization the International Academies of Emergency Dispatch (IAED).

> **Recommendation #2:** The ECDC should adopt performance measurements applicable to all call processing steps and fire unit dispatching transactions. These goals should be in accordance with the National Fire Protection Association (NFPA), International Academies of Emergency Dispatch (IEAD), Association of Public-Safety Communications Officers International (APCO), National Emergency Number Association (NENA) and other organizations.
>
> **Recommendation #3:** Based upon the call handling performance goals adopted, Fire-Rescue should strive to constantly staff the ECDC on all shifts with enough personnel to, at a minimum, effectively handle the expected call loading levels in addition to having enough capacity to accommodate surges.

At present, there are very limited methods and personnel to immediately handle a surge situation when multiple emergency calls are coming into the ECDC. During normal business hours, two persons trained at the Fire Dispatch Supervisor-level (Training and QA/QI positions) can be available to answer additional incoming calls should they be needed (and available), along with the Fire Dispatch Administrator. Should the surge occur after normal business hours, on weekends and on holidays when administrative staff is unavailable, a Fire Dispatch Supervisor must determine that a significant need is present and attempt to contact an off-duty dispatcher to request them to return. This is not always successful, as it can take one to two hours for a dispatcher to receive the message and return to the ECDC prepared to work, as the surge may have already subsided. Due to this situation, the Fire Dispatch Supervisors do *not* often make the decision to "staff up" during a surge event, opting instead to attempt to handle the load with the personnel present.

It should also be noted that on a regular basis, the Dispatch Supervisors become call takers due to an absence of adequate shift staffing, a surge in incoming calls, or both. When this happens, the Dispatch Supervisor can no longer effectively supervise the center to ensure its smooth operation. NFPA Standard 1221, Section 7.3.4.2 allows a Supervisor to provide "short-term" coverage of a vacant position in certain circumstances. However, in the ECDC at minimum staffing the coverage can occur for an entire shift.

The Dispatch Supervisors are also responsible for ancillary tasks, such as scheduling, seat/position and break assignments, security camera observation/control, and technical system/problem entries. Some of these functions are delayed or missed when the Supervisor is

tasked with providing Emergency Medical Dispatch (EMD) instructions or taking other phone calls.

> **Finding #3:**   The Fire Dispatch Supervisors are also responsible to answer incoming phone calls as the fourth level of backup, which removes their ability to provide supervision to the floor at various times.

> **Recommendation #4:**   Fire-Rescue should adopt policies that guide ECDC personnel to, unless facing extreme cases, limit the need for a Dispatch Supervisor to perform call taking duties, in compliance with NFPA Standard 1221, Section 7.3.4.2.

The radio positions within the center can become hectic when call volume is high. Some of these positions still have call taking responsibilities (in second and third queue). They also have the responsibility to monitor several emergency incident and ancillary radio channels.

At least two of the radio positions (Regional Communications System and Incident Radio) are responsible to monitor in excess of five radio talkgroups, all of which may be active simultaneously.

Special care should be taken when any operator is tasked with monitoring a number of radio channels or talkgroups. If mistakes are noted, such as missed conversations, an analysis of tasks should be performed to determine if fewer busy radio channels or talkgroups would have eliminated the opportunity for the mistake.

When illness or injury, vacations, and training produce shortages on the floor, either on-duty personnel are "mandated" to stay over or preferably an off-duty dispatcher agrees to come in for the shift. Current City labor rules only allow a dispatcher to work a total of 16 consecutive hours, so even on a mandated hold-over, it only covers one-third of the vacant shift. There is no provision in the labor agreement for a "force-back" provision to fill open positions.

Recommendation #5:	A special task force (or other similar instrument) should be formed, made up of representatives of leadership, mid-level managers in the ECDC, and labor to look at adopting realistic "Minimum, Mandated, and Return for Duty" requirements that would support the effective deployment of personnel to achieve the call processing performance goals and efficiently attend to all functions on all shifts, at all times. In addition, it is recommended that the task force review current requirements for Communications Training Officers and those who qualify for Out-of-Class Assignments (OCA) and the factors limiting participation.

Fire, EMS, and a number of law enforcement dispatch entities throughout North America have adopted a program designed by the Association of Public-Safety Officials International (APCO) that is intended to assist an agency in determining staffing requirements based on call loading, along with predicting normal hiring and training needs based on historic evidence. This program, called Project RETAINS, is available without cost to a member agency. Once the toolkit is completed, new information should be added periodically throughout the year to determine trends and patterns, and react accordingly.

The ECDC has accessed the Project RETAINS toolkit and begun the complex task of determining staffing levels from the data it currently has. At this time it has not used the toolkit to determine vacancy patterns and trends which affect hiring, training, and staffing.

ECDC staff currently does not have access to all information that would allow an annual prediction of vacancies, based on sick leave use, industrial injury or sickness, and separation from the agency. If this information is obtained and reviewed through the toolkit, staff could then predict, based on historic figures, what the annual vacancy rate would be and hire replacements in time to be trained prior to an extended opening on the dispatch floor.

Recommendation #6:	It is highly recommended that ECDC personnel complete the International Association of Public-Safety Officials Project RETAINS toolkit to determine appropriate staffing levels and vacancy rates for personnel to assess and determine the average annual vacancy rate and hiring needs for the ECDC.

3.5.2   Training

Fire-Rescue has placed a proper importance on the training function within the ECDC. A Fire Dispatch Supervisor-level employee is assigned as the Training Coordinator. This assignment is rotated, with a minimum two-year commitment required. This position is responsible to manage both the training of new recruits and to monitor and design on-going training for legacy personnel, which includes training for Communications Training Officers (CTOs), a certification process for line-level dispatchers to provide oversight and support training of new recruits as they progress from successful dispatch academy processes through console training and eventually release from training to function as fully-trained communications operators.

Of the 39 current fire dispatchers, only seven are currently authorized to act as a Communications Training Liaison, or CTO. This vital added responsibility is required to process and train the trainees. Ideally, the ECDC should have an adequate number of CTOs per shift. Citygate suggests that the ECDC should have a minimum of three CTOs on each shift, as the number of CTOs available to train new recruits becomes a factor in how quickly a new recruit proceeds from classroom to functioning as a call taker without assistance.

During the site visits, Citygate members consistently heard the same background discussion surrounding the reasons more dispatch personnel did not sign up to become or maintain CTO status. The current and previous labor contracts have provisions to "bump" up the CTO's hourly wage by fifty cents per hour when actually training a new recruit. With the amount of training the CTO-candidate must complete prior to certification, this new responsibility is viewed as "not worth it" by some. Not only does the CTO work in tandem with the recruit, but after the shift an evaluation and supporting documentation is required. If a CTO works an entire shift training a new recruit, the net effect is an additional $6.00 for that shift. Often, the CTO is only providing training for half of his/her shift. An insufficient amount of CTOs on each shift produces a bottle-neck effect when the new recruits complete their initial classroom training. When there are not enough CTOs available for training recruits, filling vacancies is challenging. Currently, some veteran dispatchers are asked to train new recruits even if they have not had formal CTO training.

This same hesitation and concern was voiced by employees as it relates to qualifying for OCA status to work as a Fire Dispatch Supervisor. The main concerns being too little opportunity to perform and too little compensation to make the additional job responsibilities worthwhile.

Also, a component of the training responsibility is the Quality Assurance Coordinator. This is also a Fire Dispatch Supervisor-level employee, and on a two-year rotation. The QA/QI process is determined in the criteria designed into the accreditation program under the International Academies of Emergency Dispatch (IAED) program. Fire-Rescue's ECDC is currently certified under this program. As such, the QA Coordinator is charged with maintaining specific regimens of performance review of incidents of emergency medical nature(s). The ECDC must report

outputs from this process to the IAED quarterly to maintain certification. New employees must complete a 30-hour Emergency Medical Dispatcher course as part of the Dispatch Academy, and each dispatcher, supervisor, and the Fire Dispatch Administrator must successfully complete 24 hours of continuing education every two years.

It is imperative that the Training Coordinator and QA Coordinator cooperatively function to support the quality training and on-going education efforts of a functional public safety dispatch center. ECDC staff reports that it takes between 6 and 12 months to fully train a new employee to work at all console positions at the ECDC. This is similar to many other public safety dispatch centers. Knowing this lengthy training time, it may be in the agency's best interest to begin the hiring and training process long before an opening occurs to eliminate the need to either "run short" with a minimum of dispatchers on duty and therefore risk having incoming calls not answered in a timely manner, or experience increases in overtime spending to cover the open positions. Project RETAINS, as described before, can assist in analyzing experienced trends and predicting future needs.

3.5.3 Facilities

The ECDC is just one facility located at 3750 Kearny Villa Road in the Kearny Mesa area of the City of San Diego. All off-site radio facilities are owned, operated, or maintained by the City's Department of Information Technology, Wireless Services Division. Currently there is no fixed location for an alternative site for the ECDC; however, Fire-Rescue maintains an Emergency Communications trailer, capable of performing some of the functionality of the ECDC. Adjacent to the structure is a metal-constructed radio tower approximately 55 feet in height which has an array of radio antennae attached, including Very High (VHF) and Ultra High (UHF) Frequencies, and Microwave appliances.

The ECDC has been maintained to a minimum level of repair and preparedness since its construction. There is evidence of wear and deferred maintenance throughout the building.

The facility has electrical service, water and sewer, and communications pathways such as cable and fiber. Major or critical problems or inferior performance issues with of any of these systems have not been noted. Because of the age of the facility, when systems such as heating, venting, and air conditioning (HVAC) need repair and upgrades, the City reacts accordingly. The building is protected by automatic fire sprinklers, and the computer/communications equipment room is protected by a Halon-type of fire suppression system.

Security to the ECDC is provided by a means of both locked entrances and gates, and closed circuit cameras. During normal business hours, an unauthorized person can enter the second floor by using the unrestricted elevator. At times during the business day, when the receptionist is away from the desk, other office doors are not secured and access to the dispatch floor becomes unrestricted.

Security of a critical facility such as the ECDC should become a priority and secured 24/7/365.

> **Finding #4:** The current ECDC facility and its security practices do not fully meet the criteria found in National Fire Protection Association (NFPA) Standard 1221 (2016 edition) with regard to security.

> **Recommendation #7:** Fire-Rescue should take steps in the near term to increase the security of its existing ECDC facility to comply with NFPA Standard 1221. At no time should an unauthorized person be allowed access to any area but the reception desk.

The current facility design and space available on the dispatch floor limits the addition of new consoles. Any need to add positions will force the agency to either remodel the facility, commit existing offices or rooms to the dispatch function, or search for new alternative facilities. As discussed in Section 3.5.1, using the 1:10,000 ratio for consoles to annual incidents calculation, the ECDC should have access to 19 consoles currently to handle the peak loading imposed by 192,546 incidents in 2015. At current maximum, there are only 14 consoles available for use by the ECDC. This leaves the center with a current five console shortage for handling large surges in incoming calls.

Training and console task deployment/distribution can reduce the number of consoles needed. Because the ECDC has many experienced employees and the division of duties is such that nearly all positions must multi-task (i.e., assume responsibility for call taking *and* radio use), its calendar 2015 experience of 192,546 incidents handled by 14 consoles at most, equates to approximately 13,750 incidents per console.

When analyzing the growth in total incidents handled by the center from 2011 through 2015, there has been an average annual growth of 6.3 percent (low of 4.8 percent to a high of 7.8 percent). If this same rate of increase is applied to the period from 2016 through 2020, by 2020 the ECDC could be handling 261,337 annual incidents. Utilizing the 1:10,000 incidents per console rule, this would indicate the need for 26 consoles, or 12 additional consoles added by the year 2020. Utilizing the ECDC's experience, the new load by 2020 would indicate an additional five consoles needed for a total of 19.

As a comparison, Los Angeles County Fire Department handled 329,119 incidents during 2015 while having 15 dispatchers and two Supervisors on each shift. Its dispatch center is configured

with more than 20 consoles available for surge occasions, in addition to an extensive "expanded dispatch" arrangement. This would equate to 16,456 annual incidents per console.

Finding #5:   The dispatch floor does not have enough space available to add sufficient positions to handle current surge capacity. The second floor cannot be modified to handle additional consoles without displacing personnel and/or needed meeting room resources.

Finding #6:   The current facility has insufficient capacity to accommodate expected growth in annual calls over the next three years by 2020. It is estimated that with current expected growth, all current consoles will be staffed on a regular basis within two years leaving no space to handle surge capacity by 2019.

Recommendation #8:   Citygate recommends that Fire-Rescue begin a space needs analysis immediately for its own needs as determined by the information gathered on staffing the ECDC to appropriate levels based upon adopted performance criteria. It should then fully research all advantages and costs involved in retrofitting the existing facility, modifying another existing building to meet current NFPA standards, or constructing a purpose-built replacement facility.

Part of any facilities assessment should include a review of the functional design of the entire facility. As described before, the ECDC is in a 25-year-old purpose-designed building, which has been internally modified over time to accommodate added personnel and functions. The basic design of the first and second floors now constricts any easily-achieved console and/or office space additions without sacrificing another functional room. Some of the modifications previously made result in reduced effectiveness for current conditions.

3.5.4 Facility and Personnel Operating Issues

The Fire Dispatch Supervisor console position has been moved to a raised floor. A common complaint from the Fire Dispatch Supervisors is that they are now unable to hear the other console positions well, which compromises their ability to supervise.

All positions are required to wear wired headsets when at the consoles. During times of elevated call volume, inter-console communications are accomplished by standing up and speaking directly across consoles as needed, raising the noise level in the room.

Acoustics on the dispatch floor have become an issue for some, as there is a noticeable "din" of bells, radio, and phone conversations during periods of elevated activity. The addition of a large number of "hard surfaced, noise-reflective" surfaces such as consoles, furniture, screens, and office equipment have contributed largely to this increase in noise.

Modern public safety communications centers are being designed for safe and adaptive use, taking into consideration ergonomics, movement by employees, changing environments based upon elevated call handling levels, and concern for adequate acoustics. The use of noise cancelling panels, wall coverings, and soft surfaces are in use now to handle loud environments properly.

ECDC management should research the existing opportunities for console-to-console communications paths, or explore new solutions if existing opportunities are found to be insufficient, for operators to communicate in forms other than speaking across and over other consoles. A common solution should be selected, training provided, and then supervisors should require this solution be used in all cases.

The layout and functionality of each console position makes it difficult for supervisors, dispatchers, and management to determine activity levels without interrupting the person occupying the console position.

There are examples of modern public safety dispatch centers that have deployed systems giving "visual cues" allowing all personnel to observe at a glance the level of activity occurring on the dispatch floor. These systems have been successfully used to mitigate these same issues that the ECDC is currently experiencing.

The ECDC has investigated such a "Boat Light" system which provides visual cues, but as yet the system has not been purchased or installed.

3.5.5 Electronic Systems

As with most modern metropolitan fire/EMS dispatch centers, the ECDC utilizes a complex "system of systems" to provide residents with modern services. These systems—the telephone, CAD, and radio systems—complement each other in that use of the systems can occur at the consoles and function in a similar way. There is also some limited functionality shared between the CAD and telephone systems, sharing information in specific fields, enhancing dispatcher performance and reporting.

Table 3—Metro Zone ECDC Systems in Use

Function	Vendor Name and Version	Date In Service
9-1-1	Airbus VESTA 6.1	2015
Administrative Phones	Cisco VoIP (maintained by ATOS)	2012
CAD	TriTech VisiCAD, version 5.5.25	2014
RMS	Zoll; Firehouse (for contract agencies)	
GIS	VisiCAD map using ARC GIS	
Radio	Motorola 800 MHz Trunked System P25 Compliant*	2017*
Logging Recorder	NICE Systems (redundancy REVCORD in place)	2012
Internet Access	Limited	

* City Radio System planned upgrade to P25 Compliant in 2017

Telephone/9-1-1

The City of San Diego has installed an Airbus VESTA 9-1-1 system and has installed the most current version at this time (v6.1). This system supplies both the Primary PSAP (located at San Diego Police Department) and the Secondary PSAPs (the ECDC and Lifeguard Dispatch). The system is maintained by a third-party vendor under contract.

CAD/RMS

Fire-Rescue operates and maintains a TriTech VisiCAD map-based system, first purchased in 1997. This system has been updated and upgraded to its current 5.5.25 version. Fire-Rescue also has deployed TriTech's mobile application to most field resources, including those operated by its contract agencies. ECDC's CAD is also connected to the County's Regional CAD Interoperabilty Project, a CAD-to-CAD system that connects the fire/EMS CAD systems. This system is designed and operates in a live environment, sharing real time resource status and location, allowing the connected CAD systems to select and dispatch resources without regard for jurisdictions, if allowed. San Diego and its contract agencies enjoy a boundary drop environment with surrounding jurisdictions, allowing for the closest most appropriate resource to be assigned to all emergency responses.

A primary task of the call taker is to identify the location and type of emergency being reported. Within the last 10 years, the area has seen a change in the way emergencies are being reported. Currently, the majority of 9-1-1 calls are made via cellular or mobile phones for fire and medical emergencies. Previously, the majority of calls originated from land-based telephones in which a defined location electronically accompanied the call to the PSAP. With cell phones, regulatory agencies have not kept up with technology and the exact location of the caller cannot always be ascertained unless it is given by the caller. In the event that the caller cannot speak, is

disoriented, or unfamiliar with the exact location, the dispatcher has difficulty in determining the correct location. A common occurrence is an able caller does not know a specific address or cross street, but can reveal he or she is at a convenience store on "A Street" in San Diego.

Many dispatch centers utilize resources on the internet to search for possible locations such as convenience stores, grocery stores, gas stations, and churches.

Current Fire-Rescue rules do not allow direct internet access on CAD devices for security reasons. This restriction creates a problem in that dispatchers cannot easily and quickly access the internet to search and verify location information when it is not forthcoming from a calling party. Dispatchers at times use personal devices while at the console to access the internet for this information, endeavoring to lessen the research time and hasten providing the responding resources with the most accurate information.

Many agencies, including the San Diego Police Department, provide controlled and secure internet access at CAD positions which allows dispatchers and call takers to quickly utilize other means of determining a caller's location information.

> **Recommendation #9:** The ECDC should pursue the opportunity to allow a secure connection at each call taking and dispatch console for access to the internet, a valuable tool in determining locations by common name, latitude and longitude, or slang or uncommon place names.

The newest version of VisiCAD INFORM (v5.7) is an upgrade planned for fourth quarter of 2017. There are many features and enhancements in this version, along with a transition to a mobile client platform that affords the field users a wider selection of appliances.

Fire-Rescue has deployed a Zoll Records Management System (RMS) for its record-keeping needs for incidents. The RMS is fed directly out of CAD without dispatcher intervention. This system is kept up to date via an annual contract with the vendor. In addition to the Zoll system, CAD also reports out via a server to the Firehouse RMS system used by the contract agencies other than Poway. The ECDC and staff have no responsibilities for the Firehouse RMS system, other than to verify that records are transferring from CAD to the Firehouse server.

At this time, the City of San Diego intends to extend an RFP for a new RMS system for Fire-Rescue. No target date for this RFP has been determined. It is possible that when a replacement RMS bid is awarded, the contract agencies would be allowed to also include their agencies in this project.

Radio

The City of San Diego owns and operates a trunked 800 megahertz (MHz) radio system within the City boundaries and surrounding area. The ECDC and field units are equipped with these trunked radios which are capable of interoperability among all City departments and also programmed with the County's Regional Communications System (RCS) 800 MHz trunked fleetmap for County-wide interoperability. The City of San Diego trunked radio system has been modified to be a Federal Communications Commission (FCC) Project 25 compliant, digital trunked network system (P25 IP). The public safety users on this system are not yet operating at a P25 level. The City of San Diego is completing a 700 MHz trunked system at this time, and it is reported that the public safety users will migrate to this new system over the next two years.

In addition, the City maintains VHF radios in all fire apparatus for interoperability in mutual aid situations. The ECDC has within its consoles methods of controlling two of these VHF frequencies; however, there are limitations to these controls. These two VHF frequencies were designed for coverage within the City limits, and therefore may not cover all of the areas for which the contract agencies are responsible. The County of San Diego, through the RCS, maintains other VHF channels which can be used by all fire agencies.

The VHF channels become very important on large or regional emergencies as mutual aid resources from out of San Diego County and those without 800 MHz capabilities become involved. Resource coordination then suffers without direct communications paths.

Finding #7: The ECDC does not have functional access to certain Very High Frequency (VHF) radio channels that are designed to be used for regional emergencies by the agencies that contract for dispatch services, in addition to Fire-Rescue.

Recommendation #10: The ECDC should investigate with the City's Wireless Services Division the opportunities to bring access and control of all of the existing regional Very High Frequency (VHF) mutual aid radio channels into the radio consoles at the ECDC.

Logging Recorder

NFPA Standard 1221, Section 7.6 and other best practices indicate that public safety dispatch centers shall operate appropriate logging recorders to capture telephone calls and radio traffic

within their centers. Fire-Rescue achieves this functionality by deploying a NICE system of digital recording. All incoming and outgoing telephone lines and telephone answering points within the dispatch floor are recorded. All radio consoles are also recorded for incoming and outgoing radio functions on the selected channels. The radio system itself has recording capabilities which occur at the City's Wireless Services Division for all dispatch, command, and specific tactical talkgroups. These radio system recordings can be requested by the Department for investigative and training purposes. Each of the telephone and radio consoles also have an immediate playback feature which allows the operators and supervisors to replay recent recordings for verification purposes. The NICE system is maintained under an annual contract and is upgraded per the contract.

In addition to the NICE system, the previous logging recorder system, referred to as the brand "REVCORD," is still in place and acts as a redundant recorder to the NICE system, in addition to being the primary logging recorder for the Lifeguard Dispatch Center. This system is not maintained under any contract and is therefore susceptible to an uncontrolled outage.

3.5.6 Electronic System Support

Support for all of these systems is very complex also. Some support is provided by ECDC staff (for the CAD system) and its vendor contract; connectivity solutions are provided by third-party contractors Citywide; telephone and 9-1-1 system support comes via contract also with a third party; and radio system support is mostly provided by the City's Wireless Services Division for console and mobile radio needs. In addition, the County of San Diego Regional Communications System has a role in support for the deployed console RCS resources within the ECDC and in the field, through the Sheriff's Wireless Services Division.

3.5.7 Redundancy and Backup

As with all public safety functions, best practices demand that an efficient and practical solution be put in place to have continuous, seamless operation of the dispatch function in the event that the current facilities, systems, and/or personnel become unable to continue to provide services. To the extent that dispatch centers employ very complex systems to receive calls, deploy resources, and manage incidents, the redundancy of all systems must be designed in a manner that ensures that all components of the operation continue with only minor interruptions. The ECDC's redundancy plan can be divided into four basic components: facilities; telephones; CAD systems; and radios. There is also a fifth component of redundancy to be considered: personnel.

> **Finding #8:** Currently, the ECDC does not have an agreement with a staffed facility that can immediately act as backup in the event that the daily functions of the ECDC become disrupted and the facility and systems unusable, as identified in NFPA Standard 1221.

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Recommendation #11: Fire-Rescue should enter into discussions with either CAL FIRE or the North County Dispatch JPA, to develop an agreement of mutual support as alternative Communications Centers as required by NFPA Standard 1221.

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Incumbent upon any Emergency Operations Plan or Continuity of Operations Plan (COOP) is the necessity of providing the users with instructions on how to implement the plan, expected operational limits, and equipment needed. Within the ECDC's policies and Standard Operating Procedures are details in how to recover from individual system failures. However, in the event of the need to leave the ECDC, the plans lack details on resources needed during the move, who should move and where, along with notifications that must be made and by whom. To be an effective plan, it must include this level of detail and be practiced.

The City of San Diego maintains an extensive COOP that covers all facets of City government. The COOP relies on each department within the City to develop specific plans for system and facility failure. However, clear and concise instructions for dealing with all system and facility failures that may occur at the ECDC are lacking detail.

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Recommendation #12: The ECDC should immediately embark upon a project to create, document, train, and deploy an ECDC-specific "Comprehensive Emergency Management Plan" or CEMP, that serves as the detailed document that provides guidance to all ECDC personnel as to their roles and responsibilities in the event of a partial or total systems/facility outage and need to relocate as required by NFPA Standard 1221. Such a plan must become a part of the City's Continuity of Operations Plan, and be practiced regularly to become effective when needed.

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System redundancy must be planned and well thought-out, taking into account the vulnerability and resiliency of each system, measured against many scenarios. The components involved in ECDC's current operations therefore are displayed below:

Facility

The building and grounds in which the ECDC performs its daily operations was purpose-built in 1991 and believed to have met codes and standards at that time. As pointed out earlier in this

report, Fire-Rescue does not have an alternative fixed site to act as backup to the ECDC. Reliance at this time is placed solely on the Fire-Rescue Emergency Communications trailer, kept at the ECDC site. Being trailer-mounted, this unit cannot be utilized in operation during transit. Additionally, it is designed to be operated by a maximum of eight persons, a number insufficient to continue operations at peak performance during multiple or a regional emergency as a dispatch center.

When planning and designing an alternative facility to continue the ECDC operations, it is necessary to place it in a location that is not likely to suffer the same conditions which would place the existing ECDC as uninhabitable. Naturally-occurring events such as seismic activity, flooding, high winds, wildfires, and conflagrations must be considered, and a site sought that would not likely be exposed to these events at the same time the existing location would. Add to that the human-caused and environmental events such as terrorism, civil disorder, extended loss of critical infrastructures (electricity, water, sewer, communications pathways, etc.), hazardous materials releases, explosive events, etc. The current location of the ECDC does not lend itself to protection from many of these events due to its close proximity to major roadways, highways, and a municipal airport. It does not meet current criteria found in the 2016 edition of NFPA Standard 1221 for dispatch/communications facilities.

The City of San Diego has in previous years considered modifying a City-owned site at the Chollas Operations facility to allow both the San Diego Police Department and Fire-Rescue to operate an alternative dispatch facility when needed. As part of this study, Citygate was requested to review provided documentation on the site and the budget estimation for the project (see Appendix A for further information). As a result, Citygate has reached the conclusion that this project must undergo a complete and thorough investigation as to the needs of both agencies for an adequately designed and located Alternative Dispatch Facility. Research has given us concern for basic elements such as location and site hazards, size, and adequacy of the building construction along with budget numbers.

Telephones

This component has two distinct pieces: 9-1-1 hardware/software and Administrative telephone systems, which also have separate hardware and software. The current 9-1-1 system is designed so that in the event there is a failure of the 9-1-1 system at the ECDC (or within the connectivity solutions serving the 9-1-1 system at ECDC), callers will still reach the Primary PSAPs for the law enforcement agencies. Once it is noted that a 9-1-1 call cannot be transferred to the ECDC, procedures are in place to contact the ECDC by the PSAP to transfer caller information. The PSAPs have two or more paths to make this connection (ten-digit phone numbers and radios). There currently is no ideal solution in place to push incoming 9-1-1 callers and their information to an alternate location. If the outage affects both the 9-1-1 system and the Administrative phone

system, the dispatchers would have to rely upon cell phones to complete the connection to the PSAPs.

CAD System

The TriTech VisiCAD system is a reliable system if maintained and current. The ECDC has in place maintenance contracts with TriTech for this purpose. Within the next budget, it is intended to have an additional three TriTech employees under contract to work from the ECDC, in cooperation with the current cadre of ISA employees to maintain and utilize the CAD system to its greatest advantage.

Backup to the CAD system is going through revisions at this time. Servers have been placed at an off-site secure location (SDPD) that will run in tandem with the main CAD server, with a fail-over solution. This method is not automatic, nor does the solution work immediately. In light of the importance of the CAD system in providing adequate services to the public, it is imperative that the solution be designed, tested, and implemented with the capability to activate a satisfactory full-function CAD system immediately.

Radios

The City of San Diego Wireless Services Division has systematically upgraded the trunked radio system to become "P25 compliant," an industry standard which enables both digital and analog radio use. The conversion to P25 compliance was completed in 2015 for the system backbone. The City's public safety users (Police Department, Fire-Rescue, and Lifeguards) will be upgraded and use the full P25 system upon completion of the next phase of the City's project which is building out a compatible 700 MHz system. It is anticipated that this move will take place by the end of 2018. The County's Regional Communications System (RCS) is in the process of designing and procuring the upgrades needed for its trunked radio system to transition into compliance also.

Fire-Rescue maintains a two-channel legacy VHF system, which is now utilized on wildland fires within and adjacent to the City. The County of San Diego also maintains a similar legacy VHF system, but has expanded the system with multiple channels and on multiple radio sites for extended coverage throughout the County. In addition, there are two VHF state channels that can be used by any fire agency in a regional event. The entire suite of VHF channels could also be used as backup radio resources should the primary systems fail. The ECDC currently does not have access to the County VHF channels from the consoles, as there are reported "licensing" issues that have remained unresolved.

Personnel

Personnel, within the context of this section, encompasses those employees who are trained and are equipped with sufficient experience to perform the tasks assigned as responsibilities of the

ECDC. The successful operation of a modern urban fire/EMS dispatch facility is dependent upon all of the components listed here to adequately handle every request for service delivered to the center. In each case, a trained dispatcher must perform prescribed tasks to complete the successful delivery of services.

There are systems in place to temporarily replace dispatchers and supervisors in the ECDC when they are unable to work when these events occur individually such as illness of earned time off. However, should the vacancies become long-term or occur in large numbers of personnel out of service, this would likely affect the ability of the ECDC to successfully perform. Due to the amount of time required to train a person to perform these tasks (6 to 12 months), it is not effective to rely upon wide-scale replacement schemes.

The need for a plan to replace a large number of dispatchers has not been an event that has been commonly considered in the past. However, it has become prudent to produce a plan to replace or augment the trained workforce due to the possibility of such circumstances as epidemics, environmental hazards within the center, civil disorders, or natural disasters which may inhibit the center operations and also labor issues. Fire-Rescue has not as yet addressed the need to research and design a plan for replacing this important resource.

Often large agencies have a contingency plan that involves the transfer of task responsibilities to another department within the agency. It may be something as simple as placing the dispatch of fire/EMS resources task on the Police Department if the fire dispatch center is unable to perform, or vice-versa. Public safety entities across North America are beginning to realize that to have such a plan in a large, urban environment, is designing a plan to fail. Law enforcement CAD systems do not perform as fire CAD systems. The specific task of interrogation of a caller reporting a crime does not follow the same line of questioning of a caller reporting a medical aid or fire incident, nor should it. There are different considerations for a reported crime than there are for an incident threatening life or property. The knowledge that dispatchers have in the operation of their agency or discipline-specific CAD is considered a perishable skill, and must be performed periodically to retain performance abilities. To suddenly and without advanced notice transfer the responsibility is to invite certain failure.

A better live backup option for a dispatch center is to construct a plan that utilizes another agency that performs the same tasks and uses the same or similar CAD. This increases the likelihood that the other agency will be able to at least temporarily receive a call for service, classify the call in the same fashion as the dispatch center, assign resources, and manage the incident until it is over.

In the case of the ECDC, the options are greater. Two other fire/EMS dispatch centers operate TriTech Fire CAD systems (North Comm and Heartland). In addition, the region enjoys the Regional CAD Interoperability Project (RCIP), which would allow three of the current centers to enter calls into their CAD systems and produce a suggested response. These centers—North

Comm, Heartland, and CAL FIRE—are all smaller and have a lesser volume of calls; however, they have interconnectivity, shared radio resources, and trained staffing that could perform and dispatch Fire-Rescue resources without significant delays. Agreements would need to be drafted and approved that clearly outline responsibilities and liabilities of performance should the service be needed.

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SECTION 4—OVERALL ASSESSMENT OF THE CURRENT ECDC OPERATION

Any analysis of a communication center program would be incomplete without an objective look at what the future holds for the program. There are many variables in calculating future impacts, particularly for a program such as a fire/EMS communications center that relies so heavily on technology. It is difficult enough just to predict how the ever-changing landscape of technology will effect public safety communications; however, we know it will play an increasingly greater role in effective and efficient communications.

One of the most reliable methods to gauge how prepared an operation or program is for future performance is to assess how it stands today—in a given "status quo" situation. To that end, to measure the Strengths, Weaknesses, Opportunities, and Threats to sustained success will provide a solid foundation on which to base future decisions.

4.1 STRENGTHS

San Diego Fire-Rescue Department is by far the largest fire and EMS agency in San Diego County. Fire-Rescue has the most fire stations, the most fire apparatus, and the greatest number of trained personnel to handle the largest number of annual incidents of any other fire agency within the County. This fact alone is a strength. The resources already assembled to handle the existing and near term ECDC load should be the minimum expectation. Fire-Rescue has both the experience and staffing to effectively manage all of its programs, including the ECDC. With this study, Fire-Rescue is planning on what it needs in the future as both call volume and incident experiences change.

It is commonplace in the industry to staff a dispatch center to handle recent historical and peak-hour call loads. When an event occurs that produces *more than* the peak hour call loading, the net effect is to cause excessive call processing times, including extended "ring-to-answer" and CAD entry times. This requires regular review and reporting on the effectiveness of staffing and procedures, particularly the call-handling procedures. Fire-Rescue does have effective review processes in place.

4.2 WEAKNESSES

At times, strengths, if not managed appropriately, can become a weakness. A large call volume center such as the ECDC can experience influences that affect the performance of the center as a whole, such as a single large event or multiple "multi-company" incidents. The ECDC is certainly no stranger to experiencing regional events. To assess the quality of service provided during these "peaks and valleys" of call volume, a standard expectation of performance is needed. Next, the performance of the center and its operators must be measured regularly against

the standard to identify successes and areas needing improvement. Once measured, this information is only valuable if reported to those responsible for the operation.

Currently, the only measured standards in the ECDC are the call processing times for medical-related incidents. This measurement and reporting is mandated by the International Academy of Emergency Dispatch as part of the Quality Assurance requirements to continue use of the Emergency Medical Dispatch product.

National Fire Protection Association's Standard 1221 addresses dispatch and communications centers. NFPA 1221 (2016 Edition), Section 7.4.1, recommends that a performance standard be met as follows: "95 percent of alarms received on emergency lines shall be answered within 15 seconds, and 99 percent of alarms received on emergency lines shall be answered within 40 seconds."

Both the NFPA and IAED performance standards should be measured and reported monthly.

The call taking process is recorded and reportable for all activities occurring at the ECDC. However, there is one aspect of the process that is not recorded by Fire-Rescue. This is the transfer data when an emergency caller first contacts a Primary PSAP (usually law enforcement) and then is transferred to fire/EMS. This is referred to as the "transfer time." Because all of the Primary PSAPs operate CAD systems in San Diego County, these times can be captured and reported to obtain the true picture of how long it takes to report an emergency.

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Finding #9:   Fire-Rescue does not regularly receive reports from the Primary Public Safety Answering Points (PSAPs) identifying the call transfer time involved in sending a caller from the Primary to the Secondary PSAP.

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Recommendation #13:   Fire-Rescue should work with all of the Primary PSAP centers that forward or transfer emergency calls to the ECDC to develop an adequate reporting format to capture the data elements of each transfer, according to the performance requirements found in NFPA Standard 1221, Section 12.5.2, and determine a schedule for periodic reporting of transfer data.

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The current facility is operating at maximum with little to no room to add staff. However, if the first floor could be utilized by the ECDC for its primary functions, it would be possible to

continue use into the future. Investigation would need to occur as to any facility upgrades that might be needed for expanded use. Overall security of the facility is a concern and should also be addressed.

4.3   OPPORTUNITIES

Fire-Rescue is positioned to consider some interesting opportunities. First, due to interest in improving all 9-1-1 answer and processing times, leadership has been provided with limited opportunities to add staff and systems to migrate from the previous command center into a modern Emergency Command and Data Center. Management of the ECDC has been elevated to a Deputy Chief position, with other chief officer positions assigned to various functions within the ECDC. With appropriate staffing of both the dispatch floor positions and support staff, this would position the ECDC well to continue to improve its performance, readiness, and both short- and long-term planning for future needs of the Department.

Secondly, discussions have been occurring regularly with the Fire Chief and his peers in other local fire and dispatch agencies on the value of a merged or co-located operation.

4.4   THREATS TO SUCCESS

There are two large factors that contribute to common problems of Emergency Dispatch and Communications Centers in North America: failure to maintain adequate staffing through recruitment and training, and failure to provide adequate funding to operate an adequately-staffed and equipped center.

Both leadership of Fire-Rescue and the ECDC recognize and are focused upon making certain that appropriate staffing on the dispatch floor is imperative, and the measurement of the center's performance will validate that level of staffing.

The ECDC in recent years has experienced both of these problems. However, within the last 12 months the City of San Diego has taken steps to increase staffing and also to commit additional funding to operate and equip the center. The current Fire Chief has recognized the importance of having an effective and efficient dispatch center along with efficient data collection and reporting.

Since the delivery of fire and EMS services in times of need always begins with a dispatch center performing tasks, it must be recognized that to be effective the fire and EMS services must hold the dispatch center to the highest standards of performance, funding it accordingly.

Another threat to successful operation of the ECDC can be unconcerned or unsupportive attitudes toward change and improvement. A workforce can be divided when there is no recognized plan for the future or a recognizable and realistic mission, goals, and objectives

specific to the center. If only leadership knows the plan for the future, it is unlikely that the rank and file will tend to pull in a unified direction.

4.5   MAINTAINING THE STATUS QUO

There are of course public safety agencies that fund and staff dispatch centers at baseline levels. In an effort to place more services on the street where they are needed, often the dispatch center is asked to do with less along with other services that are considered "ancillary." This is a dangerous action to take and accept, as this truly bottlenecks any effort to reduce response times and deliver the needed services to those that have requested it.

For modern 9-1-1 service in a rapidly-changing world, a government entity cannot afford to accept the status quo. A fire and EMS service communications center must constantly be aware of how effectively it is serving its population and always planning to adapt to changes, whether it is demographic or population shifts, or accommodating new technology. "Keeping up with the flow" is only good for the moment and does not handle any surge.

The same concern should be given to the physical facilities which an agency operates. Modern dispatch centers need to be secure, protected, and designed to operate in the future, providing for adequate space for the staff to operate effectively.

With the historic growth rate of the ECDC's annual call volume, maintaining the status quo of the size and capabilities of the facility will eventually cause issues with the center's ability to adequately perform its tasks in an acceptable manner.

SECTION 5—MERGER ASSESSMENT

5.1   PRESENT MERGER OPPORTUNITIES

5.1.1 Preface

The overall term of "mergers" can have as many meanings as there are reactions by the people involved in the discussion. A merger project for public safety dispatch operations can be something as simple as implementing equipment capable of sharing functionality, to co-locating in a single facility but yet maintaining autonomous operations and workforces. It can also be everything from contracting services to the full implementation of a new governmental unit to provide all pieces of the public safety dispatch package. Merger projects are generally conceived to either achieve financial or operational advantages, or both. The success or failure of a cooperative merger of any type will depend upon a developed plan and support for the plan, along with adequate funding and implementation. It may also depend upon the will and belief of the political leadership present before, during, and after the project.

Table 4—Large Fire/EMS Dispatch Centers in San Diego County

Agency	No. of Incidents in 2015	Population Served	No. of Agencies	No. of Staff	No. of Consoles
Metro Zone ECDC	192,546	1.7 Million	6*	65	14
Heartland	42,918	383,314	10	21	4
North Comm	64,839	685,374	19	32	8
CAL FIRE	29,469	**	8	28	12
Total	329,772		43	146	38

 * Coronado Fire Department was added in July of 2016.
** Due to the Countywide footprint of coverage and responsibilities of CAL FIRE and its contract agencies, no estimate of
    population served was found.

Using figures in the above tables, handling all of the incidents from these agencies in a single center it would take approximately 33 consoles (utilizing a national standard practice of attributing one console per 10,000 incidents). Again, using a nationally recognized average figure for required floor space for these consoles, a single facility would need approximately 4,950 square feet (33 consoles multiplied by 150 square feet per console). In addition, there would be additional floor space needed for offices, training, management, Quality Assurance, and technical support personnel plus breakrooms, storage, equipment, etc.

Of course, not all of the above agencies desire to merge into one single entity.

Effective merger models to consider fall into these four categories:

◆ *Shared technical systems* – When two or more agencies provide the same services, sometimes they can share one or more systems to find an advantage, usually financial. With today's technology, it is no longer necessary to co-locate to share systems. The advantages of updated technology can be spread among more stakeholders, which then creates additional benefits through additional sharing, such as combined recruitment, training, and sharing personnel when needed. Examples are many, with the RCS system being one. Another is the cooperative agreement over the last few years between the North County Dispatch JPA (North Comm) and Heartland Communications to share CAD technology and certain technical support positions.

◆ *Co-location* – This can occur for any number of agencies, but usually occurs with two to three agencies within the same building or complex. These cooperators can back each other up during busy periods when systems are configured to do so. They can share the costs of a secure site, building, and backup power to name a few. In co-location, they retain separate dispatch operations, employers, and supervision. An example of this is the CAL FIRE / United States Forest Service operation. Shared facility costs and the operational efficiencies of working in the same location are found to be the advantages.

◆ *Contracted Services* – A common model among public safety entities, this becomes an opportunity for two or more agencies to reduce costs through the removal of duplicate services. Agencies ask themselves, "do we need to operate a separate dispatch facility complete with personnel, systems, and facilities, or can we contract these services adequately from a neighboring agency already in operation?" The advantages are financial and operational efficiencies for all parties involved, with additional advantages being merged operational policies which then leverage improved response times and levels. Examples of this are the current operation of the ECDC which contracts services to five suburban fire agencies.

◆ *Fully Merged Agencies* – When agencies are fully engaged in the operation and management of a complex service such as fire and EMS dispatching, they are sometimes reluctant to give up that control over the quality and level of service they provide. However, these agencies might also be in a position to realize that there may be cost-controlling and operational advantages. It is a very complex task to merge two existing agencies into one, with many steps and many decision points to consider in moving forward. While financial advantages may be evident or assumed, care must be taken to assemble all information in determining the

costs involved. Certainly a cost advantage would be a reduction in facility costs if two sites were reduced to one. However, factors such as the purchase of a new site that is adequately located, designed, and equipped might erase most or all of the potential savings. In mergers of public safety dispatch agencies, it is rare that the cost savings will come from personnel, particularly from the dispatch floor, unless one agency is over-staffed at the time of the project. There may be some advantage seen in the supervisory and administrative positions if they can be reduced.

Any communication center is faced with keeping technology current. Within the last 30 years, the fire service and EMS industries have experienced rapid and vast changes within the realm of communications and technology. Public safety as a whole is still attempting to catch up to the enhanced services provided by cellular telephones and the ways the public use them. The industry is aware of coming changes in voice communications, telematics, distributed sensors, and cloud technology. The general public and private industry embraces these technological improvements much more rapidly than public safety is prepared to accept. When a single facility maintains a single system such as a CAD and has uniform mobile technology deployed, the costs to accept and distribute the enhanced solutions are reduced when measured against the cost to equip and deploy these upgrades to several smaller systems.

5.2   REGIONAL DISPATCH CENTER PROFILES

The Metro Zone ECDC operates from the facility described in Section 3.5 of this document. There does not appear to be an easy solution to expand this facility to accommodate additional call loading and its attendant personnel. There are also inherent security risks at this location, due mainly to its proximity to freeways, major arterial streets, and a municipal airport.

Included below are the profiles of the three other major fire/EMS dispatching operations in San Diego County.

5.2.1 Heartland Communications Facility Authority

Heartland has leased space in the El Cajon Fire Department Headquarters facility since 1987. Heartland makes use of the approximately 2,400 square feet in the basement. There is currently space available for up to five consoles. All Heartland employees work within this facility to provide dispatching services to the Central Zone.

Heartland has participated in at least two previous merger studies. At this time, Heartland has determined it would be in its best interest to continue as a stand-alone operation, continuing to maintain high-cooperation levels with all other dispatch centers.

5.2.2 North County Dispatch JPA (North Comm)

Operating from a purpose-built facility constructed in 1991, North Comm leases approximately 4,600 square feet of space from the Rancho Santa Fe Fire Protection District. Located in Rancho Santa Fe, it lies in a suburban setting that has significant wildland urban interface issues. This location does not have growth potential for North Comm, and currently has significant parking restrictions for staff. The building is protected by automatic fire sprinklers, and the communications equipment has a Halon-type fire suppression system. The facility has both a generator and uninterruptible power supply (UPS, or battery backup) that are adequately sized, located, and maintained. The current site is not believed to meet the sections of NFPA Standard 1221 as it relates to hardened facility and security requirements.

North Comm has participated in recent studies of options for a merger. It is actively assessing other sites and options as it continues to grow both in member agencies and volume of incidents processed.

5.2.3 CAL FIRE San Diego Unit

CAL FIRE and the U.S. Forest Service's Cleveland National Forest (CNF) operate an Interagency Command Center at CAL FIRE's campus in an unincorporated area of El Cajon. The center is comprised of four buildings in close proximity. The dispatch floor and support rooms occupy one building, with expanded dispatch facilities for significant events, meeting rooms, and other support facilities in the second building. The third and fourth buildings are offices and meeting rooms along with equipment storage. The facility has been upgraded and expanded within the last five years, and is considered to be adequately sized for the current operation. The facility is completely monitored with fire/smoke detection systems; however, it is not protected by automatic fire sprinklers. The center is equipped with both a generator and UPS adequately designed, located, and maintained. The center has a Mobile Communications Unit assigned. The current site is not believed to meet the sections of NFPA Standard 1221 as it relates to hardened facility and security requirements.

CAL FIRE's campus has many buildings on the property, with room for growth. There has been recent interest to explore building a new facility to house the command center and co-locate other dispatch agencies there along with an alternate Emergency Operations Center (EOC) that the County of San Diego is seeking. While the campus is remote from the urbanized centers of San Diego County, it does have attractive features such as site growth potential, ample parking, public and private transit avenues, sufficient utilities, and it is well suited to have line-of-site pathways to at least two mountain-top transmitter sites.

5.3   HYPOTHETICAL MERGED COSTS

Considering the possibilities of a merger, it is critical to assess the realities of which agencies would be *most likely* to enter into discussions with Fire-Rescue on the subject. As recently as August of this year, North Comm and Heartland Communications considered the advantages and disadvantages of merging the two Joint Powers Agencies into one. It is Citygate understands at this time that this merger will not be going ahead. Heartland has determined to proceed with purchasing its own CAD system to operate independently of North Comm.

As pointed out previously, CAL FIRE's Emergency Command Centers are designed and operated in a manner which maximizes CAL FIRE's ability to successfully perform the State of California mission for CAL FIRE. While CAL FIRE provides dispatching services under contract to other fire/EMS agencies, it does so in a way that will not compromise the CAL FIRE mission (predominantly wildland fires and the San Diego County Fire Authority for structural fire protection). CAL FIRE has many successful contracts with local and county agencies throughout the state in which it provides adequate dispatch services to municipal agencies (CAL FIRE / Riverside County Fire Department is an example). However, the local agencies must routinely compromise and accept limitations to service (including CAD design, console configuration, and Automatic Vehicle Location (AVL) and mobile CAD clients), or pay additional funds to implement and maintain the added value systems above what the state requires for its state mission.

Fire-Rescue has invested significant time, effort and money in its many systems to serve the public well. These investments continue to provide the residents and visitors alike in their time of need. It is neither advisable nor prudent to replace these systems and start over again with another CAD system such as CAL FIRE operates.

North Comm, which operates on the same CAD system, the same 9-1-1 phone system, and the same radio system used at some of the ECDC consoles, make it worthy of considering. The governance and administration of the North Comm JPA has in the past been willing to discuss options. Therefore, Citygate determined that to evaluate a hypothetical full merger of two dispatching operations, it would be conceivable to study combining San Diego's ECDC with North Comm.

5.3.1 Personnel Total Compensation

The largest cost in operating a public safety dispatch center is the cost of personnel. This section of the report compares the current total compensation paid by North Comm and Fire-Rescue for dispatcher and dispatch supervisor. Total compensation includes top step monthly base salary, cash add-ons, employer contribution to medical insurance, and employer pension costs. This contrasts with a total cost analysis in that a cost analysis would include the total amount actually paid to each employee in the classifications under study.

Table 5 and Table 6 below compare the total compensation paid by the two agencies for dispatcher and dispatch supervisor.

Table 5—Dispatcher Total Compensation Paid

Agency	Top Step Base Monthly Salary	Cash Add-Ons	Employer Paid Medical	Employer Paid Pension	Monthly Total Compensation	Annual Total Comp
North Comm	$4,829.24	$366.33	$1,300.00	$604.45	$7,100.01	$85,200.24
Fire-Rescue	$4,149.60	$692.29	$712.91	$381.76	$5,936.56	$71,238.72

Table 6—Dispatch Supervisor

Agency	Top Step Base Monthly Salary	Cash Add-Ons	Employer Paid Medical	Employer Paid Pension	Monthly Total Compensation	Annual Total Comp
North Comm	$5,444.75	$381.72	$1,300.00	$677.85	$7,804.32	$93,651.84
Fire-Rescue	$4,771.87	$754.52	$712.91	$439.01	$6,678.31	$80,139.72

As the tables above show, North Comm total compensation for dispatchers is 19.6 percent higher than Fire-Rescue; and at the supervisor classification, 16.86 percent higher. In most if not all mergers, one employment group does not accept a pay reduction to the level of the other. Pay levels are typically phased over a short time period to be the same, under the principal of equal value for equal work. In the example above, Fire-Rescue would have to close a significant base compensation gap to reach parity with North Comm.

5.3.2 Employer Provided Medical Insurance

North Comm contracts with the California Public Employees' Retirement System (CalPERS) for medical insurance and contributes $1,300 per month toward the cost of the premium. Fire-Rescue contributes $712.91 per month to a flexible benefit plan that employees use to pay for their portion of the medical insurance premium.

CalPERS rules require that agencies contribute the same dollar amount for eligible retirees that they provide for active employees. The CalPERS contracting rules provide two methods for paying the premium: the equal or unequal contribution method. If a contracting agency decides to use the equal contribution method, upon the execution of the contract with CalPERS, it pays the same amount for its active and eligible retirees and must contribute no less than the statutory minimum of $125 per month per employee. Using the unequal contribution method, an agency, upon execution of a contract with CalPERS, can pay more toward the premium cost for active

employees than it does for retirees, but must increase its retiree contribution by five percent each year until the contribution rates for active and retirees are equal. This creates an obligation under Government Accounting Standard Board regulation to tabulate the long-term cost of providing this benefit. We have not obtained information from North Comm as to the long-term obligation for providing retiree medical insurance.

For retiree medical, the City of San Diego set up a medical trust and contributes .25 percent of pay (employees contribute the same amount). This method of funding a retiree medical benefit does not result in a long-term liability under the current accounting rules because the City is not paying for the benefit, but rather making contributions into a medical trust.

5.3.3 Pension

North Comm contracts with CalPERS for pension benefits. It currently has three levels of pension plans: employees hired before March 1, 2013 receive the 2.7 percent at 55 plan; employees hired after March 1, 2013 receive the 2.5 percent at 55 plan; and pursuant to California's Public Employees' Pension Reform Act (PEPRA), employees hired after January 1, 2013 receive the 2 percent at 62 plan. The 2.5 percent at 55 plan was implemented prior to the passage of PEPRA legislation, thus the apparent inconsistency in the effective dates.

North Comm CalPERS employer pension rates in FY 16/17 for the three plans are:

Table 7—North Comm CalPERS Employer Pension Rates in FY 16/17

CalPERS Plan	North Comm Employer Pension Rate
2.7%@55	11.634%
2.5%@55	9.498%
2%@62	6.55%

San Diego City employees hired after July 19, 2012 are <u>not</u> eligible to participate in the City's defined benefit legacy pension plan; rather, employees are eligible for a defined contribution program in which the City pays 9.2 percent of base pay and the employee pays an equal amount. Employees hired before July 19, 2012 remain in the City's legacy plan. According to the most recent actuarial valuation, the City's required pension contribution is 61.98 percent of reportable compensation.

The City of San Diego is now the only dispatch provider not in the CalPERS pension system and Citygate does not foresee any employee group in CalPERS being willing to leave that pension system. If this holds true, then for a dispatching personnel merger into a JPA, the City of San Diego would have to accept moving its dispatchers into a non-City employment JPA that contracted with CalPERS.

Finding #10: Should Fire-Rescue consider any merger opportunity that would involve a new single employer, there would need to be considerable research performed on how to align base compensation, health insurance, and pension costs between the two employer systems.

5.4   MERGED FACILITY REQUIREMENTS BASED ON FIRE-RESCUE AND NORTH COMM

Citygate provides the following information to assist Fire-Rescue with considering placing any effort into planning such a merger:

◆ Size required—Citygate recommends a facility of 12,000 to 20,000 square feet of developable interior space for the new facility, given the operations and number of employees of the merged agency.

◆ The building should meet current California Building Code Essential Facilities Act requirements, while also meeting current NFPA 1221 standards for communication centers along with Americans with Disabilities Act requirements.

◆ In determining the location of the facility, the following factors should be considered:

➢ Adequate space for today, tomorrow, and the future.

➢ Accessibility of site—while protecting access from the public, consider the accessibility by employees.

➢ Power and utilities access.

➢ Access to communication services providers (e.g., cable, phone, fiber, and microwave).

➢ Alignment with radio systems in use.

➢ Transportation—both access to public transportation and location for the commute.

➢ Protection against environmental hazards—floods, fires, seismic activity, tidal inundation, and frequent power disruption are all hazards to avoid in the siting of a Public Safety Answering Point (PSAP).

➢ Protection against civil disturbance/threats—site away from heavily-travelled roadways that cannot be shut down for protection; site away from railroads, airports, and frequently-impacted freeways.

Costs for the purchase or lease of an adequate facility will be sizeable. Funds planned for such a project should include site selection, evaluation and acquisition or lease, facility design, construction, and outfitting the building for occupancy. The projection of accurate costs for the acquisition and modifications to such a facility for this intended purpose requires a high level of detail and planning that is not within the scope of this project. However, for planning purposes, Citygate sought basic information from real estate industry professionals, selecting two areas: Rancho Bernardo/4S Ranch (RB/4S), and the Kearny Mesa/Clairemont area.

We have been informed that in searching leases for a modifiable existing commercial or industrial building, a client can expect to pay between $2.00 to $3.25/square foot in the Rancho Bernardo/4S Ranch (RB/4S), and $1.50 to $1.85 in the Kearny Mesa/Clairemont areas. We were also advised that market fluctuation and availability determine the negotiated prices. Unless negotiated as part of the lease, expect additional costs for auxiliary power, site security, and facility hardening features.

Citygate also suggests that as the agency explores locations and buildings for such a project, that buildings larger than our suggested range are considered. Other clients have found it financially attractive to lease or sub-lease out to compatible tenant's adjacent additional space that can assist in covering building costs.

As an illustration of a leased building cost, 15,000 square feet at $2.25 per square foot totals $33,750 per month, or $405,000 per year. At these rates in a robust economy, co-location and/or full merger partners should reach siting and funding of their own long-term facility.

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SECTION 6—FORMS OF MERGER AND GOVERNANCE

6.1 CO-LOCATION DEFINED

As the brief personnel cost analysis described above, it is quite common to need several years to align payroll costs and benefits to allow one employer such as a JPA to directly employ personnel.

A step between contracting for service, as some suburban fire departments do with San Diego, is to physically co-locate into one building sharing support systems but not everything. This provides some cost control while other issues, such as employment or differing technologies can be brought into alignment.

Even with co-location, there must be structures for shared decision making and fiscal matters. The normal structure used for these issues in California is the Joint Powers Authority.

6.2 JPA DESIGN

The California Government Code allows two or more public agencies within a Joint Powers Authority structure to do any form of sharing up to forming a new separate employer and owner of any physical/capital assets. Therefore, when considering a JPA for two dispatching centers, considerable study has to occur as to how the partners will control the level of shared facilities or services.

While JPAs are powerful tools for intergovernmental cooperation, the issue of policy control for significant decisions can be difficult. This issue becomes harder when there are large differences in sizes of participating jurisdictions which drive different economic impacts to the member agencies when a cost apportionment decision is made by the JPA. Some JPAs are governed entirely by staff, others by only elected officials, and many using a blend of staff and elected officials that mirrors typical local government organizations.

Citygate believes a dual layer approach of an elected official commission, and a staff group of chiefs, along with an Executive Director, is best for two reasons. First, most agencies are familiar with this structure. Second, it provides for more in-depth operational planning and decisions that most elected boards do not have the time or expertise to handle.

However, a large JPA with many members, agency sizes, and different local area challenges across much of San Diego County, could be considered "insensitive" to member agency concerns due to size differences. A large, one-member, one-vote Commission and Board of Chiefs could be untenable to large jurisdictions, and pure "weighted" voting methods (based on population, calls for service, or size of payments) can be untenable to smaller jurisdictions.

While one perspective is that only weighted voting is best as different size agencies have revenues in proportion to their JPA charges, the reality can be that in different economic conditions, either a large or a small agency may have great difficulty implementing a decision mandated by a simple majority of a very large group.

Citygate believes that a model that fosters consensus based on listening and respect is best, and thus Commission and staff committees can follow the ideal of "one director, one vote." A safety valve is needed to serve as a second try at either building consensus or forming a super majority on critical issues that must be passed in a timely manner, such as an annual budget.

There are two ways to add voting rigor above that of a simple majority. One way would be to require a two-thirds vote for key matters. Another increasingly-used method in large JPAs is to use weighted voting (based upon population or incidents served in each jurisdiction) as an option to majority votes. This is typically done as a "double majority" action. In this use, if, after a simple majority vote, any voting member believes adequate consensus was not reached, any member on either side of the vote can move and, if seconded, call for a weighted vote. Then both simple and the supplemental weighted vote must pass to move the decision forward. Having either a super majority or weighted supplemental vote option creates protections for both smaller and larger jurisdictions.

Another JPA decision-making policy can be to require special votes on very large, and typically rare, issues such as the involuntary termination or the addition of members. In these votes, either a two-thirds majority or a double majority weighted vote can required.

Finally, where there is a two-thirds vote rule along with weighted voting, and one member has more than 33 percent of the voting shares and votes "no," then at least one other member must also vote "no" to block the action. This rule would prevent one large member from solely blocking an action.

However, most dispatch JPA issues are technical and routine, and, as such, governance issues are infrequent during operation. For these reasons, Citygate believes in keeping the "default" vote method as one member, one vote where possible, and using a double majority voting structure only when requested.

6.2.1 Executive Committee

A combined JPA of many agencies can be too large of a group to hold frequent Commission meetings of elected officials. Many large JPAs allow certain ongoing operational decisions to be made within the overall approved annual budget by an Executive Committee, which would meet monthly with the Executive Director. While there are multiple ways to set up an Executive Committee, given the size and nature of the agencies being served, Citygate suggests the following Executive Committee composition:

◆ (2) The largest rate payer Chief Executives of the member agencies.

◆ (2) A Fire District Chief Executive if an independent fire district is a member.

◆ (1 or 2) A Fire Chief elected at large from the new combined Fire Chiefs pool.

◆ Total Executive Committee members are five (5) along with the JPA Chief Executive.

The Executive Committee would provide oversight to ongoing operations, approve modest budget changes up to a specified limit, approve personnel decisions up to the point of settlements and contracts requiring Commission approvals, and recommend to the Commission the appointment and removal as needed of an Executive Director.

6.2.2 Operations Committee (Board of Chiefs)

A combined Operations Committee (Board of Chiefs) to include at a minimum the permanent member agencies should exist to provide recommendations on services, service measures, technology advances, and multiple-year business planning.

6.2.3 Finance Committee

A Finance Committee should be used to review the annual budget before approval, review the annual independent audit, and to suggest multiple-year economic strategies. It should be comprised of agency Finance Directors along the lines of the Executive Committee.

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SECTION 7—MERGER CONCLUSION

San Diego Fire-Rescue has options to resolve its Metro Zone ECDC issues, which are primarily related to near term physical building capacity. The ECDC's management and support staff is being grown. While some dispatchers are being hired, as described in this study, the building runs out of additional dispatch console space by 2019—which, being only two years away, is not a long time for a large government agency to site, fund, design, and construct or lease a capital facility.

> **Finding #11:** Given the personnel cost differences between the City of San Diego and the suburban agencies, it will take time and attention to merge to one employment structure and these issues could well distract or even stop a building co-location effort.
>
> **Finding #12:** Given the growing space pressures on the ECDC, Citygate believes San Diego does not have the typical, "do nothing" option left. Fire-Rescue and City Hall have to accept the limited term of beneficial use left in the facility and make solving the issue a top public safety priority.

> **Recommendation #14:** Based on our work in this study, as a first step, Citygate believes San Diego, the North County Dispatch JPA, and the County of San Diego Fire Authority with CAL FIRE should all explore a two- or three-way co-location option. Preferably, the solution results in a new building, meeting standards, that can be a public safety communications hub for the region lasting upwards of 50 years, at least as far as the chosen site is concerned.

The building could be sized for very long-term buildout, with unused space initially leased to other compatible government agencies, whose lease payments would offset part of the construction debt costs. Some of the space in the new building could be ready-to-operate backup consoles and systems for other centers not immediately in the co-location operation.

In this model, two or more agencies could co-locate while keeping personnel, management, and even some technology needs separate. Over time, personnel costs permitting a single employer

JPA could emerge, but not be the immediate goal. The JPA could start to directly employ some support and analyst positions if so desired as new hires are needed.

If a JPA is to be considered, with or without the goal of creating a single new employer, then there are dozens of steps that must occur over time for a merger to proceed from conceptual approval to legal implementation. A JPA merging personnel and technical functions would need all of the following steps and require decisions to be made. If the two JPAs approve more incremental work, here are the macro issues and steps:

1. Jointly appoint an Implementation Manager.

2. Appoint an implementation committee.

3. Conduct impact meet and confer with the represented employees, and draft a single Memorandum of Understanding (MOU) to be the foundation for final costs and benefit provider contracts.

4. Give the required one-year notice to CalPERS for a merger/change of contracts.

5. Conduct other change of benefits cost analysis as set by the meet and confer result.

6. Prepare a final economics model.

7. Draft a new merged JPA agreement.

8. Ask the potential partners to provide incremental approvals as the elements come together.

9. Ask the potential partners to approve the final JPA and MOU agreements.

10. Appoint a merged Executive Director.

11. Ask the potential partners to give final approval resolutions to CalPERS.

12. Implement a merged payroll and operating budget at an agreed-to date.

During these steps, the two JPAs must make many decisions regarding operational elements such as:

1. Merged agency name.

2. Computer-aided dispatch (CAD) upgrade scope and cost.

3. Use of capital replacement funds in excess of need.

4. Temporary and permanent facility choices.

7.1 CONCLUDING OPINION

There are two main reasons for a dispatch co-location or full merger given the scope of services provided: (1) immediately reducing costs, and/or (2) increasing strength and resilience against unknowns in the future by becoming larger. With the latter reason, there are eventually cost *increase* <u>containments</u> due to efficiency of scale.

As Citygate found, there are pay and benefit differences between at least Fire-Rescue and North Comm. Other agencies have found that mergers are incentivized when major decisions have to be made, such as large capital or facility purchases or executive management replacements due to attrition.

> **Recommendation #15:** If a co-location study does not readily present a solution, Citygate recommends the City of San Diego Fire-Rescue Department pursue prompt replacement of the Communications Center building, at a different site that can be operational by 2020.

Citygate does not find issues impossible to overcome, but a quick full merger will not be easy and will not produce major short-term economic savings in personnel expenses. Long-term, we believe a full merger would provide strength in numbers by spreading personnel costs, retention, and staffing challenges and capital costs against a much larger subscriber base.

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APPENDIX A—GLOSSARY

9-1-1: The 3-digit number utilized in North America to access emergency services such as law enforcement, fire and rescue and emergency medical services. Basic 9-1-1 enables the caller to reach the appropriate emergency services without having to know "who" to call and "what" number to call to reach them.

ADA: Acronym used for the Americans with Disabilities Act of 2009, which defines accommodations necessary. Find more at: *United States Department of Justice Civil Rights Division, ADA.gov website 2016*

ALS: Acronym for Advanced Life Support, a higher level of emergency medical care, usually in San Diego County provided by Paramedics. Typically ALS includes invasive techniques such as IV therapy, intubation, and/or drug administration. (Mosby's Medical Dictionary, 9th edition. © 2009, Elsevier)

AMR: Acronym for American Medical Response. This privately held company is the current ALS transport provider for the City of San Diego and others. AMR also provides BLS transport services to many areas of the nation.

APCO: Acronym for Association of Public-Safety Communications Officers International. A membership organization committed to providing complete public safety communications expertise, professional development, technical assistance, advocacy, and outreach to benefit its members and the public. www.apcointl.org

AVL: Acronym for Automatic Vehicle Location. A means for determining the geographic location of a vehicle and transmitting this information to a point where it can be used. (Reference: National Emergency Number Association Standard# 53-501)

BLS: Acronym for Basic Life Support. This includes basic first aid and emergency treatment of a victim of cardiac or respiratory arrest through cardiopulmonary resuscitation and emergency cardiac care. (Mosby's Medical Dictionary, 9th edition. © 2009, Elsevier)

Boat Light System: A term used to describe a "visual cue" system of lights to portray a level of activity at a console or a center. Also referred to as "Stack Lights" in some centers.

Call Taker: This functional position is typically the first position to answer an incoming emergency phone line. In some dispatch centers, the Call Taker is the primary position to answer and may not have collateral duties. In others, a Dispatcher may also have responsibility to answer incoming emergency lines when dedicated Call Takers are unavailable for the next call.

CAD: Acronym for Computer-Aided Dispatch system. Defined as "the principal application used by public safety agencies to manage law enforcement, fire, and EMS incidents from the initial time an incident is reported to the conclusion of the incident. CAD is also used to track the

status and location of resources, and for post-incident analysis of the response." From www.apcointl.org; search Unified CAD Functional Requirements document.

CalPERS: Popular acronym for the California Public Employees Retirement System.

CEMP: Acronym for Comprehensive Emergency Management Plan. As identified and required by NFPA Standard 1221 (Section 4.1.5.3.2), this document is designed to provide all employees with guidelines on how and where to continue to provide their services when a component system or the entire facility is rendered inactive by emergency conditions.

Communications Center: A commonly-used term among public safety agencies to describe the place in which the public calls to seek assistant for an emergent event, and responder coordination takes place. Is synonymous with the terms Dispatch Center and may also be used as a synonym for PSAP.

COOP: Acronym for Continuation of Operations Plan. A strategic plan developed with either internal or external resources to guide an agency or a division on how to continue to adequately serve the public after a partial or total disruption of systems and/or facilities, addressing how and where the agency or division will base all operations to effectively serve the public *during and after* the event that hinders and/or diminishes normal operations.

CTO: Acronym for Communications Training Officer. For Fire-Rescue, Dispatchers who qualify may volunteer to receive training to become a CTO. They will assist the Training Officer in providing information and instruction to new recruits, both in the classroom and in the beginning stages of training at the consoles under the close supervision of the CTO. Provisions for the CTO qualifications are a part of the current labor agreement for Fire Dispatchers.

Dispatch: A verb, meaning "to send (someone or something) quickly to a particular place for a particular purpose" (www.merriam-webster.com). For public safety agencies, this term is widely used to define the act of a specially trained person who accepts information relative to an emergent event, and determines the closest most appropriate resource capable of mitigating the emergency, notifies such resource(s) and tracks and supports the field resources in accomplishing the mission. This term, when used as "Dispatch Center" is then synonymous with Communications Center and may also be used as a synonym for PSAP.

Dispatcher: The position name for a trained employee who is assigned the task of (a) answering incoming phone lines, or (b) answering radio traffic and monitoring resource and incident status, or (c) both (a) and (b).

DOC: Acronym for Department Operations Center. While a city or agency normally has an Emergency Operations Center (EOC), some entities find it beneficial to also stand up a DOC during emergencies or large planned events to better control resources, procure, and relay information to an EOC and elected officials.

ECDC: Acronym for Emergency Command and Data Center, this is San Diego Fire-Rescue Department's Fire Dispatch center. Classified as a Secondary PSAP, the ECDC receives requests for service from the public and allied agencies, then dispatches the closest most appropriate resources to handle the event.

EMD: Acronym for Emergency Medical Dispatch. A term used to describe the program provided by many modern fire/EMS dispatch facilities to triage information from a person reporting a medical emergency and to also provide the caller with appropriate pre-arrival instructions if applicable. This same acronym at times is applied to the individual performing these tasks as an Emergency Medical Dispatcher.

EMS: Acronym for Emergency Medical Service. This term is widely used in public safety as a term for the resources and trained personnel that handle emergent and non-emergent requests for medical assistance by the public.

E9-1-1: Acronym for "Enhanced 9-1-1." This is the current 9-1-1 system in predominant use throughout the developed areas of North America. This system improves Basic 9-1-1 by also delivering to the Public Safety Answering Point the caller's telephone number and location, if known.

Fleetmap: A fleetmap determines how the trunked radio system for each user group of an organization is controlled. Through controlling communications between different user groups and between individuals within a group, the trunked radio system resources are used efficiently.

Fleetmapping also provides a structured approach to the management of many radio users and provides the opportunity to plan for expansion or changes within an organization.

GIS: Acronym for Geographic Information System. It refers to a program or system of programs that allows for viewing, analyzing, and interpreting data and its relationship to a given location on earth, maps, or space, to understand relationships, patterns, and trends.

IAED: Acronym for International Academies of Emergency Dispatch. Found originally as the National Academies of Emergency Dispatch, this organization was renamed to better reflect both its membership and its application to the industry. While there is more than one organization that provides approved protocols on EMD, this organization was the first. It has also established protocols that can be applied to law enforcement and fire incidents, providing uniform inquiry and reaction protocols. More information can be found at: www.emergencydispatch.org

JPA: Acronym for Joint Powers Authority. In some states, a JPA can be formed by two or more government entities that have determined a mutual benefit in operating collectively. JPA can also refer to the legal instrument that created the Authority, a Joint Powers Agreement.

MDC: Acronym for Mobile Data Communications. This term commonly refers to the data appliance used in the field to retrieve and view electronic files. When connected to CAD

appropriately, can be used to message, change status, share data files, and view AVL information on maps.

NENA: Acronym for the National Emergency Number Association (www.nena.org), an organization founded to promote a single emergency number to be used throughout North America. This organization develops standards, training, and support programs for public safety dispatch and communications centers in this country, and worldwide.

NFPA: Acronym for the National Fire Protection Association. First created in 1896, this non-profit organization creates and promotes a wide array of national standards for the fire service internationally. It is "devoted to eliminating death, injury, property and economic loss due to fire, electrical and other hazards." http://www.nfpa.org/overview

NG9-1-1: Acronym for Next Generation 9-1-1. Term used to describe an Internet Protocol (IP) based 9-1-1 system. NG9-1-1 is a system comprised of managed IP-based networks (ESInets), functional elements (applications), and databases that replicate traditional E9-1-1 features and functions and provide additional capabilities. NG9-1-1 is designed to provide access to emergency services from all connected communications sources, and provide multimedia data capabilities for PSAPs and other emergency service organizations. (Extract from NENA Master Glossary of 9-1-1 Terms. www.nena.org)

OCA: Acronym for "Out-of-Class" Assignment. This refers to a voluntary qualification sought by veteran employees who wish to become skilled and certified to temporarily work at levels higher than their current classification. An example would be a Dispatcher who works OCA as a Fire Dispatch Supervisor to cover an absence or opening. Provisions for the CTO qualifications are a part of the current labor agreement for Fire Dispatchers.

PEPRA: Acronym for CalPERS's Public Employees' Pension Reform Act. More information can be found here: https://www.calpers.ca.gov/page/about/laws-regulations/regulatory-actions/pepra

Project 25: Also known as P25, this refers to a suite of standards for two-way public safety radios developed by APCO. As part of the Federal Communications Committee's requirements for changes in how certain areas of the radio spectrum shall be divided and shared to maximize this finite resource, the FCC adopted these standards along with requiring agencies to modify some of their existing radio channels in certain bands. To be P25 compliant, the system and all radios must be capable of operating on both digital and analog, trunked and conventional systems. The City of San Diego's 800 Megahertz Trunked Radio system is being modified to become P25 compliant.

Project RETAINS: This is a product of the APCO International organization, providing guidance and a toolkit for agency to assemble and understand data pertaining to hiring, training, and retaining Dispatch and Communications Center employees.

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

PSAP: Acronym for Public Safety Answering Point. A set of call takers authorized by a governing body and operating under common management which receives 9-1-1 calls and asynchronous event notifications for a defined geographic area and processes those calls and events according to a specified operational policy (Extract from NENA Master Glossary of 9-1-1 Terms. www.nena.org). *Primary PSAPs* (the first point to answer a 9-1-1 call) will be a law enforcement agency in San Diego County. *Secondary PSAPs* are generally fire/EMS agencies that accept the transferred calls from the Primary PSAPs, then provide call taking operations to discern the location and type of call, and any other pertinent information. The Fire-Rescue Lifeguard Services Division is also a Secondary PSAP.

QA/QI: Acronym for Quality Assurance and Quality Improvement programs.

RCIP: Acronym for Regional CAD-to-CAD Interoperability Project, a grant-funded project connecting the various CAD systems in use by the Fire Dispatch Centers in San Diego County, first implemented in 2010. This allows real-time sharing of data on incidents, resources, and requests for assistance between agencies.

RCS: Acronym for San Diego County's *Regional Communications System,* a trunked radio system serving public safety and public service agencies as a primary radio system in San Diego and Imperial Counties.

Resources: Defined as "a source of supply or support" (www.merriam-webster.com). This term is commonly used within public safety agencies to describe personnel and/or equipment which can be dispatched to a request for service to mitigate an emergent situation, or satisfy a need. Formerly referred to as a "unit," the term resource can mean anything from a piece of mobile equipment (lifeguard truck), watercraft, or person.

RFP: Acronym for Request for Proposal. This describes a procurement instrument used to solicit and receive proposals to purchase services and goods by government entities and others.

RMS: Acronym for Records Management System. A software system designed to collect data from activities performed by public safety agencies, and provide methods for extraction and analysis and/or transfer of the stored data to analyze performance and statistics. Most often in California public safety agencies, these RMS systems are designed to extract specific data components from CAD systems logically. However, there are some RMS systems that can provide adequate data storage and review with manual entry.

SOPs: Acronym for Standard Operating Procedures. A written directive that provides a guideline for carrying out an activity. The guideline may be made mandatory by including terms such as "shall" rather than "should" or "must" rather than "may."

SSC: Acronym for System Status Controller. These positions in a dispatch center are assigned the responsibility of monitoring the location and status of medical resources in a manner that creates effective area coverage and readiness status according to an established plan.

Talkgroup: A talkgroup is an assigned group of frequencies on a trunked radio system. As many people understand that "channels" are a frequency (or set of frequencies) on a radio that allow one radio to contact and speak with another radio (if both are on the same channel. In trunked radio systems, a talkgroup becomes synonymous with the old term "channel." Unlike a conventional radio which assigns users a certain frequency), a trunk system takes a number of frequencies allocated to the system and establishes a control channel that coordinates with the system which ultimately allows the talkgroups to share these frequencies seamlessly. The primary purpose of talkgroups is to dramatically increase bandwidth. Currently, many modern-day radios treat talkgroups as if they were frequencies because of functional similarity. (For example, it is common to be able to assign the talkgroups of radio scanners into banks or lock them out, exactly like that of conventional frequencies.)

Trunked Radio A trunked radio system is a complex type of computer-controlled radio system that allows sharing of relatively few radio frequency channels among a large group of users. For example, instead of assigning a radio channel to one particular organization at a time, users are assigned to a logical grouping (i.e., a "talkgroup").

VHF: Acronym for Very High Frequency, describing a section of the radio spectrum. Used in the context of this report, it specifically refers to the section of the radio spectrum set aside by the Federal Communications Commission to be used as the "VHF Marine Band" for mariners to contact and speak with other mariners, harbors, and all maritime uses.

VoIP: Acronym for Voice over Internet Protocol. Utilized mostly in telephony, this describes a system where two or more parties are connected and converse utilizing the internet rather than a wire or radio-based system.
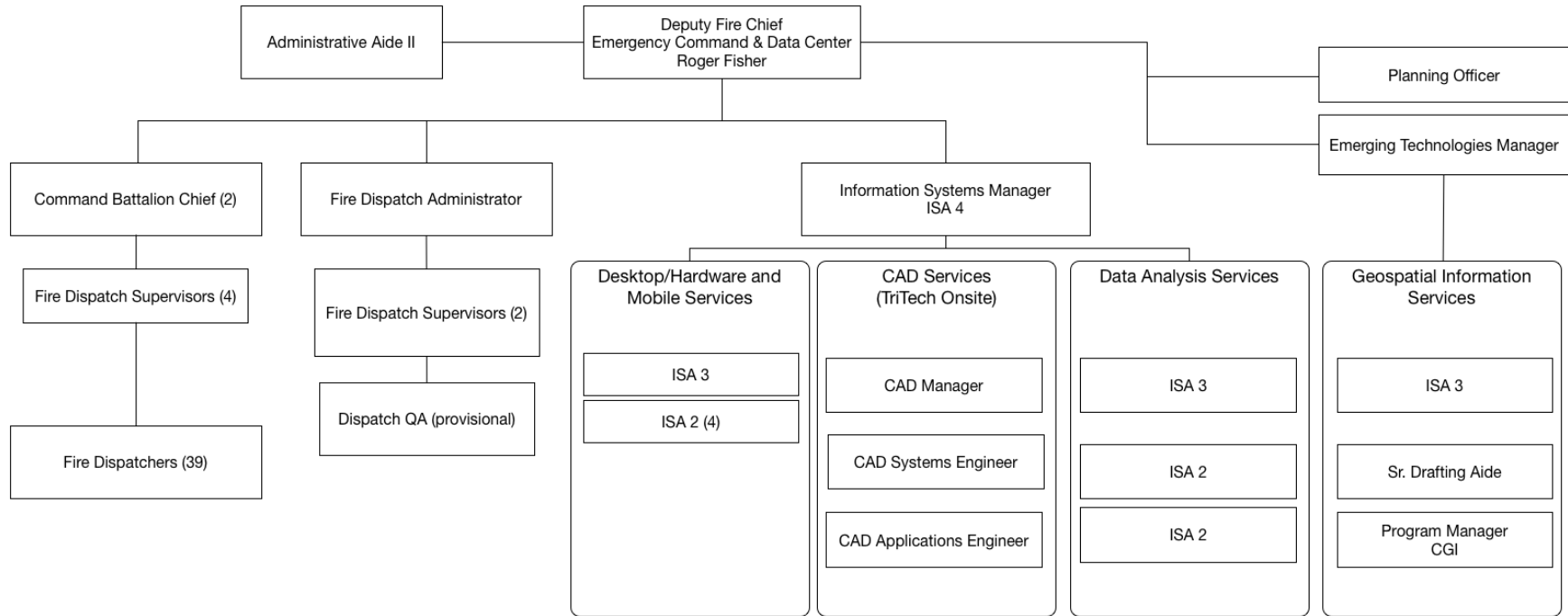
APPENDIX B—DEPARTMENT AND ECDC ORGANIZATIONAL CHARTS

Figure 3—Fire-Rescue Organizational Chart (January 2017)
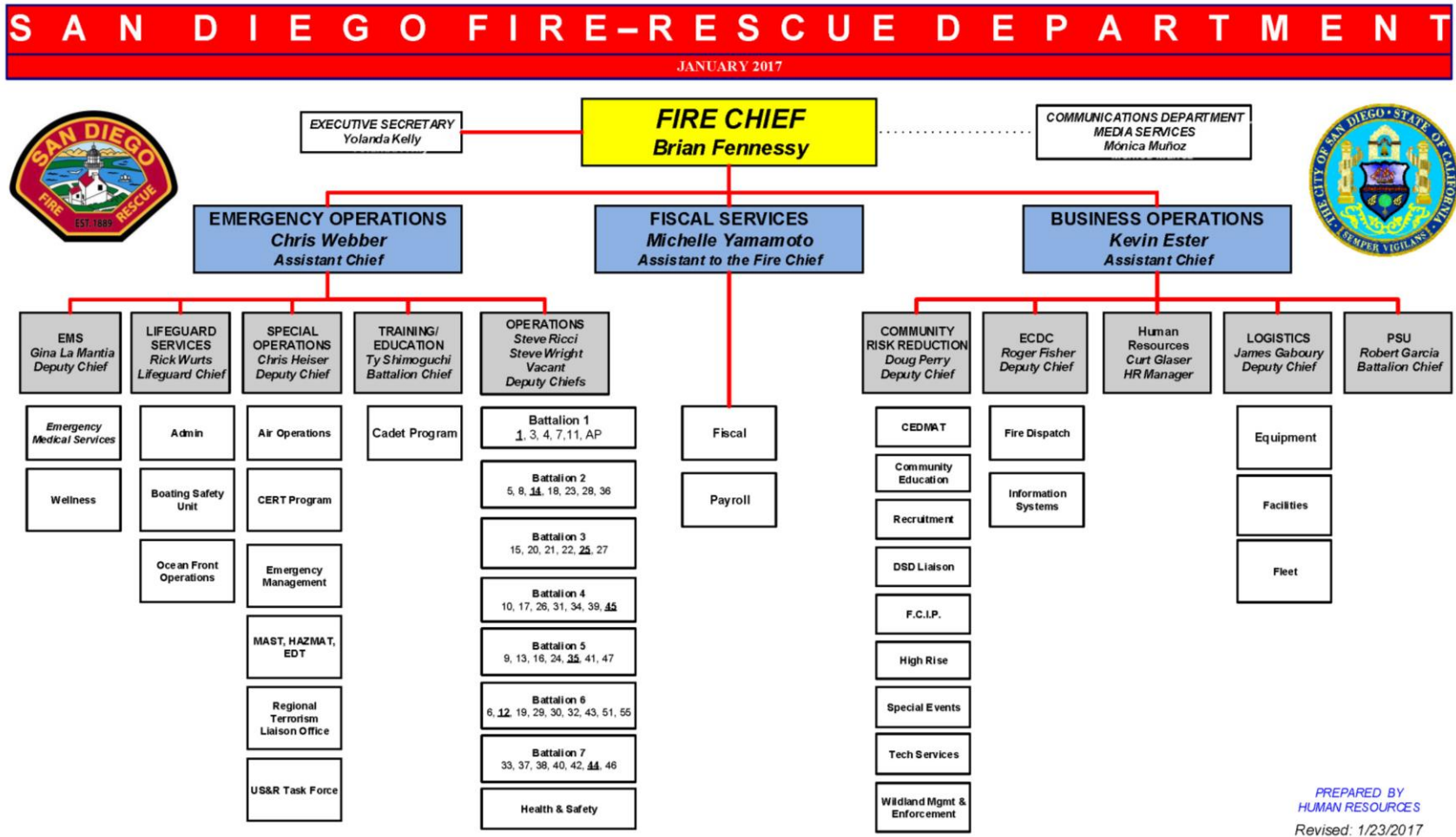
Figure 4—Metro Zone ECDC Organizational Chart (January 2017)

APPENDIX C—CHOLLAS BACKUP SITE REVIEW

Chollas Backup Site Review

As Requested by Chief Fennessy

September 29, 2016

As requested recently by Chief Fennessy, Citygate has reviewed information with regard to existing City of San Diego property referred to as "Chollas Operations Center," for the purpose of providing a high level analysis and our opinion of the use of this property as an alternate dispatch location for Fire-Rescue and the San Diego Police Department. As we were informed, this was an earlier project idea that resurfaced about the Police Department and Fire-Rescue jointly standing up a backup call center to the City's existing dispatch operations. Citygate understands the following assumptions:

◆ This was an idea presented to both Departments between two to five years ago.

◆ Some costs were recognized in a document; however, it is unknown if this was a complete list of costs or if it was provided simply "for budgeting purposes."

◆ An existing City-owned building, located at the City's Chollas Operations Yard, was targeted for this project. The brick building was thought to be constructed in the early 1990s.

◆ The proposal is to re-purpose this facility to allow operation of a total of 20 dispatch consoles, with supporting facilities.

◆ The time frame for completion of this project was not known.

◆ There is interest at upper levels of City government and at the Police Department in funding and processing this project.

We have reviewed the budgeting document provided to us by the City of San Diego on costs for the project. Also reviewed were maps of the area. While Citygate whole-heartedly would support the idea of having a fixed, adequate facility with infrastructure as a backup center, as required in NFPA Standard 1221, our review of this information has resulted in some concerns with elements of this project that we suggest should be resolved prior to supporting the project. They are:

◆ *Location* – It appears from aerial views that the Chollas property is built on, over, and/or near an old landfill. Generally speaking, previous landfills bring their own problems. We have concern over the seismic stability of the land, and also concern on any atmospheric off-gassing that may occur now, later, or after a seismic event. There is history with the former landfills to find everything from

methane, to radon, to arsenic on the surface. While the intended use for this facility would be an occasional use, *if* the backup center was to be used as intended, the City would have employees operating out of it 24/7 for possibly months. A soils engineering report is warranted on this to determine if the site is compatible with the intended use.

◆ *Facility* – Questions exist about the size and adaptability of this masonry building for the purpose of providing 9-1-1 and dispatch services. Without an engineering report on the current condition and a gap analysis from engineers on its re-purposing to an Essential Services building, it is risky to commit funding to the project. Since there is no facility information included such as size, etc., Citygate really cannot determine if it would be adequate for that amount of people.

◆ *Capacity* – Directly related to the size of the building, when designing a room to operate as a dispatch/communications center, usually we attribute 150 square feet for each console. The size and configuration of the selected consoles can vary immensely, so it may be possible to reduce the amount of area needed, but that comes with costs in performance and possibly resultant morale issues. If the Department was to go ahead with this project, we suggest confirming the installation of facilities to accommodate the simple "plug in" of the current Communications trailer for added space and capacity, at an extra cost.

◆ *Costs* – The costs identified in the earlier report may not be accurate for today. For instance, the cost recently to install a new console at the ECDC was just under $20,000. This console does not have as many features as modern day, ergonomic design consoles. Also, it is our understanding that the City's current backup servers are located at the current Police Department building, so they would need to be moved to the backup site at a cost not yet accounted for.

◆ *Growth Potential* – Citygate does not have any of the statistics to review for the Police Department, but Fire-Rescue's call counts continue to increase. We know currently that 10 staffed positions barely keep up with ECDC's busiest periods. If both Departments see exponential growth 5 years down the road, this facility will be inadequate to serve even in a temporary setting. This might better serve the City as a "surge" facility rather than "backup."

◆ *Alternatives* – Speaking to only Fire-Rescue's concerns, the decision to commit what will likely be more than $800,000 to a project while the Department is actively researching other partnerships in the dispatch arena might seem short-sighted. Should the Department commit and build the site now and make a decision to co-locate or blend with another fire/EMS dispatch operation, this Chollas site could not handle the capacity of the new cooperative operation. It

may be money better spent to invest in a new, properly designed and built, primary facility to lessen the likelihood of needing a backup center. Another alternative to consider, as other like agencies expand and create new operational centers, San Diego Fire-Rescue and its contract agencies might be better served by creating agreements to serve as backup to each other so that the "backup" task is immediately functional, not dependent upon transferring employees to a new site, performing to the same standards as Fire-Rescue.