Developing a Preliminary Damage Assessment Policy for the Santa Clara Fire Department, CA

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Date: 10/7/'18.

Abstract

There is a 99.68% chance of a major earthquake occurring within 30 miles of the City of Santa Clara, California within the next 50 years. The problem is that while the Santa Clara Fire Department (SCFD) is responsible for conducting post-incident Preliminary Damage Assessments (PDA) following large scale incidents in the City of Santa Clara, such as natural and man-made disasters, there is currently no policy/ procedure in place for this purpose. The purpose of this research was to develop a process for implementing a PDA policy/ procedure for the SCFD to be utilized following natural or man-made disasters. Research was conducted for works relating to emergency management, preliminary damage assessment procedures and reporting requirements as well as to the disaster potential specific to Santa Clara. Interviews were conducted with SCFD command staff members and a survey questionnaire was distributed to the author's former and current fellow Executive Fire Officer Program students. Action research was the methodology utilized to answer the following research questions: (a) What is the purpose of performing preliminary damage assessments? (b) What are the natural or man-made disasters for which the Santa Clara Fire Department shall establish a damage assessment policy/ procedure? (c) What is the assessment criteria utilized in performing preliminary damage assessments? The results of this research indicated that the SCFD recognized the need to develop procedures for performing PDAs as this is an important step in the incident management process following a large natural or man-made disaster from which Santa Clara is threatened, specifically earthquake or terrorist attack, should occur. Recommendations included the development of procedures consistent with Federal Emergency Management Agency (FEMA) guidelines for performing PDAs while utilizing current technology available to the SCFD as well as the development of training for all SCFD personnel in conducting PDAs.

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In the world of emergency management there exist certain recognized and standardized phases to the emergency management process as related to natural and man-made disasters and while addressing any threat or hazard. As defined by the Federal Emergency Management Agency (Federal Emergency Management Agency [FEMA], 2016a) these are prevention, protection, response, recovery, and mitigation. It is the integration of these key areas as part of the overall planning effort that allows jurisdictions to produce an effective emergency operations plan and advance overall preparedness (p.1-8). This applied research project deals with the areas of response and recovery and in particular to the processes and procedures necessary in ensuring that once the initial response and mitigation phases of the emergency management process have been implemented, the recovery phase is implemented effectively. In order for this to happen, it is necessary that Preliminary Damage Assessments (PDA) be performed so that state and/ or federal aid is allocated to the incident following a proclamation of disaster by the California State Governor or declaration of disaster by the President of the United States. The completion of PDAs are an important step in the disaster proclamation and declaration processes.

The PDA process is a mechanism used to determine the impact and magnitude of damage and the resulting unmet needs of individuals, businesses, the public sector, and the community as a whole. Information collected is used by the State as a basis for the Governor's request, and by FEMA to document the recommendation made to the President in response to the Governor's request (Preliminary Damage Assessment Rule, 1988). The SCFD does not currently have procedures in place to perform PDAs and therefore is unable to effectively or accurately determine the impact of damage following an incident and the degree to which this affects members of the Santa Clara community.

It must be noted that if there is any delay in the completion of PDAs resulting in a delay for a State Governors request of assistance, a delay in allocating federal resources needed for the

recovery phase of the incident will ensue (FEMA, 2016c, pp. 3-5). The problem is that while the SCFD is responsible for conducting post-incident PDA following large scale incidents in the City of Santa Clara, such as natural and man-made disasters, there are currently no policy/ procedures in place for this purpose. The purpose of this research was to develop a process for implementing a PDA policy/ procedure for the SCFD to be utilized following natural or man-made disasters. Action research was the methodology utilized to provide information pertinent to answering the following questions: (a) What is the purpose of performing preliminary damage assessments? (b) What are the natural or man-made disasters for which the Santa Clara Fire Department shall establish a damage assessment policy/ procedure? (c) What is the assessment criteria utilized in performing preliminary damage assessments? In the words of Sir Winston Churchill, "Let our advance worrying become advanced thinking and planning." (Churchill, n.d.).

Background and Significance

SCFD Overview

The Santa Clara Fire Department was established in 1854 when local residents formed the Columbia Hose Volunteer Fire Company. In 1951 the city hired the first paid fire chief while the majority of firefighting was still being done by the volunteer firefighters. Later in 1959, six paid personnel were added to the ranks of the department and the transition was made from being a fully volunteer department to a combination paid and volunteer department. Today, Santa Clara has 10 fire stations consisting of eight engine companies, two truck companies, one rescue/light and air unit, two paramedic ambulances, one hazardous materials unit, and two command vehicles in service at any given time (City of Santa Clara, 2018a). The mission of the SCFD is "to protect and enhance the quality of life of the people we serve. We will provide caring, customer-oriented service to protect life, property and the environment through education, prevention, emergency preparedness, and emergency response*"* (City of Santa Clara, 2018b). The SCFD's projected 2017-2018 budget is estimated at $45,264,279 (City of Santa Clara,

2017c).

The SCFD is an all-risk fire department comprising 160 full-time paid members serving the community of Santa Clara City, which has 126,215 citizens as reported by the US Census Bureau (2017). During the working day the population increases to 200,000. Santa Clara is located in northern California's Silicon Valley, fifty miles south of San Francisco, California. The SCFD is a progressive all-risk fire department delivering non-transport advanced life support paramedic services, fire suppression response, participation in California's Urban Search and Rescue Task Force 3 (USAR TF-3), hazardous materials response and has an active Volunteer/ Reserve Division. The SCFD was the first fire department in Santa Clara County to provide a hazardous materials unit, comprising trained hazardous-materials emergency responders, in response to the increasing presence of high-tech manufacturing facilities during the regional nineteen-eighties Silicon Valley trend of developing businesses in the area. In 2014 Levi's Stadium was opened within the city limits and serves as home to the San Francisco Forty-niners National Football League (NFL) team as well host to various other public events including musical concerts and other sporting events including soccer and hockey matches.

The SCFD is organized into the following Divisions: (a) The Fire Administration Division provides management, organization, and support for the various divisions actively engaged in the protection of life and property, (b) The Emergency Medical Services Division is responsible for training personnel to deliver pre-hospital emergency medical services to people who live, work in and visit Santa Clara, (c) The Fire Prevention Division and the Hazardous Materials Division is primarily responsible for fire safety education, fire cause determination, inspection of high hazard occupancies, and fire code enforcement within the City of Santa Clara as well as maintaining a vital role as technical consultant to the SCFD, the City of Santa Clara, and the business community, advising on site construction, process installation, and the safe use and handling of hazardous materials as outlined in federal, state, and local regulations, (d) The

Suppression Division, numbering 134 members, efficiently responds to over 8,000 emergency responses annually, (e) The Training Division provides services to the SCFD, other city departments, industry, and the community at large by way of providing education in areas relating to fire suppression, community preparedness for disaster response and cardio pulmonary resuscitation, (f) The Volunteer/Reserve Division, comprising numbers fluctuating in the region of around 40 members, augments the Suppression Division by providing trained personnel to respond to the scenes of emergencies (City of Santa Clara, 2018b).

Background Analysis of Problem

The City of Santa Clara has seen steady growth in both population and industry during the past twenty years due to high-tech industry employers such as the Apple Corporation moving to the area and the increase in high density housing to accommodate employees also moving to the area. According to the US Census Bureau (2017), the population of Santa Clara has seen an increase of 8.3% from April 2010 and is estimated to further increase by 20% by the year 2022 (US Census Bureau, 2017). As the population of Santa Clara increases so will the number of people visiting the city to work as is evident by the current economic growth. According to the Local Agency Formation Commission (LAFC) of Santa Clara County (2017), the number of jobs in Santa Clara County are expected to rise from 112,890 from 2010 to 134,650 in 2025, an increase of 9.4%. It can be expected that as the city experiences both residential and commercial growth that there will be an increase in structures and infrastructure threatened by natural or man-made disasters. The City of Santa Clara is at risk from the threat of earthquake and from the treat of terrorist activity. Each of these threats have the potential to result in incidents high in civilian casualties and costly recovery leading to high economic impact.

The City of Santa Clara is located within 30 miles of three major earthquake fault lines, the San Andreas Fault, the Hayward Fault and the Rodgers Creek Fault. The San Andreas Fault

Line is located less than six miles to the west of Santa Clara (Lynch and Cole, 2018). The US Geological Survey (USGS) reports that Santa Clara has an earthquake risk that is classified as very high. There have been a total of 3,430 earthquakes since 1931 occurring within 30 miles of Santa Clara. There is a 99.68% chance of a major earthquake occurring within 30 miles of Santa Clara within the next 50 years. The largest earthquake within 30 miles of Santa Clara was the Loma Prieta, a 6.9 Magnitude event in 1989 that caused damage in six counties (USGS, 2016). There were 63 fatalities and 3,757 injuries as a result of the Loma Prieta earthquake, 400 of which were serious. The cost of recovery was reported to be 6 billion dollars (USGS, 2009).

Santa Clara's Silicon Valley is at the forefront of technology and therefore both a target for terrorist activity as well as being on the front line in battling terrorism, as national security and war are being redefined for the digital age. Vital systems must be protected against malevolent intrusions while physical attack will render countermeasures to terrorism less effective (Jenkins, 2016).

The problem is that while the Santa Clara Fire Department is responsible for conducting post-incident damage assessment following large scale incidents in the City of Santa Clara, such as natural and man-made disasters, there are currently no policy/ procedures in place for this purpose. The purpose of this research is to develop for implementation a Preliminary Damage Assessment (PDA) Policy/ Procedure for the Santa Clara Fire Department to be utilized following natural or man-made disasters.

A policy/ procedure for the purpose of conducting PDAs following natural or man-made disasters will increase the effectiveness of the SCFD. This is due to the SCFD providing a higher level of service as it pertains to the emergency management aspect of service specifically the recovery phase. By acquiring federal assistance for recovery in an efficient manner, through compliance with the correct procedure for assistance requests, the SCFD will be in position to better serve the community of Santa Clara.

Relevance of Applied Research Project to the Executive Fire Officer Program

The topic of this Applied Research Project is directly related to the content of the April 2018 Executive Analysis of Fire Service Operations in Emergency Management course delivered by the National Fire Academy in Emmitsburg, MD. *Unit 1: National incident management system and the national response framework* (NFA, 2016b) is relevant as it relates specifically to incident management and fire service operations. A preliminary damage assessment conducted by local, state, federal and volunteer organizations is utilized to determine losses and recovery needs. A major disaster declaration is then requested by the governor, based on the damage assessment, and an agreement to commit state funds and resources to the long- term recovery follows (p. 1-55). *Unit 2: Stafford Act* (NFA, 2016b) is relevant for a process to be employed by the SCFD in performing preliminary damage assessment and will be an integral part of the major disaster declaration process. The results of this survey will then be used to help determine the need for federal involvement in the recovery process (p. 2-6). *Unit 3: Damage assessment* (NFA, 2016b) is relevant in that any delay in completing the damage assessment may delay supplemental disaster assistance and therefore hinder the recovery process (p. 3-5). This applied research project is aimed at "developing a process for obtaining and using damage assessment information and applying damage assessment procedures" (p. 3-3) to be utilized by the SCFD following natural or man-made disasters. "Preliminary damage assessment (PDA) is a detailed examination and analysis of the incident. Policies and procedures should be outlined in the disaster plan for every jurisdiction" (p. 3-4). The SCFD does not currently have policies and procedures in place with which to conduct PDAs. This applied research project will address this issue by way of developing a process for implementing such policies and procedures. The SCFD is a pro-active organization that values preparation in order to provide the best possible service to its citizens as defined in the organization's mission statement as "protecting, life, property and the environment through education, prevention, emergency preparedness and emergency response"

(City of Santa Clara, 2018b). The SCFD will become better prepared to serve the community as a policy is implemented for conducting preliminary damage assessments as this will provide for a more streamlined and effective recovery process.

The topic of the research regarding this applied research project is in line with the five-year strategic plan of the United States Fire Administration (USFA) for 2014-2018. The goals of this plan are to (a) reduce fire and life safety risk through preparedness, prevention and mitigation, (b) promote response, local planning and preparedness for all hazards, (c) enhance the fire and emergency services' capability for response to and recovery from all hazards, (d) advance the professional development of fire service personnel and of other people engaged in fire prevention and control activities, (e) establish and sustain the USFA as a dynamic organization (USFA, 2014).

The implementation of a process with which the SCFD will have the tools to perform PDAs meet the second and third organizational goal of the USFA. The second goal of the USFA is that of promoting response, local planning and preparedness for all hazards. An important component of emergency management is that of local planning. The SCFD by way of developing a plan with which to conduct PDAs following large scale disasters will better prepare the community for a successful recovery effort. The third goal of the USFA is to enhance the fire and emergency services' capability for response to and recovery from all hazards. The SCFD will aim to plan for recovery from large scale disasters by way of implementing procedures for completing PDAs that will in turn ensure the securing of funding from the state and federal government aimed at restoring the community to normalcy in a more effective and efficient manner.

Literature Review

The purpose of the literature review for this particular applied research project is to review data and information pertinent to the area of PDA as it relates to the aftermath of natural

or man-made disasters. The findings and observations of others, as detailed in this literature review, influenced this applied research project due to the literature revealing that criteria for performing PDAs exist in various forms and for specific situations. Information gathered from this literature review served as a foundation for the formation of a plan to implement a procedure by which members of the SCFD will complete PDAs following large scale disasters occurring in Santa Clara by providing adequate information with which to answer the research questions: (a) What is the purpose of performing preliminary damage assessments? (b)What are the natural or man-made disasters for which the Santa Clara Fire Department shall establish a damage assessment policy/ procedure? (c)What is the assessment criteria utilized in performing preliminary damage assessments?

The Purpose of Performing Preliminary Damage Assessments

FEMA defines the purpose of performing PDAs as a means to expedite decision-making and the delivery of assistance through defined national standards for assessing damage while clearly outlining the information considered when evaluating requests for a Major Disaster Declaration. FEMA's Damage Assessment Operations Manual supports this overall objective through the following goals: promote accuracy by clearly defining the information and documentation that should be collected to assess damage and support requests for Stafford Act assistance; promote consistency by standardizing the criteria used to assess damage to residential homes and offering clear guidance on assessing damage to infrastructure; promote efficiency by empowering emergency management at all levels with the structure and information needed to streamline damage assessment efforts (FEMA, 2016a).

A damage assessment as detailed in FEMA's EAFSOEM student manual (2016c), is defined as being a process with which to "provide detailed information on the total amount and types of damage sustained by the community or area from the event" (p. 2-6). A Preliminary Damage Assessment (PDA) is defines as being a process with which to determine the magnitude

and impact of the total damage. While the responsibility for performing PDAs usually lies with the first responding fire companies to the scene, the responsibility may be shared between agencies of differing disciplines such as police, fire and public works agencies. This combined effort may be practical in areas where there are challenges with serving a large geographic location with a widely spread out population. In this case FEMA suggests that helicopter is the preferred means with which to conduct PDAs quickly (FEMA, 2016b).

There are two forms of assistance available, Public Assistance (PA) and Individual Assistance (IA) as detailed in FEMA's IS-559 Local Damage Assessment Independent Study Program. PA is reimbursement and emergency assistance provided to state, tribal, and local governments and certain types of private non-profit entities from the federal government. FEMA provides supplemental federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities. IA is funding or direct assistance to individuals, families and businesses in areas where property has been damaged or destroyed and where losses are not covered by insurance. This process is intended to help with expenses that cannot be covered by other means to assist a community in restoring damaged property to its condition before the disaster as closely as possible (FEMA, 2018d).

Another type of damage assessment detailed in FEMA's EAFSOEM student manual (2016c) is the Post Incident Damage Assessment. This particular assessment is more detailed than a PDA and is performed after the initial emergency phase and assesses the types and cost of damage. This assessment is generally conducted within 36 hours of an incident by a PDA team comprised of local, county, state and FEMA representatives (p. 3-26).

Peterson (2017b), explains that following a disaster, a state governor requests PDAs as the first step in the declaration process. Federal representatives, including the U.S. Small Business Administration, join state, tribal, and local officials to form PDA teams. These teams are

responsible for surveying damages in designated counties by going city-by-city, street-by-street, door-to-door, until impacted areas identified by state, tribal, and local officials have been thoroughly assessed. These teams also obtain information on the impact to the community as a whole.

The primary means with which to provide for federal assistance is through the President's Disaster Assistance Program managed by FEMA. The Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288, as amended the Stafford Act, was established for the sole purpose of providing support to local and state governments following a disaster as well as for establishing the requirements for which a Presidential Disaster Declaration will be implemented. This law provides for the governor of the affected state "if the situation is beyond the capability of local or state forces, may request federal assistance and "may request that the President declare a major disaster or emergency" (FEMA, 2008).

According to Hancilar et al. (2010), earthquake shaking and loss information is ultimately intended for dissemination to agencies tasked with the planning and coordination of post-earthquake emergency response. Earthquake losses might be assessed on a regional and/ or local urban level. Regional estimates of damage and assessment of human losses can be achieved using region-specific theoretical/empirical vulnerability relationships in connection with regional inventories of physical and social elements exposed to risk. On an urban level, more detailed inventories of elements at risk are required to be used with analytical vulnerability relationships for the estimation of earthquake losses (Hancilar et al., 2010).

Zaninotto et al. (2014), highlight Italy's awareness of a need for an effective disaster data collection, storage, and sharing of analyses. Italian authorities have expressed the need for specific procedures to be used in post-flood damage assessment to collect data. This data may then be used to: create a database on the basis of which damage models can be defined or validated; supply a comprehensive scenario of flooding impacts according to which priorities can be identified during

the emergency and recovery phase; and establish the compensation due to citizens from insurers or local authorities (Zaninotto et al., 2014).

The work of Papathoma-Köhle et al. (2015) notes how Austrian authorities utilize a post-landslide assessment process. It is utilized for the same purpose as for utilizing a PDA, to enhance the post-event damage data collection process; assess the monetary loss of future events. Austrian authorities also use the process to continuously update and improve the existing vulnerability curve by adding data of recent events. This proactive measure aids in the preparation phase of emergency management such that authorities are better prepared to respond to future events in order to reduce damage through preventative measures.

The notion of performing damage assessments immediately following damage is not unique to the world of local government and local emergency services. The US Army employs a Battle Damage Assessment (BDA) process as its first, and most important, step of Battle Damage Assessment and Repair (BDAR). The BDA process starts immediately when battle damage is detected. An accurate assessment then determines the extent of the damage including which systems or components were damaged, the level of repair required and the risk involved with making repairs. An assessment of an estimate of personnel, time, and materials required to perform repairs or determine if recovery assets are needed ensures wasted resources or opportunities are kept to a minimum. If this damage assessment process is not handled correctly, resources will be wasted and opportunities to return to the fight will be missed. The objective of BDAR is to return a critical system to service without injury to personnel or causing further damage to equipment (US Army, 2012).

The City of Santa Clara engaged in damage assessments following storms the community experienced as a result of the 2017 storm event resulting in $100 million of damage throughout Santa Clara County and prompting the activation of the county's Emergency Operations Center (EOC). Santa Clara County, while acting as the Operational Area, had the responsibility of

communicating with the State of California, and then through the State of California to the federal government (Smith, 2017).

During the 2017 storm event, the City of Santa Clara submitted assistance requests to the State of California's Emergency Management Agency (Appendix L). The cost estimates contained within this particular request for financial assistance were provided by the City of Santa Clara's Water Department and Electrical Department.

Chandler (2008) notes how the PDA process may also be used to identify life threatening situations and imminent hazards with the information obtained being applied to response operations. Evaluation of the critical infrastructure provides information pertinent to any limitations affecting the deployment of resources.

FEMA (2018d) recognizes, as detailed in IS-559: Local Damage Assessment, Independent Study program, every community is different and therefore it is important a community identifies hazards that are most likely to occur. This stage of preparation should take the form of conducting a risk assessment and a hazard vulnerability assessment. A risk assessment provides information about hazards that are likely to occur in a given community while a hazard vulnerability assessment includes information about how often each hazard is likely to occur, the area likely to be impacted and how severe the impact may be. These processes are then used to formulate the community's emergency management plan. Items required in the risk assessment include natural hazards such as earthquakes, tornadoes, hurricanes, and flooding that have occurred in the past and/ or are likely to occur. Another important consideration when conducting a risk assessment is that of any functional needs populations within a given community. This population includes individuals who may be more vulnerable because of immobility issues or simply through their inability to take protective action. These individuals may include children, the elderly, migrant individuals/ families, tourists, non-native English speakers, mobile home residents, and inmates as well as those with disabilities (FEMA, 2018d).

FEMA (2001) provides guidance and worksheets, as detailed in publication 386-2: Understanding Your Risks- Identifying Hazards and Estimating Losses, as a process for hazard analysis that comprises: (a) hazard identification, (b) hazard profile, (c) assets inventory, (d) loss estimate. This guideline is used to estimate damage based on the specific type of construction. For example, if a warehouse is damaged, information in the guide specific to warehouses is applied and the estimation will be different than that for another type of structure such as an office building.

The Natural and Man-made Disasters Threatening Santa Clara

Natural Disasters

The hazard risk ranking as reported by the City of Santa Clara (2016) in the City's Emergency Operations Plan is as follows in order of highest rank: Earthquake; Severe Weather; Flood; Dam and Levee failure; Drought; Landslide and Wildfires. The risk category for earthquake is categorized as high while severe weather, flood, dam and levee failure are categorized medium (Appendix A).

The Santa Clara County Operational Area Mitigation Plan highlights the point that all critical facilities in the operational area are exposed to the earthquake hazard. In Santa Clara County there are an estimated 34,006 people in 7,803 households who live on soils having high to very high liquefaction potential. This can be equated to approximately 1.8% of the total population. The total value of buildings and contents estimated for property in the City of Santa Clara has been estimated to be approximately $34.4 billion (Appendix F). Hazards secondary to an earthquake will likely have damaging effects on the environment. Hazardous materials releases can occur during an earthquake from fixed facilities or secondary to transportation-related incidents. There is the possibility that there follows a release of materials into the surrounding environment. "During an earthquake, structures storing these materials could rupture and leak into the surrounding area or an adjacent waterway, having a disastrous effect on the environment, or emit chemicals in a toxic plume" (p. 145). Of particular concern is the possibility of the resulting isolation of neighborhoods

following a hazardous materials release (Santa Clara County, 2017).

The USGS (2016) estimates a 99.68% chance of a major earthquake occurring within 30 miles of Santa Clara within the next 50 years. The City of Santa Clara is located such that USGS (2016) mapping shows it as being flanked by areas having geological conditions conducive to high degrees of liquefaction (Appendix C). The fact that the San Andreas Fault line passes within six miles of Santa Clara is cause for concern (Lynch and Cole, 2018). The San Andreas Fault, running from north to south, divides the San Francisco Silicon Valley peninsula in two (Appendix A). The USGS (2018) reports that the City of Santa Clara has an earthquake risk that is classified as very high.

Severe weather is the ranked the second highest risk to earthquake for the City of Santa Clara (2016) as detailed in the City's Emergency Operations Plan. California Governor Edmund G. Brown Jr. requested a Major Disaster Declaration (Appendix E) as a result of the 2017 winter storms and on April 1, 2017, President Donald Trump declared a major disaster in California.

As reported by Serna (2017) for the LA Times, during California's 2017 severe winter storms, officials estimated a cost of more than $860 million to repair the state's roads, bridges and highways that were damaged. A combination of snow-heavy storms flowing south from the Alaska Gulf and atmospheric rivers moving east from the tropical Pacific lasting several months produced some of the wettest conditions California has seen in generations. The most expensive event was in Caltrans district four in Santa Clara County, where a 200-foot long section of Highway 35 slid downhill more than 50 feet. A permanent rebuild of the highway and stabilization of the hillside is estimated to cost more than $29.5 million (Serna, 2017).

Man-made Disasters

The City of Santa Clara is home to Levi's Stadium, a 68,500 capacity National Football League stadium. Levi's Stadium is home to the San Francisco forty-niners as well as being the site of the annual NCAA (National Collegiate Athletic Association) Fight Hunger Bowl and the Pac-12

Championship game. For the first time since 1985, the San Francisco Bay Area hosted a Super Bowl championship, Super Bowl 50 that was played at Levi's Stadium on February 7, 2016. The cost of the stadium was $1.3 billion, 12% of which was acquired through public financing. The City of Santa Clara contributed $114 million in public contributions that included $42 million in redevelopment money (Stadiums of Pro Football, 2018).

During the lead up to Super Bowl 50 (February 7, 2016), Levi's Stadium operated under a heightened sense of surveillance as reported by Glaser (2016). There were 60 federal, state, and local agencies working together to coordinate surveillance and security at what was the biggest national security event of the year. The Drug Enforcement Agency (DEA), Transportation Security Administration (TSA), US Coast Guard (USCG), US Secret Service as well as state and local law enforcement agencies have spent more than two years planning for the event. The San Francisco Bay Area was already packed with surveillance equipment installed by the government and private businesses. The hardware included cell phone surveillance devices, video cameras, automated license plate readers, and social media monitoring software. San Francisco is home to one of the largest fusion centers in the US, the Northern California Regional Intelligence Center (NCRIC). Under the direction of the Department of Homeland Security (DHS), fusion centers facilitate intelligence sharing between federal, state, and local agencies. These agencies include the National Security Agency (NSA) and the Federal Bureau of Investigation (FBI) as well as local police agencies, all in the name of preventing terrorism. NCRIC has identified the Silicon Valley area as a high risk objective for acts of terror (Glaser, 2016).

The white paper published by Looking Glass (2016), detailing a physical threat assessment of Super Bowl 50, shows that although no expressed intentions by terrorists to specifically attack the 2016 Super Bowl were identified, there were however identified homegrown terrorists and international terrorist networks that had expressed an interest in attacking other sporting events. Al Qaeda Central's Manual of Afghan Jihad, a 5,000-page document translated from Arabic to

English in 2002, revealed that Al Qaeda has singled out crowded stadiums as one of the best targets for spreading fear. International terrorist networks are interested in targeting sporting events because of the thousands of spectators gathered in a confined space for a long period of time thus maximizing the number of human casualties. Combined with the comparatively low-cost and basic knowledge needed to make an improvised explosive device, this makes perpetrating a terrorist attack relatively cost effective. The 2013 Boston Marathon attack was allegedly made possible through online instructions detailing how to make a homemade explosive (Looking Glass, 2016). Reference is specifically made to the online magazine Inspire, published by Al Qaeda in the Arabian Peninsula (AQAP, 2012). This publication discloses instructions for lone wolves to prepare and launch attacks against crowded sport arenas inside the US. The ninth issue of Inspire recommend supporters inside the U.S. target highly populated locations including sports stadiums and festivals, by detonating car bombs. Supporters are encouraged to attack the entrances and exits of sports arenas as spectators leave and congregate outside. The magazine encourages attacks in the vicinity of stadiums, as it can be difficult to enter a stadium with a bomb (AQAP, 2012, pp. 24).

According to AQAP (2012) as detailed in Inspire, it is not only stadiums that are viable threats for terrorist attacks, but also critical infrastructure and targets affecting commerce. This is apparent by the content of the 9th edition of Inspire reading, “The most important targets in America and in Western countries allied to her militarily” (pp. 23). Specifically these targets have been identified as being, “Large strategic economic targets, such as: The Stock Exchange, power and oil installations, airports, harbors, railroad systems, bridges and highway intersections, tunnels on the highways, metro systems, tourist targets... and so on, [targeting] resources and sources for the economy” (pp. 23). Also, “Centralized information and computer centers that are in control of connecting the different institutions within the state, because this will completely paralyze the activity within that state” (pp. 24) highlights the threat to technological infrastructure.

Paganini (2015) reported on the continued attacks by terrorists on communication infrastructure. Specifically, on September 14, 2015, unknown attackers cut fiber optic internet cables in Livermore, California. This area is immediately west of the Santa Clara's Silicon Valley. This was not an isolated attack as law enforcement agencies reported fourteen other attacks on critical communications infrastructure in the same region. It is apparent from these events that attackers are carrying out sabotage as a means of economic and cyber warfare.

According to the Maryland Coordination and Analysis Center (2017), Khaled Abu Dahab, 57, an Egyptian-born naturalized US citizen and former Silicon Valley car salesman, was arrested in 1998 on terrorism charges in Cairo. He confessed to being a member of the Egyptian Islamic Jihad, an Al Qaeda affiliate having ties to Osama bin Laden. He admitted to US investigators that he recruited Americans into Al Qaeda during his 12 years in California and was once congratulated by Bin Laden for his work on recruiting in the US.

According to Heires (2016), recent terrorist attacks in the US and abroad have underscored the need for tools and strategies that can anticipate and mitigate the dangers of terrorism, whether attacks occur on city streets, in workplaces, at social gatherings, or online in the form of cyberattacks on corporate or government computer networks. Major suppliers of tools in this arena include defense contractors such as Lockheed Martin, Northrop Grumman, Raytheon and Boeing, which sponsor laboratories and incubators that produce technologies that can be applied to the counterterrorism effort. "The Department of Homeland Security recently made it easier and faster to fund technology startups by opening a satellite office in Silicon Valley and introducing a new program to fund startups in 30 days, compared to the many months or even years normally required" (Heires, 2016).

It can be seen that the very tools being developed to combat terrorism in the US and abroad are being developed in the Santa Clara area thus giving credence to the notion that while Santa Clara is at the forefront to the war on terror, it is also a target of such terror.

> According to Brock Long, administrator of FEMA, during a hearing for the Senate Committee on Homeland Security, October 31, 2017, "the events of the past several years, including the planned and deliberate violent attacks abroad in London, Paris, and Brussels, and closer to home in Charlotte, San Bernardino, Orlando, Charlottesville, and most recently Las Vegas, are constant and disturbing reminders of the destruction and human suffering that terrorism and other man-made events can inflict in today's world. This is also a recurring reminder that both the Nation and its communities need to continue to plan, prepare and build the capabilities needed to face constantly evolving man-made threats, from lone shooters to cyber-attacks" (FEMA, 2017c).

Assessment Criteria Utilized in Performing Preliminary Damage Assessments

The National Preparedness Goal as defined by FEMA (2018b) is a statement as it relates to the community as a whole to be prepared for all types of disasters and emergencies. It reads, "A secure and resilient nation with the capabilities required across the whole community to prevent, protect against, mitigate, respond to, and recover from the threats and hazards that pose the greatest risk." Risks include events such as natural disasters, disease pandemics, chemical spills and other manmade hazards, terrorist attacks and cyber-attacks. The National Preparedness Goal organizes 32 Core Capabilities into the following five mission areas: (a) Prevention- to prevent, avoid or stop an imminent, threatened or actual act of terrorism; (b) Protection- to protect our citizens, residents, visitors and assets against the greatest threats and hazards in a manner that allows our interests, aspirations and way of life to thrive; (c) Mitigation- to reduce the loss of life and property by lessening the impact of future disasters; (d) Response- to respond quickly to save lives, protect property and the environment, and meet basic human needs in the aftermath of a catastrophic incident; (e) Recovery- to recover through a focus on the timely restoration, strengthening and revitalization of infrastructure, housing and a sustainable economy, as well as the health, social,

cultural, historic and environmental fabric of communities affected by a catastrophic incident (FEMA, 2018b).

The National Preparedness Goal established by FEMA (2018c) describes 32 core capabilities that address the greatest risks to the nation. Each of these core capabilities is linked to a capability target and these targets recognize that everyone needs the flexibility to determine how they apply resources, based on the threats most relevant to all respective communities.

The 32 core capabilities are listed as:

- Planning
- Public Information and Warning
- Operational Coordination
- Forensics and Attribution
- Intelligence and Information Sharing
- Interdiction and Disruption
- Screening, Search, and Detection
- Access Control and Identity Verification
- Cyber security
- Physical Protective Measures
- Risk Management for Protection Programs and Activities
- Supply Chain Integrity and Security
- Community Resilience
- Long-term Vulnerability Reduction
- Risk and Disaster Resilience Assessment
- Threats and Hazards Identification

- Critical Transportation
- Environmental Response/Health and Safety
- Fatality Management Services
- Fire Management and Suppression
- Infrastructure Systems
- Logistics and Supply Chain Management
- Mass Care Services
- Mass Search and Rescue Operations
- On-scene Security, Protection, and Law Enforcement
- Operational Communications
- Public Health, Healthcare, and Emergency Medical Services
- Situational Assessment
- Economic Recovery
- Health and Social Services
- Housing
- Natural and Cultural Resources (FEMA, 2018c).

FEMA (2018f) has specific criteria for PDA damage state definitions. These are organized into four categories: (a) Destroyed, (b) Major, (c) Minor, and (d) Affected. Each of these four categories details criteria with which the assignment of an asset to a particular category will be achieved. The criteria for each of the four individual categories is defined as follows:

Destroyed - structure is a total loss or damaged to such an extent that repairs are not economically feasible. Any one of the following may constitute a status of destroyed:

- Repair of structure is not economically feasible;
- Structure is permanently uninhabitable;
- There is a complete failure of major structural components (collapse of walls or roof); or
- Unaffected structure will be required to be removed or demolished due to ordinance (e.g., beachfront homes removed due to severe beach erosion).

Major – structure has sustained structural or significant damage, is uninhabitable and requires extensive repairs. Any of the following may constitute major damage:

- Substantial failures to structural elements of the residence (e.g., walls, floors, foundations);
- Damage to the structure exceeds the Disaster Housing Program, Home Repair Grant maximum ($10,000);
- General exterior property damage exceeds the Disaster Housing Program Home Repair Grant maximum (e.g., roads and bridges, wells, earth movement) and has more than 50% damage to the structure; or
- Damage will take more than 30 days to repair.

Minor – structure is damaged and uninhabitable but may be made habitable in a short period of time with home repairs. Any of the following may constitute minor damage:

- Structure can be repaired within 30 days;
- Structure has more than $100 of eligible habitability items through the Disaster Housing Program, Home Repair Grant; has less than $10,000 of eligible habitability items through the Disaster Repair Program, Home Repair Grant; or
- Damage repair costs are less than 50% of total value of house.

Affected – structures sustain some damage to structure and contents but which are habitable without repairs and damage to habitability items is less than Disaster Housing Program, Home Repair Grant minimum (FEMA, 2018f).

As reported by Homeland Security Today US (2013), the State of Wisconsin was

successful in securing federal disaster aid assistance after the June 2013 flooding due to the utilization of data collected with the mobile app RunMobile, developed by Alpharetta, Georgia. State and local emergency management officials used RunMobile's Damage Assessment Reporting Solution (DARS) to report and collect damage data, which was then used to complete the PDA requirement for securing federal disaster aid assistance. The app is specifically designed to help emergency managers and recovery specialists improve the speed and consistency of damage assessment reporting during and after a disaster. Based on Wisconsin's PDA, Governor Scott Walker formally requested a Federal Disaster Declaration on August 2, 2013 and then days later the declaration was approved by President Barack Obama. Assistance covering eligible projects such as debris removal and road repairs for eight Wisconsin counties and one tribe in the state was provided. The app is compatible with all mobile devices such as Apple, Windows and Android. It provides a form-driven data collection process engineered to ensure detailed and consistent descriptions of damage. The app also integrates to device cameras and Global Positioning Satellite (GPS) technology which in turn provides for photographing and precisely locating damage on maps (Homeland Security Today US, 2013).

While damage assessments deal with estimating losses and the impact to a community as whole following an incident, a threat assessment deals with estimating potential impact to a community prior to an incident. As a threat assessment is not generally considered a part of the recovery process it is key component of the incident management process, specifically the planning phase.

A Threat and Hazard Identification and Risk Assessment (THIRA) is defined by FEMA (2018a) as a "three-step risk assessment process that assist communities in answering the following questions: (a) What threats and hazards can affect our community? (b) If they occurred, what impacts would those threats and hazards have on our community? (c) Based on those impacts, what capabilities should our community have? "The THIRA helps communities understand their risks

and determine the level of capability they need in order to address those risks". The information garnered from this process will then form the foundation for determining any gaps in a given community's preparedness plan (FEMA, 2018a).

Direction for performing THIRA reports is found in the FEMA document titled Comprehensive Preparedness Guide 201: Threat and Hazard Identification and Risk Assessment Guide, second edition (FEMA, 2013). This document provides a four step process for conducting a THIRA while developing an understanding of a given community's risks from natural, technological, and human-caused threats and hazards. This process in turn allows a community to make informed decisions regarding the management of risk and the development of needed capabilities to address these risks. The four steps as detailed in FEMA's Comprehensive Preparedness Guide 201 are to: (a) Identify the threats and hazards of concern; (b) Give the threats and hazards context through showing how they may affect the community; (c) Establish capability targets through assessing each threat and hazard in context to develop a specific capability target for each core capability identified in the National Preparedness Goal; (d) Apply the results. For each core capability, estimate the resources required to achieve the capability targets through the use of community assets and mutual aid, while also considering preparedness activities, including mitigation opportunities (FEMA, 2013).

The work of Kilbury (2007), makes an interesting comparison to the way PDAs are conducted on the west coast of the US to how they are conducted on the east coast of the US. While the purpose for conducting these respective PDAs is essentially the same, to provide detailed information on the total amount and types of damage sustained by the community or area from the event, the specific assessment process for each is determined by the type of threat that each is likely to experience. Florida is subject primarily to the treat of hurricanes while California is subject primarily to the threat of earthquakes and therefore the expected damage due to each of these natural disasters should be considered when determining assessment processes in their

respective aftermaths. The way in which PDAs are conducted also differ from the west coast to the east coast of the US as related to the agencies performing them. The states of California and Washington primarily utilize fire department personnel while Seminole County, Florida for example, utilizes a larger and more diverse workforce comprising the Sherriff's helicopter fleet, department of public works members as well as traffic and utility departments (Kilbury, 2007).

The work of Scearce (2015) describes the process of Initial Rapid Damage Assessment (IRDA) that is tasked to the City of Danville Fire Department, Virginia. The purpose of this particular damage assessment is to "gather as much information as possible to help determine mitigation actions and immediate resource needs" (p.17). Also noted are critical areas for prioritization, "namely life hazard (both citizens and responders), property damage and critical infrastructure damage" (p. 17). In the event that local responders are unable to assess damage, assistance is then requested through the Virginia Emergency Operations Center. The purpose of performing an IRDA as described by Scearce (2015) is similar to that of the PDA as detailed by FEMA (2016b) with the exception of FEMA's criteria of providing for information gathering specific to assisting in resource requests through the Stafford Act.

FEMA provides a two hour web-based interactive course specializing in damage assessment training, IS-559: Local Damage Assessment. It provides information and resources that will enable participants to plan an effective damage assessment program and then conduct rapid and effective damage assessments. This will in turn save lives, protect property and the environment, and begin the process of recovery and mitigation. The primary audience for this course are "local officials who are responsible for assessing, collecting, and reporting damages during and after any event that causes damage of private, public, and critical infrastructure". The IS-559: Local Damage Assessment course comprises the following sections:

- Lesson 1: Introduction to Local Damage Assessment
- Lesson 2: Hazard Analysis

- Lesson 3: Planning and Damage Assessment Program
- Lesson 4: Training and Exercises
- Lesson 5: Operations
- Lesson 6: Data Collection and Analysis

Following completion of the course there is a final exam (FEMA, 2018d).

The Federal Emergency Management Agency (2018d) has identified a five step procedure designed to complete the damage assessment process. The first step involves the identification of the team responsible for planning efforts. Next, members of the local damage assessment planning team review historical data, maps, and other documentation. The third step is to determine plan components and assumptions, while considering factors such as resources and priorities affecting the plan and its implementation. The fourth step is identifying damage assessment zones. It is important to identify in the planning process the zones that damage assessment response team members will inspect after an event in order to be familiar with these zones and can therefore rapidly deploy to conduct damage assessment. The fifth step is establishing local defined standards for damage assessment that are in accordance with state requirements. Establishing procedures for maintaining the process of damage assessment requires that the PDA program may need to be modified periodically as new information such as new hazards are identified (FEMA, 2018d).

Federal Disaster Assistance may be acquired in a catastrophic disaster, and if the state's governor requests it, federal resources may be mobilized through FEMA. Federal funding to state or local governments is provided to pay part of the costs of rebuilding a community's damaged infrastructure. This funding may include funding for debris removal, emergency protective measures, public services, repair or replacement of damaged public property and loans needed by communities for essential government functions as well as grants for public schools. FEMA coordinates with Cal OES (California Office of Emergency Services) to implement the Public Assistance (PA) Grant Program. The request for PA must be received by Cal OES within 30

days of the date of the disaster declaration (State of California, 2018b).

The following details the step by step process of recovery as it relates to Federal Disaster Assistance, for the State of California:

- A joint Preliminary Damage Assessment is conducted by FEMA, Cal OES, and local partners to determine losses and recovery needs
- The Governor requests federal assistance
- The President approves the request for federal disaster funding or FEMA informs the governor it has been denied. This decision process could take a few hours or several weeks
- Cal OES holds Applicants' Briefings to provide a general overview of the Public Assistance (PA) program and describe the application process
- Applicants submit a Request for Public Assistance to Cal OES within 30 days of the date of the disaster declaration
- Kick-off Meetings for eligible applicants are held with FEMA, Cal OES and the local partner to provide a more detailed review of the program and specific applicant needs
- The applicant submits a List of Projects to Cal OES
- Damaged sites are documented using a Subgrant Application (Project Worksheet).
- Eligible Project Worksheets are obligated
- Funding is disbursed through Cal OES to the applicant as appropriate
- Applicants are required to provide quarterly status updates for each large project
- Applicants must submit time extension requests prior to the last approved project deadline
- Applicants complete construction of their projects and notify Cal OES
    - within 60 days of completion of EACH large project
    - within 60 days of completion of ALL small projects
- Cal OES and FEMA complete a closeout of the application (State of California, 2018b).

It is therefore important to not only complete applications in a timely manner as detailed above but also to do so accurately and to the specific criteria required by the State of California to ensure that federal funding is secured. The State of California (2018a) provides guidance on starting the actual process of recovery through correct request for assistance, namely the publication Emergency Proclamations: A Quick reference Guide for Local Governments (Appendix M). This guide details request the processes for assistance and the levels of disaster assistance (Director's Concurrence, Governor's Proclamation of State Emergency, Presidential Declaration of Emergency and Presidential Declaration of a Major Disaster).

The assessment of properties may be done prior to an event occurring as well as post event. A THIRA is performed prior to an event occurring and a PDA following an event. The State of California's agency tasked with the management of wildfire events, Cal Fire, utilizes treat assessment guidelines for structures threatened by wildfire as well as post-fire assessments. The guidelines for threat assessment as determined by Firescope deal with threats to properties following which operational decisions determine the deployment of resources. Firescope is a "program intended to complete the legislative attempt to unify various fire agencies together into one voice and direction. The character of this group is comprised of diverse fire agencies derived from the founding legislation. The synergy created by these diverse fire agencies truly provides valuable input to the Director of Cal OES in addressing the future of fire/ rescue services in California and assures excellent representation for the continued development of Firescope products" (State of California, 2018a).

The standardized method for triaging structures allows for a rapid assessment followed up with timely decisions regarding resource allocation. The status of homes/ structures are reported in terms of three standardized Structure Triage Categories (Appendix H) as defined by Firescope and utilized by all firefighting agencies responding to wildland fire events in California. The categories are non-threatened, threatened defensible or threatened non-defensible. The path of the wildfire is

predicted and any structures threatened are triaged so that firefighting resources may be efficiently and effectively applied. Cal Fire utilizes Damage Inspectors to assess damage following a wildland fire event as a means to determining damage caused by wildfires. This information is collated and released in press conferences and serves as a method for calculating fire losses (State of California, 2013).

The work of Mazza (2009) compares the American Red Cross and FEMA damage classification criteria for performing damage assessment. While there are differences in the criteria utilized to classify a structure, it is noted that the PDA be completed "as soon as possible" in both cases as "the level of damage assessment is often conducted in cooperation with state and/ or federal emergency management officials to establish eligibility for a State of Emergency proclamation or federal Presidential Major Disaster or Emergency Declaration" (p. 19).

The State of Minnesota's Homeland Security and Emergency Management Agency provides a Preliminary Damage Assessment Field Guide (Appendix G) "to serve as a quick reference tool for officials and others in conducting local damage assessment for homes and businesses" (p. 2). This field guide illustrates the 4 Degrees of Damage (Destroyed, Major, Minor and Affected) and the specific FEMA criteria for seeking Individual Assistance. It contains illustrations that offer examples of the different degrees of damage for both wind and flood (State of Minnesota, 2018).

Chandler (2008), stresses the importance of including damage assessment as a key component of disaster management. The consequences of not doing so have been identified as: (a) a lack of defined roles and responsibilities between responding agencies resulting in a duplication of efforts in performing PDAs; (b) incomplete pre-planning failed to identify key infrastructure resulting in the delay of prioritizing incident needs; (c) inaccurate reporting of information to the EOC from field units resulted in critical damage information not being reported. This was largely due to the absence of any standardized reporting process or format. Information that was reported

was often subjective in nature and therefore biased; (d) the EOC was unable to support the incident management team physically during disaster operations (p. 9). By having a PDA policy in place, many of the problems listed above may be eliminated while also providing for the allocation of resources to prioritized incident needs as well as ensuring the securing of state and federal assistance occurs in a timely manner (Chandler, 2008).

For a community to effectively mitigate and then recover from an event, it is important that the community has in place prior to the event a PDA process. PDAs are made effective by influences from available resources such as dedicated teams that understand their roles, how information is gathered and documented and relayed to the EOC. The EOC is made effective through its ability to obtain and analyze information provided by the PDA teams and then prioritize incident needs with the available resources. In the event that the needs of the incident exceed the capabilities of the community, additional resources such as aid from state and federal sources may be requested (Chandler, 2008).

Procedures

The idea for this applied research project started when the author attended the National Fire Academy's course R0306 Executive Analysis of Fire Service Operations in Emergency Management (EAFSOEM), during the period from April 9, 2018 to April 20, 2018. At the start of this course the author was not aware of any reasons or benefits for performing PDAs. As the course progressed the author became aware of the importance of having a process in place for conducting PDAs. This awareness raised the question as to why a PDA procedure is not in place for the SCFD, based on the author's operational knowledge, and as such highlighted the need to develop one. The author contacted the SCFD's Deputy Chief of Operations, JD Madden (personal communication, April 11, 2018) and asked who in the City of Santa Clara has the responsibility to conduct PDAs. The author learned that the responsibility was with the SCFD and it was confirmed that there is no procedure/ policy currently in place for this purpose.

Following completion of the R0306 course, Executive Analysis of Fire Service Operations in Emergency Management, the author was required to complete an applied research project dealing with a specific problem in the City of Santa Clara as related to the course topic. The following problem statement was developed: The problem is that while the SCFD is responsible for conducting post-incident PDA following large scale incidents in the City of Santa Clara, such as natural and man-made disasters, there are currently no policy/ procedures in place for this purpose. The following purpose statement was then developed: The purpose of this research therefore was to develop and then implement a PDA policy/ procedure for the SCFD to be utilized following natural or man-made disasters.

The following three research questions were formulated as a means with which to develop recommendations to apply in implementing a PDA policy/ procedure for the SCFD to be utilized following natural or man-made disasters: (a) What is the purpose of performing preliminary damage assessments? (b) What are the natural or man-made disasters for which the Santa Clara Fire Department shall establish a damage assessment policy/ procedure? (c) What is the assessment criteria utilized in performing preliminary damage assessments?

Following the development of a problem statement, a purpose statement and the relevant research questions, the author conducted research through a literature review, through interviews with SCFD command staff members and by requesting information from past and former fellow EFO students.

Research Methodology

The applied research model was chosen because it is conducive to studying what is occurring and then looking at ways to improve, or in the case of this particular applied research project implement, procedures such that a resulting process for SCFD personnel is established for the completion of PDAs in the field. According to Brown and Hale (2014), applied research projects are primarily concerned with solving a contemporary problem (p. 2).

Action research was the specific methodology utilized to develop a procedure with which the SCFD will perform PDAs following natural or manmade disasters. During this research new information was gathered by way of literature review, interviews, and through contact with EFO students.

Literature Review

Literature review was conducted starting with research at the National Emergency Training Center's Resource Learning Center where scholarly articles were searched for subjects pertaining to preliminary damage assessments as well as FEMA resources pertaining to the emergency management of large scale events. References searched include applied research projects from other EFO students, periodicals and books. The internet search engine Scholar.Google.com provided access to periodicals and journals from which information relevant to the emergency management of large scale events and PDAs was obtained.

Interviews

An interview was conducted with SCFD Deputy Chief of Operations JD Madden (personal communication, April 11, 2018), for the purpose of enquiring as to the need for the SCFD to develop a policy/ procedure for conducting PDA in the event a natural or man-made disaster were to occur in Santa Clara City. An interview with the City of Santa Clara's Emergency Services Coordinator, Ms. Lisa Schoenthal (personal communication, July 18, 2018), was conducted to gather information regarding EOC implementation and how PDAs may be introduced while also identifying stakeholders. The author formulated questions aimed at discovering specifics of the PDA process and in particular how it would be applied to the City of Santa Clara while also investigating the interface of field operations personnel and the EOC (Appendix I).

Request for Information to Current and Former EFO Students

The rosters for the August 2016 Executive Development, June 2017 Executive Analysis

of Community Risk Reduction and 2018 Executive Analysis of Fire Service Operations in Emergency Management classes, all of which the author participated in as a student, at the National Fire Academy were surveyed. Each participant was invited, via a combination of private and government email, to provide information on policies relating to PDAs if their particular organization employed one (Appendix J). There were a total of 27 requests submitted to 27 EFO students, of which there were three replies resulting in a response rate of 11.1% participation.

Limitations and Assumptions

The information obtained from the literary reviewed sources during the course of research for this applied research project is deemed as reliable and current. This assumption is made on consideration of each author's credentials and experience in qualification as a subject matter expert while also evaluating the publications in which literary works appeared for credibility based in peer reviewed or acceptance as an industry reference resource. It is assumed that the EFO students to whom the request for information regarding their respective PDA policies possess an adequate level of understanding regarding fire department policies and procedures in their respective jurisdictions.

Due to a response rate of 11.1% for the EFO students polled, it may appear that many agencies to not have procedures in place for performing PDAs. It must be understood however that the 27 EFO students polled may or may not provide for a representative group of the US fire service, therefore it is not known based on results of the survey questionnaire alone the degree to which PDAs are performed by fire department first responders .

To answer question number one, (What is the purpose of performing preliminary damage assessments?) the National Emergency Training Center's Resource Learning Center database was searched for EFO Applied Research Projects as well as periodicals and research concerned with the area of emergency management and damage assessment. The internet search engine

Scholar.Google.com was also searched for periodicals and research work related to emergency management and damage assessment. An interview was conducted with SCFD Deputy Chief of Operations JD Madden (personal communication, April 11, 2018), for the purpose of enquiring as to the need for the SCFD to develop a policy/ procedure for conducting PDAs in the event that a natural or man-made disaster were to occur in Santa Clara City. The work of Chandler (2008), a former EFO student, was surveyed for the importance of conducting PDAs and for the consequences of inaccurate and/ or incomplete reporting and documentation. The work of Searce (2015), a former EFO student, was surveyed for the initial process of performing PDAs as well as for ideas regarding the prioritization of critical infrastructures during the process. An interview was conducted with Ms. Lisa Schoenthal (personal communication, July 18, 2018), the City of Santa Clara's Emergency Services Coordinator, to gather information regarding the completion of PDAs in the field and how this relates specifically to the City of Santa Clara's EOC.

To answer question number two, (What are the natural or man-made disasters for which the Santa Clara Fire Department shall establish a damage assessment policy/ procedure?) a literature review utilizing the National Emergency Training Center's Learning Resource Center aimed at investigating which natural and man-made disasters that may threaten California and the Santa Clara Valley was conducted. Articles searched included those from periodicals and news sources.

A telephone interview was conducted with Ms. Lisa Schoenthal, (personal communication, 25 May, 2018) Emergency Services Coordinator, where she provided her professional insight into the types of natural and man-made disasters that the City of Santa Clara may be subject to. Ms. Schoenthal provided the author with access to the City of Santa Clara's Intranet website where the Emergency Operations Plan is located.

The internet search engine Scholar.Google.com was searched for periodicals and research work relating to preliminary damage assessments, earthquake damage assessment and damage

assessment following natural disasters. Research was then conducted based on the findings of the level of threat posed by acts of terrorism specific to the Silicon Valley area using the search engine Google.Scholar.com. News articles on the subject of terrorism and natural disasters related to Santa Clara Valley were surveyed.

To answer question number three, (What is the assessment criteria utilized in performing preliminary damage assessments?) The National Emergency Training Center's Resource Learning Center database was searched for EFO Applied Research Projects concerned with the area of emergency management and damage assessment. The work of Kilbury (2007), a former EFO student, was surveyed for PDA completion criteria. The work of Mazza (2009), a former EFO student, was surveyed for criteria for completing PDAs which differed between agencies.

The internet search engine Scholar.Google.com was searched for periodicals and research work relating to emergency management and damage assessment. The literature review was not limited to fire service operations, but included information on damage assessment performed by the US Army as well as by fire services abroad. A request for information from 27 former and current EFO students was generated for the purpose of soliciting information regarding PDA procedures utilized by their respective agencies, or other agencies of which they may be aware.

The author, a seventeen year veteran of the SCFD, provided insight from both operational and administrative experience on how the implementation of technology, specifically Apple iPads were being utilized on all front line SCFD apparatus, and if they may be employed in performing PDAs. The author also drew from his experience of the SCFD's training model and how it may be applied to training department personnel in performing PDAs.

The author, while participating in wildland firefighter training and during the execution of his duties as a member of the SCFD Wildland Firefighting Team, became aware of an app called Avenza Maps. This app had been recently introduced, although not widely used, as a potential asset to the SCFD's wildland firefighters. The author investigated the possibility of

utilizing Avenza Maps in conducting PDAs.

The author completed the online training module designed to be training for conducting PDAs that was discovered during the literature review, IS-559: Local Damage Assessment (FEMA, 2018d). This training module was completed for the purpose of assessing training tools that may be implemented for department wide training upon the introduction of the PDA process to the SCFD's suppression division personnel.

An interview was conducted with Ms. Lisa Schoenthal (personal communication, July 18, 2018), the City of Santa Clara's Emergency Services Coordinator, while discussing topics formed from ten questions (Appendix I) dealing with PDAs and EOC procedures specific to the City of Santa Clara and if a need exists to formulate policies specifically for Santa Clara.

Results

The first research question inquired as to the purpose of performing PDAs. The results for this research question produced important findings such as the process for applying for federal assistance, in particular the intent of the Stafford Act (FEMA, 2016e) and the criteria necessary for a state proclamation or federal declaration of emergency. The Stafford Act as defined by FEMA (2016e), "authorizes the President to provide financial and other forms of assistance to state, local and tribal governments, certain non-profit private organizations and individuals to support recovery and mitigation efforts following presidentially declared disasters and emergencies" (pp. 99 -100). Following a disaster, a state governor requests PDAs as the initial step in the disaster declaration process to assist in the assessment of impact to the community as a whole (Peterson, 2017b).

The primary means with which to provide for federal assistance following a natural or man-made disaster is through FEMA's Disaster Assistance Program. The Stafford Act was specifically formulated for the purpose of providing support to local and state governments following a disaster as well as for establishing requirements for the implementation of a Presidential Disaster Declaration (FEMA, 2008). A damage assessment as detailed in FEMA's EAFSOEM student manual (2016c),

is defined as being a process with which to "provide detailed information on the total amount and types of damage sustained by the community or area from the event" (p. 2-6). A Preliminary Damage Assessment (PDA) is defined as being a process with which to determine the magnitude and impact of the total damage. While the responsibility for performing PDAs usually lies with the first responding fire companies to the scene, the responsibility may be shared between agencies of differing disciplines such as police, fire and public works agencies. This combined effort may be practical in areas where there are challenges with serving a large geographic location with a widely spread out population. In this case FEMA suggests that helicopter is the means with which to conduct RDAs quickly (FEMA, 2016b).

There are two forms of assistance available, Public Assistance (PA) and Individual Assistance (IA) as detailed in FEMA's IS-559 Local Damage Assessment Independent Study Program. PA is reimbursement and emergency assistance provided from the federal government to state, tribal, and local governments as well as certain types of private non-profit entities. FEMA provides supplemental federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities. IA is funding or direct assistance to individuals, families and businesses in areas where property has been damaged or destroyed and where losses are not covered by insurance (FEMA, 2018d). This research project is concerned with Public Assistance (PA) as this involves city assets and critical infrastructure.

SCFD Deputy Chief of Operations JD Madden (personal communication, April 11, 2018), stated that there was a need for the SCFD to develop a policy/ procedure for conducting PDAs in the event a natural or man-made disaster were to occur in Santa Clara. There is currently no procedure in place for SCFD personnel to perform PDAs even though the responsibility lies with the department.

According to Ms. Schoenthal (personal communication, July 18, 2018), the City of Santa Clara's

Emergency Services Coordinator, there is a need for the City of Santa Clara to develop a policy/ procedure for conducting PDAs following large incidents and the following informational points were provided (Appendix I):

- The line of communication from those performing PDAs in the field to the EOC generally involve field personnel contacting the EOC's Operations Section who then notify the Finance/ Admin Section from which information will be passed to the Recovery Unit.
- It is feasible to expect city employees other than SCFD personnel to perform PDAs. This is currently the case as evident in the storms of 2017 in which members of the city's Electric Department and Water Department conducted damage assessments for assets with which they were familiar.
- Is it feasible to have target hazards in each district pre-planned for the purpose of creating priorities when performing PDAs following an event

The City of Santa Clara's EOC, when activated by order of the City Manager or his/ her designee, is staffed by a team of full-time city employees comprising department heads and managers with each occupying a position within the organizational structure (Appendix K).

The second research question inquired as to the natural or man-made disasters for which the SCFD shall establish a PDA policy/ procedure. The results for this research question produced important findings such as the hazard risk ranking as reported by the City of Santa Clara (2016) in the City's Emergency Operations Plan is as follows in order of highest rank: Earthquake; Severe Weather; Flood; Dam and Levee failure; Drought; Landslide and Wildfires. The risk category for earthquake is categorized as high and Santa Clara City is a community clearly at risk from natural disasters (Appendix A).

There is a 99.68% chance of a major earthquake occurring within 30 miles of Santa Clara within the next 50 years (USGS, 2016). The City of Santa Clara is located such that USGS (2016) mapping shows it as being flanked by areas having geological conditions conducive to high

degrees of liquefaction (Appendix C). The San Andreas Fault, running from north to south, divides the San Francisco Silicon Valley peninsula in two (Appendix A). The USGS (2018) reports that the City of Santa Clara has an earthquake risk that is classified as very high.

Santa Clara County has already experienced the detrimental effects of severe weather resulting in the permanent rebuild of a county highway, located in Caltrans district four, and stabilization of the hillside with an estimated cost of more than $29.5 million in the storm event of 2017 (Serna, 2017).

The threat of a terrorist attack is present in Santa Clara due to the technological infrastructure present in the city. Targets have been identified by terrorist groups as being "centralized information and computer centers that are in control of connecting the different institutions within the state, because this will completely paralyze the activity within that state" (AQAP, 2012, pp. 24).

There have to date been continued attacks by terrorists on communication infrastructure in the Santa Clara County area. Specifically, on September 14, 2015, unknown attackers cut fiber optic internet cables in Livermore, California. This area is immediately west of the Santa Clara Valley. This was not an isolated attack as law enforcement agencies reported fourteen other attacks on critical communications infrastructure in the same region (Paganini, 2015).

The third research question inquired as to the assessment criteria utilized in performing PDAs. The results for this research question produced important findings such as the fact that there are specific criteria established for the completion of PDAs. These criteria include specific classification for the description of the extent to which assets are damaged. There is also a specific procedure in place in the State of California for recovery relating to Federal Disaster Assistance as detailed below:

- A joint Preliminary Damage Assessment is conducted by FEMA, Cal OES, and local partners to determine losses and recovery needs

- The Governor requests federal assistance
- The President approves the request for federal disaster funding or FEMA informs the governor it has been denied. This decision process could take a few hours or several weeks
- Cal OES holds Applicants' Briefings to provide a general overview of the Public Assistance (PA) program and describe the application process
- Applicants submit a Request for Public Assistance to Cal OES within 30 days of the date of the declaration
- Kick-off Meetings for eligible applicants are held with FEMA, Cal OES and the local partner to provide a more detailed review of the program and specific applicant needs
- The applicant submits a List of Projects to Cal OES
- Damaged sites are documented using a Subgrant Application (Project Worksheet)
- Eligible Project Worksheets are obligated
- Funding is disbursed through Cal OES to the applicant as appropriate
- Applicants are required to provide quarterly status updates for each large project
- Applicants must submit time extension requests prior to the last approved project deadline
- Applicants complete construction of their projects and notify Cal OES
    - within 60 days of completion of EACH large project
    - within 60 days of completion of ALL small projects
- Cal OES and FEMA complete a closeout of the application (State of California, 2018b).

It is therefore important to not only complete applications in a timely manner as detailed above but to also complete applications accurately and to the specific criteria required by the State of California to ensure that federal funding is secured. The State of California (2018a) provides guidance on starting the actual process of recovery through correct a request for assistance, namely the publication Emergency Proclamations: A Quick reference Guide for Local Governments

(Appendix M). This publication provides guidelines for assistance requests and details the levels of disaster assistance (Director's concurrence, Governor's Proclamation of State Emergency, Presidential Declaration of Emergency and Presidential declaration of a Major Disaster).

According to Kilbury (2007), the way PDAs are conducted on the west coast of the US to how they are conducted on the east coast of the US are not the same. While the purpose for conducting these respective PDAs is essentially the same, that is to provide detailed information on the total amount and types of damage sustained by the community or area from an event, the specific assessment process for each is determined by the type of threat that each is likely to experience. For example, Florida is subject primarily to the treat of hurricanes while California is subject primarily to the threat of earthquakes and therefore the expected damage due to each of these natural disasters should be considered when determining assessment processes in their aftermath.

According to Ms. Schoenthal (personal communication, July 18, 2018), the City of Santa Clara's Emergency Services Coordinator, the following informational points were provided via an interview based on specific questions pertinent to this particular research question (Appendix I):

- The most appropriate PDA criteria is that which is compliant with state and FEMA grant applications
- The City of Santa Clara should utilize criteria specific to the risk profile of the geographic and political area it occupies

The Federal Emergency Management Agency (2018d) has identified five steps in a process designed to complete the damage assessment. The first step involves the identification of the team responsible for planning efforts. Next, members of the local damage assessment planning team review historical data, maps, and other documentation. The third step is to determine plan components and assumptions, while considering factors such as resources and priorities affecting the plan and its implementation. The fourth step is identifying damage assessment zones. It is

important to identify in the planning process the zones that damage assessment response team members will inspect after an event in order to be familiar with these zones and can therefore rapidly deploy to conduct damage assessment. The fifth step is establishing local defined standards for damage assessment that are in accordance with state requirements. Establishing procedures for maintaining the process of damage assessment requires that the PDA program may need to be modified periodically as new information such as new hazards are identified (FEMA, 2018d).

With regard to establishing local defined standards for damage assessment that are in accordance with state requirements, guidance comes in the way of FEMA (2018f) guidelines as detailed in four categories: (a) Destroyed, (b) Major, (c) Minor, and (d) Affected. Each of these four categories details criteria with which the assignment of an asset to a particular category will be achieved. The criteria for each of the four individual categories is defined as follows:

Destroyed - structure is a total loss or damaged to such an extent that repairs are not economically feasible. Any one of the following may constitute a status of destroyed:

- Repair of structure is not economically feasible;
- Structure is permanently uninhabitable;
- There is a complete failure of major structural components (collapse of walls or roof); or
- Unaffected structure will be required to be removed or demolished due to ordinance (e.g., beachfront homes removed due to severe beach erosion).

Major – structure has sustained structural or significant damage, is uninhabitable and requires extensive repairs. Any of the following may constitute major damage:

- Substantial failures to structural elements of the residence (e.g., walls, floors, foundations);
- Damage to the structure exceeds the Disaster Housing Program, Home Repair Grant maximum ($10,000);

- General exterior property damage exceeds the Disaster Housing Program Home Repair Grant maximum (e.g., roads and bridges, wells, earth movement) and has more than 50% damage to the structure; or
- Damage will take more than 30 days to repair.

Minor – structure is damaged and uninhabitable but may be made habitable in a short period of time with home repairs. Any of the following may constitute minor damage:

- Structure can be repaired within 30 days;
- Structure has more than $100 of eligible habitability items through the Disaster Housing Program, Home Repair Grant; has less than $10,000 of eligible habitability items through the Disaster Repair Program, Home Repair Grant; or
- Damage repair costs are less than 50% of total value of house.

Affected – structures sustain some damage to structure and contents but which are habitable without repairs and damage to habitability items is less than Disaster Housing Program, Home Repair Grant minimum (FEMA, 2018f).

Technology is being utilized to aid in the PDA process in differing degrees. The State of Wisconsin utilized data collected with the mobile app RunMobile, developed by Alpharetta, Georgia, during storms of June 2013. State and local emergency management officials used RunMobile's Damage Assessment Reporting Solution (DARS) to report and collect damage data, which was then used to complete the PDA requirement for securing federal disaster aid assistance. The app is specifically designed to help emergency managers and recovery specialists improve the speed and consistency of damage assessment reporting during and after a disaster. The app is compatible with all mobile devices such as Apple, Windows and Android. It provides a form-driven data collection process engineered to ensure detailed and consistent descriptions of damage the app also integrates to device cameras and Global Positioning Satellite (GPS) technology which in turn provides for photographing and precisely locating damage on maps (Homeland Security

Today US, 2013).

A Threat and Hazard Identification and Risk Assessment (THIRA) is a process that asks the following questions of a given community: (a) What threats and hazards can affect the community? (b) If these events occurred, what impacts would those threats and hazards have on the community? (c) Based on those impacts, what capabilities should the community have? It is the information garnered from the THIRA that communities an understanding of their risks and helps them determine the level of capability they need in order to address those risks. This information also serves to determine if any gaps exist in a given community's preparedness plan (FEMA, 2018a).

There are online resources available to aid communities in preparing for natural or man-made disasters as well as resources to provide guidance in the development of programs to be used for performing PDAs. FEMA (2018d) provides IS-559: Local Damage Assessment. This online class will enable participants to plan an effective damage assessment program and conduct rapid and effective damage assessments. This course is aimed at first responders and local officials charged with gathering and reporting damages during and after events that causes damage of private, public, and critical infrastructure".

Following completion of the course there is a final exam (FEMA, 2018d).

A THIRA is to be performed prior to the event occurring and a PDA following the event. In California, Cal Fire, the agency responsible for wildland firefighting and incident management throughout the state utilizes processes for pre-event (threat) and post-event (hazard) assessment. The guidelines for threat assessment as determined by Firescope deals with threats to properties following which operational decisions determine the deployment of resources (State of California, 2018a).

Pre-event threat assessment of the status of homes/ structures are reported in terms of three standardized Structure Triage Categories (Appendix H) as defined by Firescope and utilized by all

firefighting agencies responding to wildland fire events in California. The categories are non-threatened, threatened/ defensible or threatened non-defensible. Post-event damage assessment of homes/ structures are performed by Cal Fire's Damage Inspectors (DINS) (State of California, 2013).

There are differences to how different agencies perform damage assessments as highlighted by Mazza (2009) who compares the American Red Cross and FEMA damage classification and criteria for performing damage assessment. While there are differences in the criteria utilized to classify a structure, it is noted that the PDA be completed "as soon as possible" as "the level of damage assessment is often conducted in cooperation with state and/ or federal emergency management officials to establish eligibility for a State of Emergency proclamation or federal Presidential Major Disaster or Emergency Declaration" (p. 19).

The consequences of not performing accurate and timely damage assessments may include: (a) A lack of defined roles and responsibilities between responding agencies resulting in a duplication of efforts in performing PDAs; (b) Incomplete pre-planning failed to identify key infrastructure resulting in the delay of prioritizing incident needs; (c) Inaccurate reporting of information to the EOC from field units resulted in critical damage information not being reported. This was largely due to the absence of any standardized reporting process or format. Information that was reported was often subjective in nature and therefore biased; (d) The EOC was unable to support the incident management team physically during disaster operations (Chandler, 2008).

Discussion

On the Reasons for Performing PDAs

Damage assessments are necessary following any large scale disaster or a smaller scale disaster in which local resources are immediately overwhelmed and for which there will be needed a substantial recovery effort. A damage assessment as detailed in FEMA's EAFSOEM student manual (2016c), is defined as being a process with which to "provide detailed information on the

total amount and types of damage sustained by the community or area from the event" (p. 2-6). Peterson (2017b), explains that following a disaster, a Governor requests PDAs as the first step in the declaration process. Federal representatives, including the U.S. Small Business Administration, join state, tribal, and local officials to form PDA teams.

The primary means with which to provide for federal assistance is through the Presidents Disaster Assistance Program managed by FEMA. The Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288, as amended the Stafford Act, was established for the sole purpose of providing support to local and state governments following a disaster as well as for establishing the requirements for which a Presidential Disaster Declaration be implemented.

Upon the implementation of a Presidential Disaster Declaration, assistance is then made available. There are generally two forms of assistance available, Public Assistance (PA) and Individual Assistance (IA). PA is reimbursement and emergency assistance provided to state, tribal, and local governments and certain types of private non-profit entities from the federal government while IA is funding or direct assistance to individuals, families and businesses in areas where property has been damaged or destroyed and where losses are not covered by insurance. FEMA provides supplemental federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities (FEMA, 2018d).

There a process in place for requesting federal assistance whether it be PA or IA. In brief, this process involves a joint PDA being by FEMA, Cal OES, and local partners to determine losses and recovery needs followed by a request from the Governor for federal assistance. The President will then approve the request for federal disaster funding or FEMA informs the governing or it has been denied (State of California, 2018b). The PDA is an important step in the process for requesting federal assistance. It is important that PDAs are correctly completed as to not hinder

efforts when requesting assistance and therefore also important that a PDA policy be implemented for jurisdictions where one does not exist.

The SCFD does not currently have a procedure in place to perform PDAs following natural or man-made disasters should any occur in Santa Clara. SCFD Deputy Chief of Operations JD Madden (personal communication, April 11, 2018), and Ms. Schoenthal (personal communication, July 18, 2018), the City of Santa Clara's Emergency Services Coordinator, both agree there is a need for the SCFD to develop a policy/ procedure for conducting PDAs.

The consequences of not having a policy in place for PDA procedures were discussed in the work of Chandler (2008) and included the EOC being unable to support the incident management team physically during disaster operations (p. 9). This concern is consistent with that of Ms. Schoenthal (personal communication, July 18, 2018) who raised the question of whether SCFD suppression personnel will be able to conduct PDAs following a no-notice event due to being engaged in, and very likely be overwhelmed with, emergency response duties in spite of a PDA process being in place. While the reason for performing PDAs is understood it must also be understood that a policy needs to be in place that not only provides a procedure on performing PDAs but also ensures that the damage assessment process is actually carried out without being subject to external influences competing for interest.

While the focus of this applied research project was to develop a process for conducting damage assessments, it became apparent that conducting pre-event risk assessments is conducive to improving the SCFD's emergency management model. This is due to the importance of recognizing the planning phase as an important part of the incident management process that in turn will contribute to an improved recovery phase. This view is consistent with that of Ms. Schoenthal (personal communication, July 18, 2018), SCFD Emergency Services Coordinator, who expressed that SCFD companies fire stations perform risk assessments for assets located in their first-in response areas. This information could also be used to prioritize specific assets within

a large incident so that resources may then be allocated according to the big picture. This position is consistent with that of Papathoma-Köhle et al. (2015) in that proactive measures aid in the preparation phase of emergency management such that authorities are better prepared to respond to future events in order to reduce damage through preventative measures. The position of Chandler (2008) is that a process used to identify life threatening situations and imminent hazards may provide information to be applied to response operations and that evaluation of critical infrastructure provides information pertinent to any limitations affecting the deployment of resources.

On the Threats to Santa Clara

The Santa Clara Fire Department is an all risk fire department, meaning that emergency response is provided to fires, to medical emergencies, to hazardous materials releases and to situations requiring technical rescue. It stands to reason therefore that while a particular PDA policy may be formatted specifically for the risks identified in the City's Emergency Operations Plan (City of Santa Clara, 2016), it must be acknowledged that man-made disasters, such as domestic terrorism, have the potential to affect the Santa Clara community in other ways. This is particularly important when considering the extent to which the community will be affected by an event such as that secondary to an act of domestic terrorism. Levi's stadium cost $1.3 billion to construct, 12% of which came from public financing (Stadiums of Pro Football, 2018).

While it may appear that a relatively small percentage of the construction cost came from public financing, it must be noted that public assistance will still be sought following damage to this asset as opposed to individual assistance. This is largely due to the fact that the stadium is owned by the Santa Clara Stadium Authority, an entity of the City of Santa Clara. While, "the Santa Clara Stadium Authority is structured so that the City is not liable for the debts or obligations of the Santa Clara Stadium Authority" (City of Santa Clara, 2018). Any disruption to the operation of this venue will adversely impact the City of Santa Clara financially due to reduced income and

recovery costs in turn subsequently the Santa Clara citizenry will be affected financially.

According to Ms. Schoenthal, the City of Santa Clara's Emergency Services Coordinator (personal communication, July 18, 2018), the threat from terrorism is real as is the threat from earthquake and the development of a process for the timely and accurate assessment of damage to city assets post-event is of importance. The threat of man-made disasters threatening Santa Clara, specifically by act of terrorism, is also highlighted by Paganini (2015) in a report regarding attacks by terrorists on communication infrastructure as was the case in Livermore, California on Monday, September 14, 2015 in which attackers cut fiber optic internet cables. The work of Heires (2016), is also consistent with the notion of the threat of terrorism in Santa Clara being ever present as terrorist attacks in the US and abroad have underscored the need for tools and strategies that can anticipate and mitigate the dangers of terrorism on corporate or government computer networks.

The City of Santa Clara (2016) Emergency Operations Plan lists the following in order of highest rank in its vulnerability assessment: Earthquake; Severe Weather; Flood; Dam and Levee failure; Drought; Landslide and Wildfires. The risk category for earthquake is categorized as high while severe weather, flood, dam and levee failure are categorized medium (Appendix A). This risk assessment is consistent with information from Santa Clara's Community Risk Analysis and Standards of Cover as detailed in the CFAI accreditation process of 2018.

On PDA Criteria

PDAs are performed following an event. Other forms of assessment are those that deal with pre-event assessments and are a risk assessment and a vulnerability assessment. A risk assessment is provides information about the hazards that are likely to occur and a vulnerability assessment includes information on how a hazard is likely to occur (FEMA, 2018d). It is important to understand the risks that Santa Clara is subject to so that the appropriate criteria for each hazard is established prior to an event occurring.

Kilbury (2007), makes an interesting comparison to the way PDAs are conducted on the

west coast of the US to how they are conducted on the east coast of the US. While the purpose for conducting these respective PDAs is essentially the same, to provide detailed information on the total amount and types of damage sustained by the community or area from the event, the specific assessment process for each is determined by the type of threat that each is likely to experience. Florida is subject primarily to the treat of hurricanes while California is subject primarily to the threat of earthquakes and therefore the expected damage due to each of these natural disasters should be considered when determining assessment processes in their aftermath.

It stands to reason therefore that the SCFD should develop PDA criteria for the specific threats faced by the Santa Clara community. These specific threats are earthquake and severe weather in the natural disaster category while terrorist activity constitutes the major man-made disaster threat (Appendix A). Ms. Schoenthal (personal communication, July 18, 2018), City of Santa Clara's Emergency Services Coordinator, agreed that criteria specific to the risks faced by Santa Clara be developed during the formation of a policy for implementing a damage assessment procedure. The notion of having in place PDA procedures for hazards specific to a given community is consistent with the practice of the State of Minnesota's Homeland Security and Emergency Management Agency PDA Field Guide (Appendix G). This particular filed guide addresses PDA procedures for flood and wind events, which risks specific for the State of Minnesota (State of Minnesota, 2018).

In order for the City of Santa Clara to become better prepared for emergency responses requiring the completion of PDAs, the community profile must be understood and a vulnerability assessment be conducted so that a process for conducting PDAs based on this profile is established. The community profile for the City of Santa Clara is provided in the information utilized for the 2018 Commission on Fire Accreditation International (CFAI) accreditation process, more specifically the Community Risk Analysis and Standards of Cover modules [Commission on Fire Accreditation International (CFAI, 2018)]. This document addresses the vulnerability assessment

for Santa Clara as does the City's Emergency Operations Plan (City of Santa Clara, 2016). The risks to Santa Clara have been identified as being earthquake being categorized as high (Appendix A) while a vulnerability to damage secondary to terrorism remains a threat.

The City of Santa Clara has a system in place for Emergency Operations Center (EOC) activation that was recently updated and implemented as explained by Ms. Schoenthal (personal communication, July 18, 2018). The EOC is staffed by full-time city employees that respond to fill the operational positions following activation by the City Manager or her designee. These positions are then staffed by department heads and managers forming a formal operational structure (Appendix K). Information from the field is sent to the Operations Section and then relayed to the Finance/ Admin Section where requests for state and then federal assistance are prepared in compliance with criteria required for California State OES and FEMA grant applications. There is currently no process in place, informal or otherwise, for SCFD members to complete PDAs in the field while tools exist within the organization that may be utilized to bridge the current gap in this important part of the disaster recovery process.

It is important that PDAs are completed within the given timeframes and that they are completed in a manner consistent with requirements set forth by the federal government. In the event that the standardized model for reporting type of damage sustained and its extent is not adhered to, there may be a delay in receiving assistance from recovery efforts. This issue was highlighted by Ms. Schoenthal (personal communication, July 18, 2018) and is also consistent with the point made by Chandler (2008) who brings attention to the consequences of failing to include damage assessment as a key component of the disaster management process. These adverse effects include a lack of defined roles leading to a duplication of efforts and inaccurate reporting to the EOC resulting in the EOC being unable to support the incident management team in the field.

The US Army also recognizes the importance of conducting damage assessments accurately as evident the US Army's Battle Damage Assessment policy in which the consequences

of inaccurate damage assessments may include wasted resources and missed opportunities to return to the fight (US Army, 2012). This highlights the commonality among differing types of agencies tasked with damage assessment the understanding of accurate assessment and reporting with the common goal being the efficient use of resources for the recovery effort.

The need to perform damage assessments accurately and concisely, while utilizing resources efficiently in order to provide for a more successful recovery effort, is well documented. The City of Santa Clara has EOC procedures in place and is at risk for both natural and man-made disasters but has no process in place for damage assessment. The missing step in the emergency management process for the SCFD, as it relates to recovery, is that of damage assessment. These assessments must be performed and reported accurately by persons in the field to the EOC utilizing criteria consistent with federal guidelines, and as such a plan to develop a PDA policy is necessary.

There is currently no plan for SCFD suppression personnel to engage in any damage assessment procedures other than windshield surveys, an informal and non-structured rapid assessment process implemented as needed with no guidelines or assessment criteria defined. To the author's knowledge, as a seventeen year veteran of the SCFD serving in the Suppression Division, there has been no training regarding damage assessment procedures following events causing damage to city assets or infrastructure.

According to Ms. Schoenthal (personal communication, July 18, 2018), City of Santa Clara's Emergency Services Coordinator, during the 2017 storm event, the City of Santa Clara submitted assistance requests to the State of California's Emergency Management Agency (Appendix L). The cost estimates contained within this particular request for financial assistance were provided by the City of Santa Clara's Water Department and Electrical Department. It was determined that these agencies were the appropriate ones to provide these specific cost estimates as they were the most familiar with their own infrastructures. Ms. Schoenthal suggested that there should be collaboration between all city departments when PDAs are to be performed. It was

discussed that the SCFD and the Community Development Department be tasked with the responsibility of assessing damage to structures while the other city departments assess damage to the infrastructures of which they are the most familiar. This view is consistent with that of Chandler (2008) as he recommends multi-discipline teams be developed and expands on this notion by way of considering the inclusion of Community Emergency Response Team (CERT) members to the plan. SCFD Deputy Chief of Operations JD Madden (personal communication, April 11, 2018) agreed that a policy for PDA completion in the field is needed as one does not currently exist and that the responsibility for completing PDAs lies with the SCFD.

Some events such as hurricanes can be predicted while others such as those due to fire or earthquake cannot. Should the City of Santa Clara be subject to a no-notice event, such as an earthquake and its cascading events, is it reasonable to expect SCFD suppression personnel to engage in completing PDAs? The primary mission of the SCFD's Suppression Division is to protect life (City of Santa Clara, 2018b) and following a no-notice event such as earthquake personnel will become quickly overwhelmed with the task of emergency response to calls for assistance from the community. While it is understood that the timeline for submitting preliminary claims following the completion of PDAs to the EOC allows for approximately 48 hours of time, this timeframe is still considered to be in the early phases of emergency operations particularly for large scale events. Therefore, consideration must be given to the role that SCFD members will be engaged in and how likely the possibility of completing PDAs under circumstances such as those following a large scale no-notice event will be. Ms. Schoenthal, Emergency Services Coordinator (personal communication, 18, July, 2018) raised the concern of SCFD suppression personnel not having the capacity to engage in the damage assessment process due to being tactically engaged in first responder operations.

While the process for requesting state and federal aid are defined as are the criteria for performing PDAs, this phase of the recovery process is still relatively slow as compared to

timelines in the world of emergency response and mitigation with months and even years of filing papers before a community's infrastructure is restored to how it was prior to the event occurring. Ms. Schoenthal (personal communication, July 18, 2018) commented on this issue and offered that it would be beneficial for communities impacted by events causing large scale damage to have more flexibility from FEMA in situations where the damage sustained is clearly over the required threshold for state and federal assistance allocation so that the process of funding may be initiated sooner rather than following the completion of preliminary assessments (PDAs).

As reported by Pohl (2018), this is an opinion consistent with that of Brock Long, FEMA's Administrator as FEMA "vowed to cut down on bureaucratic burdens after an especially devastating hurricane and wildfire season, saying the agency needs to empower people with life-saving skills to speed rescue and recovery efforts". A strategic plan calls for "reducing the complexity of FEMA and trimming the bureaucratic burdens that hinder response and recovery. That means speeding up financial assistance and streamlining the process for post-disaster building inspections".

It is recognized that there are challenges associated with response to, mitigation of and recovery from large scale incidents or simply incidents in which PDAs are required. While FEMA clearly calls for the reduction of complexity in its process so that response and recovery are not hindered, the City of Santa Clara and more specifically the SCFD must work toward the removal of in-house barriers such as the lack of a procedure/ policy for performing PDAs. This will be a step in the direction of removing bureaucratic burdens by way of providing the correct information within the appropriate timeframe to facilitate a more prompt request for assistance ensuring a more streamlined recovery process.

On Technology Implementation

The SCFD has been active in the implementation of technology to better improve the delivery of service to customers through efficiency and improved documentation processes for

record keeping. Currently all patient care reports (PCR), utilized to document medical contacts, are paperless and completed utilizing Apple iPads carried on all front line apparatus (engine companies, truck companies and ambulances). The information from the PCR once entered is then uploaded to a server so that any subsequent information that is added will then be included with the original information. This allows for real time concise reporting and documentation. This collation of information model is consistent with that of all other fire and EMS agencies operating in Santa Clara County.

The iPads carried on all SCFD apparatus are also utilized in the performance of fire company life and safety inspections of businesses in the City of Santa Clara. All businesses in Santa Clara are inspected for fire code compliance and most of these inspections are performed by the local SCFD fire company from the local fire station. Again, real time documentation uploaded to a server affords the Fire Prevention Division of the SCFD to collaborate with the SCFD's Suppression Division in matters relating to fire prevention duties. The details of the inspection are recorded and include violations and a means with which to refer to the SCFD's Fire Prevention Division in matters where a greater degree of fire prevention expertise is required.

The SCFD's iPads may be utilized as tools for recording and then sending information gathered from the scene of damage assessments post-incident to the EOC as well as from assessments conducted pre-incident such as risk assessments to a data server.

Real time information collection and compilation achieved through the routing of information through a data server helps to prevent the duplication of efforts while also providing accurate and up to date information regarding operational progress. This is important when considering the degree to which a large incident must be organized and the extent to successful recovery efforts hinge on the ability of multiple agencies who need to share information. Chandler (2008), while making reference to operations in Columbus, Mississippi, highlights the consequences of inaccurate information reporting to the EOC from field as critical damage

information not being reported. This was largely due to the absence of any standardized reporting process or format so that information that was reported was often subjective in nature and therefore biased leading to the EOC being unable to support the incident management team physically during disaster operations (p. 9).

The iPads carried on all SCFD apparatus are also utilized to access operational manuals such as those dealing with Urban Search and Rescue (USAR), swift water rescue, and hazardous materials response). Access to web based information through specific apps such as wildland incident information is also available to crews responding to wildland fire incidents. Manuals and guides/ procedures for conduction risk and/ or damage assessments may be made accessible on these devices for reference.

The SCFD, while operating in the wildland firefighting arena specifically at the Tubbs Fire (Central LNU Complex), Sonoma and Napa Counties, California discovered Avenza Maps software through iPad devices on front line fire apparatus. Avenza Maps Pro was used as a medium with which to share vital GIS information with the Situation Unit. As this is a web based app, all information is uploaded to a server and this allows all entities for whom access has been granted to see all updates in real time. The app was used to provide information regarding the status of roads and hazards encountered such as downed power lines during the event. The status of homes were reported in terms of three standardized Structure Triage Categories (Appendix H) as defined by Firescope. The Cal Fire wildland structure triage categories are non-threatened, threatened/ defensible or threatened non-defensible (State of California, 2013).

The utilization of Avenza Maps during the PDA process will ensure that there is no duplication of efforts due to the fact that once information is uploaded it can be seen by all users. This information may provide the incident command team with up to date progress reporting as to the status of PDA completions. Pictures can also be added. Progress can be checked on what has been done and what needs to be done. The platform may also contain target hazards that are

prioritized ahead of any incident occurring as information can be regularly added or updated.

Avenza Maps Pro is designed for individuals, organizations, governments and academic institutions around the world that need advanced mobile GIS capabilities in the field. It is possible to share up-to-date maps quickly as situations evolve for better response time and greater safety while offering the following capabilities:

- Provides a mobile solution for off-line maps- Equips teams with a reliable offline map app for navigating remote areas without internet, network or satellite connections. May be used it on smartphones and tablets.
- Uses digital maps from virtually any source- Imports specialized, classified and proprietary georeferenced maps, then adds critical information such as GPS tracks, symbols and photos using in-app data collection tools.
- Distributes maps faster and more efficiently- Shares up-to-date maps quickly as situations evolve for better response time and greater safety (Avenza Maps, 2018).

On Training

As with all implementation of new policy/ procedures, the training of all personnel expected to perform the new functions must be completed. The SCFD subscribes to the web based training platform Target Solutions in order to complete some of the mandatory training required for personnel serving in the Suppression Division. This training includes EMT (Emergency Medical Technician), hazardous materials response and fire suppression/ policy items. The City of Santa Clara also subscribes to Target Solutions and utilized it to deliver mandatory compliance training such as harassment prevention training for managers.

Target Solutions is “Online continuation training for firefighters” and “features more than 450 hours of training for fire departments, including 250 hours of Fire & EMS continuing education. Fire courses are based on NFPA standards, including NFPA 1001, 1021 and 1500 Series” (Target Solutions, 2018). All areas of emergency response as well as fire prevention has

training components utilizing Target Solutions. This has become the preferred method for didactic instruction during the past eight years due to keeping fire companies in quarters ready to respond to calls for service in their respective first in districts, as opposed to several companies being absent from quarters and out of service at the SCFD's training center while participating in instructor led classroom training. Also, electronic accountability of course completion as well as documentation of state and locally mandated training including record retention is provided for.

The SCFD Training Division has the capacity and tools available to develop a specific tailor made training program to be delivered to all department members. The training program should take into consideration the fact that the concept of damage assessment for any purpose other than incident mitigation or scene safety is new to SCFD members. Therefore, communicating to members the background as to the specific purpose of performing these PDAs, for reasons other than to aid in operational response, is vital to ensuring their accurate and timely completion. It must be communicated that the PDAs serve as a vital component of the incident management process and through which assistance for recovery efforts is acquired.

In formulating departmental training, there are guidelines available from other jurisdictions that may be surveyed such as those of the State of Minnesota's Homeland Security and Emergency Management Agency that provide a PDA field guide that is widely used by agencies throughout the state. The guide provides information designed for the rapid damage assessments of homes and businesses while meeting criteria necessary for the application of assistance. The guide deals only with wind damage and flood damage (State of Minnesota, 2018). It is a consideration that the formulation of a PDA field guide for the City of Santa Clara comprise assessment criteria for incidents that are more likely to occur in Santa Clara as determined by City of Santa Clara (2016) in the City's Emergency Operations Plan. The incidents for which assessment criteria be established would be as follows in order of highest rank: Earthquake; Severe Weather; Flood; Dam and Levee failure; Drought; Landslide and Wildfires. The risk category for earthquake is

categorized as high while severe weather, flood, dam and levee failure are categorized medium (Appendix A).

The delivery of PDA training, in remaining consistent with the SCFD's current model of departmental wide training, should be detailed in a policy outlining the specific requirements to include a Target Solutions component that provides for electronic accountability of completion as well as a medium with which to deliver the specific literature followed by a test on the presented material. Target Solutions may also be utilized to direct members to the online class IS-559: Local Damage Assessment (FEMA, 2018d). This class provides an understanding of the complete process as well as purpose for completing PDAs and was completed by the author during the course of this research. Based on the author's assessment of the course coupled with the needs of the SCFD supported by seventeen years of operational experience serving in the SCFD, IS-559 Local Damage Assessment was determined to provide the necessary knowledge in a format consistent with that of the SCFD's training model.

If SCFD personnel are trained in the completion of PDAs such that a simple and practical process be implemented, then this responsibility, while adding to the already busy workload of first responders, will better serve the community in the long run due to more timely allocation of state and federal resources than would be the case if requests were not correctly executed. It is however unknown the degree to which the SCFD Suppression Division will actually be free to complete PDAs when faced with the task of treating those needing emergency care in the field following any large scale event or even a small scale no-notice event.

The issue of competency in executing PDAs must not be ignored. Comfort and Zagorecki (2014) bring to attention the fact that following Hurricane Andrew, Red Cross personnel while being familiar with the federal response model did not possess the detailed knowledge needed to fully execute the plan successfully. The SCFD, once recognizing the community's specific threats, can move toward the development of a damage assessment process utilizing suppression personnel.

Recommendations

The SCFD does not currently have a policy/ procedure in place for conducting PDAs following an incident in which damage occurs of the magnitude that recovery requires detailed and concise reporting of damage sustained in order to ensure timely resource assistance. According to FEMA (2016c) a correctly executed PDA process will "provide detailed information on the total amount and types of damage sustained by the community or area from the event" (p. 2-6), and for which state and federal assistance is to be formally requested. The SCFD, as the agency responsible for providing PDA information to the EOC, recognizes the importance of developing such a policy/ procedure and the following recommendations will support its development. The research conducted during the development of this applied research project bought to light federal requirements and guidelines for damage assessment consistent with damage reporting criteria following a disaster declaration by the US President and a disaster proclamation by a state governor. Recommendations of this applied research project may be grouped into the following categories: Implementation of a PDA policy/ procedure; Development of tools with which to conduct PDAs and document findings; Training for all SCFD Suppression Division members in conducting PDAs.

The formation of a working group is recommended, a practice consistent within the SCFD for exploring and developing new operational processes, to provide insight from all stakeholders so that a comprehensive development and implementation process for a PDA program will be introduced. In collaboration with the City of Santa Clara's Emergency Services Coordinator, Ms. Lisa Schoenthal, the SCFD will develop an all-risk PDA process to be utilized by first responders. It is recommended that the SCFD identify all stakeholders that will be involved with the damage assessment process and with the transfer of information obtained from it. These stakeholders include internal stakeholders such as members of the SCFD as well as external stakeholders such as EOC personnel and members of local government. It is recommended that a working group

comprising SCFD members of all ranks ranging from command staff members to all ranks of the Suppression Division be established to research options for performing PDAs, reporting findings and developing training. This working group of internal stakeholders will formulate a plan to integrate external stakeholders into a collaborative and all-inclusive process aimed at developing a process of PDA documentation and reporting that is in line with state and federal guidelines.

It is recommended that the working group investigate methods with which to incorporate technology in completing and reporting the findings of PDAs. The use of Apple iPads carried on all front line apparatus is a viable option and may also contain a manual or reference source for conducting PDAs.

It is recommended that this training be conducted on an annual basis, a model consistent with other aspects of the SCFD's training matrix in which several disciplines within the department have periodic refresher training such as EMT, live fire training, fire prevention and hazardous materials response that are completed quarterly or annually. The working group will consider the development of training utilizing Target Solutions supported by instructor based training to include:

- The reasons as to why performing PDAs in an efficient and consistent manner is important
- Where the PDA manual is located for reference- iPad as well as specific web based location
- Practice in performing PDAs utilizing simulation- pictures of damaged structures/ infrastructures and the imputing of the information into the appropriate form
- IS 559: Local Damage Assessment online training to be completed through Target Solutions

The goal of the SCFD as defined in this applied research project is to develop, through stakeholder participation and collaboration, a process with which to perform PDAs in a manner consistent with criteria currently recognized by FEMA and the State of California. The information provided from this process will serve the City of Santa Clara in acquiring state and federal

assistance following damage due to natural or man-made events while reducing any delay in the allocation of what will likely be most needed financial assistance for recovery efforts.

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Appendices

Appendix A

Hazard Risk Ranking
City of Santa Clara Emergency Operations Plan
Local Hazard Mitigation Plan (LHMP) Vol 2

Rank	Hazard	Risk Rating Score (Probability x Impact)	Category
1	Earthquake	54	High
2	Severe Weather	33	Medium
3	Flood	18	Medium
3	Dam and Levee Failure	18	Medium
4	Drought	9	Low
5	Landslide	0	Low
6	Wildfire	0	Low

City of Santa Clara (2016)

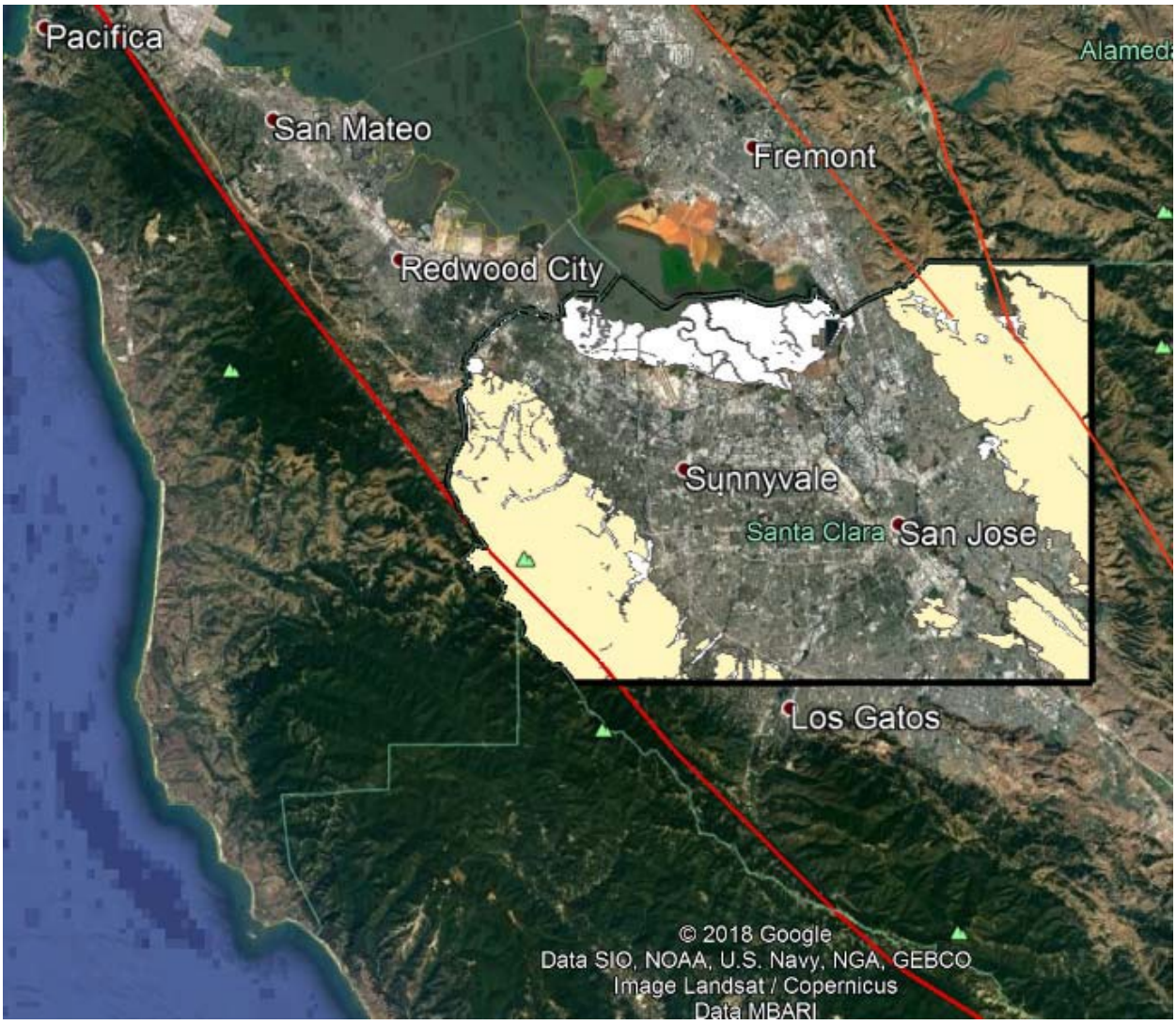
Appendix B

San Andreas Fault Map

Lynch (2006)

Appendix C

Santa Clara County Liquefaction Hazard Map



USGS (2018)

Appendix D

Preliminary Damage Assessment Report
California – Wildfires FEMA-4353-DR
Declared January 2, 2018

On December 20, 2017, Governor Edmund G. Brown Jr. requested a major disaster declaration due to wildfires beginning on December 4, 2017, and continuing. The Governor requested a declaration for Individual Assistance and Public Assistance, including direct Federal assistance for four counties and Hazard Mitigation statewide. During the period of December 15-28, 2017, joint federal, state, and local government Preliminary Damage Assessments (PDAs) were conducted in the requested counties and are summarized below. PDAs estimate damages immediately after an event and are considered, along with several other factors, in determining whether a disaster is of such severity and magnitude that effective response is beyond the capabilities of the state and the affected local governments, and that Federal assistance is necessary.1

On January 2, 2018, President Trump declared that a major disaster exists in the State of California. This declaration made Public Assistance, including direct Federal assistance requested by the Governor available to state and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by the wildfires in Santa Barbara and Ventura Counties. This declaration also made Hazard Mitigation Grant Program assistance requested by the Governor available for hazard mitigation measures statewide.2

Summary of Damage Assessment Information Used in Determining Whether to Declare a Major Disaster

Individual Assistance

Total Number of Residences Impacted: 1,316

Destroyed - 1,004
Major Damage - 55
Minor Damage - 51
Affected - 206

Percentage of insured residences: 80.0%
Percentage of low income households: 16.0%
Percentage of ownership households: 95.0%
Total Individual Assistance cost estimate: $4,259,632

[1] The Preliminary Damage Assessment (PDA) process is a mechanism used to determine the impact and magnitude of damage and resulting needs of individuals, businesses, public sector, and community as a whole. Information collected is used by the State as a basis for the Governor's request for a major disaster or emergency declaration, and by the President in determining a response to the Governor's request (44 CFR § 206.33).

[2] When a Governor's request for major disaster assistance under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended (Stafford Act) is under review, a number of primary factors are considered to determine whether assistance is warranted. These factors are outlined in FEMA's regulations (44 CFR § 206.48). The President has ultimate discretion and decision making authority to declare major disasters and emergencies under the Stafford Act (42 U.S.C. § 5170 and § 5191).

[3] Degree of damage to impacted residences:

- Destroyed – total loss of structure, structure is not economically feasible to repair, or complete failure to major structural components (e.g., collapse of basement walls/foundation, walls or roof);
- Major Damage – substantial failure to structural elements of residence (e.g., walls, floors, foundation), or damage that will take more than 30 days to repair;
- Minor Damage – home is damaged and uninhabitable, but may be made habitable in short period of time with repairs; and
- Affected – some damage to the structure and contents, but still habitable.

[4] By law, Federal disaster assistance cannot duplicate insurance coverage. 42 U.S.C. § 5155 and 44 C.F.R. § 206.48(b 5).

[5] Special populations, such as low-income, the elderly, or the unemployed may indicate a greater need for assistance. 44 C.F.R. § 206.48(b 3).

[6] Ibid. 44 C.F.R. § 206.48(b 3).

[7] Based on State population in the 2010 Census.

[8] Statewide Per Capita Impact Indicator for FY18, *Federal Register,* October 1, 2017.

[9] Countywide Per Capita Impact Indicator for FY18, *Federal Register,* October 1, 2017.

Public Assistance

Primary Impact: Debris Removal

Total Public Assistance cost estimate: $101,790,178

Statewide per capita impact: [7] $2.73

Statewide per capita impact indicator: [8] $1.46

County-wide per capita impact: Los Angeles County ($1.89), San Diego

County ($0.14), Santa Barbara County ($23.85), and Ventura County ($88.33).

Countywide per capita impact indicator: $3.68

Appendix E

Preliminary Damage Assessment Report
California – Severe Winter Storms, Flooding, and Mudslides
FEMA-4308-DR
Declared April 1, 2017

On March 19, 2017, Governor Edmund G. Brown Jr. requested a major disaster declaration due to severe winter storms, flooding, and mudslides during the period of February 1-23, 2017. The Governor requested a declaration for Public Assistance for 42 counties and Hazard Mitigation statewide. During the period of February 28 to March 15, 2017, joint federal, state, and local government Preliminary Damage Assessments (PDAs) were conducted in the requested counties and are summarized below. PDAs estimate damages immediately after an event and are considered, along with several other factors, in determining whether a disaster is of such severity and magnitude that effective response is beyond the capabilities of the state and the affected local governments, and that Federal assistance is necessary.1

On April 1, 2017, President Trump declared that a major disaster exists in the State of California. This declaration made Public Assistance requested by the Governor available to state and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by the severe winter storms, flooding, and mudslides in Alameda, Alpine, Amador, Butte, Calaveras, Colusa, Contra Costa, Del Norte, El Dorado, Glenn, Humboldt, Kings, Lake, Lassen, Marin, Mariposa, Merced, Modoc, Monterey, Napa, Nevada, Plumas, Sacramento, San Benito, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Shasta, Sierra, Siskiyou, Solano, Sonoma, Stanislaus, Sutter, Tehama, Trinity, Tuolumne, Yolo, and Yuba Counties. This declaration also made Hazard Mitigation Grant Program assistance requested by the Governor available for hazard mitigation measures statewide.2

Summary of Damage Assessment Information Used in Determining Whether to Declare a Major Disaster

Individual Assistance - *(Not requested)*

Total Number of Residences Impacted: -

Destroyed - -
Major Damage - -
Minor Damage - -
Affected - -

Percentage of insured residences: -
Percentage of low income households: -
Percentage of ownership households: -

[1] The Preliminary Damage Assessment (PDA) process is a mechanism used to determine the impact and magnitude of damage and resulting needs of individuals, businesses, public sector, and community as a whole. Information collected is used by the State as a basis for the Governor's request for a major disaster or emergency declaration, and by the President in determining a response to the Governor's request (44 CFR § 206.33).
[2] When a Governor's request for major disaster assistance under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended (Stafford Act) is under review, a number of primary factors are considered to determine whether assistance is warranted. These factors are outlined in FEMA's regulations (44 CFR § 206.48). The President has ultimate discretion and decision making authority to declare major disasters and emergencies under the Stafford Act (42 U.S.C. § 5170 and § 5191).
[3] Degree of damage to impacted residences:
o Destroyed – total loss of structure, structure is not economically feasible to repair, or complete failure to major structural components (e.g., collapse of basement walls/foundation, walls or roof);
o Major Damage – substantial failure to structural elements of residence (e.g., walls, floors, foundation), or damage that will take more than 30 days to repair;
o Minor Damage – home is damaged and uninhabitable, but may be made habitable in short period of time with repairs; and
o Affected – some damage to the structure and contents, but still habitable.

[4] By law, Federal disaster assistance cannot duplicate insurance coverage. 42 U.S.C. § 5155 and 44 C.F.R. § 206.48(b (5).
[5] Special populations, such as low-income, the elderly, or the unemployed may indicate a greater need for assistance. 44 C.F.R. § 206.48(b (3).
[6] Ibid. 44 C.F.R. § 206.48(b (3).
[7] Based on State population in the 2010 Census.
[8] Statewide Per Capita Impact Indicator for FY17, *Federal Register,* October 1, 2016.
[9] Countywide Per Capita Impact Indicator for FY17, *Federal Register,* October 1, 2016.
Total Individual Assistance cost estimate: N/A

Public Assistance

Primary Impact: Emergency protective measures

Total Public Assistance cost estimate: $537,119,780

Statewide per capita impact: [7] $14.42

Statewide per capita impact indicator: [8] $1.43

County-wide per capita impact: Alameda County ($7.42), Alpine County ($256.56),

Amador County ($32.82), Butte County ($1,259.01), Calaveras County ($14.62), Colusa County ($37.93), Contra Costa County ($9.15), Del Norte County ($227.38), El Dorado County ($125.16), Glenn County ($25.92), Humboldt County ($27.59), Kings County ($12.02), Lake County ($107.32), Lassen County ($83.85), Marin County ($26.35), Mariposa County ($71.72), Merced County ($15.32), Modoc County ($103.70), Monterey County ($41.74), Napa County ($108.39), Nevada County ($23.14), Plumas County ($33.16), Sacramento County ($12.00), San Benito County ($22.58), San Joaquin County ($6.16), San Luis Obispo County ($10.78), San Mateo County ($9.26), Santa Barbara County ($18.96), Santa Clara County ($13.68), Santa Cruz County ($111.42), Shasta County ($33.71), Sierra County ($244.29), Siskiyou County ($10.33), Solano County ($4.83), Sonoma County ($12.93), Stanislaus County ($7.63), Sutter County ($140.01), Tehama County ($69.45), Trinity County ($156.68), Tuolumne County ($30.20), Yolo County ($9.57), and Yuba County ($90.04).

Countywide per capita impact indicator: $3.61

FEMA (2017a)

Appendix F

Santa Clara County
Santa Clara Operational Area Hazard Mitigation Plan (Pg. 145, Table 8-5)
Earthquake Exposure by Municipality

Jurisdiction	Total # of Building	Total Structure and Contents Value
Campbell	11,987	$11,181,660,749
Cupertino	16,413	$13,890,786,985
Gilroy	13,144	$13,401,505,586
Los Altos	10,981	$8,825,187,782
Los Altos Hills	2,970	$3,242,710,721
Los Gatos	10,407	$10,893,322,460
Milpitas	18,242	$19,146,882,365
Monte Sereno	1,218	$872,909,228
Morgan Hill	11,974	$11,160,393.427
Mountain View	18,891	$25,062,452,472
Palo Alto	20,209	$25,777,115,586
San Jose	235,552	$213,377,474,752
Santa Clara (city)	28,809	$43.398.577,930
Saratoga	10,830	$8,143,761,638
Sunnyvale	31,915	$42,852,045,398
Unincorporated	20,681	$25,352,649,992
Total	464,223	$476,579,437,071

(Santa Clara County, 2017)

Appendix G

State of Minnesota PDA Field Guide

Preliminary Damage Assessment
(PDA)
Field Guide

The Purpose of this Preliminary Damage Assessment Field Guide

This field guide has been designed to serve as a quick reference tool to be utilized by local officials and others in conducting local damage assessment for homes and businesses. Inside you will find listed the *4 Degrees of Damage*; FEMA criteria for seeking an Individual Assistance Declaration and tips – things to do and things to remember. In addition, illustrations have been provided and offer examples of the different degrees of damage for both wind and flood.

Local Damage Assessment Must be Rapid, Detailed and Accurate.

- It should be completed and Submitted to the State within 36 hours of the event.
- The data collected will then be analyzed to determine if supplemental assistance will be needed from the State and/or Federal Agencies.
- If necessary, the State will request a joint preliminary damage assessment with the Federal Emergency Management Agency (FEMA) and/or the Small Business Administration (SBA).
- Delay in completing the assessment may delay supplemental disaster assistance to those most in need.

Why Do Damage Assessment?

Conducting a local damage assessment enables local officials to:

- Determine the severity and Magnitude of the event.
- Quantify homes and businesses Impacted by the disaster.
- Determine whether local resources will be sufficient to effectively respond and recover from the event.

There are 4 degrees of damage:

- Destroyed
- Major
- Minor
- Affected

Criteria for requesting assistance from SBA:

There must be a minimum of twenty five (25) homes and/or businesses with 40% uninsured damages.

Note: Generally, structures with either "Destroyed" or "Major" degree of damage will meet "40% uninsured damages" criteria.

DO:

- Conduct visual inspection to verify damages.
- Be sensitive when discussing damages with property owner.
- Determine extent of insurance coverage homeowner's policy vs. flood insurance).
- Include impact to businesses in your survey.
- Ensure current assessment reports are as accurate as possible.
- Know that exaggeration of amount of damage will be detrimental during a joint PDA.
- Provide detailed assessment to HSEM within 36 hours of the event.

REMEMBER

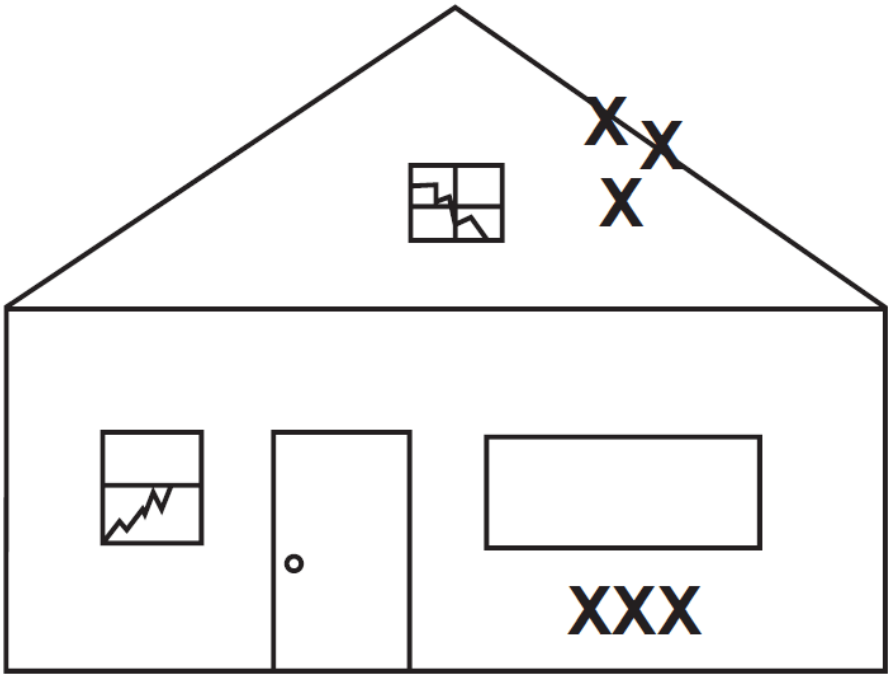
- Focus on degrees of damage and habitability.
- Do not become preoccupied with property value.
- Look for waterline or debris line to determine depth of water.
- Only report disaster-related damages.
- Deferred maintenance and/or pre-existing damage should not be included in your assessment.

Based on criteria, make a judgment call.

SINGLE FAMILY DWELLING

AFFECTED

Wind Damage: Single Family Dwelling



Minimal damage to structure and home is habitable, requiring minimal repairs.
Examples:

- Some shingle damage.
- Few broken windows.
- Cosmetic damage to siding.
- Repairable.

MINOR

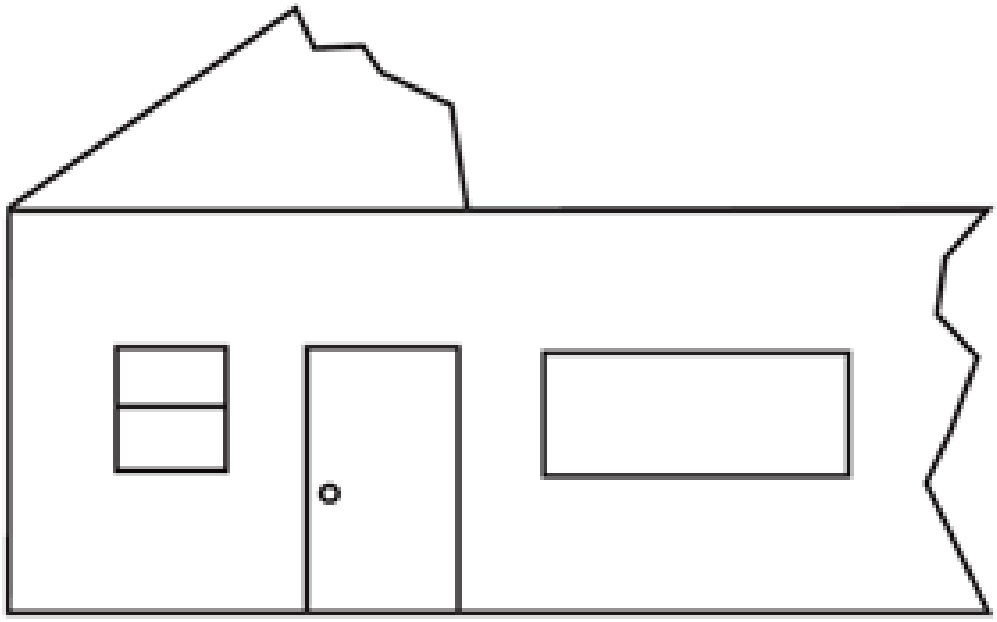
Wind Damage: Single Family Dwelling

Damage may be repaired **within 30 days** making the structure habitable.
Examples:

- Windows/doors are damaged and unsecurable.
- Damage to functional components (furnace, water heater, HVAC).

MAJOR

Wind Damage: Single Family Dwelling

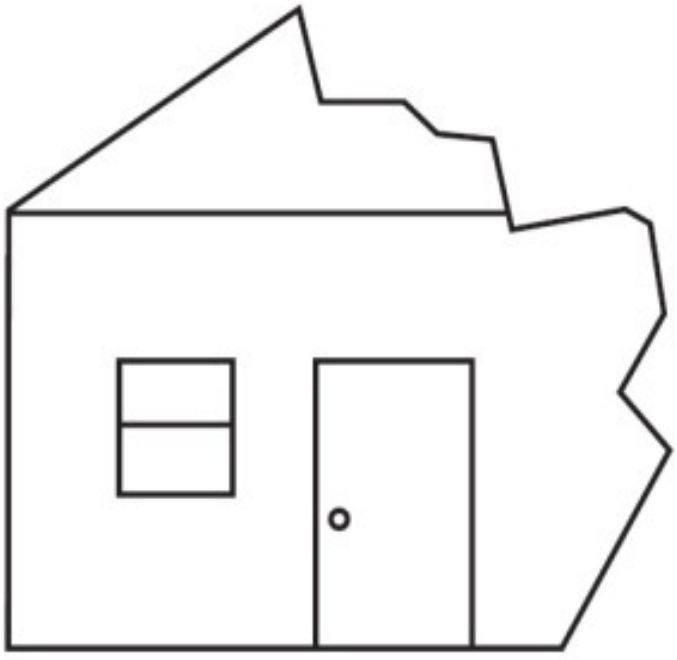


Significant structural damages requiring **longer than 30 days** for repair.
Examples:

- Structural failure of walls, roof and foundation which **are** repairable.
- Damage to windows, doors and exterior walls.
- Extensive debris and utility problems.

DESTROYED

Wind Damage: Single Family Dwelling



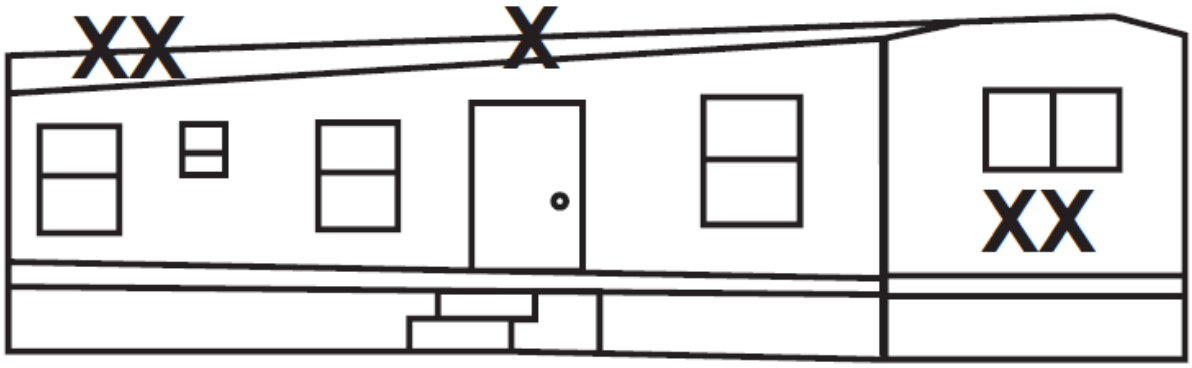
Structure is a total loss and damage is to such an extent that repair is not feasible and has left the home **permanently uninhabitable**.
Examples:

- Complete failure of two or more structural components, such as collapse of basement walls/foundation, walls or roof.
- Only foundation remains.
- Condemned structure that will require demolition or removal by local government due to disaster related health and safety concerns.

MOBILE HOME

AFFECTED

Wind Damage: Mobile Home

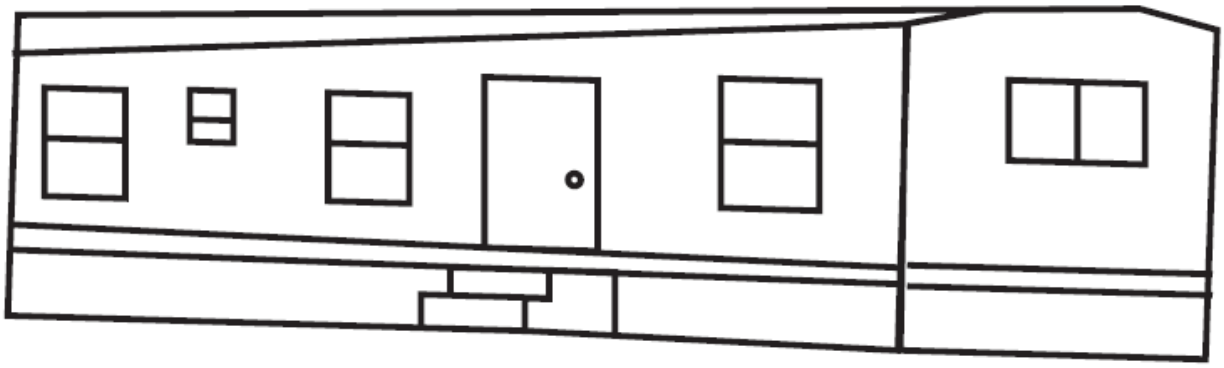


Minimal damages to the dwelling and/or contents and is **habitable**, requiring minimal repairs.
Examples:

- Frame is NOT bent, twisted or otherwise compromised.
- No structural components have been damaged.

MINOR

Wind Damage: Mobile Home

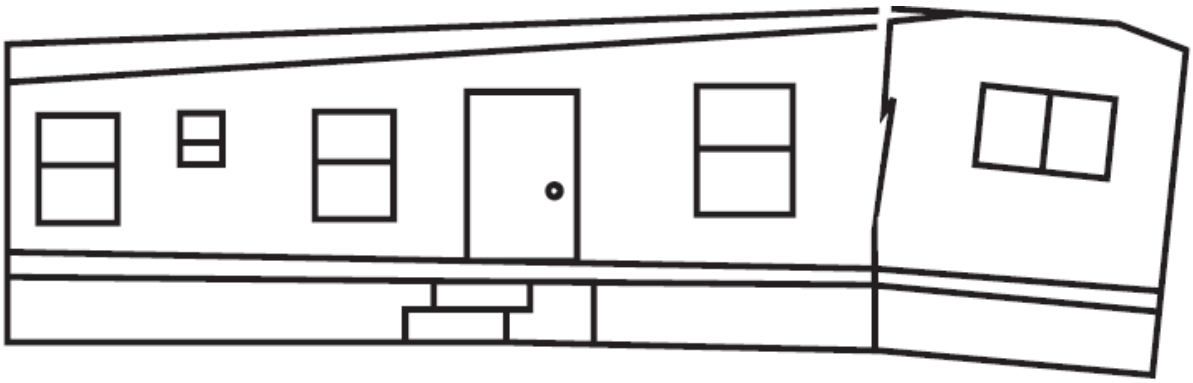


Damages may be **repaired within 30 days** making the structure habitable.
Examples:

- Minor structural damage (not displaced from foundation).
- Other structural components may have minor damage (windows, roof, doors, duct work, etc.)

MAJOR

Wind Damage: Mobile Home

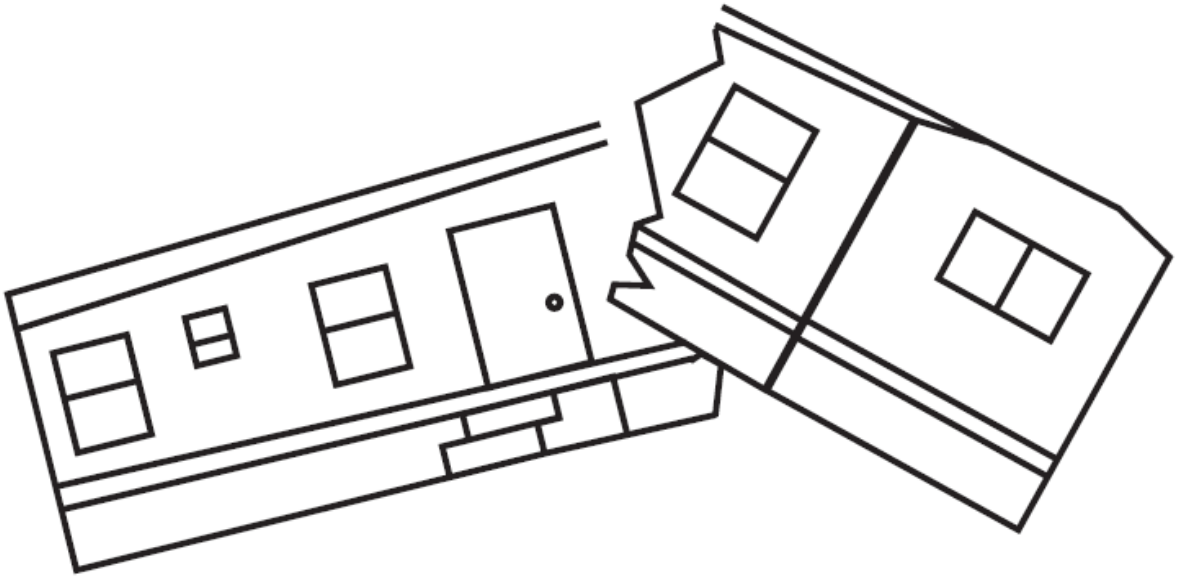


Significant structural damages requiring **longer than 30 days for repair**.
Extensive repairs will be required to become habitable.
Examples:

- Displaced from foundation.
- Other structural components have been damaged (windows, doors, wall coverings, roof, bottom board insulation, utility hook-up, etc.)

DESTROYED

Wind Damage: Mobile Home



Structure is a **total loss**. There is no value associated with the structure except for its basic material content (scrap).
Examples:

- Frame is bent, twisted or otherwise compromised.
- Missing roof or has sustained significant damage to roof covering, sheathing, and framing.

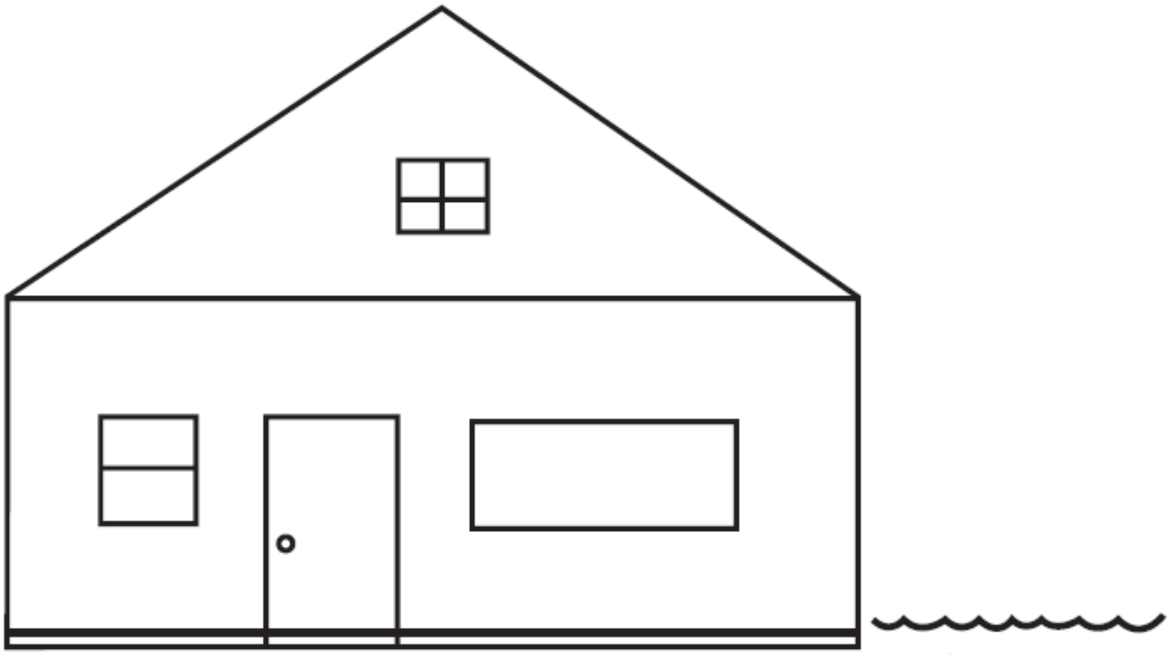
FLOOD

DAMAGE

SINGLE FAMILY DWELLING

AFFECTED

Flood Damage: Single Family Dwelling

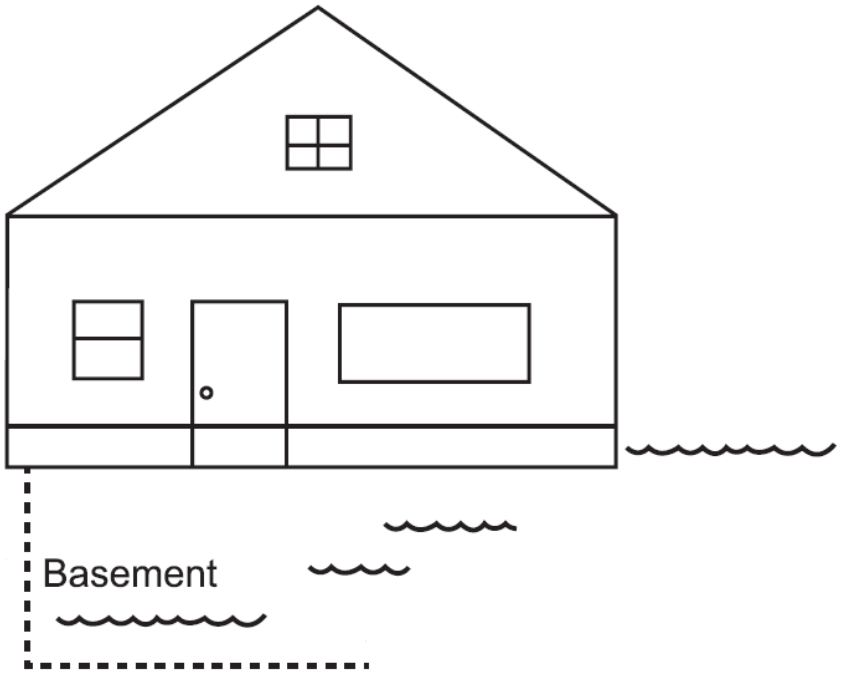


Minimal damage to the structure and/or contents and is **habitable, requiring minimal repairs.**
Examples:

- Minimal flooding with less than 3” in an occupied or required room.

MINOR

Flood Damage: Single Family Dwelling

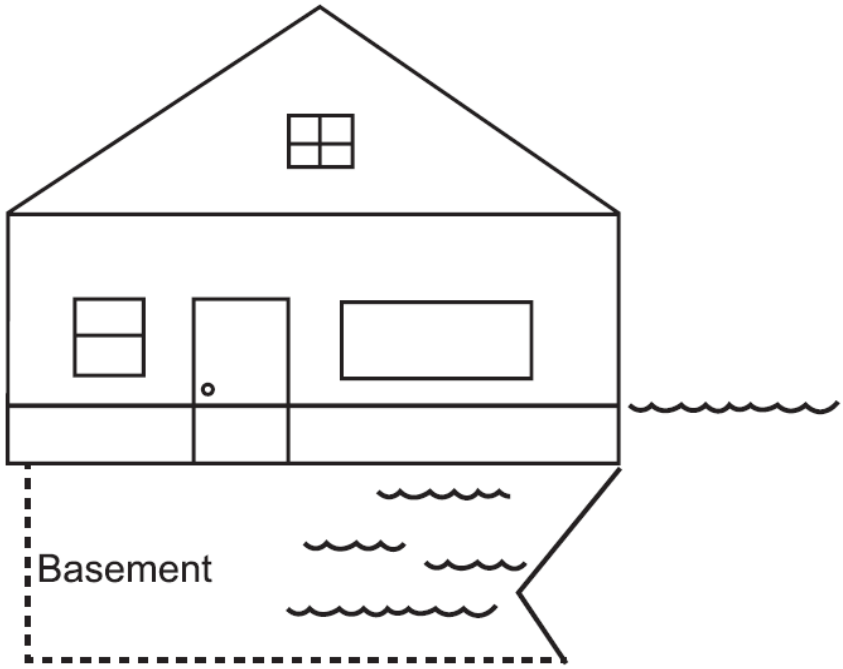


Damages **may be repaired within 30 days** making the structure habitable.
Examples:

- 3” – 18” of water in an occupied or required room.
- Damage or disaster related contamination to private well or septic system.

MAJOR

Flood Damage: Single Family Dwelling

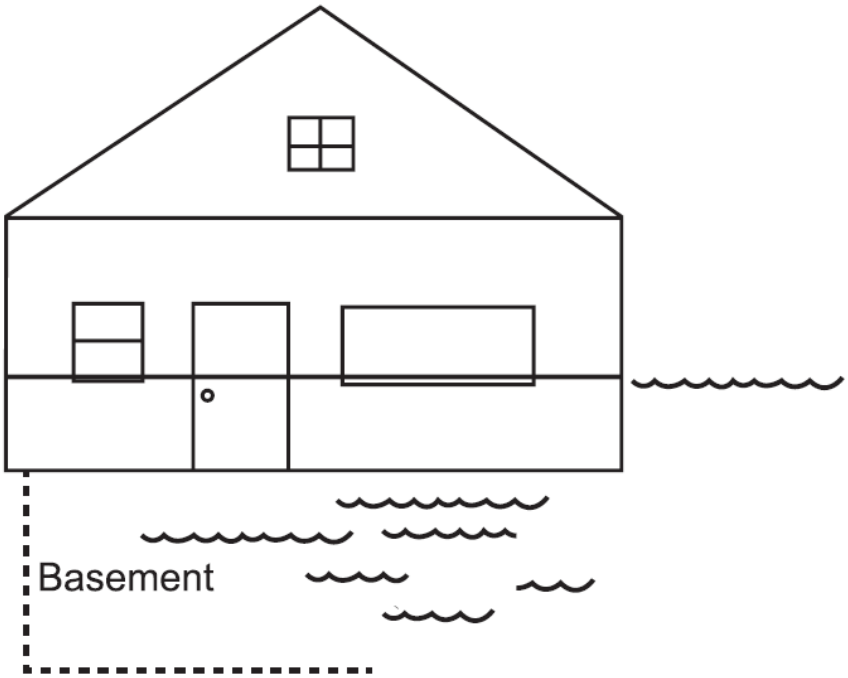


Significant structural damages requiring **longer than 30 days for repair**.
Examples:

- 18” or more of water on the first floor or water that covers the electrical outlets.
- Water in the basement which compromises the structural integrity of the home.

DESTROYED

Flood Damage: Single Family Dwelling



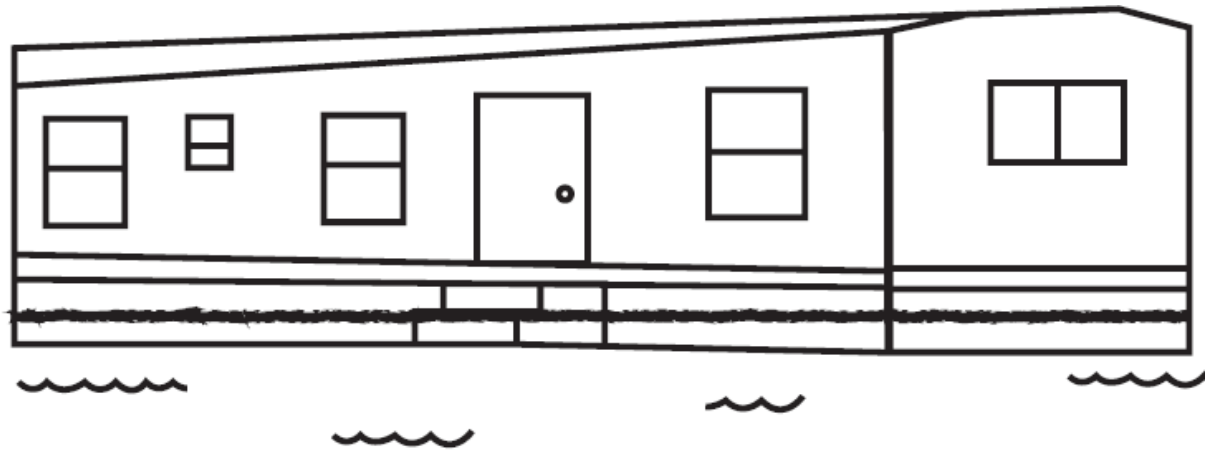
Structure that is a **total loss** and damage is to such an extent that repair is not feasible and has left the home **permanently uninhabitable.**
Examples:

- Complete failure of two or more major structural components, such as collapse of basement walls/foundation, walls or roof.
- Only foundation remains.
- A structure that will require removal or demolition by local government due to a confirmed imminent danger, such as impending landslides, mudslides or sinkholes.

MOBILE HOME

AFFECTED

Flood Damage: Mobile Home

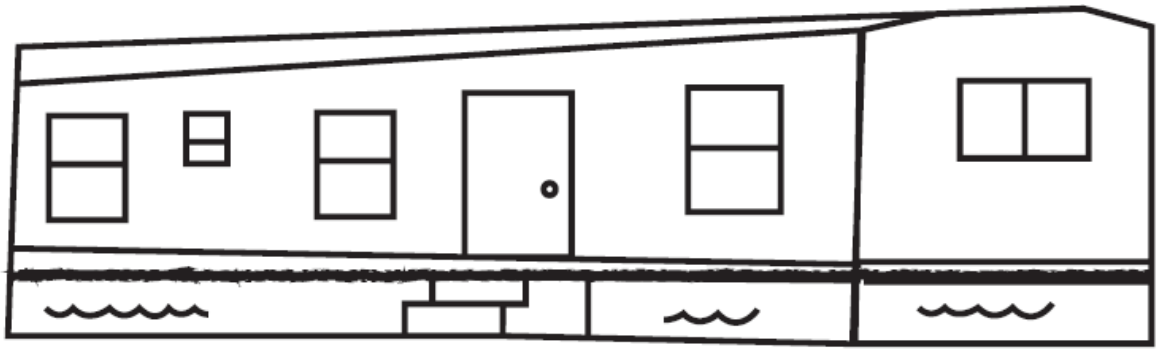


Minimal damage to the dwelling and/or contents and is **habitable, requiring minimal repairs.**
Examples:

- No damages affecting habitability.
- Cosmetic damage only.

MINOR

Flood Damage: Mobile Home

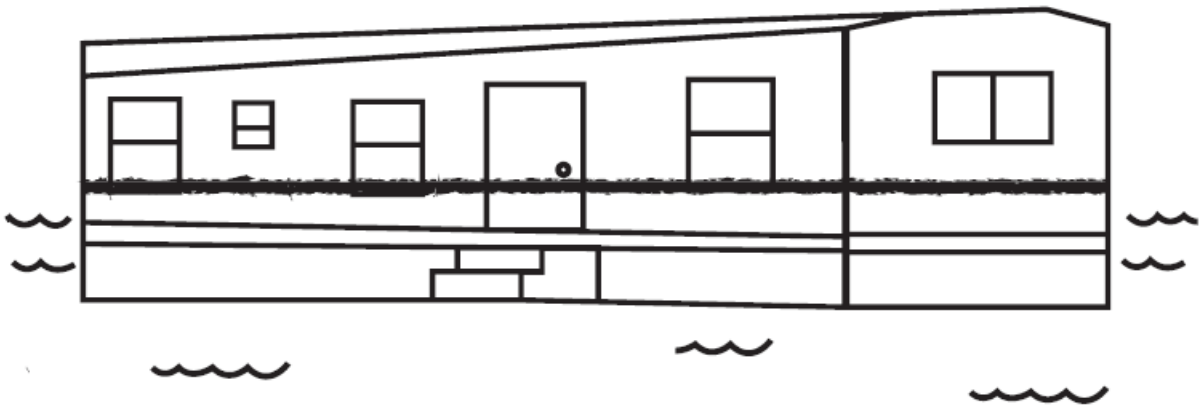


Damages may be **repaired within 30 days** making the structure habitable.
Examples:

- Water line is below the floor system.
- Skirting or HVAC may be impacted.

MAJOR

Flood Damage: Mobile Home

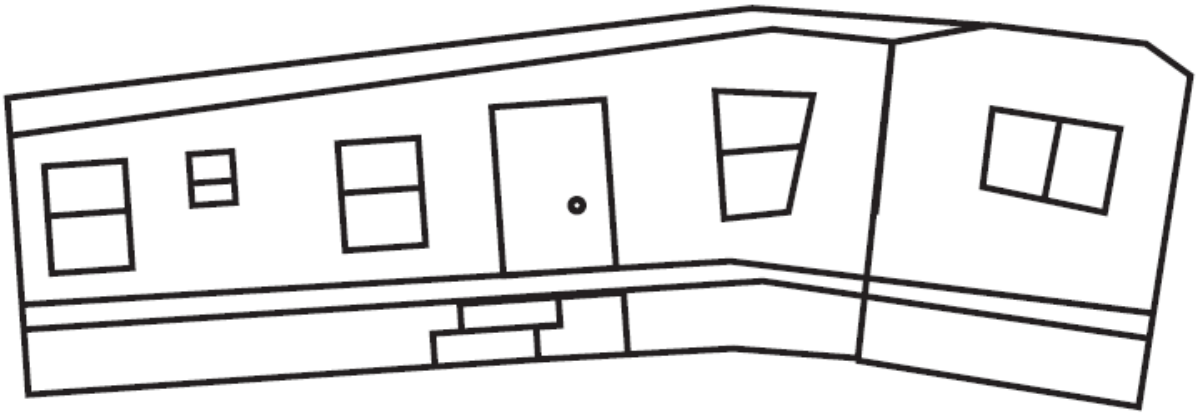


Significant structural damages requiring **longer than 30 days for repair.**
Extensive repairs will be required to become habitable.
Examples:

- Water that impacts the floor system (belly board insulation, duct work, subfloor).
- Water line up to 12 inches in the living area.

DESTROYED

Flood Damage: Mobile Home



Structure is a **total loss**. There is no value associated with the structure except for its basic material content (scrap).
Examples:

- Water line is higher than 12 inches.
- Frame twisted, bent or otherwise compromised.
- Interior so compromised by contamination that cleanup is infeasible.

Appendix H

Firescope California, Wildland Urban Interface (WUI), Structure Defense
STRUCTURE TRIAGE CATEGORIES

Select the appropriate structure triage category based on the forecasted fire behavior, the surrounding area terrain and any defensible space:

Not-Threatened:

Safety Zone and TRA are present and construction features or defensible space make it unlikely that the structure will ignite during initial fire front contact.

Threatened Defensible:

Safety Zone and TRA are present and construction features, lack of defensible space, or other challenges requires firefighters to implement structure defense tactics during fire front contact.

Threatened Non-Defensible:

Either there is no Safety Zone or TRA present and/or the structure has challenges that do not allow firefighters to safely commit to stay and protect the structure during fire front contact.

(State of California, 2013)

Appendix I

Interview Questions for Lisa Schoenthal, Santa Clara City Emergency Services Coordinator

Interview conducted on June 29, 2018 at SCFD Headquarters

777 Benton Street. Santa Clara, CA 95050

1. Are you aware of a need for the City of Santa Clara to develop a process/ policy to conduct preliminary damage assessments following large incidents?
2. What is the most appropriate PDA criteria to be utilized by Santa Clara?
3. Is there criteria that shall be specific to Santa Clara based on the specific risk profile?
4. How the EOC is currently activated and how are members notified?
5. Who are the members currently assigned to the EOC?
6. Is it feasible to expect other city employees to engage in performing PDAs?
7. Is there a timeframe for PDA completion and reporting to the EOC?
8. Are the current 10 SCFD response districts appropriate to utilize in organizing the city into geographic areas with the station serving each district performing the assessments?
9. Is it feasible to have target hazards in each district pre-planned for the purpose of creating priorities when performing PDAs following an event?
10. How are PDA findings normally reported to EOCs?

Appendix J

Request for Information to Fellow EFO Students

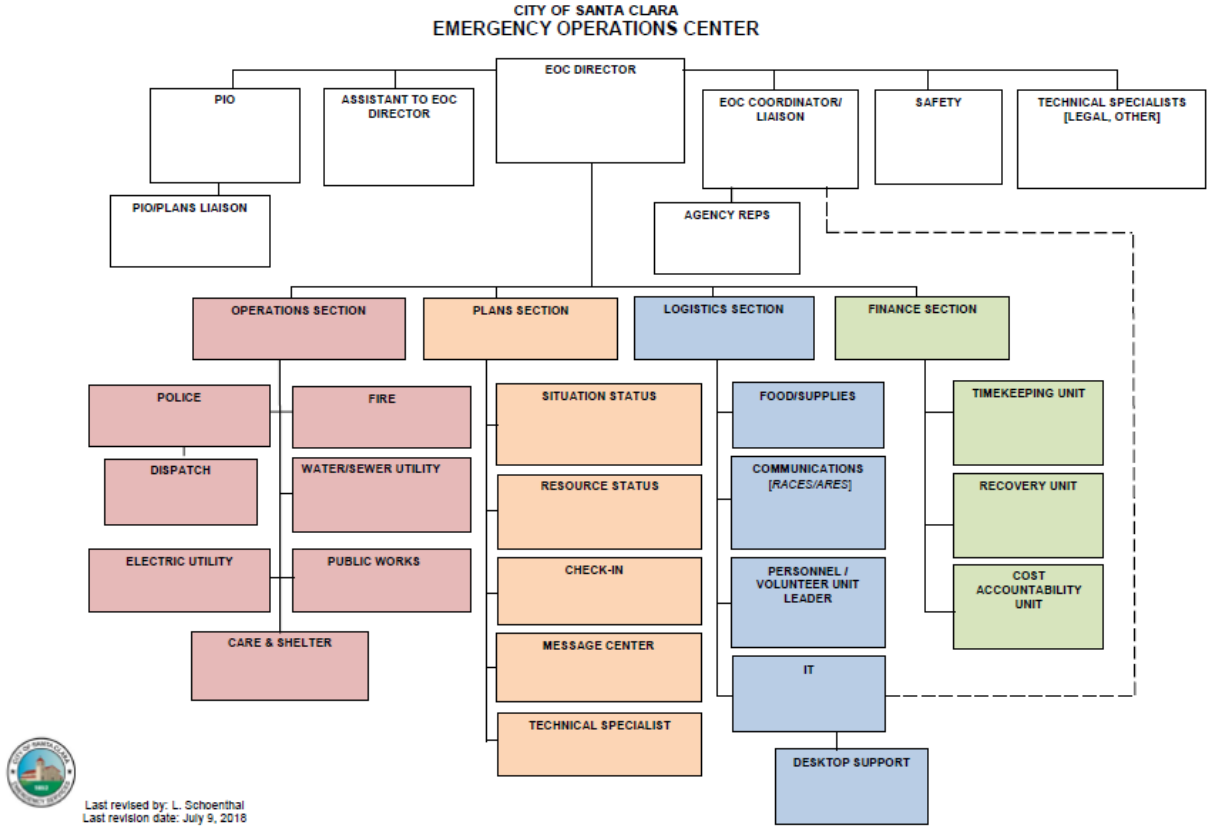
April 23, 2018

Hello Fellow EFO Students,
I am starting to write my third paper, as you are all well into yours.
I am gathering information regarding Preliminary Damage Assessments or Windshield Surveys that are to be performed immediately following a natural or man-made disaster.
I am working on developing a policy/ procedure specific to Santa Clara, CA, as we currently don't have one.
If you have a policy/ procedure in place for this, would you mind sharing it with me? I would be interested to see how your departments do this.
Thank you in advance for your time,
Stay safe and good luck with finishing up your papers,

Calogero Monachino
Fire Captain
Santa Clara Fire Department
City of Santa Clara, CA

Appendix K

City of Santa Clara EOC



Appendix L

California Emergency Management Agency List of Projects

State of California
California Emergency Management Agency

List of Projects

Disaster N

APPLICANT:_____City of Santa Clara_____ 15-May-17

CONTACT NAME AND PHONE NUMBER: Lisa Schoenthal (408) 615-4990 IS THIS AN AMENDED LIST OF PROJECTS? ___ No

ITEM #	LOCATION	DESCRIPTION OF DAMAGE AND SCOPE OF WORK	COST ESTIMATE	CATEGORY*	WAS WORK COMPLETED BY FORCE ACCT (FA), CONTRACT (C) OR BOTH (F/C)?	ENTER "ENV" IF THERE ARE ENVIRONMENTAL ISSUES OR "HIST" FOR HISTORIC ISSUES, OR BOTH	WAS THERE INSURANCE COVERAGE? IF YES, ENTER DEDUCTIBLE AMOUNT	WAS THE FACILITY DAMAGED IN A PRIOR DISASTER(S)? IF YES, ENTER DISASTER NAME(S) OR NUMBER(S	ARE THERE COST EFFECTIVE HAZARD MITIGATION MEASURES THAT MAY PREVENT FUTURE DAMAGE?
1	citywide	debris clearance	$27,738.00	A	FA	No	No	No	No
2	200 Lawrence Expressway, Serra Tanks	flood damage to meter & pressure transducer	$12,358.00	D	FA	No	No	No	No
3	628 Azvedo Ct	winds/tree caused downed wire and blown fuses	$10,114.00	F	FA	No	No	No	No
4	Ponderosa Way	winds/tree caused downed wire	$6,956.00	F	FA	No	No	No	No
							$		
			$				$		
			$				$		

PW
Water
SW

*CATEGORY: A) Debris Clearance; B) Protective Measures; C) Road System; D) Water Control Facility; E) Buildings and Equipment; F) Public Utility System; G) Other. (Note: if a single site has more than one category, indicate the category that represents the majority of damage.)

Cal EMA 95, (Rev.12/09)

Appendix M

Emergency Proclamations: A Quick reference Guide for Local Governments

EMERGENCY PROCLAMATIONS

A quick reference guide for Local Government

March 2014

General Information about Local Emergency Proclamations

Definition of Local Emergency: "[T]he duly proclaimed existence of conditions of disaster or of extreme peril to the safety of persons and property within the territorial limits of a county, city and county, or city, caused by such conditions as air pollution, fire, flood, storm, epidemic, riot, drought, sudden and severe energy shortage, plant or animal infestation or disease, the Governor's warning of an earthquake or volcanic prediction, or an earthquake, or other conditions, other than conditions resulting from a labor controversy, which are or are likely to be beyond the control of the services, personnel, equipment, and facilities of that political subdivision and require the combined forces of other political subdivisions to combat . . ." (California Government Code (Govt. Code) section 8558 (c)).

Issued by (Govt. Code section 8630(a)):

- Governing body of a city, county, or city and county, or
- An official designated by an ordinance adopted by that governing body (e.g., police/fire chief, director of emergency services).

Purpose (Govt. Code sections 8625 and 8634):

- Authorizes the promulgation of orders and regulations necessary to protect life and property (e.g., special purchasing or emergency contracting).
- Describes the circumstances that exist that may support the need for issuance of a State of Emergency Proclamation and/or Executive Order.
- Supports request for a Director's Concurrence, Governor's Proclamation of a State of Emergency, Executive Order, California Disaster Assistance Act (CDAA) funding, and/or a Presidential Declaration of an Emergency or Major Disaster.*

Deadlines:

- Issuance: Within 10 days after the actual occurrence of a disaster if assistance will be requested through CDAA (Govt. Code section 8685.2).
- Ratification: If issued by official designated by ordinance, must be ratified by governing body within 7 days (Govt. Code section 8630(b)).
- Renewal: Reviewed at least once every 30 days by the governing body until terminated (Govt. Code section 8630(c)).
- Termination: At the earliest possible date that conditions warrant (Govt. Code section 8630(d)).

Notification Process (consistent with the Standardized Emergency Management System (Govt. Code section 8607)):

- Local governments should notify the Operational Area (OA) and provide a copy of the local emergency proclamation as soon as possible.
- OA shall notify Cal OES and provide a copy of the proclamation as soon as possible.
- Cal OES Region will ensure notification to the Cal OES Director and Deputy Directors, and shall be the primary contact between the Cal OES Director, OA, and the local jurisdiction for updates on any requests for assistance.
- Cal OES Director will respond in writing to the local government concerning the status of any requests for assistance included within the local proclamation or accompanying letter.

***Please note**:
When a local government requests a Gubernatorial State of Emergency Proclamation, Director's Concurrence, and/or California Disaster Assistance Act funding, local government should provide information describing local response efforts and identify the specific type and extent of state emergency assistance needed, including regulatory waivers necessary to facilitate the protection of life and property during response efforts.
A local emergency proclamation and/or Governor's proclamation is not a prerequisite for mutual aid assistance, Red Cross assistance, the federal Fire Management Assistance Grant Program, or disaster loan programs designated by the U.S. Small Business Administration or the U.S. Department of Agriculture.

Levels of Disaster Assistance

Director's Concurrence:
Purpose: CDAA authorizes the Cal OES Director, at his or her discretion, to provide financial assistance to repair and restore damaged public facilities and infrastructure.
Deadline: Cal OES must receive a request from local government within 10 days after the actual occurrence of a disaster (Govt. Code section 8685.2).
Supporting Information: Local Emergency Proclamation, Initial Damage Estimate (IDE) prepared in "CalEOC," and a request from the City Mayor or Administrative Officer, or County Board of Supervisors.

Governor's Proclamation of State of Emergency:
Purpose: Provides the Governor with powers authorized by the Emergency Services Act; may authorize the Cal OES Director to provide financial relief under the California Disaster Assistance Act for emergency actions, restoration of public facilities and infrastructure, and hazard mitigation; prerequisite when requesting federal declaration of a major disaster or emergency.
Deadline: Cal OES must receive a request from local government within 10 days after the actual occurrence of a disaster (Govt. Code section 8685.2).
Supporting Information: Local Emergency Proclamation, IDE prepared in "CalEOC," and a request from the City Mayor or Administrative Officer, or County Board of Supervisors.

Presidential Declaration of an Emergency:
Purpose: Supports response activities of the federal, state and local government; authorizes federal agencies to provide "essential" assistance including debris removal, temporary housing and the distribution of medicine, food, and other consumable supplies.
Deadline: Governor must request on behalf of local government within 5 days after the need for federal emergency assistance becomes apparent, but no longer than 30 days after the occurrence of the incident (Title 44 of the Code of Federal Regulations (44 CFR) section 206.35(a)).
Supporting Information: All of the supporting information required above and a Governor's Proclamation, certification by the Governor that the effective response is beyond the capability of the state, confirmation that the Governor has executed the state's emergency plan, information describing the state and local efforts, and identification of the specific type and extent of federal emergency assistance needed.

Presidential Declaration of a Major Disaster:
Purpose: Supports response and recovery activities of the federal, state, and local government and disaster relief organizations; authorizes implementation of some or all federal recovery programs including public assistance, individual assistance and hazard mitigation.
Deadline: Governor must request federal declaration of a major disaster within 30 days of the occurrence of the incident (44 CFR section 206.36(a)).
Supporting Information: All of the supporting information required above, a Governor's Proclamation, certification by the Governor that the effective response is beyond the capability of the state, confirmation that the Governor has executed the state's emergency plan, and identification of the specific type and extent of federal aid required.

SAMPLE PROCLAMATION

WHEREAS, Ordinance No._____of the City/County of _____empowers the Director of Emergency Services* to proclaim the existence or threatened existence of a local emergency when said City/County is affected or likely to be affected by a public calamity and the City Council/County Board of Supervisors is not in session, and;

WHEREAS, the Director of Emergency Services* of the City/County of_____does hereby find; that conditions of extreme peril to the safety of persons and property have arisen within said city/county, caused by_____(fire, flood, storm, mudslides, torrential rain, wind, earthquake, drought, or other causes); which began on the_____th day of_____, 20___. and;

That these conditions are or are likely to be beyond the control of the services, personnel, equipment, and facilities of said City/County, and;

That the City Council/County Board of Supervisors of the City/County of _____is not in session and cannot immediately be called into session;

NOW, THEREFORE, IT IS HEREBY PROCLAIMED that a local emergency now exists throughout said City/County, and;

IT IS FURTHER PROCLAIMED AND ORDERED that during the existence of said local emergency the powers, functions, and duties of the emergency organization of this City/County shall be those prescribed by state law, by ordinances, and resolutions of this City/County; and that this emergency proclamation shall expire 7 days after issuance unless confirmed and ratified by the governing body of the City/County of_____.

Dated:_____By:_____
Director of Emergency Services*

Print Name_____

Address_____

**Insert appropriate title and governing body*

Note: Local governments should provide a description of the local efforts and identification of the specific type and extent of state emergency assistance needed.

Note: It may not be necessary for a city to proclaim a local emergency if the county has already proclaimed an emergency that applies to the entire geographic county area or for a specific area that includes the impacted city or cities.

This guide is not intended to be a legal opinion on the emergency proclamation process and related programs under federal, state, and local law. Local governments should consult their own legal counsel when considering proclaiming a local state of emergency.

Appendix N

NFA Preliminary Damage Assessment Forms

Executive Analysis of Fire Service Operations in Emergency Management

Damage Assessment Report

Routing: Upon completion of this report Operations forwards to the Situation Unit.
Situation Unit will map either the Current Map or Projected Map as required.
Situation Unit will forward this report to the Display Processor(s).
Display Processor(s) will log information to the appropriate computer display.
Display Processor(s), upon completion of logging, will forward this report to the Operations Chief.
Operations Chief will review to determine the needed response.

Date ____ 10/19/2015 Time ____ 915 Name ___ Capt. Thomas Position __ E1 OIC

Geographical Area ___ Engine 1 First Due

Condition of Fire Station _____ Windows cracked/broken | Police Station _____ No damage | Public Works Facility __ N/A

Injuries to Fire Personnel _____ 1 possible broken arm | Police Personnel ___ 2 with cuts/bruises | Public Works Personnel N/A

Condition of Fire Apparatus _____ Operable | Police Vehicles ____ Operable | Public Works Vehicles _ N/A

Check the area being reported:

	Streets non-passable
	Flooding areas
	Residential
	Commercial
	Schools
	Target hazards
	Infrastructure (check specific item)
	Gas lines
	Electrical lines
	Sewer
	Water mains
XX	Public bldgs.

Injuries on this report: 1 P2; 2P3
(List # and priority (1-4) being reported, e.g., 6P1, 3P2, etc.)

Address or area of property being reported:

_____ FS1@X&19th Streets; PD@X&20th Streets

Additional information about this property (number of structures, etc.)

_____ None

Is the damage noted at left:

	Destroyed>50% damage
	Major 25% to 50%
XX	Minor <25%

Other information (shelter requirements, requested response, etc.) _____ None

(FEMA, 2016d)