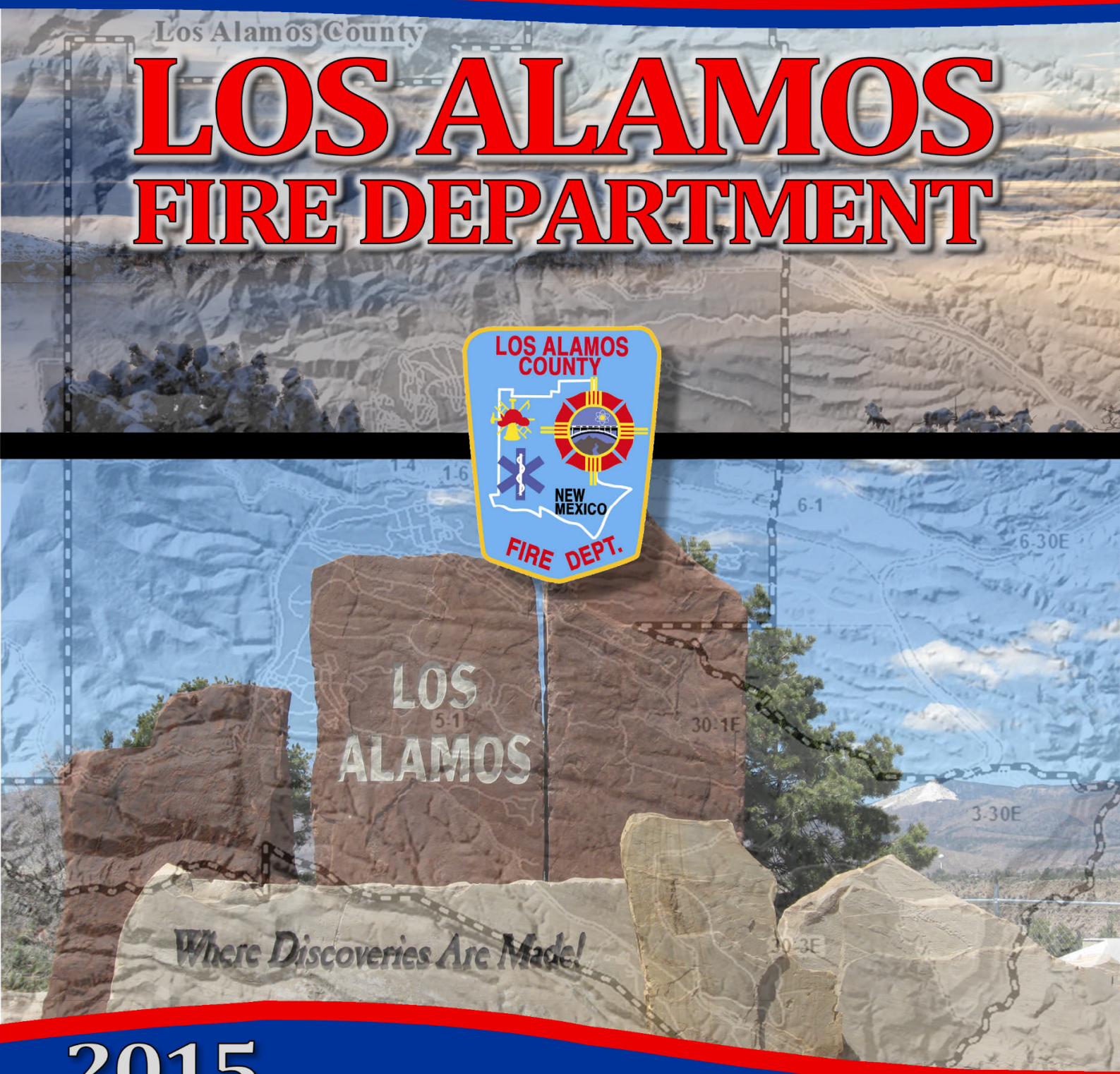
LOS ALAMOS FIRE DEPARTMENT



2015 COMMUNITY RISK ASSESSMENT & STANDARDS OF COVER

Facilitated by CPSE Center for Public Safety Excellence

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Los Alamos Fire Department

Fire Chief Troy Hughes

Deputy Fire Chief Justin Grider

Accreditation Manager

Norma Jean Valdez

Accreditation Core Team

Fire Chief Troy Hughes

Deputy Fire Chief Justin Grider

Norma Jean Valdez, Management Analyst

Heather Garcia, Management Analyst

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Significant Contributors

Division Chief Ramon Garcia – Wildland/Public Education

Division Chief Jeffrey Wetteland – Fire & Life Safety

Division Chief Wendy Servey - Safety

Division Chief Benjamin Stone – Emergency Medical Services

Division Chief Francisco Martinez - Training

Division Chief Paul Grano – Water Supply & Communications

Battalion Chief Steven Dawald – Fire Suppression, Fleet, Risk

Battalion Chief Justin Cassel – Fire Suppression, Fleet, Risk Assessment

Battalion Chief Adam Muller – Fire Suppression, Fleet, Risk Assessment

Captain Kelly Grace-Meyer – Hazmat, Risk Assessment

Captain Micah Brittelle – Technical Rescue, Risk Assessment

Captain Ernest Agnew – ARFF, Risk Assessment

Sharyl Hofer, Safeguard/Security Labor Relations Manager – Staffing, Editing

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Command Staff – SOC Content

Operations Division personnel – Area Characteristics, Risk Assessment, SOC Content

Beverly Purtymun, Management Analyst

MARCH 2015, UPDATED JUNE 2015

Introduction

The purpose of this document is to serve as an overall blueprint for the Los Alamos Fire Department's (LAFD or department) mandate to protect lives, the environment, and the property of the public it serves. The LAFD mission statement is an integral part of that blueprint in that it provides a succinct explanation as to our purpose.

The strategies employed to achieve our mission are defined throughout this and other supportive documents. LAFD's Standards of Cover was developed with life safety as the overall objective while keeping the following risk management statement at the forefront of our ambition.

"We will risk a lot to save savable lives. We will risk a little to save savable property. We will risk nothing to save that which has already been lost."

Due to the nature of the department, a unique challenge is presented to service providers in as much as the department is in a cooperative agreement with the Department of Energy (DOE)/National Nuclear Security Administration (NNSA) to provide fire protection service to the Los Alamos National Laboratory (LANL). Los Alamos County (LAC or County) will use guidance from National Fire Protection Association (NFPA) documents in developing LAFD's overall policies and practices. Certain issues involving national security arise when discussing DOE facilities; therefore, discussion may be limited as appropriate.

When developing a "Standards of Cover" document for the LAFD, wildland urban interface response must be considered. During wildland fire season, typically from April to September, the entire community is designated as highly threatened regardless of neighborhood demographics. With thousands of acres of wildland encroaching on several neighborhoods within Los Alamos, a special mitigation project has been implemented and is ongoing to reduce the hazard to the community.

The remainder of this document is intended to provide a snapshot of the department's level of service objectives to the County and should be regarded as a "working document" subject to the dynamic nature of the fire service as technologies and practices change to accommodate the wants and needs of the customers served. Certain assumptions must therefore be made including the assumption that response travel times to critical LANL facilities begin when an apparatus leaves a fire station or when it is announced that a particular unit is "enroute" and ends when an apparatus has arrived at a staging area or security barrier from which access to the facility may be delayed while appropriate security and/or safety protocols are followed.

This document will include a critical analysis of historical data, existing and proposed deployment strategies, distribution and concentration of resources based on time parameters, identification of community risks and expectations, and collection of data on reliability of response. The governing body for the accreditation process is the Commission on Fire Accreditation International (CFAI).

The overall assessment evaluates the department's ability to provide adequate resources to respond to an "all-risk" environment including fire and non-fire incidents such as emergency medical, hazardous material, technical rescue, and disasters both natural and manmade.

The methodology used was a systems approach to deployment rather than the one-size-fits-all prescriptive formula. An evaluation was conducted to match local needs or threats and expectations with expected outcomes. The data contained in this Standards of Cover document should provide the leaders of Los Alamos with the information necessary to understand and make decisions upon an effective delivery system for an "all-risk" environment.

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Executive Summary

The purpose of the Standards of Cover (SOC) is to define and measure the appropriate level of service based on a comprehensive study of the department's historical performance, deployment strategies and the community risk factors to determine the capability of its response system.

This document outlines the risk capabilities of the LAFD and conforms to the 5th edition of the CFAI Standards of Cover guidelines.

Since the LAFD is under a Cooperative Agreement with the Department of Energy (DOE) National Nuclear Security Administration (NNSA) to protect the Los Alamos National Laboratory (LANL), this SOC must measure not only the service needs and delivery to the community, but to a high-hazard nuclear grade government facility which due to the nature of its mission is highly protected and secured with fixed protection and a substantial armed guard force.

With 5 fire stations and 139 shift firefighters, the LAFD is not staffed and configured to protect the community of 18,000 but is based on LANL needs; thus the ability to dispatch and respond units in a greater value than most communities of this size. In addition, the approximate 2,000 per year call volume allows the department the latitude to dispatch additional resources and adjust the number of resources needed based on in-route information or upon arrival and size up by the first unit on scene.

As the mission and environment of the Laboratory, and their Fire Service Baseline Needs Assessment dictate, the introduction of new federally owned fire stations and additional personnel and equipment will be modified. The County does not anticipate any significant growth which would require the addition or relocation of existing County owned fire stations or the addition of personnel or equipment.

The department will face the same economic challenges as the rest of the nation and since 80% of the funding is through federal allocation, the department must be prepared to adapt if funding is modified.

This SOC describes the service area, the risks that must be protected within the community and at LANL, the services provided, the department capabilities and performance objectives and measures. The LAFD must assess risks based upon the potential frequency (probability of an incident occurring), consequence (potential damage should an event occur) and impact to the department (resources committed). Risk management is the analysis of the chance of an event occurring and the resulting damage that could occur as a result of the event. The Community Risk Assessment identifies both fire and non-fire risks in each response district and places the risk in a risk category.

This document provides the department with an assessment of quantitative and qualitative data establishing a baseline of service delivery performance. An enormous amount of research and analysis has gone into the development of this document. Numerous successes, milestones and areas of strength are identified which verify and validate the quality services provided by the Los Alamos Fire Department. As expected, areas for improvement were identified as well. These findings have led to further research, analysis, evaluation and investigation with short and long range solutions in the development stages.

Much of this information and the conclusions and recommendations derived from it are used to fulfill the continuous improvement promise and achieve excellence.

The Los Alamos Fire Department is proud to be entrusted with the safety and welfare of our community. We are honored to provide exceptional services for the preservation of life, the environment, and property.

We Walk With PRIDE!

A. Description of Community Served

Los Alamos, New Mexico

Los Alamos County is located in north central New Mexico. Perched atop steep-walled mesas of the Pajarito Plateau at the foot of the Jemez Mountains, Los Alamos offers some of the most awe-inspiring vistas anywhere. Located on the Jemez Mountain Trail National Scenic Byway, Los Alamos is at the heart of New Mexico recreation, with added cultural and historical significance.

In 1917, one of the most successful ranches, the Alamos Ranch, was purchased by Ashley Pond, a Detroit entrepreneur and former "Rough Rider." Pond converted the working ranch to the Los Alamos Ranch School where "privileged eastern boys might become robust, learned men." The natural depression that occasionally filled with water on the property came to be known as Ashley Pond. Twenty-six years later, the remote location and existing infrastructure of buildings and roads around the school would make it the ideal choice when the United States Government needed a secure location to base Project Y of the top-secret Manhattan Project.

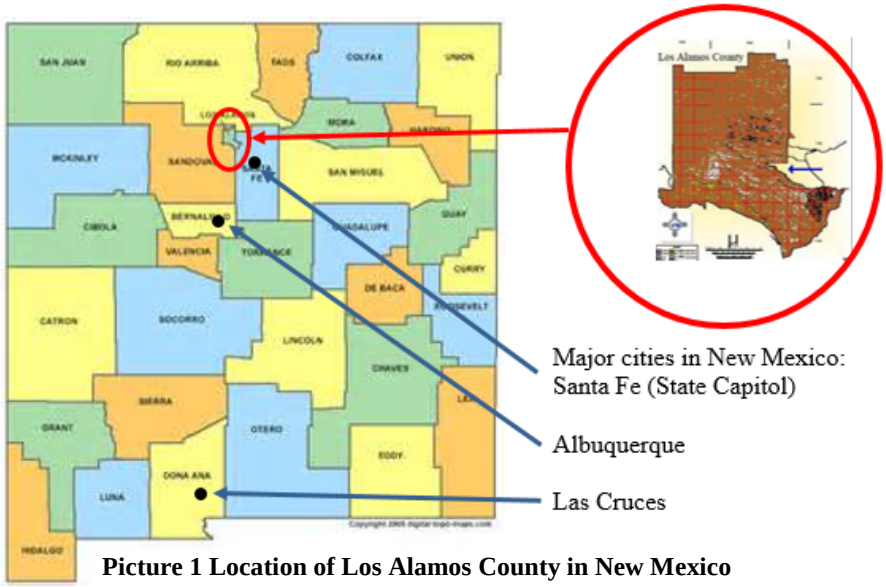
In 1943, the school closed and in its place gathered some of the world's greatest scientific minds tasked with unlocking the secrets hidden in the atom. Led by J. Robert Oppenheimer, a physicist at the University of California, this group of men and women conducted fundamental research which led to the world's first atomic bomb.

Most of the hundreds of temporary war-time buildings of the Manhattan Project era are gone now, but remaining in the historic heart of Los Alamos are former ranch school buildings that also served the Manhattan Project. Fuller Lodge, designed by famed architect John Gaw Meem, is a massive vertical-log structure built in 1928 to serve as the Ranch School dining hall. After World War II, wings were added when it was converted to a hotel.

Adjacent to the lodge, in the former ranch school guest house, is the award-winning Los Alamos Historical Museum, interpreting the social history of the plateau. An easy historic walking tour provides a journey through time—from the Stone Age to the Atomic Age.

World War II ended in 1945, due in part to the work done here at Los Alamos, New Mexico. In 1947, the Atomic Energy Commission assumed ownership and began building a modern town to support the Los Alamos Scientific Laboratory. In 1957, the security gates came down and property was sold to private individuals. Since then the town has continued to grow.

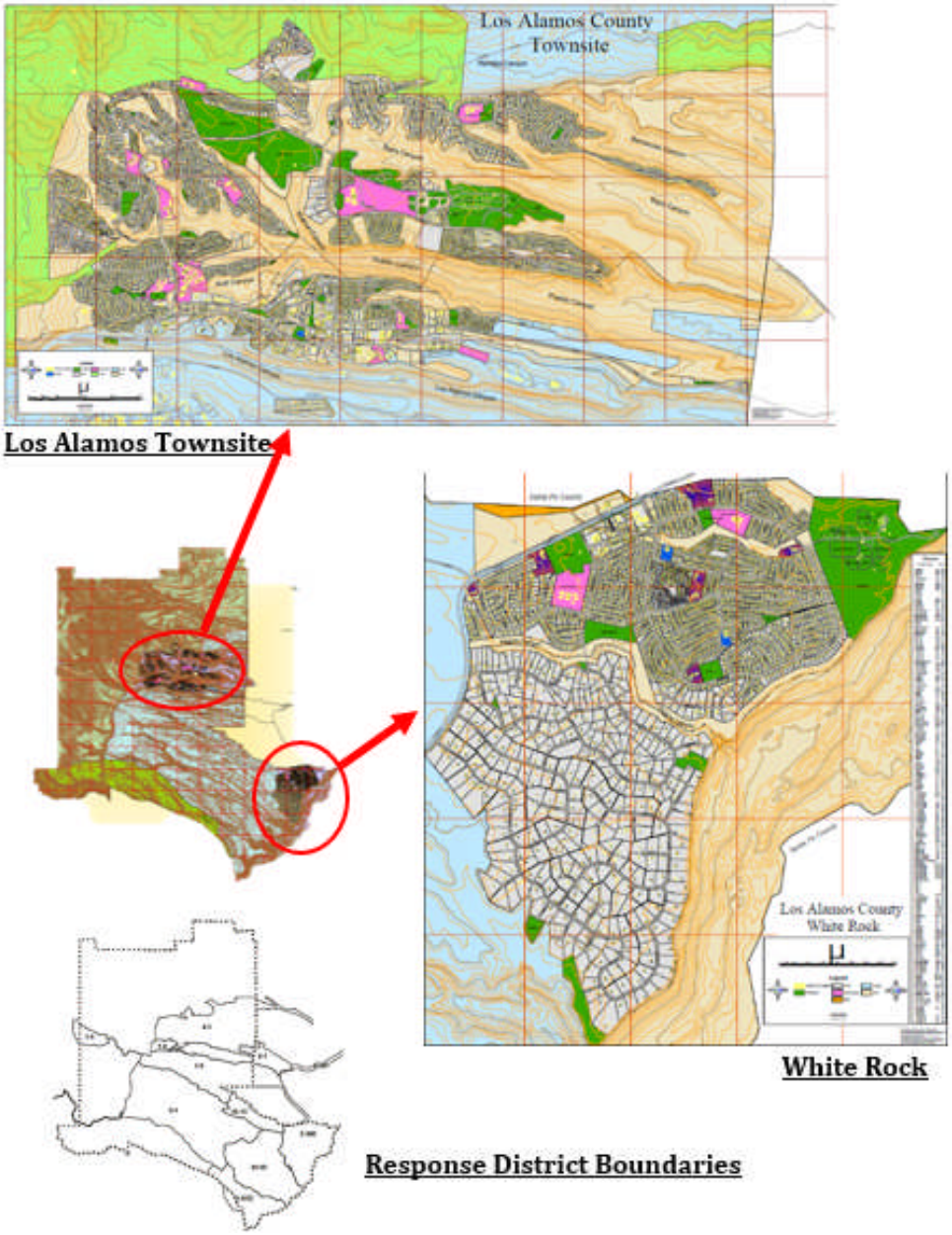
The Los Alamos National Laboratory (LANL) was created in 1942 by the U.S. Army Manhattan Engineer District with the initial mission to develop the world's first nuclear fission weapon. The relative isolation of Pajarito Plateau was considered ideal for this mission when the site was selected. At the end of WWII, the Atomic Energy Commission (AEC) received control of LANL from the Army and renewed the contract with the University of California



Picture 1 Location of Los Alamos County in New Mexico

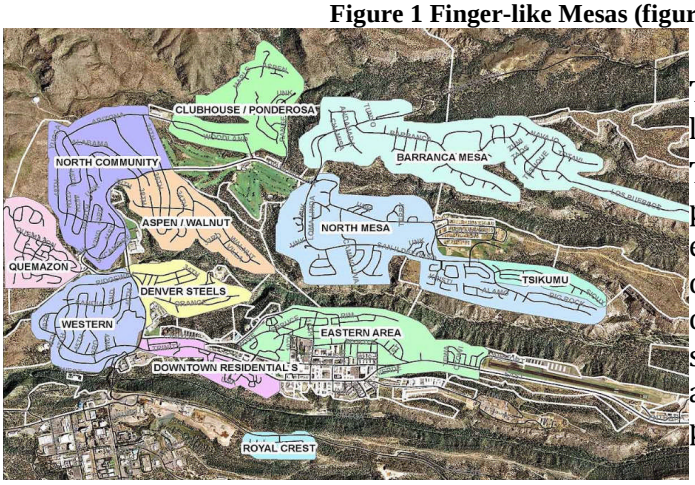
(UC) to maintain US pre-eminence in the field of atomic energy. LAC was created in 1949 and chartered in 1968 in response to the Atomic Energy Communities Act of 1954 that required the privatization of the community facilities surrounding national research laboratories.

LANL is located in Los Alamos County. The approximately 40-square mile Laboratory site is situated on the Pajarito Plateau, which consists of a series of finger like mesas (ridges) separated by deep east to west oriented canyons cut by intermittent streams. Most Laboratory and community developments are confined to mesa tops. The surrounding land is largely undeveloped and large tracts of land north, west and south of LANL are administered by the Los Alamos County, Santa Fe National Forest, and Bandelier National Monument. The San Ildefonso Indian Pueblo borders LANL to the east.



Picture 2 Populated Areas of Los Alamos County

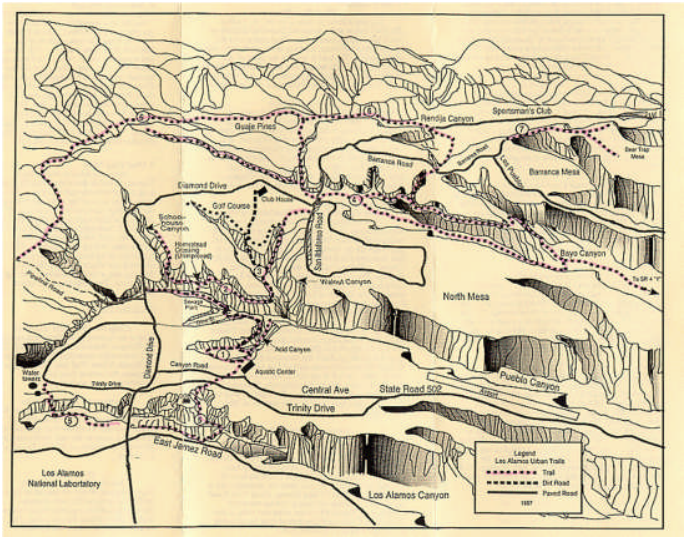
Figure 1 Finger-like Mesas (figures, description, pictures)

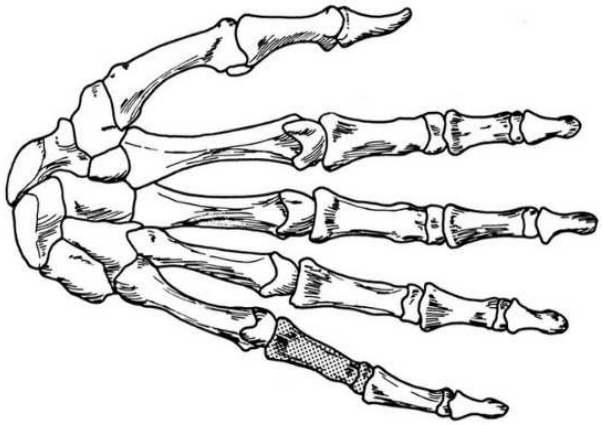


Finger-like Mesas

The images illustrate the "finger-like mesa" layout of Los Alamos County.

The layout of the finger like mesa tops presents a unique response challenge as the end of these fingers or mesas can be reached only on one way in, one way out roads. In other words, responders must go back on the same roads to get to a main road or artery to access another part of the county or LANL property.





Legal Basis

The department was legally established in 1985 through the Los Alamos County Code of Ordinances pursuant to Part 2 - Administration, Article IV- Departments, Division 7, Sections 2-361 and 2-362. In 2002, the County rewrote the County Code. During this rewrite and reclassification, the legal establishment of all County departments, including the LAFD, was achieved through the adoption of Resolution Number 08-05 by the Los Alamos County Council.

In October 2013, the County entered into an unprecedented ten-year cost sharing Cooperative Agreement (CA) with the Department of Energy/National Nuclear Security Administration (DOE/NNSA). As stated in the statement of objectives, "The general objective of this CA is to provide financial support for staff, response vehicles, specialized tours and training, and the use of fire station facilities to the Incorporated County of Los Alamos to allow the County to provide an enhanced level of fire department services, including advanced nuclear facility capable, industrial fire suppression, advanced emergency medical, rescue, hazardous material response, and other services ("fire department services") through its municipal fire department."

As the owner of LANL, the federal government through its agency, the NNSA has a substantial interest to ensure the protection of the public, the environment and property in Los Alamos County which includes LANL and surrounding geographical areas by the provision of the fire department services enhanced by the CA. The Laboratory's research and other activities affect national security interests and include the potential for hazardous or radiological releases. Therefore, a close collaboration must occur between NNSA and the County to ensure an appropriately enhanced level of fire department services.

Because of these interests, NNSA will be substantially involved with Los Alamos County in its provision of the fire department services at LANL enhanced by the CA. NNSA will collaborate in the management of the fire department services outlined in the Statement of Substantial Government Involvement. This collaboration by NNSA is not meant to supplant or control the day to day management of the County's fire department or other offices of the County but rather to augment the systems, programs, training and capability of the department. It is recognized that both NNSA and the County will benefit from this collaborative effort by enhancing the safety of the firefighters, the public, LANS and federal government employees, as well as members of the communities surrounding Los Alamos, the protection of the environment and property.

The DOE/NNSA provides for the vast majority of funding of personnel and vehicles for the LAFD, responses, training, and stationing of fire fighters for LANL's needs and shall be foremost in the management and direction of the responders by Los Alamos County. The CA captures that the response of the LAFD for fire and/or hazardous material and medical emergencies to the LANL facilities is paramount for the safety of both the Los Alamos community and workers at the Laboratory.

History of the Agency

The LAFD is currently the third largest career fire department in the State of New Mexico and the first department with an ISO (Insurance Services Office) rating of 1 in the state. The Department provides fire, rescue, emergency medical, public education, and life safety services to the citizens and visitors of LAC and LANL.

LAC encompasses 109.5 square miles and houses approximately 17,795 residents and is supplemented by over 10,000 daily commuters. The LAFD was originally organized under the Manhattan Project in April of 1943. At that time, it consisted of 7 civilian firefighters and 25 volunteer firefighters. In September 1943, the firefighter functions were taken over by the

military. The Fire Department was operated under the US Atomic Energy Commission and the DOE, who employed federal government employees for this service until 1988. At that time, the DOE awarded a contract to the County to hire personnel and provide fire and EMS service for LANL and the community. The contractual relationship between the DOE and County continued through November 30, 1997, with two consecutive contracts. On December 1, 1997, DOE transitioned the contract to University of California (UC) and on June 1, 2006, the contract was transitioned again to Los Alamos National Security, LLC (LANS). LANS currently operates LANL for the NNSA of the DOE. On October 1, of 2008, the County, the DOE and NNSA entered into a five-year Cooperative Agreement (CA) for the funding and operation of LAFD. CA #DE-FC52-08NA28090 became effective on October 1, 2008, and establishes an estimated project cost through September 30, 2013 and the cost-sharing arrangement. In October, 2013, the hard work of the LAFD resulted in the signing of an unprecedented 10-year Cooperative Agreement.

Picture 3 Omega Bridge

The LAFD reports to DOE/NNSA and Los Alamos County; however, the LAFD is chartered by the Los Alamos County so the County Administrator is the Authority Having Jurisdiction (AHJ) over the department. The NNSA site manager is AHJ for overall operations of the DOE/LANL property.

LAFD currently operates with 150 budgeted positions consisting of 139 uniformed and 11 civilian positions. LAFD has five operational fire stations, one training station, and an administration office.

Service Milestones

- September 1989 – Fire Department transferred from DOE to Los Alamos County
- September 1990 – Construction of Fire Station 6 at 457 East Road
- May 5, 1997 – Began providing Advanced Life Support medical services
- 1997 – LAFD became a beta site for the Commission on Fire Accreditation International's self-assessment process and was among the first five fire departments in the world to receive accredited status.
- May 5, 2000 – Cerro Grande Fire burned 45,000 acres of property and 400 homes in 200 structures.
- December 2000 – IFSAC Accrediting Body adopted for certification
- 2002-2003 – Entire fleet upgrade following the Cerro Grande Fire
- January 2007 – Shift schedule change from 24/48 to 48/96
- October 1, 2008 – Per the Cooperative Agreement, minimum staffing requirements were identified to maintain seven firefighters at Fire Station 1 as a major nuclear facility reserve force.
- October 2008 – Minimum staffing requirements increased to 30, per the CA.

- May 2009- EMS division hired a full time EMS training coordinator
- January 2009 – Per the Cooperative Agreement, the minimum staffing requirements increased to 37 with a minimum of five firefighters at Fire Station 5.
- July 2009 – Fire Chief Douglas MacDonald retired, Deputy Chief Doug Tucker promoted to Fire Chief, Assistant Chief Mark Sandoval named acting Deputy Fire Chief
- August 2009 – PEARS/PALS program added to EMT refreshers
- August 2009- CPAP and automatic transport ventilators added to Ambulances
- September 2009—Knox boxes placed in ambulances to secure controlled narcotics
- September 2009- Impedance threshold devices added to ambulance
- December 2009- Medical Advisory Committee started
- May 2010- EMS training coordinator became an IAED instructor.
- August 26, 2010 – LAFD received accredited status from the Commission on Fire Accreditation International.
- September 2010 – 1900 2-story residential/industrial training simulator "Practical Learning Center" (burn building) constructed adjacent and attached to the 4-story training tower.
- November 2010 – 25-year Vehicle Replacement Plan developed
- November 2010- Zoll Auto-pulse added to ambulances
- Jan 2010 to Dec 2010 – LAFD experienced eight retirements
- Jan 2010 to Dec 2010 – LAFD promoted 67 personnel to higher ranks (11 to Captain, 15 to Driver Engineer, 20 to Firefighter II and 21 to Firefighter I).
- January 2011 – Per the Cooperative Agreement, an additional Paramedic required at Station 5.
- March 2011 – Change in Medical Director
- March 2011 – LAFD began eliminating the hard copy patient care reports.
- June 2011 – LAFD adds accountant position to organizational structure
- June 26, 2011 – Las Conchas Fire, the largest wildfire in New Mexico History began burning 144,000+ acres; this is the second wildfire to devastate the community in eleven years.
- July 2011 – Academy 23 started with 19 Recruits
- September 2011 – Fire Chief Doug Tucker retired
- September 2011 – Academy 22 completed with five Fire Recruits
- October 2011 – Fire Chief Troy Hughes hired as LAFD Fire Chief
- November 2011, Harry Burgess appointed to County Administrator position
- November 2011 – NNSA and LANL conducted a station relocation study for replacement of Fire Stations 1 and 5.
- December 2011 – Placed five new medic units in service
- 2011 – Expansion of the Emergency Preparedness of Hazardous Assemblies (EPHA) briefing LANL to enhance safety and response to LANL areas.
- January 2, 2011 – Per Cooperative Agreement, staffing requirements would be five firefighters at Station 1 (including one Paramedic).
- Jan to Dec 2011 – LAFD experienced eleven retirements (1 Fire Chief, 2 Assistant Fire Chiefs, 1 Battalion Chief, 4 Captains, 2 Driver Engineers, and 1 Firefighter).

- Jan to Dec 2011 – LAFD promoted 53 personnel to higher ranks (2 to Battalion Chief, 5 to Captain, 19 to Driver Engineer, 14 to Firefighter II and 5 to Firefighter I).
- February 2012 – Organizational restructuring of department to establish stronger divisional teams and allow for more efficiency in both administrative and operational areas. Elimination of two Assistant Chief positions, addition of an additional Deputy Chief position. Administrative Battalion Chiefs became Division Chiefs and the Administrative Services division was dissolved.
- March 2012 – ePCR process in place
- May 2012 – LAFD celebrated the first twelve graduates of the UNM-LA Fire Science program through an articulation agreement with LAFD where college credit was awarded for fire department delivered classes.
- June 2012 – Began Red Card testing
- August 2012 – Upgraded fleet of SCBA cylinders from 30 minute to 45 minute
- August 2012 – Change in Medical Direction to Health Front
- Summer 2012 – Developed a program to offer a Pre-Recruit Academy orientation
- September 2012 – Fire Station 6 expansion and remodel
- October 2012 – ISO Fire Protection Classification inspection conducted. A classification of 2/9 was assigned and the department retained the relative ISO 1 rating.
- October 2012 – NM Secretary of Health appointed EMS Training Coordinator to the state Joint Organization in Education Committee
- November 2012 – Recipient of New Mexico Fire Protection Fund Grant in the amount of $100,000.
- October 2012 – Implemented LAFD capital asset and property accountability system called BACON (Being Accountable and Compliant of Operational Needs)
- December 2012 – Modification 11 to the Cooperative Agreement to expand and clarify LAFD services. This modification expanded HazMat services, included response time deliverables, and extended the Safeguards and Security requirements.
- Jan to Dec 2012 – Began receiving vehicles per the Vehicle Replacement schedule – 7 utility vehicles, 4 staff vehicles.
- Jan to Dec 2012 – Station relocation project placed on hold.
- Jan to Dec 2012 – LAFD experienced two retirements: 1 Lieutenant and 1 Firefighter
- Jan to Dec 2012 – LAFD promoted 36 personnel to higher ranks: 2 to Deputy Chief, 4 to Captain, 3 to Driver Engineer, 12 to Firefighter II, and 11 to Firefighter I.
- January 2012 – 15 Fire Recruits began Academy 24 – Six Recruits graduated in June 2013
- 2013 – Began participating in the Military Veteran's GI Bill Program
- January 31, 2012 - Ratification of a four-year Collective Bargaining Agreement utilizing the Interest Based Bargaining process.
- 2013 – Received the Albuquerque Journal's Top Work Places designation voted on by employees for Creating a Winning Culture – Attracting New Hires and Going Good for Others.
- February 2013 – Began Blue Card training and application system for scene management at Type IV and V emergencies.
- February 2013 – Contracted with third party ambulance billing contractor
- March 2013 – Academy 25 graduated 7 Recruits.
- Jan to Dec 2013 – Purchase of eight Lifepak 15 Cardiac monitors to replace Zoll monitors

- 2014 – Purchased and installed a drug dispensing machine at Fire Administration to reduce waste and increase accountability.
- May 2013 – Six LAFD members graduated from the UNM-LA Fire Science degree program.
- June 2013 – An articulation agreement entered with Northern New Mexico College for a Wildland Firefighting Associates degree program.
- May 2013 – Fire Administrative Offices relocated to 999 Central Avenue on a 5-year lease agreement.
- October 2013 – Signing of an unprecedented 10-year Cooperative Agreement.
- October 2013 – Academy 25 began with ten Recruits – 7 Graduated in 2013
- July 2013 – Completion of Station 6 expansion project.
- September 2013- UCAPIT machine put into service
- December 2013 – Fire Chief Troy Hughes received the Chief Fire Officer (CFO) designation by the Center for Public Safety Excellence Commission on Professional Credentialing
- December 2013- Implementation of STEMI bypass protocol
- Jan to Dec 2013 – Acquisition of new medic units
- Jan to Dec 2013 – Medical protocols updated to mirror State of New Mexico standards of patient care.
- Jan to Dec 2013 – LAFD experienced four retirements: 1 Deputy Fire Chief, 1 Division Chief, 1 Driver Engineer and a Management Analyst.
- Jan to Dec 2013 – LAFD promoted 30 personnel to higher ranks: 1 to Battalion Chief, 2 to Captain, 3 to Driver Engineer, 17 to Firefighter II and 7 to Firefighter I.
- May 2014 –Wendy Servey promoted to Division Chief/Safety Officer (First female in LAFD history promoted to a Chief Officer position).
- June 2014- Ability to transmit 12 lead EKGs to St. Vincent PCI center.
- June 2014 – Change in Medical Director to Duke City Health Care
- June 2014 – ePCR platform changed to ESO Solutions
- June 2014 – Changed from CSTI Hazmat curriculum to IFSAC Hazmat curriculum to align with State of New Mexico adoption.
- June 2014- New ALS mannequin ordered
- June 2014- Addition to UCAPIT machine added for non-medications
- August 2014 – Academy 26 began with eleven Recruits.
- August 2014 – Tourniquets, king airways, LMAs and pelvic slings added to ambulances.
- August 2014 –Jeffrey Wetteland promoted to Fire Marshal/Division Chief of Fire & Life Safety Management position.
- September 2014 – Organizational restructure of Administration. Creation of Wildland Division. Reclassify Deputy Chief/Operations position to Division Chief Wildland
- September 2014 – Ramon Garcia promoted to Division Chief/Wildland Division
- October 2014 –Took possession of new Hazmat: FEMA Type 1 Hazardous Materials Team

- January 2015 - the title for Harry Burgess has become County Manager instead of County Administrator. This change was part of changes passed by voters in the General Election for charter amendments. Leslie will be updating maps in the municipal building in January.
- January 2015 – Nine Recruits graduate Academy, assigned to shift
- May 2015 – Joseph Candelaria promoted to Division Chief/Training Division

Financial Basis

LAC is currently in the first year of a ten-year cost-sharing Cooperative Agreement (CA) between LAC and the DOE/NNSA for funding and operation of the LAFD. The principal purpose of the CA is to assist Los Alamos County in providing fire protection services to all residential, commercial, and government entities located within its boundaries. Because of the size and nature of LANL, significant burdens relating to fire protection have been cast on Los Alamos County. The LANL campus is interspersed throughout Los Alamos County; therefore, this places the surrounding community at a much greater risk of a radiological or hazardous material disaster in the event of a wild fire in the community or at LANL. To adequately protect against these unique risks, LAFD is required to employ highly trained personnel and equipment in greater numbers than would normally be required for a standard county fire department, thereby drastically increasing the financial burden on Los Alamos County. Without DOE/NNSA's financial assistance, Los Alamos County would not have comparable resources available to protect itself, LANL, or its citizens, most of whom work at LANL.

Sharing the costs and resources of fire protection services within Los Alamos County, including LANL will result in reasonable overall costs for performance. Citizens and visitors to Los Alamos County will benefit from a heightened level of fire protection services their tax base could not support. Likewise, the State of New Mexico and nearby communities and counties receive a level of fire department assistance that would not be otherwise available in the rural and small town areas of northern New Mexico. Additionally, any wildland fires that might occur on National Forest, National Park, and Pueblo lands within or adjacent to Los Alamos County will be responded to and suppressed quicker following discovery because of the increased capabilities of the LAFD.

The LAC is required to apply for continuation funding on an annual basis prior to the new federal fiscal year (beginning October 1). Continuation funding is contingent on 1) availability of funds appropriated by Congress for the purpose of this program; 2) the availability of future year budget authority; 3) substantial progress towards meeting the objectives of the approved application; 4) submittal of required reports; and 5) compliance with the terms and conditions of the award.

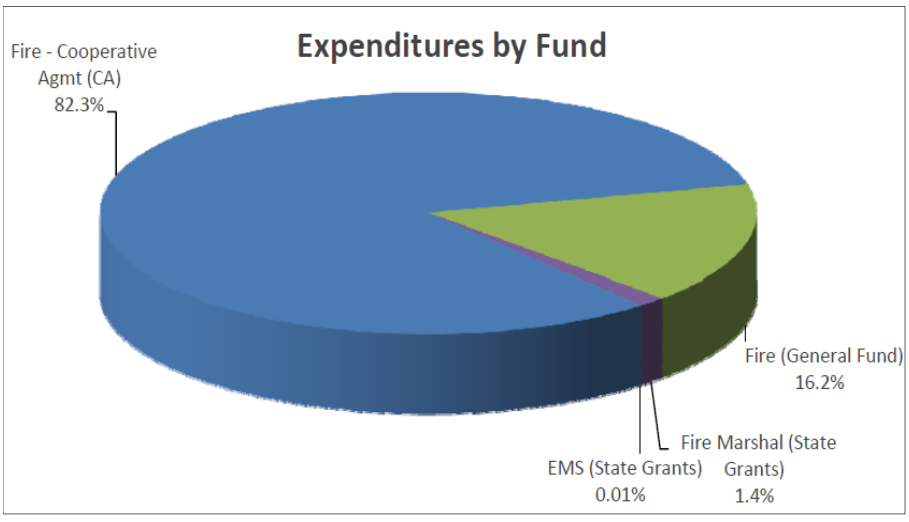


Figure 2 Expenditures by Fund

Table 1 2015 Incorporated County of Los Alamos Biennial Budget Book – Fire Department

	FY 2013 Actual	FY 2014 Adopted Budget	FY 2015 Adopted Budget	Variance FY 2015 vs FY 2014	FY 2016 Projected Budget	% Variance FY 2016 vs FY 2015
Expenditures by Fund:						
Fire - Cooperative Agmt (CA)	19,564,465	18,432,823	18,392,150	(0%)	18,751,630	2%
Fire (Non-CA)	211775	0	0	N/A	0	N/A
Fire (General Fund)	3,872,665	3,668,219	4,306,985	17%	4,608,607	7%
Fire Marshal (State Grants)	753,260	430,000	401,685	(7%)	400,341	(0%)
EMS (State Grants)	8,531	11,500	11,000	(4%)	11,200	2%
	24,410,696	22,542,542	24,322,176	8%	25,017,237	3%
Expenditures by Type:						
Salaries	10,175,427	11,530,013	11,701,417	1%	12,048,132	3%
Benefits	4,731,442	5,097,742	5,263,613	3%	5,421,686	3%
Contractual Services	408,219	537,702	648,010	21%	666,290	3%
Other Services	230,253	339,729	425,914	25%	411,043	(3%)
Materials / Supplies	724,356	1,002,353	1,045,610	4%	1,084,853	4%
Interfund Charges	7,215,322	3,676,949	3,038,183	(17%)	3,843,373	27%
Capital Outlay	716,741	358,054	300,000	(16%)	296,341	(1%)
Debt/Fiscal Charges	208,936	0	0	N/A	0	N/A
	24,410,696	22,542,542	22,422,747	(1%)	23,360,237	4%
FTE Summary:						
Regular (full & part time)	148.00	150.00	150.00	0%	150.00	0%
FTEs by Division:						
Emergency Medical	3.00	3.00	3.00	0%	3.00	0%
Fire Life Safety	3.00	3.00	2.00	(33%)	2.00	0%
Operations	133.00	133.00	132.00	(1%)	132.00	0%
Training	4.00	4.00	3.00	(25%)	3.00	0%
Administration	7.00	7.00	10.00	43%	10.00	0%
	150.00	150.00	150.00	0%	150.00	0%

Budget Summary

The majority of the increase in the FY 2015 Fire Department budget is an increase in the inter fund/indirect charges based on the new Cooperative Agreement (CA). These charges include amounts from the General Fund to pay for the County's portion of fire services. The indirect charges includes charges in the General Fund to administer the CA and are recoverable from the CA. Other increases are for the formation of a hazardous materials response team including protective clothing, supplies and training. Also included are increases for vehicle purchase reviews, airport safety training academy, command training, Toughbook replacements and Zoll licenses.

In the November 2006 election, voters passed a new GRT fire excise tax that took effect on July 1, 2007. Amounts received from this new tax was used to repay the Economic Development Fund for the construction of the Fire Station 3 capital project. The loan was paid off as of the end of FY 2013.

Total amount of the Fire CA for FY15 is $22,676,176. General Fund portion is increased by $639K, or 17%. This amount is based on the new CA which became effective October 1, 2013 and has a term of 10 years.

Area Description

Figure 3 Response District Map
(black and white outline shows county borders)

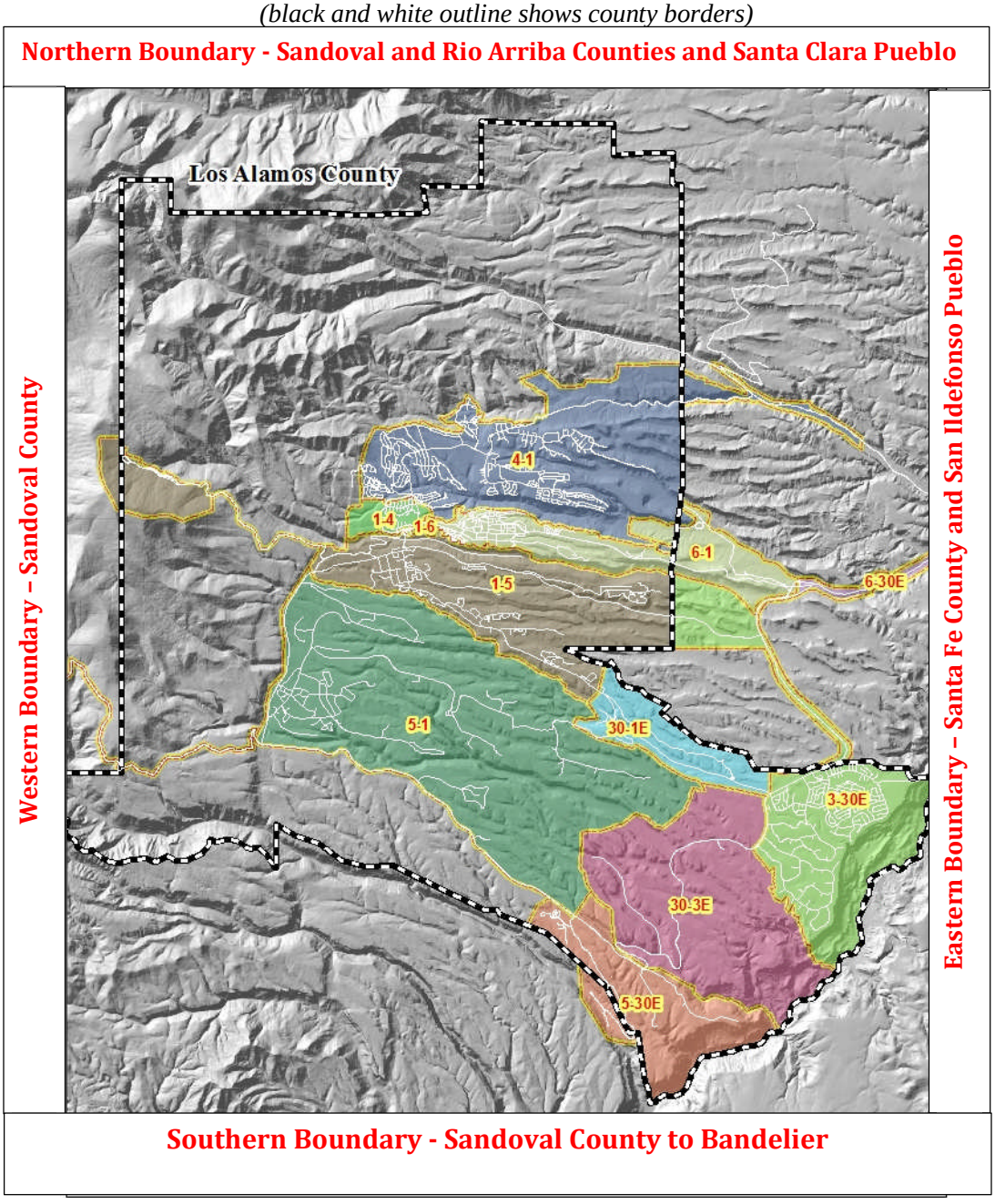
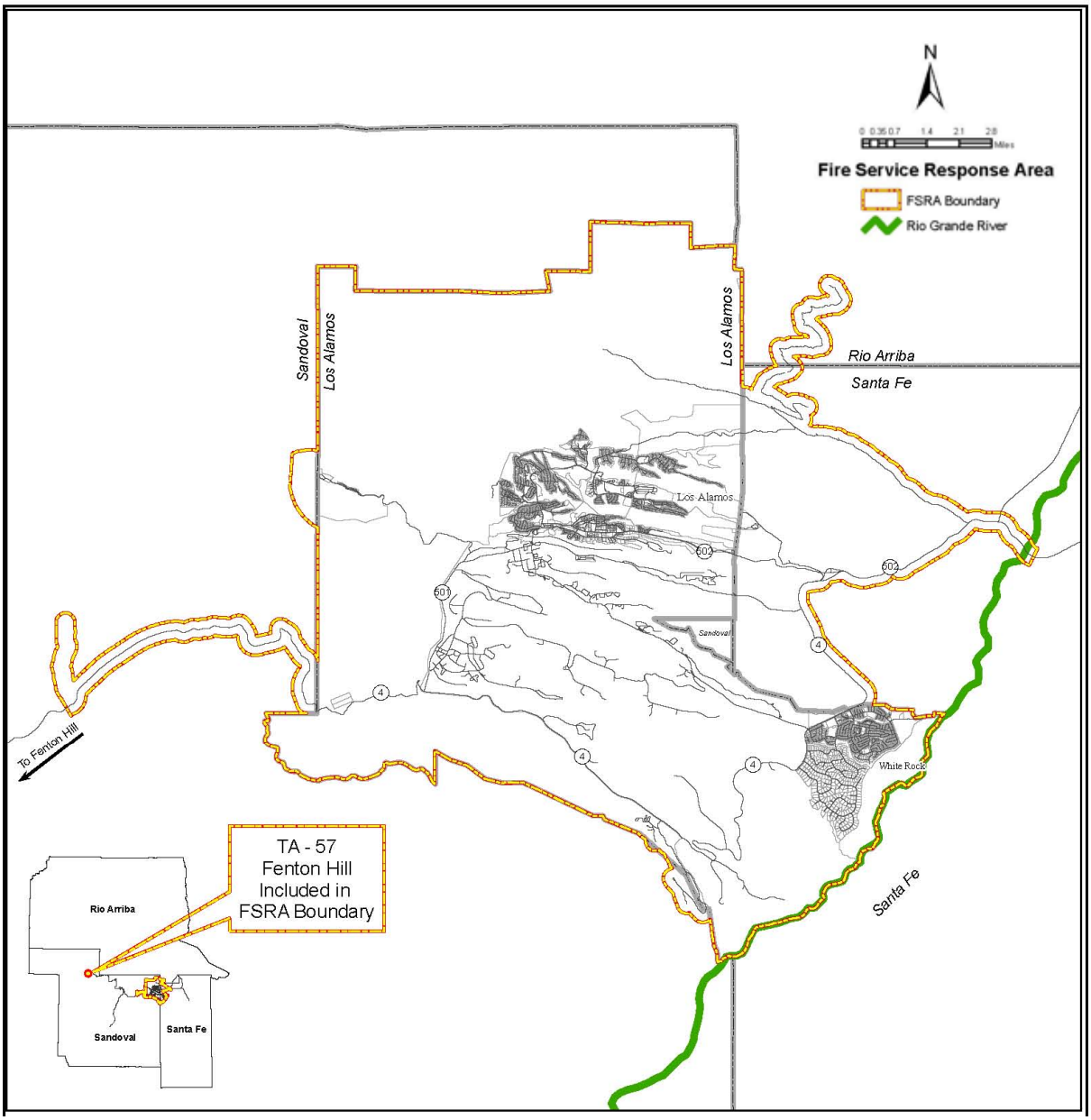


Figure 4 Fire Service Response Area



Topography

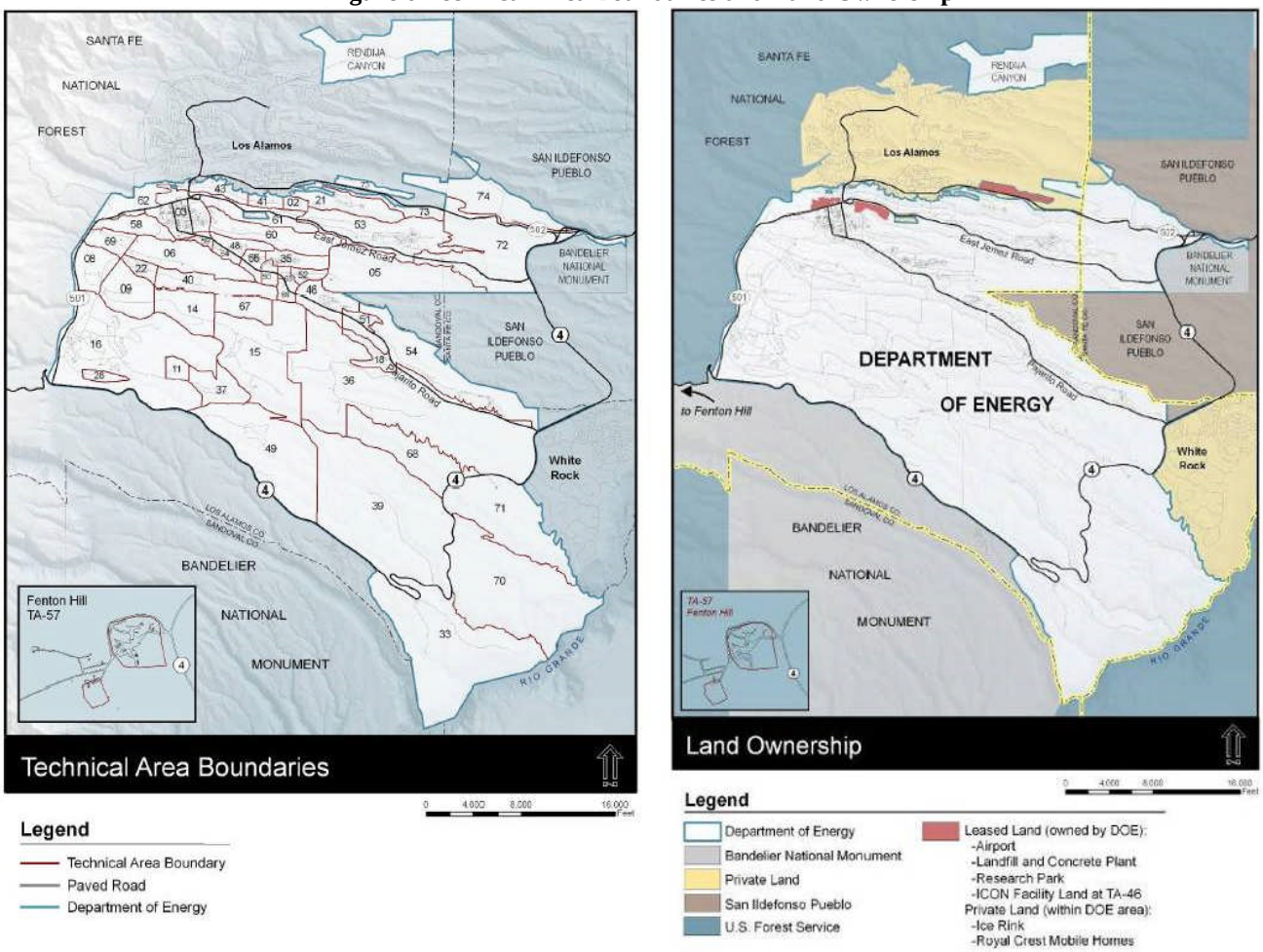
Los Alamos is located at 7,355 feet above sea level at the base of the Pajarito Mountains. It is located in the North-Central part of New Mexico on the eastern slope of the Pajarito Plateau with 13 steeply sloped canyons. Flat table topped hills (mesas) with steep sloped canyons in between characterize the topography.

Figure 5 Topography Image

The topography of the County dictates that population centers are spread out and accordingly, times to reach these population centers require careful placement of emergency facilities. The unique layout of the finger like mesa tops presents a unique response challenge as the end of these fingers or mesas can be reached only on one way in, one way out roads. In other words, responders must go back on the same roads to get to a main road or artery to access another part of the county or LANL property.

The Fire District covers 109.5 square miles of county and LANL property. The actual response area is larger, as LAFD responds out of the county east and west to the Rio Grande River.

Figure 6 Technical Area Boundaries and Land Ownership



LANL is divided into technical areas that are used for building sites, experimental areas, and waste management locations. LANL is divided into 49, active and separate, Technical Areas (TA) sites with location and spacing that reflects the sites historical development patterns, regional topography, and functional relationships. There are approximately 925 permanent structures, 362 temporary structures (trailers, transportable units) and 873 other structures and facilities. However these uses only account for a small part of the total land area. Development is limited by steep slopes and by the need for security and safety buffers because of the type of work performed. There are approximately 100 miles of paved roads and an estimated 168 miles of unpaved roads. At the end of FY 2009, LANL had approximately 9.5 million gross square feet of space including leased facilities with several other large facilities currently under construction.

Climate

Los Alamos has a temperate mountain climate with four distinct seasons. Spring tends to be windy and dry. Summer begins with warm, often dry, conditions in June, followed by a two-month rainy season. In the autumn there is a return to drier, cooler, and calmer weather. In the winter, mild altitude storms drop far enough south to keep the ground covered with snow for about two months. In July, the warmest month of the year, the temperature ranges from an average daily high of 81° F to an average daily low of 55° F. The extreme daily high temperature in the record is 95° F. In January, the coldest month, the temperature ranges from an average

daily high of 40° F to a low of 17° F. The extreme daily low temperature in the record is -18° F. The large daily range in temperature results from the site's relatively dry, clear atmosphere, which allows strong solar heating during the daytime and rapid radiative cooling at night. Although relative humidity can vary considerably over 24 hours, monthly average values vary little during the year. Relative humidity ranges from a low of 39% in June to a high of 56% in December, averaging 51% over the entire year. Absolute humidity, a better indicator of atmospheric moisture content, ranges from a low of 2.4 g of water/m^3 of air in January to a high of 8.7 g/m^3 in July and August, when moist, subtropical air invades the region during the rainy season. Fog in Los Alamos is very rare, occurring less than five times a year on average. The average annual precipitation (rainfall plus the water-equivalent of frozen precipitation) is 47.6 cm (18.7 in.). However, the annual total fluctuates considerably from year to year; the standard deviation of these fluctuations is 12.2 cm (4.8 in.). The lowest recorded annual precipitation is 17.3 cm (6.8 in.) and the highest is 77.1 cm (30.3 in.). The maximum precipitation recorded for a 24-hour period is 8.8 cm (3.5 in.). The maximum 15-minute precipitation in the record is 2.3 cm (0.9 in.).

Los Alamos receives substantial snow falls beginning in early November and lasting until mid-March. The largest reported snowfall occurred in 1987 when 57 inches of snow was reported over a 48 hour period. Most LAFD vehicles are equipped to handle the snow as the engines and medic units, smaller staff and mini tenders are equipped with all-wheel drive. One of the response areas in the winter is the Pajarito Ski Area. LAC and LANL are equipped with some of the best snow removal equipment in New Mexico which allows the units to be able to respond during the winter months in a timely manner. Los Alamos County gets approximately 18 inches of rain per year and the average snowfall in Los Alamos County is 55 inches. The number of days with any measureable precipitation is 89 days. On average, there are 278 sunny days per year. The July high is around 81 degrees and the January low is 19 degrees.

Table 2 Climate: Los Alamos vs United States

(source: www.bestplaces.net)

Climate	Los Alamos, NM	United States
Rainfall (in.)	18.1	36.5
Snowfall (in.)	54.5	25
Precipitation Days	89	100
Sunny Days	278	205
Avg. July High	81	86.5
Avg. Jan. Low	18.6	20.5
Comfort Index (higher=better)	76	44
UV Index	6.3	4.3
Elevation ft.	7,483	1,443

Lightning is very frequent in Los Alamos. In an average year, Los Alamos experiences 61 thunderstorm days a year, about twice the national average. (A thunderstorm day is defined as a day on which thunder is heard or a thunderstorm occurs.) These summer lightning strikes are known to start occasional wildland and snag fires, especially in the dry, windy spring months. These small fires are usually extinguished by LAFD wildland response personnel in our jurisdiction along with assistance from the Santa Fe National Forest Service and National Park Service resources. Only in the southeastern part of the country is this frequency of lightning strikes exceeded.

Los Alamos winds are generally light, having an annual average of 2.5 m/s (5.5 mi/h). However, the period from mid-March to early June is apt to be windy. During this windy period, sustained

wind speeds exceeding 4 m/s (8.8 mi/h) occur 20% of the time during the daytime, and the daily maximum wind gust exceeds 14 m/s (31 mi/h) about 20% of the time. The highest wind gust on record is 34.4 m/s (77 mi/h). High winds are associated with frontal passages, thunderstorms, and mid-latitude storm systems. No tornadoes are known to have touched ground in the Los Alamos area; however, funnel clouds have been observed in Los Alamos and Santa Fe Counties. Flooding in Los Alamos County is very infrequent; however, due to the burn scars from the Cerro Grande Fire in 2000 and Las Conchas Fire in 2011, the canyons do experience high amounts of runoff from the watersheds off Pajarito Mountain. These canyons will flood during the monsoon season and after winter runoff.

Table 3 Climate Data for Los Alamos (1981-2010 normals)

(source: NOAA website)

Climate data for Los Alamos, New Mexico (1981–2010 normals) [hide]													
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Record high °F (°C)	65 (18)	69 (21)	73 (23)	80 (27)	93 (34)	95 (35)	95 (35)	92 (33)	94 (34)	84 (29)	72 (22)	69 (21)	95 (35)
Average high °F (°C)	39.9 (4.4)	43.7 (6.5)	51.3 (10.7)	59.8 (15.4)	69.2 (20.7)	78.8 (26)	81.3 (27.4)	78.0 (25.6)	72.3 (22.4)	61.4 (16.3)	49.1 (9.5)	39.7 (4.3)	60.38 (15.77)
Average low °F (°C)	18.9 (−7.3)	22.1 (−5.5)	27.5 (−2.5)	33.8 (1)	42.7 (5.9)	51.4 (10.8)	55.1 (12.8)	53.5 (11.9)	47.3 (8.5)	36.9 (2.7)	26.7 (−2.9)	19.1 (−7.2)	36.25 (2.35)
Record low °F (°C)	−18 (−28)	−17 (−27)	−3 (−19)	5 (−15)	24 (−4)	28 (−2)	37 (3)	31 (−1)	23 (−5)	6 (−14)	−14 (−26)	−13 (−25)	−18 (−28)
Precipitation inches (mm)	0.98 (24.9)	0.86 (21.8)	1.20 (30.5)	1.05 (26.7)	1.39 (35.3)	1.52 (38.6)	2.82 (71.6)	3.60 (91.4)	2.01 (51.1)	1.55 (39.4)	0.98 (24.9)	1.01 (25.7)	18.99 (482.3)
Snowfall inches (cm)	13.7 (34.8)	10.9 (27.7)	9.4 (23.9)	3.5 (8.9)	0.3 (0.8)	0 (0)	0 (0)	0 (0)	0 (0)	2.2 (5.6)	4.8 (12.2)	11.9 (30.2)	56.7 (144)
Avg. precipitation days	5.4	6.1	7.2	5.9	7.6	8.0	13.3	15.5	9.4	7.0	5.6	6.2	97.2
Avg. snowy days	4.5	4.6	4.0	1.7	0.3	0	0	0	0	0.8	2.7	4.9	23.4
Source: NOAA [4]													

The town of Los Alamos is divided up across four mesas - Barranca Mesa, North Mesa, Los Alamos Mesa and South Mesa - along with the connecting communities at the base of the mountain. The Lab also occupies half of South Mesa, Two Mile Mesa, Frijoles Mesa, Mesita de Buey and several nearby areas in the region (in the valleys and at the base of the mountain). White Rock lies at the top of White Rock Canyon. There are three access roads between White Rock and Los Alamos - Main Hill Road, Jemez Road and Pajarito Road. Since 9-11, Pajarito Road has been restricted to LANL badge holders for security reasons.

Population

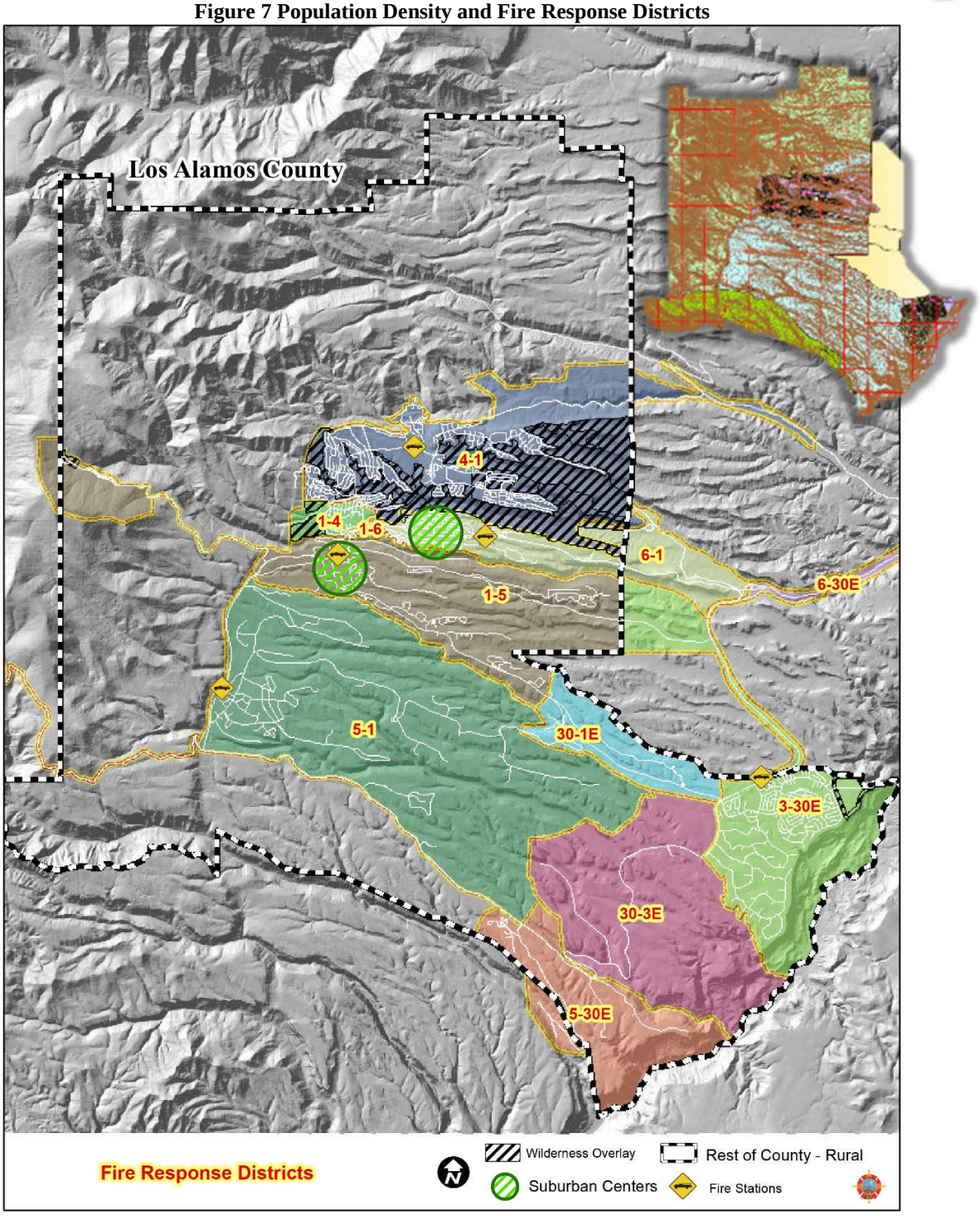
- ✓ According to the US Census, population in Los Alamos County has remained rather constant over the last forty years.
- ✓ The average annual population change between 1980 and 1990 was 0.29%, 1990-2000 was 0.13%, 2000-2010 was 0.13%. and between 2010 and 2013 was -0.8%
- ✓ Population in 1980-17,599; 1990-18,115; 2000-18,344; 2008-18,150; 2010-17,950; and 2013-17,798.
- ✓ There are segments of the population that have special needs for housing. According to the Census Bureau, 4.9% of the population are below the federal poverty level, up from 2000.

Demographic Features

Table 4 Los Alamos County Quick Facts
(source: US Census data)

Los Alamos County Quick Facts (source – US Census data)	
Population in 2014	17,798
Population in 2010	17,950
Population in 2000	18,344
Population in 1990	18,115
Population in 1980	17,599
Persons under 5 years, percent, 2013	5.3%
Persons under 18 years, percent, 2013	23.3%
Persons 65 years and over, percent, 2013	16.5%
Female persons	49.6%
Living in same house 1 year & over, percent, 2008-2012	85.3%
Foreign born persons, percent, 2008-2012	9.7%
Language other than English spoken in the home	14.3%
High school graduate or higher	97.4%
Bachelor's degree or higher	63.2%
Veterans	1750
Mean travel time to work (minutes)	15.6
Per capita money income in past 12 months	$50,740
Median household income	$106,426
Persons below poverty level	4.9%

Figure 7 Population Density and Fire Response Districts



Economic Indicators

(Source: Economic Development Update, 11/6/14, Economic Conditions and Policy Summary for Los Alamos County)

Los Alamos County is unique in many ways. It has almost as many people working in the county as there are living in it, has one of the highest average worker earnings and per capital personal incomes in the nation, has one of the best school systems in the western United States, and has been ranked as having the "highest quality of life" of any county in the nation.

Many of the positive man-made attributes of Los Alamos are linked to the presence of the Los Alamos National Laboratory (LANL). Before the establishment of Los Alamos National Laboratory (LANL), a few isolated ranches and an exclusive ranch school for boys occupied the 109 square mile area which is now the County. The federal government acquired the land through eminent domain in 1943 to further the Manhattan Project leading to the development of the atomic bomb that ended World War II, and all land became the property of the US Government. Los Alamos was incorporated as both a city and county in 1949, and under the 1955 Atomic Energy Communities Act, the federal government began to sell commercial real estate, residential lots, and housing units to private owners. Institutional properties, including churches, schools, municipal properties, transportation and public utility infrastructure were transferred to public and quasi-public institutions, the County, and school system.

Seventy years after its founding, LANL remains the largest employer in Los Alamos and in Northern New Mexico, and controls roughly 35 square miles, or one-third of all property in Los Alamos County. While the economic vitality of the County is still largely dependent on activity at LANL, increasing efforts to diversify the economy away from dependence on the federal government are being implemented through Los Alamos County and allied partners such as the Regional Development Corporation of Northern New Mexico, the Los Alamos Commerce and Development Corporation, and LANL itself through the Feynman Center for Innovation (formerly the Technology Transfer Division) and the LANL Community Programs Office. Additional partners from the University of New Mexico and the US Small Business Development Center round out a local roster of economic development services, and other partners from the region participate as well. Growth and diversity in the local and regional economy are common goals of this multi-pronged effort.

Demographic Trends

(Source: Economic Development Update, 11/6/14, Economic Conditions and Policy Summary for Los Alamos County)

The population of Los Alamos County grew very quickly during and after World War II, increasing from less than 200 residents in 1940 to over 13,000 in 1960. However, by 1980 the County's population stabilized at around 18,000 people, and the population has remained close to that figure for almost 40 years. Population growth patterns in the County present a number of concerns, among the most important being the overall aging of the workforce and the lack of a corresponding increase in the working age population.

Of major concern in Los Alamos is the relatively low number of young working adults aged 20-29 who make up just 7.4% of the County population versus 14 % nationwide, and the relatively large population of mature working age people aged 45-65 which made up 37.9% of the County population versus 26.5% nationwide (Source: US Census). The percentage of County residents who are greater than 65 years of age grew from 1.1% in 1960 to 15% in 2010. The 2014 population of Los Alamos County was estimated at 18,191 people with a median age of 44.8 years old compared with a US median age of 36.8 years old, a difference of more than 8 years.

Education

(Source: Economic Development Update, 11/6/14, Economic Conditions and Policy Summary for Los Alamos County)

Los Alamos is one of the most educated counties in the nation, with 80.3% of all citizens over 25 completing some college and 36.2% holding a graduate or professional degree or higher. This compares with 58% of all US citizens over 25 completing some college and 11.6% earning a graduate degree or greater (Source: US Census). The Los Alamos Public School District (LAPS) contains a number of top performing schools including the third best performing high school in New Mexico, which is also ranked the 500th best performing high school in the nation. The local

branch campus of the University of New Mexico (UNM-LA) currently offers several undergraduate certificate and degree programs serving the local population, but the vast majority of Los Alamos High School graduates do not attend college in Los Alamos.

Employment and Income

(Source: Economic Development Update, 11/6/14, Economic Conditions and Policy Summary for Los Alamos County)

Employment and income in Los Alamos County and Northern New Mexico are dominated by the Los Alamos National Laboratory, making Los Alamos County the major job center in Northern New Mexico and one of the best paying job centers in the nation. In early 2014 there were 15,653 total jobs in Los Alamos County, 1.66 jobs per employed person living in the county (9,449). This job base reached over 18,000 by mid-2014 as some LANL contractors returned to work and Smith's Marketplace opened with over 200 additional new staff. Approximately 7,000 employees commute from other counties to Los Alamos to work each day, primarily at LANL and in the service industries. Approximately 1,000 Los Alamos County residents commute from Los Alamos to other counties each day. This commuter activity creates a typical work day population in Los Alamos of approximately 24,000 people, which is 32% greater than the evening and weekend population.

The Los Alamos National Laboratory (LANL) directly employed 10,199 people in 2014, or 66% of the total number of employees working each day in Los Alamos. Approximately 65% of all employment in the County totaling 10,176 jobs were classified as Professional, Scientific, and Technical Services and 1,855 or 12% were classified as government (other).

In recent national polls, Los Alamos County has been variously ranked among the top counties in the USA for household affluence, personal wealth, and household income. Per Capita Money Income (PCMI) in Los Alamos County was $50,740 in 2010, and Median Household Income was $106,426. This compares with a US average of $28,051 and $53,046 respectively.

Per capita personal income (PCPI) in Los Alamos County, including wages and benefits, real estate income, and other income ranked among the nation's highest at $59,237 per person in 2010, nearly double the PCPI for the state of New Mexico which was $32,940. PCMI and PCPI dropped approximately 15% in 2014 with the hiring of hundreds of supermarket employees at the new Smith's Marketplace at an average wage of $15 per hour versus $52 per hour at the lab.

There were 1,496 business firms listed in Los Alamos County in 2007, including 1,051 non-employer establishments (sole proprietor or startup firms with no employees) and 379 private non-farm establishments. Forty-nine percent of County businesses were woman-owned in 2007. Los Alamos County, unlike most communities in the US has remained at "full employment" (less than 5% unemployment) over the past decade, reaching an all-time high unemployment rate of 4% in 2011, still a full percentage point below full employment.

Taxes

(Source: Economic Development Update, 11/6/14, Economic Conditions and Policy Summary for Los Alamos County)

New Mexico does not have a state sales tax. However, the state imposes a gross receipts tax (GRT) on most business transactions. GRT resembles a sales tax, but unlike most states' sales taxes it applies to services, as well as tangible goods. Normally, the provider or seller passes most elements of the GRT on to the purchaser. The state of New Mexico's gross receipts tax rate in 2014 was 5.125%, and the local rate in Los Alamos County was 2.1875%, making the local GRT tax rate equal to 7.3125%. New Mexico levies a modest state income tax of 1.7% to 4.9%, among the lowest 20% in the nation. Property taxes in New Mexico average $633 per capita per year, the third lowest rank among 50 states (Source: UNM BBER).

Gross receipts tax (GRT) receipts are a major source of funding for state and local government, and Los Alamos County experienced a steep decline in GRT revenue between 2012-13, when LANL eliminated over 500 federal positions and over 1,000 contracting jobs. Taxable gross receipts generated in the County for County use only (not shared with the state) declined from $35.6 million in 2011 to $26.5 million in 2013, a decrease of 26% in 24 months. In the Service sector alone County GRT receipts dropped from $ 1.5 million to $1 million between 2011 and 2013, a decline of 33% in 24 months. GRT receipts have stabilized in 2014 and there are strong indications that GRT will increase somewhat due to new contract employment at LANL. The opening of Smith's Marketplace should positively impact county GRT revenue in 2014 and going forward.

Income and Cost of Living

(Source: Economic Development Update, 11/6/14, Economic Conditions and Policy Summary for Los Alamos County)
The Cost of Living Index (CLI) is a measure of the average cost of a basket of common goods and services in comparison to the US average (100). In 2010, the overall Cost of Living in Los Alamos County was ranked 115, or 15% greater than the US average (Source: Sperling's Best Places). However, only one single component of CLI exceeded the US average—housing—which ranked 150% of the US average cost in 2010, while all other components remained at or below the US average. Between 2010 and 2014, average housing prices in Los Alamos County declined from $289,377 to $233,766, a decline of 20% over five years (Source: ReMax). This significant housing price decline is a strong indicator that the overall cost of living in Los Alamos County has also declined during this time.

Between 2010 and 2014, Los Alamos County median income fell approximately 15% to just below $90,000 per household, due in large part to LANL's federal job reduction initiative (VSP), as well as an unknown number of contractor position losses that removed between $100-200 million per year from Los Alamos area payrolls. Average earnings per worker in Los Alamos County in 2014 were $89,052. Although reduced from the previous level of $106,862 per person, earnings in Los Alamos were still ranked at 145% of the national average earnings per worker of $53,046 in 2014.

Disaster Potentials

Hazard Identification

The department conducted a hazard identification study to determine what hazards threaten the LAC planning area. This section documents the previous occurrence of natural hazards, those that might occur in the future, and the likelihood of their recurrence.

This section begins with an overview of the declared disasters in LAC and leads to a detailed hazard profile for the identified hazards. The purpose of this section is to profile all the natural hazards that affect, or could affect LAC. For each hazard, a generic description of the hazard and associated problems is provided, followed by details on the hazard specific to LAC. Information on past occurrences, including the extent or location of the hazard within or near the County, and impacts, where known, are discussed here. Information provided by planning team members are integrated in this section with information from other data sources, such as National Weather Service databases. The frequency of past events is used in this section to gauge the likelihood of future occurrences.

Based on historical data, the frequency of occurrence is categorized into one of the following classifications:

- ***Highly Likely****: Near 100% chance of occurrence in next year, or happens every year.*
- ***Likely****: Between 10 and 100% chance of occurrence in next year, or has a recurrence interval of 10 years or less.*
- ***Occasional****: Between 1 and 10% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years.*
- ***Unlikely****: Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years.*

The frequency, or chance of occurrence, was also calculated where possible based on existing data. Frequency was determined by dividing the number of events observed by the number of years and multiplying by 100. This gives the percent chance of the event happening in any given year. An example would be 3 droughts occurring over a 30 year period which equates to 10% chance of that hazard occurring any given year.

Utilizing the existing New Mexico State All Hazard Mitigation Plan, portions of the County Emergency Response Plan, as well as input from the planning meetings, the department agreed upon a list of those natural hazards of concern to the LAC community. Historical data from the National Oceanic and Aeronautic Administration (NOAA), National Climatic Data Center (NCDC), New Mexico Office of Emergency Management, and other sources were also examined to confirm the significance of these hazards to the planning area. Significance was measured in general terms, focusing on key criteria such as frequency and resulting damage, including, deaths/injuries and property, crop, and economic damages to the community.

The natural hazards identified and investigated for LAC include:

- Wildfires
- The impact of Pine Beetle Kill
- Severe Weather; including;
  - Monsoons
  - Hail and Wind
  - Winter Storms
- Floods; including
  - Dam Failure
- Drought
- Rock fall
- Earthquakes
- Volcanoes

Also discussed by the department, the natural hazards set forth below were eliminated from further consideration because: (1) they either occur rarely or not at all, and (2) when they do occur, no or very limited damages are sustained.

- Avalanche
- Landslide
- Tornado

Disaster Declaration History

One method to identify hazards based upon past occurrence is to look at what events triggered federal and/or state disaster declarations within the LAC planning area. Disaster declarations are granted when the severity and magnitude of the event's impact surpass the ability of the local government to respond and recover. Disaster assistance is supplemental and sequential. When the local government's capacity has been surpassed, a state disaster declaration may be issued allowing for the provision of state assistance. Should the disaster be so severe that both the local and state government's capacity is exceeded, a federal disaster declaration may be issued allowing for the provision of federal disaster assistance.

Within LAC, there have only been three federal declarations. Two were related to the Cerro Grande Fire in May of 2000. The first was an Emergency Declaration on May 5, 2000 (FEMA # 3154). The second was a Major Disaster Declaration (FEMA # 1329). The unique circumstances surrounding the wildfire then resulted in the Cerro Grande Fire Assistance Act (CGFAA) – an Act of Congress, which superseded the two FEMA Declarations. Together, these three disaster assistance mechanisms resulted in over $1 billion in federal money being provided to the affected jurisdictions.

On July 2, 2011, a request for fire management assistance declaration for the Las Conchas Fire was approved by Congress (FEMA #2933) for mitigation management and control. At the time of the request, fire had destroyed three homes and was threatening 500 homes in and around Los Alamos. Voluntary evacuations were issued for residents of the County.

It is also important to note that the federal government may issue a disaster declaration through the U.S. Department of Agriculture and/or the Small Business Administration, as well as through FEMA. The quantity and types of damage are the determining factors. In fact, on November 22, 2003, the U.S. Secretary of Agriculture designated all counties in New Mexico, except Los Alamos County, as primary natural disaster areas due to losses caused by drought. LAC was excluded because there is minimal commercial agricultural activity in the County. ***(Source: U.S. House of Representative's Press Release 11/22/03)***

Wildfires

Historical data has shown that wildfires are the most frequent natural occurring hazard threatening LAC. Wildfires are uncontrolled fires in forested or other vegetated landscapes. They are often caused by lightening or people and they create a significant threat to life and property. The area most at risk is the wildland and urban interface (WUI). Nationally, this area increases as communities expand into previously uninhabited forested areas. Interestingly, in LAC, the opposite is true. The community has seen very limited growth over the past two decades. Rather, the forest has grown into the town perimeter.

Wildfires often result from other natural hazards and leave burned areas vulnerable to additional hazards as well. This is the case in LAC. For example, the wildfire vulnerability resulting from lightening is further increased as a result of the dry and drought-like conditions. These conditions weaken trees increasing their vulnerability to Pine Beetle Kill, which in turn provides greater quantities of fuel which lightening can then ignite. Pine Beetle Kill is the result of a beetle that bores itself into the bark of pine trees, spreading a blue stain-like fungus that kills the tree very rapidly. The post-fire environment is then more susceptible to erosion, debris-flows and flooding. The wildfire season in LAC is typically between May 1 and July 1. Generally, there are three major factors that sustain wildfires and allow for predictions of a given area's potential to burn. These factors are fuel, topography and weather.

• **Fuel -** Fuel is the material that feeds a fire and is a key factor in wildfire behavior. Fuel is generally classified by type and by volume. Fuel sources are diverse and include everything from dead tree needles, twigs and branches, to dead standing trees, live trees, brush and cured grasses. Also, to be considered as fuel sources are man-made structures and other associated combustibles. The type of prevalent fuel directly influences the behavior of wildfire. Light fuels, such as grasses, burn quickly and serve as a catalyst for fire spread. Ponderosa pines are especially volatile due to the resins they produce. The volume of available fuel is described in terms of fuel loading. The areas in and surrounding LAC is extremely vulnerable to fires as a result of overly dense forests creating an accumulation of fuel, combined with a growing number of structures being built near and within the forested lands. The forest itself has also grown into the town.

• **Topography -** An area's terrain and land slopes affect its susceptibility to wildfire spread. Fire intensities and rates of spread increase as slope increases due to the tendency of heat from a fire to rise via convection. The natural arrangement of vegetation throughout a hillside can also contribute to increased fire activity on slopes. Fires also burn more intensely in narrow canyons, chutes and saddles as these land features create natural constrictions for fire, forcing flames and heat to funnel through these areas. LAC was originally built at the base of a mountain on mesas surrounded by long, steep, forested canyons. Growth in the County has continued to expand into the forested areas located on the hillsides. The topography of LAC acts as a natural accelerant for fire.

• **Weather -** Weather components such as temperature, relative humidity, wind and lightning also affect the potential for wildfire. High temperatures and low relative humidity dries out fuels that feed the wildfire creating a situation where fuel will readily ignite and burn more intensely. Wind is the most treacherous weather factor. With intense wind speed, the faster a fire will spread and the more intense it will become. Winds can be significant in New Mexico, including LAC. In addition to high winds, wind shifts can occur suddenly due to temperature changes or the interaction of wind with topographical features such as canyons or steep hillsides. Related to weather is the issue of recent drought conditions in New Mexico contributing to concerns about wildfire vulnerability. The drought has not escaped the higher elevations of LAC as evidenced by the dying piñon pine forests in the southern an area of LAC, as well as, similar impacts to the ponderosa pine ecosystem has exacerbated the existing beetle kill problem for both piñons and ponderosas. During periods of drought, the threat of wildfire increases. Drought conditions have persisted for the last six years leaving LAC more susceptible to wildfires.

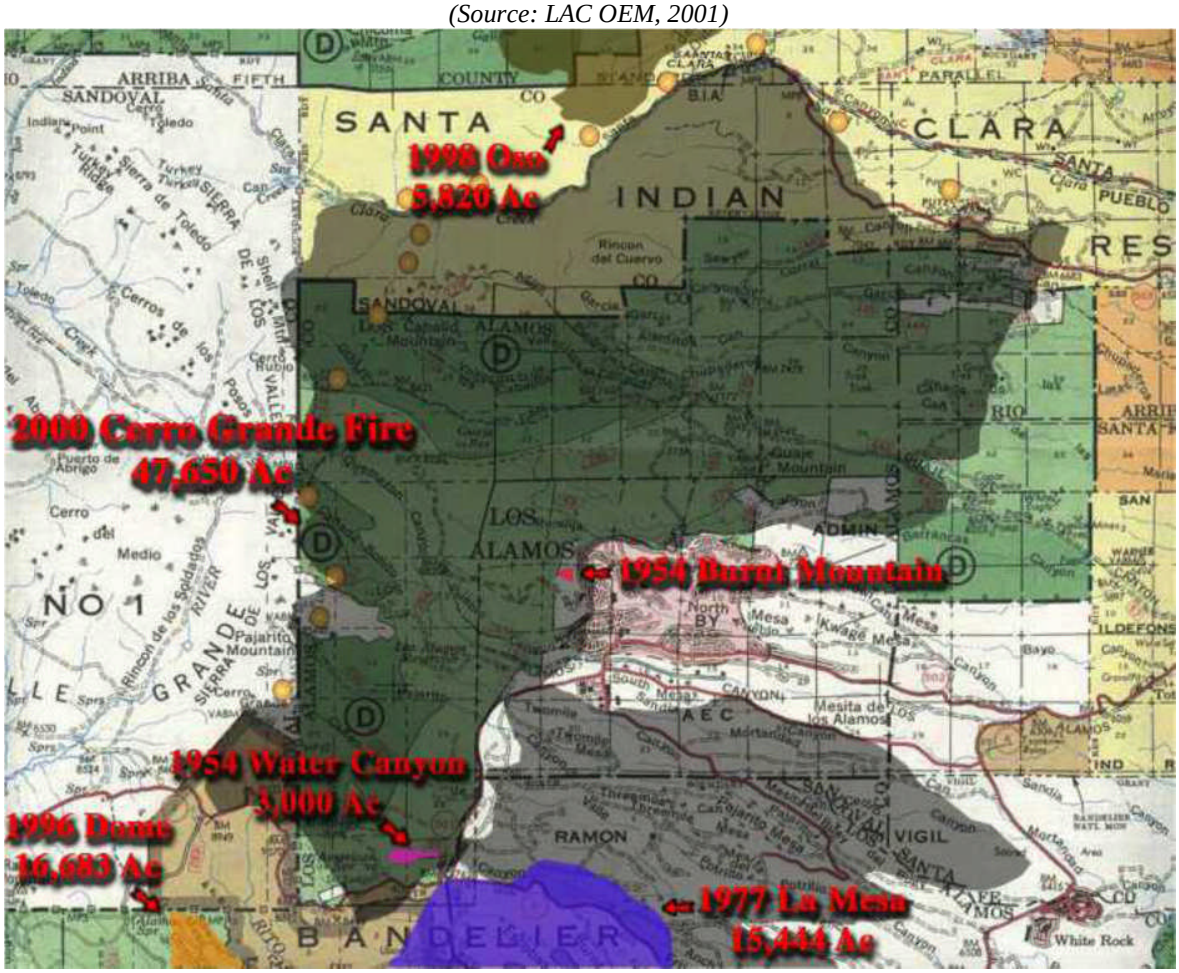
Past Occurrences

Within the past 50 years alone, there have been numerous major wildfires within LAC and the immediate vicinity. These include:

Table 5 Major Wildfires

Fire	Year	Acres Burned
Water Canyon Fire	1953	6000
Burnt Mountain Fire	1954	1000+ acres
La Mesa Fire	1977	15,444
Dome Fire	1996	16,683
Oso Complex Fire	1998	5820
Cerro Grande Fire	2000	47,658
Las Conchas Fire	2011	greater than 145,000

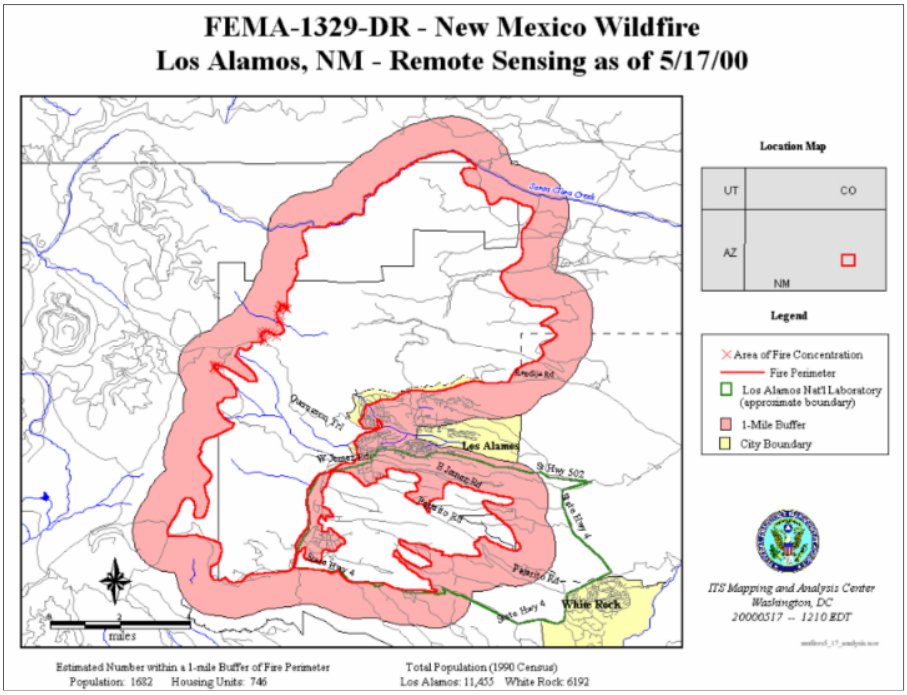
Figure 8 Past Wildfires Map
(Source: LAC OEM, 2001)



The Cerro Grande fire had by far the greatest impact to LAC. The Cerro Grande Fire began on Thursday, May 4, 2000, when National Park Service personnel ignited a prescribed burn with the intent of mitigating future fire risks by reducing the increasing fuel loads. Sporadic and changing winds carried fire embers up and away causing the fire to "spot" across the fire line. Control was lost and the prescribed burn was declared a wildfire on May 5th. The fire was initially contained on May 6 and 7 until significant wind speed increases resulted in a major wildfire outbreak. On May 10, carried by increasing winds, the wildfire entered Los Alamos Canyon and moved towards the town site of Los Alamos. Approximately 18,000 people, the entire populations of Los Alamos and White Rock, were evacuated. The fire spread rapidly over the next few days, burning public, private and Pueblo lands.

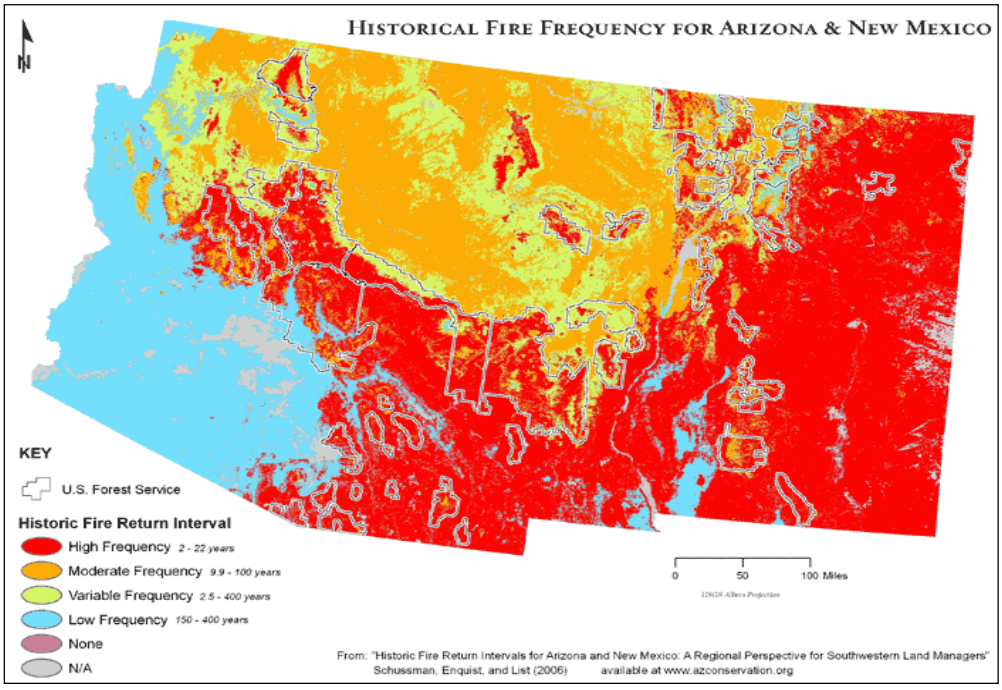
In Los Alamos, 239 residential structures were burned, displacing over 400 families. More than 25% of LANL lands were burned, including numerous small buildings, historic structures, vehicles, utilities and environmental monitoring stations. The fire continued to spread onto private lands and lands of San Ildefonso and Santa Clara Pueblos. The fire encompassed approximately 47,000 acres.

Figure 9 FEMA-1329-DR New Mexico Wildfire
(Source: FEMA ITS Mapping and Analysis Center)



The National Interagency Fire Center reports indicate that New Mexico has averaged 1301 wildfires per year burning a total of 1,000,883 acres between 2007 and 2009. These include fires caused naturally by lightning as well as fires caused by man and/or unknown causes. The historical fire frequency map (below) clearly illuminates the wildfire problem facing the State of New Mexico and LAC.

Figure 10 Historical Fire Frequency for Arizona and New Mexico
(source:http://nmconservation.org/projects/southwest_forest_assessment)



Even since the Cerro Grande fire in 2000, there have been numerous wildfires in the forested public lands near LAC. Many of these fires occurred in areas with weather, vegetation, and topography similar to that found in LAC.

Likelihood of Future Occurrences

***Likely*:** Based on historic data, the LAC vicinity has experienced six major wildfires in the last 50 years. This is an average of one fire every 8.3 years, or a 12% chance of a fire any given year.

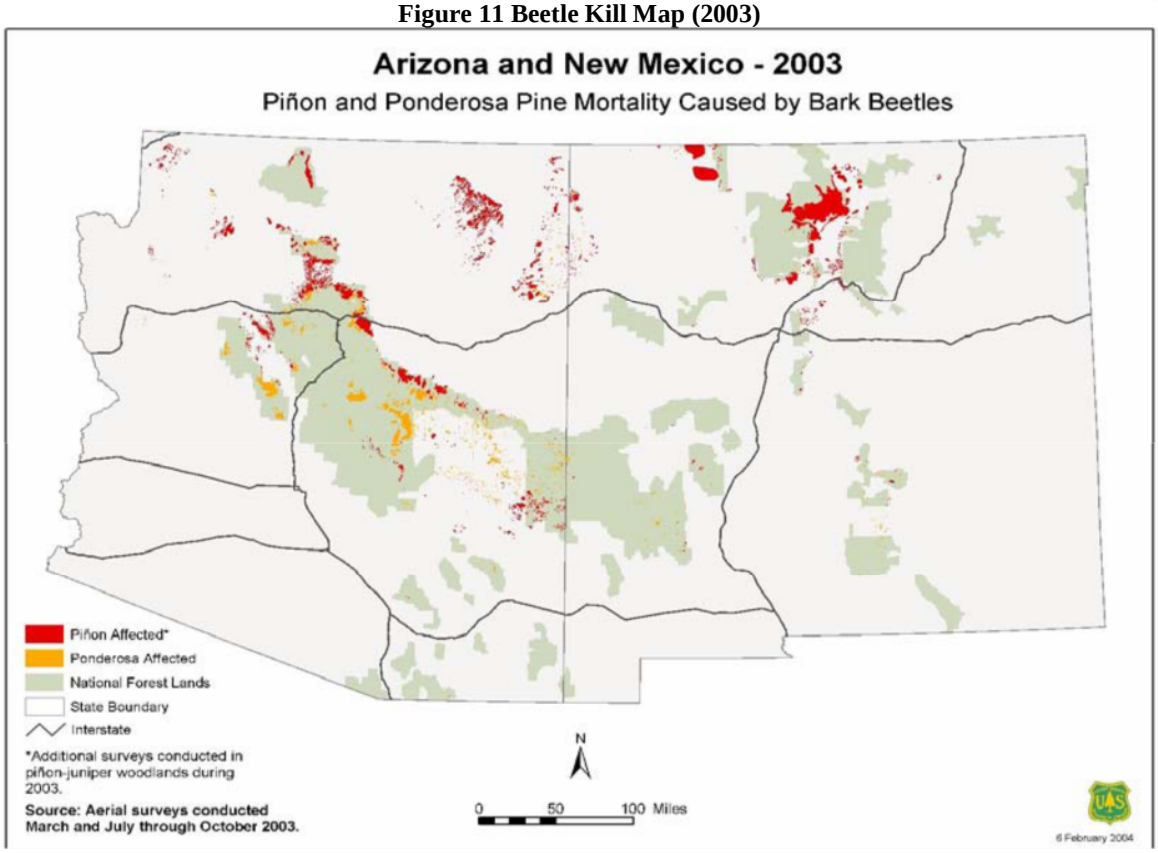
The risk of wildfires to LAC has been and continues to be great. According to an analysis conducted as part of the Los Alamos County Long-Term Recovery, Redevelopment & Hazard Mitigation Plan developed in response to the Cerro Grande Fire and adopted March 13, 2001, the planning team substantiated an increased risk of future wildfire as a result of the Cerro Grande fire. An initial reaction to this concept might be that the risk of wildfire would be decreased because all the fuel has been burned, this was not the case. Several scientific research papers have been developed since the Cerro Grande fire. These papers all suggest similar conclusions:

- Within the burned areas the dead and dying standing trees, dead fallen trees, rapid re-establishment of ground-cover, and increased presence of beetles and beetle kill all contribute to an increase in post-fire fuels with high flammability. This risk increases with time as damaged trees fall to the ground and new growth reestablishes "ladder fuels."
- Depending upon fire severity within the burned areas, regrowth occurs at different rates. Post-fire fuels can support greater flame lengths than those experienced for up to the next 12 years.
- Unburned areas adjacent to burned areas remain over-burdened with high fuel loads and because they are contiguous to areas with an increased risk of fire, the risk within these areas increases as well.
- The "hazard trees" (dead and dying trees remaining standing), snags, and stump holes create an additional hazard in themselves.

Beetle Kill and Forest Health

Beetle Kill can significantly impact forest health and contribute to wildfires. A community forum called Wildfire 2003, conducted in April 15, 2003, on fire conditions and emergency plans for LAC and the Jemez Mountains, concluded that the drought over the past two years has left New Mexico's forests highly vulnerable to fires. Trees and underbrush are tinder dry, and bark beetles are leaving large stands of dead forest. According to a New Mexico State University horticulturalist, in 2001 bark beetles had infested 71,675 acres of New Mexico forest; in 2002, the infestation spread to 164,635 acres and it was continuing to increase in 2003. The following 2003 beetle kill map, prepared by the US Forest Service, illustrates the impact of beetle kill in the area. LAC is located in the North Central Area colored red.

Figure 11 Beetle Kill Map (2003)



The amount of dead wood fuels is quite extensive in LAC due to the extensive drought and insect-caused mortality of the last several years. However, the actual risk of a damaging crown fire is actually decreasing in many of the piñon-juniper woodlands. This decrease is because the mass and continuity of live canopy fuels are reduced as dead needles fall from the trees, usually occurring within a year of tree death. Large, intense fires in southwestern piñon-juniper woodlands almost always occur as wind-driven crown fires under conditions of extremely low humidity and fuel moisture. Crown fires, which are extremely difficult to fight, primarily burn the live needles and small twigs of trees, not the coarse wood of stems and branches that typically remain after crown fires. Dead piñon trees generally do not remain standing for long; they usually begin to break apart and fall to the ground a few years after death. As piñon trees decay, the potential energy content of the residual wood declines markedly. Downed wood fuel mass on the ground will indeed increase, and may result in locally intense burning if a fire is ignited. These patchily distributed dead fuels probably will not carry severe fires over large areas in the same way as an intact canopy of live piñon and juniper. Thus the local expression– "standing red versus standing dead." Furthermore, firefighting technology is more effective at controlling surface fires.

In LAC and vicinity, most of the needles have fallen from the trees. Thus, rather than elevating the risk of catastrophic fire, the recent episode of widespread tree mortality is followed by reduced fire hazard for several decades because the canopy fuel bed has been effectively thinned. However, this "reduced fire hazard" should be considered in relative terms given other fire risk factors in the LAC planning area, as already described in this section. Also, contributing to the risk of wildfires is the nature and frequency of lightning in an area.

Further compounding the risk of wildfire, long-term drought conditions continue to plague the region. According to the U.S. Forest Service Southwest Area Wild Land Fire Operations, this is due to; rapidly decreasing early spring snowpack, significant vegetative stress and dieback due to insect damage and drought effects, and a forecast for near normal April weather conditions followed by abnormally warm and dry conditions from May through early July.

Severe Weather

Severe weather is generally any destructive weather event, but usually occurs in LAC as localized storms, such as, monsoon thunderstorms, winter storms, and strong wind and hail events. Severe weather occurs in many forms and varies significantly in size, strength, intensity, duration, and impact. Elements to consider in evaluating severe weather include temperature, winds and precipitation. The following sections discuss weather typically experienced in LAC.

Monsoons

The term monsoon generally refers to a seasonal wind shift, or monsoon circulation, that produces a radical change in moisture conditions in a given area or region. In the Southwestern United States, this shift in wind direction is primarily the result of two meteorological changes:

- The movement northward from winter to summer of the huge upper level subtropical high pressure system, specifically known as the Bermuda High, and the intense heating of the Mohave Desert that creates rising air and surface low pressure, called a thermal low.

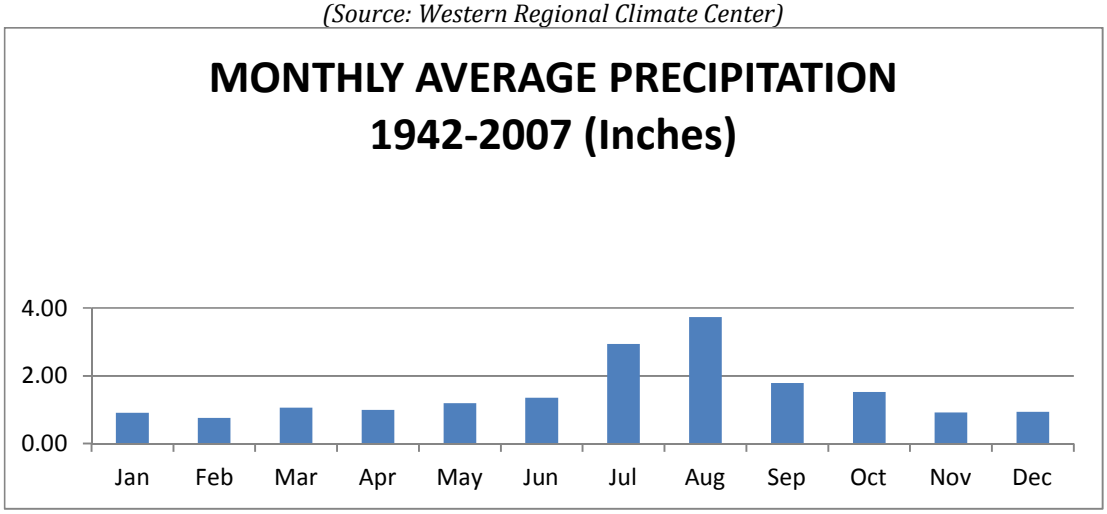
These two features then combine to create a strong southerly flow that helps bring in moisture (i.e. from the Gulf of Mexico, the Gulf of California, and the Pacific Ocean) that lifts and forms thunderstorms when it encounters the higher terrain of New Mexico, including Los Alamos. The monsoons are significant to LAC for two reasons. First, on the positive side, the monsoons can temper the fire season. Second, since the Cerro Grande fire, flooding in LAC is directly related to monsoon thunderstorms and the associated precipitation running off the burned areas. The runoff causes flooding and erosion and creates an ongoing maintenance need to maintain clear passage of runoff through culverts.

Past Occurrences

In LAC, summer begins with warm, and often dry, conditions in June, followed by a two-month rainy season. This rainy season in July and August, often referred to as the "monsoon" season, is really just predictable afternoon rainstorms that comprise approximately 36% of the annual 18.7 inches of precipitation. However, the annual total fluctuates considerably from year to year. The lowest recorded annual precipitation is 6.8 inches and the highest is 30.3 inches. The maximum recorded precipitation for a 24-hour period is 3.5 inches; the maximum 15-minute precipitation on record is .9 inches. Because of the eastward slope of the terrain, there is a large east-to-west gradient in precipitation across the plateau. As a result, White Rock often receives noticeably less annual precipitation than the official observing station within LANL boundaries, while the eastern flanks of the Jemez Mountains often receive more.

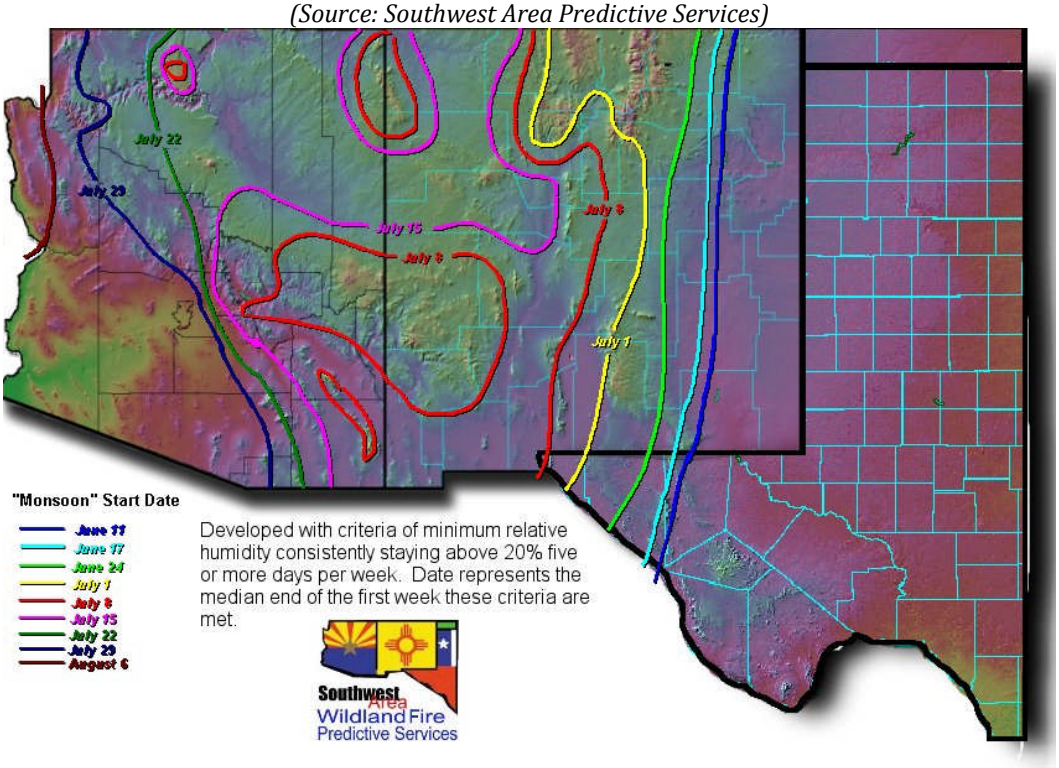
The following table provides the monthly average total precipitation for LAC:

Figure 12 Monthly Average Precipitation (1942-2007)
(Source: Western Regional Climate Center)



Consistent with the monthly annual precipitation records, the following map illustrates the monsoon season "start date" in the New Mexico and LAC region.

Figure 13 Median Monsoon Start Dates
(Source: Southwest Area Predictive Services)



Likelihood of Future Occurrences

Highly Likely: The monsoon in the Southwestern United States is a well-documented seasonal occurrence that is anticipated to continue in the future during the July/August "monsoon" season.

Wind and Hail

Typically associated with the monsoon/thunderstorm season is the frequent occurrence of wind and hail. Wind is the motion of air relative to the earth's surface. Wind is caused by the movement of air from areas of high pressure to areas of low pressure. The greater the difference in pressure, the stronger the wind. Hail is a round or irregularly shaped piece of ice that falls from a cumulonimbus (thunderstorm) cloud. Hail can range in diameter from pea sized to baseball or even grapefruit sized. The greater the diameter the more destructive and dangerous the hail can be. Wind and hail can result in property damage and injury. Associated hazards in this area include: utility outages, arcing power lines, downing of trees, debris blocking streets and an occasional structure fire. Hail and wind often accompanies thunderstorms and can break windows, dent automobiles, damage rooftops, and injured persons.

Past Occurrences

In an average year, Los Alamos experiences 61 thunderstorm days a year, about twice the national average. In addition to lightning, hail often occurs with these summertime convective thunderstorms. Hailstones of .25 inches are common, but stones up to 2 inches in size have been reported. Hail has caused significant damage to property and vegetation and localized accumulations of three inches have been observed.

Los Alamos winds are generally light, having an annual average of 5.5 miles per hour.

However, the period from mid-March to early June can be windy. During this windy period, sustained wind speeds exceeding 8.8 miles per hour occur 20% of the time during the daytime and the daily maximum wind gust exceeds 31 miles per hour about 20% of the time. The highest wind gust in record is 77 miles per hour. No tornadoes are known to have touched ground in the Los Alamos area; however, funnel clouds have been observed in Los Alamos and Santa Fe counties.

Likelihood of Future Occurrences

***Likely*:** Based on historic data, LAC has experienced 10 recorded hail events between 1961 and 2000. This is an average of one hail event every 3.9 years, or a 26% chance of a hailstorm in any given year. Hail and wind are typically associated with the monsoon and thunderstorm season occurring during the 2-month rainy season in July and August. Due to the seasonal wind shift that occurs as a result of the two meteorological changes in the southwestern United States, the increase in moisture conditions over LAC will continue to occur annually during the rainy season bringing with it hail and wind events.

Winter Storms

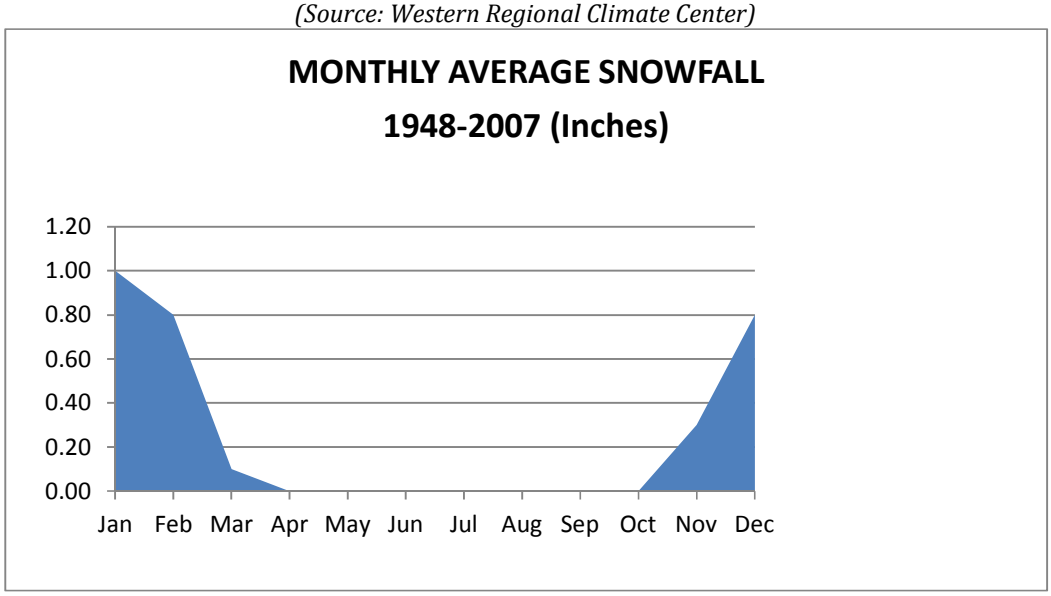
Winter storms occur when precipitation and freezing temperatures mix to produce a significant accumulation of snow or ice. Winter storms are often worsened by wind that produces blowing and drifting snow and reduced visibility. Winter storms can be quite disruptive. Road closures can occur causing people to become stranded; accidents occur; power, water and sewer services can be temporarily interrupted. These events can cause great impact to a community depending on the severity and duration of a storm. Due to LAC's remote location, winter storms can easily hamper the limited access from other communities, including even White Rock.

Past Occurrences

In LAC, winter precipitation occurs mostly as snow, which is generally dry. Freezing rain is rare. The bulk of the snowfall generally occurs during the months of December and January, but can occur anytime between the months of October through May. Annual snowfall averages 59 inches but is quite variable. The highest recorded snowfall for one season is 153 inches (1986-87); the

highest recorded snowfall for a 48-hour period is 57 inches. In a typical winter season, snowfalls equal to or exceeding 1 inch occur on 14 days, and snowfalls equal to or exceeding 4 inches occur on four days. The following table illustrates average and extreme snowfalls for a 24-hour period.

Figure 14 Monthly Average Snowfall (1948-2007)
(Source: Western Regional Climate Center)



Information obtained from the NCDC and other sources consulted did not report any winter storms occurring in LAC between 1948 and 2007 that caused any reportable damage to people or property. However, according to the Department, school and lab closures generally occur several times a year due to heavy snows.

Likelihood of Future Occurrences

Highly Likely: Based on historic information for the Los Alamos area, snowfall in Los Alamos is generally moderate with an average snowfall of 59 inches per year. However, snowfall in the area can be highly variable. As a result of this data, the Department concludes that winter storms will continue to occur in the future, most probably on an annual basis, but that damages associated with these events should be minimal.

Floods

Floods are among the most frequent and costly natural disaster nationally in terms of human hardship and economic loss. Riverine flooding is defined as when a watercourse exceeds its "bank-full" capacity and is usually the most common type of flood event. Riverine flooding generally occurs as a result of prolonged rainfall, or rainfall that is combined with soils already saturated from previous rain events. The area adjacent to the channel is the floodplain. In its common usage, the floodplain most often refers to that area that is inundated by the 100-year flood, the flood that has a 1% chance in any given year of being equaled or exceeded. Other types of floods include: general rain floods, thunderstorm generated flash-floods, alluvial fan floods, snowmelt and rain on snow floods, dam failure floods and local drainage floods. The 100-year flood is the national standard to which communities regulate their floodplains through the National Flood Insurance Program (NFIP).

The potential for flooding can change and increase through various land use changes and changes to land surface. A change in environment can create localized flooding problems in and outside of natural floodplains by altering or confining watersheds or natural drainage channels.

These changes are commonly created by human activities. These changes can also be created by other events such as wildfires. Wildfires create hydrophobic soils – a hardening or "glazing" of the earth's surface that prevents rainfall from being absorbed into the ground, thereby increasing runoff, erosion and downstream sedimentation of channels. The two types of flood events LAC is most susceptible to include post fire flooding and possible flash-flooding, either as a result of thunderstorms or the unlikely, but possible, failure of the Los Alamos Dam.

Past Occurrences

The Cerro Grande Fire destroyed the protective vegetative cover that normally slows runoff and left in its place high concentrations of hydrophobic ash, making the top layer of soil impervious. As a result, LAC was exposed to an increased risk of flooding, erosion, and mudslides, just prior to the monsoon season.

The increased risk of flooding, erosion, and mudslides was expected to last between 3 and 5 years (2003-2005), before declining towards pre-fire conditions. To date, the NCDC substantiates this. NCDC data identifies the following severe events in LAC between 1950 and 2003. Over half of the events occurred during July and August, the heart of the monsoon season. One third of the events are floods and all six flood events occurred after the Cerro Grande wildfire. The two flood events resulting in property damages were clearly the result the increased runoff conditions created by the hydrophobic soils left in the aftermath of the Cerro Grande Fire.

Dam Failure Flooding

A dam failure flood is when the partial or complete collapse of an impoundment causes flooding downstream. Dam failures are often the result of prolonged rainfall and flooding, but can happen in any conditions due to erosion, piping, structural deficiencies, lack of maintenance and repair, or the gradual weakening of the dam over time. Other factors that can lead to dam failure include earthquakes, volcanic lahars, landslides, improper operation, rodent activity, vandalism or terrorism. Dam failures can inflict severe damage and losses due to the sudden release of large volumes of water downstream.

In September of 2001, LAC acquired ownership of the Los Alamos Dam from the federal government. The dam is an earth embankment dam that is approximately 40 feet high and 175 feet long with an approximate reservoir storage capacity of 28 acre-feet based on the permit application dated August 16, 1937. The drainage area above the dam is approximately 5 square miles and the entire watershed was burned during the Cerro Grande fire. The Phase 1 report for the dam dated August 1992 indicates that construction included a 12 to 18-inch thick concrete cutoff wall from the rock elevation to the high water line and a puddle clay core cutoff along the centerline.

According to a recent inspection by the State Engineer in April of 2003, it was determined that the crest of the dam is in satisfactory condition and covered with concrete. The emergency spillway, located in the center of the dam, is a 155-foot long concrete chute over the dam with a bottom width of 8 feet. The maximum discharge capacity of the emergency spillway is 1000 cubic feet per second. The emergency spillway is in satisfactory condition.

The dam is currently used as a flood control dam. However, LAC will return the Los Alamos Reservoir to a water supply reservoir once the watershed has recovered from the Cerro Grande fire. Although the dam was previously listed as a low hazard dam in the Office of State Engineer's dam inventory, based on the 2003 inspection it was recommended that the dam be classified as a high hazard potential dam on the dam inventory. A dam failure could impact future water supply plans, as well as cause downstream erosion, though the resulting flood would be confined to Los

Alamos Canyon. The only potential downstream damage would possibly be to the Ice Rink, which should be evacuated when there are indications of a dam failure, and debris blockage to the culverts at Highway 502. There have been no historic flood events in LAC as a result of dam failure.

Likelihood of Future Occurrences

100-year flood – *Occasional*: The 100-year flood is the flood that has a one percent chance in any given year of being equaled or exceeded. Outside the 100-year floodplain:

Post Cerro Grande Fire - *Highly Likely*: Based on historic data, LAC has experienced six flood events between 2000 and 2004. This is an average of 1.5 floods each year.

Dam failure flood – *Unlikely*: There have been no historic flood events in LAC as a result of dam failure.

LAC participates in the NFIP. NFIP and NCDC statistics substantiate that little risk existed prior to the Cerro Grande fire. This is primarily due to the fact that the community is built on the mesa tops while the streams run at the bottom of the steep canyons between each mesa. Using current NFIP maps for LAC, the CPT determined that there are no structures located within the mapped 100-year flood plain. Prior to the Cerro Grande fire, according to the NCDC database, there are no records of a flood event in the past 50 years within LAC, and NFIP statistics indicate there were only 8 flood insurance policies, with $981,600 of insurance in force within LAC. There had been only one paid loss since 1978 for $930. There had been no substantial damage or repetitive loss determinations.

Current NFIP statistics substantiate both the increased risk and actual damages associated with post-fire flooding in LAC. As of October 31, 2003, FEMA reports that there were 113 policies, with $28,548,000 of insurance in force. There has also been $30,869 dollars paid out on 8 additional losses.

Over the next few years the CPT expects, as stated, that flood risk will return to the low pre-fire expectations as the vegetative cover is reestablished. The current flood maps for LAC are available on the FEMA website. The NFIP community identification number for LAC is 350035.

With respect to the Los Alamos dam, as long as the recommended inspection and maintenance activities are performed as required, it is unlikely that the dam will fail unnoticed as a result of a natural hazard.

Drought

Drought is a period of drier than normal conditions that lasts for several months or years. In most cases droughts cause problems with water supply and crops, but in LAC there are no commercial crops and the community wells are so deep that they are not affected. In addition, New Mexico is a very arid state, so “drier than normal conditions” are difficult to define. Drought involves many complex factors, with differing conditions and drivers throughout the state making this a regional focus. New Mexico defines drought regionally based on its effects:

- **Meteorological** - this type of drought is usually defined by a period of below average water supply;
- **Agricultural** – this type of drought occurs when there is inadequate water supply to meet the needs of the state’s crops and other agricultural operations such as livestock;
- **Hydrological** – a hydrological drought is defined as deficiencies in surface and subsurface water supplies; it is generally measured as stream flow, snowpack, and as lake, reservoir and groundwater levels;

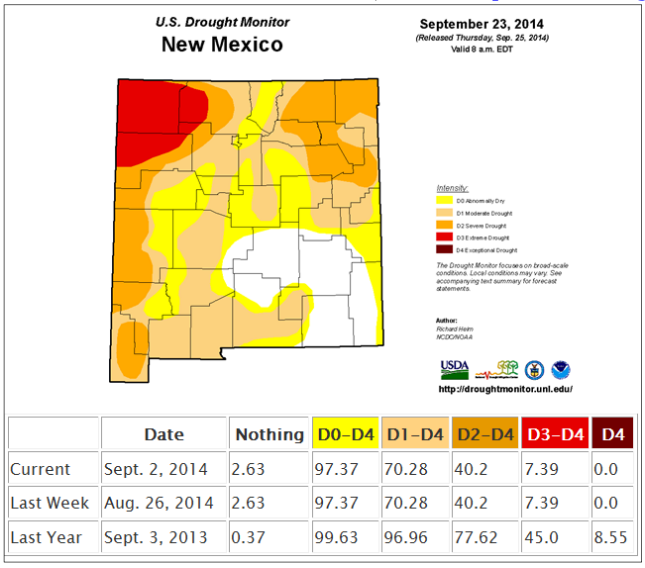
- **Socioeconomic** – a socioeconomic drought occurs when the results of drought impact the health, wellbeing, and quality of life, or when a drought starts to have an adverse economic impact on a region.

The drought issue is further compounded by water-rights specific to any state or region. Water is a commodity possessed under a variety of legal doctrines. In New Mexico there are complex water-rights issues between New Mexico and Texas, which address the sharing of the Rio Grande waters. In addition, the prioritization of water rights between farming, recreation and federally protected fish habitats in the state is also at issue.

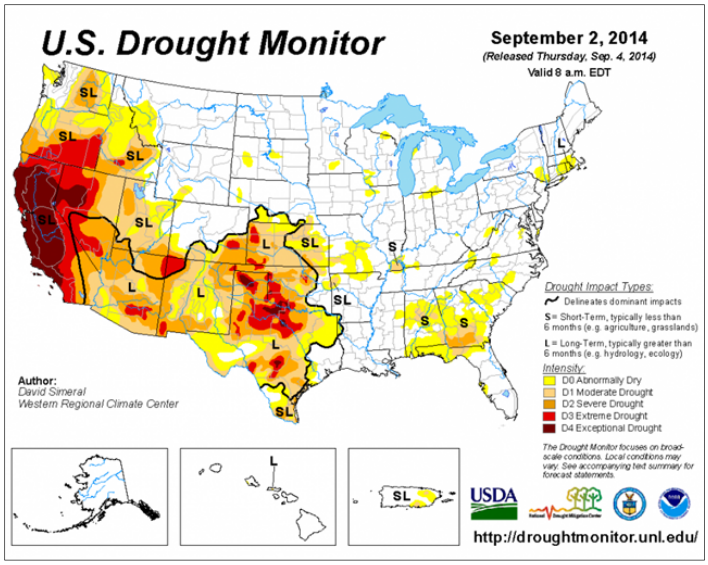
Past Occurrences

According to the New Mexico Office of the State Engineer, droughts occur on average every 10 years within the state. New Mexico experienced some of its worst drought conditions during 1950's, but the recent long-term drought may surpass that decade. The year 2000 was one of the hottest and driest on record for the state. Another severe drought year occurred two years later in 2002. New Mexico remains in a long-term drought and currently LAC is in a drought as determined by NOAA, USDA and the New Mexico Drought Monitoring Workgroup.

Figure 15 U.S. Drought Monitor (September 2014)
(Source: http://www.drought.unl.edu/dm/pdfs/west_dm.pdf)



	Date	Nothing	D0–D4	D1–D4	D2–D4	D3–D4	D4
Current	Sept. 2, 2014	2.63	97.37	70.28	40.2	7.39	0.0
Last Week	Aug. 26, 2014	2.63	97.37	70.28	40.2	7.39	0.0
Last Year	Sept. 3, 2013	0.37	99.63	96.96	77.62	45.0	8.55



Likelihood of Future Occurrences

Likely: According to the New Mexico Office of the State Engineer, droughts occur on average every 10 years within the state. Drought indices indicate sustained drought conditions throughout most of the state. Reservoir levels throughout New Mexico are still below average. Moreover, the final 2003 USDA state topsoil conditions report indicated that 94 percent of New Mexico topsoil was in the short to very short categories—a statistic graphically corroborated by recent dust storms originating in eastern New Mexico and affecting the Great Plains states.

On November 22, 2003, USDA declared all 33 counties in New Mexico as designated disaster areas, due to losses caused by drought. All counties, except LAC, were considered primary natural disaster areas for purposes of applying for financial assistance, based on the fact that LAC had not sustained sufficient production losses. This is not surprising since there is no commercial agriculture within LAC. According to the various drought predictive services,

drought conditions continue to be extreme to exceptional statewide despite significant winter and spring precipitation.

Rock fall

Rock fall is the falling of a detached mass of rock from a cliff or down a very steep slope. Weathering and decomposition of geological materials produce conditions to support rock fall. Rock falls are caused by the loss of support from underneath through erosion or triggered by ice wedging, root growth, or ground shaking. Changes to an area or slope such as cutting and filling activities can also increase the risk of a rock fall. Rocks in a rock fall can be of any dimension, from the size of baseballs to houses. Rock fall occurs most frequently in mountains or other steep areas during the early spring when there is abundant moisture and repeated freezing and thawing. Rock falls are a serious geological hazard that can threaten human life, impact transportation corridors and communication systems, and result in other property damage.

Past Occurrences

According to the CPT, past rock falls in the LAC area have primarily occurred along State Highway 502, which is maintained by the State Department of Transportation, and in the area of the switchback located along State Route 4. Depending on the severity of an incident, blockages may last from hours to days.

There are a few other areas within the County that also experience some minor rock fall occurrences. The steep canyons that lace Los Alamos County can produce rock fall hazards, but only the occasional hiker may be at risk since the valley floors are largely undeveloped. One documented rock fall fatality is associated with the naming of the "Deadman Trail" in Los Alamos Canyon. This trail was named for a 1930's homesteader who was killed by a rock fall while working on the trail. *(Source: www.losalamos.com/hiking/lahiking.asp)*

Although, historically, there have been few reported injuries and little property damage associated with the rock fall hazard in LAC, the potential for damages in the future remains. In addition to potential damages to people and property, the greatest potential impact from rock falls is the impact to transportation routes. The CPT contacted the NM State Police to identify additional past occurrences, but no data was available.

Likelihood of Future Occurrences

Likely: Based on historical data, and given the sloped terrain along many of the roads within the Los Alamos area, rock fall hazards are likely to continue.

Earthquakes

An earthquake is caused by a sudden slip on a fault. Stresses in the earth's outer layer push the sides of the fault together. Stress builds up and the rocks slip suddenly, releasing energy in waves that travel through the earth's crust and cause the shaking that we feel during an earthquake. New Mexico and Los Alamos County are subject to earthquakes.

Past Occurrences

Most of New Mexico's historical seismicity has been concentrated in the Rio Grande Valley, between Socorro and Albuquerque. About half of the earthquakes of Modified Mercalli (MM) intensity VI or greater that occurred in the State between 1868 and 1973 were centered in this region.

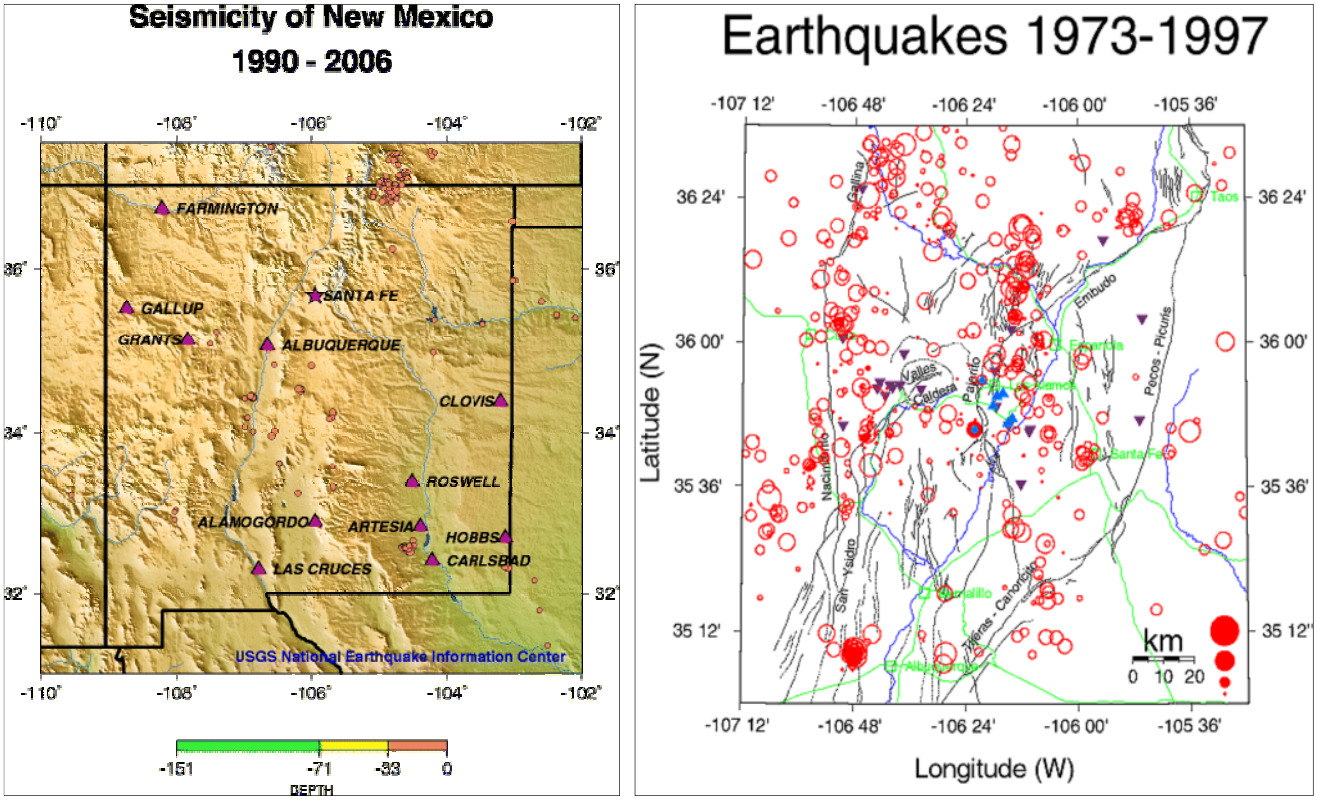
This earliest documented 6.0+ earthquake in New Mexico was in the Socorro area, in 1906, MM Intensity VII. Four rebuilt chimneys were shaken off the Socorro County Courthouse and two others were cracked severely. Plaster fell at the courthouse and a cornice on the northwest corner of the two-story adobe Masonic Temple was thrown onto its first floor. Several bricks fell

from the front gable on one house. Plaster was shaken from walls in Santa Fe, about 200 kilometers from the epicenter. The earthquake was felt over most of New Mexico and in parts of Arizona and Texas. From this information, the Planning Team assumes that the earthquake could have been felt in Los Alamos.

Table 6 Earthquake Intensities with Approximate Corresponding Magnitudes
(Source: Math/Science Nucleus.Org website)

MERCALLI INTENSITY	DESCRIPTION	RICHTER MAGNITUDE
I	*INSTRUMENTAL*: detected only by seismographs	**3.5**
II	*FEEBLE*: noticed only by sensitive people	**4.2**
III	*SLIGHT*: like the vibrations due to a passing train; felt by people at rest, especially on upper floors	**4.3**
IV	*MODERATE*: felt by people while walking; rocking of loose objects, including standing houses	**4.8**
V	*RATHER STRONG*: felt generally; most sleepers are awakened and bells ring	**4.9 - 5.4**
VI	*STRONG*: trees sway and all suspended objects swing; damage by overturning and falling of loose objects	**5.5 - 6.0**
VII	*VERY STRONG*: general alarm; walls crack; plaster falls	**6.1**
VIII	*DESTRUCTIVE*: car drivers seriously disturbed; masonry fissured; chimneys fall; poorly constructed buildings damaged	**6.2**
IX	*RUINOUS*: some houses collapse where ground begins to crack, and pipes break open	**6.9**
X	*DISASTROUS*: ground cracks badly; many buildings destroyed and railway lines bent; landslides on steep slopes	**7.0 - 7.3**
XI	*VERY DISASTROUS*: few buildings remain standing; bridges destroyed; all services (railways, pipes and cables) out of action; great landslides and floods	**7.4 - 8.1**
XII	*CATASTROPHIC*: total destruction; objects thrown into air; ground rises and falls in waves	**> 8.1**

Figure 16 Seismicity of NM (1990-2006) and Earthquakes (1973-1997)



Los Alamos Seismic Network's (LASN's) Seismic Stations. From the first data recorded in the fall of 1973 to now, the Los Alamos Seismograph Network (LASN) has operated for almost 30 years. During that time, LASN data have been used to locate more than 2,500 earthquakes in north-central New Mexico.

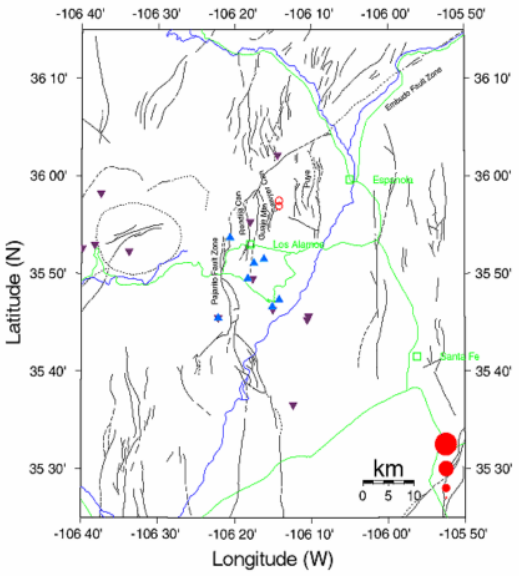
The plot, shown on page 92, shows some the region of north-central New Mexico. The Jemez Mountains are in the middle, and within them, the Valles Caldera is the circular feature. The plot shows about 600 of the best-located earthquakes (red circles) in north-central New Mexico during the 25 years from 1973 through 1997. The size of each circle is proportional to the magnitude of the earthquakes (filled circles at bottom right show magnitudes from 0 to 3). Faults are drawn in black, rivers in blue, major roads in green. Stations are shown as triangles, with those that operated from 1973 through 1984 as purple inverted triangles, those currently operating as blue upright triangles.

The network was installed to aid in seismic verification research as well as to monitor quakes for Los Alamos National Laboratory (LANL). LASN station data is the only instrumental seismic data available for earthquakes that occur in northern New Mexico. Currently, 7 stations are operated, all within or near LANL. More than 2,000 earthquakes were detected and located throughout northern New Mexico during the first 11 years of the network's operation (1973 to 1984). With a subsequent "down-sizing" of the network, about 1-2 nearby earthquakes a month are detected and located. Earthquakes are considered to be nearby if the time between their P (Primary) and S (Secondary) wave arrivals is about 20 seconds or less. That corresponds roughly to about 150-160 km distance from the network.

In the 12 months, October 1997 through September 1998, a total of 27 earthquakes were located. Many of these were part of the Willard, NM swarm which started in late December 1997

and continued into January, 1998. The Willard swarm earthquakes are located about 30 km south of the southern edge of the north-central New Mexico seismicity plot. Plot features are similar to those described for the previous plot.

Figure 17 Los Alamos Earthquakes (10/1997-09/1998)



Los Alamos lies near several major boundary faults of the Rio Grande Rift in north central New Mexico. The margin of the Rio Grande Rift in the Los Alamos area is locally defined by the Pajarito fault system. The Pajarito Fault extends some 50 kilometers, oriented north-south from near Bland Canyon nearly to Santa Clara Canyon. Two other faults in the area include the Guaje Mountain Fault and the Rendija Canyon that transect the plateau. LANL data suggests that a magnitude seven earthquake occurred along the Guaje Mountain Fault between 4,000 and 6,000 years ago. A quake of similar magnitude apparently occurred on the Rendija Canyon Fault either 8,000 or 22,000 years ago (a discrepancy due to different age results of two different materials: charcoal deposits, which yielded the more recent date, and soil). The magnitude of the earthquakes along the Guaje Mountain Fault and Rendija Canyon Fault were based on documented displacements of one and a half to two meters. However, according to a researcher at LANL, this information is being updated. There is new evidence of three surface rupturing earthquakes (i.e., magnitude 6 or larger and probably closer to magnitude 7) in the last 10,000 years. The most recent of these earthquakes was about 2,000 years ago.

Figure 18 Pajarito Fault System Map

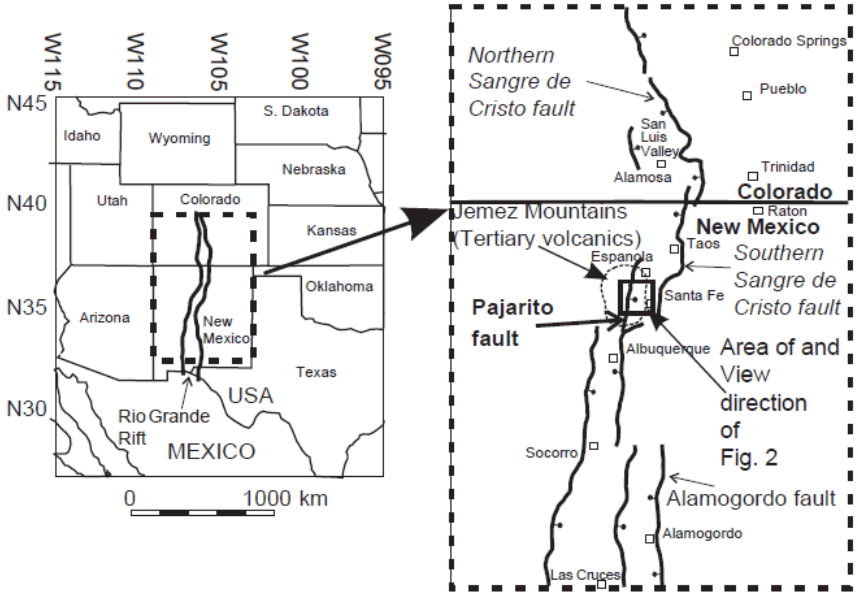
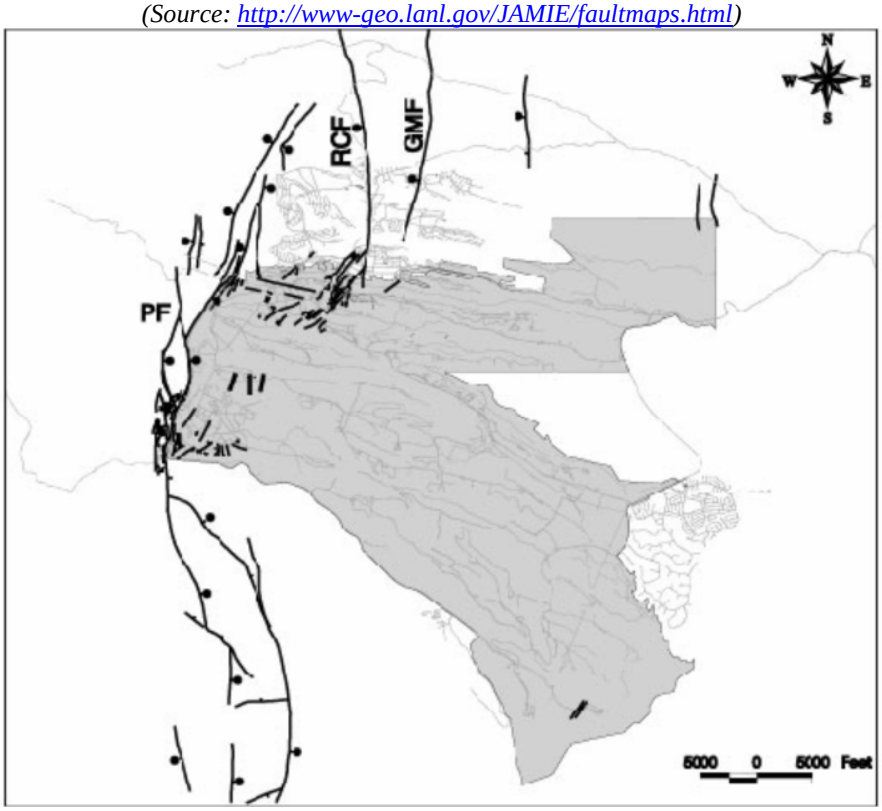


Fig. 1. Location map of Pajarito fault system. Left: location of the Rio Grande rift (thick black lines) in the southwestern United States. Right: detail of the Rio Grande rift in vicinity of northern New Mexico and southern Colorado. Thick black lines show major rift-bounding faults, with bar-and-ball on downthrown side.

Figure 19 Map of Pajarito Fault System in the Los Alamos Area
(Source: http://www-geo.lanl.gov/JAMIE/faultmaps.html)



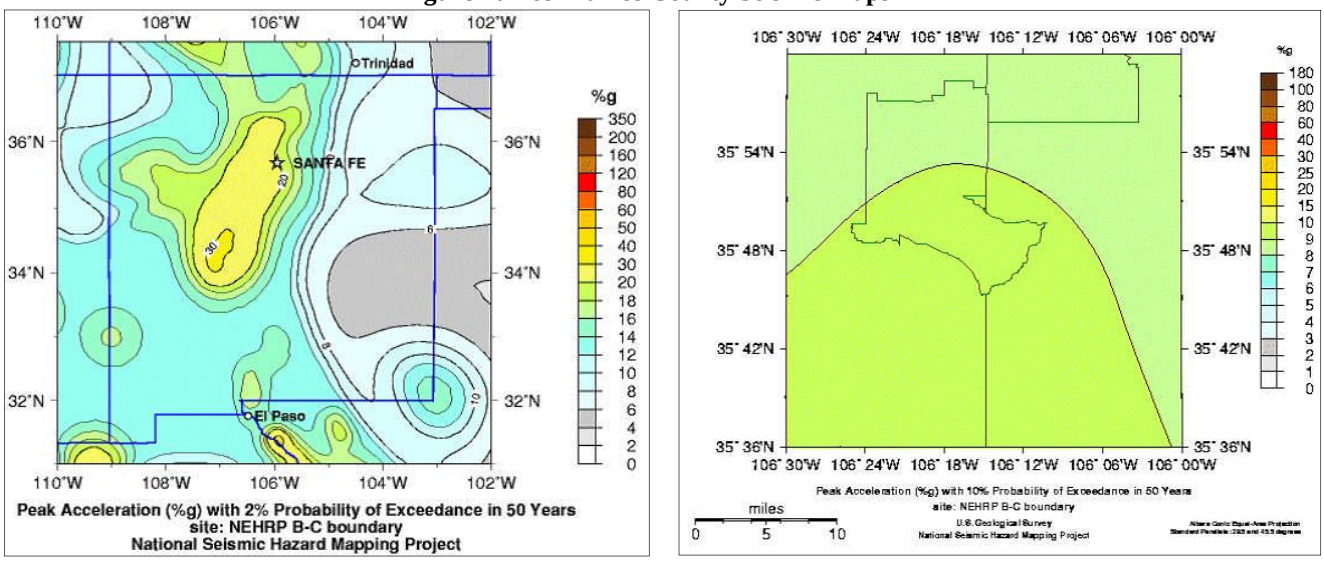
PF= Pajarito Fault
RCF=Rendija Canyon Fault
GMF=Guaje Mountain Fault
Gray shaded area is Los Alamos National Laboratory.
Some areas of the Pajarito fault system have not yet been mapped.
This map reflects mapping through the Spring of 2000.

Since the establishment of LANL during the early 1940's, there have been seven earthquakes felt by the residents of LAC. The largest of these were a magnitude 4 (Richter) in 1952 and a magnitude 3.3 in 1971, both reported as Modified Mercalli Intensities of V in Los Alamos. More recently, in 1991 and 1998, LAC experienced very small magnitude earthquakes (M<2) with unusually high Modified Mercalli Intensities up to V, indicating significant felt effects. This is due to the unusually shallow nature of these earthquakes. Two of these earthquakes happened on the same day in 1991; the other earthquake occurred in 1998. The areas where residents felt the quakes are built on a thick package of old, alluvial material deposited atop the Bandelier tuff or on artificial fill. Residences built directly on tuff were far less likely to feel the small quakes.

Likelihood of Future Occurrences

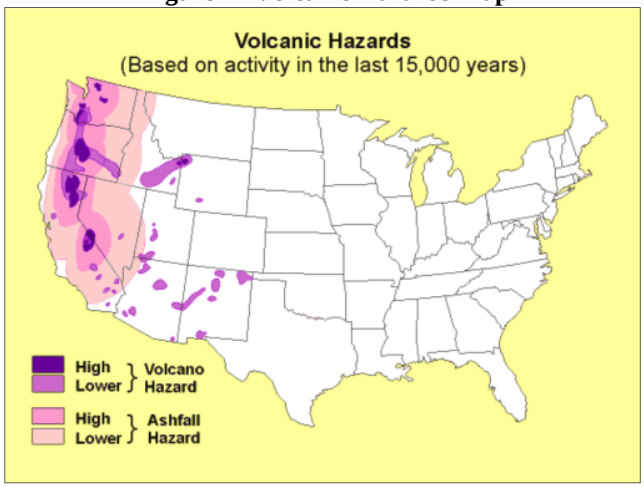
Magnitude 6.0 earthquake - *Unlikely:* Studies conducted by the New Mexico Institute of Mining and Technology, with support from the state, suggest that an earthquake of magnitude of 6.0 on the Richter scale has a probability of occurrence somewhere in this state once every 150 years. This prediction is based on extrapolated data since the only known documentation of a magnitude 6.0 + earthquake was in the early 1900s, prior to instrumentation for the measurement of earthquake epicenter magnitudes. From various other sources, the following maps provide information on the potential seismic hazard in the area.

Figure 20 Los Alamos County Seismic Maps



From these data we can infer that the likelihood of an earthquake affecting LAC is moderate. In Los Alamos County, the larger an earthquake, the more severe the impacts will be. Small earthquakes will continue to occur frequently, though most will be undetectable to people. Moderate earthquakes will occur less frequently, but could be reasonably expected to occur within anyone's lifetime. The Planning Team can only infer (and agree with NM Tech) that a significant earthquake, one 6.0 or greater on the Richter scale, may occur in the area at least once every 150 years.

Figure 21 Volcanic Hazards Map



Volcano

A volcano is a mountain formed by the eruption of subsurface material including lava, rock fragments, ash, and gases, onto the earth's surface. Volcanoes produce a wide variety of hazards that can damage and destroy property and cause injury and death to people caught in its path. Hazards include those related to volcanic activities, such as: eruption columns and clouds, volcanic gases, lava/pyroclastic flows, volcanic landslides and mudflows or debris flows (called lahars). Based on the evidence of past activity, volcanoes can be considered "active", "dormant", or "extinct". "Active" volcanoes usually have evidence of eruption during historic times. Volcanoes have a wide degree of variability in their eruptions, from mild lava flows to large explosions that eject tons of material and ash into the air. The degree of volcanic hazard depends largely on if the volcano has a reasonable probability of erupting, the nature of the eruption, and the associated hazards that may be triggered.

Past Occurrences

The Jemez Mountains, located to the northwest of LAC, are a volcanic field that overlies the west edge of the Rio Grande rift. This volcanic field is best known for the Valles Caldera. A Caldera is formed when huge amounts of magma are erupted out of sub-surface magma chambers. The removal of all this magma leaves a void below the surface and the top collapses in to form the

caldera. Subsequent eruptions usually fill them in partially so that the jumbled debris is buried. At 15 miles in diameter, the Valles Caldera is believed to have been formed during two explosive events, 1.6 and 1.2 million years ago, when the volcanic pile collapsed in response to this eruption of ash and rock from the magma chamber. During these events over 90 cubic miles of ash/rock spewed out, forming the Bandelier tuff. Subsequent resurgence of magma formed domes along the caldera ring fracture, including Redondo Peak, which is over 3000 feet above the caldera floor. The geothermal and hot springs systems in the area are caused by flow of groundwater through the caldera. The water flows near the top of a subsurface body of igneous rock that still may be partially molten. Some of the water rises to the surface to supply fumaroles and hot springs. Geothermal activity continues.

Having been studied since the 1920's to learn about the fundamental processes of magmatism, hydrothermal systems and ore deposition, the Valles Caldera is one of the most well-known resurgent calderas in the United States. Researchers from LANL estimate that the most recent volcanic activity ended 50,000 years ago.

Mesas and Valles Caldera: This view is looking west across the dissected Bandelier Tuff of the Pajarito Plateau. The view looks across the lava domes and composite cones of the pre-2-million-year Jemez volcanic field (middle) into the Valles caldera. The grassy area, located at the center top, is the southeast quarter of the caldera. The Los Alamos town site is in the foreground.

Picture 4 Mesas and Valles Caldera

On the Ground: Looking west towards the LANL, the skyline is the topographic rim of the Valles Caldera. The cliffs are Bandelier Tuff. The layers represent the two major eruptions of the tuff and different cooling rates in each tuff deposit. The center of an ash-flow tuff sheet cools slower than the top and bottom, so its fragments of volcanic glass become welded to each other. This rock is massive and strong, unlike the unwelded ash-flows and air-fall tuffs, which can commonly be crumbled by hand. So, the center of an ash-flow tuff holds up cliff tops, and the top and bottom tend to form slopes.

Picture 5 Ground View Looking West Toward LANL

Picture 6 Bandelier Tuff, Jemez Canyon

Bandelier Tuff, Jemez Canyon: The pale rock here is Bandelier tuff, erupted from the Valles Caldera. The cliff-forming layers are the centers of ash-flows and the slopes are weaker rock from the tops and bottoms. Beneath the Bandelier tuff are red shales and sandstones of the Permian aged Abo formation, and brown limestone of Pennsylvanian age. Some of the white patches on the hillside are hot-spring deposits – with heat courtesy of the Valles volcano. This scene is near Jemez Pueblo and the Soda Dam hot springs.

Likelihood of Future Occurrences

Unlikely: Based on historic data (most recent volcanic activity ended 50,000 years ago), it is highly unlikely that volcanic activity will resume any time soon.

Several Studies, including those conducted by LANL and other studies conducted in conjunction with the New Mexico Bureau of Mines & Mineral Resources, indicate that based on the long history of the Jemez volcanic field and past cycles in activity, Valles Caldera should be considered a dormant volcano that will probably erupt again. Further, should an eruption occur based on past record, any future eruption would probably be explosive. When or if the next cycle of volcanic activity could begin is unknown. Renewed activity would likely be preceded with increased seismic activity that would provide some warning of the potential hazard. A map, shown in this section, depicts volcanic hazards based on activity in the last 15,000 years.

Area Development

Many of the structures in Los Alamos are legacy buildings from the Manhattan Project built in the mid-40's. Most of the early residential buildings in the town center have been removed, but some remain between 6th and 15th Streets. Many of the multifamily and single family dwellings were built in the 50's. Development began in the 60's on the mesas and in White Rock. Quemazon and Ponderosa subdivisions were developed starting in the 90's. Much of the Downtown development was constructed in the late 50's, 60's and 70's with some additional buildings added over the years.

LAC is surrounded by Federal and Tribal property which has limited growth although DOE has transferred some property to the County for commercial development. Some of the transferred land has included property east of the airport and a large tract north of White Rock. The property east of the airport (Airport Basin Project) was developed allowing for the County and Los Alamos Public Schools (LAPS) to vacate prime real estate south of Trinity Drive.

Commercial

Most of the Commercial property is located in the downtown area with some light industrial located on DP Road and at East Gate. There are three older school properties that have been converted into business property located around Los Alamos and a small pocket of commercial property located in White Rock near the entrance to Rover Boulevard off of State Road 4. The most significant revitalization is planned for the property that is being vacated south of Trinity

Drive. LANL has numerous commercial occupancies throughout its property with the highest concentration in Technical Area 3 (TA 3).

Office Space

Office space is inter mixed within the commercial areas of Los Alamos and White Rock. There is an 83,000 square foot building that is owned by the Small Business Administration with the assistance of LAC at 4200 West Jemez Road that has four floors of mixed office and commercial space. LANL has numerous offices throughout its property with the highest concentration in Technical Area 3.

Agricultural

Agricultural activities are limited to small private properties in White Rock, La Senda and Pajarito. There is a small community horse stable area on the North Mesa that is used for housing of privately owned horses.

Open Space

Lying on the eastern flank of the Jemez Mountains, Los Alamos enjoys a mountain backdrop amid the orange cliffs of the Pajarito Plateau. The town spans three miles of the plateau, interrupted by deeply incised canyons that offer natural escapes within the town's limits.

Pueblo and Bayo Canyons provide the largest wooded section of uninterrupted open space in the County. A popular access point is through Acid Canyon at the Larry R. Walkup Aquatic Center on Canyon Road. The Western Perimeter area provides access to the Santa Fe National Forest above the town site. Access can be found at the Quemazon and Mitchell Trailheads. Two undeveloped mesa top open spaces—Deer Trap Mesa and Kwage Mesa—offer outstanding vistas that take in the surrounding canyon, the Rio Grande Valley, and the Sangre de Cristo Mountains. White Rock Canyon offers spectacular scenery, rugged terrain, and unparalleled opportunities for solitude.

Transportation

County, State, and LANL roadways and sidewalks are used by motorists, bicyclists and pedestrians. There are several modes and means of transportation utilized within LAC, including the following: a local bus system (Atomic City Transit) that serves the Los Alamos and White Rock public; a LANL shuttle system that serves LANL employees; two regional bus systems including the North Central Regional Transit District (NCRTD) that connect Los Alamos to various northern New Mexico communities, and the Park n' Ride commuter bus system and New Mexico Rail Runner that connect Los Alamos to Espanola, Santa Fe, and Albuquerque.

LAC also operates a small airport that serves primarily privately owned aircraft. The Los Alamos County airport (KLAM) is located on the high mesas of the Pajarito Plateau on the eastern flanks of the Jemez Mountains. Built in 1947 by the Atomic Energy Commission as part of the Los Alamos Scientific Laboratory, but the federal government transferred the facility to county ownership in 2008.

Picture 7 LAC Airport

The Los Alamos County Airport (KLAM) is a publicly owned non-indexed general aviation airport. The elevation of the airport is approximately 7171' above sea level, with a total property boundary of 89 acres. The runway is 6000' by 120' with standard/basic aviation markings (lights, paint, compass, etc.) which runs in an east/west direction. The designation of the runway is 9/27, depending on which direction you are traveling (East for runway 9, west for runway 27). The airport is operational 24 hours a day (limited staffing after hours) with the following services:

24-hour AV-GAS (100LL) refueling; 24-hour flight planning accommodations; temporary and permanent aircraft parking (tie downs); general aviation mechanic and maintenance services (2 companies); rental car services (2 companies); and commercial flight services to Albuquerque International Airport (ABQ).

The airport averages between 12,000 and 15,000 inbound and outbound flights annually, or approximately 37 a day (statistic taken prior to commercial service starting). There are 57 aircraft based at LAM (55 single engine general aviation airplanes, 1 multi-engine airplane, and 1 ultralight). The summer months also see periodic housing of 1 to 4 jet propulsion helicopters for wildland firefighting. There is a year round commercial air service which operates 7 days a week and averages 3 takeoffs and 3 landings a day, with an increased number of flights scheduled as demand warrants (i.e. holiday travel season). LAM also sees approximately 50 military flights annually due to the proximity to Kirtland Air Force Base. Unscheduled twin jet engine traffic is not uncommon at LAM, however statistic data is not available to determine the average frequency at this time. These flights are usually in the form of fixed wing charters for LANL visitors, emergency medical aircraft, or government officials on business.

The commercial flight service is operated by Pacific Wings by way of New Mexico Airlines. The service started making flights in April 2014. Currently this company offers an average of 3 flights daily to Albuquerque International Airport (ABQ), as well as 3 return flights (ABQ-LAM). They also provide unscheduled charter services and cargo shipping between destinations. During times of increased traffic demand, New Mexico Airlines will add additional flights between LAM and ABQ. Pacific Wings operates Cessna Caravan and Grand Caravan Model 208 and 208B jet/propeller (jet prop) aircraft. These aircraft carry 9 passengers (and 2 pilots) and can haul 1400lbs of baggage, or a total weight of 3567 lbs. including passengers. This aircraft carries a max of 335 Gallons of Jet Fuel (Jet A) and operates a 3 blade (106" diameter) propeller. The wingspan is 51' 1" and the length is 41' 7".

Other risks at the airport would be characterized based on the building and hangar functions. First and foremost, the hangars themselves are mostly made of light metal construction which will have little resilience to fire exposure. This will make interior fire attack difficult at best. There is no internal fire protection in any hangar. The terminal is a standard industrial type facility with a flat built up roof. There is no internal fire protection within the facility. The building houses a communications center (tower) for communication with local air/ground traffic which has a high electrical hazard. In any hangar, one could expect to encounter exotic metals, carbon composites, Class B fuels including all different aviation type fuels (i.e. Jet A/B, Solid/gel rocket fuel, av-gas, etc.). Several of the aircraft on the property are equipped with Ballistic Recovery Systems which could also have one of several different ballistic parachute assemblies. These are often operated with a jet propellant or gun powder charge. There are several hangars leased/operated by amateur airplane builders and aircraft mechanics. These hangars will have similar hazards as the aforementioned hangars, in addition to the high probability of having paints, solvents, and potentially exposed toxic fluids. All of these areas will

likely have machinery, hydraulics, and pneumatic tools, all of which increase the potential hazard during an incident.

Any incident at the airport is also subject to potential biological exposures due to the probability of high impact incidents. This would most likely be in the form of bodily fluids from victims.

The 24 hour fuel center is located outside on the northwest corner of the airport property and has all of the same hazards typically present at a traditional gas station.

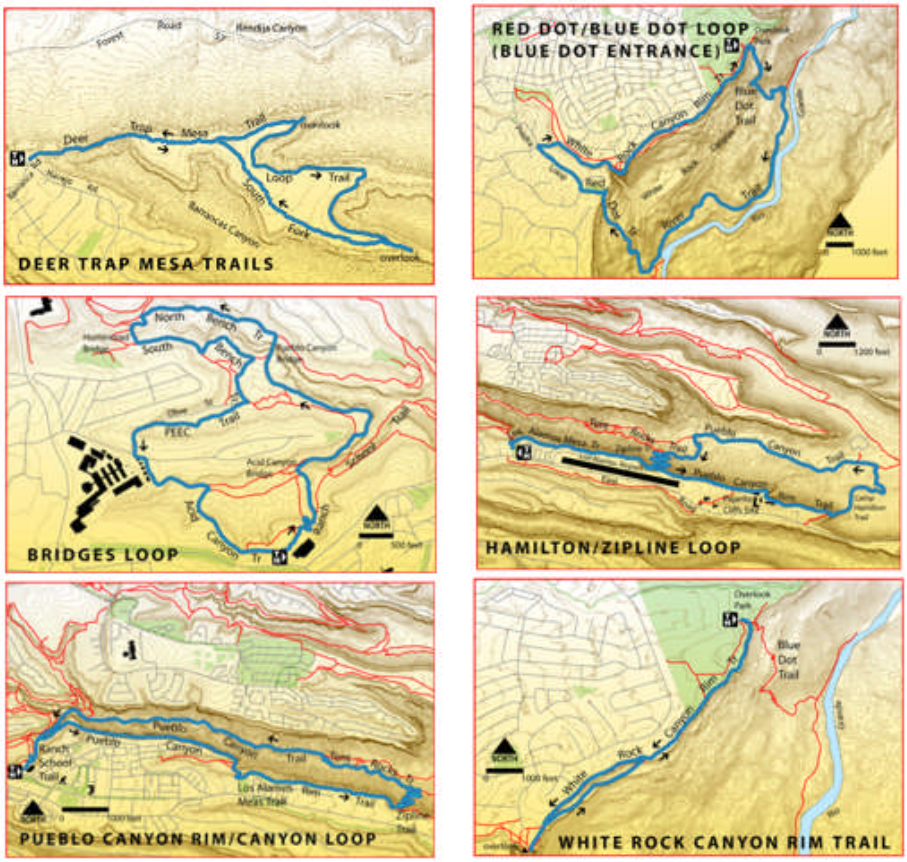
The airport operates with an unmanned control tower. This means that all traffic (air and ground) within the airfield is to be communicated via the airport radio network at specific markers and geographic locations. If there is miscommunication or a lack of communication there is a higher probability of having an incident/accident on the property or in the air. This has happened in the past.

The airport is situated on the end of a mesa. Any incident on the property, or within the immediate surroundings, is subject to high angle rescue type scenarios, wildland fires, or difficult terrain with limited driving access. There are also several buildings situated immediately east of the airport boundary which could pose additional risks including chemical and biological (via the NM Consortium), high population density (Holiday Inn and their hosted concerts/meetings), high fuel loading (Los Alamos County Annex, Fuel Center, and Fleet Shop), and exotic fuel loading (via several machine shops, veterinary clinic, etc.). Immediately to the west of the airport is a neighborhood with approximately 75 single family dwellings situated in an area of roughly 21 acres.

As with any airport, there are certain hazards which are present just due to the aircraft themselves. These include extreme noise, high heat and high velocity debris (jet wash/prop wash), fast moving/spinning parts (propellers, jet fans, engine components, etc.), and varying levels of traffic (both passenger cars and aircraft).

Trails

An extensive trail network is used by bicyclists, runners, and pedestrians to access parts of the community and the surrounding mountain and canyon areas as well as for personal enjoyment and exercise. The canyons and mesas in and around Los Alamos are linked by a 58-mile network of trails. Hikers, runners, horseback riders, mountain bikers, and other trail users delight in the variety of trails from which to choose. The trails offer a quick escape from the hectic pace in the town, a route to commute to work, an easy stroll or a physical challenge, and a chance to observe wildlife or to soak in impressive views.



Picture 8 Trails / Trail Network

QUEMAZON NATURE TRAIL

Length: 1.8 miles roundtrip
Fitness Level: moderately easy
Trail surface: packed dirt, rock
Elevation Gain: 400 feet
Features: wildfire recovery, guide
Recommended for foot traffic only

A local favorite, the Quemazon Nature Trail is a 2-mile loop suitable for all hikers. The trail gains about 400 feet in elevation, but the grades are gentle. Trail guides keyed to the number posts along the trail are availible at the trailhead or on the trails page of the Los Alamos County web site.

From the trailhead, travel up hill on a wide dirt road, passing the Satch Cowan Trail. In a few mintues, pass to the left of a green gate at a water tank and turn left onto the nature trail. Follow the trail as it winds up the mesa. After marker 28, continue on the trail as it swings to the north. In a minute, reach the Quemazon Trail, turn right, and return to the trailhead.

CAVE OF THE WINDS

Length: 2.2 miles out and back
Fitness Level: moderate
Trail surface: packed dirt, rock
Elevation Gain: 450 feet
Features: cave
Recommended for foot traffic only

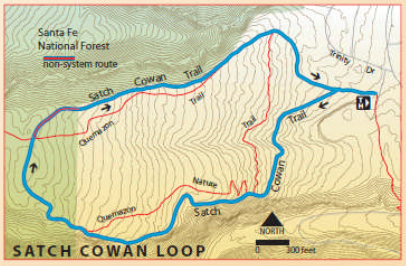
The Cave of the Winds is a small cave that has long been a favorite destination of the kids of Los Alamos. It is reached via the Quemazon Trail and a short spur. Take flashlight for the cave—it isn't very big, but it is dark in the back.

Begin at the Quemazon Trailhead near the intersection of 48th and Trinity. Walk up the wide road behind the information kiosk, passing the Satch Cowan Trail to the left. In a few minutes, pass to the left of a water tank and a green gate at the lower intersection with the Quemazon Nature Trail. Steadily climb on the well-worn road for about 0.8 mile. Where the trail finally levels for a bit, meet the upper section of the Quemazon Nature Trail. Continue across a long, flat stretch and watch for the rock cairns that mark the entrance to the Cave of the Winds Trail (this is just after the trail begins climbing again). Turn left and follow the winding trail to the edge of Los Alamos Canyon. The cave is 100 feet below the rim, down a staircase of rock in small notch in the cliff. Use caution, but it is a safe and relatively easy descent. You have to watch carefully for the entrance to the cave, which is a horizontal slit in the rocks.

SATCH COWAN LOOP

Length: 1.9 miles
Fitness Level: moderate
Trail surface: packed dirt, rock
Elevation Gain: 400 feet
Features: views along canyon edge
Recommended for foot traffic only

A bit steeper and more rugged than the nature trail, the Satch Cowan Trail hugs the north rim of Los Alamos Canyon to provide spectacular views. From the Quemazon Trailhead, travel about 200 feet up the wide dirt road behind the information kiosk and bear left onto the Satch Cowan Trail. In a few minutes come to another road. Turn left onto the road and in a few yards, turn right onto the marked trail. Meander uphill on a rocky slope and in 0.2 miles, join the Quemazon Nature Trail. Around the first turn to the right, the Satch Cowan Trail bears left and steeply ascends the mesa along the rim of Los Alamos Canyon. Enjoy grand vistas as the trail gains about 200 feet in elevation along the rim. About a mile from the start, rejoin the Nature Trail near marker 27. Bear left onto the Nature Trail as it swings to the north and crosses the main Quemazon Trail where a rock cairn marks an informal trail that leads to the Pueblo Canyon leg of the Satch Cowan Trail. Now heading downhill, enjoy sweeping views. The trail meets the main Quemazon Trail near a water tank. Turn left on the wide trail, pass the water tank, and follow the road back to the trailhead.



QUEMAZON/PIPELINE LOOP

Length: 7.8 miles
Fitness Level: difficult
Trail surface: packed dirt
Elevation Gain: 1,600 feet
Features: 360-degree views
Mountain Bike Skill Level: challenging

This long loop can be hot in summer, but makes a great early or late season journey. Head up the main Quemazon Trail as it ascends the mesa, gaining 1,500 feet over three miles. At Pipeline Road, turn right and follow its winding route that offers outstanding views of Los Alamos and its surroundings. After about 2.5 miles on the road, turn right onto the Perimeter Trail. The trail winds around several drainages as it traverses above Los Alamos. Near the rim of South Pueblo Canyon, the trail swings to the east, crosses a pipeline, and then wiggles downhill over rocky terrain. After a hairpin turn through a drainage, watch on the right for cairns that mark a steep trail that crosses the branch of Pueblo Canyon. On the other side, the trail ascends, turns to the right and passes between two houses on an easement. At the road, head straight on 49th Street. At the t-intersection with Trinity, turn left and in 300 feet, turn right onto the access road for the Quemazon Trailhead.

Highways and Other Access, Streets, and Roads

LAC includes the Los Alamos and White Rock communities located approximately 35 miles northwest of Santa Fe and Interstate Highway 25, the major north-south highway in New Mexico. Due to its location, LAC is viewed primarily as a destination, not a thoroughfare. Primary access to Los Alamos from Interstate 25 near Santa Fe is on US 84/285 and NM502 from the east. The lesser-traveled scenic route from Interstate 25 near Bernalillo is on NM550, NM4, and NM501 from the west. White Rock is accessed on NM4 from the east or west.

NM502 is the primary access to Los Alamos and also serves as the main route for approximately 9000 daily commuters during the work week. The NM502 corridor is approximately 4.2 miles as measured from the LAC line to Diamond Drive. In addition to serving commuters, this primary stretch of roadway also serves those who frequent the downtown area, residents who live in the area and visitors who are unfamiliar with the area. Surrounding roadways include Trinity Drive, Central Avenue, Diamond Drive, East Jemez Road, NM4, and NM502 east of the county line down the "Main Hill" road.

The NM502 corridor runs east to west from the LAC line and begins as a two lane highway with a speed limit of 50 miles per hour (mph) that drops to 40 mph near Airport Road and then drops to 35 mph near East Park. The speed limit for the remaining corridor is 35 mph all the way to Diamond Drive.

NM502 at the intersection of East Gate Drive is commonly known as East Road and is considered a major arterial that briefly widens to a three lane road until it reaches Airport Basin Road. At this location, it reduces back down to a two lane roadway. From East Gate Drive until Arroyo Lane, NM502 is the primary arterial that serves adjacent businesses, restaurants, residential neighborhoods, parks, churches, LAC and school shop facilities, the airport, a fire station, a swimming pool, and hotels.

At the intersection of Arroyo Lane, the local name of NM502 is Trinity Drive where it continues as an arterial running east and west through the downtown area. This stretch of road widens to a five lane road with stop controlled intersections, traffic signals, left turn bays, and four foot sidewalks on both sides of the roadway. This stretch of road is a critical link to the downtown area but is also used by commuters to enter and exit town in order to get to LANL. This area of road serves numerous retail business and other entities, including but not limited to offices, hotels, parks, banks, governmental sites, community functions, gas stations, restaurants, fraternal organizations, residential neighborhoods, and offices.

On NM502 just west of Oppenheimer, Trinity Drive's right of way narrows down to four lanes without any turn bays but maintains the four foot sidewalks on both sides. The road then intersects Diamond Drive - the largest volume intersection in LAC. This is a signalized intersection that is vitally important for the connection between the downtown area, residential neighborhoods, and LANL.

Central Avenue is a minor arterial that runs in the east-west direction adjacent to Trinity Drive. It is a two lane road with sidewalks on both sides of the roadway. The majority of the roadway has been streetscaped with landscaping and curb extensions for pedestrian crossings and parking areas. Central Avenue cuts through the heart of the downtown area where pedestrian, bicycling, and transit activities are found.

Diamond Drive is a major north and south arterial. The primary intersections are controlled with traffic signals, and the roadway is a five lane road with six foot wide sidewalks on both sides of the roadway. In the southbound direction, Diamond Drive crosses the Los Alamos Canyon Bridge.

This is the beginning of the DOE property and control. The first intersection on the south side of the bridge is known as Jemez Road. This is controlled by a new traffic signal that is the primary access to LANL. Because of the configuration of this signalized intersection, Diamond Drive turns into East Jemez Road that is locally known as the "Truck Route."

East Jemez Road becomes a two lane road that serves LAC's environmental services facility, a concrete plant, small mobile home park, and some LANL technical areas. After the mobile home park, the road takes on the characteristics of a minor arterial highway. This road winds downhill in a three lane stretch of roadway where two lanes head uphill in the westbound direction and one lane heads downhill in the eastbound direction. East Jemez Road returns to two lanes where it eventually intersects with NM4 at a signalized intersection that includes a right-turn slip lane towards the south to White Rock.

NM4 is a minor arterial highway that runs north and south through this stretch of LAC. It is a three lane road with no shoulders from the intersection of East Jemez Road, and continues until it merges with NM502 at a point that is locally known as the "Y". In this general area, there is a small parking lot used by people desiring to meet White Rock or Los Alamos residents in order to carpool.

NM502 from the intersection of NM4 to the LAC line is a narrow two lane road that has numerous horizontal and vertical curves as it climbs up the "Main Hill" where it exits Santa Fe County and enters LAC near the intersection of East Gate Drive.

Water Supply

Water is our most valuable resource. This is especially true when bearing in mind firefighting applications. When it comes down to it, water is the fire department's ammunition. Despite all the equipment, training, and efficiency of the firefighting personnel, an adequate water supply for firefighting plays the most important role in our ability to protect life and property from fire.

Alternative water supply resources include, large-diameter hose lays, long hose lays with a reduction in diameter of hose, hauled water using tenders, tender shuttle relays, hauled water using Mini-Tender, Tender shuttle to Mini-Tender, Tender shuttle relays to Mini Tender shuttle relays, hauled water using water-buffalos, 10,000 gallon storage tanks at LANL TA36 and water back packs. Alternative water resources that can be ordered helicopter buckets, aerial air tanker. Several of these resources mentioned have been used over the years for firefighting in Los Alamos County.

Overall, the water system serving Los Alamos, White Rock and LANL is a high quality system. It was a well-designed water main distribution system. The current procedure for enforcing water flow requirements for new structures has worked well. The procedure gave developers prior notification and assisted in developing plans to address flow requirements before issuance of permits.

Water maps available to the LAFD and provide adequate information accessible to department personnel. Maps are carried on command vehicles that responded to all alarms.

LAFD's first due response area is a geographical area proximate to fire stations and normally served by the personnel and apparatus from that facility in the event of a fire or other emergency and does not include daily or seasonal population surges is 109.5 square miles. 6% of Los Alamos County has a suburban population density; 76% is Rural; ad 18% wilderness. Of those square miles, 18% is protected by hydrants. 64% of the 109.5 square miles is either agricultural, wildland, open space or undeveloped properties. 21% of LAFD's primary response area is protected by hydrants and used for commercial and industrial purposes. 15% is residential and

protected by hydrants. There are 82 occupied structures that are three stories or greater which fall under commercial, industrial, residential, institutional facilities and have internal fire protection systems.

Table 7 Water Supply by Response District and Population Density

District	1-4	1-5	1-6	3-30E	30-1E	30-3E	4-1	5-1	5-30E	6-1	6-30E	Out of RD boundary
Square Miles	0.5	4.5	0.5	7.2	5	4	9	45	12	6	4	11
Population Density												
Suburban	X									X		
Rural		X	X	X	X		X	X	X			
Wilderness						X					X	X
Number of Hydrants	92	350	24	189	40	3	392	237	15	309	0	0
% that has Hydrants	75%	30%	90%	65%	15%	5%	40%	10%	5%	45%	0%	0%

	Sq. Miles	% by Population Density
Suburban	6.5	6%
Rural	83.2	76%
Wilderness	19.3	18%
Totals	109	**100%**

Hydranted areas by Population Density	**# Hydrants**	**Sq. Mi. hydranted**	**% hydranted**
Suburban Hydranted=	401	3.08	47%
Rural Hydranted=	1247	18.7	19%
Wilderness Hydranted=	3	0.2	1%
Total LAC Hyrdranted=	**1651**	**21.98**	**18%**

The current water supply system maintains sufficient volume and pressure for control and extinguishment of all fires within the department's response areas. The water supply system receives water from deep wells located in LAC. These wells produce all the water used for municipal and industrial purposes in the County and LANL and the distribution system is in compliance with LAC Utilities Design Standards, and 2003 NFPA 1, Appendix H & I are used for defining number and placement of hydrants at new construction sites.

Water flows through transmission lines (14 to 16 inch) to water storage tanks and then to distribution lines through commercial and residential areas (8"-12" mains). All hydrants are color coded per Los Alamos County Municipal Code (LACMC) designating minimum gallons per minute available.

The LAC and LANL Utilities departments maintain the systems in their respective areas as outlined in NFPA 25 Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems. All hydrants are tested by LAFD annually as outlined in the LAC/NNSA/DOE Cooperative Agreement and NFPA 25. Deficiency reports are then submitted to LAC and LANL respectively for repairs.

In addition to fixed water supply, LAFD has the capability to supply and/or supplement water to areas where there are no hydrants or when additional water is needed to augment existing hydrants. This is done through the use of Tenders and/or Mini-Tenders assigned to each station. In addition, station 6 has a CFR apparatus that while normally used for aircraft fires, can be used as a portable water supply resource. These apparatus are cross staffed with an adequate number of trained personnel assigned to each station. Finally, LANL has two "Water Buffalos" with 5000 gallons of water that can provide an additional resource for portable water supply. These water buffalos can be used to pre-treat areas being threatened by a wildland fire or they can be used to fill drop tanks. In addition, in the last year, the department acquired the

necessary adapters to directly fill LAFD apparatus from the water buffalos.

In the Fire Chief's Directive 400.11, the department provides procedures for addressing alternate water supplies for areas without fixed supply, insufficient water flow, or disruption of a public water system and provided personnel with methods to follow under these conditions.

The agencies responsible for maintaining the water system both for the community and the LANL will continue to maintain and upgrade these systems as future demands dictate.

Table 8 Response Area Characteristics

Response District	1-4	1-5	1-6	3-30E	30-1E	30-3E	4-1	5-1	5-30E	6-1	6-30E
General Area	Town-site	LANL	Town-site	WR	WR	WR	LA	LANL	LANL	Town-site	East Road
Square Miles	.5	4.5	.5	7.2	5	4	9	45	12	6	4
Population Density											
Suburban	X									X	
Rural		X	X	X	X		X	X	X	X	
Wilderness						X					X
Ownership											
Private	X	X	X	X			X			X	
DOE	X	X	X	X	X	X	X	X	X	X	
Los Alamos County	X	X	X	X	X		X			X	
US Forest Svc.							X	X	X	X	X
Federal/Tribal				X			X		X		X
Santa Fe County											X
Sandoval Co.				X							
Occupancy Type											
Schools	2	0	0	2	0	0	4	0	0	0	0
Churches	3	0	1	9	0	0	8	0	0	9	0
Apartments/Condo	1	0	2	2	0	0	5	0	0	11	0
Industrial	1		0	1	40	11	0	15	6	5	0
Single Family Res.	300	0	23	1500	0	0	2500	0	20	2000	0
Multi Family Res.	5	0	2	2	0	0	200	0	0		0
Mobile Homes	0	70	0		0	0	150	0	0		0
Commercial	7	1	4	35	0	0	7	1	1	47	1
Hospitals	0	1	1	0	0	0	0	0	0		0
Nursing Homes	0	0	0	0	0	0	0	0	0	4	0
Day Care Centers				0	0	0	2	0	0	2	0
Recreational	Ice Rink	Trails Ski Hill	Trails	Yes	0	Trails	Ball Fields	Trails	Yes	5	Trails
Special	Yes	0	Yes	Yes	1	Yes	Yes	Yes	Yes		
Water Supply											
Hydrants	92	350	24	189	40	3	392	237	15	309	0
Alt. Water Source Needed	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Accessibility											
Paved Streets	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Developed roads	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trails	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Not accessible by MVA	Ltd.	Ltd.	Ltd.	Ltd.	Ltd.	Ltd.	Ltd.	Ltd.	Ltd.	Ltd.	Ltd.
Hazard Considerations	Yes	Yes	Yes	TRT	Haz Mat	Wild-land	Can-yons	Yes	Yes	Yes	Yes

B. Services Provided

The LAFD is an Insurance Services Office (ISO) Class 1 Fire Department and currently operates a response fleet consisting of 13 structural suppression vehicles, 11 wildland/urban interface suppression vehicles, 3 rescue vehicles, 6 ambulances, 1 crash/fire/rescue vehicle and 1 mobile operations center vehicle to protect LANL and the community of Los Alamos. Authorized shift staffing is currently 130 combat fire personnel trained to within the NFPA standards for fire suppression, wildland firefighting, urban interface firefighting, technical rescue and hazardous materials/Weapons of Mass Destruction (WMD) and radiological emergency response.

The combat fire personnel respond out of five active fire stations strategically placed throughout the County with one additional station used primarily for training with a training tower, confined space simulator and various training props. Construction will soon begin on a state of the art fire training simulation facility and a new ventilation prop.

Since the County is geographically separated from other fire departments, the nearest being Santa Fe City which may be able to respond with an engine company with a response time of one hour or greater, the LAFD must provide for an aggressive fire attack using on-duty resources with limited call back capabilities. LAFD meets the deployment objectives for fire suppression emergency incidents by responding in accordance with procedures outlined in Los Alamos Fire Chief Directive (FCD) Division 900, Article 3, Response and Alarm Assignments. Our basic dispatching philosophy is to send "too many" units rather than "too few", balanced with the safety of the public and our personnel. The Battalion Chief or any responding officer will determine dispatching beyond a first alarm response. The FCD allows the department to respond the appropriate amount of apparatus, equipment, and personnel to each type of fire incident.

LAFD adopted the National Interagency Incident Command Management System (NIMS) in 1992. The guidelines and command structure are outlined in LAFD FCD Division 400, Article 15, Incident Command. LAFD also has policies in place for accountability, rapid intervention procedures, lost or trapped firefighters and radio procedures.

LAFD personnel use incident command at all incidents including drills and exercises. This incident command system is designed to expand from a simple incident command system to a more comprehensive command system. LAFD also utilizes NIMS Forms and/or LAFD Tactical Worksheets on complex incidents.

The LAFD Incident Commander is responsible for formulating the strategy, development and implementation of a single Incident Action Plan (IAP), and for the completion of certain tactical objectives. The tactical objectives, listed in order of priority, are as follows:

1. Remove endangered occupants and treat the injured.
2. Stabilize the incident and provide for life safety.
3. Protect the environment.
4. Conserve property.
5. Provide for the safety, accountability, and welfare of personnel. **This priority is ongoing throughout the incident**.

The Department has set a high priority on supplying all operational personnel with personal protective clothing (PPE) using current NFPA Standards of protection. All station wear, structural and wildland protective clothing, is specified, purchased and maintained within current OSHA and NFPA Standards.

All equipment on the Department's apparatus was designed and equipped within current OSHA and NFPA Standards. Each unit is equipped with Self-Contained Breathing Apparatus (SCBA's)

with multi-purpose respirator canisters and extra bottles, forcible entry tools, salvage/overhaul equipment, positive pressure ventilation fans, medical kits, high angle rope rescue kits, a generator with a portable light system, radiological monitors, and gas monitors. The 2 rescue units are equipped with state of the art extrication devices, SCBA bottle re-fill station, technical rescue equipment and tools. Truck 1, Engine 3 and all medic units also carry vehicle extrication technical equipment and tools.

Medic units are all equipped using current NFPA and 18 New Mexico Administrative Code (NMAC) 4.2 Standards.

All combat personnel are assigned a handheld radio and all response units are equipped with cellular phones and laptop computers with reference programs installed.

Service Delivery Programs

Fire Suppression

The department currently operates a response fleet consisting of 13 structural suppression vehicles, 11 wildland/urban interface suppression vehicles, 3 rescue vehicles, 6 ambulances, 1 crash/fire/rescue vehicle, 1 mobile operations center vehicle, 1 Hazmat truck, 6 utility trucks, and 3 all-terrain vehicles to protect the Los Alamos National Laboratory (LANL) and the community of Los Alamos.

The total authorized work force consists of 139 uniform staff and 11 civilian support staff. Minimum operational staffing is currently 37 combat fire personnel trained to meet/exceed the NFPA standards for fire suppression, wildland firefighting, wildland-urban interface firefighting.

The CA also calls out committed force requirements by stating that the County will notify the LANL Emergency Operations Center (EOC) when less than 21 on duty firefighters are available to immediately respond to LANL. Upon notification of dropping below the 21 firefighter threshold, LANL will begin compensatory measures to curtail operations and reduce risk across the laboratory.

Combat fire personnel and the response fleet respond from five active fire stations strategically placed throughout the county. One additional station provides facilities for classroom and practical training. The facility has a practical learning center with a training tower, new fire training simulation and ventilation structure, confined space simulator and various training props utilized for practical training evolutions.

For structural suppression, the LAFD's capabilities consist of front line pumpers with Class A and Class B foam with compressed air foam capabilities. The department also has tender vehicles and reserve apparatus. Reserve apparatus carry 900 gallons of water and front line units carry 600 gallons of water. Front line and reserve units carry 50 gallons of Class A foam and 50 gallons of Class B foam. Tenders carry 2200 gallons of water and 150 gallons of foam. The pumps are rated at 1250 gpm on tenders and reserve apparatus, and front line engines are rated at 1500 gpm. Truck 1 carries 300 gallons of water and 25 gallons of Class A foam. The pump is rated at 1500 gpm.

Truck 1 has a 105' ladder. Front line engines at Stations 1, 4, and 6 have a 50' aerial ladder. Engine 3 has a 75' boom. Reserve truck 10 has a 75' aerial ladder.

Tenders and reserves are all pump and roll capable. All front line apparatus carry ISO and NFPA required structural firefighting equipment.

Rescue

LAFD is well equipped to provide emergency rescue services and specialized equipment to incidents requiring technical rescue capability. LAFD currently has a Technical Rescue Team that consists of 48 personnel with 16 assigned to each shift. In addition to standardized departmental training, they receive an additional 80 hours of training in such disciplines as High Angle Rescue, Confined Space, Trench Rescue, Extrication, Elevator emergencies, and Building Collapse. The department currently has three medium duty rescue units and one trailer that carry technical rescue and extrication equipment, and three utility terrain vehicles (UTVs) and are ready to respond at all times.

All Operational personnel receive training in high/low angle rescue, confined space training, vehicle extrication, trench rescue, elevator emergencies, and structural collapse.

Due to the uniqueness of the surrounding terrain, LAFD responds to several high and low angle rescues each year to aid injured hikers and climbers. LAFD also has the ability to provide numerous confined space stand by teams for personnel making confined space entries at LANL. LAFD has adequate personnel and equipment to effectively perform both high angle and confined space rescue.

LAFD has supplies and materials available to begin initial shoring, incident command, and rescue operations at either a structural collapse or trench rescue. Due to the unique topography and makeup of the soil (tufa) in our jurisdiction, the possibility of either due to a natural occurring emergency is remote. LAFD still has a cache of shoring equipment and materials available and trains for the events.

LAFD has more than adequate equipment to respond to extrication rescues including vehicle, industrial, or heavy equipment.

The department has purchased a dynamometer device which is designed to measure force and assist in safe weight distribution determination in rope systems. The Arizona Vortex system, a device to create artificial high points to assist in safely transitioning cliff edges, has been part of LAFD's equipment cache since 2003 and has been used numerous times on high angle rescues and in training. A CMC Rescue multipurpose device (MPD), a progress capturing pulley system and lowering device has also been added to the rescue equipment cache. This device simplifies and increases safety when building ropes systems.

Medical

The Los Alamos Fire Departments resource deployment strategy is predicated on training as many personnel as possible in all phases of emergency medical care. This philosophy provides for a resource deployment strategy that maximizes flexibility and is cost effective.

LAFD provides emergency medical services (EMS) with Firefighter-Emergency Medical Technician (FF-EMT) certified responders. The FF-EMT's certification levels vary from EMT-Basic (EMT-B), EMT- Intermediate/Advanced (EMT-I/AEMT), or EMT-Paramedic (EMT-P). All response personnel also maintain a basic life support (BLS) to stay current on American Heart Association's (AHA) Cardio Pulmonary Resuscitation (CPR) standards.

Medical alarms coded as advanced life support (ALS) by the Emergency Medical Dispatcher (EMD) will receive a minimum of one paramedic. Higher acuity calls coded as "delta" or "echo" calls receive a second paramedic. All dispatched medical calls receive a response of 100% trained EMT medical response team.

Currently LAFD staffs 31 EMT-Bs, 58 EMT-I/AEMTs, 43 EMT-Ps. These trained medical personnel respond from five stations on six ALS equipped ambulances, six BLS equipped engines, one BLS truck, and one ALS rescue.

All units are equipped with equipment capable of 12-lead electrocardiogram, and defibrillation. LAFD's ambulances respond under protocols developed and approved by leading physicians in each field expertise to all calls for help within the county, providing initial care, transporting, and transferring care to appropriate facilities.

LAFD's EMS Division operates under two sets of guidelines the Fire Chiefs Directives (FCD) and the Medical Director's protocols. The protocols are reviewed by the Physicians' group holding the Medical Director's contract on a yearly basis. Once reviewed updates are sent to the EMS Division Chief and EMS Training Coordinator for review and concurrence. Once reviewed the Fire Chief signs off on the changes and the responders are trained in the updates. The FCD series 500 directives are easily accessible to personnel via the county intranet site.

The EMS training coordinator chairs an aggressive quality control program ensuring that 100% of all electronic patient care reports (ePCR) are reviewed for critical criteria. The ePCR program utilizes tough-book computers to enter their patient information into the system. This system meets the state and national reporting requirements for record management systems (RMS), as well as incorporating required Health Insurance Portability and Accountability Act (HIPAA) compliance. The EMS Training Coordinator, the Medical Director and the EMS Division Chief review all variances monthly. All records are secured and maintained for the life of the Cooperative Agreement plus seven years or as described by legal counsel.

The HIPAA compliance program begins with training as a cadet, personnel are taught that maintaining patient privacy and confidentiality is mandatory under local policy, state and federal law. All non-uniform employees handling confidential patient information are required to receive HIPAA training before handling this information.

In early 2013 the EMS Division contracted with an outside billing company to take over the role of billing for ambulance services provided. The ambulance billing had been done in the past by an internal biller however the position was vacated and revenues were declining rapidly. The fact that billing was not being done on a consistent basis resulted in the decision to outsource ambulance billing. After a long process of reviewing proposals a contract was awarded in February 2013 to AMB/MARS Inc. The initial set up for outsourcing with the billing company was tedious and took longer than the EMS Division had anticipated. Finally in August 2013 the revenue streams began to improve and LAFD saw an 95% increase in ambulance revenues over the prior fiscal year. Although the challenges continue in the billing process ambulance revenues now remain steady. LAFD will continue to outsource ambulance billing in an effort to maximize reimbursements for services provided. The cost of providing emergency medical services is high and will continue to rise as long as the costs of healthcare increase.

Hazardous Materials

The LAFD responds to all hazardous materials incidents at the hazardous materials operations level to stabilize the incident by performing rescue and working in a defensive mode to mitigate the emergency. The department has an undocumented understanding with NNSA for cooperation during emergencies, which allows the incident commander to request assistance from the Los Alamos National Laboratory (LANL) Hazmat Team and combine capabilities and personnel with the Los Alamos Fire Department's Hazardous Materials Response Team to mitigate hazards in an offensive mode at the technician level. During regular working hours, the LANL Hazmat team can respond if requested in less than one hour. After regular working hours, on weekends and holidays the LANL Hazmat team has the capability to be on scene within 2 hours.

The LAFD Hazmat Team currently consists of 53 members trained to the Technician level and one member trained to the Specialist level.

For the last several years, the LAFD Hazmat team participated in the LANL Hazmat Challenge. This challenge is designed to train on practical scenarios in a team environment with performance evaluations being conducted. In addition, six members of the Hazmat Team traveled to the 2014 IAFC Hazardous Materials Team Conference, the annual hazmat refresher (4 hours) was conducted for all LAFD personnel in compliance with the OSHA requirement, and other specialty training in accordance with OSHA standards (24 hours) is conducted annually to comply with the technician level requirements. LAFD conducted an IFSAC technician class and certified 15 members to the Technician level. In addition, LAFD partnered with LANL and the 64 WMD Civil Support team through the National Guard to participate in practical evolutions and skills evaluations.

The department recently adopted the IFSAC standard of training; having changed from the CSTI curriculum.

Recently, the department purchased a hazmat response vehicle, radiation detection and identification equipment, fuel transfer equipment, self-contained breathing apparatus specifically for the hazmat team and advanced communication equipment. Team members are in the process of ordering field testing equipment, monitoring equipment, sampling supplies, protective clothing ensembles, specialty supplies (digital imaging, heat sensing, light amplification, gloves and other specialized equipment), intervention supplies and decontamination supplies to meet the requirements of a FEMA Type 1 Hazardous Materials Response Team.

The LAFD responds to all hazardous materials incidents at the hazardous materials operations level to stabilize the incident by performing rescue and working in a defensive mode to mitigate the emergency. The department may request the LANL Hazmat team to respond in an offensive mode at the technician level to stabilize the incident.

The LAFD Hazmat Team consists of 49 members trained to the Technician level and one member trained to the Specialist level.

For the last several years, the LAFD Hazmat team participated in the LANL Hazmat Challenge. This challenge is designed to train on practical scenarios in a team environment with performance evaluations being conducted. In addition, six members of the Hazmat team traveled to the 2014 Hazmat conference, the annual Hazmat refresher (8 hours) was conducted for all LAFD personnel in compliance with the NFPA requirement, and other specialty training in accordance with OSHA standards (24 hours) is conducted annually to comply with the technician level requirements. LAFD conducted a technician class and one person became certified as a train-the-trainer. In addition, LAFD partnered with LANL and the 64 WMD Civil Support team through the National Guard to participate in practical evolutions and skills evaluations.

As LAFD's FEMA Type 1 Hazardous Materials Response Team is being constructed, the department has purchased a response vehicle, radiation detection and identification equipment, fuel transfer equipment, SCBA specifically for the hazmat team and advanced communication equipment in the past year. The remainder of the equipment to outfit the new vehicle and to meet the requirements of a FEMA Type one Hazardous Materials Response Team will be ordered in FY15.

Wildland

Sitting on the eastern flank of the Jemez Mountains, LAC has one of the largest wildland urban interfaces in New Mexico. The town site is located on the boundary of the Pajarito Plateau and the foothills of the Sierra de los Valles, which is the easternmost extension of the Jemez Mountain range. Neighborhoods are built on finger mesas that are separated by deep canyons carved into soft volcanic rock. This disjointed, linear arrangement of housing creates an unusually high proportion of homes located at the border or within the forest or woodland areas.

Historically, large wildfires in northern New Mexico occur in mid-to-late spring and are driven by prevailing spring winds out of the southwest. The most recent examples, are the Cerro Grande Fire and Las Conchas Fire which were wind-driven fires that moved steadily to the northeast, and at times creating their own winds, which makes it extremely difficult to contain. The wind factor is complicated by the concentration of dense forest areas to the south and west of Los Alamos. As a result, fires originating in the forests southwest of the town site and White Rock have the potential to be readily driven into the community.

Although Los Alamos and White Rock are laced with an extensive road and trail network, many locations within the county are inaccessible by vehicle or difficult to reach on foot. Due to steep terrain with limited escape routes, suppression of a wildfire ignition in many canyon areas can place firefighters at great risk.

The Los Alamos County Fire Department (LACFD) is tasked with performing fire prevention and to control activities in order to protect life and property from wildfire. The Department's goal is to minimize wildfire loss through the establishment of effective policies, planning, fire prevention, personnel, infrastructure, training, communications, operational systems, safety, and coordination. A fundamental concept of fire risk is associated with living in a wildland/interface community. The LACFD attempts to reduce the risk within the District by taking measures to prevent the outbreak of fires, limit the extent and severity of those fires that do start, provide for the removal or rescue of endangered persons, control and extinguish fires that occur within the County, as well as, to perform other emergency response operations and delivery of emergency medical services.

All combat firefighters are cross trained for wildland firefighting. After the Cerro Grande Fire, the entire LACFD firefighting fleet was replaced with urban-interface capable apparatus. All firefighting units have compressed air foam (CAF's). Some engines, all tenders and mini-tenders are AWD, have pump and roll capabilities with front turrets operated from within the cabs. The units carry a compliment of wildland hand tools for indirect attack.

Under the New Mexico Wildland Fire Management Joint Powers Master Agreement, and through the Interagency Wildland Management Team and the Santa Fe Zone (New Mexico Communications Hub for Wildland Firefighting), the LACFD works with other fire agencies to provide initial attack and structural protection on contiguous area surrounding Los Alamos County. LACFD FCD Division 900, Article 6, establishes the communication plan for working with outside agencies all within NIMS.

Aircraft Rescue Firefighting

The Los Alamos Fire Department (LAFD) currently responds to a small non-indexed municipal airport located within LAFD's response jurisdiction. The airport is owned by the County of Los Alamos. The airport services small privately owned aircraft and now has several scheduled commercial flights daily. The airport has one 6000 ft. lighted runway. There airport is home to 74 single engine small aircraft. An average of 36 take offs and landings occur during each 24 hour period.

The airport lies within the response boundaries of LAFD. While no equipment or personnel are located at the airport, Fire Station 6 is located within 1/2 mile of the airport and would be the first station to respond units to the airport in the event of an aviation emergency.

Communications

The emergency communications system consists of a Consolidated Dispatch Center (CDC) which is located at 2500 Trinity Drive, Suite D in Los Alamos. The CDC is responsible for taking all emergency calls for the police and fire departments. All emergency information is routed through the CDC where licensed and trained emergency dispatchers then distribute the information to shift personnel through the LAFD radio system. This is a 16 channel digital EDACS 410 MHz mid-range radio system maintained by Los Alamos National Laboratory (LANL) radio shops personnel. Once the emergency information is announced to the LAFD, incident

communications mirror the Incident Command System (ICS). Equipment currently assigned to all first-in units include mobiles, portables and base station radios on the LANL digital radio system with a 16-channel talk group and cellular telephones which are assigned to all staff officers. Call back for Firefighters is achieved by utilizing the LANL emergency call back system that will initiate a telephone call-back when activated by authorized personnel. The LANL call back system has a current personal cell phone number for most firefighters. Firefighters who cannot provide a personal cell phone number are issued government pagers and the pager number is also maintained in the LANL call back system.

The Incident Commander (IC) or Support Officer (SO) at the scene normally handle incident communications. Large scale or multiple incident scenarios are handled by the Tactical Operations Center (TOC), which is activated and operated according to current procedures.

Incidents that involve other agencies require the use of programmable portable radios which are currently setup to communicate with the United States Forest Service (USFS) and mutual aid fire and ambulance services. Additional communication systems include networked computers at all facilities along with normal business telephone and FAX capabilities. While overall communications is adequate, LAFD has identified some key areas needing improvement which have been noted throughout this document. A few of the critical areas include: radio coverage gaps, an inadequate backup dispatch center, and alarm processing times.

Emergency Operations Center (EOC)

The Cerro Grande Fire, May 2000, a prescribed burn by the National Park Service turned into a wildfire that threatened the Los Alamos National Laboratory (LANL) and destroyed 235 structures in and around Los Alamos, New Mexico.

In response to the fire, the University of California, on behalf of the United States Department of Energy (DOE), awarded a $16 million contract to provide complete architectural design, engineering and construction services for a new, state-of-the-art Command and Emergency Operations Center (EOC).

The facility would be jointly used by LANL and the County of Los Alamos - the first joint effort ever between a laboratory and a local government. The devastating fire taught LANL many lessons about emergency preparation, which would be directly applied to the design of the EOC.

The two-story, 38,000 square foot facility provides an operations area, interagency coordination room, executive policy isolation room, radio communications center, director and staff offices, training facilities and offices for all emergency agencies in the event of an emergency.

The EOC employs about 25 to 30 people day-to-day and about 120 during an emergency. The EOC provides enhanced and coordinated command and management capabilities. The facility is designed and constructed to strengthened survivability performance standards, which exceed current codes for essential facilities. It also provides the capability for longer-term operations under emergency conditions, offering full self-support capabilities, including stand-by power generation, reserve potable water supply, kitchen, bunkroom, shower and laundry facilities, and other requirements to independently sustain uninterrupted operations for 14 days.

The EOC provides the highest possible level of security, operational efficiency and cost-effective self-sufficiency, while offering users the comfort and support necessary in extended emergency conditions. Eight vehicle bays accommodate a variety of emergency response vehicles.

The facility incorporates a number of sustainable design features and received a Sustainable Design/Pollution Prevention Award from the Department of Energy.

(Source: http://www.theaustin.com/case-study/los-alamos-national-laboratory-emergency-operations-center)

Fire and Life Safety Management

Public Education

The Public Education/Community Outreach Program is designed to enhance community awareness and provide fire and EMS educational opportunities to the members of Los Alamos and neighboring communities. The department works with local businesses to offer necessary programs such as fire extinguisher training. Annually, the Public Education Team participates in the Los Alamos National Laboratory (LANL) Safety-Days event and distributes prevention materials to participants. The department participates in community events such as health fairs, the fire service safety-day event at the New Mexico State Fair, Firefighter Day at the New Mexico State Legislature, the LA Chamber of Commerce Safety event, and the County's Fourth of July celebration to promote seasonal prevention programs. Following the Cerro Grande Fire and Las Conchas Fires, a major campaign was launched to educate the citizens of the community regarding the need for creating defensible space. The newly created Wildland Urban Interface Division is focusing on fuel mitigation and educating the public about strategies for creating a firewise community. The department's EMS Coordinator has also facilitated some large participation events/exercises, such as Every 15 Minutes and the Heart Start Program. In addition, the department has Firefighter certified in the installation and inspection of car seats.

The Public Education program utilizes a Fire Safety trailer, Jumbo Firefighter, and Sparky mascot to assist in community outreach events, as well and maintains a cache of age specific materials, (i.e., crayons and coloring books for younger participants; wrist bands and school supply pouches for pre-teens and teenagers; and brochures, fridge magnets and other materials for adult groups to assist in the delivery of public education messages.

Fire Investigation

The LAFD Investigation Program is designed to produce a systematic process by which effective fire investigation of origin and cause can be accomplished. The department has a Fire Investigation Team responsible for cause and origin determination on structural, vehicle, and structure fires and procedures in place to achieve successful results.

A core group consisting of at least two firefighters per shift and the Fire Marshal make up the Fire Investigation Team. This allows redundancy to ensure that trained personnel are available to adequately investigate fires. All fires are investigated by the core group to identify the origin and cause of fires, explosions, and other emergencies. In addition, the LAFD and LAPD have initiated a process to work together in all fire investigations that are undetermined or suspicious in nature to ensure appropriate measures are taken to secure evidence; chain of custody issues are addressed, and the fire scene is adequately documented. All fire investigators are members of and have received advanced arson training through the International Association of Arson Investigators (New Mexico Chapter) and/or the NM State Fire Academy and have met the NFPA 1033 Professional Qualifications for Fire Investigator. Additionally, two personnel have received training from the National Fire Academy.

In cooperation with the LAPD, New Mexico State Police, New Mexico Police Crime Laboratory, State Fire Marshal's Office, and the Bureau of Alcohol, Tobacco and Firearms provide an effective Fire Investigation Program. All fires that are undetermined as to origin, suspicious, large dollar loss and explosions or fires resulting in a death are investigated thoroughly and promptly by the coordinating agencies.

Fire & Life Safety

The department's Fire & Life Safety Management Division is responsible for administering an adequate, effective, and efficient program directed toward fire prevention, life safety, hazard risk reduction, the detection, reporting, and control of fires and other emergencies, the provision of occupant safety and exiting.

The Pre Incident Plans program is designed to increase emergency response capabilities and performance and enhance firefighter safety when responding to pre-determined LANL and LAC facilities, the LAFD provides for the effective use of department resources to conduct PIP visits, obtain and maintain accurate information, organize PIP information in a format which is ready and easy to use during an emergency response, and address training needs based on PIP information and user feedback.

For code enforcement inspections, plans review and construction inspections, the State of New Mexico Public Regulation Commission (NMPRC) adopts a state wide fire prevention code with a provision that local communities can adopt more stringent codes. Currently NMPRC has adopted the 2003 International Fire Code with a list of amendments in the New Mexico Administrative Code (NMAC) 10.25.5 and Los Alamos has adopted the 2003 National Fire Protection Association (NFPA) 1: Fire Code including Annex H and I and 2003 NFPA 101: Life Safety Code through Los Alamos County Municipal Code (LACMC) 22-31.

The department has had conversations with the State Fire Marshal's Office and has learned that they are exploring adoption of the 2015 IFC with reference guidance from NFPA. The Fire Marshal has started to engage in conversations internally to discuss the advantages of adoption of the IFC and evaluate a path forward for the future. The plan is to pursue and adopt the same position the NM State Fire Marshal's Office has taken, which by state law, is a compatible code with the New Mexico Construction Industries Division, (currently the 2006 Fire Code); however, plans are for legislative action to adopt the 2015 IFC with reference guidance from NFPA a new and current set of codes as they apply to Los Alamos County.

Training Requirements

LAFD has many training requirements stemming from various regulatory agencies. The matrix below illustrates the initial and ongoing training requirements, and references the source detailing the type of training, with initial and on-going training requirements, as we have interpreted the standard.

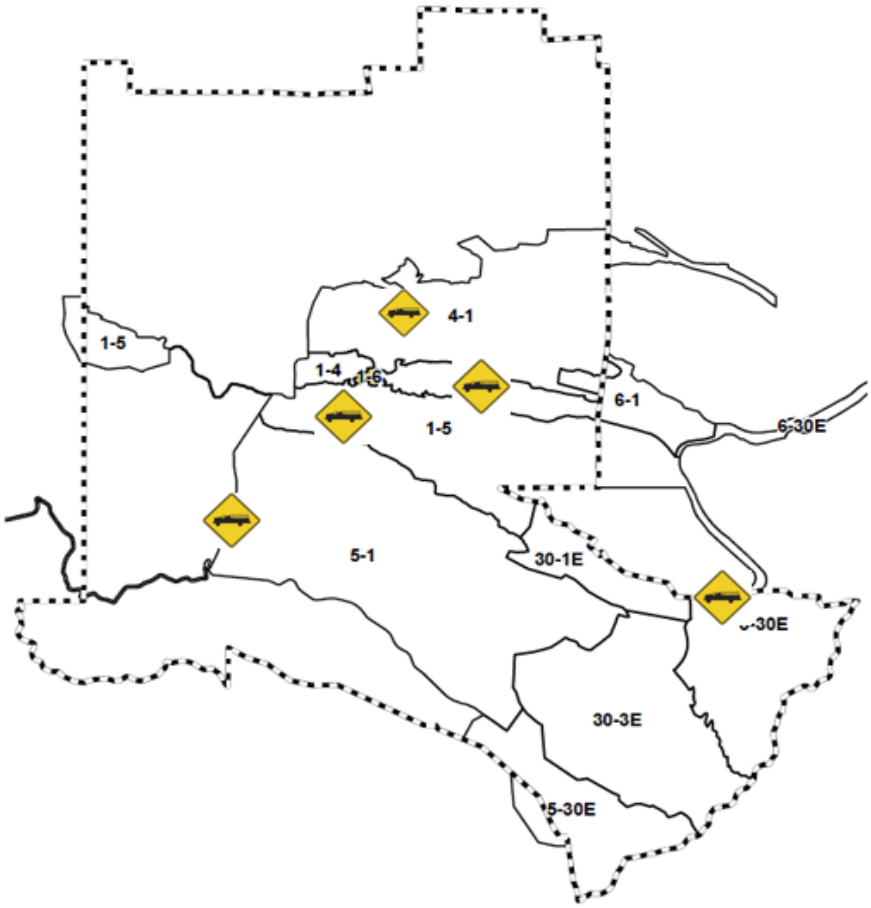
Table 9 Training Requirements Matrix

Training type or area of discipline	**Standard or Source referenced**	**Initial Hours Requirement**	**Annual or Additional Training Hours Requirement, or CE/Refresher Requirement**	**On-Going hours requirements** A=Annually B = Bi Annually Q = Quarterly M = Monthly
General Safety (hearing, traffic, etc.)	OSHA, NFPA, CFR,	16	4	A
Firefighter I & II	NFPA 1001, ISO, NIMS	1,000+	240	M
Driver Operator	NFPA 1002, ISO,	80	12	A
Fire Officer I/II	NFPA 1021, 1041, ISO, NIMS	80/80	12	A
Fire Officer III	NFPA 1021, ISO, NIMS	80+	12	A
EMT-B CE	NM DOH EMS Bureau	120	24 Refresher + 24 hrs additional	B
EMT-I CE	NM DOH EMS Bureau	120	30	B
EMT-P CE	NM DOH EMS Bureau, and National Registry	1000+	48	B
Wildland	NFPA 1051, NWCG PMS 310-1, NIMS	40	8	A
Physical Fitness Training	NFPA 1500	N/A	N/A	M
Technical Rescue Level 1 (high angle, confined space, trench, structural collapse, etc.)	NFPA 1006	40	8	A
Technical Rescue Level 2	NFPA 1006 & 1670, CFR, NMSFFA	80	32	A
Vehicle Extrication	NFPA 1006, NMSFFA	24	8	B
Driver training (EVOC/CEVO/DDC)	NFPA 1002, NM PRC, DOT, & OSHA	16	4	B
Respiratory Protection	NFPA 1001 & OSHA	8	8	A
Haz-Mat	NFPA 1001, 472, 473 & OSHA	40	3	B
Company Training	NFPA 1001	-	240	A
Pre Incident Plans	NFPA 1001; 1620	4	2	A
Fire Investigation Team	NFPA 1001; 921	40	8	A
Fire Inspections	NFPA 1001; 101	8	8	A
Fire Fighter Survival	NFPA 1001, 1670, 1006, 1983	24	4	A
Weapons of Mass Destruction (WMD)	NFPA 1001 & OSHA	8		B
LANL Security	LANL	2	2	A
LANL Site Specific Training	LANL	*	As needed, assigned or scheduled	*
Radiation Specific	10 CFR 835	24	8	A, B, Q
LANL Medical Screening	NFPA 1500, OSHA	N/A	N/A	A

Current Deployment

Points of Service Delivery

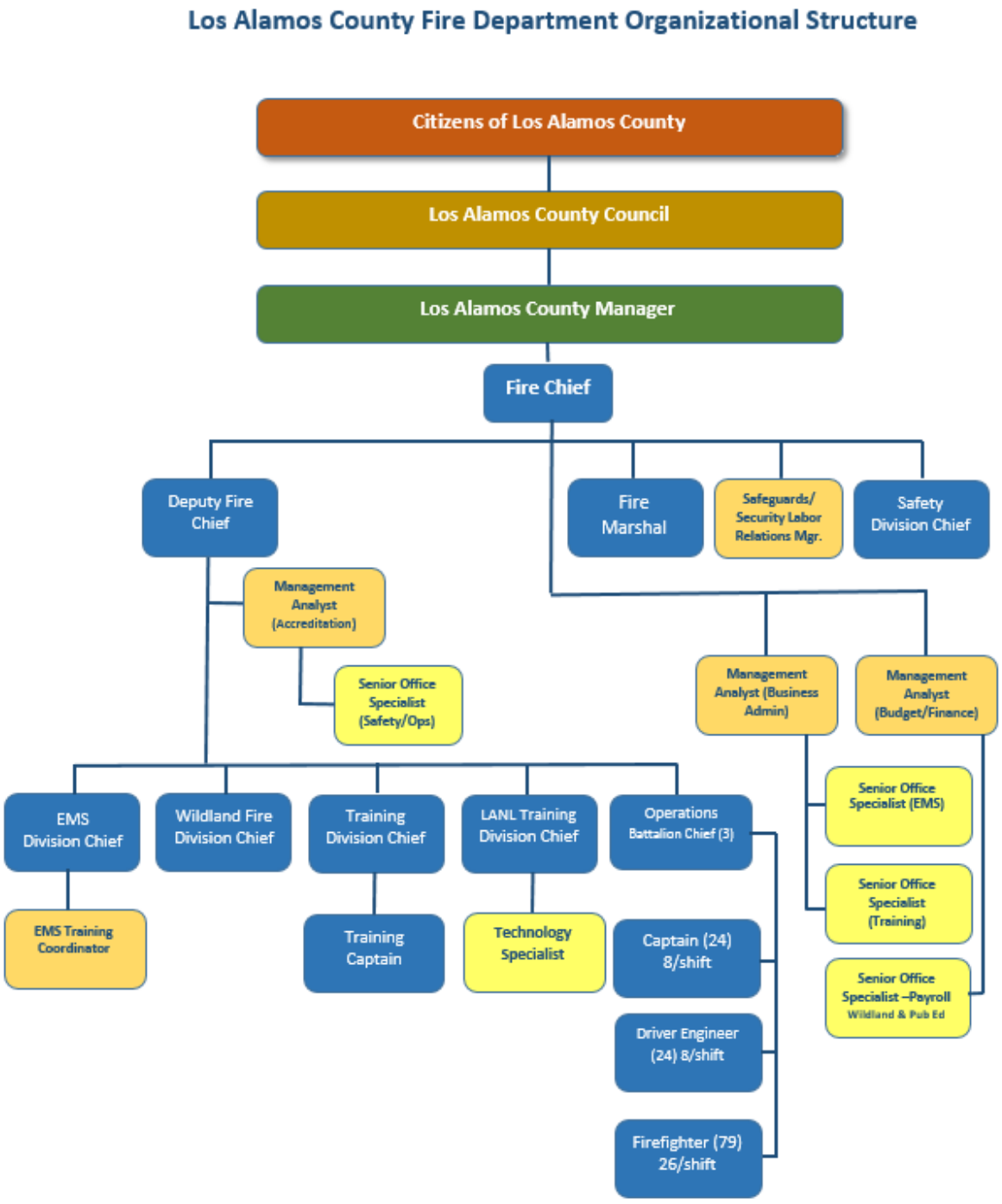
Figure 22 Points of Service Delivery



There are five active fire stations within LAC, and an Administrative headquarters located in a separate facility. An additional fire station (Station 2) is used for training, including training offices and housing of training apparatus and equipment. The fire stations include locations in the Town of Los Alamos, White Rock, and on the LANL site. These stations are situated to protect both federal and private lands totaling approximately 109.5 square miles. Most of the stations were constructed in the 1950-1960's with Station 6 completed in 1991 and Station 3 in 2008.

Resources

Figure 23 Organizational Structure



Available Equipment and Apparatus

Table 10 LAFD Fleet

ID	Description	Year	Capability	Min. Staff	Station	Staffing from
	FIRE STA. 1					
Battalion 1	Chevy Suburban	2013	Front Line	2	1	
Engine 1	E-One 50' Boom	2003	Front Line	3	1	
Engine 3	E-One 75' 1250Q	2002	Front Line	3	3	
Engine 30	E-One Class A Pumper	2003	Front Line	3	3	
Engine 4	E-One 50' Boom	2003	Front Line	3	4	
Engine 5	E-One Class A Pumper	2003	Front Line	3	5	
Engine 6	E-One 50' Boom	2003	Front Line	3	6	
Medic 1	4500 Dodge	2011	Front Line	2	1	
Medic 3	4500 Dodge	2011	Front Line	2	3	
Medic 30	4500AMB	2012	Front Line	2	3	
Medic 4	4500 Dodge	2011	Front Line	2	4	
Medic 5	4500 Dodge	2011	Front Line	2	5	
Medic 6	Dodge 4500 HD	2011	Front Line	2	6	
Rescue 1	E-One	2003	Front Line	2	1	
Truck 1	105' Smeal	2014	Front Line	3	1	
ATV1	Polaris Ranger ATV (6x6)	2013	Cross Staffed		2	Engine
ATV2	Polaris Ranger ATV	2014	Cross Staffed		2	Engine
CFR-6	E-One CFR	2003	Cross Staffed		6	E6
Hazmat 1	E-One	2014	Cross Staffed	2	3	Engine
Mini Tender 5	Ford 550 w/ Pneumax CAF	2003	Cross Staffed		5	E5
Mini Tender 6	Ford 550 w/ Pneumax CAF	2003	Cross Staffed		6	E6
Mini-Tender 1	Ford 550 w/ Pneumax CAF	2003	Cross Staffed		1	E1
Mini-Tender 3	Ford 550 w/ Pneumax CAF	2003	Cross Staffed		3	E3
Mini-Tender 4	Ford 550 w/ Pneumax CAF	2003	Cross Staffed		4	E4
Mobile Command	E-One MCU	2004	Cross Staffed		3	E30
Polaris	Polaris Ranger ATV	2010	Cross Staffed		3	Engine
Polaris	Polaris Ranger ATV	2012	Cross Staffed		3	Engine
Tender 3	E-One CAF	2002	Cross Staffed		3	E3
Tender 4	E-One CAF	2002	Cross Staffed		4	E4
Tender 5	E-One CAF	2002	Cross Staffed		5	E5

Tender 1	E-One CAF	2002	Cross Staffed		1	E1
Tender 6	E-One CAF	2003	Cross Staffed		6	E6
TRT 1	E-One	2003	Cross Staffed		1	E1
ID	**Description**	**Year**	**Capability**	**Min. Staff**	**Station**	
Battalion 10	Chevy Suburban	2002	Reserve		1	
Engine 10	E-One 50' Boom	2003	Reserve		1	
Engine 20	E-One Class A Pumper	2003	Reserve		2	
Engine 40	E-One Class A Pumper	2003	Reserve		4	
Engine 50	E-One 50' Boom	2003	Reserve		5	
Rescue-10	E-One Rescue	2003	Reserve		1	
Battalion 2 (LANL TCh)	Chevy Suburban	2002	Reserve		Adm	
Tender 2	E-One CAF	2003	Reserve		2	
TRK 10	E-30 75' Boom	2003	Reserve		1	
Prevention 10	Dually/LAC Unit #2112	2003	Special		3	
Prevention Trailer	Fifth Wheel Trailer	2008	Special		3	
Admin 1	Chevy Equinox	2013	Support		Adm	
Battalion 2 (LANL TCh)	2500 Dodge	2013	Support	1	Adm	
Chief 1 (Fire Chief)	2500 Chevy Suburban	2013	Support	1	Adm	
Chief 2 (DC-Admin)	2500 Dodge	2013	Support	1	Adm	
Chief 3 (DC- Ops)	2500 Dodge	2013	Support	1	Adm	
Chief 4 (FSLM DCh)	Chevy Tahoe	2013	Support	1	Adm	
Chief 5 (Safety DCh)	2500 Dodge	2013	Support	1	Adm	
Chief 6 (EMS DCh)	Chevy Tahoe	2012	Support	1	Adm	
Chief 7 (Trng DCh)	2500 Dodge	2013	Support	1	Adm	
EMS 1 (Trng Coord)	GMC Terrain	2013	Support	1	Adm	
Training 1	2500 Dodge	2013	Support	1	2	
Training 3	Excursion, County #2108	2002	Support	1	2	
Training Van	Chevy Passenger Van	2002	Support		2	
UT-1	Chevy PU	2002	Support		1	
UT-2	Chevy PU	2003	Support		2	
UT-3	Chevy PU	2002	Support		3	
UT-4	Chevy PU	2003	Support		4	
UT-5	2500 Dodge	2013	Support		5	
UT-6	Chevy P/U	2003	Support		6	
Apparatus/Vehicles shaded in blue are owned by Los Alamos County; all others owned or leased by DOE/NNSA						

Fire Administration

Table 11 Fire Administration Fleet Assignments

Unit ID	Assigned to	Make/Model	Year
Admin 1	Administrative Staff	Chevy Equinox	2013
Battalion 2	LANL Div. Chief	2500 Dodge	2013
Chief 1	Fire Chief	2500 Dodge	2013
Chief 2	Deputy Fire Chief	2500 Dodge	2013
Chief 3	Wildland Division Chief	2500 Dodge	2013
Chief 4	Fire Marshal	Chevy Tahoe	2013
Chief 5	Safety Division Chief	2500 Dodge	2013
Chief 6	EMS Division Chief	Chevy Tahoe	2013
Chief 7	Training Division Chief	2500 Dodge	2013
EMS 1	EMS Educator	GMC Terrain	2013

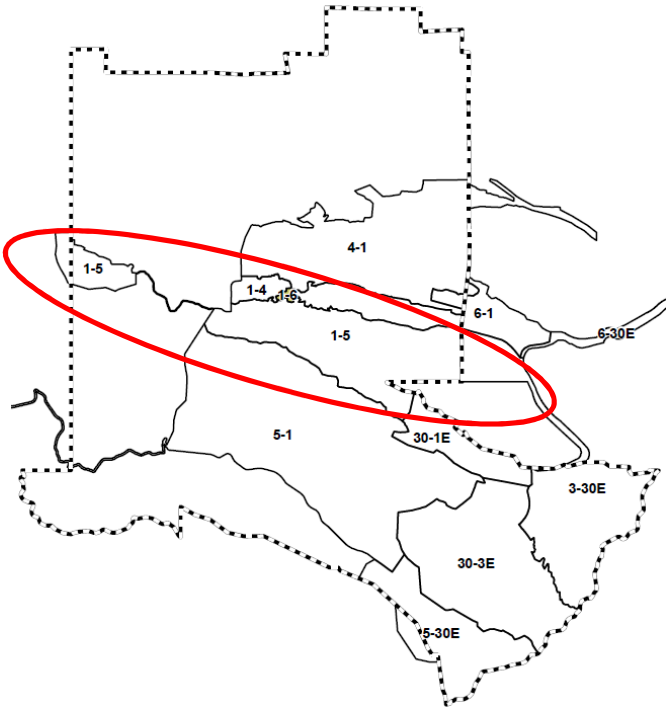
Picture 9 Fire Station 1 - West Jemez Road

Built in 1952, **Fire Station 1**, located on West Jemez Road houses some of the Department's most sophisticated response equipment. Station 1 has four bays, two of which are drive-through bays and one additional oversized drive through bay for the aerial truck. This station has sleeping, living, and work areas overhead and additional work and storage areas in the lower level east wing. Station 1 is owned by the DOE and located on DOE property. The minimum shift crew consists of 12 personnel. This station's first response is to most of the major sites at LANL and portions of the County. They also respond with special equipment from this station to all other districts in the county.

Station 1 has 12 personnel on duty. Staffing consists of one Battalion Chief, one Support Officer (SO) Captain, two Company Officers (CO), two Driver Engineers (DE), and six Firefighters (FF). One or more of these positions will be at the Paramedic level.

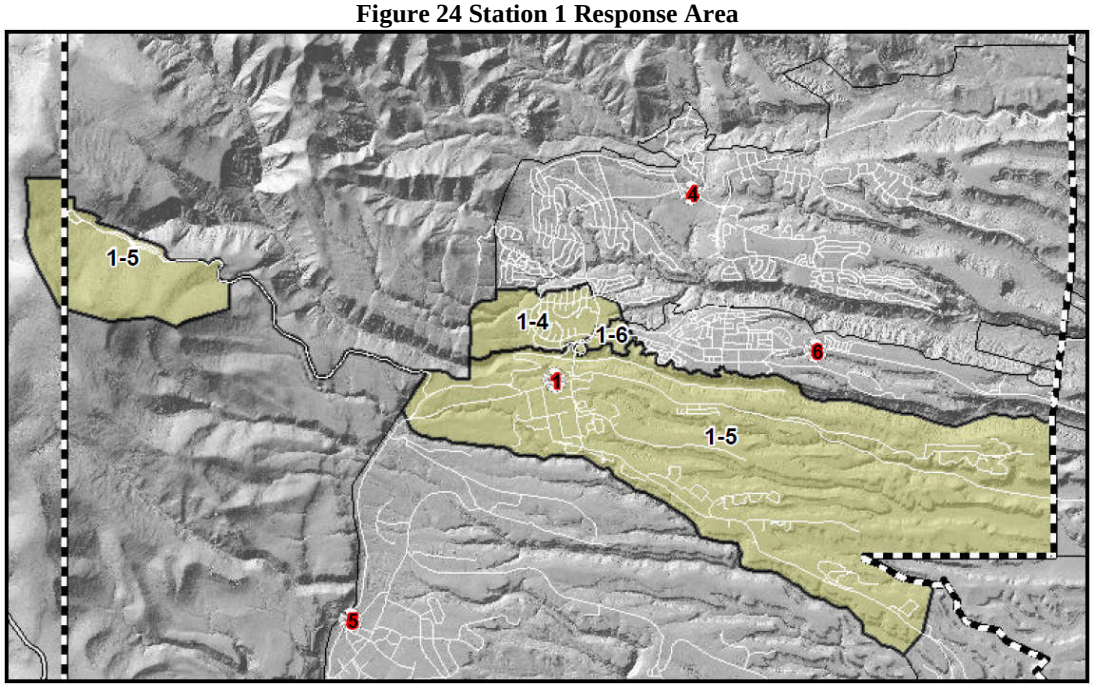
Table 12 Station 1 Units and Staffing

Unit ID	Staffing	Make/Model	Year	Vehicle Type	Pump/Capacity Capability	Tank Capacity
Battalion 1	2	Chevy Suburban	2013	Staff Vehicle		
Battalion 10	CS	Chevy Suburban	2002	Reserve Staff		
Engine 1	3	E-One 50'Boom	2003	Front line engine	Waterous single stage 1500 gpm @ 150 psi	600 gallons
Medic 1	2	4500 Dodge	2011	Ambulance		
MT 1	CS	Ford 550 w/Pneumax CAF	2003	Mini-Tender		
Rescue 1	2	E-One Rescue	2003	Front Line		
Rescue 10	CS	E-One Rescue	2003	Reserve		
Tender 1	CS	E-One CAF	2002	Front Line		
Truck 1	3	105' Smeal	2014	Front Line		
UT-1	CS	Chevy Pickup	2002	Utility Vehicle		



Picture 10 Truck 1 - 105' Smeal

Figure 24 Station 1 Response Area



Picture 11 Practical Learning Center and Training Tower

Fire Station 2, owned by the County was built in 1951 and is home to the LAFD Training Division. It is located on DP Road near the entrance from Trinity Drive, with access directly to DP Road. Converted from a response station in 1989, it is now used exclusively for ongoing training for our current staff as well as for new recruit academies. On the 1.25 acre property sits a 4-story concrete training tower and a 2-story station with 3 apparatus bays, living quarters, offices, and a training room. Also on the drill yard are a confined space rescue prop, ventilation props, a search and rescue facility, and a pump test pit. In 2011, LAFD completed construction of a Firefighter Practical Learning Center at which live fire burns and other practical training evolutions are conducted. The LAFD strives to achieve excellence through a well-qualified, confident and high performing work force.

Staffing consists of one Training Officer (Captain) who is able to backfill Monday through Friday in the event of a significant event that taxes resources.

Table 13 Station 2 Units and Staffing

Unit ID	Staffing	Make/Model	Year	Vehicle Type	Pump/Capacity Capability	Tank Capacity
Engine 20	CS	E-One Class A Pumper	2003	Reserve Engine	Waterous Single Stage 1250 gpm	900 gallons
Training 3		Ford Excursion	2002	Staff Vehicle		
Training Van		Chevy Passenger Van	2002	15-passenger van		
Training 1	1	2500 Dodge	2013	Staff Vehicle		
UT-2		Chevy Pickup	2003	Utility vehicle		
PR-1		Polaris Ranger 6 x 6	2013	UTV		
PR-2		Polaris Ranger	2013	UTV		

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Picture 12 Station 3 - 129 State Road 4, White Rock

The newest of the stations, **Fire Station 3** was built in its current location in White Rock in 2008. This state of the art station has received several national awards for its design and function ability. This station is equipped with 5 large drive-through bays, 24 private sleeping quarters, 12,000 square feet of living quarters, offices, work out area, and a 65 seat classroom. Staffed with 10 personnel, the first due response units include: 2 CAFS engines, 2 Medic Units, Compressed Air Foam Tender, Mini-Tender. This station also houses reserve units and response trailers along with the LAFD Mobile Command Unit (MOC). This station is owned by the County.

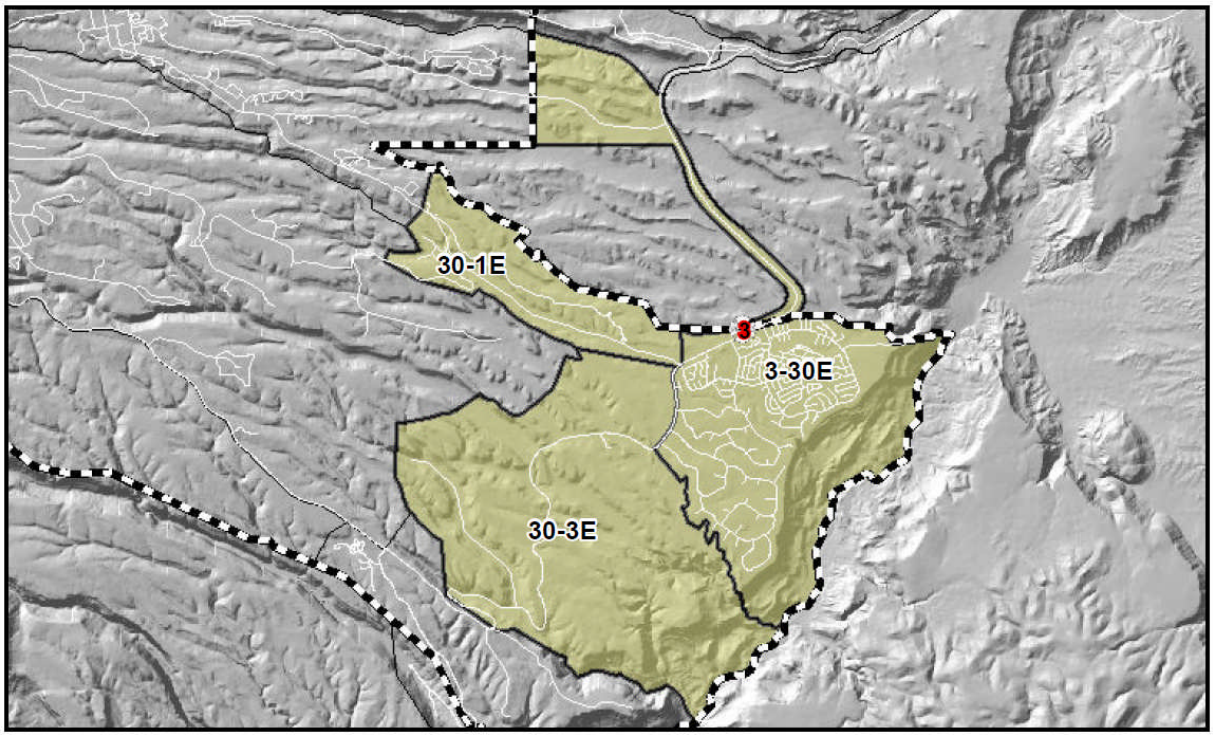
Station 3 is staffed with ten personnel. Staffing consists of two Company Officers, two Driver Engineers, and six Firefighters. One or more of these positions will be at the Paramedic level.

Table 14 Station 3 Units and Staffing

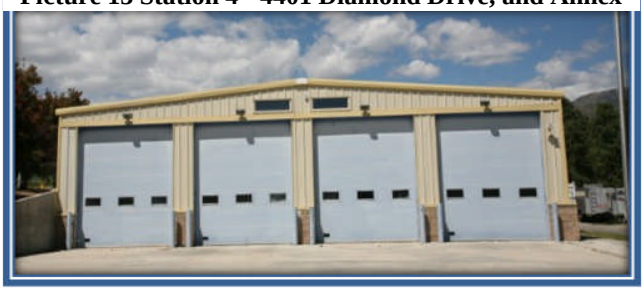
Unit ID	Staff	Make/Model	Year	Vehicle Type	Pump/Capacity Capability	Tank Capacity
Engine 3	3	E-One 75' 1250Q	2002	Front line engine	Waterous single stage 1500 gpm @ 150 psi	400 gallons
Engine 30	3	E-One Class A Pumper	2003	Front line engine	Waterous single stage 1250 gpm	900 gallons
Medic 3	2	4500 Dodge	2011	Ambulance		
Medic 30	2	4500 Dodge	2012	Ambulance		
MT-3	CS	Ford 550 w/Pneumax CAF	2003	Mini Tender		
MOC	0	E-One	2004	Mobile Command		
Tender 3	CS	E-One CAF	2002	Tender		
UT-3	CS	Chevy Pickup	2002	Utility Vehicle		
TRK 10	0	E-30 75' Boom	2003	Reserve	TRK 10	0
HazMat 1	CS	E-One Rescue Cyclone	2014	HazMat		

3

Figure 25 Station 3 Response Area



Picture 13 Station 4 - 4401 Diamond Drive, and Annex



Fire Station 4 was constructed in 1964 and is located in the County's northern community. Through LAC and the NM Fire Protection Distribution Funds, this station was upgraded in 2002, and a separate structure was constructed near the station to house additional apparatus operated by LAFD. Fire Station 4 contains five bays with sleeping and living areas on the north side and work and storage areas on south side. The Annex contains four additional bays and provides additional storage for reserve units. The basement of Station 4 is home to the storages cages for special programs such as uniform/clothing, EMS Supply, HazMat supplies, emergency operations equipment and supplies, etc. There are five personnel assigned to this station and units assigned to this station include: CAFS Engine, Medic Unit, Compressed Air Foam Tender, and a Compressed Air Foam Mini-Tender.

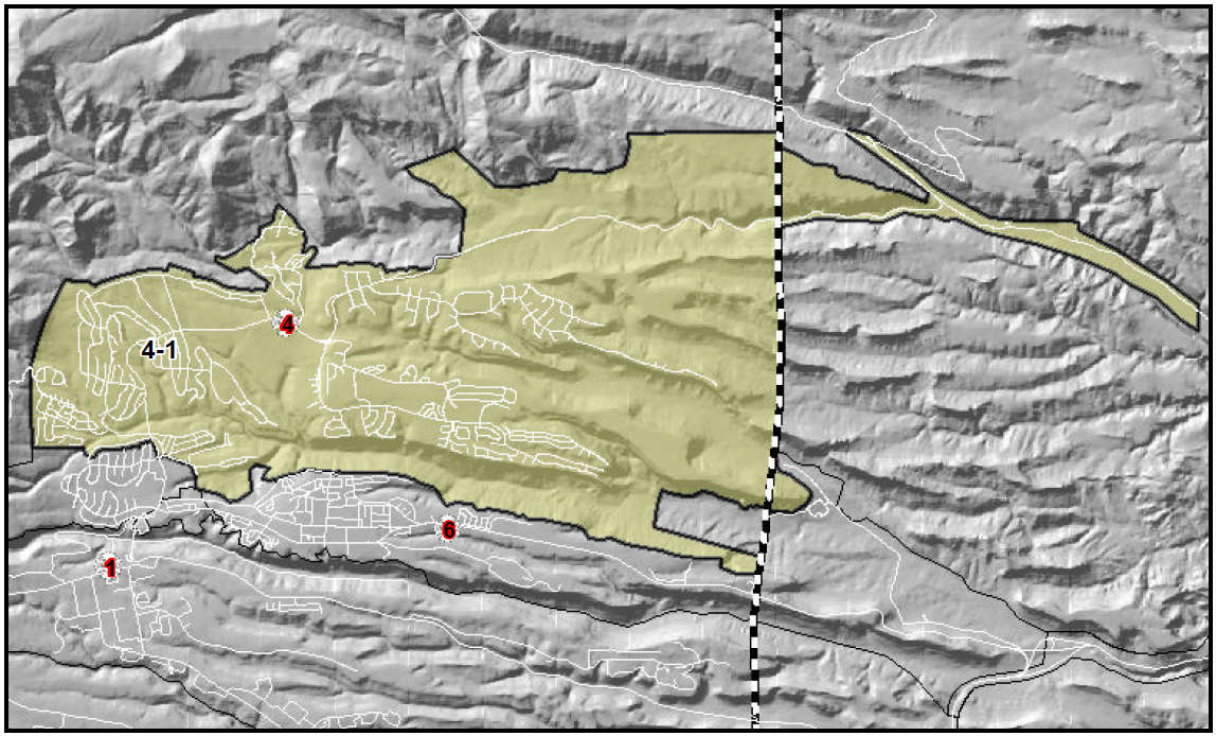
Station 4 is staffed with five personnel. Staffing consists of one Company Officer, one Driver Engineer, and three Firefighters.

Table 15 Station 4 Units and Staffing

Unit ID	Staff	Make/Model	Year	Vehicle Type	Pump/Capacity or Capability	Tank Capacity
Engine 4	3	E-One 50' Boom	2003	Front Line engine	Waterous single stage 1500 gpm @ 150 psi	600 gallons
Engine 40	0	E-One Class A Pumper	2003	Reserve engine	Waterous single stage 1250 gpm	900 gallons
Medic 4	2	4500 Dodge	2011	Ambulance	ALS equipped	
MT-4	CS	Ford 550 w/Pneumax CAF	2003	Mini-Tender		
Tender 4	CS	E-One CAF	2002			
UT 4	CS	Chevy Pickup	2003	Utility vehicle		
Engine 10	0	E-One 50' Boom	2003	Reserve engine	Waterous single stage 1250 gpm	900 gallons
Engine 60	0	E-One 50' Boom	2003	Reserve engine	Waterous single stage 1250 gpm	900 gallons
Tender 2	CS	E-One CAF	2003		Waterous single stage 1250 gpm	2200 gallons
PR-4		Polaris Ranger	2012	ATV		
Prevention 10		Dually	2003	Utility Vehicle		
Prevention Trailer		5th Wheel Trailer	2008	Prevention trailer		

4

Figure 26 Station 4 Response Area



Picture 14 Station 5 - State Road 501 - TA 16

Fire Station 5 was constructed in 1952 and is located on LANL property in Technical Area 16 near the intersection of State Highway 502 and State Road 4. The fire station has three bays (two drive-through) with direct access to LANL technical areas. This station has sleeping and living areas upstairs and work and storage areas in the lower level. Fire Station 5 is owned by the DOE and is located on DOE property. This station is staffed with 5 personnel and first due response units include: CAFS Engine, Medic Unit, Compressed Air Foam Tender, and Mini-Tender. This station main response is to LANL and handles the majority of experimental explosive detonations.

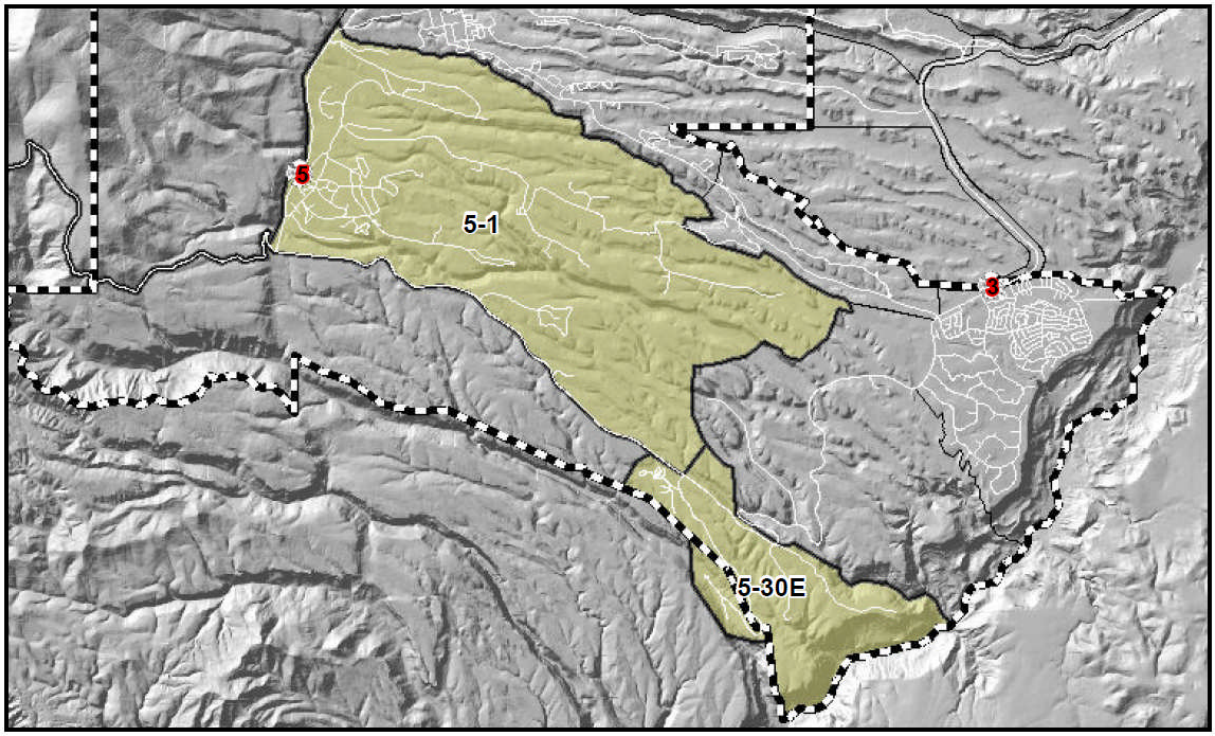
Station 5 is staffed with five personnel. Staffing consists of one Company Officer, one Driver Engineer, and three Firefighters. One or more of these positions will be at the Paramedic level.

Table 16 Station 5 Units and Staffing

Unit ID	Staff	Make/Model	Year	Vehicle Type	Pump/Capacity Capability	Tank Capacity
Engine 5	3	E-One 50' Boom	2003	Front line engine	Waterous single stage 1500 gpm @ 150 psi	600 gallons
Medic 5	2	4500 Dodge	2011	Ambulance	ALS Equipped	
MT-5	CS	Ford 550 w/Pneumax CAF	2003	Mini Tender		
Tender 5	CS	E-One CAF	2002	Tender	Waterous single stage 1250 gpm	2200 gallons
UT-5	CS	2500 Dodge	2013	Utility vehicle		

5

Figure 27 Station 5 Response Area



Picture 15 Station 6 - 457 East Road

Fire Station 6 was constructed in 1991and is located on State Highway 502 at the east side of the Los Alamos town site and west of the airport. Fire Station 6 has four drive-through bays with sleeping, living, work and storage areas located on the south side. This station houses five personnel and first due response units include: CAFS Engine, Medic Unit, Mini-Tender, and Crash Fire Rescue Unit (CFR) for response to the airport. A Tender is also housed at this station during wildland season. In addition to first in response to the airport, this station is also located directly across from a nursing home and assisted living facility. Fire Station 6 is owned by the County.

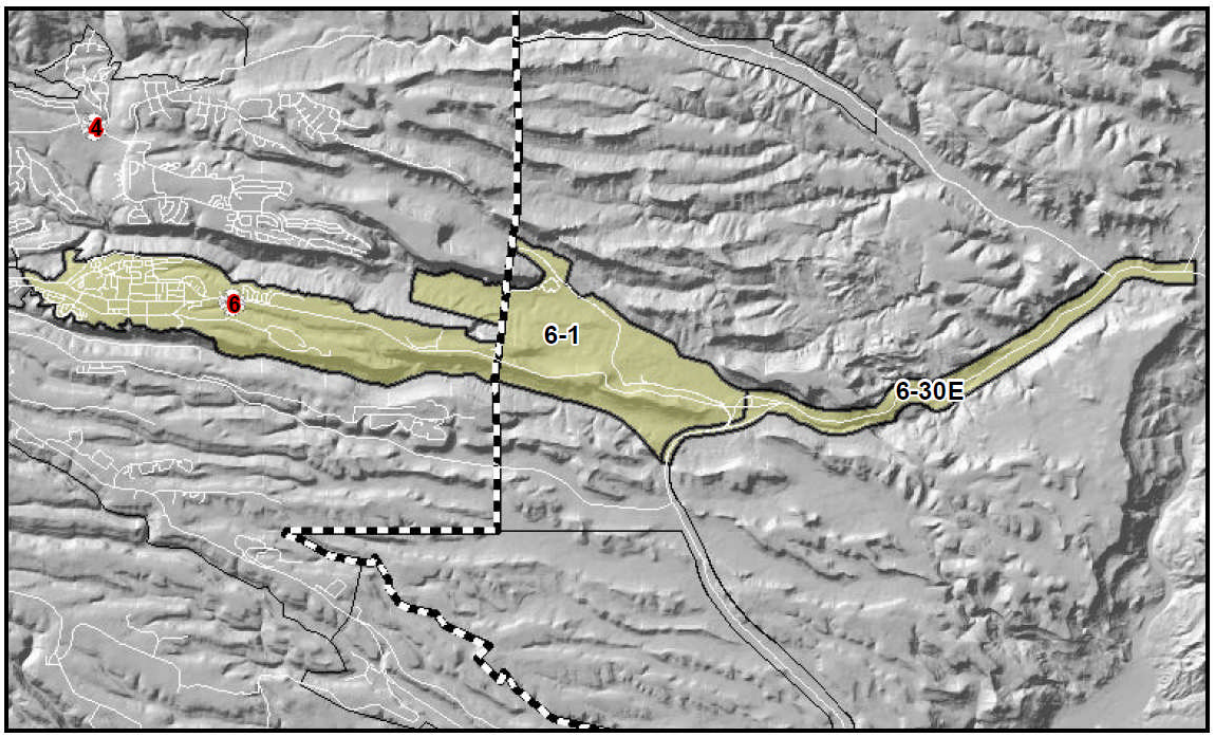
Station 6 is staffed with five personnel. Staffing consists of one Company Officer, one Driver Engineer and three Firefighters.

Table 17 Station 6 Units and Staffing

Unit ID	Staff	Make/Model	Year	Vehicle Type	Pump/Capacity Capability	Tank Capacity
CFR-6	CS	E-One Titan HP	2003	Crash Fire Rescue vehicle	Pump and roll, 2000 gpm	3000 gal
Engine 6	3	E-One 50' Boom	2003	Front line engine	Waterous single stage 1500 gpm @ 150 psi	600 gallons
Medic 6	2	Dodge 4500 HD	2011	Ambulance	ALS equipped	
MT-6	CS	Ford 550 w/Pneumax CAF	2013	Mini-tender		
Tender 6	CS	E-One CAF	2003	Tender	Waterous single stage 1250 gpm	2200 gallons
UT-6	CS	Chevy pickup	2003	Utility vehicle		

6

Figure 28 Station 6 Response Area



Los Alamos Fire Department Operations Staffing

In accordance with Fire Chief's Directive Division 400, Article 7, the minimum number of on-duty LAFD members required to begin a shift is 37, including a Battalion Chief (BC). There shall be one BC or acting BC on duty; a minimum of eight company officers (COs) on duty in regular or acting status; at least five COs shall be badged officers and one of the five will be a captain who will be the BC support officer (SO). If a captain moves up to an acting BC position, there will still be eight qualified COs in regular or acting status and five of those will be badged officers. One of those five will be a Captain serving as the SO. There shall be a minimum of eight qualified driver engineers (DEs) on duty in regular or acting status. At least four of those DEs will be badged officers. One of the four regular DEs will be on duty at Station 1.

There will be a minimum of six paramedics (fully certified and not in mentoring status) on duty at all times. Paramedics are assigned as follows: Station 1 – two paramedics; Station 3 – one paramedic; Station 4 – one paramedic; Station 5 – one paramedic; Station 6 – one paramedic. In the event there is an extra paramedic(s) on duty, that paramedic will be deployed at BC discretion.

There will be a minimum of seven (7) HazMat Technicians on duty at all times located at stations 1, 3 or 5. There shall be an initial response force of twelve (12) firefighters (FFs) as a major nuclear and high hazard/risk facility response force, including two (2) paramedics. This minimum initial response force shall be on LANL property or housed in Station 1, 3 or 5 at all times during typical LANL work hours.

In accordance with the Cooperative Agreement, the LAFD will notify the LANL Emergency Operations Center (EOC) when less than 21 on-duty firefighters are available to immediately respond to LANL.

Personnel will be held on overtime or called back to maintain minimum staffing levels. The duty BC has the authority to alter minimum staffing to meet the needs of the department. Personnel held on overtime for other special projects shall not impact operational staffing. The duty BC takes these staffing requirements into consideration when approving annual leave, compensatory time, shift trades, and standbys.

Table 18 On Duty Staffing by Station and Unit

Number of Personnel on Duty											
Note: 1. All Company Officers must be aware of stations that are vacant due to activity or training. 2. Crew integrity and response capability must not be compromised.											
Shift Total:	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**
Station 1:											
Engine 1	3	3	3	3	3	3	4	4	4	4	4
Truck 1	3	4	4	4	4	4	4	4	4	5	5
Rescue 1	2	2	2	2	2	2	2	2	2	2	3
Medic 1	2	2	2	2	2	2	2	2	2	2	2
BC-1	2	2	2	2	2	2	2	2	2	2	2
TOTAL:	**12**	**13**	**13**	**13**	**13**	**13**	**14**	**14**	**14**	**15**	**16**
Station 3:											
Engine 3	3	3	3	3	3	3	3	4	4	4	4
Engine 30	3	3	4	4	4	4	4	4	5	5	5
Medic 3	2	2	2	2	2	2	2	2	2	2	2
Medic 30	2	2	2	2	2	2	2	2	2	2	2
TOTAL:	**10**	**10**	**11**	**11**	**11**	**11**	**11**	**12**	**13**	**13**	**13**
Station 4:											
Engine 4	3	3	3	3	3	4	4	4	4	4	4
Medic 4	2	2	2	2	2	2	2	2	2	2	2
TOTAL:	**5**	**5**	**5**	**5**	**5**	**6**	**6**	**6**	**6**	**6**	**6**
Station 5:											
Engine 5	3	3	3	4	4	4	4	4	4	4	4
Medic 5	2	2	2	2	2	2	2	2	2	2	2
TOTAL:	**5**	**5**	**5**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**
Station 6:											
Engine 6	3	3	3	4	4	4	4	4	4	4	4
Medic 6	2	2	2	2	2	2	2	2	2	2	2
TOTAL:	**5**	**5**	**5**	**5**	**6**	**6**	**6**	**6**	**6**	**6**	**6**

Fleet

Following the 2000 Cerro Grande Fire, the majority of LAFD apparatus was replaced and updated to current standards through a major Capital Funding project supported by Cerro Grande Fire federal recovery funds. Each apparatus is a result of post fire assessment recommendations and was placed in service during FY 2003, with some apparatus in receipt and acceptance in 2007. Apparatus that was purchased through the DOE or General Services Administration (GSA) is provided for use by LAFD and are maintained through LANL service programs and subcontracts in accordance with the Vehicle Replacement Plan required by the CA.

In 2011, the department received four ambulances; eleven staff vehicles in 2012 and 2013; and a new Truck in 2014.

In December 2014, the department took receipt of a Hazardous Materials vehicle. An additional 105' Smeal ladder truck is being built with the expected delivery in the spring of 2015.

Apparatus Capability

Table 19 Engines 1, 4, 5, 6 - 50' Aerial

Pump	Waterous single stage
Pump capacity	1500gpm @ 150psi
Water tank capacity	600 gallons
Foam tank capacity	50 gallons Class A / 50 gallons Class B
Vertical reach	50’
Horizontal reach	42’
Waterway gpm	1000 gpm
Generator	6.0 KW hydraulic generator
Hose lengths	Crosslay - 200’ of 1 ¾” and 150’ of 2 ½”
Hosebed	150’ of 2 ½” attack line, 500’ of 2 ½” supply line and 1000’ of 5”
Bumper	100’ of 1 ¾”

Table 20 Engine 3 - 75' Aerial

Pump	Waterous single stage
Pump capacity	Class A tank – 50 gallons; Class B tank – 50 gallons
Water tank capacity	400 gallons
Foam tank capacity	50 gallons Class A / 50 gallons Class B
Vertical reach	75’
Waterway gpm	1000 gpm
Generator	6.0 KW hydraulic generator
Hose lengths	Crosslay - 200’ of 1 ¾” and 150’ of 2 ½”
Hosebed	150’ of 2 ½” attack line, 500’ of 2 ½” supply line and 1000’ of 5”
Front Bumper	100’ of 1 ¾”

Table 21 Engine 10, 20, 30, 40, 60

Pump	Waterous single stage
Pump capacity	1250 gallons per minute
Water tank capacity	900 gallons
Bumper Turret	250 to 500 gpm Firefox
Master Stream	Deck Gun – 1250 gpm Deckmaster
Generator	AMPS 6KW-20KW Hydraulic generator

Table 22 Rescue 1 & 10

Rescue Unit	E-One, 2003
Generator	20 KW
Purple K system	500 pound
Cascade System	6-bottle (air bottle fill unit)
Light tower	Four 1500 watt lights
Extrication equipment	Holmatro
Rope Rescue equipment	Stokes litter
Medical equipment	ALS
Winch	15,000 pound capacity
Tools/Equipment	Two high lift jacks, cribbing, chainsaws, K-saw, chains, tool box, air chisel and other miscellaneous hand tools

Table 23 Truck 10 - 1997 E-One 75' Aerial

Pump	Waterous single stage
Pump capacity	1250 gallons per minute
Water tank capacity	400 gallons; 1000 gpm deluge on aerial
Hose Loads	400' of 1 ¾"; 400' of 2 ½"; 1000' of 5"
Tools/Equipment	PPV fan, K saw, chainsaw and other miscellaneous hand tools and assorted equipment

Table 24 CFR-6 - 2003 E-One Titan HP ARFF Crash Fire Rescue Unit - Pump and Roll

Pump capacity	2000 gallons per minute
Water Tank capacity	3000 gallons
Class B Foam (3-6%)	400 gallons
Hose Loads	400' of 1 ¾" pre-connected hand lines (2 x 200) 300' of hard hose reels (2 x 150')
Purple K	700 pound dry chemical system
Roof turret	1200 gpm with water, foam and purple K discharge capability
Bumper turret	300 gpm w/water and foam discharge capability
Tools/Equipment	External quartz lighting, infrared thermal imaging camera

Table 25 Tender 1, 2, 3, 4, 5, 6

Pump	Waterous single stage
Pump capacity	1250gpm
Water tank capacity	2200 gallons
Foam tank capacity	Class A- 75 gallons; Class B-75 gallons
Crosslays	200' of 1 ¾" x 2
Hosebed	1000' of 5" supply line; 500' of 2 ½" supply/attack line; 1500' of 1" attack line
Bumper Turret	250 to 500 gpm Firefox
Master Stream deckgun	1250 gpm Deckmaster
Generator	AMPS 6KW-20KW hydraulic generator

Table 26 Truck 1 - 105' Aerial

Pump	Waterous
Pump capacity	1500 gpm
Water tank capacity	300 gallons
Hose Loads	Two 200' triple loads of 1 ¾"; one 200' triple load of 2.5"; 300' of 2.5" supply line; 300' of 5" supply line; 1 stinger/high rise pack
Ladders & Pike Poles	36' extension ladder; 24 extension ladder; 14' combination ladder; 16' roof ladder; 10' folding attic ladder; 8 pike polies (two of each 3', 6', 8', 12'); two dry wall hooks
Special Equipment	T4 Max Thermal Imager, Holmatro power unit, Combi cutter/spreader tool, hydraulic ram, attic piercing nozzle, 2 ½# sodium bicarb extinguisher, bucket of graphite, dam and dike bucket, rapid intervention pack, cribbing and wedging pieces, K saw, ventilation chain saw, five high pressure airbags and system kit, one bottle jack, air shoring equipment.

Los Alamos Fire Department Operations and Response

Emergency Response Staffing

All BLS engine companies are staffed with three personnel: company officer, driver engineer, and a firefighter.

Deployment strategies in regards to Emergency Medical Services are based upon the consolidated dispatch center's (CDC) determination of severity of call. The CDC uses Pro QA to identify a response code within the Clausen code system. The Clausen codes are broken down into: alpha, bravo, Charlie, delta, echo, and omega. All medical calls receive an engine, and medic with the exception of a non-emergent omega call, because it is coded as an assist. Alpha and bravo responses do not require a paramedic, however receive one a majority of the time. Charlie calls receive a minimum of one paramedic, delta and echo calls usually receive two paramedics, and any variance is based on the first arriving unit's interpretation of the critical tasks.

Engines carry BLS equipment, the responders staffing the engine may be of any service level. All ambulances are ALS equipped while the level of the responders staffing the unit vary.

All rescue companies are staffed with two firefighters, either: driver engineer, firefighter and/or a paramedic and have ALS capability.

All tenders and mini tenders (when deployed) are staffed with two firefighters, either driver engineer, firefighter and/or a paramedic. MTs are equipped to staff up to 4 people, if necessary.

All truck companies are staffed with three personnel: company officer, driver engineer and a firefighter.

Notifications and Actions identified in Fire Chief's Directive 900.3

Working First Alarm Notifications and Actions

- ✓ Page all Chief Officers
- ✓ All-call page for off duty fire personnel
- ✓ A Chief Officer is assigned to Station 1 to assist with resource needs
- ✓ Consider the establishment of a Tactical Operations Center (Fire Tac) Staff reserve apparatus as soon as possible
- ✓ Call for TRT, CAF, or other specialized equipment as needed
- ✓ Consider request for mutual aid and other support resources
- ✓ Move up available LAFD Resources

Second Alarm Notifications and Actions

- ✓ Move up available LAFD Resources
- ✓ Actively call back personnel.
- ✓ Establish a Tactical Operations Center (Fire Tac)
- ✓ Assign Chief Officers to support positions needed
- ✓ Request for assistance

Special Calls Notifications and Actions

- ✓ Page all Chief Officers
- ✓ Utilize Administrative support staff at the Fire Tac

- ✓ ARFF Emergencies: B1, CFR6, E6, E1, CAFT1, R1, M1, M4 (If Station 6 is on relocation or not available, another company will need to pick up and respond with CFR6)
- ✓ BOMB THREAT: Appropriate engine, Medic, B1, Rescue 1, and other units as assigned
- ✓ TECHNICAL RESCUE: B1, In district Engine, Rescue, Medic, TRT
- ✓ HAZMAT

Units

Automatic response for a commercial or residential structural fire shall include the following: **NOTE:** See Response Schedule for district and unit information:

- ✓ 1 Battalion Chief
- ✓ 1 Engine (emergency traffic)
- ✓ 1 Engine (normal traffic, CO may upgrade to emergency traffic based on information.)
- ✓ 1 Ladder Truck
- ✓ 1 Rescue
- ✓ 1 Medic (emergency traffic)
- ✓ 1 Medic (normal traffic)

First Alarms

Response of apparatus within assigned districts: (See Response Schedule for additional information.)

- ✓ Add CAF Unit, TRT, or other specialized equipment to first alarm assignment as circumstances warrant.
- ✓ Notify Chief Officers (via all chiefs page by LA Fire) for all unusual emergencies or any time smoke or fire is showing.
- ✓ At least 1 Chief Officer should be assigned to Station 1 to assist with planning and logistical needs.
- ✓ Units not assigned to the first alarm shall relocate to Fire Station 1 in order to centralize available resources and assist with resource needs.
- ✓ The Incident Commander shall establish an Initial Rapid Intervention Crew (IRIC) team using personnel from first alarm companies, and follow up with the assignment of personnel to the Tactical Deployment Group (TDG) as soon as available resources allow (Refer to FCD 400.20.).

Second Alarms

- ✓ A second alarm will provide two additional engines and other equipment/apparatus as needed (*i.e. CAF Tanker for exposure protection or Class B capabilities)*.
- ✓ Consider activation of call back systems - *Pagers and Community Alert Network (CAN).*
- ✓ Establish a Fire Tactical Operations Center (Fire Tac) or for radio purposes, "Fire Tac" at Fire Station 1 or the LANL EOC. Utilize Chief Officers and off duty personnel as needed to support the ongoing incident or to staff reserve units to respond to other incidents.
- ✓ All LAFD units not on emergency activity will initiate appropriate move up/relocations or return to their assigned fire stations.
- ✓ The Incident Commander and responding Officers may consider Level I and Level II staging areas as circumstances warrant.

- ✓ Consider request for assistance – *Air transport, Santa Fe City Fire, Santa Fe County Fire, Espanola Valley Emergency Medical Services (Espanola Ambulance).*

Response/Move-Up (Relocations)
It is the responsibility of all Company Officers to automatically respond/move-up for coverage when an emergency or non-emergency incident has been reported, or an extended operation for medical/rescue call, or when requested by a Chief Officer.

Committed Resources
It is the responsibility of the Battalion Chief to notify LANL Emergency Operations Center when more than 50% of the County's fire department resources are committed to response activities.

Special Request/Response
A Special Request/Response is any response other than structural, which may include:

1. Aircraft Emergency
2. Bomb Threat
3. High Angle Rescue
4. Hazardous Materials
5. Wild land Fire
6. Multi-Casualty Incidents

The duty Operations Battalion Chief has the ability to authorize responses outside the fire service area, based on the following:

1. Responses within the Los Alamos County fire service area will **always** have priority.
2. Nature of emergency.
3. Availability of fire personnel and equipment.

Note: LA Fire will notify the appropriate authority having jurisdiction *(i.e. fire/rescue, medical, or law enforcement)*. Responding Chief or Company Officer shall confirm with LA Fire that the appropriate jurisdiction has been notified and attain information regarding their ability to respond. If appropriate responders from the authority having jurisdiction are on scene, LAFD personnel and equipment will support the operation as circumstances warrant and return to service as soon as reasonably possible.

If no equipment is available, the on-duty Battalion Chief will instruct LA Fire to contact the appropriate jurisdictional authority.

Figure 29 LAFD Response Districts

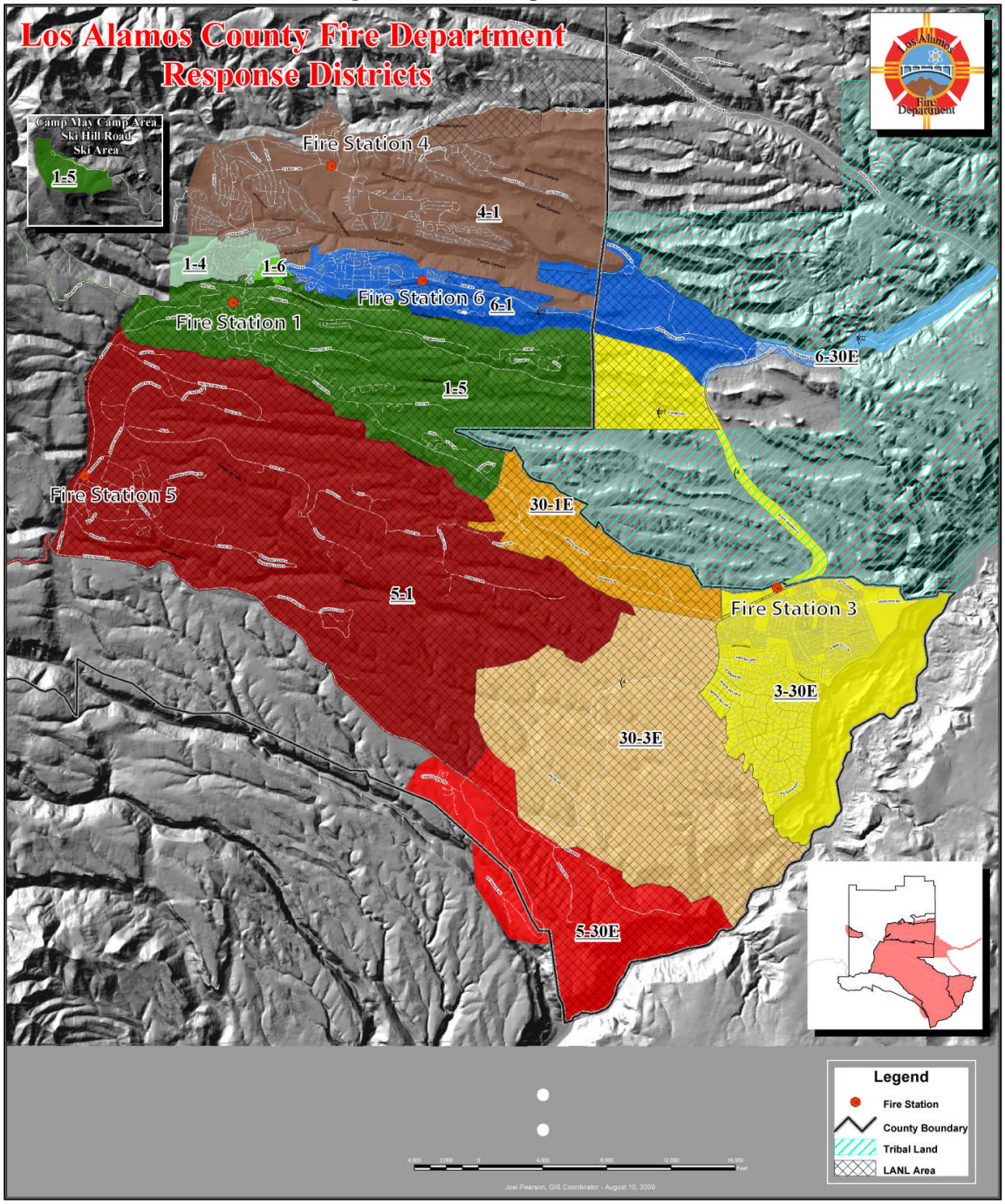


Table 27 Response and Alarm Assignments Matrix

Response and Alarm Assignments Matrix

Note; when available inset E-40 to augment coverage.

DISTRICT	1-4	1-5E**	1-6	3-30 E*	30-1 E*	30-3 E*	4-1	5-1 E**	5-30 E*	6-1	6-30E*
FIRST ALARM	E-1	E-1	E-1	E-3	E-30	E-30	E-4	E-5	E-5	E-6	E-6
	Trk-1	Trk-1	Trk-1	E-30	E-1	E-3	Trk-1	Trk-1	E-30	Trk-1	E-30
	R-1	R-1	R-1	R-1	R-1	R-1	R-1	R-1	R-1	R-1	R-1
	B-1	B-1	B-1	B-1	B-1	B-1	B-1	B-1	B-1	B-1	B-1
	M-1	M-1	M-1	M-3	M-30	M-30	M-4	M-5	M-5	M-6	M-6
FIRST ALARM	E-4	E-5	E-6	E-6	E-3	E-5	E-1	E-1	E-3	E-1	E-1
	M-4	M-5	M-6	M-30	M-3	M-3	M-1	M-1	M-30	M-1	M-30
Normal Traffic **Move Up Station #1**	E-30 M-30	E-30 M-30	E-30 M-30		E-5		E-30+ M-30+	E-30 M-30		E-30+ M-30+	
SECOND ALARM	E-6	E-30	E-4	E-1	E-6	E-1	E-6	E-30	E-1	E-4	E-4
Move Up Station #1	E-5 M-6	E-6					E-5	E-4		E-5	
THIRD	E-5	E-6	E-5	E-5	E-5	E-6	E-5	E-3	E-6	E-5	E-3
ALARM	E-30	E-4	E-30				E-30++ M-30++			E-30++ M-30++	
Centralized **Station #1**											

WORKING FIRST ALARM NOTIFICATIONS AND ACTIONS	• Page all Chiefs • All Call page for off duty fire personnel. A Chief Officer to Station #1 to assist with resource needs. • Consider the establishment of a Department Operations Center (DOC) "Fire Doc" • Staff reserve apparatus as soon as possible. • Call for TRT, CAF, or other specialized equipment as needed. • Consider Mutual Aid
SECOND ALARM NOTIFICATIONS AND ACTIONS	• Move Up available LAFD resources. • Actively call back personnel. Utilizing FCD 906 Procedures. • Establish a Department Operations Center (DOC) "Fire DOC" • Assign Chief Officers to support positions as needed. • CALL for Mutual Aid
SPECIAL CALLS NOTIFICATIONS AND ACTIONS	• Page all Chiefs Officers. • Utilize Administration support staff at the DOC. • *ARFF Emergencies*: B-1, CFR-6, E-6, E-1, CAFT-1, R-1, M-1, M-4 *(If Station #6 is on relocation or not available, another company will need to pick up and respond with CFR-6)* • *TA-21 MDA-B and/or before any other LANL Emergencies.* CFR-6 *(If Station #6 is on relocation or not available, another company will need to pick up and respond with CFR-6)* • *BOMB THREAT:* Appropriate Engine, Medic, and other units as assigned. • *TECHNICAL RESCUE:* B-1, In district Engine, Rescue, Medic, TRT

*****Truck responds at the request of the BC. ****** Camp May road and State Road 4 to TA 57 Truck response BC request only
+ E-30 or M-30 which ever unit has ALS personnel will move up to Station 1
++ E-30 or M-30 which ever unit is available to move up to Station 1.

Population

The LAC residential population is approximately 18,800 housed in approximately 8,300 units with 24 percent of those units in multi-unit structures. The LANL work population is approximately 12,000 located in approximately 2,100 buildings.

Response Area

The LAFD is responsible for protecting the two communities of the County, Los Alamos town site and White Rock (about 16 square miles), the LANL (about 43 square miles) and initial response to the adjacent federal lands (about 59 square miles). The federal lands within LAC are controlled by the U.S. Forest Service, Bandelier National Monument, General Services Administration, Bureau of Land Management, and the tribal lands of Santa Clara and San Ildefonso Pueblos.

Response Area Characteristics

LANL is operated by the DOE/NNSA with LANS as the prime contractor. LANL contains both nuclear and non-nuclear facilities. Hazardous materials of all kinds are also concentrated at LANL. These include chemicals of many types, flammable liquids, cryogenics, explosives, biological agents, special nuclear materials, and radioactive materials.

Although fire suppression service demands at LANL have been minimal, the potential risk is significant. Many of the housing units in LAC are old in that they were built prior to 1960 and a large number are multiple dwelling units. In addition, the County has only two routes for ingress and egress, State Roads 4 and 502.

Community Response History

Figure 30 Responses Plotted in Los Alamos (2013)

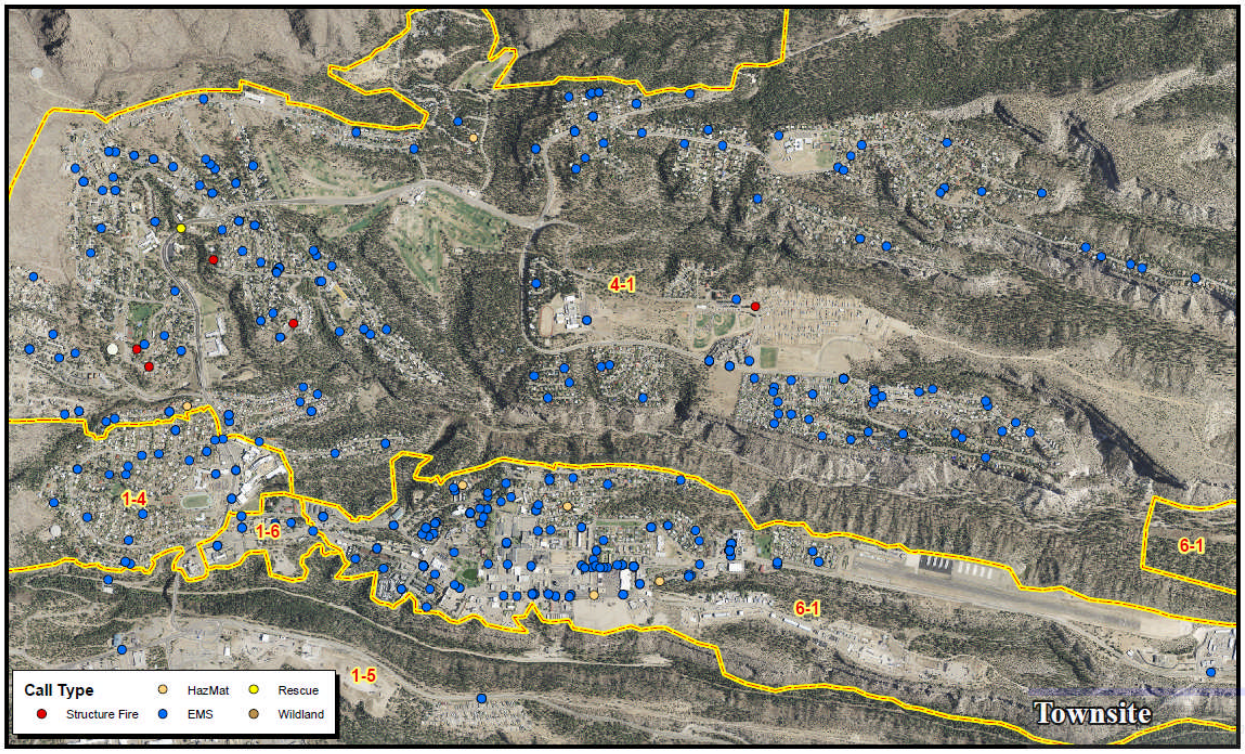


Figure 31 Responses Plotted in White Rock (2013)

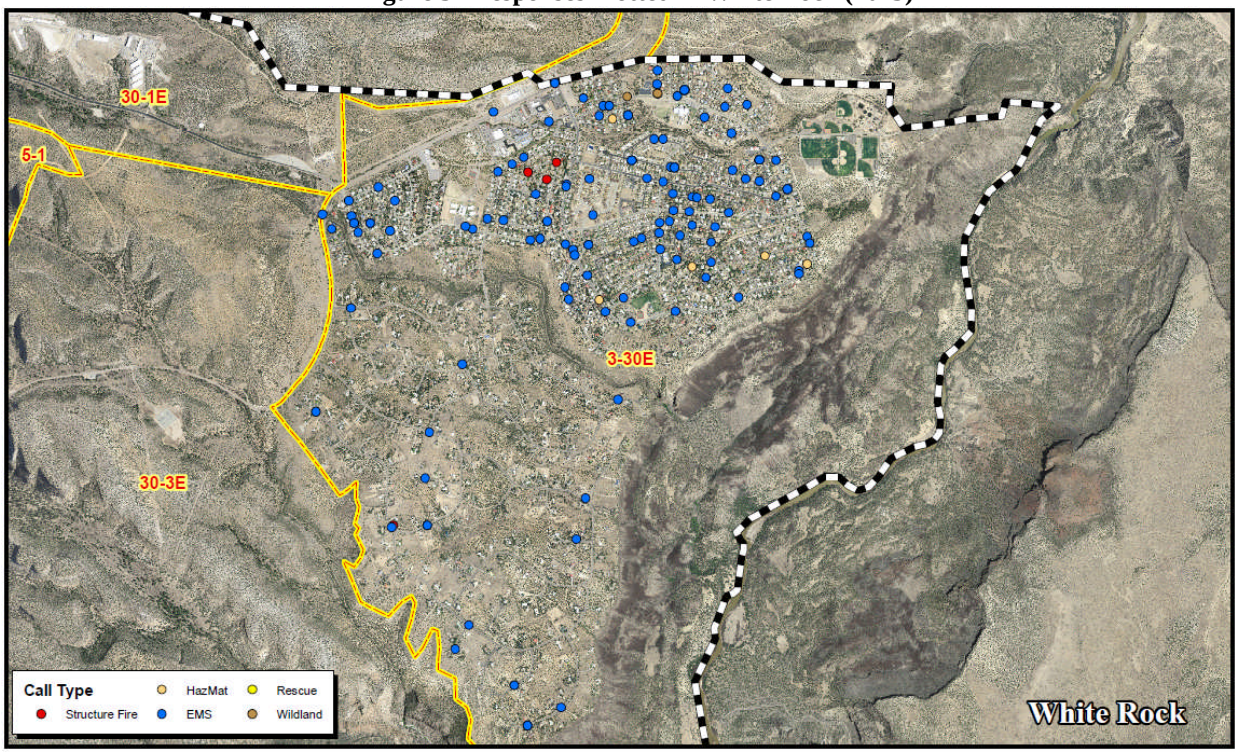


Table 28 Responses by Call Type Comparison (2010-2014), Including Non-Emergency Data

	2010		2011		2012		2013		2014	
Incident Type 1	**Incidents**	**Units**	**Incidents**	**Units**	**Incidents**	**Units**	**Incidents**	**Units**	**Incidents**	**Units**
False Alarm & False Call	323	1552	327	1367	231	1040	259	1137	245	1176
Fire	54	322	61	336	45	197	37	203	35	164
Good Intent Call	54	162	35	85	45	129	41	105	41	130
Hazardous Condition (no Fire)	70	237	57	161	66	233	50	173	43	150
Overpressure Rupture, Explosion, Overheat (no fire)	2	10	8	27	5	19	4	17	3	7
Rescue & EMS Incident	1268	2804	1297	2975	1242	2704	1238	2714	1209	2649
Service Call	257	560	266	632	197	415	196	440	168	367
Severe Weather & Natural Disaster	5	9	4	12	1	3	11	31	1	4
Special Incident	17	57	10	41	15	46	2	5	4	11
Grand Total	**2050**	**5713**	**2065**	**5636**	**1847**	**4786**	**1838**	**4825**	**1749**	**4658**

Table 29 Responses by Call Type Comparison by Shift (2010-2014), Including Non-Emergency Data

Incident Type 1	A		B		C	
	Incidents	Units	Incidents	Units	Incidents	Units
False Alarm & False Call	450	1996	486	2305	449	1971
Fire	84	444	78	419	70	359
Good Intent Call	68	179	72	194	76	238
Hazardous Condition (No Fire)	101	326	80	269	105	359
Overpressure Rupture, Explosion, Overheat(no fire)	10	39	7	23	5	18
Rescue & Emergency Medical Service Incident	2159	4738	2018	4508	2077	4600
Service Call	381	839	365	808	338	764
Severe Weather & Natural Disaster	6	18	5	21	11	20
Special Incident Type	11	38	19	66	18	55
Grand Total	**3270**	**8617**	**3130**	**8613**	**3149**	**8384**

Table 30 Incident and Unit Counts for Responses by Year (2010-2014), Including Non-Emergency Data

Year	Incidents	Units
2010	2050	5713
2011	2065	5636
2012	1847	4786
2013	1838	4825
2014	1749	4658
Grand Total	**9549**	**25618**

C. Community Expectations and Performance Goals

Los Alamos Fire Department (LAFD) provides fire suppression, emergency medical services, basic and technical rescue, hazardous materials mitigation, aviation rescue and firefighting, fire prevention, fire inspection and investigation, public education, and domestic preparedness planning and response to Los Alamos County. The LAFD is consistently working to achieve and/or maintain the highest level of professionalism and efficiency on behalf of those it serves, and thus contracted with the Center for Public Safety Excellence (CPSE) to facilitate a method to document the agency's path into the future via a "Community-Driven Strategic Plan" with the intent of meeting the goals of the LAFD. The following strategic plan was written in accordance with the guidelines set forth in the CFAI *Fire & Emergency Service Self-Assessment Manual* 8th Ed., and is intended to guide the organization within established parameters set forth by the authority having jurisdiction.

The CPSE utilized the Community–Driven Strategic Planning process to go beyond just the development of a document. It challenged the membership of the LAFD to critically examine paradigms, values, philosophies, beliefs and desires, and challenged individuals to work in the best interest of the "team." Furthermore, it provided the membership with an opportunity to participate in the development of their organization's long-term direction and focus. Members of the agency's external and internal stakeholders' groups performed an outstanding job in committing to this important project and remain committed to the document's completion.

This strategic plan, with its foundation based in community and membership input, revisits the agency's pillars (Mission, Values, and Vision) and sets forth a continuous improvement plan that offers a road map for justifiable and sustainable future.

Community Expectations

Understanding what the community expects of its fire and emergency services organization is critically important to developing a long-range perspective. With this knowledge, internal emphasis may need to be changed or bolstered to fulfill the community needs. In certain areas, education on the level of service that is already available may be all that is needed. To follow are the expectations of the community's external stakeholders:

Picture 16 Community Stakeholder Work Session

Table 31 Community Expectations of the Los Alamos Fire Department
(verbatim, in priority order)

1.	Be knowledgeable of both EMS and fire suppression and be able to demonstrate knowledge when called upon in the line of duty. All personnel trained/certified with the highest national knowledge, skills, and abilities.
2.	Respond quickly and efficiently to all emergencies. Response times under 4 minutes.
3.	Professionalism: LAFD should have a good, professional reputation with the residents of the community - there needs to be a level of trust.
4.	Personnel are provided with the equipment they need to do their jobs to the best of their abilities. State-of-the-art equipment.
5.	Engaged in the community. Department has a presence in the community. Community-minded service to customers - listen to community issues - relationship building.
6.	Competency in job. Skill and ability to respond to an emergency.
7.	Quality service delivery. Highest quality response.
8.	To keep my family and community safe.

9.	Courtesy and respect demonstrated.
10.	Sufficient, well trained staff to provide service to LANL and community.
11.	As representatives of the community, be good role models at all times.
12.	Department is skilled in knowledge of neighborhoods and individual businesses and homes. Knowledge of (locations) LANL, Los Alamos and recreation areas (trails) for rapid response.
13.	Educate those who are willing as to the role of the citizen to help. Community outreach programs to the general public.
14.	High physical fitness level.
15.	They show up in the case of an emergency.
16.	Save my life in an emergency.
17.	To maintain or report maintenance to all fire equipment.
18.	Good stewards of the taxpayers' dollars.
19.	'Nuclear-grade' achievement and performance for LAFD.
20.	Funding.
21.	Exhibit highest ethical standards.
22.	Work with other organizations for the good of the community. Interagency coordination.
23.	Continued excellent suppression skills.
24.	To provide educational tools, materials, seminars, etc. on fire prevention.
25.	Operate safely.
26.	Prioritization of efforts and response to LANL.
27.	Follow all policy/procedures (rules and regulations).
28.	Are held accountable for failure to adhere to highest ethical standards.
29.	Participation in emergency response planning at LANL and multidisciplinary coordination in response.
30.	Integrity.
31.	Strong organizational skills
32.	Have a working emergency plan to communicate and execute in the case of terrorist attack or natural disaster including training the workforce and community for readiness.
33.	Interaction with DOE/NNSA more as equal partners and less as subordinates.
34.	Coordination with the Building Department, plans reviewers, code officials to ensure Los Alamos structures meet or exceed ICC standards.
35.	Maintain accreditation.
36.	Ability to integrate quickly with Emergency Management and Law Enforcement/Security personnel.
37.	Rigorous pursuit of safeguarding of DOE assets (funding, vehicles, stations) placed in the care of LAFD.
38.	Adequate communication. Communication at all levels.
39.	Allocate resources to provide for priorities and services.
40.	Competency and comfort level in responding to a contaminated patient/situation (radiological and chemical).
41.	To be prepared and in compliance with all requirements not only to protect community, but to also protect firefighters.
42.	Be kind.
43.	Fair and equal workplace environment and opportunities.
44.	Wages and benefits retain quality personnel and do not attract negative union action.
45.	Approachability - any leader/role model in the community needs to be viewed as approachable.
46.	Protect my property.
47.	Comply with all safety and security policies at LANL.
48.	Let the community know what resources are available.
49.	Attention is on situation at hand.

50.	Department is consistent in enforcement standards.
51.	Efficiency.
52.	Exploring ideas to keep department costs down, while keeping morale up.
53.	Resources available to ensure leading edge of the profession.
54.	Friendly.
55.	Diversity acceptance / fairness.
56.	Better interaction / relationship with the union.
57.	Partner (be a partner in the community - collaborating and communicating).
58.	Responds to local events first and events outside of LAC/LANL second.
59.	Do your best and care about the community you serve.
60.	Experienced leadership (great leadership).
61.	Be prepared.
62.	Maintain security and positive control of sensitive information.
63.	Always looking to improve.
64.	Willingness to "lean into discomfort" (do the right thing even if it is unpopular).
65.	Be prepared for natural disasters.
66.	Expanding coverage area to support surrounding communities with technical support, training and manpower for large incidents.
67.	Honesty.
68.	To work cohesively with county government and streamline inefficiencies.
69.	Multi-disciplinary approach to suppression.
70.	After emergency review (meeting with other agencies and departments to assess how we/they did).
71.	Maintaining a stable workforce with reducing turnover.

Picture 17 Community Stakeholders Work Session

Positive Community Feedback

The CPSE promotes the belief that, for a strategic plan to be valid, the community's view on the agency's strengths must be established. Needless efforts are often put forth in over-developing areas that are already successful. However, proper utilization and promotion of the strengths may often help the organization overcome or offset some of the identified weaknesses.

Table 32 Positive Community Comments about the Los Alamos Fire Department (verbatim, in no particular order)

• Calls seem to be rapidly responded to.
• The department clearly has strong and effective leadership.
• The department has a high level of training and tools.
• Open dialogue and feedback – transparent.

- Responsive to federal government customers.
- Understand the serious nature of hazards at the laboratory.
- Overall professionalism of leadership.
- Well trained department that also supports higher education.
- This department is tasked with lots of different kinds of emergency response situations and they do a nice job with all situations.
- This department has a positive relationship with our police department and they work to keep this a good relationship.
- The entire department is extremely good at community relations.
- Kudos to the guys at the north community for repairing a broken smoke detector –way to go above and beyond.
- The strategic planning process shows a level of professionalism that many departments do not have.
- Well trained and ready to tackle whatever is presented.
- Professional appearance and manner.
- Service to the community is timely for all reported needs.
- Leadership is good overall.
- Opportunities for advancement – gender bias breaking down.
- So happy with LAFD. I have had several instances where they have showed up at my business, they have always arrived quickly (in the case of a fire alarm or health emergency) and acted in a professional matter. I appreciate that they came into my business once a year to check compliance, make sure that I am staying on top of things and pointing out safety hazards.
- Department members are polite and courteous individuals.
- Efficient, well trained department overall.
- Good at what they do.
- Impressive at rescues from canyons and cliffs.
- All staff really cares.
- Very fast in response time.
- Excellent job w/fighting fires, both domestic as well as wildland.
- EMT service is stupendous.
- Very engaged with citizens at large as well as community groups.
- Very clear in advising.
- In calls that I am aware of, they have been timely and well organized considering that every call can be different.
- Department has a positive reputation in community.
- It appears that our department is ready for all scenarios, especially when a car drives off a cliff.
- This class shows that we want to be better. That is a great thing! Always improving.
- My interactions w/ staff have always been pleasant.
- Media coverage suggests LAFD is highly trained and well prepared for the community & LANL needs.
- Firefighters dress neatly and conduct themselves professionally.
- Good interactions with frequent visibility in the community.
- Accessible to public.
- Thanks for seeking our input (this meeting) actions always speak louder than words.
- Appreciate stations going to schools in community to give hands-on experiences (fire trucks, etc.).
- Relationship with community is excellent.
- Business / fire department communication is great.
- The professional appearance in public from uniforms to vehicles is very clean and up to date.
- Fire staff is well trained across a very large range of areas of expertise.
- Excellent equipment (both vehicles and other) allowing firefighters to perform well in a variety situations (high

angle rescue, structure fire, etc.).
• LAFD is top shelf.
• They are the most fully trained department in the state (including LANL response).
• Provide interaction w/ community.
• Great code enforcement.
• Firefighters provide excellent support at community events.
• Excellent role models.
• Well trained in all aspects of the service they provide.
• Trust them implicitly.
• Very competent.
• Community driven.
• Numerous recruits.
• Large division.
• Financially supported (needs do not go unmet).
• Positive team members.
• Excellent chiefs – willingness to work on tough issues.
• Top of the line – line staff.
• General feeling of camaraderie – great team!
• Diverse workforce.
• Professional appearance within ranks.
• Fire department has friendly approachable staff.
• I always feel comfortable calling and getting assistance.
• They always are helpful and responsive.
• Good leadership team.
• Well trained / technically competent.
• Kind compassionate staff.
• Dedicated firefighters.
• Understanding of DOE hazards.
• High quality service and response times.
• Well trained and prepared (too well?).
• Great medical services.
• Command staff well integrated with LANL.
• Good at training and exercising.
• Good firefighting.
• Good at rescue.
• Best in the state.
• Has one of the greatest leaders.
• The department as a whole (have a great team).
• Outstanding department.
• Outstanding leadership.
• Well trained.
• Well equipped.
• Good community partner.
• They respond quickly.

- They are well trained.
- Always represented at public events.
- Great training for school age kids.
- Excellent cooperation/coordination in emergency preparedness planning.
- Emergency medical responses in general very well trained.
- Always open and receptive to communication – leadership.
- Very community and constituent friendly.
- Friendly customer service has always been demonstrated during inspections and calls on site.
- Retirement package is good.
- Willingness to participate in community events.
- Quick response times.
- Courteous customer service.
- Highly trained and knowledgeable.
- Extremely well trained and equipped.
- Well organized staff.
- All the fire personnel I have dealt with have a high level of self-confidence and competence.
- Great community outreach.
- Quick responses.
- Accessibility to management.
- Professionalism.
- Available for assistance (even if it is not fire related).
- This community loves and appreciates firefighters!
- Involvement around town helps department's reputation-public perception seems to be that department is friendly, helpful and hard working.
- Historically LAFD has done a terrific job in the community.
- They have maintained a good relationship with citizens and business.
- They are well respected for both attitude and professionalism.
- Los Alamos is blessed to have a county funded department. Outsourcing would dilute professionalism. Timely response.
- Friendly and knowledgeable staff.
- Well trained personnel.
- Excellent community outreach.
- Top department – customer service in the field is excellent.
- Respect and trust from community is excellent.
- Always smiling and professional.
- GREAT DEPARTMENT – needs to get better.
- We are very lucky to have this department and their quick response.
- Knowledge base.
- Community outreach and involvement.
- EMS.
- Education and certifications.
- Administration is excellent and easy to talk with, and accessible.
- Highly effective organization.
- Under great leadership.
- Professional staff.

• Looks like environment is first rate.
• The amount of training and community involvement is great.
• Devoted staff.
• Well equipped.
• Well trained.
• Equipment (thanks to LANL).
• Middle management.
• Well trained.
• Great equipment.
• Large staff.
• All staff is professional and easily approachable.
• Great response times.
• Professional appearance and project their confidence well.

Other Thoughts and Comments

The Community was asked to share any other comments they had about the LAFD or its services. The following written comments were received:

Table 33 Other Community Comments about the Los Alamos Fire Department (verbatim, in no particular order)

• A + guys.
• Fire department is the best in the state, but want them to continue to raise the benchmark to be one of the best in the country.
• None at this time.
• I feel safe; I feel I can trust LAFD to do its best to protect our community and my family.
• Thank you for how you serve this and surrounding communities, we are glad to live here and have such great men and women to keep us safe and meet our emergency needs.
• Our fire department rocks! Aside from an occasional bad apple, the guys are great. The new guys sometimes seem a bit unsure but that is to be expected – maybe just make sure they are paired with someone more experienced who knows all the ropes.
• Keep an eye on gender equality and treatment of women, but this seems to be much improved under Chief Hughes.
• Really a great thing that they are going through this process.
• Seems the department internal issues.
• They interact with the public well, good public perception especially with the children.
• Community trusts LAFD, reputation has improved.
• It's hard work to maintain a consistent level of professionalism at all times with a large fire department in a small town.
• Perhaps more investment in state fire relationships would benefit LAFD.
• Explore cost recovery via Affordable Care Act, more EMS and wildland advancements with community.
• Model program teaching fire/EMS skills at UNMLA.
• Our fire department has the opportunity to mentor other surrounding volunteer fire departments around smaller rural areas where they can learn fire techniques and best fire prevention practices.
• Really think it would be helpful it there were meetings to review how emergencies were handled with all staff and agencies and county departments (what worked, what could be improved).
• Thanks for giving us the opportunity to participate in this exercise / progress!!
• Something to the effect should be sent to the entire community.
• Engage the public when possible.

• I would like to see more public awareness, regarding potential local hazmat threats.
• I am very biased to the brave men and women in our department and want the best outcome. This survey is difficult to fill out due to this department cannot be compared to others due to the involvement of the lab and that it is a LANL department first then a community department. That being said our department has been amazing at balancing that and I feel this community should be more grateful to these wonderful firefighters.
• Public safety is priority one, I don't think that the public understands the roll of DOE / LANL we have the best FD in the state.
• LAFD is a good positive organization. Always helpful with positive atmosphere. Thank you.
• Quite simply the best fire department I have ever seen.
• I am pleased to live in a community where I know that our FD is highly trained, responsive, empathetic and capable to serve our citizens.
• Pleased with services provided.
• Great department.
• Good department.
• Think the department should focus on efficiency of administration programs; utilize uniformed personnel for some administration functions.
• Consider increasing community outreach to schools and organizations for basic first aid, when and when not to activate 911.

Picture 18 Community Stakeholders Work Session

Performance Expectation Goals

Mission Statement

Los Alamos Fire Department is proud to be entrusted with the safety and welfare of our community. We are honored to provide exceptional services for the preservation of life, the environment, and property.

Vision

We Walk With P.R.I.D.E.

It is the vision of the Los Alamos County Fire Department to be renowned for its **PRIDE** and consistent demonstration of best practices and active department values in mission execution that exceeds the needs and expectations of our community.

Professionalism will be the foundation of our overall culture and, enhanced through our commitment to public relations and external communications initiatives, ensuring an enhanced interaction with the community we are honored to serve.

♦ ♦ ♦ ♦ ♦ ♦

Readiness will be demonstrated by continued improvements to the community's emergency communications system supported by contemporary technology solutions and a complete range of updated physical resources.

♦ ♦ ♦ ♦ ♦ ♦

Involvement will be clearly established in the internal communications processes that when institutionalized, will support our members and work toward greater accountability and development.

♦ ♦ ♦ ♦ ♦ ♦

Discipline will be demonstrated as we hold one another accountable for fulfilling our mission and actively demonstrating our values through our empathic awareness of others, as we develop better quality human resource management practices.

♦ ♦ ♦ ♦ ♦ ♦

Excellence is at the heart of our individual and department goals, recognized by steadfast efforts to be continuously known as an internationally accredited fire service agency, recognizing we are entrusted with the safety and welfare of our community which drives us to ensure this vision becomes reality.

Performance Goals

In order to achieve the mission of the LAFD, realistic goals and objectives must be established to enhance strengths, address identified weaknesses, provide individual members with clear direction, and address the concerns of the community. The internal stakeholders met for several hours during the development of the Strategic Plan to complete this critical phase of the planning process.

The internal stakeholders set timelines for completion of objectives supporting the goals. Leadership of the LAFD have established work groups to meet periodically to review progress toward these goals and objectives and adjust timelines as needs and the environment change.

The goals and objectives now become the focus of the efforts of the LAFD.

Table 34 LAFD Goals

Goal 1	**Develop an enhanced internal communication system to meet our mission.**
Goal 2	**Develop enhanced public relations to meet the department's mission.**
Goal 3	**Use applicable technology to meet our mission.**
Goal 4	**Enhance external communications systems to meet the LAFD mission.**
Goal 5	**Establish internal personnel practices that are fair, consistent and support the department's mission.**
Goal 6	**Enhance emergency communications to improve the safety of all department members.**

Community Service Expectations

The LAFD internal stakeholders identified the following core programs provided to the community, as well as the services that enable the agency to deliver those programs:

Table 35 LAFD Core Programs

• Emergency Medical Services	• Fire Suppression
• Rescue - Basic and Technical	• Wildland Firefighting
• Hazardous Materials Mitigation	• Fire Prevention
• Domestic Preparedness Planning and Response	• Aircraft Rescue and Firefighting
• Public Fire / EMS Safety Education	• Fire Investigation

Community Service Priorities

In order to dedicate time, energy, and resources on services most desired by its community, the LAFD needs to understand what the customers consider to be their priorities. The external stakeholders were asked to prioritize the programs offered by the agency through a process of direct comparison.

Table 36 LAFD Community Service Program Priorities

PROGRAMS
Emergency Medical Services
Fire Suppression
Rescue - Basic and Technical
Wildland Firefighting
Hazardous Materials Mitigation
Fire Prevention
Domestic Preparedness Planning and Response
Aircraft Rescue and Firefighting
Fire Investigation
Public Fire / EMS Safety Education

D. Community Risk Assessment and Risk Levels

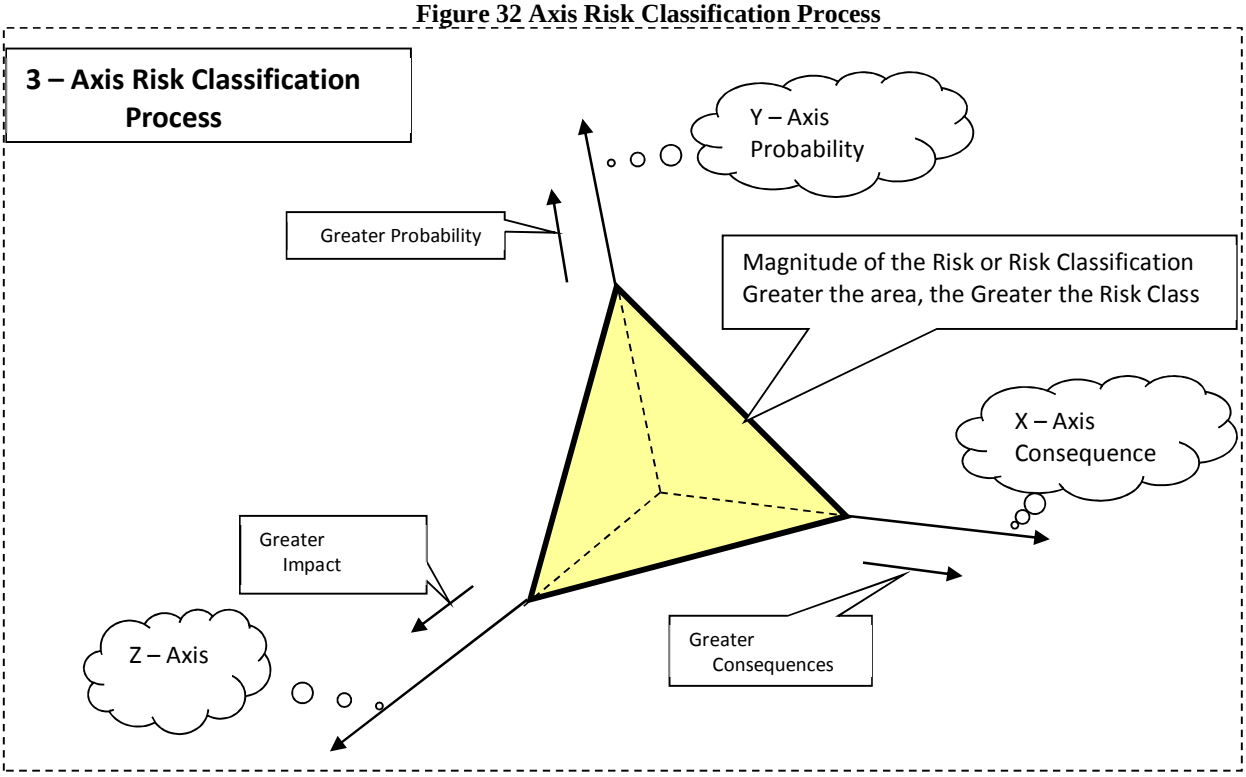
Risk Assessment Methodology

Methodology (Probability/Consequence/Impact of Event Risk)

The department conducted an analysis of the community and its potential risks. To collect this information, data was gathered from table top exercises with each station crew, review of pre-incident plans, fire inspections, public education events, plan reviews, and community development meetings. Members were involved in the review and development of the risk levels for each planning zone. All moderate, high and very high risks have been preplanned and inspected in all response districts.

Using the Probability/Consequence/Impact Model, considerations of risks were assessed in each of the eleven response districts. While it is clear that there is always a probability of an event occurring, the frequency of that probability ranges from low to high. There are always consequences of an event occurring which range from low to high levels. Consequences could be financial or physical. In the same way, each occurrence has an impact on the department which ranges from low to high. Impact is measured by the resources committed to the incident. This 3-axis risk classification process was used in the assignment of risk levels for each service type and response area.

Figure 32 Axis Risk Classification Process



The department conducted an analysis of the community and its potential risks.

Planning Areas/Zones

Table 37 Response Area Characteristics

RESPONSE AREA CHARACTERISTICS											
Response District	**1-4**	**1-5**	**1-6**	**3-30E**	**30-1E**	**30-3E**	**4-1**	**5-1**	**5-30E**	**6-1**	**6-30E**
Square Miles	.5	4.5	.5	7.2	5	4	9	45	12	6	4
Population Density											
Suburban	x									x	
Rural		x	x	x	x		x	x	x	x	
Wilderness						x					x
ownership											
Private	x	x	x	x			x			x	
DOE	x	x	x	x	x	x	x	x	x	x	
Los Alamos County	x	x	x	x	x		x			x	
US Forest Svc.							x	x	x	x	x
Federal/Tribal				x			x		x		x
Santa Fe County											x
Sandoval Co.				x							
Occupancy Type											
Schools	2	0	2	2	0	0	4	0	0	2	0
Churches	3	0	1	9	0	0	8	0	0	9	0
Apartments/Condo	1	0	2	2	0	0	5	0	0	11	0
Industrial	1		0	1	40	11	0	15	6	5	0
Single Family Res.	300	0	23	1500	0	0	2500	0	20	2000	0
Multi Family Res.	5	0	2	2	0	0	200	0	0		0
Mobile Homes	0	70	0		0	0	150	0	0		0
Commercial	7	1	4	35	0	0	7	1	1	47	1
Hospitals	0	1	1	0	0	0	0	0	0		0
Nursing Homes	0	0	0	0	0	0	0	0	0	4	0
Day Care Centers				0	0	0	2	0	0	2	0
Recreational	Ice Rink	Trails Ski Hill	Trai ls	Yes	0	Trails	Ball Fields	Trails	Yes	Downtown &Airport	Main Hill Rd.
Special	Yes	0	Yes	Yes	1	Yes	Yes	Yes	Yes	Yes	Yes
Water Supply											
Hydrants	92	350	24	189	40	3	392	237	15	309	0
Alt. Water Source	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Accessibility											
Paved Streets	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Developed roads	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trails	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Not MV accessible	Ltd.	Ltd.	Ltd.	Ltd.	Ltd.	Ltd.	Ltd.	Ltd.	Ltd.	Ltd.	Ltd.
Hazards	Yes	Yes	Yes	TRT	Haz Mat	Wild-land	Can-yons	Yes	Yes	Yes	Yes

District Analysis (Zone Analysis)

Introduction

This document provides an evaluation of the current risks and hazards of each of the response districts (planning zones) that are located in Los Alamos County. The risk and hazards analysis is based on the LAFD's fire service delivery concerns in each of the response districts and directs response capabilities in these areas. This analysis allows the department to maintain the objective of reducing the risks, forecast future needs, and to enhance response capabilities.

As this analysis was being developed, the current Standards of Cover and Strategic Plan was carefully considered to ensure that it would be consistent with and supportive of the projected needs and planned response in those documents.

It is our goal to create a department which is receptive to change and always seeking to improve the services it delivers. As such, the vision and mission of the department emphasize service to community, and the goals and objectives provide direction for the department as it strives to accomplish this endeavor. The development and use of a risk and hazards analysis process allows our members to better understand, be a part of and support the ongoing direction of the department.

Since planning is a continuous process, this plan will be reviewed and updated on an annual basis during the review of the Standards of Cover to measure our progress and to determine if modifications are necessary. This plan, like our other plans, has been carefully developed to be dynamic which allows us the ability to update, modify or replace the section/sections that no longer apply. Thus the plan will adapt to the needs of the residents and the department in general.

Critical Task Analysis

In order to provide life safety and emergency mitigation efforts in an effective manner, it is imperative that firefighters respond to emergencies in a timely manner and with enough trained firefighters to safely mitigate the emergency. Critical tasks are those duties that must be conducted by firefighters in order to safely control emergency incidents.

In order to effectively determine LAFD ability to ensure effective service delivery while maintaining a safe working environment, the department must conduct a critical task analysis. The critical task analysis is the process of matching LAFD's resource deployment to each type of risk. A critical task analysis identifies the necessary staffing level required to safely perform each task and successfully mitigate each risk. A critical task analysis was conducted for the following risk types:

Fire Suppression, Emergency Medical Calls, Wildland Fires, Technical Rescues, Hazardous Material Responses, Aircraft Rescue Firefighting.

Fire Risk Assessment

The following helps to identify the elements that must be considered when assessing the community's risk. Each of the four categories (Low, Moderate, High/Special, Maximum) represents a specific level of risk based on the probability of that risk occurring and ties the probability of occurrence, the consequences to the community and the impact to the department that will be experienced if the risk occurs. Each risk that a community faces can be identified and categorized using this measurement of probability/ consequence/ impact. As the level of risk increases, a different commitment of fire resources is needed to keep the risk from escalating.

The relationships between probability, consequence and impact, and the community's adopted service level goals determine the needed concentration and distribution of resources. Distribution is the location of resources throughout the County. Concentration is the number of resources needed in a given area within the County. This varies depending on many factors including the number of events (calls for service); the risk factors of the area; the availability, reliability, and time of arrival of secondary responding units; etc.

Fire Risk Definitions

Table 38 Risks by District

Call Type	District	Low	Moderate	High	Maximum
Fire Suppression	1-4	4		2	
	1-5	18			1
	1-6	3	1		
	301e	1		1	
	330e	32		7	2
	4-1	45	4	8	1
	5-1	6		1	
	530e	1			
	6-1	16	3	5	
	630e	1			
	Out	4			
Fire Suppression Total		**131**	**8**	**24**	**4**

Low Fire Risk – outbuildings, detached garages, storage sheds, automobile fires. Incidents that occur most often are the types that have the lowest impact on the department and lowest consequence to the community. Examples would include car fires, etc. As a result, they would have a higher probability than fires in single family dwellings.

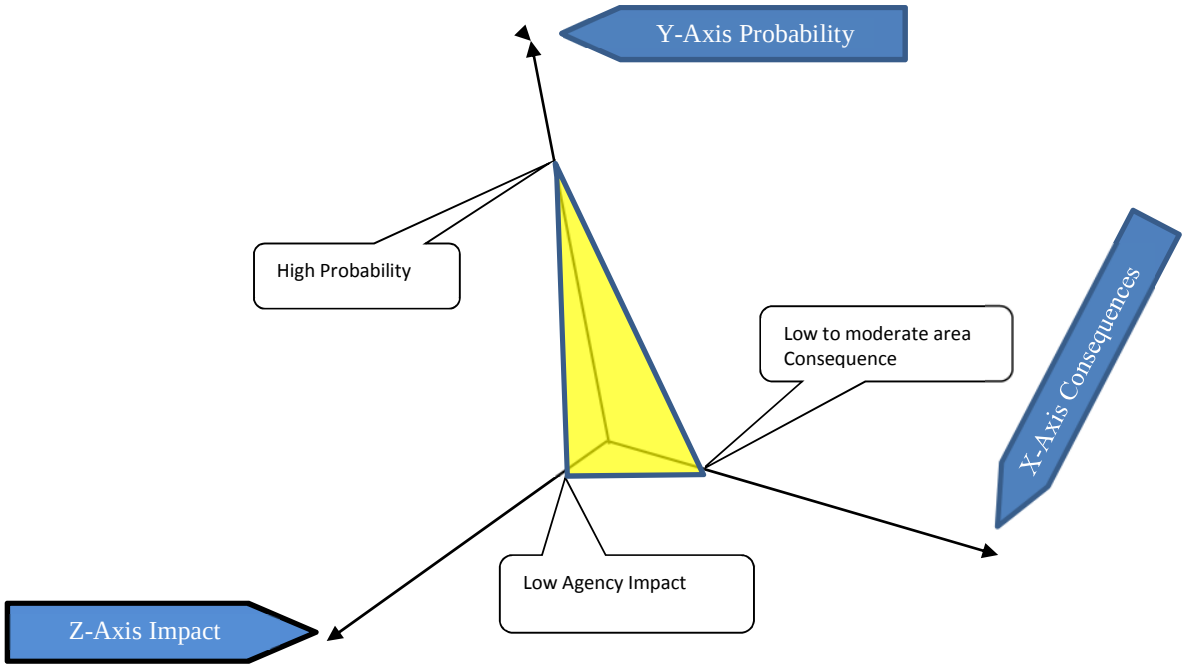
Figure 33 Axis Risk Classification Process - Low Fire Risk Level, Scenario 1

Scenario: Car fire on Main Hill Road

Probability of Occurrence: High, as there are between 5,000 and 10,000 automobiles traveling up and down "the Hill" each day.

Consequences to the Community: Low to moderate, as there may be minor traffic delays or detours.

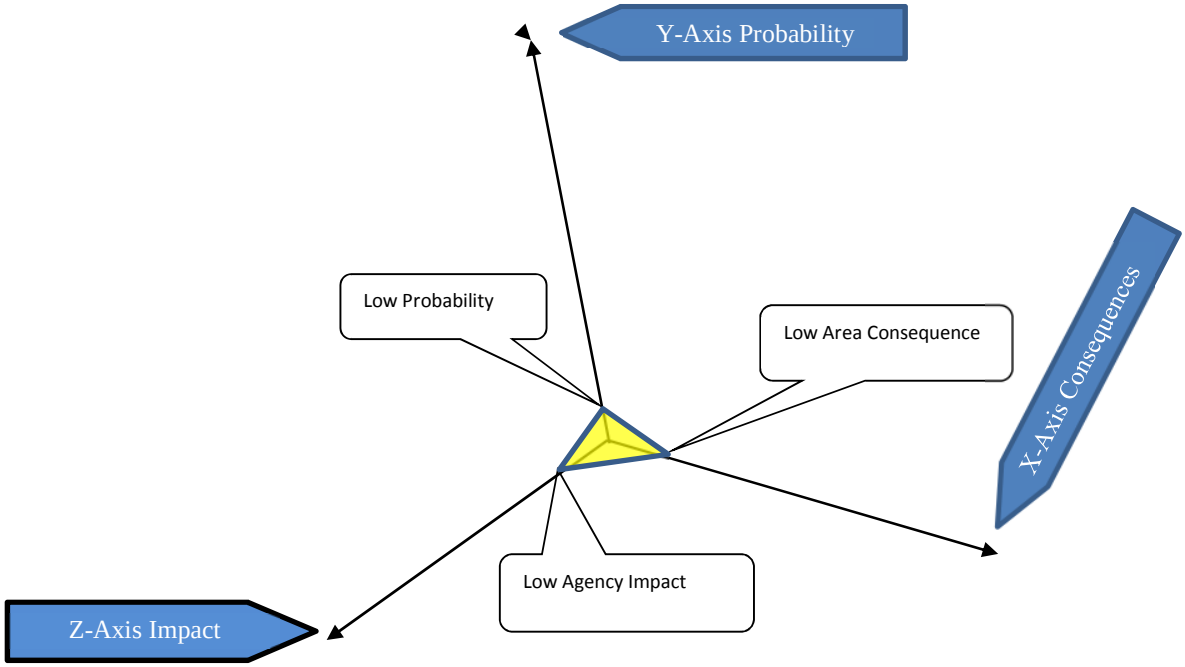
Impact to the department: Low. First alarm assignment resources needed.



In addition, low risk levels may also include risks that have a low probability of occurrence, a low level of consequence to the community and low impact to the department. This risk level presents little threat to the community's ability to function unless the community does not have adequate resources allocated to handle this level of risk. The occurrence of this type of event is infrequent and presents little, if any, potential for significant life and property loss or damage.

Figure 34 Axis Risk Classification Process - Low Fire Risk Level, Scenario 2

Scenario: Structure fire in the old golf cart storage shed at the golf course.
Probability of Occurrence - Low, as there is limited use of storage.
Consequence to the Community – Low.
Impact to the department – Low.



Moderate Fire Risk –single family dwellings, mobile homes. This level of risk can present a potential for life and property loss but these are usually limited to only those areas, properties and residents in the immediate threat zone. A moderate risk usually has an impact both financially and socially, but is limited to specific areas unless the community has not allocated adequate resources to respond to a risk of this level. Inadequate resource allocations for moderate risk incidents can cause them to escalate to a significant level of risk requiring additional resources and the possibility for increased life and property loss. Recovery from a moderate risk is usually completed within a brief period of time. Moderate risk incidents seldom require assistance from outside the jurisdictional area.

Figure 35 Axis Risk Classification Process - Moderate Fire Risk Level

Moderate Fire Risk Scenario: Structure fire in a single family dwelling or mobile home.
Probability of Occurrence: Moderate. Opportunity for cooking fires, wood stove heating fires. Many of these structure types may not have fire protection systems (i.e., sprinklers).
Consequence to the Community: Low. Displacement of family.
Impact to the Community: Low.

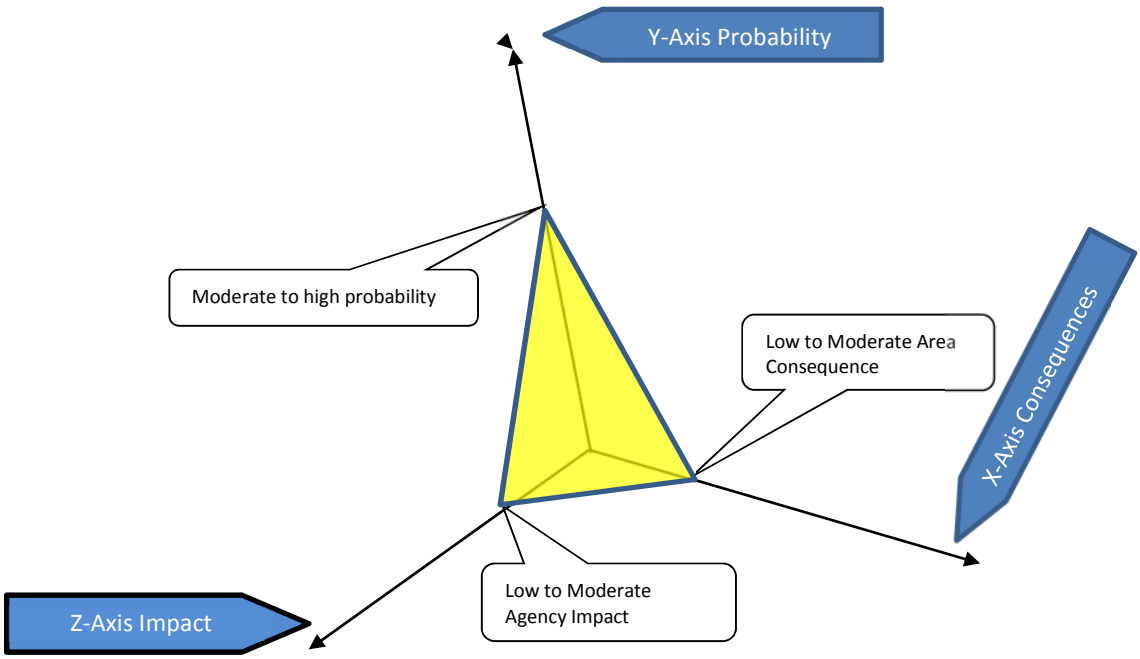


Figure 36 Axis Risk Classification Process - High Fire Risk Level

High Fire Risk – multifamily dwellings, mercantile facilities, schools, hospitals, nursing homes

Probability of Occurrence: Moderate. High occupancy facilities, fire protection systems in place.

Consequence to the Community: Moderate to High. Displacement or relocation of occupants may be necessary.

Impact to Department: Moderate to High.

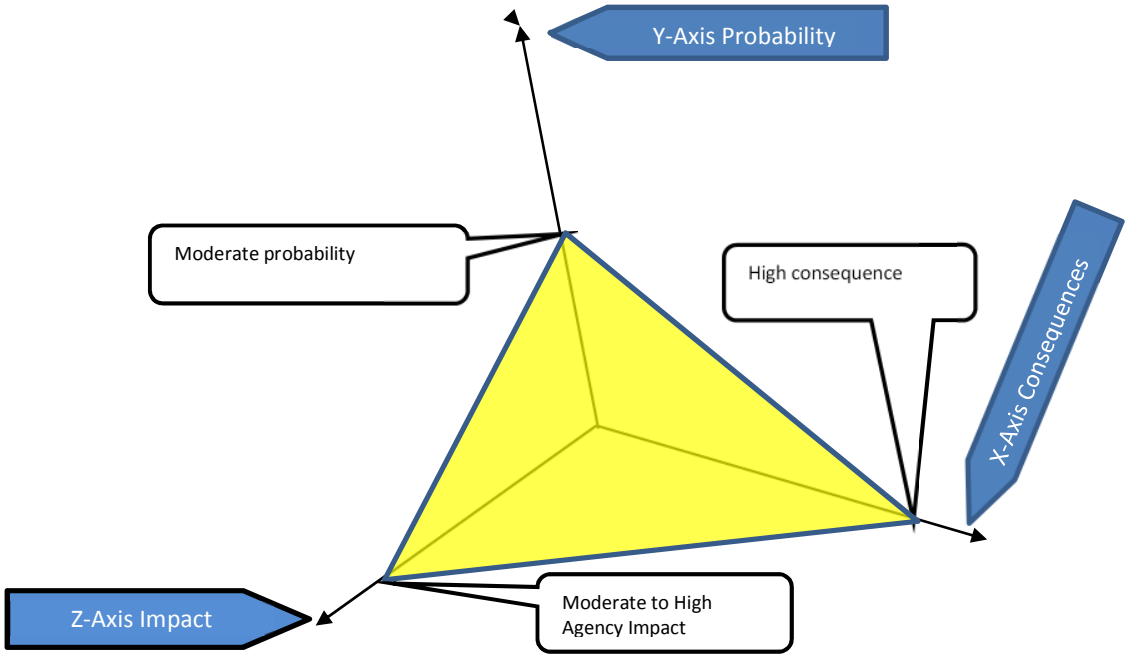


Figure 37 Axis Risk Classification Process - Special Fire Risk Level

Special Fire Risk – buildings with high historical value (Fuller Lodge, Bathtub Row)
This risk level has the potential for high to moderate life and property loss. A significant risk may vary in magnitude and may create varying threats to those people in the immediate area of impact. Significant risks can also impact those in close proximity to the immediate threat zone. The financial impact related to a significant risk is usually high by threatening the community's economic and social structures. A significant risk will require an extended recovery period but a community that has prepared can recover within a reasonable period of time.

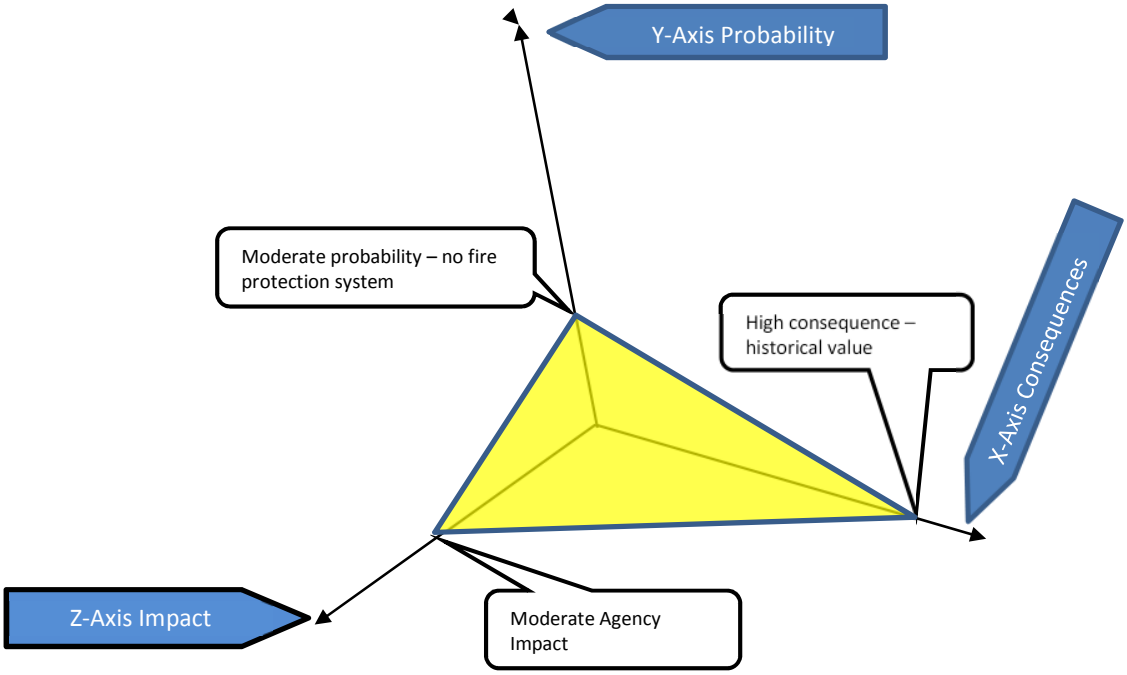
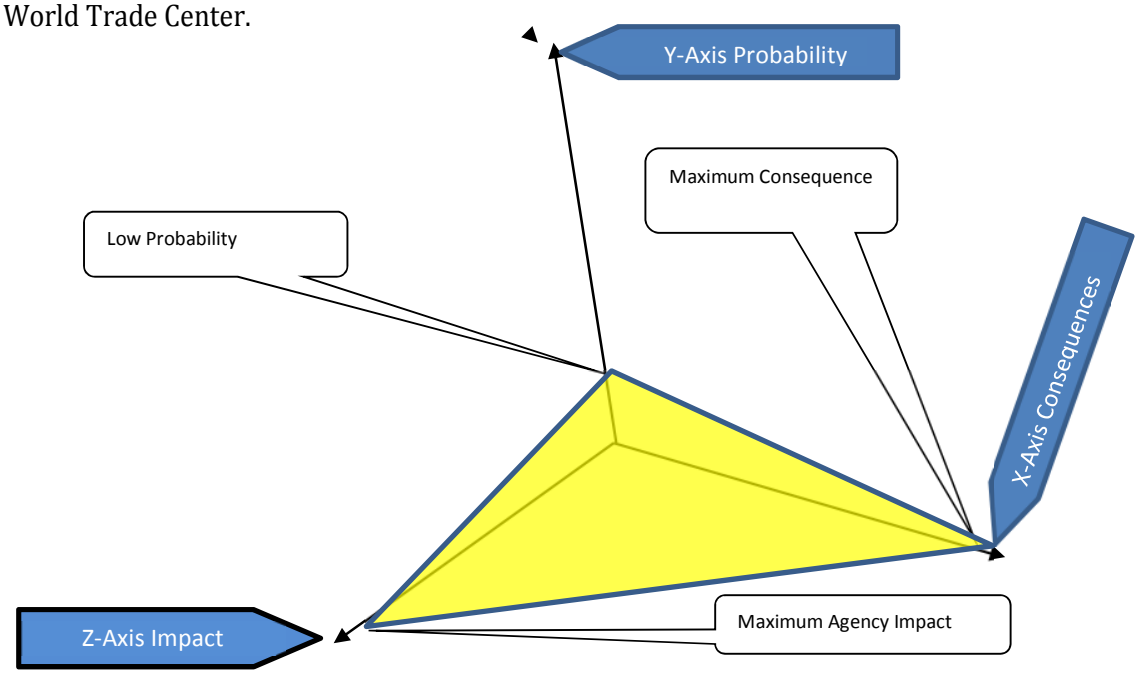


Figure 38 Axis Risk Classification Process - Maximum Fire Risk Level

Maximum Fire Risk – Emergency Planning and Hazard Assessment (EPHA) Facilities at LANL

Maximum risk, while having low to moderate probability, may have maximum consequence and high impact to the organization. This level of risk has the potential for a high level of life and property loss as well as significant property damage across the entire geographic area. Maximum risks on LANL property may have high national consequences. Maximum risks may have a devastating impact on the community's ability to maintain its commercial, residential, and industrial tax base. An event of this nature would most likely include a disaster declaration by the Governor and/or the President of the United States. An example of a maximum risk event would be the Cerro Grande Fire (2000), the Las Conchas Fire (2011), Hurricane Katrina, the Loma Prieta Earthquake, or the bombing of the World Trade Center.



EMS Risk Assessment

Emergency incidents are time-sensitive and require the prompt response of an appropriately staffed ambulance. There is a direct correlation between the total time from injury/illness to definitive care and positive clinical outcomes. Blood flow to the organs is essential. According to the American Heart Association in a cardiac arrest, irreversible organ damage will occur in four to six minutes. In cardiac arrests, quick EMS response, CPR, and early defibrillation by EMS personnel have a direct correlation in decreased mortality.

Medical Director Protocols have been developed for medical, trauma, and cardiac arrest responses. These protocols serve as a guide for the initial scene management of an emergency event. The identified positions are assigned as the incident progresses by the Incident Commander or the responder with the highest level of medical certification on scene. The Incident Commander is responsible for scene safety and command of the incident. All personnel wear appropriate personal protective equipment.

The first-due units shall be capable of: assessing scene safety and establishing command; sizing-up the situation; conducting initial patient assessment; obtaining vitals and patient's medical history; initiating mitigation efforts within one minute of arrival; providing first responder medical aid including automatic defibrillation.

Table 39 EMS Responses by Risk Levels by District

(Only emergency responses 2010-2014)

Call Type	District	Low	Moderate	High
EMS	1-4	102	115	4
	1-5	138	135	9
	1-6	80	37	2
	301e	28	5	1
	303e	6	5	2
	330e	616	132	24
	4-1	679	363	14
	5-1	29	21	2
	530e	5	7	1
	6-1	1145	365	18
	630e	5	2	
	Out	25	2	1
EMS Total		**2858**	**1189**	**78**

*The one Maximum incident was a motor vehicle accident that involved TRT. A large number of personnel was needed for the response.

EMS Risk Definitions

Figure 39 Axis Risk Classification Process - Low EMS Risk Level

Low EMS Risk – Any incident or combination of incidents with one to three serious patients such as a motor vehicle accident or single EMS incident. In general, the everyday emergency call is considered low risk unless it is in combination with other EMS incidents that tax the resources.

Though this type of event may be the most occurring event in the community, the frequency of this type of event occurring at the same risk location is low and presents little threat to the community's ability to function unless the community does not have adequate resources allocated to handle this level of risk. The occurrence of this type of event is infrequent and presents little, if any potential for significant life and property loss or damage.

Probability of Occurrence: Moderate to High

Consequences to the Community: None to Low

Impact to the department: Low

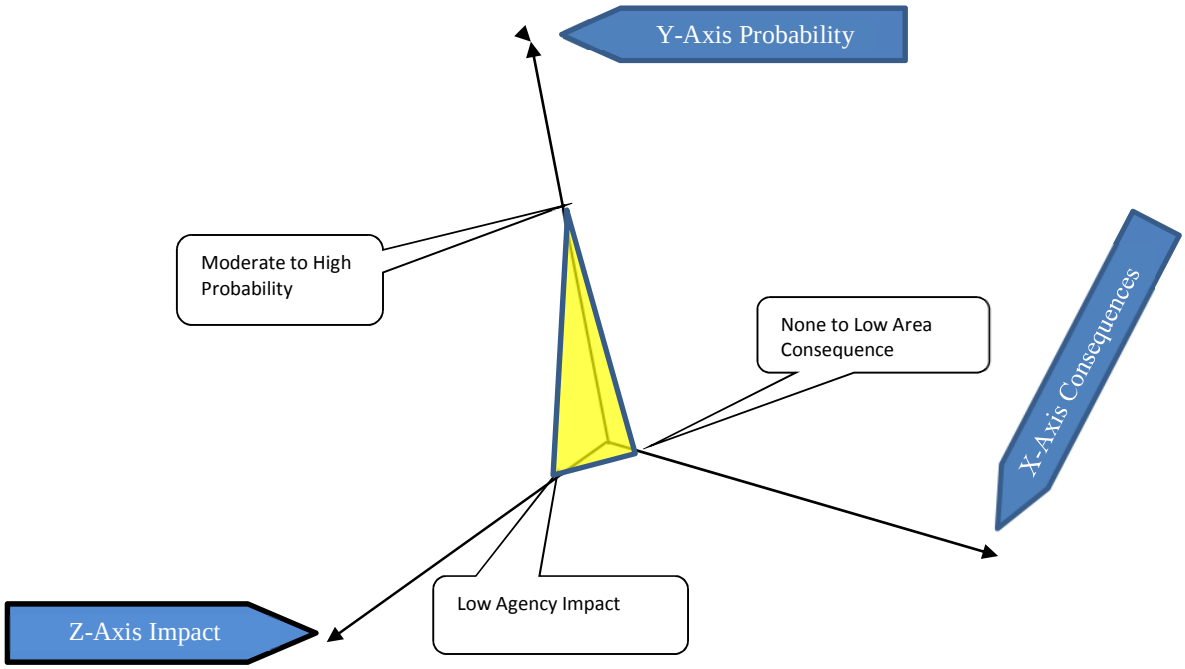


Figure 40 Axis Risk Classification Process - Moderate EMS Risk Level

Moderate EMS Risk – Any incident or combination of incidents that require more than 50% of the ambulance force, such as an MVA with several (3 to 5) patients who require medical attention, but not necessarily transport.

Probability of Occurrence: Low to Moderate

Consequence to the Community: Low

Impact to the department: Moderate

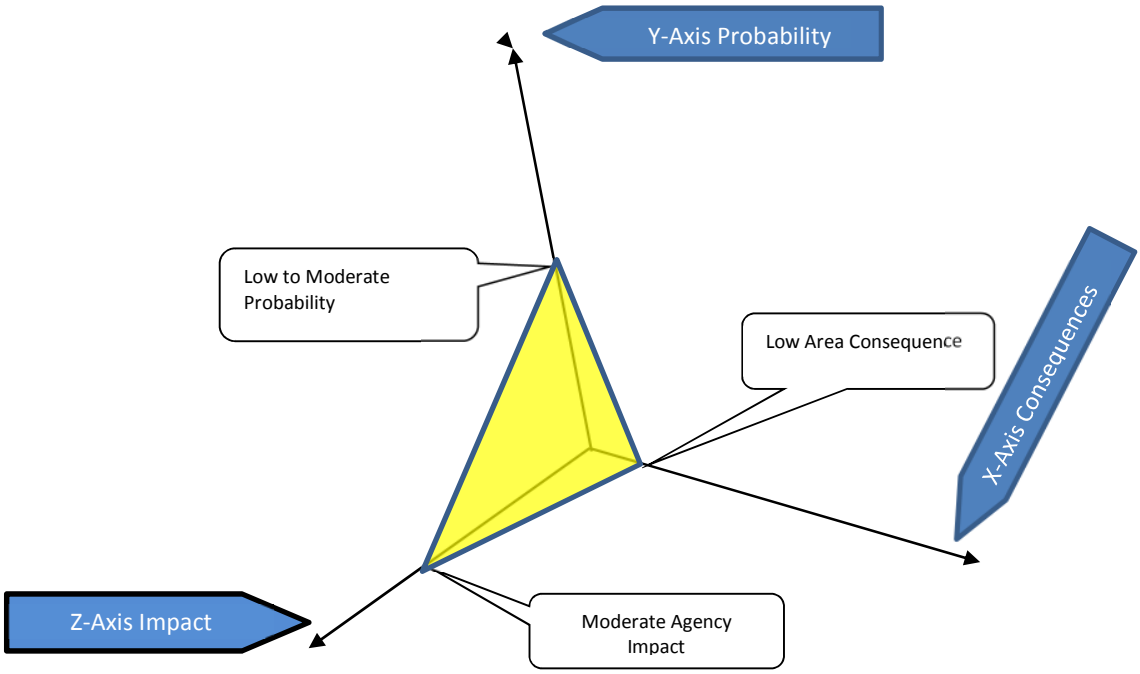


Figure 41 Axis Risk Classification Process - High EMS Risk Level

High/Special EMS Risk: Any incident or combination of incidents with five to six serious patients requiring deployment of 75% of the ambulance force.

Scenario: Multiple vehicle accident with four critically injured patients while and out of county transport is being done simultaneously.

Probability of Occurrence: Low

Consequence to the Community: High

Impact to the department: High

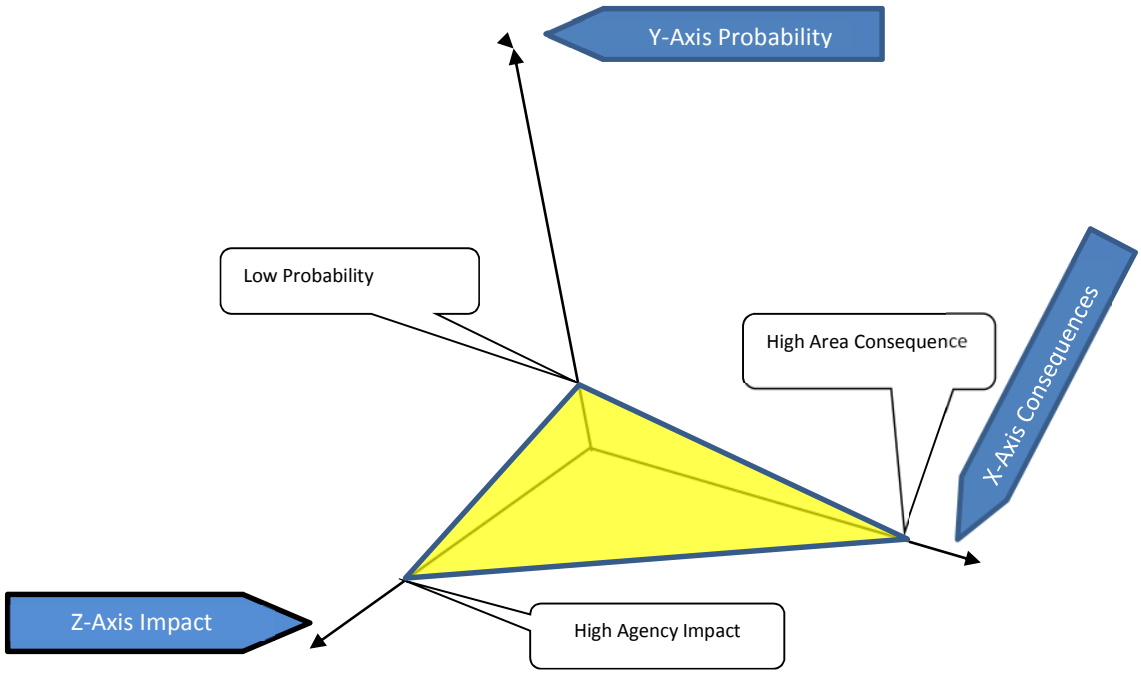


Figure 42 Axis Risk Classification Process - Maximum EMS Risk Level

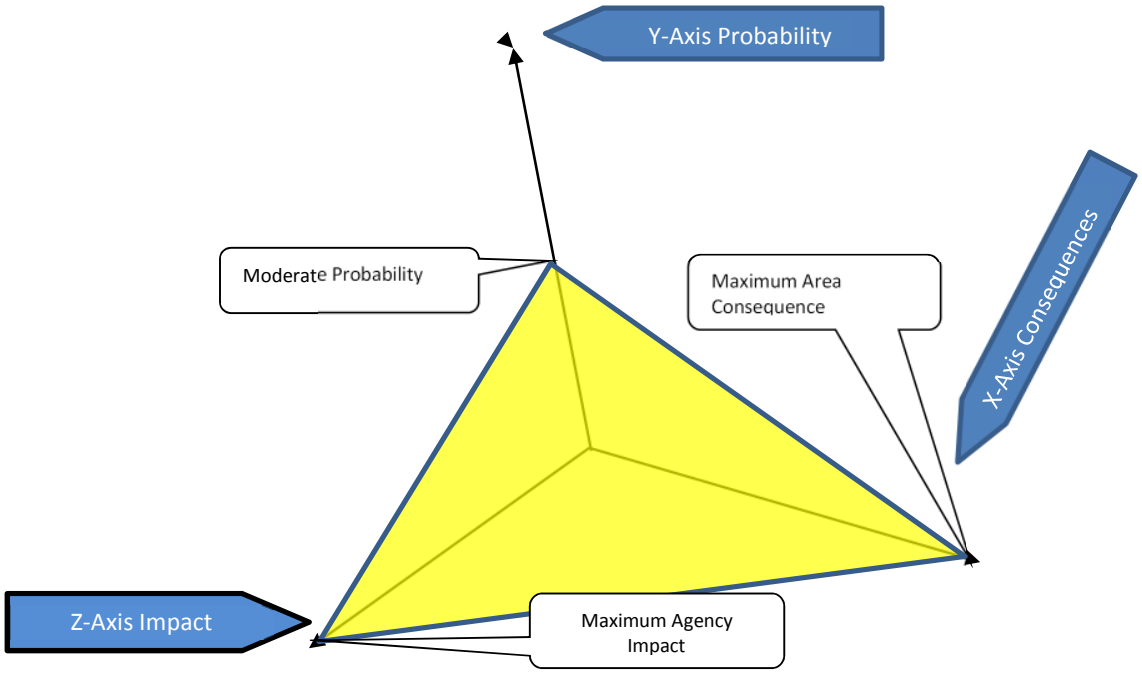
Maximum EMS Risk – Any incident or combination of incidents that exceed the department's response ambulance force capability (7+ patients).

The department experienced a combination of events that resulted in maximum EMS risk during the Las Conchas Fire in 2011. The primary focus of the county quickly became the need to evacuate patients that were unable to ambulate themselves, to include Sombrillo Nursing Home, Aspen Ridge Assisted Living, Oppenheimer Place Assisted Living, and the Los Alamos Medical Center. While LAFD crews were evacuating these facilities, the department was fighting the major wildland occurrence in progress. Maintaining responsibility for providing emergency medical services to the areas of the townsite and White Rock that had yet to be evacuated and moving patients.

The department utilized the County's transit system as well as outlying agencies (per the State's Resource Mobilization Plan) to assist in the evacuation and response to local incidents during this emergency.

The entire event of the Las Conchas incident continued almost two weeks, keeping the department's EMS in a maximum risk response state.

The probability of this type of event occurring again is low to moderate. The consequence to the community is maximum, and the impact to the department is maximum.



Disasters or mass casualty incidents have the potential to have major consequences and impact the community in a negative way, such as a bus rollover or an active shooter. Department impact would involve deployment of most of the resources leaving the rest of the community inadequately protected.

Additional examples are listed below:

School bus rollover with more than six critical patients.
Probability of Occurrence – Low
Consequence to the Community – Moderate to High
Impact on the department – High.
Active shooter (with multiple known patients)
Probability of Occurrence – Low
Consequence to the Community – Moderate. News worthy
Impact on the department – High.

Hazardous Materials Services

The LANL include the following facilities that may require hazardous materials response:

Nuclear facilities, high explosives and detonation manufacturing facilities, weapons assembly, radioactive materials use (other than nuclear facilities), hazardous waste storage facilities, high electrical and or laser use, computer facilities, facilities with large chemical use or storage, warehouses, explosives storage, machine shops, experimental research laboratories with small radioactive sources or moderate chemicals present, flammable liquid or gas handling and storage facilities.

Micro and Nano Technologies: Typical hazards are associated with lasers, chemicals, microwave radiation, and organic and inorganic and toxic materials. Other hazards include standard industrial hazards, such as, high voltages, power and hand tools, and electronic test equipment.

Chemical and Radiation Detection: Routine hazards are associated with lasers, chemicals, microwave radiation, flames and furnaces, cryogenic materials, compressed gases, and organic, inorganic and toxic materials including toxins, toxin fragments, and bio-hazardous materials. Standard industrial hazards include high voltages, hot and cold surfaces, and test equipment.

Weapons Research & Development: Typical hazards include standard industrial hazards including compressed gases, cryogenic materials and energetic materials. Other hazards include radioactive, toxic, thermal and energetic materials.

Materials and Chemistry Research & Development: Routine hazards include lasers, chemicals, microwave radiation, flames and furnaces, compressed gases, cryogenic materials, extreme ultraviolet radiation, ionizing radiation from accelerators, and organic and inorganic and energetic materials. Other hazards include cutting, grinding and etching, as well as the use of high voltages, power and hand tools, electronic test equipment and power supplies.

Explosives Storage: Routine hazards include explosive hazards classified by DOT as either 1.1 (mass detonating), 1.2 (non-mass detonating, fragment-producing), 1.3 (mass fire), and 1.4 (moderate fire-no blast).

All laboratory activities above utilize various quantities of cryogenic gases including liquid nitrogen and liquid argon.

Table 40 HazMat Risks by District

Call Type	District	Low	Moderate	High	Special	Maximum
HazMat	1-4	3	2			
	1-5	5	8			6
	1-6	3				
	301e	1	2			1
	330e	21	3	1		
	4-1	21	9	1	1	
	5-1	1	3	1		
	6-1	19	6	1		
	Out	1				
HazMat Total		**75**	**33**	**4**	**1**	**7**

Hazmat Risk Definitions

Low Hazmat Risk – Oil or other combustion liquid spills, hazmat release investigations.
Example: Motor oil or diesel spill at a gas station.
Probability of Occurrence: Moderate.
Consequence to the Community: Low.
Impact to the department: Low

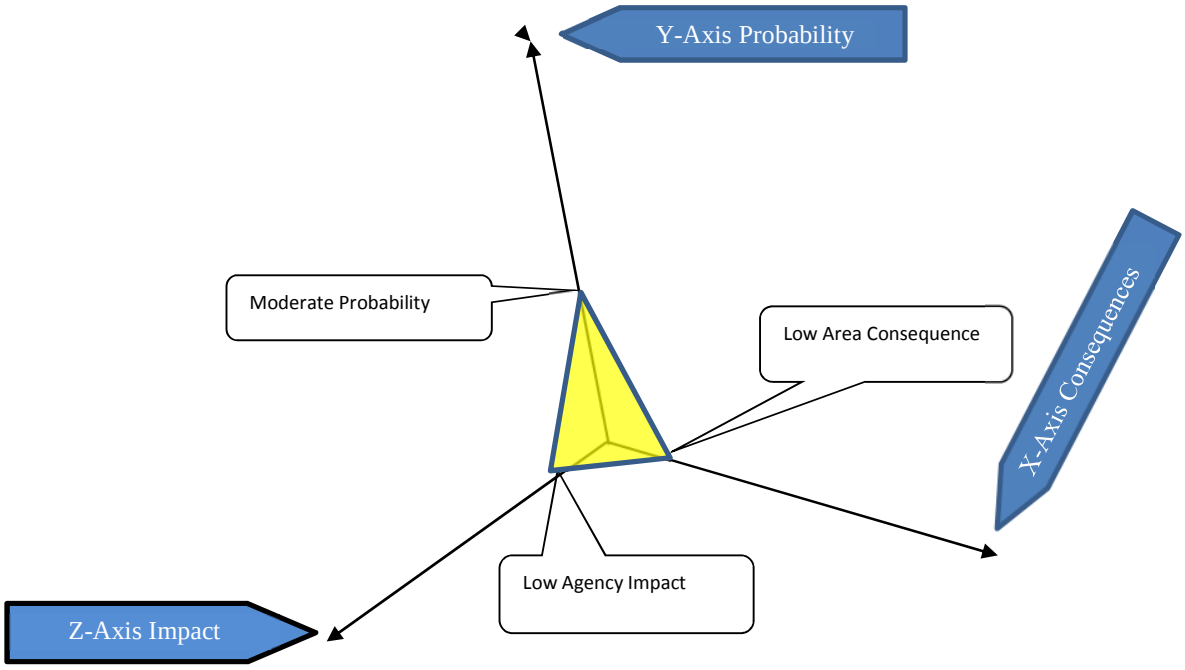


Figure 43 Axis Risk Classification Process - Moderate HazMat Risk Level

Moderate Hazmat Risk – Carbon monoxide alarms, odor checks, hazmat standby for LANL hazmat, miscellaneous chemical hazard calls.

Scenario: Natural gas leak in a residence. Probability changes with the season. There are no as many carbon monoxide alarms in summer; however, high natural gas checks and carbon monoxide calls in the winter.
Probability of Occurrence: Moderate.
Consequence to the Community: Moderate.
Impact to the department: Low.

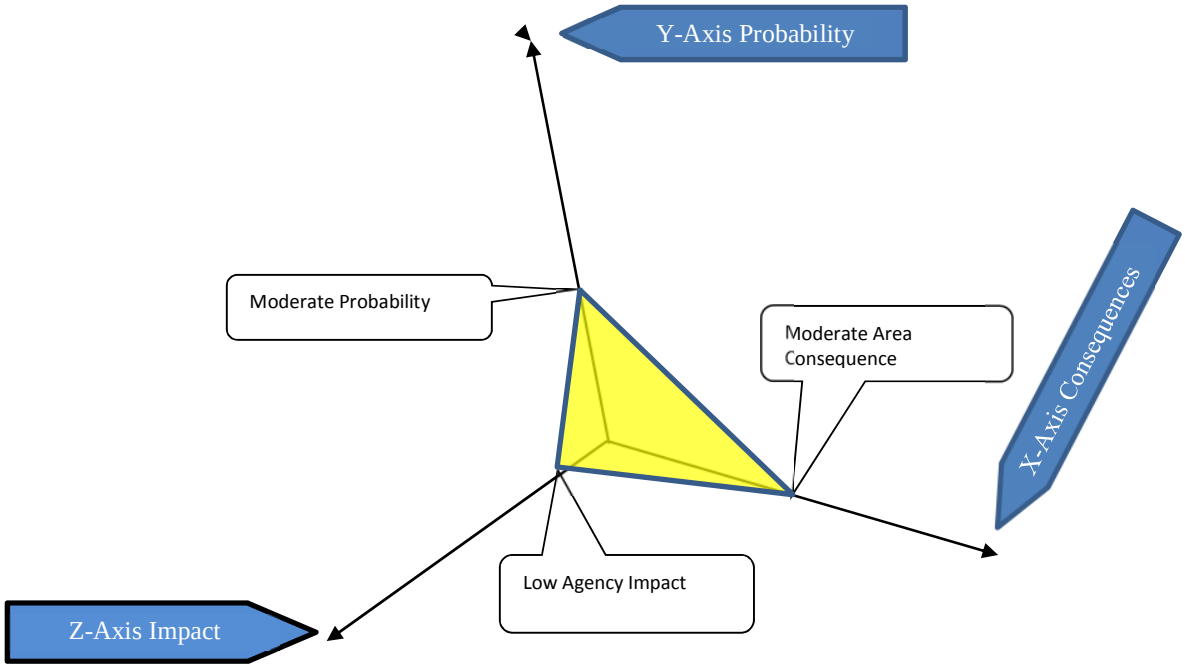


Figure 44 Axis Risk Classification Process - High/Special HazMat Risk Level

High/Special Hazmat Risk – Gasoline or flammable liquid spills, natural gas or LPG leaks, explosives emergency response

Probability of Occurrence – Moderate, occurrence history is approx. 2 per month.

Consequence to the Community – Moderate to High – may require area evacuation and business and road closures

Impact to the department – Low to Moderate – Two engine crews, two medics, a rescue unit and support resources in the case of evacuation.

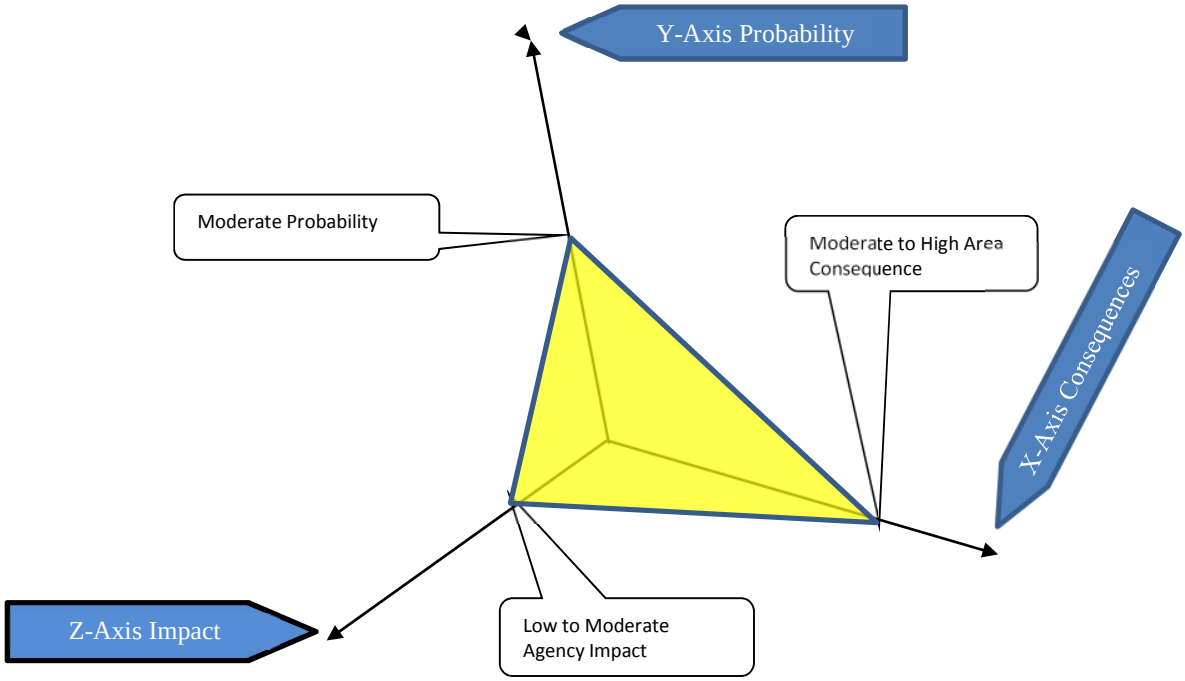
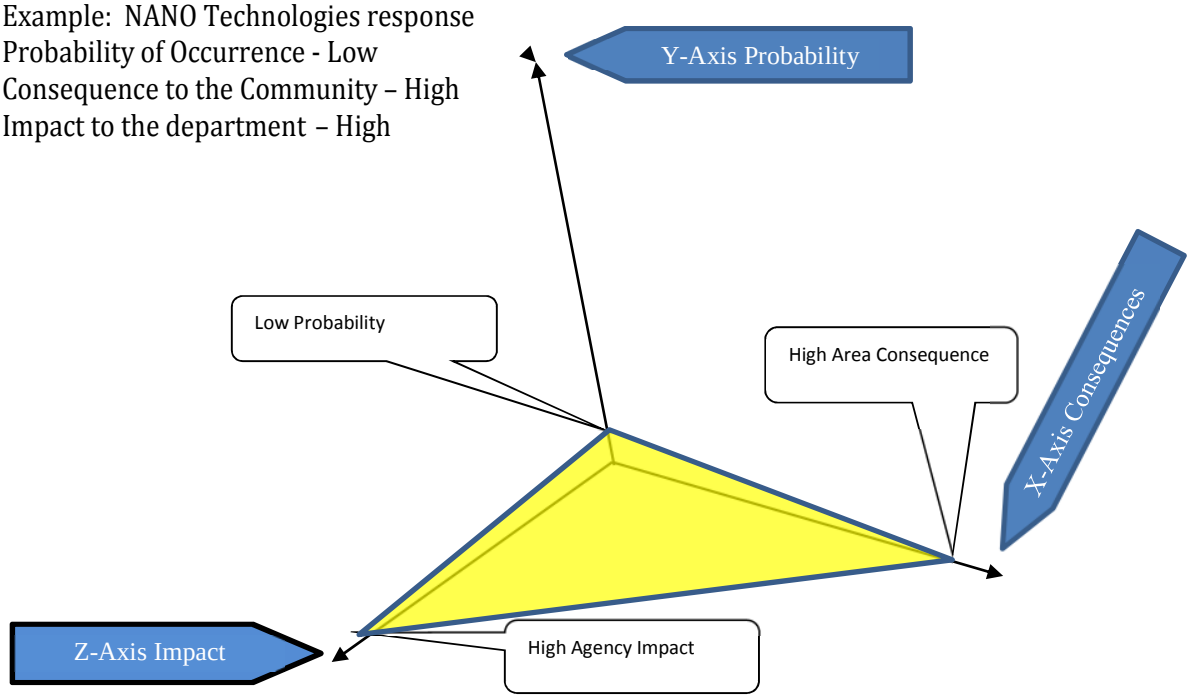


Figure 45 Axis Risk Classification Process - Maximum HazMat Risk Level

Maximum Hazmat Risk – Bomb removal scenarios, biological scares, radiological emergencies,

Example: NANO Technologies response
Probability of Occurrence - Low
Consequence to the Community – High
Impact to the department – High



Rescue Services

Table 41 Rescue Risks by District

Call Type	District	Low	Moderate	High	Maximum
Rescue	1-4	5	6		1
	1-5	22	26		1
	1-6	6	12		
	301e	1	1		
	303e	3	2		
	330e	17	19	1	3
	4-1	13	20	1	1
	5-1	13	11	1	
	530e	1	1		1
	6-1	28	35		2
	630e	6	10		1
	Out	3	8		
Rescue Total		**118**	**151**	**3**	**10**

Rescue Risk Definitions

Low Angle Rescue Scenario: An individual is unable to remove themselves from a wilderness area.

Probability of Occurrence: Moderate. This type event happens several times a year. The County has an extensive trail network that is regularly used for hiking and biking.

Potential Consequence to the Community: Low. A trail or low angle rescue would not have much of an effect on the community.

Impact on the Department: Low. A trail or low angle rescue does not require the same level of personnel or expertise as a high angle event. Typically, the resources required are UTVs.

Elevator Rescue Scenario: Individuals become trapped in an elevator that has stalled.

Probability of Occurrence: Moderate. Elevator alarms for stalled elevators occur almost monthly.

Potential Consequences to the Community: Low. The community would not be affected other than an elevator being placed out the service.

Impact on the department: Low. This type of emergency does not require a large response force.

Figure 46 Axis Risk Classification Process - Low Rescue Risk Level

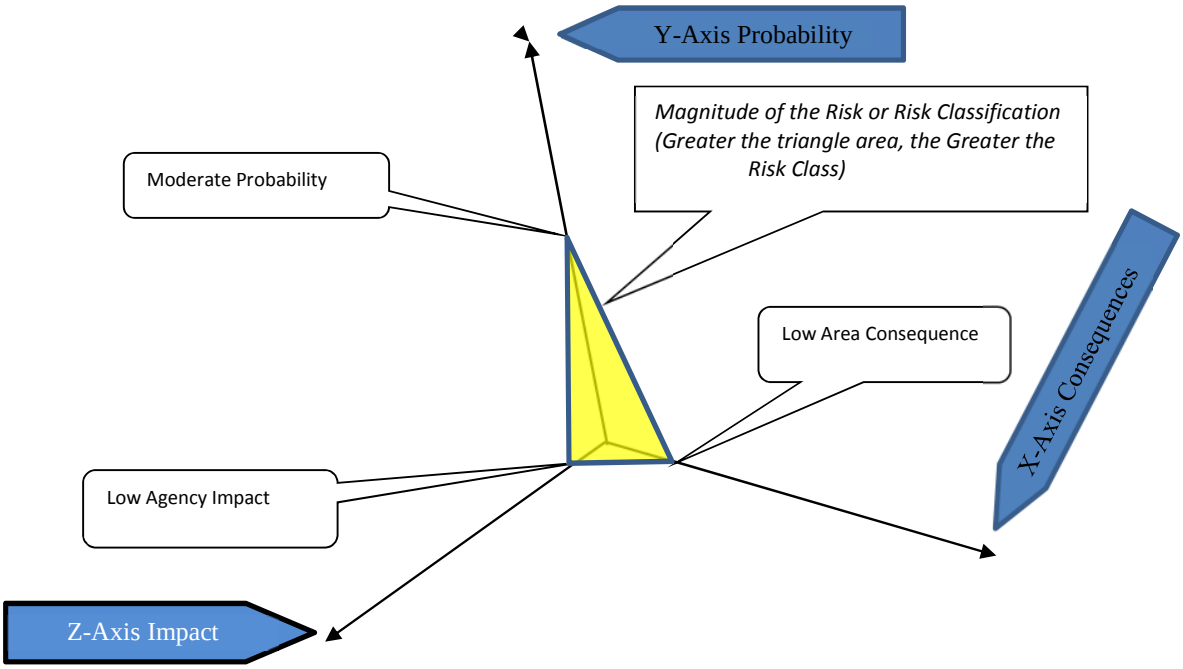


Figure 47 Axis Risk Classification Process - Low Rescue Risk Level

Trench Rescue Scenario: Construction workers become trapped in a trench.

Probability of Occurrence: Low. The soil type in Los Alamos is mostly rock and does is not likely to cave in. The department has not has incidents of this type.

Potential Consequences to the Community: Low. The impact of this event would only affect the immediate area of the incident.

Impact on the department: Moderate to High. These types of incidents can become labor intensive and may require more personnel as the call progresses.

Vehicle Extrication Scenario: Single vehicle crash with the vehicle on its side requiring stabilization and extrication.

Probability of Occurrence: Moderate. This type of MVA is not uncommon and there is potential with the mountainous roads in Los Alamos.

Potential Consequence to the Community: Low. A single vehicle accident usually does not have a significant impact. If it occurs on one of the main access roads, it could cause a traffic flow slowdown, especially during the morning or evening commute.

Impact to the department: Low. A vehicle on its side does require more knowledge, but should not require more resources than the first alarm assignment. In some cases, TRT may be dispatched for this type of incident.

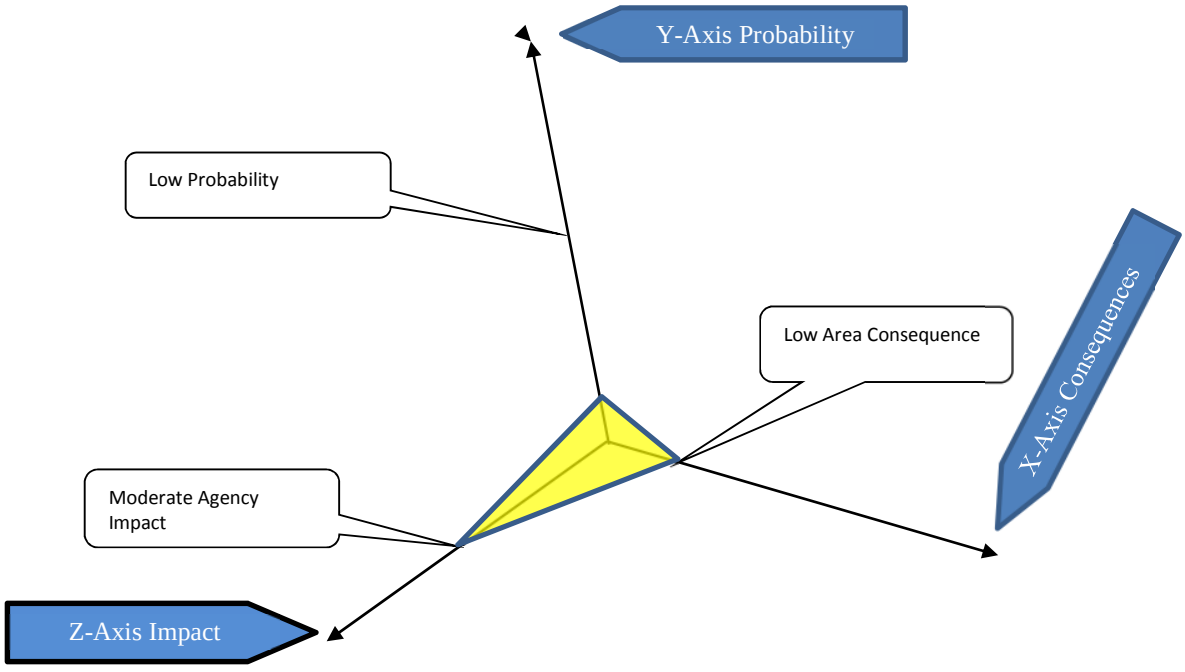


Figure 48 Axis Risk Classification Process - Moderate Rescue Risk Level, Scenario 1

High Angle Rescue Scenario

An individual that fell off of a cliff.

Probability of Occurrence=Moderate. There are numerous areas for sports climbing and cliff site activities. This type of event happens several times a year.

Impact on the department=Moderate. Initial response to this type of incident would be 12 personnel with a call back of core TRT members

Potential consequences on community=Low. This type of incident usually effects a small amount of people and would not cause any sort of immediate effect to the community to perform the rescue.

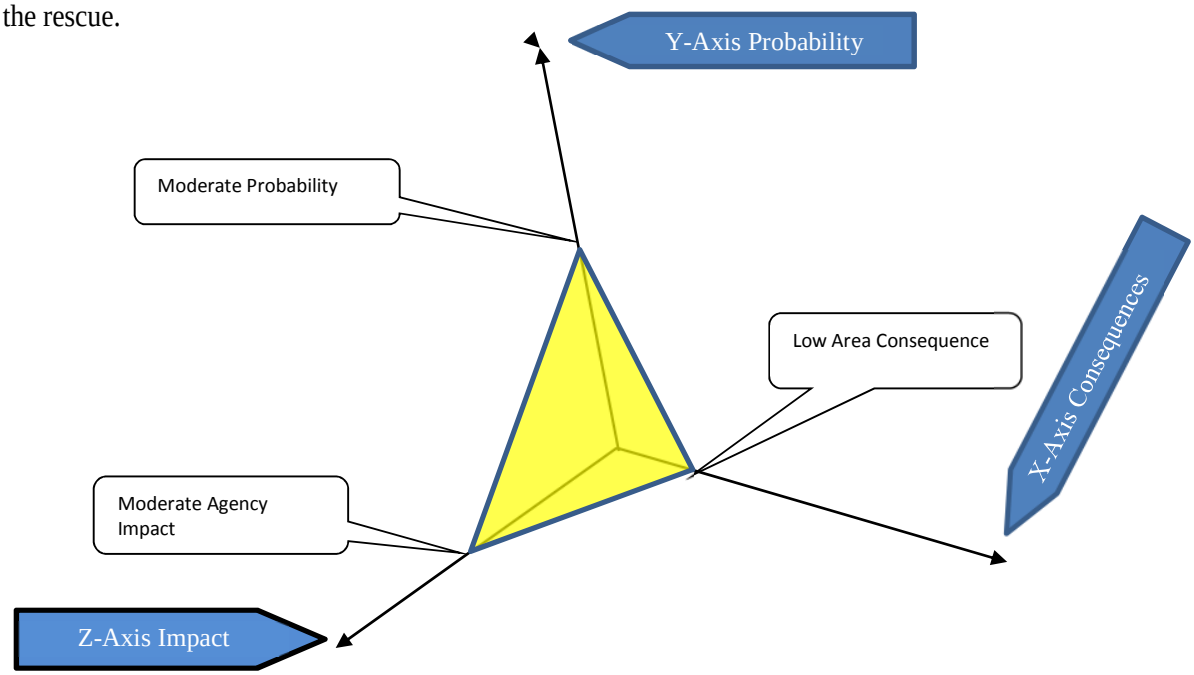


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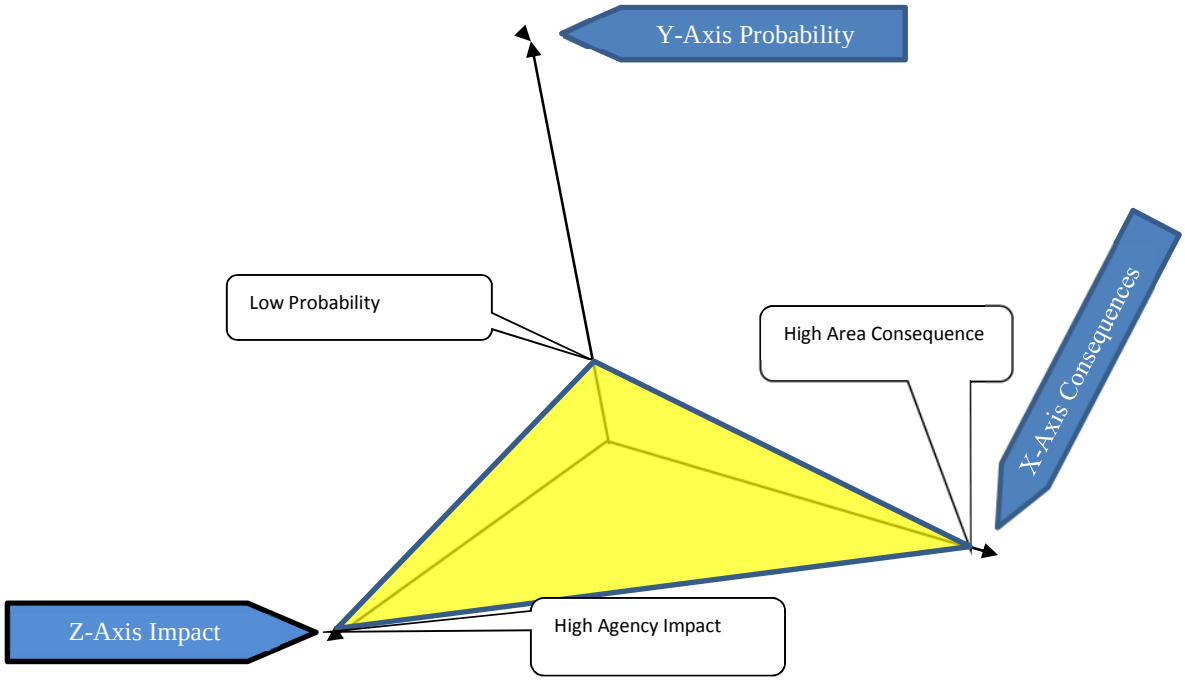
Figure 49 Axis Risk Classification Process - High Rescue Risk Level, Scenario 1

Vehicle Extrication Scenario: Bus rollover on main hill road.
Probability of Occurrence - Low. There is potential for this to happen but has never happened in Los Alamos.
Impact on the department - High. Staffing would be exhausted and call backs would be necessary to handle the amount of Patients involved.
Potential consequences on community - High A crash of this size would most likely effect the community due to the number of people involved and the time that one of the main roadways allowing access to this community being closed



The LAFD is responsible for providing initial response to technical rescue incidents to the LANL and the communities within the County.

In the past three years (1/1/2011 to 11/18/2014), the LAFD has responded to 71 calls that would be considered technical rescue responses: 36 Stalled elevator removal; 7 Extrications other; 2 Vehicle extrications; 3 High angle rescues; 1Confined space rescue.

Figure 50 Axis Risk Classification Process - High Rescue Risk Level, Scenario 2

Building Collapse Scenario: There is a building collapse.
Probability of Occurrence=Low We are not in an area of frequent seismic activity and have not had a building collapse.
Impact on the department=High This type of incident could last for several days depending on the structure involved.
Potential consequences on community=Moderate/High A large number of people could be involved in a building collapse and the adjacent buildings and are will be closed until this situation is stabilized.

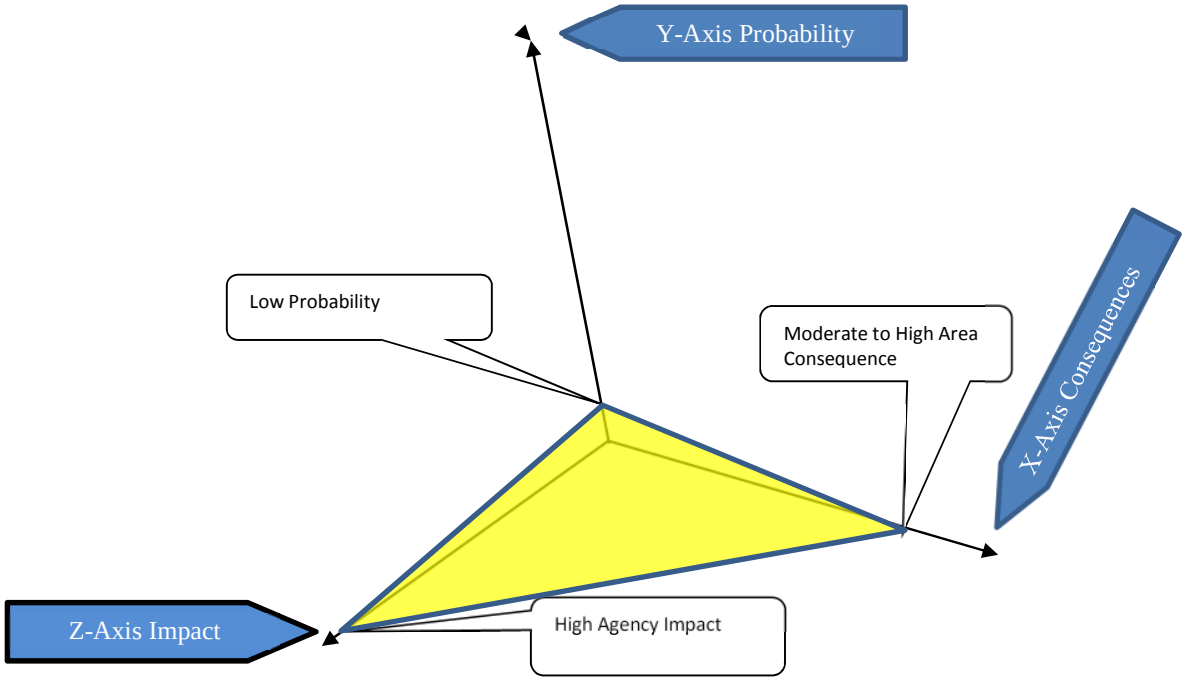
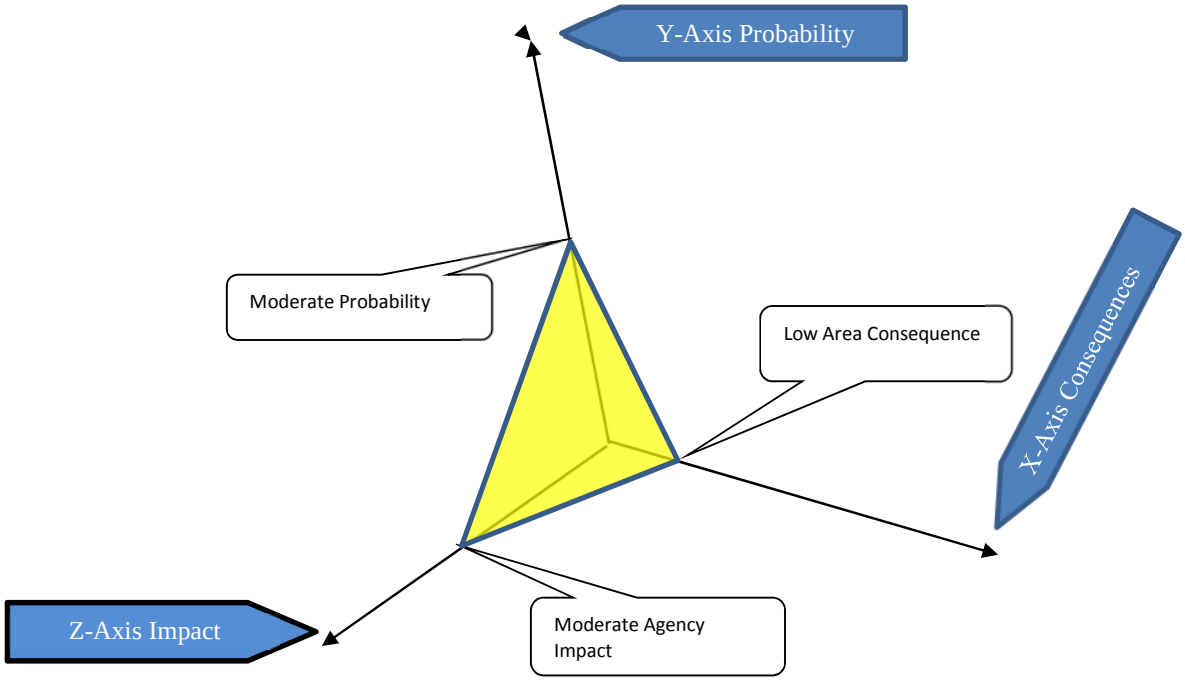


Figure 51 Axis Risk Classification Process - Moderate Rescue Risk Level, Scenario 2

Confined Space Scenario: Workers become trapped in a confined space while performing maintenance activities.
Probability of Occurrence=Moderate The county and LANL have numerous confined spaces that are entered routinely to do various maintenance tasks.
Impact on the department=Moderate The initial response for a confined space rescue is 12 personnel with a call back of core TRT members but could increase due to the working conditions.
Potential consequences on community= Low These incidents would not have a large impact on the community due to the operation would mostly be in the confined space.



There are no special or maximum risk levels for technical rescue within the service area.

Wildland

Table 42 Wildland Risks by District

Call Type	District	Low	Moderate
Wildland	1-4	2	1
	1-5	3	4
	303e		1
	330e	4	11
	4-1	8	11
	5-1	3	
	530e	1	
	6-1	2	
	Out	2	
Wildland Total		**25**	**28**

Wildland Risk Definitions

Figure 52 Axis Risk Classification Process - Low Rescue Risk Level

Low Wildland Risk – Grass fire (400 sq. ft. or smaller); Brush fire (400 sq. ft. or smaller) where **winds conditions are calm**. Little duration flaming front with occasional torching. Fuels are uniform and fire behavior can be easily predicted and tactics implemented. Fire proportion is expected to be small for the governing fuel type involved. Grass, vegetation structure are similar and considered low risk of loss.

Wildland Scenario: Visible smoke called in by someone in the community. Units dispatched and locate a campfire on ski hill road.

Probability of Occurrence: Moderate/High

Consequence to the Community: Low.

Impact on the department: Low. Staffing will be dedicated to the emergency until the fire is extinguished.

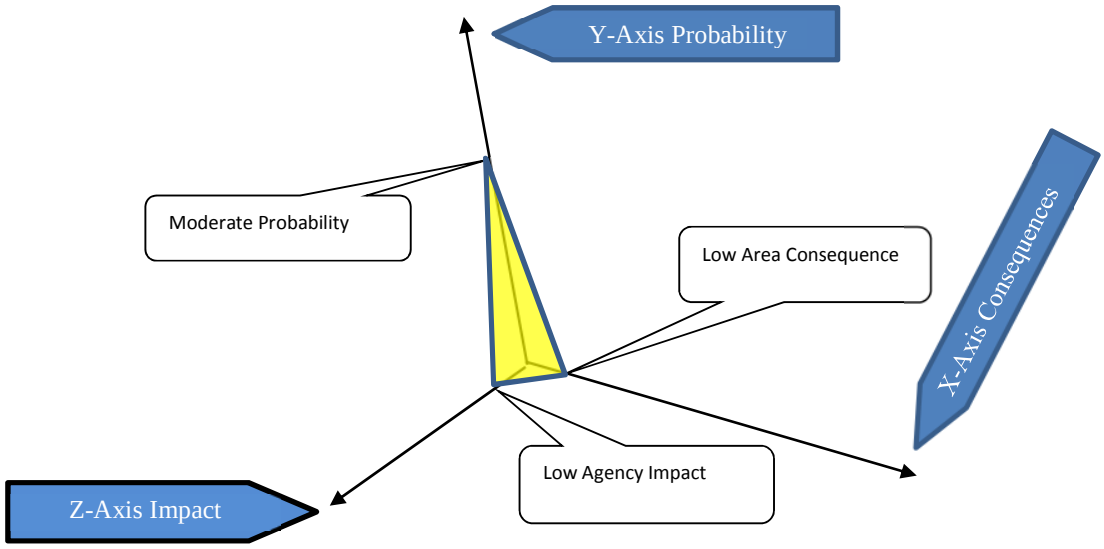


Figure 53 Axis Risk Classification Process - Moderate Wildland Risk Level

Moderate Wildland Risk Scenario – Lightning strike fire. Grass fire (400 sq. ft. or larger); brush fire (400 sq. ft. or larger), crown fires, **with wind speeds of 15 to 25 miles per hour**.

Fire may or may not be spotting. Heavier fuel loading wind, weather, time of year and time of day are factors. Moderate rates of spread are expected with surface fire and torching. Fire size is expected to be in the mid-range for the dominant fuel type involved. Both the configuration and arrangement of vegetation has shifted in the direction of more at risk of loss.

Probability of Occurrence: Moderate. Lightning strike fires are relatively common in Los Alamos County.

Consequences to the Community: Moderate to High. These types of fires tend to go undetected until they've grown. Structures could be exposed in the wildland urban interface areas.

Impact on the department: Moderate.

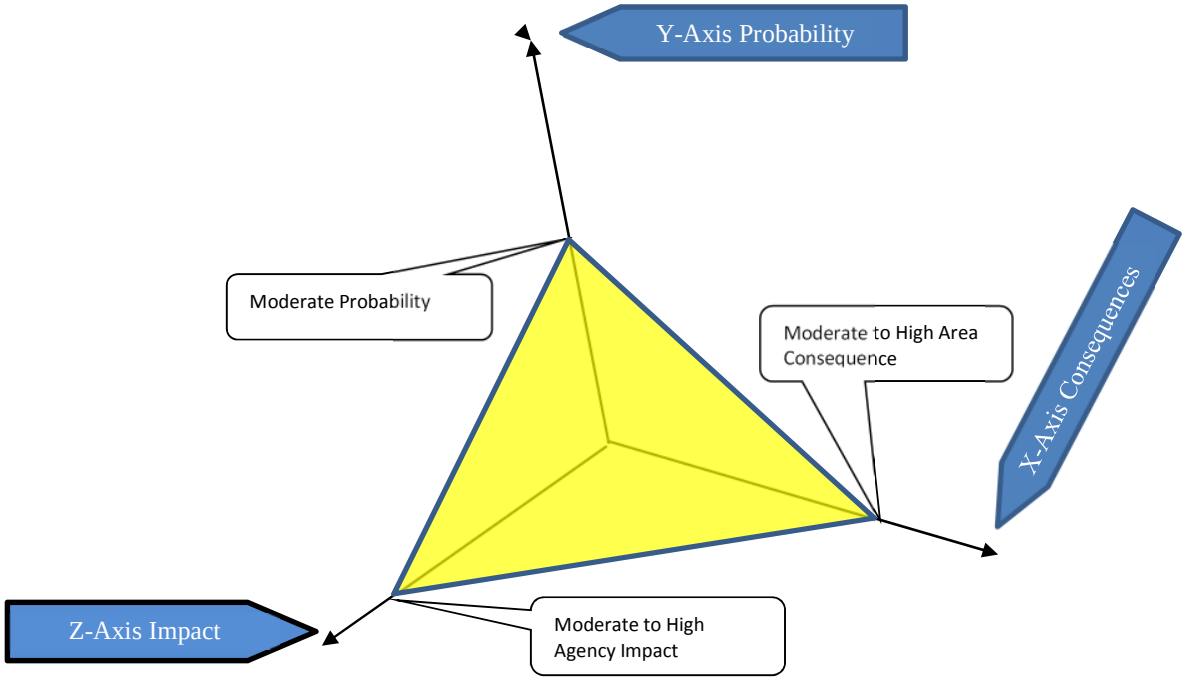


Figure 54 Axis Risk Classification Process - High/Special Wildland Risk Level

High/Special Wildland Risk – Shot activity standby, multiple spot fires resulting from a shot activity, chimney canyon fires, **with wind speeds of 25 miles per hour or greater.**

Hazardous materials are involved in the fire from a shot activity. Multiple spot fires resulting from a shot activity. Fire involving down power lines in the area. Canyon fires which form a chimney effect by preheating unburned material and traveling fast up the canyon. Fires with wind greater than 15 miles per hour. Wildland fires where a home or multiple homes may be affected. Wildland fires where vehicles are involved.

Wildland Scenario: Following a shot activity standby, multiple fires are reported by a firing site leader.

Probability of Occurrence: Moderate. Brush fires resulting from shot activity are frequent.

Consequence to the Community/LANL: Moderate to High. Staffing dedicated to the emergency. Call back of off duty personnel. Incident may last more than one day or two operational periods. LANL may change or develop new policies and procedures. LANL may be in a stop work until full investigation is conducted.

Impact on the department: Moderate to High. Staffing will be dedicated to the emergency until the fire is extinguished. Scene will require personnel dedicated to the fire throughout the incident.

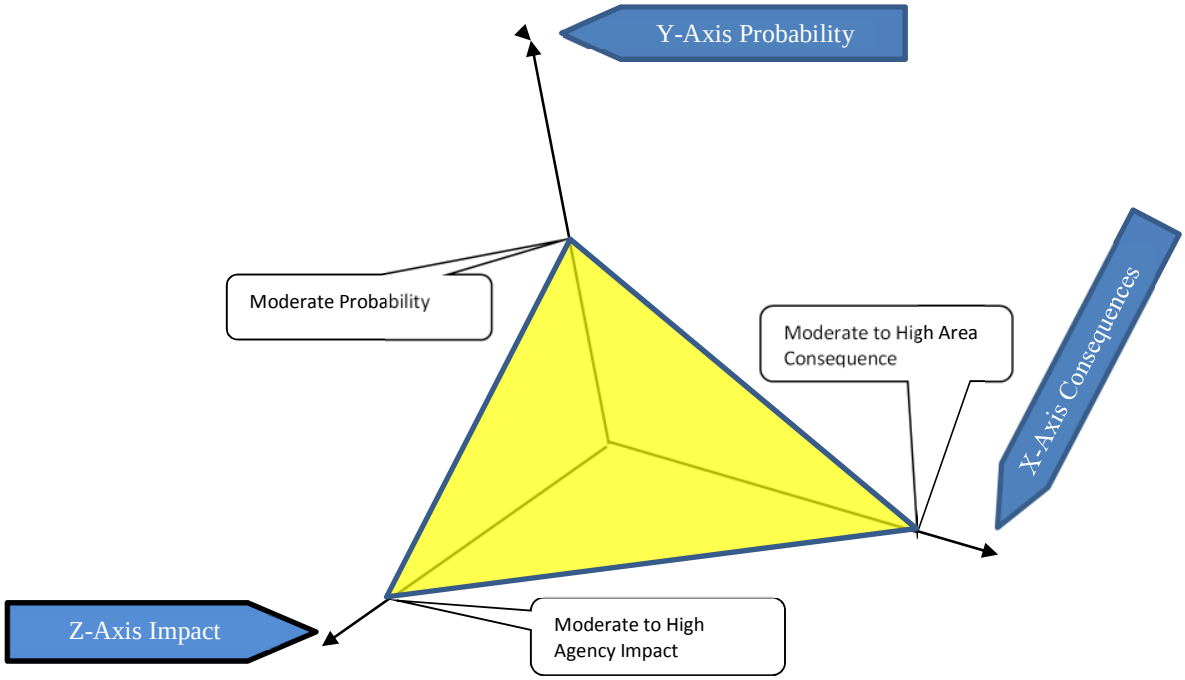


Figure 55 Axis Risk Classification Process - Maximum Wildland Risk Level

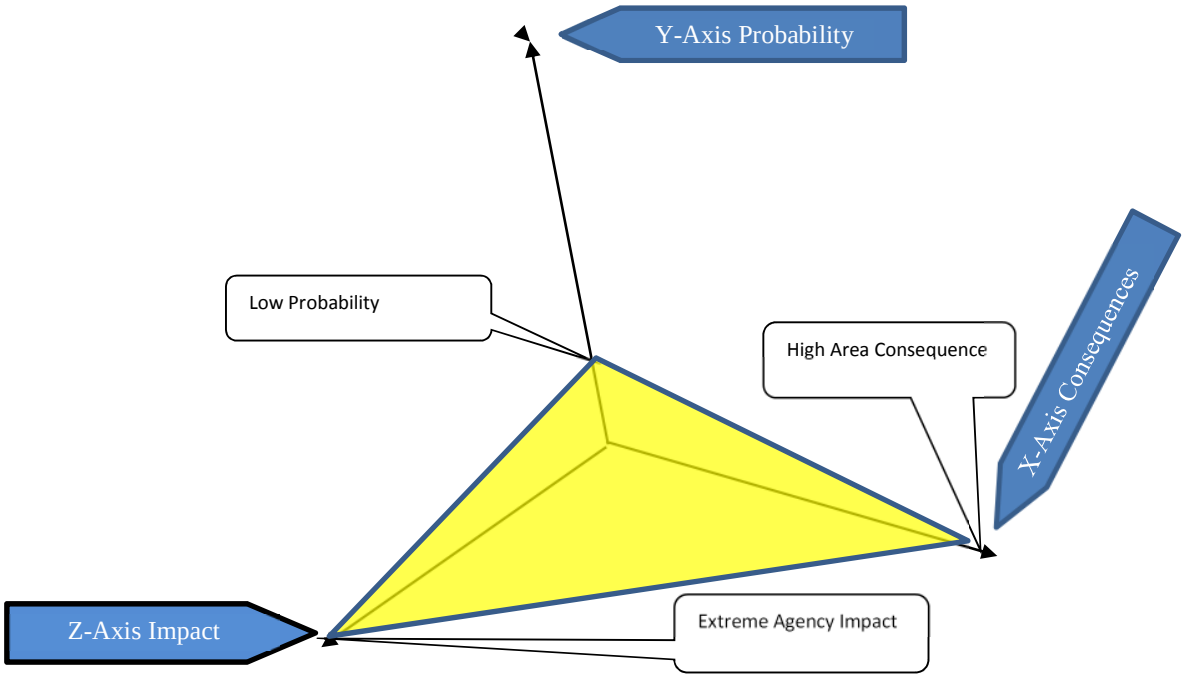
Maximum Wildland Risk – Grass fire (100 acres or larger); brush fire (100 acres or larger), crown fires, fires in canyons with wind speeds of greater than 25 miles per hour.

Fire now has a high probability of spotting. Dangerous rates of spread, and crown fire activity are possible. Fuels, elevation, and topography vary throughout the fire area creating high resistance to control. Fire size is expected to be large for the dominant fuel type involved. Vegetation composition and structure are highly altered, landscape because of the fire effects has changed. Fire environments of this magnitude have never before measured.

Probability of Occurrence: Low. Five maximum risk occurrences within the last 40 years, due to high winds in the spring and summer time and drought conditions.

Consequences to the Community: High. 400 homes were lost in the Cerro Grande Fire of 2000.

Impact to the department: Extreme. Exhaust department resources, require mobilization of state resources.



Aircraft Rescue Firefighting

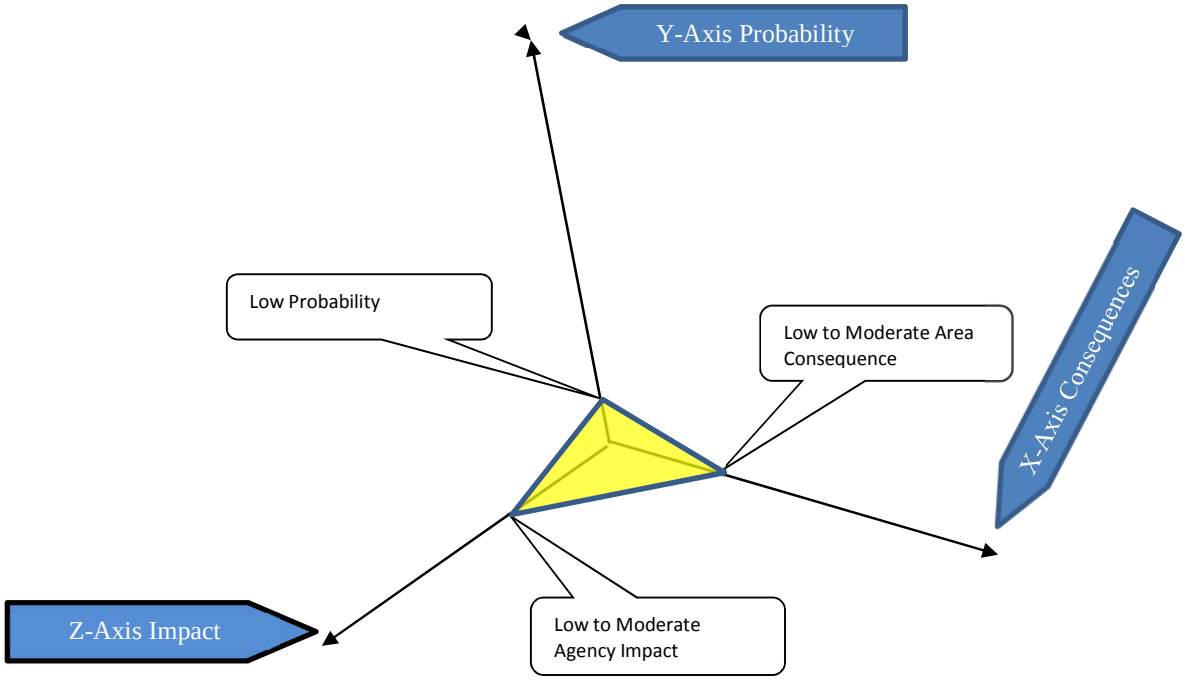
Call Type	District	Moderate
ARFF	6-1	1
ARFF Total		1
Grand Total		1

ARFF Risk Definitions

Low ARFF Risk – Likely to have less than 25% of resources deployed. Inbound emergency declared which does not affect the safe landing of the aircraft. Low to moderate smoke in the cockpit w/out fire. Electrical, mechanical, or structural failure of aircraft. Tire failure or "hot brake" emergency post landing. In flight EMS emergencies with 1 or 2 patients.

Figure 56 Axis Risk Classification Process - Low ARFF Risk Level

Low ARFF Scenario
Inbound general aviation aircraft emergency with mechanical or electrical failure which does not affect the pilot's ability to control and land the aircraft.
Probability of Occurrence = Low
Impact on the department = Low/Moderate. Staffing will be dedicated to the emergency until the plane lands safely or the incident escalates
Potential consequences on community = Low/Moderate. Area air traffic MAY have to be diverted hindering scheduled flights (both takeoff and landing). Other dep artment resources may be delayed in responding



Low ARFF Scenario: An aircraft declares that they have a fire in their #1 engine. The engine is shut down but the plane lands safely at the airport using the thrust from its #2 engine. Fire conditions remain in the #1 engine upon landing.

Probability of Occurrence = Low

Impact on the department = Moderate. Initial response deployment will be large to accommodate the potential for MCI and large fire potential. Fires contained within an engine compartment/jet engine do not usually spread as long as agent is correctly applied to/in the fire area in a timely manner. Many of these incidents can be mitigated without the evacuation of an aircraft.

Potential Consequences to the community = Low/Moderate. Delayed response of other department resources. Affected runway/taxiway will likely need to be shut down until the hazard is mitigated, firefighting agents are cleaned up, and the aircraft moved. News worthy event making for high curiosity and potential social disruption.

Figure 57 Axis Risk Classification Process - Moderate ARFF Risk Level

Moderate ARFF Risk – Likely to have 25%-50% of resources initially deployed. Any aircraft that has an engine fire that is safely on the ground. May be an aircraft preparing for takeoff. Potentially an inbound aircraft with multiple engines that can safely land with one or more engine(s) shut down. Inbound emergencies or known crashes with moderate impact or hard landings, landing gear failure/belly landings, uncontrolled descent, pilot error, environmental/weather related incidents, mechanical failure, any incident that causes a leak of fuels, oils, or pyrophoric substances that DO NOT have fire involvement. Can be caused by and accident/collision, refueling spill, mechanic work/repair, brake and/or tire fire without exposures, aircraft with low/moderate collisions on the ground (Aircraft vs. Aircraft, Aircraft vs. Hangar, etc.), any aircraft emergency with 2-4 critical EMS patients.

Moderate ARFF Scenario: Inbound aircraft with a known landing gear failure requiring the pilot to make a belly landing.

Probability of Occurrence = Low

Impact on the department = Moderate. Staffing will be dedicated to the emergency until the plane lands or incident escalates. Due to the potential for harder impact, more damage, and higher risk to life, scene time will likely be extended to mitigate all hazards. Scene will require personnel dedicated to the site throughout the incident and investigation by NTSB if they see fit.

Potential Consequences to the Community = Moderate. Air traffic to the area will likely have to be diverted until incident is mitigated, investigated, and cleaned up. Depending on damage to airport property, repairs may be required prior to flight services resuming.

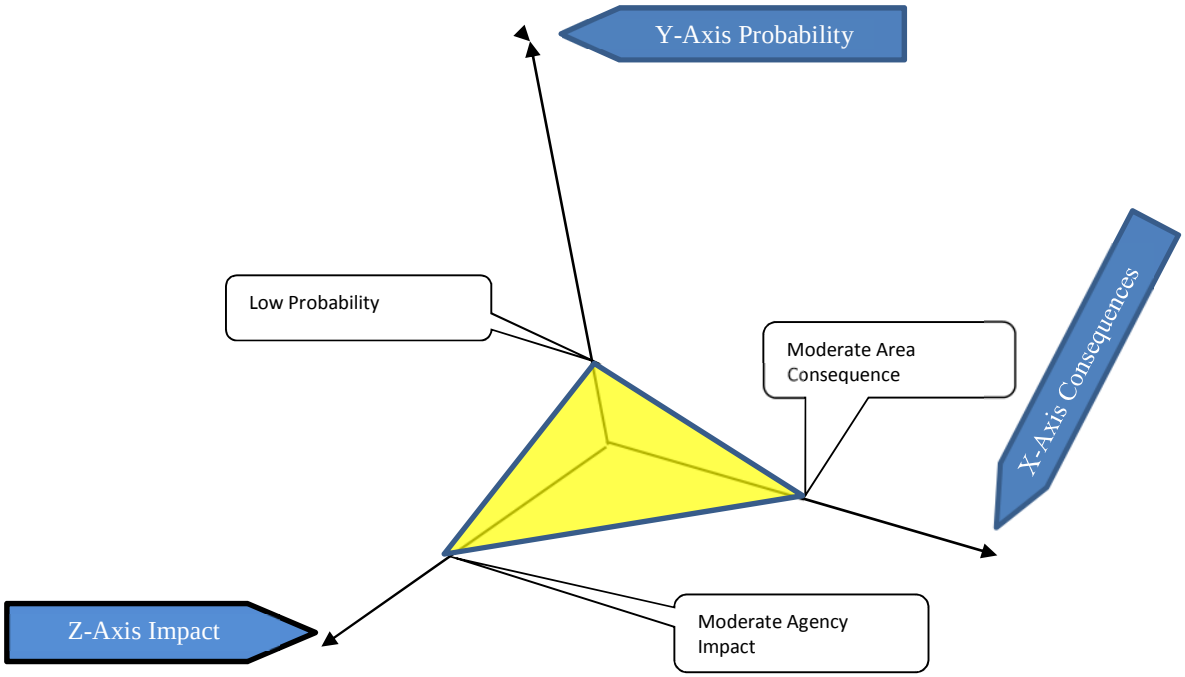


Figure 58 Axis Risk Classification Process - High/Special ARFF Risk Level

High/Special ARFF Risk – Likely to have 50%-75% of resources deployed. Small aircraft with known mechanical failure that affects control of the aircraft. Any Helicopter incident. High probability of structural failure upon impact. Expanded scene perimeter due to high speed and unpredictable shrapnel expulsion. Any aircraft incident outside the airport perimeter: Canyons/cliffs, difficult access, TRT implications, delayed response, residential/commercial buildings, landings in uncontrolled areas (roadways, fields, parking lots, etc.), landings/Crashes with wildland fire implications, any incident with Ballistic Recovery Systems, deployed system, un-deployed system, unknown. Any incident/ emergency where communications via UNICOM 123.000 can't be established, aircraft details can't be established, and number of souls aboard can't be confirmed, nature of emergency is uncertain, any incident with known hazardous materials or bio hazards: medical flights, military, cargo flights, large fuel/oil spills.

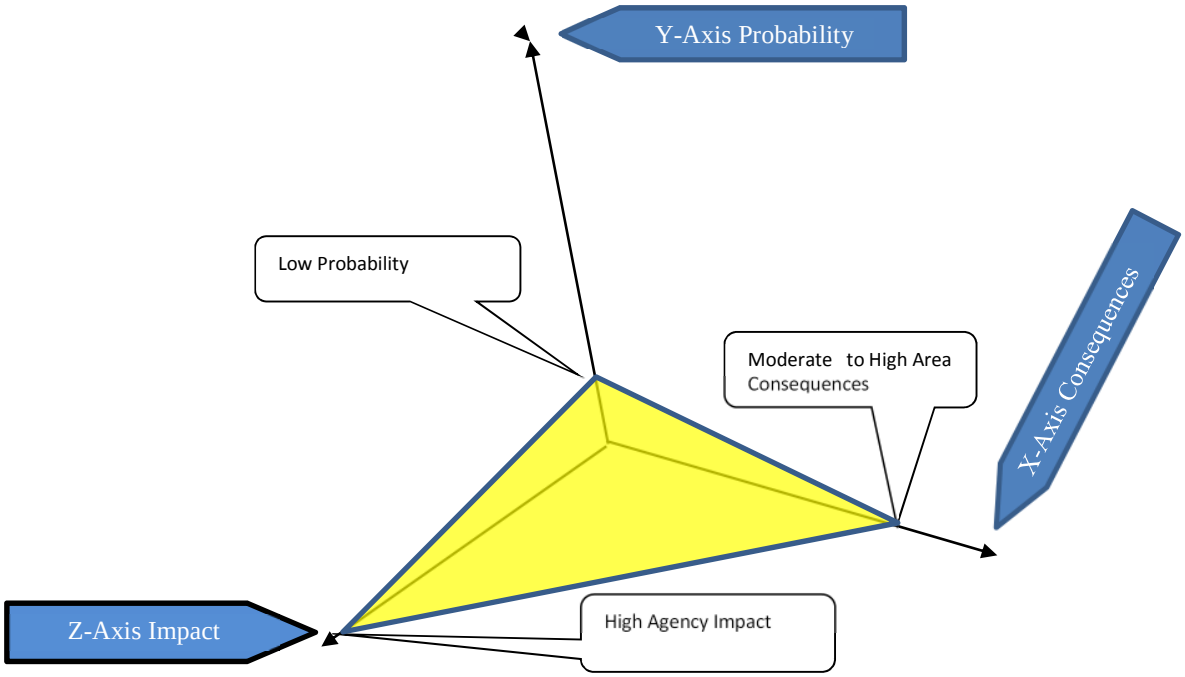


Figure 59 Axis Risk Classification Process - High ARFF Risk Level

High ARFF Scenario: Inbound COMMUTER flight with 11 souls aboard came up short of the runway, crashing within the airport perimeter.
Probability of Occurrence = Low
Impact on the department = HIGH. High number of personnel required; staffing will be dedicated to the incident throughout the mitigation, cleanup, and investigation phases of the incident. High probability of fire conditions requiring multiple units for hose/agent. High probability of MCI conditions. Nearly all of the LAFD ambulances will likely be required. Mutual aid may be needed with expanded IMS. CISD/CISM will likely be required.
Potential Consequences to the community = HIGH. Airport will likely be shut down for extended period. Tight-knit community will likely see a devastating social impact. Delayed response from other department recourses.

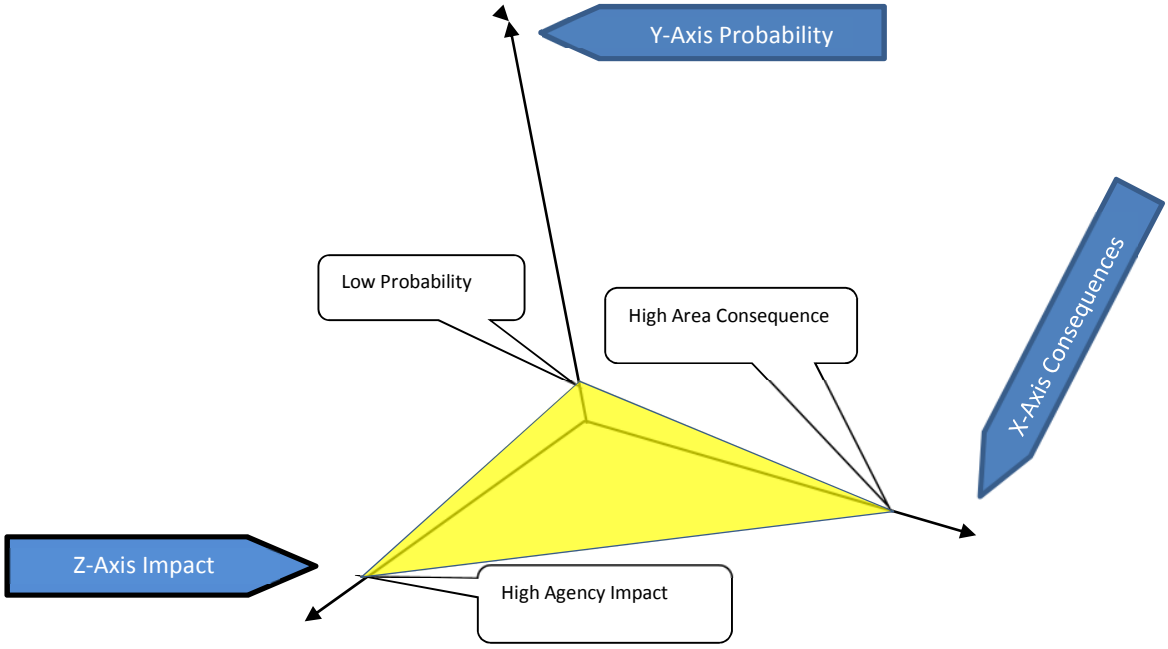
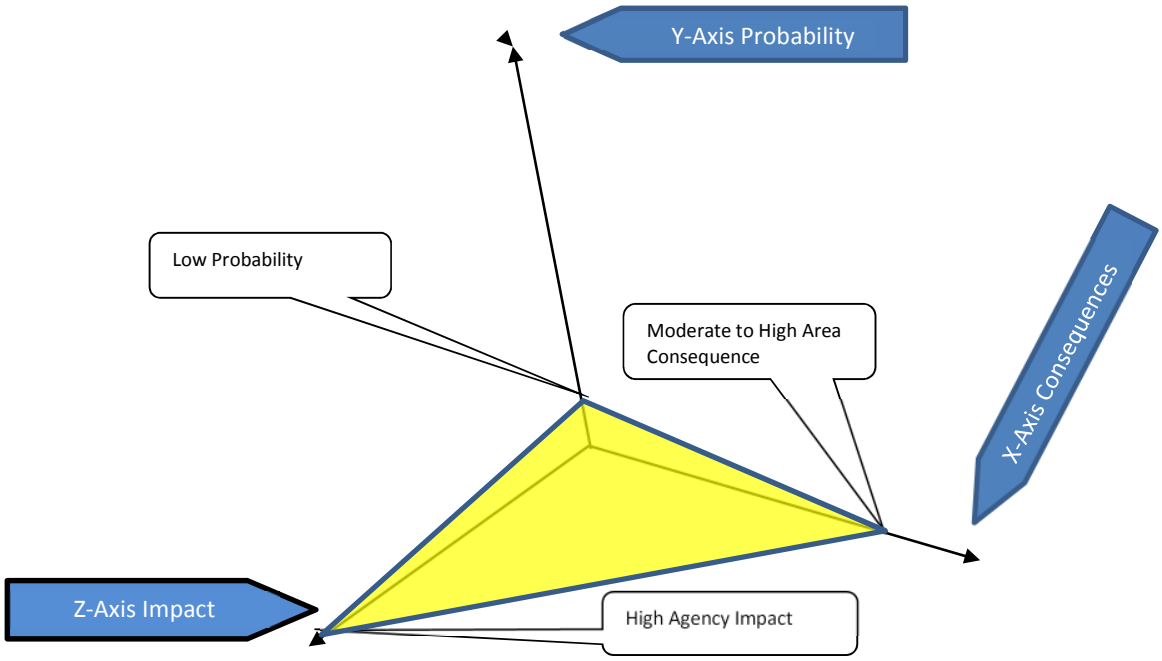


Figure 60 Axis Risk Classification Process - Maximum ARFF Risk Level

Maximum ARFF Risk – Likely to have over 75% deployment of resources. Large aircraft (both in size and occupancy) with known mechanical failure affecting control of the aircraft. Any aircraft emergency with five or more people aboard. Any aircraft with high quantities of fuel that cannot be burned off prior to landing. Hard impact crashes
Any aircraft emergency involving fire conditions not contained within an engine or brake compartment. Fire conditions inside or outside the fuselage; secondary structural fire conditions; secondary wildland fire conditions; any aircraft vs. building affecting structural stability; may or may not include fire conditions within the structure.
Probability of occurrence: Low, as the volume of air traffic in and out of Los Alamos Airport is relatively low.
Consequence to the community: Moderate to High
Impact to the department: High.



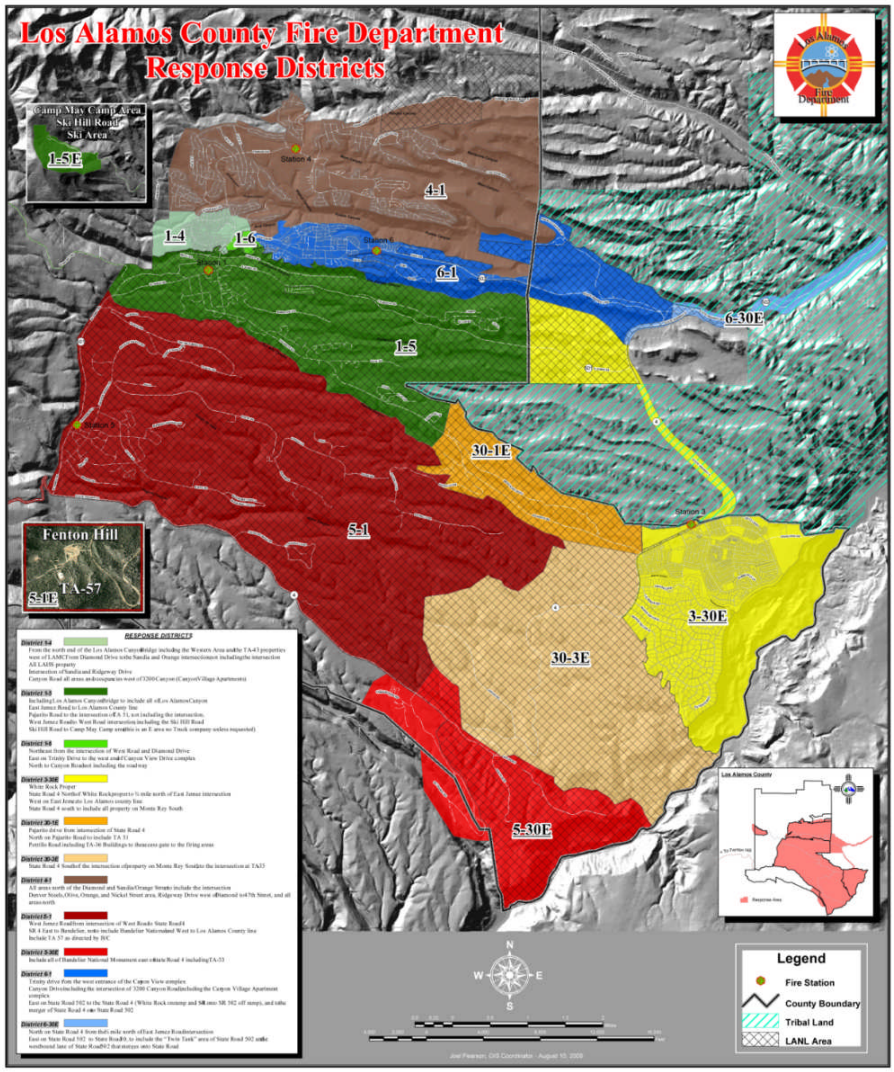
Distribution

The term distribution is used in the fire service to describe the location of fire department emergency response resources in an effort to ensure their availability to provide intervention for all risk levels. Because of the cost related to the allocation of fire resources, fire departments use a static response system. A static response system is a system in which fire stations are strategically located in designated response areas across the community or coverage area. This allows fire department units to travel from one point to another in a pre-designated period of time known as response times or performance objectives.

A key component to a static response system is to ensure fire department resources are properly placed based on current and future growth. Properly spaced fire stations are needed to assure a rapid deployment of emergency resources in order to respond to and mitigate average, or routine, emergency calls for service in a timely manner.

LAFD districts are delineated in FCD 900 article 3 Response and Alarm Assignments. These response districts are also displayed below in LAFD's Response District map.

Figure 61 LAFD Response District Map



District 1-4 *c*onsists of the territory between the north end of the Los Alamos Bridge including the Western Area and the TA-43 properties west of the Los Alamos Medical Center and Diamond Drive to the Sandia and Orange intersection, not including the intersection. All Los Alamos High School property, the intersection of Sandia and 47th Street, Canyon Road all areas and occupancies west of 3200 Canyon (Canyon Village Apartments). This area is a mix of a significant amount of single-family dwellings, apartment buildings, several churches, the high school, the university, hospital and a strip mall. The majority of this district is single family housing. Other occupancies in this district include the Los Alamos Medical Center, Los Alamos High School, University of New Mexico at Los Alamos, and the First United Methodist Church.

District 1-5 encompasses the area from the north end of the Los Alamos Bridge to include all of the Los Alamos Canyon, East Jemez Road to the county line, Pajarito Road to the intersection of TA 51, West Jemez Road to the intersection of West Road, and the Camp May Road to include the ski hill. Most of the area is owned and operated by the Los Alamos National Laboratories (LANL) and its primary usage is business and industrial. The only housing in this district is Royal Crest

Mobile Home Park. This district contains 61 high hazard areas all located on LANL property and any of their loss would be potentially disastrous. They are inspected and preplanned annually. For security reasons, this document will not identify which buildings are the worst fire risks though a risk assessment has occurred. All of the high risk buildings are protected by automatic sprinklers and fire alarm systems.

District 1-6 covers the Northeast from the intersection of West Road and Diamond Drive to the intersection of Diamond and Trinity Drive to the west end of Canyon View Drive and North to Canyon Road, not including the roadway. District 1-6 contains 6 very high risk hazards. They include two churches, three apartment structures, and a LANL research laboratory. This district is mainly made up of commercial and single family dwellings.

District 3-30E encompasses all of White Rock proper and Pajartito Acres, includes State Road 4 north of White Rock Proper from ¾ mile north of the East Jemez intersection to 4 ¼ miles south of Monte Rey South. This district contains 21 occupancies classified as very high. They include 9 churches, 5 day-cares, 3 gas stations/convenience stores, 2 elementary schools, 1 hotel and 1 grocery store. The majority of this district is single family housing.

District 30-1E boundaries are Pajarito Drive from the intersection of State Road 4, north to include TA 51, Potrillo Road including TA 36 buildings to the access gate of the firing ranges. This district contains 8 LANL facilities that have been identified as very high risk. There is no housing in this district.

District 30-3E is from State Road 4 South of the intersection ¼ mile south Monte Rey South, to the intersection at TA-33. This is a very rural area made up of some LANL facilities but mostly wildland. There is no housing in this district.

District 4-1 includes all areas north of the Diamond and Sandia/Orange Street; to include the intersection, Denver Steels, Olive, Orange, and Nickel Street area, Ridgeway Drive west of Diamond to 47th Street, and all areas north. This district contains 4 schools and 3 churches. The majority of this district is single family housing.

District 5-1 is from the West Jemez Road from intersection of West Road to State Road 4, SR 4 East to Bandelier, not to include Bandelier National Monument and West to county line, and as directed by B/C 1 to include TA 57. This area is owned and operated by LANL. It is a rural area, however, the primary LANL usage is business and industrial. There are 32 very high hazard occupancies in the district, all on LANL property. There are no residences in this district.

District 5-30E includes all of Bandelier National Monument east on State Road 4 including TA-33. This is a very rural area with limited housing in the Bandelier National Monument and several LANL occupancies. There are no occupancies designated as very high risk in the district.

District 6-1 encompasses Trinity Drive from the west entrance of the Canyon View complex; Canyon Drive, including the intersection of 3200 Canyon Road, including the Canyon Village Apartment complex, East on State Road 502 to the State Road 4 (White Rock exit and SR-4 onto SR 502 off ramp), and to the merger of State Road 4 onto State Road 502. The district is made up of mostly residential and commercial occupancies.

District 6-30 north on State Road 4 from the ¾ mile north of East Jemez Road intersection, East on State Road 502 to State Road 30, to include the "Twin Tank" area of State Road 502 and the westbound lane of State Road 502 that merges onto State Road 4. There are no structures in this district.

Concentration

The term concentration is used to describe the spacing of multiple fire department resources so a fire department can assemble an "effective response force" (ERO) at the scene of an emergency incident. An ERO is that which will most likely stop the escalation of the emergency incident as it is categorized in each risk type. Differing incident types require different levels of initial and secondary staffing based on the nature of the incident. These incident specific resource requirements are called critical tasking and are explained in detail later in this document. It is a critical factor for fire departments to develop specific service level objectives to address the concentration of resources for each risk area.

Calls for Service

During the 2013 calendar year, LAFD responded to 1849 calls for service. Of these requests for service, 37 were Fire calls (NFIRS 100s); 4 were Overpressure rupture, explosion, no fire (NFIRS 200s); 968 were EMS (NFIRS 300s minus rescue); 50 were Hazardous condition (NFIRS 400s); 197 were Service Calls (NFIRS 500s); 45 were Good Intent Calls (NFIRS 600s); 261 were False Alarms/False Call (NFIRS 700s); 11 were Severe Weather and Natural Disaster (NFIRS 800s); and 2 Special Incident Types (NFIRS 900s).

During the 2014 calendar year, LAFD responded to 1807 calls for service. Of these requests, 37 were Fire calls (NFIRS 100s); 3 were Overpressure rupture, explosion, no fire (NFIRS 200s); 1227 were EMS (NFIRS 300s minus rescue); 16 were Technical Rescue (NFIRS 340-381); 12 were Wildland Urban Interface fires (NFIRS 140s, 160s); 44 were Hazardous condition (NFIRS 400s); 170 were Service Calls (NFIRS 500s); 52 were Good Intent Calls (NFIRS 600s); 254 were False Alarms/False Call (NFIRS 700s); 1 was Severe Weather and Natural Disaster (NFIRS 800s); and 3 were Special Incident Types (NFIRS 900s).

Educational Facilities

In 2014, the Los Alamos Public School (LAPS) District provided education to 3,475 students at five elementary schools, one middle school, and one high school. The state requirements for the LAPS have the capacity for a maximum of 3700 students.

Also, located in the County of Los Alamos is the University of New Mexico –Los Alamos (UNM-LA) Branch. The facility consists of 77,000 square feet with seven buildings. At present UNM-LA has an enrollment of 718 students in the day and evening programs. There are 192 full-time students and 526 part-time students. The campus has the capacity of 1055 students. No dorms or student housing are located on campus. Access to UNM-LA has been identified with good fire access roads and four fire hydrants all within reach for a water supply. See Section I for list of educational facilities.

Critical Tasks

Fire Suppression

When there is confirmation of a working fire, a structure response is automatically upgraded to a second alarm that brings an additional engine (Refer to FCD 900.3 Response and Alarm Assignments for further information). The third engine is typically used to establish a Tactical Deployment Group (TDG) and to upgrade from the initial two-person Initial Rapid Intervention Crew (IRIC). The following critical tasks need to be completed on all structure fires:

The first–in engine company and medic company consist of five firefighters who are responsible for the following initial actions:

- Establish command
- Size-up the situation
- Secure a water supply
- Place one line in-service at 150 gallons per minute (GPM)
- Initiate search and rescue, and mitigation efforts within one minute of arrival
- Provide first responder medical aid using automatic external cardiac defibrillator (AED)

An effective response force (EFR) for an incident is 16 firefighters and 1 chief officer for completing the following tasks:

- Secure a water supply
- Place one line in-service with two firefighters at 150 GPM
- Provide one ventilation team consisting of two firefighters
- Provide one search and rescue team consisting of two firefighters
- Establish command outside the hazard area with a dedicated position
  Comply with the requirements of Two In/Two out (OSHA 1910.134) consisting of two firefighters
- Provide a second attack line with two firefighters and a minimum of 150 GPM
- Establish the capability of flowing 400 GPM without interruption

Some of the specific position responsibilities are listed below:

Attack line-A firefighting line staffed with a minimum of two firefighters capable of delivering an effective fire attack with a minimum of 150 GPM.

Back-up Line-This is the same size as the attack line, but can be larger and staffed with a minimum of two firefighters. The back-up line is used to protect the fire attack crew in the event of a flashover or a problem arising with the initial attack crew.

Search and Rescue-A minimum of two firefighters assigned to search the structure for victims. The crew locates and removes any victims while the fire attack and ventilation are being completed.

Ventilation- A minimum of two firefighters assigned to provide vertical and/or horizontal ventilation.

Initial Rapid Intervention Crew- A minimum of two firefighters assigned to stage in a ready position near the entry point of the involved structure. Their purpose is to provide search and rescue for lost or injured firefighters inside the structure and/or to assist with the removal of victims.

Tactical Deployment Team (TDG) - The objective of TDG is to have assigned personnel equipped, organized, and ready to react and respond to the immediate needs on the fire ground, especially the rescue of injured or trapped firefighters or civilians.

Pump Operator/Driver Engineer-This position is responsible for the operation of the pumper to deliver water at the proper pressure to the attack lines, and the initial accountability location.

Water Supply- One or more firefighters responsible for providing uninterrupted water supply to the attack engine. This is accomplished by laying a five-inch supply line.

Command- An officer responsible for coordinating the fire operation.

Safety/Operation- This officer is responsible for making sure that safe firefighting operations are being conducted.

Table 43 Critical Tasks - Low Level Fire Risk (Car Fire, Outbuilding, Fence, and Dumpster)

Task	Staffing Level	Units Assigned
Command, Initial Attack line and Water Supply	2	1st Engine
Pump Operator/Accountability	1	1st Engine
Total Personnel	**3**	

Table 44 Critical Tasks - Moderate Level Structure Fire Risk (Single family dwelling, mobile home)

Task	Staffing Level	Units Assigned
Command/Safety (Battalion Chief and Support Officer)	2	Battalion Chief
Initial Attack Line and Primary Search and Water Supply	2	1st Engine
Primary Search and Rescue	2	1st Medic
Ventilation/Ladder, Access	3	Truck-1
Back up Hose line	3	2nd Engine
Initial Rapid Intervention Crew and Initial Medical Aid	2	2nd Medic
Secondary S&R	2	Rescue-1
Pump Operator/Accountability	1	1st Engine
Total Personnel	**17**	

Table 45 Critical Tasks - High Level Structure Fire Risk (Multi-family dwelling, mercantile, school)

Task	Staffing Level	Units Assigned
Command/Safety (Battalion Chief and Support Officer)	2	Battalion Chief
Initial Attack Line and Primary Search and Water Supply	2	1st Engine
Primary Search and Rescue	2	1st Medic
Ventilation/Ladder, Access	3	Truck-1
Back up Hose line	3	2nd Engine
Initial Rapid Intervention Crew and Initial Medical Aid	2	2nd Medic
Secondary S&R	2	Rescue-1
Pump Operator/Accountability	1	1st Engine
Tactical Deployment Group	3	3rd Engine
Total Personnel	**20**	

Table 46 Critical Tasks - Maximum Level Fire Risk (LANL EPHA facilities)

Task	Staffing Level	Units Assigned
Command/Safety (Battalion Chief and Support Officer)	2	Battalion Chief
Initial Attack Line and Primary Search and Water Supply	2	1st Engine
Primary Search and Rescue	2	1st Medic
Ventilation/Ladder, Access	3	Truck-1
Back up Hose line	3	2nd Engine
Initial Rapid Intervention Crew and Initial Medical Aid	2	2nd Medic
Secondary S&R	2	Rescue-1
Pump Operator/Accountability	1	1st Engine
Evacuation/Exposures/Elevated Master Stream	3	2nd Truck
Tactical Deployment Group	3	3rd Engine
Field monitoring of conditions/Coordinating RCTs	3	4th Engine
Rehab	2	3rd Medic Unit
Total Personnel	**28**	

Table 47 Critical Tasks - Special Level Fire Risk (properties with high historical value)

Task	Staffing Level	Units Assigned
Command/Safety (Battalion Chief and Support Officer)	2	Battalion Chief
Initial Attack Line and Primary Search and Water Supply	2	1st Engine
Primary Search and Rescue	2	1st Medic
Ventilation/Ladder, Access	3	Truck-1
Back up Hose line	3	2nd Engine
Initial Rapid Intervention Crew and Initial Medical Aid	2	2nd Medic
Secondary S&R	2	Rescue-1
Pump Operator/Accountability	1	1st Engine
1st Alarm Total Personnel	17	

Emergency Medical Services

Emergency incidents are time-sensitive and require the prompt response of an appropriately staffed ambulance. There is a direct correlation between the total time from injury/illness to definitive care and positive clinical outcomes. Blood flow to the organs is essential. According to the American Heart Association in a cardiac arrest, irreversible organ damage will occur in four to six minutes. In cardiac arrests, quick EMS response, CPR, and early defibrillation by EMS personnel have a direct correlation in decreased mortality.

Medical Director Protocols have been developed for medical, trauma, and cardiac arrest responses. These protocols serve as a guide for the initial scene management of an emergency event. The identified positions are assigned as the incident progresses by the Incident Commander or the responder with the highest level of medical certification on scene. The Incident Commander is responsible for scene safety and command of the incident. All personnel wear appropriate personal protective equipment.

The first-due units shall be capable of: assessing scene safety and establishing command; sizing-up the situation; conducting initial patient assessment; obtaining vitals and patient's medical history; initiating mitigation efforts within one minute of arrival; providing first responder medical aid including automatic defibrillation.

Table 48 Medical Responses by Chief Complaint

Year	Cardiac	Diabetic Emergency	Respiratory Emergency	Seizure / CVA	Syncopal Episode	Trauma	Allergic Reaction	MVA	Other
2011	88	18	72	52	52	199	12	81	320
2012	87	16	76	54	65	233	9	65	258
2013	79	21	54	48	64	191	4	65	304
2014	70	11	57	55	45	162	6	54	228

**Inter-facility transports, no patient, DOA or behavioral emergencies are not included.*

The analysis is intended to summarize the types of EMS responses by year to identify trends. The information is utilized to identify training opportunities for EMS responders, as well as, areas that would benefit from public education training.

Table 49 Critical Tasks - Low Risk (BRAVO with 1 patient) Emergency Medical Service

Task	Staffing Level	Units Assigned
Command and Patient Assessment	1	Medic Unit
Patient Assessment, BLS, ALS	1	Medic Unit
Total	**2**	
Response includes 1 Medic unit responding emergency		

Table 50 Critical Tasks - Low Risk (< 2 patients) Emergency Medical Service

Task	Staffing Level	Units Assigned
Command	1	Engine Officer
Patient Assessment	1	Engine EMT/PM
Patient care/transportation	2	Medic unit
Equipment Setup	1*	Engine EMT/PM
Total	**5**	
Response includes 1 Engine and 1 Medic unit		

- *Critical tasking may transition roles as incident requires.*

NOTE:
Two patient low risk response:
Alpha calls require an engine and a medic unit response – both responding non-emergency.
Bravo calls require a medic unit respond emergency. The engine will respond non-emergency.
Charlie calls require an engine and a medic unit response – both responding emergency.
Delta calls require an engine and a medic unit response – both responding emergency.
Echo calls require an engine and a medic unit response – both responding emergency.

Table 51 Critical Tasks - Moderate Risk (3 to 4 patients) Emergency Medical Service

Task	Staffing Level	Units Assigned
Command/Safety	1	Engine Officer
Patient Triage	1*	Engine Company EMT/PM
Patient care/transport	4	Medic Units (2)
Equipment Setup	1*	Engine Company EMT/PM
Total	**7**	
Response includes 1 Engine and 2 Medic units.		

- *Critical tasking may transition roles as incident requires.*

Table 52 Critical Tasks - High Risk (5 to 6 patients) Emergency Medical Service

Task	Staffing Level	Units Assigned
Command	1	1st Engine Officer
Triage	1	1st Engine Co. EMT/PM
Patient Care/Transport	6	Medic Units (3)
Safety	1	Engine Driver/Engineer
Equipment Setup/Treatment/Extrication	2*	Rescue Unit
Total	**11**	
Response includes 1 Engine, 1 Rescue, and 3 Medic units.		

- *Critical tasking may transition roles as incident requires.*

Table 53 Critical Tasks - Maximum Risk (7 patients) Emergency Medical Service

Task	Staffing Level	Units Assigned
Command	1	Ops Battalion Chief
Safety and Accountability	1	Support Officer
Triage	1	Captain on 1st Engine
Transport Coordinator	1	Captain on 3nd Engine
Treatment Coordinator	1*	Paramedic
Patient Transport	8	Medic units (4)
Equipment Setup/Treatment/Extrication	2*	Rescue
Patient Treatment	7*	Engine EMTs and Paramedics
Total	**21**	
Response includes 3 Engines (w/3 on each), 4 Medics (w/2 on each), 1 Rescue (w/2), 1 Battalion (w/2)		

- *Critical tasking may transition roles as incident requires.*

NOTE: As the number of patients increases, so will the number of response units. When LAFD resources are exhausted, the incident will require response from other agencies; as department impact would involve deployment of all of LAFD's resources leaving the rest of the community inadequately protected.

Table 54 Critical Tasks - Special Risk (responses to LANL) Emergency Medical Service

Task	Staffing Level	Units Assigned
All Medical Calls – all Risk Levels requires a minimum of two Paramedics. If the responding station has less than two Paramedics, a second Paramedic will respond normal traffic until upgraded. This response could include more apparatus depending on how Paramedics are staffed that day.		

NOTE:
Air ambulances are available in the cases that the patient's injuries or illness require a greater level of care than Los Alamos Medical Center is able to provide. Due to the 45 minute or greater drive time to a trauma or STEMI Center, air ambulances are utilized to reduce travel time and get the patient to a higher level of care as quickly as possible.

Technical Rescue

Table 55 Critical Tasks - Low Level TRT Risk (rescue injured hiker from trailhead, elevator rescue, single MVA)

Task	Staffing Level	Units Assigned
Command, Patient Assessment	3	Engine
Packaging and Transport	2	Medic unit
Total Personnel	**5**	

Table 56 Critical Tasks - Moderate Level TRT Risk (rescue hiker from trail)

Task	Staffing Level	Units Assigned
Command/Safety	1	Engine
Technical Rescue (equipment system setup/operation/patient rescue)	2	Rescue
Patient Assessment, Packaging and Transport	2	Medic unit
Rehab	2	Engine
Total Personnel	**7**	

Table 57 Critical Tasks - High Level TRT Risk (rescue hiker who fell off cliff)

Task	Staffing Level	Units Assigned
Command/Safety	2	Battalion and SO
Technical Rescue (equipment system setup/operation/patient rescue)	8	Engine, Rescue, TRT
Patient care, packaging and transport	2	Medic unit
Safety and Rehab	1	Safety Division Chief
Total Personnel	**13**	

Table 58 Critical Tasks - Maximum Level TRT Risk (building collapse)

Task	Staffing Level	Units Assigned
Command/Safety	**2**	Battalion and SO
Technical Rescue (equipment system setup/operation/patient rescue)	**10**	Engine (3), Rescue (2), TRT (3) & TRT Trailer (2)
Safety and Rehab	**1**	Safety Officer
Patient care, packaging and transport	**2**	Medic Unit
Total Personnel	**15**	
The number of medic units will increase as the number of patients increases. The NM Type 1 FEMA Task Force Team will be called when the situation exceeds LAFD's response capability.		

Wildland Fire

The first LAFD unit on scene shall establish IC to assess and report the need for additional resources, structures threatened, location, slope, aspect, and size of the fire. Additional size up considerations includes: wind speed and direction, direction of spread, rate of spread, fuel type and fire intensity. The on duty Battalion Chief shall notify all Chief Officers and outside agencies in the event fire activity/behavior exceeds resources available for suppression operations. All out of county responses or non-LAFD resources requested shall be coordinated through the Santa Fe Zone Dispatch Center.

All LAFD units involved with wildland suppression operations shall be supported by LAFD for the first 24-hour operational period. After the first 24-hour operational period, an incident management team shall provide support for all LAFD units involved with suppression activities.

Some of the specific position tasks are listed below:

Constructing Control Line- An inclusive term for all constructed or natural fire barriers and treated fire edge used to control the fire.

Direct Attack-A method of suppression that treats the fire as a whole, or all its burning edge, by wetting, cooling, smothering, or chemically quenching the fire or by mechanically separating the fire from unburned fuel.

Indirect Attack-A method of suppression in which the control line is located along natural fuel breaks, favorable breaks in topography, or at considerable distance from the fire and intervening fuel is burned out.

Mop Up – A method in which burning materials are extinguished with the aid of water, or in combination with water and soil.

Cold Trailing- A method of controlling a partly dead fire edge by carefully inspecting and feeling with the hand to detect any fire, digging out every live spot, and trenching any live edge.

Pump operator/Driver Engineer-This position is responsible for the operation of the pumper to deliver water at the proper pressure to the attack lines, and the initial accountability location.

Command- An officer responsible for coordinating the fire operation.

Safety/Operation- This officer is responsible for making sure that safe firefighting operations are being conducted.

Table 59 Critical Tasks - Low Level Wildland Risk (stump on fire)

Task	Staffing Level	Units Assigned
Command and Direct Attack	2	Mini Tender
Direct Attack with Additional Water Supply	1	Tender
Total Personnel	**3**	

Table 60 Critical Tasks - Moderate Level Wildland Fire Risk (without structural exposure)

Task	Staffing Level	Units Assigned
Command/Safety	2	Battalion & Support Officer
Direct Attack and Additional Water Supply	6	2 Tender (2) & 2 Mini Tender (4)
Total Personnel	**8**	

Table 61 Critical Tasks - Moderate Level Wildland Fire Risk (with structural exposure)

Task	Staffing Level	Units Assigned
Command/Safety	2	Battalion & Support Officer
Direct Attack and Additional Water Supply	3	Tender (1) & Mini Tender (2)
Structural Protection	3	Engine (3)
RIC and Rehab	4	Medic (2), Rescue (2)
Total Personnel	**12**	

Table 62 Critical Tasks - High Level Wildland Fire Risk (with structural exposure)

Task	Staffing Level	Units Assigned
Command/Safety	2	Battalion & Support Officer
Direct Attack and Additional Water Supply	6	2 Tender (2) & 2 Mini Tender (4)
Structural Protection	6	2 Engine (6)
RIC and Rehab	6	2 Medic (4), 1 Rescue (2)
Total Personnel	**20**	

Table 63 Critical Tasks - Maximum Level Wildland Urban Interface Fire Risk (with multiple structural exposure)

Task	Staffing Level	Units Assigned
Command/Safety	2	Battalion & Support Officer
Direct Attack and Additional Water Supply	8	4 Tender (4) & 2 Mini Tender (4)
Structural Protection	12	4 Engine (12)
RIC and Rehab	6	3 Medic (6), 1 Rescue (2)
Total Personnel	**28**	

Hazardous Materials

Table 64 Critical Tasks - Low Level Hazmat Risk (motor oil or diesel spill at gas station)

Task	Staffing Level	Units Assigned
Command/Safety	1	Engine
Mitigate the incident	2	Engine
Total Personnel	**3**	

Table 65 Critical Tasks - Moderate Level Hazmat Risk (CO2 alarms, odor check, natural gas leak)

Task	Staffing Level	Units Assigned
Command/Safety	2	Battalion 1 and Support Officer
Isolate and Deny Entry	5	Engine (3) and Medic (2)
Rescue	2	Rescue
Total Personnel	**9**	

Table 66 Critical Tasks - High/Special Level Hazmat Risk

Task	Staffing Level	Units Assigned
Command/Safety	2	Battalion 1 and Support Officer
Isolate and Deny Entry	5	Engine (3) and Medic (2)
Rescue	2	Rescue (2)
Containment	3	2nd Engine (3)
Emergency Decontamination, Evacuate & Shelter	3	3rd Engine (3)
Total Personnel	**15**	

Table 67 Critical Tasks - Maximum Level Hazmat Risk (LANL EPHA facilities)

Task	Staffing Level	Units Assigned
Command/Safety	2	Battalion 1 and Support Officer
Isolate and Deny Entry	5	Engine (3) and Medic (2)
Rescue	2	Rescue (2)
Containment	3	2nd Engine (3)
Emergency Decontamination	6	3rd Engine (3), Truck (3)
Evacuate & Shelter	5	4th Engine (3), 2nd Medic unit (2)
Rehab and monitoring	2	3rd Medic unit (2)
Field monitoring, accountability	3	5th Engine (3) or *Hazmat 1 (3)
Total Personnel	**28**	
NOTE: *Hazmat 1 is expected to be placed in service by the end of April 2015. The critical task above includes it. It will be crossed staffed with Truck 3 personnel.		

Maximum Level Risks are identified sites on LANL property and are critical to national security; therefore further discussion is prohibited.

E. Historical Perspective and Summary of System Performance

The Los Alamos Fire Department completed a comprehensive review of historical responses, including emergency and non-emergency responses. Our resource distribution, concentration, reliability, comparability, and baseline performances were analyzed thoroughly.

Through the use of the records management system (RMS) FireHouse, and the data mining capabilities of Vinelight and Microsoft Office Excel, the charts, graphs, and tables you will see below were created to illustrate and provide quantitative data for the LAFD baseline performance numbers for each discipline. All raw data for emergency and non-emergency responses was queried for the years 2010-2014, for all call types and unit. This information also included incidents that were downgraded or units that were cancelled enroute. The following data fields were included in the raw data:

- Incident Number
- Address
- Property Type
- Alarm Date
- Dispatch Date
- Enroute Date
- Arrival Date
- Clear Date
- Incident Type
- Unit Type and Number
- 1st Unit
- Number of Personnel
- Priority Response
- Simultaneous Event
- Station
- Shift

The following data fields were calculated and added to the raw data using the information listed directly above:

- Arrival Order
- Risk Level (lookup tables using Occupancy Lists in FireHouse and Property Types)
- ERF (Based on Critical Task Staffing Levels for each discipline)
- Call Processing Time
- Turnout Time
- Total Response Times
- Committed Times

In the process of analyzing the date, 134 outliers were identified, which is 1.4% of all calls for this time range. A total of 82 calls were located on Lab properties that are excluded in from reporting for the Cooperative Agreement due time limitations created by guard stations and restricted access to certain facilities. Incidents to these locations are automatically skewed and deemed unusable. The remaining 52 calls were found to be true errors of data capture (25 calls), rather than failures in performance, or were far outside the normal responses times for LAFD, even though no direct reason for the times to be skewed could be found (27 calls). These were then excluded from the data, a listing is provided in the reference materials for the SOC Module 7 Appendix, “Exclusion Listing and Justification.”

Month of the year, day of the week, and hour of the incidents have been analyzed as well. A total of 9,549 calls for service, with 25,618 responding units, were met by the LAFD since 2010. Calls for service break down by year in the following manner:

Table 68 Number of Incidents and Responding Apparatus, per year (2010-2014)*

YEAR	# Of Incidents	# Of Responding Units
2010	2050	5713
2011	2065	5636
2012	1847	4786
2013	1838	4825
2014	1749	4658
Total	9549	25618

*Includes non-emergency calls and calls that have been excluded or deemed unsalvageable due to identified data errors.

Table 69 Number of Emergency Calls and Non-Emergency Calls, by year (2010-2014)*

YEAR	Emergency	Non-Emergency
2010	1239	811
2011	1309	756
2012	1272	575
2013	1308	530
2014	1232	517
Total	6360	3189

*Includes calls that have been excluded or deemed unsalvageable due to identified data errors.

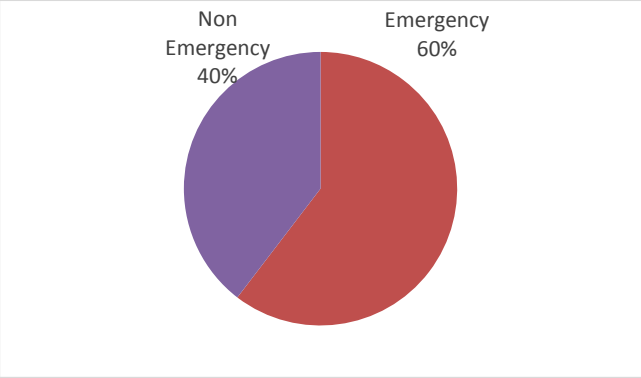


Figure 62 Percentage of Total Emergency and Non-Emergency Call Volumes by Call Type (2010-2014)*

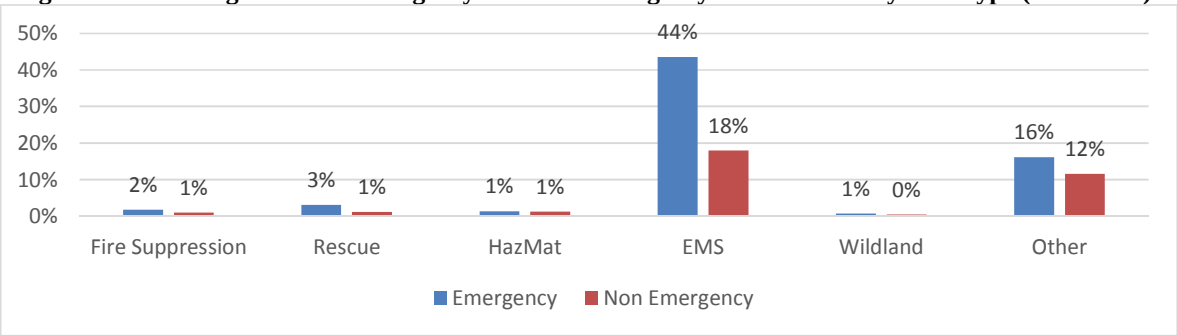
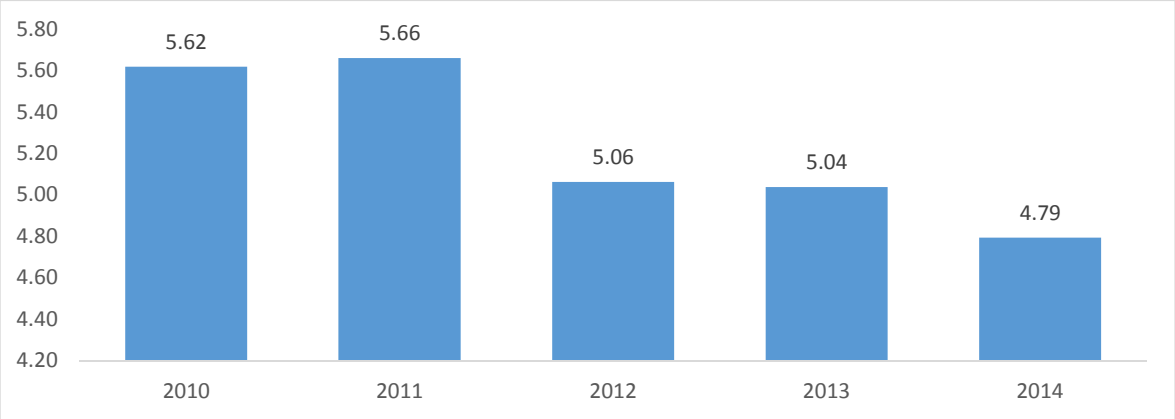


Table 70 Total Emergency and Non-Emergency Call Volumes by Call Type (2010-2014)*

Call Type	Emergency	Non-Emergency
Fire Suppression	171	92
Rescue	293	112
HazMat	128	114
EMS	4157	1717
Wildland	65	46
Other	1545	1108
ARFF	1	
Total	**6,360**	**3,189**

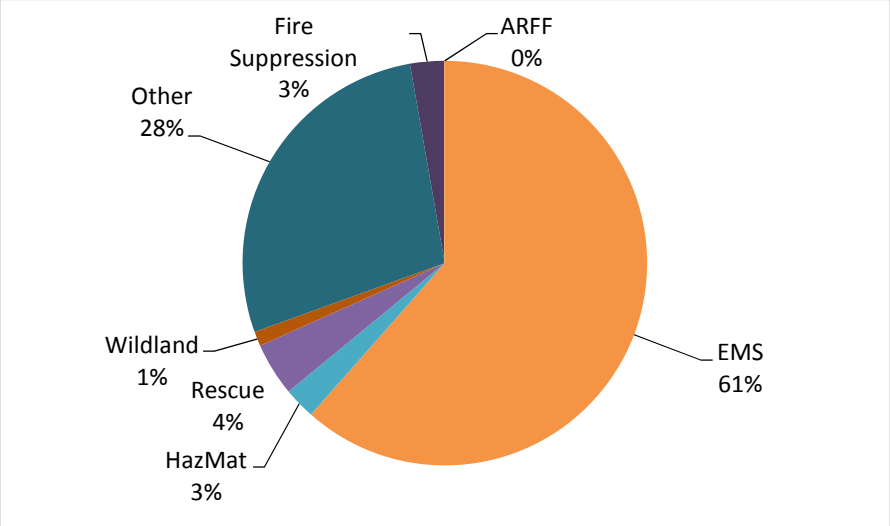
*Includes calls that have been excluded or deemed unsalvageable due to identified data errors.

Figure 63 Average Calls Dispatched, per day (2010-2014)*



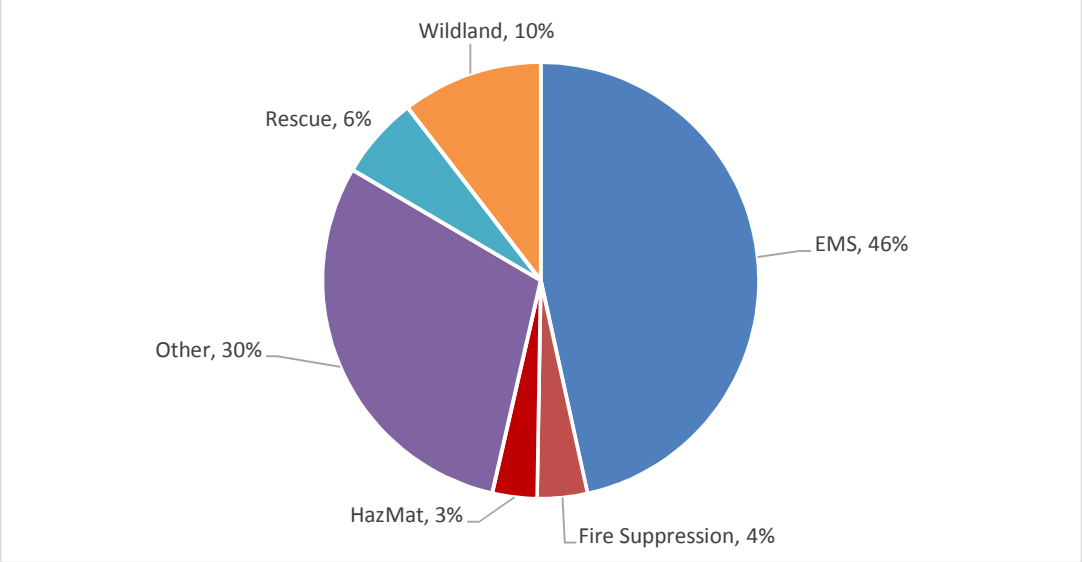
*Includes non-emergency calls.

Figure 64 Number of Calls by Incident Types (2010-2014)*



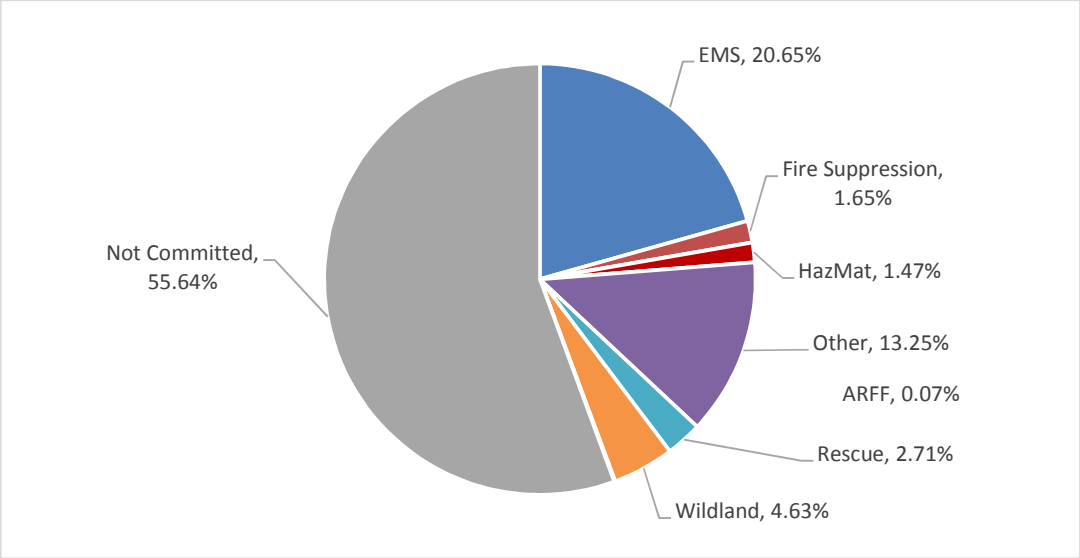
*Includes non-emergency calls.

Figure 65 Percentage of Total Time Committed to Incident Types (2010-2014)*



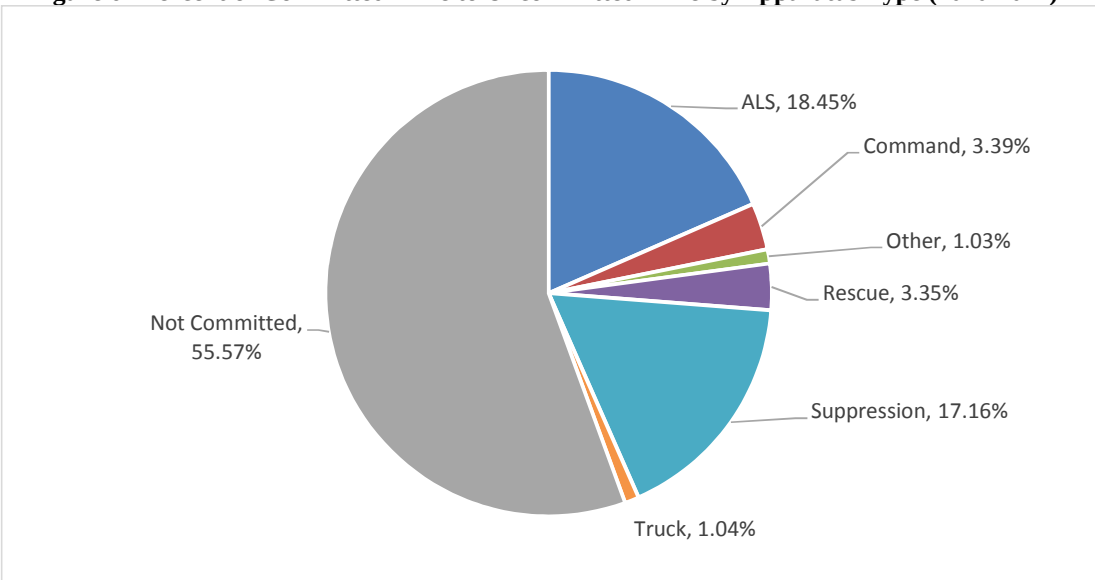
*Includes non-emergency calls.

Figure 66 Percentage of Committed Time to Uncommitted Time by Incident Types (2010-2014)*



*Calculated by dividing total committed time by incident type for years 2010-2014 and dividing it by total minutes available in 365 days for 5 years. Also includes non-emergency calls. Non-committed time includes time spent on tours, pub ed. events, inspections, PIPs, etc.

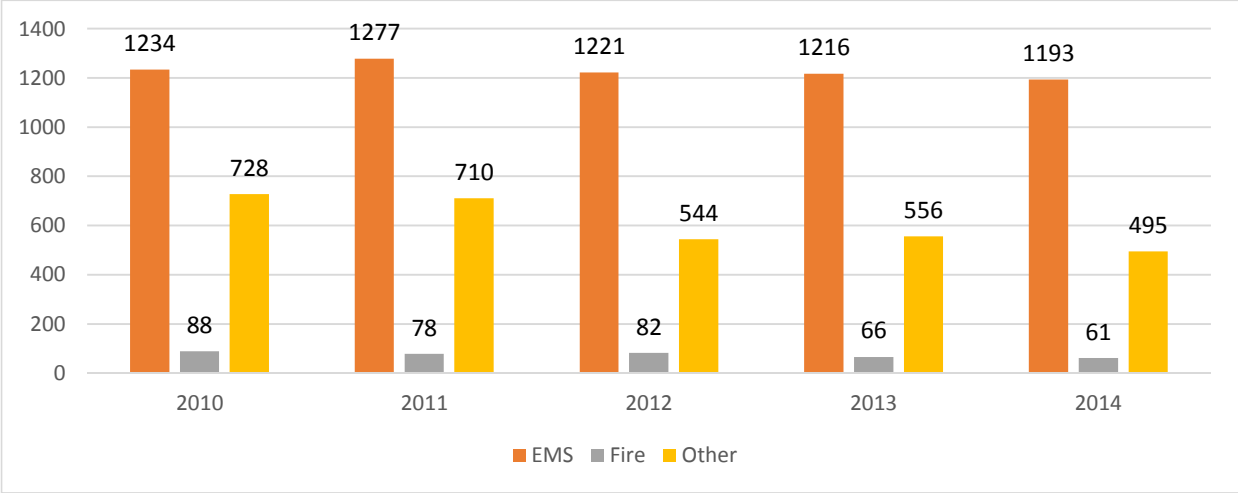
Figure 67 Percent of Committed Time to Uncommitted Time by Apparatus Type (2010-2014)*



*Includes non-emergency calls.

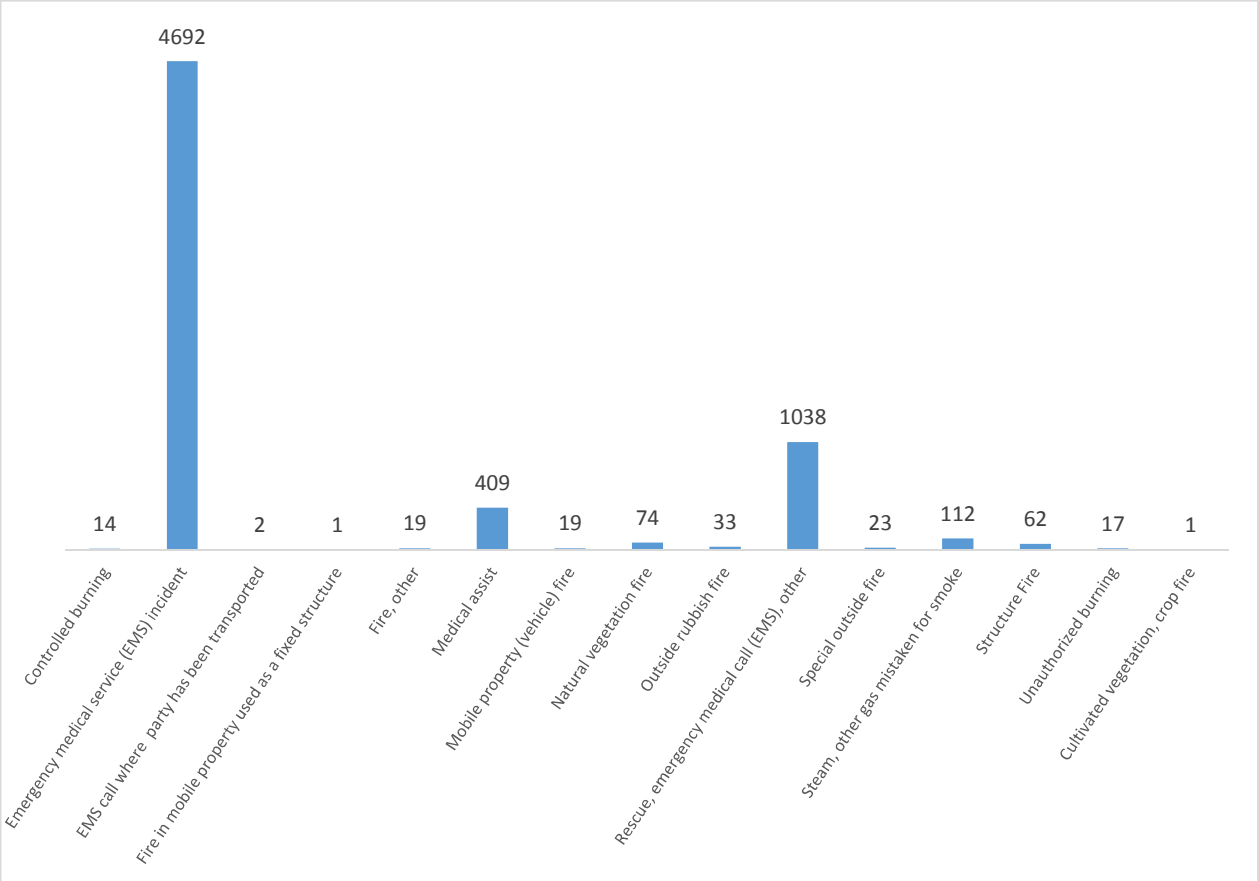
The three charts below illustrate the breakdown of LAFD's call volumes by a general type. The first illustrates the amount of calls that are EMS, Fire or Other. The second chart drills down the EMS and Fire calls by description. The third on the next page, lists all "other" call types by description.

Figure 68 Call Volumes by Incident Type and Year (2010-2014)*



*Includes non-emergency calls. A listing of "Other" calls is provided in Figure E.6.

Figure 69 Number of EMS and Fire Calls with Descriptions (2010-2014)*



*Includes non-emergency calls.

Table 71 Number of "Other" Category Calls with Descriptions (2010-2014)*

Incident Type Description	Total
Accident, potential accident	8
Animal problem or rescue	2
Biological hazard	1
Bomb scare	6
Chemical release, reaction, or toxic condition	48
Citizen complaint	3
Combustible/flammable spills & leaks	110
Cover assignment, standby at fire station, move-up	532
Dispatched and canceled enroute	8
Electrical rescue	4
Electrical wiring/equipment problem	84
Excessive heat, scorch burns with no ignition	8
Explosion (no fire)	3
Explosive, bomb removal	3
Extrication, rescue	66
False alarm and false call, other	5
Flammable gas or liquid condition, other	32
HazMat release investigation w/no HazMat	12
Malicious, mischievous false alarm	13
Overpressure rupture from air or gas (no fire)	7
Overpressure rupture from steam (no ensuing fire)	1
Overpressure rupture, explosion, overheat, other	3
Person in distress	32
Public service assistance	181
Rescue or EMS standby	28
Search for lost person	17
Service call, other	192
Severe Weather & Natural Disaster	22
Smoke, odor problem	49
Special type of incident, other	45
System or detector malfunction	519
Unintentional system/detector operation (no fire)	842
Vicinity alarm	2
Water problem	79
Wrong location, no emergency found	66
Grand Total	**3033**

*Includes non-emergency calls.

Distribution Factors

The LAFD currently staffs five fire stations with a minimum of 37 personnel on duty each day. Staffing is spread among six engine companies, one truck company, one rescue company, six medic units, and one Battalion unit. Specific first in units and their respective station assignments are identified as follows:

Station 1: Battalion -1, Engine-1, Truck-1, Rescue-1, Medic-1
Station 3: Engine-3, Engine 30, Medic-3, Medic-30
Station 4: Engine-4, Medic-4
Station 5: Engine-5, Medic-5
Station 6: Engine-6, Medic-6

Calls were analyzed by station to help analyze current station and apparatus distribution.

Table 72 Number of Incidents by Station (2010-2014)*

Station	2010	2011	2012	2013	2014	Station Totals
1	596	589	469	503	442	2599
3	356	337	315	287	305	1600
4	335	364	343	346	355	1743
5	125	150	123	126	145	669
6	595	593	572	528	469	2757
Station Totals	**2007**	**2033**	**1822**	**1790**	**1716**	**9368**

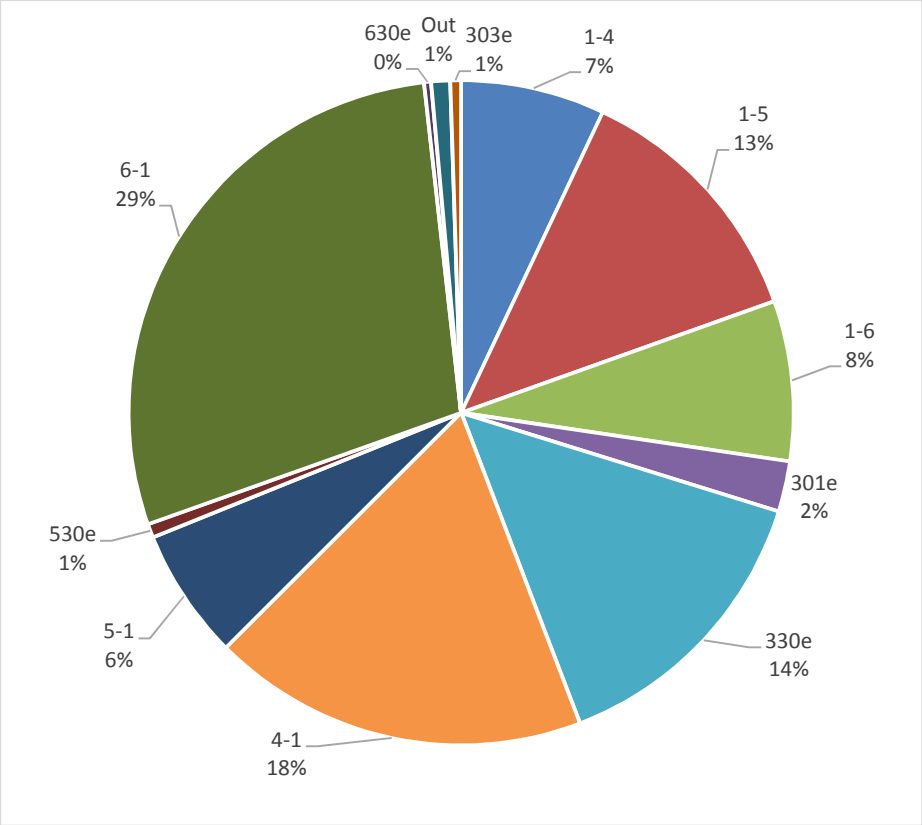
*Includes non-emergency calls. Station 2 and Fire Admin numbers are not included, as they are not normally dispatched. Out of District calls are not included.

Los Alamos County is broken into 11 response districts. The primary responding stations to each district is as follows:

Station 1: 1-5, 1-6, 1-4
Station 3: 3-30e, 30-3e, 30-1e
Station 4: 4-1
Station 5: 5-1, 5-30e
Station 6: 6-1, 6-30e

The first number in the response district indicates the primary Station which will be dispatched for that area, the second number indicates the secondary station for that area. All calls, emergency and non-emergency, for each district, and by time of year, week and day are displayed below.

Figure 70 Percentage of Calls by District (2010-2014)*



*Includes non-emergency calls.

Table 73 Count of Calls by District (2010-2014)*

District	Total
1-4	666
1-5	1193
1-6	740
301e	233
330e	1367
4-1	1743
5-1	605
530e	64
6-1	2725
630e	32
Out	87
303e	50
Grand Total	**9505**

*Includes non-emergency calls. Does not include calls that have been excluded or deemed unsalvageable due to identified data errors.

Table 74 Calls by Station by Month (2010-2014)*

Alarm Month	Station 1	Station 3	Station 4	Station 5	Station 6	Monthly Totals
Jan	210	118	131	28	213	700
Feb	221	114	131	23	195	684
Mar	246	135	132	45	241	799
Apr	205	130	141	65	230	771
May	204	169	150	79	277	879
Jun	251	149	146	88	264	898
Jul	234	139	150	67	258	848
Aug	259	134	166	71	249	879
Sep	210	142	141	65	239	797
Oct	198	114	168	59	212	751
Nov	175	122	137	40	200	674
Dec	186	134	150	39	179	688
Monthly Totals	**2599**	**1600**	**1743**	**669**	**2757**	**9368**

*Includes non-emergency calls. Station 2 and Fire Admin numbers are not included, as they are not normally dispatched, and Out of District calls not included. Does not include calls that have been excluded or deemed unsalvageable due to identified data errors.

Table 75 Percentage of Calls by Time of the Week (2010-2014)*

Weekday	61%
Weekend	39%

**LANL work week is typically from Monday-Thursday. Los Alamos sees an increase and decrease in population due to commuting employees of Los Alamos National Labs. The lab employees approximately 7,000 people, many of whom live in surrounding communities. This helps to explain the decrease in call volume experienced during the weekend.*

Figure 71 Average Number of Incidents by Day of the Week (2010-2014)*

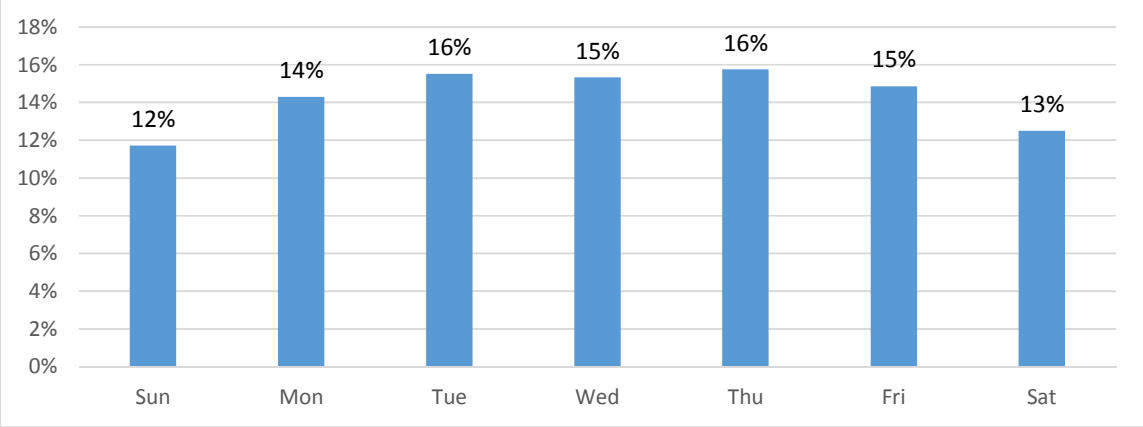
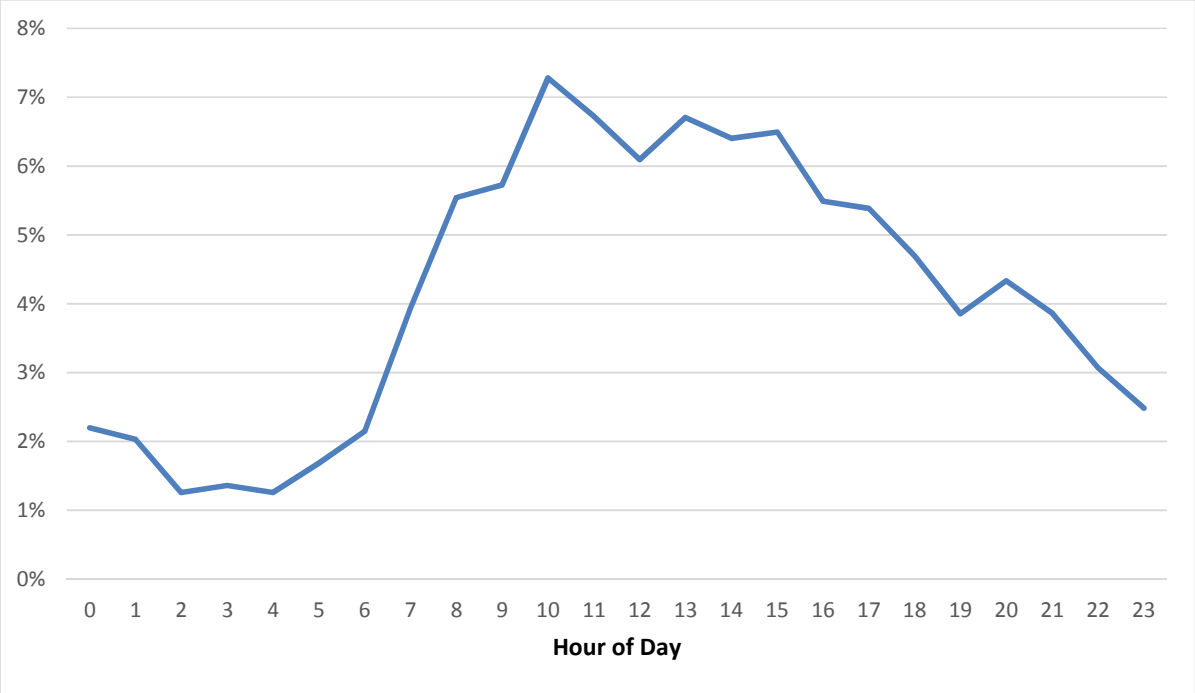


Table 76 Calls by Day of the Week, by Station (2010-2014)*

Day of the Week	Station 1	Station 3	Station 4	Station 5	Station 6	Total
Sun	261	187	268	38	344	1098
Mon	399	232	262	71	382	1346
Tue	410	239	267	123	417	1456
Wed	425	263	233	137	380	1438
Thu	427	264	225	168	385	1469
Fri	371	228	242	82	467	1390
Sat	306	187	246	50	382	1171
Total	**2599**	**1600**	**1743**	**669**	**2757**	**9368**

*Includes non-emergency calls. Station 2 and Fire Admin numbers are not included, as they are not normally dispatched, and Out of District calls are not included. Does not include calls that have been excluded or deemed unsalvageable due to identified data errors.

Figure 72 Percentage of Incidents by Time of Day (2010-2014)*



*Includes non-emergency calls.

Table 77 Calls by Time of Day, by Station (2010-2014)*

Time of Day	Station 1	Station 3	Station 4	Station 5	Station 6	Total Calls
0000 - 0559	246	180	201	26	276	929
0600 - 1159	780	515	488	336	799	2918
1200 - 1759	1049	551	596	232	986	3414
1800 - 2400	524	354	458	75	696	2107
Total Calls	**2599**	**1600**	**1743**	**669**	**2757**	**9368**

*Includes non-emergency calls. Station 2 and Fire Admin numbers are not included, as they are not normally dispatched, and Out of District calls not included. Does not include calls that have been excluded or deemed unsalvageable due to identified data errors.

Concentration Factors

Through the use of Vinelight, data for simultaneous calls and minutes between alarm times (when dispatch notifies the department) can be mined. These are calls that are dispatched out while a call is already in process. For 2010-2014, simultaneous emergency calls for service break out as follows:

Table 78 Simultaneous Emergency Calls by Year (2010-2014)*

Year	Number of Simultaneous Incidents	Average Number of Simultaneous Incidents a Day
2010	152	0.42
2011	172	0.47
2012	121	0.33
2013	150	0.41
2014	118	0.32
Total	**713**	**0.39**

Average of *Minutes* Between Simultaneous Calls (Dispatched)	347.6
90th Percentile of *Minutes* between Simultaneous Calls (Dispatched)	109.6

*Station 2 and Fire Admin numbers are not included, as they are not normally dispatched. Does not include calls that have been excluded or deemed unsalvageable due to identified data errors. Averages calculated using a 365 day year.

Table 79 Simultaneous Emergency Calls by Station and Year (2010-2014)*

	Station 1		Station 3		Station 4		Station 5		Station 6	
Year	No. of Simult. Calls	Average Per Day	No. of Simult. Calls	Average Per Day	No. of Simult. Calls	Average Per Day	No. of Simult. Calls	Average Per Day	No. of Simult. Calls	Average Per Day
2010	49	0.13	27	0.07	23	0.06	7	0.02	43	0.12
2011	41	0.11	39	0.11	21	0.06	9	0.02	56	0.15
2012	36	0.10	19	0.05	25	0.07	7	0.02	31	0.08
2013	49	0.13	20	0.05	30	0.08	10	0.03	38	0.10
2014	36	0.10	24	0.07	18	0.05	9	0.02	28	0.08
Totals	**211**	**0.12**	**129**	**0.07**	**117**	**0.06**	**42**	**0.02**	**196**	**0.11**

	Station 1	Station 3	Station 4	Station 5	Station 6
Average of *Minutes* Between Simultaneous Calls (Dispatched)	232.6	245.7	50.9	22.7	136.7
90th Percentile of *Minutes* between Simultaneous Calls (Dispatched)	109.0	134.0	112.2	35.4	103.0

*Station 2 and Fire Admin numbers are not included, as they are not normally dispatched. Does not include calls that have been excluded or deemed unsalvageable due to identified data errors. Averages calculated using a 365 day year.

Reliability Factors

The following section consist of histograms (or plot charts) for all emergency calls for each discipline, as well as descriptive statistics such as the mean, median, minimum, maximum, range, standard deviation, and percentiles (0%-100%). This is done so that all possible information is looked at from various perspectives and to ensure resources are placed strategically to meet all performance objectives and community needs, from the point of "big picture" versus "the detail".

In the interest of analyzing only relevant data for this exercise, upper and lower limits were established based on the frequency and the percentiles of all call data. These limits were then applied to all the data for 2010-2014. This approach is only applied on this reliability analysis effort, not on the baseline performance measures. This ensures that outliers that both negatively and positively affect response times, for example 6 hours of call processing and 0 call processing times, are removed before the analysis. Identified calls with data issues were also excluded. While the department acknowledges that there is value in studying the outliers, as they drive fixes such as training, quality assurance, and technology, excluding them from the reliability analysis illustrates the general performance.

A histogram is a graphical representation of the distribution of data in a data series. For every data point in a range, a point is plotted on an X Y axis. This is used to show visually the likelihood and the density of the data. A "Bell" curve is considered a normal distribution of data, shown in the graphic below.

The mean is the average value of all the data points in the series, while the median is the exact midpoint of the data set. The minimum is simply the smallest value in the data set, and the adverse is true for the maximum. The range is the difference of the maximum and the minimum. The standard deviation shows how widely distributed the data points are in relation to the mean. All these calculations help to illustrate and measure the distribution of calls, identify trends and outliers, and help us to understand likelihood.

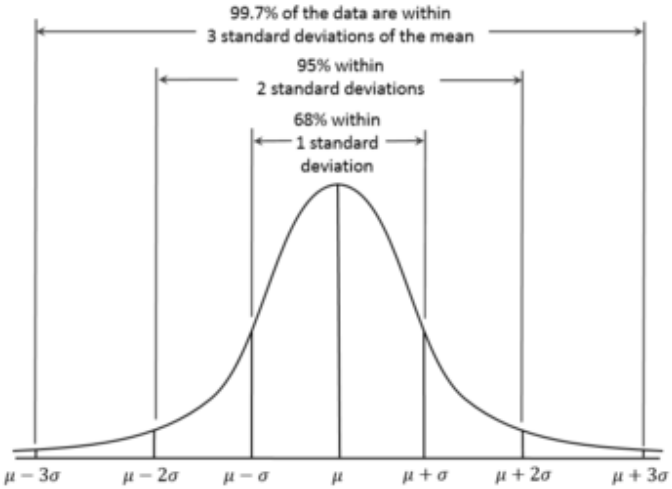


Figure 73 Source: Wikipedia

The histogram below shows the frequency of total response times for all Emergency Calls for 2010-2014 in 10 second time increments, although it's only labeled for 30 second time increments. This includes all unit responses, not just 1st responding units. Included in the graph is the mean and the 90th percentile. The data is skewed to the right, meaning the peak is off center and has a long tail, it is not a normal "Bell" curve shape. This is typical for emergency response times because of the fact that time cannot equal less than zero.

The tables on the next page contain the corresponding descriptive statistics for the histogram. This information is provided by each discipline for LAFD (excluding ARFF, 1 call for 2010-2014 is statistically insignificant).

Figure 74 Total Response Times for all Emergency Calls (2010-2014)

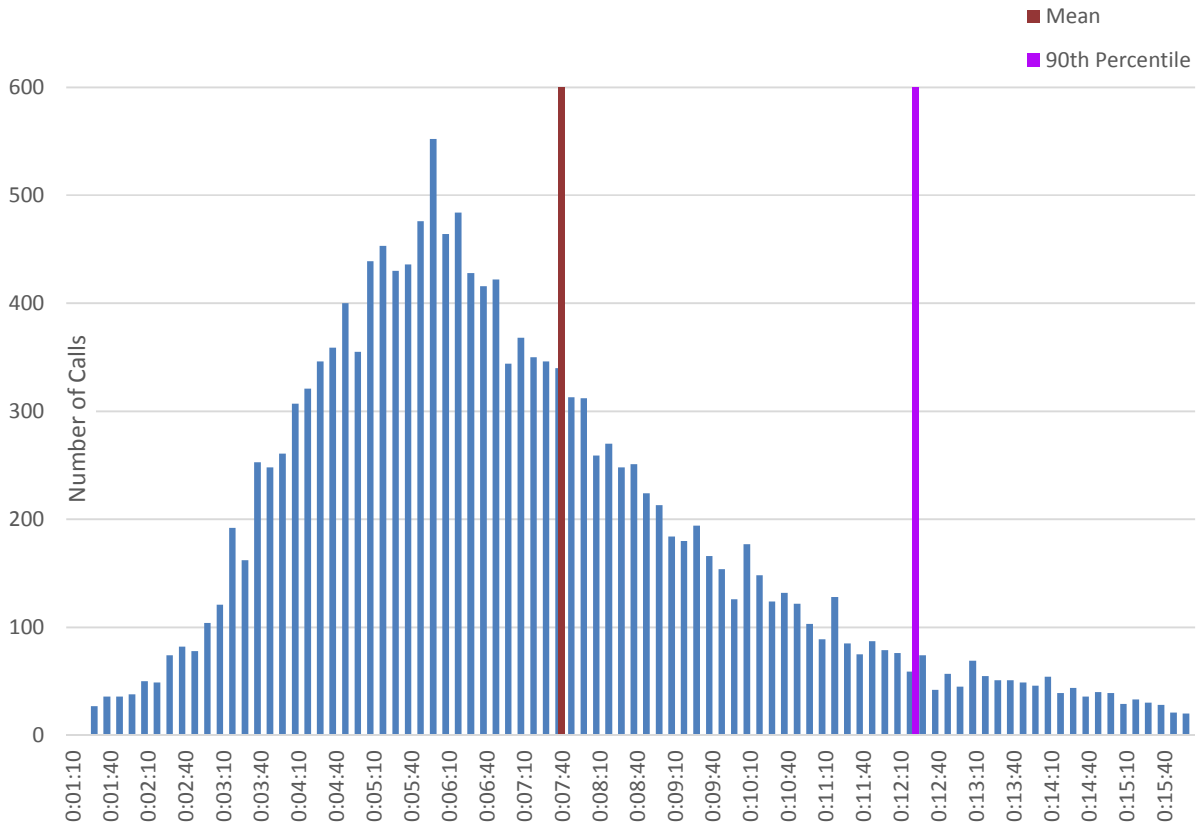


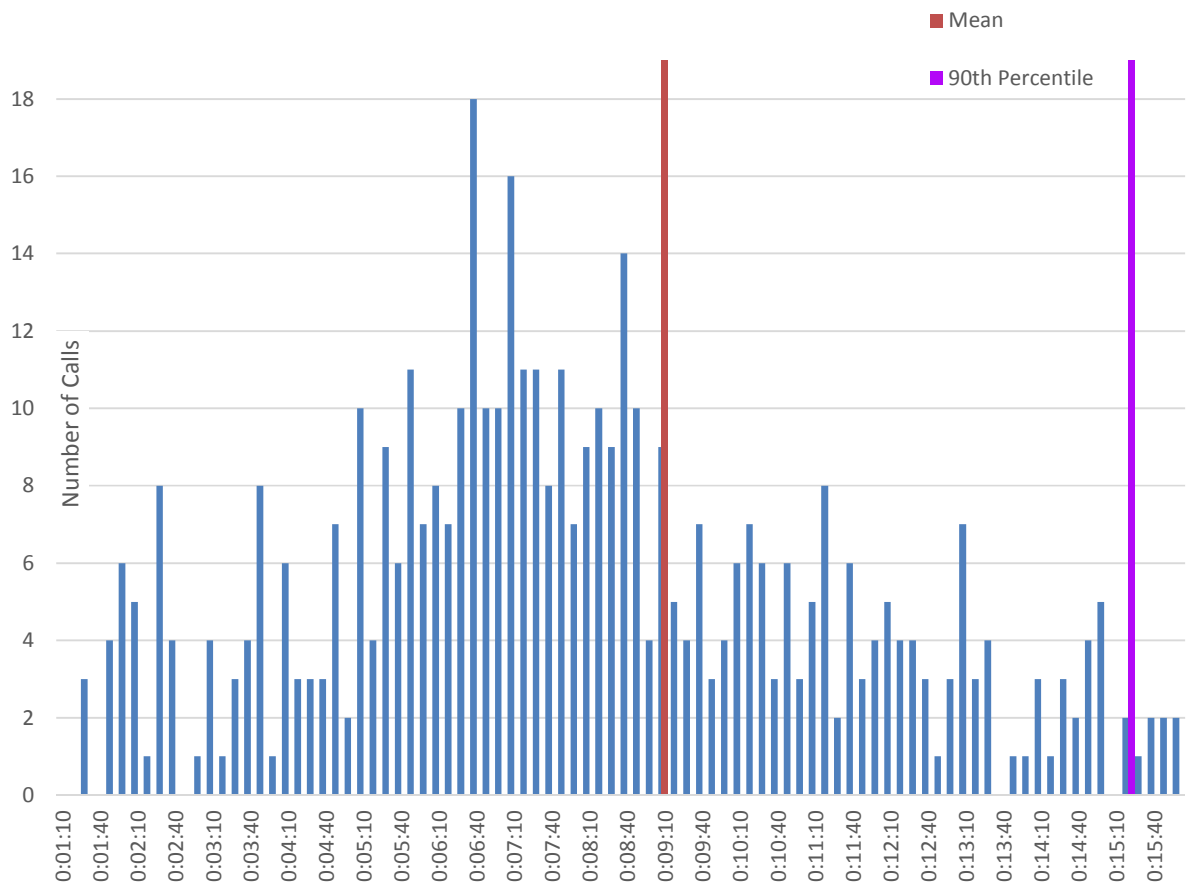
Table 80 Descriptive Statistics for All Emergency Calls (2010-2014)

	Call Processing	Turnout	Travel	Total Response
No. Of Calls	6227	4851	5891	6257
No. Resp. Unit	19394	13870	15931	16913
Mean	0:01:47	0:01:30	0:04:25	0:07:42
Median	0:01:35	0:01:18	0:03:44	0:06:40
Min	0:00:11	0:00:30	0:00:40	0:01:20
Max	0:06:52	0:17:08	0:15:00	0:57:58
Range	0:06:41	0:16:38	0:14:20	0:56:38
Standard Deviation	0:00:54	0:00:54	0:02:42	0:04:30

Table 81 Percentiles for All Emergency Calls (2010-2014)

	Call Processing	Turnout	Travel	Total Response
0%	0:00:11	0:00:30	0:00:40	0:01:20
5%	0:00:45	0:00:35	0:01:16	0:03:18
10%	0:00:56	0:00:40	0:01:40	0:03:55
15%	0:01:03	0:00:46	0:01:59	0:04:23
20%	0:01:08	0:00:50	0:02:17	0:04:46
25%	0:01:14	0:00:55	0:02:33	0:05:08
30%	0:01:18	0:00:59	0:02:47	0:05:27
35%	0:01:23	0:01:03	0:03:01	0:05:45
40%	0:01:27	0:01:08	0:03:15	0:06:02
45%	0:01:31	0:01:13	0:03:30	0:06:19
50%	0:01:35	0:01:18	0:03:44	0:06:40
55%	0:01:40	0:01:23	0:04:01	0:07:01
60%	0:01:45	0:01:29	0:04:22	0:07:25
65%	0:01:51	0:01:35	0:04:42	0:07:51
70%	0:01:58	0:01:42	0:05:05	0:08:22
75%	0:02:06	0:01:50	0:05:35	0:08:58
80%	0:02:17	0:02:00	0:06:10	0:09:44
85%	0:02:29	0:02:11	0:06:59	0:10:44
90%	0:02:49	0:02:27	0:08:12	0:12:19
95%	0:03:31	0:02:57	0:10:08	0:15:16
96%	0:03:45	0:03:08	0:10:46	0:16:22
97%	0:04:10	0:03:23	0:11:25	0:17:48
98%	0:04:36	0:03:52	0:12:06	0:20:08
99%	0:05:27	0:04:44	0:13:24	0:25:10
100%	0:06:52	0:17:08	0:15:00	0:57:58

Figure 75 Total Response Times for All Fire Emergency Calls (2010-2014)



Fire calls that were included in the "Fire" category include all structure fires, vehicle fires, trash fires, and the one ARFF incident that occurred in 2013. Although the bell shape is visible here, the abnormal distribution of this data is likely due to the small data set that is available for analysis. Used 10 second time increments to plot frequency. Please see the corresponding descriptive statistics (below) and percentiles (on the following page).

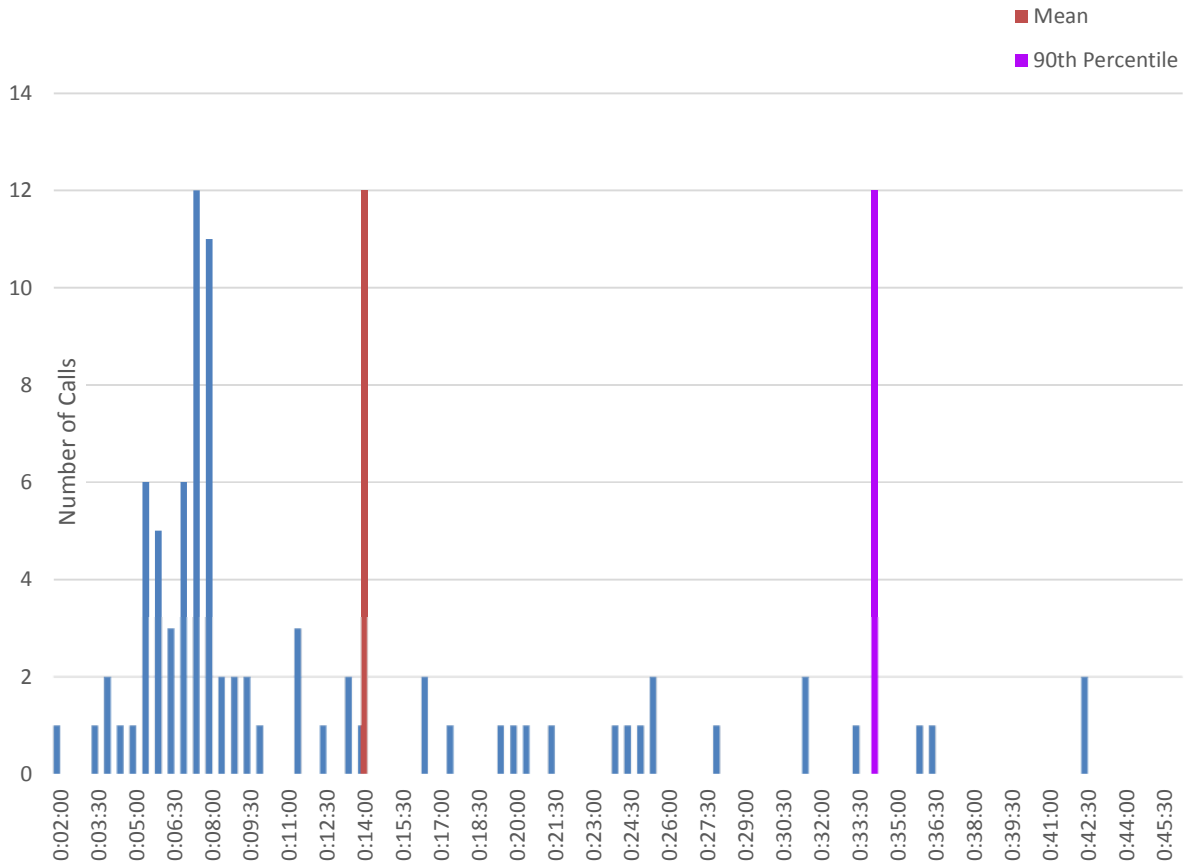
Table 82 Descriptive Statistics for All Fire Emergency Calls (2010-2014)

	Call Processing	Turnout	Travel	Total Response
No. of Calls	115	87	103	113
Resp. Unit Count	653	429	440	505
Mean	0:02:00	0:01:39	0:05:39	0:09:12
Median	0:01:50	0:01:26	0:04:54	0:08:02
Min	0:00:30	0:00:30	0:00:43	0:01:21
Max	0:06:52	0:11:05	0:14:29	0:49:45
Range	0:06:22	0:10:35	0:13:46	0:48:24
Standard Deviation	0:00:57	0:00:59	0:03:05	0:05:26

Table 83 Percentiles for All Fire Emergency Calls (2010-2014)

	Call Processing	Turnout	Travel	Total Response
0%	0:00:30	0:00:30	0:00:43	0:01:21
5%	0:00:46	0:00:36	0:01:45	0:02:28
10%	0:01:08	0:00:43	0:02:08	0:03:47
15%	0:01:14	0:00:49	0:02:43	0:04:53
20%	0:01:18	0:00:56	0:02:58	0:05:33
25%	0:01:28	0:00:59	0:03:19	0:06:02
30%	0:01:30	0:01:03	0:03:39	0:06:31
35%	0:01:34	0:01:10	0:04:00	0:06:49
40%	0:01:40	0:01:15	0:04:10	0:07:10
45%	0:01:42	0:01:21	0:04:31	0:07:34
50%	0:01:50	0:01:26	0:04:54	0:08:02
55%	0:01:53	0:01:30	0:05:12	0:08:29
60%	0:02:02	0:01:38	0:05:54	0:08:50
65%	0:02:04	0:01:46	0:06:21	0:09:36
70%	0:02:13	0:01:55	0:06:52	0:10:22
75%	0:02:17	0:02:01	0:07:38	0:11:12
80%	0:02:26	0:02:16	0:08:19	0:12:11
85%	0:02:38	0:02:30	0:09:09	0:13:21
90%	0:03:04	0:02:52	0:10:18	0:15:19
95%	0:03:44	0:03:23	0:11:57	0:18:59
96%	0:03:44	0:03:38	0:12:03	0:20:08
97%	0:04:54	0:03:49	0:12:29	0:21:06
98%	0:05:02	0:04:01	0:13:05	0:25:06
99%	0:06:02	0:04:15	0:14:00	0:29:48
100%	0:06:52	0:11:05	0:14:29	0:49:45

Figure 76 Total Response Times for All Rescue Emergency Calls (2010-2014)



Includes all calls for rescue including high angle, confined space extrication and other extrications. The abnormal distribution of this data is likely due to the small data set that is available for analysis. Used 30 second time increments to plot frequency. Please see the corresponding descriptive statistics and percentiles on the following page.

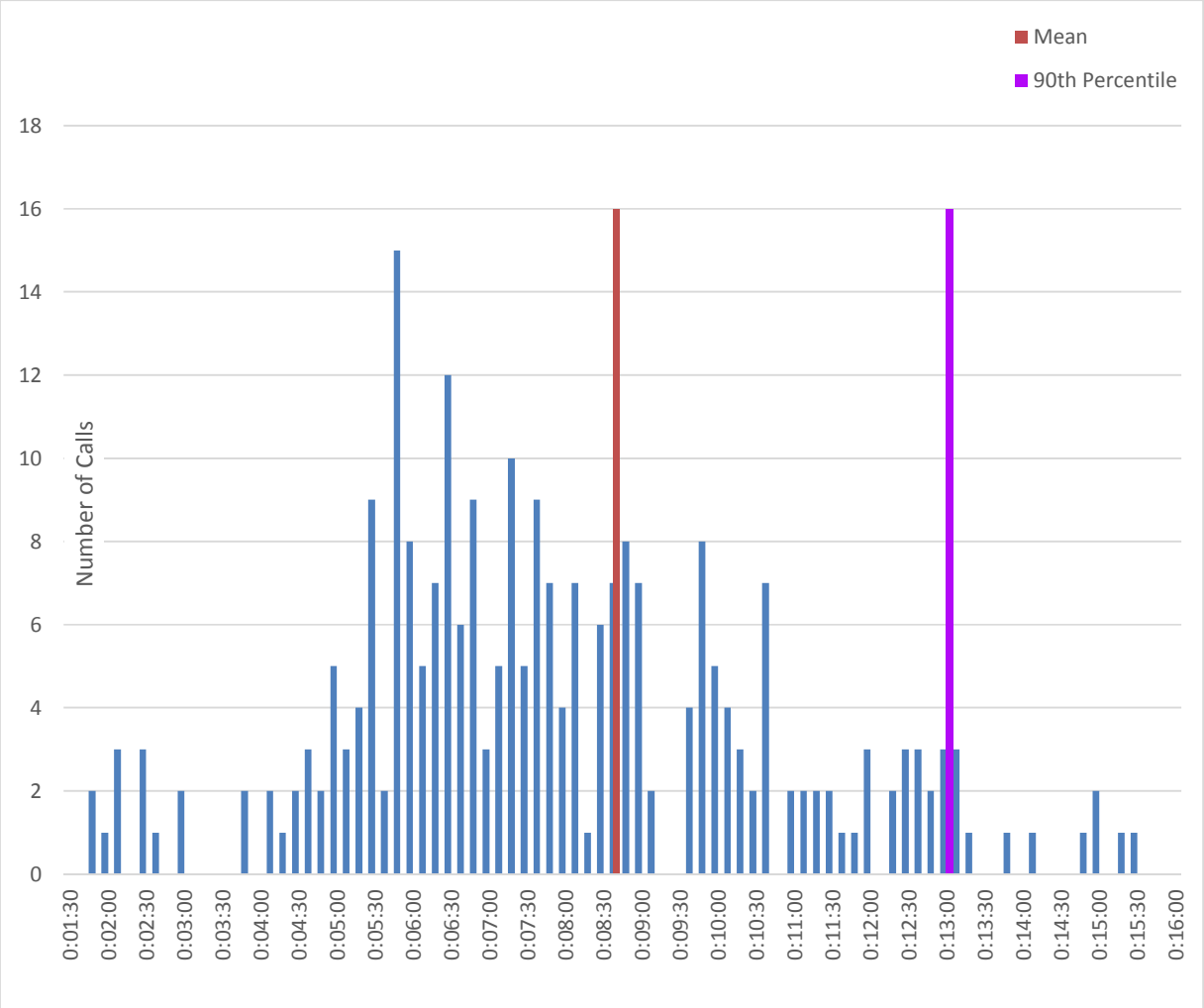
Table 84 Descriptive Statistics for All Rescue Emergency Calls (2010-2014)

	Call Processing	Turnout	Travel	Total Response
No. of Calls	30	26	30	33
Resp. Unit Count	86	62	70	88
Mean	0:02:00	0:01:40	0:05:21	0:13:55
Median	0:01:48	0:01:21	0:04:33	0:07:46
Min	0:00:29	0:00:30	0:01:03	0:01:37
Max	0:05:07	0:06:13	0:14:54	0:46:33
Range	0:04:38	0:05:43	0:13:51	0:44:56
Standard Deviation	0:00:59	0:01:08	0:03:31	0:12:03

Table 85 Percentiles for All Rescue Emergency Calls (2010-2014)

	Call Processing	Turnout	Travel	Total Response
0%	0:00:29	0:00:30	0:01:03	0:01:37
5%	0:00:40	0:00:34	0:01:33	0:04:18
10%	0:00:46	0:00:40	0:01:54	0:05:19
15%	0:00:50	0:00:45	0:02:08	0:05:38
20%	0:01:15	0:00:49	0:02:34	0:06:07
25%	0:01:19	0:00:53	0:03:00	0:06:46
30%	0:01:33	0:00:57	0:03:21	0:07:02
35%	0:01:38	0:01:00	0:03:41	0:07:11
40%	0:01:45	0:01:05	0:03:58	0:07:19
45%	0:01:47	0:01:13	0:04:23	0:07:34
50%	0:01:48	0:01:21	0:04:33	0:07:46
55%	0:01:50	0:01:28	0:04:51	0:07:52
60%	0:01:57	0:01:30	0:05:02	0:09:01
65%	0:02:11	0:01:48	0:05:05	0:11:13
70%	0:02:25	0:01:56	0:05:08	0:13:24
75%	0:02:31	0:02:05	0:05:45	0:17:35
80%	0:02:44	0:02:10	0:08:10	0:22:43
85%	0:03:00	0:02:33	0:09:17	0:25:24
90%	0:03:00	0:02:51	0:11:33	0:33:59
95%	0:04:22	0:03:51	0:13:09	0:44:47
96%	0:04:22	0:04:10	0:13:33	0:46:08
97%	0:04:22	0:04:34	0:13:46	0:46:08
98%	0:04:22	0:05:09	0:14:12	0:46:08
99%	0:04:29	0:05:42	0:14:35	0:46:11
100%	0:05:07	0:06:13	0:14:54	0:46:33

Figure 77 Total Response Times for All HazMat Emergency Calls (2010-2014)



This includes all emergency Hazmat calls for 2010-2014. The abnormal distribution of this data is likely due to the small data set that is available for analysis. Used 10 second time increments to plot frequency. Please see the corresponding descriptive statistics and percentiles on the following page.

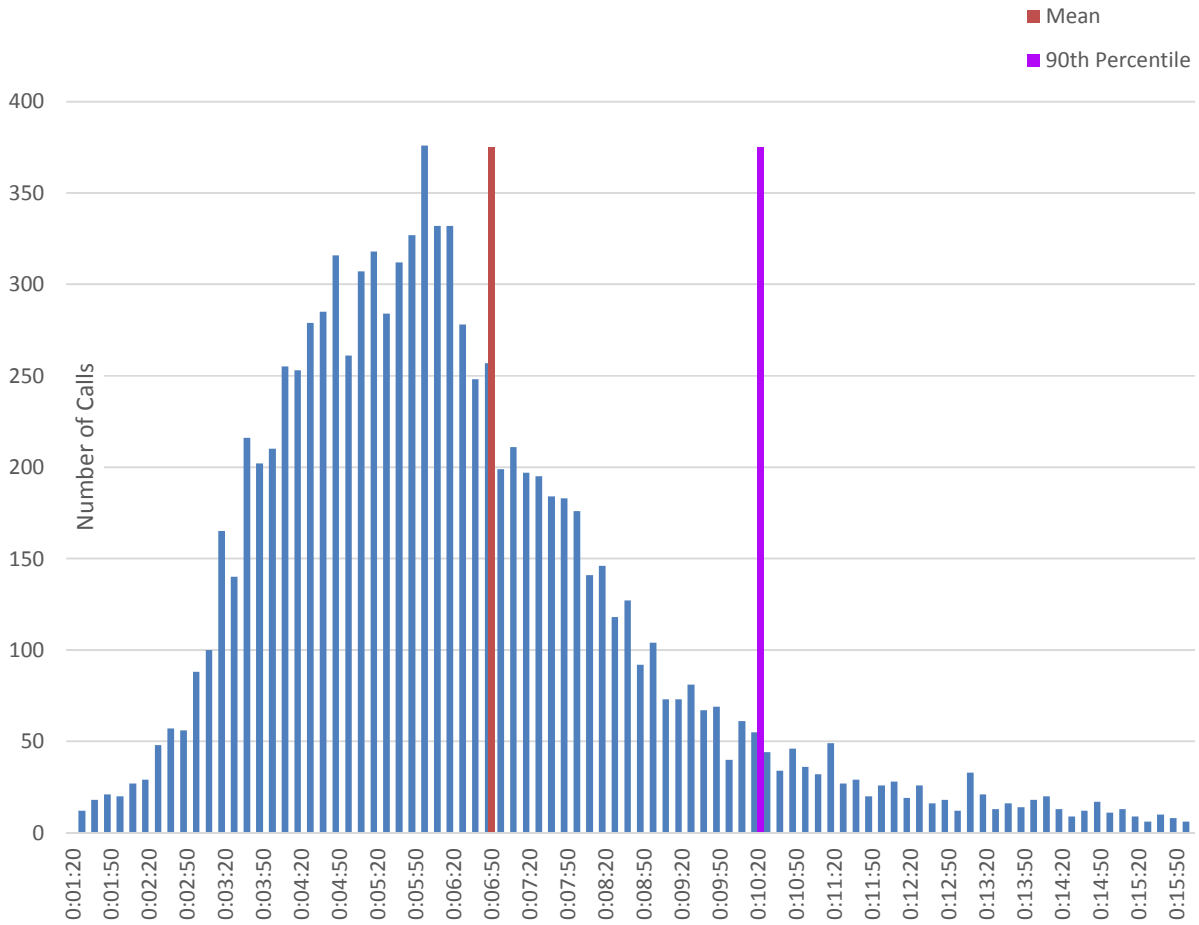
Table 86 Descriptive Statistics for All HazMat Emergency Calls (2010-2014)

	Call Processing	Turnout	Travel	Total Response
No. of Calls	97	76	93	101
Resp. Unit Count	303	223	261	277
Mean	0:02:14	0:01:41	0:04:44	0:08:39
Median	0:02:03	0:01:36	0:04:01	0:07:36
Min	0:00:17	0:00:31	0:00:45	0:01:43
Max	0:06:24	0:07:49	0:14:00	0:39:47
Range	0:06:07	0:07:18	0:13:15	0:38:04
Standard Deviation	0:01:03	0:00:57	0:02:47	0:04:26

Table 87 Percentiles for All HazMat Emergency Calls (2010-2014)

	Call Processing	Turnout	Travel	Total Response
0%	0:00:17	0:00:31	0:00:45	0:01:43
5%	0:00:52	0:00:35	0:01:19	0:03:59
10%	0:01:04	0:00:41	0:01:55	0:04:55
15%	0:01:13	0:00:51	0:02:25	0:05:27
20%	0:01:25	0:00:58	0:02:35	0:05:47
25%	0:01:35	0:01:03	0:02:43	0:06:00
30%	0:01:39	0:01:07	0:03:01	0:06:21
35%	0:01:45	0:01:12	0:03:09	0:06:37
40%	0:01:46	0:01:18	0:03:29	0:06:58
45%	0:01:56	0:01:25	0:03:45	0:07:18
50%	0:02:03	0:01:36	0:04:01	0:07:36
55%	0:02:11	0:01:40	0:04:17	0:08:01
60%	0:02:15	0:01:45	0:04:28	0:08:30
65%	0:02:25	0:01:52	0:04:52	0:08:49
70%	0:02:29	0:01:57	0:05:24	0:09:40
75%	0:02:43	0:02:01	0:06:02	0:10:00
80%	0:03:01	0:02:10	0:06:58	0:10:37
85%	0:03:11	0:02:21	0:07:51	0:11:56
90%	0:03:32	0:02:39	0:08:55	0:12:57
95%	0:04:23	0:03:03	0:10:18	0:17:46
96%	0:04:30	0:03:10	0:10:37	0:19:04
97%	0:04:30	0:03:54	0:10:56	0:19:05
98%	0:05:08	0:04:25	0:12:14	0:21:29
99%	0:05:29	0:05:13	0:13:23	0:24:48
100%	0:06:24	0:07:49	0:14:00	0:39:47

Figure 78 Total Response Times for All EMS Emergency Calls (2010-2014)



This includes all emergency EMS calls for 2010-2014, including medical assists, vehicle accidents, and other EMS calls. Here again we see a distribution that is skewed to the right, which is very typical for time data. Used 10 second time increments to plot frequency. Please see the corresponding descriptive statistics and percentiles on the following page.

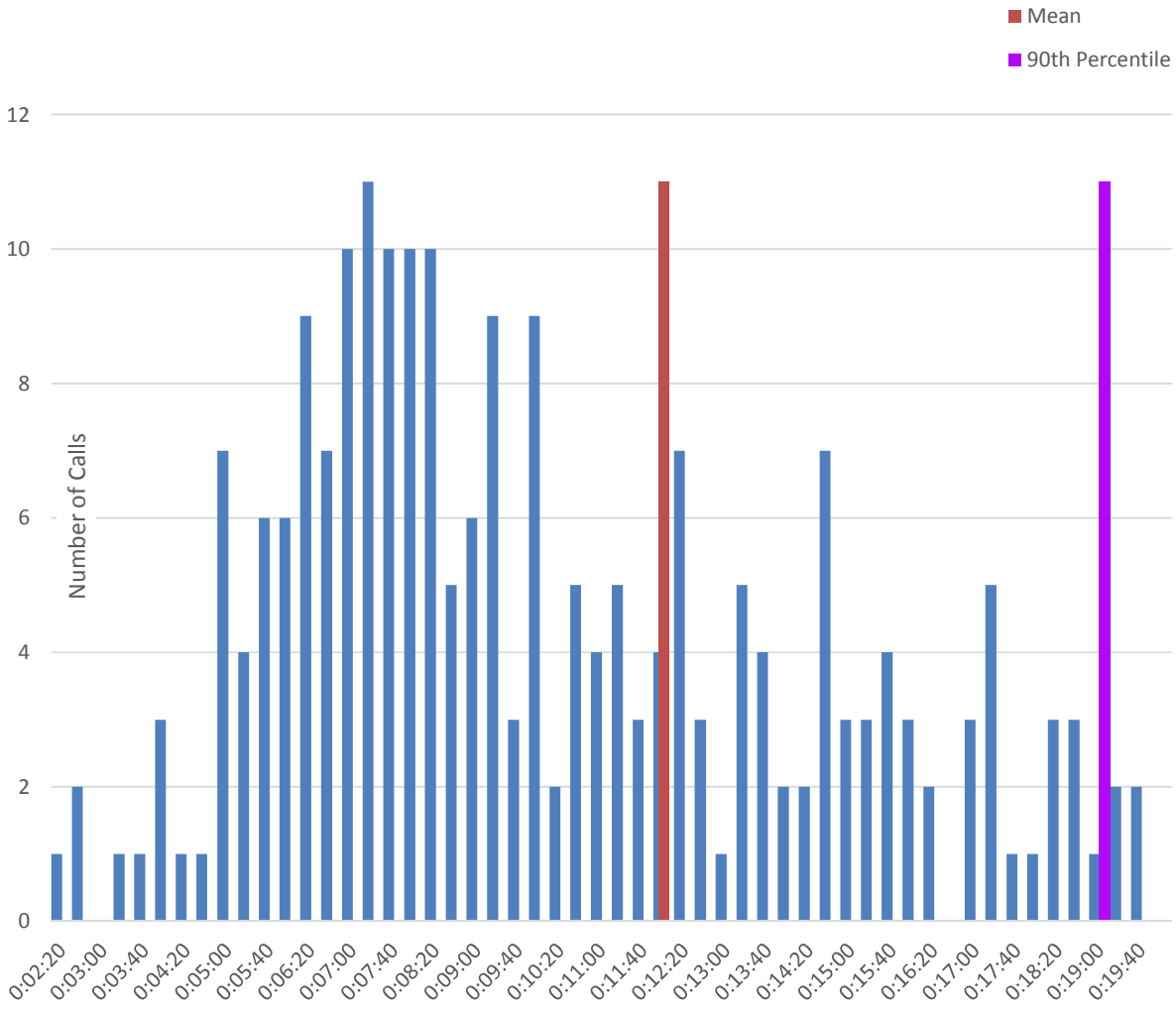
Table 88 Descriptive Statistics for All EMS Emergency Calls (2010-2014)

	Call Processing	Turnout	Travel	Total Response
No. of Calls	4330	3332	4135	4335
Resp. Unit Count	10844	7529	9547	10024
Mean	0:01:39	0:01:20	0:03:53	0:06:51
Median	0:01:29	0:01:09	0:03:22	0:06:01
Min	0:00:12	0:00:30	0:00:41	0:01:20
Max	0:06:47	0:17:08	0:15:00	0:57:58
Range	0:06:35	0:16:38	0:14:19	0:56:38
Standard Deviation	0:00:48	0:00:49	0:02:21	0:03:58

Table 89 Percentiles for All EMS Emergency Calls (2010-2014)

	Call Processing	Turnout	Travel	Total Response
0%	0:00:12	0:00:30	0:00:41	0:01:20
5%	0:00:42	0:00:34	0:01:09	0:03:12
10%	0:00:52	0:00:38	0:01:29	0:03:41
15%	0:00:59	0:00:43	0:01:47	0:04:03
20%	0:01:04	0:00:47	0:02:03	0:04:24
25%	0:01:09	0:00:51	0:02:19	0:04:41
30%	0:01:14	0:00:54	0:02:32	0:04:58
35%	0:01:18	0:00:58	0:02:45	0:05:15
40%	0:01:22	0:01:01	0:02:57	0:05:32
45%	0:01:26	0:01:05	0:03:09	0:05:47
50%	0:01:29	0:01:09	0:03:22	0:06:01
55%	0:01:34	0:01:14	0:03:36	0:06:16
60%	0:01:39	0:01:19	0:03:49	0:06:33
65%	0:01:44	0:01:24	0:04:05	0:06:54
70%	0:01:50	0:01:29	0:04:25	0:07:19
75%	0:01:57	0:01:36	0:04:46	0:07:46
80%	0:02:06	0:01:44	0:05:16	0:08:17
85%	0:02:18	0:01:54	0:05:49	0:09:03
90%	0:02:35	0:02:07	0:06:47	0:10:20
95%	0:03:05	0:02:30	0:08:49	0:13:15
96%	0:03:18	0:02:39	0:09:20	0:14:15
97%	0:03:36	0:02:53	0:10:00	0:15:47
98%	0:03:59	0:03:14	0:11:07	0:18:11
99%	0:04:36	0:03:58	0:12:24	0:23:40
100%	0:06:47	0:17:08	0:15:00	0:57:58

Figure 79 Total Response Times for All Wildland Emergency Calls (2010-2014)



All emergency Wildland calls for 2010-2014, including crop fires, special outside fires, and other natural vegetation fires. Used 20 second time increments to plot frequency. Please see the corresponding descriptive statistics and percentiles on the following page.

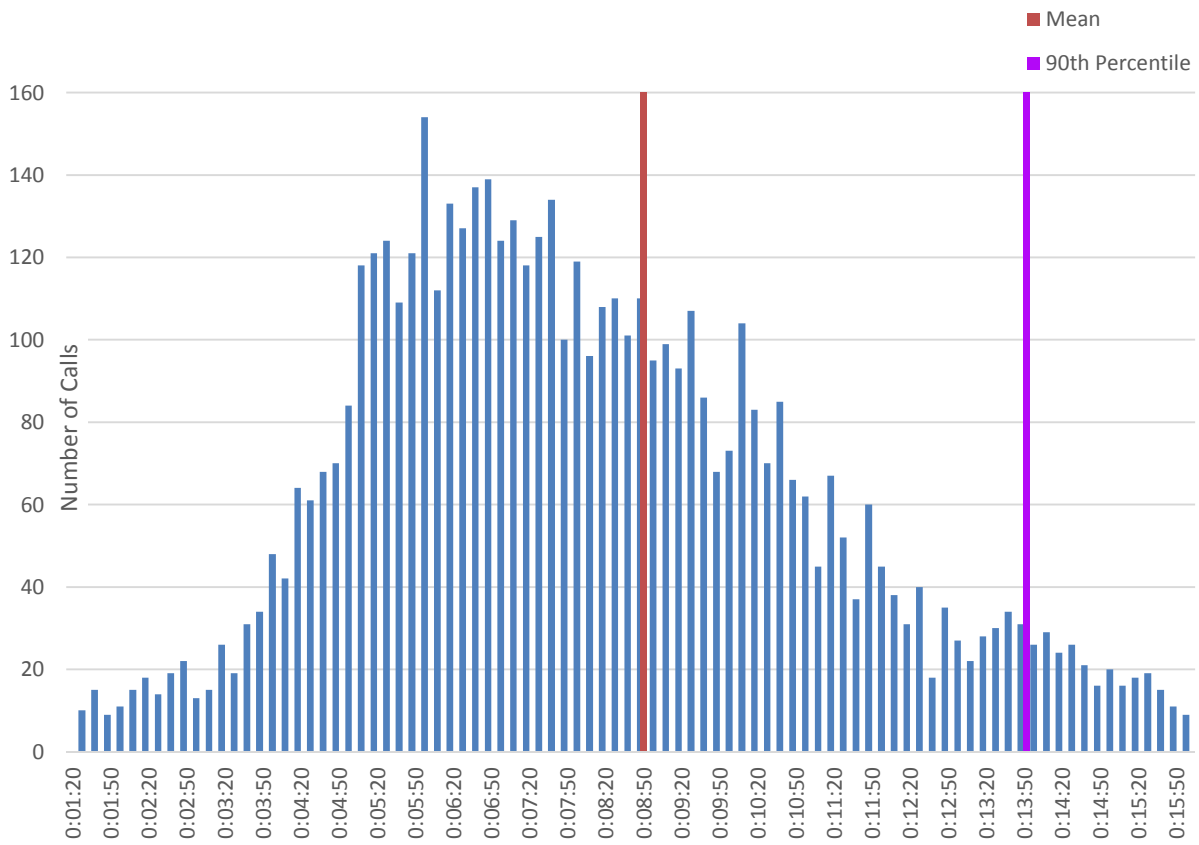
Table 90 Descriptive Statistics for All Wildland Emergency Calls (2010-2014)

	Call Processing	Turnout	Travel	Total Response
No. of Calls	50	39	54	56
Resp. Unit Count	320	207	215	249
Mean	0:02:20	0:02:03	0:06:14	0:12:01
Median	0:01:49	0:01:41	0:05:07	0:09:26
Min	0:00:25	0:00:30	0:00:43	0:01:25
Max	0:06:49	0:08:21	0:15:00	0:56:46
Range	0:06:24	0:07:51	0:14:17	0:55:21
Standard Deviation	0:01:28	0:01:17	0:03:35	0:08:40

Table 91 Percentiles for All Wildland Emergency Calls (2010-2014)

	Call Processing	Turnout	Travel	Total Response
0%	0:00:25	0:00:30	0:00:43	0:01:25
5%	0:00:51	0:00:33	0:01:53	0:04:14
10%	0:01:03	0:00:44	0:02:29	0:05:22
15%	0:01:10	0:00:57	0:02:55	0:06:01
20%	0:01:17	0:01:03	0:03:11	0:06:37
25%	0:01:19	0:01:08	0:03:24	0:06:56
30%	0:01:28	0:01:18	0:03:42	0:07:21
35%	0:01:34	0:01:21	0:04:01	0:07:48
40%	0:01:39	0:01:26	0:04:28	0:08:09
45%	0:01:41	0:01:36	0:04:46	0:08:46
50%	0:01:49	0:01:41	0:05:07	0:09:26
55%	0:01:55	0:01:50	0:05:25	0:10:07
60%	0:02:15	0:02:02	0:06:28	0:11:03
65%	0:02:20	0:02:17	0:07:10	0:12:03
70%	0:02:29	0:02:24	0:07:58	0:13:20
75%	0:02:38	0:02:43	0:08:54	0:14:24
80%	0:03:00	0:02:58	0:09:31	0:15:32
85%	0:04:16	0:03:18	0:10:10	0:17:08
90%	0:04:54	0:03:43	0:11:47	0:19:10
95%	0:05:08	0:04:18	0:13:12	0:28:04
96%	0:06:01	0:04:42	0:13:46	0:33:45
97%	0:06:07	0:05:07	0:14:32	0:38:24
98%	0:06:49	0:05:38	0:14:47	0:43:30
99%	0:06:49	0:05:47	0:14:58	0:47:28
100%	0:06:49	0:08:21	0:15:00	0:56:46

Figure 80 Total Response Times for all "Other" Emergency Calls (2010-2014)



Used 10 second time increments to plot frequency. Types of calls included in the "Other" category include service calls, persons in distress, water problems, false alarms, bomb scares, severe weather calls, etc. Please see the corresponding descriptive statistics and percentiles on the following page.

Table 92 Descriptive Statistics for all "Other" Emergency Calls (2010-2014)

	Call Processing	Turnout	Travel	Total Response
No. of Calls	1605	1291	1476	1619
Resp. Unit Count	7188	5420	5398	5770
Mean	0:01:55	0:01:41	0:05:11	0:08:45
Median	0:01:42	0:01:30	0:04:36	0:07:55
Min	0:00:11	0:00:30	0:00:40	0:01:23
Max	0:06:48	0:11:35	0:14:59	0:57:16
Range	0:06:37	0:11:05	0:14:19	0:55:53
Standard Deviation	0:00:58	0:00:56	0:02:55	0:04:20

Table 93 Percentiles for all "Other" Emergency Calls (2010-2014)

	Call Processing	Turnout	Travel	Total Response
0%	0:00:11	0:00:30	0:00:40	0:01:23
5%	0:00:51	0:00:37	0:01:34	0:03:55
10%	0:01:01	0:00:45	0:02:02	0:04:44
15%	0:01:08	0:00:51	0:02:21	0:05:13
20%	0:01:15	0:00:57	0:02:43	0:05:38
25%	0:01:20	0:01:01	0:03:00	0:06:00
30%	0:01:24	0:01:08	0:03:17	0:06:22
35%	0:01:28	0:01:13	0:03:33	0:06:44
40%	0:01:33	0:01:19	0:03:54	0:07:07
45%	0:01:37	0:01:25	0:04:15	0:07:30
50%	0:01:42	0:01:30	0:04:36	0:07:55
55%	0:01:47	0:01:36	0:04:57	0:08:22
60%	0:01:52	0:01:43	0:05:18	0:08:48
65%	0:01:58	0:01:49	0:05:43	0:09:19
70%	0:02:07	0:01:57	0:06:11	0:09:53
75%	0:02:17	0:02:06	0:06:44	0:10:26
80%	0:02:26	0:02:15	0:07:21	0:11:10
85%	0:02:38	0:02:25	0:08:10	0:12:07
90%	0:03:00	0:02:42	0:09:21	0:13:46
95%	0:03:50	0:03:13	0:11:20	0:16:15
96%	0:04:10	0:03:23	0:11:44	0:16:57
97%	0:04:27	0:03:41	0:12:06	0:18:13
98%	0:04:56	0:04:10	0:12:56	0:20:18
99%	0:05:45	0:05:15	0:13:53	0:23:34
100%	0:06:48	0:11:35	0:14:59	0:57:16

Comparability Factors

Due to the unique nature of Los Alamos, with regards to topography and the Los Alamos National Labs, a comparable department was not available to analyze. The charts below, instead compare shift to shift for each station.

Table 94 Number of Emergency Incidents by Call Type for Station and Shifts (2010-2014)*

Station	Call Type	Shift A	Shift B	Shift C	Grand Total
Station 1	Fire Suppression	9	8	12	29
	Rescue	27	34	18	79
	HazMat	7	11	9	27
	EMS	226	194	202	622
	Wildland	5	1	4	10
Station 1 Total		**274**	**248**	**245**	**767**
Station 3	Fire Suppression	19	14	10	43
	Rescue	15	16	11	42
	HazMat	11	9	9	29
	EMS	292	237	277	806
	Wildland	7	4	4	15
Station 3 Total		**344**	**280**	**311**	**935**
Station 4	Fire Suppression	15	24	19	58
	Rescue	12	12	11	35
	HazMat	11	13	8	32
	EMS	340	323	393	1056
	Wildland	7	6	6	19
Station 4 Total		**385**	**378**	**437**	**1200**
Station 5	Fire Suppression	1	2	5	8
	Rescue	12	6	10	28
	HazMat	4		1	5
	EMS	28	18	19	65
	Wildland	1	2	1	4
Station 5 Total		**46**	**28**	**36**	**110**
Station 6	Fire Suppression	3	3	19	25
	Rescue	34	25	23	82
	HazMat	13	4	9	26
	EMS	521	554	460	1535
	Wildland		1	1	2
	ARFF			1	1
Station 6 Total		**571**	**587**	**513**	**1671**
Grand Total		**1620**	**1521**	**1542**	**4683**

*Station 2 and Fire Admin not included, as they are not normally dispatched. Does not include calls that have been excluded or deemed unsalvageable due to identified data errors.

Table 95 Turnout Time for First Arriving Units, by Station, Call Type and Shift (2010-2014)

Station	Call Type	Shift A	Shift B	Shift C	90th Percentile for Station
Station 1	Fire Suppression	0:02:01	0:01:25	0:02:42	0:02:36
	Rescue	0:02:17	0:02:37	0:02:09	0:02:28
	HazMat	0:01:55	0:04:44	0:03:10	0:03:55
	EMS	0:02:05	0:01:52	0:02:00	0:01:58
	Wildland	0:03:20	0:00:40	0:01:20	0:02:05
Station 3	Fire Suppression	0:02:06	0:02:24	0:02:27	0:02:27
	Rescue	0:02:04	0:02:08	0:01:42	0:02:01
	HazMat	0:02:28	0:02:19	0:02:21	0:02:26
	EMS	0:02:19	0:02:04	0:02:12	0:02:10
	Wildland	0:01:57	0:02:31	0:03:29	0:02:50
Station 4	Fire Suppression	0:01:57	0:01:35	0:02:32	0:02:00
	Rescue	0:01:12	0:02:06	0:01:52	0:01:57
	HazMat	0:01:18	0:01:55	0:01:51	0:01:45
	EMS	0:01:40	0:01:40	0:02:04	0:01:49
	Wildland	0:01:10	0:01:23	0:01:33	0:01:24
Station 5	Fire Suppression	0:01:43	0:01:04	0:01:36	0:01:44
	Rescue	0:01:24	0:02:39	0:01:30	0:01:30
	HazMat	0:01:15		0:01:29	0:01:25
	EMS	0:02:13	0:02:13	0:02:29	0:02:28
	Wildland	0:01:25	0:00:17	0:01:16	0:01:22
Station 6	Fire Suppression	0:01:05	0:01:46	0:01:21	0:01:22
	Rescue	0:01:26	0:01:22	0:02:03	0:01:30
	HazMat	0:01:59	0:03:55	0:01:19	0:02:07
	EMS	0:01:39	0:01:29	0:01:25	0:01:31
	Wildland		0:01:11	0:00:11	0:01:05

*Only emergency calls were analyzed. Station 2 and Fire Admin not included, as they are not normally dispatched. Does not include calls that have been excluded or deemed unsalvageable due to identified data errors.

Table 96 Travel Time for First Arriving Units, by Station, Call Type and Shift (2010-2014)

Station	Call Type	Shift A	Shift B	Shift C	90th Percentile for Station
Station 1	Fire Suppression	0:04:26	0:10:03	0:06:04	0:06:51
	Rescue	0:05:38	0:05:23	0:05:03	0:05:33
	HazMat	0:08:07	0:05:24	0:04:41	0:06:07
	EMS	0:06:07	0:06:43	0:06:00	0:06:13
	Wildland	0:05:00	0:04:58	0:05:48	0:05:09
Station 3	Fire Suppression	0:05:30	0:03:38	0:03:34	0:05:11
	Rescue	0:06:34	0:06:15	0:03:30	0:05:56
	HazMat	0:05:58	0:05:35	0:05:20	0:06:24
	EMS	0:05:21	0:05:14	0:05:31	0:05:21
	Wildland	0:07:04	0:03:07	0:02:53	0:04:59
Station 4	Fire Suppression	0:05:46	0:06:38	0:07:01	0:06:34
	Rescue	0:04:14	0:06:28	0:03:26	0:05:13
	HazMat	0:04:53	0:05:11	0:05:27	0:05:16
	EMS	0:06:12	0:05:44	0:05:24	0:05:45
	Wildland	0:06:32	0:07:34	0:06:56	0:07:12
Station 5	Fire Suppression	0:02:26	0:03:14	0:10:07	0:08:16
	Rescue	0:09:22	0:10:44	0:10:06	0:09:52
	HazMat	0:06:36		0:01:57	0:06:33
	EMS	0:11:52	0:16:18	0:15:06	0:14:31
	Wildland	0:14:19	0:13:40	0:04:12	0:14:44
Station 6	Fire Suppression	0:02:47	0:04:19	0:04:37	0:04:50
	Rescue	0:08:27	0:06:03	0:05:05	0:07:15
	HazMat	0:04:17	0:02:44	0:05:29	0:04:29
	EMS	0:04:13	0:04:05	0:04:05	0:04:08
	Wildland		0:03:33	0:02:07	0:03:24

*Only emergency calls were analyzed. Station 2 and Fire Admin not included, as they are not normally dispatched. Does not include calls that have been excluded or deemed unsalvageable due to identified data errors.

Table 97 Total First Response by Station, Call Type and Shift (2010-2014)

Station	Call Type	Shift A	Shift B	Shift C	90th Percentile for Station
Station 1	Fire Suppression	0:09:30	0:14:30	0:11:38	0:12:00
	Rescue	0:08:21	0:08:55	0:09:15	0:08:48
	HazMat	0:10:24	0:11:58	0:08:47	0:11:10
	EMS	0:10:55	0:10:19	0:09:33	0:10:14
	Wildland	0:10:37	0:07:50	0:08:57	0:10:03
Station 3	Fire Suppression	0:11:00	0:09:42	0:07:05	0:10:23
	Rescue	0:09:11	0:09:52	0:08:07	0:09:32
	HazMat	0:09:58	0:10:17	0:10:54	0:10:54
	EMS	0:08:33	0:08:36	0:08:42	0:08:37
	Wildland	0:10:06	0:08:16	0:08:58	0:09:25
Station 4	Fire Suppression	0:09:22	0:10:38	0:12:25	0:11:21
	Rescue	0:06:37	0:08:31	0:07:16	0:07:59
	HazMat	0:08:09	0:09:42	0:08:25	0:09:07
	EMS	0:09:14	0:08:37	0:08:39	0:08:50
	Wildland	0:08:45	0:12:58	0:13:22	0:13:21
Station 5	Fire Suppression	0:06:29	0:05:21	0:15:15	0:12:26
	Rescue	0:11:30	0:13:09	0:14:36	0:13:32
	HazMat	0:11:21		0:04:52	0:11:00
	EMS	0:17:48	0:18:41	0:18:46	0:18:22
	Wildland	0:17:01	0:14:31	0:08:06	0:16:36
Station 6	Fire Suppression	0:05:29	0:06:49	0:07:37	0:07:26
	Rescue	0:10:53	0:08:32	0:08:15	0:09:18
	HazMat	0:09:30	0:06:15	0:08:11	0:09:15
	EMS	0:07:20	0:07:00	0:06:50	0:07:06
	Wildland		0:05:58	0:03:37	0:05:44

*Only emergency calls were analyzed. Station 2 and Fire Admin not included, as they are not normally dispatched. Does not include calls that have been excluded or deemed unsalvageable due to identified data errors.

Baseline Performance Tables

Table 98 Number of Emergency Incidents by Type, Risk, and Year for First Unit Distribution (2010-2014)

Incident Type	Risk	2014	2013	2012	2011	2010	Grand Total
Fire Suppression	Maximum		1		2	1	4*
	High	2	3	3	8	8	24
	Moderate	2			4	2	8*
	Low	24	33	35	21	18	131
Fire Suppression Total		**28**	**37**	**38**	**35**	**29**	**167**
HazMat	Maximum		2	3		2	7*
	Special			1			1*
	High	1		3			4*
	Moderate	8	4	4	11	6	33
	Low	16	23	17	11	8	75
HazMat Total		**25**	**29**	**28**	**22**	**16**	**120**
Rescue	Maximum	2	3	1	1	3	10
	High	1	1	1			3*
	Moderate	34	32	30	31	24	151
	Low	16	25	19	33	25	118
Rescue Total		**53**	**61**	**51**	**65**	**52**	**282**
EMS	High	13	18	13	27	7	78
	Moderate	225	229	211	264	260	1189
	Low	582	616	628	523	509	2858
EMS Total		**820**	**863**	**852**	**814**	**776**	**4125**
Wildland	Moderate	3	5	8	4	8	28
	Low	2	4	5	7	7	25
Wildland Total		**5**	**9**	**13**	**11**	**15**	**53**
ARFF	Moderate		1				1*
ARFF Total			**1**				**1***
Grand Total		**931**	**1000**	**982**	**947**	**888**	**4748**

**Indicates statistically insignificant data.*

Table 99 Number of Emergency Incidents by Type, Risk, and Year for ERF Concentration (2010-2014)

Incident Type	Risk	2014	2013	2012	2011	2010	Grand Total
Fire Suppression	Maximum		1		2		3*
	High	1	3	3	8	7	22
	Moderate	1			2	1	4*
	Low	24	33	35	21	18	131
Fire Suppression Total		**26**	**37**	**38**	**33**	**26**	**160**
HazMat	High			1			1*
	Moderate	7	4	4	10	5	30
	Low	16	23	17	11	8	75
HazMat Total		**23**	**27**	**22**	**21**	**13**	**106**
Rescue	Maximum	2	3	1	1	3	10
	High	1	1	1			3*
	Moderate	34	32	30	31	24	151
	Low	10	12	14	17	16	69
Rescue Total		**47**	**48**	**46**	**49**	**43**	**233**
EMS	High	13	18	13	27	7	78
	Moderate	225	229	211	264	260	1189
	Low	493	525	549	431	427	2425
EMS Total		**731**	**772**	**773**	**722**	**694**	**3692**
Wildland	Moderate	3	5	8	4	8	28
	Low	1	1	1	2	1	6*
Wildland Total		**4**	**6**	**9**	**6**	**9**	**34**
ARFF	Moderate		1				1*
ARFF Total			**1**				**1***
Grand Total		**831**	**891**	**888**	**831**	**785**	**4226**

**Indicates statistically insignificant data.*

Table 100 Fire Suppression - 90th Percentile Times - Baseline Performance for First Unit Distribution

Risk		Density	2010-2014	2014	2013	2012	2011	2010
Maximum	**Call Processing**	Suburban	0:02:47				0:02:26	0:02:49
		Rural	0:03:28		0:01:08		0:03:44	
	Turnout	Suburban	0:00:28				0:00:08	0:00:30
		Rural	0:01:07		0:01:14		0:00:00	
	Travel	Suburban	0:03:49				0:03:35	0:03:51
		Rural	0:04:02		0:04:29		0:00:02	
	Total Response	Suburban	0:07:04				0:06:09	0:07:10
		Rural	0:06:32		0:06:51		0:03:46	
High	**Call Processing**	Suburban	0:02:04		0:01:34	0:01:39	0:02:11	0:01:47
		Rural	0:03:50	0:02:58	0:03:04	0:03:03	0:04:20	0:02:07
	Turnout	Suburban	0:01:21		0:01:00	0:00:00	0:01:30	0:00:27
		Rural	0:02:53	0:03:20	0:01:45	0:01:53	0:01:35	0:02:12
	Travel	Suburban	0:05:14		0:05:53	0:00:27	0:03:12	0:03:42
		Rural	0:05:33	0:01:10	0:02:53	0:03:31	0:04:51	0:06:01
	Total Response	Suburban	0:07:42		0:08:27	0:02:06	0:05:58	0:05:56
		Rural	0:08:52	0:07:28	0:06:41	0:08:27	0:07:12	0:09:09
Moderate	**Call Processing**	Suburban	0:01:44				0:01:52	0:00:30
		Rural	0:02:54	0:02:58			0:02:17	
	Turnout	Suburban	0:01:53				0:00:35	0:02:02
		Rural	0:01:41	0:01:50			0:00:17	
	Travel	Suburban	0:04:17				0:04:37	0:01:15
		Rural	0:05:25	0:03:47			0:05:36	
	Total Response	Suburban	0:06:38				0:06:57	0:03:47
		Rural	0:08:22	0:08:23			0:08:10	
Low	**Call Processing**	Suburban	0:03:13	0:01:30	0:02:08	0:03:57	0:02:07	0:02:00
		Rural	0:03:55	0:03:14	0:03:23	0:04:16	0:02:39	0:01:56
		Wilderness	0:04:17		0:02:33	0:01:25	0:05:02	0:00:46
	Turnout	Suburban	0:02:25	0:01:23	0:01:33	0:02:45	0:01:02	0:01:54
		Rural	0:02:21	0:02:17	0:01:34	0:02:24	0:01:28	0:01:57
		Wilderness	0:02:12		0:02:34	0:00:41	0:01:22	0:00:47
	Travel	Suburban	0:05:51	0:00:43	0:04:02	0:02:21	0:04:54	0:06:29
		Rural	0:10:23	0:06:40	0:04:46	0:06:34	0:12:51	0:05:40
		Wilderness	0:12:03		0:10:50	0:02:12	0:12:35	0:02:03
	Total Response	Suburban	0:08:32	0:03:36	0:07:21	0:05:58	0:07:27	0:09:16
		Rural	0:14:19	0:12:06	0:08:20	0:11:38	0:15:47	0:08:34
		Wilderness	0:17:37		0:14:25	0:03:44	0:18:59	0:03:36

Table 101 Fire Suppression - 90th Percentile Times - Baseline Performance for ERF Concentration

Risk		Density	2010-2014	2014	2013	2012	2011	2010
Maximum	**Turnout**	Suburban	0:01:32				0:01:32	
		Rural	0:02:54		0:01:41		0:03:02	
	Travel	Suburban	0:04:57				0:04:57	
		Rural	0:13:16		0:11:43		0:13:26	
	Total Response	Suburban	0:08:30				0:08:30	
		Rural	0:17:53		0:14:02		0:18:19	
High	**Turnout**	Suburban	0:03:09		0:03:18	0:00:57	0:02:47	0:02:19
		Rural	0:03:31	0:03:42	0:03:14	0:02:04	0:01:55	0:02:21
	Travel	Suburban	0:07:51		0:05:56	0:08:00	0:07:31	0:06:05
		Rural	0:15:44	0:02:42	0:13:36	0:17:10	0:09:59	0:10:07
	Total Response	Suburban	0:11:04		0:09:33	0:09:39	0:11:08	0:10:56
		Rural	0:18:29	0:08:27	0:17:22	0:19:13	0:13:42	0:13:32
Moderate	**Turnout**	Suburban	0:01:54				0:01:56	0:01:36
		Rural	0:03:10	0:03:10				
	Travel	Suburban	0:07:48				0:06:11	0:07:59
		Rural	0:06:46	0:06:46				
	Total Response	Suburban	0:08:50				0:08:17	0:08:54
		Rural	0:12:05	0:12:05				
Low	**Turnout**	Suburban	0:02:25	0:01:23	0:01:33	0:02:45	0:01:02	0:01:54
		Rural	0:02:21	0:02:17	0:01:34	0:02:24	0:01:28	0:01:57
		Wilderness	0:02:12		0:02:34	0:00:41	0:01:22	0:00:47
	Travel	Suburban	0:05:51	0:00:43	0:04:02	0:02:21	0:04:54	0:06:29
		Rural	0:10:23	0:06:40	0:04:46	0:06:34	0:12:51	0:05:40
		Wilderness	0:12:03		0:10:50	0:02:12	0:12:35	0:02:03
	Total Response	Suburban	0:08:32	0:03:36	0:07:21	0:05:58	0:07:27	0:09:16
		Rural	0:14:19	0:12:06	0:08:20	0:11:38	0:15:47	0:08:34
		Wilderness	0:17:37		0:14:25	0:03:44	0:18:59	0:03:36

Table 102 Rescue - 90th Percentile Times - Baseline Performance for First Unit Distribution

Risk		Density	2010-2014	2014	2013	2012	2011	2010
Maximum	**Call Processing**	Suburban	0:01:18	0:00:39			0:01:22	
		Rural	0:02:26		0:02:35	0:01:48		0:01:36
		Wilderness	0:01:41	0:00:59	0:01:19			0:01:47
	Turnout	Suburban	0:01:12	0:01:04			0:01:13	
		Rural	0:02:00		0:01:20	0:02:10		0:00:55
		Wilderness	0:01:52	0:00:56	0:01:14			0:02:02
	Travel	Suburban	0:03:20	0:03:13			0:03:21	
		Rural	0:04:40		0:03:14	0:01:52		0:05:02
		Wilderness	0:11:28	0:03:03	0:13:29			0:03:23
	Total Response	Suburban	0:05:50	0:04:56			0:05:56	
		Rural	0:07:28		0:07:10	0:05:50		0:07:33
		Wilderness	0:14:16	0:04:58	0:16:02			0:07:12
High	**Call Processing**	Suburban	0:00:46		0:00:46			
		Rural	0:01:52	0:01:52				
		Wilderness	0:01:23			0:01:23		
	Turnout	Suburban	0:01:03		0:01:03			
		Rural	0:00:00	0:00:00				
		Wilderness	0:00:50			0:00:50		
	Travel	Suburban	0:05:08		0:05:08			
		Rural	0:00:00	0:00:00				
		Wilderness	0:03:39			0:03:39		
	Total Response	Suburban	0:06:57		0:06:57			
		Rural	0:01:52	0:01:52				
		Wilderness	0:05:52			0:05:52		
Moderate	**Call Processing**	Suburban	0:02:56	0:01:42	0:02:20	0:02:55	0:02:56	0:02:03
		Rural	0:04:53	0:02:12	0:00:59	0:01:33	0:04:37	0:05:04
		Wilderness	0:02:53	0:02:34	0:02:54	0:02:35	0:02:29	0:02:51
	Turnout	Suburban	0:01:58	0:01:40	0:02:00	0:01:43	0:01:41	0:01:54
		Rural	0:02:42	0:02:18	0:01:19	0:01:34	0:01:11	0:02:58
		Wilderness	0:02:01	0:01:59	0:01:48	0:00:55	0:02:03	0:01:01
	Travel	Suburban	0:05:36	0:04:56	0:04:35	0:03:57	0:05:37	0:05:35
		Rural	0:08:16	0:04:50	0:09:41	0:03:04	0:06:08	0:04:43
		Wilderness	0:09:38	0:07:21	0:09:25	0:06:44	0:08:16	0:09:47
	Total Response	Suburban	0:08:56	0:06:35	0:07:51	0:06:21	0:09:40	0:07:51
		Rural	0:11:04	0:09:24	0:11:29	0:05:27	0:09:54	0:10:26
		Wilderness	0:12:58	0:10:16	0:13:26	0:10:34	0:10:46	0:12:15
Low	**Call Processing**	Suburban	0:02:59	0:03:17	0:02:04	0:01:32	0:02:31	0:01:31
		Rural	0:03:10	0:02:03	0:03:29	0:01:17	0:02:21	0:02:41
		Wilderness	0:03:25	0:03:51	0:01:30	0:02:14	0:02:28	0:02:46
	Turnout	Suburban	0:02:57	0:01:29	0:01:37	0:02:46	0:01:53	0:03:05
		Rural	0:02:04	0:01:58	0:01:40	0:01:31	0:01:58	0:02:08
		Wilderness	0:02:30	0:01:18	0:01:06	0:03:00	0:01:44	0:01:22
	Travel	Suburban	0:06:07	0:01:51	0:02:47	0:03:42	0:06:47	0:05:07
		Rural	0:06:56	0:06:31	0:03:09	0:05:28	0:07:12	0:03:37
		Wilderness	0:11:57	0:04:38	0:12:48	0:04:15	0:10:40	0:10:14
	Total Response	Suburban	0:08:34	0:05:51	0:05:46	0:05:41	0:08:40	0:08:25
		Rural	0:09:05	0:08:59	0:06:42	0:07:41	0:09:09	0:06:32
		Wilderness	0:13:54	0:09:42	0:14:51	0:06:15	0:12:14	0:12:28

Table 103 Rescue - 90th Percentile Times - Baseline Performance for ERF Concentration

Risk		Density	2010-2014	2014	2013	2012	2011	2010
Maximum	**Turnout**	Suburban	0:03:41	0:01:22			0:03:56	
		Rural	0:03:23		0:02:13	0:03:41		0:00:55
		Wilderness	0:02:17	0:00:56	0:01:42			0:02:26
	Travel	Suburban	0:07:54	0:05:37			0:08:09	
		Rural	0:16:12		0:10:50	0:03:56		0:17:32
		Wilderness	0:20:53	0:11:42	0:22:46			0:13:21
	Total Response	Suburban	0:11:24	0:06:51			0:11:54	
		Rural	0:18:42		0:14:44	0:08:00		0:19:41
		Wilderness	0:22:33	0:12:46	0:24:32			0:14:38
High	**Turnout**	Suburban	0:00:57		0:00:57			
		Rural	0:00:02	0:00:02				
		Wilderness	0:00:49			0:00:49		
	Travel	Suburban	0:16:10		0:16:10			
		Rural	0:13:38	0:13:38				
		Wilderness	0:10:54			0:10:54		
	Total Response	Suburban	0:17:22		0:17:22			
		Rural	0:15:31	0:15:31				
		Wilderness	0:12:23			0:12:23		
Moderate	**Turnout**	Suburban	0:02:05	0:01:31	0:02:08	0:02:01	0:01:44	0:01:59
		Rural	0:02:33	0:02:06	0:01:40	0:02:00	0:01:29	0:02:51
		Wilderness	0:02:04	0:02:10	0:01:56	0:01:09	0:01:34	0:01:23
	Travel	Suburban	0:07:46	0:04:55	0:06:45	0:04:32	0:06:40	0:08:26
		Rural	0:10:40	0:07:14	0:12:07	0:05:56	0:07:51	0:08:29
		Wilderness	0:13:48	0:11:12	0:14:58	0:12:03	0:11:18	0:12:02
	Total Response	Suburban	0:10:57	0:06:35	0:10:46	0:07:06	0:10:27	0:11:05
		Rural	0:13:22	0:10:07	0:14:00	0:08:30	0:11:21	0:12:24
		Wilderness	0:16:10	0:14:44	0:17:08	0:13:55	0:12:57	0:14:27
Low	**Turnout**	Suburban	0:02:03	0:01:10	0:02:12	0:01:40	0:01:34	0:01:49
		Rural	0:02:41	0:02:59	0:02:06	0:02:15	0:02:02	0:01:50
		Wilderness	0:02:31	0:02:58	0:01:23	0:00:59	0:01:50	0:01:25
	Travel	Suburban	0:07:34	0:02:22	0:02:47	0:04:30	0:07:50	0:07:11
		Rural	0:07:01	0:07:44	0:03:13	0:02:50	0:05:56	0:04:24
		Wilderness	0:09:57	0:04:22	0:08:26	0:06:38	0:10:57	0:08:24
	Total Response	Suburban	0:09:36	0:06:41	0:05:44	0:05:48	0:09:38	0:09:34
		Rural	0:09:30	0:09:56	0:06:09	0:05:45	0:08:51	0:07:17
		Wilderness	0:12:25	0:10:12	0:11:00	0:08:24	0:13:22	0:10:37

Table 104 HazMat - 90th Percentile Times - Baseline Performance for First Unit Distribution

Risk		Density	2010-2014	2014	2013	2012	2011	2010
Maximum	**Call Processing**	Suburban	0:04:59		0:02:04	0:03:01		0:05:28
		Rural	0:03:25		0:02:27	0:03:32		
	Turnout	Suburban	0:03:52		0:02:11	0:02:08		0:04:17
		Rural	0:05:32		0:06:00	0:01:21		
	Travel	Suburban	0:04:27		0:01:00	0:02:27		0:04:57
		Rural	0:07:30		0:02:01	0:08:07		
	Total Response	Suburban	0:13:01		0:05:15	0:06:19		0:14:42
		Rural	0:12:45		0:10:28	0:13:00		
High	**Call Processing**	Suburban	0:02:17			0:02:17		
		Rural	0:04:46	0:05:10		0:01:13		
		Wilderness	0:00:56			0:00:56		
	Turnout	Suburban	0:00:10			0:00:10		
		Rural	0:01:23	0:01:25		0:01:08		
		Wilderness	0:01:07			0:01:07		
	Travel	Suburban	0:03:00			0:03:00		
		Rural	0:04:15	0:04:25		0:02:48		
		Wilderness	0:06:47			0:06:47		
	Total Response	Suburban	0:05:27			0:05:27		
		Rural	0:10:25	0:11:00		0:05:09		
		Wilderness	0:08:50			0:08:50		
Special	**Call Processing**	Suburban	0:01:46			0:01:46		
	Turnout	Suburban	0:01:18			0:01:18		
	Travel	Suburban	0:04:29			0:04:29		
	Total Response	Suburban	0:07:33			0:07:33		
Moderate	**Call Processing**	Suburban	0:03:54		0:02:59		0:04:08	0:02:51
		Rural	0:05:42	0:03:44			0:06:12	0:01:48
	Turnout	Suburban	0:01:49		0:00:59		0:00:35	0:02:02
		Rural	0:01:46	0:00:55			0:01:56	0:01:08
	Travel	Suburban	0:04:33		0:02:20		0:05:06	0:02:22
		Rural	0:08:11	0:05:43			0:07:17	0:08:24
	Total Response	Suburban	0:08:53		0:06:18		0:09:30	0:06:23
		Rural	0:13:28	0:09:22			0:14:17	0:10:12
Low	**Call Processing**	Suburban	0:04:46	0:04:59	0:04:27	0:03:25	0:03:01	0:03:24
		Rural	0:03:58	0:02:46	0:02:28	0:04:16	0:02:01	0:03:30
		Wilderness	0:02:22				0:02:24	0:02:08
	Turnout	Suburban	0:03:30	0:04:14	0:01:18	0:01:33	0:00:35	0:02:25
		Rural	0:02:55	0:02:07	0:02:27	0:03:13	0:01:11	0:01:45
		Wilderness	0:00:23				0:00:25	0:00:07
	Travel	Suburban	0:06:17	0:04:32	0:04:23	0:03:26	0:03:21	0:07:27
		Rural	0:05:35	0:04:38	0:05:55	0:04:14	0:05:05	0:02:37
		Wilderness	0:09:58				0:02:47	0:10:46
	Total Response	Suburban	0:10:29	0:09:25	0:07:48	0:07:00	0:06:47	0:11:12
		Rural	0:10:00	0:08:32	0:09:32	0:10:19	0:07:35	0:07:52
		Wilderness	0:12:16				0:05:31	0:13:01

Table 105 HazMat - 90th Percentile Times - Baseline Performance for ERF Concentration

Risk		Density	2010-2014	2014	2013	2012	2011	2010
High	**Turnout**	Suburban	0:00:32			0:00:32		
	Travel	Suburban	0:06:54			0:06:54		
	Total Response	Suburban	0:09:42			0:09:42		
Moderate	**Turnout**	Suburban	0:01:35		0:01:37		0:00:38	0:01:26
		Rural	0:03:08	0:01:51			0:01:56	0:03:26
	Travel	Suburban	0:09:49		0:04:11		0:10:57	0:05:18
		Rural	0:09:34	0:06:57			0:09:42	0:09:00
	Total Response	Suburban	0:14:01		0:07:53		0:15:15	0:09:05
		Rural	0:17:37	0:09:54			0:18:42	0:13:16
Low	**Turnout**	Suburban	0:03:10	0:03:29	0:01:48	0:02:41	0:01:01	0:02:39
		Rural	0:02:52	0:02:26	0:02:39	0:03:00	0:01:26	0:01:34
		Wilderness	0:02:11				0:02:24	0:00:16
	Travel	Suburban	0:08:12	0:08:39	0:06:34	0:03:45	0:03:49	0:07:32
		Rural	0:06:26	0:04:23	0:06:39	0:06:06	0:05:15	0:02:21
		Wilderness	0:09:57				0:02:43	0:10:45
	Total Response	Suburban	0:12:09	0:11:50	0:10:25	0:07:39	0:07:19	0:12:21
		Rural	0:11:12	0:08:41	0:09:45	0:12:10	0:08:00	0:07:05
		Wilderness	0:12:14				0:05:27	0:12:59

Table 106 EMS - 90th Percentile Times - Baseline Performance for First Unit Distribution

Risk		Density	2010-2014	2014	2013	2012	2011	2010
High	**Call Processing**	Suburban	0:03:33	0:02:34	0:03:39	0:03:24	0:01:34	0:02:29
		Rural	0:04:24	0:04:36	0:02:27	0:02:01	0:02:04	0:04:05
		Wilderness	0:02:20		0:01:54	0:00:53	0:01:58	0:02:29
	Turnout	Suburban	0:02:14	0:00:06	0:01:30	0:01:53	0:01:15	0:02:28
		Rural	0:02:16	0:01:44	0:02:17	0:02:14	0:01:37	0:00:35
		Wilderness	0:01:52		0:02:13	0:01:02	0:00:14	0:00:03
	Travel	Suburban	0:06:09	0:05:05	0:06:52	0:05:03	0:02:43	0:02:43
		Rural	0:08:56	0:10:54	0:06:00	0:03:09	0:06:00	0:04:12
		Wilderness	0:13:44		0:14:02	0:13:01	0:11:09	0:09:23
	Total Response	Suburban	0:10:40	0:07:44	0:12:18	0:08:12	0:04:47	0:06:37
		Rural	0:12:49	0:15:04	0:09:26	0:07:01	0:08:41	0:06:31
		Wilderness	0:17:11		0:18:09	0:14:56	0:13:21	0:11:55
Moderate	**Call Processing**	Suburban	0:02:54	0:02:01	0:02:21	0:02:22	0:02:38	0:03:05
		Rural	0:02:47	0:02:16	0:02:20	0:02:20	0:02:40	0:02:51
		Wilderness	0:05:06	0:00:59	0:01:42	0:04:04	0:03:07	0:05:48
	Turnout	Suburban	0:01:36	0:01:41	0:01:28	0:01:23	0:01:13	0:01:20
		Rural	0:02:13	0:01:53	0:02:19	0:02:05	0:01:46	0:02:01
		Wilderness	0:02:00	0:02:06	0:01:51	0:00:54	0:01:41	0:01:17
	Travel	Suburban	0:04:53	0:03:52	0:04:08	0:03:43	0:04:58	0:04:46
		Rural	0:06:09	0:05:12	0:05:48	0:05:22	0:05:57	0:06:17
		Wilderness	0:15:36	0:08:28	0:09:34	0:06:39	0:12:19	0:17:48
	Total Response	Suburban	0:08:11	0:06:47	0:07:21	0:06:40	0:08:15	0:08:06
		Rural	0:09:13	0:08:11	0:08:39	0:08:34	0:08:39	0:09:36
		Wilderness	0:19:06	0:10:30	0:10:55	0:10:32	0:15:49	0:21:18
Low	**Call Processing**	Suburban	0:03:12	0:02:03	0:02:09	0:02:07	0:03:19	0:03:02
		Rural	0:02:54	0:02:13	0:02:23	0:02:11	0:02:39	0:03:04
		Wilderness	0:04:40	0:02:46	0:04:35	0:02:27	0:03:58	0:04:44
	Turnout	Suburban	0:01:43	0:01:42	0:01:44	0:01:31	0:01:24	0:01:27
		Rural	0:02:07	0:02:08	0:02:01	0:02:06	0:01:55	0:02:06
		Wilderness	0:02:05	0:01:53	0:01:59	0:02:08	0:01:47	0:02:01
	Travel	Suburban	0:05:12	0:03:20	0:04:09	0:03:58	0:04:51	0:05:26
		Rural	0:06:03	0:05:30	0:05:05	0:05:10	0:05:59	0:06:05
		Wilderness	0:16:38	0:12:59	0:16:15	0:11:22	0:16:54	0:15:19
	Total Response	Suburban	0:08:31	0:06:21	0:07:10	0:06:45	0:08:20	0:08:38
		Rural	0:09:35	0:08:43	0:08:12	0:08:14	0:09:24	0:09:43
		Wilderness	0:20:16	0:16:05	0:21:06	0:15:05	0:17:26	0:19:02

Table 107 EMS - 90th Percentile Times - Baseline Performance for ERF Concentration

Risk		Density	2010-2014	2014	2013	2012	2011	2010
High	**Turnout**	Suburban	0:02:04	0:01:05	0:02:02	0:02:05	0:01:48	0:01:49
		Rural	0:02:10	0:01:43	0:02:05	0:02:13	0:01:41	0:01:49
		Wilderness	0:01:59		0:02:20	0:00:52	0:01:10	0:00:44
	Travel	Suburban	0:09:03	0:05:18	0:09:41	0:08:06	0:05:37	0:03:39
		Rural	0:10:47	0:11:28	0:09:41	0:06:29	0:09:45	0:07:03
		Wilderness	0:21:28		0:17:36	0:23:08	0:11:24	0:12:54
	Total Response	Suburban	0:12:49	0:08:05	0:13:30	0:11:48	0:07:43	0:07:02
		Rural	0:16:17	0:18:07	0:13:32	0:09:47	0:11:27	0:12:12
		Wilderness	0:22:47		0:19:47	0:24:04	0:13:29	0:15:40
Moderate	**Turnout**	Suburban	0:01:45	0:01:48	0:01:41	0:01:34	0:01:22	0:01:41
		Rural	0:02:13	0:02:04	0:02:18	0:02:05	0:01:49	0:01:59
		Wilderness	0:02:40	0:03:07	0:01:59	0:01:38	0:01:53	0:01:10
	Travel	Suburban	0:06:23	0:05:29	0:05:41	0:05:00	0:05:54	0:06:42
		Rural	0:08:57	0:07:05	0:07:15	0:07:29	0:08:58	0:08:56
		Wilderness	0:17:46	0:09:26	0:09:44	0:17:29	0:14:04	0:17:57
	Total Response	Suburban	0:09:26	0:08:06	0:08:15	0:07:42	0:08:52	0:09:48
		Rural	0:11:26	0:09:54	0:10:04	0:10:36	0:11:21	0:11:29
		Wilderness	0:21:13	0:12:34	0:11:43	0:18:52	0:16:21	0:22:47
Low	**Turnout**	Suburban	0:01:46	0:01:45	0:01:47	0:01:34	0:01:29	0:01:36
		Rural	0:02:09	0:02:08	0:02:07	0:02:10	0:01:57	0:02:03
		Wilderness	0:02:11	0:01:43	0:02:03	0:02:15	0:02:01	0:02:06
	Travel	Suburban	0:05:29	0:03:54	0:04:33	0:04:15	0:05:25	0:05:32
		Rural	0:06:33	0:05:25	0:05:42	0:05:30	0:06:38	0:06:25
		Wilderness	0:16:16	0:13:11	0:15:39	0:11:23	0:16:40	0:14:42
	Total Response	Suburban	0:08:51	0:06:39	0:07:40	0:07:12	0:08:53	0:08:48
		Rural	0:10:10	0:08:39	0:08:44	0:08:36	0:09:47	0:10:25
		Wilderness	0:19:48	0:16:22	0:19:51	0:15:05	0:18:05	0:19:44

Table 108 Wildland - 90th Percentile Times - Baseline Performance for First Unit Distribution

Risk		Density	2010-2014	2014	2013	2012	2011	2010
Moderate	**Call Processing**	Suburban	0:01:23		0:01:17			0:01:24
		Rural	0:03:25	0:02:08	0:02:15	0:02:40	0:03:22	0:03:27
		Wilderness	0:04:52			0:05:05	0:03:00	
	Turnout	Suburban	0:01:32		0:00:55			0:01:36
		Rural	0:02:35	0:02:25	0:00:47	0:02:41	0:01:41	0:02:17
		Wilderness	0:01:21			0:01:25	0:00:47	
	Travel	Suburban	0:02:51		0:02:53			0:02:37
		Rural	0:05:50	0:06:19	0:03:01	0:04:44	0:04:33	0:05:07
		Wilderness	0:11:48			0:12:34	0:04:52	
	Total Response	Suburban	0:05:04		0:04:42			0:05:06
		Rural	0:09:06	0:09:05	0:05:15	0:07:49	0:07:36	0:09:06
		Wilderness	0:18:02			0:19:04	0:08:39	
Low	**Call Processing**	Suburban	0:06:02		0:06:07	0:01:17	0:05:38	0:05:49
		Rural	0:04:28	0:01:38	0:04:40	0:03:52	0:00:25	0:04:11
		Wilderness	0:04:06		0:01:41		0:02:16	0:04:33
	Turnout	Suburban	0:02:38		0:00:01	0:01:06	0:03:05	0:01:35
		Rural	0:01:30	0:01:36	0:01:08	0:00:58	0:00:18	0:01:21
		Wilderness	0:02:20		0:00:00		0:00:07	0:02:53
	Travel	Suburban	0:08:38		0:09:15	0:03:46	0:06:16	0:07:12
		Rural	0:14:00	0:02:20	0:04:56	0:04:30	0:14:54	0:12:38
		Wilderness	0:09:26		0:10:05		0:06:52	0:02:00
	Total Response	Suburban	0:14:38		0:15:23	0:05:54	0:11:52	0:12:53
		Rural	0:15:41	0:05:34	0:09:45	0:09:20	0:15:37	0:15:43
		Wilderness	0:11:18		0:11:46		0:09:15	0:09:26

Table 109 Wildland - 90th Percentile Times - Baseline Performance for ERF Concentration

Risk		Density	2010-2014	2014	2013	2012	2011	2010
Moderate	**Turnout**	Suburban	0:02:56		0:03:00			0:02:23
		Rural	0:03:20	0:03:18	0:02:12	0:03:21	0:01:46	0:02:14
		Wilderness	0:02:32			0:01:25	0:02:40	
	Travel	Suburban	0:04:26		0:04:00			0:04:29
		Rural	0:13:24	0:14:01	0:07:17	0:06:23	0:12:28	0:07:39
		Wilderness	0:13:40			0:12:30	0:13:48	
	Total Response	Suburban	0:07:22		0:07:05			0:07:24
		Rural	0:16:02	0:16:10	0:09:49	0:09:41	0:15:51	0:10:54
		Wilderness	0:18:47			0:18:59	0:16:57	
Low	**Turnout**	Suburban	0:05:36		0:00:36		0:06:09	
		Rural	0:01:27	0:01:36				0:00:02
	Travel	Suburban	0:08:09		0:08:26		0:05:36	
		Rural	0:05:26	0:02:20				0:05:47
	Total Response	Suburban	0:14:46		0:14:43		0:14:46	
		Rural	0:09:59	0:05:34				0:10:29

Table 110 ARFF - 90th Percentile Times - Baseline Performance for First Unit Distribution

Risk		Density	2010-2014	2013
Moderate	**Call Processing**	Suburban	0:02:35	0:02:35
	Turnout	Suburban	0:00:30	0:00:30
	Travel	Suburban	0:02:30	0:02:30
	Total Response	Suburban	0:05:35	0:05:35

Table 111 ARFF - 90th Percentile Times - Baseline Performance for ERF Concentration

Risk		Density	2010-2014	2013
Moderate	**Call Processing**	Suburban	0:02:35	0:02:35
	Turnout	Suburban	0:02:32	0:02:32
	Travel	Suburban	0:05:53	0:05:53
	Total Response	Suburban	0:09:53	0:09:53

High Risk Fire Calls - 90th Percentile Times - Baseline Performance			**2010-2014**	**2014**	**2013**	**2012**	**2011**	**2010**
Alarm Handling	Pick-up to Dispatch	Suburban	0:02:03		0:01:34	0:01:39	0:02:11	0:01:43
		Rural	0:03:50	0:02:58	0:03:04	0:03:03	0:04:20	0:02:07
		Wilderness						
Turnout Time	Turnout Time 1st Unit	Suburban	0:01:21		0:01:00	0:00:00	0:01:30	0:00:55
		Rural	0:02:53	0:03:20	0:01:45	0:01:53	0:01:35	0:02:12
		Wilderness						
Travel Time	Travel Time 1st Unit **Distribution**	Suburban	0:05:15		0:05:53	0:00:27	0:03:12	0:03:45
		Rural	0:05:33	0:01:10	0:02:53	0:03:31	0:04:51	0:06:01
		Wilderness						
	Travel Time ERF **Concentration**	Suburban	0:07:51		0:05:56	0:08:00	0:07:31	0:05:26
		Rural	0:15:44	0:02:42	0:13:36	0:17:10	0:09:59	0:10:07
		Wilderness						
Total Response Time	Total Response Time 1st Unit On Scene **Distribution**	Suburban	0:07:44		0:08:27	0:02:06	0:05:58	0:06:04
		Rural	0:08:52	0:07:28	0:06:41	0:08:27	0:07:12	0:09:09
		Wilderness						
	Total Response Time ERF **Concentration**	Suburban	0:10:41		0:09:33	0:09:39	0:11:08	0:08:31
		Rural	0:18:29	0:08:27	0:17:22	0:19:13	0:13:42	0:13:32
		Wilderness						
Total Calls Analyzed	Alarm Handling	All	24	2	3	3	8	8
	Turnout	All	24	2	3	3	8	8
	Distribution	Suburban	10	0	1	1	5	3
		Rural	14	2	2	2	3	5
		Wilderness	0	0	0	0	0	0
	Concentration	Suburban	10	0	1	1	5	3
		Rural	12	1	2	2	3	4
		Wilderness	0	0	0	0	0	0

Low Risk Fire Calls - 90th Percentile Times - Baseline Performance			2010-2014	2014	2013	2012	2011	2010
Alarm Handling	Pick-up to Dispatch	Suburban	0:04:53	0:02:46	0:04:38	0:05:03	0:02:32	0:02:38
		Rural	0:05:42	0:03:17	0:06:10	0:05:00	0:02:54	0:02:19
		Wilderness	0:06:57		0:03:42	0:07:39	0:05:19	0:00:46
Turnout Time	Turnout Time 1st Unit	Suburban	0:02:10	0:01:21	0:01:51	0:02:08	0:01:01	0:02:11
		Rural	0:02:22	0:02:17	0:02:05	0:02:25	0:02:04	0:02:09
		Wilderness	0:02:03		0:02:23	0:00:37	0:01:15	0:00:47
Travel Time	Travel Time 1st Unit **Distribution**	Suburban	0:06:12	0:04:47	0:05:47	0:04:05	0:04:37	0:06:29
		Rural	0:08:33	0:06:40	0:07:36	0:06:02	0:09:11	0:06:10
		Wilderness	0:17:10		0:13:20	0:02:11	0:18:48	0:02:03
	Travel Time ERF **Concentration**	Suburban	0:06:12	0:04:47	0:05:47	0:04:05	0:04:37	0:06:29
		Rural	0:08:33	0:06:40	0:07:36	0:06:02	0:09:11	0:06:10
		Wilderness	0:17:10		0:13:20	0:02:11	0:18:48	0:02:03
Total Response Time	Total Response Time 1st Unit On Scene **Distribution**	Suburban	0:10:39	0:08:38	0:11:45	0:08:33	0:07:19	0:09:01
		Rural	0:12:31	0:09:35	0:12:14	0:11:41	0:12:42	0:10:08
		Wilderness	0:22:15		0:17:16	0:08:10	0:24:23	0:03:36
	Total Response Time ERF **Concentration**	Suburban	0:10:39	0:08:38	0:11:45	0:08:33	0:07:19	0:09:01
		Rural	0:12:31	0:09:35	0:12:14	0:11:41	0:12:42	0:10:08
		Wilderness	0:22:15		0:17:16	0:08:10	0:24:23	0:03:36
Total Calls Analyzed	Alarm Handling	All	131	24	33	35	21	18
	Turnout	All	131	24	33	35	21	18
	Distribution	Suburban	40	2	11	10	10	7
		Rural	82	22	19	22	9	10
		Wilderness	9	0	3	3	2	1
	Concentration	Suburban	40	2	11	10	10	7
		Rural	82	22	19	22	9	10
		Wilderness	9	0	3	3	2	1

There were four Maximum Risk and eight Moderate Risk fire calls from 2010-2014. This is statistically insignificant. There were no Special Risk fire calls to analyze.

Maximum Risk Rescue Calls - 90th Percentile Times - Baseline Performance			2010-2014	2014	2013	2012	2011	2010
Alarm Handling	Pick-up to Dispatch	Suburban	0:01:18	0:00:39			0:01:22	
		Rural	0:02:26		0:02:35	0:01:48		0:01:36
		Wilderness	0:01:41	0:00:59	0:01:19			0:01:47
Turnout Time	Turnout Time 1st Unit	Suburban	0:01:12	0:01:04			0:01:13	
		Rural	0:02:00		0:01:20	0:02:10		0:00:55
		Wilderness	0:01:52	0:00:56	0:01:14			0:02:02
Travel Time	Travel Time 1st Unit **Distribution**	Suburban	0:03:20	0:03:13			0:03:21	
		Rural	0:04:40		0:03:14	0:01:52		0:05:02
		Wilderness	0:11:28	0:03:03	0:13:29			0:03:23
	Travel Time ERF **Concentration**	Suburban	0:07:54	0:05:37			0:08:09	
		Rural	0:16:05		0:10:16	0:03:56		0:17:32
		Wilderness	0:16:47	0:11:42	0:17:39			0:13:21
Total Response Time	Total Response Time 1st Unit On Scene **Distribution**	Suburban	0:05:50	0:04:56			0:05:56	
		Rural	0:07:28		0:07:10	0:05:50		0:07:33
		Wilderness	0:14:16	0:04:58	0:16:02			0:07:12
	Total Response Time ERF **Concentration**	Suburban	0:11:24	0:06:51			0:11:54	
		Rural	0:18:21		0:13:00	0:08:00		0:19:41
		Wilderness	0:18:42	0:12:46	0:19:43			0:14:38
Total Calls Analyzed	Alarm Handling	All	10	2	3	1	1	3
	Turnout	All	10	2	3	1	1	3
	Distribution	Suburban	2	1	0	0	1	0
		Rural	4	0	2	1	0	1
		Wilderness	4	1	1	0	0	2
	Concentration	Suburban	2	1	0	0	1	0
		Rural	4	0	2	1	0	1
		Wilderness	4	1	1	0	0	2

Moderate Risk Rescue Calls - 90th Percentile Times - Baseline Performance			2010-2014	2014	2013	2012	2011	2010
Alarm Handling	Pick-up to Dispatch	Suburban	0:02:56	0:01:42	0:02:20	0:02:55	0:02:56	0:02:03
		Rural	0:04:53	0:02:12	0:00:59	0:01:33	0:04:37	0:05:04
		Wilderness	0:02:53	0:02:34	0:02:54	0:02:35	0:02:29	0:02:51
Turnout Time	Turnout Time 1st Unit	Suburban	0:01:58	0:01:40	0:02:00	0:01:43	0:01:41	0:01:54
		Rural	0:02:42	0:02:18	0:01:19	0:01:34	0:01:11	0:02:58
		Wilderness	0:02:01	0:01:59	0:01:48	0:00:55	0:02:03	0:01:01
Travel Time	Travel Time 1st Unit **Distribution**	Suburban	0:05:36	0:04:56	0:04:35	0:03:57	0:05:37	0:05:35
		Rural	0:08:16	0:04:50	0:09:41	0:03:04	0:06:08	0:04:43
		Wilderness	0:09:38	0:07:21	0:09:25	0:06:44	0:08:16	0:09:47
	Travel Time ERF **Concentration**	Suburban	0:07:42	0:05:48	0:06:31	0:04:34	0:06:40	0:08:24
		Rural	0:11:49	0:06:47	0:12:07	0:05:56	0:11:21	0:08:29
		Wilderness	0:12:53	0:11:12	0:13:26	0:12:03	0:11:18	0:11:48
Total Response Time	Total Response Time 1st Unit On Scene **Distribution**	Suburban	0:08:56	0:06:35	0:07:51	0:06:21	0:09:40	0:07:51
		Rural	0:11:04	0:09:24	0:11:29	0:05:27	0:09:54	0:10:26
		Wilderness	0:12:58	0:10:16	0:13:26	0:10:34	0:10:46	0:12:15
	Total Response Time ERF **Concentration**	Suburban	0:10:56	0:07:56	0:10:44	0:07:30	0:10:27	0:11:04
		Rural	0:14:35	0:10:01	0:14:00	0:08:30	0:14:58	0:12:24
		Wilderness	0:14:53	0:14:44	0:14:59	0:13:55	0:12:57	0:13:32
Total Calls Analyzed	Alarm Handling	All	151	34	32	30	31	24
	Turnout	All	151	34	32	30	31	24
	Distribution	Suburban	67	6	12	18	18	13
		Rural	43	19	6	4	8	6
		Wilderness	41	9	14	8	5	5
	Concentration	Suburban	67	6	12	18	18	13
		Rural	43	19	6	4	8	6
		Wilderness	41	9	14	8	5	5

Low Risk Rescue Calls - 90th Percentile Times - Baseline Performance			2010-2014	2014	2013	2012	2011	2010
Alarm Handling	Pick-up to Dispatch	Suburban	0:02:59	0:03:17	0:02:04	0:01:32	0:02:31	0:01:31
		Rural	0:03:10	0:02:03	0:03:29	0:01:17	0:02:21	0:02:41
		Wilderness	0:03:25	0:03:51	0:01:30	0:02:14	0:02:28	0:02:46
Turnout Time	Turnout Time 1st Unit	Suburban	0:02:57	0:01:29	0:01:37	0:02:46	0:01:53	0:03:05
		Rural	0:02:04	0:01:58	0:01:40	0:01:31	0:01:58	0:02:08
		Wilderness	0:02:30	0:01:18	0:01:06	0:03:00	0:01:44	0:01:22
Travel Time	Travel Time 1st Unit **Distribution**	Suburban	0:06:07	0:01:51	0:02:47	0:03:42	0:06:47	0:05:07
		Rural	0:06:56	0:06:31	0:03:09	0:05:28	0:07:12	0:03:37
		Wilderness	0:11:57	0:04:38	0:12:48	0:04:15	0:10:40	0:10:14
	Travel Time ERF **Concentration**	Suburban	0:07:34	0:02:22	0:02:47	0:04:30	0:07:50	0:07:11
		Rural	0:07:01	0:07:44	0:03:13	0:02:50	0:05:56	0:04:24
		Wilderness	0:09:57	0:04:22	0:08:26	0:06:38	0:10:57	0:08:24
Total Response Time	Total Response Time 1st Unit On Scene **Distribution**	Suburban	0:08:34	0:05:51	0:05:46	0:05:41	0:08:40	0:08:25
		Rural	0:09:05	0:08:59	0:06:42	0:07:41	0:09:09	0:06:32
		Wilderness	0:13:54	0:09:42	0:14:51	0:06:15	0:12:14	0:12:28
	Total Response Time ERF **Concentration**	Suburban	0:09:36	0:06:41	0:05:44	0:05:48	0:09:38	0:09:34
		Rural	0:09:30	0:09:56	0:06:09	0:05:45	0:08:51	0:07:17
		Wilderness	0:12:25	0:10:12	0:11:00	0:08:24	0:13:22	0:10:37
Total Calls Analyzed	Alarm Handling	All	118	16	25	19	33	25
	Turnout	All	118	16	25	19	33	25
	Distribution	Suburban	57	3	11	11	18	14
		Rural	32	11	7	4	5	5
		Wilderness	29	2	7	4	10	6
	Concentration	Suburban	36	2	7	9	9	9
		Rural	16	6	3	2	2	3
		Wilderness	17	2	2	3	6	4

There were three High Risk Rescue calls from 2010-2014. This is statistically insignificant. There were no Special Risk Rescue calls to analyze.

Moderate Risk Hazmat Calls - 90th Percentile Times - Baseline Performance			2010-2014	2014	2013	2012	2011	2010
Alarm Handling	Pick-up to Dispatch	Suburban	0:03:35		0:02:57	0:03:03	0:03:48	0:02:51
		Rural	0:05:18	0:03:37	0:01:48	0:01:26	0:06:17	0:03:49
		Wilderness						
Turnout Time	Turnout Time 1st Unit	Suburban	0:02:07		0:01:37	0:02:09	0:01:12	0:02:02
		Rural	0:01:46	0:01:10	0:00:09	0:01:29	0:01:58	0:01:02
		Wilderness						
Travel Time	Travel Time 1st Unit **Distribution**	Suburban	0:04:21		0:02:56	0:01:48	0:04:57	0:02:22
		Rural	0:07:43	0:05:28	0:07:11	0:01:57	0:07:10	0:08:05
		Wilderness						
	Travel Time ERF **Concentration**	Suburban	0:08:50		0:04:50	0:03:33	0:10:21	0:05:18
		Rural	0:10:38	0:06:27	0:10:39	0:10:36	0:09:41	0:09:00
		Wilderness						
Total Response Time	Total Response Time 1st Unit On Scene **Distribution**	Suburban	0:08:16		0:07:00	0:05:07	0:08:48	0:06:23
		Rural	0:12:53	0:09:18	0:09:08	0:04:52	0:14:53	0:09:53
		Wilderness						
	Total Response Time ERF **Concentration**	Suburban	0:13:07		0:08:33	0:06:53	0:14:51	0:09:05
		Rural	0:16:41	0:09:47	0:13:28	0:13:42	0:18:40	0:10:52
		Wilderness						
Total Calls Analyzed	Alarm Handling	All	33	8	4	4	11	6
	Turnout	All	33	8	4	4	11	6
	Distribution	Suburban	12	0	3	3	4	2
		Rural	21	8	1	1	7	4
		Wilderness	0	0	0	0	0	0
	Concentration	Suburban	12	0	3	3	4	2
		Rural	18	7	1	1	6	3
		Wilderness	0	0	0	0	0	0

Low Risk Hazmat Calls - 90th Percentile Times - Baseline Performance			2010-2014	2014	2013	2012	2011	2010
Alarm Handling	Pick-up to Dispatch	Suburban	0:05:54	0:04:49	0:06:38	0:03:25	0:02:56	0:03:24
		Rural	0:03:53	0:02:46	0:02:29	0:04:08	0:02:01	0:03:30
		Wilderness	0:02:22				0:02:24	0:02:00
Turnout Time	Turnout Time 1st Unit	Suburban	0:03:23	0:04:02	0:01:42	0:01:33	0:00:34	0:02:25
		Rural	0:02:55	0:02:30	0:02:27	0:03:11	0:01:11	0:01:45
		Wilderness	0:01:05				0:00:25	0:01:09
Travel Time	Travel Time 1st Unit **Distribution**	Suburban	0:06:16	0:04:30	0:04:22	0:03:26	0:03:55	0:07:27
		Rural	0:05:28	0:04:32	0:05:44	0:04:11	0:05:05	0:02:37
		Wilderness	0:09:31				0:02:47	0:10:16
	Travel Time ERF **Concentration**	Suburban	0:07:43	0:07:51	0:06:07	0:03:45	0:05:05	0:07:32
		Rural	0:06:53	0:05:19	0:07:29	0:06:00	0:05:15	0:02:21
		Wilderness	0:10:03				0:02:43	0:10:52
Total Response Time	Total Response Time 1st Unit On Scene **Distribution**	Suburban	0:10:27	0:09:20	0:08:42	0:07:00	0:07:13	0:11:12
		Rural	0:09:54	0:08:58	0:09:25	0:10:14	0:07:35	0:07:52
		Wilderness	0:11:46				0:05:31	0:12:28
	Total Response Time ERF **Concentration**	Suburban	0:11:51	0:11:02	0:11:05	0:07:39	0:08:17	0:12:21
		Rural	0:11:12	0:09:19	0:09:46	0:12:09	0:08:00	0:07:05
		Wilderness	0:12:24				0:05:27	0:13:10
Total Calls Analyzed	Alarm Handling	All	75	16	23	17	11	8
	Turnout	All	75	16	23	17	11	8
	Distribution	Suburban	25	5	9	4	3	4
		Rural	45	11	14	13	6	1
		Wilderness	5	0	0	0	2	3
	Concentration	Suburban	25	5	9	4	3	4
		Rural	45	11	14	13	6	1
		Wilderness	5	0	0	0	2	3

There were only seven Maximum Risk, one Special Risk, and four High Risk HazMat calls for 2010-2014. This is statistically insignificant.

High Risk EMS Calls - 90th Percentile Times - Baseline Performance			2010-2014	2014	2013	2012	2011	2010
Alarm Handling	Pick-up to Dispatch	Suburban	0:03:33	0:02:34	0:03:39	0:03:24	0:01:34	0:02:29
		Rural	0:04:24	0:04:36	0:02:27	0:02:01	0:02:04	0:04:05
		Wilderness	0:02:20		0:01:54	0:00:53	0:01:58	0:02:29
Turnout Time	Turnout Time 1st Unit	Suburban	0:02:14	0:00:06	0:01:30	0:01:53	0:01:15	0:02:28
		Rural	0:02:16	0:01:44	0:02:17	0:02:14	0:01:37	0:00:35
		Wilderness	0:01:52		0:02:13	0:01:02	0:00:14	0:00:03
Travel Time	Travel Time 1st Unit **Distribution**	Suburban	0:06:09	0:05:05	0:06:52	0:05:03	0:02:43	0:02:43
		Rural	0:08:56	0:10:54	0:06:00	0:03:09	0:06:00	0:04:12
		Wilderness	0:13:44		0:14:02	0:13:01	0:11:09	0:09:23
	Travel Time ERF **Concentration**	Suburban	0:09:03	0:05:18	0:09:41	0:08:06	0:05:37	0:03:39
		Rural	0:10:47	0:11:28	0:09:41	0:06:29	0:09:45	0:07:03
		Wilderness	0:21:28		0:17:36	0:23:08	0:11:24	0:12:54
Total Response Time	Total Response Time 1st Unit On Scene **Distribution**	Suburban	0:10:40	0:07:44	0:12:18	0:08:12	0:04:47	0:06:37
		Rural	0:12:49	0:15:04	0:09:26	0:07:01	0:08:41	0:06:31
		Wilderness	0:17:11		0:18:09	0:14:56	0:13:21	0:11:55
	Total Response Time ERF **Concentration**	Suburban	0:12:49	0:08:05	0:13:30	0:11:48	0:07:43	0:07:02
		Rural	0:16:17	0:18:07	0:13:32	0:09:47	0:11:27	0:12:12
		Wilderness	0:22:47		0:19:47	0:24:04	0:13:29	0:15:40
Total Calls Analyzed	Alarm Handling	All	78	13	18	13	27	7
	Turnout	All	78	13	18	13	27	7
	Distribution	Suburban	26	2	8	6	8	2
		Rural	46	11	8	6	18	3
		Wilderness	6	0	2	1	1	2
	Concentration	Suburban	26	2	8	6	8	2
		Rural	46	11	8	6	18	3
		Wilderness	6	0	2	1	1	2

Moderate Risk EMS Calls - 90th Percentile Times - Baseline Performance			2010-2014	2014	2013	2012	2011	2010
Alarm Handling	Pick-up to Dispatch	Suburban	0:02:54	0:02:01	0:02:21	0:02:22	0:02:38	0:03:05
		Rural	0:02:47	0:02:16	0:02:20	0:02:20	0:02:40	0:02:51
		Wilderness	0:05:06	0:00:59	0:01:42	0:04:04	0:03:07	0:05:48
Turnout Time	Turnout Time 1st Unit	Suburban	0:01:36	0:01:41	0:01:28	0:01:23	0:01:13	0:01:20
		Rural	0:02:13	0:01:53	0:02:19	0:02:05	0:01:46	0:02:01
		Wilderness	0:02:00	0:02:06	0:01:51	0:00:54	0:01:41	0:01:17
Travel Time	Travel Time 1st Unit **Distribution**	Suburban	0:04:53	0:03:52	0:04:08	0:03:43	0:04:58	0:04:46
		Rural	0:06:09	0:05:12	0:05:48	0:05:22	0:05:57	0:06:17
		Wilderness	0:15:36	0:08:28	0:09:34	0:06:39	0:12:19	0:17:48
	Travel Time ERF **Concentration**	Suburban	0:06:23	0:05:29	0:05:41	0:05:00	0:05:54	0:06:42
		Rural	0:08:57	0:07:05	0:07:15	0:07:29	0:08:58	0:08:56
		Wilderness	0:17:46	0:09:26	0:09:44	0:17:29	0:14:04	0:17:57
Total Response Time	Total Response Time 1st Unit On Scene **Distribution**	Suburban	0:08:11	0:06:47	0:07:21	0:06:40	0:08:15	0:08:06
		Rural	0:09:13	0:08:11	0:08:39	0:08:34	0:08:39	0:09:36
		Wilderness	0:19:06	0:10:30	0:10:55	0:10:32	0:15:49	0:21:18
	Total Response Time ERF **Concentration**	Suburban	0:09:26	0:08:06	0:08:15	0:07:42	0:08:52	0:09:48
		Rural	0:11:26	0:09:54	0:10:04	0:10:36	0:11:21	0:11:29
		Wilderness	0:21:13	0:12:34	0:11:43	0:18:52	0:16:21	0:22:47
Total Calls Analyzed	Alarm Handling	All	1189	225	229	211	264	260
	Turnout	All	1189	225	229	211	264	260
	Distribution	Suburban	553	47	125	110	135	136
		Rural	606	173	97	98	123	115
		Wilderness	30	5	7	3	6	9
	Concentration	Suburban	553	47	125	110	135	136
		Rural	606	173	97	98	123	115
		Wilderness	30	5	7	3	6	9

Low Risk EMS Calls - 90th Percentile Times - Baseline Performance			2010-2014	2014	2013	2012	2011	2010
Alarm Handling	Pick-up to Dispatch	Suburban	0:03:12	0:02:03	0:02:09	0:02:07	0:03:19	0:03:02
		Rural	0:02:54	0:02:13	0:02:23	0:02:11	0:02:39	0:03:04
		Wilderness	0:04:40	0:02:44	0:04:35	0:02:27	0:03:49	0:04:44
Turnout Time	Turnout Time 1st Unit	Suburban	0:01:43	0:01:42	0:01:44	0:01:31	0:01:24	0:01:27
		Rural	0:02:07	0:02:08	0:02:01	0:02:06	0:01:55	0:02:06
		Wilderness	0:02:05	0:01:52	0:01:59	0:02:08	0:01:47	0:02:01
Travel Time	Travel Time 1st Unit **Distribution**	Suburban	0:05:12	0:03:20	0:04:09	0:03:57	0:04:51	0:05:26
		Rural	0:06:03	0:05:30	0:05:03	0:05:10	0:05:59	0:06:05
		Wilderness	0:16:06	0:12:58	0:16:15	0:11:22	0:15:52	0:15:19
	Travel Time ERF **Concentration**	Suburban	0:05:29	0:03:54	0:04:33	0:04:15	0:05:25	0:05:32
		Rural	0:06:33	0:05:25	0:05:42	0:05:30	0:06:38	0:06:25
		Wilderness	0:16:16	0:13:11	0:15:39	0:11:23	0:16:40	0:14:42
Total Response Time	Total Response Time 1st Unit On Scene **Distribution**	Suburban	0:08:31	0:06:21	0:07:10	0:06:43	0:08:20	0:08:38
		Rural	0:09:35	0:08:43	0:08:09	0:08:14	0:09:24	0:09:43
		Wilderness	0:20:16	0:16:05	0:21:06	0:15:05	0:17:26	0:19:02
	Total Response Time ERF **Concentration**	Suburban	0:08:51	0:06:39	0:07:40	0:07:12	0:08:53	0:08:48
		Rural	0:10:10	0:08:39	0:08:44	0:08:36	0:09:47	0:10:25
		Wilderness	0:19:48	0:16:22	0:19:51	0:15:05	0:18:05	0:19:44
Total Calls Analyzed	Alarm Handling	All	2858	582	616	628	523	509
	Turnout	All	2858	582	616	628	523	509
	Distribution	Suburban	1388	160	334	339	278	277
		Rural	1364	413	263	261	219	208
		Wilderness	106	9	19	28	26	24
	Concentration	Suburban	1244	150	306	307	237	244
		Rural	1104	337	209	219	173	166
		Wilderness	77	6	10	23	21	17

There were no Special or Maximum Risk levels for EMS calls to analyze for 2010-2014.

Moderate Risk Wildland Calls - 90th Percentile Times - Baseline Performance			2010-2014	2014	2013	2012	2011	2010
Alarm Handling	Pick-up to Dispatch	Suburban	0:01:23		0:01:17			0:01:24
		Rural	0:03:25	0:02:08	0:02:15	0:02:40	0:03:22	0:03:27
		Wilderness	0:04:52			0:05:05	0:03:00	
Turnout Time	Turnout Time 1st Unit	Suburban	0:01:32		0:00:55			0:01:36
		Rural	0:02:35	0:02:25	0:00:47	0:02:41	0:01:41	0:02:17
		Wilderness	0:01:21			0:01:25	0:00:47	
Travel Time	Travel Time 1st Unit **Distribution**	Suburban	0:02:51		0:02:53			0:02:37
		Rural	0:05:50	0:06:19	0:03:01	0:04:44	0:04:33	0:05:07
		Wilderness	0:11:48			0:12:34	0:04:52	
	Travel Time ERF **Concentration**	Suburban	0:04:26		0:04:00			0:04:29
		Rural	0:13:24	0:14:01	0:07:17	0:06:23	0:12:28	0:07:39
		Wilderness	0:13:40			0:12:30	0:13:48	
Total Response Time	Total Response Time 1st Unit On Scene **Distribution**	Suburban	0:05:04		0:04:42			0:05:06
		Rural	0:09:06	0:09:05	0:05:15	0:07:49	0:07:36	0:09:06
		Wilderness	0:18:02			0:19:04	0:08:39	
	Total Response Time ERF **Concentration**	Suburban	0:07:22		0:07:05			0:07:24
		Rural	0:16:02	0:16:10	0:09:49	0:09:41	0:15:51	0:10:54
		Wilderness	0:18:47			0:18:59	0:16:57	
Total Calls Analyzed	Alarm Handling	All	28	3	5	8	4	8
	Turnout	All	28	3	5	8	4	8
	Distribution	Suburban	4	0	2	0	0	2
		Rural	22	3	3	7	3	6
		Wilderness	2	0	0	1	1	0
	Concentration	Suburban	4	0	2	0	0	2
		Rural	22	3	3	7	3	6
		Wilderness	2	0	0	1	1	0

Low Risk Wildland Calls - 90th Percentile Times - Baseline Performance			2010-2014	2014	2013	2012	2011	2010
Alarm Handling	Pick-up to Dispatch	Suburban	0:06:02		0:06:07	0:01:17	0:05:38	0:05:49
		Rural	0:04:31	0:04:18	0:04:40	0:03:43	0:00:25	0:04:11
		Wilderness	0:04:40		0:01:41	0:02:05	0:04:43	0:04:33
Turnout Time	Turnout Time 1st Unit	Suburban	0:02:38		0:00:01	0:01:06	0:03:05	0:01:35
		Rural	0:01:37	0:01:33	0:01:08	0:01:40	0:00:18	0:01:21
		Wilderness	0:02:36		0:00:00	0:00:04	0:01:55	0:02:53
Travel Time	Travel Time 1st Unit **Distribution**	Suburban	0:08:38		0:09:15	0:03:46	0:06:16	0:07:12
		Rural	0:14:00	0:03:30	0:04:56	0:04:27	0:14:54	0:12:38
		Wilderness	0:12:08		0:10:05	0:02:33	0:13:00	0:02:00
	Travel Time ERF **Concentration**	Suburban	0:08:09		0:08:26		0:05:36	
		Rural	0:05:26	0:02:20				0:05:47
		Wilderness	0:12:34			0:02:02	0:13:44	
Total Response Time	Total Response Time 1st Unit On Scene **Distribution**	Suburban	0:14:38		0:15:23	0:05:54	0:11:52	0:12:53
		Rural	0:15:41	0:09:01	0:09:45	0:09:13	0:15:37	0:15:43
		Wilderness	0:17:16		0:11:46	0:04:42	0:19:38	0:09:26
	Total Response Time ERF **Concentration**	Suburban	0:14:46		0:14:43		0:14:46	
		Rural	0:09:59	0:05:34				0:10:29
		Wilderness	0:19:05			0:03:46	0:20:47	
Total Calls Analyzed	Alarm Handling	All	25	2	4	5	7	7
	Turnout	All	25	2	4	5	7	7
	Distribution	Suburban	10	0	1	2	4	3
		Rural	10	2	2	2	1	3
		Wilderness	5	0	1	1	2	1
	Concentration	Suburban	2	0	1	0	1	0
		Rural	2	1	0	0	0	1
		Wilderness	2	0	0	1	1	0

There were high, or special risk levels for Wildland calls to analyze for 2010-2014.

The Las Conchas fire of 2011 was the only maximum risk wildland urban interface fire incident during the period. It burned over 145,000 acres and suppression operations ran over for almost ten days; however it was discovered by LAFD crews, so processing, turnout and total response times are skewed. Therefore it is one of the 46 calls that was excluded from the data.

There was only one ARFF call, at the moderate risk level, to analyze for 2010-2014. This data is statistically insignificant.

F. Performance Objectives and Measurement

Performance Objectives – Benchmarks

Fire Suppression Services Program

Performance Objective:
Arrive in a timely manner with sufficient resources to mitigate all fire incidents and to stop escalation of a fire when found. Typically, this means conducting a search for any victims, confining fire to the floor area of origin, plus limiting heat and smoke damage to the area of floor origin. The first arriving unit is capable of starting rescue work or advancing a first line for fire control. The second engine and truck company provide additional personnel for the task already started plus ventilation, salvage, and other work as necessary. The tasks of rapid intervention, rescue for trapped firefighters, property salvage, and crew rotation with rehabilitation requires additional personnel on a fire scene.

Call Processing/Alarm Handling Performance Objectives for Fire Calls - Benchmarks

For 90 percent of all fire calls, the call processing/alarm handling time from the time the dispatch center receives the call to the time the department is notified shall be 60 seconds.

Turnout Time Performance Objectives for Fire Calls– Benchmarks

For 90 percent of all fire calls, the time from when the department is notified by the dispatch center to the time crews go enroute is turnout time and shall be 80 seconds.

Total Response Time Performance Objectives for Fire Calls – Benchmarks

For 90 percent of all risk level fire calls, the total response time for the arrival of the first-due unit, staffed with 3 firefighters and officers shall be: 7 minutes and 20 seconds in suburban areas; and 12 minutes and 20 seconds in rural and wilderness areas. The first-due unit shall be capable of establishing command, scene size-up, securing a water supply, placing one line in service at 150 gallons per minute (gpm), initiating search and rescue, initiating mitigation efforts within one minute of arrival, and providing first responder medical aid using automatic external cardiac defibrillator (AED). These operations shall be done in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

For 90 percent of all low risk fire calls, the total response time for the arrival of the effective response force (ERF) staffed with 3 firefighters and officers shall be 12 minutes and 20 seconds in suburban areas; 16 minutes and 20 seconds in rural and wilderness areas. The ERF shall be capable of establishing command; providing an uninterrupted water supply; advancing an attack line and a backup line for fire control; pump operations and accountability.

For 90 percent of all moderate and special risk fires, the total response time for the arrival of the ERF, staffed with 17 firefighters and officers, shall be: 12 minutes and 20 seconds in suburban areas; and 16 minutes and 20 seconds in rural and wilderness areas. The ERF for moderate and special risk fires shall be capable of establishing command, providing uninterrupted water supply, advancing an attack line and backup line for fire control, complying with the OSHA requirements of two in-two out, initial rapid intervention and medical aid, completing forcible entry, completing forcible entry; search and rescue; ventilating the structure; controlling utilities; and performing salvage and overhaul, pump operations and accountability.

For 90 percent of all high risk fires, the total response time for the arrival of the ERF, staffed with 20 firefighters and officers, shall be: 12 minutes and 20 seconds in suburban areas; and 16 minutes and 20 seconds in rural and wilderness areas. The ERF for high risk fires shall be capable of establishing command, providing uninterrupted water supply, advancing an attack line and backup line for fire control, complying with the OSHA requirements of two in-two out, initial rapid intervention and medical aid, completing forcible entry, completing forcible entry; search and rescue; ventilating the structure; controlling utilities; and performing salvage and overhaul, pump operations and accountability. The ERF for high risk fires shall also be capable of placing elevated streams into service from aerial ladders.

For 90 percent of all maximum risk fires, the total response time for the arrival of the ERF, staffed with 28 firefighters and officers, shall be: 12 minutes and 20 seconds in suburban areas; and 16 minutes and 20 seconds in rural and wilderness areas. The ERF for maximum risk fires shall be capable of establishing command, providing uninterrupted water supply, advancing an attack line and backup line for fire control, complying with the OSHA requirements of two in-two out, initial rapid intervention and medical aid, completing forcible entry, completing forcible entry; search and rescue; ventilating the structure; controlling utilities; and performing salvage and overhaul, pump operations and accountability. The ERF for maximum risk fires shall also be capable of placing elevated streams into service from aerial ladders.

Emergency Medical Services Program

Call Processing/Alarm Handling Performance Objectives for EMS Calls - Benchmarks

For 90 percent of all EMS calls, the call processing/alarm handling time from the time the dispatch center receives the call to the time the department is notified shall be 60 seconds.

Turnout Time Performance Objectives for EMS Calls– Benchmarks

For 90 percent of all EMS calls, the time from when the department is notified by the dispatch center to the time crews go enroute is turnout time and shall be 60 seconds.

Total Response Time Performance Objectives for Fire Calls – Benchmarks

For 90 percent of all EMS risk level response incidents, the total response time for the arrival of the first-due unit, staffed with a minimum of 2 firefighters, shall be 7 minutes 20 seconds in suburban areas; 12 minutes 20 seconds in rural and wilderness areas. The first-due unit shall be capable of assessing scene safety and establishing command, sizing-up the situation, conducting initial patient assessment, obtaining vitals and patient's medical history, initiating mitigation efforts within one minute of arrival, providing first responder medical aid including automatic defibrillation, initiating cardio-pulmonary resuscitation (CPR), and assisting transport personnel with packing the patient.

For 90 percent of all low risk (≤2 patients) EMS responses, the total response time for the arrival of the effective response force (ERF), staffed with 5 firefighters, shall be 12 minutes and 00 seconds in suburban areas; 16 minutes and 00 seconds in rural and wilderness areas. The ERF shall be capable of providing incident command and producing related documentation, completing patient assessment, providing appropriate treatment, performing automatic external defibrillator (AED), initiating cardio-pulmonary resuscitation (CPR), and providing intravenous (IV) assess-medication administration.

For 90 percent of all moderate risk EMS response incidents, the total response time for the arrival of the effective response force (ERF), staffed with 7 firefighters and officers, shall be

12 minutes 00 seconds in suburban areas; 16 minutes 00 seconds in rural and wilderness areas. The ERF shall be capable of providing incident command and producing related documentation; completing patient assessment; providing appropriate treatment; performing automatic external defibrillator (AED); initiating cardio-pulmonary resuscitation (CPR); and providing intravenous (IV) assess-medication administration.

For 90 percent of all high risk EMS response incidents, the total response time for the arrival of the effective response force (ERF), staffed with 11 firefighters and officers, shall be 12 minutes 00 seconds in suburban areas; 16 minutes 00 seconds in rural and wilderness areas. The ERF shall be capable of providing incident command and producing related documentation; completing patient assessment; providing appropriate treatment; performing automatic external defibrillator (AED); initiating cardio-pulmonary resuscitation (CPR); and providing intravenous (IV) assess-medication administration.

For 90 percent of all maximum risk EMS response incidents, the total response time for the arrival of the effective response force (ERF), staffed with 21 firefighters and officers, shall be 12 minutes 00 seconds in suburban areas; 16 minutes 00 seconds in rural and wilderness areas. The ERF shall be capable of providing incident command and producing related documentation; completing patient assessment; providing appropriate treatment; performing automatic external defibrillator (AED); initiating cardio-pulmonary resuscitation (CPR); and providing intravenous (IV) assess-medication administration.

Hazardous Materials Services Program

Call Processing/Alarm Handling Performance Objectives for Hazmat Calls - Benchmarks

For 90 percent of all risk level hazmat calls, the call processing/alarm handling time from the time the dispatch center receives the call to the time the department is notified shall be 60 seconds.

Turnout Time Performance Objectives for Hazmat Calls– Benchmarks

For 90 percent of all risk level hazmat calls, the time from when the department is notified by the dispatch center to the time crews go enroute is turnout time and shall be 80 seconds.

Total Response Time Performance Objectives for Hazmat Calls – Benchmarks

For 90 percent of all risk level hazardous material incidents, the total response time for the arrival of the first-due unit, staffed with 3 firefighters on the engine, shall be: 7 minutes and 20 seconds in suburban areas; and 12 minutes and 20 seconds in rural and wilderness areas. The first-due unit shall be capable of: establishing command; sizing up to determine if a technical rescue response is required; requesting additional resources; and providing basic life support to any victim without endangering response personnel.

For 90 percent of all low risk hazardous materials response incidents, the total response time for the arrival of the ERF, staffed with 3 firefighters and officers, shall be: 12 minutes and 20 seconds in suburban areas; and 16 minutes and 20 seconds in rural and wilderness areas. The ERF shall be capable of: approaching the incident from a direction of uphill, upgrade, and upwind; establishing command; establishing an incident command post in a safe area; setting up a staging area outside the perimeter; appointing a safety officer; sizing up the situation; identifying and assessing hazards from a safe distance; isolating and denying entry using the Emergency Response Guidebook; performing rescue; beginning evacuation or sheltering in place; containing product by damming, diking, or diverting; and requesting additional resources in accordance with fire chief directives.

For 90 percent of all moderate risk hazardous materials response incidents, the total response time for the arrival of the effective response force (ERF) at the hazardous materials first responder operations level, staffed with 9 firefighters and officers, shall be: 12 minutes and 20 seconds in suburban areas; and 16 minutes and 20 seconds in rural and wilderness areas. The ERF shall be capable of: approaching the incident from a direction of uphill, upgrade, and upwind; establishing command; establishing an incident command post in a safe area; setting up a staging area outside the perimeter; appointing a safety officer; sizing up the situation; identifying and assessing hazards from a safe distance; isolating and denying entry using the Emergency Response Guidebook; performing rescue; beginning evacuation or sheltering in place; containing product by damming, diking, or diverting; and requesting additional resources in accordance with fire chief directives.

For 90 percent of all high risk hazardous materials response incidents, the total response time for the arrival of the effective response force (ERF) at the hazardous materials first responder operations level, staffed with 15 firefighters and officers, shall be: 12 minutes and 20 seconds in suburban areas; and 16 minutes and 20 seconds in rural and wilderness areas. The ERF shall be capable of: approaching the incident from a direction of uphill, upgrade, and upwind; establishing command; establishing an incident command post in a safe area; setting up a staging area outside the perimeter; appointing a safety officer; sizing up the situation; identifying and assessing hazards from a safe distance; isolating and denying entry using the Emergency Response Guidebook; performing rescue; beginning evacuation or sheltering in place; containing product by damming, diking, or diverting; and requesting additional resources in accordance with fire chief directives.

For 90 percent of all maximum risk hazardous materials response incidents, the total response time for the arrival of the effective response force (ERF) at the hazardous materials first responder operations level, staffed with 28 firefighters and officers, shall be: 12 minutes and 20 seconds in suburban areas; and 16 minutes and 20 seconds in rural and wilderness areas. The ERF shall be capable of: approaching the incident from a direction of uphill, upgrade, and upwind; establishing command; establishing an incident command post in a safe area; setting up a staging area outside the perimeter; appointing a safety officer; sizing up the situation; identifying and assessing hazards from a safe distance; isolating and denying entry using the Emergency Response Guidebook; performing rescue; beginning evacuation or sheltering in place; containing product by damming, diking, or diverting; and requesting additional resources in accordance with fire chief directives.

Rescue Services Program

Call Processing/Alarm Handling Performance Objectives for Technical Rescue Calls - Benchmarks

For 90 percent of all risk level technical rescue calls, the call processing/alarm handling time from the time the dispatch center receives the call to the time the department is notified shall be 60 seconds.

Turnout Time Performance Objectives for Technical Rescue Calls– Benchmarks

For 90 percent of all risk level technical rescue calls, the time from when the department is notified by the dispatch center to the time crews go enroute is turnout time and shall be 80 seconds.

Total Response Time Performance Objectives for Technical Rescue Calls – Benchmarks

For 90 percent of all technical rescue risk level incidents, the total response time for the arrival of the first-due unit, staffed with 3 firefighters on the engine, shall be: 7 minutes and 20 seconds in suburban areas; and 12 minutes and 20 seconds in rural and wilderness areas. The first-due unit shall be capable of: establishing command; sizing up to determine if a technical rescue response is required; requesting additional resources; and providing basic life support to any victim without endangering response personnel.

For 90 percent of all low risk technical rescue calls, the total response time for the arrival of the effective response force (ERF) staffed with 5 firefighters and officers, shall be 12 minutes and 20 seconds in suburban areas; 16 minutes and 20 seconds in rural and wilderness areas. The ERF shall be capable of: establishing patient contact; staging and apparatus set up; providing technical expertise, knowledge, skills and abilities during technical rescue incidents; and providing first responder medical support.

For 90 percent of all moderate risk technical rescue calls, the total response time for the arrival of the effective response force (ERF) staffed with 7 firefighters and officers, shall be 12 minutes and 20 seconds in suburban areas; 16 minutes and 20 seconds in rural and wilderness areas. The ERF shall be capable of: establishing patient contact; staging and apparatus set up; providing technical expertise, knowledge, skills and abilities during technical rescue incidents; and providing first responder medical support.

For 90 percent of all high risk technical rescue calls, the total response time for the arrival of the effective response force (ERF) staffed with 13 firefighters and officers, shall be 12 minutes and 20 seconds in suburban areas; 16 minutes and 20 seconds in rural and wilderness areas. The ERF shall be capable of: establishing patient contact; staging and apparatus set up; providing technical expertise, knowledge, skills and abilities during technical rescue incidents; and providing first responder medical support.

For 90 percent of all maximum risk technical rescue calls, the total response time for the arrival of the effective response force (ERF) staffed with 15 firefighters and officers, shall be 12 minutes and 20 seconds in suburban areas; 16 minutes and 20 seconds in rural and wilderness areas. The ERF shall be capable of: establishing patient contact; staging and apparatus set up; providing technical expertise, knowledge, skills and abilities during technical rescue incidents; and providing first responder medical support.

Wildland Firefighting Services Program

Call Processing/Alarm Handling Performance Objectives for Wildland Fire Calls - Benchmarks

For 90 percent of all risk level wildland urban interface fire calls, the call processing/alarm handling time from the time the dispatch center receives the call to the time the department is notified shall be 60 seconds.

Turnout Time Performance Objectives for Wildland Fire Calls– Benchmarks

For 90 percent of all risk level wildland urban interface fire calls, the time from when the department is notified by the dispatch center to the time crews go enroute is turnout time and shall be 80 seconds.

Total Response Time Performance Objectives for Wildland Fire Calls – Benchmarks

For 90 percent of all wildland urban interface fire risk calls, the total response time for the arrival of the first-due unit, staffed with a minimum of 2 firefighters, shall be 7 minutes and

20 seconds in suburban areas; 12 minutes and 20 seconds in rural and wilderness areas. The first-due unit shall be capable of: assessing the situation, request additional resources, constructing control lines, applying direct and indirect attacks and/or establish Incident Command, pump operation and accountability.

For 90 percent of all low risk wildland urban interface fire calls, the total response time for the arrival of the effective response force (ERF) staffed with 3 firefighters and officers, shall be 12 minutes and 20 seconds in suburban areas; 16 minutes and 20 seconds in rural and wilderness areas. The ERF shall be capable of providing additional fire suppression support.

For 90 percent of all moderate risk wildland urban interface fire calls, the total response time for the arrival of the effective response force (ERF) staffed with 8 to 12 firefighters and officers, shall be 12 minutes and 20 seconds in suburban areas; 16 minutes and 20 seconds in rural and wilderness areas. The ERF shall be capable of providing additional fire suppression support.

For 90 percent of all high risk wildland urban interface fire calls, the total response time for the arrival of the effective response force (ERF) staffed with 20 firefighters and officers, shall be 12 minutes and 20 seconds in suburban areas; 16 minutes and 20 seconds in rural and wilderness areas. The ERF shall be capable of providing additional fire suppression support.

For 90 percent of all maximum risk wildland urban interface fire calls, the total response time for the arrival of the effective response force (ERF) staffed with 28 firefighters and officers, shall be 12 minutes and 20 seconds in suburban areas; 16 minutes and 20 seconds in rural and wilderness areas. The ERF shall be capable of providing additional fire suppression support.

Aircraft Rescue Firefighting Services Program

Call Processing/Alarm Handling Performance Objectives for Aircraft Rescue Firefighting Calls - Benchmarks

For 90 percent of all risk level aircraft rescue firefighting calls, the call processing/alarm handling time from the time the dispatch center receives the call to the time the department is notified shall be 60 seconds.

Turnout Time Performance Objectives for Aircraft Rescue Firefighting Calls– Benchmarks

For 90 percent of all risk level aircraft rescue firefighting calls, the time from when the department is notified by the dispatch center to the time crews go enroute is turnout time and shall be 80 seconds.

Total Response Time Performance Objectives for Aircraft Rescue Firefighting Calls – Benchmarks

For 90 percent of all low, moderate, high, special and maximum risk aircraft rescue firefighting incidents, the total response time for the arrival of the first-due unit, staffed with 3 firefighters on the Engine or 2 firefighters on the Medic unit, shall be 7 minutes and 20 seconds in suburban areas; 12 minutes and 20 seconds in rural areas; and 12 minutes and 20 seconds in wilderness areas. The first-due unit shall be capable of: assessing the situation, request additional resources, effect rescue, apply fire control methods and/or establish Incident Command.

For 90 percent of all low and moderate risk aircraft rescue firefighting incidents, the total response time for the arrival of the effective response force (ERF) staffed with 18 firefighters

and officers, shall be 12 minutes and 20 seconds in suburban areas; 16 minutes and 20 seconds in rural areas; and 16 minutes and 20 seconds in wilderness areas. The ERF shall be capable of: supporting aircraft rescue firefighting.

For 90 percent of all high, special and maximum risk aircraft rescue firefighting incidents, the total response time for the arrival of the effective response force (ERF) staffed with 22 firefighters and officers, shall be 12 minutes and 20 seconds in suburban areas; 16 minutes and 20 seconds in rural areas; and 16 minutes and 20 seconds in wilderness areas. The ERF shall be capable of: supporting aircraft rescue firefighting.

In summary, the department BENCHMARK objectives are as follows:

Table 112 Benchmark Objectives

Measured at the 90th Percentile		Suppression	EMS	Haz-Mat	Tech Rescue	Wildland	Aircraft
Call Processing	Pick-up to Dispatch	60	60	60	60	60	60
Turnout	Turnout Time 1st Unit	80	60	80	80	80	80
	Turnout Time for ERF	80	60	80	80	80	80
Travel	Travel Time 1st Due	S-5:00 R-6:00 W-8:00	S-5:00 R-6:00 W-8:00	S-5:00 R-6:00 W-8:00	S-5:00 R-6:00 W-8:00	S-5:00 R-6:00 W-8:00	S-5:00 R-6:00 W-8:00
	Travel Time ERF	S-10:00 R-12:00 W-15:00	S-8:00 R-10:00 W-12:00	S-8:00 R-10:00 W-12:00	S-8:00 R-10:00 W-12:00	S-8:00 R-10:00 W-12:00	S-8:00 R-10:00 W-12:00
Total Response Time	Total Response Time 1st Due	S-7:20 R-12:20 W-12:20	S-7:20 R-12:20 W-12:20	S-7:20 R-12:20 W-12:20	S-7:20 R-12:20 W-12:20	S-7:20 R-12:20 W-12:20	S-7:20 R-12:20 W-12:20
	Total Response Time ERF	S-12:20 R-16:20 W-16:20	S-12:20 R-16:20 W-16:20	S-12:20 R-16:20 W-16:20	S-12:20 R-16:20 W-16:20	S-12:20 R-16:20 W-16:20	S-12:20 R-16:20 W-16:20

Performance Objectives – Baselines

Fire Suppression Services Program

Call Processing/Alarm Handling Performance Objectives for Fire Calls - Baselines

For 90 percent of all low risk fire calls (131), the call processing/alarm handling time from the time the dispatch center receives the call to the time the department is notified was 4 minutes 53 seconds in suburban areas; 5 minutes 42 seconds in rural areas and 6 minute 57 seconds in wilderness areas.

For 90 percent of all moderate risk fire calls (8), the call processing/alarm handling time from the time the dispatch center receives the call to the time the department is notified was 1 minutes 52 seconds in suburban areas; 2 minutes 54 seconds in rural areas and no moderate risk fire calls in wilderness areas.

For 90 percent of all high risk fire calls (24), the call processing/alarm handling time from the time the dispatch center receives the call to the time the department is notified was 2 minutes 03 seconds in suburban areas; 3 minutes 50 seconds in rural areas and there were no high risk fire calls in wilderness areas.

The special risk (0) and maximum risk (4) fire calls were statistically insignificant in number to analyze.

Turnout Time Performance Objectives for Fire Calls– Baselines

For 90 percent of all low risk fire calls, the time from when the department is notified by the dispatch center to the time crews go enroute is turnout time and was 2 minutes 10 seconds in suburban areas; 2 minutes 22 seconds in rural areas; and 2 minutes 03 seconds in wilderness areas.

For 90 percent of all moderate risk fire calls, the time from when the department is notified by the dispatch center to the time crews go enroute is turnout time and was 1 minutes 50 seconds in suburban areas; 1 minutes 41 seconds in rural areas; and there were no moderate risk fires calls in wilderness areas.

For 90 percent of all high risk fire calls, the time from when the department is notified by the dispatch center to the time crews go enroute is turnout time and was 1 minutes 21 seconds in suburban areas; 2 minutes 53 seconds in rural areas; and there were no high risk fire calls in wilderness areas.

The special risk (0) and maximum risk (4) fire calls were statistically insignificant in number to analyze.

Total Response Time Performance Objectives for Fire Calls – Baselines

For 90 percent of all low risk and all fires, the total response time for the arrival of the first-due engine, staffed with 3 firefighters, is: 10 minutes and 39 seconds in suburban areas; 12 minutes and 31 seconds in rural areas; and 22 minutes and 15 seconds in wilderness areas. The first-due unit for all risk levels is capable of: providing 500 gallons of water and 1,500 gpm pumping capacity; initiating command; requesting additional resources; establishing and advancing an attack line flowing a minimum of 150 gpm; establishing an uninterrupted water supply; containing the fire; rescuing at-risk victims; and performing salvage operations. These operations are done in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

For 90 percent of all high risk fires, the total response time for the arrival of the first-due engine, staffed with 3 firefighters, is: 7 minutes and 44 seconds in suburban areas; 8 minutes and 52 seconds in rural areas; and there were no high risk fire calls in wilderness areas. The first-due unit for all risk levels is capable of: providing 500 gallons of water and 1,500 gpm pumping capacity; initiating command; requesting additional resources; establishing and advancing an attack line flowing a minimum of 150 gpm; establishing an uninterrupted water supply; containing the fire; rescuing at-risk victims; and performing salvage operations. These operations are done in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

There were eight moderate, four maximum, and zero special risk fire calls. This is statistically insignificant to analyze.

For 90 percent of all high risk fires, the total response time for the arrival of the ERF, staffed with 20 firefighters and officers, is: 10 minutes and 41 seconds in suburban areas; and 18 minutes and 29 seconds in rural areas. There were no high risk fire calls in wilderness areas. The ERF for high risk fires is capable of: establishing command; appointing a site safety officer; providing an uninterrupted water supply; advancing an attack line and a backup line for fire control; complying with the OSHA requirements of two-in and two-out; completing forcible entry; searching and rescuing at-risk victims; ventilating the structure; controlling utilities; performing salvage and overhaul; and operating elevated streams.

There were four moderate, three maximum, and zero special risk fire calls. This is statistically insignificant to analyze.

Emergency Medical Services Program

Call Processing/Alarm Handling Performance Objectives for EMS Calls - Baselines

For 90 percent of all low risk EMS calls, the call processing/alarm handling time from the time the dispatch center receives the call to the time the department is notified was 3 minutes 12 seconds in suburban areas; 2 minutes 54 seconds in rural areas; and 4 minutes 40 seconds in wilderness areas.

For 90 percent of all moderate risk EMS calls, the call processing/alarm handling time from the time the dispatch center receives the call to the time the department is notified was 2 minutes 54 seconds in suburban areas; 2 minutes 47 seconds in rural areas; and 5 minutes 06 seconds in wilderness areas.

For 90 percent of all high risk EMS calls, the call processing/alarm handling time from the time the dispatch center receives the call to the time the department is notified was 3 minutes 33 seconds in suburban areas; 4 minutes 24 seconds in rural areas; and 2 minutes 30 seconds in wilderness areas.

Turnout Time Performance Objectives for EMS Calls– Baselines

For 90 percent of all low risk EMS calls, the time from when the department is notified by the dispatch center to the time crews go enroute is turnout time and was 1 minute 43 seconds in suburban areas, 2 minutes 07 seconds in rural areas and 2 minutes 05 seconds in wilderness areas.

For 90 percent of all moderate risk EMS calls, the time from when the department is notified by the dispatch center to the time crews go enroute is turnout time and was 1 minute 36 seconds in suburban areas, 2 minutes 13 seconds in rural areas and 2 minutes 00 seconds in wilderness areas.

For 90 percent of all high risk EMS calls, the time from when the department is notified by the dispatch center to the time crews go enroute is turnout time and was 2 minute 14 seconds in suburban areas, 2 minutes 16 seconds in rural areas and1 minutes 52 seconds in wilderness areas.

Total Response Time Performance Objectives for EMS Calls – Baselines

For 90 percent of all low EMS risk level response incidents, the total response time for the arrival of the first-unit staffed with a minimum of 2 firefighters, is: 8 minutes and 31 seconds in suburban areas; 9 minutes and 35 seconds in rural areas; and 20 minutes and 16 seconds in wilderness areas. The first-due unit is capable of: assessing scene safety and establishing command; sizing-up the situation; conducting initial patient assessment; obtaining vitals and patient's medical history; initiating mitigation efforts within one minute of arrival; providing

first responder medical aid including automatic defibrillation; and assisting transport personnel with packing the patient.

For 90 percent of all moderate EMS risk level response incidents, the total response time for the arrival of the first-unit staffed with a minimum of 2 firefighters, is: 8 minutes and 11 seconds in suburban areas; 9 minutes and 13 seconds in rural areas; and 19 minutes and 06 seconds in wilderness areas. The first-due unit is capable of: assessing scene safety and establishing command; sizing-up the situation; conducting initial patient assessment; obtaining vitals and patient's medical history; initiating mitigation efforts within one minute of arrival; providing first responder medical aid including automatic defibrillation; and assisting transport personnel with packing the patient.

For 90 percent of all high EMS risk level response incidents, the total response time for the arrival of the first-unit staffed with a minimum of 2 firefighters, is: 10 minutes and 40 seconds in suburban areas; 12 minutes and 49 seconds in rural areas; and 17 minutes and 11 seconds in wilderness areas. The first-due unit is capable of: assessing scene safety and establishing command; sizing-up the situation; conducting initial patient assessment; obtaining vitals and patient's medical history; initiating mitigation efforts within one minute of arrival; providing first responder medical aid including automatic defibrillation; and assisting transport personnel with packing the patient.

For 90 percent of all low risk EMS response incidents, the total response time for the arrival of the ERF, staffed with a minimum 2 firefighters is: 8 minutes and 51 seconds in suburban areas; 10 minutes and 10 seconds in rural areas; and 19 minutes and 48 seconds in the wilderness areas. The ERF is capable of: providing incident command and producing related documentation; completing patient assessment; providing appropriate treatment; performing automatic external defibrillator (AED); initiating cardio-pulmonary resuscitation (CPR); and providing intravenous (IV) assess-medication administration.

For 90 percent of all moderate risk EMS response incidents, the total response time for the arrival of the ERF, staffed with 7 firefighters and officers is: 9 minutes and 26 seconds in suburban areas; 11 minutes and 26 seconds in rural areas; and 21 minutes and 13 seconds in the wilderness areas. The ERF is capable of: providing incident command and producing related documentation; completing patient assessment; providing appropriate treatment; performing automatic external defibrillator (AED); initiating cardio-pulmonary resuscitation (CPR); and providing intravenous (IV) assess-medication administration.

For 90 percent of all high risk EMS response incidents, the total response time for the arrival of the ERF, staffed with 11firefighters and officers is: 12 minutes and 49 seconds in suburban areas; 16 minutes and 17 seconds in rural areas; and 22 minutes and 47 seconds in the wilderness areas. The ERF is capable of: providing incident command and producing related documentation; completing patient assessment; providing appropriate treatment; performing automatic external defibrillator (AED); initiating cardio-pulmonary resuscitation (CPR); and providing intravenous (IV) assess-medication administration.

There were no special or maximum risk EMS incidents, which required a first-due response or an effective response force to be assembled for 2010-2014, to provide reliable data. There are therefore no baseline service level performance statements provided in this report.

Hazardous Materials Services Program

Call Processing/Alarm Handling Performance Objectives for Hazmat Calls - Baselines

For 90 percent of all low risk hazmat calls, the call processing/alarm handling time from the time the dispatch center receives the call to the time the department is notified was 5 minutes 54 seconds in suburban areas; 3 minutes 53 seconds in rural areas and 2 minutes 22 seconds in wilderness areas.

For 90 percent of all moderate risk hazmat calls, the call processing/alarm handling time from the time the dispatch center receives the call to the time the department is notified was 3 minutes 35 seconds in suburban areas; 5 minutes 18 seconds in rural areas and there were no hazmat calls in wilderness areas.

*There were only four high, one special, and seven maximum risk hazmat calls from 2010 to 2014 to analyze. This is statistically insignificant.

Turnout Time Performance Objectives for Hazmat Calls– Baselines

For 90 percent of all low risk hazmat calls, the time from when the department is notified by the dispatch center to the time crews go enroute is turnout time and was 3 minutes 23 seconds in suburban areas, 2 minutes 55 seconds in rural areas and 1 minute and 05 seconds in wilderness areas.

For 90 percent of all moderate risk hazmat calls, the time from when the department is notified by the dispatch center to the time crews go enroute is turnout time and was 2 minutes 07 seconds in suburban areas, 1 minutes 46 seconds in rural areas and there were no moderate risk hazmat calls in wilderness areas.

*There were only four high, one special, and seven maximum risk hazmat calls from 2010 to 2014 to analyze. This is statistically insignificant.

Total Response Time Performance Objectives for Hazmat Calls – Baselines

For 90 percent of all low risk hazardous materials response incidents, the total response time for the arrival of the first unit staffed with 3 firefighters and officers is: 10 minutes and 27 second in suburban areas; and 9 minutes and 54 seconds in rural areas; and 11 minutes and 46 seconds in wilderness areas.

For 90 percent of all moderate risk hazardous materials response incidents, the total response time for the arrival of the first unit staffed with 3 firefighters and officers is: 8 minutes and 16 second in suburban areas; and 12 minutes and 53 seconds in rural areas; and there were no moderate risk hazmat calls in in wilderness areas.

For 90 percent of all low risk hazardous materials response incidents, the total response time for the arrival of the ERF, staffed with 3 firefighters and officers including the hazardous materials response team is: 11 minutes and 51 second in suburban areas; and 11 minutes and 12 seconds in rural areas; and 12 minutes and 24 seconds in wilderness areas. The ERF is capable of: providing the equipment, technical expertise, knowledge, skills, and abilities to mitigate a hazardous materials incident in accordance with department standard operating guidelines.

For 90 percent of all moderate risk hazardous materials response incidents, the total response time for the arrival of the ERF, staffed with 9 firefighters and officers including the hazardous materials response team is: 13 minutes and 07 second in suburban areas; and 16 minutes and 41 seconds in rural areas. There were no moderate risk hazardous material response incidents in wilderness areas. The ERF is capable of: providing the equipment,

technical expertise, knowledge, skills, and abilities to mitigate a hazardous materials incident in accordance with department standard operating guidelines.

There were insufficient high, special or maximum risk hazardous materials incidents, which required a first-due response or an effective response force to be assembled for 2010-2014, to provide reliable data. There are therefore no baseline service level performance statements provided.

Rescue Services Program

Call Processing/Alarm Handling Performance Objectives for Technical Rescue Calls - Baselines

For 90 percent of all low risk technical rescue calls, the call processing/alarm handling time from the time the dispatch center receives the call to the time the department is notified was 2 minutes 59 seconds in suburban areas; 3 minutes 10 seconds; and 3 minutes 25 seconds in wilderness areas.

For 90 percent of all moderate risk technical rescue calls, the call processing/alarm handling time from the time the dispatch center receives the call to the time the department is notified was 2 minutes 56 seconds in suburban areas; 4 minutes 53 seconds; and 2 minutes 53 seconds in wilderness areas.

For 90 percent of all maximum risk technical rescue calls, the call processing/alarm handling time from the time the dispatch center receives the call to the time the department is notified was 1 minutes 18 seconds in suburban areas; 2 minutes 26 seconds; and 1 minutes 41 seconds in wilderness areas.

There were no special and only three high risk technical rescue calls from 2010 to 2014 to analyze. This is statistically insignificant.

Turnout Time Performance Objectives for Technical Rescue Calls– Baselines

For 90 percent of all low risk technical rescue calls, the time from when the department is notified by the dispatch center to the time crews go enroute is turnout time and was 2 minutes 57 seconds in suburban areas, 2 minutes 04 seconds in rural areas; and 2 minutes 30 seconds in wilderness areas.

For 90 percent of all moderate risk technical rescue calls, the time from when the department is notified by the dispatch center to the time crews go enroute is turnout time and was 1 minutes 58 seconds in suburban areas, 2 minutes 42 seconds in rural areas; and 2 minutes 01 seconds in wilderness areas.

For 90 percent of all maximum risk technical rescue calls, the time from when the department is notified by the dispatch center to the time crews go enroute is turnout time and was 1 minutes 12 seconds in suburban areas, 2 minutes 00 seconds in rural areas; and 1 minutes 52 seconds in wilderness areas.

There were no special and only three high risk technical rescue calls from 2010 to 2014 to analyze. This is statistically insignificant.

Total Response Time Performance Objectives for Technical Rescue Calls – Baselines

For 90 percent of all low risk technical rescue incidents, the total response time for the arrival of the first-due unit, staffed with 3 firefighters is: 8 minutes and 34 seconds in suburban areas; 9 minutes and 05 seconds in rural areas; and 13 minutes and 54 seconds in wilderness areas. The first-due unit is capable of: establishing command; sizing up to

determine if a technical rescue response is required; requesting additional resources; and providing basic life support to any victim without endangering response personnel.

For 90 percent of all moderate risk technical rescue incidents, the total response time for the arrival of the first-due unit, staffed with 3 firefighters is: 8 minutes and 56 seconds in suburban areas; 11 minutes and 04 seconds in rural areas; and 12 minutes and 58 seconds in wilderness areas. The first-due unit is capable of: establishing command; sizing up to determine if a technical rescue response is required; requesting additional resources; and providing basic life support to any victim without endangering response personnel.

For 90 percent of all maximum risk technical rescue incidents, the total response time for the arrival of the first-due unit, staffed with 3 firefighters is: 5 minutes and 50 seconds in suburban areas; 7 minutes and 28 seconds in rural areas; and 14 minutes and 16 seconds in wilderness areas. The first-due unit is capable of: establishing command; sizing up to determine if a technical rescue response is required; requesting additional resources; and providing basic life support to any victim without endangering response personnel.

There were three high risk technical rescue calls from 2010-2014. This is statistically insignificant. There were no special risk fire calls to analyze.

For 90 percent of all low risk technical rescue incidents, the total response time for the arrival of the ERF, staffed with 5 firefighters and officers is: 9 minutes and 36 seconds in suburban areas; 9 minutes and 30 seconds in rural areas; and 12 minutes and 25 seconds in the wilderness areas. The ERF is capable of: establishing patient contact, staging and apparatus set up, providing technical expertise, knowledge, skills and abilities, performing rescue operations and providing patient care and medical support.

For 90 percent of all moderate risk technical rescue incidents, the total response time for the arrival of the ERF, staffed with 7 firefighters and officers is: 10 minutes and 56 seconds in suburban areas; 14 minutes and 35 seconds in rural areas; and 14 minutes and 53 seconds in the wilderness areas. The ERF is capable of: establishing patient contact, staging and apparatus set up, providing technical expertise, knowledge, skills and abilities, performing rescue operations and providing patient care and medical support.

For 90 percent of all maximum risk technical rescue incidents, the total response time for the arrival of the ERF, staffed with 15 firefighters and officers is: 11 minutes and 24 seconds in suburban areas; 18 minutes and 21 seconds in rural areas; and 18 minutes and 42 seconds in the wilderness areas. The ERF is capable of: establishing patient contact, staging and apparatus set up, providing technical expertise, knowledge, skills and abilities, performing rescue operations and providing patient care and medical support.

There were no special risk technical rescue incidents which required a first-due response or an effective response force to be assembled for 2010-2014 and there were only three high risk technical rescue calls which is statistically insignificant.

Wildland Urban Interface Services Program

Call Processing/Alarm Handling Performance Objectives for Wildland Urban Interface Calls - Baselines

For 90 percent of all low risk wildland urban interface calls, the call processing/alarm handling time from the time the dispatch center receives the call to the time the department

is notified was 6 minutes 02 seconds in suburban areas, 4 minutes 31 seconds in rural areas; and 4 minutes and 40 second in wilderness.

For 90 percent of all moderate risk wildland urban interface calls, the call processing/alarm handling time from the time the dispatch center receives the call to the time the department is notified was 1 minutes 23 seconds in suburban areas, 3 minutes 25 seconds in rural areas; and 4 minutes and 52 second in wilderness.

There were no high, or special risk wildland urban interface incidents from 2010 to 2014 to analyze.

The Las Conchas fire of 2011 was the only maximum risk wildland urban interface fire incident during the period. It burned over 145,000 acres and suppression operations ran over for almost ten days; however it was discovered by LAFD crews, so processing, turnout and total response times are skewed.

Turnout Time Performance Objectives for Wildland Urban Interface Calls– Baselines

For 90 percent of all low risk wildland urban interface fire calls, the time from when the department is notified by the dispatch center to the time crews go enroute is turnout time and was 2 minutes 38 seconds in suburban areas, 1 minutes 37 seconds in rural areas; and 2 minutes 36 seconds in wilderness areas.

For 90 percent of all moderate risk wildland urban interface fire calls, the time from when the department is notified by the dispatch center to the time crews go enroute is turnout time and was 1 minutes 32 seconds in suburban areas, 2 minutes 35 seconds in rural areas; and 1 minutes 21 seconds in wilderness areas.

There were no high, or special risk wildland urban interface fire incidents from 2010 to 2014 to analyze.

The Las Conchas fire of 2011 was the only maximum risk wildland urban interface fire incident during the period. It burned over 145,000 acres and suppression operations ran over for almost ten days; however it was discovered by LAFD crews, so processing, turnout and total response times are skewed.

Total Response Time Performance Objectives for Wildland Urban Interface Calls – Baselines

For 90 percent of all low risk wildland urban interface fire incidents, the total response time for the arrival of the first unit, is: 14 minutes and 38 seconds in suburban areas; 15 minutes and 41 seconds in rural areas; and 17 minutes and 16 seconds in wilderness areas.

For 90 percent of all moderate risk wildland urban interface fire incidents, the total response time for the arrival of the first unit, is: 5 minutes and 04 seconds in suburban areas; 9 minutes and 06 seconds in rural areas; and 18 minutes and 02 seconds in wilderness areas.

For 90 percent of all low risk wildland urban interface fire incidents, the total response time for the arrival of the ERF, staffed with 3 firefighters and officers, is: 14 minutes and 46 seconds in suburban areas; 9 minutes and 59 seconds in rural areas; and 19 minutes and 05 seconds in wilderness areas. The ERF is capable of providing additional fire suppression support.

For 90 percent of all moderate risk wildland urban interface fire incidents, the total response time for the arrival of the ERF, staffed with 8 to12 firefighters and officers, is: 7 minutes and 22 seconds in suburban areas; 16 minutes and 02 seconds in rural areas; and 18 minutes and

47 seconds in wilderness areas. The ERF is capable of providing additional fire suppression support.

There were no high, special or maximum risk wildland incidents, which required a first-due response or an effective response force to be assembled for 2010-2014. There are therefore no baseline service level performance statements provided.

There were only six low risk wildland incidents which required an effective response force to be assembled for 2010-2014. This is statistically insignificant.

The Las Conchas fire of 2011 was the only maximum risk wildland urban interface fire incident during the period. It burned over 145,000 acres and suppression operations ran over for almost ten days; however it was discovered by LAFD crews, so processing, turnout and total response times are skewed.

Aircraft Rescue Firefighting Services Program

Call Processing/Alarm Handling Performance Objectives for Aircraft Rescue Firefighting Calls - Baselines

There was only one moderate risk ARFF call between 2010 and 2014; the call processing/alarm handling time from the time the dispatch center received the call to the time the department was notified was 2 minutes 35 seconds at the airport (suburban).

Turnout Time Performance Objectives for Aircraft Rescue Firefighting Calls– Baselines

There was only one moderate risk ARFF call between 2010 and 2014; the time from when the department was notified by the dispatch center to the time crews go enroute is turnout time and was 30 seconds to the airport (suburban).

Total Response Time Performance Objectives for Aircraft Rescue Firefighting Calls – Baselines

There was only one moderate risk ARFF call between 2010 and 2014. The total response time for arrival of the first unit, staffed with 3 firefighters on the Engine or 2 firefighters on the Medic unit, was 5 minutes 35 seconds. The first-due unit is capable of: assessing the situation, request additional resources, effect rescue, apply fire control methods and/or establish Incident Command.

The total response time for the arrival of the effective response force (ERF) staffed with 18 firefighters and officers, was 9 minutes and 53 seconds in suburban areas;

The ERF is capable of supporting aircraft rescue firefighting.

In summary, the department baseline performance has been as follows when compared to the BASELINE objectives:

Table 113 Suppression Fires - 90th Percentile - Baseline Performance to Objective

Suppression Fires - 90th Percentile Times		2014	2013	2012	2011	2010	BASELINE Objective
Call Processing	Pick-up to Dispatch	0:03:10	0:05:43	0:05:21	0:03:38	0:02:31	0:05:34
Turnout	Turnout Time 1st Unit	0:02:24	0:02:12	0:02:06	0:01:39	0:02:05	0:02:19
	Turnout Time for ERF	0:02:48	0:02:44	0:01:54	0:02:00	0:02:50	0:02:49
Travel	Travel Time 1st Due	0:06:30	0:07:59	0:04:59	0:07:45	0:06:21	0:07:53
	Travel Time ERF	0:07:09	0:11:06	0:10:05	0:10:28	0:09:26	0:10:51
Total Response Time	Total Response Time 1st Due	0:09:20	0:13:39	0:10:56	0:10:53	0:09:36	0:12:34
	Total Response Time ERF	0:10:59	0:14:56	0:14:43	0:15:31	0:12:37	0:15:17

Table 114 EMS - 90th Percentile Times - Baseline Performance to Objective

EMS - 90th Percentile Times		2014	2013	2012	2011	2010	BASELINE Objective
Call Processing	Pick-up to Dispatch	0:02:13	0:02:23	0:02:19	0:02:49	0:03:06	0:02:59
Turnout	Turnout Time 1st Unit	0:02:02	0:01:54	0:01:50	0:01:37	0:01:49	0:01:59
	Turnout Time for ERF	0:02:02	0:01:59	0:01:51	0:01:42	0:01:51	0:02:01
Travel	Travel Time 1st Due	0:05:16	0:05:07	0:04:52	0:06:00	0:06:07	0:06:04
	Travel Time ERF	0:05:51	0:05:59	0:05:40	0:07:26	0:07:11	0:07:20
Total Response Time	Total Response Time 1st Due	0:08:18	0:08:11	0:08:03	0:09:18	0:09:35	0:09:28
	Total Response Time ERF	0:08:49	0:08:57	0:08:49	0:10:29	0:10:53	0:10:43

Table 115 HazMat - 90th Percentile Times - Baseline Performance to Objective

HazMat - 90th Percentile Times		2014	2013	2012	2011	2010	BASELINE Objective
Call Processing	Pick-up to Dispatch	0:04:14	0:02:43	0:03:35	0:04:11	0:04:05	0:04:13
Turnout	Turnout Time 1st Unit	0:02:34	0:02:26	0:02:44	0:01:56	0:02:34	0:02:40
	Turnout Time for ERF	0:02:35	0:02:20	0:02:57	0:01:57	0:01:55	0:02:48
Travel	Travel Time 1st Due	0:04:41	0:04:48	0:04:37	0:05:59	0:08:58	0:07:46
	Travel Time ERF	0:06:35	0:08:02	0:07:03	0:09:41	0:09:00	0:09:25
Total Response Time	Total Response Time 1st Due	0:09:29	0:09:53	0:09:50	0:09:57	0:12:41	0:11:35
	Total Response Time ERF	0:09:55	0:11:10	0:12:14	0:15:04	0:12:29	0:14:02

Table 116 Tech Rescue - 90th Percentile Times - Baseline Performance to Objective

Technical Rescue - 90th Percentile Times		2014	2013	2012	2011	2010	BASELINE Objective
Call Processing	Pick-up to Dispatch	0:02:19	0:02:35	0:02:30	0:02:32	0:02:52	0:02:45
Turnout	Turnout Time 1st Unit	0:02:10	0:01:51	0:01:49	0:01:57	0:02:09	0:02:10
	Turnout Time for ERF	0:02:02	0:02:01	0:01:57	0:01:59	0:02:00	0:02:02
Travel	Travel Time 1st Due	0:06:46	0:08:57	0:05:16	0:07:33	0:07:06	0:08:23
	Travel Time ERF	0:08:42	0:12:07	0:08:36	0:10:27	0:11:02	0:11:41
Total Response Time	Total Response Time 1st Due	0:09:58	0:11:39	0:07:17	0:09:54	0:09:42	0:10:59
	Total Response Time ERF	0:11:32	0:14:43	0:10:24	0:12:47	0:13:03	0:14:03

Table 117 Wildland - 90th Percentile Times - Baseline Performance to Objective

Wildland - 90th Percentile Times		2014	2013	2012	2011	2010	BASELINE Objective
Call Processing	Pick-up to Dispatch	0:03:40	0:05:09	0:03:39	0:04:59	0:04:53	0:05:05
Turnout	Turnout Time 1st Unit	0:02:17	0:01:03	0:01:56	0:02:07	0:02:18	0:02:18
	Turnout Time for ERF	0:03:15	0:02:16	0:02:58	0:02:05	0:02:15	0:03:08
Travel	Travel Time 1st Due	0:05:42	0:09:25	0:05:50	0:13:41	0:07:00	0:11:59
	Travel Time ERF	0:13:40	0:07:36	0:11:41	0:13:42	0:07:43	0:13:41
Total Response Time	Total Response Time 1st Due	0:09:34	0:12:29	0:09:06	0:15:37	0:12:26	0:14:22
	Total Response Time ERF	0:15:47	0:12:01	0:14:20	0:19:00	0:11:00	0:17:43

Table 118 ARFF - 90th Percentile Times - Baseline Performance to Objective

ARFF - 90th Percentile Times		2014	2013	2012	2011	2010	BASELINE Objective
Call Processing	Pick-up to Dispatch		0:02:35				0:02:35
Turnout	Turnout Time 1st Unit		0:00:30				0:00:30
	Turnout Time for ERF		0:02:32				0:02:32
Travel	Travel Time 1st Due		0:02:30				0:02:30
	Travel Time ERF		0:05:53				0:05:53
Total Response Time	Total Response Time 1st Due		0:05:35				0:05:35
	Total Response Time ERF		0:09:53				0:09:53

G. Compliance Methodology

Compliance Team / Responsibility

The development of the Community Based Strategic Plan, Community Risk Standards of Cover, and the Fire and Emergency Service Self-Assessment manual have allowed the department to thoroughly evaluate the current delivery system from numerous perspectives. The department reviewed the existing risks found in the community and analyzed the department's performance relative to distribution, concentration and reliability of emergency response resources.

Operational performance and compliance is the responsibility of the Los Alamos Fire Department Command Staff, serving in the capacity of the Compliance Team. This team consists of the Fire Chief, Deputy Fire Chief, Fire Marshal, Wildland Fire Division Chief, Safety Division Chief, EMS Division Chief, Training Division Chief, Labor Relations Manager, EMS Training Coordinator, Financial/Budget Management Analyst, Business Management Analyst and Accreditation Manager/Management Analyst.

Performance Evaluation and Compliance Strategy

The LAFD is committed to excellence and will fulfill the continuous improvement promise through assessment of program effectiveness and analysis of program performance.

The department, through the Compliance Team, has evaluated compliance and program performance by establishing the standards and desired outcomes, collecting data to determine the baseline, identifying the service gaps, and executing a plan for remediation. This is an on-going process that the Team addresses at each monthly meeting.

To remain current with the CFAI Standards of Cover and Self-Assessment requirements, the Compliance Team reviews the LAFD Dashboard – a method of reporting cumulative performance compliance. In addition, the group meets quarterly with LAFD Leadership (Company Officers and Command Staff) to discuss program performance and strategies for process improvement.

Compliance Verification Reporting

A maintenance and compliance methodology system includes a Daily Exception Report submitted by the shift Support Officer to Command Staff reporting the previous day's staffing and response activity; a daily Performance Report produced by Vinelight Fire Intelligence showing the response time performance for all incidents the previous day, data deliverables provided to NNSA in a Monthly Progress Report (specifically reporting performance on response to the Los Alamos National Laboratory), and a monthly LAFD Dashboard is developed and published. The LAFD Dashboard is a synopsis of both the month and year-to-date measurements by program and/or division. The Dashboard monitoring tool was created as a result of the self-assessment process and is intended to help the department review and evaluate performance in areas all program areas as well as administrative service areas.

The LAFD Dashboard includes quantitative/qualitative data by month and cumulative year-to-date data for division, program, and administrative service performance deliverables. The Dashboard includes service milestones, status of goals and objectives; Fire Chief's Directive updates; financial activity; processing, turnout, travel and total response time analysis of call performance by service type and by station and shift; life safety code inspection activity and compliance; public education and community outreach events data; fleet, facilities, and equipment concerns; staffing or personnel changes; training compliance; administrative services performance timeliness; accidents, injuries and other occupational health and safety related

activity, and external partnerships.

In addition, quarterly reporting of each performance goal stated within the Strategic Plan document, as well as progress reporting of division/program goals and objectives are provided to the Fire Chief and Command Staff and discussed at Divisional Meetings, Leadership meetings, and at Labor Management Committee meetings, as appropriate.

Institutionalized processes of compliance monitoring for EMS provider licensure, pharmaceuticals and ambulances are conducted in partnership with the respective regulatory agencies.

Incident performance reviews are conducted through post incident analysis by crew, shift Battalion Chiefs and Command Staff. Training and compliance reporting of critical tasks are coordinated by the Deputy Fire Chief, Training Division Chief, shift Battalion Chiefs and Training Officers. Safety compliance with regard to occupational health, wellness, fitness, accidents and injuries are coordinated by the Division Chief/Safety Officer.

Finally, all program compliance is reported in the CFAI Annual Compliance Report.

Constant Improvement Strategy

To ensure the Los Alamos Fire Department is meeting current service level objectives, continuous monitoring of service level baselines is a perpetual process; initial review, performance evaluation and assessment for effectiveness, development of process improvement strategies, communication of expectation and timelines, execution of strategies, review, and the performance evaluation process repeats.

In addition to the review of service level objectives, the Deputy Fire Chief and Fire Marshal will review the response demands within each zone and the identified risks within. The Deputy Fire Chief will determine if there have been any changes within a planning zone, changes to service demands or changes in standards or operations that impact the service level objectives or the Standards of Cover document. These reviews will be conducted on an annual basis.

To aid in the collection and presentation of this information, the Administrative Management Team will work as a group to assemble all required information and assist the Compliance Team in the interpretation of data and considerations for improvement towards achieving targets (benchmarks). Data and conclusions will be presented in the LAFD Dashboard.

H. Overall Evaluation and Conclusion Recommendations

Evaluation Methodology and Determinations

Evaluation Methodology

The creation of this Standards of Cover document was approached from a multi-disciplinary perspective. Individuals with specialized knowledge in the specific categories of this document either authored those sections themselves or were significant contributors to the process. Some of these individuals were members of the Core Accreditation Team, Administrative staff, Command Staff, LANL Training Coordinator, members of Fire & Life Safety Management Division, Operations Division, EMS Division, Training Division, Wildland Fire Division, and Safety Division. Nine of the eleven Los Alamos Fire Department Chief Officers have been in their positions for three and half years or less; only two participated in the previous accreditation processes. This dynamic created an opportunity to assess the department capabilities, risks, objectives, and service delivery from a new perspective. Los Alamos County contributors included staff from Human Resources, Finance, Dispatch, Economic Development, and IT. Multiple outside sources and individuals had significant input as well, including members of the Los Alamos National Laboratory.

In tandem with the large number of contributors listed above, multiple sources were referenced to obtain data found throughout this document. The majority of data came from Firehouse software, Vinelight Fire Intelligence, Microsoft Office, the 2010 US Census, GIS systems, Internet resources, and numerous internal documents (FCDs, maps, etc.).

Throughout this process, the department identified many areas in which the current levels of service delivery either met or exceeded adopted performance objectives. At the same time, as was expected, the department discovered several opportunities for improvement.

Evaluation Determinations

While developing the Standards of Cover the Accreditation Core Team identified program responsibilities, strengths and weakness as well as opportunities and threats, be considered in LAFD's continuous endeavor towards organizational excellence:

Strengths

1. While the service level baseline objectives are challenging, the majority of total response times fall within the performance objectives.
2. Due to the Cooperative Agreement requirement for a nuclear grade fire department, the staffing and level of training is substantially larger than a community similar in size to Los Alamos would normally require.
3. The number of simultaneous calls received by response district is low; the service delivery and capabilities of the department is reliable.
4. The Cooperative Agreement secures funding or the next ten years.

Weaknesses

1. Call processing times exceed the benchmark objectives. Numerous potential contributing variables have been identified and are being investigated. The department has struggled with data reliability. The lack of a ProQA-Fire protocol requires dispatchers to contact the Battalion Chief by land-line to get direction on the response plan for fire calls. This method of communication causes delays in processing times. It is suspected that response time data transfer from CAD through an Intergraph interface may be populating data into incorrect

data fields resulting in extended processing times reported (ranging from 30 seconds up to minutes).

2. The data sets, when analyzed by population density, risk level and discipline are relatively small due to the low call volume; many data sets are statistically insignificant.
3. LAFD occupies two fire stations owned by the DOE. Both of these stations are aging (built in the '50s) and are in need of repair.
4. Data deficiencies were discovered due to inconsistent and/or formal training in data entry and quality assurance.
5. Goals and objectives for specific programs and divisions were developed and many of them met; however, there had not been a formal method of tracking progress to ensure proper execution.
6. The department's standard operating procedures (i.e., Fire Chief's Directives) were identified as being reviewed and updated on a reactive basis, rather than a scheduled proactive and regular review cycle.

Opportunities

1. Improve call processing and turnout times by acquisition and implementation of mobile data terminals and dispatch technologies (i.e., new CAD, acquisition of FireProQA)
2. Improve alerting and dispatch protocols.
3. Enhance data entry and quality assurance education.

Threats

1. The department experienced two major wildfires in recent years; Cerro Grande in 2000 and Las Conchas in 2011. Although defensible space and mitigation efforts have been made, drought conditions and surface fuels, ladder fuels, crown fuels and heavy vegetation still pose a threat.
2. According to US Census data, the population of over 65 years of age is increasing, while the population of 20 to 44 years of age is decreasing substantially. An aging population implies that there will be an increasing demand for emergency medical services.

Conclusions

As part of LAFD's commitment to excellence and the continuous improvement promise, the department has evaluated the community and the department services using industry best practices and standards. A comprehensive assessment of community risk was performed. A thorough examination of risks by service delivery type (suppression, emergency medical services, technical rescue, hazmat, wildland urban interface firefighting and aircraft rescue firefighting) was carefully analyzed.

Within this scope, risk levels were classified through the use of the probability, consequence, and impact methodology. Risk level classifications were determined for each service delivery type by considering the probability of occurrence (based on historical response data, occupancy data, and fire protection capabilities), consequences to the community (based on financial and physical consequences), and impact to the department (based on required human and physical resources).

Historical response data was used along with the identification of target hazards, historic loss considerations, and resource requirements. The department identified population densities for

the jurisdiction as primarily rural with two pockets of suburban density, surrounded by wilderness area.

Critical task analysis was then conducted for each risk level classification which identified the number of staff necessary to mitigate the incident within a prescribed timeframe, establishing an effective response force (ERF).

Historical response time data was used to measure current system performance. Benchmark and baseline performance objectives were drafted that specified total response time measures of alarm handling (pick up to dispatch), turnout (dispatch to enroute), and travel (enroute to arrival) times. Benchmark and baseline performance measures for distribution (first unit arrival) and concentration (effective response force) of resources were identified by service delivery type, risk levels and by population density.

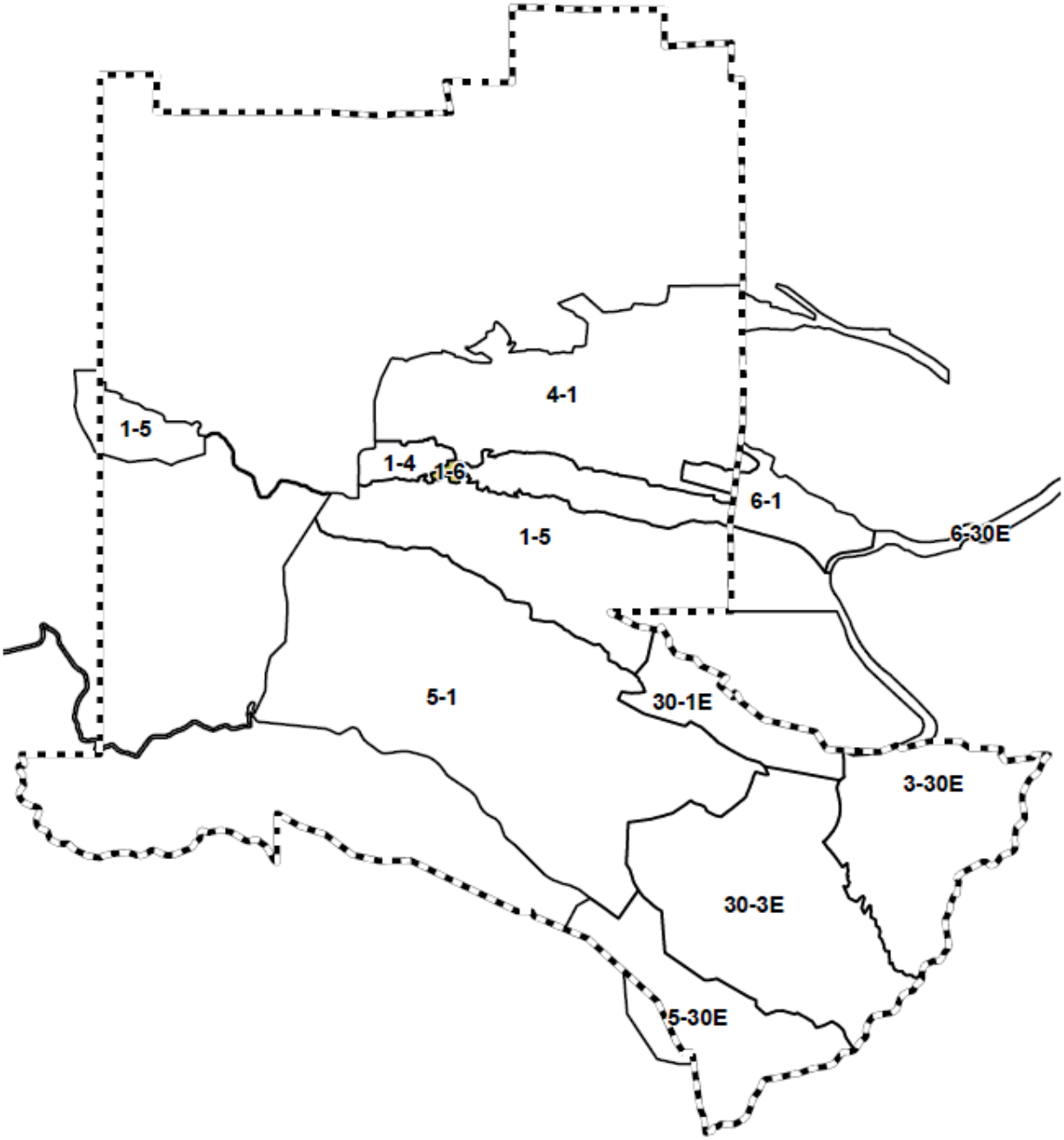
Through the evaluation of the community and the department, several areas were noted as needing improvement. The department concluded that, while there is already extensive data collection, there is a need to improve upon quality assurance checks to ensure accuracy and ultimate confidence in the data that is being mined.

Recommendations

1. The department should formally outline the expectations and adopt a policy that clearly defines the roles, responsibilities and deliverables of the Compliance Team (Command Staff). This policy will include a specific process for analyzing performance data and addressing imbalances and corrective action proposals for improved service delivery.
2. The department should explore a records management system that will enhance the department's ability to capture and analyze information and allow for more accurate reporting and data mining.
3. The department should augment the existing process of communicating information collection and recording by conducting refresher training on data entry requirements and quality assurance checks to ensure consistency and confidence in data.
4. The department should aggressively pursue acquisition of a Fire-ProQA dispatch protocol with review and updates to the department's response plans.
5. The department should enhance the prevention and public education services provided, as identified in the Community Expectations section of the SOC to seek new opportunities and pursue community outreach initiatives.
6. The department should continue to emphasize the need with DOE/NNSA on a Congressional request for funding for relocation and replacement of the two LANL fire stations.
7. The department should aggressively pursue acquisition and implementation of data collection technology through an RMS or mobile data terminals to better improve status and collection of processing, turnout, and travel time data.

I. Exhibits and References

Description of Area Characteristics by Response District



Response District 1-4

Response District 1-4	
Characteristic	**Detailed Description**
Square Miles	.5 square miles **District 1-4** • From the north end of the Los Alamos Land Bridge including the Western Area and the TA-43 properties west of LAMC. • From Diamond Drive to the Sandia and Orange intersection, not including the intersection • All LAHS property • Intersection of Sandia and 47th Street, • Canyon Road all areas and occupancies west of 3200 Canyon (Canyon Village Apartments).
Population Density Suburban – an area with a population of 10,000 to 29,999 and/or any area with a population density of 1,000 to 2,000 people per square mile. Rural – An area with a total population less than 10,000 people or with a population density of less than 1,000 per square mile. Wilderness – any rural area not readily accessible by public or private maintained road.	SUBURBAN Daytime – 1000 estimated Nighttime – 1000 Description of change: None
Property Ownership (Los Alamos County, DOE, US Forest Service, Private, Other)	County, Private, DOE, Public schools,
Occupancy Type(s) (qty. and description)	
Schools	2 – Los Alamos High School and University of New Mexico, Day Care Center and Ark.
Churches	3 – Immaculate Heart of Mary Catholic Church, Methodist
Apartment Complexes	1 complex of 5 structures
Industrial Facilities	1 – TA 43
Residential	Approximately 300
Commercial	7 – Metzger's Gas station, Strip Mall, restaurants, Comcast
Hospitals	None
Nursing Homes	None
Special	LAHS, Sullivan Field, Los Alamos Canyon to the south, Acid Canyon to the west
Hydrants	92 hydrants within this response district.
Alternate Water source	Hydrants for all populated areas. Tender or Mini Tender or helicopter (250gal) for Acid Canyon and LA Canyon
Accessibility (developed roads, paved streets, trails, inaccessible)	With the exception of the canyons, all areas are accessible by developed roads or access roads
Additional Considerations	None
Additional considerations/characteristics	Acid Canyon, LA Canyon trails, cliffs,

Response District 1-5

Response District 1-5	
Characteristic	**Detailed Description**
Square Miles	4.5 square miles **District 1-5** • From the north end of Los Alamos Bridge to include all of Los Alamos Canyon; • East Jemez Road, to County Line; • Pajarito Road to the intersection of TA 51; • West Jemez Road to West Road intersection, including Camp May Road; • Camp May Road to Camp May Camp area to include the Ski Hill (this is an E area no Truck company unless requested).
Population Density Suburban – an area with a population of 10,000 to 29,999 and/or any area with a population density of 1,000 to 2,000 people per square mile. Rural – An area with a total population less than 10,000 people or with a population density of less than 1,000 per square mile. Wilderness – any rural area not readily accessible by public or private maintained road.	RURAL Daytime – Nighttime – Description of change:
Property Ownership (Los Alamos County, DOE, US Forest Service, Private, Other)	DOE, Private, County, United States Forest Service
Occupancy Type(s) (qty. and description)	
Schools	None
Churches	None
Apartment Complexes	None
Industrial Facilities	
Residential	Royal Crest Trailer Park
Commercial	Motorola
Hospitals	None-Occupational Medical Health Care Facility
Nursing Homes	None
Special	
Hydrants	350 hydrants within this response district.
Alternate Water source	Helicopter (250 gal.) to LA Canyon
Accessibility (developed roads, paved streets, trails, inaccessible)	Structures accessible by developed roads. Use MT & Tenders for Canyon, UTV's
Additional Considerations	
Additional considerations/characteristics	1. Explosives 2. Security Access-may require extended delays- may need to adjust response time performance objective. 3. Material- classified materials

Response District 1-6

Response District 1-6	
Characteristic	**Detailed Description**
Square Miles	.5 square miles **District 1-6** • Northeast from the intersection of West Road and Diamond Drive; • From the intersection of Diamond and Trinity Drive to the west end of Canyon View Drive, • North to Canyon Road not including the roadway.
Population Density Suburban – an area with a population of 10,000 to 29,999 and/or any area with a population density of 1,000 to 2,000 people per square mile. Rural – An area with a total population less than 10,000 people or with a population density of less than 1,000 per square mile. Wilderness – any rural area not readily accessible by public or private maintained road.	RURAL Daytime – 200 Nighttime – 350 Description of change: residential with some business
Property Ownership (Los Alamos County, DOE, US Forest Service, Private, Other)	Private, County, DOE-Compa
Occupancy Type(s) (qty. and description)	
Schools	Montessori, Pre-school
Churches	Trinity on the Hill
Apartment Complexes	2-Gold St. apts., Canyon view condos
Industrial Facilities	None
Residential	Single family apx 23 homes
Commercial	Dental ofc., Dr. Ofc., D&P lock, Xray-Nitrus
Hospitals	LAMC- Large OCC
Nursing Homes	None
Special	LA Canyon, Urban/Wildland interface
Hydrants	24 hydrants within this response district.
Alternate Water source	None required
Accessibility (developed roads, paved streets, trails, inaccessible)	Developed roads, paved streets
Additional Considerations	None
Additional considerations/characteristics	Access issues at LAMC due to parking design. Trucks don't clear ambulance bays. Truck needs to drive against opposing traffic

Response District 3-30E

Response District 3-30E	
Characteristic	**Detailed Description**
Square Miles	7.2 square miles **District 3-30E** • White Rock Proper and Pajarito Acres; • State Road 4 North of White Rock Proper to ¾ mile north of East Jemez intersection; • West on East Jemez to county line, • State Road 4 ¼ mile south of Monte Rey South.
Population Density Suburban – an area with a population of 10,000 to 29,999 and/or any area with a population density of 1,000 to 2,000 people per square mile. Rural – An area with a total population less than 10,000 people or with a population density of less than 1,000 per square mile. Wilderness – any rural area not readily accessible by public or private maintained road.	RURAL Daytime – 3000 estimated Nighttime – 6000 estimated Description of change: residents leaving White Rock to work.
Property Ownership (Los Alamos County, DOE, US Forest Service, Private, Other)	Tribal, DOE, Private, Los Alamos County and part of Sandoval County
Occupancy Type(s) (qty. and description)	
Schools	2 Chamisa Elementary (450 students) and Piñon (300 students) elementary schools; 4 daycares (15-20 kids during the day); 1 hotel with occupancy of 100 +/-
Churches	9 Various. Largest church has occupancy of 500
Apartment Complexes	2 – 2 story dwelling with occupancy of 20
Industrial Facilities	1 – Water treatment plant
Residential	1500 approx. Single family dwellings
Commercial	35- gas stations, grocery store, restaurants, etc.
Hospitals	None
Nursing Homes	None
Special	Two public swimming pools
Hydrants (Explain the density.)	189 hydrants within this response district. Density: 1 every 300' as per NFPA requirements
Alternate Water source	Tenders, MTs, Helicopter (250gal.), 1 water tank (20000gal), water buffalo (DOEs)
Accessibility (developed roads, paved streets, trails, inaccessible)	Dwellings are mostly on paved roads. WR has all the mentioned accessibilities.
Additional Considerations	High angle rescues, Wildland (Pajarito acres), Cliff rescues. Metzgers and Smiths (Propane sales)
Additional considerations/characteristics	

Response District 30-1E

Response District 30-1E	
Characteristic	**Detailed Description**
Square Miles	5 square miles **District 30-1E** • Pajarito drive from intersection of State Road 4 • North on Pajarito Road to include TA 51 • Potrillo Road including TA-36 Buildings to the access gate to the firing areas.
Population Density Suburban – an area with a population of 10,000 to 29,999 and/or any area with a population density of 1,000 to 2,000 people per square mile. Rural – An area with a total population less than 10,000 people or with a population density of less than 1,000 per square mile. Wilderness – any rural area not readily accessible by public or private maintained road.	RURAL Daytime – 200 Nighttime – 100 Description of change: daytime is due to LANL employees and nighttime is SOC, Ops and personnel at TA54.
Property Ownership (Los Alamos County, DOE, US Forest Service, Private, Other)	County, DOE owns most of response district
Occupancy Type(s) (qty. and description)	
Schools	None
Churches	None
Apartment Complexes	None
Industrial Facilities	40 – Waste Disposal facilities
Residential	None
Commercial	None
Hospitals	None
Nursing Homes	None
Special	TA39 is a Firing Site
Hydrants (Explain the density.)	40 hydrants within this response district. Density is as per NFPA requirements.
Alternate Water source	Mobile water tanks supplied by DOE, Tender, MTs, Helicopter (250gal), water buffalo (DOE)
Accessibility (developed roads, paved streets, trails, inaccessible)	Area is developed roads and accessible by all vehicle types
Additional Considerations	HazMat, Radiation, TRT, Wildland
Additional considerations/characteristics	

Response District 30-3E

Response District 30-3E	
Characteristic	**Detailed Description**
Square Miles	4 square miles **District 30-3E** • From State Road 4 South of the intersection ¼ mile south Monte Rey South, to the intersection at TA-33.
Population Density Suburban – an area with a population of 10,000 to 29,999 and/or any area with a population density of 1,000 to 2,000 people per square mile. Rural – An area with a total population less than 10,000 people or with a population density of less than 1,000 per square mile. Wilderness – any rural area not readily accessible by public or private maintained road.	WILDERNESS Daytime – 20 Nighttime – 0 Description of change: LANL employees at TA33
Property Ownership (Los Alamos County, DOE, US Forest Service, Private, Other)	DOE
Occupancy Type(s) (qty. and description)	
Schools	None
Churches	None
Apartment Complexes	None
Industrial Facilities	11 – Storage/laboratory
Residential	
Commercial	
Hospitals	
Nursing Homes	
Special	Area is Fire/Explosive storage facilities. Classified materials.
Hydrants (Explain the density.)	3 hydrants within this response district. Density: Low, but as per NFPA requirements
Alternate Water source	DOE portable water tanks, Tenders, MTs, Helicopter (250gal), water buffalo (DOE)
Accessibility (developed roads, paved streets, trails, inaccessible)	Paved streets, dirt roads, walking trails. All vehicle types
Additional Considerations	Wildland
Additional considerations/characteristics	

Response District 4-1

Response District 4-1	
Characteristic	**Detailed Description**
Square Miles	?? square miles **District 4-1** • All areas north of the Diamond and Sandia/Orange Street; to include the intersection, • Denver Steels, Olive, Orange, and Nickel Street area, Ridgeway Drive west of Diamond to 47th Street, and all areas north.
Population Density Suburban – an area with a population of 10,000 to 29,999 and/or any area with a population density of 1,000 to 2,000 people per square mile. Rural – An area with a total population less than 10,000 people or with a population density of less than 1,000 per square mile. Wilderness – any rural area not readily accessible by public or private maintained road.	RURAL Daytime – 5000 Nighttime – 8204 Description of change: LANL workers, residents travel to districts 1 and 6 for employment. Daytime includes occupancy of students at the middle school, elementary and daycare.
Property Ownership (Los Alamos County, DOE, US Forest Service, Private, Other)	Tribal, LAC, DOE, US Forest Service and private
Occupancy Type(s) (qty. and description)	
Schools	2 daycares; 1 middle school; 3 elementary
Churches	8- Christian, Baptists, etc. Largest church occupies 200
Apartment Complexes	2 2 story dwellings; 200 quads; 3 condo units;
Industrial Facilities	None
Residential	Single dwelling family homes
Commercial	3 Conoco gas station; shopping center, golf course
Hospitals	None
Nursing Homes	None
Special	None
Hydrants (Explain the density.)	392 hydrants within this response district. (2 not stamped)
Alternate Water source	Tender, MTs, helicopter (250gal), Barranca swimming pool, 2 elevated water tanks, 2 ground water tanks
Accessibility (developed roads, paved streets, trails, inaccessible)	All roads accessible; inaccessible are the walking trails.
Additional Considerations/hazards	Urban interface, TRT, Stables.
Additional considerations/characteristics	Canyons (Bayo, Pueblo, Rendija, Walnut, etc.)

Response District 5-1

Response District 5-1	
Characteristic	**Detailed Description**
Square Miles	45 square miles District 5-1 • West Jemez Road from intersection of West Road to State Road 4. • West Jemez Road to Camp May to include TA58 • SR 4 East to Bandelier, not to include Bandelier National Monument and West to county line. • Include TA 57 (Fenton Hill in Sandoval County) as directed by BC
Population Density Suburban – an area with a population of 10,000 to 29,999 and/or any area with a population density of 1,000 to 2,000 people per square mile. Rural – An area with a total population less than 10,000 people or with a population density of less than 1,000 per square mile. Wilderness – any rural area not readily accessible by public or private maintained road.	RURAL Daytime – 500 Nighttime – 30 This is on DOE property. Structures are LANL facilities only occupied during 7 am to 6 pm. With exception TA49 Forest, occupied during summer. EOC dispatch always occupied.
Property Ownership Los Alamos County, DOE, US Forest Service, Private, Other	DOE, US Forest Service
Occupancy Type(s) (qty. and description)	
Schools	None
Churches	None
Apartment Complexes	None
Industrial Facilities	Mostly single story, concrete construction, with fire protection (10- 2 story buildings; 3- 3 story buildings)
Residential	Apx. 0
Commercial	Cafeteria at TA 16 and LANL Emergency Operations Center located within this response district.
Hospitals	None
Nursing Homes	None
Special	Many of the areas (with and without structures) are LANL and additional discussion is not permitted. Fenton Hill (TA 57) is in the protection jurisdiction of LAFD; however, outside of TA57 is with Sandoval County's jurisdiction.
Hydrants	237 hydrants within this response district. Density: Low density as per NFPA requirements
Alternate Water source	Three 10,000 water storage within the response district that are only filled between May and October. Water storage tanks are located at the top of IJ hill and bottom of IJ hill and entrance to Lower Slobovia. Water buffalo (DOE), MTs, Tenders, Pumpkin tank at TA49 (3000gal), Helicopter (250gal-during April thru Sept)
Accessibility (developed roads, paved streets, trails, inaccessible)	All structures are accessible by paved or developed road. There are fire roads throughout the response district accessible with an off-road capable vehicle. Some areas within the response district require special security access. There are a few foot trails within the response district used for mountain biking, hiking, walk/running.
Hazard Considerations	Some areas within the response district require access control permissions. Hazardous materials, high explosives, security access (with allowed access of security personnel or by cutting of pad locks at gates. (CLASSIFIED MATERIALS)
Additional considerations/characteristics	Fenton Hill (TA-57) is considered part of the 5-1 response district. This area is approximately 25 miles from the Los Alamos in Sandoval County. Travel to this location is by paved road; however, it is a steep climb and takes between 45 minutes to an hour from Fire Station 5.

Response District 5-30E

Response District 5-30E	
Characteristic	**Detailed Description**
Square Miles	12 square miles **District 5-30E** Include all of Bandelier National Monument east on State Road 4 including TA-33.
Population Density Suburban – an area with a population of 10,000 to 29,999 and/or any area with a population density of 1,000 to 2,000 people per square mile. Rural – An area with a total population less than 10,000 people or with a population density of less than 1,000 per square mile. Wilderness – any rural area not readily accessible by public or private maintained road.	RURAL Daytime – 200 Nighttime – 100 Description of change: Consists of SOC, 20 residential, Bandelier and DOE
Property Ownership (Los Alamos County, DOE, US Forest Service, Private, Other)	DOE, Forest, private
Occupancy Type(s) (qty. and description)	
Schools	None
Churches	None
Apartment Complexes	None
Industrial Facilities	6- Classified structures
Residential	20- single family dwellings
Commercial	Bandelier
Hospitals	None
Nursing Homes	None
Special	Bandelier archeological ruins; undisclosed property
Hydrants (Explain the density.)	15 hydrants within this response district. Density: low as per NFPA requirements
Alternate Water source	20000 gal tank, helicopter (250gal), Tenders, MTs, Airtankers
Accessibility (developed roads, paved streets, trails, inaccessible)	Developed roads, trails, fire roads,
Additional Considerations	
Additional considerations/characteristics	TA33 Classified; Bandelier National monument

Response District 6-1

Response District 6-1	
Characteristic	**Detailed Description**
Square Miles	6 square miles **District 6-1** • Trinity drive from the west entrance of the Canyon View complex; • Canyon Drive including the intersection of 3200 Canyon Road, including the Canyon Village Apartment complex • East on State Road 502 to the State Road 4 (White Rock exit and SR-4 onto SR 502 off ramp), and to the merger of State Road 4 onto State Road 502.
Population Density Suburban – an area with a population of 10,000 to 29,999 and/or any area with a population density of 1,000 to 2,000 people per square mile. Rural – An area with a total population less than 10,000 people or with a population density of less than 1,000 per square mile. Wilderness – any rural area not readily accessible by public or private maintained road.	SUBURBAN: 1 SQ MI RURAL: 5 SQ MI Daytime – (s) 5000 (r) 1500-2000 Nighttime – (s) 2000 (r) 2500 Description of change: LANL employees, businesses have daytime hours.
Property Ownership (Los Alamos County, DOE, US Forest Service, Private, Other)	County, DOE, Forest and Private
Occupancy Type(s) (qty. and description)	
Schools	2 daycares included with churches
Churches	9 churches; largest occupying 400 (Baptist)
Apartment Complexes	11- 10 are 2 story and 1 are 3 story
Industrial Facilities	5 County owned mechanical shops
Residential	2000 single dwelling homes (estimated)
Commercial	470- Grocery stores, restaurants, shops, banks, gas stations, veterinary, animal shelter.
Hospitals	None
Nursing Homes	4: 2 -1 single story, 2 – 3 story
Special	Biofuel- 2 10000 gal gas tanks; training center (LANL),
Hydrants (Explain the density.)	309 hydrants within this response district. Density: Normal as per NFPA requirements
Alternate Water source	Tenders, MTs, Ashley pond, swimming pools, helicopter (250gal), water buffalo (DOE)
Accessibility (developed roads, paved streets, trails, inaccessible)	Paved trails, walking trails, rural areas so all roads are basically paved.
Additional Considerations	Hilltop house, Motel 6
Additional considerations/characteristics	TRT difficulties, rescue, shops/mechanic, classified materials, Wildland, airport.

Response District 6-30E

Response District 6-30E	
Characteristic	**Detailed Description**
Square Miles	4 square miles **District 6-30E** • North on State Road 4 from the ¾ mile north of East Jemez Road intersection, • East on State Road 502 to State Road 30, to include the "Twin Tank" area of State Road 502 and • The westbound lane of State Road 502 that merges onto State Road 4.
Population Density Suburban – an area with a population of 10,000 to 29,999 and/or any area with a population density of 1,000 to 2,000 people per square mile. Rural – An area with a total population less than 10,000 people or with a population density of less than 1,000 per square mile. Wilderness – any rural area not readily accessible by public or private maintained road.	WILDERNESS Daytime – 10 Nighttime – 0 Description of change: Totavi gas station is the only occupancy.
Property Ownership (Los Alamos County, DOE, US Forest Service, Private, Other)	Tribal, forest, Santa Fe County
Occupancy Type(s) (qty. and description)	
Schools	None
Churches	None
Apartment Complexes	None
Industrial Facilities	None
Residential	None
Commercial	1 – Gas station
Hospitals	None
Nursing Homes	None
Special	None
Hydrants (Explain the density.)	0 hydrants within this response district.
Alternate Water source	Tenders, MTs, helicopter (250gal)
Accessibility (developed roads, paved streets, trails, inaccessible)	Developed roads, paved, trails
Additional Considerations	Wildland, gas station, Tribal historical sites, wildlife, flooding roads, snow packed roads, road closures, daytime speeding traffic.
Additional considerations/characteristics	

Schools

The student population is the primary concern during the school day. Are the student and faculty able to recognize and respond properly to an event which requires protective actions, will they shelter in place or will an evacuation happen in a timely manner and will the action be successful? Schools are inspected annually by the Fire Marshal.

School	Address	District
Los Alamos High School	1300 Diamond Drive	1
Los Alamos Middle School	1 Hawk Drive	4
Aspen Elementary	2182 33rd. Street	4
Mountain Elementary	2280 North Road	4
Barranca Elementary	57 Loma Del Escolar	4
Pinon Elementary	90 Grand Canyon Drive	3
Chamisa Elementary	301 Meadow Lane	3
University of NM-Los Alamos	4000 University Drive	1

Churches

Our primary concern in churches for life safety is on the days of worship; however, many churches do use their facilities for evening activities such as bible study or during the summer for Bible Schools. Mainly are the people who are attending services familiar with the exits and can the church be successfully evacuated in a safe and timely manner?

Church	Address	District
White Rock Baptist Church	80 State Road 4	3
United Church of Los Alamos	2525 Canyon Road	6
First United Methodist	715 Diamond Drive	1
First Baptist Church of Los Alamos	2200 Diamond Drive	4
Crossroads Bible	97 East Road	6
Los Alamos Church of Christ	2323 Diamond Drive	4
Trinity on the Hill	3900 Diamond Drive	4
Christian Church of Los Alamos	92 East Road	6
Unitarian Church	1738 N. Sage Street	6
Church of the Nazarene	15 Grand Canyon	3
Bryce Avenue Presbyterian Church	333 Bryce Ave.	3
White Rock Presbyterian Church USA	310 Rover Blvd.	3
White Rock United Methodist Church	580 Meadow Lane	3
St. Dimitri Orthodox Church	2270 39th Street	4
Pajarito Church of Christ	135 Longview Drive	3
Messiah Evangelical Lutheran	172 Meadow Lane	3
Immaculate Heart of Mary Catholic	3700 Canyon Road	6
Church of Latter Day Saints	1967 18th Street	6
Church of Christ Latter Day Saints	366 Grand Canyon	3
Redeemer Lutheran Church	2000 Diamond Drive	3
Bethlehem Evangelical Church	2390 North Road	4
Church of Latter Day Saints	240 Kimberly Lane	3
Saint Joseph's Catholic Church	196 Meadow Lane	3
Los Alamos Jewish Center	2400 Canyon Road	6
New Beginnings Fellowship	112 East Road	6
Christian Science Society	1725 17th Street	6
Grace Vineyard Christian	991 Central Ave.	6
Calvary Chapel of Los Alamos	580 N. Mesa Road	4
Kingdom Hall-Jehovah's Witnesses	4542 Yucca St.	4
Masonic Temple	15th and Canyon	6
Baha'i Faith	2290 39th Street Apt. A	4

Day-Care Facilities

Our primary concern and obvious issue is the capability for the teachers/care-giver to provide for the safe and timely response to an emergency within the facility. The Department is very involved with the day-care facilities, and the practicing of fire safety. We will continue to evaluate and improve the programs.

Daycare	Address	District
Canyoncito Montessori School	2525 Canyon Road	6
Children's Montessori School	1060 Nugget	6
Ponderosa Montessori School	304 Rover Blvd.	3
Quemazon Montessori School	4600 Esperanza Drive	4
Little Forest Play School	3880 Villa Street	4
Bilingual Montessori School	115 Longview Drive	3
Ark Child Development Center	715 Diamond Drive	1
Horizons Center	580 Meadow Lane	3
Sage Cottage Montessori School	142 Meadow Lane	3

Nursing Home/Assisted Living

Our primary concern is the inability for non-ambulatory patients who reside in nursing home/assisted living center to self-evacuate. The Department conducts pre-incident plans and fire and live safety inspections annually to ensure our personnel have a working knowledge of the special needs associated with these facilities.

Nursing Home/Assisted Living	Address	District
Sombrillo	1010 Sombrillo Ct.	6
Aspen Ridge	1011 Sombrillo Ct.	6

Senior Centers

The Senior Centers we have identified pose special risks in the fact that not all attendees are fully ambulatory and may not be able to self-extricate in the event of a fire. The Department conducts pre-incident plans and fire and live safety inspections annually to ensure personnel have a good understanding of the facility.

Senior Centers	Address	District
Betty Ehart	1000 Oppenheimer	6
White Rock Senior Center	137 Longview Drive	3

Swimming Pools

The swimming pools pose multi-faceted hazards and concerns for the LAFD. All, but the aquatic center, are outdoor pools thus offer a seasonal special hazard. Due to swimming pool chemicals, there may be is a hazardous materials component that is identified through our PIP's. The aquatic center is a year round operation with annual shutdowns for cleaning of the pool. The aquatic center also has numerous classrooms, meeting rooms and offices that are routinely used for events. The Department conducts pre-incident plans and fire and live safety inspections annually to ensure personnel have a working knowledge of the facility.

Swimming Pools	Address	District
Pinon Park Pool	104 Bryce Ave.	3
Canyon Vista	361 Aragon Ave.	3
East Park	111 East Road	6
Los Alamos County Aquatic Center	2760 Canyon Road	6
Barranca Mesa Pool	63 Loma Del Escolar	4

Larry Walkup Aquatic Center

Medical Facilities

The LAFD has identified the medical facilities as a unique and special hazard. As in most medical facilities, there are numerous patients in various stages of mobility. Some may not be ambulatory without specialized treatment and assistance. This poses several issues and has been identified through pre-incident plans. Fire and life safety inspections are conducted annually to ensure personnel have a good working knowledge of the facility.

Medical Facilities	Address	District
Los Alamos Medical Center	3917 West Road	1
Los Alamos Urgent Care	1460 Trinity Drive	6
Lahiri & Mesibov	118 Central Park Square	6
Occupational Medicine	TA 03 SM 1411	1
Children's Clinic of White Rock	35C Rover Blvd.	3
Endoscopy Center	1911 Central Park Square	6

Recreation Areas

The recreation areas are identified as special and unique hazards as the majority of these are seasonal in nature. The Los Alamos School of Gymnastics and YMCA are indoor facilities and thus are open year around. Brewer Arena is an outdoor equestrian arena that is operational year round. Overlook Park is a series of softball and soccer fields that are seasonal in use. Bomber Field is the high school baseball field and seasonal in use. Sullivan Field is the LA high school's track/field and football field. The Pajarito Ski Hill and the ice rink are both open to the public year round.

Recreation Areas	Address	District
Bomber Field	North Mesa Road	4
Overlook Park	Overlook Road	3
Ice Rink	4475 West Road	1
Pajarito Ski Hill	397 Camp May Road	1
Brewer Arena	North Mesa Road	4
Sullivan Field	Diamond Drive	1
LA School of Gymnastics	555 North Mesa Road	4
YMCA	1450 Iris Street	6
Ashley Pond		6
Urban Park		3
Bandelier Nation Monument		5

Ashley Pond

Bed and Breakfast

The LAFD identified the local Bed and Breakfasts in the community as they pose a unique hazard. These are typically homes that will rent out rooms. The Department conducts pre-incident plans and fire and live safety inspections annually to ensure personnel have a working knowledge of the facilities.

Bed and Breakfast	Address	District
Adobe Pines B&B	2101 Loma Linda Dr.	4
Back Porch B&B	13 Karen Circle	3
Canyon B&B	80 Canyon Road	6
A Bandelier B&B	135 La Senda	3
Pueblo Canyon Inn & Gallery	199 San Ildefonso Road	4
Margo's Bavarian B&B	104 Monte Rey Drive	3
North Road B&B	2127 North Road	4

Hotels/Motels

The LAFD identified Hotels and Motels in the community as they pose a unique hazard as these are typically filled to capacity and tenants don't always pay attention to evacuation routes from their rooms. The Department conducts pre-incident plans and fire and live safety inspections annually to ensure personnel have working knowledge of the facilities.

Hotels/Motels	Address	District
Holiday Inn Express	60 Camino Entrada	6
Comfort Inn	2455 Trinity	6
Hampton Inn	124 State Road 4	3

Apartments and Condominiums

The LAFD identified apartments and condominiums in the community as they pose a unique hazard and are typically fully occupied. The Department conducts pre-incident plans and fire and live safety inspections annually to ensure personnel have a good working knowledge of the facility.

Apartments and Condominiums	Address	District
Caballo Peak Apartments	195 East Road	6
Canyon Village Apartments	Canyonview Drive	6
Casa de Luz Apartments	799 6th Street	6
Courtright Street Apartments	3807 Gold Street	1
Chapel Apartments	1926 24th Street	6
Iris Street Apartments	1300 Iris Street	6
Los Cerros Apartments	3000 Trinity Drive	6
Las Ventanas Townhomes	3200 Canyon Road	6
Mesa Del Norte Apartments	650 San Ildefonso Dr.	4
Mountain Vista Apartments	600 San Ildefonso Dr.	4
UNM/9th Street Apartments	939 9th Street	6
Timber Ridge Condominiums	3055 Timber Ridge	6
Central Park Condominiums	802 9th Street	6
Ridge Park Condominiums	505 Oppenheimer Dr.	6
Loma Vista Condominiums	Loma Vista Drive	6

Los Alamos National Laboratories

The LAFD recognizes the LANL as a special and unique hazard. Numerous sites and buildings are located throughout the county. The LAFD conducts pre-incident plans and fire and life safety inspections annually to ensure personnel have a good understanding of the facilities.

Los Alamos National Labs	Address	District
The Los Alamos National Laboratory encompasses 40 + square miles and LANL proper is within the following Fire response districts: District 1 District 3 District 5 District 6		

Wildland, Trails, Canyons

The LAFD recognizes and identifies the wildland, trails and canyons that encompass Los Alamos as its own unique hazard. These areas, although remote, are accessible from many of the populated areas in town. Access to these areas is through trailheads and forest access roads. This poses unique rescue, wildland-urban interface, and EMS issues for the department.

Wildland, Trails, Canyons	Districts
The Wildland, trails and canyons encompass numerous square miles and acreage and lie within the following Fire response districts: District 1 (Camp May, reservoir and canyon access) District 3 (Red Dot, Blue Dot and Rim Tailheads) District 4 (Mitchell Trailhead, Guaje Pines, numerous forest rd. access) District 5 (Numerous forest rd. access and Bandalier Trails) District 6 (Access to canyons)	

State Highways

The LAFD recognizes the unique hazards of the State Roads that traverse the county. Incidents that can occur are typically EMS in nature. With a rescue component, however, there is the potential for fire and hazardous materials incidents.

State Highways	Districts Affected
State Road 501	Districts 1, 3 and 6
State Road 502	Districts 1, 3 and 5
State Road 4	Districts 3, 5 and 6
East Jemez	Districts 1 and 3

Additional Risk Scenarios

MODERATE RISK ARFF SCENARIO
Inbound COMMUTER flight with 11 souls aboard declares emergency just before final approach to airport, reporting smoke in cockpit w/out fire
Probability of Occurrence = Low
Impact on the department = Moderate/High. Staffing will be dedicated to the emergency until the plane lands or incident escalates. EMS impact will be HIGH due to potential for MCI. Scene will require personnel dedicated to the site throughout the incident and investigation by NTSB if they see fit.
Potential Consequences to the community = Moderate/High. Air traffic to the area will likely have to be diverted until incident is mitigated, investigated, and cleaned up. Very news worthy event which will potentially cause social issues or concerns within the community. Delayed response from other department resources.

SPECIAL RISK ARFF SCENARIO
General aviation aircraft forced to make emergency landing on a major road in the town site. Safely touches down without crashing.
Probability of Occurrence = Low
Impact on the department = Low/Moderate. Number of personnel required for incident will not likely exceed 12. Station 6 will need to respond to establish communication line with air traffic. Hazard mitigation will potentially be extended depending on NTSB recommendations. Will they want to send an investigator to the site prior to removing the aircraft? How will the aircraft need to be removed from the site?
Potential Consequences to the community = Moderate. Major roadway will likely have lanes blocked or completely shut down. News worthy event making for high curiosity and potential social disruption.

LOW RISK ARFF SCENARIO
Aircraft with Ballistic Recovery System makes a hard landing. Known or Unknown deployment of BRS rigging.
Probability of Occurrence = Low
Impact on department = Moderate. Number of personnel required depends on where the incident occurred and if the BRS deployed or not. Station 6 personnel will need to respond to establish communication with the area air traffic. Deployed and Un-deployed units both have characteristic hazards which will need to be dealt with. Units will likely need to remain on scene for a long period of time as the incident will likely require an NTSB investigation
Potential Consequences to the community = Low / Moderate. News worthy event making for high curiosity and potential social disruption. Airport or crash site will likely need to be shut down until the hazards are mitigated.

HIGH RISK ARFF SCENARIO
Any type of aircraft in a canyon
Probability of Occurrence = Low
Impact on the department = High. High number of personnel required. Firefighting Companies for wildland, Technical Rescue, High EMS/MCI potential, staffing will be dedicated to the incident throughout the mitigation, cleanup, and investigation phases of the incident. High probability of fire conditions requiring multiple units for hose/agent. CISD/CISM will likely be required post incident.
Potential Consequences to community = High. Tight-knit community will likely see a devastating social impact. Delayed response from other department recourses. If wildland fire conditions spread expect potential evacuations to be ordered. Potential lasting imprint on the environment. Potential road closures.

HIGH RISK ARFF SCENARIO
An unknown aircraft overshot the runway and crashed into a neighborhood adjacent to the airport causing known fire conditions in at least 2 structures.
Probability of Occurrence = Low
Impact on department = High. High number of personnel required. Additional fire companies for water supply, hose, agent, and manpower. Potential for MCI. TRT possibility. Staffing will likely be dedicated to the area for extended period of time conducting suppression operations. Personnel call back will likely be required. CISD/CISM will likely be required. Expect a lengthy investigation by NTSB and other federal agencies to rule out potential terrorism implications
Potential Consequences to the community = High. Tight-knit community will likely see a devastating social impact. Delayed response from other department recourses. If fire conditions spread expect potential evacuations to be ordered. Potential lasting imprint on the environment area. Potential road/area closures. News worthy event making for high curiosity and potential social disruption.

HIGH RISK ARFF SCENARIO
A medical helicopter at LAMC loses lift due to an atmospheric effect known as "vortex ring state." Upon impact, shrapnel is thrown several hundred feet in all directions including parking lot, canyon, and adjacent buildings.
Probability of Occurrence = Low
Impact on the department = High. Lengthy investigation will likely be required. Several companies will have to be deployed to investigate exposures and mitigate hazards. Potential for many MCI.
Potential Consequences to the community = Moderate/High. News worthy event making for high curiosity and potential social disruption. Delayed response from other department recourses. Affected area may need to be shut down/closed for use.

Photos

Los Alamos County Municipal Building

Live Burns Evolutions – NM Firefighters' Training Academy

LPG Live Burns Training – NM Firefighters' Training Academy

Confined Space Rescue Training

Technical Rescue Team Vortex Training

Technical Rescue Team High Angle Rescue Training

EMS Training

Operation Hilltopper

Medic Unit

Tender

Utility Vehicle

Technical Rescue

Mobile Command Unit

Truck 1

MiniTender

Engine

Crash Fire Rescue Unit

Rescue

EMS Care

Patient Transfer

Fire at daycare 2010

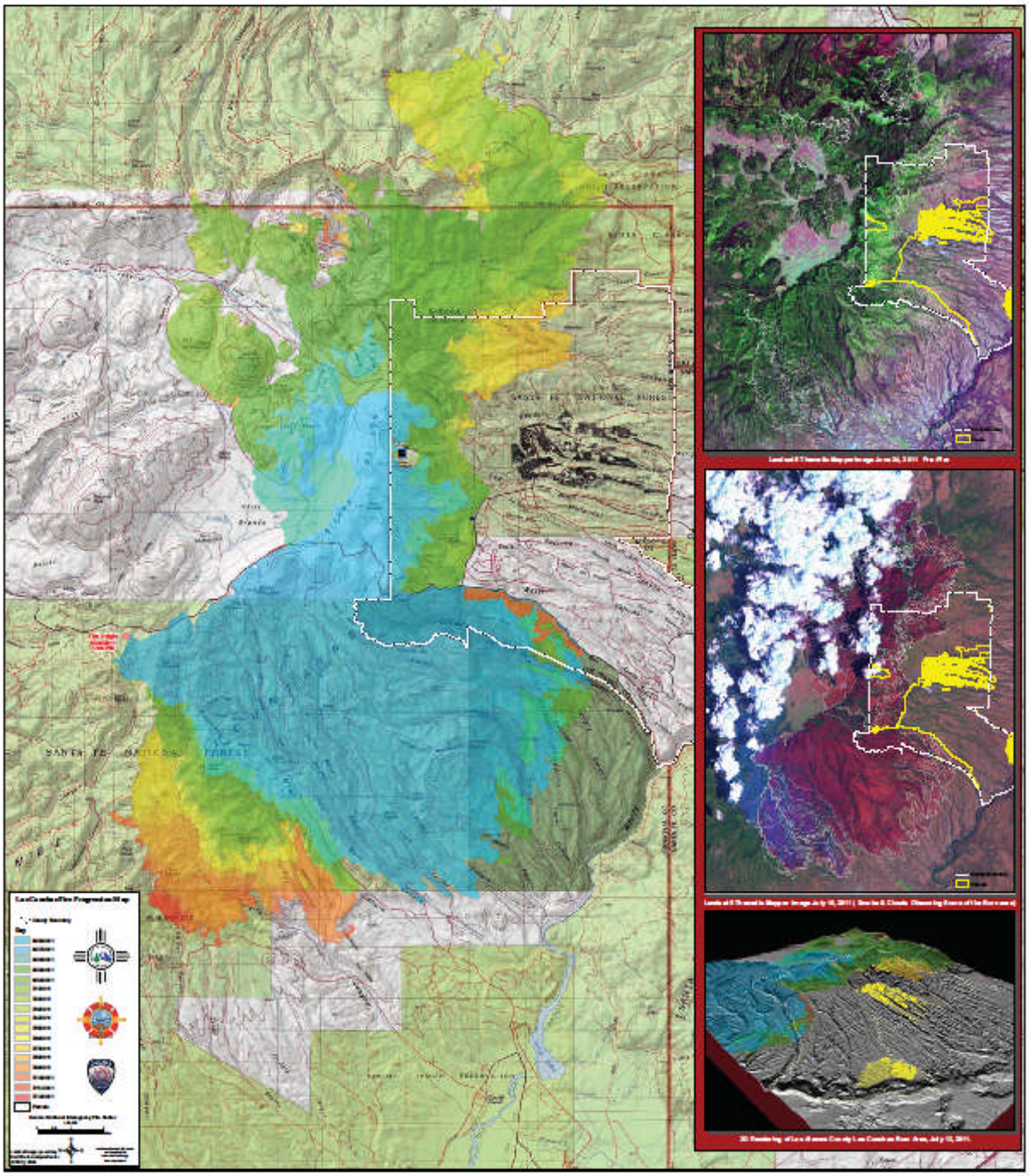
Church Fire 2012

Recruit Class 25
Cleaning up trash that was dumped into the canyon by Overlook Park

Las Conchas Fire Day 1

Las Conchas Fire Day 2

Las Conchas Fire Map



Exclusion Listing and Justification

Incident Number	Call Type	Call Type Description	Justification For Exclusion	Error Type
10-0000579	Other	Service Call	Schedule shot activity at LANL, incorrectly coded as an emergency call. Dispatch created call when shot was scheduled, the call processing clock continued to track time incorrectly for an hour prior to the shot. On the way to the scene, another call (emergency) was received. Times capture when Station 5 was available to report to LANL after service to previous call was completed. times are skewed.	Call Processing & Turnout
10-0000662	Other	False Alarm & False Call	Call processing times are skewed and since the call happened in 2010 and does not affect the baseline performance, the call was excluded.	Call Processing
10-0000779	Other	False Alarm & False Call	Call processing times and turnout times are skewed and since the call happened in 2010 and does not affect the baseline performance, the call was excluded.	Call Processing & Turnout
10-0000928	Rescue	Rescue & Emergency Medical Service Incident	Due to lack of communication between ICP and National Guard Helicopter, ground crews and TA-49 were committed to search and rescue activities for prolonged period of time until confirmation was received that National Guard Helicopter had, in fact, transported both Pts. to Albuquerque. Acting Captain Kelly Sterna 6/18/2010	Call Processing, Turnout, and Travel
10-0001321	Rescue	Rescue & Emergency Medical Service Incident	Turnout and Travel times were either 0 or 2.5 hours long. Inconsistent with the Narrative and call information.	Turnout & Travel
10-0001366	Other	False Alarm & False Call	All times are skewed without narrative to explain the delays, and since the call happened in 2010 and does not affect the baseline performance, the call was excluded.	Call Processing, Turnout and Travel
10-0001443	EMS	Rescue & Emergency Medical Service Incident	It was noted in the narrative that the Run times in firehouse are not accurate due to CAD malfunctions. Call was excluded and deemed unreliable.	All Call Times
10-0001513	Rescue	Rescue & Emergency Medical Service Incident	Trail rescue call, call time capture is inconsistent and M3's time was clearly captured in error. The incident narrative did not speak to any data capture errors and this incident took place in 2010, however, because the call is statistically insignificant to the baseline performance numbers it was concluded that it should be excluded from the data.	All Call Times
10-0001958	Other	Service Call	Force on Force Drill, Units were dispatched for standby, this call was incorrectly coded as an emergency incident. Excluded from the data analysis.	Data Entry
11-0000102	HazMat	Hazardous Condition (No Fire)	Times are skewed and it is unclear where the skew has occurred (Data entry, dispatching, etc.), Also should have been coded as a False Alarm call.	Call Processing, Turnout, Data Entry
11-0000345	HazMat	Hazardous Condition (No Fire)	HazMat call to LANL, crews were requested to standby for ongoing event while scene was controlled by LANL HazMat. Call times were skewed due to this.	Call Processing.
11-0000981	Wildland	Fire	Incident number was created when LANL called to schedule a standby for shot activity on lab property. This started the clock for call processing (4.5 hours), crews were on scene for scheduled activity which resulted in an event. Additional crews were dispatched out to aide with the suppression efforts, however, this skewed their time (20 minutes for turnout). Because of these errors the data was deemed unreliable and was excluded.	Data Entry
11-0001052	Wildland	Fire	The Las Conchas fire of 2011 was the only maximum risk incident during the period. It burned over 145,000 acres and suppression operations ran over for almost ten days; however it was discovered by LAFD crews, so processing, turnout and total response times are skewed.	All Call Times
11-0001219	Other	False Alarm & False Call	It was noted in the narrative that response times were incorrect. Call was excluded from the data.	All Call Times
11-0001586	EMS	Rescue & Emergency Medical Service Incident	Patient Facility Transfer, should have been marked non-emergency, call times are skewed.	All Call times & Data Entry
11-0001841	HazMat	Hazardous Condition (No Fire)	HazMat call to LANL, crews were requested to standby for ongoing event while scene was controlled by LANL HazMat and EM&R. Call times were skewed due to this.	Call Processing
12-0000144	EMS	Rescue & Emergency Medical Service Incident	Times are skewed and it is unclear where the skew has occurred (Data entry, dispatching, etc.), call occurred in 2012, because the call is statistically insignificant to the baseline	Call Processing

			performance numbers it was concluded that it should be excluded from the data. .	
12-0000227	Rescue	Rescue & Emergency Medical Service Incident	Trail rescue call, units status-ed in via the radio to dispatch incorrectly although the incident narrative did not speak to any data capture errors. All call times are believed to be skewed because of this.	Call Processing
13-0000452	HazMat	Hazardous Condition (No Fire)	HazMat call to LANL, crews were requested to standby for ongoing event while scene was controlled by LANL HazMat and EM&R. Call times were skewed due to this. Call processing time was 19 minutes while travel and turnout were 0.	All Call Times
13-0000775	Wildland	Fire	Small grass fire that was difficult to locate. Times are skewed and deemed unreliable because of this.	Call Processing and Travel
13-0001092	EMS	Rescue & Emergency Medical Service Incident	Call was excluded due to prolonged call processing times caused by a CAD Malfunction. Because the turnout and travel times are statistically insignificant to the baseline performance numbers and it is unclear whether or not the times were captured correctly after call processing, the call was excluded.	Call processing
13-0001180	Wildland	Fire	B1 responded non-emergency, however was marked emergency, one unit was cancelled in route, and the remaining unit that was dispatched to the call was instructed to retrieve the Polaris vehicle for use on this call. It is unclear where the status of this unit was captured at. Because the times that may have been salvageable were statistically insignificant to the baseline performance numbers the call was excluded from the data.	Data Entry, Call Processing and Travel
14-0000355	Wildland	Fire	Call for Wildland fire near the ski hill area was called in. Dispatch was uncertain whether or not call should have been created in CAD. skewing call processing times. Dispatch had difficulties getting enough information about the alleged fire to provide to LAFD. MT5 could not locate the fire once dispatched. MT5 then began investigation mode, and was able to spot the fire after almost an hour. It was found to be a smoldering campfire with 2 campers. Data was excluded as it is clearly an outlier with numerous contributing variables to the extensive times which are not due to performance.	Call Processing and Travel
14-0000661	EMS	Rescue & Emergency Medical Service Incident	Error/discrepancies in CAD/VESTA times. Identified dispatch error also occurred. The data is deemed to be unreliable due to these issues and was excluded from the data.	Call Processing, Turnout and Travel
14-0000817	Wildland	Fire	There are errors in time capture from dispatch as well as status-ing in errors from crews. Majority of units had one or the other error involved in its times, the few that did not would have made no effect on the baseline performance times. This was also on Lab property and crews needed an okay from Site personnel before action could be initiated. The call was deemed unreliable and was excluded from the data.	All Call Times
14-0000914	Fire Suppression	Fire	Errors in data capture of call processing times. This call also occurred on Lab property and caused crews delays in travel. Call is statistically insignificant to baselines and was excluded from data.	Call Processing and Travel
14-0001565	Rescue	Rescue & Emergency Medical Service Incident	Errors in Travel times and data entry. Some responding units responded non-emergency, although it was marked that they responded emergency. Call was deemed unreliable and was excluded from the data for these reasons.	Travel and Data Entry
14-0001608	Fire Suppression	Fire	Information given to dispatch and crews was unclear, created confusion on whether this was a Wildland fire or a structure fire. This caused skewed times, this was also downgraded quickly and many units were cancelled en route. The amount of data that would have been salvageable was insignificant to the baselines and deemed unreliable due to issues associated with this call. Call was excluded from the data.	Turnout, Travel, and Total Response times
10-0001266 **	HazMat	Hazardous Condition (No Fire)	***Only M3 and E30*** were excluded, E30 and M3 relieved E3 and M30 during the incident. Responded Non-emergency, but marked incorrectly in FireHouse. The remaining units responding to the call were included.	Data Entry
12-0000696 **	Fire Suppression	Fire	***B1*** travel times are skewed due to error in capturing arrival status. Only this unit was excluded from the call.	Data Entry
*** Indicates calls where units were excluded vs. the entire call data.*				