RESOLUTION NO. 13-65

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LANCASTER, CALIFORNIA, APPROVING THE CITY HAZARD MITIGATION PLAN 2013-2018

WHEREAS, the Federal Disaster Mitigation Act of 2000 requires that local governments develop and submit local hazard mitigation plans to the Federal Emergency Management Agency ("FEMA") as a condition of receiving FEMA Hazard Mitigation Grant Program Funds after November 2004; and

WHEREAS, a steering committee comprised of the city manager and members of various city departments, developed the Hazard Mitigation Plan 2013-2018 to serve as the hazard mitigation plan for the City of Lancaster; and

WHEREAS, the public has been provided an opportunity to comment on the Hazard Mitigation Plan during its drafting, and prior to its approval, by the City Council; and

WHEREAS, the City Council held a duly-noticed public meeting on December 10, 2013, to consider the adoption of the Hazard Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED AND ORDERED BY THE CITY COUNCIL OF THE CITY OF LANCASTER, STATE OF CALIFORNIA, THAT:

Section 1. The City Council hereby adopts the City of Lancaster Hazard Mitigation Plan 2013-2018, which was presented to the City Council on December 10, 2013 at a regular duly-noticed City Council meeting, as the local hazard mitigation plan for the City of Lancaster.

Section 2. The City Manager is hereby directed to include a copy of this resolution in the City of Lancaster Hazard Mitigation Plan 2013-2018.

PASSED, APPROVED, and ADOPTED this _____ day of _____, 2013, by the following vote:

AYES:

NOES:

ABSTAIN:

ABSENT:

ATTEST:

_____
GERI K. BRYAN, CMC
City Clerk
City of Lancaster

APPROVED:

_____
R. REX PARRIS
Mayor
City of Lancaster

STATE OF CALIFORNIA }
COUNTY OF LOS ANGELES }ss
CITY OF LANCASTER }

CERTIFICATION OF RESOLUTION
CITY COUNCIL

I, _____, _____ City of Lancaster, CA, do hereby certify that this is a true and correct copy of the original Resolution No. 13-65, for which the original is on file in my office.

WITNESS MY HAND AND THE SEAL OF THE CITY OF LANCASTER, on this _____ day of _____, _____.

(seal)

_____

lancaster ca
it's positively clear.

2013 City of Lancaster Hazard Mitigation Plan

9/4/2013

mlc Empowering Performance.

Submitted by:
MLC & Associates, Inc.
3525 Hyland Avenue, Suite 265
Costa Mesa, CA 92626
www.MLCHQ.com

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SECTION 1. INTRODUCTION

ACKNOWLEDGEMENTS

The Hazard Mitigation Plan (HMP) was an extensive effort that involved the input of multiple individuals representing the City of Lancaster. Participants in the process included the following HMP Working Group.

HMP Working Group

Department	Name	Title	E-mail
Administration, Office of the City Manager	Kelvin Tainatongo	Assistant to the City Manager	ktainatongo@cityoflancasterca.org
Administration, Office of the City Manager	Brenda Gamlowski	Management Analyst II	bgamlowski@cityoflancasterca.org
Building & Safety	Ray Moreau		rmoreau@cityoflancasterca.org
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Capital Projects / Engineering	Ray Hunt	Capital Engineering Manager	rhunt@cityoflancasterca.org
City Engineering	Michelle Cantrell	City Traffic Engineer	mcantrell@cityoflancasterca.org
Finance	Nicole Rizzo	Management Analyst II	nrizzo@cityoflancasterca.org
Planning	Chuen Ng	Associate Planner	cng@cityoflancasterca.org
Planning	Brian Ludicke	Director	bludicke@cityoflancasterca.org
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Public Works	Robert Neal	Director	rneal@cityoflancasterca.org
Public Works	Richard Long	Maintenance Service Manager	rlong@cityoflancasterca.org
Public Works Utilities / Mapping	Carlyle Workman	Utility Service Manager	cworkman@cityoflancasterca.org
Los Angeles County Fire Department	Gerald Cosey	Assistant Fire Chief	
Los Angeles County Sheriff	Pat Nelson	Captain	

EXECUTIVE SUMMARY

LOS ANGELES COUNTY OPERATIONAL AREA AND DISASTER MANAGEMENT AREAS

The Los Angeles County Office of Emergency Management (OEM) was established by Chapter 2.68 of the County Code with responsibility for organizing and directing the preparedness efforts of the Emergency Management Organization of Los Angeles County. OEM responsibilities include: Planning and Coordination, Operations, Training, Technical Operations, and Public Education.

The Los Angeles County Operational Area is divided into 8 groupings (A through H):

Area A	**Area D**	**Area E**	**Area F**
Beverly Hills	Arcadia	Artesia	Avalon
Culver City	Azusa	Bell	Long Beach
Santa Monica	Baldwin Park	Bell Gardens	Signal Hill
West Hollywood	Bradbury	Bellflower	
	Claremont	Carson	**Area G**
Area B	City Of Industry	Cerritos	El Segundo
Agoura Hills	Covina	City Of Commerce	Gardena
Calabasas	Diamond Bar	Compton	Hawthorne
Hidden Hills	Duarte	Cudahy	Hermosa Beach
Lancaster	El Monte	Downey	Inglewood
Malibu	Glendora	Hawaiian Gardens	Lawndale
Palmdale	Irwindale	Huntington Park	Lomita
Santa Clarita	La Puente	La Habra Heights	Manhattan Beach
Westlake Village	La Verne	La Mirada	Palos Verdes Estates
	Monrovia	Lakewood	Rancho Palos Verdes
Area C	Pomona	Lynwood	Redondo Beach
Alhambra	Rosemead	Maywood	Rolling Hills
Burbank	San Dimas	Montebello	Rolling Hills Estates
Glendale	Sierra Madre	Norwalk	Torrance
La Canada Flintridge	South El Monte	Paramount	
Monterey Park	Temple City	Pico Rivera	**Area H**
Pasadena	Walnut	Santa Fe Springs	Los Angeles
San Fernando	West Covina	South Gate	
San Gabriel		Vernon	
San Marino		Whittier	
South Pasadena			

As a member of Area B, the City of Lancaster is able to incorporate County hazard mitigation and emergency response activities and programs into its local mitigation and planning strategies. Examples include the Los Angeles County Fire Department's wildfire prevention efforts and the Specific Needs Awareness Planning (SNAP) program.

Map 1: Los Angeles County Disaster Management Areas. (Area B circled)

HAZARD MITIGATION PLAN ORGANIZATION

This Hazard Mitigation Plan (HMP) contains background information on the purpose and methodology used to develop the mitigation plan, a profile of the Lancaster, California area, sections on the identified hazards that threaten the area as well as the associated risks, a five-year mitigation strategy action plan matrix, and supporting information contained in the Annex. Additional section details are provided in Section 1: Plan Introduction.

Mitigation Strategy Five-Year Action Plan

The City of Lancaster Hazard Mitigation Action Plan includes resources and information to assist residents, public and private sector organizations, and others interested in participating in planning for hazards. The Mitigation Strategy Action Plan provides a list of activities designed to assist the City of Lancaster to reduce risk and prevent losses from future hazard events. The strategies address multi-hazard issues, as well as hazard specific activities for windstorms, earthquakes, fires, flooding, landslide, and terrorism.

Hazard Mitigation Plan Participants

The development of the Lancaster Hazard Mitigation Plan has been a collaborative city and community effort. The planning process was facilitated by a variety of departments along with a consulting agency, MLC & Associates, Inc. The City of Lancaster HMP Working Group provided vital guidance in developing and updating the plan.

The public was invited to participate in the development and update of the plan. In addition, ongoing disaster preparedness and mitigation information is routinely provided through public notices, city Web sites, newsletters, and the local newspapers.

The Working Group was chosen to provide needed feedback, guidance and approval. The Working Group drafted the original Mission Statement, Plan Goals, identified the hazards list, and is responsible for final approval of the plan and strategies. The Working Group also provided key information, supporting documentation, and updated the hazard ratings for the identified local area hazards. The hazard rating identified hazards according to probability, magnitude/severity, warning time and duration. The survey is provided in Annex C: Disaster Preparedness Risk Survey. In addition, the Working Group is responsible for continuing an ongoing dialog with the public and other interested parties such as: neighboring communities, agencies, businesses, academia, and nonprofits in maintaining the Hazard Mitigation Plan.

Part II of the plan contains hazard specific information. Each of the sections provides information on the background and history of the hazard, as well as the associated economic and social impacts.

Hazard Mitigation Plan Mission

The Mission of the City of Lancaster Hazard Mitigation Plan is to promote sound public policy and programs designed to protect the public, critical facilities, infrastructure, private and public property, and the environment from natural and human generated hazards. This will be achieved by developing, implementing, and maintaining this plan to guide the city toward creating and maintaining a safer more sustainable community.

Hazard Mitigation Plan Goals

The HMP Goals describe the overall direction that the City of Lancaster's departments, organizations, and citizens can take to minimize the impacts of hazards. The HMP Goals help to guide the direction of future activities aimed at reducing risk and preventing loss from hazards. The HMP Goals are the foundation for the broad direction of the Mission Statement and the specific recommendations that are outlined in the strategies. These goals are divided into four major categories:

To Protect Life, Property, Environment

- Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to hazards.
- Reduce losses and repetitive damages for chronic hazard events while promoting insurance coverage for catastrophic hazards.
- Encourage preventative measures for existing and new development in areas vulnerable to hazards.

Public Awareness

- Develop and implement education and outreach programs to increase public awareness of the risks associated with hazards.
- Develop and implement education and outreach programs to increase public awareness of the mitigation measures associated with hazards.
- Provide information on tools, partnership opportunities, and funding resources to assist in implementing mitigation activities.

Partnerships and Implementation

- Strengthen communication and coordinate participation among and within public agencies, citizens, non-profit organizations, business, and industry to gain a vested interest in implementation.
- Encourage leadership within public and private sector organizations to prioritize and implement local, county, and regional hazard mitigation activities.
- Assist in the development of the Safety Element of the General Plan

Emergency Management

- Establish policy to ensure mitigation projects for critical facilities, services, and infrastructure.
- Update current ordinances, make recommendations for guidelines, codes, and permitting process and establish new ordinances that support mitigation.
- Strengthen emergency operations by increasing collaboration and coordination among departments, public agencies, non-profit organizations, business, and industry.
- Coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures.

Strategy Organization

The data collection, research and the public participation process resulted in the development of the hazard mitigation strategies listed. The strategies outline activities in which the citizens of the City of Lancaster can be engaged to reduce risk. They reflect future action to be taken in order to reduce the loss of property and life. Section 4 Hazard Mitigation Goals and Strategies provides brief descriptions of the projects and strategies developed.

Hazard Mitigation Plan Implementation, Monitoring, and Evaluation

Section 5 Plan Implementation, Monitoring, and Evaluation details the formal process that describes how the City of Lancaster's Hazard Mitigation Plan is maintained. The plan maintenance process included a schedule for monitoring and evaluating the plan and producing a plan revision every five years. In addition, this section also describes how the City of Lancaster integrated public participation in the plan maintenance and update process.

Finally, the Plan Implementation, Monitoring, and Evaluation section includes an explanation of how the City of Lancaster incorporated the mitigation strategies outlined into existing planning mechanisms such as the city's individual General Plans, Capital Improvement Plans, Building and Safety Codes and other programs, and/or plans within the City of Lancaster.

Hazard Mitigation Plan Adoption

In 2005, the City of Lancaster proposed a draft Hazard Mitigation Plan. Subsequently, in 2013 this Hazard Mitigation Plan was reviewed, updated, and adopted.

The Assistant to the City Manager of the City of Lancaster will be responsible for submitting the updated plan to the State Hazard Mitigation Officer at the Governor's Office of Emergency Services (Cal OES). Cal OES will then submit the updated plan to the Federal Emergency Management Agency (FEMA) for review. This review addresses the federal criteria outlined in *Title 44 CFR Emergency Management and Assistance: Part 201 – Mitigation Planning*. Upon acceptance by FEMA, The City of Lancaster will maintain its eligibility for Hazard Mitigation Grant Program funds.

Coordinating Body

The City of Lancaster Hazard Mitigation Plan Working Group was responsible for coordinating implementation of plan strategies and undertaking the formal review process, as well as supporting the tactical/operational tasks required to implement the Hazard Mitigation Plan.

Implementation Through Existing Programs

The City of Lancaster addresses statewide planning goals and legislative requirements through its General Plans, Capital Improvement Plans, and Building and Safety Codes. This Hazard Mitigation Plan provides a series of recommendations that are closely related to the goals and objectives of these existing planning programs. The City of Lancaster may implement the recommended mitigation strategies through existing programs and procedures or develop new projects

Economic Analysis of Mitigation Projects

Determining the economic feasibility of mitigating hazards can provide decision makers with an understanding of the potential benefits and costs of an activity, as well as provide a basis upon which to compare alternative projects. The Federal Emergency Management Agency's approach to identify the benefits and costs associated with hazard mitigation strategies or projects includes a Benefit-Cost Review.[1]

Conducting a Benefit-Cost Review for a mitigation activity can assist communities in determining whether a project is worth undertaking now in order to avoid disaster-related damages later. For the purposes of this Hazard Mitigation Plan, an estimate of the Benefit / Cost Ratio was used to evaluate the relative feasibility of the mitigation projects and strategies outlined in Section 4 Hazard Mitigation Goals and Strategies.

Formal Review Process

As part of this update, the Lancaster Hazard Mitigation Plan was evaluated to determine the effectiveness of existing mitigation programs and projects as well as consider changes in land development or other changes that may have affected mitigation priorities. The Assistant to the City Manager of the City of Lancaster was responsible for contacting the Hazard Mitigation Plan Working Group members and organizing progress reviews. Group members were then responsible for monitoring and evaluating the progress of the mitigation strategies in the plan.

Continued Public Involvement

The City of Lancaster is dedicated to involving the public directly in the continual review and updating of the Hazard Mitigation Plan. Copies of the plan were made available at various locations throughout the City including but not limited to the library, City Hall, and the city website. The existence and location of these copies were publicized on the city website and through information bulletins.

In addition, ongoing public participation in the Hazard Mitigation Plan is promoted to encourage public review and to provide feedback and suggestions for improvement through:

- Annual surveys
- City-owned television bulletins
- Public E-mails
- Handouts at City Hall and other public locations
- City website
- Training events (CERT, CPR, etc.)
- Emergency exercises

[1] FEMA Publication 386-5, State and Local Mitigation Planning, Using Benefit-Cost Review in Mitigation Planning, May 2007

PLAN DESCRIPTION

Hazard Mitigation Plan

While disasters cannot be fully prevented, their effects can be reduced through a well-organized public education and awareness effort, preparedness, mitigation, and coordinated response. In 2005, the City of Lancaster chose to draft its Hazard Mitigation Plan (HMP) in order to coordinate efforts and resources. This update to the HMP is part of the ongoing renewal process.

Why Develop a Mitigation Plan?

The Robert T. Stafford Disaster Relief and Emergency Assistance Act provides the basis for federal assistance to state and local governments impacted by a disaster and outlines the requirements for mitigation planning. Hazard Mitigation is considered the first step in preparing for emergencies (rather than placing a reliance on recovery after an event). The Federal Emergency Management Agency (FEMA) requires state and local governments to update their hazard mitigation plans every 5 years. The consequences of not having an approved Local Hazard Mitigation Plan can be significant. Without it, cities are ineligible for FEMA mitigation programs including: the Hazard Mitigation Grant Program and Flood Mitigation Assistance Program. More importantly, an ongoing mitigation effort is required in order for cities to obtain public assistance funding for repetitive losses (e.g., damaged facilities) following a disaster.

The Disaster Mitigation Act of 2000 (DMA 2000), Section 322 (a-d) requires that local governments maintain mitigation plans that describe the process for identifying hazards, risks and vulnerabilities, identifies and prioritizes mitigation actions, encourages the development of local mitigation, and provides technical support for those efforts as a condition of receiving federal disaster mitigation funds. This Hazard Mitigation Plan serves to meet these requirements.

Furthermore, this plan assists the City of Lancaster in reducing risk from hazards by identifying resources, information, and strategies for risk reduction, while helping to guide and coordinate mitigation activities throughout the Lancaster area. Mitigation strategies for reducing the potential losses identified in the risk assessment are outlined and are based on existing authorities, policies, programs, resources, and the ability to expand on and improve these existing tools. In summary, the information and mitigation strategies within the Hazard Mitigation Plan:

- Establish a basis for coordination and collaboration between departments and the public in the City of Lancaster
- Identify and prioritize future mitigation projects
- Assist in meeting the requirements of federal assistance programs

Whom Does the Mitigation Plan Affect?

This Hazard Mitigation Plan affects City of Lancaster and provides a framework for pre-emptive planning for hazards. The resources and background information in the plan are applicable area-wide, and the goals and recommendations lay the groundwork for mitigation plans and partnerships for neighboring communities.

How is the Plan Used?

Each section of the Hazard Mitigation Plan provides information and resources to assist in understanding the region and the hazard-related issues facing citizens, businesses, and the environment. The sections of the Hazard Mitigation Plan combine to create a document that guides the mission to reduce risk and prevent loss from future hazard events.

Hazard Mitigation Plan Update Process

The update of this plan was a collaborative effort. The process was facilitated across multiple departments along with a consulting agency, MLC & Associates, Inc. The HMP Working Group was composed of the representatives from various City of Lancaster departments involved in mitigation planning and disaster preparedness. The HMP Working Group was established in order to guide the process and provide final approval of the Hazard Mitigation Plan and mitigation strategies. In addition, the HMP Working Group facilitated the plan update process, provided feedback, reviewed the plan, and was responsible for initial approvals.

Various departments within the City of Lancaster assisted in updating the plan. Information resources included but were not limited to: General Plans, Master Plans, reports and studies, hazard maps, and public process documentation.

The workflow below depicts the basic process used to update the plan.

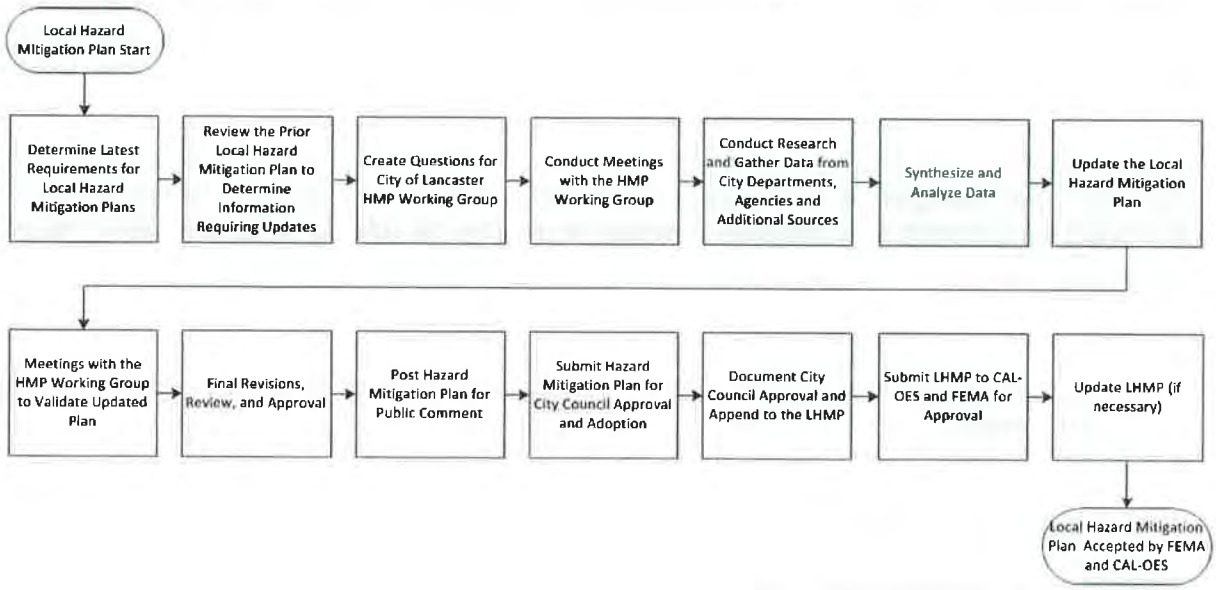


Figure 1: HMP Update Process Workflow

Internal Input

The HMP Working Group was established in order to facilitate the update to the plan, provide feedback, guidance, and approval. Participating departments included:

- Administration
- Building & Safety
- Capital Projects/Engineering
- City Engineer/Traffic Engineer
- Finance
- Planning
- Public Safety
- Street Maintenance
- Utilities/Mapping
- Los Angeles County Fire Department
- Los Angeles County Sheriff's Department

The Hazard Mitigation Plan Working Group, city staff, and various other stakeholders were involved in updating the plan. This process involved meetings, discussion and individual reviews and input. The planning process included:

- Planning sessions with City of Lancaster representatives
- Reviews of historical disaster events in the local area
- A review of activities related to hazard mitigation from existing programs and General Plan, Capital Improvement Projects, and Development Projects

External Input

Existing mitigation strategies and activities from neighboring communities were reviewed as well as current FEMA hazard mitigation planning standards and the State of California Hazard Mitigation Plan Guidance document. In addition, geographic area and hazard specific data were generated to develop scenario based hazard maps. These resources were valuable in updating the City of Lancaster Hazard Mitigation Plan (see Annex A Resources for source information).

Information from the sources noted above was evaluated and (when applicable) incorporated into the plan. In addition, the information gathered served as a basis for the strategy sessions that were conducted to document ongoing and future mitigation activities:

REQUIREMENTS FOR MITIGATION PLANS

Federal and State Requirements

The following Federal requirements must be met for approval of a Hazard Mitigation Plan:

- Open public involvement, with public meetings that introduce the process and project requirements.
- The public must be afforded opportunities for involvement in: identifying and assessing risk, drafting a plan, and public involvement in approval stages of the plan.
- Community cooperation, with opportunity for other local government agencies, the business community, educational institutions, and non-profits to participate in the process.
- Incorporation of local documents, including General Plans, Zoning Ordinances, Building Codes, and other pertinent city and regional documents.

The following components must be part of the planning process:

- Complete documentation of the planning process.
- A detailed risk assessment on hazard exposures in the community.
- A comprehensive mitigation strategy, which describes the goals and objectives, including proposed strategies, programs & actions to avoid long-term vulnerabilities.
- A plan maintenance process, which describes the method and schedule of monitoring, evaluating and updating the plan and integration of the All Hazard Mitigation Plan into other planning mechanisms.
- Formal adoption by the City Council.
- Plan Review by CAL EMA and FEMA.

Public/Community Process

Public participation is a key component of strategic planning processes. Citizen participation offers stakeholders in the community the opportunity for inclusion of their interests and concerns into the process. The Federal Emergency Management Agency requires public input during the development of local hazard mitigation plans.

During the Hazard Mitigation Plan development and update process, the public was invited to participate. Information was provided on city websites, newsletters, and the local newspapers. Examples are provided in Annex E Planning and Public Involvement.

HAZARD MITIGATION PLAN ORGANIZATION

The Hazard Mitigation Plan is organized as follows:

PART I: OVERVIEW AND MITIGATION STRATEGY ACTION PLAN

Section 1: Introduction

The Introduction provides an overview of the Hazard Mitigation Plan Mission, Goals, and Strategies. In addition, this section outlines the process used to develop the goals and strategies that cut across the six hazards addressed in the Hazard Mitigation Plan. Finally, this section describes the background and purpose of developing the Hazard Mitigation Plan and the planning process.

Section 2: Community Profile

The Community Profile section presents the history, geography, demographics, and socio-economics of the City of Lancaster and its surrounding areas. It serves as a tool to provide a historical perspective of hazards in the area, potential impacts, and identifies at risk populations.

Section 3: Risk Assessment

The Risk Assessment section provides information on hazard identification, vulnerability, and risk associated with hazards in the Lancaster area.

Section 4: Multi-Hazard Goals and Strategies

The Multi-Hazard Goals and Strategies section describes the mitigation strategies developed for the Hazard Mitigation Plan. The strategies address multi-hazard issues, as well as hazard-specific activities that can be implemented to reduce risk and prevent loss from future events.

Section 5: Plan Maintenance

The Plan Maintenance section provides information on plan implementation, monitoring and evaluation.

PART II: HAZARD SPECIFIC INFORMATION

Part II provides hazard specific Information on the six hazards addressed in the Hazard Mitigation Plan. Continuing hazards occur on an ongoing and/or seasonal basis and may be predicted through historic evidence and scientific methods. Each of the hazard-specific sections includes information on the history, hazard causes and characteristics, hazard assessment, mitigation goals and strategies. Continuing hazards addressed in the plan include:

Section 6: Windstorms

Section 7: Earthquakes

Section 8: Energy Disruption

Section 9: Wildfire

Section 10: Flood

Section 11: Terrorism

PART III: ANNEXES

The Annexes includes references to the information used to gather data and conduct analytical research to assemble the City of Lancaster Hazard Mitigation Plan. The Resources section also includes a description of the tools used to develop the plan as well as documentation of the meetings, discussions and events that were involved in the planning process.

Annex A: Resources	This section provides a list of resources for Regional, County, State, and Federal agencies and organizations that may be referenced directly and indirectly within the City of Lancaster Hazard Mitigation Plan.
Annex B: Local Hazard Mitigation Plan Review Crosswalk	This section includes the Local Hazard Mitigation Plan Review Crosswalk for California Local Governments. The Crosswalk provides a quick reference to key sections of the plan.
Annex C: Disaster Preparedness Risk Survey	This section includes the survey by which community members rated their preparedness for disasters and risk ratings of the identified hazards.
Annex D: HMP Working Group Hazard Rating Survey	This survey was provided to the HMP Working Group to prioritize the hazards within the City of Lancaster.
Annex E: Planning and Public Involvement	This section provides a description of public involvement activities including meetings and other public outreach efforts related to the Hazards Mitigation Plan update.
Annex F: Flood Insurance Rate Maps	This section provides Flood Insurance Rate Maps (FIRM) for selected areas within the Lancaster area. These maps depict areas subject to flooding and are used for planning purposes.
Annex G: Plan Approval Documentation	This section provides a copy of Plan Approval documents related to the City of Lancaster Hazard Mitigation Plan.

SECTION 2. CITY OF LANCASTER CITY PROFILE

INTRODUCTION

Natural hazards impact the citizens, property, environment, and economy of the City of Lancaster. Earthquakes, flooding, wildfire, and windstorms have exposed Lancaster residents and businesses to the financial and emotional costs of recovering after natural disasters.

Identifying population groups and the risks posed by hazards provides the basis for implementing strategies to reduce potential impacts; thereby protecting the lives and property of citizens and communities. The result is the development and implementation of strategies, coordination of resources, and increased public awareness that will reduce risk and prevent loss from future hazard events.

This section of the Hazard Mitigation Plan provides an overview of the City of Lancaster, including summaries of the vulnerable populations, structures and economic base of the City.

LANCASTER COMMUNITY PROFILE

Lancaster is located in the high desert of northern Los Angeles County in the Antelope Valley, near the border with Kern County. Lancaster encompasses 94.28 square miles (U.S. Census Bureau, 2010) and is located approximately 70 miles north of downtown Los Angeles. Lancaster is separated from the Los Angeles Basin by the San Gabriel Mountain Range to its south and from Bakersfield and the San Joaquin Valley by the Tehachapi Mountain Range to its north. Lancaster is characterized by its arid desert climate with low humidity and a blend of semi-rural, suburban, and urban development.

In the 1930s, the construction of the Muroc Army Air Field (later renamed Edwards Air Force Base) caused the area to transform from a rural farming and mining community to a suburban community heavily influenced by the aerospace industry and a bedroom community for businesses in the San Fernando Valley and the Los Angeles Basin.

The General Plan 2030 for the City of Lancaster not only covers the land within the City, but within Lancaster's "Sphere of Influence", an area of about 268 square miles that covers the area from Lancaster city limits north to the Kern County line and includes a portion of Edwards Air Force Base and its dry lakebeds. The communities of Quartz Hill and Antelope Acres are also included. These areas are taken into account in this Community Profile.

BRIEF HISTORY

Lancaster was originally settled by bands of Piute Indians who inhabited the Mojave Valley at the time the Spaniards came to California. By the beginning of the 19th century, most of the Indians had been moved out of the valley, many to the San Fernando Mission. In 1876 the Southern Pacific Railroad set up a station house and watering facilities in what is now Lancaster as it built a railroad between San Francisco and Los Angeles.

The creation of the railroad that connected the high desert areas with the rest of California was the impetus for settlement in the Lancaster area. During the 1880s hotels were built, land speculators and agricultural investors moved into the area, and artesian wells were dug to provide water for the new residents and businesses. By the 1890s Lancaster built its first church and had a successful agricultural sector. A decade long drought that started in 1894 drove most of the area residents away and there were no buyers for land or homes, although the discovery of gold north of Lancaster and borax in the local mountains drew prospectors and miners into the area.

The population began to rebound in 1908 as workers building the California Aqueduct began to settle in the area. The construction of Muroc Air Base (now Edwards Air Force Base) in the 1930s was the beginning of the local aerospace industry and the start of a population increase that has been steady up until the current time. In 1977 residents voted in favor of cityhood, and on November 22, 1977, Lancaster became the 80th city in Los Angeles County.

POPULATION

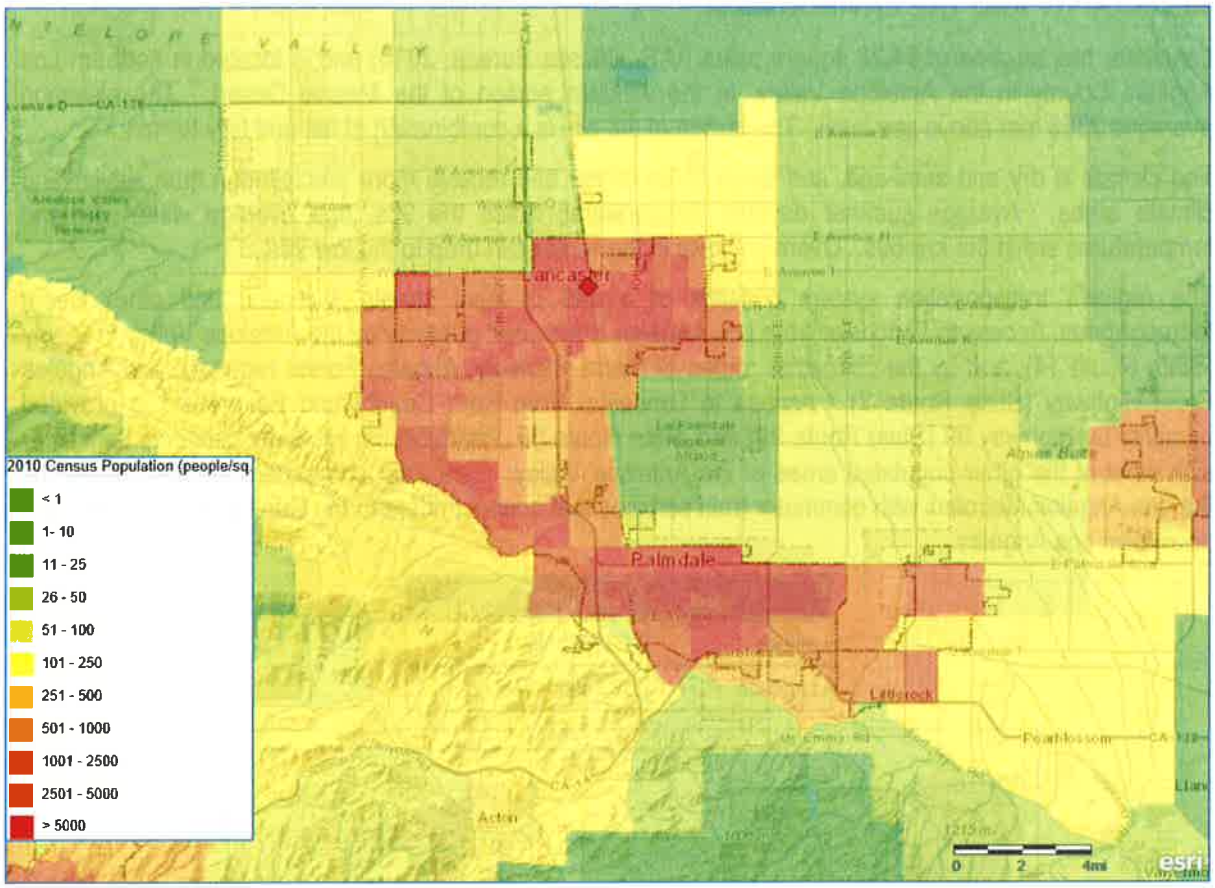
According to 2010 Census data, the population of the City of Lancaster totaled 156,633. This is a 31.94% increase in population since the 2000 Census and a significant increase over the overall growth of Los Angeles County, which grew 3.1% between 2000 and 2010.

Most residences and businesses are centered around the area loosely bordered by Avenues H and L, and 10th Street W and 30th Street E.

Lancaster Population Data Comparison with Los Angeles County				
Location	**2010 Population**	**% of Los Angeles County**	**2000 Population**	**% Change from 2000 to 2010**
Lancaster	156,633	0.02%	118,718	31.94%
Los Angeles County	9,818,605	100%	9,519,338	3.1%

Table 1: Lancaster 2010 Population Data Compared to Los Angeles County

Source: US Census Bureau 2010 Census



Map 2: Population Density per Square Mile

Source: http://myplan.calema.gov.ca/

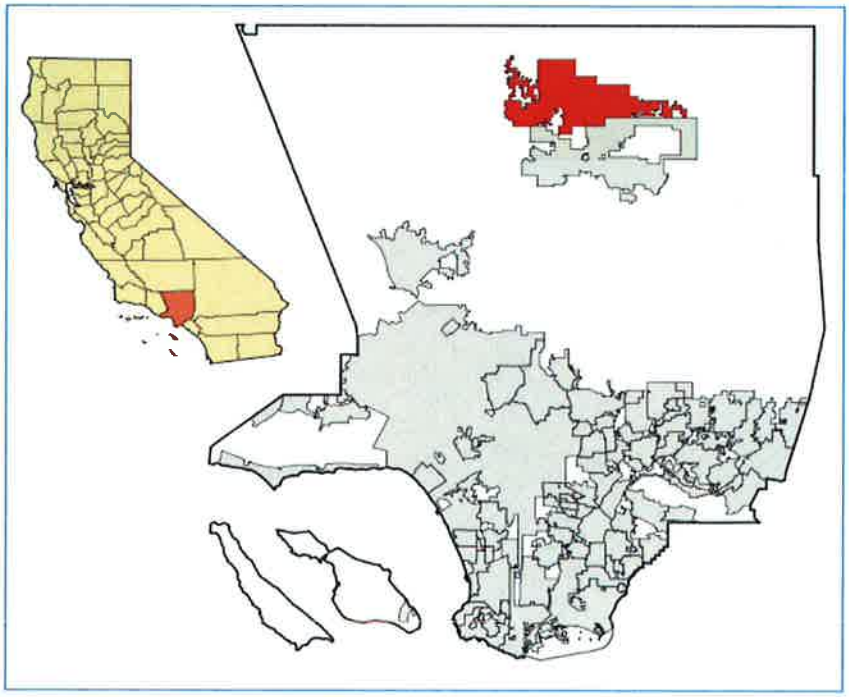
GEOGRAPHY AND THE ENVIRONMENT

Lancaster has an area of 94.28 square miles (U.S. Census Bureau, 2010) and is located in northern Los Angeles County in the Antelope Valley, in the western portion of the Mojave Desert. The elevation averages 2355 feet above sea level. The terrain of the city is a combination of flat and hilly terrain.

The climate is dry and semi-arid, and tends to be cooler and receive more precipitation than similar arid climate areas. Average summer daytime temperatures reach the 90s, and average winter daytime temperatures are in the low 60s. Overnight lows in the winter can drop to the low 20s.

The region's transportation system consists of a grid of local streets, arterials, and other lesser thoroughfares. Access to Lancaster from Los Angeles is provided primarily by the Antelope Valley Freeway (State Route 14), and by the connector routes of Sierra Highway, Angeles Forest Highway, and Angeles Crest Highway (State Route 2). Access to Lancaster from Kern County and Bakersfield is provided primarily by Highway 99 (State Route 99) and State Route 58. Pearblossom Highway connects Lancaster with most of the other populated areas of the Antelope Valley. Lancaster commuters are also served by the Los Angeles Metrolink with commuter train services that connect riders to the San Fernando Valley and downtown Los Angeles.

General Coordinates	
Latitude	34.6981° North
Longitude	118.1358° West



Map 3: Lancaster Location Map

GEOLOGY / CLIMATE

Lancaster is located in the western Antelope Valley. The San Gabriel Mountain Range to the south of Lancaster separates it from the Los Angeles Basin, and the Tehachapi Mountain Range to the north of Lancaster separates it from Bakersfield and the San Joaquin Valley. The Antelope Valley is the westernmost valley of the Mojave Desert that stretches east from Lancaster across California into Nevada, Arizona and Utah.

Geology

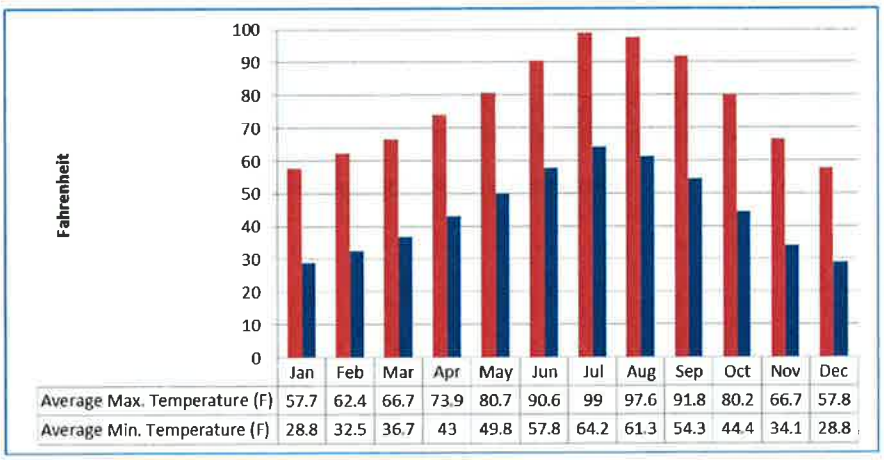
Seismic hazard studies in the Antelope Valley and Lancaster detail the risks to areas of the city due to earthquakes, liquefaction and landslides. Surface materials within Lancaster include unconsolidated, fine-grained deposits of silt, sand, gravel, and recent flood plain deposits.

Torrential flood events can introduce large deposits of sand and gravel. Sandy silt and silt containing clay are moderately dense and firm, and are primarily considered to be prone to liquefaction, and earthquake related hazard. Basaltic lava consists mainly of weathered and non-weathered, dense, fine-grained basalt. Though the characteristics of this lava may offer solid foundation support, landslides are common in many of these areas where weathered residual soil overlies the basalt. While the danger of landslides and liquefaction is isolated to a few specific areas of the City, they are risks that need to be taken into consideration when creating an emergency response plan.

Climate

Lancaster is characterized by hot, dry summers and mild to warm winters with little humidity.

Average Monthly Temperatures



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Max. Temperature (F)	57.7	62.4	66.7	73.9	80.7	90.6	99	97.6	91.8	80.2	66.7	57.8
Average Min. Temperature (F)	28.8	32.5	36.7	43	49.8	57.8	64.2	61.3	54.3	44.4	34.1	28.8

Figure 2: Average Temperature by Month

The climate in Lancaster is characterized by cold winters with temperatures ranging from the low 30s to the low 60s, and hot summers with temperatures ranging from the low 60s to the high 90s. Average annual rainfall is 5 inches with the greatest portion of precipitation occurring during the winter months. Temperatures exceed 100 degrees Fahrenheit in the summer months (June-September), and drop below 30 degrees Fahrenheit in the winter months (December-February).

July tends to be the hottest month, and December tends to be the coldest month. However, it should be noted that temperatures can vary over a wide range.

Figure 3: Monsoonal Thunderstorm Viewed from Space

Source: NASA

From June through September, high summer temperatures, low humidity, and low air pressure draw moisture into the California and Arizona deserts from the Gulf of Mexico, creating monsoonal storm systems. Lancaster is prone to summer thunderstorms caused by these monsoonal storms.

Precipitation

Rainfall in Lancaster averages about 5 inches per year. However, the term "average rainfall" is misleading because over the recorded history of rainfall in the area, rainfall amounts have ranged from less than an inch to well over normal averages in very wet years. Furthermore, actual rainfall in Southern California tends to fall in large amounts during sporadic and often heavy storms rather than in consistent amounts throughout the year.

Lancaster averages about 1 inch of snow per year. As with rainfall averages, snowfall amounts have ranged from no snow at all in some years to well over normal averages in others.

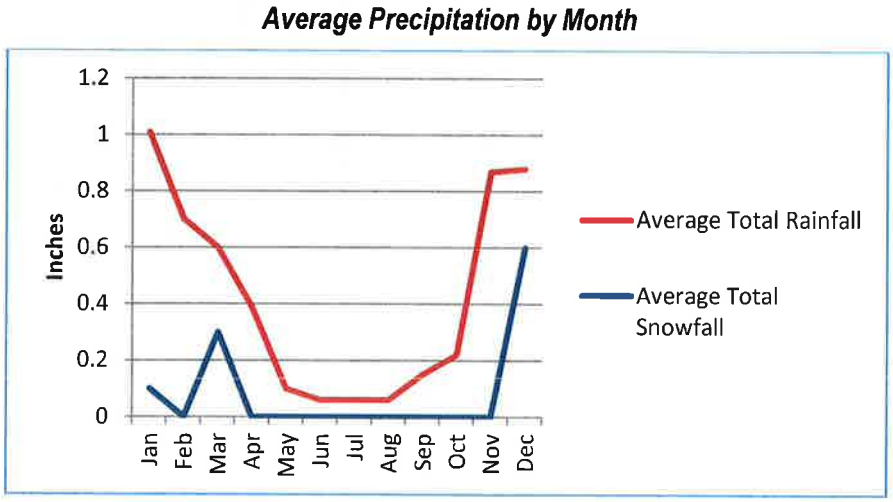


Figure 4: Average Precipitation by Month

El Niño and La Niña

Periodically, Southern California, including the Lancaster region, is subject to the effects of El Niño or La Niña conditions:

- El Niño is characterized by unusually warm ocean temperatures in the Equatorial Pacific resulting in increased rainfall in the southern tier of the U.S. El Niño conditions can result in flooding and traffic disruptions in the Lancaster area.
- La Niña is characterized by unusually cold ocean temperatures in the Equatorial Pacific resulting in decreased rainfall in the southern tier of the U.S. La Niña conditions can result in drought and increased danger from wildfires.

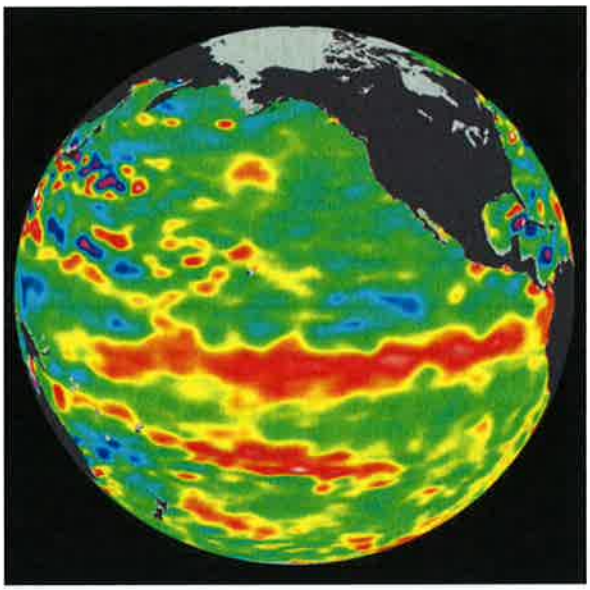


Figure 5: El Niño Temperature Conditions Image

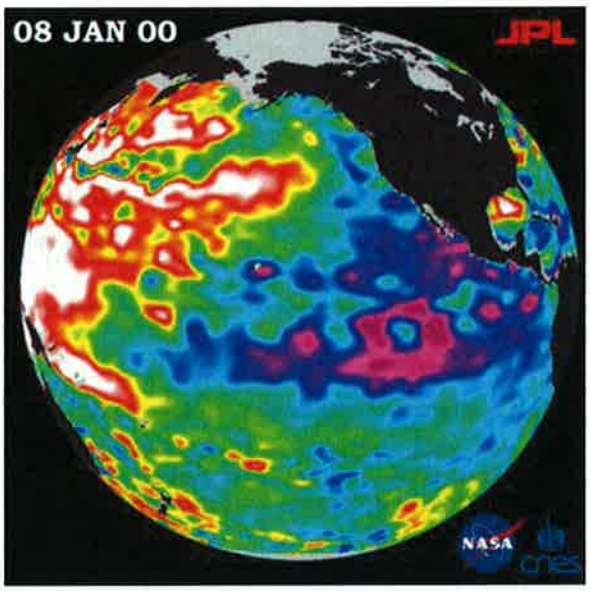


Figure 6: La Niña Temperature Conditions Image

ECONOMIC ACTIVITY

Economic activity is one indicator of the potential losses that may be incurred in the event of a disaster. The following tables list the principal employers, property tax payers, and taxable sales in Lancaster.

Lancaster Principal Employers

Company	Industry	Employees	Percent of Total City Employment
Edwards Air Force Base	Government	12,515	20.16%
China Lake Naval Weapons	Government	6,080	9.79%
County of Los Angeles	Government	3,757	6.05%
Lockheed Martin	Aerospace	3,320	5.35%
Palmdale School District	Government	2,728	4.39%
Antelope Valley Hospital	Hospital	2,561	4.12%
Northrop Grumman	Aerospace	2,300	3.70%
Wal-Mart (5)	Retail	2,150	3.46%
AV Union High School District	Government	2,106	4.12%
California Correctional	Government	1,957	3.15%
Total		**62,087**	**63.58%**
Total City Employment*		**46,721**	**100%**

Table 2: Lancaster Principal Employers

Source: City of Lancaster Comprehensive Annual Report Fiscal Year End 2010 and SCAG Profile of the City of Lancaster, May, 2011.

*Employment statistics provided by the City of Lancaster define total employment as the Greater Antelope Valley region. The Antelope Valley region is considered to be the Lancaster's economic region and covers 3,514.2 square miles of area and includes the City of Lancaster, Palmdale, Tehachapi and Ridgecrest. The principal employers represent all employers within the greater Antelope Valley region.

Lancaster Principal Property Tax Payers

Company	Taxable Assessed Value	Percent of Total City Assessed Value
Basrock	113,155,178	1.15%
US Industrial REIT II	83,607,360	0.85%
Walmart	65,729,750	0.67%
Avenue K Lancaster UCM Cadenc	46,640,059	0.47%
Bank of America N A	44,114,023	0.85%
Deutsche Bank Nat'l Trust	37,118,785	0.38%
Thrifty Payless Inc.	34,263,008	0.35%
BPP Valley Central	28,371,988	0.29%
US Bank National Assoc	25,865,677	0.26%
HSBC Bank USA	25,494,930	0.26%
Total	**504,360,758**	**5.13%**

Table 3: Lancaster Principal Tax Payers

Source: City of Lancaster Comprehensive Annual Report Fiscal Year End 2010

Population and Demographics

The following tables summarize the population and demographic groups at risk from a disaster in Lancaster.

Sex and Age Distribution

Demographic Estimates		
Sex and Age	**Estimate**	**Percent**
Total Population	**156,633**	**100.0%**
Male	78,546	50.1%
Female	78,087	49.9%
Under 5 years	12,484	8.0
5 to 9 years	12,423	7.9%
10 to 14 years	13,188	8.4%
15 to 19 years	14,968	9.6%
20 to 24 years	12,704	8.1%
25 to 29 years	11,718	7.5%
30 to 34 years	10,381	6.6%
35 to 39 years	10,030	6.4%
40 to 44 years	10,446	6.7%
45 to 49 years	11,401	7.3%
50 to 54 years	10,549	6.7%
55 to 59 years	7,775	5.0%
60 to 64 years	5,907	3.8%
65 to 69 years	3,952	2.5%
70 to 74 years	3,070	2.0%
75 to 79 years	2,358	1.5%
80 to 84 years	1,713	1.1%
85 years and over	1,566	1.0%
Median age (years)	30.4	

Table 4: Lancaster Sex and Age Demographics

Source: US Census Bureau 2010 Census

Lancaster Female to Male Distribution

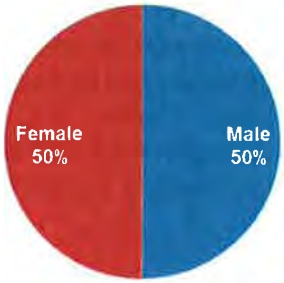


Figure 7: Lancaster Female to Male Distribution

The average age of residents in Lancaster is 30.4 with males (50.1%) slightly outnumbering females (49.9). Mitigation planning must consider the unique needs of population groups, for example those under 15 years of age and those over 70 years of age.

Lancaster Age Distribution

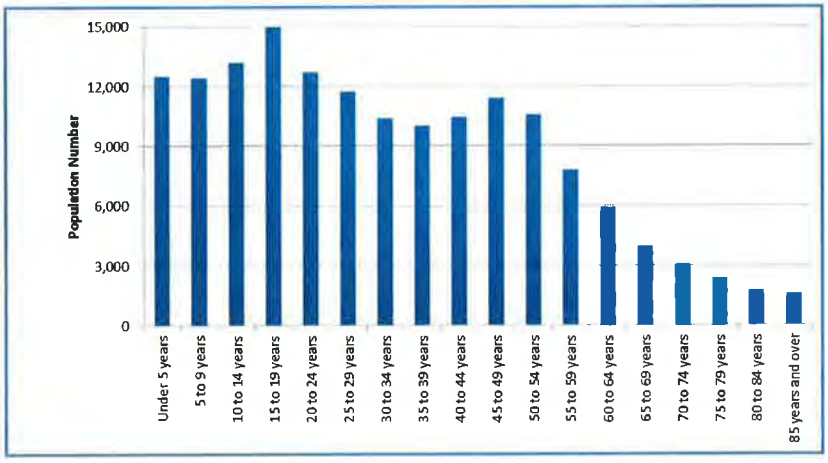


Figure 8: Lancaster Age Distribution

Race Composition

One aspect of mitigation planning is the need to address the language (communications) needs of local populations. This includes the ability to distribute information and provide notification in the event of a regional emergency. For Lancaster, an estimated 49% of the population speaks languages other than English (including English and another language or non-English only), with little more than half of these speaking English "less than very well".

Race	Population	Percent of Total
Total population	**156,633**	**100.0%**
White	53,576	34.2%
Black or African American	30,859	19.7%
American Indian and Alaska Native	663	0.4%
Asian	6,474	4.1%
Native Hawaiian and Other Pacific Islander	295	0.2%
Some Other Race	621	0.4%
Two or More Races	4,549	2.9%
Hispanic or Latino	59,596	38.0%

Table 5: Lancaster Race Composition

Source: US Census Bureau 2010 Census

Languages Spoken at Home

Subject	Total Estimate	Speak English "Very Well" Estimate	Speak English Less Than "Very Well" Estimate
Population 5 years and over	134,617	74%	26%
Speak only English	74%	(X)	(X)
Speak a language other than English	26%	49%	51%
Spanish	20%	45%	55%
Other Indo-European languages	2%	72%	28%
Asian and Pacific Island languages	3%	59%	41%
Other languages	1%	55%	45%

Table 6: Languages Spoken at Home

Source: US Census Bureau 2010 Census

Lancaster Race Distribution

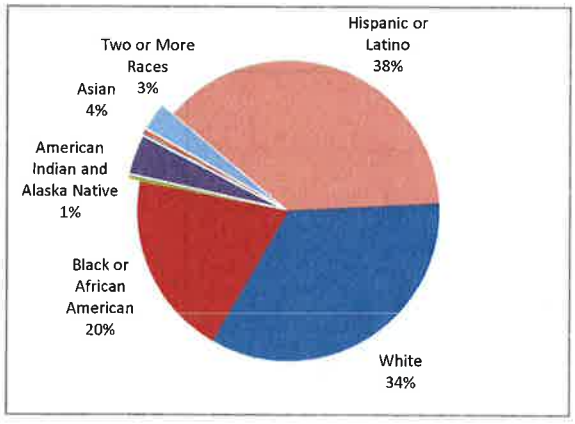


Figure 9: Lancaster Race Distribution

Lancaster Language Spoken at Home

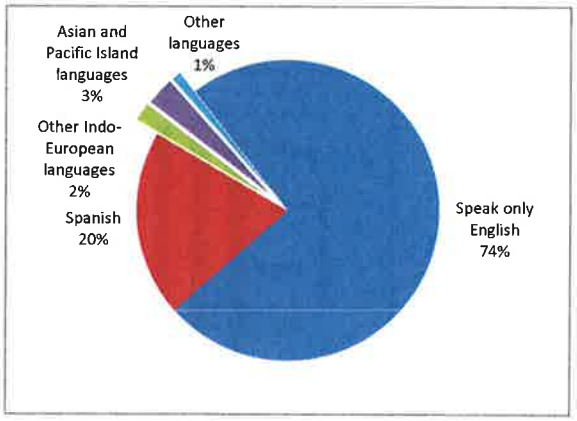


Figure 10: Lancaster Race Distribution

Income Distribution

Household income is a factor for mitigation planning since population groups in lower income ranges are less able to cope with the impact of disasters.

Furthermore, the availability of household funds can have a direct impact on the level of individual and family hazard mitigation activities and emergency preparedness.

In Lancaster, while the mean household income is over $65,876, there are a significant number of households with incomes less than $25,000, near the U.S. poverty level of $22,350 for a family of four as defined by the *2011 HHS Poverty Guidelines*, by the U.S. Department of Health & Human Services.

Income and Benefits (In 2011 Inflation Adjusted Dollars		
	Estimate	**Percent**
Total households	46,255	100%
Less than $10,000	4,258	9.2%
$10,000 to $14,999	3,206	6.9%
$15,000 to $24,999	4,600	9.9%
$25,000 to $34,999	3,657	7.9%
$35,000 to $49,999	6,475	14.0%
$50,000 to $74,999	9,150	19.8%
$75,000 to $99,999	5,879	12.7%
$100,000 to $149,999	6,046	13.1%
$150,000 to $199,999	1,721	3.7%
$200,000 or more	1,263	2.7%
Median household income (dollars)	52,290	(X)
Mean household income (dollars)	65,876	(X)

Table 7: Lancaster Income Distribution

Source: US Census Bureau 2010 Census

Lancaster Number of Households by Income Distribution

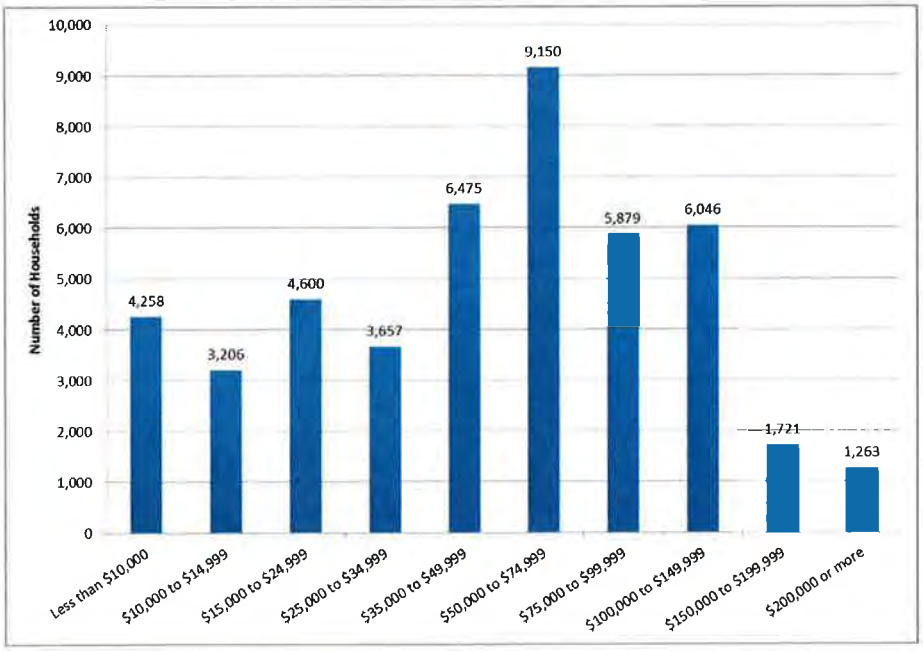


Figure 11: Lancaster Income Distribution

Housing Characteristics

The following housing statistics provide a summary of the numbers and types of housing units that are at risk if a disaster were to occur in Lancaster. Housing data includes: Housing Occupancy, Change from 2000 to 2010, Number of Structures Built by Year, Home Values and Home Value Distribution. There has been a significant increase in the number of available housing units between the 2000 and 2010 census, and increases in housing units came from 1-unit detached and multi-unit structures.

Lancaster Housing Occupancy

Housing Occupancy	Estimate	Percent
Total housing units	51,260	100.0%
Occupied housing units	46,255	90.2%
Vacant housing units	5,005	9.8%

Table 8: Lancaster Housing Occupancy

Source: US Census Bureau 2007 – 2011 American Community Survey

Lancaster Units in Structure Change from 2000 to 2010

Units in Structure	2010		2000		% Change	
	Estimated Number	Percent of Units	Number	Percent of Units	Difference 2010-2000	Percent Change
Total housing units	51,260	100%	41,682	100%	9,578	19%
1-unit, detached	36,145	70.5%	26,981	64.7	9,164	25%
1-unit, attached	890	1.7%	1,198	2.9%	-308	-35%
2 units	593	1.2%	619	1.5%	-26	-4%
3 or 4 units	2,194	4.3%	2,103	5.0%	91	4%
5 to 9 units	2,767	5.4%	2,242	5.4%	525	19%
10 to 19 units	1,950	3.8%	1,450	3.5%	500	26%
20 or more units	3,049	5.9%	3,600	8.6%	-551	-18%
Mobile home	3,606	7.0%	3,376	8.1%	230	6%
Boat, RV, van, etc.	66	0.1%	113	0.3%	-47	-71%

Table 9: Lancaster Units in Structure Change from 2000 to 2010

Source: US Census Bureau 2007 – 2010 American Community Survey and US Census Bureau 2000 Census

In terms of risk and disaster mitigation, older structures that have not been retrofitted or otherwise improved may be more susceptible to damage or destruction due to age and the fact that older building codes were less stringent than those required for newer structures. As a result, the inventory of older structures is a consideration when developing mitigation plans.

Another consideration for risk and disaster mitigation is the increase in urban and infill development, coupled with smart growth redevelopment that calls for more mixed-use and mixed income multi-unit housing structures in the City's core, mean that there will be a larger concentration of housing units and commercial businesses in urban areas of the city that need to be taken into account when planning for an emergency or disaster.

Year Structure Built	Estimate	Percent
Total housing units	51,260	100%
Built 2005 or later	4,611	9.0%
Built 2000 to 2004	3,992	7.8%
Built 1990 to 1999	8,579	16.7%
Built 1980 to 1989	15,706	30.6%
Built 1970 to 1979	7,949	15.5%
Built 1960 to 1969	2,707	5.3%
Built 1950 to 1959	5,872	11.5%
Built 1940 to 1949	1,020	2.0%
Built 1939 or earlier	824	1.6%

Table 10: Year Structure Built in Lancaster

Source: US Census Bureau 2007 – 2010 and US Census Bureau 2000 Census

Lancaster Number of Structures Built by Year

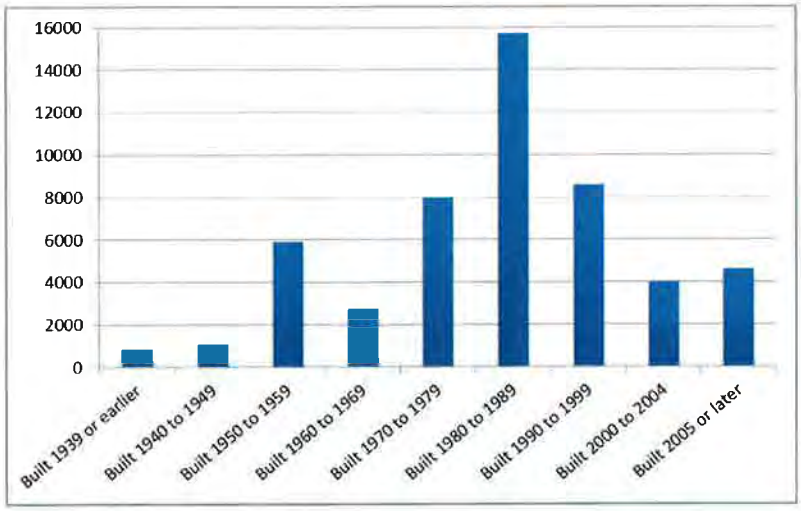


Figure 12: Lancaster Number of Structures Built by Year

Home values are an important consideration when evaluating the potential dollar loss due to disasters. These values can also be used to assess the cost / benefit of mitigation activities and planning. In Lancaster, the majority of Owner Occupied Units are valued between $200,000 and $499,000. Consequently, the potential dollar losses from a disaster can rapidly escalate – illustrating the need for mitigation planning.

Value		
	Estimate	Percent
Owner-occupied units	**28,750**	**100.0%**
Less than $50,000	2,441	8.5%
$50,000 to $99,999	2,449	8.5%
$100,000 to $149,999	4,127	14.4%
$150,000 to $199,999	4,310	15.0%
$200,000 to $299,999	7,132	24.8%
$300,000 to $499,999	6,952	24.2%
$500,000 to $999,999	1,057	3.7%
$1,000,000 or more	282	1.0%
Median (dollars)	214,800	(X)

Table 11: Lancaster Home Value Distribution

Source: US Census Bureau 2007 – 2010 American Community Survey

Lancaster Distribution of Owner Occupied Unit Values

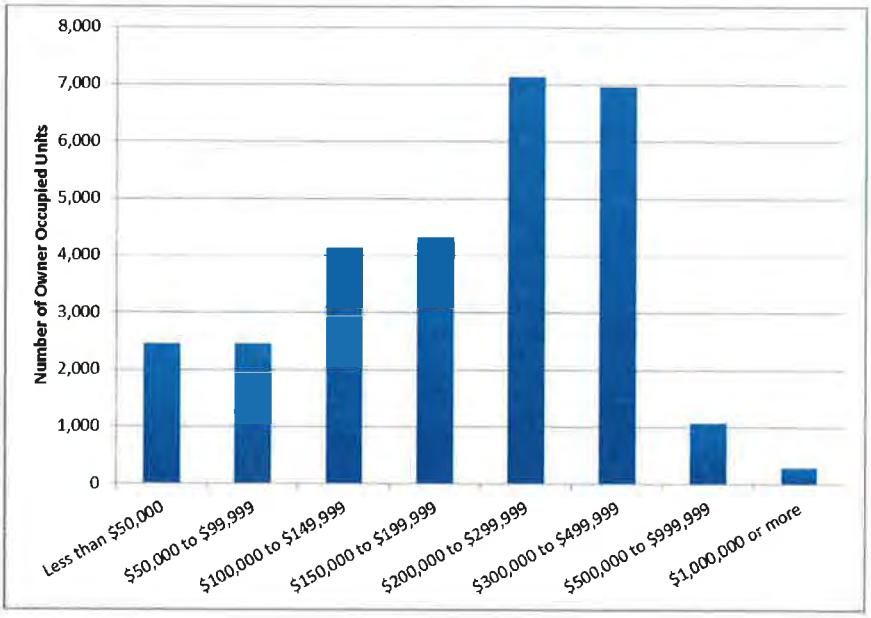


Figure 13: Lancaster Distribution of Owner Occupied Unit Values

Housing Program

The City's Housing and Neighborhood Revitalization Program includes elements for:

- Construction and rehabilitation of affordable housing
- Neighborhood Stabilization Program

Lancaster's Housing Division runs the Housing & Neighborhood Revitalization Program that reviews areas within the City in order to develop a strategy and implementation plan to redevelop specific challenged housing; to improve the stability of existing neighborhoods; to provide subdivision and site planning design guidance for infill development; and to ensure adequate infrastructure.

The Neighborhood Stabilization Program (NSP) is a federal program created to help municipalities manage the foreclosure. The NSP has awarded Lancaster funds to acquire and rehabilitate foreclosed homes, and then resell the homes to low-to-moderate income families.

Land Use

When the City of Lancaster adopted its first General Plan in 1980, the area within the incorporated city limits was approximately 34 square miles. Annexations since the 1980s have increased the area of the city limits to the current 94 square miles. As of 2009, only 30% of the land in the incorporated city limits was developed.

The General Plan divides the city into Rural and Urbanizing areas, with the Urbanizing areas designated for urban development. According to the General Plan, the Urbanizing areas contain enough open space and infill to accommodate the projected 117% population growth expected to occur by 2030.

The City of Lancaster has committed to sustainable development goals as a guide to its urban development and redevelopment projects. The City of Lancaster General Plan details several planned revitalization and redevelopment projects to focus on the City's urban core, with one of the revitalization goals meant to encourage infill development. The redevelopment goals focus on the idea of "smart growth" – sustainable development practices meant to decrease urban sprawl, protect open space and the environment, conserve natural and energy resources, and protect open space. Lancaster has created a "mixed-use" development designation to encourage mixed housing and commercial developments and redevelopment projects close to transportation and the City's downtown core.

Lancaster has a number of commercial and industrial business parks, shopping centers, and community gathering spaces, including:

- Power Center (shopping)
- Lancaster Boulevard (The BLVD)
- Lancaster Auto Mall
- Lancaster Performing Arts Center
- Fox Field Industrial Corridor
- North Lancaster Industrial Center
- Lancaster Business Park
- Enterprise Business Park
- North Valley Industrial Center
- Airport Business Park (California City)

Regional access to Lancaster is provided by California State Route 14 that runs north/south through Northern Los Angeles and Kern Counties, and California State Route 138 that runs east / west from Interstate 5 north of Santa Clarita and terminates near the city of Crestline in San Bernardino County.

Homeowners Associations

Homeowners associations meet to discuss various community issues, including disaster recovery, and are involved with the community. The following is a list of the Homeowners Associations in the Antelope Valley area.:

- Antelope Valley Country Club HOA
- Barbara Townhomes, Inc.
- Beech Wood Townhouses
- Beechdale Meadows TA, Inc.
- California Chateau CA
- Casa De Pueblo Of Palmdale HOA
- Challenger II Townhouse Condo Owners' Assn., Inc.
- Chatham Court HOA
- College Park Garden Homes CA
- Desert Hills HOA
- El Domingo Estates Condo Assn.
- Friendly Village MobileHOA Assn., Inc.
- Godde Hill Estates HOA
- HOA of Leisure Lakes Mobilehome Park, Inc.
- J-4 HOA
- Lakeshore Condo Owners' Assn., Inc.
- Lancaster Somerset Place HOA
- Lancaster Woodbridge I HOA
- Mammoth View Villas HOA, Inc.
- Marbella Villas - Lancaster HOA
- Palmdale Village HOA
- Palmdale Villas Townhomes Assn.
- Park Shadows HOA, Inc.
- Park Somerset Of Lancaster HOA
- Parthenia Villas Owners Assn.
- Pine Creek Village HOA, Inc.
- Pinnacle at Quartz Hill - Columbia Way
- Rancho Colima Mutual Benefit Assn.
- South Antelope Valley Water Basin Assn.
- Stanridge HOA
- Sunrise East Garden Townhouses HOA, Inc.
- The Candlewood HOA
- The Renaissance at Quartz Hill HOA, Inc.
- Villa Patrician HOA, Inc.
- Westfield Estates HOA, Inc.
- Windsor Court HOA

LAW ENFORCEMENT AND FIRE RESOURCES

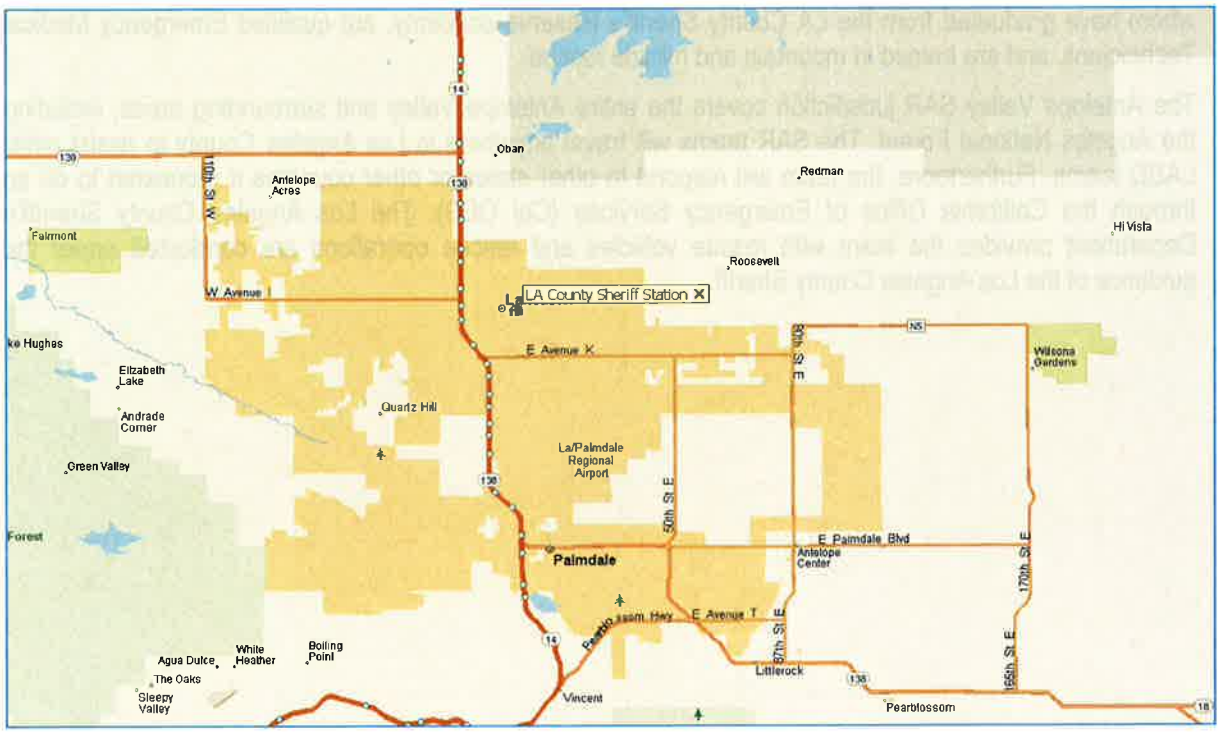
The City of Lancaster is part of Los Angeles County. Lancaster contracts for essential services such as law enforcement with the Los Angeles County Sheriff and fire and paramedic resources with the Los Angeles County Fire Department. In addition, Highway 14 is a major transportation corridor under the jurisdiction of the California Highway Patrol.

The Los Angeles County Sherriff's Department

Lancaster contracts its law enforcement services with the Los Angeles County Sheriff's Department. The Lancaster Sheriff's Station provides 24 hour access and is located at 501 West Lancaster Boulevard, Lancaster, CA 93534.

Figure 14: LASD Lancaster Station

This station serves the city of Lancaster, as well as all unincorporated areas between Lake Los Angeles to the east and Neenach to the north west, up to the Los Angeles / Kern County border. This large service area encompasses a blend of urban, residential, and rural areas.



Map 4: LASD Lancaster Station Location

State Prison

There is a state prison in the Lancaster area. The California State Prison is operated by the California Department of Corrections & Rehabilitation. The California State Prison has an annual budget of $100 million and houses approximately 4,550 inmates with 1,519 staff members (custody and support employees).[2]

Local Prisons and Detention Centers	
California State Prison California Department of Corrections & Rehabilitation	44750 60th St W, Lancaster, CA 93536

Los Angeles County Search and Rescue (SAR)

Search and Rescue in the City of Lancaster is provided by the Los Angeles County Search & Rescue for more than 50 years. The LA County SAR is an all-volunteer team of approximately 110 people, most of whom have graduated from the LA County Sheriff's Reserve academy, are qualified Emergency Medical Technicians, and are trained in mountain and hillside rescue.

The Antelope Valley SAR jurisdiction covers the entire Antelope Valley and surrounding areas, including the Angeles National Forest. The SAR teams will travel anywhere in Los Angeles County to assist other LASD teams. Furthermore, the team will respond to other states or other countries if requested to do so through the California Office of Emergency Services (Cal OES). The Los Angeles County Sherriff's Department provides the team with rescue vehicles and rescue operations are conducted under the guidance of the Los Angeles County Sheriff.

[2] http://www.cdcr.ca.gov/Facilities_Locator/LAC-Institution_Stats.html

The Los Angeles Fire Department

Lancaster contracts fire and paramedic services with the Los Angeles County Fire Department. The Antelope Valley - Division Headquarters is located in Division 5 – North Regional Operations Bureau of the LA County Fire Department's Regional Plan Divisions. Battalion 11 of the Los Angeles County Fire Department is assigned to directly serve the greater Lancaster region. The Antelope Valley Division Headquarters are located at 42110 6th Street West, Lancaster, CA 93534.

BATTALION 11	
Fire Station #33 – Battalion Headquarters	44947 Date Ave., Lancaster, 93534
Fire Station #78	17021 N Elizabeth Lake Rd., Palmdale, 93550
Fire Station #84	5030 W Avenue L-14, Quartz Hill, 93536
Fire Station #112 – CFF	8812 W Avenue E-8, Lancaster, 93535
Fire Station #117	44851 30th St.T East, Lancaster, 93535
Fire Station #129 – Division Headquarters	42110 6th St. West, Lancaster, 93534
Fire Station #130	44558 40th St. West, Lancaster, 93536
Fire Station #134	43225 N 25th St. W, Lancaster, 93534
Fire Station #135	1846 East Avenue K-4, Lancaster, 93535
Fire Station #140 – CFF	8723 Elizabeth Lake Rd., Leona Valley, 93550
Fire Station #157 – CFF	15921 Spunky Canyon Rd, Green Valley, 91350

Table 12: Fire Station Listings Battalion 11
Source: County of Los Angeles Fire Department

Fire Prevention Division

The Los Angeles County Fire Department has a Fire Prevention Division that focuses on community education and identifying and eliminating hazardous conditions that can endanger life, the environment, and property. The Fire Prevention Division is composed Regional Units, Special Units, and an Engineering Section that manage different prevention functions and services. Lancaster is home to an Engineering Section that is tasked with the following:

- **Building Plan Checks**: Responsible for performing nonstructural fire safety plan reviews and approving architectural plans for various complex occupancies.
- **Fire Sprinkler Plan Checks**: Responsible for providing plan reviews for all structures requiring an automatic fire sprinkler system, fire pump, and / or on-site hydrants. They also review and approve fire protection systems.
- **Fire Alarm Checks**: Responsible for performing plan reviews on all structures that require a fire alarm or smoke management system. They review and approve all types of fire alarm systems and assist with on-site inspections and testing of complex alarm and smoke management systems.

The Fire Prevention Office is located at 335-A East Avenue K-6, Lancaster, CA 93535.

REGIONAL COLLABORATION

Community Emergency Response Training

Lancaster participates in the local Antelope Valley Community Emergency Response Training (CERT) programs. The CERT program is conducted by the Los Angeles County Fire Department and the Los Angeles County Sherriff's Department. This CERT effort allows individuals to prepare to respond to and cope with a disaster. Individuals who obtain a CERT certificate can volunteer for a "call-out team" that is comprised of volunteers who wish to help in the community when disaster strikes, as well as assist citizens in need until the first-responders (Fire, Sheriff, EMS) are available.

Figure 15: Antelope Valley CERT Logo

Specific Needs Awareness Planning (SNAP)

Figure 16: LA County SNAP Logo

Lancaster participates in the Los Angeles County Office of Emergency Management (OEM) Specific Needs Awareness Planning (SNAP) voluntary disaster registry. The SNAP Registry is an Internet-based system that allows residents to provide information to public safety officials about their access or functional needs. Examples include requirements relating to physical, medical, sensory, cognitive, or age-related conditions. SNAP does not guarantee priority response to registrants; it is used by emergency response officials to plan and respond to the requirements of people with access and functional needs during a disaster by integrating databases and mapping technology together.

CodeRED

Lancaster has implemented the CodeRED Notification System. CodeRED is an ultra-high-speed telephone communication service for communications to residents. This system allows the City to telephone all areas or targeted areas in case of an emergency situation that requires immediate action (such as a missing child or evacuation notice).

EMERGENCY PREPAREDNESS

The following groups are active in providing emergency preparedness, mitigation and response services within the City of Lancaster:

Emergency Operations Center

The City of Lancaster has a fully-equipped and maintained Emergency Operations Center located at the City Hall at 44933 Fern Avenue, and an alternate Emergency Operations Center located at the City Maintenance Yard at 615 West Avenue H. Activation of the center can be ordered by the City Manager, the Deputy City Manager, the Assistant to the City Manager, the Parks, Recreation and Arts Director, or the Housing and Neighborhood Services / Redevelopment Director, based on who is the acting Director of Emergency Services / EOC Director (the EOC Director), or who is acting on behalf of the acting EOC Director, or an appointed representative.

Emergency Response Team

The City of Lancaster implements a volunteer Community Emergency Response Team (CERT). The Lancaster CERT is part of the larger Antelope Valley CERT (AVCERT) that serves Lancaster, Palmdale, Quartz Hill, Lake Los Angeles, Acton, Agua Dulce, and the nearby Lakes and Valleys areas.

Lancaster Search and Rescue (SAR)

In addition to the services provided by Los Angeles County Search & Rescue (Los Angeles County Sheriff), Lancaster maintains a Search and Rescue Team through its CERT program. These volunteers would assist public safety agencies in rescue activities if requested. Different branches of the Operations section have the ability to supervise search and rescue activities, based on the type of event.

General Plan

The City Council of Lancaster adopted a new General Plan on July 14, 2009 that details a strategy for the City's development over the next twenty years. Included in this plan are provisions for seismic activity, flooding, wildfire, hazardous materials, and other general emergency preparedness topics.

As part of the General Plan, the City of Lancaster implemented the following principals that adhere to particular facets of disaster preparedness:

- Protect all persons and property in Lancaster from seismic and non-seismic geological hazards.
- Protect Lancaster residents, workers, and visitors from flood hazards.
- Protect all persons in Lancaster from significant noise caused by local airports and air stations, auto and truck traffic, rail traffic, and industrial and construction activities.
- Ensure that life and property in Lancaster are not endangered by the use, storage, or transport of hazardous materials.
- Protect all persons and property in Lancaster from criminal activities.
- Protect all persons and property in Lancaster from urban and wild land fires.

SECTION 3. RISK ASSESSMENT

The goal of mitigation is to reduce the future impacts of hazards. Hazards can result in injuries and the loss of life, cause property damage, disrupt the local economy, and force the expenditure of large amounts of public and private funds to assist with recovery. In order to focus efforts on the most likely and highest impact scenarios, mitigation must be based on a comprehensive Risk Assessment.

A Risk Assessment measures the potential loss from a hazard event by evaluating the vulnerability of buildings, infrastructure and people. It identifies the characteristics and potential consequences of hazards, how much of the community could be affected by a hazard, and the impact on community assets. Risk Assessment consists of:

- Hazard Identification and Risk Analysis
- Vulnerability Analysis / Loss Estimates

> *Note: This Risk Assessment presents loss estimates and provides a foundation for evaluating mitigation measures should a real hazard event occur. The loss estimates are intended to support the decision making process for mitigation efforts.*
>
> *It is important to note that the loss estimates calculated for this Risk Assessment used available data and methodologies and are approximate. These estimates should be used to understand the relative risk from hazards and potential losses and are not intended to be predictive of precise results.*
>
> *Uncertainties are inherent in any loss estimation methodology arising in part from incomplete scientific knowledge concerning natural hazards and their effects on the built environment. Uncertainties also result from approximations and simplifications that are necessary in developing vulnerability estimates (e.g., risk of loss projections and relative likelihood of occurrence). These factors can result in a range of uncertainty in loss estimates produced by this analysis.*

DISASTER HISTORY

Emergencies and disasters can cause damage to the City of Lancaster and its residents, businesses, infrastructure and the environment. These disasters can cause fatalities or injuries and expense in terms of response and recovery dollars.

The Antelope Valley area has experienced natural disasters in the past and continues to have the potential for future events. While the risk of disasters cannot be eliminated, the effects can be reduced through a well-organized public education and awareness effort, preparedness, and mitigation. In addition, communities must be prepared to provide efficient and effective response and recovery. Furthermore, careful planning and collaboration among public agencies, private sector organizations, and citizens within the community can minimize the losses that result from disasters.

In order to illustrate the potential hazards to the region, a review of historical events can provide indicators for future threats to the area. The table below provides a summary of major disasters occurring in Los Angeles County since 1995.

Incident Period	Hazard Type	Disaster #	Counties Declared	Federal Declaration	Total Public Assistance Grants
January 16 - February 6, 2010	Severe Winter Storms, Flooding, and Debris and Mud Flows	FEMA-1884-DR	Calaveras County, Imperial County, Los Angeles County, Riverside County, San Bernardino County, Siskiyou County.	3/8/2010	$15,604,176
November 13 - 28, 2008	Wildfire	FEMA-1810-DR	Los Angeles County, Orange County, Santa Barbara	11/18/2008	$35,044,374
October 21, 2007 - March 31, 2008	Wildfire, flooding, mud flows, and debris flows directly related to the wildfires	FEMA-1731-DR	Los Angeles, Orange, Riverside, San Bernardino, San Diego, Santa Barbara, Ventura	10/24/2007	$170,094,288
January 11-17, 2007	Severe Freeze	FEMA-1689-DR	Fresno, Imperial, Kern, Los Angeles, Monterey, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, Tulare, Ventura	3/13/2007	approx. $23,000,000
February 16 - 23, 2005	Severe Storms, Flooding, Landslides, and Mud and Debris Flows	FEMA-1585-DR	Los Angeles, Orange, Riverside, Ventura	4/14/2005	$74,826,845
February 2, 1998 - April 30, 1998	California Severe Winter Storms and Flooding	FEMA-1203-DR	Los Angeles and 40 additional counties	2/9/1998	not listed
February 13 - April 19, 1995	Severe Winter Storms, Flooding, Landslides, Mud Flows	FEMA-1046-DR	Los Angeles and 57 additional counties	3/12/1995	not listed

Table 13: Los Angeles County Federal Declared Disasters from 1995-2010

Source: FEMA

While Lancaster does not have a high risk of damage from events such as wildfires and landslides, areas in Lancaster's sphere of influence are prone to such events, such as the Canyon Fire in Tehachapi in September, 2011.

FEDERAL REQUIREMENTS FOR RISK ASSESSMENTS

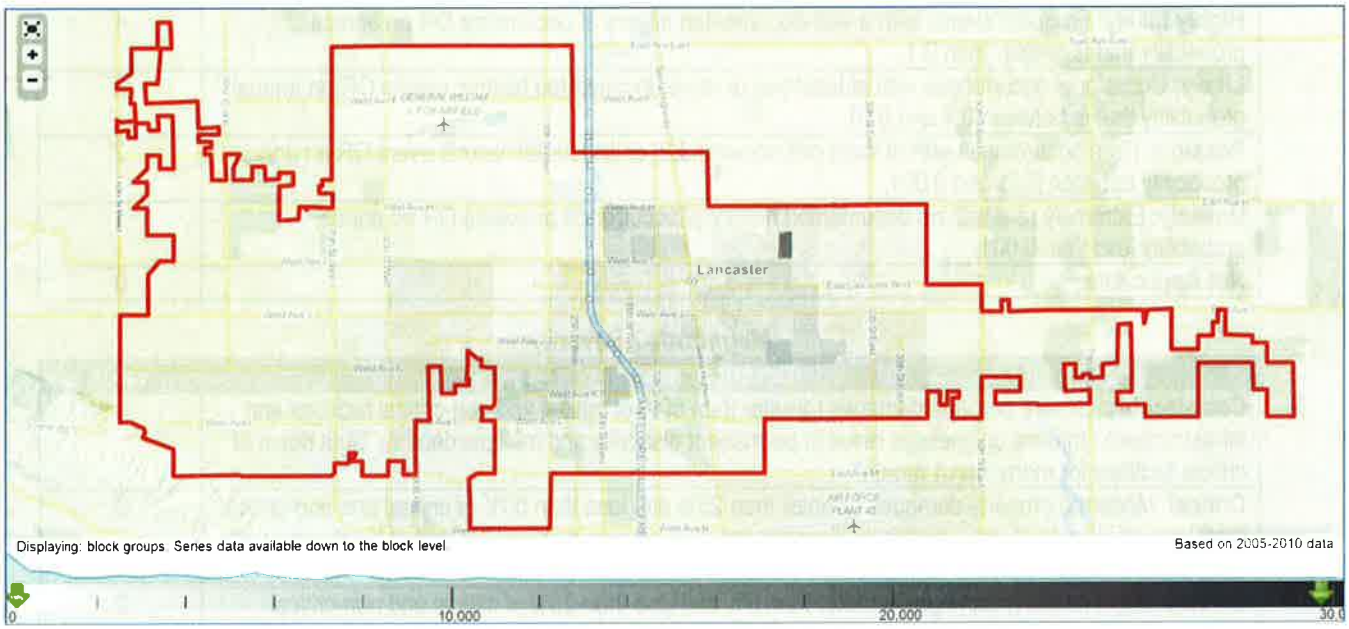
Federal regulations for hazard mitigation plans outlined in 44 CFR Part 201 include a requirement for conducting a Risk Assessment. This Risk Assessment requirement is intended to provide information to help communities identify and prioritize mitigation activities that will reduce losses from the identified hazards. The hazards profiled in this mitigation plan include: earthquakes, earth movement (including landslide), flooding, fires (including wildland and structural), windstorms and terrorism.

The Federal criteria for conducting Risk Assessments under 44 CFR Part 201 (Section 322 of the Stafford Act, 42 U.S.C. 5156) and information on how Lancaster plans to meet those criteria are outlined below.

Section 322 Plan Requirement	How is this addressed?
Identifying Hazards	Each hazard section includes an inventory of selected available data sources that identify hazard areas. Maps identifying the locations of hazards in Lancaster are provided in this Risk Assessment and in each individual hazard section, i.e., Earthquake, Wildfire, Wind, Landslide, Flood, and Terrorism.
Profiling Hazard Events	Each hazard section includes documentation of the history, and causes and characteristics of the hazard in the Region.
Assessing Vulnerability: Identifying Assets	The "hazard identification" and "risk assessment" provide a summary of the vulnerability assessment from each hazard and (where data is available) contain the types and numbers of existing buildings, infrastructure and critical facilities exposed to each hazard.
Assessing Vulnerability: Estimating Potential Losses	The calculations of the impact of the hazard (if data was available), the economic exposure, and physical losses, are discussed in this Risk Assessment and under each hazard of this Hazard Mitigation Plan. Vulnerability assessments were completed for the hazards addressed in the plan, and quantitative estimates were made (when data was available) for each hazard.
Assessing Vulnerability: Analyzing Development Trends	The Community Profile Section of this plan provides a description of the development trends in the Lancaster area, including the geography and environment, population and demographics, land use and development, housing and community development, employment, business-base, and transportation data.

HAZARD IDENTIFICATION AND RISK ANALYSIS

Hazard identification consists of (1) defining the study area in terms of scale and coverage; and (2) collecting and compiling a list of prevalent hazards in the study area to help narrow the focus of the analysis. The figure below depicts the study area and population density



Map 5: Lancaster Population Density

Source: City-Data.com

Hazard Identification Process

Input on the types of hazards and relative risk was solicited from members of the community through a Disaster Preparedness Risk Survey (see Annex C) that asked questions regarding the public's general preparedness for disasters as well as which hazards were most likely to impact the local area. Further input was also obtained from the Hazard Mitigation Plan Working Group (See Annex D). The following sections describe the process and results obtained.

Community Disaster Preparedness Risk Survey

Lancaster posted the Disaster Preparedness Risk Survey (see Annex C) on its City Web site. Based on the results of the survey, community participants felt that **earthquake** and **fire** were the most likely hazard events to affect the area. These responses were based on magnitude, impact, and probability.

Hazard Mitigation Plan Working Group

The HMP Working Group was created to assess the risk and vulnerability of hazards in the Lancaster area. In order to obtain a comprehensive rating of the hazards, the HMP Working Group rated the identified hazards via a Hazard Rating Survey. This method of tabulation considers the probability, magnitude / severity, the duration and warning time for each hazard and then produces a risk index.

Risk Survey

The HMP Working Group completed a Hazard Risk Survey (see Annex D) to rank identified hazards according to probability, magnitude / severity, warning time, and duration using the following values.

Probability

Description	Value
Highly Likely: Frequent events with a well-documented history of occurrence OR an annual probability that is greater than 0.1.	4
Likely: Occasional occurrences with at least two or more documented historic events OR an annual probability that is between 0.1 and 0.01.	3
Possible: Rare occurrences with at least one documented or anecdotal historic event OR an annual probability between 0.01 and 0.001.	2
Unlikely: Extremely rare with no documented history of occurrence or events OR an annual probability less than 0.001.	1
Not Applicable	0

Magnitude / Severity

Description	Value
Catastrophic: Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than 1 month.	4
Critical: Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week and less than 1 month.	3
Limited: Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than 1 day and less than 1 week.	2
Negligible: Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.	1
Not Applicable	0

Warning Time

Description	Value
Less than 6 hours or no warning	4
6 to 12 hours	3
12 to 24 hours	2
More than 24 hours	1
Not Applicable	0

Duration

Description	Value
More than 1 week	4
Greater than 24 hours, up to 1 week	3
Greater than 6 hours, up to 24 hours	2
Less than 6 hours	1
Not Applicable	0

The following table summarizes the results using the following equation and weighting factors. [3]

Risk = 0.45 * Probability + 0.3 * Magnitude/Severity + 0.15 * Warning Time + 0.1 * Duration

Hazard	Average Probability	Weighted Probability	Average Magnitude	Weighted Magnitude	Average Warning Time	Weighted Warning Time	Average Duration	Weighted Duration	Risk
Severe Windstorm	3.27	**1.85**	2.07	**.78**	2.19	**.39**	2.36	**.25**	**3.27**
Earthquake (Greater than Magnitude 6)	2.88	**1.59**	2.77	**1.05**	2.73	**.51**	3.16	**.44**	**3.59**
Power Outage	2.48	**1.40**	1.50	**.57**			1.52	**.19**	**2.73**
Wildfire	2.14	**1.18**	1.82	**.69**	2.20	**.35**	2.25	**.28**	**2.50**
Flood	1.81	**1.00**	1.69	**.61**	1.67	**.26**	2.11	**.27**	**2.14**
Terrorism	1.50	**.85**	1.52	**.57**	1.82	**.34**	1.45	**.18**	**1.94**
Landslide	1.07	**.60**	1.00	**.31**	1.70	**.32**	1.19	**.15**	**1.38**

Table 14: Hazard Rating Survey

Identified Hazards

Based on the risk ratings for each hazard to the region, the HMP Working Group chose to incorporate the following events into the Hazard Mitigation Plan:

- Severe Windstorm
- Earthquake
- Power Outage
- Wildfire
- Flood
- Terrorism

Each of these disasters can have widespread effects that include loss of life and property, disruption to critical infrastructure (utilities, communications, transportation, etc.), and long term economic loss to the area. Specific event scenarios are provided in the Vulnerability and Loss Estimates section of this Risk Assessment.

Note: The only human generated disasters included in this plan are terrorism and energy events. Although this threat is viewed as unlikely, the lack of warning time raises the overall risk score.

[3] Formula published by the Arizona Division of Emergency Management (2008)

Other Natural Disasters

Drought is a natural disaster that has in the past affected the Antelope Valley. Land subsidence as a result of drought and increasing population pressures on the water supply is a concern in the Antelope Valley, although one with little direct impact on the health and safety of residents. The following sections provide brief summaries of these threats.

Drought

Historical records of the last century do not show any significant loss of life or property to the Lancaster area because of a drought occurrence. The last devastating drought to hit the Antelope Valley was from 1894 to 1904, an event that caused most farmers to move out of the Valley, only to return after new irrigation techniques were introduced after 1905. More recently, Lancaster and the Antelope Valley had water supplies provided by the State Water Project reduced as a result of droughts in 1976, 1991, 2008, as well as other years when drought affected the aqueduct sources in Northern California.

Although Southern California is under constant threat of drought, there is no indication that a serious threat to life or property exists. Below average rainfall in Southern California during the fall and winter of 2012-2013 mean that the likelihood of drought conditions developing in the Antelope Valley during 2013 are likely.

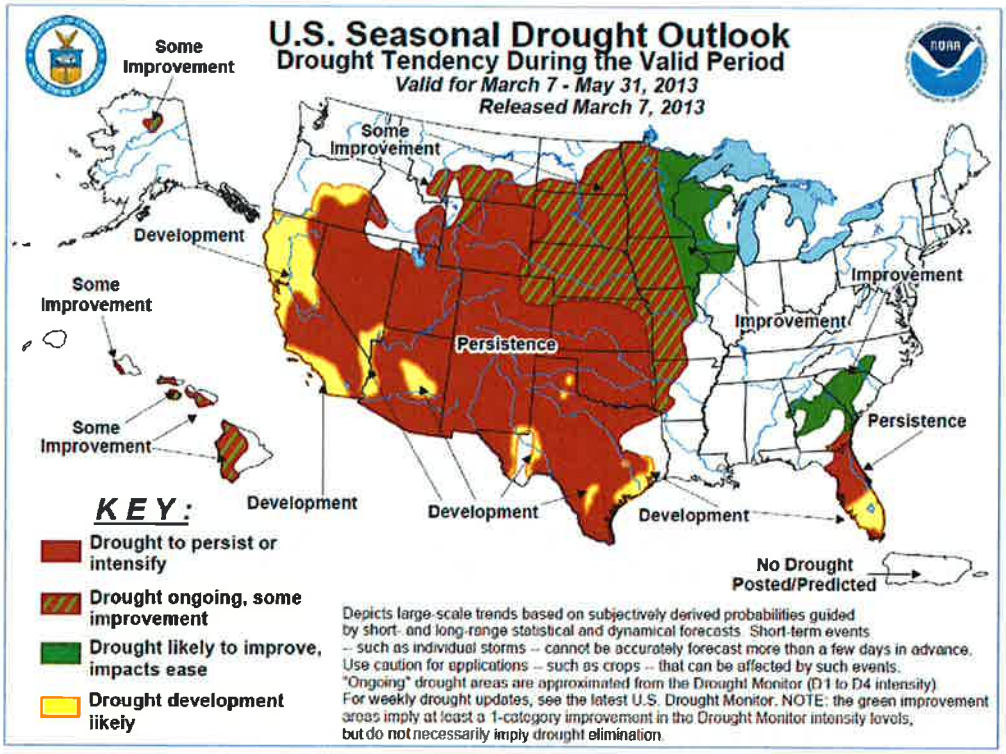


Figure 17: United States Seasonal Drought Outlook

It is important to note that drought can have a secondary impact to the hydro-electric power generation capabilities of the entire Western United States. As a result, drought remains a concern for the entire region.

Land Subsidence

Land subsidence is occurring within the Antelope Valley, including around wells close to the City of Lancaster. It is most often caused by the withdrawal of water from underground reservoirs. Subsidence from any cause accelerates maintenance problems on roads, lined and unlined canals, and underground utilities. Some serious effects of land subsidence include change of gradient along water conveyance canals, damage to roads, bridges and buildings, and collapse of water well casings.[4] Subsidence can also disturb buried energy infrastructure such as fuel and natural gas lines. Understanding and detecting land subsidence in very early stages is important to prevent these types of structural damage.

Figure 18: Edwards Air Force Base Fissure Caused by Subsidence

Source: http://pubs.usgs.gov/fs/fs-103-03/

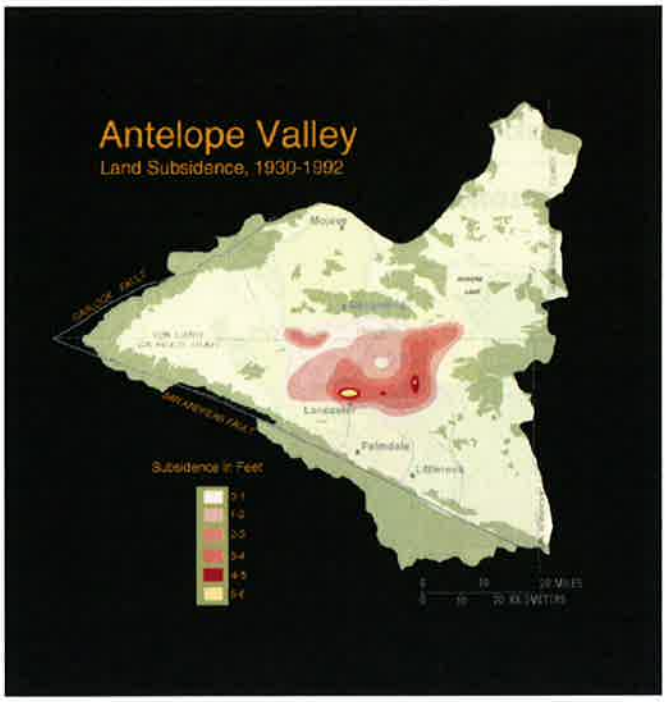


Figure 19: Land Subsidence in the Antelope Valley 1930-1992

Source: http://ca.water.usgs.gov/groundwater/poland/polfig.html

Lancaster has identified areas of the city that may be affected by subsidence, including the area north of Lancaster Boulevard and west of 10th Street West where the soils are classified as moderately expansive and warrant special design considerations. High shrink-swell potential is found in the general area between Avenue I and Avenue J to 75th Street W, and north of the City between 40th Street W and Sierra Highway. The City has detailed programs in its Master Plan to mitigate building and fissuring issues caused by subsidence.

[4] http://www.glenncountywater.org/documents/LandSubsidence.pdf

HUMAN GENERATED AND TECHNOLOGY DISASTERS

Power Outage

Power outages do occur occasionally so the risk of occurrence is somewhat likely. Electrical power is supplied to the Lancaster area by Southern California Edison (SCE). Power outages can occur whenever there is a severe disruption to power generation facilities or the distribution network (for instance, during a severe storm, an earthquake, a windstorm, or a wildfire).

In addition, human error is a potential risk. On September 8, 2011, an Arizona Public Service (APS) employee is believed to have caused a major power outage that included Arizona and portions of Southern California including San Diego, Orange, and Imperial Counties. The outage impacted more than 5 million people. While the Lancaster area was not impacted, this event demonstrates the potential for widespread power disruptions.

Finally, there is an ongoing risk of cyber-attack to the nation's critical infrastructure. On August 14, 2003, the MBLAST work (Blaster) and SoBig worms were suspected of causing a massive blackout in the Northeastern Interconnect, impacting 50 million customers from the Midwest to the East Coast.

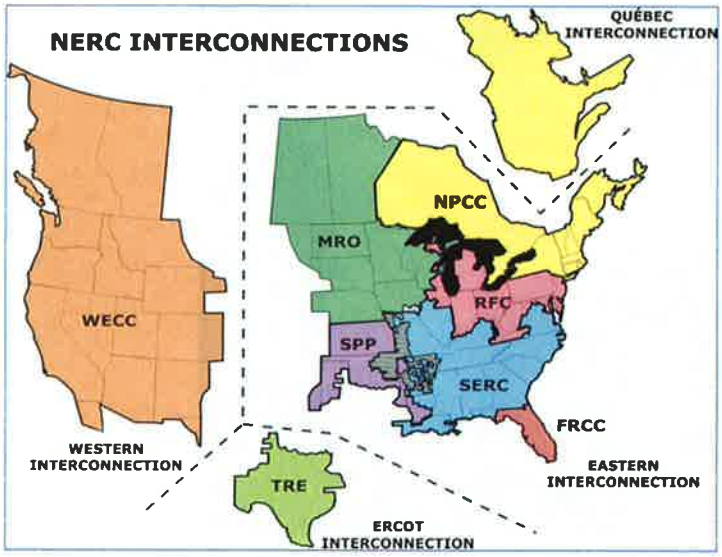
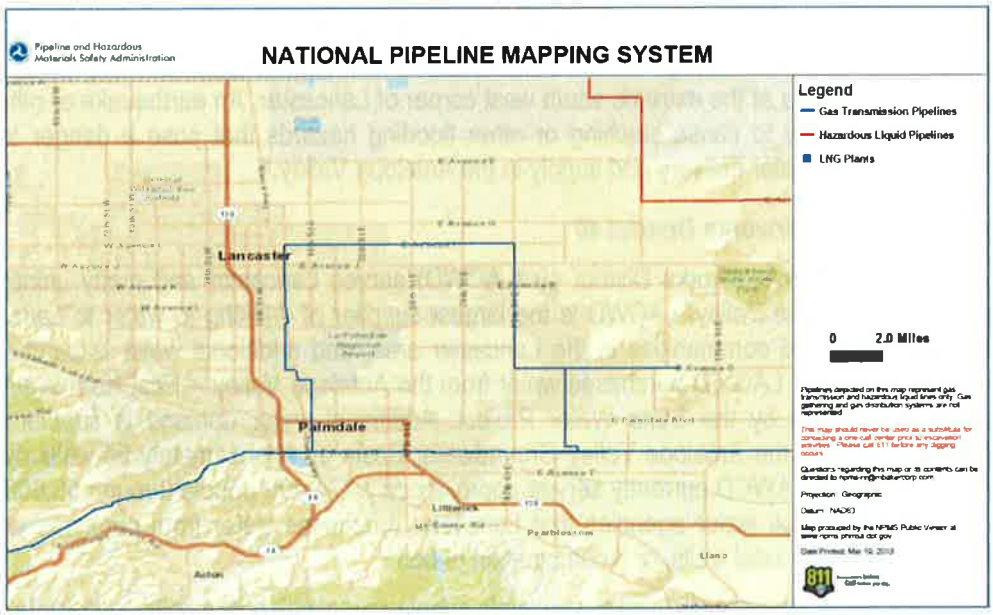


Figure 20: NERC Interconnection

To mitigate the threat of power outage, SCE has an emergency preparedness program in place to address pre- and post-disaster planning needs. Additionally, they have included in their plans the need to communicate with the Region during an outage. Finally, SCE continually assesses the vulnerability of their system to hazards and takes steps to mitigate the risk.

Pipeline Rupture / Explosion

Natural gas transmission and hazardous liquid pipelines are present within the Lancaster area, and there is a conceivable risk from rupture and / or explosion. Portions of Lancaster have underground pipelines that pose a potential risk to discrete locations in the community.



Map 6: Lancaster Pipelines

The San Bruno, California natural gas transmission pipeline rupture and fire on September 9, 2010 demonstrated the impact of this type of disaster to local populations. The pipeline operated by Pacific Gas and Electric Company ruptured releasing 47.6 million standard cubic feet of natural gas and produced a crater 72 feet long and 26 feet wide.

The explosion and resulting fire killed 8 people, left numerous injuries, destroyed 38 homes and damaged 70.[5] In addition, people in the surrounding neighborhood had to be evacuated until the danger subsided. While catastrophic in terms of lives and property loss, a pipeline rupture and/or explosion would be a localized event and not impact the Lancaster area as a whole. In terms of regional impact, the most widespread disruption would occur if there were significant damage where the gas transmission pipelines cross State Route 14, Sierra Highway, or Avenue I through Lancaster. This would cause transportation issues for the entire area. An explosion where the gas transmission pipelines cross Lake Palmdale may create a flood hazard.

Figure 21: San Bruno Pipeline Explosion

Source: Cal EMA

[5] NTSB Pipeline Accident Report, Pacific Gas and Electric Company Natural Gas Transmission Pipeline Rupture and Fire, San Bruno, California, September 9, 2010 (NTSB Number: PAR-11-01, NTIS Number: PB2011-916501, Adopted: August 30, 2011).

California Aqueduct

The California State Water Project captures, stores, and conveys water to 29 water agencies throughout California. It is a system of pumping and power plants; reservoirs, lakes, storage tanks; canals, tunnels, and pipelines that bring water from the Sierra Nevada Mountains and the valleys of Northern and Central California to Southern California. The 444 mile long California aqueduct starts just south of Livermore and splits into two branches at the base of the Tehachapi Mountains northeast of Quail Lake. The east branch supplies water to the Antelope Valley and the Inland Empire. The East Branch of the Aqueduct passes through an uninhabited area at the extreme south west corner of Lancaster. An earthquake or other human generated event is unlikely to cause seiching or other flooding hazards that pose a danger to life and property, but may impact water delivery and supply in the Antelope Valley.[6]

Los Angeles County Waterworks District 40

The Los Angeles County Waterworks District 40 (LACWD) serves Lancaster and many unincorporated communities in the Antelope Valley. LACWD is the largest supplier of drinking to water to Lancaster and many of the unincorporated communities in the Lancaster area, and additional water is purchased from other retail water agencies. LACWD purchases water from the Antelope Valley – East Kern Water Agency (AVEK), which is supplied by the State Water Project. Additional water demand is supplemented by groundwater pumped from the Antelope Valley Groundwater Basin by approximately 54 wells owned and operated by the LACWD. LAWCD currently serves approximately 174,000 people through 55,600 metered connections. The other retail water agencies that Lancaster purchases water from purchase water from AVEK, pump water through local wells, or a combination of both.

AVEK is a regional water importer and water wholesale supply organization that sells and distributes water to retail public and private water agencies. AVEC operates four water treatment sites in the Antelope Valley:

- Acton Water Treatment Plant
- Eastside Water Treatment Plant
- Rosamond Water Treatment Plant
- Quartz Hill Water Treatment Plant

The Quartz Hill Water Treatment Plant treats all of the imported water currently used in the Lancaster area.

Disruptions can occur to the water distribution system due to inadequate design and / or deteriorating conditions of ageing water transmission pipelines. This is especially true for Southern California, where much of the water supply is delivered by the State Water Project, 900 miles of canals, aqueducts, dams, and tunnels. This system is especially vulnerable to liquefaction damage caused by earthquakes.

[6] http://www.avek.org/AVEK_UWMP_2010_072111.pdf

Hazardous Materials Sites

The Lancaster area could be affected by hazardous materials incidents. The spills / releases of material can result from both stationary and mobile sources. The level of exposure form stationary sources is considered to be very low due to the types of business and industry conducted within the area (traffic from major highways and railways still pose a risk). Although there sites in the general vicinity known to harbor hazardous materials, there is no record of a major hazardous material spill or incident within the area. Because of this low historical frequency, the HMP Working Group did not address this disaster. The Antelope Valley Environmental Collection Center at the Antelope Valley Landfill handles hazardous and e-waste for the surrounding communities.

Civil Unrest / Riot

Los Angeles County experienced the Los Angeles Civil Unrest in 1992 and the Watts Riots in 1965. During these periods, the Lancaster area suffered no loss of life or property.

Similarly, during 2011 "Occupy LA" and other civil protests were staged in Los Angeles County and across the United States. The Occupy Lancaster group held small demonstrations, but there was little public disturbance or law enforcement intervention. The actual risk of a major civil disturbance in the Lancaster area is considered minimal.

Aircraft Crash

There are no major airports in the Lancaster area, but there are numerous general aviation airports and airstrips, private airports, and heliports in the Antelope Valley. The airports that pose the greatest risk to the area are Edwards Air Force Base, Naval Air Weapons Station China Lake, and Plant 42 in Palmdale, all government or government contracted stations used to test aircraft.

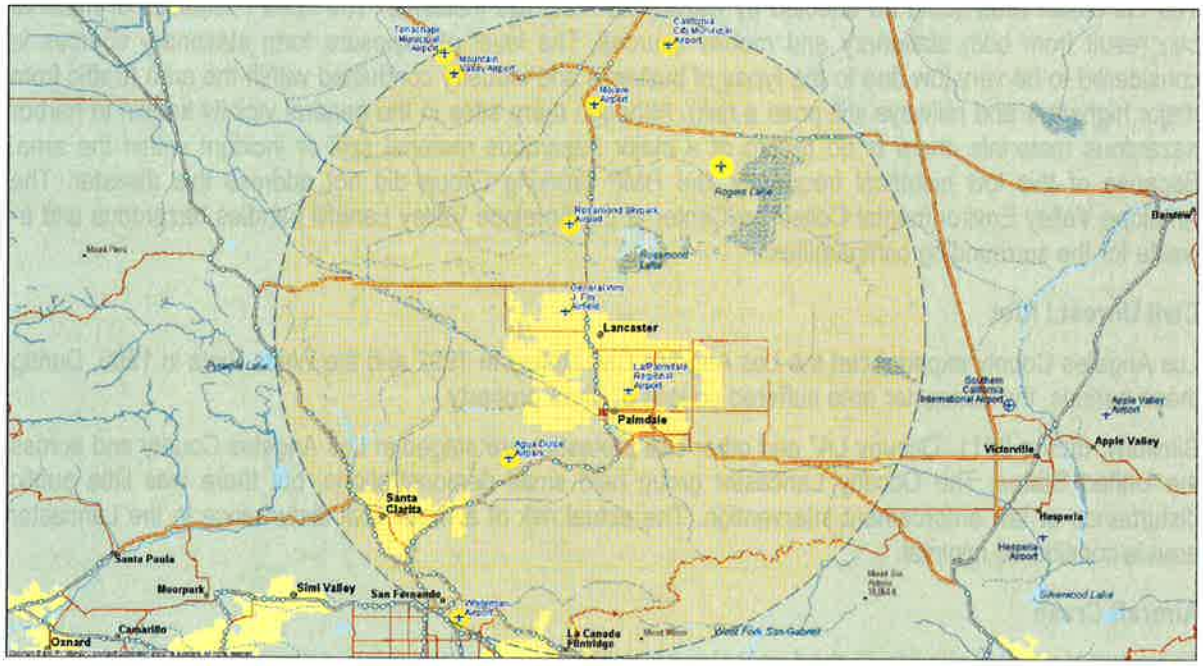
The airports within 35 miles of Lancaster are:

- General Wm. J. Fox Airfield
- LA / Palmdale Regional Airport / Air Force Plant 42
- Rosamond Skypark Airport
- Agua Dulce Airpark
- Mojave Airport
- California City Municipal Airport
- Mountain Valley Airport
- Whiteman Airport
- Tehachapi Municipal Airport
- Edwards Air Force Base

Private airports / airstrips in the area include:

- Quail Lake Sky Park Airport
- Bohunk's Airpark Airport
- Little Buttes Antique Airfield Airport
- Antelope Valley Service Center Heliport
- Gray Butte Field
- Crystal Airport

There is a small but existing risk of an aircraft crash in the Lancaster area. Nevertheless, if an aircraft were to crash, the impact would be limited to a localized area and would not disrupt the entire region.



Map 7: Airports within 35 miles

VULNERABILITY AND LOSS ESTIMATES

Assessing vulnerability is a three step process. The first step is to identify existing structures and critical facilities that are located within the hazard area. Government critical facilities are of particular concern because these buildings provide essential products and services to the general public that are necessary to preserve the welfare and quality of life in the region and fulfill important public safety, emergency response, and / or disaster recovery functions (see Critical Facilities and Infrastructure Matrix for a listing of key sites).

Once existing structures and critical facilities are identified, the next step is to include an estimate of losses for the identified asset. Estimating potential loss involves assessing the damage, injuries, and financial costs likely to be sustained in a geographic area over a given period of time. This level of analysis involves using mathematical models.

The two measurable components of risk analysis are magnitude of the harm that may result and the likelihood of the harm occurring. Describing vulnerability in terms of dollar losses provides the community and the state with a common framework in which to measure the effects of hazards on assets. The last step in assessing the City's vulnerability to hazards is to analyze development trends in the City.

Critical Facilities and Infrastructure Overview

Critical facilities and infrastructure are resources that are vital to the continued delivery of key government services or that may significantly impact the public's ability to recover from an emergency. For example, in order to provide Continuity of Operations (COOP) and Continuity of Government (COG) the city has developed its own Emergency Operations Center (EOC). The following lists are provided to illustrate the critical and essential facilities within the Lancaster area:

- Los Angeles County Sherriff's Stations
- Los Angeles County Fire Stations
- Retail, Commercial, and Industrial Sites
- Critical Infrastructure Matrix

Los Angeles County Sheriff's Station

The Lancaster Sheriff's station serves the City of Lancaster, as well as all unincorporated areas between Lake Los Angeles to the east and Neenach to the North West, up to the Los Angeles / Kern County border.

LOS ANGELES COUNTY SHERIFF	
Lancaster Los Angeles County Sheriff's Station	501 West Lancaster Boulevard Lancaster CA 93534

Table 15: Lancaster Area Sheriff's Station

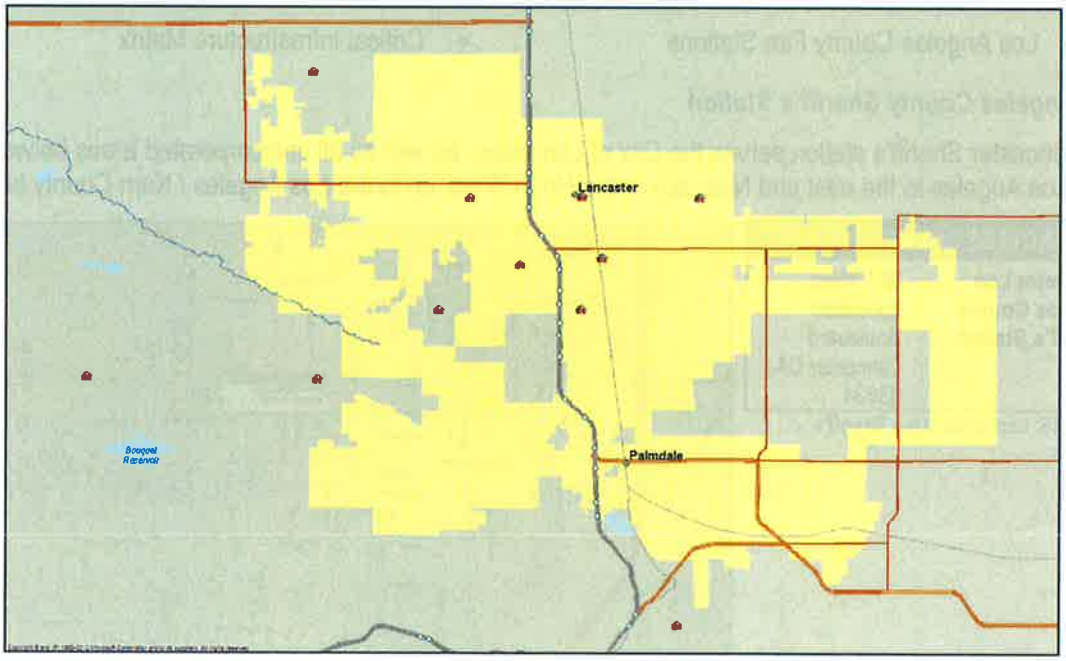
Map 8: Lancaster Los Angeles County Sheriff's Station

Los Angeles County Fire Stations

The following fire stations are located within the Lancaster area.

BATTALION 11	
Fire Station #33 – Battalion Headquarters	44947 Date Ave., Lancaster, 93534
Fire Station #78	17021 N Elizabeth Lake Rd., Palmdale, 93550
Fire Station #84	5030 W Avenue L-14, Quartz Hill, 93536
Fire Station #112 - CFF	8812 W Avenue E-8, Lancaster, 93535
Fire Station #117	44851 30th St.T East, Lancaster, 93535
Fire Station #129 – Division Headquarters	42110 6th St. West, Lancaster, 93534
Fire Station #130	44558 40th St. West, Lancaster, 93536
Fire Station #134	43225 N 25th St. W, Lancaster, 93534
Fire Station #135	1846 East Avenue K-4, Lancaster, 93535
Fire Station #140 - CFF	8723 Elizabeth Lake Rd., Leona Valley, 93550
Fire Station #157 - CFF	15921 Spunky Canyon Rd, Green Valley, 91350

Table 16: Lancaster Area Fire Stations



Map 9: Battalion 11 Fire Stations

Retail, Commercial, and Industrial Sites

The following sites in the City of Lancaster occupy at least 100,000 square feet.

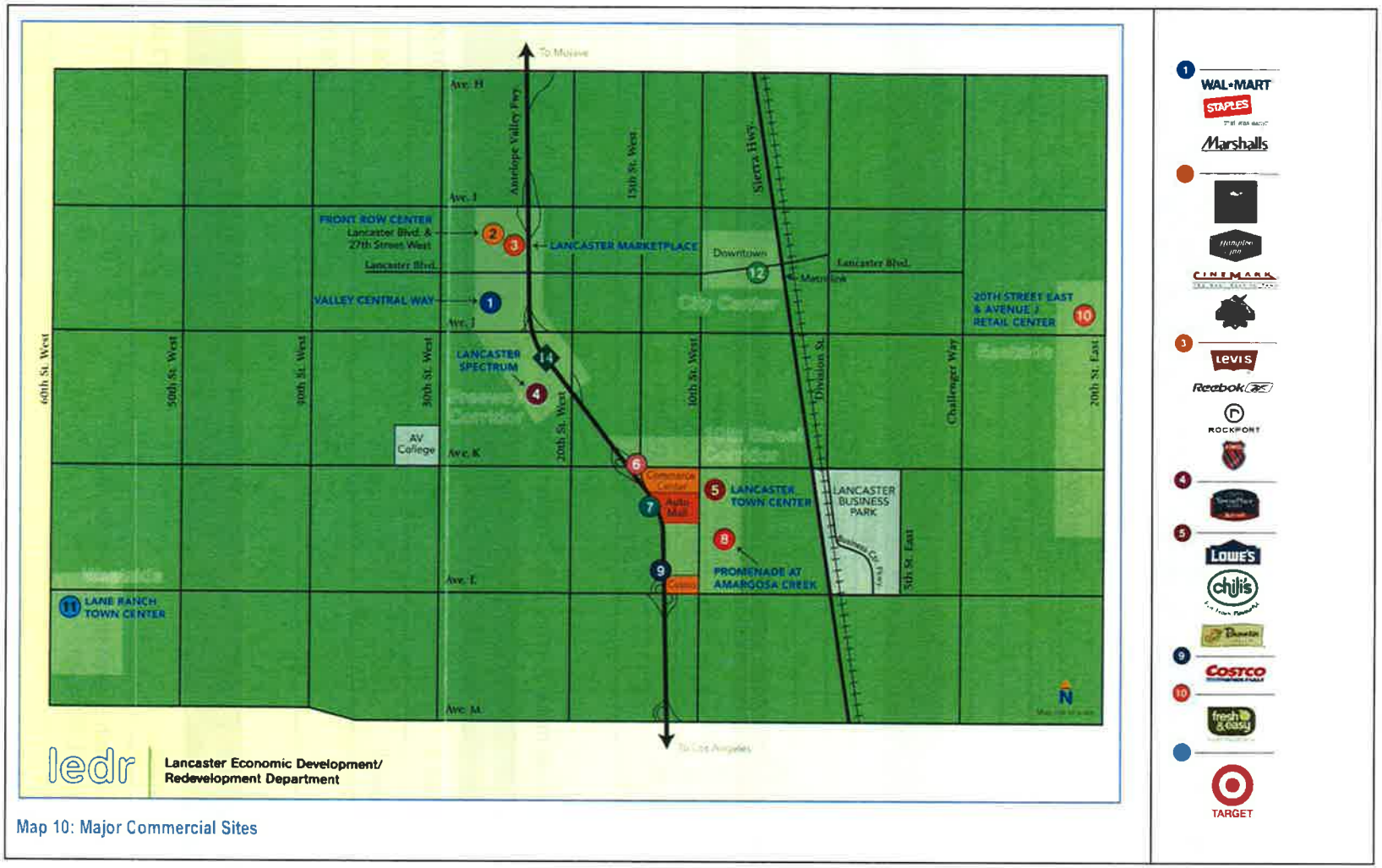
Address	Business Name	Retail Commercial Square Footage
2337 W. Ave. I	Young's RV Center	201,235
44765 Val Cent Way	Walmart	120,682
44226 20th St W.	Home Depot	105,700
1810 W. Ave. J	Kmart	175,600
43525 10th St. W.	Target	102,100
1140 W. Ave. L	Costco	148,643
1731 E. Ave. J	Walmart Store	160,509
Address	**Business Name**	**Other Commercial Square Footage**
2600 W. Ave. I	Cinemark 22	104,620
1600 W. Ave. J	AV Hospital Medical Center	339,588
1209 E. Ave. I	Stor Rite	196,400
176 Countrywide	Bank of America	101,395
Address	**Business Name**	**Industrial Square Footage**
3501 W. Ave. H	Michaels Warehouse	762,745
2801 W. Ave. H	Rite Aid Distribution Ctr.	923,845
46147 7th St. W.	BYD Coach and Bus	108,850
43120 Venture	Lance Campers	109,430

Two major areas make up more than 3 million square feet of business space in the City of Lancaster:

Lancaster Business Park Building Footages	
SP 80-02 Phase II	691,290 Square Feet
SP99-01 Phase III	708,509 Square Feet
Total	1,399,799 Square Feet

Fox Field Corridor	
Fox Field Corridor	1,973,698 Square Feet
AV Fairgrounds (with covered structures at fairground approximately 220,000 sq. ft.)	133 Acres

The following map below depicts the distribution of major commercial sites within the City. Most sites are along the Highway 14 corridor.



Map 10: Major Commercial Sites

Critical Facilities and Infrastructure Matrix

The following sectors in the Lancaster area are essential due to the impact of a disaster on the pubic (e.g., large public meeting places, economy, or key infrastructure). Sixteen (16) specific sectors are listed in Presidential Policy Directive 21 (PPD-21) Critical Infrastructure Security and Resilience. The Critical Facilities and Infrastructure Matrix below provides a summary of key governmental, utility, commercial, cultural, and historical sites in the region (City of Lancaster and adjacent areas). An understanding of critical facilities and infrastructure provides a basis of modeling current and future events and assists in focusing mitigation efforts.

Critical Infrastructure Sectors	Description	Critical Infrastructure Name
1. Chemical	Chemical manufacturers, pharmaceutical, consumer products, agricultural chemicals, etc.	N/A
2. Commercial Facilities	Public Assembly (e.g., arenas, stadiums, aquariums, zoos, museums, convention centers), Sports Leagues (e.g., professional sports leagues and federations) Gaming (e.g., casinos), Lodging (e.g., hotels, motels, conference centers), Outdoor Events (e.g., theme and amusement parks, fairs, campgrounds, parades), Entertainment and Media (e.g., motion picture studios, broadcast media), Real Estate (e.g., office/apartment buildings, condominiums, mixed-use facilities, self-storage) and, Retail (e.g., retail centers and districts, shopping malls)	• Cedar Grove • Commerce Center • Fox Field Industrial Center • Lancaster Market Place • Lancaster Business Center • Milestones of Flight Air Museum • The BLVD • Town Center • Valley Central Center
3. Communications	Terrestrial, satellite, and wireless transmission systems (major hubs, transmission/reception centers, etc.)	• Clear Channel Broadcasting • High Desert Broadcasting • Time Warner Cable
4. Critical Manufacturing	Primary metal manufacturing (iron and steel mills, ferro-alloys, aluminum, nonferrous metal production and processing), machinery manufacturing (engine, turbine, power transmission), electrical equipment (electrical equipment, appliance, and component manufacturing), transportation equipment manufacturing (motor vehicle, aerospace, railroad, etc.)	• BAE Systems • BYD Manufacturing • Lancampers • Michaels Distribution Center • Morton Manufacturing • Rite Aid Distribution Center • Sygma Distribution Center
5. Dams	Dams, navigation locks, levees, hurricane barriers, mine tailings impoundments, or other similar water retention and/or control facilities	• California Aqueduct East Bank • Fairmont Reservoir No .#2 • Lake Palmdale and Palmdale Dam • Littlerock Dam and Reservoir
6. Defense Industrial Base	Department of Defense (DoD), government, and the private sector worldwide industrial complex with the capabilities of performing research and development, design, production, delivery, and maintenance of military weapons systems, subsystems, components, or parts to meet military requirements	• Edwards Air Force Base • Naval Air Station China Lake • Plant 42 • Small and medium sized businesses that support the defense industry

Critical Infrastructure Sectors	Description	Critical Infrastructure Name
7. Emergency Services	First-responder disciplines that include: emergency management, emergency medical services, fire, hazardous material, law enforcement, bomb squads, tactical operations/special weapons assault teams, and search and rescue	• Los Angeles County Sheriff's Station - Lancaster • Los Angeles County Fire Station #33 – Battalion Headquarters • Los Angeles County Fire Station #129 – Division Headquarters • Los Angeles County Fire Stations #78, #84, #112 - CFF, #117, #130, #134, #135, , #140 – CFF, #157 – CFF
8. Energy	Electricity, petroleum, natural gas	• Edison Substations • Energy Transmission Lines • Hazardous Liquid Pipeline • Natural Gas Pipelines • Oil Pipelines • Solar Farms
9. Financial Services	Banks, thrifts, credit unions, insurers, securities brokers/dealers, investment companies, financial services, etc. Includes Bank / Financial headquarters, loan processing centers, credit card processing centers, data centers	• Bank of America Loan Processing Center
10. Food and Agriculture	Farming, livestock, poultry, food distribution, etc.	N/A
11. Government Facilities	General-use office buildings and special-use military installations, embassies, courthouses, national laboratories, and structures that may house critical equipment and systems, networks, and functions as well as cyber elements that contribute to the protection of sector assets (e.g., access control systems and closed-circuit television systems) and the protection of individuals who possess tactical, operational, or strategic knowledge or perform essential functions	• Antelope Valley Fairgrounds • City Hall • City Library • City Maintenance Yard • Edwards Air Force Base • Highway Patrol • Naval Air Station China Lake • Plant 42 • Stanley Kleiner Activity Center • Lancaster Municipal Stadium • Lancaster Performing Arts Center • Lancaster National Soccer Center • Museum of Art and History
	Education: Public and private universities, state colleges, community colleges, private colleges (education includes pre-kindergarten through 12th grade schools which are not listed individually here)	• Antelope Valley College • Cero Coso Community College • Lancaster University Center • University of Antelope Valley • West Coast Baptist College
	National Monuments and Icons: Places listed in the National Register of Historic Places, List of National Historic Landmarks, icons, or other recognized physical structures, objects, or geographic sites	N/A

Critical Infrastructure Sectors	Description	Critical Infrastructure Name
12. Healthcare and Public Health	Public and private healthcare facilities including hospitals and clinics.	• Antelope Valley Hospital Medical Center • High Desert Health System • Kaiser Permanente Health Center • Multi Ambulatory Care Center • Palmdale Regional Medical Center • Sierra Medical Group
13. Information Technology	Public and private sector information systems including the Internet	(see Communications Sector)
14. Nuclear Reactors, Materials, and Waste	Nuclear power plants; non-power nuclear reactors used for research, testing, and training; nuclear materials used in medical, industrial, and academic settings; nuclear fuel fabrication facilities; decommissioning reactors; and the transportation, storage, and disposal of nuclear material and waste	(see Hospitals and Public Health Sector for medical facilities that may use nuclear materials)

15. Transportation	Aviation, highways, maritime transportation, mass transit, pipeline systems, and rail	• Roads and Highways:
		  ○ California State Route 14
		  ○ Sierra Highway
		  ○ State Route 138 Pearblossom Highway
		• Mass Transit
		  ○ Metrolink
		  ○ Amtrak
		  ○ Commuter Bus (AVTA)
		• Pipelines (see Energy)

	Public and private airports, airstrips, and helipads	• Agua Dulce Airpark • Antelope Valley Service Center Heliport • Apple Valley Airport • Bohunk's Airpark Airport • Crystal Airport • General William J Fox Airfield • Gray Butte Field • Little Buttes Antique Airfield Airport • Mojave Air and Space Port • Palmdale Regional Airport • Quail Lake Sky Park Airport • Rosamond Skypark Airport • San Bernardino International Airport • Sheriff's Heliport • Victorville Airport

Critical Infrastructure Sectors	Description	Critical Infrastructure Name
	Postal & Shipping: High volume processing facilities, delivery units, collection locations, retail operations, transport vehicles, postal/delivery information and communications networks	• Antelope, Lancaster • Cedar, Lancaster • Lake Hughes, Lake Hughes • Lancaster, Lancaster • Rosamond, Rosamond
16. Water and Wastewater Systems	Drinking water and waste water	• LA County Waterworks District No. 40 • Tertiary water treatment plant • Underground aquifers • Water reclamation and treatment plants • Water storage tanks (multiple)
Other locations not otherwise defined	Prisons and detention centers	• California State Prison, Lancaster
	Religious centers with more than 2,000 attendees for a weekly service.	• Central Christian Church • Lancaster Baptist Church • Desert Vineyard Christian Fellowship • Hindu Temple of Antelope Valley (plan approved, in development)

Table 17: Critical Facilities and Infrastructure Matrix

Principle Employers

The following list represents the top 10 employers in the Greater Antelope Valley (includes the City of Lancaster, Palmdale, Tehachapi and Ridgecrest). In the event of a disaster, these organizations represent over 60% of the total employment base for the area.

Employer	Employees	Rank	Percentage of Total Valley Employment	Category
Edwards Air Force Base	10,610	1	17.13%	Defense Industrial Base
China Lake Naval Weapons	6,734	2	10.87%	Defense Industrial Base
County of Los Angeles	3,953	3	6.38%	Government
Lockheed Martin	3,100	4	5.01%	Critical Manufacturing
Palmdale School District	2,739	5	4.42%	Government
Antelope Valley Hospital	2,722	6	4.40%	Healthcare and Public Health
Northrop Grumman	2,611	7	4.22%	Critical Manufacturing
AV Union High School District	2,054	8	3.32%	Government
California Correctional	1,911	9	3.09%	Other
Bank of America	1,846	10	2.98%	Financial Services
Sub-Total	38,280		61.82%	
TOTAL	61,923 (All Employers)		100.00%	

Table 18: Top 10 Employers

Source: Greater Antelope Valley Economic Alliance Research: 2011 Economic Roundatble Report

Loss Estimates and Scenarios

Estimated Dollar Exposure

The Estimated Dollar Exposure represents the value of economic activity in the area that may be at risk during a disaster. The table below provides key economic data by sector (NAIC code) for 2007. The total loss exposure for the City of Lancaster (per the Employer Value of Sales, Shipments, Receipts, Revenue, or Business Done) is $12,479,000 per day (based on 365 days per year).

2007 NAICS code	Meaning of 2007 NAICS code	Number of Employer Establishments	Employer Value Of Sales, Shipments, Receipts, Revenue, or Business Done ($1,000)	Annual Payroll ($1,000)	Number of Paid Employees (for Pay Period Including March 12)
72	Accommodation and Food Services	222	$178,112	$45,912	3,733
56	Administrative and Support and Waste Management and Remediation Services	100	$94,833	$47,424	1,992
71	Arts, Entertainment, and Recreation	20	Withheld to avoid disclosing data for individual companies	Withheld to avoid disclosing data for individual companies	100 to 249
61	Educational Services	21	$17,632	$8,150	324
62	Health Care and Social Assistance	410	$1,033,585	$357,113	8,845
51	Information	29	Not Available	$14,790	407
31-33	Manufacturing	56	$258,596	$50,217	1,192
81	Other Services (except public administration)*	171	$88,906	$23,468	987
54	Professional, Scientific, and Technical Services	146	$85,508	$31,331	943
53	Real Estate and Rental and Leasing	116	$114,772	$17,774	654
44-45	Retail trade	343	$1,754,369	$156,492	6,023
42	Wholesale Trade: Merchant wholesalers, except manufacturers' sales branches and offices	65	$928,561	$40,083	905
	Totals	**1,699**	**$4,554,874 $12,479 per Day** (Based on 365 days/year)	**$792,754**	**26,105 to 26,254**

Table 19: Economic Activity by NAICS Code

2007 American Fact Finder for the City of Lancaster (http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_00A1)

*The Other Services (except Public Administration) sector comprises establishments engaged in providing services not specifically provided for elsewhere in the classification system. Establishments in this sector are primarily engaged in activities, such as equipment and machinery repairing, promoting or administering religious activities, grantmaking, advocacy, and providing drycleaning and laundry services, personal care services, death care services, pet care services, photofinishing services, temporary parking services, and dating services. Private households that engage in employing workers on or about the premises in activities primarily concerned with the operation of the household are included in this sector. Excluded from this sector are establishments primarily engaged in retailing new equipment and also performing repairs and general maintenance on equipment. These establishments are classified in Sector 44-45, Retail Trade. For the 2007 Survey of Business Owners, Subsector 813, Religious, Grantmaking, Civic, Professional, and Similar Organizations; and Industry 814110, Private Households are out of scope. For the 2007 Economic Census of Island Areas, Industry Group 8131, Religious Organizations; Industry 81393, Labor Unions and Similar Labor Organizations; Industry 81394, Political Organizations; and Industry 814110, Private Households are out of scope.

The following table provides the estimated economic loss per day for several scenarios. The projected potential economic loss ranges from $125,000 per day (1% loss) to 2,496,000 per day (20% loss).

2007 NAICS code	Meaning of 2007 NAICS code	Employer Value Of Sales, Shipments, Receipts, Revenue, or Business Done ($1,000)	1% Loss per Day ($1,000)	5% Loss per Day ($1,000)	10% Loss per Day ($1,000)	15% Loss per Day ($1,000)	20% Loss per Day ($1,000)
72	Accommodation and Food services	$178,112	$4.9	$24.4	$48.8	$73.2	$97.6
56	Administrative and Support and Waste Management and Remediation Services	$94,833	$2.6	$13.0	$26.0	$39.0	$52.0
61	Educational Services	$17,632	$0.5	$2.4	$4.8	$7.2	$9.7
62	Health Care and Social Assistance	$1,033,585	$28.3	$141.6	$283.2	$424.8	$566.3
31-33	Manufacturing	$258,596	$7.1	$35.4	$70.8	$106.3	$141.7
81	Other Services (except public administration)*	$88,906	$2.4	$12.2	$24.4	$36.5	$48.7
54	Professional, Scientific, and Technical Services	$85,508	$2.3	$11.7	$23.4	$35.1	$46.9
53	Real Estate and Rental and Leasing	$114,772	$3.1	$15.7	$31.4	$47.2	$62.9
44-45	Retail trade	$1,754,369	$48.1	$240.3	$480.6	$721.0	$961.3
42	Wholesale Trade: Merchant wholesalers, except manufacturers' sales branches and offices	$928,561	$25.4	$127.2	$254.4	$381.6	$508.8
	Totals	**$4,554,874**	**$125**	**$624**	**$1,248**	**$1,872**	**$2,496**

Table 20: Estimated Dollar Exposure per Day

71 Arts, Entertainment, and Recreation and 51 Information omitted – no data available

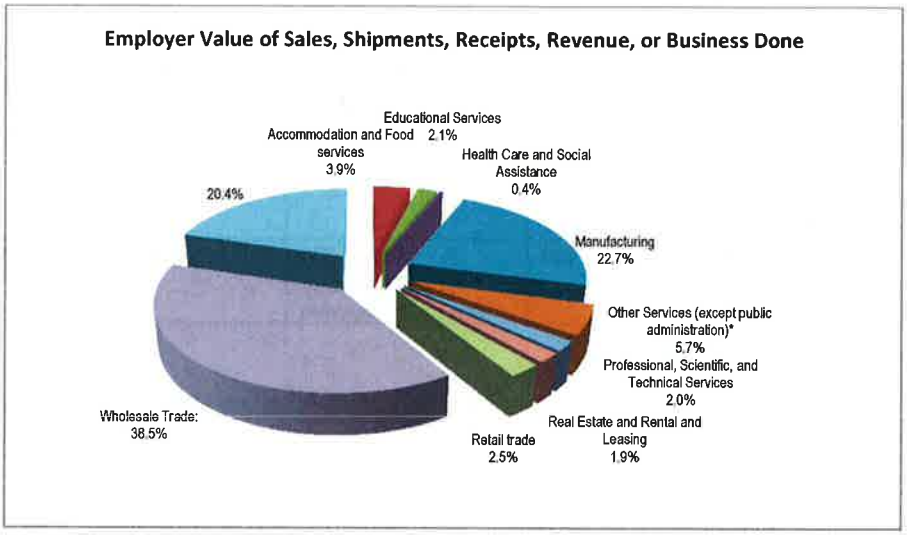


Figure 22: Distribution of Employer Value of Sales, Shipments, Receipts, Revenue, or Business Done

City Finances

Sales taxes comprise a significant portion of the City of Lancaster's budget. The figure below provides examples of significant tax payers that could be impacted by a disaster - resulting in a decrease in revenues to the City and a reduction in the overall economic base of the community.

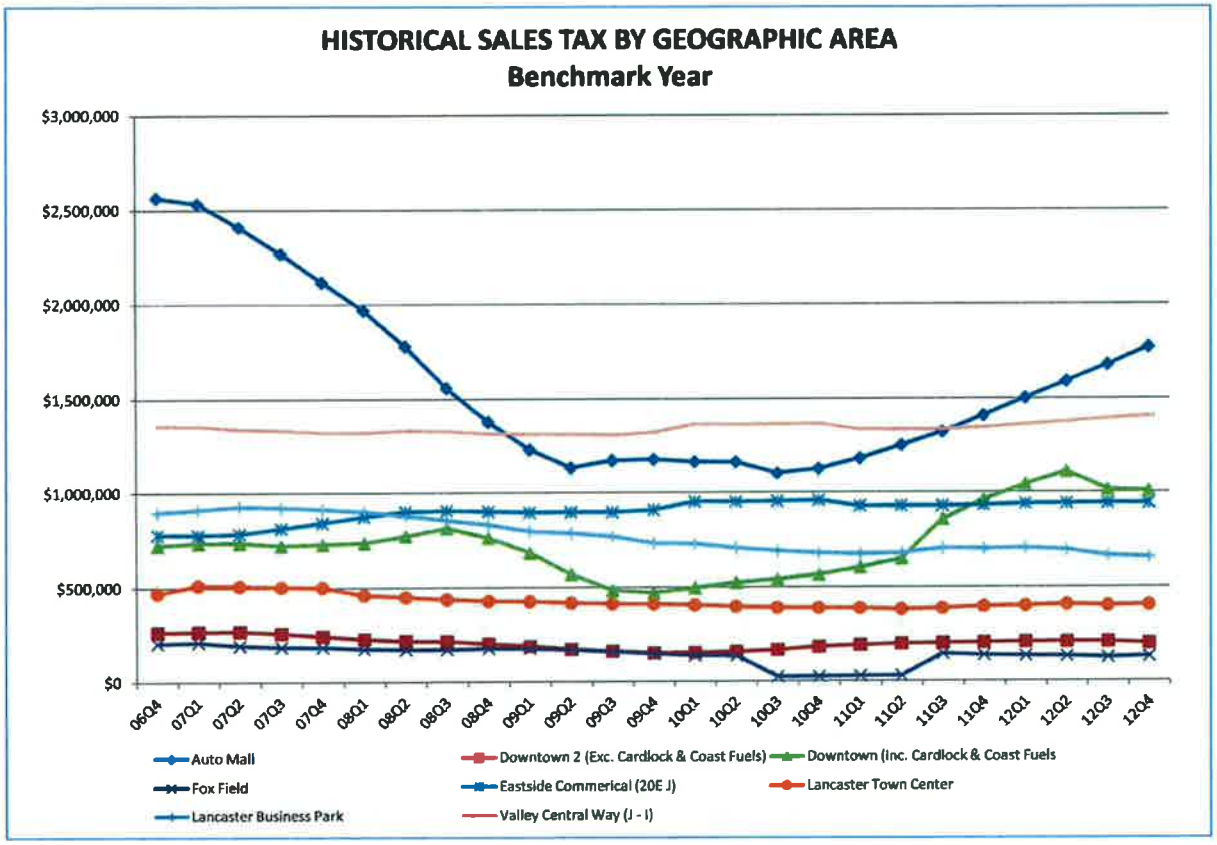


Figure 23: Historical Sales Tax by Geographic Area

Building Counts and Square Footage

Estimated Building Counts provides an estimate of the relative proportion of structure types in the area. Square Footage (SF) figures are provided for retail, commercial, industrial, and other properties.

Category	Residential Buildings	Retail Commercial Buildings	Other Commercial Buildings	Industrial Buildings	Misc. Other*	Total Number of Buildings
Total	52,285	764 SF: 4,709,240	1,096 SF: 5,919,921	380 SF: 3,804,086	130 SF: 620,672	54,095
Single Family Detached	36,434	-		-	-	-
Single Family Attached	834	-		-	-	-
Multi-Family 2-4 Units	3,107	-		-	-	-
Multi-Family 5+ Units	8,002	-		-	-	-
Mobile Homes	3,908	-		-	-	-

Table 21: Estimated Building Counts by Type

Does not include sites reported as vacant. Square footage provided for structures only, does not include lot sizes.
*Misc. Other includes: Not-for-Profits, Religious, and Government Buildings
Residential Buildings Source: CA Department of Finance, Table E-5 dated 1/1/2012 includes Single Family, Multi-Family, and Mobile Homes
Commercial, Industrial, and Misc. Other Buildings Source: 2004 Urban Structure Database, City of Lancaster

A disaster in the City of Lancaster can have an impact on approximately 54,095 structures. The vast majority of which are residential buildings.

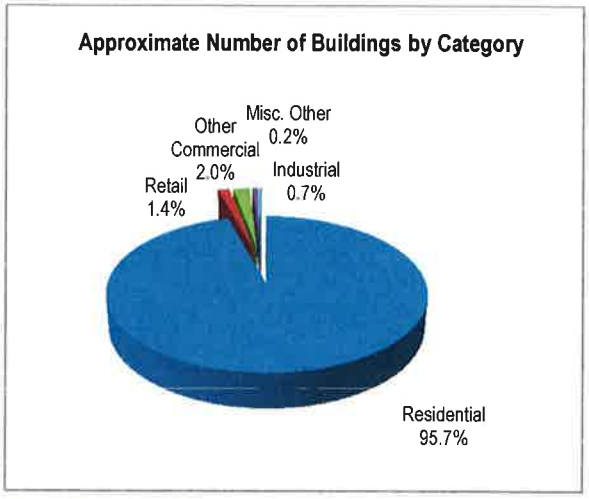


Figure 24: Approx. Number of Buildings by Category

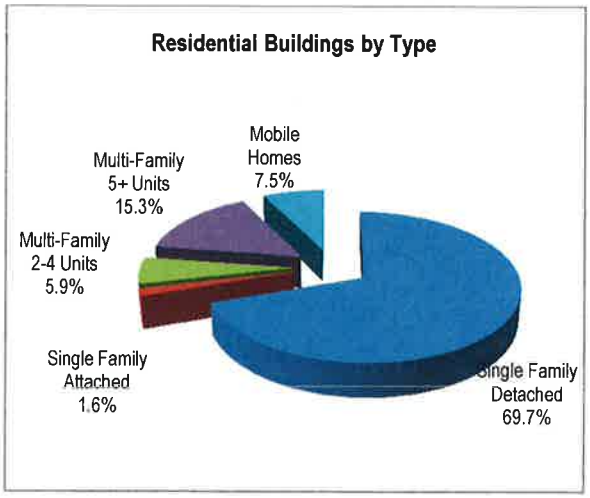


Figure 25: Residential Buildings by Type

Property Values

The total estimated value of properties by category in the City of Lancaster (based on Total Estimated Taxable Assessed FY2011) is provided below:

Fiscal Year	Residential Property (1,000s)	Commercial Property (1,000s)	Industrial Property (1,000s)	Other Property (1,000s)	Total Assessed Value (1,000s)
FY2011	$5,752,260	$1,119,257	$405,506	$1,217,476	$8,494,499

Table 22: Property Values

Source: City of Lancaster, Comprehensive Annual Financial Report (FY2011) and data from Los Angeles County Assessor data, MuniServices, LLC

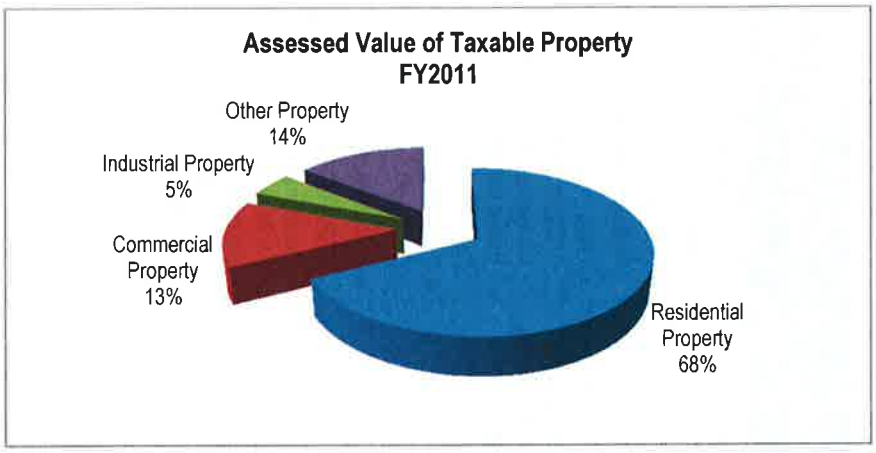


Figure 26: Assessed Value of Taxable Property FY2011

Property Loss Estimates

The following table provides the estimated property loss projections for several scenarios ranging from 0.05% to 5% (based on property values for FY2011). The projected potential property loss ranges from $42,472,000 (.5% loss) to $424,725,000 (5.0% loss).

% Loss	Residential Property Loss Estimate (1,000s)	Commercial Property Loss Estimate (1,000s)	Industrial Property Loss Estimate (1,000s)	Other Property Loss Estimate (1,000s)	Total Property Loss Estimate (1,000s)
0.5%	$28,761	$5,596	$2,028	$6,087	$42,472
1.0%	$57,523	$11,193	$4,055	$12,175	$84,945
2.5%	$143,807	$27,981	$10,138	$30,437	$212,362
5.0%	$287,613	$55,963	$20,275	$60,874	$424,725

Table 23: Property Loss Estimates

Note: Actual replacement costs may be significantly higher than current property values.

Threats, Vulnerabilities, and Consequences

The following vulnerabilities by threat table summarizes the high level exposures within and near the City of Lancaster.

Threats ⇨	Earthquake (>6.0M)	Flood	Landslide	Power Outage	Severe Windstorm	Terrorism	Wildfire
Major Vulnerabilities⇨	• Unreinforced Masonry Structures • Regional Utility Infrastructure • Hospitals and Medical Facilities • Freeways, Bridges, Overpasses • Local Transportation Infrastructure (traffic control systems, etc.) • Utility Pumping Stations • Communications Infrastructure Commercial Facilities including Shopping Centers and Gasoline Stations	• Structures In or Near Flood Hazard Zones • Local Utility Infrastructure • Streets, Bridges and Roadways in Flood Zones	• Structures In or Near Landslide Hazard Areas • Local Utility Infrastructure • Streets, Bridges and Roadways in Landslide Areas	• Energy-dependent Residents • Hospitals and Medical Facilities • Local Transportation Infrastructure (traffic control systems, etc.) • Utility Pumping Stations • Communications Infrastructure • Commercial Facilities including Shopping Centers and Gasoline Stations	• Above Ground Utility Infrastructure • Transportation Routes Due to Debris Blockage • Residential and Commercial Structures Subject to Roof and Tree Damage • Personal Property Subject to Wind and Tree Damage • Local Agriculture	• Large Public Venues (Sports, Arts, Theaters, Shopping Centers, etc.) • Schools and Colleges • Utility Infrastructure (Substations, Transmission Lines, Pipelines, Storage Facilities, etc.) • Military / Defense Industrial Sites • Prisons and Jails • Airports • Rail Stations and Tracks • Government Facilities	• Structures In or Near Fire Hazard Areas (Urban Interfaces) • Utility Infrastructure (Transmission Lines and Above Ground Pipelines and Storage Facilities) • Streets, Bridges and Roadways in Fire Areas

Table 24: Threats and Major Vulnerabilities

The following consequences by threat table summarizes the potential impact of severe disasters on the City of Lancaster.

Threats ⇨	Earthquake (>6.0M)	Flood	Landslide	Power Outage	Severe Windstorm	Terrorism	Wildfire
Consequences ⇩							
Casualties Injuries and Deaths based on 2010 Population = 156,633	• Widespread Casualties (ranging from 0 to 100's) • Widespread Psychological Trauma • Need for Temporary Morgue Facilities	• Localized Casualties (<100)	• Localized Casualties (<100)	• Potential Casualties in Vulnerable Populations (<100) • Increased Traffic Accidents	• Potential Casualties Due to Structure Damage and Wind Blown Debris (<100)	• Local to Widespread Casualties (0 to 1000's) depending on the type and location of incident • Widespread Psychological Trauma • Need for Temporary Morgue Facilities	• Localized Casualties (<100)
Food and Water	• Temporary Disruption to Food and Water Supplies	• Possible Temporary Disruption to Water Supplies if Utility Pipelines Damaged	• Possible Temporary Disruption to Water Supplies if Utility Pipelines Damaged	• Lack of Electricity Resulting in Refrigerated Food Spoilage and Disruption of Food Distribution Outlets • Disruption to Water Pumping Stations	• Possible Temporary Disruption to Water Supplies if Utility Pumping Stations are Inoperable	• Possible Temporary Disruption or Contamination to Food and Water Supplies	• Potential Disruption to Water Pumping Stations and Above Ground Pipelines

Threats ⇨	Earthquake (>6.0M)	Flood	Landslide	Power Outage	Severe Windstorm	Terrorism	Wildfire
Consequences ⇩							
Shelter	• Damage to Housing Resulting in Extensive Mass Shelter Requirements (up to 1,566 displaced people if 1% of the population requires shelter)	• Damage to Housing Resulting in Shelter Requirements (less than 200 displaced people if 0.1% of the population requires shelter)	• Damage to Housing Resulting in Shelter Requirements (less than 100 displaced people if 0.05% of the population requires shelter)	• Temporary Heating or Cooling Shelter Requirements (less than 100 displaced people if 0.05% of the population requires shelter)	• Damage to Housing Resulting in Shelter Requirements (less than 200 displaced people if 0.1% of the population requires shelter)	• Damage, Contamination, or Immediate Threat to Housing or Transportation Routes Resulting in Extensive Mass Shelter Requirements (up to 1,566 displaced people if 1% of the population requires shelter)	• Damage to Housing Resulting in Shelter Requirements (less than 100 displaced people if 0.05% of the population requires shelter)
Utilities / Energy • Electricity • Natural Gas • Water • Waste	• Temporary Loss of Lifeline Services • Damage to Local Infrastructure (loss of electrical, natural gas, and water outages from hours to several weeks)	• Localized Loss of Lifeline Services and Damage to Local Infrastructure in Flood Zones	• Localized Loss of Lifeline Services and Damage to Local Infrastructure in Landslide Zones	• Local to Regional Outages Caused by System Failures or Other Incident (e.g., earthquake, flood, fire, etc.)	• Local to Regional Electrical Outages Due to Above Ground Transmission Line Failures	Depending on the Type/Location of the Incident: • Possible Temporary Loss of Lifeline Services • Potential Damage to Local Infrastructure (loss of electrical, natural gas, and water outages from hours to several weeks)	• Local to Regional Outages Due to Above Ground Transmission or Pipeline Failures

Threats ⇨	Earthquake (>6.0M)	Flood	Landslide	Power Outage	Severe Windstorm	Terrorism	Wildfire
Consequences ⇩							
Healthcare	• Hospital and Clinic Damage with Concurrent Influx of Patients Requiring Critical Care • Up to 1,566 Injuries (if 1% of the population requires medical care)	• Less than 200 Injuries (if 0.1% of the population requires medical care)	• Less than 100 Injuries (if 0.05% of the population requires medical care)	• Less than 100 Injuries (if 0.05% of the population requires medical care)	• Less than 200 Injuries (if 0.1% of the population requires medical care)	Depending on the Type/Location of the Incident: • Hospital and Clinic Damage • Up to 1,566 injured people(if 1% of the population requires medical care) • Possible Contamination of Victims, First Responders, and Equipment	• Less than 100 Injuries (if 0.05% of the population requires medical care(
Transportation	• Local Road and Bridge Damage • Rail and Station Damage • Airport Damage to Runways and Structures	• Local Road and Bridge Damage in Flood Areas	• Local Road and Bridge Damage in Landslide Areas	• Disruption to Traffic Control and Monitoring Systems	• Local Road and Bridge Due to Wind Blown Debris	Depending on the Type/Location of the Incident: • Local Road and Bridge Damage • Rail and Station Damage • Airport Damage to Runways and Structures	• Local Road and Bridge Damage in Wildfire Areas

Threats ⇨	Earthquake (>6.0M)	Flood	Landslide	Power Outage	Severe Windstorm	Terrorism	Wildfire
Consequences ⇩							
Economic Impact	• Short to Long Term Disruption to the Local Economy • Long Term Business Disruption • Extensive Recovery Costs for Debris Removal and Structure Repairs and Replacement	• Short Term Disruption to the Local Economy • Recovery Costs for Debris Removal and Structure Repairs and Replacement	• Minimal Disruption to the Local Economy • Recovery Costs for Mud and Debris Removal and Structure Repairs and Replacement	• Short Term Disruption to the Local Economy	• Minimal Disruption to the Local Economy • Recovery Costs for Debris Removal and Structure Repairs	• Short to Long Term Disruption to the Local Economy • Long Term Business Disruption • Extensive Recovery Costs for Debris Removal and Structure Repairs and Replacement	• Minimal Disruption to the Local Economy • Recovery Costs for Fire Damage Debris Removal and Structure Repairs and Replacement

Table 25: Potential Consequences by Threat

SECTION 4. HAZARD MITIGATION GOALS AND STRATEGIES

This section describes the framework that focuses the plan on developing successful mitigation strategies. The framework is made up of three parts: the Mission, Goals, and Strategies.

MISSION

The mission of the City of Lancaster Hazard Mitigation Plan is to promote sound public policy and programs designed to protect the public, critical facilities, infrastructure, private and public property, and the environment from natural and manmade hazards. The mission is achieved by developing and implementing the Hazard Mitigation Plan to guide the Region towards creating and maintaining a safer and more sustainable community.

HAZARD MITIGATION PLAN GOALS

The Hazard Mitigation Plan goals describe the overall direction that the City of Lancaster departments, organizations, and citizens can take to minimize the impacts of hazards. The plan goals help to guide the direction of future activities aimed at reducing risk and preventing loss from hazards. The goals are stepping-stones between the broad direction of the mission and the specific recommendations that are outlined in the strategies.

To Protect Life, Property, Environment

- Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to hazards.
- Reduce losses and repetitive damages for chronic hazard events while promoting insurance coverage for catastrophic hazards.
- Encourage preventative measures for existing and new development in areas vulnerable to hazards.

Public Awareness

- Develop and implement education and outreach programs to increase public awareness of the risks associated with hazards.
- Develop and implement education and outreach programs to increase public awareness of the mitigation measures associated with hazards.
- Provide information on tools, partnership opportunities, and funding resources to assist in implementing mitigation activities.

Partnership and Implementation

- Strengthen communication and coordinate participation among and within public agencies, citizens, non-profit organizations, business, and industry to gain a vested interest in implementation.
- Encourage leadership within public and private sector organizations to prioritize and implement local and regional hazard mitigation activities.

Emergency Management

- Establish policy to ensure implementation of mitigation projects for critical facilities, services, and infrastructure.
- Make recommendations for updating local ordinances, city guidelines, codes, and permitting processes, and establish new ordinances that support mitigation.
- Strengthen emergency operations by increasing collaboration and coordination among departments, public agencies, non-profit organizations, businesses, and industry.
- Coordinate and integrate hazard mitigation activities (when appropriate) with emergency operations plans and procedures.

HAZARD MITIGATION STRATEGIES

The Hazard Mitigation Plan identifies action items developed and submitted through data collection, research, and the public participation process. Mitigation plan activities may be considered for funding through Federal and State grant programs as well as other funds made available to the City of Lancaster. To help ensure activity implementation, each action item includes estimated timeframes and a list of coordinating organizations.

Mitigation strategies were assigned a priority based on a combination of factors, including urgency, importance, and cost / benefit. Constraints may apply to some of the action items. These constraints may be a lack of city staff, lack of funds, or vested property rights which might expose the City to legal action as a result of adverse impacts on private property.

Hazard Mitigation Prioritization of Projects and Actions

Lancaster Mitigation Project Benefit Cost Comparison and Prioritization

According to the Disaster Mitigation Act (DMA) 44 CFR 201.6(c)(3)(iii)), local mitigation plans must contain a strategy (or action plan) whereby "Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs. A comprehensive cost-benefit calculation is not required as part of the Hazard Mitigation Plan (per FEMA Local Hazard Mitigation Plan Review Guide) however a detailed cost-benefit analysis may be needed later if an application for federal mitigation grant funding is made).

Each of the projects listed on the following pages were reviewed and prioritized by the HMP Working Group and considered the expected benefit to the community versus the estimated cost. Other considerations included whether projects were already in progress or part of another effort, if funds were already budgeted or if additional budget funding was required, the availability of resources, ongoing maintenance requirements, and the timeline for completion (if known).

The priority values assigned followed the basic criteria as defined below:

Priority 1	Immediate: The project provides a high benefit with relatively low to moderate cost and/or requires minimal implementation effort. Funding and/or resources may already be assigned or are readily available.
Priority 2	Important: The project provides a moderate benefit. Resources, costs and/or funding may need to be allocated or obtained.
Priority 3	Significant: The project provides a benefit but resources, costs and/or funding must be allocated.

The Project List beginning on the following page summarizes the projects developed by the City of Lancaster as part of this Hazard Mitigation Plan. Projects are categorized by type, status, and priority. Note: Multi-Hazard projects have wide applicability across all potential scenarios. Specific hazard types, i.e., Earthquake Flood, Wildfire, Windstorm, and Energy projects are generally issue specific but may also support other disaster scenarios.

Hazard Mitigation Plan Project List

The following matrix provides a summary of the Hazard Mitigation Projects implemented in the City of Lancaster, the current status, and their estimated benefit (e.g., impact on New Buildings, Existing Buildings, Infrastructure, and the Community). The hazards addressed (●) focuses on the high risk hazards identified in the Risk Assessment (**Section 3: Risk Assessment**). The primary mitigation goals addressed (◈) by each project are listed (per Section 4: Hazard Mitigation Goals, p. 4-1), i.e., (1) Public Awareness; (2) Protect Life, Property, and the Environment; (3) Partnerships and Implementation; (4) Emergency Management. In addition, the issues addressed by each project are identified in terms of Mitigation, Preparedness, Response, and Recovery (✓).

Hazard Type / Number	Project	Windstorm	Earthquake	Energy Disruption	Wildfire	Flood	Terrorism	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery	Status	Priority	Estimated Cost	Estimated Benefit
Multi-Hazard #1	Implement, Revise, and Maintain the City of Lancaster Hazard Mitigation Plan	●	●	●	●	●	●	◈	◈	◈	◈	✓	✓	✓	✓	Ongoing	1	None – Internal Time Only	• The Hazard Mitigation Plan provides a roadmap for mitigation planning and mitigation project implementation for the City. • Implementation of the projects included in the Hazard Mitigation Plan will result in a reduction in disaster losses (life, property, economy, etc.) and improve recovery capabilities.
Multi-Hazard #2	Backup Power	●	●	●	●	●	●		◈		◈		✓	✓		Ongoing	1	None – Internal Time Only	• Ensuring that city-owned critical facilities are identified and equipped with emergency generators and fuel supplies will mitigate the impact of multiple incidents including power outages, major earthquakes, floods, etc. • Backup power will enable the City to maintain operations, respond to emergencies, and help ensure Continuity of Operations (COOP) and Continuity of Government (COG).
Multi-Hazard #3	Disaster Drills	●	●	●	●	●	●	◈	◈	◈	◈		✓	✓		Ongoing	1	$25,000 - $49,000	• Conducting annual drills helps to ensure that City personnel are prepared to respond to a variety of scenarios. • Joint exercises with local utilities and VOADs such as the American Red Cross will assist in better coordination with critical lifeline services and disaster response groups. • Increased effectiveness will help reduce recovery timeframes - resulting in improved public assistance capabilities and decreased costs.
Multi-Hazard #4	Emergency Shelter Coordination	●	●	●	●	●	●		◈		◈		✓	✓		Ongoing	1	None – Internal Time Only	• Coordination with emergency shelter providers such as the American Red Cross and the Los Angeles County Department of Social Services will enable the City to more quickly provide shelter and basic services to displaced residents – including plans for addressing special needs. • Ensuring that Memorandums of Understanding (MOU's) are in place before a disaster strikes will help to ensure that the City is able to coordinate shelter activities.
Multi-Hazard #5	Evacuation Routes	●	●		●	●	●		◈		◈		✓	✓		Ongoing	1	None – Internal Time Only	• Alternate evacuation route planning and better coordination with other agencies, and jurisdictions will enable the City to better coordinate public evacuations – reducing and mitigating the threat to life and safety.
Multi-Hazard #6	Government Coordination	●	●	●	●	●	●		◈		◈	✓	✓	✓	✓	Ongoing	1	None – Internal Time Only	• Improved working relationships and MOU's with local, state, and federal agencies as well as better communications, planning, and coordination of mitigation activities will result in improved mitigation, response, and recovery.
Multi-Hazard #7	Emergency Services Contractors	●	●	●	●	●	●				◈		✓	✓	✓	New Project	1	None – Internal Time Only	• Identifying and tracking the critical vendors and contractors required after a disaster will enable the City to more rapidly acquire needed resources.
Multi-Hazard #8	Municipal Code Review	●	●	●	●	●	●		◈			✓				New Project	1	None – Internal Time Only	• Building Code amendments and enforcement will assist in mitigating the impact of disasters such as earthquakes on life/safety and structures (Building Codes are updated every 3 years). • Requirements for automatic shut-offs, flexible piping, etc. for new construction, major repairs to existing structures, and critical infrastructure will help to prevent losses and reduce local area damage.

Hazard Type / Number	Project	Windstorm	Earthquake	Energy Disruption	Wildfire	Flood	Terrorism	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery	Status	Priority	Estimated Cost	Estimated Benefit
Multi-Hazard #9	Mutual Water Agreements		●		●		●		◈	◈			✓	✓	✓	New Project	1	None – Internal Time Only	• Better coordination between the City and local water agencies will decrease response and recovery times in the event of a water disruption. • Developing and implementing Mutual Aid Agreements and Memorandums of Understanding with local water providers will mitigate the impact of a disruption to local water supplies to the public.
Multi-Hazard #10	Pre-Established Contracts	●	●	●	●	●	●		◈	◈	◈		✓	✓		Ongoing	1	None – Internal Time Only	• Implementing pre-established contracts with local merchants to provide essential supplies, materials, and/or function as local distribution points for food, water, etc. will provide the public with needed resources following a disaster. • Emergency supplies will also assist the City in maintaining Continuity of Operations and Continuity of Government after a disaster.
Multi-Hazard #11	Public Hazard Mitigation Education and Planning	●	●	●	●	●	●	◈	◈			✓				New Project	1	$5,000 - $24,000	• Creation and development of additional mitigation education programs and information will better enable the local population to prepare for and mitigate the impact of disasters. • Educational and awareness programs can have an immediate impact on public preparedness and mitigation and leverage available funds to reach local households and businesses.
Multi-Hazard #12	Sustainability Projects Mitigation	●	●	●	●	●			◈			✓				New Project	1	None – Internal Time Only	• Integrating mitigation into the "Natural Environment" section of the General Plan will provide an immediate benefit by supplementing existing natural hazard mitigation actions into existing goals, objectives, policies, and actions while ensuring ongoing monitoring.
Multi-Hazard #13	Critical Infrastructure Assessment	●	●	●	●	●	●		◈		◈	✓				Ongoing	2	None – Internal Time Only	• Identification and preparation of critical facilities and infrastructure will mitigate the impact of disasters on the local community (e.g., public shelter sites) as well as help ensure City Continuity of Operations.
Multi-Hazard #14	Hazardous Waste Hauling Study		●				●		◈				✓	✓		Ongoing	2	$50,000 - $100,000 (existing CalEMA Grant)	• Identification and preparation for a hazardous materials release in the City will enable responders to more effectively manage recovery efforts.
Multi-Hazard #15	Mitigation Funding Sources	●	●	●	●	●	●				◈	✓				Ongoing	2	None – Internal Time Only	• Obtaining access to local hazard mitigation funding will provide the resources needed to implement mitigation projects.
Multi-Hazard #16	Natural Resources Protection	●	●		●	●	●		◈			✓	✓			Ongoing	2	None – Internal Time Only	• Integrating natural resources programs with mitigation activities will assist in hazard prevention/mitigation such as flood control and wildfire protection.
Multi-Hazard #17	Public and Private Partnerships	●	●	●	●	●	●	◈	◈	◈	◈	✓	✓	✓	✓	Ongoing	2	$0 - $4,999	• Encouraging public/private partnerships will assist in coordinating mitigation actions prior to a disaster. • Public/private partnerships will also help to better coordinate response and recovery activities following a disaster.
Multi-Hazard #18	Inventory At-Risk Buildings and Infrastructure	●	●	●	●	●	●		◈		◈	✓		✓		New Project	2	$0 - $4,999	• An inventory of critical at-risk buildings and infrastructure will enable the City to develop site specific mitigation projects. • Issues include unreinforced masonry structures, flood hazard areas, public/private bridges, and vulnerable transportation routes.
Multi-Hazard #19	Advanced Community Training	●	●		●	●	●	◈	◈				✓	✓		Ongoing	3	$0 - $4,999 annually	• Promotion of advanced public training programs such as CPR, AED, and EMT enhances community preparedness.

Hazard Type / Number	Project	Windstorm	Earthquake	Energy Disruption	Wildfire	Flood	Terrorism	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery	Status	Priority	Estimated Cost	Estimated Benefit
Multi-Hazard #20	Emergency Preparedness Public Awareness Campaigns	●	●	●	●	●	●	◈	◈	◈		✓	✓	✓		Ongoing	3	$5,000 - $24,999 annually	• Ongoing public awareness campaigns provide a means for educating the public about hazards and hazard mitigation. • Public awareness includes continued information campaigns for mitigating the threat of wildfires and earthquakes. • CERT programs provide greater public preparedness and neighborhood level response capabilities.
Multi-Hazard #21	Ongoing Hazard Mitigation Public Comment Program	●	●	●	●	●	●	◈		◈		✓				Ongoing	3	None – Internal Time Only	• An ongoing public comment and participation program provides the local community with a forum for providing their input into the City's Hazard Mitigation Plan. • There is currently an ongoing public web survey that is regularly reviewed and will be periodically updated.
Earthquake #1	Non-structural Earthquake Mitigation		●					◈		◈		✓	✓			New Project	1	$0 - $4,999	• Providing information to the public to encourage non-structural mitigation will decrease injuries and losses from an earthquake. • The City will use its internal capabilities such as the City website, quarterly Outlook publication, and City Newsletter to publish articles and guidelines.
Earthquake #2	Analysis of Earthquake Hazards		●						◈		◈	✓	✓	✓		New Project	2	$50,000 – $100,000	• Identification of structures vulnerable to earthquakes including liquefaction zones will assist in developing earthquake specific mitigation projects. • Implementation of HAZUS and other tools to map the local area will enable the City to better identify vulnerable sites.
Earthquake #3	Seismic Retrofit Outreach Programs		●					◈	◈	◈		✓				New Project	3	$0 - $4,999	• Providing homeowners with information on retrofitting their homes will reduce losses from an earthquake. • The City will distribute brochures and use its internal capabilities such as the City Departments, website, quarterly Outlook publication, and City Newsletter to publish retrofitting articles and guidelines.
Flood #1	FIRM (Flood Insurance Rate Maps) Monitoring					●			◈			✓				Ongoing	1	None – Internal Time Only	• FIRM reviews are ongoing. Change requests are submitted as required. Ongoing FIRM monitoring will help ensure that high risk areas are identified and action taken to reduce risk. • Existing or new policies, activities, and tools will be used to improve mitigation efforts.
Flood #2	Floodplain Management Plan					●			◈		◈	✓	✓	✓		Ongoing	2	None – Internal Time Only	• Performing ongoing reviews of the City's Floodplain Management Plan will help ensure that changes to local area flood risks are identified and new mitigation projects are developed (if needed). • Reviews will require internal time only. New flood management projects (if needed) will have to be budgeted.
Flood #3	Surface Water Drainage Study					●			◈			✓	✓	✓		New Project	2	$50,000 - $100,000	• Monitoring and analysis of surface water drainage obstructions, patterns, and risks will mitigate flood damage. • Identified risks will be reviewed and high risk areas will be subject to greater levels of monitoring during flood conditions. • If needed new projects developed. • Additional funding will be required for new projects and supplemental monitoring capabilities.

Hazard Type / Number	Project	Windstorm	Earthquake	Energy Disruption	Wildfire	Flood	Terrorism	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery	Status	Priority	Estimated Cost	Estimated Benefit
Flood #4	Drainage and Flood Control Maintenance					●			◈			✓	✓			New Project	2	Greater than $100,000	• Targeted flood mitigation efforts to ensure drainage systems are free of debris will reduce the likelihood of flooding. New projects will need to be budgeted. • Continuation of flood prevention activities such as retention/detention basin maintenance and updates to the Master Plan will reduce the potential for flooding.
Wildfire #1	Fire Outreach and Education				●			◈	◈	◈		✓	✓			Ongoing	1	$5,000 - $24,999	• Enhancing existing outreach and educational programs will help ensure that the homeowners, property managers, and local businesses take action to reduce wildfire risks, particularly in urban/wildland interface areas.
Wildfire #2	Alternative Firefighting Water Sources				●				◈	◈	◈		✓	✓		New Project	2	$5,000 - $24,999	• Improved water storage and distribution capabilities will help ensure that water resources are available in the event of a major wildfire. • Improved communications between fire jurisdictions and water districts will enhance response capabilities in the event of a major wildfire.
Wildfire #3	Federal Cost-Share and Grant Programs				●				◈	◈	◈			✓		New Project	2	$0 - $4,999	• Obtaining additional funds for coordination and mutual aid activities will better enable the City to fund wildfire response capabilities.
Wildfire #4	Cooperative Fire Protection Agreements				●				◈	◈	◈	✓	✓	✓		New Project	3	None – Internal Time Only	• Better coordination of mitigation activities with the Los Angeles County Fire Department and other agencies will assist the City in its wildfire prevention efforts.
Windstorm #1	Utility Tree Clearance Operations	●							◈			✓				New Project	2	Greater than $100,000	• Better coordination with local utilities will help ensure that the threat of windblown tree damage is reduced.
Windstorm #2	Critical Facilities Wind Damage Mitigation Retrofit	●							◈		◈	✓				New Project	3	None – Internal Time Only	• Ensuring that critical facilities are protected against wind driven damage will mitigate the damage potential and loss of functionality. • Updates to the building code will help prevent windblown damage from flag poles, antennas, and other structures.
Windstorm #3	Tree Vulnerability Assessment and Tree Trimming	●							◈			✓				New Project	3	Greater than $100,000 (includes tree-trimming contracts)	• Completing an inventory of tree wind vulnerabilities will enable the City to develop mitigation projects to reduce the threat of wind driven tree damage to life/safety, utilities, structures, and personal property.
Energy #1	Coordination with Utilities			●					◈	◈	◈	✓	✓	✓	✓	New Project	1	None – Internal Time Only	• Working with utilities and the California Utilities Emergency Association to develop mitigation programs and coordinate activities to better prepare the City and protect the public.
Energy #2	Special Needs Residents			●				◈	◈	◈		✓	✓	✓		New Project	1	None – Internal Time Only	• Addressing the requirements of special needs residents and programs to ensure ongoing power will mitigate the impact of power outages. • Identification of requirements for special needs populations will enable the City to develop specific programs and projects to protect at-risk populations.
Energy #3	Energy Needs and Hazards Public Outreach			●				◈	◈	◈		✓	✓	✓		New Project	3	$5,000 - $24,999	• Public meetings to assess primary and secondary risks of power outages will enable the City to target programs for at-risk residents. • Identification of lifelines, critical facilities, and services will allow the City to develop mitigation projects that focus on key public service providers.

Table 26: HMP Project List

Strategy Organization

The Mitigation Strategies presented provide a listing of activities that the Region (normally through individual city departments) and citizens can implement to reduce risk. They reflect ongoing activities and future actions to be taken in order to reduce the loss of property and life.

The strategies are organized within the following matrix. Data collection, research and stakeholder participation were used to develop the hazard mitigation strategies listed. The following categories of information are provided for each strategy:

Hazard	The type of hazard that the strategy addresses. Multi-Hazard mitigation strategies provide strategies that can be applied to multiple or all hazards.
Project Name	Name of the mitigation project strategy.
Status	Project status, e.g., Complete, Partially Complete, Ongoing, Removed (Cancelled), Discontinued, etc.
Strategy	Strategy description.
Action Items	Actions that will be completed to implement (or continue) the strategy.
Coordinating Department	The department with regulatory responsibility to address the named hazard, or that is willing and able to organize resources, find appropriate funding, or oversee implementation, monitoring, and evaluation. Participating departments are listed with the main department responsible in **BOLD**.
Timeline/Completion Date/Priority	The estimated timeframe for implementation along with a general implementation priority.
Total Cost	Estimated cost of the project.
Funding Source(s)	Where the funding will be obtained.
Constraints	Constraints may apply. These constraints may include a lack of staff, lack of funds, or vested property rights which might expose the Region to legal action as a result of adverse impacts on private property.
Implementation Description and Estimated Benefits	A brief description of activities associated with the project and the estimated benefits.

Plan Goals Addressed The plan goals addressed by each project are divided into four categories (see check boxes below) and are included as a method to monitor and evaluate mitigation plan progress.			
	Public Awareness		Protect Life, Property, and the Environment
	Partnerships and Implementation		Emergency Management

Detailed mitigation strategies for the City of Lancaster are provided in the following sections. The mitigation strategies provide detailed action items that support the strategy. Mitigation strategies were submitted from various departments within the city. Mitigation strategies were reviewed, prioritized, and approved by the Working Group.

Hazard Mitigation Strategy Projects

The following Hazard Mitigation Strategies were included in the 2005 Hazard Mitigation Plan. An update on the status of each project for the 2013 Hazard Mitigation Plan is provided in the following tables for specific projects. Additional information related to mitigation activities since 2005 are included (as applicable) under specific projects or as new projects.

Multi-Hazard Mitigation Projects

Hazard	Multi-Hazard #1
Project Name	**Implement, Revise, and Maintain the City of Lancaster Hazard Mitigation Plan**
Status	Ongoing Project
Strategy	Update the Hazard Mitigation Plan as needed.
Action Items (recurring)	1 Conduct an annual review of the plan. 2 Implement and monitor all mitigation strategies within the stated time periods. 3 Plan action items will continue to address at least one, if not all, plan goals: Public Awareness, Partnership and Implementation, Protect Life, Property, and the Environment, and Emergency Management. 4 Establish clear roles for participants. 5 Meet regularly to pursue and evaluate implementation of mitigation strategies. 6 Establish measurable standards to evaluate mitigation policies and programs and provide a mechanism to update and revise the Mitigation Plan. 7 Monitor hazard mitigation implementation by jurisdictions and participating organizations through surveys and other reporting methods. 8 Develop updates for the Hazard Mitigation Action Plan based on new information. 9 Provide training for Committee members to remain current on developing issues in the natural hazard loss reduction field.
Coordinating Department	**Administration**
Timeline/Completion Date/Priority	Ongoing / Review Annually Priority 1
Total Cost	None – Internal Time Only (if performed in-house)
Funding Source(s)	City – General Fund
Constraints	Time (schedule); Internal Resources (time)
Implementation Description and Estimated Benefits	The Hazard Mitigation Plan was created in 2013 as part of the strategy. • The Hazard Mitigation Plan provides a roadmap for mitigation planning and mitigation project implementation for the City. • Implementation of the projects included in the Hazard Mitigation Plan will result in a reduction in disaster losses (life, property, economy, etc.) and improve recovery capabilities.

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

Hazard	Multi-Hazard #2		
Project Name / Description	**Backup Power**		
Status	Ongoing Project		
Strategy	Ensure that there are generators available during a power failure, schedule testing on the equipment, and create an equipment testing log to ensure backup power equipment is in working order.		
Action Items	1 Ensure an adequate supply of fuel is available for generators. 2 Develop a schedule to test all critical facility backup power generators. 3 As part of the testing process, rotate fuel stock. 4 Create a database of backup power equipment for critical facilities. 5 Keep an accurate record of equipment specification and testing date information.		
Coordinating Department / Organization	**Parks Department**, Public Works		
Timeline/Completion Date/Priority	To be determined / Ongoing Priority 1		
Total Cost	None – Internal Time Only		
Funding Source(s)	State of California Grant and/or Federal Grant and/or City – General Fund		
Constraints	Time (schedule); Internal Resources (time)		
Implementation Description	• Ensuring that city-owned critical facilities are identified and equipped with emergency generators and fuel supplies will mitigate the impact of multiple incidents including power outages, major earthquakes, floods, etc. • Backup power will enable the City to maintain operations, respond to emergencies, and help ensure Continuity of Operations (COOP) and Continuity of Government (COG).		
Plan Goals Addressed			
	Public Awareness		Protect Life and Property
	Partnerships and Implementation	X	Emergency Management

Hazard	Multi-Hazard #3
Project Name / Description	**Disaster Drills**
Status	Ongoing Project
Strategy	Test emergency preparedness on an annual basis.
Action Items	1 Create a program to test emergency response on an annual basis. 2 Work with Southern California Edison, The Gas Company, the County of Los Angeles Water Works District 40, and other local utilities to participate in the annual disaster drill. 3 Involve the Sherriff's Department and the County Fire Department in the annual disaster drill. 4 Involve civic organizations such as the Red Cross and AVCERT in the annual disaster drill.
Coordinating Department / Organization	**Administration**, Public Safety, Public Works / Utility Services Division, Public Works / Maintenance Services,
Timeline/Completion Date/Priority	To be determined / Ongoing Priority 1
Total Cost	$25,000 - $49,000
Funding Source(s)	State of California Grant and/or Federal Grant and/or City – General Fund
Constraints	Time (schedule); Internal Resources (time)
Implementation Description	• Conducting annual drills helps to ensure that City personnel are prepared to respond to a variety of scenarios. • Joint exercises with local utilities and VOADs such as the American Red Cross will assist in better coordination with critical lifeline services and disaster response groups. • Increased effectiveness will help reduce recovery timeframes - resulting in improved public assistance capabilities and decreased costs.

Plan Goals Addressed			
	Public Awareness		Protect Life and Property
X	Partnerships and Implementation	X	Emergency Management

Hazard	Multi-Hazard #4
Project Name	**Emergency Shelter Coordination**
Status	Ongoing Project
Strategy	Coordinate with the Los Angeles County Department of Social Services and the American Red Cross to ensure availability of shelters.
Action Items	1 Ensure Site Surveys for shelter sites are completed and/or updated. 2 Ensure that Memos of Understanding for shelter sites are current or in place. 3 Provide detailed instructions to shelter sites on how to set up when activated as an emergency shelter during an event. 4 Ensure shelters meet all Americans with Disabilities Act (ADA) requirements. 5 Conduct at minimum, yearly drills at the emergency shelters.
Coordinating Department	**Administration**, Parks Department, Public Works, Public Safety
Timeline/Completion Date/Priority	To be determined / Ongoing Priority 1
Total Cost	None – Internal Time Only
Funding Source(s)	City – General Fund and/or State of California Grant and/or Federal Grant and/or Public / Private Partnership
Constraints	Time (schedule); Internal Resources (time)
Implementation Description and Estimated Benefits	The City has identified shelter sites, although they do not publish the list. The Los Angeles County Department of Public Social Services has the Operational Area responsibility for Care and Shelter during an emergency in conjunction with the American Red Cross. Shelter availability is part of the Care and Shelter Branch of Operations. • Coordination with emergency shelter providers such as the American Red Cross and the Los Angeles County Department of Social Services will enable the City to more quickly provide shelter and basic services to displaced residents – including plans for addressing special needs. • Ensuring that Memorandums of Understanding (MOU's) are in place before a disaster strikes will help to ensure that the City is able to coordinate shelter activities.

Plan Goals Addressed			
	Public Awareness		Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

Hazard	Multi-Hazard #5
Project Name	**Evacuation Routes**
Status	Ongoing project
Strategy	Create alternate evacuation routes in case of an emergency event.
Action Items	1 Create alternate evacuation routes. 2 Coordinate the maintenance of emergency transportation routes with the City's Department of Public Works, the Department of Transportation, and neighboring jurisdictions.
Coordinating Department	**Public Works**
Timeline/Completion Date/Priority	To be determined / Ongoing Priority 1
Total Cost	None – Internal Time Only
Funding Source(s)	State of California Grant and/or Federal Grant and/or City – General Fund
Constraints	Time (schedule); Internal Resources (time)
Implementation Description and Estimated Benefits	• Alternate evacuation route planning and better coordination with other agencies, and jurisdictions will enable the City to better coordinate public evacuations – reducing and mitigating the threat to life and safety.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Hazard	Multi-Hazard #6
Project Name / Description	**Government Coordination**
Status	Ongoing Project
Strategy	Coordinate with Federal and State agencies on recovery plans.
Action Items	1 Coordinate with Federal and State agencies on response and recovery plans. 2 Coordinate staging area locations with Federal and State agencies. 3 Coordinate with the State and the County of Los Angeles to develop local mitigation policies and Memorandums of Understanding that address power outages or other emergencies that will affect the California State Prison. 4 Improve communication between Caltrans and the City to create hazard mitigation and emergency response activities and plans. 5 City agencies to coordinate with each other to ensure public safety when planning land use efforts or reviewing development proposals. 6 Establish hazard mitigation activities for communication and electric providers and the Department of Transportation to assure rapid restoration of transportation capabilities after a hazard event. 7 Participate in Community Emergency Response Team (CERT) efforts.
Coordinating Department / Organization	**Administration**, Public Works, Planning, Public Safety
Timeline/Completion Date/Priority	To be determined / Ongoing Priority 1
Total Cost	None – Internal Time Only
Funding Source(s)	State of California Grant and/or Federal Grant and/or City – General Fund
Constraints	Time (schedule); Internal Resources (time)
Implementation Description and Estimated Benefits	• The City coordinates with the Air Force and the Federal Aviation Administration to ensure that land uses near air facilities are planned in a manner that is safe and protects quality of life. • The City coordinates with the California Department of Public Health (CDPH) for management of hazardous materials. The CDPH approved the Hazardous Waste Management Plan for the County of Los Angeles. To comply with this plan, Lancaster adopted Ordinance No. 560 to establish a comprehensive application and review process as well as siting criteria for hazardous waste facilities. • Improved working relationships and MOU's with local, state, and federal agencies as well as better communications, planning, and coordination of mitigation activities will result in improved mitigation, response, and recovery.

Plan Goals Addressed			
	Public Awareness		Protect Life and Property
X	Partnerships and Implementation	X	Emergency Management

Hazard	Multi-Hazard #7
Project Name	**Emergency Services Contractors**
Status	New Project
Strategy	Develop a directory of pre-existing contractors in case of emergency services.
Action Items	1 Conduct an assessment of past contractors used and local contractors. 2 Indicate which contractors best suit the City's needs. 3 Create an inventory of contractors to use if and when a hazard event warrants the need for a contractor's particular services.
Coordinating Department	**Finance**, Administration
Timeline/Completion Date/Priority	1 year / 2014 Priority 1
Total Cost	None – Internal Time Only
Funding Source(s)	Public / Private Partnership and/or City – General Fund
Constraints	Time (schedule); Internal Resources (time)
Implementation Description and Estimated Benefits	• Identifying and tracking the critical vendors and contractors required after a disaster will enable the City to more rapidly acquire needed resources.

Plan Goals Addressed			
	Public Awareness		Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

Hazard	Multi-Hazard #8
Project Name / Description	**Municipal Code Review**
Status	New Project
Strategy	Review the City's Building, Energy, and Zoning Codes to determine what Code changes are necessary to support hazard and risk mitigation.
Action Items	1 Amend the Building Code to require earthquake shut-off valves for gas meters for new construction or when repairing or replacing fire and / or disaster damaged buildings. 2 Amend the Building Code to require the use of flexible piping when extending water, sewer, or natural gas service. 3 Integrate the City's Mitigation Plan into all improvement plans to ensure that development does not encroach on known hazard areas. 4 Require the installation of shutoff valves and emergency connector hoses where water mains cross fault lines. 5 Create and enforce an ordinance that regulates dumping in streams and ditches.
Coordinating Department / Organization	**Public Works / City Engineering Division**, Public Works / Capital Engineering, Public Works
Timeline/Completion Date/Priority	To be determined Priority 1
Total Cost	None – Internal Time Only
Funding Source(s)	N/A
Constraints	Time (schedule); Funding; Internal Resources (time)
Implementation Description	The City currently requires that all new developments comply with the most recent state Building Code seismic design standards. Lancaster's Building Codes are updated every three (3) years. • Building Code amendments and enforcement will assist in mitigating the impact of disasters such as earthquakes on life/safety and structures (Building Codes are updated every 3 years). • Requirements for automatic shut-offs, flexible piping, etc. for new construction, major repairs to existing structures, and critical infrastructure will help to prevent losses and reduce local area damage.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation		Emergency Management

Hazard	Multi-Hazard #9
Project Name / Description	**Mutual Water Agreements**
Status	New Project
Strategy	Develop, approve, and promote mutual aid agreements among the various Antelope Valley water districts.
Action Items	1 Coordinate with Los Angeles Department of Public Works Water Works District 40 and the various local water districts to establish Mutual Aid Agreements. 2 Work with the Los Angeles Department of Public Works Water Works District 40 and the various local water districts to clarify roles and responsibilities in the event of an emergency. 3 Establish Emergency Memorandums of Understanding with water purveyors. 4 Add the contract and MOU details of this project to Lancaster's Emergency Operations Plan.
Coordinating Department / Organization	**Public Works / Utility Services Division**, Administration, Public Works, Finance, Legal
Timeline/Completion Date/Priority	18 months / July 2014 Priority 1
Total Cost	None – Internal Time Only
Funding Source(s)	City – General Fund
Constraints	Time (schedule); Internal Resources / Time
Implementation Description and Estimated Benefits	• Better coordination between the City and local water agencies will decrease response and recovery times in the event of a water disruption. • Developing and implementing Mutual Aid Agreements and Memorandums of Understanding with local water providers will mitigate the impact of a disruption to local water supplies to the public.

Plan Goals Addressed			
	Public Awareness		Protect Life and Property
X	Partnerships and Implementation	X	Emergency Management

Hazard	Multi-Hazard #10
Project Name	**Pre-Established Contracts**
Status	Ongoing
Strategy	Create pre-established contracts with local merchants to provide emergency items and materials in an emergency situation.
Action Items	1 Create relationships with local merchants. 2 Establish contracts that would have these merchants provide certain goods to the city in case of an emergency situation, i.e. water, candles, canned food, etc.
Coordinating Department	**Administration**, Finance
Timeline/Completion Date/Priority	1 year / 2014 Priority 1
Total Cost	None – Internal Time Only
Funding Source(s)	Public / Private Partnership and/or City – General Fund
Constraints	Time (schedule)
Implementation Description and Estimated Benefits	• Implementing pre-established contracts with local merchants to provide essential supplies, materials, and/or function as local distribution points for food, water, etc. will provide the public with needed resources following a disaster. • Emergency supplies will also assist the City in maintaining Continuity of Operations and Continuity of Government after a disaster.

Plan Goals Addressed			
	Public Awareness		Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

Hazard	Multi-Hazard #11
Project Name / Description	**Public Hazard Mitigation Education and Planning**
Status	New Project
Strategy	Create a comprehensive program that would educate public and private sector organizations, businesses, and citizens about hazard mitigation.
Action Items	1 Identify instructive mitigation activities that can be applied to businesses, schools, and residences, such as nonstructural seismic retrofits. 2 Distribute information about flood, fire, earthquake, wind, and other forms of natural hazards to property owners in areas identified to be at risk through hazard mapping. 3 Develop a one-page handout on insurance types and deliver to the public through City utility or service agencies. 4 Encourage businesses to create business continuity and disaster recovery plans. 5 Review and evaluate development permit applications; determine whether or not the development will take place in a Special Flood Hazard Area. 6 Interpret floodplain boundaries and provide base flood elevation data when available. 7 Educate residents and businesses on the services that the City can and will provide during an emergency. 8 Educate residents on where to find information in an emergency – television, social media, text messaging, local community gathering point, etc. 9 Encourage community preparedness through public education outreach at public forums, events, workshops, gatherings, and safety fairs. 10 Utilize local print, radio and television media outlets as conduits for advertising public forums. 11 Create a Hazard Mitigation page on the City's website. 12 Publish the Hazard Mitigation Plan on the City of Lancaster website.
Coordinating Department / Organization	**Communication**, Administration, Public Works, Planning, , Public Safety, Finance, Building and Safety, Human Resources
Timeline/Completion Date/Priority	1 year / To be determined Priority 1
Total Cost	$5,000 - $24,000
Funding Source(s)	State of California Grant and/or Federal Grant and/or City – General Fund
Constraints	Time (schedule); Funding
Implementation Description and Estimated Benefits	• Creation and development of additional mitigation education programs and information will better enable the local population to prepare for and mitigate the impact of disasters. • Educational and awareness programs can have an immediate impact on public preparedness and mitigation and leverage available funds to reach local households and businesses.

Plan Goals Addressed			
X	Public Awareness		Protect Life, Property, and the Environment
X	Partnerships and Implementation		Emergency Management

Hazard	Multi-Hazard #12
Project Name / Description	**Sustainability Projects Mitigation**
Status	New Project
Strategy	Integrate mitigation recommendations from the Hazard Mitigation Plan into the "Plan for the Natural Environment" section of the General Plan.
Action Items	1 Review the Natural Environment chapter of the General Plan to determine what policies and specifications need to be updated, changed, or require ongoing monitoring.
Coordinating Department / Organization	**Planning**
Timeline/Completion Date/Priority	6 months / 2014 Priority 1
Total Cost	None – Internal Time Only
Funding Source(s)	City – General Fund and/or Identify Other Grants.
Constraints	Time (schedule); Funding; Internal Resources (time)
Implementation Description and Estimated Benefits	• The City's 2009 General Plan includes a Plan for the Natural Environment that comprises goals, objectives, policies, and specific actions to address natural hazards. The next update of the City's General Plan needs to update and/or add objectives and policies to reflect and implement the findings and mitigation plans from this 2013 Hazard Mitigation Plan. • Integrating mitigation into the "Natural Environment" section of the General Plan will provide an immediate benefit by supplementing existing natural hazard mitigation actions into existing goals, objectives, policies, and actions while ensuring ongoing monitoring.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation		Emergency Management

Hazard	Multi-Hazard #13
Project Name	**Critical Infrastructure Assessment**
Status	Ongoing Project
Strategy	Conduct an assessment of long term support for critical infrastructure.
Action Items	1 Determine what infrastructure is most crucial to the city during an emergency event. 2 Conduct an assessment of how well prepared this infrastructure is in terms of long term support, i.e. what buildings have back-up generators, emergency materials, etc. to last for a designated period of time. 3 Establish a designated period of time for 'long term' support that critical infrastructure should be prepared for.
Coordinating Department	**Public Works**, Administration, Parks Department, Public Safety, Planning
Timeline/Completion Date/Priority	To be determined / Ongoing Priority 2
Total Cost	None – Internal Time Only
Funding Source(s)	City – General Fund and/or State of California Grant and/or Federal Grant
Constraints	Time (schedule), Funding, Internal Resources (time)
Implementation Description and Estimated Benefits	• Identified City Hall, the City Maintenance yard, Stanley Kleiner Activity Center, the Fairgrounds, Lancaster National Soccer Center, and the sewer lift station as critical facilities. • City Hall has a functioning power generator with a fuel reserve to last seven (7) days. • The Maintenance Yard has installed an emergency generator for auxiliary power; 12V fuel pumps for backup fueling; installed 208V outlet in server room at Yard for APU. • Identification and preparation of critical facilities and infrastructure will mitigate the impact of disasters on the local community (e.g., public shelter sites) as well as help ensure City Continuity of Operations.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Hazard	Multi-Hazard #14
Project Name / Description	**Hazardous Waste Hauling Study**
Status	Ongoing
Strategy	Document and understand the hazardous materials used and transported through the City (local and intrastate road, rail, and air) and create a plan to respond to potential transportation incidents.
Action Items	1 Conduct a needs / hazards assessment of the existing hazardous materials transportation conditions. 2 Create a database and GIS maps to document existing facilities and thoroughfares that use or transport hazardous materials. 3 Share the data with the existing EOC software programs and all first responders.
Coordinating Department / Organization	**Public Works**, Administration, Public Works / Engineering
Timeline/Completion Date/Priority	18 months / July 2014 Priority 2
Total Cost	$50,000 - $100,000
Funding Source(s)	Hazardous Materials Emergency Preparedness (HMEP) Grant and/or State of California Grant and/or Federal Grant
Constraints	Internal Resources (skills)
Implementation Description and Estimated Benefits	• The study is currently in progress. The information gathered for this study will be used to design, conduct, and evaluate a full-scale exercise that evaluates the current readiness levels of the EOC, field response crews, and CERT volunteers to determine future needs. The scenario will involve a tanker truck accident and resulting spill. Results of the assessment and exercise lessons learned will directly relate to an intended 2013-14 application to fund the development of a HazMat Transportation Emergency Area Plan. There is a Cal OES grant in place to document haulers and routes. • Identification and preparation for a hazardous materials release in the City will enable responders to more effectively manage recovery efforts.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

Hazard	Multi-Hazard #15
Project Name / Description	**Mitigation Funding Sources**
Status	Ongoing Project
Strategy	Identify and pursue Federal, State, and Local mitigation grants and funds.
Action Items	1 Register to monitor and receive notifications of Federal grant opportunities at http://www.grants.gov/. 2 Register to monitor and receive notifications of FEMA grant opportunities at http://www.fema.gov/grants. 3 Monitor, develop, and submit California Department of Water Resources grants at http://www.water.ca.gov/nav/nav.cfm?loc=t&id=103. 4 Monitor, develop, and submit Cal OES Grants at http://hazardmitigation.calema.ca.gov/grants. 5 Monitor, develop, and submit California Energy Commission Grants at http://www.energy.ca.gov/recovery/assurance.html. 6 Monitor, develop, and submit Hazardous Materials Grants at http://phmsa.dot.gov/hazmat/grants. 7 Monitor, develop, and submit California Natural Resources Agency grants: http://resources.ca.gov/grant_programs.html#. 8 Fire Management Assistance Grant Management Program: http://www.fema.gov/fire-management-assistance-grant-program. 9 Identify funding sources for structural and nonstructural retrofitting of structures that are identified as seismically vulnerable. 10 City Departments to meet on a quarterly basis to discuss projects eligible for mitigation grants and funds.
Coordinating Department / Organization	**Administration**, Public Works, Planning, Housing and Neighborhood Revitalization, Parks Department, Finance
Timeline/Completion Date/Priority	Ongoing / Continuous monitoring Priority 2
Total Cost	None – Internal Time Only
Funding Source(s)	City – General Fund and/or City – Other Fund
Constraints	Internal Resources (time); Internal Resources (skills)
Implementation Description and Estimated Benefits	• Obtaining access to local hazard mitigation funding will provide the resources needed to implement mitigation projects.

Plan Goals Addressed			
	Public Awareness		Protect Life, Property, and the Environment
X	Partnerships and Implementation		Emergency Management

Hazard	Multi-Hazard #16
Project Name / Description	**Natural Resources Protection**
Status	Ongoing Project
Strategy	Adopt policies and implement ordinances that focus on protecting natural systems as a mitigation activity.
Action Items	1 Review ordinances that protect natural systems and resources to apply mitigation strategies related to natural hazards. 2 Pursue vegetation and restoration practices that assist in enhancing and restoring the natural and beneficial functions of the watershed. 3 Participate in the review of the Multi-Jurisdictional Plan that will provide a unified approach to natural resources management across multiple jurisdictions and levels of government. 4 Research funding sources for the Amargosa Creek Tree Habitat Restoration Project to implement tree habitat around the terminus basin of the Creek. Determine if there are funds through FEMA, NFIP, or the California Natural Resources Agency.
Coordinating Department / Organization	**Public Works**, Planning
Timeline/Completion Date/Priority	To be determined / Ongoing Priority 2
Total Cost	None – Internal Time Only
Funding Source(s)	State of California Grant and/or Federal Grant and/or City – General Fund
Constraints	Time (schedule); Internal Resources (time)
Implementation Description and Estimated Benefits	

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation		Emergency Management

Hazard	Multi-Hazard #17
Project Name / Description	**Public and Private Partnerships**
Status	Ongoing Project
Strategy	Encourage leadership within public and private sector to coordinate with and collaborate on the implementation of local and regional hazard mitigation activities.
Action Items	1 Involve private businesses in mitigation planning.
Coordinating Department / Organization	**Planning**, Administration, Communications
Timeline/Completion Date/Priority	To be determined / Ongoing Priority 2
Total Cost	$0 - $4,999
Funding Source(s)	City – General Fund
Constraints	Time (schedule)
Implementation Description and Estimated Benefits	• Encouraging public/private partnerships will assist in coordinating mitigation actions prior to a disaster. • Public/private partnerships will also help to better coordinate response and recovery activities following a disaster.

Plan Goals Addressed			
	Public Awareness		Protect Life, Property, and the Environment
X	Partnerships and Implementation		Emergency Management

Hazard	Multi-Hazard #18
Project Name / Description	**Inventory At-Risk Buildings and Infrastructure**
Status	New Project
Strategy	Create an inventory of buildings, bridges, roads, and other at-risk infrastructure in order to create mitigation projects to resolve any issues.
Action Items	1 Develop an inventory of unreinforced masonry, soft story buildings, and other seismically at-risk structures within the City. 2 Create mitigation plans for the unreinforced masonry building at the Blvd. 3 Inspect the suspected unreinforced masonry building on Sierra Hwy. and Milling. 4 Develop an inventory of buildings and developments within Special Flood Hazard Areas. 5 Create projects to mitigate the issues found in the current LA County Bridge Inspection Reports. 6 Create an inventory of privately owned bridges. 7 Identify critical infrastructure at risk from natural hazards events. Develop strategies to mitigate risk to these facilities or to utilize alternative facilities should natural hazards events cause damages to the facilities. 8 Work with the Department of Transportation to identify any highways or roads that may be vulnerable to hazards.
Coordinating Department / Organization	**Public Works / City Engineering Division**
Timeline/Completion Date/Priority	24 months / December 2016 Priority 2
Total Cost	$0 - $4,999
Funding Source(s)	State of California Grant and/or Federal Grant and/or City – General Fund
Constraints	Time (schedule); Internal Resources (time)
Implementation Description and Estimated Benefits	Lancaster ensures that any new development proposal located within an area determined by the state to be a seismic hazard zone is conditioned for appropriate mitigation as part of its development review process. • An inventory of critical at-risk buildings and infrastructure will enable the City to develop site specific mitigation projects. • Issues include unreinforced masonry structures, flood hazard areas, public/private bridges, and vulnerable transportation routes.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation		Emergency Management

Hazard	Multi-Hazard #19
Project Name	**Advanced Community Training**
Status	Ongoing Project
Strategy	Provide advanced emergency training for community members.
Action Items	1 Promote CPR training for residents. 2 Promote EMT training for residents. 3 Seek funding for more Automatic External Defibrillators (AED). 4 Promote additional training for residents and staff to be certified to operate AEDs already present at some public buildings within the Region. 5 Promote Advanced Emergency Training for residents.
Coordinating Department	**Communications**, Public Safety, Administration
Timeline/Completion Date/Priority	To be determined / Ongoing Priority 3
Total Cost	$0 - $4,999 annually
Funding Source(s)	State of California Grant and/or Federal Grant and/or Public / Private Partnership and/or City – General Fund
Constraints	Funding; Internal Resources (time)
Implementation Description and Estimated Benefits	• Promotion of advanced public training programs such as CPR, AED, and EMT enhances community preparedness.

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

Hazard	Multi-Hazard #20
Project Name	**Emergency Preparedness Public Awareness Campaigns**
Status	Ongoing Project
Strategy	A comprehensive program that would educate public and private sector organizations, businesses, and citizens about local hazards and what to do in case of hazard events.
Action Items	1 Provide the public with information regarding hazards. 2 Place public service TV shows on local cable channels. 3 Feature hazard mitigation articles in the City's quarterly Outlook Magazine and social media channels.
Coordinating Department	**Communications**, Administration, Public Safety
Timeline/Completion Date/Priority	To be determined / Ongoing Priority 3
Total Cost	$5,000 - $24,999 annually
Funding Source(s)	State of California Grant and/or Federal Grant and/or Public / Private Partnership and/or City – General Fund
Constraints	Time (schedule); Internal Resources (time)
Implementation Description and Estimated Benefits	• Los Angeles County, State, and Federal government established the California Fire Alliance which includes an information campaign aimed at educating the public about wildfire safety. • The Los Angeles County Fire Department developed the Ready Set Go Wildfire Action Plan to inform residents of actions they can take to keep them safe from wildfires. • LA County ShakeOut Exercise conducted annually. • CERT training is offered throughout the year to better prepare local residents and raise public awareness. • The City of Lancaster website has educational information about disaster preparedness. • Ongoing public awareness campaigns provide a means for educating the public about hazards and hazard mitigation. • Public awareness includes continued information campaigns for mitigating the threat of wildfires and earthquakes. • CERT programs provide greater public preparedness and neighborhood level response capabilities.
Plan Goals Addressed	

X	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation		Emergency Management

Hazard	Multi-Hazard #21
Project Name / Description	**Ongoing Hazard Mitigation Public Comment Program**
Status	Ongoing Project
Strategy	Ongoing program for public participation of the Hazard Mitigation Plan.
Action Items	1 Create an ongoing public survey. 2 Invite public comment on mitigation projects and plans using public forums and City Council meetings. 3 Invite public comment on mitigation plans and natural hazards as part of the next General Plan update.
Coordinating Department / Organization	**Administration**
Timeline/Completion Date/Priority	To be determined / Ongoing Priority 3
Total Cost	None – Internal Time Only
Funding Source(s)	Public / Private Partnership and/or City – General Fund
Constraints	Resources
Implementation Description and Estimated Benefits	• An ongoing public comment and participation program provides the local community with a forum for providing their input into the City's Hazard Mitigation Plan. • There is currently an ongoing public web survey that is regularly reviewed and will be periodically updated.

Plan Goals Addressed			
	Public Awareness		Protect Life and Property
X	Partnerships and Implementation	X	Emergency Management

Earthquake Mitigation Projects

Hazard	Earthquake #1
Project Name / Description	**Nonstructural Earthquake Mitigation**
Status	New Project
Strategy	Develop outreach programs on nonstructural earthquake risk and mitigation activities.
Action Items	1 Develop outreach programs to encourage homeowners, schools, businesses, and hospitals to secure furnishings, storage cabinets, and utilities to prevent injuries and damage. 2 Post FEMA's publication "Reducing the Risks Nonstructural Earthquake Damage" on the City's website. 3 Use the quarterly Outlook publication and City Newsletter articles to distribute mitigation articles.
Coordinating Department / Organization	**Administration**, Public Safety, Communications
Timeline/Completion Date/Priority	1 year / June 2014 Priority 1
Total Cost	$0 - $4,999
Funding Source(s)	State of California Grant and/or Federal Grant and/or City – General Fund
Constraints	Funding; Internal Resources (time)
Implementation Description and Estimated Benefits	• Providing information to the public to encourage non-structural mitigation will decrease injuries and losses from an earthquake. • The City will use its internal capabilities such as the City website, quarterly Outlook publication, and City Newsletter to publish articles and guidelines.

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation		Emergency Management

Hazard	Earthquake #2
Project Name / Description	**Analysis of Earthquake Hazards**
Status	New Project
Strategy	Identify structures vulnerable to earthquakes, including those within liquefaction zones.
Action Items	1 Update the City of Lancaster earthquake HAZUS data using more localized data including the building inventory to improve accuracy of the vulnerability assessment for the City of Lancaster. 2 Conduct risk analysis incorporating HAZUS data and hazard maps using GIS technology to identify risk sites and further assist in prioritizing mitigation activities and assessing the adequacy of current land use requirements. 3 Conduct seismic evaluations on the Cedar Arts Building and the Western Hotel as these buildings may be vulnerable due to their ages.
Coordinating Department / Organization	**Public Works**, Planning, Administration
Timeline/Completion Date/Priority	750 hours / To be determined Priority 2
Total Cost	$50,000 – $100,000
Funding Source(s)	State of California Grant and/or Federal Grant
Constraints	Time (schedule); Internal Resources (time); Internal Resources (skills)
Implementation Description and Estimated Benefits	• Identification of structures vulnerable to earthquakes including liquefaction zones will assist in developing earthquake specific mitigation projects. • Implementation of HAZUS and other tools to map the local area will enable the City to better identify vulnerable sites.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation		Emergency Management

Hazard	Earthquake #3
Project Name / Description	**Seismic Retrofit Outreach Programs**
Status	New Project
Strategy	Develop outreach programs on seismic retrofitting.
Action Items	1 Publish the "Is Your Home Protected from Earthquake Disaster? A Homeowner's Guide to Earthquake Retrofit" (IBHS) publication on the City website. 2 Target development located in liquefaction zones or in unstable soils areas for intensive education and retrofitting resources. 3 Provide local government building departments with copies of existing strengthening and repair information for distribution. 4 Use the quarterly Outlook publication and City Newsletter articles to distribute mitigation articles.
Coordinating Department / Organization	**Communications**, Building and Safety, Administration
Timeline/Completion Date/Priority	1 year / June, 2014 Priority 3
Total Cost	$0 - $4,999
Funding Source(s)	State of California Grant and/or Federal Grant and/or City – General Fund
Constraints	Internal Resources (time)
Implementation Description and Estimated Benefits	• Providing homeowners with information on retrofitting their homes will reduce losses from an earthquake. • The City will distribute brochures and use its internal capabilities such as the City Departments, website, quarterly Outlook publication, and City Newsletter to publish retrofitting articles and guidelines.

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation		Emergency Management

Flood Mitigation Projects

Hazard	Flood #1
Project Name / Description	**FIRM (Flood Insurance Rate Maps) Monitoring**
Status	Ongoing Project
Strategy	Monitor the FIRM to reduce or eliminate the long-term risk to life and property from flooding.
Action Items	1 Continue to contact FEMA to request needed FIRM changes. 2 Identify policies, activities and tools that can be used to mitigate flooding. 3 Prioritize and implement the projects recommended in the Hazard Mitigation Plan. 4 Develop flood mitigation projects as needed and attempt to secure funding to implement.
Coordinating Department / Organization	**Public Works**, City Engineering
Timeline/Completion Date/Priority	To be determined / Ongoing Priority 1
Total Cost	None – Internal Time Only
Funding Source(s)	N/A
Constraints	Internal Resources (time)
Implementation Description and Estimated Benefits	• FIRM reviews are ongoing. Change requests are submitted as required. Ongoing FIRM monitoring will help ensure that high risk areas are identified and action taken to reduce risk. • Existing or new policies, activities, and tools will be used to improve mitigation efforts.

Plan Goals Addressed			
	Public Awareness	X	Protect Life and Property
	Partnerships and Implementation		Emergency Management

Hazard	Flood #2
Project Name / Description	**Floodplain Management Plan**
Status	Ongoing Project
Strategy	All City departments to review the current Floodplain Management Plan to ensure that it is current and to determine if further mitigation plans need to be implemented.
Action Items	1 All City departments to review the Floodplain Management Plan. 2 Quarterly meetings to review the plan, review potential mitigation projects, and determine funding strategies.
Coordinating Department / Organization	**Public Works**, City Engineering
Timeline/Completion Date/Priority	To be determined / Ongoing Priority 2
Total Cost	None – Internal Time Only
Funding Source(s)	To Be Determined
Constraints	Funding; Internal Resources (time)
Implementation Description and Estimated Benefits	• Performing ongoing reviews of the City's Floodplain Management Plan will help ensure that changes to local area flood risks are identified and new mitigation projects are developed (if needed). • Reviews will require internal time only. New flood management projects (if needed) will have to be budgeted.

Plan Goals Addressed			
	Public Awareness	X	Protect Life and Property
	Partnerships and Implementation		Emergency Management

Hazard	Flood #3
Project Name	**Surface Water Drainage Study**
Status	New Project
Strategy	Identify surface water drainage obstructions for the City and its unincorporated areas and create mitigation projects based on the findings.
Action Items	1 Map concrete channels, culverts, earthen flowlines, and street surface flow patterns. 2 Prepare an inventory of culverts that historically create flooding problems and target for retrofitting. 3 Create drainage basin concrete channels location maps. 4 Create a list of storm patrol locations subject to flooding. 5 Prepare an inventory of major urban drainage problems, identify causes, and create mitigation projects. 6 Complete a stormwater drainage study, identify causes, and create mitigation projects.
Coordinating Department / Organization	**Public Works**, Public Works / Maintenance Services Division, Public Works / Utilities Services Division, Planning, Parks Department
Timeline/Completion Date/Priority	1100 hours / To be determined Priority 2
Total Cost	$50,000 - $100,000
Funding Source(s)	State of California Grant and/or Federal Grant and/or City – General Fund
Constraints	Time (schedule), Funding
Implementation Description and Estimated Benefits	• Studies are complete at some facilities. • Monitoring and analysis of surface water drainage obstructions, patterns, and risks will mitigate flood damage. • Identified risks will be reviewed and high risk areas will be subject to greater levels of monitoring during flood conditions. • If needed new projects developed. • Additional funding will be required for new projects and supplemental monitoring capabilities.

Plan Goals Addressed			
	Public Awareness	X	Protect Life and Property
	Partnerships and Implementation		Emergency Management

Hazard	Flood #4
Project Name	**Drainage and Flood Control Maintenance**
Status	New Project
Strategy	Conduct regular maintenance of drainage systems and flood control structures.
Action Items	1 Perform regular drainage system maintenance. 2 Create a schedule to clear debris from support bracing underneath low-lying bridges. 3 Routinely clear and repair stormwater drains. 4 Create a schedule to clear sediment build-up on riverbanks near aerial lines. 5 Continue to update the Master Plan of Drainage. 6 Continue ongoing maintenance of the thirty-nine retention/detention basins in the City.
Coordinating Department / Organization	**Public Works**, Planning, Administration
Timeline/Completion Date/Priority	1 year / Annual project Priority 2
Total Cost	Greater than $100,000
Funding Source(s)	City – Other Fund (Drainage District)
Constraints	Time (schedule), Funding
Implementation Description and Estimated Benefits	• Targeted flood mitigation efforts to ensure drainage systems are free of debris will reduce the likelihood of flooding. New projects will need to be budgeted. • Continuation of flood prevention activities such as retention/detention basin maintenance and updates to the Master Plan will reduce the potential for flooding.

Plan Goals Addressed			
	Public Awareness	X	Protect Life and Property
	Partnerships and Implementation		Emergency Management

Wildfire Mitigation Projects

Hazard	Wildfire #1		
Project Name / Description	**Fire Outreach and Education**		
Status	Ongoing Project		
Strategy	Enhance outreach and education programs to mitigate wildfire hazards and to reduce or preventing the exposure of citizens, public agencies, private property owners and businesses to wildfire hazards.		
Action Items	1 Coordinate with the Los Angeles County Fire Department to visit urban interface neighborhoods and rural areas to conduct education and outreach activities. 2 Coordinate with the Los Angeles County Fire Department to present specific community-based demonstration projects of fire prevention and mitigation in the urban interface. 3 Coordinate with the Los Angeles County Fire Department to establish neighborhood "drive-through" activities that pinpoint site-specific mitigation activities so that fire crews can give property owners personal suggestions and assistance.		
Coordinating Department / Organization	**Public Safety**, Administration		
Timeline/Completion Date/Priority	Ongoing / 2015 Priority 1		
Total Cost	$5,000 - $24,999		
Funding Source(s)	City – General Fund		
Constraints			
Implementation Description and Estimated Benefits	The Los Angeles County Fire Department has implemented the following outreach and mitigation activities: • Citizens Emergency Response Training (CERT) is conducted throughout the year in various areas including urban interface. • Information is available at every fire station on disaster preparedness (floods, wildfires, and earthquakes). • Ready Set Go Program / Wild Land Fire Prevention and Emergency Survival Guide programs and handouts. • Annual Fire Service Day, a Department-wide Open House for the community • Annual Brush Clearance Program – Mitigation Compliance. Every urban interface residence is visited. • Fire Prevention Week activities. • Enhancing existing outreach and educational programs will help ensure that the homeowners, property managers, and local businesses take action to reduce wildfire risks, particularly in urban/wildland interface areas.		
Plan Goals Addressed			
X	Public Awareness	X	Protect Life and Property
X	Partnerships and Implementation		Emergency Management

Hazard	Wildfire #2
Project Name / Description	**Alternative Firefighting Water Sources**
Status	New Project
Strategy	Identify alternative firefighting water sources within the City and unincorporated areas.
Action Items	1 Coordinate water storage facilities with fire-resistant electrical pump systems in developments outside of Fire Protection District 5 that are not connected to a community water or hydrant system. 2 Develop a protocol for fire jurisdictions and water districts to communicate all hydrant outages and water shortage information.
Coordinating Department / Organization	**Administration**, Public Works
Timeline/Completion Date/Priority	2 years To be determined Priority 2
Total Cost	$5,000 - $24,999
Funding Source(s)	City – Other Fund (Fire District)
Constraints	Time (schedule); Funding
Implementation Description and Estimated Benefits	• The City has not yet coordinated with the Fire Department on alternative firefighting water sources. • The Fire Department's current strategy: ○ Identified water source system outside the community water / hydrant grid system: ▪ The use of the California Aqueduct System via helicopter(s) ▪ Residential Sprinkler systems with water tank and fire department connection ❖ Requirements established through Fire Prevention Division ❖ Inspections conducted by Fire Station personnel ○ Communications with water districts: • Jurisdictional stations report the outage/shortage to fire dispatch ❖ Dispatch will contact the local water district to send representatives to the pumping station • Local water districts can report issues to fire dispatch and relayed to jurisdictional stations. • Improved water storage and distribution capabilities will help ensure that water resources are available in the event of a major wildfire. • Improved communications between fire jurisdictions and water districts will enhance response capabilities in the event of a major wildfire.

Plan Goals Addressed			
	Public Awareness	X	Protect Life and Property
X	Partnerships and Implementation	X	Emergency Management

Hazard	Wildfire #3
Project Name / Description	**Federal Cost-Share and Grant Programs**
Status	New Project
Strategy	Identify and apply for Federal cost share and grant programs.
Action Items	1 Programs to investigate include: • Fire Management Assistant Grant (FMAG) • Master Mutual Aid (California Disaster and Civil Defense Master Mutual Aid Agreement) • Automatic Aid • Initial Action Zone • Mutual Threat Zone • Mutual Aid Zone • Assistance By Hire 2 All of these programs are related to events that require the deployment of resources. The City will work with the Los Angeles County Fire Department to determine eligibility in each program and devise a strategy to apply for grants and aid after fire events.
Coordinating Department / Organization	**Public Safety**, Administration
Timeline/Completion Date/Priority	To be determined Priority 2
Total Cost	$0 - $4,999
Funding Source(s)	Federal Grants
Constraints	Time (schedule), Funding
Implementation Description and Estimated Benefits	The City has not yet coordinated with the Fire Department in submitting for federal cost-share and grant programs. • Obtaining additional funds for coordination and mutual aid activities will better enable the City to fund wildfire response capabilities.

Plan Goals Addressed			
	Public Awareness		Protect Life and Property
X	Partnerships and Implementation	X	Emergency Management

Hazard	Wildfire #4
Project Name / Description	**Cooperative Fire Protection Agreements**
Status	New Project
Strategy	Develop, approve, and promote Cooperative Fire Protection Agreements and partnerships to clarify roles and responsibilities and to provide for fire mitigation activities and suppression preparedness.
Action Items	1 Identify fire, paramedic, and emergency needs that require partnerships with other organizations. 2 Coordinate with Cal OES and the Los Angeles County Fire Department to establish Cooperative Fire Protection Agreements.
Coordinating Department / Organization	**Public Safety**, Administration
Timeline/Completion Date/Priority	To be determined Priority 3
Total Cost	None – Internal Time Only
Funding Source(s)	N/A
Constraints	Time (schedule), Internal Resources (time)
Implementation Description and Estimated Benefits	Better coordination of mitigation activities with the Los Angeles County Fire Department and other agencies will assist the City in its wildfire prevention efforts.

Plan Goals Addressed			
	Public Awareness		Protect Life and Property
X	Partnerships and Implementation	X	Emergency Management

Windstorms Mitigation Projects

Hazard	Long Term – Windstorms #1
Project Name / Description	**Utility Tree Clearance Operations**
Status	New Project
Strategy	Work with local utility companies to encourage compliance with State and Local tree clearance and integrity guidelines.
Action Items	1 Continue to work with Southern California Edison (SCE) to manage the City's urban forest as part of its windstorm mitigation plan.
Coordinating Department / Organization	**Public Works**, Administration, Planning, Parks Department
Timeline/Completion Date/Priority	3 years / 2016 Priority 2
Total Cost	None – Internal Time Only
Funding Source(s)	State of California Grant and/or City – General Fund
Constraints	Funding
Implementation Description and Estimated Benefits	• The City trims street trees as needed around street lights and at SCE's request. SCE is diligent about trimming trees near power lines. • Better coordination with local utilities will help ensure that the threat of windblown tree damage is reduced.

Plan Goals Addressed			
	Public Awareness	X	Protect Life and Property
X	Partnerships and Implementation		Emergency Management

Hazard	Windstorms #2
Project Name / Description	**Critical Facilities Wind Damage Mitigation Retrofit**
Status	New Project
Strategy	Retrofit critical facilities as needed to mitigate against wind damage.
Action Items	1 Identify critical facilities that can be retrofitted to reduce future wind damage. 2 Anchor roof-mounted heating, ventilation, and air conditioning units. 3 Update zoning code to regulate placement of flag poles and antennas near buildings. 4 Upgrade and maintain existing lightning protection systems to prevent roof cover damage.
Coordinating Department / Organization	Administration, Planning, Building Division, Parks Department, Public Works
Timeline/Completion Date/Priority	3 months / To be determined Priority 3
Total Cost	None – Internal Time Only
Funding Source(s)	State of California Grant and/or Federal Grant
Constraints	Time (schedule); Internal Resources (time)
Implementation Description and Estimated Benefits	• Ensuring that critical facilities are protected against wind driven damage will mitigate the damage potential and loss of functionality. • Updates to the building code will help prevent windblown damage from flag poles, antennas, and other structures.

Plan Goals Addressed			
	Public Awareness	X	Protect Life and Property
	Partnerships and Implementation		Emergency Management

Hazard	Windstorms #3
Project Name / Description	**Tree Vulnerability Assessment and Tree Trimming**
Status	New Project
Strategy	Conduct a tree vulnerability assessment to better understand the wind threat to the urban forest and to create mitigation strategies.
Action Items	1 Track tree damage caused by severe wind events. 2 Identify at-risk trees. 3 Incorporate findings into Hazard Mitigation Plan in order to estimate losses and create mitigation projects. 4 Issue tree trimming contracts
Coordinating Department / Organization	**Public Works Department**, Administration, Parks Department
Timeline/Completion Date/Priority	4 years / 2017 Priority 3
Total Cost	Greater than $100,000 (includes tree-trimming contracts)
Funding Source(s)	City - General Fund
Constraints	Time (schedule), Funding
Implementation Description and Estimated Benefits	• Completing an inventory of tree wind vulnerabilities will enable the City to develop mitigation projects to reduce the threat of wind driven tree damage to life/safety, utilities, structures, and personal property.

Plan Goals Addressed			
	Public Awareness	X	Protect Life and Property
	Partnerships and Implementation		Emergency Management

Energy Mitigation Projects

Hazard	Energy #1
Project Name / Description	**Coordination with Utilities**
Status	New Project
Strategy	Work with public utilities and the California Utilities Emergency Association (CUEA) to devise mitigation programs.
Action Items	1 Work with the CUEA to understand its existing partnerships and mitigation plans for the Lancaster area. 2 Coordinate with the CUEA and public utilities (SCE, The Gas Company, Los Angeles County Department of Public Works, etc.) to coordinate mitigation activities in the case of an energy event.
Coordinating Department / Organization	**Public Works**, Administration
Timeline/Completion Date/Priority	1 year / 2014 Priority 1
Total Cost	None – Internal Time Only
Funding Source(s)	N/A
Constraints	Time (schedule), Internal Resources (time)
Implementation Description and Estimated Benefits	• Working with utilities and the California Utilities Emergency Association to develop mitigation programs and coordinate activities to better prepare the City and protect the public.

Plan Goals Addressed			
	Public Awareness		Protect Life and Property
X	Partnerships and Implementation	X	Emergency Management

Hazard	Energy #2
Project Name / Description	**Special Needs Residents**
Status	New Project
Strategy	Create programs and services for special needs residents.
Action Items	1 Create a program with Southern California Edison to share its database of special needs customers with the City. 2 Establish battery back-up systems program for special needs residents (life safety, medical, etc.) **3** Promote SNAP participation among residents and promote the program to as part of the Public Safety Fair held every September.
Coordinating Department / Organization	**Administration**
Timeline/Completion Date/Priority	1 year / 2014 Priority 1
Total Cost	None – Internal Time Only
Funding Source(s)	State of California Grant and/or Federal Grant and/or City – General Fund
Constraints	Time (schedule)
Implementation Description and Estimated Benefits	• Addressing the requirements of special needs residents and programs to ensure ongoing power will mitigate the impact of power outages. • Identification of requirements for special needs populations will enable the City to develop specific programs and projects to protect at-risk populations.

Plan Goals Addressed			
	Public Awareness		Protect Life and Property
X	Partnerships and Implementation	X	Emergency Management

Hazard	Energy #3
Project Name / Description	**Energy Needs and Hazards Public Outreach**
Status	New Project
Strategy	Collect information from the public to understand energy needs and the potential for secondary accidents in the event of a power outage.
Action Items	1 Hold public meetings or other outreach sessions to understand the energy needs of the community, including energy dependent medical needs, as well as gain an understanding of the secondary accidents that will affect the community a result of power outages (car accidents, chemical spills, industrial accidents, etc.). 2 Identify the critical facilities, lifelines, and services that will not function normally during a power event. 3 Create mitigation strategies to assist the public during a power event. Examples include plans for residents to use hospital facilities to recharge medical devices and educational programs for residents to understand what city services will not be available.
Coordinating Department / Organization	**Administration**, Communications, Public Works, Public Safety
Timeline/Completion Date/Priority	3 years / 2016 Priority 3
Total Cost	$5,000 - $24,999
Funding Source(s)	Public / Private Partnership and/or City – General Fund and/or City – Other Fund
Constraints	Time (schedule); Funding
Implementation Description and Estimated Benefits	• Public meetings to assess primary and secondary risks of power outages will enable the City to target programs for at-risk residents. • Identification of lifelines, critical facilities, and services will allow the City to develop mitigation projects that focus on key public service providers.

Plan Goals Addressed			
X	Public Awareness		Protect Life and Property
	Partnerships and Implementation		Emergency Management

SECTION 5. PLAN MAINTENANCE AND MONITORING

This plan maintenance section details the formal process that will ensure that the City of Lancaster Hazard Mitigation Plan is an active and relevant document. This section includes a schedule for monitoring and evaluating the plan and producing a revision every five years.

Additionally, a description of how the City of Lancaster will integrate public participation throughout the plan maintenance process is provided. Finally, this section includes an explanation of how Lancaster intends to incorporate the mitigation strategies outlined in this plan into existing planning mechanisms such as the General Plans Capital Improvement Plan, Building & Safety Codes and other programs and or plans within the City.

IMPLEMENTATION AND PLAN ADOPTION

The City of Lancaster has the authority to promote sound public policy regarding hazards and was responsible for adopting the Lancaster Hazard Mitigation Plan. The plan was adopted and submitted to the State Hazard Mitigation Officer at the California Office of Emergency Services (Cal OES). Cal OES is responsible for submitting the plan to the Federal Emergency Management Agency (FEMA) for review. The review includes the criteria outlined in FEMA Mitigation Planning Final Rule 44 CFR Part 201 (September 2009). Upon acceptance by FEMA, Lancaster will become eligible for Hazard Mitigation Grant Program funds.

Continued Public Involvement

Lancaster is dedicated to involving the public in the Hazard Mitigation Plan process. Members of the public, businesses, and other interested parties such as: neighboring communities, agencies, businesses, academia, and nonprofits had the opportunity to provide feedback on local area risks and the Hazard Mitigation Plan.

In addition, ongoing public participation in the Hazard Mitigation Plan is promoted by the city to encourage public review of the HMP and provide feedback and suggestions for improvement through:

- Annual surveys
- Television bulletins
- Public E-mails
- Handouts at City Hall and other public locations
- City website
- Training classes and public events (CERT, CPR, etc.)
- Emergency exercises

Lancaster's Emergency Manager is responsible for ensuring ongoing public participation within his or her respective community

Coordinating Body

The Lancaster Hazard Mitigation Plan Working Group was responsible for coordinating and undertaking the formal review process. The HMP Working Group members are responsible for ensuring that reviews and updates to the plan are performed.

The HMP Working Group will conduct annual reviews of the Hazard Mitigation Plan; a public meeting is to be held annually or when deemed necessary by the HMP Working Group or City Council. The meetings will provide the public a forum where they can express their concerns, opinions, or ideas about the plan.

Adoption and Implementation

The City of Lancaster has adopted the Hazard Mitigation Plan. The Hazard Mitigation Working Group is responsible for plan implementation. The Assistant to the City Manager serves as a convener to facilitate the Hazard Mitigation Working Group meetings. Plan implementation and evaluation are a shared responsibility among all of the Hazard Mitigation Working Group Members. The HMP Working Group is responsible for providing information gained from committee meetings with staff and community members in the city.

IMPLEMENTATION THROUGH EXISTING PROGRAMS

The City of Lancaster addresses statewide planning goals and legislative requirements through its General Plan, Capital Improvement Projects, and City Building and Safety Codes. The Hazard Mitigation Plan provides a series of recommendations - many of which are closely related to the goals and objectives of existing planning programs within the city. Lancaster has the opportunity to implement recommended mitigation action items through existing programs and procedures. The mechanisms in which the city will integrate the recommendations from the Hazard Mitigation Plan include:

- The Assistant to the City Manager leads the Hazard Mitigation Working Group. This group is comprised of representative from each of the city departments involved in mitigation planning and implementation. The Assistant to the City Manager works with these departments to review existing projects as well as coordinate the addition of new mitigation projects into the HMP. Departments involved in the process include (as required):
  - Building & Safety
  - Capital Projects/Engineering
  - City Engineering
  - Finance
  - Planning
  - Public Safety
  - Public Works
  - Non-City Entities
    - Los Angeles County Fire Department
    - Los Angeles County Sheriff's Department
- The meetings of the Hazard Mitigation Working Group provide an opportunity for team members to report back on the progress made on the integration of mitigation planning elements into city planning documents and procedures.
- Risk assessments and planning elements contained within the HMP are incorporated (as needed) into the City of Lancaster General Plan as part of the General Plan update process as well as local development requirements. Examples include the Master Drainage Plan, Site Specific Plans (e.g.,

Fox Field Corridor), Plan for Public Health & Safety (geology and seismicity, flooding, hazardous materials, fire prevention and suppression, disaster planning, etc.), Plan for Municipal Services and Facilities (e.g., flood control and drainage), and Plan for Physical Development (community design, land use patterns, and general land use plans).

ECONOMIC ANALYSIS OF MITIGATION PROJECTS

FEMA's approaches to identify the costs and benefits and costs associated with hazard mitigation strategies, measures, or projects include a Benefit/Cost Review and more detailed Benefit-Cost Analyses (BCA). Conducting an economic analysis for a mitigation activity can assist the city in determining whether a project is worth undertaking now in order to avoid disaster-related damages later.

Benefit-Cost Review

The Benefit-Cost Review process includes monetary as well as non-monetary costs and benefits associated with each action. Some projects can be extremely cost-effective but not as beneficial for the community at large. The Planning Team considered a wide variety of questions, such as:

- How many people will benefit from the action?
- How large an area is impacted?
- How critical are the facilities that benefit from the action (e.g., is it more beneficial to protect the fire station than the administrative building, even though it costs more)?
- Environmentally, does it make sense to do this project for the overall community?

The process emphasized a review of costs and benefits when prioritizing the mitigation actions and projects provided in this Hazard Mitigation Plan.

Benefit-Cost Analysis

The Benefit-Cost analysis is used to determine if the cost of investing in a specific mitigation project, i.e., the "cost" will result in reduced damages in the future, i.e., the "benefits" and if the loss prevented justifies the expenditure of funds for the project. If the benefit is greater than the cost, then the project is cost effective; if the benefit is less than the cost, then the project is not cost effective.

The Benefit-Cost Analysis is essentially the same for each type of hazard mitigation project. The only differences are the types of data that are used (e.g., if the project is for earthquake, flood, wind, or fire mitigation). To determine the Benefit-Cost, the project cost is compared to the anticipated dollar loss that will be prevented by the mitigation project. For example, if the project cost is $100,000 and the expected loss averted is $1,000,000, then the benefit exceeds the cost and is therefore cost effective. The ratio of the benefit versus the cost is 10:1 ($1,000,000 divided by $100,000). Priority is given to those projects with the highest Benefit-Cost Ratio or those projects with the greatest benefit to the community.

DMA 2000 does not require Hazard Mitigation Plans to include BCA's for specific projects.[7] Consequently a Benefit-Cost Review approach is used for the Hazard Mitigation Plan. Specific projects and future actions involving federal grants requiring a more detailed Benefit-Cost Analysis will be managed on a case-by-case basis.

[7] FEMA Publication 386-5, State and Local Mitigation Planning, Using Benefit-Cost Review in Mitigation Planning, May 2007

Benefit-Cost Analysis Exemptions

The following categories of mitigation measures are exempt from the FEMA policy on Benefit-Cost analysis:

- 5% Initiative Projects: States, which receive a Presidential declaration, are eligible to use up to 5% of available HMGP funding at their discretion.
- Tornado Initiative: States, which receive a Presidential declaration, are eligible to use up to an additional 5% of available HMGP funding at their discretion.
- Substantial Damage Waivers for acquisition of substantially damaged structures in 100-year floodplain.
- Mitigation planning related grants.

Benefit-Cost Methodology Utilized

DMA 2000 does not require Hazard Mitigation Plans to include BCA's for specific projects.[9] Consequently a Benefit-Cost Review approach is used for the Hazard Mitigation Plan. Future projects will be evaluated using a similar process. Specific projects and future actions involving federal grants requiring a more detailed Benefit-Cost Analysis will be managed on a case-by-case basis at the city's discretion or if determined to be beneficial.

Mitigation projects were reviewed and prioritized by the HMP Working Group which considered:

- The expected benefit to the community according to the following categories:
  - Protection of Life / Loss of Life Reduction
  - Protection of Property / Property Loss Reduction
  - Protection of the Environment / Environmental Loss Reduction
  - Increase Public Awareness
  - Scope of Impact (i.e., the degree to which the project benefits the community)
- Costs: total estimated expense including ongoing maintenance requirements
- Constraints: the availability of resources, if funds were already budgeted or if additional budget funding was required, and the timeline for completion (if known)
- Other considerations included whether projects were already in progress or part of another effort (e.g., part of a County-wide program or existing city initiative)

[9] FEMA Publication 386-5, State and Local Mitigation Planning, Using Benefit-Cost Review in Mitigation Planning, May 2007

The following tables provide examples of the Benefit-Cost Review factors considered:

Benefit Factors	Evaluation Score
Protection of Life/Loss of Life Reduction	High / Medium / Low / None
Protection of Property/Property Loss Reduction	High / Medium / Low / None
Protection of the Environment/Environmental Loss Reduction	High / Medium / Low / None
Increased Public Awareness	High / Medium / Low / None
Scope of Impact	High (benefits the entire city or region) Medium (benefits a large part of the city or region) Low (benefits a targeted or limited area) None

Cost Factor	Evaluation Score
More than $500K regionally or $50K locally	High
$250K to $499K regionally or $25K to $49.9K locally	Moderately High
$100K to $249K regionally or $10K to $24.9K locally	Medium
$50K to $99K regionally or $5K to $9.9K locally	Moderately Low
Less than $50K regionally or $5K locally	Low
In-house Time	None

Constraint Factor	Evaluation Score
Resources	No Resources Available Limited Resources Available Resources Allocated and Assigned
Funding	No Funds Available (Need to Obtain New Funding) Limited Funds Available Funds Allocated
Time	Rapid or Condensed Timeframe Moderate Timeframe No Time Constraints

PLAN MONITORING, EVALUATION, UPDATES, AND FORMAL REVIEW PROCESS

The Lancaster Hazard Mitigation Plan will be evaluated on an annual basis to determine the effectiveness of programs, and to reflect changes in development or programs that may affect mitigation priorities. Hazard Mitigation Plan Working Group members are responsible for monitoring and evaluating the progress of the mitigation strategies in the plan. The HMP Working Group is also responsible for updating the plan.

The HMP Working Group will review the goals and action items to determine their relevance to changing conditions within the Region, as well as changes in State or Federal policy, and to ensure they are addressing current and expected conditions. The committee will also review the risk assessment portion of the plan to determine if this information should be updated or modified, given any new available data.

The HMP Working Group comprised of representatives from city departments that support mitigation planning and conducts meetings to review local planning efforts and evaluate progress on mitigation efforts. The HMP Working Group will report progress to the Assistant to the City Manager (who will update the City Manager for submission to the City Council) and work with other city departments to implement the mitigation strategies contained in this Hazard Mitigation Plan.

The city departments responsible for the various action items identified in Section 4: Hazard Mitigation Goals and Strategies will report on the status of their projects, the success of various implementation processes, difficulties encountered, success of coordination efforts, and which strategies require revision.

Furthermore, ongoing public involvement will be included in the plan update process. Public notices will be provided via the city's website and public notices as well as through ongoing training and exercise events.

Public Involvement

Public involvement is a key component of hazard mitigation planning (per 44 CFR §201.6(c)(4)(iii)). The City of Lancaster provides access of the Hazard Mitigation Plan to the public and continues to involve the public in the Hazard Mitigation Planning, Implementation, and Maintenance process through several mechanisms:

Distribution Method	Description
City Web Page	• Downloadable online copies of the Hazard Mitigation Plan are posted on the City of Lancaster website. • Members of the public may provide feedback via: ○ City of Lancaster (661) 723-6000 • Links to mitigation and preparedness resources are provided via the City web site. Examples include: **"Be Ready" Series** Animals & Disasters [PDF, 178Kb] Basic Fire Safety & Suppression [PDF, 188Kb] Disaster Kit Checklist [PDF, 149Kb] Fire Extinguishers [PDF, 161Kb] Planning for the Aftermath [PDF, 147Kb] Post-Disaster Assistance [PDF, 177Kb] Preparedness for the Home [PDF, 192Kb] Shelter-In-Place [PDF, 160Kb] Special Needs - Elderly, Disabled, & Children [PDF, 179Kb]

Distribution Method	Description
	Your 12-Month Plan [PDF, 183Kb] Your Disaster Kit [PDF, 166Kb] Your Family Plan [PDF, 174Kb] Utilities [PDF, 189Kb] **Publications from Other Agencies** Putting Down Roots in Earthquake Country [PDF, 6129Kb] (Homeowner Earthquake Mitigation)
City Facilities	• Mitigation brochures and handouts are made available at designated City-owned facilities including City Hall.
Public Surveys	• Disaster Preparedness, Mitigation, and Risk Surveys will be used to provide feedback opportunities to the public regarding hazard mitigation planning, prioritization of mitigation efforts and risks, and community mitigation and preparedness needs.
Public Meetings and Events	• Local Disaster Preparedness Events. • City Council Meetings (as applicable per published Agenda items).
Local Media	• Emergency Preparation and Disaster Mitigation Information Posted in Local News Media (including links to the HMP, Hazard Survey, and Planning Meetings). • Emergency Preparation and Disaster Mitigation Tips and Announcements via City TV Information Bulletins.
Training Programs	• Mitigation and response activities are included in ongoing CERT Program training.

SECTION 6. WINDSTORMS

THE NATURE OF THE WINDSTORM THREAT

Severe windstorms pose a significant risk to life and property by creating conditions that disrupt essential systems such as public utilities, telecommunications, and transportation routes. High winds have the potential to cause damage to local homes and businesses from falling trees and debris. In addition, windstorms increase the risk of wildfire as the moisture content decreases in brush and vegetation on hillsides, especially in urban interface areas.

CAUSES AND CHARACTERISTICS OF WINDSTORMS IN THE LANCASTER AREA

Windstorm events in the Lancaster area can be caused by short term topographically influenced high wind gusts as well as extended duration Santa Ana wind conditions. "Santa Ana Winds" typically occur between October and February. Santa Ana winds are characterized by strong dry offshore winds originating from the Great Basin and Upper Mojave Desert. Wind temperatures can range from extremely hot to cold. Damage can occur directly from the high wind speeds generated or from the secondary effects of very low humidity, which increases the threat of wildfires, particularly in the fire-prone chaparral country.

WINDSTORM HAZARD IDENTIFICATION

Given the location and topography of Lancaster, severe windstorms are common. Windstorms in the Antelope Valley pose a threat to life, property, utility delivery systems, infrastructure, and transportation. Furthermore, if a severe windstorm results in a prolonged utility disruption, it may be necessary to utilize private and public resources to aid in the care and sheltering of displaced residents. In addition, the economic impact of providing shelter, conducting repairs, and the disruption to local business can result in economic losses to the entire area and require the services of certified arborists.

The risk of trees falling is one of the more significant hazards resulting from high wind events. The leafy canopy and structural elements of a tree crown present a drag type barrier to winds. Trees naturally minimize wind drag through the re-orientation of leaves and through the independent motion of limbs and branches, thus reducing the transfer of uniform sway motion forces to the trunk. The Beaufort Wind Scale (BWS) specifically notes problems with trees as wind speeds increase. The BWS references the likelihood of whole tree motion as wind speeds exceed 32 miles per hour (MPH), twig breakage at 39 MPH and whole tree wind-throw as wind speeds exceed 55 MPH. The susceptibility of trees to wind-throw can be influenced by the general structural condition of the trees, the location of the trees in reference to wind patterns and the level and frequency of pruning maintenance.

The following chart depicts the Beaufort scale which is used to estimate wind strengths.

Beaufort Force	Speed (MPH)	Wind Description - State of Sea - Effects on Land
0	Less 1	Calm - Mirror-like - Smoke rises vertically
1	1-3	Light - Air Ripples look like scales; No crests of foam - Smoke drift shows direction of wind, but wind vanes do not
2	4-7	Light Breeze - Small but pronounced wavelets; Crests do not break - Wind vanes move; Leaves rustle; You can feel wind on the face
3	8-12	Gentle Breeze - Large Wavelets; Crests break; Glassy foam; A few whitecaps - Leaves and small twigs move constantly; Small, light flags are extended
4	13-18	Moderate Breeze - Longer waves; Whitecaps - Wind lifts dust and loose paper; Small branches move
5	19-24	Fresh Breeze - Moderate, long waves; Many whitecaps; Some spray - Small trees with leaves begin to move
6	25-31	Strong Breeze - Some large waves; Crests of white foam; Spray - Large branches move; Telegraph wires whistle; Hard to hold umbrellas
7	32-38	Near Gale - White foam from breaking waves blows in streaks with the wind - Whole trees move; Resistance felt walking into wind
8	39-46	Gale - Waves high and moderately long; Crests break into spin drift, blowing foam in well-marked streaks - Twigs and small branches break off trees; Difficult to walk
9	47-54	Strong Gale - High waves with wave crests that tumble; Dense streaks of foam in wind; Poor visibility from spray - Slight structural damage
10	55-63	Storm - Very high waves with long, curling crests; Sea surface appears white from blowing foam; Heavy tumbling of sea; Poor visibility - Trees broken or uprooted; Considerable structural damage
11	64-73	Violent Storm - Waves high enough to hide small and medium sized ships; Sea covered with patches of white foam; Edges of wave crests blown into froth; Poor visibility - Seldom experienced inland; Considerable structural damage
12	>74	Hurricane - Sea white with spray. Foam and spray render visibility almost non-existent – Widespread damage. Very rarely experienced on land.

Table 27: Beaufort Scale

Estimated Impact of an Event

If a severe windstorm were to occur, the consequences to local populations and housing could be significant. The table below provides the estimated impact of a disaster using a 1% loss baseline.

Category	Lancaster	Impact if a 1% Loss Occurs
Population	156,633	1,566
Total Housing Units	51,260	512
Median Home Value	$214,800	More than $45M

Table 28: Estimated Population and Economic Loss of a Windstorm

Based on a 1% loss projection, more than 1,500 people could be significantly impacted and more than 512 homes damaged resulting in over $45 million in losses (see Community Profile section for population, housing, and economic data).

WINDSTORM VULNERABILITIES

Windstorms can result in damage to structures, disrupt utilities, and require emergency tree services (i.e. limb failures, clearance of private property trees fallen into roadways, etc.). Wind damage and power outages in the Lancaster area are a common occurrence, and the impact of a severe windstorm can be significant, thus mitigation planning can reduce losses when wind events occur. Specific windstorm related issues are outlined below.

Life and Property

Detached tree limbs and building elements present a hazard to life and property as well as infrastructure. Furthermore, utility providers and emergency services can be overwhelmed during a major event. At risk populations include assisted care facilities and home-bound residents that are dependent on electrical power (see Utilities and Infrastructure section below). For example, in December 2011, the City of Pasadena, California experienced a severe windstorm with reported gusts near 100 MPH. The resulting power outages and debris impacted residents for weeks.

Utilities and Infrastructure

Windstorms can cause structural damage to buildings and other critical infrastructure. Overhead electrical and telephone lines are particularly vulnerable to damage from wind and debris as are microwave and satellite facilities. There are multiple high-voltage transmission lines that run throughout the Antelope Valley that are vulnerable to high wind events. High winds commonly occur during winter storms and can cause trees to bend, sag, or fail (tree limbs or entire trees) which then come into contact with nearby power lines. Fallen trees can cause short-circuiting and conductor overloading. Wind-induced damage to the power system causes power outages to customers, incurs cost to make repairs, and in some cases can lead to ignitions that start wild land fires. In order to prepare for such events, Southern California Edison (SCE) has developed its own Hazard Mitigation Plan.

Transportation

Windblown debris, tree limbs and wind thrown trees can damage traffic control apparatus, block roadways, damage vehicles, and cause extreme traffic congestion - impeding emergency and vehicles and hampering repair efforts.

Increased Fire Threat

The Antelope Valley is subject to Santa Ana Winds with regards to their impact on fire conditions. Winds can serve as a catalyst in the foothill and mountain areas to spread fire at a rapid rate. Prolonged winds during the warmer months of the year can decrease vegetation moisture levels and increase the ignition potential in dry underbrush. When urban / wildland interface fires occur, Santa Ana Wind conditions can drive flames and increase the spread speed and severity of the fire. This is a concern of wildfires near homes, especially where brush clearance has been lax. While there is a minimal risk for wildfires in the City of Lancaster, wildfires in the surrounding areas can have a serious impact on health conditions, transportation, public services, and utilities within the City.

WINDSTORM MITIGATION STRATEGIES

Interagency Efforts

In the case of buildings and structures, the likelihood of structural element detachment is influence by local building code requirements, the location of buildings in reference to wind patterns, and in the level of maintenance and upkeep. In addition, one of the strongest and most widespread existing mitigation strategies pertains to tree clearance.

Currently, California State Law and LA County Fire Code requires utility companies to maintain specific clearances (depending on the type of voltage running through the line) between electric power lines and all vegetation (Fire Code section 325.1 Electrical Transmission Lines). Furthermore, homeowners are required to allow a utility company to comply with the law.

Failure to provide access to utility power lines can result in liability to the homeowner for damages or injuries resulting from a vegetation hazard. Many insurance companies do not cover these types of damages if the policy owner has refused to allow the hazard to be eliminated.

Continuous upgrades to engineering design criteria based on the latest industrial progress, geotechnical findings and Code revisions are being conducted. For instance, Dynamic Shake Table Tests were recently made mandatory for certain equipment in addition to analytical design.

Lancaster Mitigation Activities

In order to mitigate the impact of windstorms, the City of Lancaster works with the local utility companies to encourage them to comply with State and Local tree clearance and integrity guidelines. Lancaster's Maintenance Services Division maintains a trimming and pruning schedule to ensure that City trees do not pose a risk to public safety. Lancaster also conducts public awareness campaigns and community outreach programs to educate the community on how to protect life and property before, during, and after windstorm events.[10]

[10] City of Lancaster Hazards Mitigation Plan

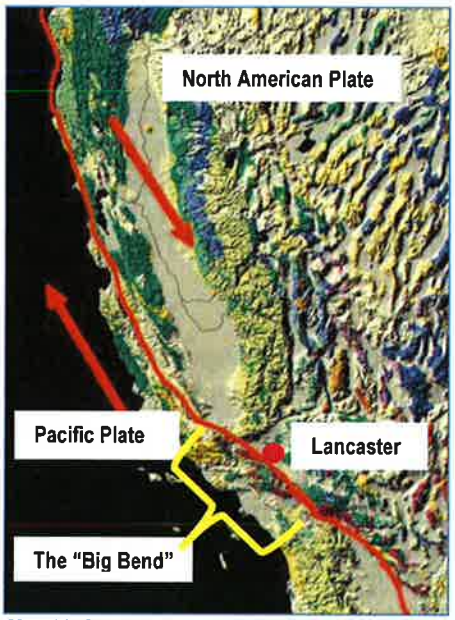
SECTION 7. EARTHQUAKE

THE NATURE OF THE EARTHQUAKE THREAT

Earthquakes occur at the boundaries of the Earth's tectonic plates as they move relative to one another. The tectonic boundary between the Pacific Plate and the North American Plate in California is along the San Andreas Fault. The fault is a transform boundary where the plates are sliding horizontally past one another.

The risk of earthquakes in Southern California is exacerbated by the fact that the two plates are inhibited in their motion by what is known as the "Big Bend". In this section of the San Andreas, the fault curves to the west then curves back to the north. This creates a barrier to simple lateral motion. This bend is a convergent (restraining) bend, creating a localized collision of tectonic plates, generating a tremendous amount of compression stress.

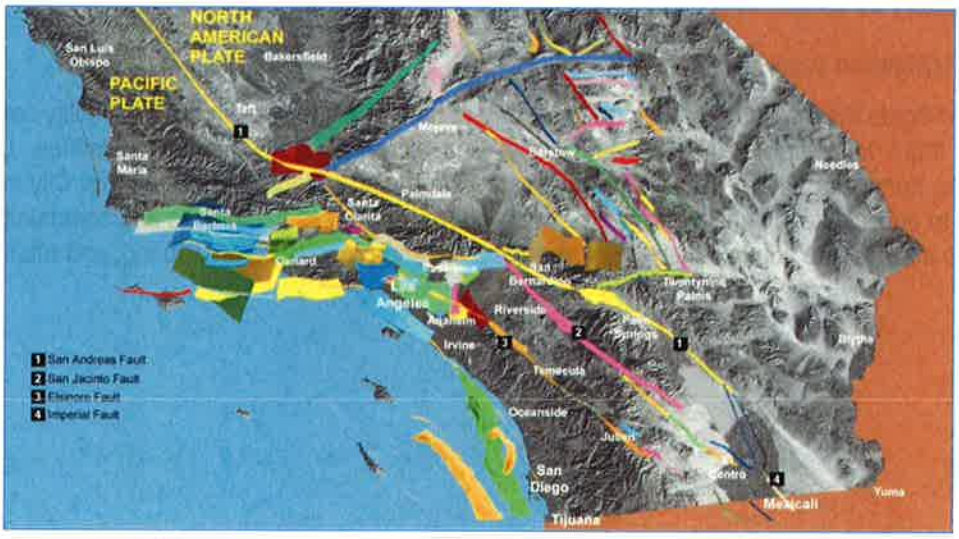
To release this stress, additional faults have formed over time. The "Big Bend" of the San Andreas Fault is thought to be responsible for much of the complexity of faulting in Southern California.



Map 11: San Andreas Fault "Big Bend"

SOURCE: http://nationalatlas.gov/articles/geology/features/sanandreas.html

The map below depicts several parallel faults to the San Andreas Fault. These four faults are considered to be responsible for approximately half of the significant earthquakes in the region.

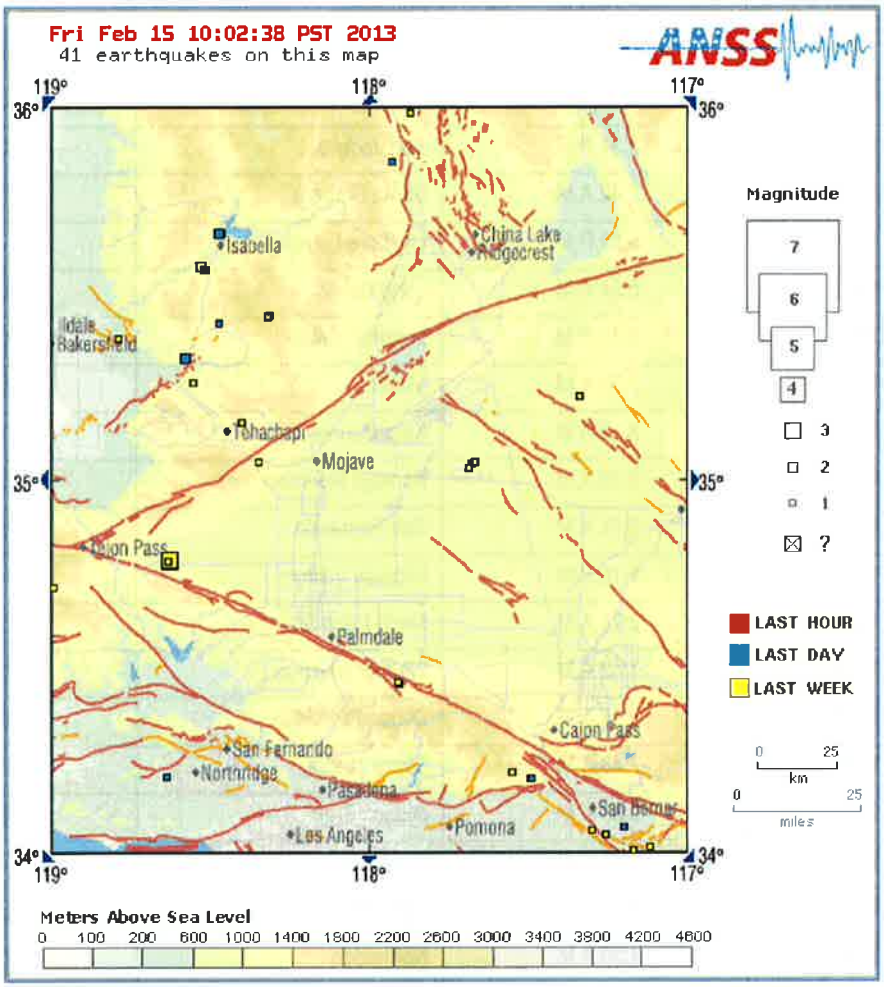


Map 12: Parallel Faults to the San Andreas Fault

SOURCE: http://www.earthquakecountry.info/roots/socal-faults.html

HISTORICAL RECORD OF EARTHQUAKES IN SOUTHERN CALIFORNIA

Earthquakes occur *every* day in Southern California. Most are small with a magnitude less than 2.5 M_w[11]. The following map depicts major faults and recent seismic activity in the Lancaster region for the week of February 15, 2013.



Map 13: Lancaster Earthquakes for the Past 7 Days

SOURCE: http://earthquake.usgs.gov/earthquakes/recenteqscanv/FaultMaps/118-35.html

[11] The Moment Magnitude is preferred to the Richter Magnitude for earthquakes larger than 6M. As the magnitude surpasses 6.5M (Richter), all events begin to take on the same magnitude values. The Moment Magnitude keeps its integrity and delineates the different values greater than 6.5M_w.

History of Significant Earthquakes in Southern California

The chart below provides examples of 24 significant earthquakes in Southern California since 1857.

Date	Time	Location	M_w
01.09.1857	8:24 A.M.	Fort Tejon	7.9
02.24.1892	11:20 P.M.	Laguna Salada	7.3
12.25.1899	4:25 A.M.	San Jacinto / Hemet	6.7
04.21.1918	2:31 P.M.	San Jacinto	6.8
06.29.1925	7:42 A.M.	Santa Barbara	6.8
11.04.1927	5:51 P.M.	Offshore Lompoc	7.1
03.10.1933	5:54 P.M.	Long Beach	6.4
05.18.1940	8:37 P.M.	Imperial Valley	6.9
04.10.1947	7:58 A.M.	Manix	6.5
07.21.1952	3:52 A.M.	Kern County	7.5
04.09.1968	6:29 A.M.	Borrego Mountain	6.6
02.09.1971	6:01 A.M.	San Fernando	6.6
10.15.1979	4:16 P.M.	Imperial Valley	6.4
07.08.1986	2:21 A.M.	North Palm Springs	5.7
10.01.1987	7:42 A.M.	Whittier Narrows	5.9
11.24.1987	5:15 A.M.	Superstition Hills	6.6
06.28.1991	7:43 A.M.	Sierra Madre	5.8
04.22.1992	9:50 P.M.	Joshua Tree	6.1
06.28.1992	4:57 A.M.	Landers	7.3
06.28.1992	8:05 A.M.	Big Bear	6.3
01.17.1994	4:30 A.M.	Northridge	6.7
10.16.1999	2:46 A.M.	Hector Mine	7.1
12.22.2003	11:15 A.M.	San Simeon	6.5
07.09.2008	11:42 A.M.	Chino Hills	5.4
04.20.2010	3:40 P.M.	Baja California	7.2

Table 29: Significant Southern California Earthquakes Since 1857

SOURCE: Southern California Earthquake Center (SCEC)

Lancaster was uninhabited at the time of the 1857 quake, but would have suffered significant damage if it were populated. Lancaster has felt many of the earthquakes on this list, and the Manix, Kern County, and San Fernando Earthquake epicenters were in close proximity. In addition to the earthquakes on this list, the Lancaster area experienced a 5.7 M_w event on July 11, 1992 with an epicenter in Mojave.

CAUSES AND CHARACTERISTICS OF EARTHQUAKES

Earthquake Faults in or Near the Lancaster Region

There are multiple fault zones in the Lancaster area. The San Andreas Fault lies 9 miles south of Lancaster, the Garlock fault lies 20 miles northwest, and throughout the Antelope Valley there are small faults created by the stress buildup from the San Andreas. The small Llano Fault runs under Palmdale, although there is no history of quakes on this fault. Although the San Andreas Fault is capable of producing an earthquake with a magnitude greater than 8 M_w, a 6.8 – 7.6 M_w earthquake along the western portion of the Garlock Fault can be just as destructive as a quake on the San Andreas Fault.

Map 14: Earthquake Faults in the Greater Lancaster Region

SOURCE: U.S. Geological Survey and California Geological Survey, 2006, Quaternary fault and fold database for the United States, accessed 2/14/2013, from USGS Web site: http//earthquakes.usgs.gov/regional/qfaults/

Fault Map Number	Fault Name	Potential Magnitude	Length	Distance to Lancaster	Direction from Lancaster	Recurrence Interval (years)
1	Garlock	6.8 – 7.6	160 miles	20 miles	NW	200 - 3000
2	Llano	Unknown	4.5 miles	29 miles	SE	Unknown
3	San Andreas	6.8 – 8.0	750 miles	9 miles	S	50 - 300
4	San Fernando	6.0 – 6.8	10.6 miles	35 miles	SW	200
5	Sierra Madre	6.0 – 7.0	46.6 miles	35 miles	SW	Unknown
6	Verdugo	6.0 – 6.8	13.1 miles	35 miles	NE	Unknown
7	White Wolf	6.5 – 7.5	37.3 miles	51 miles	SE	Unknown

Table 30: Major Faults around the Lancaster Area

Not visible on the map is the Anacapa-Dume Fault off the coast of Santa Monica. In 1989 it generated a 5.0 M_w earthquake that caused damage in Lancaster. The fault runs roughly from the ocean off of Santa Monica to just south of the Channel Islands, and is capable of generating a 6.5 – 7.3 M_w earthquake and has a recurrance of approximately 500 years.

Two additional faults not visible on the map are the Owens Valley Fault, a 68.4 mile long fault 147 miles north of Lancaster that is capable of generating a 6.5 – 8.2 M_w earthquake, and the Sierra Nevada Fault, a 149.1 mile long fault 133 miles north of Lancaster that is capable of generating a 6.0 – 7.2 M_w earthquake. The 1872 Lone Pine Earthquake on the Owens Valley fault is believed to have shaken the Lancaster area violently, and a similar event today would cause heavy damage.

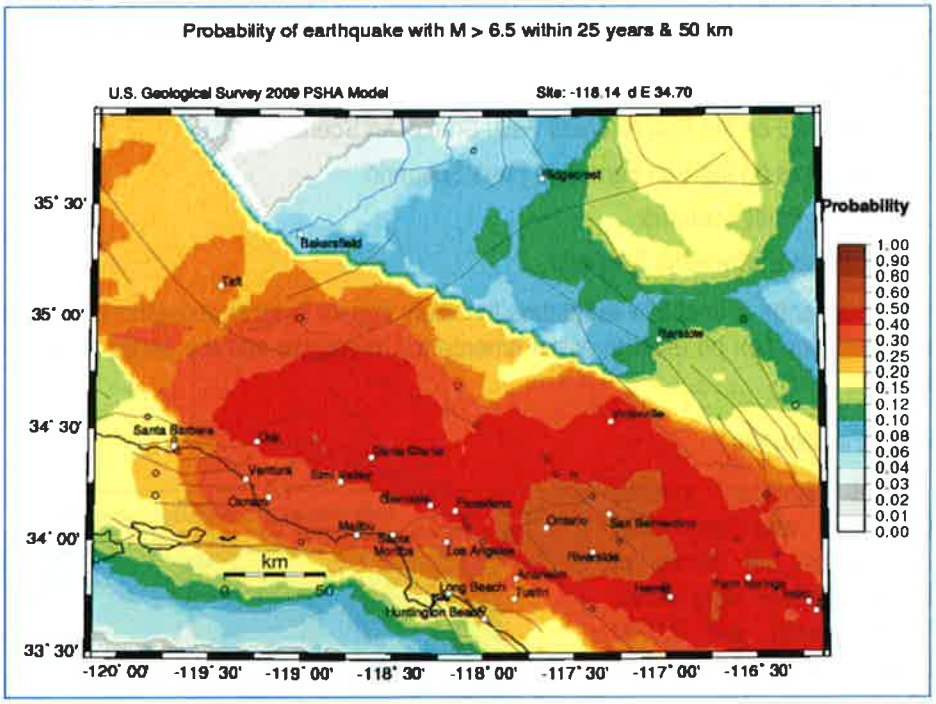
A portion of the San Andreas Fault is exposed in Palmdale where the 14 freeway intersects Avenue S. Called the "Palmdale Road Cut", the fault line was exposed when the 14 freeway was constructed.

Figure 27: Palmdale Road Cut

SOURCE: http://www.sanandreasfault.org/Visit.html

LANCASTER REGION EARTHQUAKE PROBABILITY

According to the U.S. Geological Survey earthquake Probabilistic Seismic Hazard Assessment (PSHA) model, there is a 25 to 50% chance that the Lancaster region will experience an earthquake of magnitude 6.5 M_w or greater within the next 25 years.



Map 15: Southern California PSHA Model (USGS)

SOURCE: https://geohazards.usgs.gov/eqprob/2009/

An earthquake of 6.5 M_w or larger could cause a considerable number of casualties, as well as extensive damage to buildings, infrastructure, communications, utilities, and critical facilities. The effects would be aggravated by aftershocks and secondary effects such as fires and landslides. In the event of a catastrophic earthquake, the capacity of the region to respond on its own would quickly become overwhelmed and assistance from surrounding municipalities, as well as the state and federal governments would be needed.

Furthermore, following a major earthquake:

- Extensive search and rescue operations would be required
- The demand for emergency medical care would increase
- Food and temporary shelter would have to be provided for displaced people

In addition, it is likely emergency operations would be hampered by the loss of critical infrastructure and roads, damage to critical facilities, disruption of utilities, and communications disruptions. During the recovery period, extensive efforts would be required to remove debris, clear roadways, demolish unsafe structures, restore public utilities, and provide continuing care for the affected population including temporary shelters for displaced people. Finally, secondary issues such as hazardous materials releases and civil unrest could further strain resources.

ShakeMap Scenarios

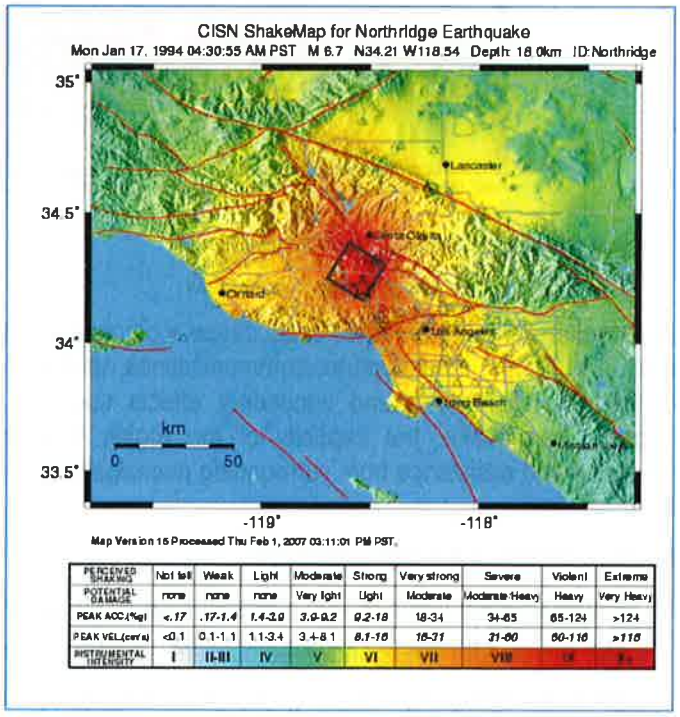
Predicted ground shaking patterns throughout Southern California for hypothetical scenario earthquakes are available from the United States Geological Survey as part of their on-going "ShakeMap" program. These maps are provided in terms of Instrumental Intensity, which is essentially Modified Mercalli Intensity (MMI) estimated from instrumental ground motion recordings. The following scenarios depict strong ground shaking patterns for the 1994 Northridge Earthquake and four hypothetical scenario events;

- M 6.7 1994 Northridge Earthquake
- M 7.8 Earthquake on the San Andreas Fault ShakeOut Scenario
- M 6.7 Earthquake on the San Fernando Fault Scenario
- M 6.7 Verdugo Fault Scenario
- M 7.9 Fort Tejon Earthquake Scenario

Modeling various scenarios is useful in estimating the likely impact to local populations, infrastructure, and facilities. This information can be used to assist emergency managers and the public to better prepare for future events.

1994 Northridge Earthquake

The most recent significant seismic event in the area was the 1994 Northridge Earthquake. In terms of human impact, 60 people were killed, more than 7,000 injured, and 20,000 were left homeless in the greater Los Angeles Basin.



Map 16: Northridge Earthquake ShakeMap

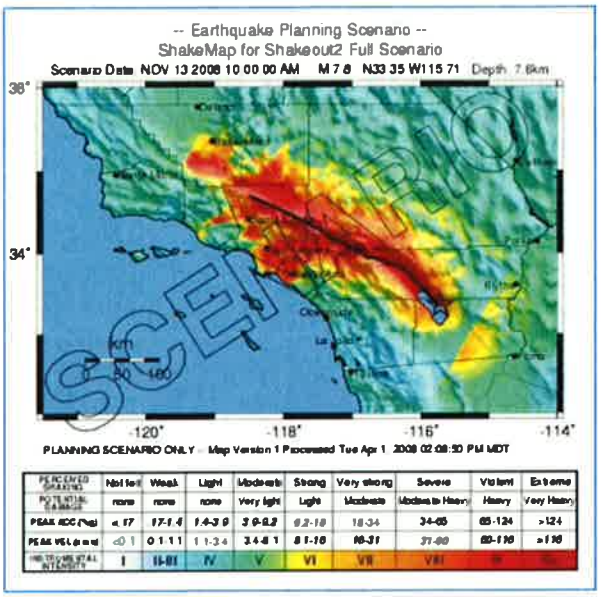
SOURCE:
http://earthquake.usgs.gov/earthquakes/shakemap/sc/shake/Northridge/

The shaking heavily damaged communities throughout the San Fernando Valley, Simi Valley, and the areas north and west of Los Angeles. It is estimated that the event resulted in $20 billion in losses (USGS). More than 1,600 buildings were "red-tagged" as unsafe to enter and another 7,300 buildings were "yellow tagged" and restricted to limited entry. Thousands of other structures experienced minor damage. The impact to local infrastructure included sink holes in local roads, damaged water lines, ruptured gas lines, electrical power outages, pipeline distribution systems damage, and communications disruptions. Furthermore, seven major freeway bridges in the area collapsed and 170 were damaged, including the Interstate 5 / Highway 14 Interchange south of Lancaster, disrupting traffic in the Antelope Valley – Los Angeles region for weeks following the earthquake.

San Andreas Fault ShakeOut Scenario

A San Andreas Earthquake has been used as the scenario for the annual ShakeOut Earthquake Exercise and also serves as a basis for statewide emergency response exercises.

Over 300 scientists, engineers, and others developed the San Andreas ShakeMap to study the likely consequences of a 7.8 Mw earthquake on the San Andreas Fault with an epicenter at Bombay Beach, on the Salton Sea in Imperial County. The scenario estimates over 1,800 deaths, 50,000 injuries, $200 billion in damages and other losses, and severe, long lasting disruptions with regional implications.

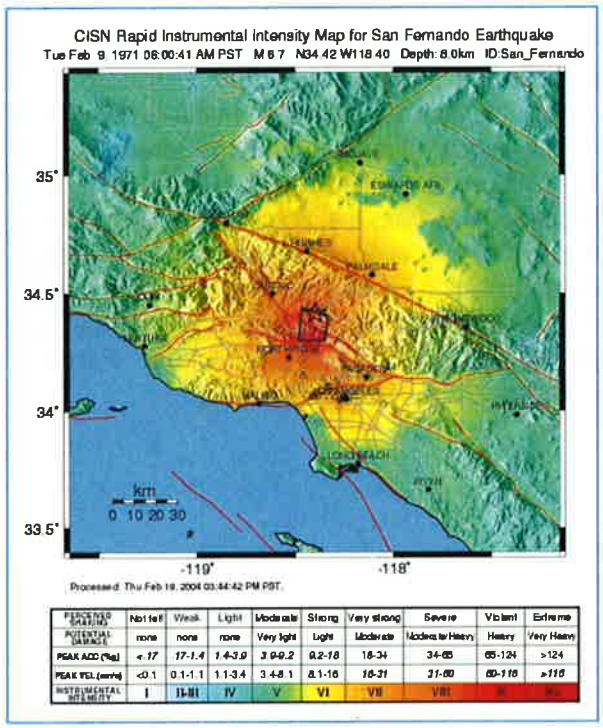


Map 17: San Andreas Fault Scenario ShakeMap

San Fernando Earthquake

The 6.7 M_w earthquake that struck on February 9, 1971 at 6:00 A.M. killed 65 people, injured more than 2,000, and caused property damage estimated at $505 million (USGS). The shaking heavily damaged communities throughout the San Fernando Valley and greatly damaged schools throughout the Los Angeles basin, caused landslides throughout the San Gabriel Valley and the mountains north of Los Angeles, as well as damaged buildings in downtown Los Angeles. Two hospitals collapsed. Twelve overpass bridges and two freeway interchanges collapsed in Los Angeles County and a portion of the Van Norman Dam collapsed, prompting evacuations over fears of a dam failure.

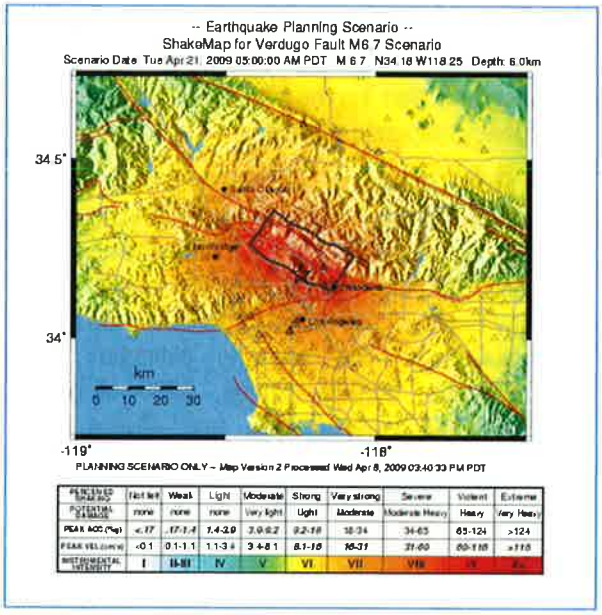
Quake related landslides closed all connector roads between Los Angeles and Lancaster, and the newly constructed Newhall Pass interchange connecting the Golden State Freeway with the Antelope Valley Freeway collapsed. Travel between Lancaster and Los Angeles required a major detour through San Bernardino.



Map 18: San Fernando Earthquake ShakeMap

Verdugo Fault Scenario

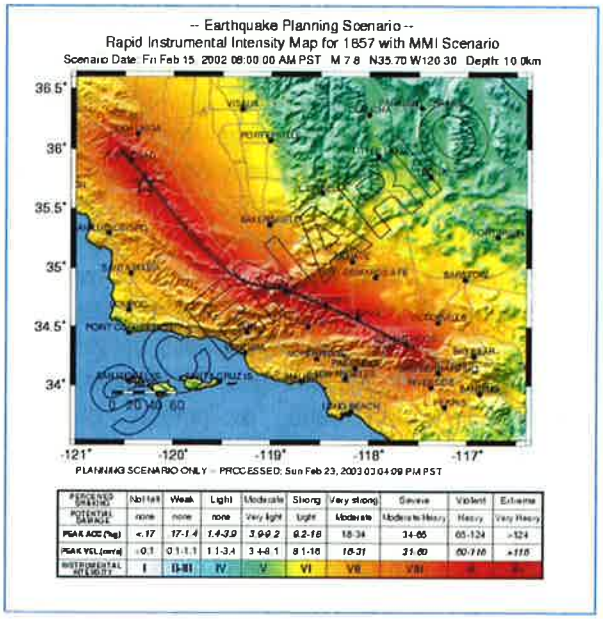
A 6.7 M_w earthquake on the Verdugo fault would result in Lancaster and the Antelope Valley experiencing Strong to Very Strong shaking and potential damage would be Light to Moderate.



Map 19: Verdugo Fault Scenario

1857 Fort Tejon Earthquake Scenario

One of the largest quakes in United States history was the Fort Tejon quake in 1857. Estimated to be 7.9 M_w, the quake originated in Parkfield, Monterrey County and traveled along the San Andreas Fault for over 360 miles. Named the Fort Tejon earthquake because the fort was the closest population center to the epicenter, a quake of similar scale today would cause Violent to Extreme shaking and Heavy to Very Heavy damage in the Lancaster area as the fault passes through what is modern-day Palmdale (adjacent to and south of Lancaster).



Map 20: 1857 Fort Tejon Quake Scenario

mlc

Other Nearby Earthquake Events

The City of Lancaster is adjacent to the San Andreas Fault, where the "Big Bend" occurs. Stress from the Big Bend is responsible for the creation of the Garlock Fault, the only major east – west oriented earthquake fault in California, which runs along the Tehachapi Mountains north of Lancaster. While in historic times there have been no major events on the Garlock Fault, it is known to generate sympathetic quakes (such as a 5.7 event near Mojave on July 11, 1992 related to the Landers Earthquake) due to stress buildup. Groundwater removal has also generated a seismic event on the fault. The Garlock Fault is an active fault and is capable of generating a 6.8 - 7.6 M_w earthquake. The Anacapa-Dume Fault generated a 5.0 M_w earthquake in 1989 that caused damage in Lancaster. The fault runs roughly from the ocean off of Santa Monica to just south of the Channel Islands. Lancaster has felt the Joshua Tree, Landers, Big Bear, and Hector Mine Quakes, and infrastructure was seriously affected during the Northridge and San Fernando earthquakes.

EARTHQUAKE HAZARD IDENTIFICATION

A major earthquake impacting the Lancaster area will likely result in casualties, damage to structures, and disruptions to critical infrastructure (roads, bridges, lifelines, etc.). In addition, the long-term impact to the local economy can be significant. The examples listed below provide brief descriptions of the types of impacts that can be anticipated.

Casualties

Collapsed structures or falling debris can kill or injure hundreds of people and trap others. Trained search and rescue teams will be needed to pull many of the injured from badly damaged or partially collapsed structures. However, it may take rescuers many hours, perhaps days, after the earthquake to free trapped people.

Additionally, damage to the transportation infrastructure could impede emergency responders from reaching the site of a collapse. Furthermore, The Antelope Valley Hospital and local urgent care centers may not be able to provide care to the injured due to overcrowding and damage to their facilities.

Structures

In most California communities, (including areas in the Lancaster area), many buildings were built before 1994 when building codes were not as strict as after the 1994 Northridge Earthquake. In addition, retrofitting is not required except under certain conditions and can be expensive. Therefore, the number of buildings at risk in the Southern California area remains a concern. The City of Lancaster is a mixture of pre- and post-1994 construction. Lancaster considers all commercial structures built prior to 1994 vulnerable and city codes enforce upgrades and retrofitting under defined circumstances.

Transportation Infrastructure

Residents in the Antelope Valley region commute frequently by automobiles and public transportation. An earthquake can greatly damage bridges, tunnels, roads, railways, highways, and freeways. Although Caltrans has retrofitted numerous freeway bridges in California, there are still some that are not retrofitted. The Federal Highway Administration requires that bridges listed on the National Bridge Inventory be inspected every two (2) years.

The resulting disruption caused by a major earthquake can hamper emergency response efforts and the normal movement of people and goods. Life and commerce within the region is highly dependent on the transportation infrastructure and the economic recovery of the region depends on how quickly repairs are completed. Recovery would begin with inspectors from local and state transportation agencies evaluating damage and recommending closures, scheduling immediate repairs, and studying more extensive repairs and replacement.

Lifelines

Lifelines include water, natural gas, electric power generation and distribution systems, fuel pipelines, sewer and telecommunications systems. Ground shaking and amplification can cause pipes to break, power and telephone lines to fall, and damage cell phone and radio towers. A disruption to lifelines will hamper rescue, recovery, and rebuilding efforts as well as interrupt the distribution of important information to the public. Examples include:

- Ground shaking and ground deformation can damage pipelines and may rip them apart. Furthermore, if soils liquefy, pipelines may float or move laterally with the blocks of soil displaced by lateral spreading.
- Water pumping stations and wells are dependent on electrical power that may be unavailable in the days following an event.
- Damage to sewage pipelines and wastewater facilities can result in waste spills and system failures.
- Damage to natural gas lines can result in fires or explosions, as well as service disruptions.
- Traditional electric power used in the Lancaster region is transported via a system of high-voltage transmission lines. Electrical transmission lines (overhead lines, power poles, and underground utility conduits) and distribution facilities (substations) can be disrupted or damaged. Ground failures such as landslides could damage lines and may take months to repair depending on accessibility. In addition, large porcelain insulators, bushings, and transformers are vulnerable to moderate ground motions and damaged transformers may take months to replace. Redundancies built into the electrical grid should mitigate some of the impact; however a major earthquake will almost certainly disrupt the local electrical grid.
- Solar power generated and used in the Lancaster region is created within the city from solar panels placed on schools, businesses, and residences, from small solar farms within city limits, and from a large solar farm in the Antelope Valley. The solar panels and transmission lines (utility conduits that connect to electrical overhead lines) can be disrupted or damaged. Ground failures such as landslides or subsidence could damage solar farms and may take months to repair.
- Communications systems are vulnerable to overload in the minutes and hours following a major event. The communications infrastructure is comprised in part of hard-wired telephone and cable TV systems, microwave transmission stations, cellular telephone systems, and radio systems. Cellular systems are dependent on the hardwired connections between cell towers and land-based telephone systems. Hardwired systems and the cell phone infrastructure are owned and operated by private companies such as AT&T, Verizon and Charter Communications.
- Hazardous materials spills from ruptured storage tanks and pipelines.

Fire

Downed power lines or broken natural and fuel gas pipelines can trigger fires. Furthermore, multiple fire emergencies may occur simultaneously. Major incidents will demand a larger share of resources and smaller fires may receive little or insufficient resources. Also, it may be more difficult for fire departments to respond to fire emergencies if fire stations suffer building damage. Damage to water pipelines may occur resulting in insufficient water supplies. Finally, loss of electricity may cause pump failures resulting in a loss of water pressure in some communities, further hampering firefighting efforts.

Economy

Economic impacts include direct property damage, lost business output and productivity, business failures, business relocations, and a long term reduction in the economic base of the community. Damage to roads, bridges and buildings can impact the private sector's ability to conduct business as well as reduce consumer traffic. Consequently, companies that experience only minimal physical loss could suffer significant customer and revenue loss. Small businesses are especially vulnerable since they generally have fewer resources and are less likely to have prepared or planned for such an event.

Estimated Impact of an Event

If a major or great earthquake were to occur, the consequences to local populations, employment, and housing will be significant. The table below provides the estimated impact of a disaster using a 10% loss baseline.

Lancaster Estimated Impact of an Event

Category	Lancaster Total	Impact if a 10% Loss Occurs
Population	156,633	15,663
Total Employment	63,947	6,395
Total Housing Units	51,260	5,126
Median Home Value	$214,800	More than $1.1B

Table 31: Estimated Population and Economic Loss of an Earthquake

Based on a 10% loss projection, more than 15,600 people would be displaced or significantly impacted and more than 6,000 jobs could be lost (either temporarily or permanently). Also, more than 5,100 homes could be damaged or destroyed, resulting in over $1.1 billion in losses (see Community Profile section for population, housing and economic data).

EARTHQUAKE VULNERABILITIES

Liquefaction

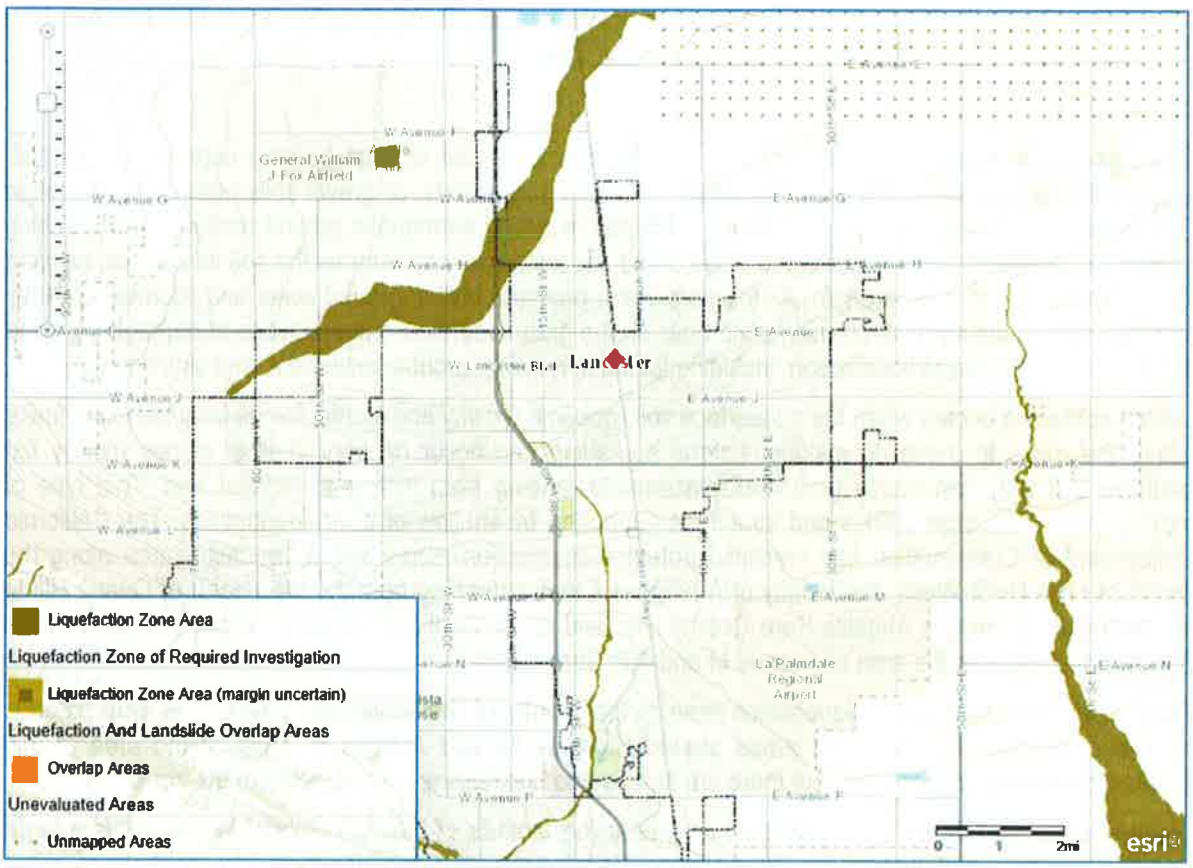
Buildings above liquefiable soils may settle or tip due to a loss of load bearing capacity of the soil. Liquefaction occurs when soil grains in loose, saturated silty, sandy, or gravel soils attempt to rearrange themselves in a denser configuration when subjected to strong earthquake ground motions. The resulting increase in pressure of the water in the voids of the soil temporarily transforms the soil into a fluid, causing the soil to lose much if its strength. As the pore-water pressure builds, ground water and liquefied soil may find their way to the surface, creating sand boils on the ground surface. Several types of damaging ground failures can occur due to liquefaction, including lateral spreading, ground settlement, and sink holes.

Lateral spreading occurs when the subsurface soil liquefies. Gravity and inertial forces from the earthquake cause the mass to move downslope. Lateral spreading can occur on very shallow slopes (nearly flat ground), and they can cause ground displacements ranging from inches to tens of feet. This type of movement can damage utilities and structures supported by shallow or deep foundations. The California Department of Conservation has identified potential liquefaction zones in the Lancaster area along the length of Little Rock Wash, the vicinity of Amargosa Creek extending from the area north of Quartz Hill to the northeast to the Los Angeles-Kern County line, and at the Apollo Community Regional Park. A small liquefaction zone is in the area of Avenue M and 40th Street West.[12]

There is development in the liquefaction area in the vicinity of the Amargosa Creek. The area extends north-east through the populated areas around Highway 14 and Avenue H. Most of the area of this liquefaction area is unpopulated, but there are homes and businesses in or adjacent to the zone.

South of Lancaster in the Lake Elizabeth area near the foothills of the San Gabriel Mountains is a large liquefaction zone, and throughout the Antelope Valley north of Lancaster there are pockets of areas identified as potential liquefaction zones, most of which are associated with creeks or bodies of water, such as the Sewage Disposal Ponds off of Highway 14 and West Avenue D near Rosamond.

[12] Department of Conservation, California Geological Survey, Seismic Hazard Zone Report for the Lancaster East 7.5-Minute Quadrangle, Los Angeles County, California, 2005, Department of Conservation, California Geological Survey, Seismic Hazard Zone Report for the Lancaster West 7.5-Minute Quadrangle, Los Angeles County, California, 2005, Department of Conservation, California Geological Survey, Seismic Hazard Zone Report for the Sleepy Village Quadrangle, Los Angeles, California, October 2003, Department of Conservation, California Geological Survey, Seismic Hazard Zone Report for the Rosamond Quadrangle, Los Angeles County, California, 2005, Department of Conservation, California Geological Survey, Seismic Hazard Zone Report for the Ritter Ridge Quadrangle, Los Angeles County, California, 2003.

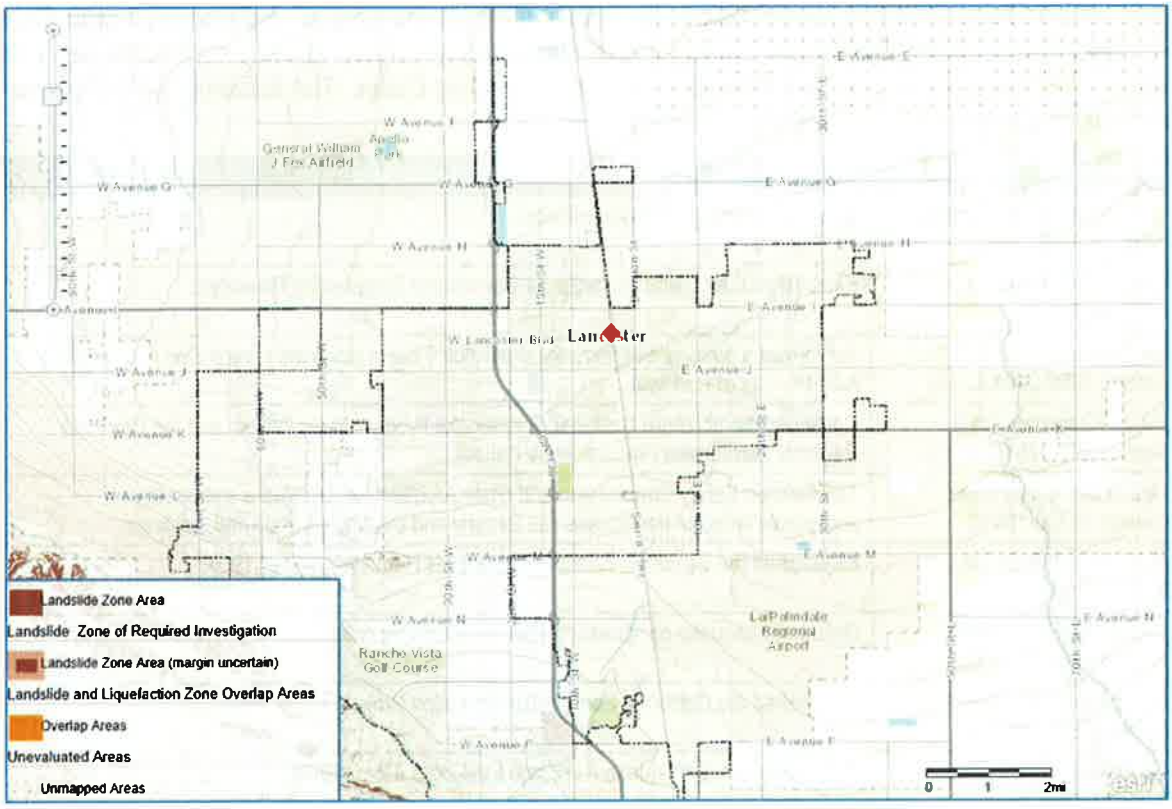


Map 21: Department of Conservation Liquefaction Map

Landslide

The severity of seismically induced landslides and related damage is dependent on the level of ground shaking and groundwater conditions at the time of the earthquake. In the City of Lancaster the California Department of Conservation has identified two potential landslide areas, both at 40th Street West and Avenue M West. In the mountain areas to the south and east of Lancaster there is a history of earthquake related landslides, and there are multiple identified landslide areas.[13]

[13] Ibid.



Map 22: Department of Conservation Landslide Map

CALIFORNIA EARTHQUAKE MITIGATION LEGISLATION

Code Development

Earthquakes often result in revisions and improvements in building codes. The 1933 Long Beach Earthquake resulted in the Field Act, affecting school construction. The 1971 San Fernando Earthquake brought another set of increased structural standards. Similar re-evaluations occurred after the 1989 Loma Prieta and 1994 Northridge Earthquakes. These code changes have resulted in stronger and more earthquake resistant structures.

The Alquist-Priolo Special Studies Zone Act requires the State Geologist to delineate "special studies zones" along known faults in California. Cities and counties affected by the zones must regulate certain development "projects" within the zones. The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. This state law was a direct result of the 1971 San Fernando Earthquake, which was associated with extensive surface fault ruptures that damaged numerous homes, commercial buildings, and other structures (SOURCE: California Geological Survey).

The 1990 Seismic Hazards Mapping Act requires the California State Geologist to identify and map zones prone to seismically induced liquefaction, ground-shaking, landslides, and other forms of ground failure resulting from earthquakes. The California Department of Conservation operates the Seismic Mapping Program for California.

The California Legislature has passed laws to strengthen the built environment and protect citizens. There are over 200 laws in the State Code related to earthquake safety. All new development within Lancaster complies with all current State and Los Angeles County Building Codes. The following table provides a partial list of California Laws on earthquake safety.

Reference	Description
Government Code Section 8870-8870.95	Creates Seismic Safety Commission.
Government Code Section 8876.1-8876.10	Established the California Center for Earthquake Engineering Research.
Public Resources Code Section 2800-2804.6	Authorized a prototype earthquake prediction system along the central San Andreas Fault near the City of Parkfield
Public Resources Code Section 2810-2815	Continued the southern California Earthquake Preparedness Project and the Bay Area Regional Earthquake Preparedness Project.
Health and Safety Code Section 16100-16110	The Seismic Safety Commission and State Architect will develop a state policy on acceptable levels of earthquake risk for new and existing state-owned buildings.
Government Code Section 8871-8871.5	Established the California Earthquake Hazards Reduction Ac t of 1986.
Health and Safety Code Section 130000-130025	Defined earthquake performance standards for hospitals.
Public Resources Code Section 2805-2808	Established the California Earthquake Education Project.
Government Code Section 8899.10-8899.16	Established the Earthquake Research Evaluation Conference.
Public Resources Code Section 2621-2630.	Established the Alquist-Priolo Earthquake Fault Zoning Act.
Government Code Section 8878.50-8878.52	Created the Earthquake Safety and Public Buildings Rehabilitation Bond Act of 1990.
Education Code Section 35295-35797	Established emergency procedure systems in kindergarten through grade 12 in all the public or private schools.
Health and Safety Code Section 19160-19169	Established standards for seismic retrofitting of un-reinforced masonry buildings.
Health and Safety Code Section 1596.80-1596.879	Required all child day care facilities to include an Earthquake Preparedness Checklist as an attachment to their disaster plan.

Table 32: Partial List of California Laws on Earthquake Safety

SOURCE: http://www.leginfo.ca.gov/calaw.html

EARTHQUAKE MITIGATION STRATEGIES

Lancaster Mitigation Activities

In order to minimize the potential for loss of life, physical injury, property damage, and social disruption resulting from seismic ground shaking and other geologic events, the City of Lancaster has enacted the following policies:

- Enforcement of Building Code.
  - Enforce of the requirements of the 2010 California Building Code (CBC). This Code addresses all provisions associated with geologic and seismic regulations. Lancaster requires the review of plans and inspection of all such structures considering the best management practices in site design and building construction methods.
  - Require that all new developments comply with the most recent California Building Code seismic design standards and additional supplemental design criteria.
  - Implement the provisions of Title 24 of the State Building Code pertaining to siting, seismic design, and review of critical, sensitive, and high-occupancy structures.
  - Provide expedited reviews of any State seismic-related revisions to the California Building Code for adoption and implementation.
  - Amended the California Building Code for the City of Lancaster to require upgrades to existing commercial buildings based on valuation for new construction, and requires upgrades when repairing or replacing fire and / or disaster damaged buildings.
- Structural Review
  - Review existing critical and essential structures for significant siting, design, or construction problems that would make them vulnerable in an earthquake.
  - Create an inventory of at-risk buildings within the city. Two buildings have been identified as of this time.
  - Implement a program for upgrading seismically hazardous (unreinforced masonry) buildings within the City pursuant to the provisions of SB 547.
  - Assist the efforts of the State and local entities responsible for regular maintenance of the California Aqueduct and the Little Rock Dam to reduce the risk of seismic failure and to ensure that water levels are kept at or below the designed safe water levels, thereby reducing the risk of overtopping.
- Construction Standards
  - Require specialized soils reports in areas suspected of having problems with bearing strength and in areas suspected of having problems with expansive soils, soil settlement, and subsidence.
  - Ensure that new development proposals located within an area determined by the State of California to be a seismic hazard zone are conditioned for appropriate mitigation.
- Community Outreach
  - Encourage purchase of earthquake insurance by publishing articles in community newsletters and communications.

SECTION 8. ENERGY DISRUPTION

THE NATURE OF THE ENERGY THREAT

Energy is a critical force that powers business, manufacturing, the transportation of goods and services, as well as homes. The energy infrastructure in the United States consists of thousands of miles of electric transmission lines, oil and natural gas pipelines, and other geographically dispersed energy related resources. Energy infrastructure threats can be a result of natural or man-made disasters or a result of energy related issues such as spikes in demand during peak energy use, unanticipated power plant or refinery shutdowns, transmission system congestion, and equipment or system failures. Any of these events can result in the reduction of supply and disrupt distribution.

ENERGY OVERVIEW

There are no electric power generating plants in the City of Lancaster. Lancaster generates more solar power kilowatts per capita than any other city in California. There are three solar farms within city limits; the Sierra Sun Tower, a 5MW concentrating solar power plant, and Del Sur I and Del Sur II, 19MW farms that generate 32 GWh each. Lancaster is connected to the Southern California Edison (SCE) grid, and power generated by the city is sold to SCE. The image below shows solar energy production in the Antelope Valley, as well as hydro and wind energy produced in Kern County that are transmitted to Los Angeles through the Lancaster area.

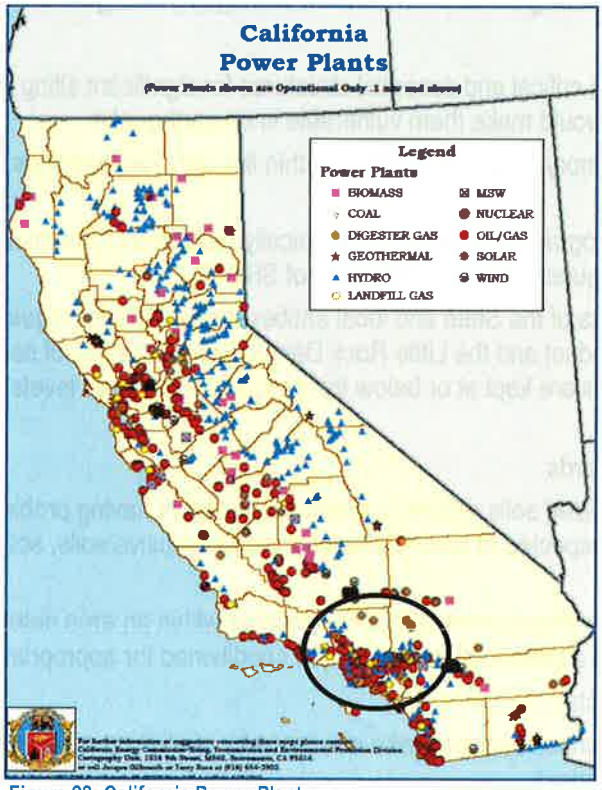


Figure 28: California Power Plants

Source: http://www.energy.ca.gov/maps/powerplants/Power_Plants_Statewide.pdf

Solar and Wind Power

Lancaster is taking steps to become the "alternative energy capital of the world" and is a leader in the renewable energy field. Lancaster has implemented plans toward becoming "net zero city", a city that generates the same amount of energy from sustainable resources as it consumes in traditional energy sources. Lancaster is replacing its fleet of cars with hybrid-electric and CNG powered vehicles where possible, and is working toward becoming energy independent by supporting solar and wind projects.

Solar projects within the city include small solar installations, solar panels on city and privately owned buildings, programs for homeowners to obtain solar panels for their homes, and construction of a solar powered minor league baseball stadium. In March, 2013, Lancaster announced its plans to require developers to install solar panels on new construction homes. Outside of Lancaster city limits are two large solar farms that sell power to Southern California Edison.

In the Tehachapi Pass north of Lancaster are large wind farms that sell power to Southern California Edison. Currently there are no wind farms in the Antelope Valley, although Lancaster has modified its city codes to encourage residents to install wind turbines on their property.

HISTORICAL RECORD OF POWER OUTAGES

History of Energy Outages in Southern California

Power outages are not uncommon in Southern California, and the region is at risk of outages caused by seismic activity and windstorms. Lancaster was not affected by the large power outages in Southern California that occurred in 2000 – 2001, 2005, and 2011, but is occasionally affected by localized unplanned power outages.

Large power outages / events in Southern California include:

Event Year	Event	Affected Areas	Cause
1996	Western North American Blackouts	Arizona, California, Colorado, Idaho, Montana, Nebraska, Nevada, New Mexico, Oregon, South Dakota, Texas, Utah, Washington and Wyoming, Alberta, British Columbia, and Baja California Norte in Mexico.	Man-made – trees too close to power lines caused systemic failures.
2000 – 2001	California Electricity Crisis	The State of California	Man-made – energy shortages caused by market manipulation, regulation and deregulation, price caps, supply and demand.
2005	Los Angeles Blackout	The City of Los Angeles, West Los Angeles, San Fernando Valley, Hollywood	Man-made – human error
2011	Southwest Blackout	California – San Diego, Orange, Riverside, and Imperial Counties. Also affected states in Northern Mexico, as well as counties in Arizona.	Man-made – human error.

Table 33: Large Power Outages in Southern California

Lancaster was threatened with electricity shortages during the 2000 – 2001 Electricity Crisis.

Large power outages in other areas of California have been caused by human error (December 1998, San Francisco), structural failure (1982, Tracy, California), and earthquakes (1989 Loma Prieta Earthquake).

History of Oil and Fuel Events in Southern California

In the State of California there are 123,753 miles of natural gas and hazardous liquid pipeline, transmission, gathering and distribution lines. There are natural gas transmission pipelines that run throughout the Lancaster area and a hazardous liquids pipeline that runs north of the city through Edwards Air Force Base. There have been no significant pipeline events reported in the Lancaster area. The Pipeline & Hazardous Materials Safety Administration (PHSMA) has reported only one significant pipeline event in Southern California, excavation damage caused by a third party to a Pasadena pipeline in 2003 that caused $61,147 in damages.[14]

CAUSES AND CHARACTERISTICS OF ENERGY EVENTS

Energy threats can be categorized into four types of events:[15]

- Deliberate attacks caused by people – (e.g. terrorists, criminals, hackers, delinquents, employees)
- Natural disasters caused by nature (e.g., floods, wind, earthquakes)
- Accidental events caused by technological failure (e.g., pipeline rupture, chemical spills, nuclear system failure)
- Systemic threats caused by the physical inability of the energy delivery system (generation and distribution) to meet demand

Deliberate Attacks

Deliberate attacks are intentional, malicious acts caused by people that are aimed at personnel, equipment, infrastructure, or computer systems (cyber-attacks). Many power plants and other infrastructure are remotely controlled by supervisory control and data acquisition (SCADA) systems. SCADA systems are vulnerable to attack by hackers who can access the system and perform acts of sabotage against a target, and an attack against SCADA can shut down an energy provider's operations. A deliberate attack such as a Denial of Service attack can slow or shut down a provider's Web site and make it difficult for customers to access personal or billing information.

Deliberate attacks in the Lancaster / Antelope Valley area in the past have included acts of vandalism of equipment at solar installations. Physical attacks can target distribution points, transmission lines, and pipelines.

[14] PHSMA California Significant Events Listing: http://primis.phmsa.dot.gov/comm/reports/safety/IncDetSt_st_CA_flt_sig.html?nocache=2134
[15] The National Association of State Energy Officials (NASEO) *State Energy Assurance Guidelines*

Natural Disasters

Natural hazard events have the potential to cause disruptions in the energy supply. In the Lancaster area, the following types of events can cause outages or other energy events:

- Drought
- Earthquakes
- Flooding
- Severe storms
- Subsidence
- Wildfires
- Windstorms

Lancaster is vulnerable to natural hazards that affect the power supply due to its location in the high desert, its proximity to multiple earthquake faults, valley flooding, storms, brush fires outside of the city limits, and subsidence on the valley floor.

While the effects of any one of these natural events should be localized and effect only part of an area, it is probable that a widespread event such as a drought, severe storm, or earthquake will cause widespread energy outages and disrupt the delivery of electricity, natural gas, CNG, petroleum, and other energy products.

Accidental Events

Accidental events that cause energy disruptions can be due to technological failure, chemical spills, nuclear contamination, pipeline rupture, nuclear system failure, or accidental actions or inaction.

Accidents can be a localized event such as a car crashing into a power pole or can be more widespread such as the Southwest Blackout of 2011 that was caused by an employee making repairs at an electrical substation. As the energy infrastructure ages, there is the possibility of equipment failure that can cause intermittent power or pipeline failures.

Systemic Threats

Systemic threats affect the entire energy distribution and production network, including production plants and distribution infrastructure. Systemic events occur when energy delivery systems are physically unable to meet demand. Examples of systemic threats include gasoline or petroleum shortages, as well as electrical shortages caused when increased use strains the system during peak events such as a heat wave.

POWER OUTAGE HAZARD IDENTIFICATION

A large power outage in the City of Lancaster that happens during the hottest part of summer or the coldest part of winter will likely result in injury and in extreme cases fatalities. An outage at any time will disrupt roads, highways, lifelines, public services, and the general health of local residents. The examples listed below provide brief descriptions of the types of impacts that can be anticipated.

Injuries

There is a potential for injuries both at home and on the roads during a power outage. During an outage, traffic signals will no longer function, creating the potential for automobile and pedestrian accidents. If the outage occurs at night, streetlights will not work, increasing the probability of accidents and corresponding injuries. Emergency responders will have difficulty navigating traffic if the outage causes traffic issues on city streets, and police will probably be used to manage traffic at high-volume intersections, reducing their ability to respond to accident sites. Finally, injuries and fatalities as a result of smoke from household generators and fumes from gas appliances or barbeque equipment are common during power outages.

Transportation Infrastructure

Residents in the Lancaster area commute frequently by automobiles and public transportation. A power outage will affect usability of roads, railways, highways, and freeways. Traffic signals and streetlights will not work, and Metrolink Train service to the Antelope Valley will stop until power is returned.

Lifelines

Many lifelines are dependent on power, including water pumping stations, food distribution, telecommunications systems, some natural gas and fuel pipelines, and sewage systems. A power outage will prevent these systems from running normally as they are reliant on electricity for operations. A disruption to lifelines will impede the ability to distribute important information to the public, as well as endanger public health and safety. Examples include:

- Water pumping stations, wells, and sewage treatment plants are dependent on electrical power. While the pumping stations have backup generators in case of power outages, an extended outage may affect the ability of the stations to provide or preserve the safety of water.
- Perishable foods are dependent on refrigeration provided by electrical power. Without electricity, these foods expire relatively quickly, leading to the potential of foodborne illness.
- The telecommunications infrastructure is comprised in part of hard-wired telephone and cable TV systems, microwave transmission stations, cellular telephone systems, and radio systems. Industries dependent on the telecommunications sector include oil and gas, electric power, transportation, emergency services, government services, water, and banking and finance. Most telecommunications providers have backup power plans and agreements to procure the fuel needed to run during a power outage, although an extended outage may impede the ability of telecommunications providers to continue to deliver service to the dependent industries.
- Some gas and fuel pipelines may be dependent on electricity at pumping and filtering stations. Utility offices and command centers may be reliant on gas or other fuels to maintain continuity of operations.

Services

Public facilities are electricity dependent and will be disrupted during a power outage. An extended outage will affect the ability of some organizations to continue to provide public services as well as affect the ability of residents to function normally. Examples include:

- Most hospitals have backup generators to get through short power outages and plans to get through longer outages and battery systems to keep critical equipment functioning. Nevertheless, generators have been known to fail during power outages. In the case of generator failures, hospitals may have to move patients to other facilities and postpone scheduled non-emergency services.
- Emergency call centers are dependent on electricity to run and to dispatch emergency services. During a power outage they may be out of service until the power returns.
- An outage may cause pump failures that result in a loss of water pressure in some areas, hampering firefighting efforts.
- ATMs and banks rely on electricity to provide money and services. Credit card and point of sale systems rely on electricity to process transactions. Without access to banks and ATMs, cash may be in short supply during a power outage, and many stores will only be able to accept cash transactions. Some stores will not be able function as cash registers, inventory systems, and electronic entry doors are dependent on electricity.
- Gas stations rely on electricity to power gas pumps; therefore many gas stations will be inoperable during a power outage.
- Government services that rely on banking, transportation, or communications, such as electronic checks, may be delayed during an outage.

Personal Safety

There will be risks to personal safety during a prolonged power outage. A prolonged outage will compromise medications that require refrigeration (such as diabetes medications) and access to home medical equipment. Closed pharmacies mean lack of access to prescription refills. Stress caused by power outages may exacerbate existing medical conditions such as respiratory disease, asthma and cardiovascular conditions. Power outages may stress people trapped in elevators, subways, mines, or other enclosed or isolated spaces.[16] Home accidents such as food and carbon monoxide poisoning increase, and heat related illness or hypothermia is a concern depending on the location and date of the outage.[17]

[16] G. Brooke Anderson and Michelle L. Bell, Lights out: "Impact of the August 2003 power outage on mortality in New York, NY", *Epidemiology*. 2012 March; 23(2): 189–193.
[17] Broder J, Mehrotra A, Tintinalli J., "Injuries from the 2002 North Carolina ice storm, and strategies for prevention", *Injury*. 2005 Jan;36(1):21-6.

Economy

Direct economic impacts due to power outages include lost business output and productivity, property damage, government overtime costs, and commodities losses caused by a lack of refrigeration. Indirect impacts include diversion of capital investments into blackout protection systems.[18] Estimated permanent economic losses from the thirteen hour Southwest Blackout in September 2011 resulted in losses between $97 to $118 million dollars.[19] Manufacturing companies may suffer heavy losses from a power outage, caused by production line losses, equipment failure, and fires and explosions. Companies outside of the manufacturing sector will likely suffer minimal physical loss in a power outage, but can suffer significant customer and revenue loss. Small businesses are especially vulnerable as they generally have fewer resources and are less likely to have prepared or planned for such an event.

Estimated Impact of an Event

If a widespread power outage were to occur, the consequences to local populations, retail, services, production, transportation, and manufacturing will be substantial. The table below provides the estimated impact of a disaster using a 1% loss baseline.

Lancaster Estimated Impact of an Event

	Lancaster	Daily Average ($1,000)	Estimated Loss %	Estimated Daily Loss ($1,000)
Manufacturers' shipments, 2007 ($1000)	$258,596	$708	1%	$7
Merchant wholesaler sales, 2007 ($1000)	$928,561	$2,544	1%	$25
Retail sales, 2007 ($1000)	$1,754,369	$4,806	1%	$48
Retail sales per capita, 2007	$12,401	$34	1%	$0
Accommodation and food services sales, 2007 ($1000)	$178,112	$488	1%	$5
	$3,132,039	**$8,581**		**$86**

Table 34: Estimated Population and Economic Loss due to an Energy Outage

Source: US Census Bureau 2007

Based on a 1% loss projection, over $86,000 in losses can be expected per day in the event of a energy outage or shortage.

[18] Electricity Consumers Research Council, "The Economic Impacts of the August 2003 Blackout"
[19] National University System Institute for Policy Research, "Economic impact of September 9th Power Outage"

OIL, FUEL AND WATER HAZARD IDENTIFICATION

Disruption to the distribution of oil, fuel or water to Lancaster can result in illness, injury, and fatalities. Pipeline breaks will disrupt roads, highways, lifelines, public services, and the general health of local residents. An explosion or accident at a distribution or pipeline center may cause injury or death, as well as threaten water and air quality. Businesses and public services without gas and water will be forced to scale back operations or close. The examples listed below provide brief descriptions of the types of impacts that can be anticipated.

Injuries and Fatalities

There is a potential for injuries to industry employees, the public, and first responders who are in close proximity to a pipeline if there is an accident. If the accident results in an explosion or a large release of fumes, there is a potential for deaths and the destruction of property. Since 2008 there have been 57 fatalities and 331 injuries caused by significant pipeline accidents in the United States.[20]

Lifelines

Natural gas, fuel and water pipelines are part of the critical infrastructure that provides lifelines to communities. A disruption to these lifelines will impede the ability to provide potable water, natural gas, and fuel that the public depends on to ensure its health and safety. Examples include:

- Water pumping stations, wells, and sewage treatment plants are dependent on electrical power. While pumping stations have backup generators in case of power outages, an extended outage may affect the ability of the stations to provide or preserve the safety of water. This will have public health implications to children, the elderly, and those with compromised immune systems, and affect the ability of some businesses to remain open.
- The delivery of gasoline and fuel is necessary to ensure that transportation is not interrupted, and that first responders have the ability to use the correct vehicles and equipment necessary to provide services.
- Restaurants, hotels, hospitals, and any establishments that require fuel and hot water to wash utensils and tools and to regulate temperature will not be able to operate at full capacity.

Economy

Direct economic impacts due to power outages include lost business output and productivity, property damage, and the loss of product. According to the Pipeline & Hazardous Materials Safety Association (PHMSA), since 2008 there have been more than $2 billion in losses due to significant pipeline accidents.[21] Businesses dependent on natural gas, CNG and water may suffer heavy losses from a shortage or loss of any of these fuel sources that will cause production line stoppages and equipment failure.

[20] PHSMA California Significant Events Listing: http://primis.phmsa.dot.gov/comm/reports/safety/IncDetSt_st_CA_flt_sig.html?nocache=2134
[21] Ibid

POWER OUTAGE VULNERABILITIES

The major concern regarding the impact on communities from power outage events is the failure of critical infrastructure and the danger to public health. Critical infrastructure failures may require days or weeks to repair. The impact to business and industry can result in immediate and long term economic loss.

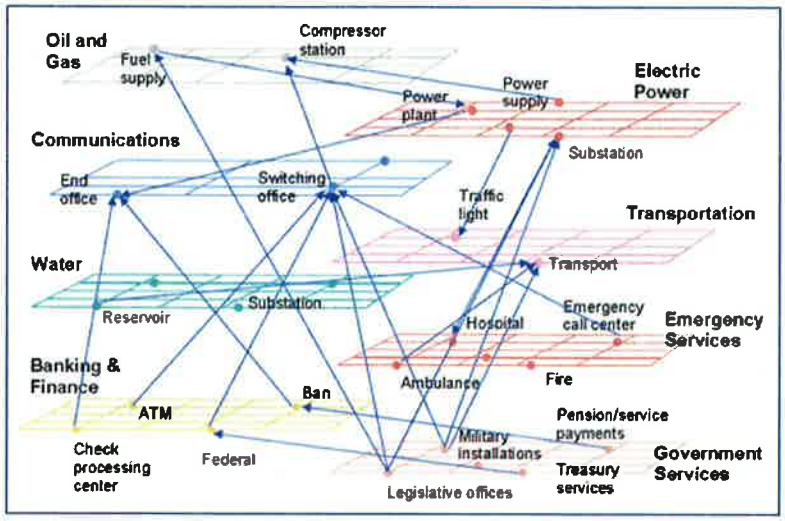


Figure 29: Infrastructure Interdependencies

Source: FCC Public Safety and Homeland Security Bureau

Critical Infrastructure

Critical infrastructure can fail during a power outage, especially if the event lasts longer than a few days. Outages will affect water and sewer systems, pipelines, transportation networks, emergency facilities, telecommunications networks, hospitals, and other essential sites. Power outages that last a few hours may be an inconvenience as most critical infrastructures have generators or backup power capabilities, but prolonged outages will affect the usability of generators and the accessibility of fuel sources. The failure of services such as the sewage system may pose a hazard to the health of the local community.

Many of these infrastructures are dependent on each other. Pipelines depend on electricity, and while fuel can be used to run generators, once the existing fuel supplies run out it is difficult to procure new supplies without electricity. If gasoline is unavailable, the transportation systems become unreliable. These "infrastructure interdependencies" can create larger issues during a power outage.

Business and Industry

Power outages impact businesses by causing shutdowns during the course of the event. Damage to physical property, interruptions in the supply chain, damage to refrigerated or heated goods that rely on electricity to maintain a certain temperature, and losses to goods on production lines that have to shut down at the time of the event are expected during a power outage. Some computer based businesses will not be able to function without access to the Internet.

Public Health and Safety

A Yale University study of the August 2003 blackout that affected the Northeast and Midwest regions of the United States and parts of Canada showed an increase in accidents and illness that lead to an increased number of deaths during the event.[22] A study by the New York City Department of Health and Mental Hygiene for the same event showed an increase in foodborne related illness as a direct result of the outage.[23] Injuries due to slips and falls and heat related illness or hyperthermia are commonly reported during power outages. Hospitals become full as people try to plug in electricity dependent medical equipment or procure prescription medications.

NATURAL GAS, OIL, AND WATER DISTRIBUTION VULNERABILITIES

The United States is heavily dependent on transmission pipelines to distribute energy and fuel sources. Virtually all natural gas, which accounts for about 28 percent of energy consumed annually, is transported by transmission pipelines. Increased urbanization is resulting in more people living and working closer to existing natural gas transmission pipelines that were placed prior to government agencies adopting and implementing land use and other pipeline safety regulations.

Compounding the potential risk is the age and gradual deterioration of natural gas, oil, and water transmission systems due to natural causes. Significant failure, including pipeline breaks and explosions, can result in loss of life, injury, property damage, and environmental impacts. Causes of and contributors to pipeline failures include construction errors, material defects, internal and external corrosion, operational errors, control system malfunctions, outside force damage, subsidence, and seismicity. Growth in population, urbanization, and land development near natural gas transmission pipelines, together with the addition of new facilities to meet new demands, may increase the likelihood of gas pipeline damage due to human activity and the exposure of people and property to pipeline failures.

California is reported to have 12,414 miles of natural gas transmission pipeline. No complete seismic hazard mitigation inventory for pipeline networks exists in California.

Earthquakes

Liquefaction is a significant contributor to pipeline failure after an earthquake. When soil liquefies, it can lose all shear strength or shear resistance, essentially becoming a fluid with the density of soil. If a pipeline or any other underground structure has a density less than the liquefied soil, it is then subjected to buoyant forces and thrust to the surface. This happens with underground pipes, tanks, and other low-density structural and non-structural components.

Pipelines subjected to significant displacement may develop leaks or breaks. These may be caused by ground deformation or by strong ground shaking. Ground deformation may include fault rupture as well as landslides, liquefaction, or subsidence.

[22] Lights out: Impact of the August 2003 power outage on mortality in New York, NY
[23] New York City Department of Health and Mental Hygene, "Diarrheal illness detected through syndromic surveillance after a massive power outage: New York City, August 2003"

Critical Infrastructure

Critical infrastructure can fail during a power outage caused by an earthquake, especially if the event is prolonged and lasts longer than a few days. Outages will affect pipelines, and prolonged electrical outages will affect the usability of generators and the accessibility of fuel sources as pipelines depend on electricity. Once existing fuel supplies run out it is difficult to procure new supplies without electricity. If gas is unavailable, the transportation systems become unreliable. These "infrastructure interdependencies" can create larger issues during a power outage.

Wells, water pumps, dams and reservoirs are dependent on electricity. Most utility wells and pumps are equipped with backup generators, but if there is a power failure that disrupts the ability to procure additional fuel supplies for the generators, these systems can also fail as part of the infrastructure interdependencies mentioned above. The diagram below shows the energy provider dependencies and highlights the importance of the continual flow of electricity in the long term.

	Electricity	Natural Gas	Water	Fuel / Gasoline	Solar
Electricity			●	●	●
Natural Gas	●				
Water	●			●	
Fuel / Gasoline	●				
Solar					

Table 35: Infrastructure Interdependency Matrix

Business and Industry

The loss of fuel or water directly impact businesses as businesses and industry cannot function without fuel and potable water. The manufacturing, services, retail, and public health and safety sectors are all reliant on gas and water to provide products and services. Without fuel there will be fewer people on the roads and in the shopping districts to purchase goods and services, and small businesses may open for fewer hours, if at all.

Public Health and Safety

Immediate threats to health and public safety in the event of a pipeline leak, break, or explosion are those caused by physical injury and the leak of hazardous materials into the air and water supply. Threats to health in the event that fuel and / or water are unavailable due to an event include the spread of foodborne and communicable diseases.

ENERGY MITIGATION STRATEGIES

Building codes, zoning ordinances, and growth and development plans can be used to mitigate power disruptions and to plan mitigation strategies. Building codes can be used to ensure that minimum required construction standards are met to safeguard public health and safety, and can also be used to increase a community's ability to deal with electrical outages by requiring that facilities are adequately prepared for power disruptions. Zoning ordinances can specify the type of land use that is acceptable in various locations in a community, and thus affect the electric power requirements of an area as areas zoned "residential" will have a different electricity profile than areas zoned "commercial" or "industrial." Electric power companies develop projections of long-term demand as a starting point for planning the expansion of electric power generation, transmission, and distribution facilities. In general, the shorter the planning horizon and the larger the geographic resolution used, the more likely the demand forecast will be representative of the actual situation. Communities can base zoning ordinances on these growth and development projections.[24]

Southern California Edison (SCE) provides power to the Lancaster area and is responsible for managing the power supply. The City of Lancaster has no jurisdiction over SCE or its operations. Lancaster has adopted the 2010 California Electrical Code as its Lancaster Electrical Code to regulate the installation, arrangement, alteration, repair, maintenance, use and operation of electrical wiring, connections, fixtures, equipment and other electrical appliances. Lancaster has also added the following sections to the code:

- 15.12.030 - Dangerous electrical equipment. This section defines what is considered dangerous electrical equipment and requires that the equipment be replaced, repaired, reinstalled, reconstructed or removed.
- 15.12.040 - Solar photovoltaic systems. This section defines regulates disconnecting means for solar photovoltaic multiple arrays.

The City of Lancaster has adopted the 2010 California Energy Code as its Lancaster Energy Code that regulates the construction, enlargement, alteration, repair, moving, conversion, and, occupancy of all structures and certain equipment.

The City of Lancaster has adopted the County of Los Angeles water ordinance as its Lancaster water ordinance.

Lancaster regulates the use of wind energy systems within city limits in its General Code:

- 17.40.590 - Wind energy conversion systems. This section specifies standards for all wind energy conversion systems in zones in which they are allowed, or allowed subject to the granting of a conditional use permit.
- 17.40.690 - Co-located small wind energy systems (CSWES). This section specifies the construction and use of CSWES on commercial and industrial lots within the city limits of the City of Lancaster.

The city can use building and energy codes, zoning regulations, and planning documents to mitigate the potential for natural gas, oil, and water pipeline disruptions, as well as ensure public safety and to plan for future energy needs and outages.

[24] Cal EMA "Power Disruption Toolkit"

SECTION 9. WILDFIRE

THE NATURE OF THE WILDFIRE THREAT

Fire is a natural part of the ecosystem in Southern California. However, wildfires present a substantial hazard to life and property in communities that are built within or adjacent to hillsides and mountainous areas. Consequently there is a significant potential for losses due to fire in the area, including wildland and urban fires). According to the California Department of Forestry and Fire Protection (CAL FIRE), for the years 2011 and 2012 the following fire season totals were reported in California (CAL FIRE jurisdiction fires).

Interval	Fires	Acres
January 1, 2012 through December 29, 2012	5,809	141,154
January 1, 2011 through December 29, 2011	4,656	57,118
5 year average (same interval)	5,084	198,769

Table 36: CAL FIRE Number of Fires and Acres Burned for 2011 and 2012

HISTORICAL RECORD OF SIGNIFICANT FIRES

The following table provides examples of significant fires in the Los Angeles County area from 1993.

Fire Name	Start Date	Acres Burned	Structures Destroyed	Deaths
Station	Aug-2009	160,557	209	2
Sayre	Nov-2008	11,262	634	0
Ranch (Castaic/Piru)	Oct-2007	58,401	10	0
Buckweed	Oct-2007	38,356	63	0
Topanga	Nov-1993	18,000	323	3

Table 37: Historical Record of Significant Fires

Source: California Department of Forestry and Fire Prevention

CAUSES AND CHARACTERISTICS OF WILDFIRES

Southern California has two distinct areas of risk for wildland fire. First, the foothills and lower mountainous areas which are often covered with scrub brush or chaparral. Second, the higher elevation mountains which contain large forest areas. In fact, the magnitude of the 2003 fires that struck Southern California were the result of three primary factors: (1) severe drought, accompanied by a series of storms that produced thousands of lightning strikes and windy conditions; (2) an infestation of bark beetles that has killed thousands of mature trees; and (3) the effects of wildfire suppression over the past century that led to a build-up of brush and small diameter trees in the forests.

WILDFIRE HAZARD IDENTIFICATION

Urban / Wildland Interface Fires

The National Wildland Coordinating Group defines urban / wildland interface as "the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuel."

In terms of urban / wildland interface fires, there are three categories of concern:

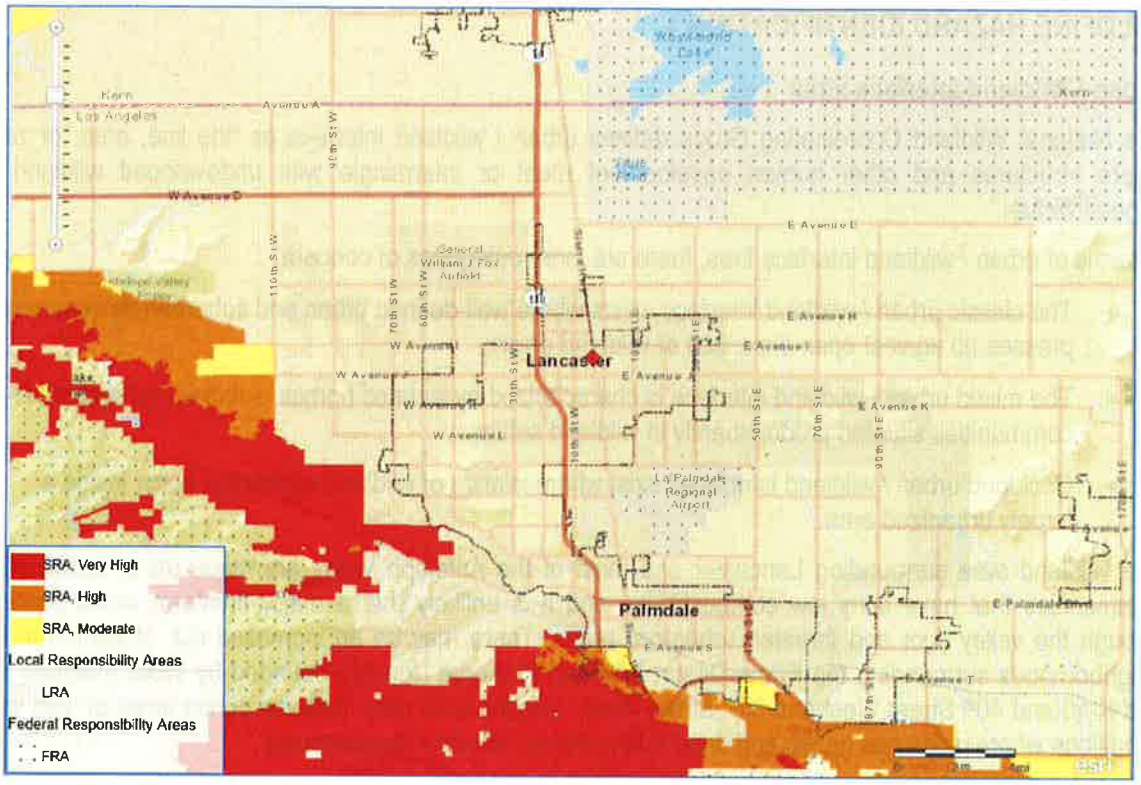
- The classic urban / wildland interface exists where well-defined urban and suburban development presses up against open expanses of wildland areas;
- The mixed urban / wildland interface is characterized by isolated homes, subdivisions and small communities situated predominantly in wildland settings;
- Occluded urban / wildland interfaces exist where islands of wildland vegetation occur inside a largely urbanized area.

The wildland area surrounding Lancaster and most of the Antelope valley are made up of desert plant communities that have fairly low combustibility, and it is unlikely that a major firestorm would proceed through the valley floor and threaten urbanized areas. There may be an increased risk of wildfire in the neighborhoods surrounding the Prime Desert Wildland Preserve (roughly bounded by West Avenues K-4 and K-10 and 40th Street West and 35th Street West). Widlfire risks may increase during times of high wind conditions where grass has grown and dried during the hot summer temperatures.

While the wildfire risk in Lancaster may be relatively low, hilly and mountainous areas surrounding Lancaster have an increased risk of wildfire. Fires in the areas surrounding Lancaster can create air quality problems, and health hazards may exist for elderly or infirm persons because of smoke and possible heat exposure.

Transportation issues may arise if fires affect the ability of commuters to use Highway 14 or the Sierra Highway, both of which have been closed in the past due to wildfire activity. Wildland fires can require evacuation of portions of the population, revised traffic patterns to accommodate emergency response vehicle operations, and restrictions on water usage during the period of the emergency. An increase in hospital emergency treatments and transportation needs to such treatment centers may place an increased demand on city resources. The loss of some utilities may also be anticipated.[25]

[25] City of Lancaster Emergency Operations Plan 2010



Map 23: Cal FIRE Severity Zone Map

ESTIMATED IMPACT OF AN EVENT

If a major wildfire were to occur, the consequences to local populations and housing in urban interface areas will be significant. The table below provides the estimated impact of a disaster using a 1% loss baseline.

Category	Westlake Village	Impact if a 5% Loss Occurs
Population	156,633	1,563
Total Housing Units	51,260	512
Median Home Value	More than $214,800	More than $1B

Table 38: Estimated Population and Economic Loss of a Wildfire

Based on a 1% loss projection, more than 1,563 people would be displaced or significantly impacted and more than 512 homes could be damaged or destroyed resulting in over $1 billion in losses (see Community Profile section for population, housing, and economic data).

WILDFIRE VULNERABILITIES

Base Hazard Factors

In order to determine the "base hazard factor" of specific wildfire hazard sites and interface areas, several factors must be taken into account. Categories used to assess the base hazard factor include:

- Topography
- Fuels
- Weather

Topography

Topography influences the movement of air, thereby directing a fire's course. In general, if the percentage of uphill slope doubles the rate of fire spread doubles. Gulches and canyons can funnel air and act as chimneys, which intensify fire behavior and cause the fire to spread faster. Unfortunately, hillsides with hazardous topographic characteristics are also desirable, residential areas in many communities. This underscores the need for wildfire hazard mitigation and increased education and outreach to homeowners living in interface areas.

Fuels

An important element in understanding the danger of wildfire is the availability of diverse fuels in the landscape, such as natural vegetation, manmade structures and combustible materials. A house surrounded by brushy growth rather than cleared space allows for greater continuity of fuel and increases the fire's ability to spread. After decades of fire suppression "dog-hair" thickets have accumulated, which enable high intensity fires to flare and spread rapidly.

In addition, fuel is a key factor in wildfire behavior. Fuel is classified by volume and by type. Volume is described in terms of "fuel loading," or the amount of available vegetative fuel. In the Lancaster area there is only one fuel type – the Joshua Tree forests in proximity to the city.

Weather

Weather patterns combined with certain geographic locations can create a favorable climate for wildfire activity. Areas where annual precipitation is less than 30 inches per year are extremely fire susceptible. This is a definite classification of the Lancaster area. Southern California is known for its lack of precipitation and its years of droughts.

High-risk areas in Southern California share a hot, dry season in late summer and early fall when high temperatures and low humidity favor fire activity. The "Santa Ana" winds, which are heated by compression as they flow down to Southern California from Utah, create a particularly high risk, as they can rapidly spread what might otherwise be a small fire. Wind bends the flames to pre-heat the fuel ahead and can carry fire brands up to a quarter mile or more ahead of the flame front. The majority of catastrophic fires that Southern California has experienced have occurred in the months of September, October, and November when Santa Ana Winds typically occur. Wind is considered to be the primary factor that influences fire spread.

Recent concerns about the effects of climate change (particularly drought) have contributed to concerns about wildfire vulnerability. Drought also leads to less frequent irrigation which can contribute to wildfires. For example, from 2007 to 2009 Southern California experienced drought conditions. This corresponds to the most recent years when significant wildfires have occurred.

The Threat of Urban Conflagration

An urban conflagration could start either as a result of a lightning strike, arson, human error, earthquake or other phenomenon. Possible scenarios include a fire in planned community that quickly spreads to nearby homes due to a combination of high winds and high temperatures.

Business structures are also at risk however this threat is mitigated by requirements for commercial sprinkler systems. Nevertheless, there is still a risk of widespread fire if local water supplies are disrupted due to extremely high demand, power outage, or line breaks (cause by an earthquake or other damage). Examples include high rise offices, large hotels, and retail centers.

WILDFIRE MITIGATION

Federal Programs

The role of the federal land managing agencies in the wildland / urban interface is to reduce fuel hazards on the lands they administer; cooperate in prevention and education programs; provide technical and financial assistance; and develop agreements, partnerships and relationships with property owners, local protection agencies, states and other stakeholders. These relationships focus on activities before a fire occurs, which render structures and communities safer and better able to survive a fire occurrence.

Federal Emergency Management Agency (FEMA) Programs

FEMA is directly responsible for providing fire suppression assistance grants and, in certain cases, major disaster assistance and hazard mitigation grants in response to fires. The role of FEMA in the wildland / urban interface is to encourage comprehensive disaster preparedness plans and programs, increase the capability of state and local governments and provide for a greater understanding of FEMA programs at the federal, state and local levels.

Fire Suppression Assistance Grants

Fire Suppression Assistance Grants may be provided to a state with an approved hazard mitigation plan for the suppression of a forest or grassland fire that threatens to become a major disaster on public or private lands. These grants are provided to protect life and improved property as well as encourage the development and implementation of viable multi-hazard mitigation measures. The grant may include funds for equipment, supplies and personnel. A Fire Suppression Assistance Grant is the form of assistance most often provided by FEMA to a state for fires. The grants are cost-shared with states. FEMA's Fire Administration (USFA) provides public education materials addressing wildland / urban interface issues and the USFA's National Fire Academy provides training programs.

Hazard Mitigation Grant Program

Following a major disaster declaration, the FEMA Hazard Mitigation Grant Program provides funding for long-term hazard mitigation projects and activities to reduce the possibility of damages from all future fire hazards and to reduce the costs to the nation for responding to and recovering from the disaster.

National Wildland / Urban Interface Fire Protection Program

Federal agencies can use the National Wildland/Urban Interface Fire Protection Program to focus on wildland / urban interface fire protection issues and actions. The Western Governors' Association (WGA) can act as a catalyst to involve state agencies, as well as local and private stakeholders, with the objective of developing an implementation plan to achieve a uniform, integrated national approach to hazard and risk

assessment and fire prevention and protection in the wildland / urban interface. The program helps states develop viable and comprehensive wildland fire mitigation plans and performance-based partnerships.

U.S. Forest Service

The U.S. Forest Service (USFS) is involved in a fuel-loading program implemented to assess fuels and reduce hazardous buildup on forest lands. The USFS is a cooperating agency and, while it has little to no jurisdiction in the lower valleys, it has an interest in preventing fires in the interface, as fires often burn up the hills and into the higher elevation US forest lands.

Los Angeles County Fire Department

First Responders

The City of Lancaster is located in Division 5 – North Regional Operations Bureau of the LA County Fire Department's Regional Plan Divisions. Battalion 11 of the Los Angeles County Fire Department is assigned to directly serve the greater Lancaster region. The Antelope Valley Division Headquarters are located at 42110 6th Street West, Lancaster, CA 93534.

Operating 9 divisions and 22 battalions, LACoFD answers approximately 300,000 emergency calls annually. The Department currently has 169 fire stations, 68 paramedic squads, 9 wildland fire suppression camps, 10 bulldozers, 9 helicopters, 23 Prevention Offices, 12 Forestry Units and numerous other response vehicles and facilities. It serves 58 incorporated cities, as well as the unincorporated areas of the County. Additionally, the Department has Planning, Information Management, Lifeguard, and Health Hazardous Materials Divisions which provide valuable services to the more than 4.1 million people who reside in the 1.2 million housing units located throughout the Department's 2,305 square mile area.

The LACoFD is one of six Contract Counties that maintain a contractual relationship with California Department of Forestry and utilizes the California Fire Plan within Los Angeles County as the primary wildland fire protection plan.

Other Agencies

It is important to work with other organizations and agencies to create a more comprehensive Hazard Mitigation Plan. There are numerous agencies with which Division VII of the LACoFD works closely, including but not limited to:

Political Entity	Jurisdiction
Los Angeles County Sheriff's Department	Local Government/ Law Enforcement
City of Los Angeles	Local Government/LRA Fire Protection
Public Utility Companies	State/County
California Department of Forestry and Fire Protection	State/County

Table 39: Political Entities that Coordinate with the LACoFD to Mitigate the Threat of Fire

Fire Prevention Division

The City of Lancaster is part of the LACoFD Fire Prevention Central Region. Fire prevention and code enforcement in this area historically requires concentrated efforts related to water supplies for fire protection and vehicular access for fire apparatus. Geographic and terrain limitations as well as the lack of water supply in mountainous terrain present challenges that LACoFD Inspectors review and inspect, often times providing alternative solutions for the owners/occupants to consider.

Special Operations Bureau

The Special Operations Bureau provides highly technical operational functions to County residents including Emergency Medical Services, Urban Search and Rescue, Hazardous Materials, Air Operations, Fire Camps for wildland firefighting, Heavy Equipment and central Dispatch.

Fire Prevention Programs

The Los Angeles County Fire Department manages an active effort in order to prevent the possibility of a wildfire occurring within the City of Lancaster Region. The following list provides a sample of the programs, activities and practices.

Prescribed Burning

The health and condition of brush will determine the magnitude of wildfire. The LACoFD does practice prescribed burning. If fuels (slash, dry or dead vegetation, fallen limbs and branches) are allowed to accumulate over long periods of time without being methodically cleared, fire can move more quickly and destroy everything in its path. The results are more catastrophic than if the fuels are periodically eliminated. Prescribed burning is the most efficient method to remove these fuels.

Pre-Fire Management Plan

As a preventative measure, the LACoFD also implements a Pre-Fire Management Plan whose overall goal is to reduce the total cost and losses from wildland fires in California by protecting assets at risk through focused pre-fire management prescriptions and increased initial attacks.

Fuel Modification Plan

The Fuel Modification Plan is part of the Forestry Division of the LACoFD. This publication was prepared to establish a set of guidelines and landscape criteria for all new construction relating to fuel modification planning that will reduce the threat of fire in high hazard areas.

Vegetation Management Program

The Vegetation Management Program (VMP) is a cost-sharing program that focuses on the use of prescribed fire, mechanical, biological and chemical means for addressing wildland fire fuel hazards and other resource management issues on State Responsibility Area (SRA) and Local Responsibility Area (LRA) lands. The use of prescribed fire mimics natural processes, restores fire to its historic role in wildland ecosystems, and provides significant fire hazard reduction benefits that enhance public and firefighter safety.

The Los Angeles County Fire Department created the Vegetation Management Program in 1979 to develop strategies for responding to the growing fire hazard problem. These include:

- An ongoing effort to analyze the history of wildland fires in Los Angeles County
- Experimentation with different methods of reducing and removing fuels in fire prone areas
- Evaluation of the environmental impacts and effects of these practices

Brush Clearance Inspection Program

Mandated by the LA County Fire Code, all property owners in the region are presently required to maintain a firebreak around and adjacent to all buildings and structures by removing all flammable vegetation or other combustible growth for a minimum distance of 200 feet from the structure or to the property line, whichever is closer.

The Brush Clearance Program is a joint effort between the Los Angeles County Fire Department and the County of Los Angeles Department of Agricultural Commissioner/Weights and Measures, Weed Hazard and Pest Abatement Bureau (Weed Abatement Division). This unified enforcement legally declares both improved and unimproved properties a public nuisance, and where necessary, requires the clearance of hazardous vegetation. These measures create "Defensible Space" for effective fire protection of property, life and the environment. The Department's Brush Clearance Unit enforces the Fire Codes as it relates to brush clearance on improved parcels, coordinates inspections and compliance efforts with fire station personnel, and provides annual brush clearance training to fire station personnel.

Fire Retardant Foam

All the Los Angeles County Fire Department fire engines are equipped with fire retardant foam capability. This type of program demonstrates the value of pre-suppression and prevention efforts when combined with property owner support to mitigate hazards within the wildland / urban interface.

Fire Codes

Fire codes have been amended throughout the years to assist fire department personnel with wildland firefighting in the rural/urban interface zones. Building construction in these areas may have additional requirements for non-combustible construction components and water supplies. Inspectors assigned to these regional offices provide developers and homeowners with information for fire safe construction and fire protection systems.

Building Codes

The City of Lancaster complies with the County of Los Angeles fire codes.

Public Education and Involvement

The Fire Prevention Division within the Los Angeles County Fire Department (LACoFD) focuses on educating the community about the benefits of proper safety practices and identifying and eliminating all types of hazardous conditions, which pose a threat to life, the environment and property.

LANCASTER MITIGATION STRATEGIES

The City of Lancaster recognizes the potential fire dangers along the urban / wildland interfaces as well as structures inside the city, and has enacted the following policies to regulate development within potential natural fire hazard areas and to ensure that adequate fire facilities are available in order to ensure that life and property are protected:

- Fire prevention:
  - In cooperation with the Los Angeles County Fire Department, Lancaster conducts an annual assessment of fire prevention and suppression services, evaluates the adequacy of facilities and equipment serving the City; the status and adequacy of mutual aid agreements; personnel staffing and program needs; and equipment, facility, and staffing needs based on anticipated growth, level of service, and incident rates.
  - In cooperation with the Los Angeles County Fire Department, Lancaster has established a program to monitor the effectiveness of fire prevention and education programs and to identify sources of funding for such programs.
- Planning and construction
  - Involves fire department personnel in the development review process for all new development proposals through participation in the Development Review Committee and by referring development requests to the Los Angeles County Fire Department for review and comment.
  - Ensures that the design of new development minimizes the potential for fire.
  - Requires the use of fire resistant roofs in residential developments.
  - In conjunction with the Los Angeles County Fire Department, reviews the adequacy of ordinances requiring fire sprinklers, and continues with the practice of requiring fire sprinklers in residential structures as required by the Los Angeles County Fire Code.
- Community Education
  - Work with the Los Angeles County Fire Department and local school districts to maintain educational programs aimed at preventing fires.
  - Publishes articles on fire prevention. Utilizes the various media resources as addressed in the City's Communications Master Plan.
  - Has created outreach and education programs aimed at mitigating wildfire hazards and reducing or preventing the exposure of citizens, public agencies, private property owners and businesses to natural hazards.
  - Works to increase communication, coordination and collaboration between wildland / urban interface property owners, local and county planners and fire prevention crews and officials to address risks, existing mitigation measures and federal assistance programs.
  - Encourages the implementation of wildfire mitigation activities in a manner consistent with the goals of promoting sustainable ecological management and community stability.

SECTION 10. FLOOD

THE NATURE OF FLOOD THREAT

The City Lancaster has a relatively flat topography, and is surrounded by the San Gabriel and Sierra Pelona mountains to the south and the Tehachapi Mountains to the north in the eastern Antelope Valley. The Antelope Valley itself is geographically unique since it has no outlet to the Pacific Ocean, which restricts the removal of runoff to percolation or evaporation. Numerous streams originate in the mountains and foothills surrounding the Antelope Valley, and flow across the Valley floor and eventually pond in the dry lakes near Edwards Air Force Base.

Following short-term, low intensity rainfall, deep deposits of permeable sands absorb nearly all runoff by percolation as it flows out of the San Gabriel Mountains. However, following major storms, the sands become saturated and runoff from the mountains flows northward across the valley, sometimes overflowing natural drainage channels. Flash flooding or extended periods of rain can cause drainage channels such as Amargosa Creek and Little Rock Wash to overflow. Runoff also occurs over paved surfaces within the City and flows toward low-lying areas to the north.[26]

Lancaster and the Antelope Valley have experienced flooding in the past from winter storm events. Flooding poses a threat to life and safety, and can cause severe damage to public and private property. Flooding is a factor in the Antelope Valley due to the natural mountainous terrain surrounding the valley, the types of soil deposits, and changes in the landscape.

HISTORICAL RECORD OF FLOODING

History of Flooding in Southern California

Historically, the region has experienced extended periods (on the order of years) of either wet or dry weather. Additionally, in any given year the amount of precipitation can vary widely. The most significant flooding events to affect the Southern California area occurred in 1995, 1996, 1998, and 2010.

FEMA has classified the following events in California to be significant floods. A significant event is defined by FEMA as 1,500 or more in paid losses:

Event	Year	Number of Paid Losses	Amount Paid ($)	Average Paid Loss
Pineapple Express	Jan-98	4,227	$57,680,410	$13,646
California Flood December 1996	Dec-96	1,858	$39,699,759	$21,367
California Flood January 1995	Jan-95	3,410	$74,842,843	$21,948
California Flood February 1986	Feb-86	2,003	$34,838,406	$17,393

Table 40: Significant Flood Events in Southern California 1978 – 2010

SOURCE: http://www.fema.gov/policy-claim-statistics-flood-insurance/policy-claim-statistics-flood-insurance/policy-claim-13-9

[26] City of Lancaster Emergency Operations Plan 2010

Significant Floods in the Lancaster Region

The National Flood Insurance Program (NFIP) tracks flood losses for the United States. The following table details the NFIP loss totals for the City of Lancaster from 1978 through 2012.

City Name	Total Number of Losses	Total Payments
Lancaster	11	$25,520

Table 41: Flood Loss Statistics for California (From January 1, 1978 to December 31, 2012

SOURCE: http://bsa.nfipstat.fema.gov/reports/1040.htm#06

Severe Repetitive Losses

The Severe Repetitive Loss (SRL) grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, which amended the National Flood Insurance Act of 1968 to provide funding to reduce or eliminate the long-term risk of flood damage to severe repetitive loss (SRL) structures insured under the National Flood Insurance Program (NFIP). The definition of severe repetitive loss as applied to this program was established in section 1361A of the national Flood Insurance Act, as amended (NFIA), 42 U.S.C. 4102a. An SRL property is defined as a residential property that is covered under an NFIP flood insurance policy and:

(a) That has at least four (4) NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000; or

(b) For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both (a) and (b) above, at least two of the referenced claims must have occurred within any ten-year period, and must be greater than ten (10) days apart.

In terms of the Lancaster area, there have been losses from flooding. There are properties that have sustained severe repetitive losses and in 2012 the City built two retention basins to mitigate flood damage.

CAUSES AND CHARACTERISTICS OF FLOODS

A flood, as defined by the National Flood Insurance Program, is: A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from: overflow of inland or tidal waters or unusual or rapid accumulation of runoff of surface waters from any source or mudflow.

Flooding may occur as a result of sustained heavy rainfall, microbursts, (short periods of large volumes of rain) large wave activity on the coast, or reservoir / dam failure. A "100-Year Recurrence Interval" is defined as a flood that according to historical data has a probability of occurrence once in 100-years. This benchmark used by FEMA to establish a regulatory baseline for all flooding events. Similar benchmarks are defined for 25, 50, and 500 year events.

Annual Precipitation

Rainfall in Lancaster averages 5 inches per year and snowfall averages 1 inch per year. However, the term "average" is misleading because over the recorded history of rainfall and snowfall in the region, amounts have ranged from no precipitation at all in some years to well over normal averages in very wet years. Furthermore, actual rainfall in Southern California tends to fall in large amounts during sporadic and often heavy storms rather than in consistent amounts throughout the year (See Community Profile Section for additional details).

Dam and Reservoir Failure

Loss of life and damage to structures, roads, and utilities may result from a reservoir or dam failure. Several factors influence the severity of a full or partial reservoir or dam failure: the amount of water released, topography, and the density of downstream populations and structures.

There are three dams with reservoirs in the Lancaster area:

- The Los Angeles Department of Water and Power operates the Fairmont Reservoir No. 2 located near the intersection of Lancaster Road and 170th Street West near the town of Fairmont.
- The Palmdale Water District and the Littlerock Creek Irrigation District jointly operate the Littlerock Dam and Reservoir. The Littlerock Dam is located in the foothills of the San Gabriel Mountains near the town of Littlerock, about 5 miles southeast of Palmdale.
- The Palmdale Water District operates Palmdale Dam and its reservoir, Palmdale Lake. Palmdale Lake is located just south of Lancaster at Highway 14 and Avenue S in Palmdale.

The original Fairmont Dam and reservoir were constructed in 1913 and decommissioned in 1971 when geological studies after the San Fernando earthquake determined that the site had developed instabilities. In 1983 the Los Angeles Department of Water and Power opened a second reservoir, Fairmont Reservoir No. 2. The reservoir is hydraulically filled at an elevation of 2800 feet, has a capacity of 491 acre feet and is equipped with a spillway. Adjacent to the reservoir is the old Fairmont Dam which, although no longer in use, has a capacity of 5578 acre feet and is an earthen dam with a concrete center.

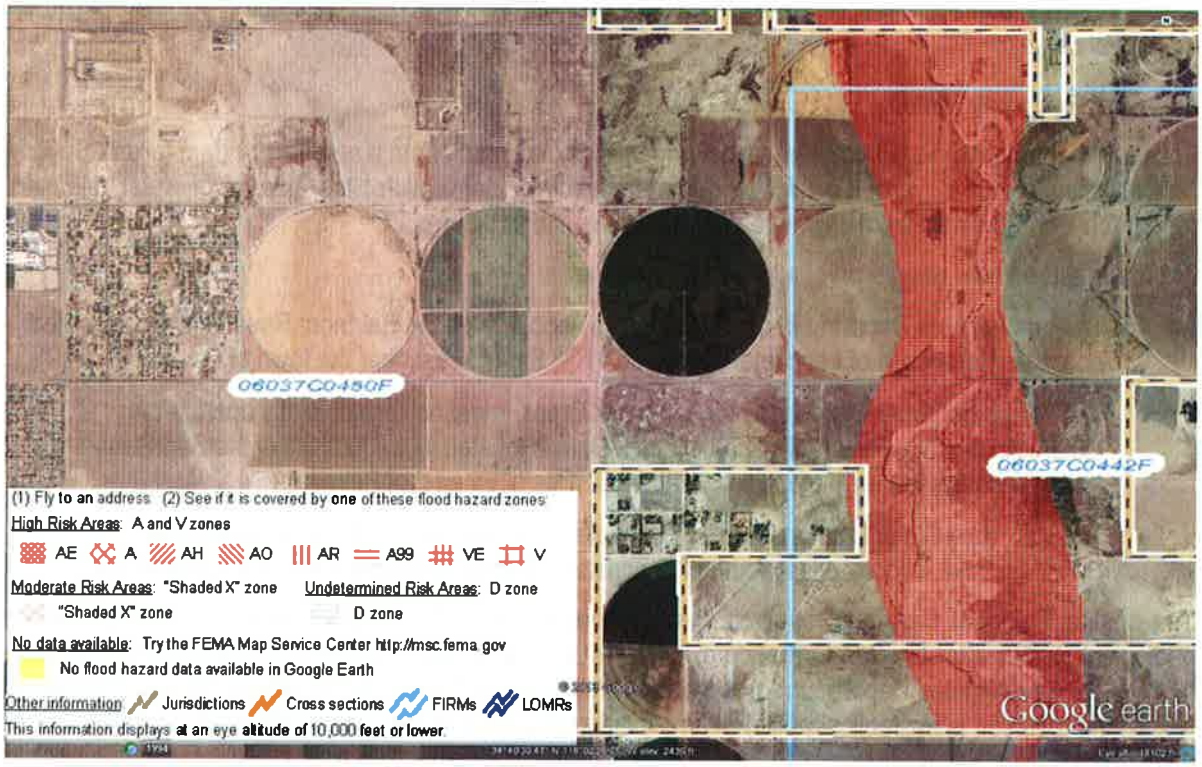
The Fairmont Reservoir presents the only flood risk to Lancaster and the surrounding area. The reservoir is rarely filled to capacity and was built so that the Fairmont Dam can contain any overflow. If both structures were to fail, the water would travel down the gorge and impact several buildings at the Antelope Valley Sportsmen's Club, 45408 160th Street West. Beyond this point, the water would proceed down the gorge for approximately 4.5 miles where it would reach flat terrain and dissipate at 110th Street West.[27]

Near Palmdale are the Littlerock Dam and Reservoir and the Palmdale Dam and its reservoir, Palmdale Lake. The Littlerock Dam can hold 3,500 acre feet of water. In 1994 Little Rock dam was improved to meet seismic requirements. The crest was elevated and spillway was raised 12 feet, increasing the dam capacity. The new spillway section was designed to meet a 100-year flood event.

If the Littlerock Dam were to rupture as a result of an earthquake, failure, or 100-year flood, a ten (10) foot wall of water is projected to inundate some residential parts of Littlerock and Palmdale just north of Pearblossom Highway. If there is an overflow at the Littlerock Dam at the same time that the Little Rock Wash and the Town of Pearblossom watershed are full, inundation will reach Lancaster along the path of the Town of Pearblossom watershed. The affected area in Lancaster is loosely bounded by 50th Street East

[27] City of Lancaster Emergency Operations Plan 2010

and 90th Street East, and East Avenue K and East Avenue L. There is a small housing development to the west of the watershed in the community of Roosevelt, but none of the houses are within the perimeter of the flood zone. An inundation at the Littlerock Dam would flood Pearblossom Highway. Pearblossom Highway is one of the major east-west regional roads connecting Lancaster to Palmdale and large cities to the east, including Victorville, therefore loss of access to Pearblossom Highway would make eastbound travel out of Lancaster difficult. [28]



Map 24: FEMA FIRM showing Town of Pearblossom Watershed

Source: Google Earth FEMA Flood Hazard Map

Palmdale Lake sits at an elevation of 2980 feet and is a 4.2 thousand acre feet reservoir fed by a ditch from the Littlerock Reservoir An earthquake can trigger a seiche (a water wave caused by the effects of seismic activity on a body of standing water) that can cause Palmdale Lake to overtop the dam. It is believed that the design of the dam will prevent water overpour, and if some were to occur the volume would not be enough to cause flooding. Flooding caused by a break of the Palmdale Dam would not reach Lancaster or Quartz Hill.[29]

The California Aqueduct presents some risk of overflow. In the event of a major earthquake, the Aqueduct might be breached. During such a break, millions of gallons of water could spill north and east across the Antelope Valley.

[28] Palmdale Water District Stormwater Flood Management, Proposition 1E, Round 2,Littlerock Reservoir Sediment Removal Project
[29] Palmdale Water District Local Hazard Mitigation Plan December 2008

Flash Floods

Much of the Lancaster area is prone to floods due to its flat topography and proximity to the San Gabriel and Sierra Pelona Mountains. While Lancaster receives and average of five (5) inches of rain per year, the San Gabriel Mountains receive an average of twenty (20) inches. The San Gabriel and Sierra Pelona Mountains prevent many Pacific Ocean storms from crossing into the Antelope Valley, but mountain storm runoff drains from the mountain ranges into alluvial fans that cross the Antelope Valley and drain into the dry lake beds at Edwards Air Force Base. During normal rainfall events, deposits of permeable sands absorb nearly all runoff by percolation as it flows out of the mountains. Following major storms or during periods of extended rainfall the sands become saturated and sometimes overflow natural drainage channels. Flash flooding or extended periods of rain can cause drainage channels such as Amargosa Creek and Little Rock Wash to overflow.

Figure 30: Amargosa Creek Flood 1969

SOURCE: Water Resources Collections and Archives, University of Riverside, California and California State University, San Bernardino

Lancaster has created a flood abatement program for its developed areas to ensure that structures designed for human occupancy within the 100-year floodplain comply with the City's flood plain ordinance. The program has also identified undeveloped or vacant land within 100-year floodplains and retained them as very low density rural use areas or open space where plans for construction of flood control facilities are absent.

Local drainage problems and flooding in Lancaster generally occur along natural tributaries. The City's flooding may be reduced by the California Aqueduct drainage crossings. Runoff originating in the Sierra Pelona and San Gabriel Mountains must cross under the aqueduct before entering the City. Storm flows in the undeveloped portions of the study area are generally channeled through wide, north-south swales until intercepted by various flood control channels or natural creek beds. Sheet flooding can occur when the capacities of washes and dry stream beds are exceeded. However, sheet flooding can also occur due to factors unrelated to the overflow of washes and stream beds, such as runoff directed across level basin areas.[30]

[30] Lancaster General Plan 2030

The following tributaries constitute natural flood hazards within the City of Lancaster:

Tributary	Details
Amargosa Creek	Amargosa Creek collects runoff from the Sierra Pelona Mountains and San Andreas Rift Zone at the southwest end of the Antelope Valley. The Creek initially flows eastward and then changes directions near State Route 14 (SR-14) and meanders northerly through Palmdale and Lancaster. The Creek eventually terminates at Rosamond Dry Lake.
Anaverde Creek	Anaverde Creek collects runoff from the Sierra Pelona Mountains and flows northeasterly through Anaverde Valley. Flow is collected in the Lockheed Drainage Channel on the U.S. Air Force Base Flight Production Center (Plant 42) and held in a retention basin. Flow that exceeds the capacity of the retention basin eventually confluences with Amargosa Creek.
Little Rock Creek	Little Rock Creek begins at the outflow of Little Rock Dam and consists of runoff from the San Gabriel Mountains in Little Rock Canyon. The Creek passes west of the community of Littlerock and travels in a northerly direction to Rosamond Dry Lake.
Neenach Wash	This wash collects runoff from La Liebre Rancho and travels due east until it merges with runoff from the Fairmont Wash.
Fairmont Wash	This wash collects runoff from Broad Canyon in Portal Ridge and from the Fairmont and Antelope Buttes. The wash flows north until reaching Avenue D, where it changes to an easterly direction and eventually reaches Rosamond Dry Lake.

Table 42: Lancaster Major Tributaries

SOURCE: Emergency Operations Plan 2010

FLOOD HAZARD IDENTIFICATION

Flooding occurs when climate, geology, and hydrology combine to create conditions where water flows outside of its usual course. As described earlier, due to the topography of the Antelope Valley, there is a potential for flooding throughout the entire area. Furthermore, due to continued growth and economic development, the region's storm water collection and conveyance system may become overwhelmed.

Storm Events

Because Lancaster is situated at the far west of the Mojave Desert it experiences monsoons that form between July and September. The North American Monsoon is a result of a shift in wind patterns during the summer as northwestern Mexico and the southwestern United States warm and wind patterns shift from the westerly to southerly, bringing cool moisture from the tropics into the dry desert and forming thunderstorms. Monsoon storms in Lancaster are characterized by brief summer thunderstorms that can release a lot of moisture in a small amount of time. While the monsoon storms are not as prevalent in the western Antelope Valley as they are in the eastern parts of the Mojave Desert, they can cause flooding and wind damage when they occur.

Another source of heavy rainfall is from summer tropical storms. These tropical storms usually coincide with El Niño years. El Niño is a disruption of the ocean-atmosphere system in the tropical Pacific Ocean having important consequences for weather in California. Among these consequences is increased rainfall across the southern tier of the United States and Peru.

During El Niño periods, trade winds begin to relax in the central and western Pacific Ocean leading to a depression of the thermocline in the eastern Pacific Ocean and an elevation of the thermocline in the west. The result is a rise in sea surface temperature and heavier than normal rainfall in Southern California. In the past, El Niño conditions have caused damage in Lancaster and the Antelope Valley.

Geography and Geology

Geologically, the Antelope Valley is part of the Mojave structural block, which is an elevated desert. The topography of the City generally slopes up to the southwest, with elevations ranging from approximately 2,300 feet in the northeast to 3,500 feet in the southwest. The overall topography of Lancaster is somewhat flat. Major topographic features include Quartz Hill, and the Fairmont and Antelope Buttes located west of 110th Street West.

The geology of the region consists of three main rock groups: crystalline rocks of Pre-Tertiary age; volcanic and sedimentary rocks of Tertiary age; and alluvial sedimentary rocks of Quaternary age. The first two groups consist of older, hard, consolidated materials from the surrounding mountains and rocky buttes that rise from the valley floor. The Antelope Valley soils profile consists of up to 4,000 feet of alluvial fill underlain by consolidated rocks. The bottom of the rock formations, known as the basement, includes the oldest formation and consists of quartz, monzonite, granite, gneiss, schist and other igneous and metamorphic rocks. The rocks overlying the basement primarily consist of shale, sandstone, conglomerate and siltstone.

The alluvial fills consist of fine to coarse-grained soil layers formed as a result of uplift and erosion of the surrounding mountains. Among the most distinct deposits of the valley fill are the fluvial lake deposits. Because of the fluvial deposits, the fill has extensive interbedding sequences of silt, clay, sand and gravel. The Antelope Valley area consists of fine-grained alluvium except for localized occurrences of very coarse-grained alluvium and metamorphic rock outcrops.

The alluvial fans in the Antelope Valley were naturally formed, therefore no well-defined channels exist. During heavy rainstorms, runoff from the San Gabriel Mountains creates streams (or washes). Once the streams reach the valley floor, the runoff percolates into the ground. During times of heavy precipitation when the ground is not able to accommodate any additional moisture, the runoff continues on as temporary streams or results in sheet flow that continue on to the dry lake beds at Edwards Air Force Base. If it were not for the existing flood control systems that include channels, storm drains, and retention basins in the area, flooding would be a much more common occurrence.[31]

Urban Development

The trend toward development has resulted in less open land and greater flood potential. The City of Lancaster and its surrounding areas are growing rapidly. New construction and in-fill leave little open land to absorb rainfall. This lack of open ground forces water to remain on the surface and rapidly accumulate. In-fill building is becoming a much more common practice in many areas. Developers tear down an older home which typically covers up to 40% of the lot size and replace it with a single massive home or multi-unit town homes or apartments which may cover 90-90% of the lot. The consequence is less surface area for water to seep into the ground causing excessive run-off

Another potential source of flooding is "asphalt creep". The street space between the curbs of a street is a part of the flood control system. Water leaves property and accumulates in the streets, where it is directed towards the underground portion of the flood control system. The carrying capacity of the street is determined by the width of the street and the height of the curbs along the street. Often, when streets are being resurfaced, a one to two inch layer of asphalt is laid down over the existing asphalt. This added layer of asphalt subtracts from the rated capacity of the street to carry water. Thus the original engineered capacity of the entire storm drain system is marginally reduced over time. Subsequent re-paving of the street will further reduce the engineered capacity even more.

[31] SOURCE: Master Environmental Assessment 2030

Flood Maps and Flood Insurance Studies

Flood maps and Flood Insurance Studies (FIS) are often used to identify flood-prone areas. The National Flood Insurance Program (NFIP) was established in 1968 as a means of providing low-cost flood insurance to the nation's flood-prone communities. The NFIP also reduces flood losses through regulations that focus on building codes and sound floodplain management. NFIP regulations (44 Code of Federal Regulations Chapter 1, Section 60, 3) require that all new construction in floodplains must be elevated at or above base flood level. Furthermore, the City of Lancaster has municipal codes that provide for the protection of residential and non-residential structures in Flood Hazard Areas.[32]

Flood Insurance Rate Maps (FIRM)

A Flood Insurance Rate Map (FIRM) is an official map produced by FEMA that delineates communities where NFIP regulations apply. FIRMs are used by insurance agents and mortgage lenders to determine if flood insurance is required and what insurance rates should apply.

FIRMs combine water surface elevations with topographic data to illustrate areas that would be inundated during a 100-year flood, floodway areas, and elevations marking the 100-year flood level. In some cases they also include base flood elevations (BFEs) and areas located within the 500-year floodplain. Flood Insurance Studies and FIRMs produced for the NFIP provide assessments of the probability of flooding at a given location. However, it is important to note that these studies and maps represent flood risks at a point in time and do not incorporate subsequent floodplain changes due to new development or other changes in the geography of the area.

Estimated Impact of an Event

If major flooding were to occur, the consequences to local populations, employment, and housing could be significant. The table below provides the estimated impact of a disaster using a 1% loss baseline.

Category	Lancaster Total	Impact of a 1% Loss
Population	156,633	1,570
Total City Employment	46,721	470
Total Housing Units	51,260	510
Median Home Value	214,800	More than $100M

Table 43: Estimated Population and Economic Loss of Floods

Based on a 1% loss projection, more than 1,566 people would be displaced or significantly impacted, 467 jobs lost (either temporarily or permanently), and more than 512 homes could be damaged or destroyed resulting in over $100 million in losses (see Community Profile section for population, housing, and economic data).

[32] City of Lancaster Municipal Code 17.40 General Regulations Article III Flood Damage Protection

FLOOD VULNERABILITIES

The major concern regarding the impact on communities from flood events is the loss of life and property. Critical infrastructure failures are also a threat and may require days or weeks to repair. Similarly, the impact to business and industry can result in immediate and long term economic loss.

Property Loss

Extensive damage can be caused by flooding and landslide damage related to soil saturation from flood events. The type of property damage caused by flood events depends on the location, depth, and velocity of flood waters. Flood waters can wash buildings off foundations and sweep personal property downstream.

Critical Infrastructure

Critical infrastructure can be damaged during floods, especially when high water levels combine with flood debris. Damage can occur to water and sewer systems, electrical supplies, pipelines, transportation networks, emergency facilities, communications networks, and other essential sites. Furthermore, flood waters and debris can overflow local storm water systems causing traffic disruptions and pose a hazard to the health of the local community.

Business and Industry

Flood events impact businesses by damaging property and interrupting access by employees, suppliers, and customers. Furthermore, a loss of utilities caused by flooding can prevent businesses and industry from functioning.

FLOOD MITIGATION STRATEGIES

National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a Federal program created by Congress to mitigate future flood losses nationwide through sound, community-enforced building and zoning ordinances and to provide access to affordable, federally backed flood insurance protection for property owners. The NFIP is designed to provide an insurance alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

The U.S. Congress established the NFIP on August 1, 1968, with the passage of the National Flood Insurance Act (NFIA) of 1968. The NFIP was broadened and modified with the passage of the Flood Disaster Protection Act of 1973 and other legislative measures. It was further modified by the National Flood Insurance Reform Act (NFIRA) of 1994 and the Flood Insurance Reform Act (FIRA) of 2004.

The NFIP is administered by the Federal Emergency Management Agency (FEMA), a component of the U.S. Department of Homeland Security (DHS). In support of the NFIP, FEMA identifies flood hazard areas throughout the United States and its territories. Most areas of flood hazard are commonly identified on Flood Insurance Rate Maps (FIRMs). A FIRM is an official map of a community on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community.

Areas not yet identified by a FIRM may be mapped on Flood Hazard Boundary Maps (FHBMs). Several areas of flood hazards are identified on these maps. One of these areas is the Special Flood Hazard Area (SFHA).

The SFHA is a high-risk area defined as any land that would be inundated by a flood having a 1-percent chance of occurring in a given year (also referred to as the base flood). The high-risk-area standard

constitutes a reasonable compromise between the need for building restrictions to minimize potential loss of life and property and the economic benefits to be derived from floodplain development. Development may take place within an SFHA, provided that development complies with local floodplain management ordinances, which must meet the minimum Federal requirements. Flood insurance is required for insurable structures within high-risk areas to protect Federal financial investments and assistance used for acquisition and/or construction purposes within communities participating in the NFIP.

Flood is defined in the Standard Flood Insurance Policy (SFIP), in part, as: A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties (at least one of which is your property) from overflow of inland or tidal waters, from unusual and rapid accumulation or runoff of surface waters from any source, or from mudflow.

The National Flood Insurance Act of 1968 allows FEMA to make flood insurance available only in those areas where the appropriate public body has adopted adequate floodplain management regulations for its flood-prone areas. Individual citizens cannot regulate building or establish construction priorities for communities. Without community oversight of building activities in the floodplain, the best efforts of some to reduce future flood losses could be undermined or nullified by the careless building of others. Unless the community as a whole is practicing adequate flood hazard mitigation, the potential for loss will not be reduced sufficiently to affect disaster relief costs. Insurance rates also would reflect the probable higher losses that would result without local floodplain management enforcement activities.

Participation in the NFIP is based on an agreement between local communities and the Federal Government that states that if a community will adopt and enforce a floodplain management ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses.

Lancaster participates in the National Flood Insurance Program (see FEMA Community Status Book Report: California table following) and the ongoing eligibility requirements are specified under 44CFR§59.21. Copies of current FIRMs are provided in Annex F: Flood Insurance Rate Maps.

CID	Community Name	County	Init FHBM Identified	Init FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
060672#	LANCASTER, CITY OF	LOS ANGELES COUNTY	09/11/79	01/06/82	09/26/08	09/26/2008	No

Table 44: FEMA Community Status Book Report: California

Source: http://www.fema.gov/cis/CA.html

Lancaster Mitigation Activities

Flooding is often a regional problem that crosses multiple jurisdictional boundaries. Flood risks are greatest and flood hazards most severe in winter when water bodies are usually full and soils saturated. Although flooding is primarily a natural process and is therefore difficult to prevent, urbanization, land use, and development decisions have a significant effect on the frequency and severity of floods.

There are a number of existing local and regional flood control facilities in Lancaster, including channels, storm drains, and retention basins. City streets are still generally used to convey water runoff, which tends to flow in sheets over paved surfaces and collect in low-lying areas. In many areas, City streets are designed to accommodate 10-year and / or 25-year storm flows within the right-of-way. Several areas in the City have recurring flood problems during rainy periods.[33] Flood mitigation activities include enforcement of building codes, zoning codes, and various planning strategies to address development in areas of known hazards and applying the appropriate safeguards. Furthermore, Lancaster has assessed its flood hazards and participates in the National Flood Insurance Program (NFIP).

The City of Lancaster is responsible for flood control within the city limits. Flood mitigation measures in the City of Lancaster include an extensive storm drain and flood control system.

FEMA has identified several Special Flood Hazard Areas (SFHA) within the City of Lancaster. Lancaster has chosen to adopt and enforce minimum floodplain management standards as dictated by FEMA. These standards are designed to prevent new development from increasing the flood threat and to protect new and existing buildings from anticipated flood events.

Lancaster completed two flood mitigation projects in 2012.

Avenue I & 20th Street East Drainage Basin

The intersection of Avenue I and 20th Street East and the neighborhood at the southwest corner of the intersection often flood during seasonal rain storms This project involved the construction and installation of less than 300 feet of storm drain pipe in Avenue I and in 20th Street East, as well as the construction and installation of a drainage basin at the northwest corner of Avenue I and 20th Street East on approximately 5 acres of vacant land. The storm drain pipe diverts local drainage from the neighborhood at the southwest corner and current master planned drainage facility intersection overflow to the drainage basin, where it is detained and is allowed to outlet north of the intersection into an earthen drainage swale west of 20th Street East.

Avenue M & 32nd Street West Drainage Basin

The intersection of Avenue L-8 and 35th Street West, the homes that front along Avenue L-8 immediately east of the intersection, and Valley View Elementary School, located at the southeast corner of the intersection, often flooded during seasonal rain storms. The project involved the construction and installation of approximately one quarter mile of storm drain pipe, upstream, on Avenue M, between 30th Street West and 32nd Street West, and the construction and installation of a drainage basin at the northeast corner of Avenue M and 32nd Street West on approximately 3.5 acres of vacant land. The storm drain pipe diverts concentrated upstream drainage from the northwest corner of Avenue M and 30th Street West to the drainage basin where it is detained and allowed to outlet slowly into the 32nd Street West alignment (not a developed road). Before leaving dedicated right-of-way, within 32nd Street West, the concentrated flow reverts to sheet flow at a significantly reduced rate.

[33] Master Environmental Assessment 2030

Development under the City's General Plan could place structures within the SFHA. Adherence to development policies as well as state and federal regulations reduces the flood threat of doing so. Lancaster has adopted. The following policies have been implemented in Lancaster to reduce the risk of floods.

Flood control

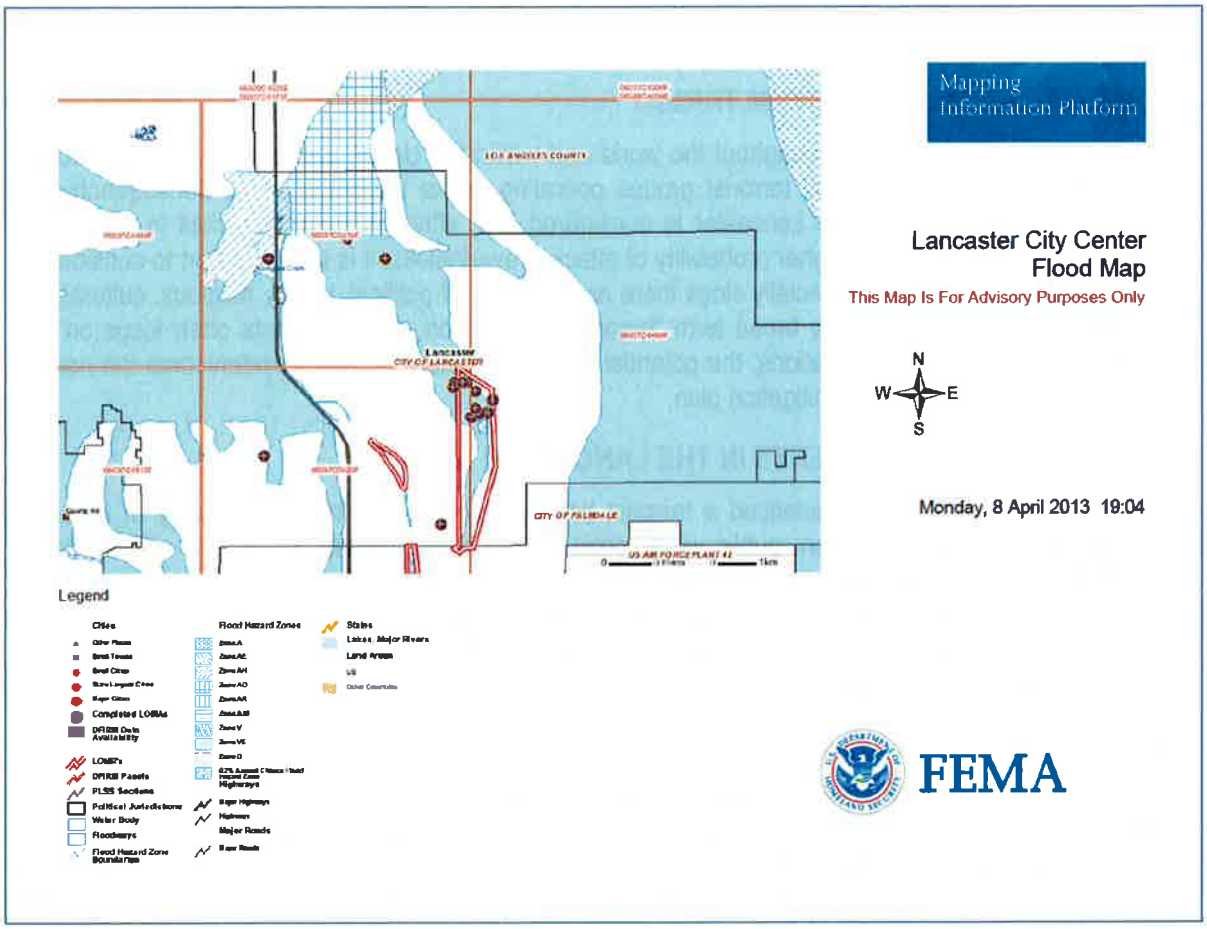
- Adoption of the County of Los Angeles Ordinance No. 1549 (flood control channel ordinance) that dictates maintenance, terms and conditions, bridges, dip policies, and penalties in regard to flood control channels in the City.

Construction Standards:

- Requires that a development permit shall be obtained before any construction or other development begins within any special flood hazard area (SFHA) identified by the Federal Insurance Administration (FIA) of the Federal Emergency Management Agency (FEMA) in the Flood Insurance Study (FIS) dated July 6, 1981, and the Flood Insurance Rate Map (FIRM), dated September 26, 2008.
- Construction standards for new structures built in special flood hazard areas that include standards for anchoring, construction materials and methods, elevation, and flood proofing, in order to reduce flood hazards.
- Standards for utilities, subdivisions, manufactured homes, recreational vehicles, and floodways in order to reduce flood hazards.
- Requires that street and storm drain flood control systems be designed to accommodate identified storm flows.

Public works

- Ensure that major creeks, channels, and basins are kept clear of obstruction, and are regularly maintained.



Map 25: Lancaster Flood Map Detail

SECTION 11. TERRORISM

THE NATURE OF THE TERRORISM THREAT

Terrorism is a continuing threat throughout the world and within the United States. There is no history of terrorist acts or organized political terrorist groups operating in the Lancaster area. Consequently, the probability of a terrorist attack in Lancaster is considered low, although there are sites in Lancaster's sphere of influence that have a higher probability of attack. Nevertheless, it is still important to consider the potential for terrorist activities especially since there are a variety of political, social, religious, cultural, and economic factors that underlie the broad term "terrorist". In addition, since terrorists often focus on high visibility targets and civilian populations, the potential consequences of an attack underscores the need to consider terrorism as part of this mitigation plan.

HISTORY OF TERRORIST EVENTS IN THE LANCASTER AREA

The Lancaster area has not experienced a terrorist act; however it does include a variety of important military installations, a state prison, public works projects, electrical facilities, as well as other potential targets that could attract the attention of terrorists. In addition, the consequences of a terrorist act in the Antelope Valley could impact the local area, e.g., disruption of State Route 14, water supply contamination, hazardous waste release. Furthermore, there is a possibility that extremist groups could operate from the area and use it as a base of operations for attacks elsewhere.

Specific Threats

Recent trends toward large scale incidents generating significant casualties make preparedness and the mechanisms for effective response essential. In addition to large scale attacks, a full range of assault styles must be considered. Contemporary terrorist activities may include a variety of methods including letter bombings, assassinations with small arms, bio-chemical attacks, car bombs, suicide attacks, and building bombings. Related threats include bomb threats, which disrupt the normal operations of business.

Venues likely to suffer the impact of terrorism include facilities that store, manufacture or transport hazardous materials, highways and freeways, telecommunications facilities, federal, state, county and city offices, shopping malls, schools, churches and religious centers, research facilities, electrical facilities, water and wastewater facilities, dams, bridges and overpasses.

Motivation

Conventional political motivations for terrorism continue, however issues involving organized crime, narcotics trafficking, ecological / animal rights, abortion / right-to-life groups, and perceived economic injustice can also involve terrorist groups or lone individual "Lone Wolf" planning and operations. Another aspect of increased motivation is the growing use of the Internet for terrorist recruitment, training and communications. Street gangs and skinhead gangs involved in criminal activities are often labeled by law enforcement as "terrorist" organizations, and there is evidence of terrorist recruitment and radicalization of prisoners in State prison system. Lancaster is home to various street gangs and the Nazi Low Riders, (NIR), a skinhead organization.

CAUSES AND CHARACTERISTICS OF TERRORISM

Defining Terrorism

There are multiple definitions of terrorism in common use. The United States Code defines terrorism as premeditated, politically motivated violence perpetrated against noncombatant targets by sub-national groups or clandestine agents usually intended to influence an audience. The United States Department of Justice defines terrorism as a violent act dangerous to human life, in violation of the criminal laws of the United States or any segment to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives. The FBI defines terrorism as the unlawful use of force or violence against persons or property to intimidate or coerce government, the civilian population, or any segment thereof, in furtherance of political or social objectives.

All three of these definitions share important components:

1. Criminal action
2. The action must include violence against civilians
3. The action is carried out in order to further political or social objectives
4. The action is intended to coerce a government or civilian population.

TERRORISM HAZARD IDENTIFICATION

The categories below serve to differentiate terrorist organizations or individuals according to common goals and motivation. It should be noted that these categories of terrorism and terrorist groups are constantly changing. In addition, the "Lone Wolf" terrorism (individuals not connected to a terror cell or larger group, but who commit acts of public violence, often on behalf of a personal grievance) has added another dimension of concern.

Category	Description
Separatist	Separatist groups are those with the goal of separation from existing entities through independence, political autonomy, or religious freedom or domination. The ideologies separatists subscribe to include social justice or equity, anti-imperialism, as well as the resistance to conquest or occupation by a foreign power.
Ethnocentric	Groups of this persuasion see race as the defining characteristic of a society, and therefore a basis of cohesion. There is usually the attitude that a particular group is superior because of their inherent racial characteristics.
Nationalistic	The loyalty and devotion to a nation, and the national consciousness derived from placing one nation's culture and interests above those of other nations or groups. This can find expression in the creation of a new nation or in splitting away part of an existing state to join with another that shares the perceived "national" identity.
Revolutionary	Dedicated to the overthrow of an established order and replacing it with a new political or social structure. Although often associated with communist political ideologies, this is not always the case, and other political movements can advocate revolutionary methods to achieve their goals
Political	Political ideologies are concerned with the structure and organization of the forms of government and communities. While observers outside terrorist organizations may stress differences in political ideology, the activities of groups that are diametrically opposed on the political spectrum are similar to each other in practice.

Category	Description
Religious	Religiously inspired terrorism is on the rise. While Islamic terrorists and organizations have been the most publicized, all of the major world religions have extremists that have taken up violence to further their perceived religious goals. Religiously motivated terrorists see their objectives as holy writ, and therefore infallible and non-negotiable
Social	Often particular social policies or issues will be so contentious that they will incite extremist behavior and terrorism. Frequently this is referred to as "single issue" or "special interest" terrorism. Some issues that have produced terrorist activities in the United States and other countries include animal rights, abortion, ecology/environment, and minority rights.
Domestic	These terrorists are "home-grown" and operate within and against their home country. They are frequently tied to extreme social or political factions within a particular society, and focus their efforts specifically on their nation's socio-political arena.
International or Transnational	Often describing the support and operational reach of a group, these terms are often loosely defined, and can be applied to widely different capabilities. *International groups* typically operate in multiple countries, but retain a geographic focus for their activities. Hezbollah has cells worldwide, and has conducted operations in multiple countries, but is primarily concerned with events in Lebanon and Israel. *Transnational groups* operate internationally, but are not tied to a particular country, or even region. Al Qaeda is transnational; being made up of many nationalities, having been based out of multiple countries simultaneously, and conducting operations throughout the world. Their objectives affect dozens of countries with differing political systems, religions, ethnic compositions, and national interests

Table 45: Terrorist Group Categories

Source: http://www.terrorism-research.com/groups/categories.php

INTERNATIONAL TERRORIST GROUPS

International terrorist groups can operate anywhere and act without regard to national borders. U.S. Code Title 18 Part I, Chapter 113b § 2331 defines international terrorism as activities that:

(A) involve violent acts or acts dangerous to human life that are a violation of the criminal laws of the United States or of any State, or that would be a criminal violation if committed within the jurisdiction of the United States or of any State;

(B) appear to be intended:

(i) to intimidate or coerce a civilian population;

(ii) to influence the policy of a government by intimidation or coercion; or

(iii) to affect the conduct of a government by mass destruction, assassination, or kidnapping; and

(C) occur primarily outside the territorial jurisdiction of the United States, or transcend national boundaries in terms of the means by which they are accomplished, the persons they appear intended to intimidate or coerce, or the locale in which their perpetrators operate or seek asylum

The U.S. State Department issues and maintains the Foreign Terrorist Organization (FTO) List which documents current threat groups. The current FTO is listed below:

1. Abu Nidal Organization (ANO)	26. Lashkar-e Tayyiba (LeT)
2. Abu Sayyaf Group (ASG)	27. Al-Aqsa Martyrs Brigade (AAMB)
3. Aum Shinrikyo (AUM)	28. Asbat al-Ansar (AAA)
4. Basque Fatherland and Liberty (ETA)	29. al-Qaida in the Islamic Maghreb (AQIM)
5. Gama'a al-Islamiyya (Islamic Group) (IG)	30. Communist Party of the Philippines/New People's Army (CPP/NPA)
6. HAMAS	31. Jemaah Islamiya (JI)
7. Harakat ul-Mujahidin (HUM)	32. Lashkar i Jhangvi (LJ)
8. Hizballah	33. Ansar al-Islam (AAI)
9. Kahane Chai (Kach)	34. Continuity Irish Republican Army (CIRA)
10. Kurdistan Workers Party (PKK) (Kongra-Gel)	35. Libyan Islamic Fighting Group (LIFG)
11. Liberation Tigers of Tamil Eelam (LTTE)	36. al-Qaida in Iraq (AQI)
12. National Liberation Army (ELN)	37. Islamic Jihad Union (IJU)
13. Palestine Liberation Front (PLF)	38. Moroccan Islamic Combatant Group (GICM)
14. Palestinian Islamic Jihad (PIJ)	39. Harakat ul-Jihad-i-Islami/Bangladesh (HUJI-B)
15. Popular Front for the Liberation of Palestine (PFLF)	40. al-Shabaab
16. PFLP-General Command (PFLP-GC)	41. Revolutionary Struggle (RS)
17. Revolutionary Armed Forces of Colombia (FARC)	42. Kata'ib Hizballah (KH)
18. Revolutionary Organization 17 November (17N)	43. al-Qa'ida in the Arabian Peninsula (AQAP)
19. Revolutionary People's Liberation Party/Front (DHKP/C)	44. Harakat ul-Jihad-i-Islami (HUJI)
20. Shining Path (SL)	45. Tehrik-e Taliban Pakistan (TTP)
21. al-Qa'ida (AQ)	46. Jundallah
22. Islamic Movement of Uzbekistan (IMU)	47. Army of Islam (AOI)
23. Real Irish Republican Army (RIRA)	48. Indian Mujahedeen (IM)
24. United Self Defense Forces of Colombia (AUC)	49. Jemaah Anshorut Tauhid (JAT)
25. Jaish-e-Mohammed (JEM)	50. Abdallah Azzam Brigades (AAB)
	51. Haqqani Network (HQN)

Table 46: Foreign Terrorist Organizations

Source: http://www.state.gov/j/ct/rls/other/des/123085.htm

International terrorist groups often have state sponsors who view terrorism as a tool of foreign policy. State sponsors of terrorism engage in anti-Western terrorist activities by funding, organizing, networking, and providing other support to many extremists.

Country	Designation Date
Cuba	March 1, 1982
Iran	January 19, 1984
Sudan	August 12, 1993
Syria	December 29, 1979

Table 47: State Sponsors of Terrorism

Source: U.S. State Department

Domestic Terrorism in the United States

Domestic terrorism involves attacks within the United States perpetrated by homegrown groups or individuals. U.S. Code Title 18 Part I, Chapter 113b § 2331 defines domestic terrorism as activities that:

(A) involve acts dangerous to human life that are a violation of the criminal laws of the United States or of any State;

(B) appear to be intended—

i. to intimidate or coerce a civilian population;

ii. to influence the policy of a government by intimidation or coercion; or

iii. to affect the conduct of a government by mass destruction, assassination, or kidnapping; and

(C) occur primarily within the territorial jurisdiction of the United States.

Domestic Terrorism Examples

Year	Event	Description
April 19, 1995	Oklahoma City Bombing	Truck bomb resulting in 168 people killed
July 27, 1996	Centennial Olympic Park Bombing	1996 Summer Olympic bombing in Atlanta, GA resulting in 2 deaths and 111 injuries
September 18, 2001 (start)	U.S. Anthrax Attacks	A series of letters containing anthrax spores lasting several weeks resulting in 5 deaths and 17 infections
June 10, 2009	U.S. Holocaust Memorial Museum Shootings	Shooting attack of a believed neo-Nazi resulting in 1 death
November 5, 2009	Fort Hood Shootings	Shooting attack of a believed Islamic extremist resulting in 13 deaths and 30 wounded
February 18, 2010	Austin, Texas IRS Airplane Attack	Aircraft attack on an IRS office building by a believed anti-government / anti-corporate business extremist resulting in 1 death
January 8, 2011	Tucson, Arizona Assassination Attempt	Attempted assassination of United States Congresswoman Gabrielle Giffords at a constituent event by a lone wolf shooter. 6 bystanders were killed and 13 more wounded.
April 15, 2013	Boston Marathon Bombings	Two explosive devices were detonated near the finish line for the Boston Marathon resulting in 3 deaths and nearly 200 injuries.

Table 48: Domestic Terrorism Examples

Post 9/11

After September 11, 2001, the United States has increased its security policies and procedures at the national and local level. Since then, Federal Grants for counter-terrorism have increased to approximately seventy-five billion dollars per year from federal and state governments. These grants have provided local counties and cities funds to strengthen their security procedures, implement needed mitigation actions, or provide first responders with specialized training and equipment.[34]

Weapons of Mass Destruction (WMD)

Weapons of Mass Destruction (WMD) are a specific type of threat that must be considered by any community. For the Lancaster area, this may involve the activation of a WMD within the area or a large-scale attack in a nearby location. Consequently, ongoing awareness and training of local emergency responders, government, and healthcare providers is important to ensure that such events are quickly identified and managed.

[34] http://articles.latimes.com/2011/aug/28/nation/la-na-911-homeland-money-20110828

Five Types of WMD That Could be Used by Terrorists

WMD can be segregated into five categories using the acronym B-NICE: Biological, Nuclear, Incendiary, Chemical and Explosive.

1. Four common types of biological agents are bacteria, viruses, rickettsia, and toxins
2. Nuclear terrorism can occur in two different ways
   a. Detonation or threat of detonation of a nuclear bomb
   b. Dispersion of radiological material using a conventional explosive or other dispersal device
3. An incendiary device is any mechanical, electrical, or chemical device used to intentionally initiate combustion and start a fire
4. Chemical agents can be classified into five categories: nerve agents, blister agents, blood agents, choking agents, and irritating agents
5. Explosive devices are the most common WMD (70% of all terrorist attacks)

While explosives are the most common method, any of the WMDs listed can be deployed at any time. Consequently threat awareness and vigilance is critical to prevent future attacks. In one well-known case a plot to detonate a car bomb at the Los Angeles International Airport was uncovered by an alert U.S. Customers inspector. On December 14, 1999, Ahmed Ressam (aka the Millennium Bomber) was arrested after a U.S. Customs inspector had his vehicle searched after he had successfully boarded a ferry from Canada to Port Angeles, Washington. The inspector is credited for noticing Ressam's behavior as unusual and ordering a secondary customs search and a check of his passport. As a result, chemicals and explosive timing devices were found in the trunk of his vehicle and his passport was identified as counterfeit. Ressam was subsequently jailed and convicted on multiple counts.

Estimated Impact of an Event

If a terrorist event or multiple events were to occur, the consequences to local populations and employment may be significant depending on the site or sites targeted. The table below provides the estimated impact of a disaster using a 0.1% loss baseline.

Category	City of Lancaster	Impact if a 0.1% Loss Occurs
Population	156,633	157
Total City Employment	62,087	62

Table 49: Estimated Population and Economic Loss of Terrorist Events

Based on a 0.1% loss projection, more than 157 people could be impacted (either directly or indirectly) and 62 jobs lost (either temporarily or permanently). Since a terrorist target will likely focus on public meeting venues, commercial structures, or transportation routes, the projected impact is focused on population and employment (see Community Profile section for population and economic data).

TERRORISM VULNERABILITIES

The probability that in individual or location will be targeted by a terrorist is a function of several factors including the attractiveness of target, the potential for success of the event, and the potential for avoiding identification and capture. Categories of potential targets include:

The Los Angeles Sherriff's Department has developed a broad threat assessment of potential terrorist targets, threat elements, and local response capabilities. The assessment identified the following potential terrorist targets in Los Angeles County, specifically Lancaster:

General Targets

- Facilities that store, manufacture or transport hazardous materials
- Highways and freeways
- Telecommunications facilities
- Federal, state, county and city offices
- Shopping malls
- Schools, churches, and religious centers (e.g., mega churches)
- Research facilities
- Electrical facilities
- Water and wastewater facilities, dams
- Bridges and overpasses

Additional potential targets include:

- Military sites and recruiting stations
- Mass transit facilities
- Public buildings and assembly areas
- Controversial businesses and defense industry companies
- Clinics and hospitals
- Places where large groups of people congregate (e.g., the BLVD)
- Law enforcement offices
- Stadiums
- Correctional facilities (out of planning control for this document)
- California Aqueduct (out of the planning area for this document, but has an impact on the Lancaster area)

Impact on the Community

Following a terrorist attack, panic, intense media interest, and the convergence of injured and possibly contaminated persons at local hospitals and urgent care centers can be expected. While local, state, and federal agencies will be mobilized to respond to a terrorist event, it will take time for assistance to arrive. Many specialized resources (such as military response teams) may need to be airlifted to the area requiring local resources to manage the initial phases of an emergency – especially in the case of a mass casualty event. The initial response phase may range from hours to a day or more. Consequently, a rapid assessment of the scope of the incident and activation of local emergency response resources will be critical to manage the situation.

Key issues include:

- Activation of local and regional Emergency Operations Centers (EOCs)
- Designation of casualty collection points and field triage / treatment sites
- Transportation (for personnel, equipment, and supplies to the impact location as well as casualty and public evacuation)
- Isolation (if needed to prevent further contamination)
- Use of personal protection equipment (PPEs)
- Communications (including internal communication, media response, and public bulletins)
- Decontamination points (if required)

Efforts to assess the situation and provide clear, easy to follow emergency management instructions to the public are essential.

The following table describes examples of the considerations expected during the initial stages of a terrorist event.

Condition	Description
Down Wind Evacuation	A large release may result in a lethal plume that may travel for miles. Emergency agencies in neighboring jurisdictions must be advised of the release and included in incident management activities.
Traffic Restrictions and Congestion	Roads, freeways and transit systems may need to be closed to contain the incident. Regardless of the need, panic may cause some persons to self-evacuate, traffic congestion and gridlock conditions and confusion may result. These factors will slow response by emergency agencies and specialized resources to affected areas. Detailed traffic management plans will need to be developed.
Self-Transport to Medical Providers	Injured and contaminated victims may leave the immediate site of the incident and then go to hospitals. In most cases, the care provider will not be equipped to decontaminate victims or treat terrorist related casualties. This can extend the scope of the incident, potentially lead to secondary contamination and strain local medical and emergency response resources Hospitals impacted by an influx of casualties who have not been decontaminated will have to establish decontamination area and may not be able to continue providing treatment.
Panic Victims	In the immediate aftermath of a terrorist event, responders should anticipate a number of people who think they have been exposed to or contaminated by the agent(s) even though there has been no actual exposure. Provisions must be made to manage these persons and provide supportive care as necessary.

Condition	Description
Scarce Supplies	Equipment and supplies needed to manage the consequences of a terrorist event will be scarce. Sufficient pharmacological supplies may not be available. Antidotes and other drugs used to treat WMD victims are usually not stockpiled in sufficient quantities for use in a mass casualty incident. Efforts to secure additional supplies will be an immediate need. Personnel involved in managing potential terrorist event must be aware of these concerns. Measures to address these issues must be incorporated into the Incident Action Plan and should be considered and assessed throughout the management of the WMD incident.

Table 50: Terrorist Event Considerations

LAW ENFORCEMENT ROLE IN COMBATTING TERRORISM

The following are steps and efforts that various law enforcement agencies are taking to combat terrorist activities:

1. On-going attention to known potential targets within the service area
2. Identification of new potential targets within the service area
3. Identification of suspicious persons, places, or things which may be related to potential terrorist activity
4. Recognition of potential surveillance and intelligence-gathering activities
5. Recognition of potential terrorist involvement in routine crimes (ID theft, shoplifting, credit card fraud, forgeries, etc.)
6. Organizing and informing community resources regarding anti- terrorism
7. Ability to respond safely and effectively to a terrorist incident or a terrorist use of a WMD
8. Identify the terrorist group
9. Monitor weapons / materials
10. Threat / vulnerability assessment
11. Counter surveillance
12. Target hardening
13. Awareness of suspicious behavior as terrorists egress from target

REGIONAL RESPONSE, MITIGATION, AND PREVENTION ACTIVITIES

The Los Angeles County Sheriff's Department is the lead law enforcement agency for the region in the event of a terrorist event. Individual cities will be responsible for consequence management. The following are practices or projects that are currently active in the Region.

Emergency Response Actions

The Los Angeles County Sheriff's Department will act as the lead agency for crisis management, perimeter security, access control, traffic/crowd control, evacuations, notifications, and safeguarding evidence. Crisis management activities may include:

- Investigation, tracking, and maintaining scene integrity.
- Coordinating coroner issues with the Los Angeles County Coroner's Department.
- Use of Special Weapons and Tactics (SWAT) or Rapid Deployment Force (RDF) units
- Assisting with damage assessment and fatalities management

The Los Angeles County Fire Department is the lead agency for fire response, hazardous materials events, and medical/rescue operations. The County Fire Department provides support as necessary to the Sheriff for Crisis Management activities. Existing procedures, such as the Fire Department's Hazardous Materials Response procedures and NBC Response Protocols are used as necessary. The Fire Department assists with:

- Fire and rescue operations
- Emergency medical services coordination
- Perimeter and access control
- Evacuation operations
- Notifications
- Safeguarding evidence
- Damage assessment
- Fatalities management
- Addressing environmental needs
- Obtaining personnel with radiological training
- Insuring decontamination procedures (radiological and chemical) are in place
- Insuring biological agents are contained

Mitigation and Prevention

The following examples provide a summary of mitigation and prevention activities that support the Lancaster Area.

Canine Unit

The Los Angeles County Sheriff maintains five (5) specially training canines to detect explosives as part of the Arson/Explosive Detail and one chemical/biological threat K-9 as part of the Hazardous Materials Detail.

Equipment and JRIC

In September 2012, Los Angeles County received a $61 million grant from the Department of Homeland Security. The grant is intended to allow the greater Los Angeles region to increase its capacity to prevent, prepare for, respond to, and recover from acts of terrorism and natural disasters by improving interagency communication and emergency response capability.[35] In past years the Los Angeles County Sheriff's Department has used previous grants to pay for equipment, such as an aerial video downlink technology, mobile surveillance cameras, tactical robots, radiation detection devices and bomb suits.

The grant funds many law enforcement, training, communications, and equipment programs, as well as the Joint Regional Intelligence Center (JRIC). The JRIC is staffed by federal, state and local intelligence analysts and investigators responsible for gathering and analyzing intelligence in the 44,000-square-mile territory surrounding Los Angeles. The JRIC opened in 2006 and is the largest of approximately 40 facilities nationwide used to coordinate data from 200 agencies in seven counties.

Terrorism Early Warning Group

In 1996, the Los Angeles County Sheriff Department established the Terrorism Early Warning (TEW) Group.[36] The purpose of the TEW Group is to act as an interdisciplinary group in which local, state, and federal agencies work together to share information and combine resources, and to enhance the ability to identify and respond to acts and threats of terrorism. This interagency approach allows for early response and enforcement by clearing the communication channels between agencies and creating an environment that facilitates information and intelligence sharing. The result is an effective network that has the ability to identify information which might indicate impending terrorist activity. This group is a significant resource for identifying and assessing potential threats, making appropriate notifications and recommendations, and aiding in mission planning and the efficient allocation of resources.

[35] http://mayor.lacity.org/PressRoom/LACITYP_023350
[36] http://file.lacounty.gov/lasd/cms1_144939.pdf

TERRORISM MITIGATION STRATEGIES

The City of Lancaster publishes emergency preparedness information, downloads, and videos on its Web site, including the LA County Emergency Survival Guide that includes a section on terrorism. In addition, the city has an active CERT program with volunteers trained to assist in disasters. Lancaster has implemented the CodeRED Notification System that allows the City to telephone all areas or targeted areas in case of an emergency situation. Lancaster's Emergency Operations Plan addresses emergency response actions the Emergency Operations Center will take in the event of a terrorist event.

SECTION 12. ANNEX A: RESOURCES

The following resources were used in the development and update of the Lancaster Hazard Mitigation Plan. In addition to the resources listed, information sources included city documents such as General Plans, Master Plans, Comprehensive Financial Reports, studies, and reports.

Name	Category	Web Site Address	Description
Antelope Valley CERT	Local and Regional Law Enforcement and Government	http://antelopevalleycert.com/	CERT information
Antelope Valley Search and Rescue	Local and Regional Law Enforcement	http://www.avsearchandrescue.com/	Search and rescue volunteer information
Army Corps of Engineers	Federal Government	www.usace.army.mil	Flood and dam information
Association of State Floodplain Managers	Research, Educational, and Standards Organizations	www.floods.org	Flood mitigation and planning information
Building Seismic Safety Council (BSSC)	Research, Educational, and Standards Organizations	www.bssconline.org	Earthquake and seismic code information
California Department of Conservation: Southern California Regional Office	State Government	www.consrv.ca.gov	Earthquake and flood information
California Department of Corrections & Rehabilitation	State Government	www.cdcr.ca.gov	State Prison Information
California Department of Transportation (Caltrans)	State Government	www.dot.ca.gov	Transportation and traffic information
California Department of Water Resources (DWR)	State Government	www.water.ca.gov	Flood information
California Division of Forestry & Fire Protection	State Government	www.fire.ca.gov	Fire codes, landslide, wildfire mitigation and programs
California Division of Mines and Geology (DMG)	State Government	www.consrv.ca.gov	Earthquake information
California Geological Survey, Department of Conservation	State Government	www.consrv.ca.gov	Earthquake information
California Office of Emergency Servcies (Cal OES)	State Government	www.calema.ca.gov	State hazard mitigation guidance
California Resources Agency	State Government	www.resources.ca.gov	Earthquake information
City of Lancaster	Local and Regional Government	www.cityoflancaster.org	General Plan and Comprehensive Annual Financial Report (CAFR)
Decline of the Californios: A Social History of the Spanish-Speaking Californias, 1846-1890	Publications		Author: Leonard Pitt

Name	Category	Web Site Address	Description
Department of Homeland Security	Federal Government	www.dhs.gov	Terrorism response, preparedness, and threats
Federal Bureau of Investigation	Federal Law Enforcement	www.fbi.gov	Terrorism response, preparedness, and threats
Federal Communications Division	Federal Government	http://transition.fcc.gov/	Energy interdependence information
Federal Emergency Management Agency, Mitigation Agency	Federal Government	www.fema.gov/about/divisions/mitigation.shtm	Federal mitigation plan requirements and information Flood information and maps
Firewise	Research, Educational, and Standards Organizations	www.firewise.org	Fire / wildfire mitigation and programs
Fresno Bee	News Organization	www.fresnobee.com/2011/07/30/2482785/12-2nteractive-map-a-history-of-wildfires.html	History of Wildfires in California
International Code Council, Los Angele s Basin Chapter	Research, Educational, and Standards Organizations	www.icclabc.org	Building Code information
Los Angeles County Fire Department	Local and Regional Government	www.lacofd.org	Fire codes and wildfire mitigation and programs
Los Angeles County Office of Emergency Services	Local and Regional Government	www.lacoa.org	Disaster and mitigation information. Disaster Management Areas.
Los Angeles County Office of the Assessor	Local and Regional Government	www.assessor.lacounty.gov	Property tax information
Los Angeles County Public Works Department	Local and Regional Government	www.ladpw.org	Earthquake and debris removal information
Los Angeles Department of Public works	Local and Regional Government	http://dpw.lacounty.gov/	Flood and water resource information
Los Angeles Search and Rescue	Local and Regional Law Enforcement	http://www.lacosar.org/	Search and rescue volunteer information
Los Angeles Sheriff's Department	Local Law Enforcement	www.sheriff.lacounty.gov	Terrorism response, preparedness, and threats Detention Center information
Los Angeles Times	News Organization	www.documentcloud.org/documents/32248-1971earthquake-2.html	San Fernando Earthquake information
National Center for Biotechnology Information	Federal Government	http://www.ncbi.nlm.nih.gov/	Health information
National Flood Insurance Program (NFIP)	Federal Government	www.fema.gov/nfip	Flood information
National Interagency Fire Center (NIFC)	Federal Government	www.nifc.gov	Fire codes and wildfire mitigation and programs

Name	Category	Web Site Address	Description
National Resources Conservation Service (NRCS), US Department of Agriculture	Federal Government	www.nrcs.gov	Flood mitigation, landslide, and watershed projects
National Transportation Safety Board (NTSB)	Federal Government	www.ntsb.gov	San Bruno Pipeline Explosion Information
National Weather Service	Federal Government	www.noaa.gov	Weather statistics
Office of the State Fire Marshal (OSFM)	State Government	www.osfm.fire.ca.gov	Fire codes and wildfire mitigation and programs
Pipelines and Hazards Materials Safety Division	Federal Government	www.phmsa.dot.gov	Pipeline Data
Southern California Area Governments (SCAG)	Local and Regional Government	www.scag.ca.gov	Principal Property Tax Payers and Employers
Southern California Earthquake Center (SCEC)	Research, Educational, and Standards Organizations	www.scec.org	Earthquake and fault information
Terrorism Research	Research, Educational, and Standards Organizations	www.terrorism-research.com	Terrorism Information – Terrorism Categories
U.S. Census Bureau	Federal Government	www.census.gov	Demographic information
U.S. Department of the Interior, Bureau of Reclamation	Federal Government	www.usbr.gov	Flood information
U.S. Fire Administration (USFA) of the Federal Emergency Management Agency	Federal Government	www.usfa.fema.gov	Fire codes and wildfire mitigation and programs
U.S. Geological Survey	Federal Government	www.usgs.gov	Earthquake information
U.S. State Department	Federal Government	www.state.gov	Terrorism Information
USGS National Landslide Information Center	Federal Government	www.landslides.usgs/nlic	Landslide information
USGS Water Resources	Federal Government	www.water.usgs.gov	Flood information
Western Regional Climate Center	Federal Government	http://www.wrcc.dri.edu/	Weather statistics
Western States Seismic Policy Council (WSSPC)	Research, Educational, and Standards Organizations	www.wsspc.org	Earthquake information

SECTION 13. ANNEX B: LOCAL HAZARD MITIGATION REVIEW CROSSWALK

INSTRUCTIONS FOR USING THE PLAN REVIEW CROSSWALK FOR REVIEW OF LOCAL MITIGATION PLANS

Attached is a Plan Review Crosswalk based on the ***Local Multi-Hazard Mitigation Planning Guidance***, published by FEMA in July, 2008. This Plan Review Crosswalk is consistent with the *Robert T. Stafford Disaster Relief and Emergency Assistance Act* (Stafford Act), as amended by Section 322 of the *Disaster Mitigation Act of 2000* (P.L. 106-390), the *National Flood Insurance Act of 1968,* as amended by the *National Flood Insurance Reform Act of 2004* (P.L. 108-264) and *44 Code of Federal Regulations (CFR) Part 201 – Mitigation Planning,* inclusive of all amendments through October 31, 2007.

SCORING SYSTEM

N – Needs Improvement: The plan does not meet the minimum for the requirement. Reviewer's comments must be provided.

S – Satisfactory: The plan meets the minimum for the requirement. Reviewer's comments are encouraged, but not required.

Each requirement includes separate elements. All elements of a requirement must be rated "Satisfactory" in order for the requirement to be fulfilled and receive a summary score of "Satisfactory." A "Needs Improvement" score on elements shaded in gray (recommended but not required) will not preclude the plan from passing.

When reviewing single jurisdiction plans, reviewers may want to put an N/A in the boxes for multi-jurisdictional plan requirements. When reviewing multi-jurisdictional plans, however, all elements apply. States that have additional requirements can add them in the appropriate sections of the *Local Multi-Hazard Mitigation Planning Guidance* or create a new section and modify this Plan Review Crosswalk to record the score for those requirements. Optional matrices for assisting in the review of sections on profiling hazards, assessing vulnerability, and identifying and analyzing mitigation actions are found at the end of the Plan Review Crosswalk.

FINAL CROSSWALK TO BE INSERTED FOR SUBMISSION TO CAL-OES AND FEMA

The example below illustrates how to fill in the Plan Review Crosswalk.:

Example

Assessing Vulnerability: Overview

Requirement §201.6(c)(2)(ii): *[The risk assessment **shall** include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description **shall** include an overall summary of each hazard and its impact on the community.*

Element	Location in the **Plan** (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the **new or updated** plan include an **overall summary** description of the jurisdiction's **vulnerability** to each hazard?	Risk Assessment p3-1 to 3-33 Table 24: Threats and Major Vulnerabilities 3-27			
B. Does the **new or updated** plan address the **impact** of each hazard on the jurisdiction?	RISK ASSESSMENT 3-1 to 3-27 Table 20: Estimated Dollar Exposure per Day 3-23 Table 23: Property Loss Estimates 3-26 Table 25: Potential Consequences by Threat 3-31 Table 28: Estimated Population and Economic Loss of a Windstorm 6-3 Table 31: Estimated Population and Economic Loss of an Earthquake 7-13 Table 34: Estimated Population and Economic Loss due to an Energy Outage 8-7 Table 38: Estimated Population and Economic Loss of a Wildfire 9-3 Table 43: Estimated Population and Economic Loss of Floods 10-8 Table 49: Estimated Population and Economic Loss of Terrorist Events 11-6			
		SUMMARY SCORE		

LOCAL MITIGATION PLAN REVIEW SUMMARY

The plan cannot be approved if the plan has not been formally adopted. Each requirement includes separate elements. All elements of the requirement must be rated "Satisfactory" in order for the requirement to be fulfilled and receive a score of "Satisfactory." Elements of each requirement are listed on the following pages of the Plan Review Crosswalk. A "Needs Improvement" score on elements shaded in gray (recommended but not required) will not preclude the plan from passing. Reviewer's comments must be provided for requirements receiving a **"Needs Improvement"** score.

Prerequisite(s) (Check Applicable Box)	**NOT MET**	**MET**
1. Adoption by the Local Governing Body: §201.6(c)(5) OR		
2. Multi-Jurisdictional Plan Adoption: §201.6(c)(5) **AND**		
3. Multi-Jurisdictional Planning Participation: §201.6(a)(3)		

Planning Process	**N**	**S**
4. Documentation of the Planning Process: §201.6(b) and §201.6(c)(1)		

Risk Assessment	**N**	**S**
5. Identifying Hazards: §201.6(c)(2)(i)		
6. Profiling Hazards: §201.6(c)(2)(i)		
7. Assessing Vulnerability: Overview: §201.6(c)(2)(ii)		
8. Assessing Vulnerability: Addressing Repetitive Loss Properties. §201.6(c)(2)(ii)		
9. Assessing Vulnerability: Identifying Structures, Infrastructure, and Critical Facilities: §201.6(c)(2)(ii)(B)		
10. Assessing Vulnerability: Estimating Potential Losses: §201.6(c)(2)(ii)(B)		
11. Assessing Vulnerability: Analyzing Development Trends: §201.6(c)(2)(ii)(C)		
12. Multi-Jurisdictional Risk Assessment: §201.6(c)(2)(iii)		

*States that have additional requirements can add them in the appropriate sections of the *Local Multi-Hazard Mitigation Planning Guidance* or create a new section and modify this Plan Review Crosswalk to record the score for those requirements.

SCORING SYSTEM

Please check one of the following for each requirement.

N – Needs Improvement: The plan does not meet the minimum for the requirement. Reviewer's comments must be provided.

S – Satisfactory: The plan meets the minimum for the requirement. Reviewer's comments are encouraged, but not required.

Mitigation Strategy	**N**	**S**
13. Local Hazard Mitigation Goals: §201.6(c)(3)(i)		
14. Identification and Analysis of Mitigation Actions: §201.6(c)(3)(ii)		
15. Identification and Analysis of Mitigation Actions: NFIP Compliance. §201.6(c)(3)(ii)		
16. Implementation of Mitigation Actions: §201.6(c)(3)(iii)		
17. Multi-Jurisdictional Mitigation Actions: §201.6(c)(3)(iv)		

Plan Maintenance Process	**N**	**S**
18. Monitoring, Evaluating, and Updating the Plan: §201.6(c)(4)(ii)		
19. Incorporation into Existing Planning Mechanisms: §201.6(c)(4)(ii)		
20. Continued Public Involvement: §201.6(c)(4)(iii)		

State		
Multi-jurisdictional: Letter of Commitment for each jurisdiction		
Summary of mitigation projects		
Summary of hazards		

LOCAL MITIGATION PLAN APPROVAL STATUS

PLAN NOT APPROVED	
See Reviewer's Comments	
PLAN APPROVED	

Local Mitigation Plan Review and Approval Status

Jurisdiction: City of Lancaster	**Title of Plan:** City of Lancaster Hazard Mitigation Plan	**Date of Plan:** August 4, 2013
Local Point of Contact: Kelvin G. Tainatongo		**Address:** City of Lancaster 44933 Fern Avenue Lancaster, CA 93534
Title: Assistant to the City Manager		
Agency: City of Lancaster		
Phone Number: 661.723.6008		**E-Mail:** ktainatongo@cityoflancasterca.org

State Reviewer:	**Title:**	**Date:**

FEMA Reviewer:	**Title:**	**Date:**
Date Received in FEMA Region [Insert #]		
Plan Not Approved		
Plan Approved		
Date Approved		

Jurisdiction:	dFIRM in plan?	Adopted	Participating	Risk Assessment	Mitigation Action	NFIP Status			
	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	N/A	CRS Review Y/N	CRS Class
1. City of Lancaster	Y	Y	Y	Y	Y	Y		Under LA County	LA County CRS 7

*** Notes:** **Y = Participating** **N = Not Participating** **N/A = Not Mapped**

SECTION 14. ANNEX C: DISASTER PREPAREDNESS RISK SURVEY

DISASTER PREPAREDNESS AND RISK SURVEY RESULTS

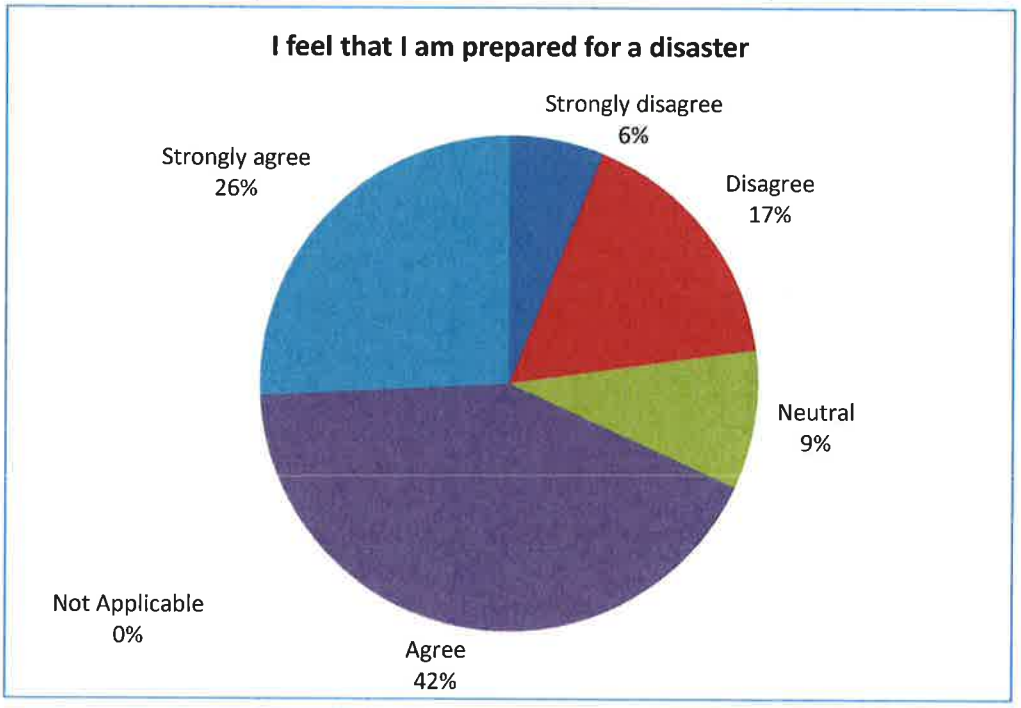
A Disaster Preparedness Risk Survey was used to encourage public participation in mitigation planning and provide input into the Hazard Mitigation planning process. The survey included questions regarding perceived risks, actual losses, and mitigation activities.

The survey also provided a forum for the public to provide their input on future planning efforts and enables emergency management personnel to better focus their mitigation efforts. The following tables provided the survey results. Surveys were made available online via Lancaster's website and as hard copies.

The data gathered will be used to help local officials better plan for disasters as well as communicate with citizens and educate residents on mitigation steps to reduce the risk of loss. This survey was administered and maintained by MLC & Associates, Inc. In some cases, comments have been summarized and edited for clarity.

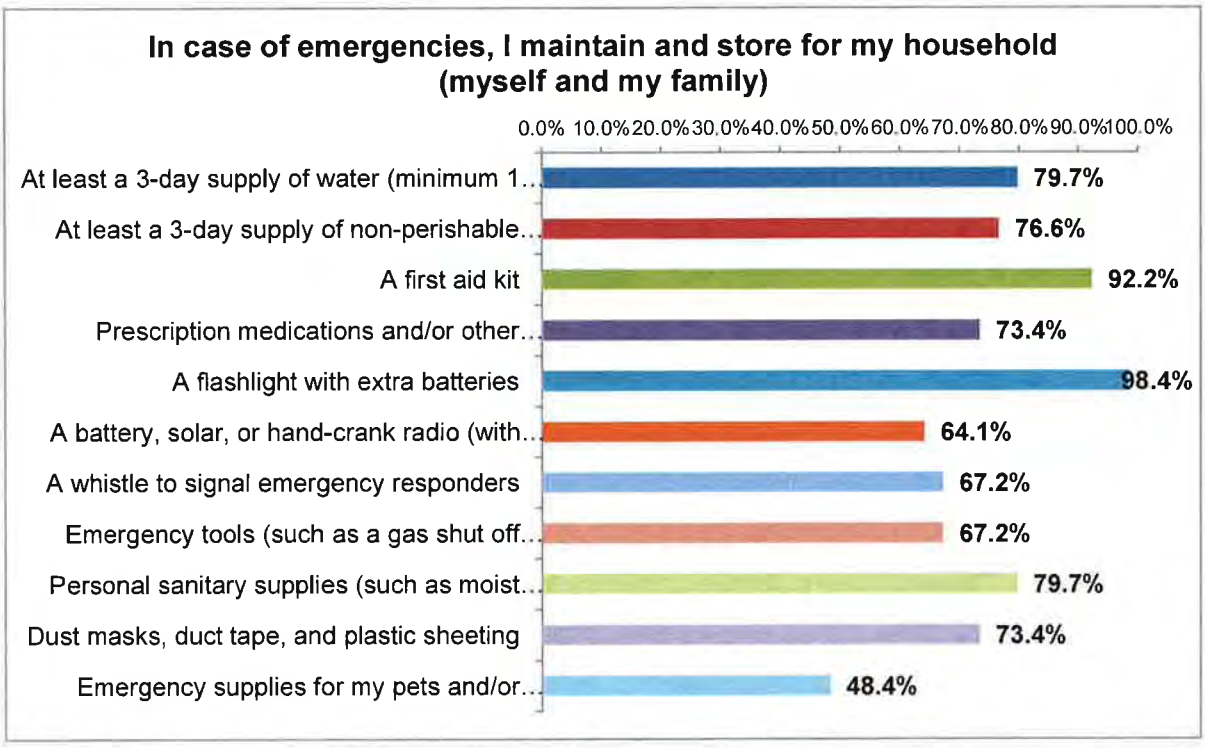
1. I feel that I am prepared for a disaster.

Value	Count	Percent
Strongly disagree	4	6.1%
Disagree	11	16.7%
Neutral	6	9.1%
Agree	28	42.4%
Strongly agree	17	25.8%
Not Applicable	0	0.0%



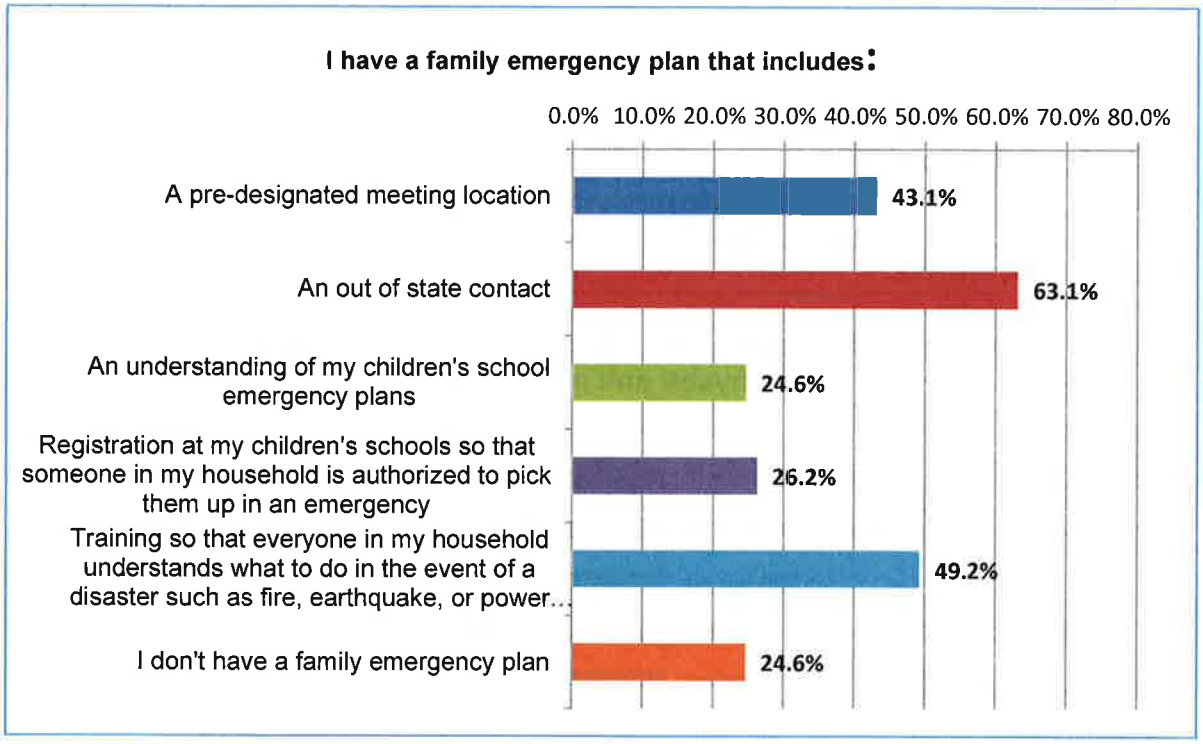
2. In case of emergencies, I maintain and store for my household (myself and my family).

Value	Count	Percent
At least a 3-day supply of water (minimum 1 gallon per person per day)	51	79.7%
At least a 3-day supply of non-perishable food (with manual can opener)	49	76.6%
A first aid kit	59	92.2%
Prescription medications and/or other needed medical supplies	47	73.4%
A flashlight with extra batteries	63	98.4%
A battery, solar, or hand-crank radio (with extra batteries)	41	64.1%
A whistle to signal emergency responders	43	67.2%
Emergency tools (such as a gas shut off wrench)	43	67.2%
Personal sanitary supplies (such as moist towelettes, hand sanitizers, garbage bags with ties, etc.)	51	79.7%
Dust masks, duct tape, and plastic sheeting	47	73.4%
Emergency supplies for my pets and/or livestock	31	48.4%



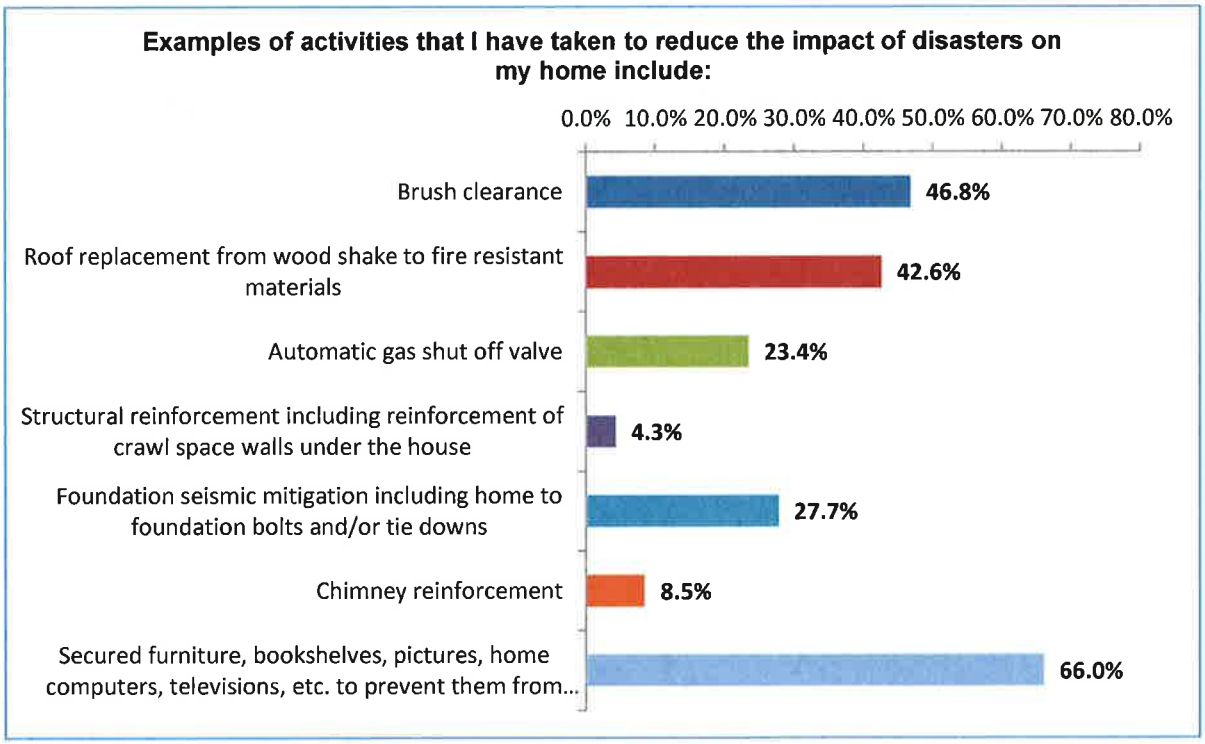
3. I have a family emergency plan that includes: (check all that apply)

Value	Count	Percent
A pre-designated meeting location	28	43.1%
An out of state contact	41	63.1%
An understanding of my children's school emergency plans	16	24.6%
Registration at my children's schools so that someone in my household is authorized to pick them up in an emergency	17	26.2%
Training so that everyone in my household understands what to do in the event of a disaster such as fire, earthquake, or power outage	32	49.2%
I don't have a family emergency plan	16	24.6%



4. Examples of actions that I have taken to reduce the impact of disasters on my home include: (check all that apply)

Value	Count	Percent
Brush clearance	22	46.8%
Roof replacement from wood shake to fire resistant materials	20	42.6%
Automatic gas shut off valve	11	23.4%
Structural reinforcement including reinforcement of crawl space walls under the house	2	4.3%
Foundation seismic mitigation including home to foundation bolts and/or tie downs	13	27.7%
Chimney reinforcement	4	8.5%
Secured furniture, bookshelves, pictures, home computers, televisions, etc. to prevent them from falling in an earthquake.	31	66.0%



Other examples of actions that I have taken to mitigate the impact of disaster to my home include:

Construction

- Prepared to shut off water at the street. Have fire extinguishers. Strapped my hot water tank.
- Replacing ancient windows with tempered glass.

Equipment

- I have a generator, extra gas and diesel, and a 4x4 tractor.
- I have a duffle bag already packed with emergency food, water, and supplies that I could grab quickly and run with. I also have a duffle bag of the same in my trunk and my spouse's vehicle.
- Travel packs in vehicles in the event of evacuation. Full camping setup in the event the house is red-tagged. Posted list of items to take in event of evacuation.
- Solar power free from the grid, bottled LPG for cooking/heat, water purification system, and 14,000 gallons of water.

Training

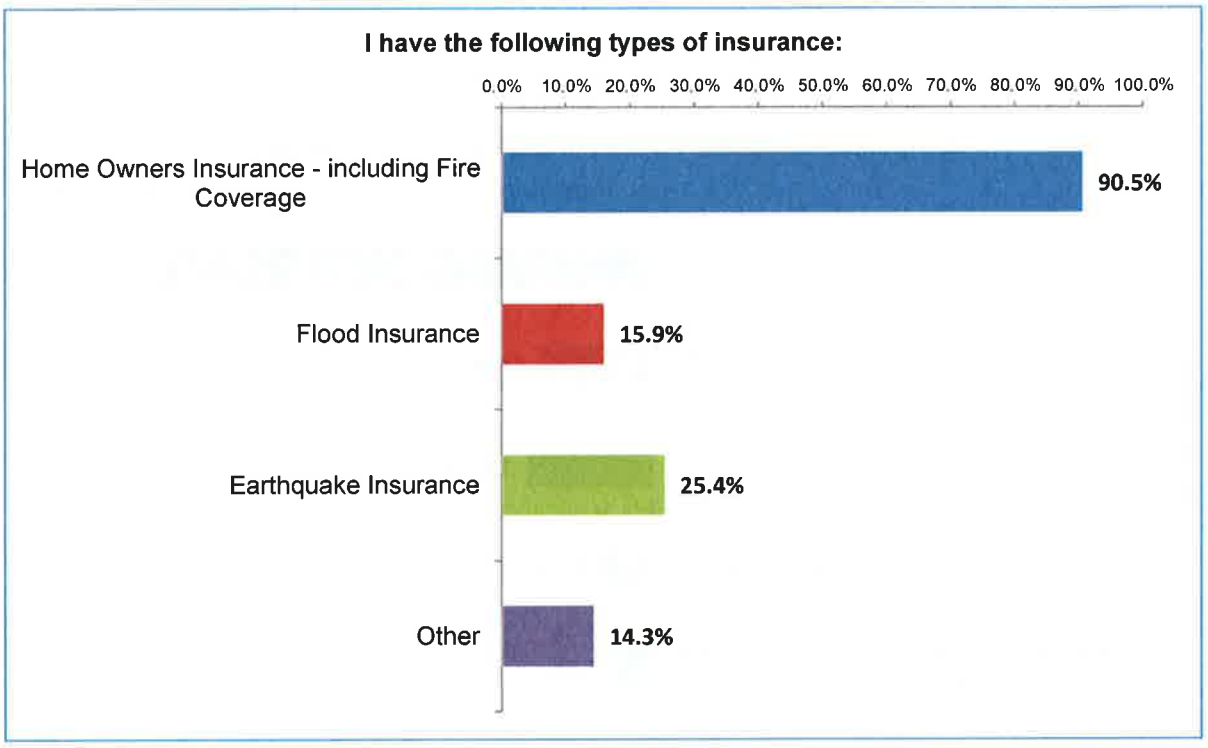
- I am CERT (Community Emergency Response Team) trained and CPR/FIRST AID trained.
- I am a member of Lancaster CERT and Red Cross Disaster Assistance Team (DAT), Palmdale Chapter.
- Taken CERT training.

Other

- Lots of ammunition.

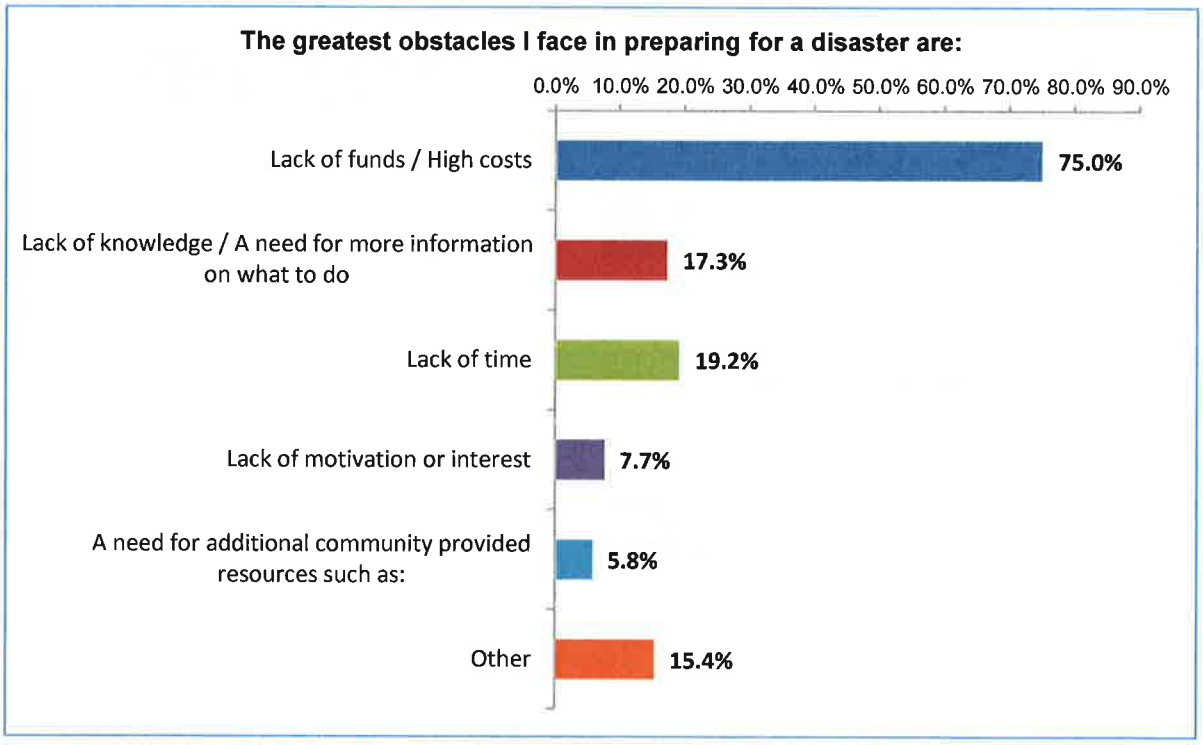
5. I have the following types of insurance: (check all that apply)

Value	Count	Percent
Home Owners Insurance - including Fire Coverage	57	90.5%
Flood Insurance	10	15.9%
Earthquake Insurance	16	25.4%
Other	9	14.3%



6. The greatest obstacles I face in preparing for a disaster are: (check all that apply)

Value	Count	Percent
Lack of funds / High costs	39	75.0%
Lack of knowledge / A need for more information on what to do	9	17.3%
Lack of time	10	19.2%
Lack of motivation or interest	4	7.7%
A need for additional community provided resources such as:	3	5.8%
Other	8	15.4%

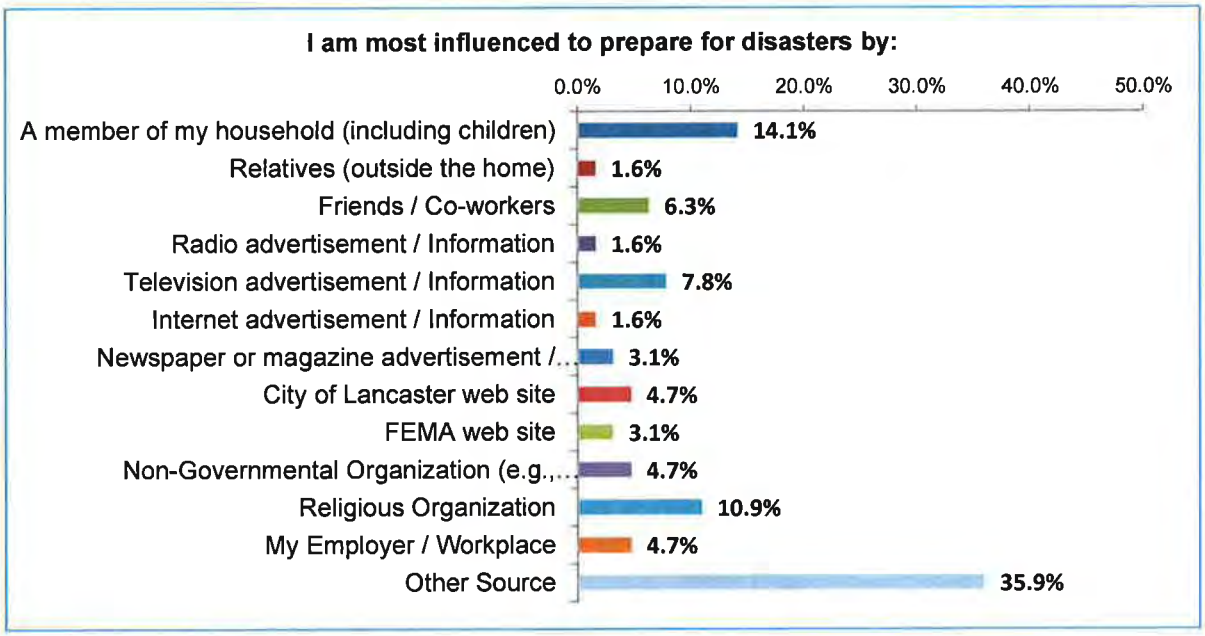


Other obstacles I face in preparing for a disaster are:

- Secure storage.
- Lack of space for more emergency supplies (food, water, shelter, extra clothes).
- Lack of storage space.
- Laziness.
- A plan for the retirement community I live in.

7. I am most influenced to prepare for disasters by:

Value	Count	Percent
A member of my household (including children)	9	14.1%
Relatives (outside the home)	1	1.6%
Friends / Co-workers	4	6.3%
Radio advertisement / Information	1	1.6%
Television advertisement / Information	5	7.8%
Internet advertisement / Information	1	1.6%
Newspaper or magazine advertisement / Information	2	3.1%
City of Lancaster web site	3	4.7%
FEMA web site	2	3.1%
Non-Governmental Organization (e.g., American Red Cross, Salvation Army, etc.)	3	4.7%
Religious Organization	7	10.9%
My Employer / Workplace	3	4.7%
Other Source	23	35.9%

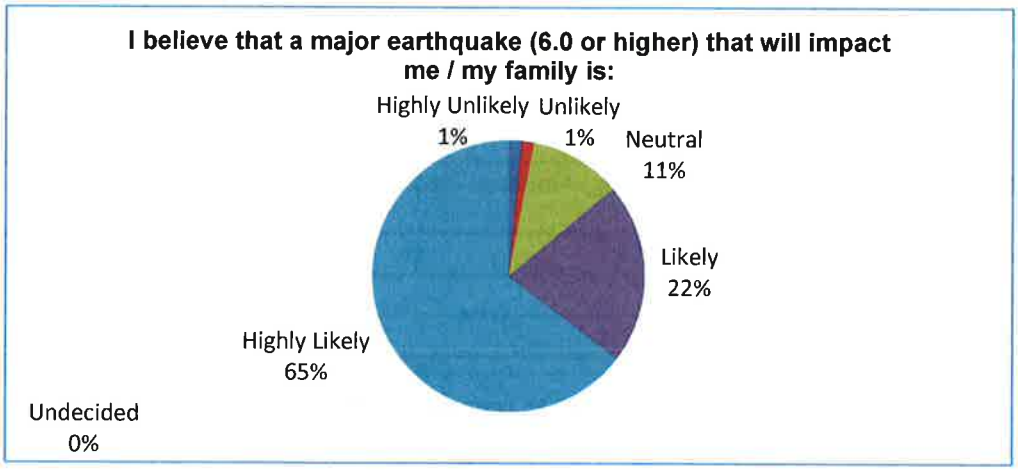


Other sources that influence disaster preparation:

- CERT (11 answers).
- Experience.
- My wife.
- No one.
- Past military training.
- Just want to be prepared.

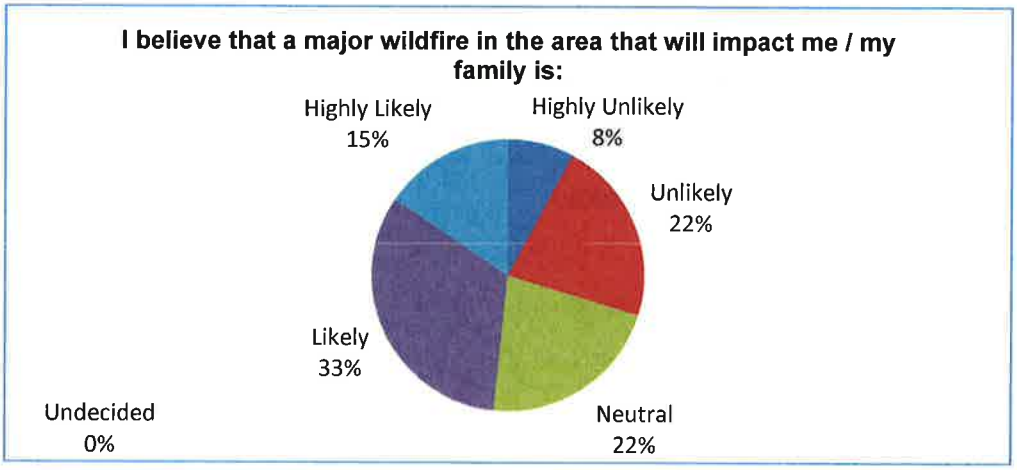
8. I believe that a major earthquake (6.0 or higher) in the area that will impact me / my family is:

Value	Count	Percent
Highly Unlikely	1	1.5%
Unlikely	1	1.5%
Neutral	7	10.8%
Likely	14	21.5%
Highly Likely	42	64.6%
Undecided	0	0.0%



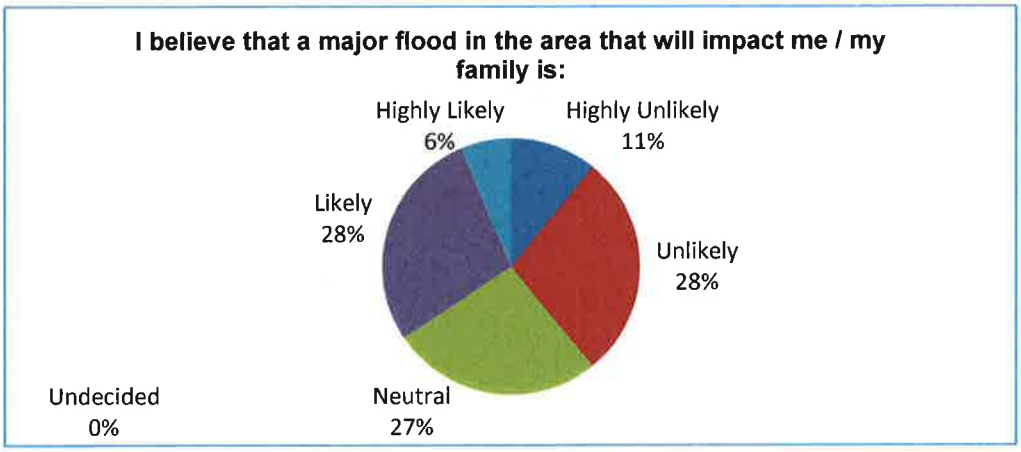
9. I believe that a major wildfire in the area that will impact me / my family is:

Value	Count	Percent
Highly Unlikely	5	7.8%
Unlikely	14	21.9%
Neutral	14	21.9%
Likely	21	32.8%
Highly Likely	10	15.6%
Undecided	0	0.0%



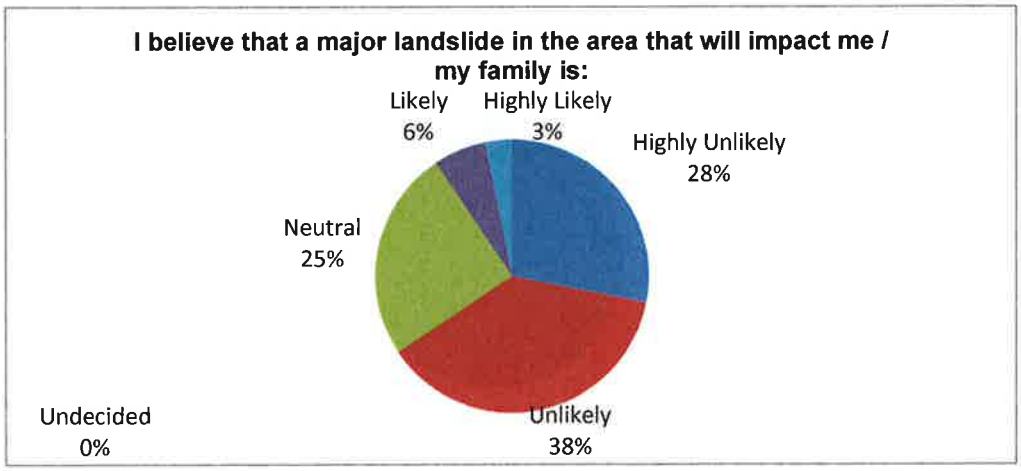
10. I believe that a major flood in the area that will impact me / my family is:

Value	Count	Percent
Highly Unlikely	7	10.9%
Unlikely	18	28.1%
Neutral	17	26.6%
Likely	18	28.1%
Highly Likely	4	6.3%
Undecided	0	0.0%



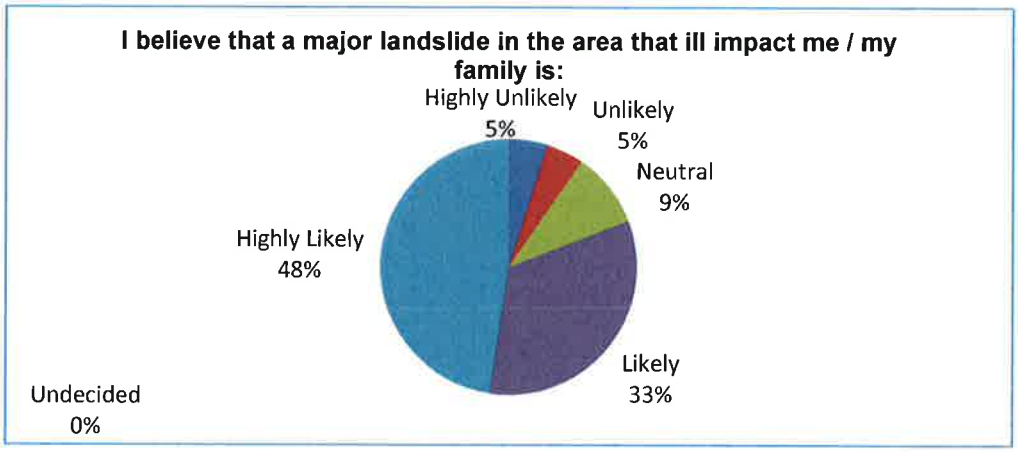
11. I believe that a major landslide in the area that will impact me / my family is:

Value	Count	Percent
Highly Unlikely	18	28.1%
Unlikely	24	37.5%
Neutral	16	25.0%
Likely	4	6.3%
Highly Likely	2	3.1%
Undecided	0	0.0%



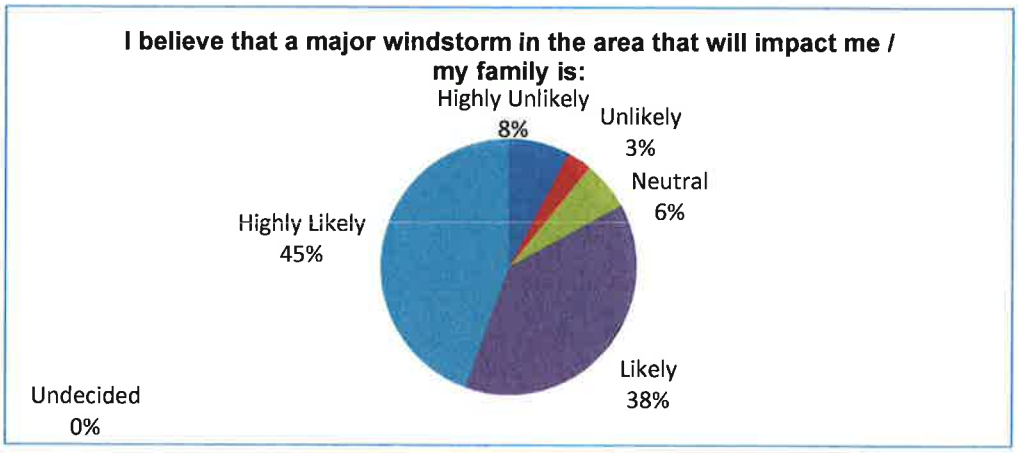
12. I believe that a major power outage in the area that will impact me / my family is:

Value	Count	Percent
Highly Unlikely	3	4.8%
Unlikely	3	4.8%
Neutral	6	9.5%
Likely	21	33.3%
Highly Likely	30	47.6%
Undecided	0	0.0%



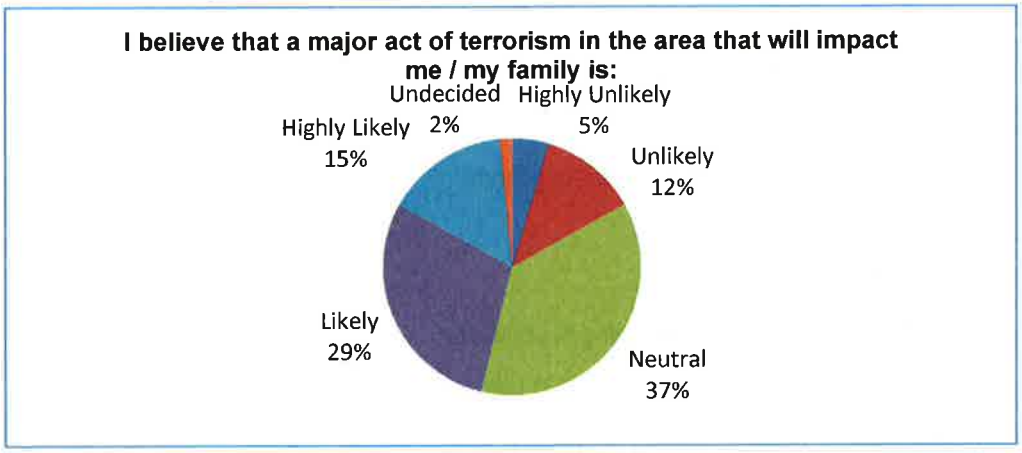
13. I believe that a major windstorm in the area that will impact me / my family is:

Value	Count	Percent
Highly Unlikely	5	7.7%
Unlikely	2	3.1%
Neutral	4	6.2%
Likely	25	38.5%
Highly Likely	29	44.6%
Undecided	0	0.0%



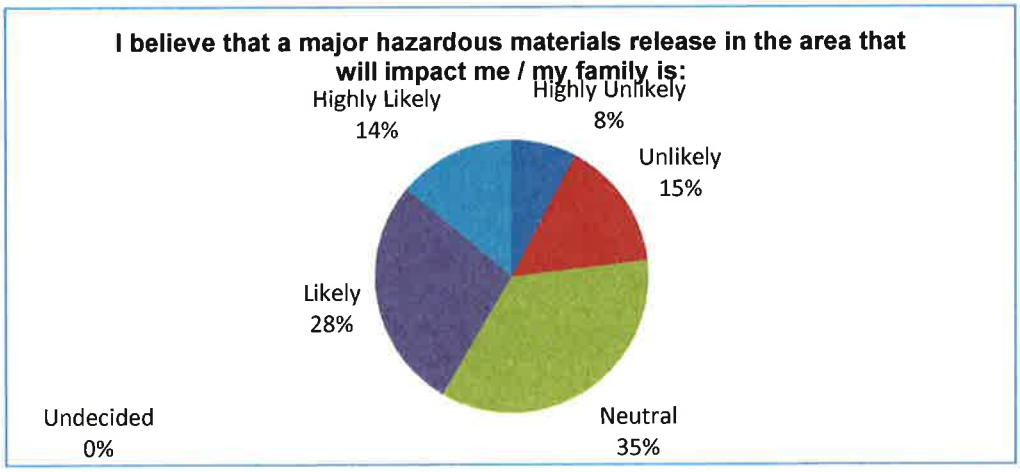
14. I believe that a major act of terrorism in the area that will impact me / my family is:

Value	Count	Percent
Highly Unlikely	3	4.6%
Unlikely	8	12.3%
Neutral	24	36.9%
Likely	19	29.2%
Highly Likely	10	15.4%
Undecided	1	1.5%



15. I believe that a major hazardous materials release in the area that will impact me / my family is:

Value	Count	Percent
Highly Unlikely	5	7.7%
Unlikely	10	15.4%
Neutral	23	35.4%
Likely	18	27.7%
Highly Likely	9	13.9%
Undecided	0	0.0%



16. List other significant events that you are concerned about.

Economic / Political Events

- Economic collapse. (3 answers)
- Economic collapse leaving no law enforcement or fire department.
- Civil unrest. (2 answers)
- Revolts against the government.

Infrastructure

- Gas leak explosions.
- Train accidents with cars containing hazardous materials.

Law Enforcement

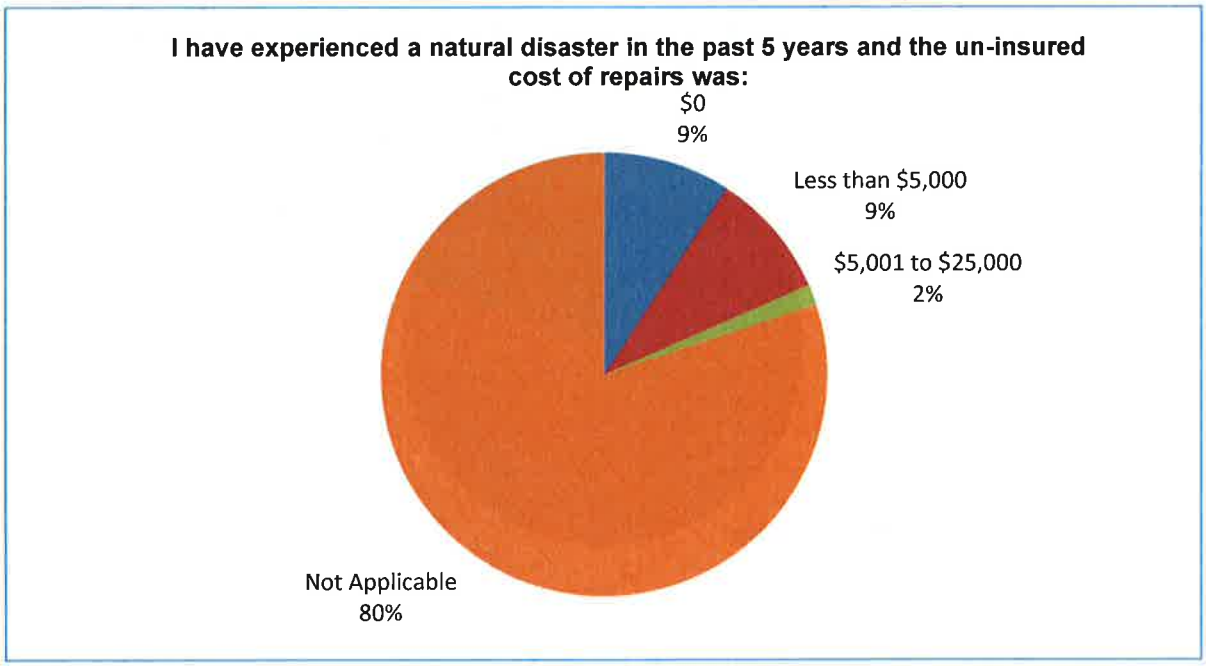
- The release of prisoners from our prisons.
- Food shortages and riots.
- Theft and burglary.
- Registered sex offenders living in Lancaster.
- Crime groups and gang activities in Lancaster.

Natural Events

- Pandemic.
- Water shortages.

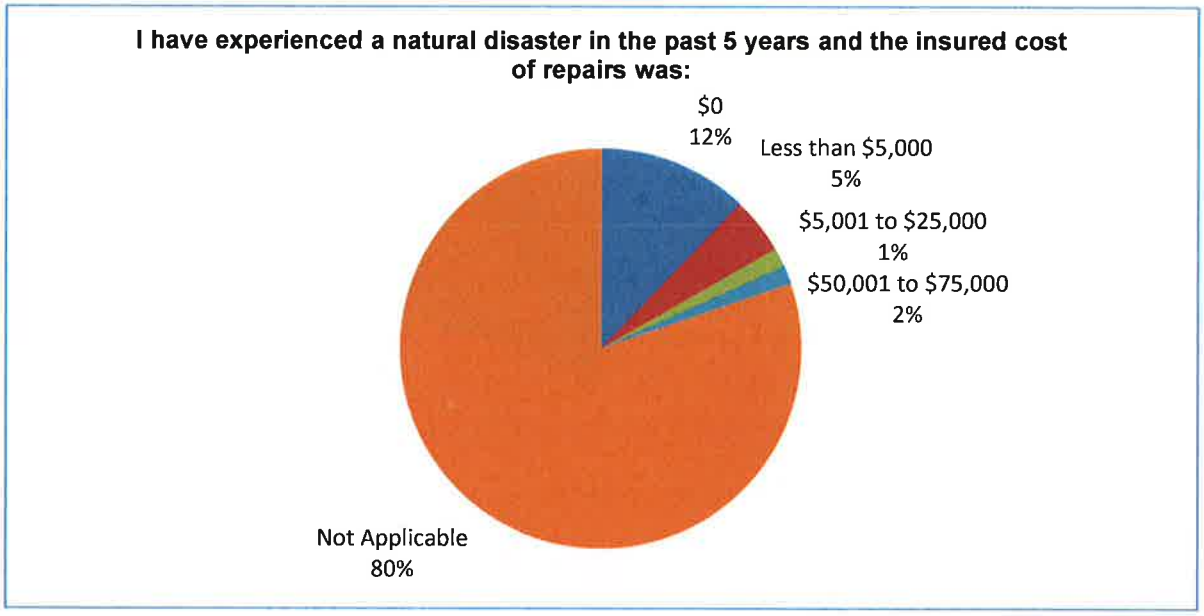
17. I have experienced a natural disaster in the past 5 years and the un-insured cost of repairs was:

Value	Count	Percent
$0	6	9.2%
Less than $5,000	6	9.2%
$5,001 to $25,000	1	1.5%
$25,001 to $50,000	0	0.0%
$50,001 to $75,000	0	0.0%
$75,001 to $100,000	0	0.0%
More than $100,000	0	0.0%
Not Applicable	52	80.0%



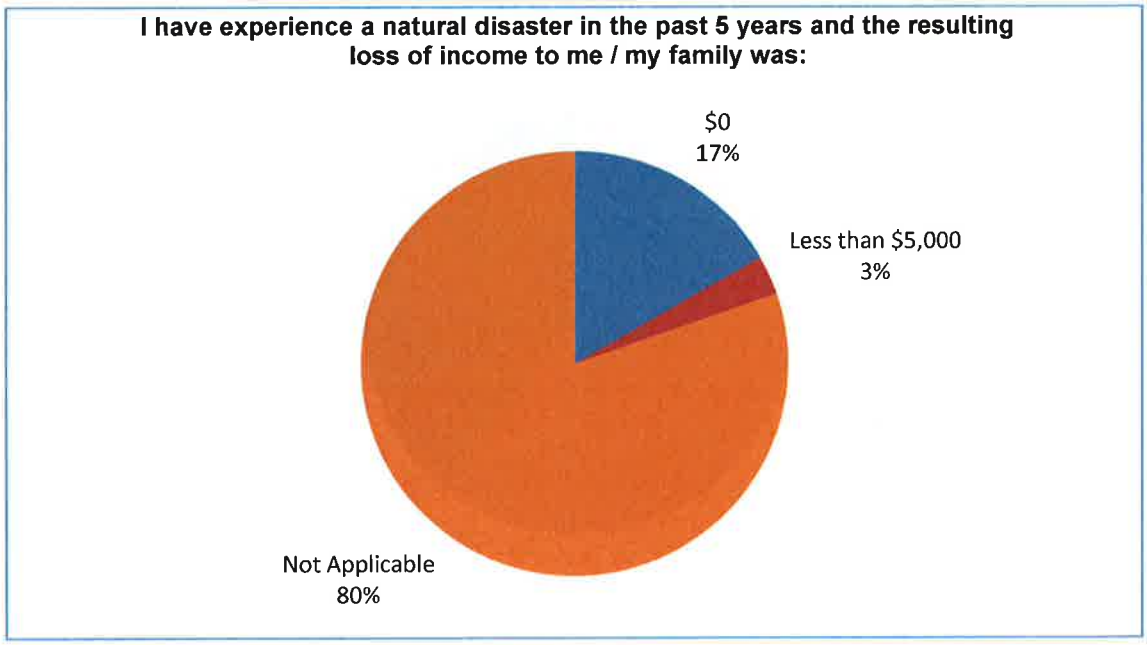
18. I have experienced a natural disaster in the past 5 years and the insured cost of repairs was:

Value	Count	Percent
$0	8	12.1%
Less than $5,000	3	4.6%
$5,001 to $25,000	1	1.5%
$25,001 to $50,000	0	0.0%
$50,001 to $75,000	1	1.5%
$75,001 to $100,000	0	0.0%
More than $100,000	0	0.0%
Not Applicable	53	80.3%



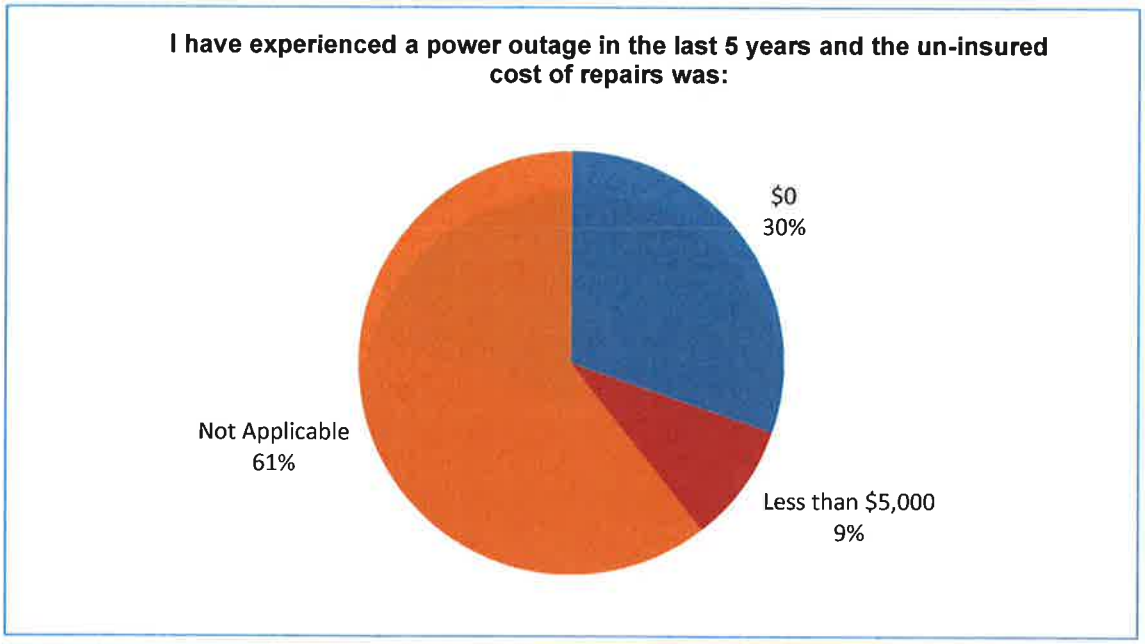
19. I have experienced a natural disaster in the past 5 years and the resulting loss of income to me / my family was:

Value	Count	Percent
$0	11	16.7%
Less than $5,000	2	3.0%
$5,001 to $25,000	0	0.0%
$25,001 to $50,000	0	0.0%
$50,001 to $75,000	0	0.0%
$75,001 to $100,000	0	0.0%
More than $100,000	0	0.0%
Not Applicable	53	80.3%



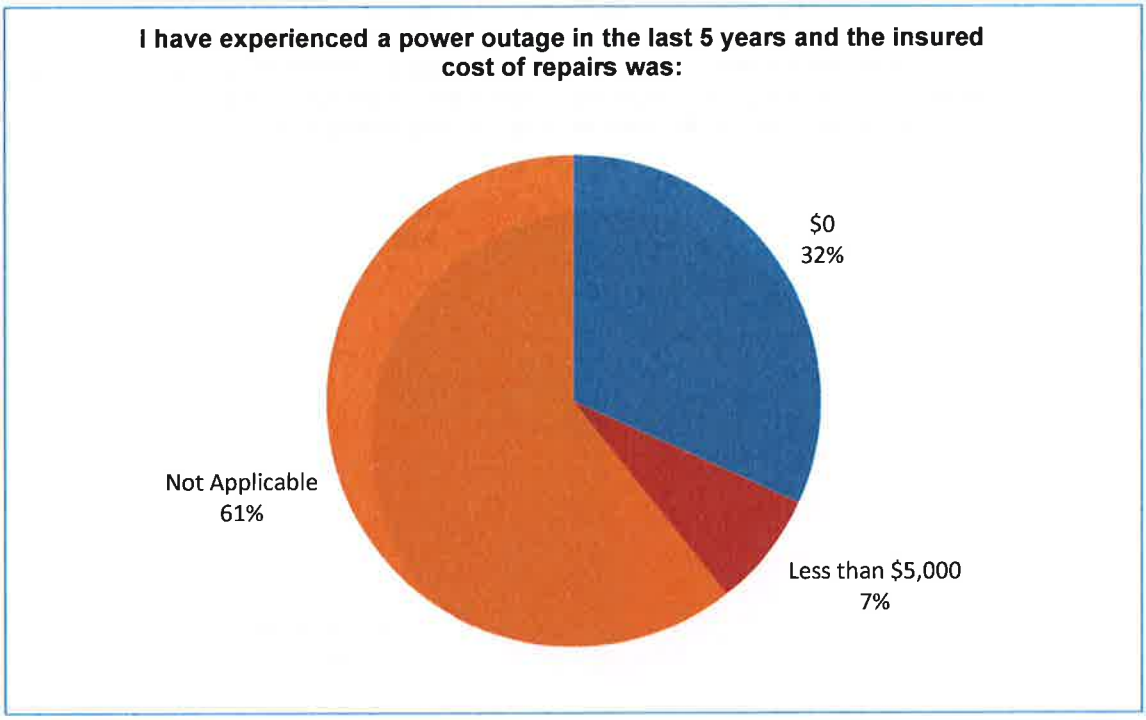
20. I have experienced a power outage in the last 5 years and the un-insured cost of repairs was:

Value	Count	Percent
$0	20	30.3%
Less than $5,000	6	9.1%
$5,001 to $25,000	0	0.0%
$25,001 to $50,000	0	0.0%
$50,001 to $75,000	0	0.0%
$75,001 to $100,000	0	0.0%
More than $100,000	0	0.0%
Not Applicable	40	60.6%



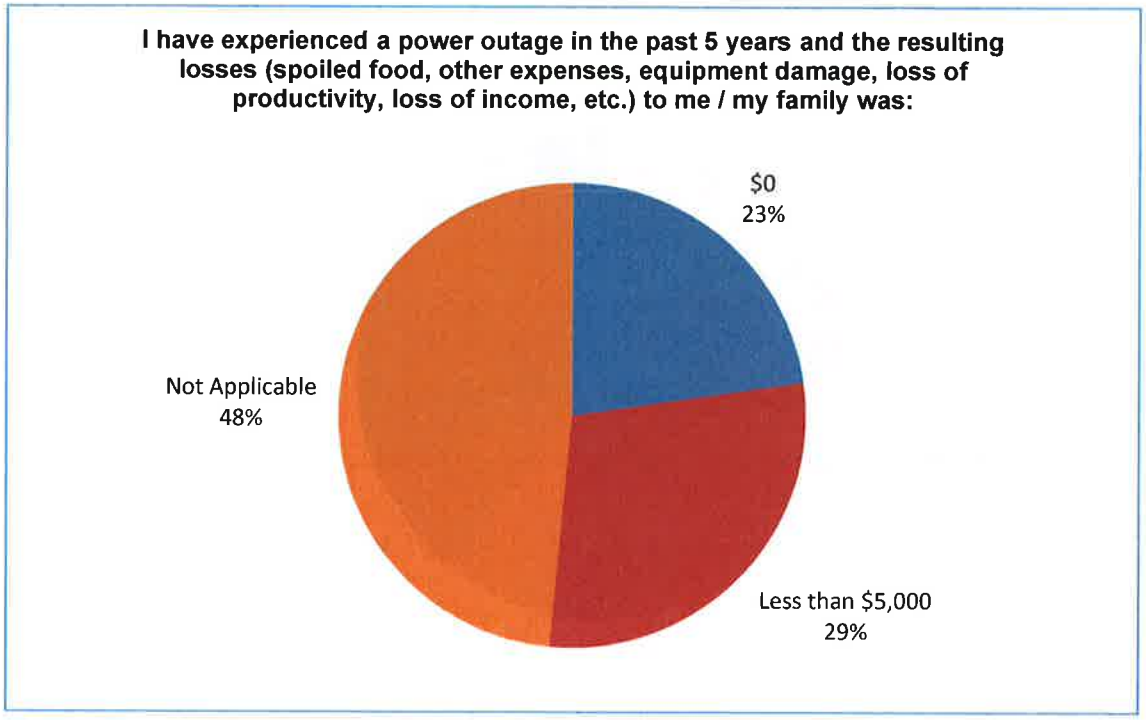
21. I have experienced a power outage in the past 5 years and the insured cost of repairs was:

Value	Count	Percent
$0	21	31.8%
Less than $5,000	5	7.6%
$5,001 to $25,000	0	0.0%
$25,001 to $50,000	0	0.0%
$50,001 to $75,000	0	0.0%
$75,001 to $100,000	0	0.0%
More than $100,000	0	0.0%
Not Applicable	40	60.6%



22. I have experienced a power outage in the past 5 years and the resulting losses (spoiled food, other expenses, equipment damage, loss of productivity, loss of income, etc.) to me/my family was:

Value	Count	Percent
$0	15	22.7%
Less than $5,000	19	28.8%
$5,001 to $25,000	0	0.0%
$25,001 to $50,000	0	0.0%
$50,001 to $75,000	0	0.0%
$75,001 to $100,000	0	0.0%
More than $100,000	0	0.0%
Not Applicable	32	48.5%



23. What actions can local government do to help you become better prepared for disasters?

Information

- Educate the public.
- Information campaigns about city resources and preparedness, such as reverse 911.
- Hold seminars.
- Help people without transportation with an escape plan. How do we get out of the area in an emergency?
- Provide public information. Encourage individual responsibility for preparedness by honestly telling the public that in the event of any major disaster, you are on your own.
- Have periodic Disaster Preparedness "festivals" where you offer seminars and have basic tools on hand for purchase.
- Continue to encourage everyone to prepare. I'm in pretty good shape but the more people that are prepared, the better it will be for everyone, including me. Articles in the paper, mailers and handouts at public events can tell people how to begin/improve their preparations.
- Where do we live if we can't stay in our homes? What is the city's plan on where to house large crowds of people?
- The City of Lancaster and the website are to be commended for the great information being provided! Perhaps the City can include in the City of Lancaster emailed newsletter a REGULAR AND REPEATING news column about planning and learning skills related to Emergency and Disaster Preparedness. It can cover various facets of planning, what to do in an emergency, tie in to the local CERT groups, Red Cross and more!
- Provide links to information sources and support organizations or programs that teach preparedness. (i.e. CERT, The Church of Jesus Christ of Latter-day Saints, FEMA's website, etc.)

Training

- Local government needs to help teach the people more.
- Train more people to help, and educate public on how to prepare for disasters.
- Hold workshops in college settings and high schools. Send out information every month about such disasters but not try to scare everyone, just make them aware.
- Offer presentations, classes, etc. to educate residents. It's up to the individual, not the government, to provide for themselves.
- Offer public safety instruction during the day and evening so different populations can attend. It can be the same program. Distribute safety information using Neighborhood Watch and Lancaster CERT.
- Classes to help people be prepared. Law Enforcement / City Officials to have open communication with its residents.

Community Preparedness

- Support local disaster preparedness groups, specialists, workshops, and seminars.
- Supply low-income with needed preparedness tools such as gas shutoff tools, first aid kits, etc.
- Support local groups like CERT that are able to better educate citizens. In the event of a major emergency like a 7.8 earthquake, first responders will be overwhelmed. It is doubtful we will get any help from over the hill for an extended time. CERT will, at the community level, be able to provide many of the services that are needed, inform people of what they should do, and inform the EOC of the conditions of countless areas throughout the City that will not get services from first responder for several days.
- Advertise CERT trainings at the Farmers Market, at Jet Hawks games, in the newspaper, or any other way where more people can be aware of its existence and become involved more with it.
- I am satisfied personally with the disaster preparedness training that I have received through the C.E.R.T. program. I believe increasing funding and the public's awareness of the availability of this program (as well as similar programs) would be the most effective.
- The CERT training program is designed to prepare and help people to have the basic skills when emergency services are not available. With training and practice of working as a team, trained people can do the greatest good for the greatest numbers after a disaster. I have been part of this program and it can do the most good of any I have experienced.

Other

- Local non-governmental emergency services to assist senior residents.
- Provide someone to call all numbers after an emergency, and police to check each home.
- Put a periodic challenge on the home page of the website, encouraging the completion of a disaster preparedness kit. Partner with local businesses to provide "specials" or incentives related to the items being featured in that challenge.
- Only by encouragement. It is not the government's responsibility to take care of me and my family. It is mine alone.

Survey Community Responses

More than 60 people completed the survey. The survey will continue to be offered to the public as a means for ongoing input into hazard mitigation planning in the City of Lancaster.

SECTION 15. ANNEX D: WORKING GROUP HMP RISK ASSESSMENT SURVEY

The following Risk Assessment Survey was distributed to determine the relative risks associated with the major hazards identified in the Lancaster area. The information was used to prioritize the threats to the region. Each hazard was rated in terms of probability (i.e. likelihood of occurrence), magnitude / severity, warning time, and duration. Ratings range from 1 (low) to 4 (high). The components of the formula are:

Category	Degree of Risk			
	Level ID	Description	Value	Weighting Factor
Probability	Unlikely	• Extremely rare with no documented history of occurrences or events. • Annual probability of less than 0.001.	1	45%
	Possibly	• Rare occurrences with at least one documented or anecdotal historic event. • Annual probability that is between 0.01 and 0.001.	2	
	Likely	• Occasional occurrences with at least two or more documented historic events. • Annual probability that is between 0.1 and 0.01.	3	
	Highly Likely	• Frequent events with a well-documented history of occurrence. • Annual probability that is greater than 0.1.	4	
Magnitude/ Severity	Negligible	• Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). • Injuries or illnesses are treatable with first aid and there are no deaths. • Negligible quality of life lost. • Shut down of critical facilities for less than 24 hours.	1	30%
	Limited	• Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). • Injuries or illnesses do not result in permanent disability and there are no deaths. • Moderate quality of life lost. • Shut down of critical facilities for more than 1 day and less than 1 week.	2	
	Critical	• Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). • Injuries or illnesses result in permanent disability and at least one death. • Shut down of critical facilities for more than 1 week and less than 1 month.	3	
	Catastrophic	• Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). • Injuries or illnesses result in permanent disability and multiple deaths. • Shut down of critical facilities for more than 1 month.	4	
Warning Time	Less than 6 hrs	Self-explanatory.	4	15%
	6 to 12 hrs	Self-explanatory.	3	
	12 to 24 hrs	Self-explanatory.	2	
	More than 24 hrs	Self-explanatory.	1	
Duration	Less than 6 hrs	Self-explanatory.	1	10%
	Less than 24 hrs	Self-explanatory.	2	
	Less than one wk	Self-explanatory.	3	
	More than one wk	Self-explanatory.	4	

The final risk levels were estimated using the following equation and weighting scale.

Risk = (0.45 x Probability) + (0.30 x Magnitude/Severity) + (0.15 x Warning Time) + (0.10 x Duration)

For the Lancaster region, the following estimates were developed. The final risk scores are shown in order of priority.

Hazard	Probability	Magnitude	Warning Time	Duration	Risk
Severe Windstorm	1.85	.78	.39	.25	3.27
Earthquake (Greater than Magnitude 6)	1.59	1.05	.51	.44	3.59
Power Outage	1.40	.57	.51	.19	2.67
Wildfire	1.18	.69	.35	.28	2.50
Flood	1.00	.61	.26	.27	2.14
Terrorism	.85	.57	.34	.18	1.94
Landslide	.60	.31	.32	.15	1.38

Table 51: Risk Ratings

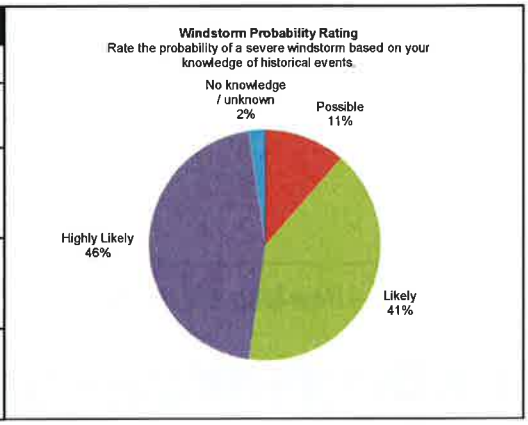
RISK ASSESSMENT SURVEY RESULTS

The following tables provide the results from the Risk Assessment Survey for the City of Lancaster. Each section of the survey describes a hazard, risks, consequences and raging summary (Note: Zero values are omitted).

Severe Windstorm

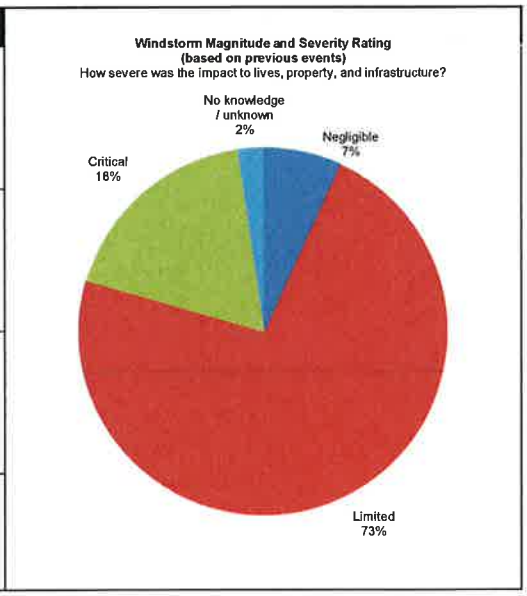
Probability – Rate the probability based on historical events.

Rating	Description
N/A	Not Applicable
Unlikely	Unlikely: Extremely rare with no documented history of occurrence or events OR an annual probability less than .1%.
Possible	Possible: Rare occurrences with at least one documented or anecdotal historic event OR an annual probability between 1% and .1%.
Likely	Likely: Occasional occurrences with at least two or more documented historic events OR an annual probability that is between 10% and 1%.
Highly Likely	Highly Likely: Frequent events with a well-documented history of occurrence OR an annual probability that is greater than 10%.



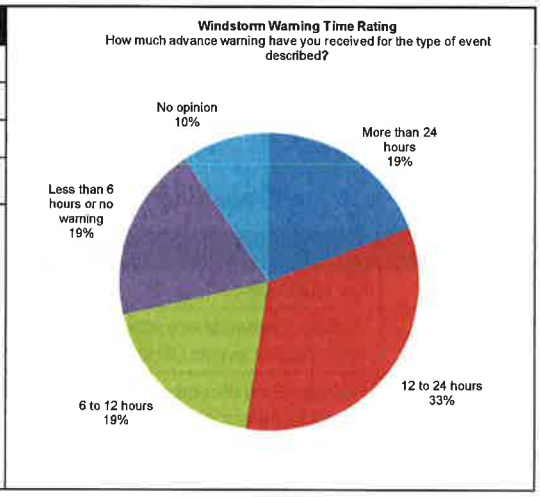
Magnitude and Severity – How severe was the impact to lives, property, and infrastructure?

Rating	Description
Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.
Limited	Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than 1 day and less than 1 week.
Critical	Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week and less than 1 month.
Catastrophic	Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than 1 month.



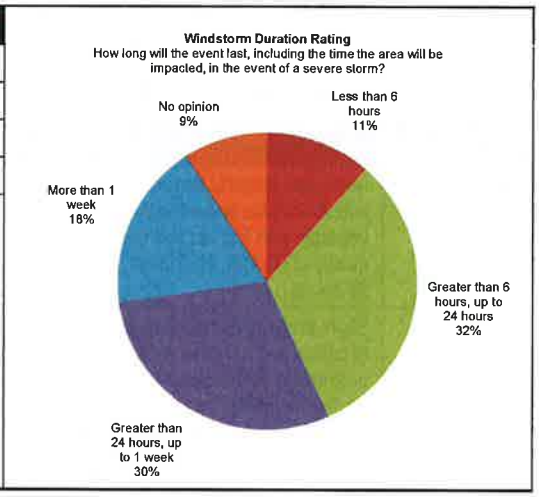
Warning Time – How much advance warning have you received for the type of event described?

Rating
More than 24 hours
12 to 24 hours
6 to 12 hours
Less than 6 hours or no warning
No knowledge / unknown



Duration – How long will the event last including the time the area will be impacted if the event described above occurs?

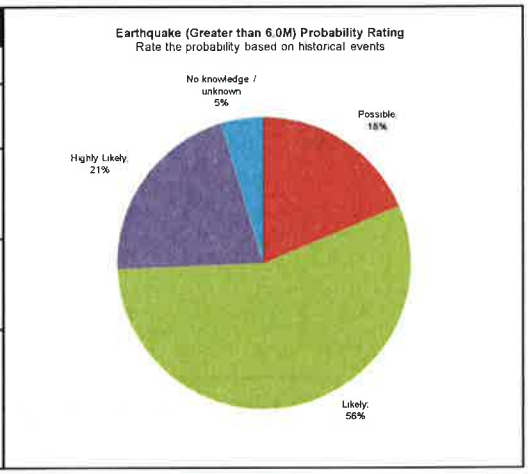
Rating
Less than 6 hours
Greater than 6 hours, up to 24 hours
Greater than 24 hours, up to 1 week
More than 1 week
No opinion



Earthquake (Greater that Magnitude 6.0)

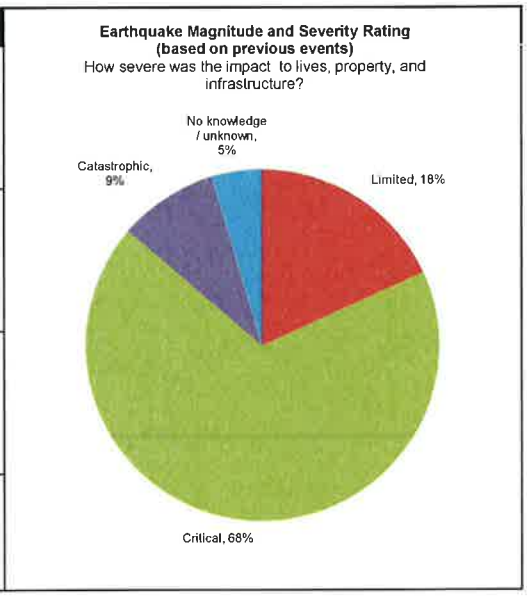
Probability – Rate the probability based on historical events

Rating	Description
N/A	Not Applicable
Unlikely	Unlikely: Extremely rare with no documented history of occurrence or events OR an annual probability less than .1%.
Possible	Possible: Rare occurrences with at least one documented or anecdotal historic event OR an annual probability between 1% and .1%.
Likely	Likely: Occasional occurrences with at least two or more documented historic events OR an annual probability that is between 10% and 1%.
Highly Likely	Highly Likely: Frequent events with a well-documented history of occurrence OR an annual probability that is greater than 10%.



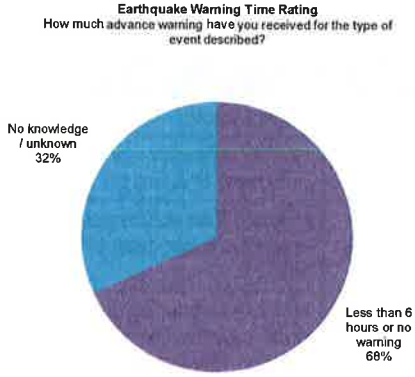
Magnitude and Severity – How severe was the impact to lives, property, and infrastructure?

Rating	Description
Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.
Limited	Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than 1 day and less than 1 week.
Critical	Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week and less than 1 month.
Catastrophic	Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than 1 month.



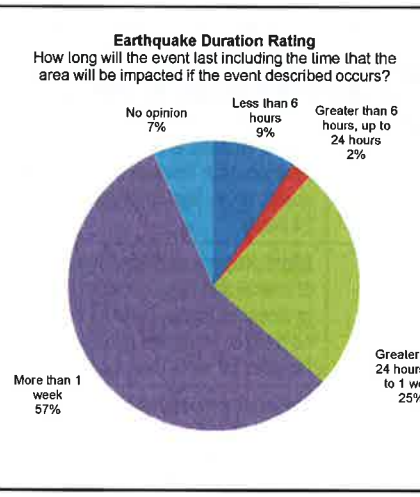
Warning Time – How much advance warning have you received for the type of event described?

Rating
More than 24 hours
12 to 24 hours
6 to 12 hours
Less than 6 hours or no warning
No knowledge / unknown



Duration – How long will the event last including the time the area will be impacted if the event described above occurs?

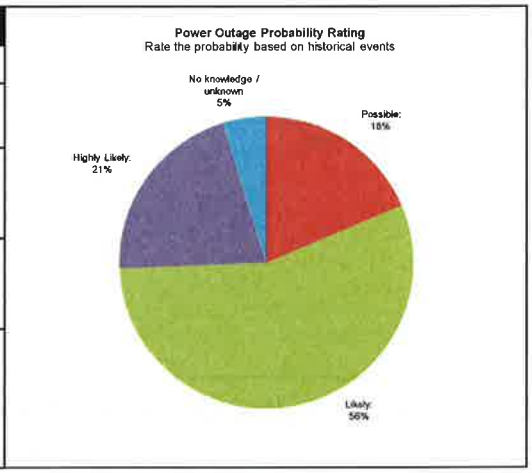
Rating
Less than 6 hours
Greater than 6 hours, up to 24 hours
Greater than 24 hours, up to 1 week
More than 1 week
No opinion



Power Outage

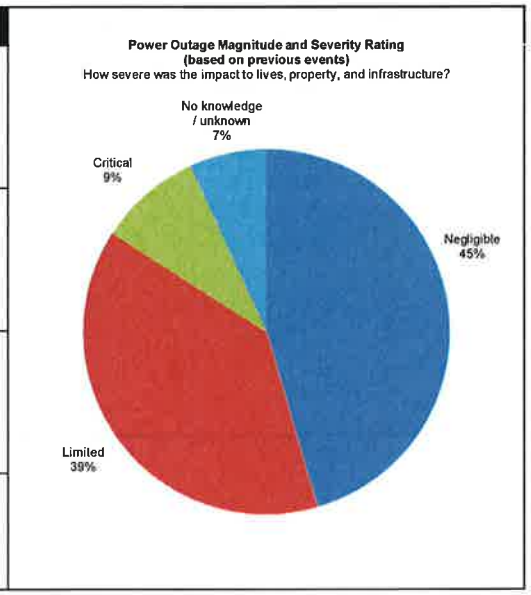
Probability – Rate the probability based on historical events

Rating	Description
N/A	Not Applicable
Unlikely	Unlikely: Extremely rare with no documented history of occurrence or events OR an annual probability less than .1%.
Possible	Possible: Rare occurrences with at least one documented or anecdotal historic event OR an annual probability between 1% and .1%.
Likely	Likely: Occasional occurrences with at least two or more documented historic events OR an annual probability that is between 10% and 1%.
Highly Likely	Highly Likely: Frequent events with a well-documented history of occurrence OR an annual probability that is greater than 10%.



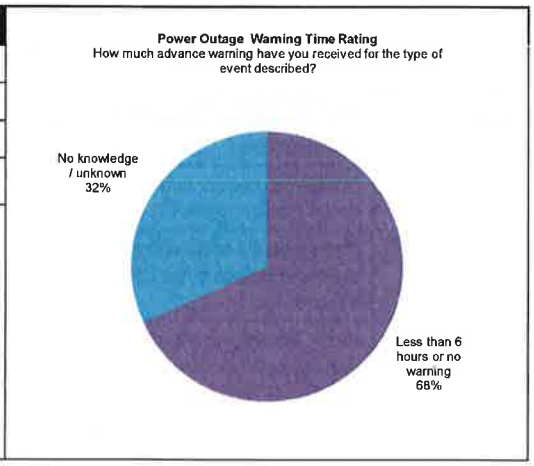
Magnitude and Severity – How severe was the impact to lives, property, and infrastructure?

Rating	Description
Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.
Limited	Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than 1 day and less than 1 week.
Critical	Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week and less than 1 month.
Catastrophic	Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than 1 month.



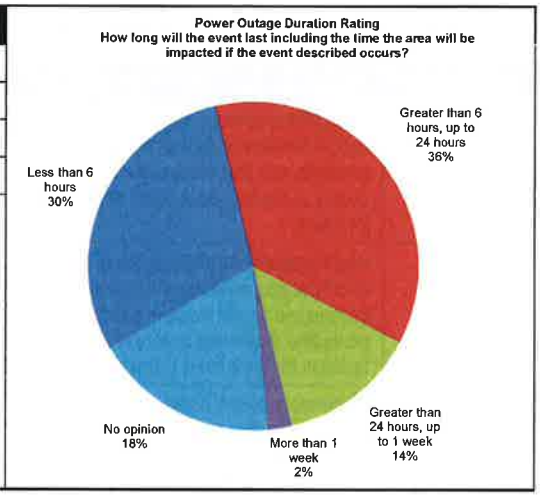
Warning Time – How much advance warning have you received for the type of event described?

Rating
More than 24 hours
12 to 24 hours
6 to 12 hours
Less than 6 hours or no warning
No knowledge / unknown



Duration – How long will the event last including the time the area will be impacted if the event described above occurs?

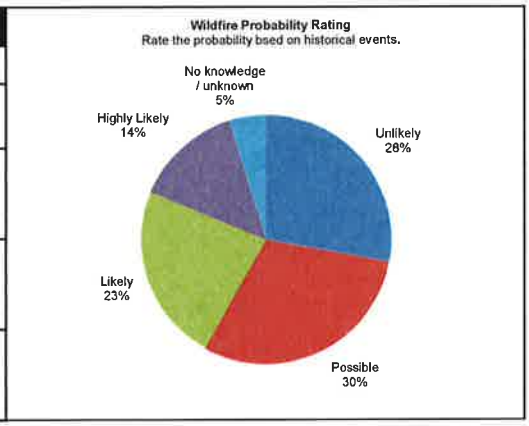
Rating
Less than 6 hours
Greater than 6 hours, up to 24 hours
Greater than 24 hours, up to 1 week
More than 1 week
No opinion



Wildfire

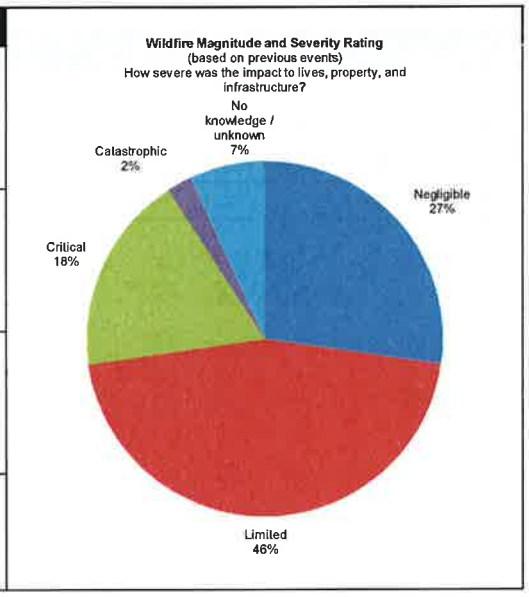
Probability – Rate the probability based on historical events

Rating	Description
N/A	Not Applicable
Unlikely	Unlikely: Extremely rare with no documented history of occurrence or events OR an annual probability less than .1%.
Possible	Possible: Rare occurrences with at least one documented or anecdotal historic event OR an annual probability between 1% and .1%.
Likely	Likely: Occasional occurrences with at least two or more documented historic events OR an annual probability that is between 10% and 1%.
Highly Likely	Highly Likely: Frequent events with a well-documented history of occurrence OR an annual probability that is greater than 10%.



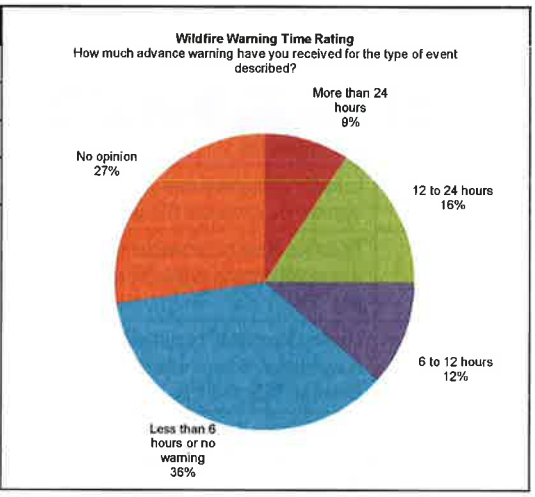
Magnitude and Severity – How severe was the impact to lives, property, and infrastructure?

Rating	Description
Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.
Limited	Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than 1 day and less than 1 week.
Critical	Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week and less than 1 month.
Catastrophic	Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than 1 month.



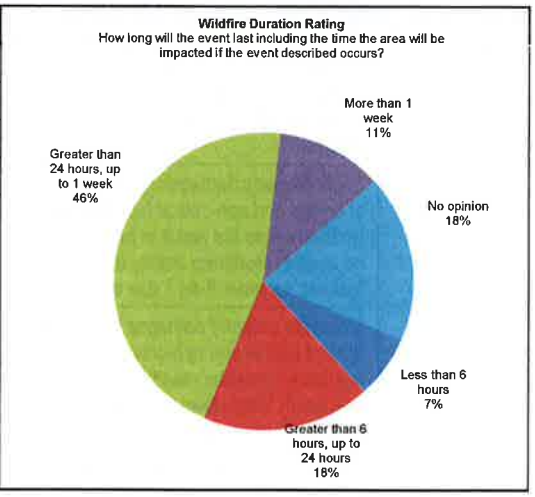
Warning Time – How much advance warning have you received for the type of event described?

Rating
More than 24 hours
12 to 24 hours
6 to 12 hours
Less than 6 hours or no warning
No knowledge / unknown



Duration – How long will the event last including the time the area will be impacted if the event described above occurs?

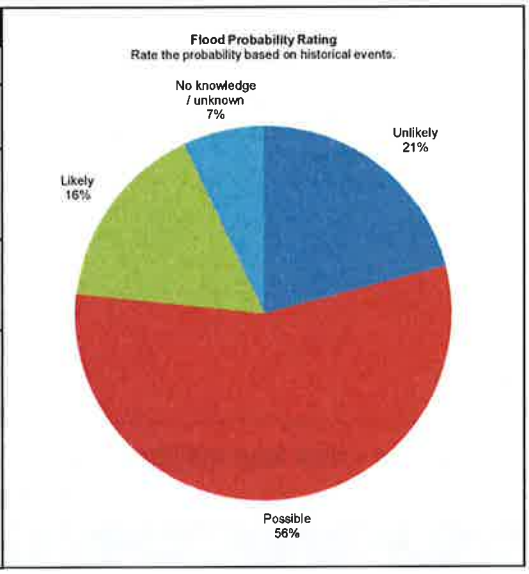
Rating
Less than 6 hours
Greater than 6 hours, up to 24 hours
Greater than 24 hours, up to 1 week
More than 1 week
No opinion



Flood

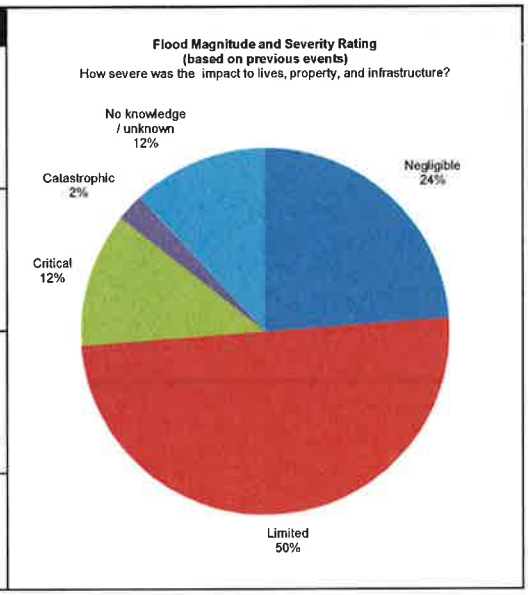
Probability – Rate the probability based on historical events

Rating	Description
N/A	Not Applicable
Unlikely	Unlikely: Extremely rare with no documented history of occurrence or events OR an annual probability less than .1%.
Possible	Possible: Rare occurrences with at least one documented or anecdotal historic event OR an annual probability between 1% and .1%.
Likely	Likely: Occasional occurrences with at least two or more documented historic events OR an annual probability that is between 10% and 1%.
Highly Likely	Highly Likely: Frequent events with a well-documented history of occurrence OR an annual probability that is greater than 10%.



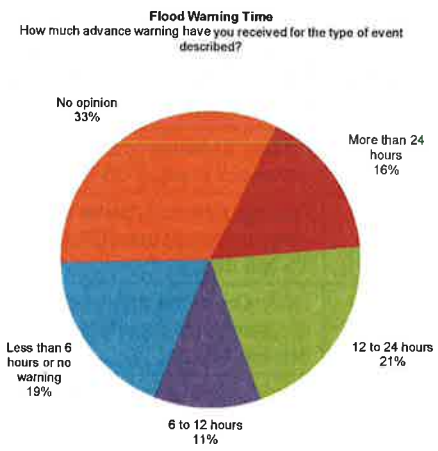
Magnitude and Severity – How severe was the impact to lives, property, and infrastructure?

Rating	Description
Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.
Limited	Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than 1 day and less than 1 week.
Critical	Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week and less than 1 month.
Catastrophic	Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than 1 month.



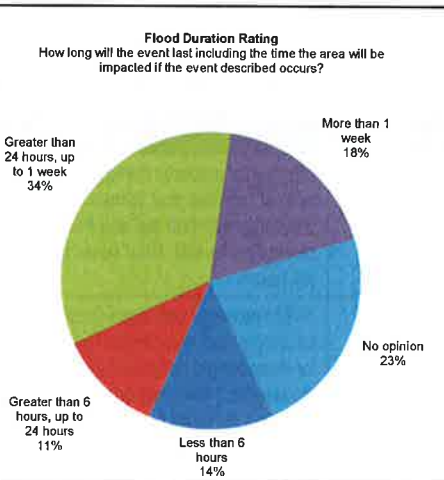
Warning Time – How much advance warning have you received for the type of event described?

Rating
More than 24 hours
12 to 24 hours
6 to 12 hours
Less than 6 hours or no warning
No knowledge / unknown



Duration – How long will the event last including the time the area will be impacted if the event described above occurs?

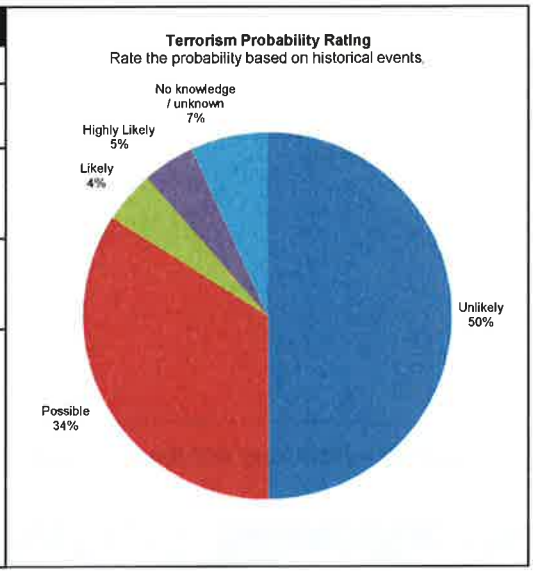
Rating
Less than 6 hours
Greater than 6 hours, up to 24 hours
Greater than 24 hours, up to 1 week
More than 1 week
No opinion



Terrorism

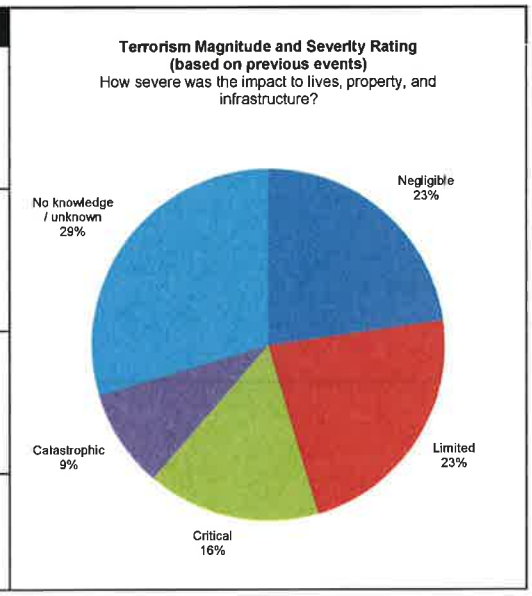
Probability – Rate the probability based on historical events

Rating	Description
N/A	Not Applicable
Unlikely	Unlikely: Extremely rare with no documented history of occurrence or events OR an annual probability less than .1%.
Possible	Possible: Rare occurrences with at least one documented or anecdotal historic event OR an annual probability between 1% and .1%.
Likely	Likely: Occasional occurrences with at least two or more documented historic events OR an annual probability that is between 10% and 1%.
Highly Likely	Highly Likely: Frequent events with a well-documented history of occurrence OR an annual probability that is greater than 10%.



Magnitude and Severity – How severe was the impact to lives, property, and infrastructure?

Rating	Description
Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.
Limited	Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than 1 day and less than 1 week.
Critical	Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week and less than 1 month.
Catastrophic	Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than 1 month.



Warning Time – How much advance warning have you received for the type of event described?

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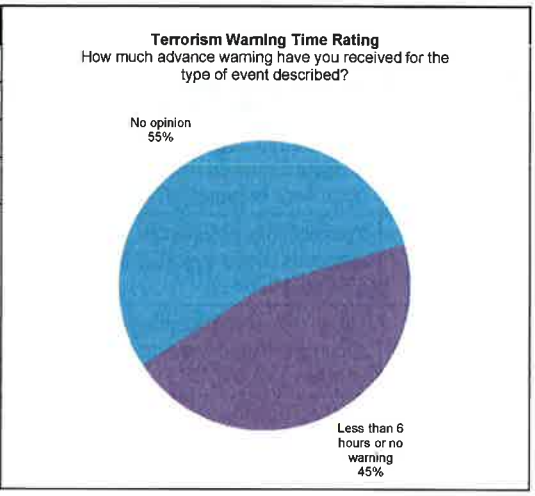
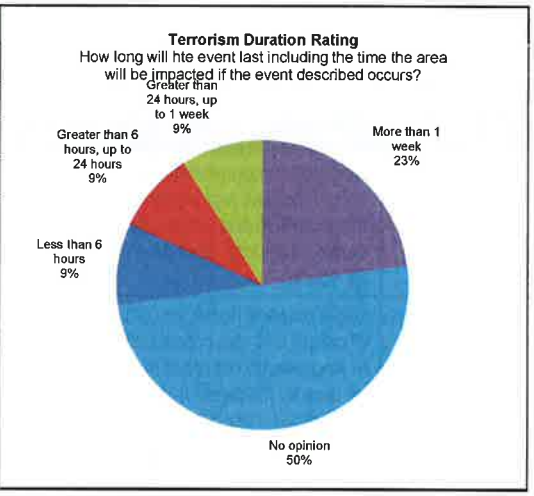
12 to 24 hours
6 to 12 hours
Less than 6 hours or no warning
No knowledge / unknown



Duration – How long will the event last including the time the area will be impacted if the event described above occurs?

Rating
Less than 6 hours
Greater than 6 hours, up to 24 hours
Greater than 24 hours, up to 1 week
More than 1 week
No opinion



Landslide

Probability – Rate the probability based on historical events

Rating	Description
N/A	Not Applicable
Unlikely	Unlikely: Extremely rare with no documented history of occurrence or events OR an annual probability less than .1%.
Possible	Possible: Rare occurrences with at least one documented or anecdotal historic event OR an annual probability between 1% and .1%.
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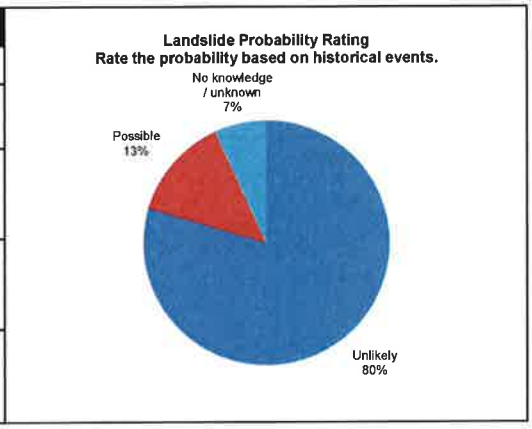

Magnitude and Severity – How severe was the impact to lives, property, and infrastructure?

Rating	Description
Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.
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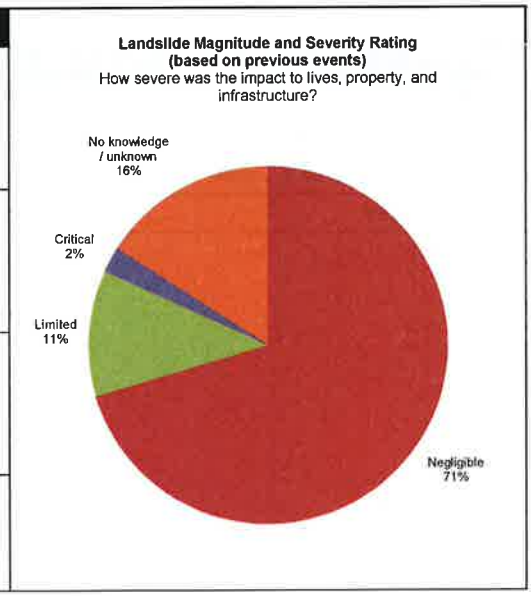

Warning Time – How much advance warning have you received for the type of event described?

Rating
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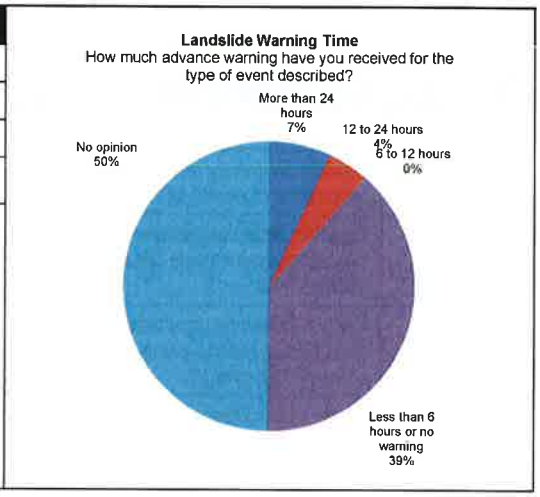
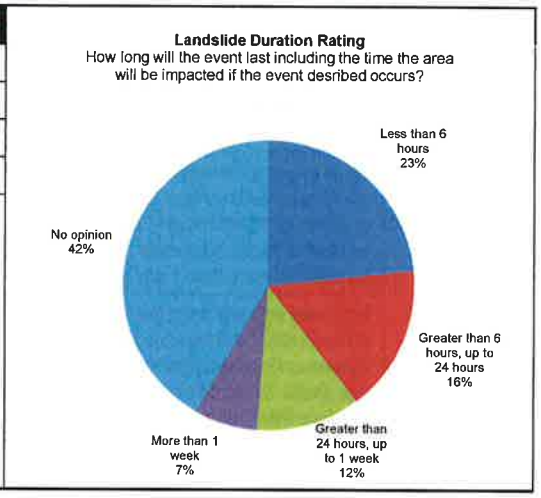
12 to 24 hours
6 to 12 hours
Less than 6 hours or no warning
No knowledge / unknown



Duration – How long will the event last including the time the area will be impacted if the event described above occurs?

Rating
Less than 6 hours
Greater than 6 hours, up to 24 hours
Greater than 24 hours, up to 1 week
More than 1 week
No opinion



SECTION 16. ANNEX E: PLANNING AND PUBLIC INVOLVEMENT

HMP PROJECT PLANNING AND PRIORITIZATION

On May 13, 2013, the Hazard Mitigation Plan Working Group met to finalize and prioritize the list of projects to be included in the HMP. The following personnel attended and participated in the process.

Name	Department
Allen Thompson	Public Works, Utilities Division
Brenda Gamlowski	Administration
Brian Ludicke, Planning Director	Planning
Chuen Ng	Planning Department
Craig Earl	Building Division
Joe Cabral, Communications Manager	Communications
Kelvin Tainatongo	City Manager's Office
Lee D'Errico	Public Safety Manager
Michelle Cantrell, City Engineer	City Engineering
Ray Hunt	Public Works, Capital Projects
Richard Long	Public Works, Maintenance Services
Robert Neal, Public Works Director	Public Works

PLANNING

As a member of Disaster Management Area B, Lancaster participates in quarterly planning meetings as well as post-DMA meetings with other cities. The following minutes provide a sample of the planning topics discussed at the DMA meetings. LVMCOG emergency management representatives also meet separately to discuss issues specific to the LVMCOG.

SAMPLE

Disaster Management Area B Meeting Minutes

CITY OF AGORA HILLS

MINUTES Jan 12, 2012 12:00 PM TO 12:18 PM CONFERENCE ROOM

MEETING CALLED BY	Standing Area B Local Hazard Mitigation Plan (LHMP) Meeting
TYPE OF MEETING	Quarterly Meeting
HOST / FACILITATOR	Debbie Pedrazzoli
NOTE TAKER	Debbie Pedrazzoli
ATTENDEES	**CITIES PRESENT:** Anne Ambrose – City of Palmdale, Director of Public Safety and Community Relations Brad Davis – City of Malibu, Emergency Preparedness Coordinator Debbie Larson – City of Calabasas, Public Safety Coordinator Donna Nuzzi – City of Santa Clarita, Emergency Services Supervisor Jim Jordan – City of Calabasas, Director of Public Safety & Emergency Preparedness Kelvin Tainatongo, City of Lancaster, Assistant to the City Manager Louis Celaya – City of Agoura Hills, Deputy City Manager Martin Zane – City of Hidden Hills, Public Safety Commissioner **DMAC PRESENT:** Deb Pedrazzoli – Area B Disaster **Management Area Coordinator (DMAC)** **AGENCY PARTNERS PRESENT:** None **GUESTS PRESENT:** None **CITIES NOT PRESENT:** Kerry Kallman – City of Westlake Village, Administrative Analyst

Agenda topics

INTRODUCTIONS DEB P

The Meeting was called to order at 12:00pm. Intriductions were not necessary.
CONCLUSIONS N/A

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
N/A	N/A	N/A

TOPIC/DISCUSSION DEB P

DISCUSSION	Overview of the FEMA's "Local Mitigation Plan Review Crosswalk": o Deb P. began reviewing with those in attendance the FEMA's Local Mitigation Plan Review Continuing Risk Assessment 201.6(c)(2). The plan shall include a risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards. o Assessing Vulnerability: Overview o Requirement 201.6(c)(2)(ii) o The risk assessment shall include a description of the jurisdiction's vulnerability to the hazards describe in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. o Elements o Include an overall summary description of the jurisdiction's vulnerability to each hazard. o Address the impact of each hazard on the jurisdiction. o Assessing Vulnerability: Addressing Repetitive Loss Properties o Requirement 201.6 (c)(2)(ii) o Assessment must address National Flood Insurance Program insured structures that have been repetitively damaged by floods. o Element o Describe vulnerability in terms of the types and numbers of repetitive loss properties located in the identified hazard areas. o Assessing Vulnerability: Identify Structures o Requirement 201.6(c)(2)(ii)(A) o Plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard area. o Elements o Describe vulnerability in terms of the types and numbers of existing buildings, infrastructure, and critical facilities located in the identified hazard areas. o Describe vulnerability in terms of the types and numbers, of future buildings, infrastructure, and critical facilities located in the identified hazard areas.

	Handouts. • Copy of FEMA's Local Mitigation Plan Review Crosswalk dated July 1, 2008 page A-7. **Next month's topic** • Continuation of FEMA's Local Mitigation Plan Review Crosswalk dated July 1, 2008 starting on page A-8 Risk Assessment – Assessing Vulnerability and Multi-Juristictional Risk Assessment.

CONCLUSIONS N/A		
ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
N/A	N/A	N/A

ROUNDTABLE ALL

DISCUSSION	Discussion ensued by all in attendance regarding the process of assessing vulnerability within their jurisdictions. Regarding Element 8 – Addressing Repetitive Loss Everyone agreed that the goal of the plan is to reduce repetitive loss. Regarding Element 8 – Identifying Structures Donna N. explained that the City of Santa Clarita is going through the process of identifying critical structures (ex. City Hall, shelter locations) Donna N. reported that the City of Santa Clarita uses the FEMA Hazus Program http://www.fema.gov/plan/prevent/hazus/ to run models but it is technical and requires GIS personnel. From the website: Hazus is a nationally applicable standardized methodology that contains models for estimating potential losses from earthquakes, floods, and hurricanes. Hazus uses Geographic Information Systems (GIS) technology to estimate physical, economic, and social impacts of disasters. Lastly Donna N. reported that the City of Santa Clarita is also using USGS ShakeCast http://earthquake.usgs.gov/research/software/shakecast/ From the website: Critical users (lifeline utilities, for example) can receive automatic notifications within minutes of an earthquake indicating the level of shaking and the likelihood of impact to their own facilities

CONCLUSIONS N/A		
ACTION ITEMS	**PERSON RESPONSIBLE**	**DEADLINE**
N/A	N/A	N/A

OBSERVERS	N/A
RESOURCE PERSONS	N/A
SPECIAL NOTES	12:18 PM MEETING ADJOURNED. Next Area B LHMP Meeting – Thursday, April 12, 2012 promptly following (approximately 12 Noon) the Area B Board Meeting at the City of Calabasas.

Public Participation and Involvement

The public participated in this Hazard Mitigation Plan (HMP). Public participation was enabled through a variety of means that included:

- An online Disaster Preparedness Risk Survey
- Public Announcements
- City Council Meetings

Disaster Preparedness Risk Survey

A survey was published to allow members of the public to provide their input on local area hazards, preparedness efforts, suggestions for mitigation and improvement, and the historic consequences of disasters. The results of the Survey are provided in Annex C.

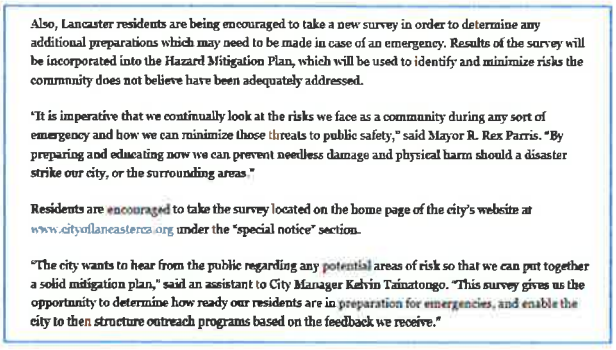
The survey was distributed and publicized via city websites, publically available forms, newspapers (link to the survey), social media, and during community training events. The figures below provide samples of announcements that appeared in news media.


The Antelope Valley Times

Home Lancaster Palmdale Crime Sports Politics Education Business

Take Lancaster's disaster preparedness survey

Figure 31: Antelope Valley Times Newspaper Survey Announcement



Also, Lancaster residents are being encouraged to take a new survey in order to determine any additional preparations which may need to be made in case of an emergency. Results of the survey will be incorporated into the Hazard Mitigation Plan, which will be used to identify and minimize risks the community does not believe have been adequately addressed.

"It is imperative that we continually look at the risks we face as a community during any sort of emergency and how we can minimize those threats to public safety," said Mayor R. Rex Parris. "By preparing and educating now we can prevent needless damage and physical harm should a disaster strike our city, or the surrounding areas."

Residents are encouraged to take the survey located on the home page of the city's website at www.cityoflancasterca.org under the "special notice" section.

"The city wants to hear from the public regarding any potential areas of risk so that we can put together a solid mitigation plan," said an assistant to City Manager Kelvin Tainatongo. "This survey gives us the opportunity to determine how ready our residents are in preparation for emergencies, and enable the city to then structure outreach programs based on the feedback we receive."

Figure 32: OurWeekly Newspaper Survey Article

The City of Lancaster announced the survey on its Twitter and Facebook social media sites.

Figure 33: Twitter Survey Announcement

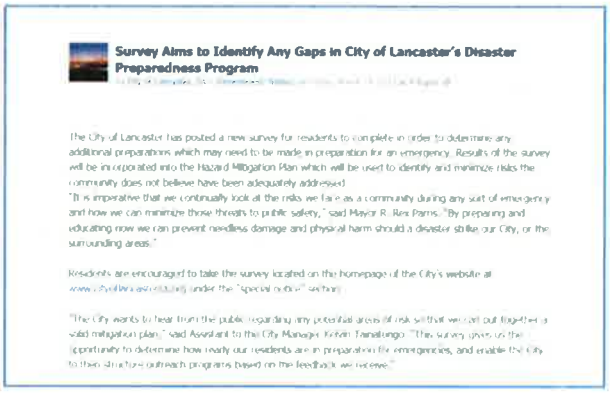


Figure 34: Facebook Survey Announcement

AVMedia, a local media company, created a Facebook post that linked to the survey.

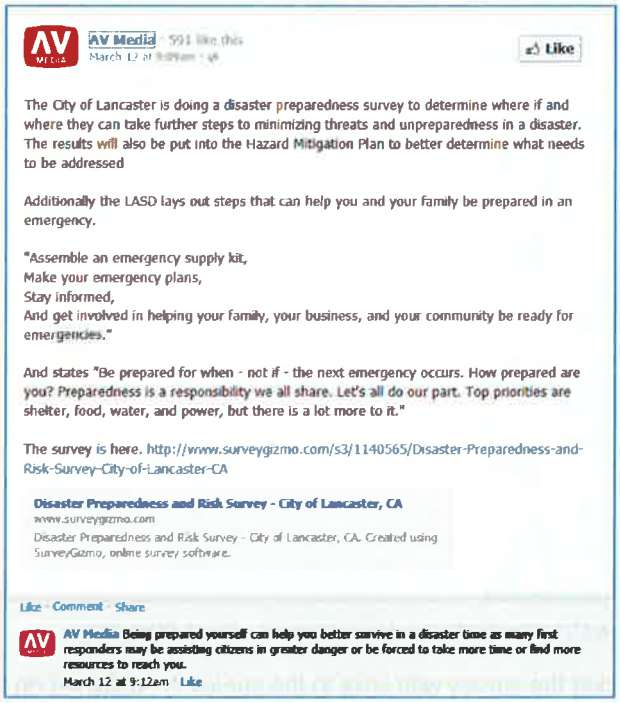


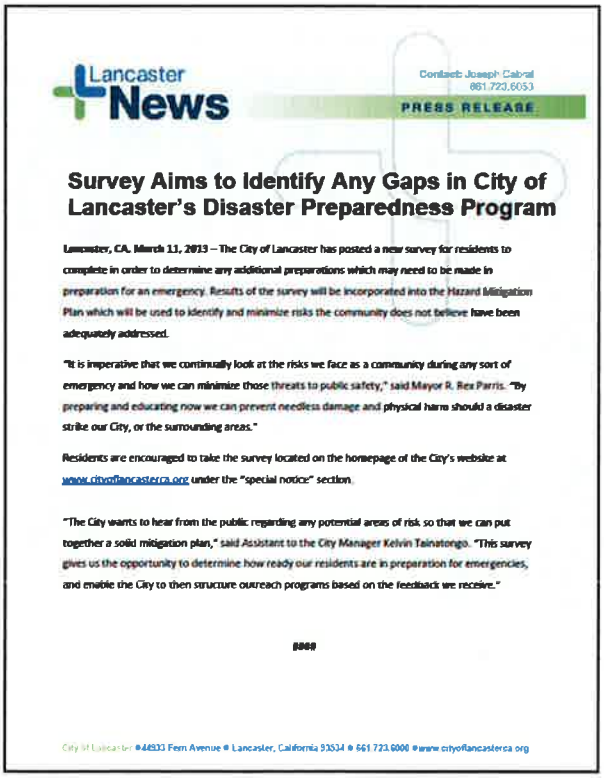
Figure 35: AV Media Facebook Survey Mention

Lancaster publicized the survey on multiple pages on its website.

Figure 36: Lancaster Survey Announcement - Home Page

Figure 37: Lancaster Survey Announcement – Public Safety Page

The press release announcing the survey with links to the survey is published on the **City News & Updates Web** page.



Lancaster News

Contact: Joseph Cabral
661.723.6053

PRESS RELEASE

Survey Aims to Identify Any Gaps in City of Lancaster's Disaster Preparedness Program

Lancaster, CA, March 11, 2013 – The City of Lancaster has posted a new survey for residents to complete in order to determine any additional preparations which may need to be made in preparation for an emergency. Results of the survey will be incorporated into the Hazard Mitigation Plan which will be used to identify and minimize risks the community does not believe have been adequately addressed.

"It is imperative that we continually look at the risks we face as a community during any sort of emergency and how we can minimize those threats to public safety," said Mayor R. Rex Parris. "By preparing and educating now we can prevent needless damage and physical harm should a disaster strike our City, or the surrounding areas."

Residents are encouraged to take the survey located on the homepage of the City's website at www.cityoflancasterca.org under the "special notice" section.

"The City wants to hear from the public regarding any potential areas of risk so that we can put together a solid mitigation plan," said Assistant to the City Manager Kelvin Tainatongo. "This survey gives us the opportunity to determine how ready our residents are in preparation for emergencies, and enable the City to then structure outreach programs based on the feedback we receive."

###

City of Lancaster ● 44933 Fern Avenue ● Lancaster, California 93534 ● 661.723.6000 ● www.cityoflancasterca.org

Figure 38: Lancaster Survey Press Release

PUBLIC ANNOUNCEMENTS AND INFORMATION

In addition to the Disaster Preparedness Risk Survey, Lancaster distributes emergency and disaster mitigation information via its website. A copy of the 2010 Emergency Response Plan Lancaster has a link to its 2010 Emergency Operations Plan on the Emergency Preparedness page of its website, as well as earthquake and active shooter educational videos and a link to download the **Be Ready Series**, a series of publications in PDF format to prepare residents for a number of emergencies.

The **Be Ready Series** topics include:

- Animals and Disasters
- Basic Fire Safety and Suppression
- Fire Extinguishers
- Hazard Mitigation
- Planning for the Aftermath
- Post-Disaster Assistance
- Shelter-in-Place
- Special Needs
- Utilities
- Your 12 Month Plan
- Your Disaster Kit
- Your Disaster Kit Checklist
- Your Family Plan

Lancaster has created a PDF documented available on its website named "Home Owner's Guide to Parkway Trees" that details resident responsibilities when planting trees so that the trees do not become a nuisance to the community. Other available publications include the "Los Angeles County Emergency Survival Guide".

The City of Lancaster website has an emergency preparedness page with links to FEMA training online preparedness training classes, fire safety information, preparation information for residents, information for special needs populations, and disaster planning kits and checklists.

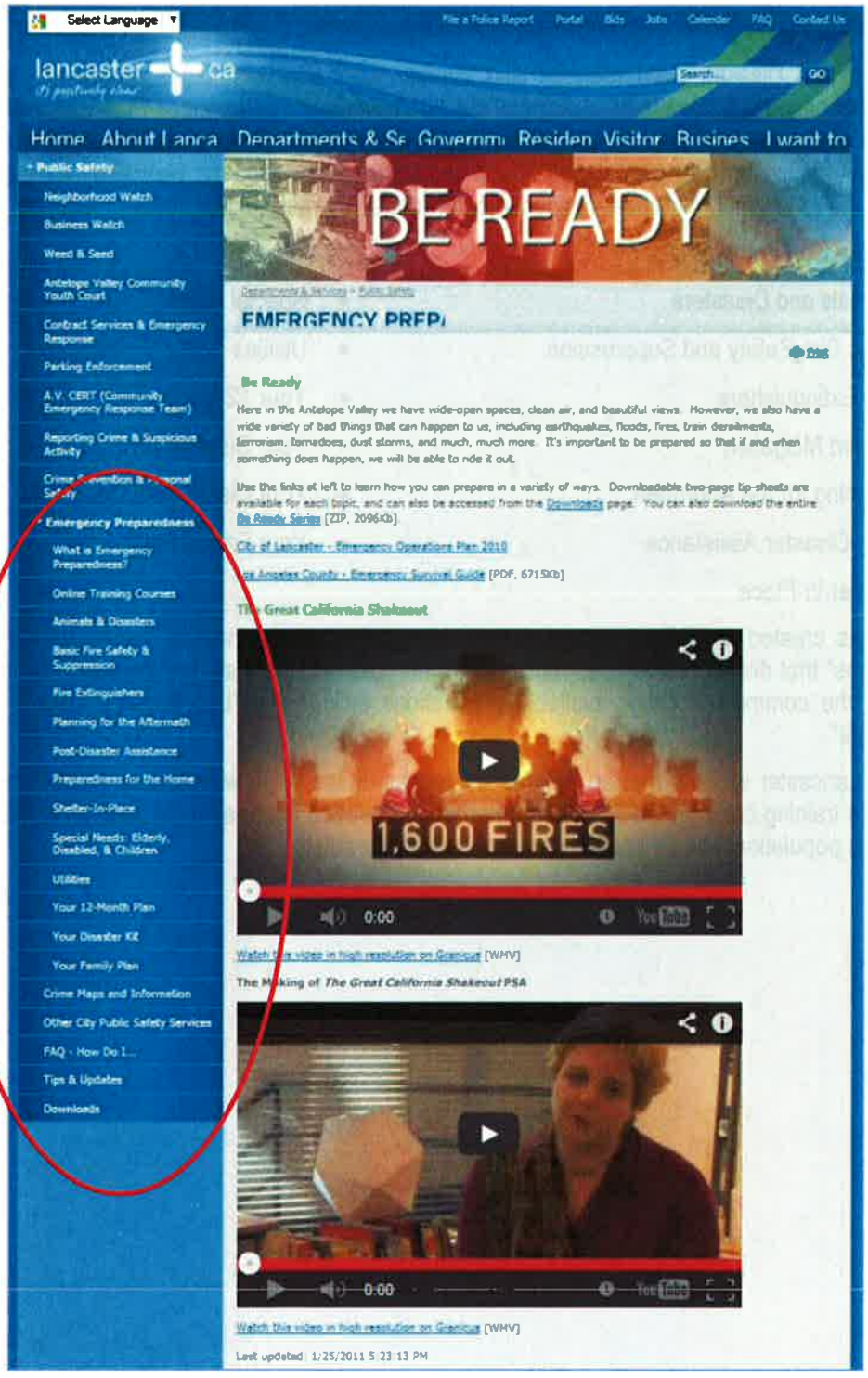


Figure 39: Lancaster's Be Ready Webpage

Lancaster also announced the survey in the monthly electronic newsletter, along with reminders to take the survey in following newsletters:

Lancaster eNews

| Forward to a Friend

Apply to be an Arts & Crafts Vendor at the 2013 California Poppy Festival

Arts & Crafts Vendor applications are now being accepted for the 22nd annual California Poppy Festival, to be held April 20 and 21 at Lancaster City Park, from 10 a.m. – 6 p.m. Whether you draw; paint; sculpt, sew; make jewelry; work with wood, iron or glass; or take beautiful pictures of nature, the Poppy Festival is a great place to display your artistic talents while making some extra money. More

Wedding on The BLVD: Engagement Photos by Sutton Photography

This week, help Laura and Juan choose the engagement photo that will be featured in the "Wedding on The BLVD" poster and framed by Graphic Experience as a keepsake for the couple! The engagement photo session was donated by Julie Sutton of Sutton Photography. Julie is an award-winning portrait and wedding photographer with decades of experience in the Antelope Valley. She specializes in everything from engagement and wedding photography to senior portraits, maternity, family, pinup and glamour shots, and more. Visit www.thebbwedding.com to vote for your favorite now!

Lancaster's First Annual Corporate Challenge to Offer Olympic Themed Fun

On Saturday, April 6, the City of Lancaster will kick off its First Annual Corporate Challenge, an Olympic style series of sporting events organized by the City staff Wellness Committee. The challenge promotes fitness, health, and wellbeing as well as encouraging networking within businesses and local organizations. Registration is now open and ends on Friday, March 29. More

Survey Aims to Identify Any Gaps in City of Lancaster's Disaster Preparedness Program

The City of Lancaster has posted a new survey for residents to complete in order to determine any additional preparations which may need to be made in preparation for an emergency. Results of the survey will be incorporated into the Hazard Mitigation Plan which will be used to identify and minimize risks the community does not believe have been adequately addressed. More

Events:
3/26/2013 5:00 PM
City Council/Successor Agency/Authority Meeting

Featured Videos:
Interview with INCOTEC
Youth in Government

In The News:
U.S. Mayor Pushes For Mandatory Solar
LA County City's Goal to Become Solar Capital of the World
All New Homes Must Have Solar, A Great Republican Idea
Special Metrolink service available to Auto Club Speedway's NASCAR race

Featured City Partner: Sierra Toyota Scion

For Your Information:
This weekend: Museum Of Art and History to Celebrate Spring with Eight New Exhibits
You can sponsor a Hometown Heroes banner on The BLVD
Make a Plan - Emergency Preparedness Tips

Have Summer Fun All Year Long at Eastside Pool

The Lancaster eNews letter is also used to promote disaster awareness, mitigation, and training.

Lancaster eNews

Have You Received Excellent Service?

You can nominate a City Employee for SABER (Service Above and Beyond the Employee's Responsibility) points. This program recognizes staff members who go the extra mile to ensure that our residents are taken care of. To nominate a City staff member for SABER points, click here.

For Your Information:

lancaster ca
it's positively clear

Recovering from a Disaster: Assistance and Services Available

Free Home Ownership Fair to be Offered by Pure Hearts R Us on June 29

Don't be the Next Victim of a Scam Artist: Helpful Tips to Avoiding Fraud

Lancaster eNews

City of Lancaster, Caltrans, and Metro Celebrate New Avenue I/SR 14 Interchange Improvements

This Tuesday, the City of Lancaster, California Department of Transportation (Caltrans) and Los Angeles County Metropolitan Transportation Authority (Metro) officials commemorated the recent opening of the new Avenue I/State Route 14 interchange. More

In the News:

AV Hospital to Host Free Hands-Only CPR Training During National CPR Week

Lancaster City Council Recognizes UAV Softball

Community Happenings:

Disaster Preparedness Event June 1 to Feature Speakers from City, LA County Fire, CERT and More

For Your Information:

Red Cross Helping Tornado Victims With Shelter, Food, Supplies

Emergency Preparedness Tips: Pet Preparedness

PUBLIC EVENTS

The City of Lancaster Public Safety department sets up booths at various events to promote public safety, disaster preparedness, and other safety related topics. The City recently set up a booth at the annual California Poppy Festival, a two day event with rides, music entertainment, food, community performances, arts and crafts, and community resources.

Figure 40: Public Event Booth with Handouts and Surveys

Figure 41: CERT at California Poppy Festival

The City also gives preparedness presentations at civic events including monthly neighborhood watch meetings. Below are the meeting notes from the last Neighborhood Watch monthly meeting with the city, along with the sign-in sheet and the Emergency Preparedness handout that was part of the Preparedness presentation.

NEIGHBORHOOD WATCH
BLOCK CAPTAIN MEETING
Thursday, April 18th, 2013, 6:00-8:00PM
CITY HALL COUNCIL CHAMBERS

AGENDA

Introductions

Bob Nishimura - Housing Authority of the County of Los Angeles
Section 8 Housing Presentation

Eddy Faison - National Alliance for Mental Illness
Mental Illness Presentation

Steve and Michele Webb - AV CERT
Community Emergency Response Team Presentation

Public Safety Staff
Lee D'Errico/Public Safety Manager
Aimee Vasquez/Crime Prevention Officer
Ann Marie Mercer/Crime Prevention Officer
Jennifer Priscaro/Crime Prevention Officer
Tracy Stewart/Crime Prevention Officer
Jim Kobolt/Senior Criminal Justice Analyst

Do You Know What to Do In An *Emergency?*

WHY TAKE THE CERT TRAINING?

Well it's like paying for car insurance. You might never need it, in fact you hope you won't. But if the occasion arises, having the CERT training, just like having car insurance, means you're as ready as you can be to help yourself, your family and your neighborhood in an emergency situation.

Class members receive 21 hours of initial training. CERT is provided free of charge to anyone 18 or over. Ages 16 and 17 must enroll along with parent.

Classes are taught year-round as interest dictates. CERT members are trained in basic disaster response skills such as fire safety, light search and rescue, team organization and disaster medical operations.

You will learn how to prepare for emergencies, what supplies you should NOW have in your house, how much food, how much water but most importantly, how to protect your family in an emergency!

It is important to know, if a major disaster occurs, the fire, paramedics, and law enforcement, WILL NOT COME FOR SOME TIME! They will be deployed FIRST to major incidents such as collapsed buildings. That is why you constantly hear...You MUST be prepared to take care of yourself! In the CERT course they say...

"The Greatest Good for the Greatest Number of People"

When you are trained, you are far more equipped to deal with your circumstances without needing aid from outside sources.

Take CERT training for:
Yourself
Your family
Your workplace
Your neighborhood
CERT Classes Are FREE!

CERT Course Class Topics

- Personal & Family Preparedness
- Earthquake Preparation
- Disaster Preparedness
- Team Organization
- Disaster Psychology
- Medical Operations
- Medical Triage
- Damage Assessment
- Fire Suppression
- Fire Chemistry
- Hazardous Materials
- Utility Control
- Light Search & Rescue
- Full Disaster Simulation

This was a CERT call-out to assist during the Station Fire. CERT members were a great help during this disaster by directing traffic, giving directions & patrolling the Fire Fighting Staging Area at Hansen Dam. This freed up emergency personnel for more critical tasks.

Free Emergency Preparedness Booklet

"Download the Emergency Preparedness Booklet by the Los Angeles Fire Department."

cert-la.com/emergprepbooklet.pdf

This is well worth your time and has critical information for you and your family's survival in an emergency.

CERT Training-Refresher

If a major earthquake hits, do you...

- have enough supplies for a minimum of 72 hours up to an entire month for all family members, including pets?
- know how to turn off the gas?
- know how to safely turn off the power?
- know how to apply first aid?
- have enough water for all of your family and your pets?
- have provisions for living outside your home for a length of time if the structure is compromised?

CERT classes are given by the Los Angeles County Fire Dept. Sign-up information at:

www.antelopevalleycert.com

We invite you to browse the website where you will find valuable and instructive information.

Note: Sign-in sheets omitted to safeguard individual privacy.

SECTION 17. ANNEX F: FLOOD INSURANCE RATE MAPS

This section provides selected Flood Insurance Rate Maps (FIRMs) for the Lancaster. This information is provided for planning purposes and is not a predictor of future events. The following FIRM notes apply to the maps included.

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply on landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements for the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services

NOAA, N/NGS12

National Geodetic Survey

SSMC-3, #9202

1315 East-West Highway

Silver Spring, MD 20910-3282

To obtain current elevation description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1994 or later and from National Geospatial Intelligence Agency

imagery produced at a scale of 1:4,000 from photography dated 2003 or later.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Pease refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, *a Flood insurance Study report*, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.

Legend

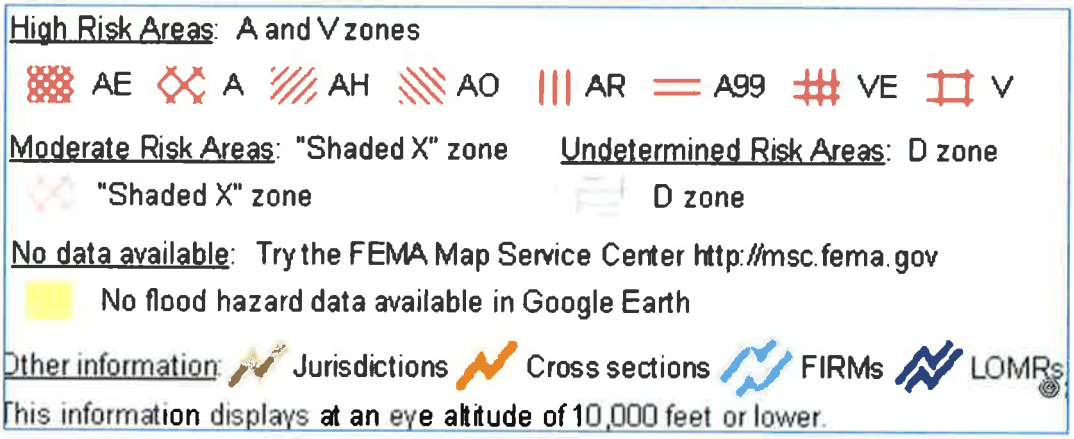
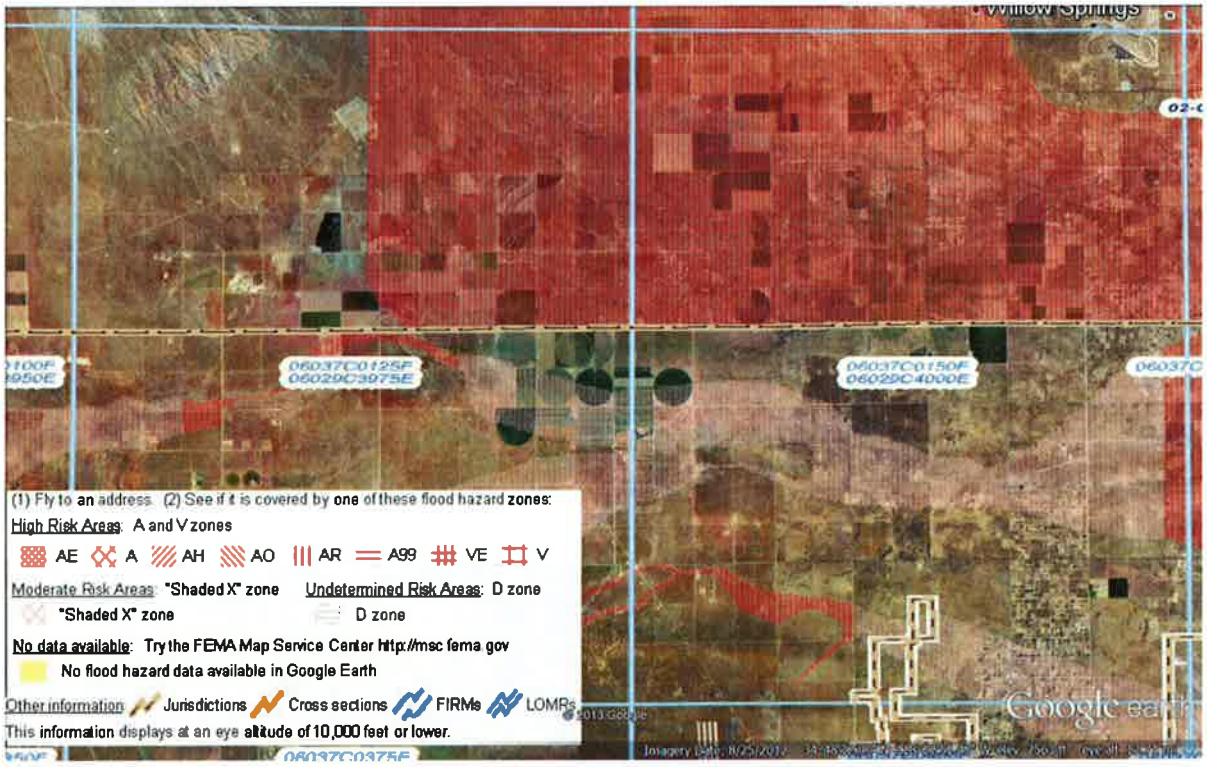


Figure 42: FEMA FIRM Legend

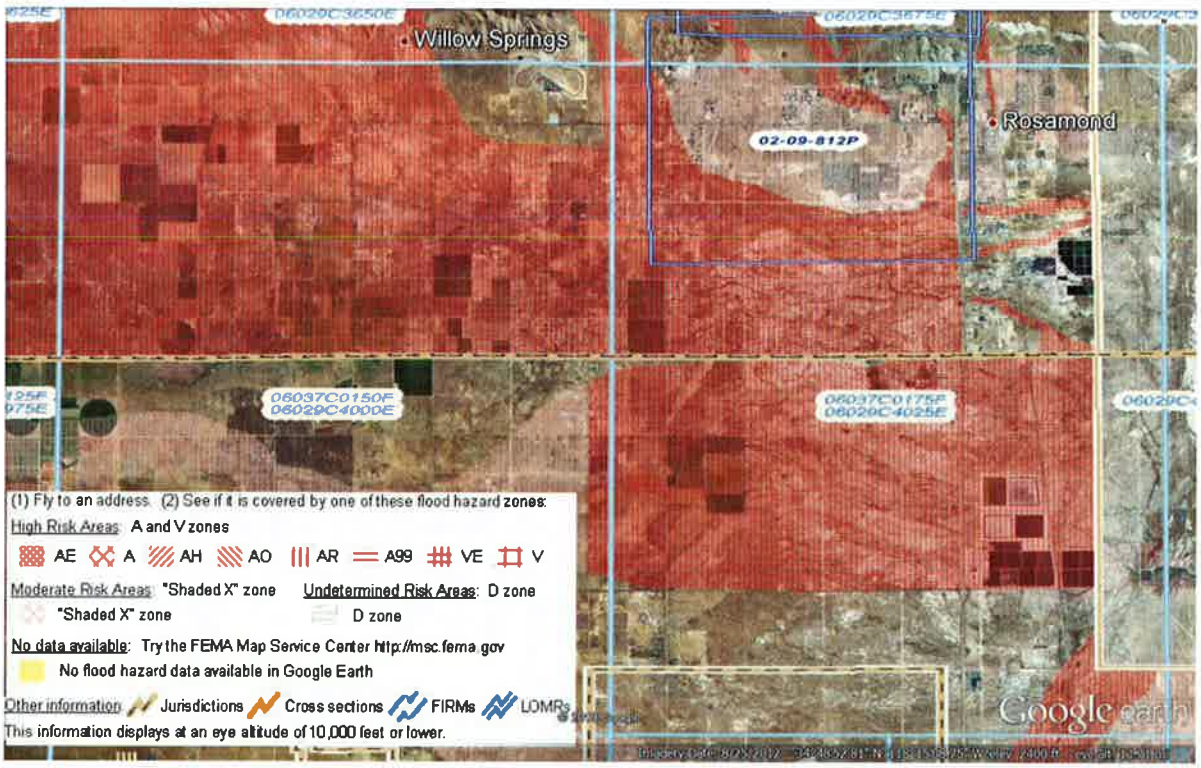
Legend Explanation

Zone A	No Base Flood Elevations Determined
Zone AE	Base Flood Elevations determined
Zone AH	Flood depths of 1 to 3 feed (usually areas of ponding); Base Flood elevations determined.
Zone AO	Flood depths of 1 to 3 feed (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities are determined.
Zone AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

Zone A99	Area to be protected form 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined
Zone V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
Zone VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

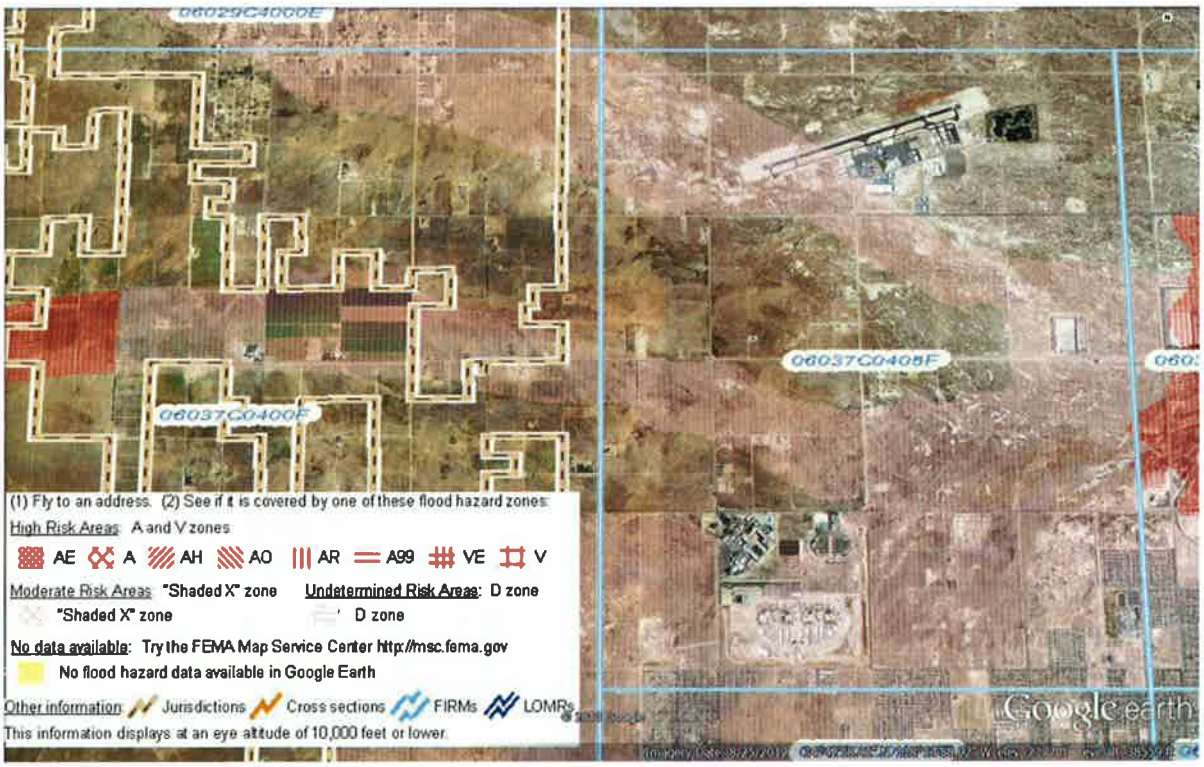


Map 26: Lancaster FIRM Panel 150

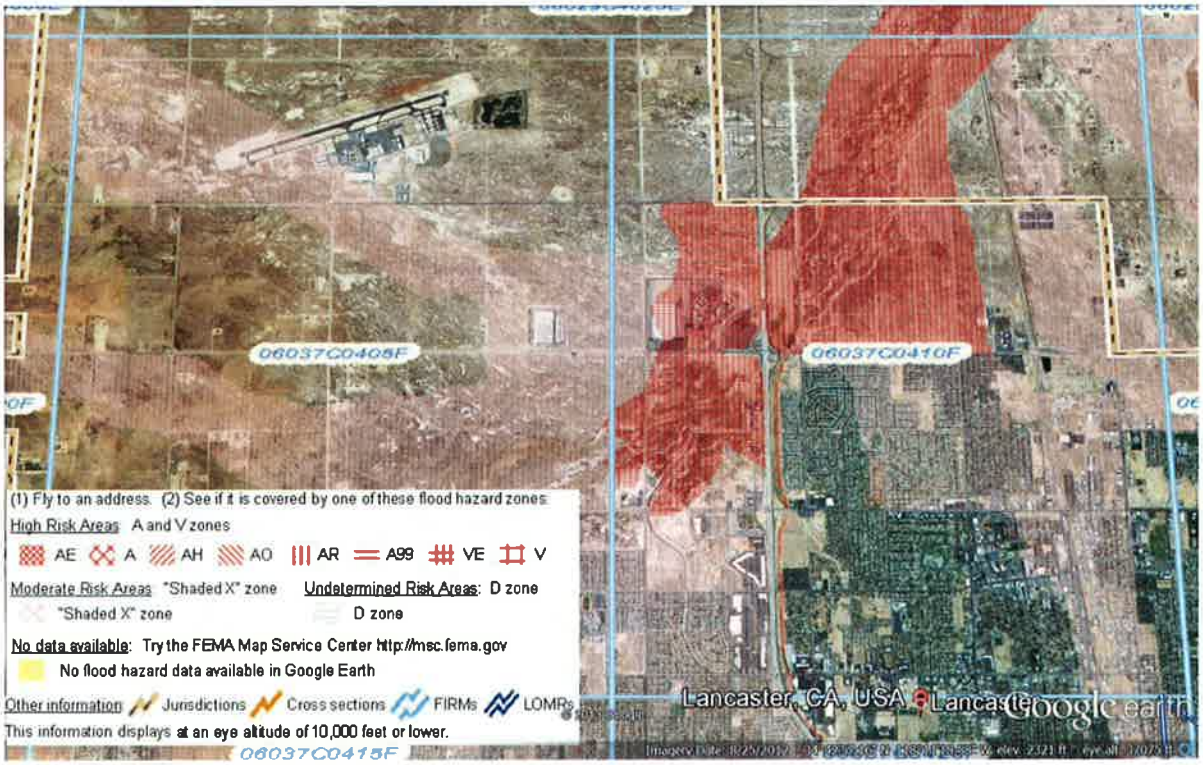


Map 27: Lancaster FIRM Panel 175

Map 28: Lancaster FIRM Panel 400



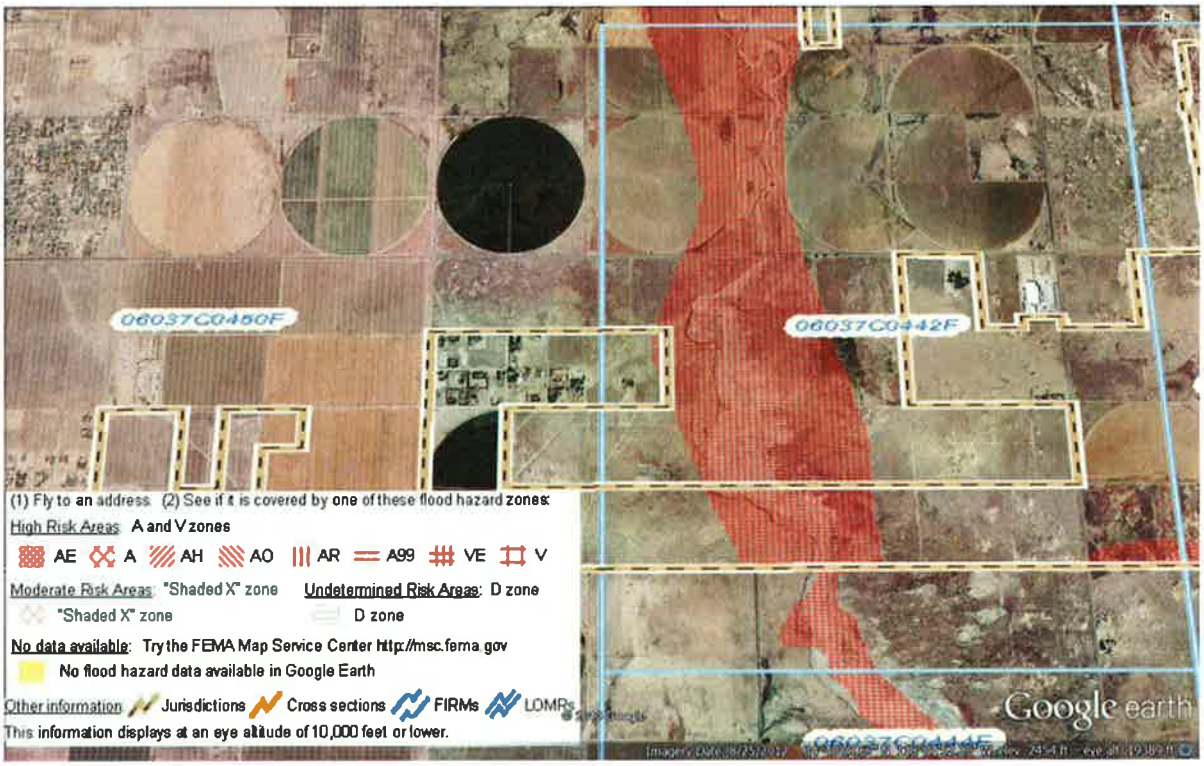
Map 29: Lancaster FIRM Panel 405



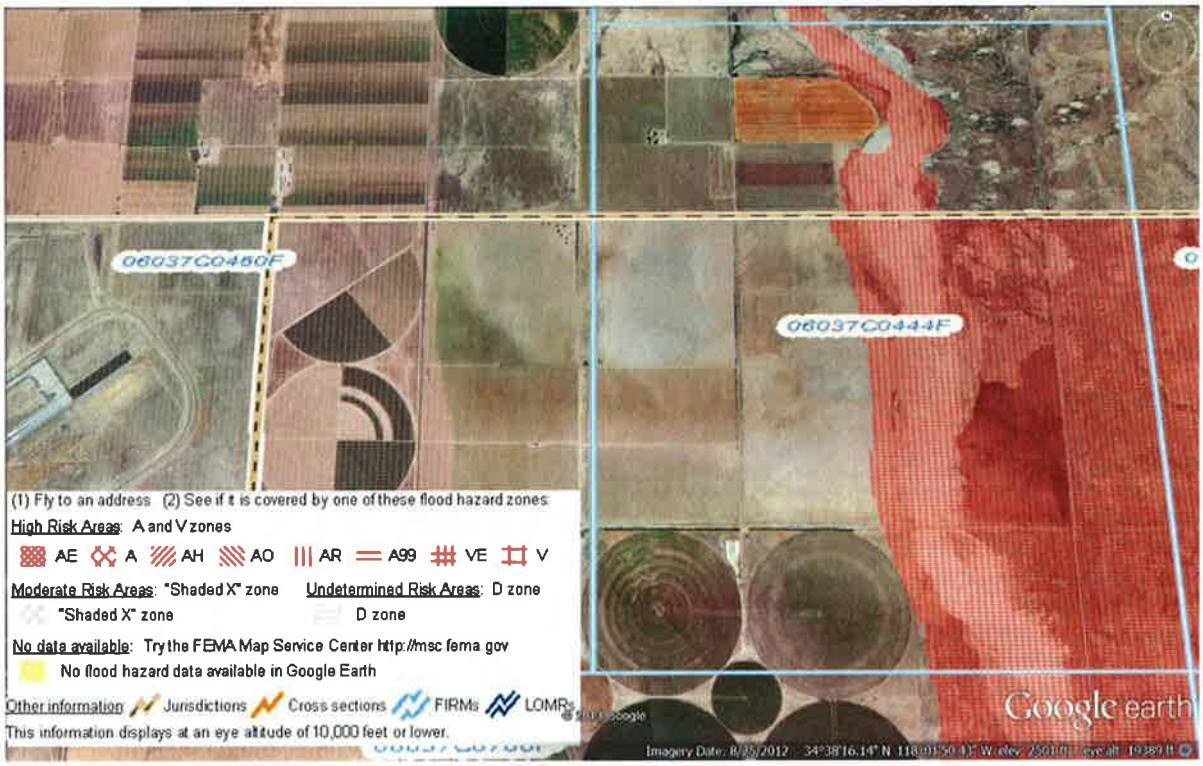
Map 30: Lancaster FIRM Panel 410

Map 31: Lancaster FIRM Panel 415

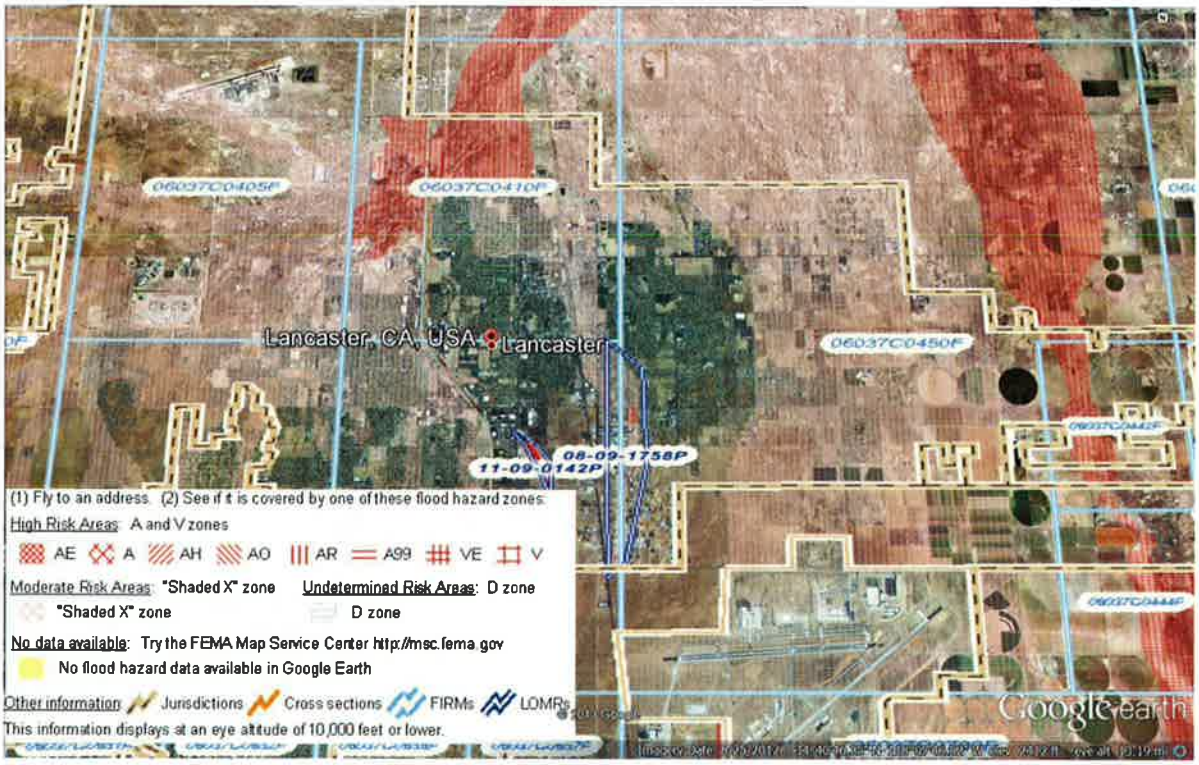
Map 32: Lancaster FIRM Panel 420



Map 33: Lancaster FIRM Panel 442



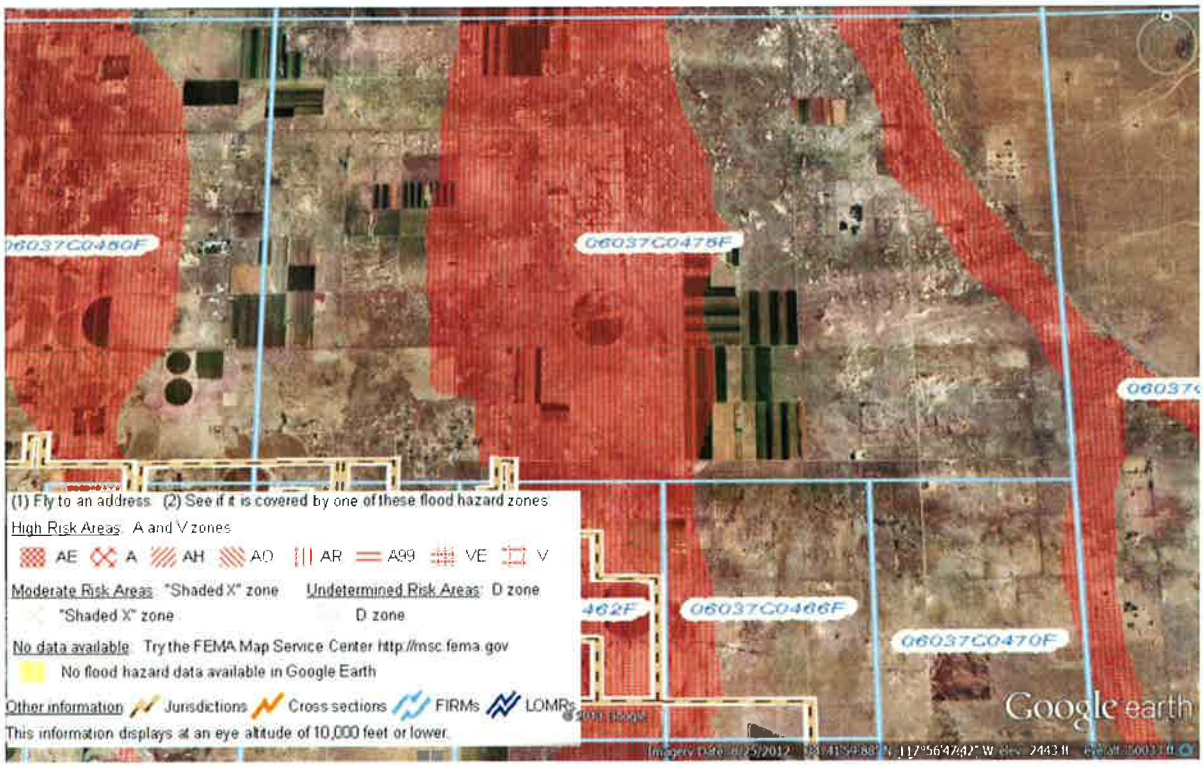
Map 34: Lancaster FIRM Panel 444



Map 35: Lancaster FIRM Panel 450

Map 36: Lancaster FIRM Panel 462

Map 37: Lancaster FIRM Panel 465



Map 38: Lancaster FIRM Panel 475

SECTION 18. ANNEX G: PLAN APPROVAL DOCUMENTS

To be inserted