

LOCAL HAZARD MITIGATION PLAN



One Civic Center Drive, La Cañada Flintridge, CA 91011

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FEMA

July 9, 2019

Christina Nguyen
Management Analyst
City of La Cañada Flintridge
1327 Foothill Boulevard
La Cañada Flintridge, CA 91011

Dear Ms. Nguyen:

We have completed our final review of the *2019 City of La Cañada Flintridge Local Hazard Mitigation Plan*, officially adopted by the City of La Cañada Flintridge on July 2, 2019 and found the plan to be in conformance with Title 44 Code of Federal Regulations (CFR) Part 201.6 *Local Mitigation Plans*.

The approval of this plan ensures the City of La Cañada Flintridge's continued eligibility for project grants under FEMA's Hazard Mitigation Assistance programs, including the Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, and Flood Mitigation Assistance Program. All requests for funding, however, will be evaluated individually according to the specific eligibility, and other requirements of the particular program under which applications are submitted.

Also, approved hazard mitigation plans may be eligible for points under the National Flood Insurance Program's Community Rating System (CRS). Additional information regarding the CRS can be found at <https://www.fema.gov/national-flood-insurance-program-community-rating-system> or through your local floodplain manager.

FEMA's approval of the *2019 City of La Cañada Flintridge Local Hazard Mitigation Plan* is for a period of five years, effective starting the date of this letter. Prior to July 9, 2024, the City of La Cañada Flintridge is required to review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval in order to continue to be eligible for mitigation project grant funding. The enclosed plan review tool provides additional recommendations to incorporate into the plan when the City of La Cañada Flintridge undertakes its identified plan maintenance process.

If you have any questions regarding the planning or review processes, please contact the FEMA Region IX Hazard Mitigation Planning Team at fema-r9-mitigation-planning@fema.dhs.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Juliette Hayes".

Juliette Hayes
Director
Mitigation Division
FEMA, Region IX

Enclosure

cc: Adam Sutkus, Hazard Mitigation Planning Chief, California Governor's Office of Emergency Services
Jennifer Hogan, State Hazard Mitigation Officer, California Governor's Office of Emergency Services

CITY OF LA CAÑADA FLINTRIDGE

RESOLUTION NO. 19-17

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LA CAÑADA FLINTRIDGE, CALIFORNIA, ADOPTING THE LOCAL HAZARD MITIGATION PLAN FOR 2019-2024 IN ACCORDANCE WITH THE FEDERAL DISASTER MITIGATION ACT OF 2000 (PUBLIC LAW 106-390)

WHEREAS, the Disaster Mitigation Act of 2000 (DMA2K) was enacted which required all public agencies to complete a Local Hazards Mitigation Plan in order to qualify for pre- and post-disaster mitigation funds; and

WHEREAS, the DMA2K focuses specifically on planning, and recognized the significance of hazard mitigation planning at the local level and the necessity for effective coordination between State and local entities to promote an integrated, comprehensive approach to mitigation planning; and

WHEREAS, local hazard mitigation planning is essential to the sustainability of the City of La Cañada Flintridge in that it increases the City's disaster resiliency; and

WHEREAS, the DMA2K requires local agencies like the City of La Cañada Flintridge to develop a mitigation plan that includes a detailed city profile; identifies specific threats and vulnerabilities within the City, and sets forth specific mitigation measures to address such threats and vulnerabilities; and

WHEREAS, in order to comply with the requirements of the Federal Government's DMA2K, each jurisdiction must plan, organize and develop the process by which the Local Hazard Mitigation Plan is created; and


WHEREAS, the DMA2K further requires detailed documentation of all actions, meetings, studies and directives undertaken in furtherance of developing and implementing the City's Local Hazard Mitigation Plan; and

WHEREAS, the City adopted Resolution No. 13-07 on April 15, 2013 adopting the City La Cañada Flintridge's Local Hazard Mitigation Plan for 2014-2019; and

WHEREAS, the City has evaluated the hazards, risks, and mitigation measures identified in the previous plan, and incorporated the results of these evaluations into an update of the plan for 2019-2024; and

WHEREAS, the updated Local Hazard Mitigation Plan has been reviewed by all City Department, committees, California Governor's Office of Emergency Services and Federal Emergency Management Agency, Region IX;

I, City Clerk of the City of La Cañada Flintridge, hereby certify that the foregoing is a full, true, and correct copy of the original on file in this office.


City Clerk of the City of La Cañada Flintridge
Date 7/8/19

WHEREAS, the updated Local Hazard Mitigation Plan was available for public comment and review for the required time period;

WHEREAS, the City Council desires to rescind Resolution No. 13-07 and adopt the updated Local Hazard Mitigation Plan for 2019-2024 in accordance with the DMA2K; and

WHEREAS, the City of La Cañada Flintridge agrees to adopt this updated Local Hazard Mitigation Plan and urges all officials, employees, public and private organizations, and citizens, individually and collectively, to do their share in furthering the goals and objectives of hazard mitigation within the City of La Cañada Flintridge.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF LA CAÑADA FLINTRIDGE, CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:

Section 1. The recitals set forth above are true and correct and are incorporated herein by reference.

Section 2. Resolution No. 13-07 is hereby rescinded.

Section 3. The City Council of the City of La Cañada Flintridge does hereby adopt the Local Hazard Mitigation Plan for 2019-2024 (dated July 2019), establishing goals and objectives to ensure the health, safety and welfare of its citizens, in the event of a natural or manmade disaster.

Section 4. The Local Hazard Mitigation Plan for 2019-2024 meets the program criteria of the Stafford Act as amended (Disaster Mitigation Act of 2000) in order that the City of La Cañada Flintridge will remain eligible for future pre-disaster and post-disaster mitigation funds.

Section 5. The City Council authorizes the City Manager or designee to perform all duties required to carry out the Local Hazard Mitigation Plan for 2019-2024.

Section 6. The City Council authorizes the City Manager or designee to make necessary administrative and operational changes to the Local Hazard Mitigation Plan for 2019-2024 that are in keeping with the intent of the plan as approved.

Section 7. This resolution shall take effect as of the date of its passage and adoption.

PASSED, APPROVED and ADOPTED this 2nd day of July 2019.



Leonard Pieroni, Mayor

ATTEST:



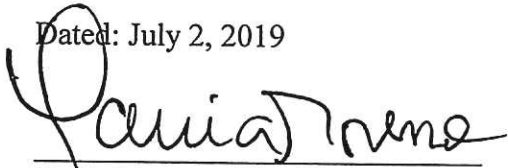
Tania Moreno, City Clerk

State of California)
County of Los Angeles) ss.
City of La Cañada Flintridge)

I, Tania Moreno, City Clerk of the City of La Cañada Flintridge, California, do hereby certify that the foregoing Resolution No. 19-17 was duly adopted by the City Council of the City of La Cañada Flintridge at a Regular Meeting held on the 2nd day of July 2019, by the following vote:

AYES: COUNCILMEMBERS: CURTIS, DAVITT, BROWN AND PIERONI
NOES: COUNCILMEMBERS: NONE
ABSENT: COUNCILMEMBERS: WALKER
ABSTAIN: COUNCILMEMBERS: NONE

Dated: July 2, 2019



Tania Moreno, City Clerk

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The City of La Cañada Flintridge 2018 Local Hazard Mitigation Plan (LHMP) includes resources and information to assist La Cañada Flintridge residents, public and private sector organizations, and others interested in participating in planning for natural and human-made hazards. The LHMP provides long-term and short-term policies, programs, projects and other activities that may assist in reducing risk and preventing loss from future disastrous events. The mitigation strategies address multiple hazard issues, as well as specific activities for drought, earthquake, extreme heat, flood, windstorm, landslide, wildfire, and human-made hazards.

The primary objective of the hazard mitigation plan is to reduce the negative impacts of future disasters on La Cañada Flintridge to save lives and reduce injuries, minimize damage to buildings and infrastructure (especially critical facilities) and minimize economic losses. This LHMP is an educational and planning document, not a regulatory document.

The plan complies with federal and state hazard planning requirements for addressing hazards, vulnerability, and risk. Adoption of this mitigation plan is required for La Cañada Flintridge to remain eligible for future Federal Emergency Management Agency (FEMA) mitigation grant funds and for reimbursement of disaster-related expenses.



1 INTRODUCTION

1.1 Why Prepare this Plan

Hazard mitigation is defined as any action taken to reduce or alleviate the loss of life, personal injury, and property damage that can result from a disaster. It involves long-term and short-term actions implemented before, during and after disasters. Hazard mitigation activities include planning efforts, policy changes, programs, studies, improvement projects, and other steps to reduce the impacts of hazards.

The Disaster Mitigation Act (DMA; Public Law 106-390), passed in 2000, requires state and local governments to develop hazard mitigation plans as a condition for federal disaster grant assistance. Regulations developed to fulfill the DMA’s requirements are included in Title 44 of the Code of Federal Regulations (44 CFR).

The responsibility for hazard mitigation lies with many, including private property owners, commercial interests, and local, state and federal governments. The DMA encourages cooperation among state and local authorities in pre-disaster planning. The enhanced planning network called for by the DMA helps local government articulate accurate needs for mitigation, resulting in the faster allocation of funding and more cost-effective risk-reduction projects.

The DMA also promotes sustainability in hazard mitigation. To be sustainable, hazard mitigation needs to incorporate sound management of natural resources and address hazards and mitigation in the largest possible social and economic context.

1.2 Updating the Plan

The City of La Cañada Flintridge 2019 Local Hazard Mitigation Plan (LHMP) is the second comprehensive update to the City’s hazard mitigation plan, meeting federal requirements for regular review and update of hazard mitigation plans. The City of La Cañada Flintridge prepared its initial local hazard mitigation plan in 2013, and FEMA approved that plan in 2014. As part of this 2019 LHMP update, a thorough review and update of the 2014 plan was conducted to ensure that this plan reflects current community conditions and priorities in order to realign the overall mitigation strategy for the next five-year planning period. The 2019 update includes a number of significant changes and enhancements:

- The following new hazards were added to the risk assessment:
 - Drought was added as a new natural hazard as a result of the 2014 Governor of California declared a State of Emergency due to drought. The drought emergency declaration was lifted in 2017, however, local and state measures are in place to prohibit wasteful practices and actions to advance water conservation; and
 - Excessive heat was added as new natural hazards as heat waves have the potential to impact vulnerable population and tax electricity demands in the community.
- Review and update of mitigation strategies;

- The plan mission statement and goals were refined; and
- The hazard sections were updated into new formats and revised to include current information and strategies to mitigate events.

The hazard mitigation plan contains a five-year implementation plan that identified resources, information, and strategies for reducing risk from natural disasters. Over the next five-years City departments will implement the actions items identified in this plan consistent with eight hazards that have the potential to occur within the City. The plan will help guide and coordinate mitigation activities through La Cañada Flintridge.

1.3 Who Will Benefit

The LHMP is intended to serve all residents and business of the City of La Cañada Flintridge. The plan reduces the risk for those who live in, work in, and visit the City of La Cañada Flintridge. It provides a viable planning framework for all foreseeable natural and human-made hazards. Participation in development of the plan by residents and key stakeholders helped ensure that outcomes will be mutually beneficial. The plan's goals and recommendations can lay the groundwork for the development and implementation of local mitigation activities and partnerships.



2 PLAN UPDATE

The City of La Cañada Flintridge LHMP is the result of a collaborative effort between La Cañada Flintridge citizens, public agencies, non-profit organizations, the private sector, and regional and state organizations. Public participation played a key role in the development of goals and action items. Meetings and workshops were held with community stakeholders and La Cañada Flintridge residents to develop the LHMP. Public outreach efforts included a project website with a link to allow for ongoing citizen and stakeholder input, the use of social media (Facebook and Twitter) and multiple press releases.

2.1 Planning Process

The Planning and Development Team and Hazard Mitigation Advisory Committee (HMAC) guided the process of developing the LHMP. The core planning team was assembled to facilitate the update of this plan, consisting of seven City of La Cañada Flintridge staff members. A 23-member committee was assembled to provide input and oversee the plan update, consisting of both governmental and non-governmental stakeholders within the planning area.

The information contained within the LHMP is based on research from a variety of sources. The Planning and Development Team consisting of City staff conducted data research and analysis, facilitated HMAC and public meetings, and developed the final LHMP.

Table 1: City of La Cañada Flintridge Planning and Development Team

Name	Title	Department
Christina Nguyen	Management Analyst	Administration Department
Arabo Parseghian	Division Manager	Administration Department
Joshua Jeffrey	Management Intern	Administration Department
Chris Carey	Emergency Services Coordinator	Administration Department
Lisa Brancheau	Senior Management Analyst	Planning Department
Hoon Hahn	City Engineer	Public Works Department
Paddy Taber	Senior Management Analyst	Public Works Department
Candice Rankin	Public Works Intern	Public Works Department

The planning team coordinated regularly during the update process to prepare, track and identify milestones for the plan’s development.

The Hazard Mitigation Advisory Committee was comprised of representatives of key agencies and organizations serving the community of La Cañada Flintridge.

Table 2: Hazard Mitigation Advisory Committee Members

Name	Title	Agency	Resident	Stakeholder
Maria Grycan	Community Services Liaison	Los Angeles County Fire Department – Division III, Fire Station 150		X
Eric Matejka	Deputy Sheriff	Los Angeles County Sheriff Department		X
John Penido	Disaster Management Area Coordinator	Los Angeles County Operational Area Disaster Management Area C		X
Pat Anderson	President & CEO	La Cañada Flintridge Chamber of Commerce	X	X
Ian Pinkham	Emergency Preparedness Program Administrator	NASA’s Jet Propulsion Laboratory (JPL)		X
William Michael		NASA’s Jet Propulsion Laboratory (JPL)		X
Wes Seastrom	Public Safety Commissioner	City of La Cañada Flintridge	X	
Marilyn Smith	Public Safety Commissioner	City of La Cañada Flintridge	X	
Brin Oh	Volunteer Emergency Response Team (VERT)		X	
Bill Pounders	Volunteer Emergency Response Team (VERT)		X	
Carl Pederson	Road Engineers	Los Angeles County Department of Public Works		X
Dan Drugan	Foothill Municipal Water District	Water Program Tech.		X
Glenn Ramos	Road Maintenance Supervisor Superintendent	Los Angeles County Department of Public Works		X
Maria Crone	Executive Director	Flintridge Riding Club		X
Marisol Espinoza	Public Affairs	Southern California Gas		X
Maureen Bond	Executive Director	Community Center of La Cañada Flintridge		X
Mike Miranda	Civil Engineer	L.A. County Department of Public Works		X
Sergio Yescas	Road Maintenance Supervisor	Los Angeles County Public Works		X
Randy Smith	Manager of Maintenance	La Cañada Unified School District		X
Nina Jazmadaria	General Manager	Foothill Municipal Water District		X
Ken Herman	District Engineer	Foothill Municipal Water District		X
Carl Alameda	Director of Administrative Services	City of La Cañada Flintridge		X
Ramil Parial	Associate Civil Engineer	Los Angeles County Public Works		X

The HMAC was invited to participate in a number of private and public meetings in which the update process was introduced and planned. The Planning and Development team emailed and called potential HMAC committee members, made announcements at public meetings, and posted meeting details on the City’s website and social media platforms. For a detailed list of contact, please see Appendix I(A)(2).

The HMAC members were key participants throughout the process, developing mitigation elements and discussing drafts as project sections were refined. They participated individually, consulting in person and through email with the Planning and Development team on their areas of expertise. Some commented through the public comment process described in Appendix I(B). They also collectively met for meetings and workshops, working with City staff and the public to develop and refine the LHMP. For a detailed description of the HMAC committee meetings and public workshops, please see Appendix I(A)(2) and Appendix I(A)(3).

Based on the review of existing plans and programs, the input received through the public participation process, expert’s knowledge from the HMAC, and the findings of a new, detailed assessment performed for this update, the planning team assembled a document that meets the federal hazard mitigation planning requirements.

2.2 How it was Prepared

The LHMP update was a yearlong process with the City and community working together to develop a comprehensive review and update of the 2014 plan that meets the needs of La Cañada Flintridge citizens and community members.

2.3 Public Involvement

Public participation is a key component of the LHMP process. Community engagement helps shape the plan and offers individuals and organizations the chance to voice their ideas and concerns. The Federal Emergency Management Agency also requires public input throughout the development of the mitigation plan.

2.3.1 Outreach Strategy

The LHMP integrates a cross-section of citizen input throughout the planning process. To accomplish this goal, the City of La Cañada Flintridge developed a public participation process utilizing four components:

1. Engaging La Cañada Flintridge’s Hazard Mitigation Advisory Committee which is comprised of knowledgeable individuals that are representative of the community;

2. Conducting targeted stakeholder meetings and workshops to leverage the specialized knowledge of individuals working with populations or areas at risk from natural and human-caused hazards in and around the municipality;
3. Conducting multiple public workshops where the community was invited to develop and discuss the plan; and
4. Participating in several regional partner meetings in order to identify common concerns and ideas regarding hazard mitigation and to discuss specific goals and actions of the mitigation plan.

Integrating public participation during the development of the City of La Cañada Flintridge Local Hazards Mitigation Plan has ultimately resulted in increased public awareness. Through citizen involvement, the mitigation plan reflects community issues, concerns, and new ideas and perspectives on mitigation opportunities and action items.



Figure 1: A stakeholder meeting discussing mitigation strategies

2.3.2 Public Meetings

Public Meetings were held to educate citizens, public officials, and business leaders about the hazard mitigation planning process and obtain feedback. Local agencies, businesses, academia, nonprofits, and other interested parties were personally invited and encouraged to provide input at these meetings to develop the Plan. Additionally, staff invited the public to give comments and suggestions directly using online forms. At the stakeholder and public information meetings, attendees discussed hazard mitigation planning

and its benefits, steps in the hazard mitigation planning process, and the importance of community input and participation. The intent was to have community input reflecting on the local goals, objectives, and mitigation actions for each of the hazards. A summary of each meeting, including copies of press releases, invitation examples, notices, PowerPoint presentation slides, and attendance lists are included in Appendix I. A list of the meetings held is presented below in Table 3.

Table 3: Timeline of Public Meetings

Event	Topic	Dates
Public Meeting	Introduction of LHMP	March 26, 2018
Project Kickoff	Initial meeting with City staff	March 28, 2018
Stakeholder Meeting	Overview of LHMP and discussion	April 23, 2018
Stakeholder Meeting	Hazard and mitigation discussion	May 22, 2018
Public Information Meeting	Review of LHMP	May 31, 2018
Public Information Meeting	Public review of final LHMP draft	October 22, 2018
Stakeholder Meeting	Review of final LHMP draft	November 6, 2018
Submit to Cal OES/FEMA	Cal OES/FEMA review of the document	December 2018

2.4 Plan Mission and Goal

The City’s Local Hazard Mitigation Plan mission statement is the following:

“The mission of the City of La Cañada Flintridge Local Hazards Mitigation Plan is to promote sound public policy and practices designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural and human-caused hazards. This is achieved by increasing public awareness, documenting the resources for risk reduction while taking measures to preserve life, property, and the environment.”

The LHMP goals describe the overall direction La Cañada Flintridge agencies, organizations, and citizens can take to work toward mitigating risk from natural and human-caused hazards. The goals are stepping-stones between the broad direction of the mission statement and the specific recommendations outlined in the action items.

A thorough evaluation of hazard threats has enabled the development of mitigation goals that are designed to minimize the impact of future disasters. Minimizing the impact of these events is essential to the continued economic and social stability of the community.

The LHMP mitigation action items and goals were developed by examining the history of disasters in La Cañada Flintridge and the surrounding communities. In the case of seismic events, it was necessary to evaluate the impact of past events that have affected other communities due to the infrequent occurrence, but the high impact of these events. Other events like wildfires and landslides occur with greater frequency and make evaluation and mitigation goal development more area specific.

The goals are organized into three categories; mitigation, collaboration, and education.

Mitigation

- A. Work towards the completion of mitigation projects for critical facilities, services, and infrastructure by establishing supportive policy.
- B. Protect lives by implementing measures that make homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from natural and human-caused hazards.
- C. Preserve life, property and the environment by balancing land use planning with natural hazard mitigation.

Collaboration

- A. Gain a vested interest in mitigation implementation by strengthening communication among and within public agencies, the school district, citizens, non-profit organizations, business, and industry.
- B. Increase hazard mitigation efforts among public agencies, the school district, citizens, non-profit organizations, business, and industry.
- C. Create precedents for local and regional hazard mitigation activities by promoting involved leadership within public and private sector organizations.

Education

- A. Increase public awareness of the risks associated with natural and human-caused hazards by developing education and outreach programs.
- B. Educate the public on personal recovery measures.



3 PLAN MAINTENANCE

In order for this LHMP to remain effective and useful to the community of La Cañada Flintridge, it must remain up to date. An updated version of the LHMP will continue to guide hazard mitigation action items in La Cañada Flintridge and will help keep the City eligible for state and federal hazard mitigation funding. The Planning and Development Team has structured this LHMP so that the City can easily update individual sections as new information becomes available and as new needs arise, helping to keep this Plan current.

3.1 Monitoring and Review

3.1.1 Plan Monitoring

The plan maintenance process includes a schedule for monitoring and evaluating the plan annually and producing an updated plan at least once every five years. Together, the action items in the Plan provide a framework for activities that the City of La Cañada Flintridge can implement over the next 5 years. The planning team and the Hazard Mitigation Advisory Committee have established goals and objectives and have prioritized mitigation actions that will be implemented through existing plans, policies, and programs.

The City of La Cañada Flintridge Administration Department will have lead responsibility for overseeing the Plan implementation and maintenance strategy. The Emergency Services Coordinator will supervise the plan monitoring and ensure that plan implementation and evaluation will be shared among all departments identified as lead departments in the mitigation action item plan. After each annual review of the plan, the Emergency Services Coordinator will produce a report outlining current progress on mitigation action items and the plans overall effectiveness. The report will be presented to City Council for review.

3.1.2 Plan Evaluation

Hazard Mitigation Advisory Committee oversaw the development of the Plan and made recommendations on key elements of the plan, including the maintenance strategy. It is recommended that a Hazard Mitigation Advisory Committee remain a viable body involved in key elements of the Plan maintenance strategy. The Emergency Services Coordinator will engage the Hazard Mitigation Advisory Committee in the review and be responsible for the LHMP's ongoing evaluation. The Planning and Development Team and Hazard Mitigation Advisory Committee should meet annually to review the implementation of mitigation action items and evaluate the plan's effectiveness. These meetings include:

- Discussion of the timing of implementing the mitigation action items.
- Evaluation of the action items that are being implemented and determining if these action items are succeeding.
- Revisions, as needed, of the prioritization of mitigation action items.
- Integration of the mitigation action items into other mechanisms as needed.

The first of these meetings will be held in the 2020 calendar year. To the extent possible, Committee meetings should be scheduled at an appropriate time in the City's annual budgeting process, which will help ensure that funding and staffing needs for mitigation action items are considered.

3.1.3 Plan Updates

Local hazard mitigation plans must be reviewed, revised if appropriate, and resubmitted for approval in order to remain eligible for benefits under the DMA (44 CFR, Section 201.6(d)(3)). The City of La Cañada Flintridge intends to update the hazard mitigation plan on a 5-year cycle from the date of initial plan adoption. This cycle may be accelerated to less than 5 years based on the following triggers:

- A Presidential Disaster Declaration that impacts the planning area;
- A change to conditions related to a hazard;
- A comprehensive update of the City of La Cañada Flintridge General Plan; and/or
- At the direction of the City Manager or designee.

The update process will add new and updated methods, demographic data, community information, hazard data and events, considerations for threat assessments, mitigation actions, and other information as necessary. This will help keep the Plan relevant and current. The Emergency Services Coordinator will be responsible for updating the Plan and ensure the Committee is engaged throughout the process. The Emergency Services Coordinator along with the Committee will determine the best process for updating the Plan, which should include the following steps:

- Involve at least one member from each City department or as a supporting role to contribute
- Contact non-City organizations that sat on the Hazard Mitigation Advisory Committee during the preparation of the Plan or other relevant entities to gauge their interest and involve them in the update process.
- Invite the public to participate.
- Review and update the hazard mapping and threat assessment for critical facilities.
- Revise the threat assessment for populations and other assets.
- Review and revise the mitigation actions as needed, including in response to actions that have been completed, changed, canceled, or postponed.
- Send a draft of the updated Plan to appropriate external agencies.
- Make a draft of the updated Plan available to members of the public for comment.
- Following public review, send a draft of the updated plan to the California Office of Emergency Services (Cal OES) and the Federal Emergency Management Agency (FEMA) for review and approval.
- Adopt the final updated Plan within one year of beginning the update process and within five years of the adoption of the previous Plan.

3.1.4 Continued Public Involvement

As part of the plan maintenance, the City will actively engage the public in the process of reviewing mitigation efforts and discussing annual updates. The public will have the opportunity to provide feedback about the Plan. Copies of the approved Plan will be catalogued and kept at all of the appropriate agencies in the City. The existence and location of the physical copies will be publicized in the City's newsletter which reaches every business and household in the City.

In addition, the Plan will be posted and made available on the City's website and will include a comment form which will be monitored by the Emergency Services Coordinator. Any proposed changes to the Plan will be posted there as well. The site will contain the contact information like email address and phone number to the Emergency Services Coordinator for the public to contact and direct their comments and concerns.

Additionally, a public meeting will be held after each annual evaluation or when deemed necessary by the Hazard Mitigation Advisory Committee. This meeting will take place during the Public Safety Commission meeting which will provide the public a forum for which to obtain updates, express concerns, provide opinions, share ideas, and learn about the Plan's ongoing maintenance activities. The Emergency Services Coordinator will be responsible for using City resources to publicize any future public meetings and maintain public involvement through the City's web page, newsletter, and public access channels.

3.2 Plan Adoption

Once pre-adoption approval of the document has been granted by Cal OES and FEMA Region IX, the final adoption phase will begin. The La Cañada Flintridge City Council will be responsible for adopting the updated LHMP and will promote sound public policies regarding local hazards. Once the City Council adopts the plan following its approval by FEMA, the Administration Department will transmit a copy of the adopted plan to FEMA. The City Council will periodically need to re-adopt the LHMP as it is revised to meet changes in the natural hazard risks and exposures in the community. A copy of the resolution is provided in Appendix III.

3.3 Implementation Through Existing Programs

The City of La Cañada Flintridge addresses statewide planning goals and legislative requirements through its General Plan, Capital Improvement Plans, Comprehensive School Safety Plans, and City Building and Safety Codes. The Local Hazard Mitigation Plan provides a series of recommendations - many of which are closely related to the goals and objectives of existing planning programs. The City of La Cañada Flintridge will have the opportunity to implement recommended mitigation action items through existing programs and procedures.

The City of La Cañada Flintridge administers the Building and Safety Codes through its Community

Development Department. In addition, the Community Development Department will work with other agencies at the state and local levels to review, develop and ensure Building and Safety Codes that are adequate to mitigate or prevent damage by natural and man-made hazards. This is to ensure that life-safety criteria are met for new construction.

The goals and action items in the mitigation plan may be achieved through activities recommended in the city's Capital Improvement Program (CIP). Various City departments develop CIP plans and review them on an annual basis. Upon the annual review of the CIPs, each city department will identify areas that the hazard mitigation plan action items are consistent with CIP planning goals and integrate them where appropriate.

Within the next fiscal year, after the formal adoption of the mitigation plan, the recommendations listed above will be incorporated into the process of existing planning mechanisms at the City level. The meetings of the Hazard Mitigation Advisory Committee will provide an opportunity for committee members to report back on the progress made on the integration of mitigation planning elements into city planning documents, procedures, and budgets.

3.3.1 Update of Mitigation Efforts

Since the adoption of the 2014 Plan, the City has aimed to mitigate hazards by implementing regulations, improving street infrastructure, and hiring staff to run the City's disaster and emergency operations.

The City's Planning, Community Development, and Building and Safety Department has implemented codes, ordinances, and resolutions that set standards, guidelines, and requirements for the building and construction of properties. The City amended and adopted the Los Angeles County Building and Fire Codes between 2013 and 2017. The most recent adoption of the 2017 Los Angeles County Building and Fire Codes, which have requirements for building structures including guidelines for making buildings resistant to hazards such as earthquakes and fires. The City updated its Water Efficient Landscape Resolution which helps homeowners and developers understand efficient landscaping design, how to reduce water usage and the potential wildfire fuel by using native species. The City has also adopted the Low Impact Development Ordinance which provide property owners with guidelines and requirements of how to contain run-off within their properties and prevent it from entering or causing damage to other properties.

The City Public Works Department has worked on various Capital Improvement projects to mitigate against flooding on City streets. These projects have consisted of street repairs and installing an emergency storm drain relief line.

In 2018, the City hired an Emergency Services Coordinator to oversee the City's disaster and emergency operations. The Emergency Services Coordinator's main scope of work is to lead the City's efforts through all emergency management areas which include prevention, protection, mitigation, response, and recovery. This individual has worked with all City Departments to ensure the successful implementation of mitigation efforts.



4 COMMUNITY PROFILE

4.1 Geography

The City of La Cañada Flintridge is located in the San Gabriel Valley between the San Gabriel Mountains and Angeles National Forest, with 2017 estimated population of 20,413. The City is located approximately 13 miles northeast of downtown Los Angeles and 6 miles northeast of Burbank. As of 2010 U.S. Census, the City had an average population density of 2,346 people per square mile and approximately 8.63 of square miles of land. The City offers the benefits of living in a Mediterranean type of climate and is characterized by the tree-lined streets and the rolling lawns of spacious estates. However, the potential impacts of natural hazards associated with the area make the environment and population possibly vulnerable to natural disasters.

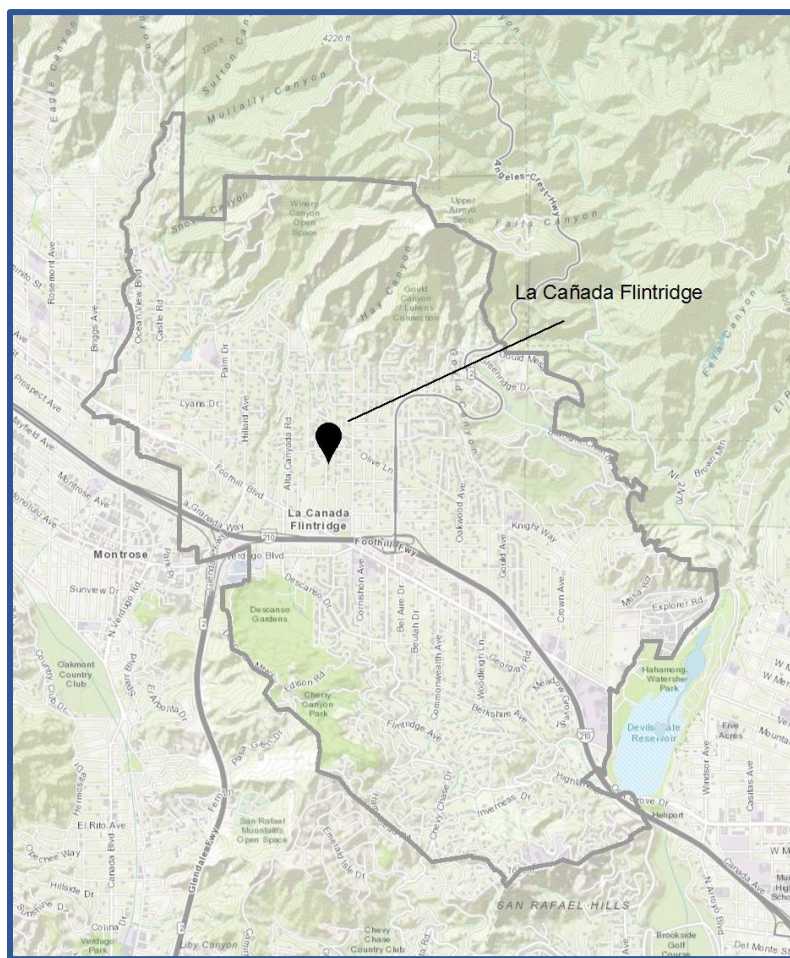


Figure 2: ArcGIS for the City of La Cañada Flintridge, 2018

4.2 Historical

Prior to the City’s incorporation on November 30, 1976, the La Cañada Flintridge area consisted of two communities, La Cañada on the north and Flintridge on the south. In the 1920s, developers began to subdivide the land and attract buyers. The largest subdivisions included Alta Canyon, developed by Edwin

T. Earl (inventor of the refrigerated fruit railroad car), and Flintridge, laid out by U.S. Senator Frank P. Flint.

Records indicate that as far as the 1800s, La Cañada Flintridge limited growth was a result of insufficient water supply and water rights. The majority of residents were ranchers who struggled with the drought and economic depression. By 1913, new sources of water supply and the construction of roadways began to change the Crescenta Valley from agricultural area to a suburban area. In 1955, the Colorado River was providing water to La Cañada Flintridge and the residential community began to expand.

Today, the City of La Cañada Flintridge retains a small-town feel and semi-rural character through policies that guide the desired pattern of development of the City. In addition, the presence of environmental and infrastructure constraints (i.e. hillside topography, wildfire hazards, lack of sanitary sewers) on much of the remaining vacant land in the City precludes extensive development.

Over 90 percent of the City's developed land consists of single-family residential uses, generally on large lots (one-quarter acre or more) with heavily landscaped streets. Regional and local commercial uses are limited to some portions of Foothill Boulevard and Verdugo Boulevard. The City contains no industry. NASA's Jet Propulsion Laboratory, located in the easternmost part of the community, is the City's largest employer. Growth continues to be limited to small residential subdivisions, residential infill, and recycling of commercial uses on Foothill Boulevard.

4.2.1 Major Past Events

La Cañada Flintridge most recently experienced damage from the "Station Fire" in 2009 and subsequent mudslides caused by hazardous heavy rains in 2010. The Los Angeles County Area was included in a Governor's declaration of emergency.

The La Cañada Flintridge area, like most of the Los Angeles Basin, lies over the area of one or more known earthquake faults, and potentially many more unknown faults, particularly so-called lateral or blind thrust faults. As a seismically active region, earthquake ground shaking, liquefaction, and seismically induced landslides are the most important geologic hazards. The City's hillside and range front areas are also subject to debris flow ("mudslide") hazards and some risk of non-seismic landslides ("mudslide") hazards and some risk of non-seismic landslides.

The major faults that have the potential to affect the greater Los Angeles Basin, and therefore the City of La Cañada Flintridge are the:

- San Andreas
- Newport / Inglewood
- Palos Verdes

- Whittier
- Santa Monica
- Sierra Madre

The Los Angeles Basin has a history of powerful and relatively frequent earthquakes, dating back to the powerful 8.0+ San Andreas earthquake of 1857 which did substantial damage to the relatively few buildings that existed at the time. Paleoseismological research indicates that large (8.0+) earthquakes occur on the San Andreas fault at intervals between 45 and 332 years with an average interval of 140 years. Other lesser faults have also caused very damaging earthquakes since 1857. Notable earthquakes include the Long Beach earthquake of 1933, the San Fernando earthquake of 1971, the 1987 Whittier earthquake and the 1994 Northridge earthquake. In addition, many areas in the Los Angeles Basin have sandy soils that are subject to liquefaction.

4.3 Physical Setting

As a hillside community, land uses are predominantly single-family residential, and range from neighborhoods on large lots to estates on winding, tree-lined streets. The City does not have manufacturing or industrial development. The undeveloped hillsides and its trail system have resulted in nearly 20 percent of its land being devoted to public and private open space uses. Future development is constrained by environmental and safety constraints such as topography, resources protection, and wildfire hazards on its undeveloped steep slopes (City of La Cañada Flintridge General Plan 2030).

4.3.1 Topology

The City is dominated by dramatic alluvial fans along the San Gabriel range front; consistent with this setting, slope gradients are steeper adjacent to the range front, decreasing southward onto the Valley floor proper. The City is nestled in the Crescenta Valley along the Interstate (I) 210 corridor, between the foothills of the San Gabriel Mountains and Angeles National Forest on the north, and in the San Rafael Hills on the south. Elevation ranges from 970 feet just below Devil's Gate Dam in the Arroyo Seco to nearly 2400 feet at the highest neighborhood on the northern boundary along the San Gabriel range front.

4.3.1.1 Local Rivers and Streams

The major rivers near La Cañada Flintridge are the Los Angeles River, Rio Hondo River, and San Gabriel River. These rivers do not have the potential to impact the City. Normally these maintained river channels are dry and only carry a significant water flow during major rainstorms.

4.3.2 Geology

The city is situated on soils assigned to the Hanford and Vista-Amargosa soil associations. Lowland areas are underlain by Hanford soils; uplands are underlain by Vista-Amargosa soil (U.S. Soil Conservation Service 1969).

The Hanford association consists of loam and sandy loam soils developed on gently sloping alluvial fans at elevations below 3,500 feet. Hanford soils are typically more than 60 inches deep, with gravel horizons locally present in the lower third of the profile. They range from mildly acid to mildly alkaline and are well drained, with slow runoff, slight erosion hazard (except where dry soils are subject to wind erosion), and moderately rapid subsoil permeability. Expansion potential (shrink-swell hazard) is typically low (U.S. Soil Conservation Service 1969).

The Vista-Amargosa association consists of thinner sandy loam soils of steep bedrock slopes at elevations between 1,300 and 3,900 feet. Vista soils are typically 28–38 inches thick and developed on granitic bedrock. They range from neutral to slightly acid, are well drained, and exhibit moderately rapid subsoil permeability. Amargosa soils are thinner (14–20 inches) and are typically slightly acid. They are excessively drained, with rapid runoff and moderately rapid subsoil permeability. Erosion hazard is high; Amargosa soils are prone to sheet and rill erosion and gullyng. Shrink-swell hazard is low (U.S. Soil Conservation Service 1969).

The characteristics of the minerals and soils present in the City of La Cañada Flintridge indicate the potential types of hazards that may occur. In the City's upland areas, the steepness of the terrain and the potential for periods of intense rainfall combine to create substantial erosion hazard. Large amounts of debris and soil are washed down from a higher elevation to the City during and after large storms, and vacant land with steep slopes may erode significantly. The potential for rapid erosion contributes to debris flow hazards by providing sediment input to rain-swollen drainages; this issue is discussed further in the next section. Although natural and introduced vegetation has substantially reduced the extent of local erosion, vacant land with steep slopes continues to erode significantly during periods of moderate to heavy rainfall.

4.3.3 Climate

The climate of La Cañada Flintridge is Mediterranean with mild winters and dry summers. Annual average temperatures range from 55 to 78 degrees Fahrenheit. The record high and low temperatures have been 113 and 21 degrees Fahrenheit. However, the temperatures can vary over a wider range, particularly when the Santa Ana winds blow, bringing higher temperatures and very low humidity. Temperatures rarely exceed 100 degrees Fahrenheit in the summer, and rarely drop below 30 degrees Fahrenheit in the winter.

The humidity in the area is moderate, averaging 65 percent. La Cañada Flintridge average annual rainfall is approximately 21 inches per year, with the highest average amounts falling between December and

March. However, the term “average rainfall” is misleading because over the recorded history of rainfall in the City of La Cañada Flintridge rainfall amounts have ranged from one-third the normal amount to more than double the normal amount. There are three types of storms that produce precipitation in the southern California area, which includes La Cañada Flintridge: winter storms, locally generated thunderstorms, and summer tropical storms.

Furthermore, actual rainfall in southern California tends to fall in large amounts during sporadic and often heavy storms rather than consistently over storms at somewhat regular intervals. In short, rainfall in southern California might be characterized as feast or famine within a single year. Due to the metropolitan basin largely built out, water originating in higher elevation communities can have a sudden impact on adjoining.

4.4 Development Profile

4.4.1 Land Use

According to the Background Report for the General Plan, the City currently has 15 existing General Plan land use designations (City of La Cañada Flintridge, 2017). Zoning divides a community into districts or “zones” which specify the permitted, special, and prohibited uses within those zones. Land uses in each zone can be regulated according to type, density, height, lot size, placement, building bulk, and other development standards. Table 4 and Figure 3 summarizes the breakdown of current land use in the City.

Table 4: General Plan Land Use Designations

General Plan Designation	Acreage	% Total Land Use
Commercial/Office	28.13	0.6
Downtown Village Specific Plan	102.06	2.1
Hillside Residential	579.11	11.7
Estate Residential	636.29	12.8
Very-Low-Density Residential	888.75	17.9
Low Density Residential	1,106.76	22.3
Medium Density Residential	242.97	4.9
Medium High Density Residential	6.24	0.1
High Density Residential	11.29	0.2
Institutional	46.32	0.9
Public Facilities	171.59	3.5
Public Schools	229.68	4.6
Recreational	50.16	1
Open Space, Public	685.15	14
Open Space, Private	169.22	3.4
Total	4,953.72	100%

Sources: City of La Cañada Land Use Map, (2003), updated by Jones & Stokes, June 26, 2007. Acreage is approximate; calculated from GIS data.

Figure 3 shows the City of La Cañada Flintridge Land Use Element Map

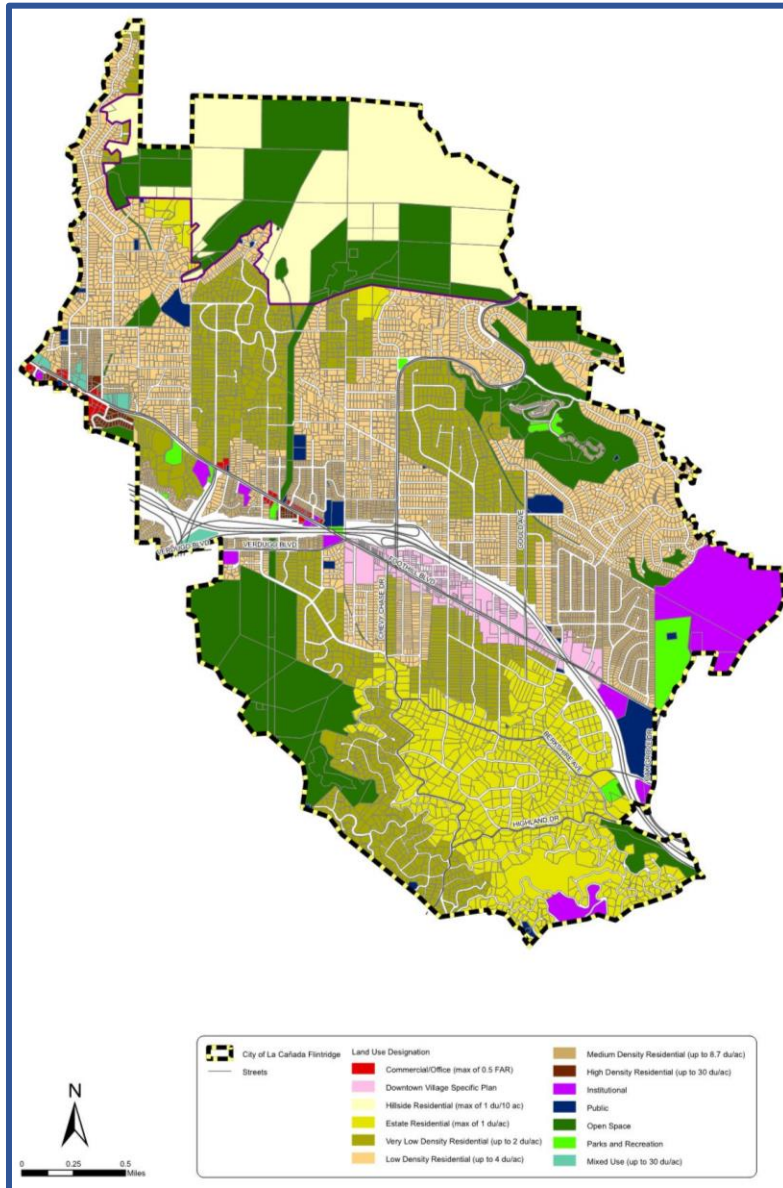


Figure 3: City of La Cañada Flintridge Land Use Element Map

The City is fully developed. Since the 2014 Plan, the City has not undergone major development. The City does not have the capacity for new development.

4.4.2 Housing and Community Development

In the City of La Cañada Flintridge, the demand for housing outstrips the available supply. Demand for medium to high priced homes continues to be strong. According to the U.S. Census Bureau between 2012-2016, 89.1% of housing units were owner-occupied. The median value of owner-occupied housing unit was \$1,207,900. The median gross rent was \$2,000. On average persons living per household was 3.08. The U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates, indicate that in La Cañada Flintridge there are approximately 7,080 housing units.

According to the City’s Planning Department 2017 Annual Progress Report, the number of residential and commercial Planning Department approvals processed by the City was 272 in comparison to 303 in 2008.

4.4.3 Critical Facilities and Infrastructure

Critical facilities and infrastructure were analyzed and identified as all public and private facilities deemed by a community to be essential for the delivery of vital services, protection of special populations, and the provision of other services of importance for that community.

Critical Operating Facilities- These facilities house City personnel and are required for the day-to-day conduct of City business. They include City Hall, an emergency operation center (EOC), Lanterman Auditorium, and CERT emergency equipment storage unit.

Critical Response Facilities- These facilities are necessary for hazard event response. They include Crescenta Valley Sheriff Station, Fire Station #82 (East), Fire Station #19 (West), NASA’s Jet Propulsion Laboratory, hospitals, and evacuation centers, such as La Cañada Unified School District schools (La Cañada High School Gymnasium), recreation and park facilities, radio tower, and alternative EOC locations such as the La Cañada Unified School District offices. The City has various water reservoirs that are critical during hazard events. In addition, the 23-miles of interconnection trails are utilized by the Los Angeles County Fire Department for a fire break.

Table 5 below is an extended list of some of the critical facilities with the City of La Cañada Flintridge.

Table 5: Critical Facilities

Type	Name	Location
Government	City Hall	One Civic Center Drive
Government	Lanterman House	4420 Encinas Drive
Government	VERT Equipment Storage Unit	1300 Foothill Boulevard Blvd
School District	La Cañada High School	4463 Oak Grove Drive

Type	Name	Location
School District	La Cañada Elementary School	4540 Encinas Drive
School District	Paradise Canyon Elementary School	471 Knight Way
School District	Palm Crest Elementary School	5025 Palm Drive
School District	La Cañada School District	4490 Cornishon Avenue
Government	LA County Fire Station #19	1729 W. Foothill Boulevard
Government	LA County Fire Station #82	352 N. Foothill Boulevard
Government	LA County Fire Camp #2	4810 N. Oak Grove Drive
Government	LA County Sheriff's Crescenta Valley Station	4544 Briggs Avenue. La Crescenta, CA 91214 (Outside City limits)
Hospital	USC Verdugo Hills Hospital	1812 Verdugo Boulevard, Glendale, CA 91208 (Outside City limits)
Federal Government	NASA's Jet Propulsion Laboratory	4800 Oak Grove Drive, Pasadena, CA 91109

Figure 4 shows the location of some critical facilities and infrastructure in La Cañada Flintridge.

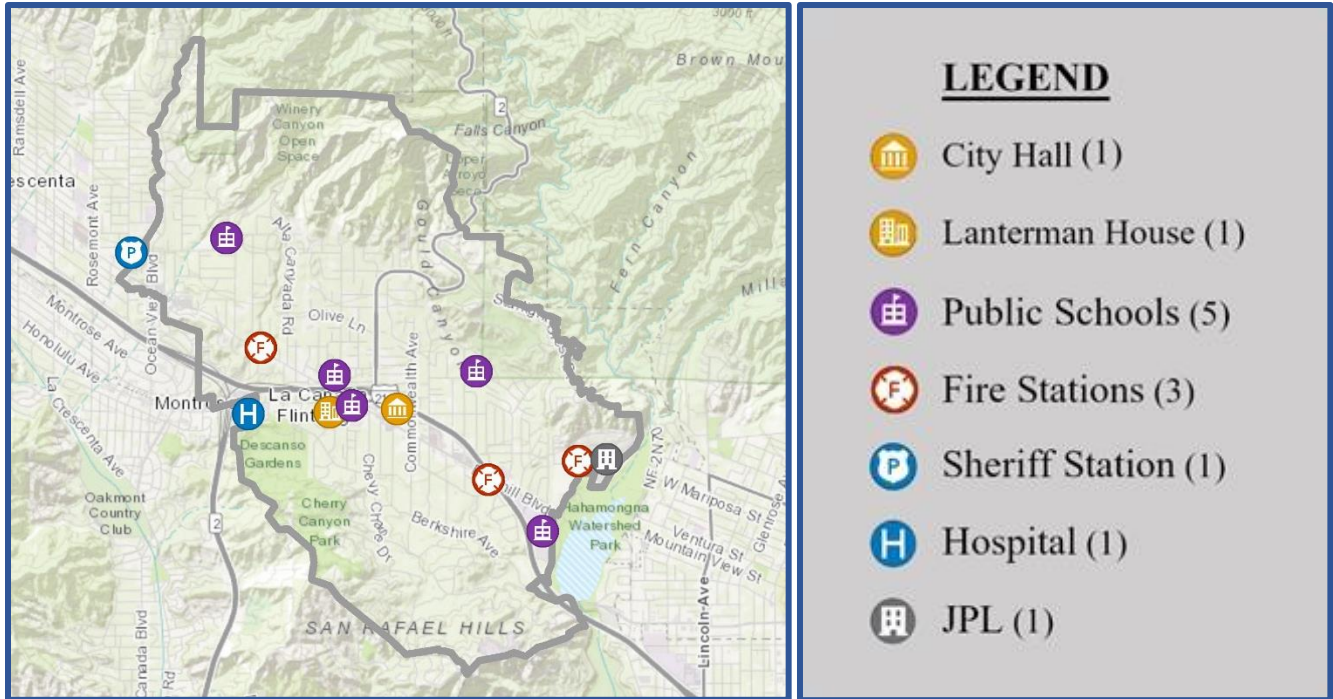


Figure 4: Map of Select Critical Facilities in La Cañada Flintridge

Critical Infrastructure- Critical public and private infrastructures.

1. Critical transportation infrastructure includes freeways, streets, and bridges.
2. Critical utility infrastructure includes potable water system (treatment), wastewater systems (major interceptors and sewer lines), electrical power systems (power plants, and major transmission lines), and communication systems.

4.5 Community Demographic Profiles

Some people are at greater risk from hazard events because of decreased resources or physical abilities. The City's per capita personal incomes is relatively greater to California's overall per capita personal income resulting in a more affluent community. However, people living near or below the poverty line, the elderly, children, ethnic minorities, renters, individuals with disabilities, and others with access and functional needs, all experience more severe effects from disasters than the general population. These vulnerable populations may vary from the general population in risk perception, living conditions, access to information before, during and after a hazard event, capabilities during an event, and access to resources for post-disaster recovery.

4.5.1 Population Demographics

Information about population is a critical part of planning because it directly related to land needs such as housing, industry, stores, public facilities and services, and transportation. The United States Census Bureau estimated the City of La Cañada Flintridge population to be 20,413 as of July 1, 2017, in comparison to 20,248 in April of 2010. The City's population has remained stable over the past 40 years with a population positive change of 0.8% since 2010.

4.5.2 Age Distribution

Children under 14 are particularly vulnerable to disaster events because of their young age and dependence on others for basic necessities. Very young children may additionally be vulnerable to injury or sickness; this vulnerability can be worsened during a natural disaster because they may not understand the measures that need to be taken to protect themselves from hazards.

The overall age distribution for 2016 in La Cañada Flintridge is shown in Figure 5. Based on the most recent 5-year estimates from the U.S. Census Bureau's American Community Survey (2012-2016), 6.0% of the population is 65 or older and 6.3 percent of the population is 14 or younger. The City's median ages is 44.3 years.

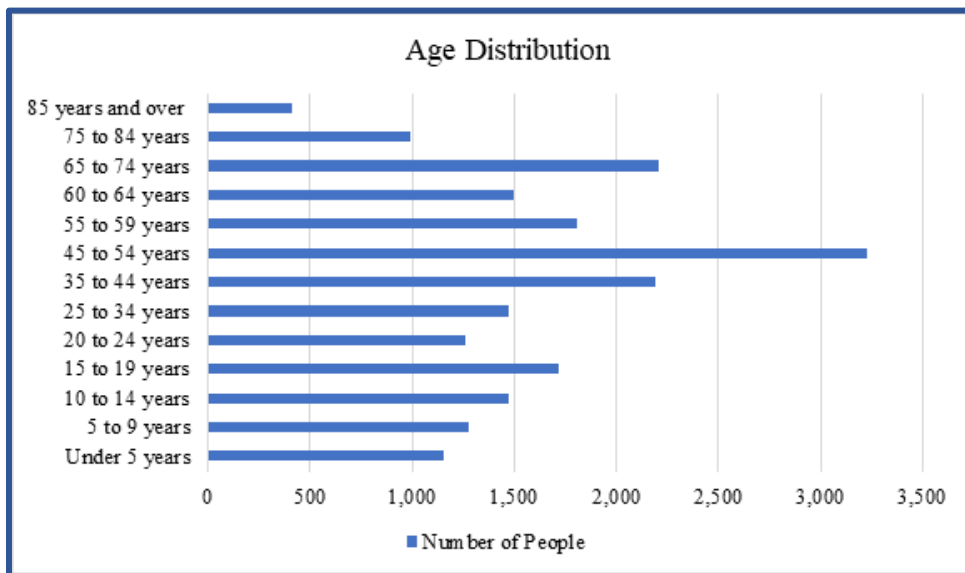


Figure 5: Age Distribution

4.5.3 Race

Figure 6 shows the U.S. Census 2017 racial distribution in the City of La Cañada Flintridge based on race categories.

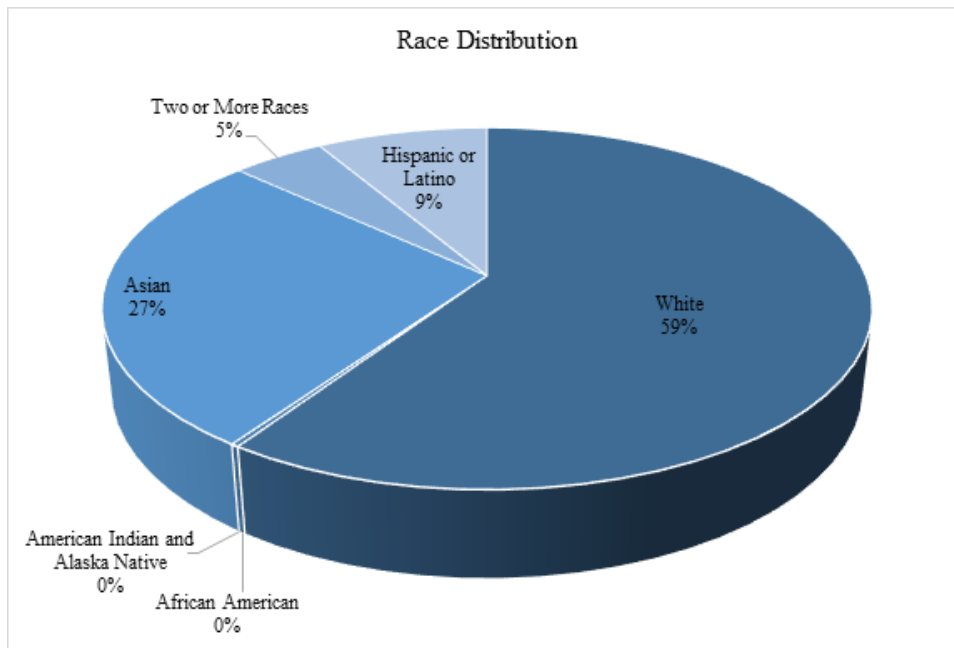


Figure 6: Race Distribution

4.6 Economy

4.6.1 Income

In the United States, individual households are expected to use private resources to prepare for, respond to and recover from disasters to some extent. Residents below the poverty level are less likely to have insurance to compensate for losses incurred from natural disasters. This means that households living in poverty are automatically disadvantaged when confronting hazards. Based on the U.S. Census Bureau estimates, per capita income in La Cañada Flintridge in 2017 was \$74,763, and the median household income was \$158,438. In comparison, California had a per capita personal income of \$58,272 in 2017 (Bureau of Economic Analysis, 2018). About 2.8% of people live in poverty in La Cañada Flintridge.

4.6.2 Industry, Businesses, and Institutions

The City of La Cañada Flintridge has approximately 1,715 business establishments which employ 3,494 people. The top three industries in La Cañada Flintridge include services sector like automobile services/repair, dry cleaners, beauty salons, and photocopying services (23 percent), followed by retail sales like restaurants, grocery stores, department and convenient stores (22 percent), and home occupation (22 percent). Miscellaneous (<1 percent), recreation and amusement (1 percent), and private school/childcare (2 percent). Figure 7 shows the breakdown of industry types in La Cañada Flintridge. Retail sales are the leading industry employing 1,947 individuals in 2018.

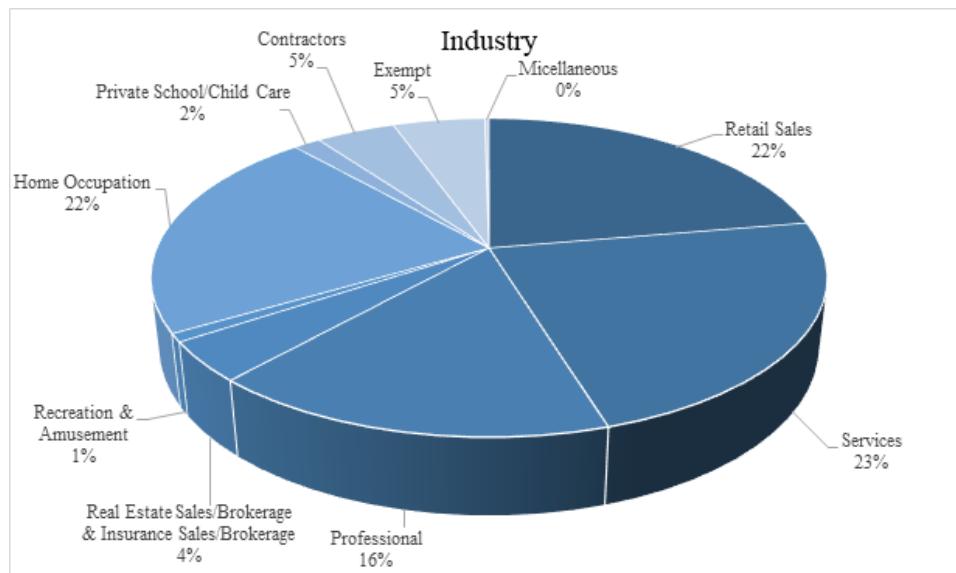


Figure 7: Industry Types

The City of La Cañada Flintridge Business License Division identify the following large employers in the City (City of La Cañada Flintridge Comprehensive Annual Fiscal Report, 2017):

- Retail Sales - Ralph's Grocery Co., Ross Dress for Less Inc., Sprouts Farmers Market, Trader Joe's, TJ Maxx, Gelson's Market, Los Gringos Locos LLC, Hill Street Café, McDonald's, Panera Bread,
- Service- Allen Lund Company Inc.
- Real Estate Sales/Brokerage & Insurance Sales/Brokerage- Dilbeck Realtors GMAC

4.6.3 Employment Trends

According to the 5-year American Community Survey (2012-2016), 9,429 of the population in the City of La Cañada Flintridge 16 years old or older is in the labor force. The working-age population, 55.9 percent of men and 44.1 percent of women are in the labor force.

4.7 Transportation

Private automobiles are the dominant means of transportation in Southern California and in the La Cañada Flintridge. However, the City of La Cañada Flintridge meets its public transportation needs through a regional transit system, Glendale Beeline. Glendale Beeline provides bus service to the City of La Cañada Flintridge and to the Los Angeles County metropolitan area via the Metropolitan Transit Authority and Foothill Transit. Natural hazards such as earthquakes, localized flooding, and severe weather have the potential to disrupt automobile traffic and shut down local and regional transit systems.

The major arterial highways are Foothill Boulevard, which runs east to west, and Angeles Crest Highway, which runs north to south and terminates at the intersection Foothill Boulevard. Additional points of entry and exits to the City include Chevy Chase Drive, Oak Grove Drive, and Ocean View Boulevard. Impacts to any of these major points can render local roads unusable. Figure 8 shows a map of the major local roads within the City.

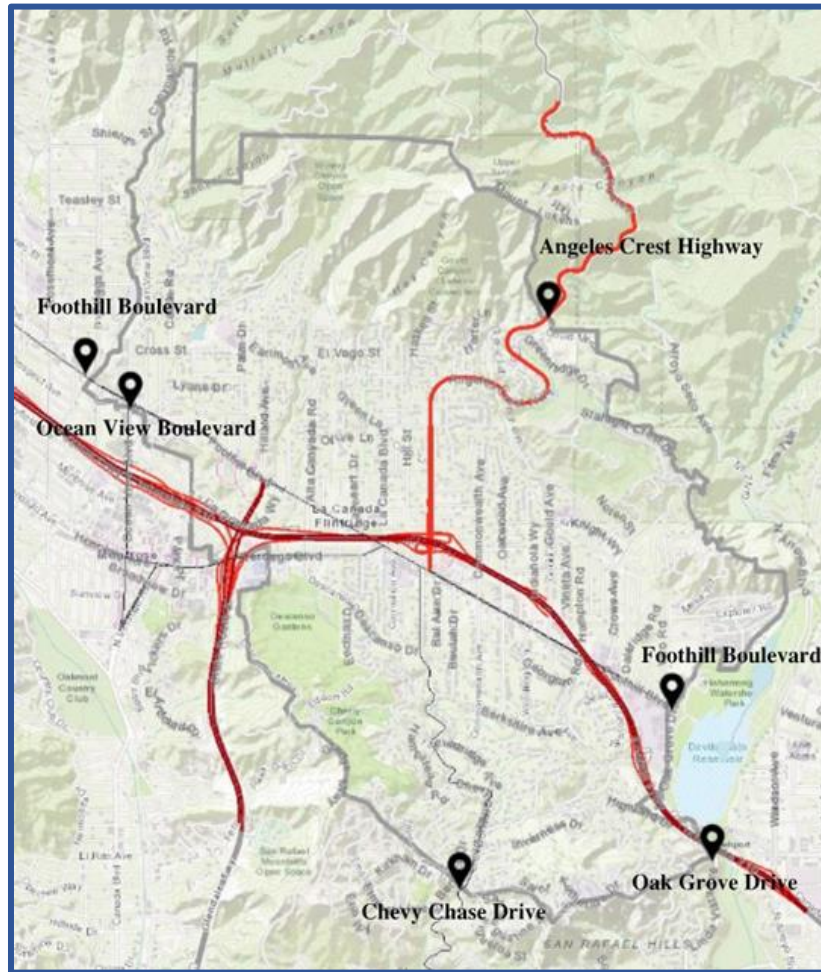


Figure 8: Major local roads within the City. GIS, 2018

4.8 Schools

The City has public and private educational facilities. La Cañada Unified Schools District operates three elementary schools, a middle school (LCHS 7/8) and a comprehensive high school (LCHS 9-12). Current student enrollment is approximately 4,000. The public education facilities in the community include La Cañada Elementary, Palm Crest Elementary, Paradise Canyon Elementary, La Cañada High School 7/8, and La Cañada High School 9-12. These school sites also serve the City as evacuation centers during events of emergency.



5 RISK ASSESSMENT

Risk assessment is the process of measuring the potential loss of life resulting from hazards, as well, as personal injury, economic injury and property damage, in order to determine the vulnerability of people, buildings, and infrastructure to hazard events. The process allows for a better understanding of a jurisdiction’s potential risk to natural hazards and provides a framework for developing and prioritizing mitigation action items to reduce risk from future hazard events. The Hazard Mitigation Advisory Committee (HMAC) reviewed and accessed the ranking of the hazards. Natural hazards were ranked for the risk they pose to the overall community based on its likelihood to occur and past events, as shown in Table 6.

Table 6: Natural Hazard Risk Ranking

Hazard Ranking	Hazard Event	Category	Priority Hazard
1	Wildfire	High	Y
2	Earthquake	High	Y
3	Human- Made	High	Y
4	Extreme Heat	Medium	Y
5	Landslide	Medium	Y
6	Windstorm	Medium	N
7	Drought	Low	N
8	Flood	Low	N

**Note: While human-made is not a natural hazard it is important to consider when making the risk assessment as a possible hazard that can impact the City.*

5.1 Hazard Identification and Approach

The risk assessment provides the foundation for the mitigation planning process. In addition, it can be used to establish emergency preparedness and response priorities, for land use and comprehensive planning, and for decision making by City departments, business, and organizations in the community. This risk assessment was conducted using the four-step process as described in the FEMA Local Mitigation Planning Handbook (2013):

1. Hazard Identification;
2. Inventory of Community Assets;
3. Risk Analysis; and
4. Vulnerability Assessment.

5.1.1 Identified Hazards of Concern

The HMAC reviewed the natural hazards identified in the 2014 plan and new hazards as recommended by the Planning and Development Team. The process of identifying hazards of concern incorporated a review of the hazards in the 2014 plan and discussions of state and local hazard information. Data and research of historical records related to the frequency of, the magnitude of, and costs associated with the hazards that

have occurred in the City or have the potential to occur was completed. Table 7 provides an overview of the hazard’s significance in the City.

Table 7: Hazard Risk Assessment

Hazard	Geographic Extent	Probability of Future Occurrence	Magnitude/ Severity	Significance
Drought	Significant	Likely	Negligible	Low
Earthquake	Extensive	Occasional	Catastrophic	High
Extreme Heat	Significant	Highly Likely	Negligible	Medium
Flood	Limited	Occasional	Negligible	Low
Human Caused	Significant	Occasional	Critical	Medium
Landslides	Significant	Likely	Limited	Medium
Wildfires	Extensive	Likely	Catastrophic	High
Windstorm	Extensive	Highly Likely	Negligible	Low

(Hazards are listed in alphabetical order; the order of listing does not indicate the hazard’s relative severity)

To identify, profile and rate the significance of the hazards, the following criteria were created:

Table 8: Hazard Rating Criteria

Geographic Extent	Probability of Future Occurrence	Magnitude/ Severity	Significance
Limited: Less than 10% of the planning area	Highly Likely: Near 100% chance of occurrence in next year or happens every year.	Catastrophic: More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths.	Low: minimal potential impact
Significant: 10-50% of the planning area	Likely: Between 10 and 100% chance of occurrence in next year or has a recurrence interval of 10 years or less.	Critical: 25-50 percent of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses resulting in permanent disability.	Medium: moderate potential impact
Extensive: 50-100% of the planning area	Occasional: Between 1 and 10% chance of occurrence in the next year or has a recurrence interval of 11 to 100 years.	Limited: 10-25 percent of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability.	High: widespread potential impact
	Unlikely: Less than 1% chance of occurrence in the next 100 years or has a recurrence interval of greater than every 100 years.	Negligible: Less than 10 percent of property damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid.	

5.1.2 Inventory of Community Assessments

This process involves identifying assets at risk to hazards that are important to the community. Assets are identified as resources that add to the character or serves a function in the community such as people, economy, build environment, and natural environment.

- **People-** People are the most important asset, as a result, it is critical to identify populations exposed to a hazard to better help with targeted preparedness.
- **Economy-** After a disaster, economic resiliency plays a vital role in the recovery process. Direct (infrastructure) and indirect (loss of employment wages) losses can affect employers and commercial centers that support the local economy.
- **Built Environment-** Includes existing structures, infrastructure, critical facilities, and community/cultural resource. Critical facilities are of particular concern because these entities provide essential products and services to the general public that are necessary to preserve the welfare and quality of life in the City and fulfill important public safety, emergency response, and/or disaster recovery functions
- **Natural Environment-** Environmental assets and natural resources are identified as those that shape the community’s identity and quality of life. Assets include the City’s 5 recreational parks, public botanical garden, and the trail systems.

While all assets may be affected by a hazard, there are some assets that may become more vulnerable. Table 9 shows an asset inventory in the community. These are estimates determined by utilizing Geographic Information System (GIS) overlay analysis software and tools. Existing GIS layer, such as parcels, can be overlaid with theoretical hazard boundary extenes, and items such as a number of structures affected by the hazard can be calculated.

Table 9: Vulnerability of Community Assets

Hazard Event	Exposed Population	# of Residential Buildings	# of Commercial Buildings	# of Critical Facilities	# of Natural Resources
Drought	20,413	0	3	0	7
Earthquake	20,413	7,000	200	11	7
Extreme Heat	20,413	0	0	0	7
Flood*	1,000	342	0	0	5
Human Made	20,413	0	5	11	7
Landslides	1,000	250	0	2	1
Wildfires	20,413	7,000	200	11	6
Windstorm	20,413	7,000	200	11	6

* The above table shows the hazard-prone areas that have a high probability of the hazard occurring.

5.1.3 Risk Analysis

Risk analysis involves evaluating vulnerable assets, describing potential impacts, and estimating the likelihood of losses in a geographic area over a given period of time. The risk analysis can be determined using qualitative or quantitative measures. One method is evaluating the magnitude of the harm that may result and the likelihood of the harm occurring during a hazard event. The second method is by assigning values in terms of dollar loss to measure the effects of hazards on assets. The risk analysis is detailed in each individual hazard chapter.

5.1.4 Vulnerability Assessment

This step provides a summary of the information generated through the risk assessment process. The summary includes the results and overall vulnerability of the La Cañada Flintridge. This LHMP provides a comprehensive description of the character of the La Cañada Flintridge and how the identified hazards impact the people, property and the environment. The City's vulnerability assessment includes- natural hazard mitigation action items that can reduce the impacts on citizens, public infrastructure, private property, commercial sector, critical facilities, and the environment. Understanding the risk of natural hazards can allow the City to better-utilized relationships that help minimize the effects of hazard events.

5.2 Action Plan Implementation

5.2.1 Status of Mitigation Action Items

The 2014 City of La Cañada Flintridge Hazard Mitigation Plan identified 23 mitigation strategies for implementation. For the current update, these actions were reviewed by City departments and stakeholders. For each strategy, it was determined whether the action had been completed, was in progress or had not been started. Incomplete actions were reviewed to determine if they should be carried over to the 2019 update or removed from the plan due to a change in priorities, capabilities, or feasibility. In total, 19 of the identified actions have been started or completed. Of the 23 identified actions 8 were carried over to the 2019 update. A total of 14 the identified actions were withdrawn from the plan based on a review by the planning team. The reasons for the withdrawal of an action ranged from the action no longer being considered feasible to the action being identified as a core capability by the 2019 planning process. Each hazard section has a mitigation implementation section that details the mitigation action items.

5.2.2 Mitigation Action Items

The selection of action items was based on the risk assessment of identified hazards of concern and the defined hazard mitigation goals and objectives. Each mitigation action item was assigned a timeframe for completion and is outlined in each hazard section. The timeframe is defined as follows:

- Short Term = to be completed in 1 to 3 years;
- Long Term = to be completed in 5 years; and
- Ongoing = currently being funded and implemented.

5.3 Federal Guidelines

Title 44 of the Codes of Federal Regulations (44 CFR) outlines the requirements for hazard mitigation plans and outlines the steps needed to monitor, evaluate, and update the plan. This provides an opportunity to reevaluate recommendations, monitor the impacts of actions that have been accomplished, and determine if there is a need to change the focus of mitigation action items. A jurisdiction covered by a plan that has expired is not able to pursue federal funding for which a current hazard mitigation plan is a prerequisite.

5.4 Data Sources

Varies data sources were used to complete the risk assessment, analyze mitigation action items and overall update of the plan. The City's General Plan, Capital Improvement Plan, and Zone Ordinance were utilized to evaluate areas of need in the City and develop goals and mitigation action items that are aligned to the plan. The City's Geographic Information System (GIS) was used to retrieve, analyze and map hazard-prone locations and estimate risk to assets. Data collected from outside agencies such as regional, state, and national provided additional information to complete the research. Additionally, the input provided by the public (residents, community members, and stakeholders) provided insightful information.

5.5 Limitations

The City may face some constraints when implementing the mitigation action items listed in the plan. These constraints include a lack of City staff and expertise, lack of available funds, limited data and software systems to analyze areas within the City, and vested property rights that might expose the City to legal action as a result of adverse impacts on private property.

5.6 Benefit-Cost Analysis

Benefit-cost analysis is a key mechanism used by the California Governor's Office of Emergency Services (Cal OES), the Federal Emergency Management Agency (FEMA), and other state and federal agencies in evaluating hazard mitigation projects and is required by the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288), as amended by the Disaster Mitigation Act of 2000 (Public Law 106-390). Benefit-cost analysis is used in hazards mitigation to show if the benefits to life and property protected through mitigation efforts exceed the cost of the mitigation activity. Conducting a benefit-cost analysis for a mitigation activity can assist in determining whether a project is worth undertaking now, in order to avoid disaster-related damages later.

The benefits of the proposed projects were weight against estimate costs. For each mitigation action items listed in the plan, careful consideration was given to the reasonable cost and benefit of implementation. A benefit-cost chart can be found in each hazard section of the plan which addresses the feasibility of implementation of each strategy developed. The following parameters were established for assigning subjective ratings (high, medium, and low) to the costs and benefits of these projects.

Cost ratings were defined as follows:

- **High**— Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).
- **Medium**—The project could be implemented with existing funding but would require a budget reapportionment or amendment, or the cost of the project would have to be spread over multiple years.
- **Low**—The project could be funded under the existing budget. The project is part of or can be part of an ongoing existing program.

Benefit ratings were defined as follows:

- **High**—Project will provide an immediate reduction of risk exposure for life and property.
- **Medium**—Project will have a long-term impact on the reduction of risk exposure for life and property, or project will provide an immediate reduction in the risk exposure for the property.
- **Low**—Long-term benefits of the project are difficult to quantify in the short term.

This section is not intended to provide a comprehensive description of benefit-cost analysis, nor is it intended to provide the details of economic analysis methods that can be used to evaluate local projects. It is intended to (1) raise benefit-cost analysis as an important issue, and (2) provide some background on how economic analysis.

SECTION 5: RISK ASSESSMENT

The table below provides a summary of the City’s Benefit-Cost Analysis for each hazard identified in this plan.

Table 10: Benefit-Cost Analysis

Mitigation Activity	Hazards Mitigated	Goals Met	Lead Agency	Estimated Cost	Estimated Benefit	Source of Funding	Timeline	Protects New Assets	Protects Existing Assets
Incorporate new earthquake hazard software for risk analysis.	Earthquake	Mitigation (B)	Administration Community Development	High	Medium	General Fund, Grant	Short	Y	Y
Identify funding sources for potentially vulnerable structures.	Earthquake	Mitigation (C)	Administration Building and Safety Community Development	High	Low	General Fund, Grant	Short	Y	Y
Encourage homeowners and business to purchase of earthquake hazard insurance by distributing informational material on the topic.	Earthquake	Mitigation (B) Education (B)	Administration Building & Safety, Community Development	Low	High	General Fund, Grant	Short	Y	Y
Encourage seismic strength evaluations of critical facilities.	Earthquake	Mitigation (B)	Administration Planning	Medium	Medium	General Fund, Grant	Long	Y	Y
Reduction of nonstructural and structural earthquake hazards in homes, schools, businesses, and government offices.	Earthquake	Mitigation (B) Collaboration (A) Collaboration (B)	Administration Building and Safety, Community Development	Low	Medium	General Fund, Pre-Disaster Mitigation	Long	Y	Y
Identify if the City falls within a fault and work with geological personnel.	Earthquake	Mitigation (B)	Administration	Medium	Low	General Fund, Grant	Long	Y	Y

SECTION 5: RISK ASSESSMENT

Mitigation Activity	Hazards Mitigated	Goals Met	Lead Agency	Estimated Cost	Estimated Benefit	Source of Funding	Timeline	Protects New Assets	Protects Existing Assets
Reevaluate potential secondary facilities for an Emergency Operations Center within the City limits.	Earthquake	Mitigation (B)	Administration	High	High	General Fund	Long	Y	Y
Biannual inspections of catch basins.	Flood	Mitigation (A) Mitigation (B)	Public Works	Medium	Medium	General Fund	Short/ Ongoing	Y	Y
Educate residents who own properties with waterways on maintenance responsibilities.	Flood	Mitigation (A) Mitigation (B) Mitigation (C) Collaboration (B) Education (A)	Public Works	Low	Low	General Fund	Short/ Ongoing	Y	Y
Perform an inventory of storm drains in the City and determine which agency has responsibility for maintenance.	Flood	Mitigation (A) Mitigation (B) Collaboration (A) Collaboration (B)	Public Works	Low	Medium	General Fund	Short	Y	Y
Educating residents about the importance of proper maintenance of the hillsides on their property	Landslide	Mitigation (A) Mitigation (B) Mitigation (C) Education (A)	Public Works	Low	High	General Fund	Long	Y	N
Collaborate with responsible agencies for regular inspection and maintenance of debris basins.	Landslide	Mitigation (A) Mitigation (B) Mitigation (C) Collaboration (A) Collaboration (B) Collaboration (C)	Public Works	Medium	High	General Fund	Long	Y	Y

SECTION 5: RISK ASSESSMENT

Mitigation Activity	Hazards Mitigated	Goals Met	Lead Agency	Estimated Cost	Estimated Benefit	Source of Funding	Timeline	Protects New Assets	Protects Existing Assets
Collaborate with utility companies on ways to reduce the hazard.	Wildfire	Mitigation (A)	Administration	Low	Medium	General Fund	Long	Y	Y
GIS inventory of fire hydrants and water pressure.	Wildfire	Mitigation (A)	Administration	High	Medium	General Fund, Grants	Long	Y	Y
Inventorying private pools which can be used during an emergency as water supply.	Wildfire	Collaboration (B)	Public Works	Low	Low	General Fund	Short	Y	Y
Public education on wildfire.	Wildfire	Education (A)	Administration	Medium	Medium	General Fund	Short	Y	Y
Establishing fire breaks in the City to prevent the spread of fires during hazard events.	Wildfire	Mitigation (B)	Administration, Community Development, Public Works	Medium	High	General Fund Grants	Long	Y	Y
Establish an outdoor warning system for potential placement in highly vulnerable areas designed to alert residents and visitors of La Cañada Flintridge about possible danger.	Wildfire	Mitigation (B)	Administration	High	High	Grants	Long	Y	Y
Research the utility of wider streets to facility evaluation and fire responder access.	Wildfire	Mitigation (C) Collaboration (B)	Administration, Community Development, Public Works	High	Medium	General Fund	Long	Y	Y
Research alternative fuel reduction methods for wildland-urban interface.	Wildfire	Mitigation (C)	Administration, Community Development, Public Works	Medium	High	Grants	Long	Y	Y

SECTION 5: RISK ASSESSMENT

Mitigation Activity	Hazards Mitigated	Goals Met	Lead Agency	Estimated Cost	Estimated Benefit	Source of Funding	Timeline	Protects New Assets	Protects Existing Assets
Establish public education campaigns on proper landscaping and vegetation to minimize property damages.	Windstorm	Education (A) Education (B)	Administration	Medium	Medium	General Fund	Short	Y	Y
Collaborate with utility companies on ways to reduce hazard during an event.	Windstorm	Collaboration (B)	Administration	Medium	Medium	General Fund; Grants	Long	Y	Y
Identify and establish a system of shared community emergency resource between private companies and citizens.	Windstorm	Mitigation (B)	Administration	Low	Medium	General Fund	Long	Y	Y
Establish a new high frequency for tree pruning program to reduce the potential for property damage.	Windstorm	Mitigation (B)	Public Works	Low	Medium	General Fund	Long	Y	Y
Public awareness and education on the effects of drought.	Drought	Education (A) Collaboration (B)	Administration Planning	Low (Staff Time)	High	General Fund	Short	N	N
Review and modify existing ordinances to promote water conservation measures.	Drought	Mitigation (A)	Planning	Low (Staff Time)	High	General Fund	Short	Y	Y
Encourage drought-tolerant landscapes design in public and private spaces.	Drought	Mitigation (C) Collaboration (B) Education (A)	Planning Public Works	Medium	Medium	General Fund, Grants	Long	Y	Y
Develop stormwater capture infrastructure to prevents runoff into impervious	Drought	Mitigation (C)	Planning Public Works	High	Medium	General Fund, Grants	Long	Y	Y

SECTION 5: RISK ASSESSMENT

Mitigation Activity	Hazards Mitigated	Goals Met	Lead Agency	Estimated Cost	Estimated Benefit	Source of Funding	Timeline	Protects New Assets	Protects Existing Assets
surfaces such as streets or sidewalks.									
Increase public awareness of extreme heat risks and safety.	Extreme Heat	Mitigation (A)	Administration	Low	High	General Fund	Short	N	N
Educate homeowners and builders on cooling methods for homes to reduce urban heat island effect.	Extreme Heat	Education (A) Mitigation (B)	Planning	Low	Medium	General Fund Grants	Short	Y	Y
Informational campaign on backup electric powered generators to prepare homeowners and business for emergencies and when power outages occur.	Extreme Heat	Mitigation (B) Education (A) Education (B)	Planning	Low	Low	General Fund Grants	Short	Y	Y
Built green streets to incorporate vegetation and sustainable design features to cool ambient temperatures and provide shade and an attractive streetscape for pedestrians.	Extreme Heat	Mitigation (A) Mitigation (C)	Planning Public Works	High	Medium	General Fund Grants	Long	Y	Y
Establish a redundancy for voice and data communications for City's EOC.	Human Caused	Mitigation (A)	Administration	High	High	Grants	Long	Y	Y
A public education campaign on cybersecurity threats and ways for individuals to protect themselves.	Human Caused	Education (A)	Administration	Medium	Medium	General Fund	Short	Y	Y

SECTION 5: RISK ASSESSMENT

Mitigation Activity	Hazards Mitigated	Goals Met	Lead Agency	Estimated Cost	Estimated Benefit	Source of Funding	Timeline	Protects New Assets	Protects Existing Assets
Collaborate with utility companies on ways to increase cybersecurity.	Human Caused	Collaboration (B)	Administration	Low	Medium	General Fund	Short	Y	Y
Data backup redundancy	Human Caused	Mitigation (A)	Administration	Medium	Medium	General Fund	Long	Y	Y
Use a defense in depth model to mitigate the threat from Active Shooters in government-owned properties by hardening spaces, distributing critical equipment, training personnel and better coordinating the response.	Human Caused	Mitigation (B) Collaboration (A) Collaboration (B) Education (A)	Administration	Medium	Medium	General Fund, Grants	Short	Y	Y
Ensure the codes and ordinances reflect the intent of the goals and the action items found in the City’s LHMP.	Multiple	Mitigation (A)	Administration Planning Public Works	Low	Medium	General Fund	Ongoing	Y	Y
Develop informational material about natural hazards to distribute among all La Cañada Flintridge property owners.	Multiple	Education (A) Education (B)	Administration Planning	Low	High	General Fund	Short	Y	Y
Develop strategies and capabilities to mitigate risk to local government facilities, or to utilize alternative facilities should local hazard events cause damage.	Multiple	Mitigation (A) Mitigation (B) Collaboration (B)	Administration	High	High	General Fund Grants	Short	Y	Y

SECTION 5: RISK ASSESSMENT

Mitigation Activity	Hazards Mitigated	Goals Met	Lead Agency	Estimated Cost	Estimated Benefit	Source of Funding	Timeline	Protects New Assets	Protects Existing Assets
Encourage individual and family preparedness.	Multiple	Education (B)	Administration	Low	High	General Fund	Short/Ongoing	Y	Y
Establish partnerships with nongovernmental organizations to secure funding for mitigation activities that would be mutually beneficial.	Multiple	Collaboration (A) Collaboration (B)	Administration	Medium	Low	General Fund, Grants	Long	Y	Y
Analyze City ingress and egress to develop potential alternate routes of access through the area.	Multiple	Mitigation (C)	Public Works	High	Medium	General Fund Grants	Long	N	Y



6 CAPABILITIES ASSESSMENT

6.1 Capabilities Assessment

A capability assessment is an inventory of existing planning and regulatory tools and an analysis of its capacity to carry them out. The City of La Cañada Flintridge has programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation action items. A capability assessment will help to ensure that proposed mitigation action items are deemed practical considering the City’s ability to implement them.

6.1.1 Planning and Regulatory

Planning and Regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 11: Planning and Regulatory Capabilities Assessment

Plans	Year	Department	Comments
General Plan	2013	Community Development	The General Plan guides the pattern of land development, including residential, commercial and recreational uses. It describes how the City will grow or change over time and is the mechanism by which community character is preserved and enhanced. The General Plan contains the official policies that guide the development of the City and can assist with the coordination of mitigation action items within the City. (City Council Resolution No. 13-01, City Council Resolution No. 14-04 (Housing Element)). The Safety Element of the General Plan expresses goals and objectives to increase the City’s resilience to hazards and recommended policies to achieve stated goals. These elements were utilized to influence the mitigation actions within the Local Hazard Mitigation Plan.
Climate Action Plan	2016	Community Development	The Climate Action Plan is intended to build on the community's existing sustainability efforts (such as the City’s 2013 Energy Action Plan) to facilitate the reduction of greenhouse gas (GHG) emissions throughout the City of La Cañada Flintridge in a way that is practical, efficient, and beneficial to the community and enhances La Cañada Flintridge’s desirable characteristics and qualities. These measures may include mitigation actions that support reducing the risk of hazard events in La Cañada Flintridge.

Multi-Hazard Function Plan	2003	Administration	The Multi-Hazard Function Plan will be updated into an Emergency Operations Plan, which will outline official and approved documents that describe the principles and methods to be applied in carrying out emergency operations or rendering mutual aid during emergencies. These plans include such elements as continuity of government, emergency services of government agencies, mobilization of resources, mutual aid and public information.
Local Hazard Mitigation Plan	2019	Administration	Hazard Mitigation Plan (LHMP) includes resources and information to assist La Cañada Flintridge residents, public and private sector organizations, and others interested in participating in planning for natural and human-made hazards. The LHMP provides long-term and short-term policies, programs, projects and other activities that may assist in reducing risk and preventing loss from future disastrous events. The mitigation strategies address multiple hazard issues, as well as specific activities for drought, earthquake, extreme heat, flood, windstorm, landslide, wildfire, and human-made hazards.

Table 12: Planning Ordinances and Building Codes Capabilities Assessment

Planning Ordinances and Building Codes	Year	Department	Comments
Zoning Ordinance	2018 (Updated)	Community Development	The Zoning Ordinance establishes the area requirements, the density of land occupancy, and the necessary, proper and comprehensive groupings and arrangements of the various industries, businesses, and population of the city. The Zoning Ordinance influences where the populace is located and how hazards affect different areas of the city. Mitigations action items pertaining to new developments may be reviewed under this ordinance.
Hillside Development Ordinance	2002	Community Development	The Hillside Development Ordinance regulates the safety and development of hillsides within the City. (Ord. 329 § 1.2, 2002). The Hillside Development Ordinance can assist with mitigation measures related to modifying and protecting the quality of hillsides.
Trees in the Public Right-of-Way Ordinance	2014	Public Works	Tree Ordinance helps maintain the health of flora in the City. The Ordinance allows the City to remove trees if the tree dead, diseased, a hazard, or creates an unreasonable burden upon an abutting property owner. Mitigation Action items related to vegetation may be reviewed under this ordinance

Floodplain Management Ordinance	2006	Public Works	The Floodplain Management Ordinance promotes public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas. (Ord. 357 § 1, 2006). Mitigation action items related to flooding may be reviewed under this ordinance.
Emergency Organization and Function Ordinance	2003	Administration	The Emergency Organization and Functions Ordinance provides an outline for preparing and carrying out of plans for the protection of people and property with the City in the event of an emergency. (Ord. 337 § 1, 2003) The ordinance ensures the City is implementing mitigation actions
Building and Safety Codes	2015 (Updated)	Community Development	The purpose of this chapter is to regulate grading, and the erection, construction, enlargement, alteration, repair, moving, removal, demolition, conversion, occupancy, use, height, area and maintenance of all structures and certain equipment therein specifically regulated within the city, providing for the issuance of permits and the collection of fees therefor, and providing procedures for correction of violation of this code.

6.1.1.1 How can these capabilities be expanded and improved to reduce risk?

Planning and regulation provide the City with a method to organize efforts and engage the public. It communicates how the city seeks to mitigate long term risk. Through a public process plans such as the General Plan and Local Hazard Mitigation Plan distill community input into long term goals. These goals are finalized within the plan and enforced through the various means of regulation, ordinances, and codes. Over time these mechanisms will change how the community is built and how it functions, driving change to mitigate hazards, lower risk and increase the resiliency of the community.

6.1.2 Administrative and Technical

Administrative and Technical capabilities include staff, tools, and public resources that can be used for mitigation planning and to implement specific mitigation actions.

Table 13: Administrative Capabilities Assessment

Advisory Bodies	Department	Comments
Disaster Council	Administration	The Disaster Council which includes the City’s Mayor, Director and Assistant Director of Emergency Services, Emergency Operations Center Coordinator and other appointees are responsible for developing and recommending emergency and mutual aid plans and agreements for City Council adoption.
Emergency Preparedness Committee	Administration Community Development Public Works	The Emergency Preparedness Committee, which includes 2-3 staff members from each City department. The Committee collaborates on emergency management strategies and initiates designed to enhance preparedness and improve the City’s ability to respond to all-hazard threats. It is responsible for analyzing and evaluating the initiative's effectiveness for emergency preparedness, response, recovery, and mitigation.
Hazard Mitigation Advisory Committee	Administration	Hazard Mitigation Advisory Committee is responsible for the Local Hazard Mitigation Plan’s ongoing evaluation.
Planning Commission	Community Development	The Planning Commission is responsible for reviewing proposed residential and commercial development projects, subdivisions, and land use requests on private property, to determine their compliance with applicable City regulations. The Commission has the authority to approve various development projects that comply with City requirements. In addition, the Commission makes recommendations to the City Council with respect to the City's General Plan, Zoning Code, Specific Plans and other matters related to development within the City. The Commission may be responsible for implementing mitigation items pertaining to the Commissions scope
Public Safety Commission	Administration	The Public Safety Commission is responsible for evaluating the public safety needs of the community and makes recommendations to the City Council. As part of their responsibilities, the Commission reviews the activities of the Los Angeles County Fire Department and evaluates service and equipment needs. The Commission also provides valuable direction related to the City's emergency preparedness efforts and goals.
Public Works &Traffic Commission	Public Works	The Public Works & Traffic Commission is responsible for advising the City Council on the Public Works program for the City including infrastructure improvements to the City's streets and roads, maintenance requirements of the City's roads, parks, trees, planted medians, traffic signals, storm drains and other improvements. The Commission develops a five-year Capital Improvement Project Plan annually for submission to the City Council outlining infrastructure needs for the future. In addition, the Commission reviews public works conditions imposed on development projects, traffic circulation, and congestion issues as well as parking restriction needs and authorizes changes consistent with state and local requirements. The Commission may be responsible for analyzing and evaluating mitigation items pertaining to the Commissions scope

Table 14: Department Capabilities Assessment

Departments	Comments
Administration	The Administration Department is multifaceted and performs a variety of internal and external services, including public safety, risk management, human resources, recreation, information technology, transportation, and emergency preparedness. The City Attorney, City Treasurer, and City Clerk are also considered staff and functions of the department. The Administration Department is the lead internal agency in charge of hazard mitigation planning and overseeing the implementation of mitigation activities.
Community Development	The Community Development Department is composed of three divisions: Planning, Building & Safety (Building Permits), and Community Preservation (Code Enforcement and Community Development Block Grant). The responsibilities of the divisions are all closely related to the physical development of the City. Mitigation activities related to planning and building can be implemented by this department.
Finance	The Department of Finance is responsible for managing the City's financial operations consistent with adopted policies and plans. The Finance Department seeks to assist other departments in achieving their objectives and assure the City's long-term fiscal well-being. The department assists with financing mitigation activities.
Public Works	The Department is primarily responsible for the design, preparation, and checking of plans for all facilities within street rights-of-way, including those within private developments and City-owned property. The Department prepares necessary plans, designs, and specifications for streets, sidewalks, storm drains, sewers, parks, parkways, medians, signing, and striping. Mitigation actions involving new or retrofitted public infrastructure fall within the purview of the Public Works Department.

Table 15: Staff Capabilities Assessment

Staff	Department	Comments
Emergency Services Coordinator	Administration	Coordinates and maintains the City's emergency response and preparedness efforts including updating the City's emergency response and hazard mitigation plans to maintain compliance with Federal, State, and Local requirements. The Emergency Services Coordinator will be responsible for evaluating, monitoring, and reporting on progress for Mitigation Action items.

Table 16: Technical Capabilities Assessment

Technical	Comments
Alert LCF (mass notification system)	Alert LCF is the City’s mass emergency notification system which has been in effect since 2014. The system delivers emergency alerts to residents when there is a threat to the health and safety of residents in the City and provides critical information such as evacuation orders and shelter locations.
Hazard data and information	Located within the General Plan

6.1.2.1 How can these capabilities be expanded and improved to reduce risk?

These administrative bodies advise and/or generate the plans and regulations that lower the long-term risk to the community and use technology to assist in implementing those plans. The Hazard Mitigation Advisory Committee, Planning Commission, Public Safety Commission and Public Works & Traffic Commission are all means for residents to engage City Staff on hazard mitigation. The Disaster Council and Emergency Preparedness Committee are internal mechanisms that City staff utilize to organize to protect from, mitigate, respond to and recover from disasters. To synchronize all these efforts the City employs an Emergency Services Coordinator who works across departments, commissions, and functions to ensure unity of effort in the City’s steps towards mitigation.

AlertLCF facilitates rapid communication between the City and residents. Messages can be passed from a web-based platform to a database of phone numbers, and deliver voice messages, text message or email. Technology assists all involved in better understanding the City, its residents, and the environment. Various technical reports within the City’s General Plan depict high hazard areas for debris flows, earthquake liquefaction, and wildfire hazard.

6.1.3 Fiscal Mitigation Capabilities

The City has access or is eligible to use the following funding resources for hazard mitigation:

Table 17: Fiscal Capabilities Assessment

Funding Resources	Department	Comments
General Fund	Administration Community Development Public Works	The General Fund is the City’s primary fund which consists of assets and liabilities are used to finance the daily and long-term operations. Funding for mitigation action items can be accomplished by accessing available funds or using funds for grant matching
Capital Improvement Program	Public Works	The Capital Improvement Plan (CIP) identifies individual capital improvement projects and funding sources. The CIP is unique construction projects that provide improvements or additions such as land, buildings, and infrastructure. The CIP helps with mitigation action items by improving the physical structures, systems, and facilities that provide services to the community.
Community Development Block Grant	Community Development	The Federal Government provides Community Development Block Grant (CDBG) funding to communities for projects that provide a direct benefit to those households with low/moderate income which may align with the mitigation action items. Private property owners share the responsibility to protect themselves and their property.

6.1.3.1 How can these capabilities be expanded and improved to reduce risk?

There are two specific ways that the City’s fiscal capabilities might be improved to reduce mitigation risk: (1) targeting specific grant resources to enhance the City’s ability to fund mitigation projects, and (2) increasing the total amount of funds available for projects through external revenue enhancement or internal reappropriation.

6.1.4 Education and Outreach

Education assists the City in reducing risk by empowering the individual constituent with knowledge of how to care for themselves during a disaster. The more individuals can prepare their families and businesses for disaster the less the risk the disaster will pose. Furthermore, the less of a burden will be placed on the larger community, freeing resources for those most in need.

Outreach is important not just because it provides an avenue for education to reach various stakeholder groups, but also for external organizations to give feedback on education or potentially contribute to the public mission. If a method of education is believed to be

effective outreach to various stakeholder groups can confirm or deny that sentiment, adjusting methods to ensure the desired message is being communicated.

Table 18: Educational Capabilities Assessment

Program/ Organization	Comments
Responsible Water Use Program	The City educates the public about water consumption within their residences and businesses, discussing how they might reduce usage through smart irrigation or xeriscaping. The Public Works, Planning, and Administration departments also notify residents through flyers or pages on the city website about how the City is conserving water within public areas, including using recycled water on traffic medians or installing low-flow and no-flow toilets in public restrooms. This program directly relates to mitigation activities about hazards like drought, extreme heat, or fire by increasing the public’s understanding of the scarcity of resources.
Emergency and Disaster Volunteers	The volunteer program is designed to provide assistance to the City's residents in the event of an emergency or disaster.
Communication and Outreach Program	General education on local government issues including hazard mitigation through quarterly newsletters and social media outreach.

6.1.4.1 How can these capabilities be expanded and improved to reduce risk?

Outreach, and specifically notification, is organized by the department taking action. Hazard mitigation outreach and education capabilities may be improved by centralizing communication efforts. Similarly, the quantity and types of content being developed can be expanded to ensure the accessibility of information and clear communication on hazard risks and mitigation activities.



7 EARTHQUAKE

7.1 General Background

An earthquake is the vibration of the earth's surface following a release of energy in the earth's crust. This energy can be generated by a sudden dislocation of the crust. Most destructive earthquakes are caused by dislocations of the crust. The crust may first bend and then when the stress exceeds the strength of the rocks, break and snap to a new position. In the process of breaking, vibrations called "seismic waves" are generated. These waves travel outward from the source of the earthquake at varying speeds.

Geologists have found that earthquakes tend to reoccur along faults, which are zones of weakness in the earth's crust. Even if a fault zone has recently experienced an earthquake, there is no guarantee that all the stress has been relieved. Another earthquake could still occur. In fact, relieving stress along one part of a fault may increase it in another part.

California is seismically active because of movement of the North American Plate, on which everything east of the San Andreas Fault sits, and the Pacific Plate, which includes coast communities west of the fault. The La Cañada Flintridge is on the Pacific Plate, which is constantly moving northwest past the North American Plate, at a relative rate of movement of about 2 inches per year.

Active faults have experienced displacement in historical time. However, inactive faults, where no such displacements have been recorded, also have the potential to reactivate or experience displacement along a branch sometime in the future. The State Division of Mines and Geology indicates that increased earthquake activity throughout California may cause movement along currently inactive fault systems.

7.1.1 Causes

California is seismically active because it sits on the boundary between two of the earth's tectonic plates. Most of the state – everything east of the San Andreas Fault – is on the North American Plate. The cities of Monterey, Santa Barbara, Los Angeles, and San Diego are on the Pacific Plate, which is constantly moving northwest past the North American Plate. The relative rate of movement is about two inches (50 millimeters) per year. The San Andreas Fault is considered the boundary between the two plates, although some of the motion (also known as slip) is taken up on faults as far away as central Utah.

The motion between the Pacific and North American plates occurs primarily on the faults of the San Andreas system and the eastern California shear zone. Faults are more likely to have future earthquakes on them if they have more rapid rates of movement, have had recent earthquakes along them, experience greater total displacements, and are aligned so that movement can relieve the accumulating tectonic stresses. Nearly all movement between the two plates is on active faults.

7.1.1.1 Faults

A fault is a fracture between blocks of the earth's crust, where either side moves relative to the other along a parallel plane to the fracture.

Strip Slip Faults -Strike-slip faults are vertical or almost vertical rifts where the earth's plates move mostly horizontally. From the observer's perspective, if the opposite block looking across the fault moves to the right, the slip style is called a right lateral fault; if the block moves left, the shift is called a left lateral fault.

Dip-Slip Fault- Dip-slip faults are slanted fractures where the blocks mostly shift vertically. If the earth above an inclined fault moves down, the fault is called a normal fault, but when the rock above the fault moves up, the fault is called a reverse fault.

Thrust Fault- Thrust faults have a reverse fault with a dip of 45° or less. The earthquakes of California are caused by the movement of huge blocks of the earth's crust. Southern California straddles the boundary between the Pacific and North American plates. These large sections of the earth's crust (the North American plate extends east to Iceland while the Pacific plate extends west to Japan) are moving past each other. The Pacific plate is moving northwest, scraping horizontally past North America at a rate of about 50 millimeters (2 inches) per year.

7.1.2 Characteristics

Earthquakes are typically classified in one of two ways: By the amount of energy released, measured as magnitude; or by the impact on people and structures, measured as intensity.

7.1.2.1 Magnitude

An earthquake's magnitude is a measure of the energy released at the source of the earthquake. It is based on the amplitude of the earthquake waves recorded on instruments. It is commonly expressed by ratings on the Richter scale and the moment magnitude (M_w) scale. The Richter scale magnitude is based on the amplitude of the largest energy wave released by the earthquake. Richter scale readings are suitable for smaller earthquakes; however, because it is a logarithmic scale, the scale does not distinguish clearly the magnitude of large earthquakes above a certain level.

The moment magnitude (M_w) scale was introduced in 1979 to address shortcomings of the Richter scale while maintaining consistency. It is based on the seismic moment of the earthquake. For medium-sized earthquakes, moment magnitude values are similar to Richter values—a magnitude 5.0 earthquake is about 5.0 on both scales. Unlike other scales, the moment magnitude scale does not saturate at the upper end; there is no upper limit to the magnitude it can measure. However, this has the side-effect that the scales diverge for smaller earthquakes. The M_w scale is currently the most commonly used magnitude scale.

7.1.2.2 Intensity

The intensity of an earthquake is based on the observed effects of ground shaking on people, buildings, and natural features, and varies with location. The intensity of earthquake shaking lessens with distance from the earthquake epicenter. The Modified Mercalli Intensity (MMI) scale expresses the intensity of an

earthquake and describes how strong a shock was felt at a particular location in values. The MMI is currently the most commonly used intensity scale.

Table 19: Modified Mercalli Intensity (MMI) Scale

Intensity	Shaking	Description/Damage
I	Not felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motorcars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very Strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

Source: Abridged from *The Severity of an Earthquake*, USGS General Interest Publication 1989-288-913

7.1.2.3 Ground Motion

During an earthquake when the ground is shaking, it also experiences acceleration. The peak acceleration is the largest increase in velocity recorded by a particular station during an earthquake. Earthquake hazard assessment based on expected ground motion involves determining the annual probability that certain ground

motion accelerations will be exceeded, then summing the annual probabilities over a time period of interest.

7.1.2.4 Effect of Soil Types

The impact of an earthquake on structures and infrastructure is largely a function of ground shaking, distance from the source of the earthquake, and liquefaction, a secondary effect of an earthquake in which soils lose their shear strength and flow or behave like a liquid, thereby damaging structures that derive their support from the soil.

Liquefaction generally occurs in soft, unconsolidated sedimentary soils. A program called the National Earthquake Hazard Reduction Program (NEHRP) creates maps based on soil characteristics to help identify locations subject to liquefaction.

The USGS has created a soil-type map for the Los Angeles area that provides rough estimates of site effects based on surface geology. NEHRP soil types were assigned to a geologic unit based on the average velocity of that unit, and USGS notes that this approach can lead to some inaccuracy.

In California, each earthquake is followed by revisions and improvements in the building codes. The 1933 Long Beach earthquake resulted in the Field Act, affecting school construction. The 1971 Sylmar earthquake brought another set of increased structural standards. Similar reevaluations occurred after the 1989 Loma Prieta earthquake and the 1994 Northridge earthquake. These code changes have resulted in stronger and more earthquake-resistant structures.

7.2 Hazard Profile

7.2.1 Past Events

Since seismologists started recording and measuring earthquakes, there have been tens of thousands of recorded earthquakes in Southern California, most with a magnitude below three. However, no community in Southern California, including the City of La Cañada Flintridge, is beyond the reach of a damaging earthquake of great magnitude. The below map indicates significant magnitudes that have taken place in the State of California since 1812.

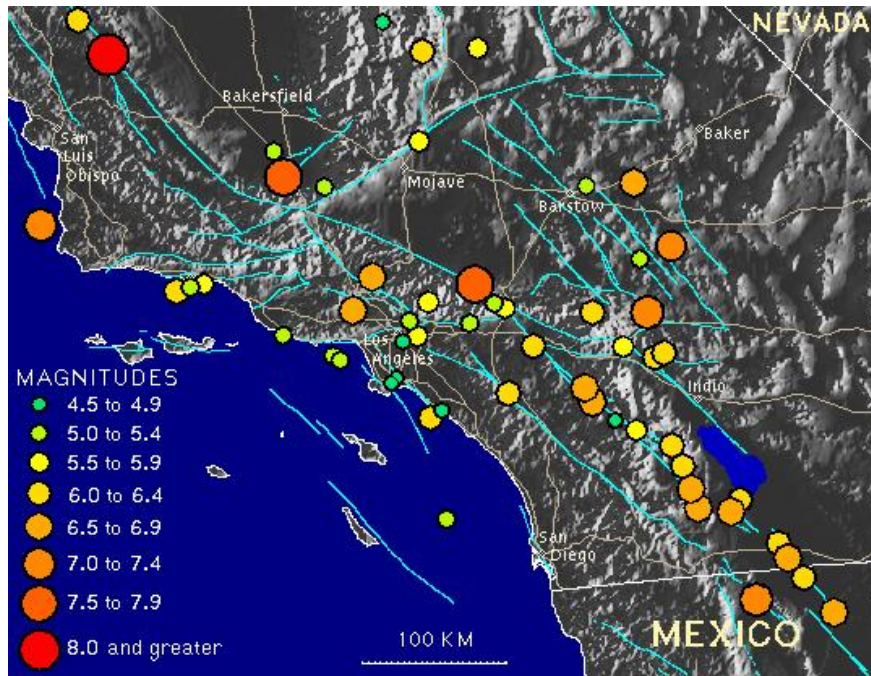


Figure 9: Map of Major Earthquakes in Southern California since 1812
 Source: www.earthwaves.org/califneq.html

The below table describes the historical earthquake events over the last 50 years that have affected Southern California near the City of La Cañada Flintridge.

Table 20: Earthquakes Magnitude 5.0 or Larger Near the Sierra Madre Fault

Date	Earthquake Name	Magnitude	Epicenter	Fault Line
March 29, 2014	Brea	5.1	Near Brea	Puente Hills Fault
July 29, 2008	Chino Hills	5.4	Near Chino Hills	Whittier Fault
January 17, 1994	Northridge	6.7	20 miles W-NW of Los Angeles	Northridge Thrust
June 28, 1991	Sierra Madre	5.8	12 miles NE of Pasadena	Clamshell-Sawpit Canyon Fault
December 3, 1988	Pasadena	5.0	Below City of Pasadena	Raymond Fault
October 1, 1987	Whittier Narrows	5.9	SE of Pasadena	Puente Hills Fault
February 9, 1971	San Fernando	6.5	Near Sylmar	San Fernando Fault

Source: Southern California Earthquake Data Center, 2017

7.2.2 Locations

The map below indicates faults located near and within the City of La Cañada Flintridge.

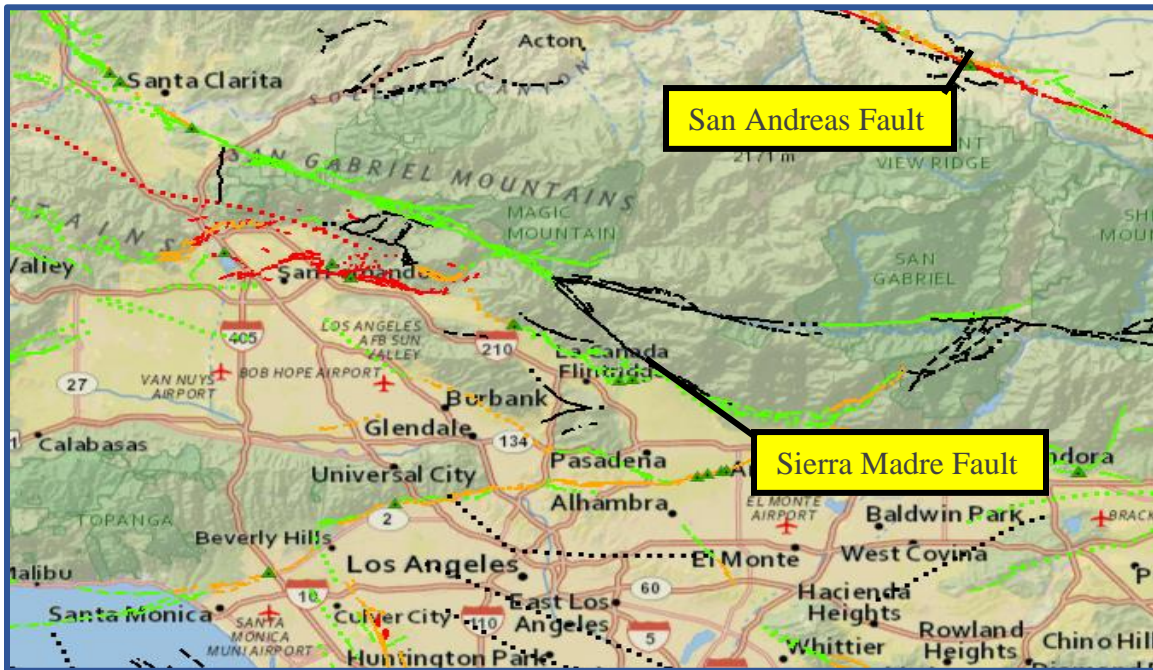


Figure 10: Faults around the City of La Cañada Flintridge
Source: USGS

7.2.3 Frequency

California experiences hundreds of earthquakes each year, most with minimal damage and magnitudes below 3.0 on the Richter scale. Earthquakes that cause moderate damage to structures occur several times a year. According to the USGS, a strong earthquake measuring greater than 5.0 on the Richter scale occurs every two to three years and major earthquakes of more than 7.0 on the Richter scale occur once a decade. The San Andreas Fault has the potential for experiencing major to great events. The State Hazard Mitigation Plan indicates that in the next 30 years in California there is over a 99 percent probability of a magnitude 6.7 earthquake and a 94 percent probability of a magnitude 7.0 earthquake.

7.2.4 Severity

The ShakeMap shown below indicates that the perceived shaking in the La Cañada Flintridge area during the Sierra Madre earthquake of 1991 was moderate to strong, though the potential damage was very light to light.

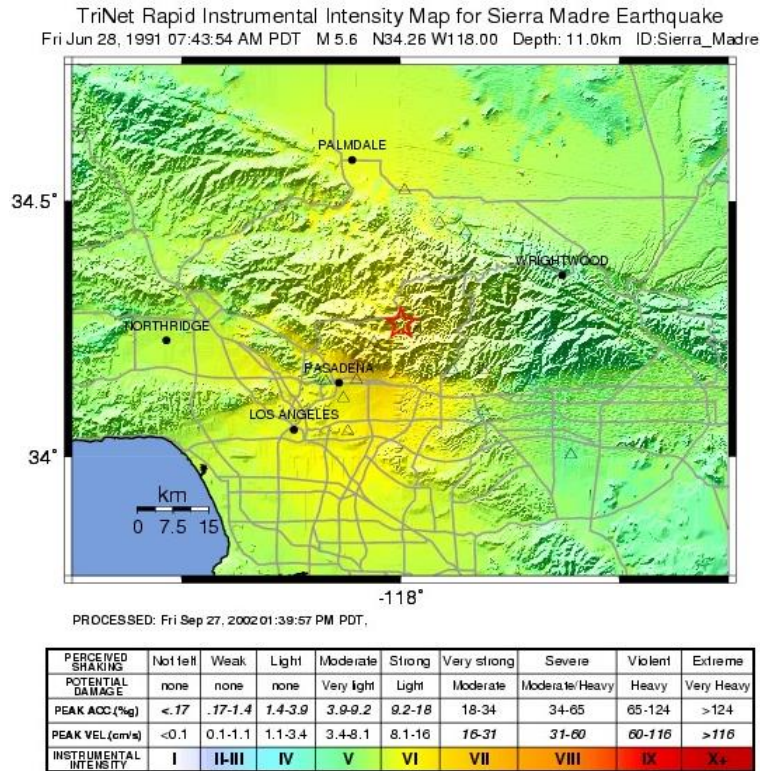


Figure 11: ShakeMap

Source: <http://www.conservation.ca.gov/cgs/smip/Pages/Shakemaps.aspx>

ShakeMaps are generated automatically following moderate and large earthquakes. The maps are only approximate. At small scales, they should be considered unreliable, as the input data is raw and unchecked. A ShakeMap is a representation of ground shaking produced by an earthquake. The information it presents is different from the earthquake magnitude and epicenter that are released after an earthquake because ShakeMap focuses on the ground shaking produced by the earthquake, rather than the parameters describing the earthquake source. So, while an earthquake has one magnitude and one epicenter, it produces a range of ground shaking levels at sites throughout the region depending on distance from the earthquake, the rock and soil conditions at sites, and variations in the propagation of seismic waves from the earthquake due to complexities in the structure of the Earth's crust. Part of the strategy for generating rapid-response ground motion maps is to determine the best format for reliable presentation of the maps given the diverse audience, which includes scientists, businesses, emergency response agencies, media, and the general public.

7.2.5 Warning Time

There is currently no reliable way to predict the day or month that an earthquake will occur at any given location. Research is being done with warning systems that use the low energy waves that precede major earthquakes. These potential warning systems give approximately 40 seconds notice that a major earthquake is about to occur. The warning time is very short, but it could allow for someone to get under a desk, step

away from a hazardous material they are working with or shut down a computer system.

7.3 Secondary Impacts

Earthquakes can cause large and sometimes disastrous landslides and mudslides. Soil liquefaction occurs when water-saturated sands, silts or gravelly soils are shaken so violently that the individual grains lose contact with one another and float freely in the water, turning the ground into a pudding-like liquid. Building and road foundations lose loadbearing strength and may sink into what was previously solid ground. Unless properly secured, hazardous materials can be released, causing significant damage to the environment and people. Earthen dams and levees are highly susceptible to seismic events and the impacts of their eventual failures can be considered secondary risks for earthquakes. Additionally, fires can result from gas lines or power lines that are broken or downed during the earthquake. It may be difficult to control a fire, particularly if the water lines feeding fire hydrants are also broken.

Death and injury can occur both inside and outside of buildings due to collapsed buildings, falling equipment, furniture, debris, and structural materials. Downed power lines and broken water and gas lines can also endanger human life.

7.4 Risk Assessment

7.4.1 Exposure Assessment

In California, many agencies are focused on seismic safety issues: The State’s Seismic Safety Commission, the Applied Technology Council, California Emergency Management Agency, United States Geological Survey, Cal Tech, the California Geological Survey as well as a number of universities and private foundations. These organizations, in partnership with other state and federal agencies, have undertaken a rigorous program in California to identify seismic hazards and risks including active fault identification, bedrock shaking, tsunami inundation zones, ground motion amplification, liquefaction, and earthquake-induced landslides. Seismic hazard maps have been published and are available for many communities in California through the State Division of Mines and Geology.

7.4.1.1 Sierra Madre Fault

The Sierra Madre fault zone is a north-dipping reverse fault zone approximately 47 miles (75 km) long that extends along the southern flank of the San Gabriel Mountains from San Fernando to San Antonio Canyon, where it continues southeastward as the Cucamonga fault. The Sierra Madre fault has been divided into five segments, and each segment seems to have a different rate of activity. It is the closest fault to the City of La Cañada Flintridge, with the western portion of the “D” segment of the fault zone running through the City. The map below shows these segments.



Figure 12: Sierra Madre Fault Segment Map

Source: <http://scedc.caltech.edu/significant/sierramadre.html>

The northwestern-most segment of the Sierra Madre Fault (the San Fernando segment) ruptured in 1971, causing the Mw 6.7 San Fernando (or Sylmar) earthquake. As a result of this earthquake, the Sierra Madre Fault has been known to be active. In the 1980s, Crook and others (1987) studied the Transverse Ranges using general geologic and geomorphic mapping, coupled with a few trenching locations, and suggested that the segments of the Sierra Madre Fault east of the San Fernando segment have not generated major earthquakes in several thousands of years, and possibly as long as 11,000 years. By California's definitions of active faulting, most of the Sierra Madre Fault would, therefore, be classified as: not active. Then, in the mid-1990s, Rubin and others (1998) trenched a section of the Sierra Madre Fault in Altadena (at Loma Alta Park, see Plate 1-2), and determined that this segment has ruptured at least twice in the last 15,000 years, causing a magnitude 7.2 to 7.6 earthquakes. This suggests that the Los Angeles area is susceptible to infrequent, but large near-field earthquakes on the Sierra Madre Fault. Rubin et al.'s (1998) trenching data show that during the last earthquake, this fault trace shifted as much as 13 feet (4 meters) at the surface, and that total displacement in the last two events adds to more than 34 feet (10.5 meters).

Although the fault seems to slip at a rate of only about 0.6 mm/yr, over time, it can accumulate a significant amount of strain. The paleoseismic data obtained at the Loma Alta Park site were insufficient to estimate the recurrence interval and the age of the last surface-rupturing event on this segment of the fault. However, Tucker and Dolan (2001) trenched the east Sierra Madre Fault at Horsethief Canyon and obtained data consistent with Rubin et al.'s (1998) findings. At Horsethief Canyon, the Sierra Madre Fault last ruptured more than 8,000 years ago. Thus, using a slip rate of 0.6 mm/yr and a slip per event of 5 meters, a recurrence interval of about 8,000 years can be calculated. If the last event occurred more than 8,000 years ago, it is possible that these segments of the Sierra Madre Fault are near the end of their cycle, and therefore likely to generate an earthquake in the not too distant future.

The San Andreas Fault is the principal boundary between the Pacific and North American plates, and as such, it is considered the "Master Fault" because it has frequent (geologically speaking), large, earthquakes, and it controls the seismic hazard in southern California. The fault extends over 1,000 miles (1,600 kilometers) from near Cape Mendocino in northern California to the Salton Sea region in southern California. At its closest approach, the San Andreas Fault is approximately 23 miles (38 kilometers) north of La Cañada

Flintridge. The five divisions of the Sierra Madre fault, while simpler than the entire fault zone, should not be thought of as individual faults, however -- some of these segments are themselves complex systems of parallel and branching faults. It has been suggested that differing fault geometries in this zone keep each lettered segment separate during rupture events -- thus, neighboring segments should not rupture simultaneously. Others, however, suggest that the fault zone may rupture both in single-segment and multiple-segment breaks.

The most recent surface ruptures are seen on the B and D segments. The least active segment, at least in surficial appearance, is the A segment, also known as the Vasquez Creek Fault, which runs between the San Gabriel fault and the intersection of the B and C segments of the Sierra Madre Fault Zone. At the junction of the C and D segments, the Clamshell - Sawpit Canyon Fault splays off from the fault zone, toward the northeast (shown in sea green on the map above). It was this fault, not the Sierra Madre fault zone itself, that ruptured to produce the Sierra Madre earthquake of 1991 (named for the nearby community of Sierra Madre).

One of the strands that make up segment D is known as the Duarte Fault, because of its location near that community. Segment E represents the easternmost part of this fault zone, and at its eastern end, it meets up with several other faults in a complex zone northwest of the town of Upland, near the epicenter of the 1990 Upland earthquake. The general trend of the Sierra Madre Fault Zone continues eastward from this point along the base of the San Gabriel Mountains, but this eastern continuation is known as the Cucamonga Fault Zone. The Cucamonga Fault Zone seems to be more active (has a higher slip rate) than the Sierra Madre Fault Zone.

While rupture on the Sierra Madre Fault Zone (theoretically) could be limited to one segment at a time, it has recently been suggested that a large event on the San Andreas Fault to the north (like that of 1857) could cause simultaneous rupture on reverse faults south of the San Gabriel Mountains -- the Sierra Madre Fault Zone being a prime example of such. Whether this could rupture multiple Sierra Madre Fault Zone segments simultaneously is unknown.

7.4.1.2 Population

According to the 2017 Census, the City of La Cañada Flintridge has a population of 20,413. The entire population of the City is potentially exposed to direct and indirect impacts from earthquakes. Whether directly impacted or indirectly impacted, the entire population will have to deal with the consequences of earthquakes to some degree. Business interruption could keep people from working, road closures could isolate populations, and loss of functions of utilities could impact populations that suffered no direct damage from an event itself.

7.4.1.3 Property

There are more than 7,000 residential and close to 200 commercial buildings in the City. All structures in

La Cañada Flintridge are susceptible to earthquake impacts to varying degrees.

7.4.1.4 Critical Facilities and Infrastructure

All critical facilities in La Cañada Flintridge are exposed to the earthquake hazard. Critical service facilities include the Sheriff station, fire stations, City Hall, school facilities, and other facilities that provide important services to the community. These facilities and their services need to be functional after an earthquake event. Critical service facilities may be housed in older buildings that are not up to current seismic codes.

Facilities holding hazardous materials, like NASA's Jet Propulsion Laboratory (JPL) are of particular concern because of possible isolation of neighborhoods surrounding them. During an earthquake, structures storing these materials could rupture and leak into the surrounding area or an adjacent waterway, having a disastrous effect on the environment. Transportation corridors can be disrupted during an earthquake, leading to the release of materials to the surrounding environment. NASA's JPL has developed their own hazard mitigation plan.

7.4.1.5 Environment

Secondary hazards associated with earthquakes will likely have damaging effects on the environment. Earthquake-induced landslides, mudslides, building and road foundations that lose load-bearing strength, gas lines rupture, downed power lines, broken fire hydrants, and fires can significantly impact the surrounding habitat.

7.4.2 Vulnerability Assessment

Earthquake vulnerability data will be obtained through the use of mapping data tools like HAZUS using GIS technology. Once the location and size of a hypothetical earthquake are identified, the mapping data tool will estimate the intensity of the ground shaking, the number of buildings damaged, the number of casualties, the damage to transportation systems and utilities, the number of people displaced from their homes, and the estimated cost of repair and clean up.

7.4.2.1 Population

The degree of vulnerability of people exposed to the earthquake hazard is dependent on many factors, including the age and construction type of the structures they live in, the soil types their homes are constructed on, their proximity to fault location, and similar factors.

Individual Preparedness

The potential for earthquake occurrences and earthquake-related property damage is relatively high in the City of La Cañada Flintridge, increasing individual preparedness is essential. Strapping down heavy furniture, water heaters, and expensive personal property, as well as being earthquake insured, and anchoring buildings to foundations are just a few steps individuals can take to prepare for an earthquake. Developing a family communication plan along with an emergency escape plan is a critical first step in becoming prepared. Next, a disaster kit with enough food and water to last for seven days is recommended.

7.4.2.2 Property

Table 13 identifies significant milestones in building and seismic code requirements that directly affect the structural integrity of development. Using a program like HAZUS would provide the means to identify the number of structures in the planning area by date of construction.

Table 21: Building Code Requirements

Year	Codes
Pre-1933	There were no explicit earthquake requirements in building codes. State law did not require local governments to have building officials or issue building permits.
1933-1940	In 1940, the first strong motion recording was made.
1941-1960	In 1960, the Structural Engineers Association of California published guidelines on recommended earthquake provisions.
1961-1975	In 1975, significant improvements were made to lateral force requirements.
1976-1994	In 1994, the Uniform Building Code was amended to include provisions for seismic safety.
1994 – present	The seismic code is currently enforced.

Businesses

Seismic activity can cause great loss to businesses, both large-scale corporations, and small retail shops. When a company is forced to stop production for just a day, the economic loss can be tremendous, especially when its market is at a national or global level. Seismic activity can create an economic loss that presents a burden to large and small shop owners who may have difficulty recovering from their losses.

7.4.2.3 Critical Facilities and Infrastructure

Mapping data tools can identify the vulnerability of critical facilities to earthquake through the use of

categories like no damage, slight damage, moderate damage, extensive damage, or complete damage. The model could be used to assign a category to each critical facility in the City. It could also estimate the time to restore critical facilities to fully functional use. Results are presented as the probability of being functional at specified time increments: 1, 3, 7, 14, 30 and 90 days after the event. For example, mapping data tools may estimate that a facility has a 5 percent chance of being fully functional on day 3 and a 95 percent chance of being fully functional at day 90.

Bridges

Even modern bridges can sustain damage during earthquakes, leaving them unsafe for use. Some bridges have failed completely due to strong ground motion. Bridges are a vital transportation link - with even minor damages making some areas inaccessible. Bridges built before the mid-1970' s have a significantly higher risk of suffering structural damage during a moderate to large earthquake compared with those built after 1980 when design improvements were made.

Much of the interstate highway system was built in the mid to late 1960s. The bridges in the City of La Cañada Flintridge are State, City, or privately owned. California Department of Transportation (Caltrans) has retrofitted most bridges on the freeway system; however, there are still some city-maintained bridges that are not retrofitted. The Federal Highway Administration (FHWA) requires that bridges on the National Bridge Inventory be inspected every two (2) years. Caltrans checks when bridges are inspected because they administer the Federal funds for bridge projects. The County of Los Angeles performs bridge inspections for the City of La Cañada Flintridge. A list of bridges located in the City are as follows:

- Berkshire Bridge
- Chevy Chase Bridge
- Castle Road Bridge
- Lyans Drive Bridge
- Cross Street Bridge
- Foothill Boulevard Bridge
- Jessen Drive Bridge
- Oak Grove Bridge

Lifelines

Lifelines are the connections between communities and outside services. They include water and gas lines, transportation systems, electricity, and communication networks. Ground shaking and amplification can cause pipes to break open, power lines to fall, roads and railways to crack or move, and radio and telephone communication to cease. Disruption to transportation makes it especially difficult to bring in supplies or services. Lifelines need to be usable after an earthquake to allow for rescue, recovery and rebuilding efforts and to relay important information to the public.

Dam

There is one dam located within the city limits of La Cañada Flintridge. The Devils Gate Dam was the first dam built by the Los Angeles Flood Control District. The dam, built in 1920, was designed for both flood control and water conservation. It also served as the main road between La Cañada Flintridge and Pasadena for many years.

Disruption of Services

Critical service facilities include the sheriff station, fire stations, city hall, and other facilities that provide important services to the community. These facilities and their services need to be functional after an earthquake event. Critical service facilities may be housed in older buildings that are not up to current seismic codes.

7.4.2.4 Environment

Earthquake-induced effects directly linked to an earthquake source or provoked by the ground shaking can significantly impact the surrounding environment. This can be seen in secondary hazards that result in faulting, ground failure, landslides, mudslides, building and road foundations that lose load-bearing strength, gas line ruptures, downed power lines, broken fire hydrants, and fires.

7.5 Mitigation Strategy

Earthquake mitigation action items provide direction on specific activities that organizations and residents in the City of La Cañada Flintridge can carry out to reduce risk and prevent loss from earthquake events. Each action item is followed by ideas for implementation which can be used by the steering committee, and local decision-makers, to pursue strategies for implementation.

7.5.1 Goals and Objectives

The earthquake mitigation action items provide guidance on suggesting specific activities that agencies, organizations, and residents in the City of La Cañada Flintridge can undertake to reduce risk and prevent loss from earthquake events. Each action item is followed by ideas for implementation, which can be used by the steering committee and local decision-makers in pursuing strategies for implementation.

The below mitigation action items were also identified as measures to be taken under the previously approved and adopted the 2014 Local Hazard Mitigation Plan. The City has made a concerted effort to carry out, further, the measures identified in the previous Plan which are incorporated once more in the below mitigation action items.

7.5.2 Previous Plan Mitigation Action Items

Below is Table 14 summarizing the activity since the last plan update. The mitigation activities appear in the same order as before. The previous titles have been renamed into the current plan conventions, where “STA” corresponds to “Short-Term Activity,” “LTA” represents “Long-Term Activity,” and “EQH” stands for “Earthquake Hazard.” Any ongoing or projects that were not completed or have ongoing components are also included in the Current Mitigation Action Items Section

Table 22: Earthquake 2014 LHMP Activities Status

Title	Description	Status
EQH-STA 1	Integrate new earthquake hazard mapping data and improve technical analysis of earthquake hazards. Conduct risk analysis incorporating mapping 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.	Item has not been completed due to pending available funding and staff. Item is in the process of being implemented in the upcoming fiscal year.
EQH-LTA 1	Identify funding sources for structural and nonstructural retrofitting of structures that are identified as seismically vulnerable. Provide information for property owners, small businesses, and organizations on sources of funds (loans, grants, etc.).	Item has not been completed due to pending available funding and staff. Item is in the process of being implemented in the upcoming fiscal year.
EQH-LTA 2	Encourage the purchase of earthquake hazard insurance. Coordinate with insurance companies to produce and distribute earthquake insurance information.	Item has not been completed due to pending available funding and staff. Item is in the process of being implemented in the upcoming fiscal year.
EQH-LTA 3	Encourage seismic strength evaluations of critical facilities in the City of La Cañada Flintridge and La Cañada Unified School District to identify vulnerabilities for mitigation of schools, public infrastructure, and critical facilities to meet current seismic standards. Encourage owners of non-retrofitted structures to upgrade them to meet seismic standards.	Item has not been completed due to pending available funding and staff. Item is in the process of being implemented in the upcoming fiscal year.
EQH-LTA 4	Encourage the reduction of nonstructural and structural earthquake hazards in homes, schools, businesses, and government offices. Provide information to government building and school facility managers and teachers on securing bookcases, filing cabinets, light fixtures, and other objects that can cause injuries and block exits. Explore	Item has not been completed due to pending available funding and staff. Item is in the process of being implemented in the upcoming fiscal year.

partnerships to provide retrofitting classes for homeowners, renters, building professionals, and contractors.

7.5.3 Current Mitigation Action Items

Below is Table 15 summarizing the new and ongoing mitigation action items since the last plan update. All items appear in the order of priority, grouped by timeline. In current conventions, “STA” corresponds to “Short-Term Activity,” “LTA” represents “Long-Term Activity,” and “EQH” stands for “Earthquake Hazard.” Each mitigation item addresses the Plan’s mission and one or more of the goals as identified in Section 2.4

Table 23: 2018 Earthquake Hazard Mitigation Strategies

Number	Mitigation Action	Timeline	Coordinating Organization	Goals Addressed	Constraints	Potential Funding	New Strategy
EQH-STA 1	Incorporate new earthquake hazard software for risk analysis for the City of La Cañada Flintridge.	Short-Term 1-2 Years	Administration, Community Development	Mitigation (B)	Funding, Available Personnel	General Fund, Hazard Mitigation, Grant Program	No
EQH-STA 2	Identify funding sources for potentially vulnerable structures	Short-Term 1-2 Years, Ongoing	Administration, Building and Safety, Community Development	Mitigation (C)	Funding, Available Personnel	General Fund, Hazard Mitigation, Grant Program	No
EQH-STA 3	Encourage homeowners and business to purchase-earthquake hazard insurance by distributing informational material on the topic.	Short-Term 1-2 Years, Ongoing	Administration, Building and Safety, Community Development	Mitigation (B) Education (B)	Funding, Available Personnel	General Fund, Hazard Mitigation, Grant Program	No
EQH-LTA 1	Encourage seismic strength evaluations of critical facilities located in the City of La Cañada Flintridge.	Long-term 3-5 Years	Administration Community Development	Mitigation (B)	Funding, Available Personnel	General Fund, Hazard Mitigation, Grant Program	No
EQH-LTA 2	Reduction of nonstructural and structural earthquake hazards in homes, schools, businesses, and government offices.	Long-term 3-5 Years	Administration, Building and Safety,	Mitigation (B) Collaboration (A) Collaboration (B)	Funding, Available Personnel	General Fund, Pre-Disaster, Mitigation	Yes

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			Community Development				
EQH-LTA 3	Identify if the City falls within a fault and work with geological personnel.	Long-term 3-5 Years	Administration	Mitigation (B)	Funding, Available Personnel	General Fund, Hazard Mitigation, Grant Program	No
EQH-LTA 4	Reevaluate potential secondary facilities for an Emergency Operations Center within the City limits.	Long-term 3-5 Years	Administration	Mitigation (B)	Funding Maintenance	General Fund Hazard Mitigation Grant Program	No

7.5.4 Action Plan and Implementation

The City plans to carry out the existing goals identified in the City’s 2014 Local Hazard Mitigation Plan, that have yet to be carried out, and accomplish the new goals listed in the previous section. Staff will coordinate with local agencies to complete projects and mitigation action items.

7.6 Resource Directory


The following resource directory lists the information and programs that can assist communities and organizations to address the hazard. The City of La Cañada Flintridge uses the resources and/or services offered by these agencies to achieve and improve mitigation efforts.

7.6.1 Local Resources

Los Angeles County Department of Public Works

The Los Angeles County Department of Public Works protects property and promotes public safety through flood control, water conservation, road maintenance, bridges, buses and bicycle trails, building and safety, land development, waterworks, sewers, engineering, and capital projects.

Address: 900 S. Fremont Ave., Alhambra, CA 91803


URL: www.dpw.lacounty.gov  (626) 458-5100


Email: info@dpw.lacounty.gov

Southern California Earthquake Center (SCEC)

The Southern California Earthquake Center (SCEC) gathers new information about earthquakes in Southern California, integrates this information into a comprehensive and predictive understanding of earthquake phenomena, and communicates this understanding to end-users and the general public in order to increase earthquake awareness, reduce economic losses, and save lives.

Address: 3651 Trousdale Parkway, Suite 169, Los Angeles, CA 90089

URL: www.scec.org  (213) 740-5843

 (213) 740-0011


7.6.2 State Resources


California Department of Transportation (Caltrans)- District 7

Caltrans is responsible for the design, construction, maintenance, and operation of the California State Highway System, as well as that portion of the Interstate Highway System within the state's boundaries. Alone and in partnership with Amtrak, Caltrans is also involved in the support of intercity passenger rail service in California.

Address: 100 S. Main Street, Los Angeles, CA 90012

URL: www.caltrans.ca.gov/d7/

 (213) 897-3656


 (213) 897-3836

California Natural Resources Agency


The California Resources Agency restores, protects and manages the state's natural, historical and cultural resources for current and future generations using solutions based on science, collaboration, and respect for all the communities and interests involved.

Address: 1416 Ninth Street, Suite 13 Sacramento, CA 95814

URL: www.resources.ca.gov

 (916) 653-5656

Email: secretary@resources.ca.gov

 (916) 653-8102

**California Department of Conservation
Division of Mines and Geology (DMG)**

The California Geological Survey develops and disseminates technical information and advice on California's geology, geologic hazards, and mineral resources.

Address: 801 K Street, Ms12-30, Sacramento, CA 95814

URL: www.conservation.ca.gov

 (916) 445-1825

Email: cgsh@consrv.ca.gov


 (916) 445-5718


California Department of Conservation: Southern California Regional Office

The Department of Conservation provides services and information that promote environmental health, economic vitality, informed land-use decisions and sound management of our state's natural resources.

Address: 888 S. Figueroa Street #1475, Los Angeles, CA 90017

URL: www.conservation.ca.gov

 (213) 239-0878

 (213) 239-0894

California Governor’s Office of Emergency Services

The Governor's Office of Emergency Services coordinates overall state agency response to major disasters in support of local government. The office is responsible for assuring the state's readiness to respond to and recover from natural, human-caused, and war-caused emergencies, and for assisting local governments in their emergency preparedness, response and recovery efforts.

Address: 4671 Liberty Ave. Building 283, Los Alamitos, CA 90720

URL: www.caloes.ca.gov  (562) 795-2939

Email: Jim.Acosta@caloes.ca.gov  (562) 795-2877

7.6.3 Federal Resources


United States Geological Survey

The USGS provides reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.

Headquarters Address: 12201 Sunrise Valley Drive Reston, VA 20192

Field Office Address: Pasadena USGS- 525 S. Wilson Avenue, Pasadena, CA 91106

URL: www.usgs.gov  (916) 444-8077

 (888) 275-8747

**National Institute of Building Sciences
Building Seismic Safety Council (BSSC)**

The Building Seismic Safety Council develops and promotes building earthquake risk mitigation regulatory provisions for the nation.

Address: 1090 Vermont Avenue, NW Suite 700, Washington D.C. 20005

URL: www.nibs.org  (202) 289-7800

Email: sstubbs@nibs.org  (202) 289-1092

Federal Emergency Management Agency, Mitigation Division

The Mitigation Division manages the National Flood Insurance Program and oversees FEMA's mitigation programs. It has programs and activities which provide citizens Protection, with flood insurance; Prevention, with mitigation measures and Partnerships, with communities throughout the country.

Address: 500 C Street, S.W., Washington, D.C. 20472


URL: www.fema.gov/fima/planhowto.shtml  (202) 646-2500


Federal Emergency Management Agency, Region IX

The Federal Emergency Management Agency supports citizens and first responders to ensure that communities work together to build, sustain and improve capabilities to prepare for, protect against, respond to, recover from, and mitigate all hazards

Address: 1111 Broadway, Suite 1200, Oakland, CA 94607

URL: www.fema.gov

 (510) 627-7100

 (510) 627-7112

Western States Seismic Policy Council (WSSPC)

WSSPC is a regional earthquake consortium funded mainly by FEMA. Its website is a great resource, with information clearly categorized - from policy to engineering to education.

Address: 801 K Street, Suite 1236, Sacramento, CA 95814

URL: www.wsspc.org

 (916) 444-6816

Email: wsspc@wsspc.org


 (916) 444-8077

Institute for Business & Home Safety


The Institute for Business & Home Safety (IBHS) is a nonprofit association that engages in communication, education, engineering, and research. The Institute works to reduce deaths, injuries, property damage, economic losses and human suffering caused by natural disasters.

Address: 4775 E. Fowler Avenue, Tampa, FL 33617

URL: www.ibhs.org

 (813) 286-3400

Email: smillerick@ibhs.org

 (813) 286-9960

7.6.4 Publications

FEMA, Public Assistance Policy Digest. (2007). *Public assistance: Debris Management Guide* (FEMA 325). Washington, D.C.: U.S. Dept. of Homeland Security, Federal Emergency Management Agency. Retrieved from https://www.fema.gov/media-library-data/20130726-1826-25045-7418/fema_325_debris_management_guide_2007.07.25.pdf

The Debris Management Guide was developed to assist local officials in planning, mobilizing, organizing, and controlling large-scale debris clearance, removal, and disposal operations. Debris management is

generally associated with post-disaster recovery. While it should be compliant with local and county emergency operations plans, developing strategies to ensure strong debris management is a way to integrate debris management within mitigation activities.

Wolfe, M. R. et. Al., (1986). Land Use Planning for Earthquake Hazard Mitigation: Handbook for Planners. University of Colorado Institute of Behavioral Science.

This handbook provides techniques that planners and others can utilize to help mitigate for seismic hazards, It provides information on the effects of earthquakes and sources on risk assessment. The handbook also gives examples on application and implementation of planning techniques to be used by local communities.

7.7 Sources

Allen, T.I., Wald, D.J., Hotovec, A.J., Lin, K., Earle, P.S. and Marano, K.D., (2008), An Atlas of ShakeMaps for Selected Global Earthquakes: U.S. Geological Survey Open-File Report 2008–1236, 35 p.. Retrieved from <https://pubs.usgs.gov/of/2008/1236/>.

City of Los Angeles. (2018). City of Los Angeles 2018 Local Hazard Mitigation Plan (Rep.). Retrieved <http://emergency.lacity.org/hmp-documents>

CISN ShakeMap: About the Maps. (n.d.). Retrieved from <http://www.cisn.org/shakemap/sc/shake/about.html#scenario>

GSN - Global Seismographic Network. (n.d.). Retrieved from <http://earthquake.usgs.gov/monitoring/gsn/>

Southern California Earthquake Data Center. (2013). Significant Earthquakes and Faults. Retrieved from <http://scedc.caltech.edu/significant/sierramadre.html>

U.S. Geological Survey (n.d.). Search Earthquake Catalog. Retrieved from <http://earthquake.usgs.gov/earthquakes/search/>.

U.S. Geological Survey. (2016). The Severity of an Earthquake. Retrieved from http://pubs.usgs.gov/gip/earthq4/severity_text.html



8 FLOOD

8.1 General Background

Flooding occurs when climate, geology, and hydrology combine to create conditions where water flows outside of its usual course. Flooding poses a threat to life and safety and can cause severe damage to public and private property.

8.1.1 Causes and Characteristics

The City of La Cañada Flintridge is vulnerable to flooding in urban areas. In addition, any low-lying area has the potential to flood. The flooding of developed areas may occur when the amount of water generated from rainfall and runoff exceeds a stormwater system's capability to remove it. The City of La Cañada Flintridge is in the western region of the San Gabriel Valley. It is close to the San Gabriel Mountains which contribute to the collection of rainwater.

Over the last 125 years, the average annual rainfall in Los Angeles has been 14.3 inches. But the term "average" means very little as the annual rainfall during this time period has ranged from a low of 3.21 inches in 2006-2007 to a high of 37.3 inches in 2004-2005. This makes the Los Angeles basin a land of extremes in terms of annual precipitation

8.1.1.1 Geography and Geology

The greater Los Angeles Basin is the product of rainstorms and erosion from the mountains. Much of the coastal plain rests on the ancient rock debris and sediment washed down from the mountains. This sediment can act as a sponge, absorbing vast quantities of rain in those years when heavy rains follow a dry period. But like a sponge that is near saturation, the same soil fills up rapidly when a heavy rain follows a period of relatively wet weather. So even in some years of heavy rain, flooding is minimal because the ground is relatively dry. The same amount of rain following a wet period can cause extensive flooding.

"Asphalt creep" is a potential source of flooding. 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 toward 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.

8.1.1.2 Urban Drainage Flooding

As land is converted from fields or woodlands to roads and parking lots, it loses its ability to absorb rainfall.

The lack of open ground forces water to remain on the surface and rapidly accumulate. Urbanization of a watershed changes the hydrologic systems of the basin. Heavy rainfall collects and flows faster on impervious concrete and asphalt surfaces. This can result in flood waters that rise very rapidly and peak with violent force. During periods of urban flooding, streets can become swift moving rivers and basements can fill with water. Storm drains often back up with vegetative debris causing additional, localized flooding.

8.1.1.3 Dam Failure

Loss of life and damage to structures, roads, and utilities may result from a dam failure. Economic losses can also result from a lowered tax base and lack of utility profits.

Because a dam failure can have severe consequences, FEMA requires that all dam owners develop Emergency Action Plans (EAP) for the warning, evacuation, and post-flood actions. The responsibility for developing potential flood inundation maps and facilitation of emergency response is the responsibility of the dam owner. As of 2017, California requires dam owners to develop inundation maps and submit them to the Department of Water Resources within Cal OES. By 2021, maps will be due for all dams with ratings of significant or higher.

8.2 Hazard Profile

Hazard identification is the first phase of the flood-hazard assessment. Identification is the process of estimating the geographic extent of the floodplain, the intensity of the flooding that can be expected in specific areas of the floodplain, and the probability of occurrence of flood events.

8.2.1 Past Events

The western San Gabriel Mountains have elevations that exceed seven thousand feet. These high ridges often trap eastern moving winter storms. Although downtown Los Angeles averages less than fifteen inches of rain a year, some mountain peaks in the San Gabriels receive more than 40 inches of precipitation annually. Because the mountains are so steep, the rainwater moves rapidly down the slopes. In extreme cases, flood-generated debris flows can roar down a canyon at speeds near 40 miles per hour with a wall of mud, debris and water tens of feet high.

Records show that from 1811 to 2013, parts of the Los Angeles basin have flooded 36 times. But averages are deceiving, for the Los Angeles basin goes through periods of drought and periods of above-average rainfall. Between 1889 and 1891 the river flooded every year, and from 1941 to 1945, the river flooded 5 times. Conversely, from 1896 to 1914, a period of 18 years, and again from 1944 to 1969, a period of 25 years, the river did not have serious floods.

Another relatively regular source for heavy rainfall, particularly in the mountains and adjoining cities is from

summer tropical storms. These tropical storms usually coincide with El Niño years. 1982-1983 and 1997-1998 were both El Niño years that resulted in significant rainstorms.

In the past 50 years, there have been only a small number of dam failures in California. The most catastrophic dam failure in California’s history is that of the infamous St. Francis Dam in Los Angeles County, which failed in March 1928, shortly after construction of the dam was completed. This failure resulted in the deaths of more than 450 people and the destruction of nearly 1,000 homes and structures. Numerous roads and bridges were also destroyed or damaged beyond repair.

In the past 30 years, there have been no significant losses due to flooding in the City of La Cañada Flintridge. According to FEMA, as of April 2018, La Cañada Flintridge has had two repetitive loss properties and no severe repetitive loss.

The following table highlights the most destructive floods in Los Angeles County in recent history. Though most of them did not directly affect La Cañada Flintridge, they provide examples of incidents that are possible in the region.

Table 24: Significant Flood Disasters in Los Angeles.

Disaster Date(s)	Declaration #	Type of Event	Constant \$ 2017
01/18/2017 – 01/23/2017	4305	Severe winter storms, flooding, and mudslides	N/A
01/17/2010 – 02/06/2010	1884	Severe winter storms, flooding, and debris and mudflows	N/A
02/16/2005 – 02/23/2005	1585	Severe storms, flooding, landslides, and mud and debris flows	\$132,250,089
12/27/2004 – 01/11/2005	1577	Severe storms, flooding, debris flows, and mudslides	\$454,772,705
02/02/1998 – 04/30/1998	1203	Severe winter storms, and flooding	\$701,763,851
02/13/1995 – 04/19/1995	1046	Severe winter storms, flooding landslides, mudflow	\$328,710,574
01/03/1995 – 02/10/1995	1044	Severe winter storms, flooding, landslides, mudflows	\$519,929,424
10/26/1993 – 4/22/1994	1005	Fires, Mud and Landslide, Soil Erosion, Flooding	\$168,573,778
01/05/1993 – 03/20/1993	979	Severe winter storm, mud and landslides, and flooding	\$423,092,413
02/10/1992 – 02/18/1992	935	Rain/snow/wind storms, flooding, mudslides	\$105,044,157
01/17/1988 – 01/22/1988	812	Severe storms, high tides and flooding	\$12,314,452
01/08/1980	615	Severe storms, mudslides and flooding	\$331,561,280
02/15/1978	547	Coastal storms, mudslides and flooding	\$396,975,564
01/26/1969	253	Severe storms and flooding	\$693,890,825

Disaster Date(s)	Declaration #	Type of Event	Constant \$ 2017
02/25/1963	145	Floods	\$6,637,111
04/04/1958	82	Heavy rainstorm and floods	\$16,964,994
02/05/1954	15	Flood and erosion	\$4,162,389

Differences in duration due to the severity of the event, and in the case of the early instances FEMA recording policies. Source: FEMA

8.2.2 Locations

Identifying hazardous locations is an essential step toward implementing more informed mitigation activities. FEMA has mapped areas within the City of La Cañada Flintridge that are at risk of 500-year floods.



Figure 13: FEMA FIRMS Map

8.2.2.1 Flood Types

The City of La Cañada Flintridge is susceptible to localized flooding from severe storms and urban run-off. The City Department of Public Works identifies areas where the storm drains are not effectively handling capacity and works through Capital Improvement Projects to address areas of issue.

8.2.2.2 Flood Map

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. FEMA mapped the 100-year and 500-year floodplains through the FIS in conjunction with the United States Army Corps of Engineers (USACE) in August of 1987. In the City of La Cañada Flintridge, the NFIP and related building code regulations were updated on July 18, 2006. NFIP regulations (44 Code of Federal Regulations (CFR) Chapter 1, Section 60, 3) require that all new construction in floodplains must be elevated at or above base flood level.

The City's Community Number is 060669. The City's current effective map is designated No Specific Flood Hazard Area (NSFHA). The City entered the regular phase of the National Flood Insurance Program on September 7, 1984.

The FEMA Flood Insurance Rate Map (FIRM) for the City of La Cañada Flintridge was updated in 2008. However, man-made and natural changes to the environment have changed the dynamics of stormwater runoff since then so the map is not entirely up to date. The majority of the community is ZONE "X" for flood insurance rating purposes with some areas in a ZONE "D." Small areas of the community are mapped to be in areas subject to 500-year floods, and areas in ZONE D have an undetermined flood risk.

Although many communities rely exclusively on FIRMs to characterize the risk of flooding in their area, there are some flood-prone areas that are not mapped but remain susceptible to flooding. These areas include locations next to small creeks, local drainage areas, debris basins, and areas susceptible to human-caused flooding.

In order to address this lack of data, the City of La Cañada Flintridge, as well as other jurisdictions, are using Geographic Information System (GIS) FIRM maps can be imported directly into GIS, which allows for GIS analysis of flood hazard areas.

Communities find it particularly useful to overlay flood hazard areas on tax assessment parcel maps. This allows a community to evaluate the flood hazard risk for a specific parcel during the review of a development request. Coordination between FEMA and local planning jurisdictions is the key to making a strong connection with GIS technology for flood hazard mapping.

FEMA and the Environmental Systems Research Institute (ESRI), a private company, have formed a partnership to provide multi-hazard maps and information to the public via the Internet. ESRI produces GIS software and the ESRI website has information on GIS technology and downloadable maps. The hazards maps provided on the ESRI site are intended to assist communities in evaluating geographic information about natural hazards. Flood information for most communities is available on the ESRI web site. Visit

www.esri.com for more information.

8.2.3 Frequency

As listed under past events, major floods in the Los Angeles area have happened about twice a decade over the last half-century. Minor flooding in La Cañada Flintridge can happen more frequently, though the City has taken the effort to address storm drain issues that may be the cause. Major floods in the City of La Cañada Flintridge are rare. However, floods may result as a secondary threat after wildfires or landslides. As previously discussed, FEMA only lists a small portion of the city as having any special flood risk.

8.2.4 Severity

Floods are damaging to infrastructure and buildings. Though dangerous floods are rare in La Cañada Flintridge, floods that affect the area will likely cause extensive property damage. The principal factors affecting flood damage are flood depth and velocity. The deeper and faster flood flows become, the more damage they can cause. Shallow flooding with high velocities can cause as much damage as deep flooding with slow velocity.

8.2.5 Warning Time

The warning time that a community has to take action to protect lives and property from a flooding threat is a function of the time between the first predictions of heavy rainfall, the first rainfall, and the first occurrence of flooding. Each watershed has unique qualities that affect its response to rainfall. The length of time that floodwaters remain above flood stage is an important characteristic of the flood hazard. Due to the sequential pattern of meteorological conditions needed to cause serious flooding, it is unusual for a flood to occur without warning. Warning times can be between 24 and 48 hours. Flash flooding can be less predictable, but communities can be warned of the potential for flash flooding to occur.

The Los Angeles County flood threat system consists of a network of precipitation gages throughout the watershed and stream gages at strategic locations in the county that constantly monitor and report stream levels. This information is fed into a U.S. Geological Survey forecasting program, which assesses the flood threat based on the amount of flow in the stream. In addition to this program, data and flood warning information is provided by the National Weather Service (NWS). All of this information is analyzed to evaluate the flood threat and possible evacuation needs. Los Angeles County is responsible for dissemination of flood warnings to all municipalities within the County.

The NWS issues watches and warnings when forecasts indicate rivers may approach bank-full levels. When a watch is issued, the public should prepare for the possibility of a flood. When a warning is issued, the public is advised to stay tuned to a local radio station for further information and be prepared to take quick action if needed. A warning means a flood is imminent, generally within 12 hours, or is occurring. Local

media broadcast NWS warnings.

8.3 Secondary Impacts

Floods may induce or be associated with other hazards. It is important to consider how the environment in La Cañada Flintridge may be susceptible to other hazards when floods occur.

8.3.1 Debris Flow

Another flood-related hazard that can affect La Cañada Flintridge is debris flows. Most typically debris flows occur in mountain canyons and the foothills against the San Gabriel Mountains. However, any hilly or mountainous area with intense rainfall and the proper geologic conditions may experience one of these very sudden and devastating events. Debris flows are especially likely when a storm follows sometime after a wildfire, as was the case after the Station Fire. Refer to the Landslide section for more details about the Station Fire event.

8.4 Risk Assessment

A flood risk analysis for the City of La Cañada Flintridge should include two components. First, the life and value of the property that may incur losses from a flood event. And, the number and type of flood events expected to occur over time. Within the broad components of a risk analysis, it is possible to predict the severity of damage from a range of events.

8.4.1 Exposure Assessment

Flow velocity models can assist in predicting the amount of damage expected from different magnitudes of flood events. The data used to develop these models is based on hydrological analysis of landscape features. Changes in the landscape, often associated with human development, can alter the flow velocity and the severity of damage that can be expected from a flood event.

Using GIS technology and flow velocity models, it is possible to map the damage that can be expected from flood events over time. It is also possible to pinpoint the effects of certain flood events on individual properties. At the time of publication of this plan, data was insufficient to conduct a risk analysis for flood events in the City of La Cañada Flintridge.

8.4.1.1 Population

About 0.21 square miles of the City of La Cañada Flintridge either has not had a flood risk assessed or is in a 500-year flood risk area. This equates to about 2.5% of the area within the City, which means that very few members of the community are at risk of a flood event.

8.4.1.2 Property

The type of property damage caused by flood events depends on the depth and velocity of the flood waters. Faster moving flood waters can wash buildings off their foundations and sweep cars downstream. Pipelines, bridges and other infrastructure can be damaged when high waters combine with flood debris. Extensive damage can be caused by basement flooding and landslide damage related to soil saturation. Most flood damage is caused by water saturating materials susceptible to loss (i.e., wood, insulation, wallboard, fabric, furnishings, floor coverings, and appliances). In many cases, flood damage to homes renders them unlivable. In California, the average flood claim in 2016 was \$13,620.

8.4.1.3 Critical Facilities and Infrastructure

Publicly owned facilities are a key component of daily life for all citizens. Damage to public water and sewer systems, transportation networks, flood control facilities, emergency facilities, and offices can hinder the ability of the government to deliver services. The government can act to reduce risk to public infrastructure from flood events, as well as craft public policy that reduces risk to private property from flood events.

Bridges are key points of concern during flood events because they are important links in road networks, river crossings, and they can be obstructions in watercourses, inhibiting the flow of water during flood events. The bridges in the City of La Cañada Flintridge are city owned. A state-designated inspector must inspect all state, county, and city bridges every two years. The inspections are rigorous, looking at everything from the seismic capability to erosion and scour. Private bridges are not inspected and can be very dangerous if not inspected. They should be subject to retrofits and current building code regulations.

Local drainage problems have been common throughout the City of La Cañada Flintridge, however, issue areas highlighted in the previous LHMP have been addressed when possible. The problems are often present where stormwater runoff enters culverts or goes underground into storm sewers. Inadequate maintenance can also contribute to the flood hazard in urban areas.

Catch Basins located within the City are owned and maintained by the Los Angeles County Flood Control District. They are critical for protecting communities from damage during flood events.

There are three sanitary districts in the City of La Cañada Flintridge. The majority of the community south of Foothill Boulevard uses septic systems, and some properties north of Foothill Boulevard have not completed the transition to the sewer. There are no wastewater treatment facilities in the City.

8.4.1.4 Environment

Environmental quality problems include bacteria, toxins, and pollution. Some of this may result from waterways being contaminated by wastewater from sewer or septic systems.

8.4.2 Vulnerability Assessment

The vulnerability assessment combines the floodplain boundary, generated through hazard identification, with an inventory of the property within the floodplain. Understanding the population and property exposed to natural hazards will assist in reducing risk and preventing loss from future events.

Because site-specific inventory data and inundation levels are given for a particular flood event are not readily available, calculating the community’s vulnerability to flooding events is not straightforward. The amount of property in the floodplain, as well as the type and value of structures on those properties, should be calculated to provide a working estimate for potential flood losses.

The largest impact on communities from flood events is the loss of life and property. During certain years, property losses resulting from flood damage are extensive. Property loss from floods strikes both private and public property. There have been no significant losses due to flooding in the City of La Cañada Flintridge over the past 30 years.

8.4.2.1 Population

Youth, the elderly, and economically disadvantaged members of the community are the most at risk during a flood event. As of 2010, 26% of the population was 18 or under, and 16% was 65 or older. Only a small portion of residents are economically disadvantaged.

Floods present threats to public health and safety. Floodwater is generally contaminated. The following health and safety risks are commonly associated with flood events:

- **Unsafe food** — Floodwaters contain disease-causing bacteria, dirt, oil, human and animal wastes, and farm and industrial chemicals. They carry away whatever lies on the ground and upstream. Their contact with food items, including food crops in agricultural lands, can make that food unsafe to eat. Power failures caused by floods damage refrigerated and frozen foods. Foods kept inside cardboard, plastic bags, jars, bottles, and paper packaging are subject to disposal if contaminated by floodwaters. Even though the packages do not appear to be wet, they may be unhygienic with mold contamination and deteriorate rapidly.
- **Contaminated drinking and washing water and poor sanitation** — Flooding impairs clean water sources with pollutants and affects sanitary toilets. Direct and indirect contact with the contaminants—whether through direct food intake, insects, unclean hands, or dirty plates and utensils—can result in waterborne infectious disease. Wastewater treatment plants, if flooded and caused to malfunction, can be overloaded with polluted runoff waters and sewage beyond their disposal capacity, resulting in backflows of raw sewage to homes and low-lying grounds.

- **Mosquitoes and animals** — Prolonged rainfall and floods provide new breeding grounds for mosquitoes and can lead to an increase in the number of mosquito-borne diseases.
- **Molds and mildews** — Excessive exposure to molds and mildews can cause flood victims—especially those with allergies and asthma—to contract upper respiratory diseases. Molds grow in as short a period as 24 to 48 hours in wet and damp areas of buildings and homes that have not been cleaned after flooding. Small mold spores can be easily inhaled and, in large enough quantities, cause allergic reactions, asthma episodes, and other respiratory problems. Infants, children, elderly people, and pregnant women are considered most vulnerable to mold-induced health problems.
- **Hazards when re-entering and cleaning flooded homes and buildings** — Flooded buildings can pose health hazards after floodwaters recede. Electrical power systems can become hazardous. Gas leaks from pipelines or propane tanks can trigger an explosion when entering damaged buildings or working to restore utility service. Flood debris may cause wounds and injuries when cleaning damaged buildings. Containers of hazardous chemicals, including pesticides, insecticides, fertilizers, car batteries, propane tanks, and other industrial chemicals, may be hidden or buried under flood debris.
- **Mental stress and fatigue** — Having experienced a flood, seen loved ones lost or injured, and homes damaged or destroyed, flood victims can experience long-term psychological impact. The expense and effort required to repair flood-damaged homes place severe burdens on the people affected, especially the unprepared and uninsured. Behavior changes may also occur in children. There is also a long-term concern among the affected that their homes can be flooded again in the future.

The best level of mitigation for these impacts is to be aware that they can occur, educate the public, and be prepared to deal with these vulnerabilities in responding to flood events.

8.4.2.2 Property

The City of La Cañada Flintridge uses building codes, zoning codes, and various planning strategies to address the goals that aim to restrict development in areas of known hazards and applying the appropriate safeguards.

Business and Industry

Flood events impact businesses by damaging property and interrupting business. Flood events can cut off customer access to a business as well as close a business for repairs. A quick response to the needs of businesses affected by flood events can help the community maintain economic vitality. Responses to business damages can include funding to assist owners in elevating or relocating business structures.

National Flood Insurance Program

The City of La Cañada Flintridge participates in the National Flood Insurance Program. As of 2014, there were 76 insurance policies active within the city. Since 1978 only 40 claims have been made, for a total of \$1,500,107.

Repetitive Loss

The City of La Cañada Flintridge does not have any properties that qualify as repetitive loss areas under the National Flood Insurance Program.

8.4.2.3 Critical Facilities and Infrastructure

Critical Facilities are those which must continue to operate before, during, and after an emergency and/or hazard event and/or are vital to health and safety. Water Districts must stay operable during an emergency to ensure residents have adequate access to clean water. Storm Water systems are infrastructure in place to remove runoff water. One important element to mitigate against floods in an adequate and operational stormwater system.

Water Districts

There are four water service companies and/or districts in the City of La Cañada Flintridge. They are The Crescent Valley Water District, La Cañada Irrigation District, Mesa Crest Water Company, and the Valley Water Company. During a disaster, water districts in the region work together to provide water for the City of La Cañada Flintridge citizens. For example, each water district has the capability to inter-tie with another district for emergency situations.

Storm Water System

There are a variety of surface water management providers in the county that manage water quality and stormwater runoff, the primary one being the Los Angeles County Department of Public Works. The City of La Cañada Flintridge Municipal Code, Chapter 9.21, addresses stormwater management and discharge.

8.4.2.4 Environment

Flooding, combined with human development, can have negative impacts on the environment. Fish can wash into roads or over dikes into flooded fields. Pollution from roads, such as oil, and hazardous materials can wash into streams. During floods, these can settle onto normally dry soils, polluting them for agricultural uses. Human development such as bridge abutments can increase stream bank erosion, causing rivers and streams to migrate into non-natural courses.

The environment vulnerable to flood hazard is the same as the environment exposed to the hazard. The best gauge of the vulnerability of the environment would be a review of damage from past flood events. Loss data that segregates damage to the environment was not available at the time of this plan. Capturing this data from future events could be beneficial in measuring the vulnerability of the environment for future updates.

8.5 Mitigation Strategy

The flood mitigation action items provide direction on specific activities that organizations and residents in the City of La Cañada Flintridge can undertake to reduce risk and prevent loss from flood events. Each action item is followed by ideas for implementation, which can be used by the Advisory Committee and local decision-makers in pursuing strategies for implementation.

Mitigation action items appear in their order of priority at the time of submittal of this plan. This is not to negate the option to re-prioritize as may be necessary due to environmental, economic or policy influences. Priorities were determined by the City departments responsible for the development of mitigation action items and their implementation. Due consideration was given to the importance of each item and evaluated against the estimated costs. Furthermore, these estimated costs were evaluated against projected city revenue.

8.5.1 Goals and Objectives

During the last update of the City's Local Hazard Mitigation Plan, three goals were identified relating to floods. These goals were established by assessing the City's capacity and ability relating to flood mitigation. They were determined to be the most effective and achievable goals that the City might be able to attempt over the last five years.

8.5.2 Previous Plan Mitigation Action Items

Below is a table summarizing the activity since the last plan update. The mitigation activities appear in the same order as before. The previous titles have been renamed into the current plan conventions, where “STA” corresponds to “Short-Term Activity,” “LTA” represents “Long-Term Activity,” and “FLH” stands for “Flood Hazard.” Any ongoing or projects that were not completed or have ongoing components are also included in the Current Mitigation Action Items Section

Table 25: Flood 2014 LHMP Activities Status

Title	Description	Status
FLH-STA 1	Analyze each repetitive flood areas within the City of La Cañada Flintridge and identify feasible mitigation options. Funding may be available through FEMA's Hazard Mitigation Grant and Flood Mitigation Assistance Programs and the Pre-disaster Mitigation Program. Explore options for incentives to encourage property owners to engage in mitigation.	No areas within the city qualified as formal repetitive flood areas. The Public Works Department did address areas that would cause roadway flooding issues during weather events.
FLH-STA 2	Develop better local flood warning systems. Utilize the capability of the mass notification system (Alert LCF) and the City’s website.	Processes related to Alert LCF have been improved an updated over the period since this goal was created.
FLH-LTA 1	Identify surface water drainage obstructions for all parts of the City of La Cañada Flintridge. Prepare an inventory of culverts that historically create flooding problems and target them for retrofitting. Prepare an inventory of major urban drainage problems and identify causes and potential mitigation actions for urban drainage problem areas.	Since the previous plan, the three areas identified as particularly vulnerable to localized flooding during storms have been addressed. However, there was a lack of staff resources to perform a formal inventory.

8.5.3 Current Mitigation Action Items

Below, Table 18 summarizes the new mitigation action items since the last plan update. All items appear in the order of priority, grouped by the timeline. In current conventions, “STA” corresponds to “Short-Term Activity,” “LTA” represents “Long-Term Activity,” and “FLH” stands for “Flood Hazard.” Each mitigation item addresses the Plan’s mission and one or more of the goals as identified in Section 2.4

Table 26: 2018 Flood Hazard Mitigation Strategies

Number	Mitigation Action	Timeline	Coordinating Organization	Goals Addressed	Constraints	Potential Funding	New Strategy
FLH-STA 1	Biannual inspection of catch basins. The inspection will help identify catch basins that need cleaning and/or repair work. The catch basins are an essential part of the storm drain system. If the catch basins are not functioning at full capacity the potential for flooding will increase in the area.	Short-Term, 1-2 Years	Administration, Community Development	Mitigation (A) Mitigation (B)	Funding, Available Personnel	General Fund	Yes
FLH-STA 2	Educating residents who own properties with waterways on maintenance responsibilities. The city has many natural waterways that run through private properties. The waterways are an essential part of a drainage system. Educating the residence that they are responsible for the maintenance and upkeep of the natural waterway is important for preventing flooding on their property and properties upstream of them. Debris build up will cause water to back up and flood the surrounding area.	Short-Term 1-2 Years, Ongoing	Administration, Building and Safety, Community Development	Mitigation (A) Mitigation (B) Mitigation (C) Collaboration (B) Education (A)	Funding, Available Personnel	General Fund, Hazard Mitigation, Grant Program	Yes
FLH-STA 3	Perform an inventory of storm drains in the city and determine which agency has responsibility for maintenance. Without a proper database, it’s difficult to keep an accurate maintenance record. This database will be the basis of our biannual inspection of catch basins	Short-Term 1-2 Years, Ongoing	Administration, Building and Safety, Community Development	Mitigation (B) Education (B)	Funding, Available Personnel	General Fund, Hazard Mitigation, Grant Program	Yes

It was determined that the City assets are not impacted by flooding, therefore structural mitigation action items were not included.

8.5.4 Action Plan and Implementation

The City of La Cañada Flintridge three new Flood goals with the plan update. The first goal is to perform biannual inspections of the catch basins within the city. This process will help ensure that no maintenance needs are overlooked and that the storm drain system will respond to property in potential flood events.

The second goal is to educate residents who own properties with waterways on their maintenance responsibilities. Residents who have waterways through their property are responsible for ensuring that the channels do not create flood hazards downstream. However, property owners may not be aware of these requirements or the proper ways to comply with them. By creating educational resources, the City will help residents to better understand their responsibilities and help the entire community avoid the further threat of floods.

The third goal is to perform an inventory of the storm drains in the city and determine which agency has responsibility for maintenance. The City coordinates with Los Angeles County Public Works and the Los Angeles County Flood Control District to maintain the storm drains throughout the city. There are different jurisdictional responsibilities in each area, and a formal inventory would help ensure that the property agency is taking responsibility for the maintenance of the appropriate locations.

8.6 Resource Directory

The following resource directory lists the information and programs that can assist communities and organizations to address the hazard. The City of La Cañada Flintridge uses the resources and/or services offered by these agencies to achieve and improve mitigation efforts.

8.6.1 Local Resources

Los Angeles County Department of Public Works

The Los Angeles County Department of Public Works protects property and promotes public safety through flood control, water conservation, road maintenance, bridges, buses and bicycle trails, building and safety, land development, waterworks, sewers, engineering, and capital projects.

Address: 900 S. Fremont Ave., Alhambra, CA 91803

URL: www.dpw.lacounty.gov/

 (626) 458-5100

EMAIL: info@dpw.lacounty.gov

Sanitation Districts of Los Angeles County


The Sanitation Districts of Los Angeles County help to manage wastewater and solid waste. These services protect both the environment and public health and these services may be interrupted in the case of a flood.

Address: 1955 Workman Mill Road Whittier, CA 90607

URL: www.lacsd.org/

 (562) 699-7411 x2301

EMAIL: info@lacsd.org

 (562) 908-4278


8.6.2 State Resources

California Governor’s Office of Emergency Services


The Governor's Office of Emergency Services coordinates overall state agency response to major disasters in support of local government. The office is responsible for assuring the state's readiness to respond to and recover from natural, human-caused, and war-caused emergencies, and for assisting local governments in their emergency preparedness, response and recovery efforts.

Address: 4671 Liberty Ave. Building 283, Los Alamitos, CA 90720

URL: www.caloes.ca.gov

 (562) 795-2939

Email: Jim.Acosta@caloes.ca.gov

 (562) 795-2877

California Natural Resources Agency

The California Natural Resources Agency is to restore, protect and manage the state’s natural, historical and cultural resources for current and future generations using creative approaches and solutions based on science, collaboration, and respect for all the communities and interests involved.

Address: 1416 Ninth Street, Suite 1311, Sacramento, CA 95814

URL: www.resources.ca.gov/

 (916) 653-5656

EMAIL: secretary@resources.ca.gov

 (916) 653-8102

California Natural Resources Agency

The Sanitation Districts aim to protect public health and the environment through wastewater and solid waste management. In the case of a flood, both wastewater and solid waste management systems are likely to be disturbed in the case of a significant flood.

Address: 1955 Workman Mill Road, Whittier, CA 90607

URL: www.lacsd.org/

☎ (562) 699-7411 x2301

EMAIL: info@lacsd.org

📠 (562) 695-5139

California Department of Water Resources (DWR)

The Department of Water Resources (DWR) is responsible for managing and protecting California’s water resources. They partner with other agencies to protect, restore, and enhance natural and human environments. This includes providing grants and technical assistance to service local water needs.

Address: 1416 Ninth Street, Sacramento, CA 95814

URL: www.water.ca.gov/

☎ (916) 653-5791

8.6.3 Federal Resources

Federal Emergency Management Agency, Region IX

The Federal Emergency Management Agency supports citizens and first responders to ensure that communities work together to build, sustain, and improve capabilities to prepare for, protect against, respond to, recover from, and mitigate all hazards

Address: 1111 Broadway, Suite 1200, Oakland, CA 94607

URL: www.fema.gov

☎ (510) 627-7100

📠 (510) 627-7112

National Flood Insurance Program (NFIP)

The National Flood Insurance Program (NFIP) aims to reduce the impact of flooding on private and public structures. It does so by providing affordable insurance to property owners and by encouraging communities to adopt and enforce floodplain management regulations. These efforts help mitigate the effects of flooding on new and improved structures.

Address: 500 C Street, S.W., Washington, D.C. 20472

URL: www.floodsmart.gov/

☎ (202) 566-1600


EMAIL: floodsmart@fema.dhs.gov

The Floodplain Management Association

The association serves as an unbiased forum for the legislature, government, industry, and science to advance best practices, technologies, policies, regulations, and legal strategies, for floodplains with a focus on California, Nevada, and Hawaii.

Address: P.O. Box 846, Ramona, CA, 92065

URL: www.floodplain.org

 (760) 936-3676


EMAIL: admin@floodplain.org

The Association of State Floodplain Managers (ASFPM)


The mission of ASFPM is to promote education, policies, and activities that mitigate current and future losses, costs and human suffering caused by flooding, and to protect the natural and beneficial functions of floodplains - all without causing adverse impacts.

Address: 575 D'Onofrio Drive, Suite 200, Madison, WI 53719

URL: www.floods.org

 (608) 828-3000

EMAIL: asfpm@floods.org


 (608) 828-6319

National Weather Service (NWS)

NWS provides resources to teach the public how to stay safe before, during, and after floods. NWS also has alert and warning systems for potentially dangerous floods.

Address: 520 North Elevar Street, Oxnard, CA 93030

URL: www.weather.gov/lox/

 (805) 988-6610

EMAIL: w-lox.webmaster@noaa.gov

Office of Water Prediction, National Weather Service

The Office of Water Prediction (OWP) collaboratively researches, develops and delivers state-of-the-science national hydrologic analyses, forecast information, data, decision-support services, and guidance to support and inform essential emergency services and water management decisions. The OWP helps to coordinate, integrate and support consistent water prediction activities.

Address: 1325 East West Highway, SSMC2, Silver Spring, MD 20910

URL: www.water.noaa.gov/  (301) 713-1658


EMAIL: nws.nwc.ops@noaa.gov

USGS Water Resources

The U.S. Geological Survey, California Water Science Center provides reliable, impartial, foundational data and scientific analysis to address water issues facing California today. They conduct hydrologic monitoring and investigative studies in partnership with Federal, State, and local agencies to assist them in managing California's water resources.

Address: California Water Science Center, 6000 J Street, Placer Hall, Sacramento, CA 95819-6129

URL: www.ca.water.usgs.gov/  (916) 278-3000

 (916) 278-3070

Bureau of Reclamation, Mid Pacific Regional Office

The Mid Pacific Region of the Bureau of Reclamation strives to develop and implement a balanced approach to water allocation, serving users while protecting the environment. The Region's goal is to balance competing needs among water uses and users.

Address: Federal Office Building 2800 Cottage Way, Sacramento CA 95825-1898

URL: www.usbr.gov/mp/  (916) 978-5001

EMAIL: mppublicaffairs@usbr.gov  (916) 978-5005

Army Corps of Engineers

The Army Corps of Engineers is the Nation's environmental engineers. They have expertise in water storage and management.

Address: Los Angeles District, 915 Wilshire Blvd., Los Angeles, CA 90017

URL: www.spl.usace.army.mil/

 (213) 452-3333

EMAIL: publicaffairs.spl@usace.army.mil

 (213) 452-4209

American Public Works Association

The American Public Works Association (APWA) serves professionals in all aspects of public works.

Address: 1200 Main Street, Suite 1400, Kansas City, MO 64105-2100

URL: www.apwa.net/

 (816) 472-6100

 (816) 472-1610

8.6.4 Publications

FEMA, Association of State Floodplain Managers. (1987). Reducing Losses in High Risk Flood Hazard Areas: A Guidebook for Local Officials (FEMA 116). Retrieved: <https://www.fema.gov/media-library/assets/documents/1619#>

This guidebook offers a table on actions that communities can take to reduce flood losses and sources for floodplain mapping assistance for the various types of flooding hazards. Information on various types of flood hazards with regard to existing mitigation efforts and options for action (policy and programs, mapping, regulatory, non-regulatory). Types of flooding which are covered include alluvial fan, areas behind levees, areas below unsafe dams, coastal flooding, flash floods, fluctuating lake level floods, ground failure triggered by earthquakes, ice jam flooding, and mudslides.

FEMA. (2007). National Flood Insurance Program: Community Rating System: Coordinators manual. Washington, D.C.: U.S. Dept. of Homeland Security, FEMA. Retrieved from <https://www.fema.gov/media-library/assets/documents/8768>

This informative brochure explains how the Community Rating System works and what the benefits are to communities. It explains in detail the CRS point system, and what activities communities can pursue to earn points. These points then add up to the "rating" for the community, and flood insurance premium discounts are calculated based upon that "rating" The brochure also provides a table on the percent discount realized for each rating (1-10). Instructions on how to apply to be a CRS community are also included.

FEMA. (n.d.). National Flood Insurance Program: Links to Related Sites. Retrieved from: <https://www.fema.gov/national-flood-insurance-program-links-related-sites>

This site contains a long list of flood-related internet sites from "Insurance News Network" to "The Weather Channel" and is a good starting point for flood information on the Internet.

FEMA, Region 10. (2002). NFIP Floodplain Management Guidebook: A Local Administrator's Guide to Floodplain Management and the National Flood Insurance Program. Bothell, WA: Federal Emergency Management Agency. Retrieved from <https://www.fema.gov/media-library/assets/documents/15477>

Floodplain Management: A Local Floodplain Administrator's Guide to the NFIP This document discusses floodplain processes and terminology. It contains floodplain management and mitigation strategies, as well as information on the NFIP, CRS, Community Assistance Visits, and floodplain development standards.

8.7 Sources

Insurance Information Institute. (n.d.). Facts Statistics: Flood insurance. Retrieved from <https://www.iii.org/fact-statistic/facts-statistics-flood-insurance>



9 LANDSLIDE

9.1 General Background

Nationally, landslides cause 25 to 50 deaths and more than \$1 billion in damage each year. As a seismically active and wildfire-prone region, California has many landslides. Landslides can result in damage to private property, transportation corridors, fuel and energy conduits, and communication facilities. They can also pose a serious threat to human life.

9.1.1 Causes and Characteristics

Landslides are broken down into two categories: (1) rapidly moving (generally known as debris flows), and (2) slow moving. Rapidly moving landslides or debris flows present the greatest risk to human life, and people living in or traveling through areas prone to rapidly moving landslides are at increased risk of serious injury. Slow moving landslides can cause significant property damage but are less likely to result in serious human injuries.

The term “landslide” encompasses events such as rock falls, topples, slides, spreads, and flows. Landslides can be initiated by rainfall, earthquakes, volcanic activity, changes in groundwater, disturbance, and change of a slope by man-made construction activities, or any combination of these factors.

Failure of a slope occurs when the force of gravity pulling the slope downward exceeds the strength of the earth materials that compose the slope. They can move slowly or can move quickly and disastrously, as is the case with debris-flows.

The size of a landslide depends on the geology and the initial cause of the landslide. Landslides vary greatly in their volume of rock and soil, the length, width, and depth of the area affected the frequency of occurrence, and speed of movement. Some characteristics that determine the type of landslide are the slope of the hillside, moisture content, and the nature of the underlying materials.

9.1.2 What is a Debris Flow?

A debris or mudflow is a river of rock, earth, vegetation, and other materials that are saturated with water. This high percentage of water gives the debris flow a rapid rate of movement down a slope. Debris flows often reach speeds greater than 20 miles per hour and can move much faster. This high rate of speed makes debris flows extremely dangerous to people and property in its path.

These flows are initiated by heavy, usually sustained, periods of rainfall, but sometimes can happen because of short bursts of concentrated rainfall in susceptible areas. Burned areas charred by wildfires are particularly vulnerable to debris flows, given certain soil characteristics and slope conditions. Wildfires can change the structure of underlying soil, resulting in less water being absorbed into the soil during periods of rain. This causes the top layer of soil and debris to be saturated with water, making them more likely to move and

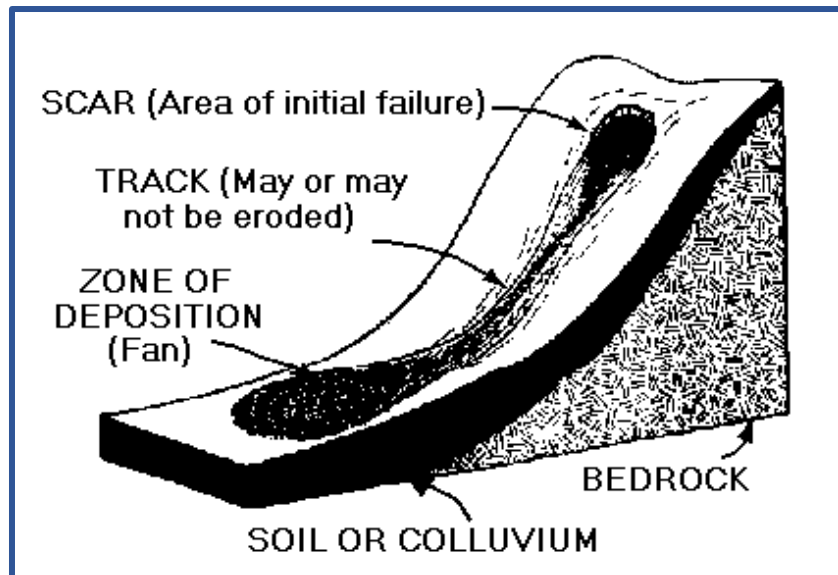
damage property in its path.

9.1.3 Landslide and Events Impacts

Landslides are a common hazard in California. Weathering and decomposition of geologic materials produce conducive conditions that are further exacerbated by human activities. Many landslides are difficult to mitigate, particularly in areas of historic movement with weak underlying geologic materials.

Rock falls occur when material come loose on steep slopes. Weathering, erosion, or excavations, such as along highways, can cause falls where the road has been cut through bedrock. They are fast moving with the materials free falling or bouncing down the slope and can cause significant damage even if the volume of material involved is small.

As communities modify the terrain and influence natural processes, it is important to be aware of the physical properties of the underlying soils as they, along with climate, create landslide hazards. Even with proper planning, landslides will continue to threaten the safety of people, property, and infrastructure, but without proper planning, landslide hazards will be even more common and more destructive. Figure 14 shows the conditions a landslide leaves behind on a hillside.



*Figure 14: Model of the components of a landslide.
Source: California Department of Conservation*

9.1.4 Landslide Conditions

Landslides are often triggered by periods of heavy rainfall. Earthquakes, subterranean water flow, and excavations may also trigger landslides. Certain geologic formations are more susceptible to landslides than

others. Human activities, including structures near steep slopes, can increase susceptibility to landslide events. Landslides on steep slopes are more dangerous because movements can be rapid. Grading for road construction and development can increase slope steepness and decrease the stability of a hill slope. This can be due to additional weight at the top of the slope, less support at the base of the slope, and increased water content. Other human-generated activities affecting landslides include excavation, drainage, and groundwater alterations, and changes in vegetation.

Wildland fires in chaparral-covered hills are often a precursor to debris flows in burned out canyons. The extreme heat of a wildfire can create a soil condition in which the earth becomes impervious to water by creating a wax-like layer below the ground surface. Since water cannot be absorbed into the soil, it rapidly accumulates on slopes, often gathering loose particles of soil into a sheet of mud and debris. Debris flows can originate miles away from unsuspecting persons, and approach them rapidly and with little warning.

Natural processes can cause landslides or re-activate historical landslide sites. Seismic tremors can trigger landslides on slopes historically known to have landslide movement. Earthquakes can also cause an additional failure that can occur on gentle slopes above steep streams and riverbanks.

9.2 Hazard Profile

Hazard identification is the first phase of the landslide-hazard assessment. Identification is the process of estimating the geographic extent of areas at risk of landslides, and the likelihood for occurrences of landslide events.

9.2.1 Past Events

The following table highlights the most destructive landslide incidents in Los Angeles County in recent history. Though most of them did not directly affect La Cañada Flintridge, they provide examples of incidents that are possible in the region.

Table 27: Past Landslides and Debris Flows

Disaster Dates	Event Type	FEMA Number	Constant \$ 2017
01/17/2010 – 02/06/2010	Severe Winter Storms, Flooding, and Debris and Mud Flows	1884	N/A
10/21/2007 – 03/31/2008	Wildfires, Flooding, Mud Flows, and Debris Flows	1731	N/A
02/16/2005 – 02/23/2005	Severe Storms, Flooding, Landslides, Mud & Debris Flows	1585	\$132,250,089
12/27/2004 – 1/11/2005	Severe Storms, Flooding, Debris Flows, And Mudslides	1577	\$454,772,705

Disaster Dates	Event Type	FEMA Number	Constant \$ 2017
10/21/2003 – 03/31/2004	Wildfires, Flooding, Mud Flow and Debris Flow	1498	N/A
02/13/1995 – 4/19/1995	Severe Winter Storms, Flooding Landslides, Mud Flow	1046	\$328,710,574
1/17/1994 – 11/30/1994	Northridge Earthquake	1008	N/A
10/26/1993 – 4/22/1994	Fires, Mud/Landslides, Flooding	1005	\$168,573,778
01/05/1993 – 03/20/1993	Severe Winter Storm, Mud and Land Slides, and Flooding	979	\$423,092,413
02/10/1992 – 02/18/1992	Rain/Snow/Wind Storms, Flooding, Mudslides	935	\$105,044,157
10/01/1987 – 11/20/1987	Earthquake and Aftershocks	799	N/A
01/08/1980	Severe Storms, Mudslides & Flooding	615	\$331,561,280
02/09/1971	San Fernando Earthquake	299	\$1,392,894,794

The extent of the related fire and storm damage determines the duration of the disaster period.
 Source: *FEMA Disaster Declarations.*

January 2005 Los Angeles County

Above normal rainfall triggered damaging debris flows and flooding. Within the City of La Cañada Flintridge, slope failures and debris flows caused over \$2.5 million in damage to public property. The most significant incident during this event was a slope failure on Inverness Drive which caused the roadway and the adjacent hillside to slide several hundred feet, leaving approximately 4,000 cubic yards of debris blocking a major road.

2009-2010 Station Fire, Los Angeles County

Above normal rainfall triggered damaging debris flows that required residential evacuations. The 2009 Station Fire burned 250 square miles of the San Gabriel Mountains, right up to residential areas in La Cañada Flintridge. All the vegetation was burned leaving only the hillside. Following the torrential rains, catch basins designated to hold mud and water filled to capacity and overflowed damaging multiple homes. A slow-moving rainstorm triggered a mudslide along Ocean View Boulevard in the La Cañada Flintridge burn area, flooded freeways, and caused traffic problems and mudslides throughout the region. This incident highlighted for the City that the debris basins in the City had not been adequately maintained to mitigate such an incident. Since then, the City has worked to improve coordination with the County for maintenance of such critical infrastructure.

9.2.2 Locations

Identifying hazardous locations is an essential step towards implementing more informed mitigation activities. The California Geological Survey has mapped areas within the City of La Cañada Flintridge that have experienced historical landslides. This map is included below in Figure 15.

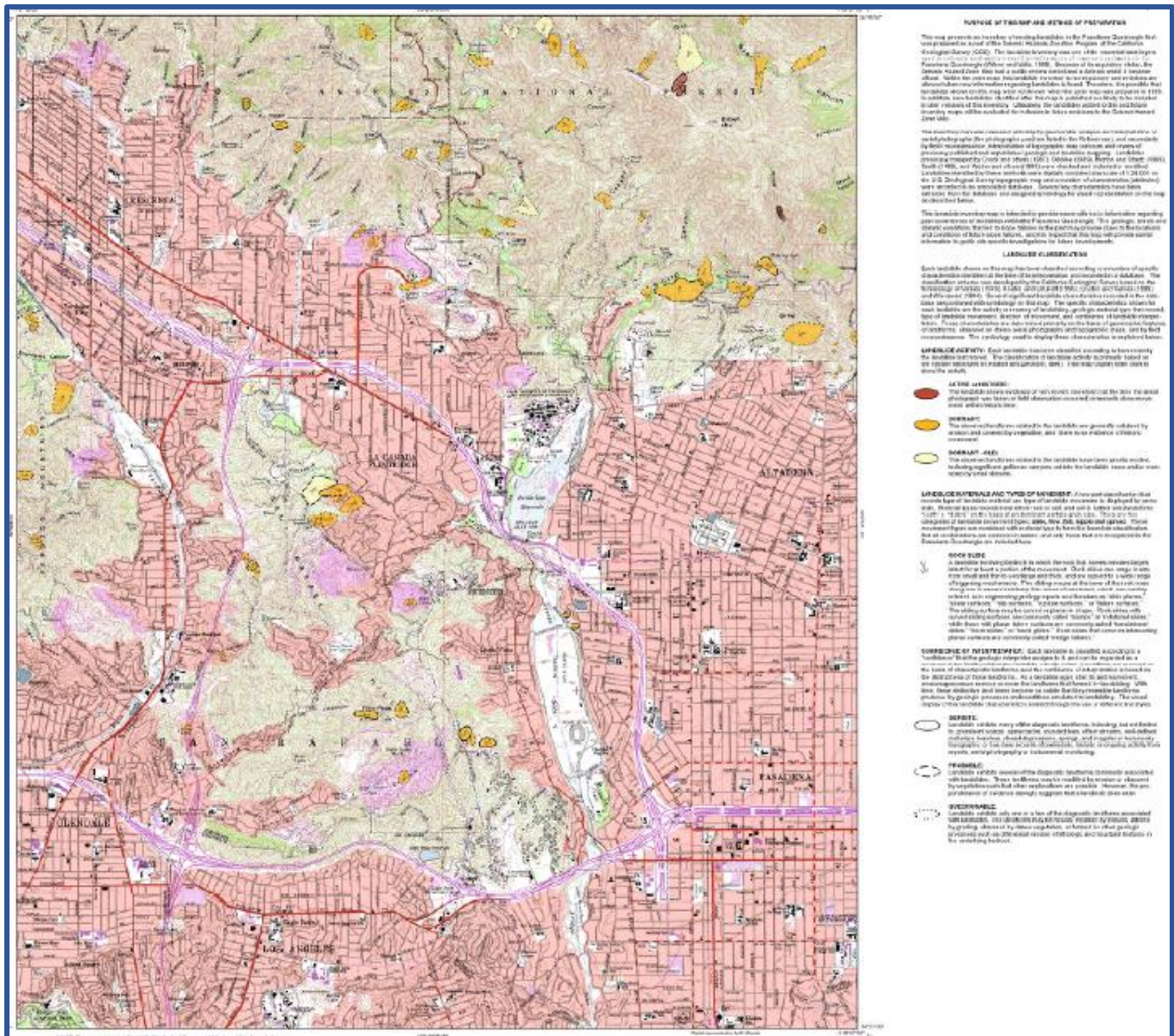


Figure 15: California Geological Survey Landslide Inventory Map of the Pasadena Quadrangle
Source: California Geological Survey

The USGS has recognized and mapped a small area of liquefaction zones in the City of La Cañada Flintridge. Figure 16 below displays the liquefaction zones in the City.



Figure 16: Landslide zones in the City of La Cañada Flintridge.
Source, Los Angeles County

9.2.3 Frequency

Since the settlement of the City in 1913, there have not been any instances of landslides associated with seismic activity. There have been only two other events due to heavy rain, refer to section 7.2.1 under Flood for more details. The low probability for a landslide to occur is highly unlikely.

9.2.4 Severity

Landslides destroy property and infrastructure and can endanger human life. They can pose a serious hazard to properties on or below hillsides. Landslides directly damage structures in two ways: disruption of structural foundations caused by differential movement and deformation of the ground upon which the structure sits, and the physical impact of debris moving down-slope against structures located in the debris flow's path. As a landslide breaks away from a slope, it deforms the ground into an undulating surface broken up by fissures and scarps. This deformation distresses foundations and structures on top of a landslide by settling, cracking, and tilting. This can occur slowly, over years, or rapidly within days or hours. A water-saturated, fast-moving debris flow can destroy all in its path, including structures. Landslides and debris flows cause millions of dollars in cumulative damage to Southern California's homes, businesses, and infrastructure every year. Due to slope conditions, geological setting varies from site to site and with specific conditions such as hydration from soils, particle-sized density, and the angle of repose. In addition, due to the majority of landslides occur on private property, it is difficult for the City to generate or access information to determine the average scale of total damage.

9.2.5 Warning Time

Mass movements can occur suddenly or slowly. They can be initiated by severe storms, earthquakes, wildland fires, or human modification of the land. They can move rapidly down slopes or through channels and can strike with no warning at avalanche speeds.

Assessing the geology, vegetation and amount of predicted precipitation for an area can help determine which areas are at risk over short periods. This allows areas to be monitored after events that may trigger debris flows, like wildfires. However, there is no practical warning system for individual landslides. The standard operating procedure is to monitor situations on a case-by-case basis, and respond after the event has occurred.

When atmospheric weather patterns reach the Los Angeles area, the risk and dangers of landslides and debris flows increase. Improved forecasting of such events could allow an advanced warning to better prepare for and respond to potential slope failures and flood events. Generally accepted warning signs for landslide activity include the following:

- Springs or saturated ground in areas that have not typically been wet before;

- New cracks or unusual bulges in the ground, street pavements or sidewalks;
- Soil moving away from foundations;
- Ancillary structures (decks, patios, etc) tilting and/or moving relative to the building;
- Tilting or cracking of concrete floors and foundations;
- Broken water lines and other underground utilities;
- Leaning telephone poles, trees, retaining walls or fences;
- Offset fence lines;
- Sunken or down-dropped roadbeds;
- Rapid creek water increase can be accompanied by increased turbidity (soil content);
- Sudden decrease in creek water levels though rain is still falling or just recently stopped;
- Sticking doors or windows, visible open space indicating jambs and frames out of plumb;
- A faint rumbling sound that increases in volume as the landslide nears; and/or
- Unusual sounds, such as trees cracking or boulders knocking together.

9.3 Secondary Impacts

Landslides are often triggered by other natural hazards such as earthquakes, heavy rain, floods or wildfires. Debris flows are especially likely when a storm follows sometime after a wildfire, as was the case after the Station Fire. It is difficult to predict where these occurrences may be before the initial threat occurs. Even after the first event, it can be difficult to predict where a landslide or debris flow may occur, and how severe an incident may be.

9.4 Risk Assessment

Factors included in assessing landslide risk include population and property distribution in the hazard area, the frequency of landslide or debris flow occurrences, slope steepness, soil characteristics, and precipitation intensity. This type of analysis could generate estimates of the damages to the city due to a specific landslide or debris flow event. At the time of publication of this plan, data was insufficient to conduct a risk analysis and the software needed to conduct this type of analysis was not available to the City.

9.4.1 Exposure Assessment

Landslides are a problem in the City of La Cañada Flintridge and impact the City's infrastructure as well as private property. The most recent landslide losses in the City were the result of rainstorms in February 2010. The City received a higher than normal amount of rainfall which resulted in saturated ground conditions and several slope failures.

Areas at risk from landslides or debris flows have one or more of the following conditions:

- On or close to steep hills;
- Steep road-cuts or excavations;
- Existing landslides or known historic landslides (sites often have tilted power lines, trees tilted in various directions, cracks in the ground, and irregular-surfaced ground);
- Steep areas where surface runoff is channeled, such as below culverts, V-shaped valleys, canyon bottoms, and steep stream channels;
- Fan-shaped areas of sediment accumulation at the outlets of canyons; and
- Canyon areas below hillside and mountains that have been subjected to a wildland fire in the last several years.

9.4.1.1 Population

The City of La Cañada Flintridge is about 8.64 square miles in size. It is estimated that about 1.5 square miles in the City are considered at a hazard for landslides or about 17 percent. However, most of this area is in the sparsely populated hills. This means that a small portion of the City's population is directly threatened by living in areas vulnerable to landslides.

9.4.1.2 Property

Although landslides are a natural occurrence, human impacts can affect the potential for landslides in the City of La Cañada Flintridge. Proper planning and geotechnical engineering can reduce the threat to the safety of people, property, and infrastructure.

Slope excavation is common in the development of home sites or roads on sloping terrain. Grading these slopes can result in some slopes that are steeper than the pre-existing slopes. Since slope steepness is a major factor in landslides, these steeper slopes can be at an increased risk for landslides. The added weight of fill placed on slopes can also result in an increased landslide hazard. Small landslides can happen in the road cut or the road fill. Landslides occurring below new construction sites are indicators of the potential impacts stemming from the excavation.

Water flowing through or above ground can trigger landslides. Any activity that increases the amount of water flowing into landslide-prone slopes can increase landslide hazards. Broken or leaking water or sewer lines can be especially problematic, as can water retention facilities that direct water onto slopes. Excess runoff can also cause erosion and increase the risk of landslide hazards. Drainage can be affected naturally by the geology and topography of an area. Development that results in an increase in impervious surface impairs the ability of the land to absorb water and may redirect water to other areas. Channels, streams, ponding, and erosion on slopes all indicate potential slope problems.

Road and driveway drains, gutters, downspouts, and other constructed drainage facilities can concentrate and accelerate flow. Ground saturation and concentrated velocity flow are causes of slope problems and may

trigger landslides.

Removing vegetation from very steep slopes can increase landslide hazards. Areas that experience wildfire and land clearing for development may have periods of increased landslide hazard. Also, certain ground covers need frequent watering to remain green. Non-native ground cover plants may increase the risk of landslide.

9.4.1.3 Critical Facilities and Infrastructure

Landslide and debris flow damage to buildings, roads, utilities, and transportation lines can have catastrophic repercussions, such as loss of power to critical facilities (hospitals, schools, fire departments, etc.), impaired disposal of sewage, contamination of water supplies, disruption of transportation infrastructure, the release of flammable fuels. The overall impact of such lifeline failures, including the secondary failure of systems that depend on lifelines, can be much greater than the impact of individual building failures.

9.4.1.4 Environment

Landslides that fall into streams may significantly impact fish and wildlife habitat, as well as affecting water quality. Hillsides that provide wildlife habitat can be lost for prolonged periods of time due to landslides.

9.4.2 Vulnerability Assessment

Landslides can affect utility services, transportation systems, and critical lifelines. Communities may suffer immediate damages and loss of service. Disruption of infrastructure, roads, and critical facilities may also have a long-term effect on the economy. Utilities, including potable water, wastewater, telecommunications, natural gas, and electric power are all essential to serve community needs.

Vulnerability assessment for landslides will assist in predicting how different types of property and population groups will be affected by a hazard. The potential for slope failure is dependent on many interrelated factors. Some of the most important factors include slope height, slope steepness, shear strength, the orientation of weak layers in the underlying geologic unit, and pore water pressures. Joints and shears, which weaken the rock fabric, allow penetration of water leading to deeper weathering of the rock along with increasing the pore pressures, the plasticity of weak clays, and the weight of the landmass.

A quantitative vulnerability assessment that describes a number of lives or amount of property exposed to landslides has not been conducted for the City of La Cañada Flintridge. Currently, there are few qualitative factors that point to potential vulnerability.

9.4.2.1 Population

All people exposed to landslide risk are vulnerable. The fact that many homes are built on steep slopes subject to mass movement increases the number of lives endangered. It is difficult to predict which hillside areas are likely to be subject to landslides, therefore all people living or working on or below hillsides are exposed to landslide risk.

9.4.2.2 Property

Natural slopes, graded slopes, or graded/natural slope combinations must meet minimum engineering standards where they impact developments. Slopes adjacent to areas where the risk of economic losses from landsliding is small, such as parks and mountain roadways, are often allowed a lesser factor of safety.

9.4.2.3 Critical Facilities and Infrastructure

Publicly owned facilities are a key component of daily life for all citizens. Damage to transportation networks, emergency facilities, and offices can hinder the ability of the government to deliver services. Government can act to reduce risk to public infrastructure from landslide events, as well as craft public policy that reduces risk to private property from landslide events.

Roads and Bridges

Losses incurred from hazards in the City of La Cañada Flintridge have been associated with roads. The Public Works Department is responsible for responding to incidents that inhibit the flow of traffic or that are damaging a road or a bridge. The Public Works Department does its best to communicate with residents impacted by incidents. Repair work is usually limited to the road itself, as well as the areas adjacent to the incident where the city has the right of way. This type of response activity is often the most cost-effective in the short-term but is only temporary.

Lifelines

Loss of electricity has the most widespread impact on other utilities and on the whole community. Natural gas pipes may also be at risk of breakage from landslide movements as small as an inch or two.

Lifelines and critical facilities should remain accessible, if possible, during a natural hazard event. The impact of closed transportation arteries may be increased if the closed road or bridge is critical for hospitals and other emergency facilities. Therefore, inspection and repair of critical transportation facilities and routes is essential and should receive high priority. Losses of power and phone service are also potential consequences of landslide events.

Due to heavy rains, soil erosion in hillside areas can be accelerated, resulting in loss of soil support beneath high voltage transmission towers in hillsides and remote areas. Flood events can also cause landslides, which can have serious impacts on gas lines that are invulnerable soils.

9.4.2.4 Environment

Environmental problems resulting from mass movements can be numerous. Landslides that fall into streams may significantly affect water quality. Hillsides that provide wildlife habitat can be lost for prolonged periods of time due to landslides.

9.5 Mitigation Strategy

Methods to reduce the hazard from debris avalanches include construction of deflection walls and debris fences. Because of the extreme force of impact associated with debris flows, these and similar structures should be carefully engineered and constructed. The specifics of these designs will vary from site to site.

9.5.1 Landslide Building / Zoning Codes

The City of La Cañada Flintridge Municipal Code addresses development on steep slopes in Chapter 11.35. This section outlines standards for steep slope hazard areas on slopes that average 15 percent or more. Generally, the ordinance requires soils engineering geologic studies for developments proposed on slopes of 15 percent or greater. More detailed surface and subsurface investigations shall be warranted if indicated by engineering and geologic studies to sufficiently describe existing conditions. This may include soils, vegetation, geologic formations, and drainage patterns. Site evaluations may also occur where stability might be lessened by proposed grading, filling or land clearing.

9.5.2 Goals and Objectives

During the last update of the City's Local Hazard Mitigation Plan, three goals were identified relating to landslides. These goals were established by assessing the city's capacity and ability relating to landslide mitigation. They were determined to be the most effective and achievable goals that the city might be able to attempt over the last five years.

9.5.3 Previous Plan Mitigation Action Items

Below is a table summarizing the activity since the last plan update. The mitigation activities appear in the same order as before. The previous titles have been renamed into the current plan conventions, where “STA” corresponds to “Short-Term Activity,” “LTA” represents “Long-Term Activity,” and “LSH” stands for “Landslide Hazard.” Any ongoing or projects that were not completed or have ongoing components are also included in the Current Mitigation Action Items Section

Table 28: Landslide 2014 LHMP Activities Status

Title	Description	Status
LSH-STA 1	Improve knowledge of landslide hazard areas and understanding of vulnerability and risk to life and property in hazard-prone areas. Conduct a landslide hazard mapping study in the City of La Cañada Flintridge. Develop public information to emphasize economic risk when building on potential or historical landslide areas.	Residents are informed of the requirements in hillside areas, and the reasons for those efforts when applying for development. The mapping study was determined to be a larger undertaking than was feasible in the short-term.
LSH-LTA 1	Review local ordinances regarding building and development in landslide-prone areas.	Building and Planning codes have been amended over the period of time and included updates to help mitigate the risk of landslides.

9.5.4 Current Mitigation Action Items

Below, Table 21 summarizes the new mitigation actions since the last plan update. All items appear in the order of priority, grouped by the timeline. In current conventions, “STA” corresponds to “Short-Term Activity,” “LTA” represents “Long-Term Activity,” and “LSH” stands for “Landslide Hazard.” Each mitigation item addresses the Plan’s mission and one or more of the goals as identified in Section 2.4

Table 29: 2018 Landslide Hazard Mitigation Strategies

Number	Mitigation Action	Timeline	Coordinating Organization	Goals Addressed	Constraints	Potential Funding	New Strategy
LSH-STA 1	Educating residents about the importance of proper maintenance of the hillsides on their property.	Short-Term 1-2 Years, Ongoing	Public Works	Mitigation (A), (B), (C) Education (A)	Funding, Available Personnel	General Fund	Yes
LSH-LTA 1	Collaborate with responsible agencies for regular inspection and maintenance of debris basins.	Long-Term 3-5 Years	Public Works	Mitigation (A), (B), (C) Collaboration (A), (B), (C)	Funding, Available Personnel	General Fund	Yes

SECTION 9: LANDSLIDE

The City does not have any City-owned assets within potential landslide areas. These areas in private property or land managed by the Los Angeles County. Therefore, no structural activities are recommended.

9.5.5 Action Plan and Implementation

The City of La Cañada Flintridge is adopting two new Landslide goals with the plan update. The first goal is to educate residents about the importance of proper hillside maintenance. Individual maintenance mitigates the risk to all properties.

The City also plans to collaborate with responsible agencies for regular inspection and maintenance of nearby debris basins. The City currently coordinates with the County Flood Control District to maintain the debris basins. This goal would improve the coordination to be more efficient and effective and allow for a more formal understanding of the processes and responsibilities for inspection and maintenance.

9.6 Resource Directory


The following resource directory lists the information and programs that can assist communities and organizations to address the hazard. The City of La Cañada Flintridge uses the resources and/or services offered by these agencies to achieve and improve mitigation efforts.

9.6.1 Local Resources

Los Angeles County Department of Public Works

The City of La Cañada Flintridge works closely with the Los Angeles County Department of Public Works to respond to infrastructure maintenance and emergencies.

Address: 900 S. Fremont Ave., Alhambra, CA 91803

URL: www.dpw.lacounty.gov/  (626) 458-5100


Email: info@dpw.lacounty.gov


9.6.2 State Resources

California Geological Survey

The California Geological Survey maps and analyzes data on the state's diverse geologic hazards and to provide critical information to protect life, property, commerce, and the environment from natural hazards. The California Geological Survey is regarded as the primary source of geologic information used for decision-making by California's government agencies, its businesses, and the public.

Address: Junipero Serra Building, 320 W. 4th Street, Suite 850, Los Angeles, CA 90013

URL: www.conservation.ca.gov/cgs  (213) 239-0877


 (213) 239-0894

California Department of Forestry and Fire Protection (Cal Fire) Southern Region Headquarters

CAL FIRE's mission emphasizes the management and protection of California's natural resources; a goal that is accomplished through ongoing assessment and study of the State's natural resources. CAL FIRE also oversees enforcement of California's forest practice regulations. From experience with both forestry and fire management, the agency has expertise on how to mitigate certain potential causes of landslides.

Address: 2524 Mulberry Street, Riverside, CA 92501

URL: www.fire.ca.gov/

 (951) 782-4140

California Department of Water Resources (DWR)

The Department of Water Resources (DWR) is responsible for managing and protecting California's water resources. They partner with other agencies to protect, restore, and enhance natural and human environments. This includes providing grants and technical assistance to service local water needs.

Address: 1416 Ninth Street, Sacramento, CA 95814

URL: www.water.ca.gov/

 (916) 653-5791

California Governor's Office of Emergency Services


The Governor's Office of Emergency Services coordinates overall state agency response to major disasters in support of local government. The office is responsible for assuring the state's readiness to respond to and recover from natural, human-caused, and war-caused emergencies, and for assisting local governments in their emergency preparedness, response and recovery efforts.

Address: 4671 Liberty Ave. Building 283, Los Alamitos, CA 90720

URL: www.caloes.ca.gov

 (562) 795-2939

Email: Jim.Acosta@caloes.ca.gov


 (562) 795-2877


California Department of Transportation (Caltrans)

Include a brief description of what this agency/program does and why it is a resource for this hazard.

Address: 100 S. Main Street, Los Angeles, CA 90012

URL: www.caltrans.ca.gov/d7/

 213-897-3656



 (213) 897-3836

9.6.3 Federal Resources

Federal Emergency Management Agency, Region IX

The Federal Emergency Management Agency supports citizens and first responders to ensure that communities work together to build, sustain and improve capabilities to prepare for, protect against, respond to, recover from, and mitigate all hazards



Address: 1111 Broadway, Suite 1200, Oakland, CA 94607

URL: www.fema.gov  (510) 627-7100
 (510) 627-7112

US Geological Survey, Landslide Hazards Program

The primary objective of the National Landslide Hazards Program (LHP) is to reduce long-term losses from landslide hazards by improving our understanding of the causes of ground failure and suggesting mitigation strategies.

Address: Mail Stop 966, Box 25046 Denver Federal Center, Denver, CO 80225

URL: www.landslides.usgs.gov/  (303) 202-4200
Email: jgodt@usgs.gov  (303) 273-8600

9.6.4 Publications

FEMA, Public Assistance Policy Digest. (2007). *Public assistance: Debris Management Guide* (FEMA 325). Washington, D.C.: U.S. Dept. of Homeland Security, Federal Emergency Management Agency. Retrieved from https://www.fema.gov/media-library-data/20130726-1826-25045-7418/fema_325_debris_management_guide_2007.07.25.pdf

The Debris Management Guide was developed to assist local officials in planning, mobilizing, organizing, and controlling large-scale debris clearance, removal, and disposal operations. Debris management is generally associated with post-disaster recovery. While it should be compliant with local and county emergency operations plans, developing strategies to ensure strong debris management is a way to integrate debris management within mitigation activities.

Olshansky, R. B. (1996). *Planning for Hillside Development*. Chicago, IL (122 S. Michigan Ave., Suite 1600, Chicago 60603): American Planning Association, Planning Advisory Service.

This document describes the history, purpose, and functions of hillside development and regulation and the role of planning, and provides excerpts from hillside plans, ordinances, and guidelines from communities throughout the United States.

Olshansky, R. B., & Rogers, J. D. (1987). Unstable Ground: Landslide Policy in the United States. *Ecology Law Quarterly*, 13(14), 939-1006. Retrieved from: <http://scholarship.law.berkeley.edu/elq/vol13/iss4/3>

This document reviews the history and policy of landslide mitigation in the United States.

Highland, L.M., and Bobrowsky, P. (2008). *The landslide handbook—A guide to understanding landslides*: Reston, Virginia, U.S. Geological Survey Circular 1325, 129 p.

The handbook provides good, general information in simple terminology on the importance of landslide studies and a list of databases, outreach, and exhibits maintained by the NLLC. The brochure also includes information on the types and causes of landslides, rock falls, and earth flows.

9.7 Sources

California Department of Conservation. (n.d.). BETA Landslides Inventory and Deep Landslides Susceptibility Map. Retrieved from <https://maps.conservation.ca.gov/lci/>



10 WILDFIRE

10.1 General Background

Fires are a natural part of the ecosystem in Southern California but present a substantial hazard to life and property in communities built within or adjacent to hillsides and mountainous areas.

Due to its weather, topography, and native vegetation, Southern California is at risk from wildland fires. The extended drought characteristic of the region's Mediterranean climate results in large areas of dry vegetation that provide fuel for wildland fires. Furthermore, oil content in the native vegetation typically makes it highly flammable. The area is also intermittently impacted by Santa Ana winds, the hot, dry winds that blow across southern California in the spring and late fall.

If ignited structures sustain and transmit the fire from one building to the next, a catastrophic fire can ensue. Insurance carriers consider a fire a catastrophe if it triggers at least \$25 million in claims or more than 1,000 individual claims. The Oakland Hills firestorm of October 1991 was such an event. Firestorms, especially in areas of wildland-urban interfaces can be particularly dangerous and complex, posing a severe threat to public and firefighter safety, and causing devastating losses of both life and property.

Continuous planning, preparedness, and education are required to reduce the fire hazard potential, and to limit the destruction caused by fires.

10.1.1 Causes and Characteristics

Wildfires are caused when vegetation is ignited by natural or human sources. Their individual characteristics vary by the fuels involved, the influence of weather, and an ignition source. Certain conditions must be present for significant interface fires to occur. The most common conditions include: hot, dry, and windy weather; the inability of fire protection forces to contain or suppress the fire; the occurrence of multiple fires that overwhelm committed resources; and a large fuel load (dense vegetation). Once a fire has started, several conditions influence its behavior, including fuel topography, weather, drought, and development.

There are three categories of interface fire:

1. **Classic** wildland-urban **interface** – exists where well-defined urban and suburban development presses up against open expanses of wildland areas;
2. **Mixed** wildland-urban **interface** – characterized by isolated homes, subdivisions and small communities situated predominantly in wildland settings; and
3. **Occluded** wildland-urban **interface** – exists where islands of wildland vegetation occur inside a largely urbanized area.

The entire City of La Cañada Flintridge has been designated as a “Very High Fire Hazard Severity Zone,” and has the potential for the classic urban interface brush fires.

10.2 Hazard Profile

10.2.1 Past Events

Large fires have been part of the Southern California landscape for millennia. Written documents reveal that during the 19th-century human settlement of southern California altered the fire regime of coastal California by increasing the fire frequency. This was an era of very limited fire suppression, and yet like today, large fires covering tens of thousands of acres were not uncommon. One of the largest fires in Los Angeles County (60,000 acres) occurred in 1878, and the largest fire in Orange County’s history, in 1889, was over half a million acres.

The “Station Fire” of 2009 burned over 160,000 acres and destroyed over 200 structures. The fire began in the Angeles National Forest near the U.S. Forest Service ranger station just north of La Cañada Flintridge. The fire threatened many of the homes on the northern side of the City, as well as neighboring communities. Many La Cañada Flintridge residents were forced to evacuate their homes due to the threat. Two firefighters were killed while responding to the blaze. The “Station Fire” is the 13th largest in modern California history and the largest wildfire in the modern history of Los Angeles County (based on acres burned). Below is a table of incidents that have occurred within Los Angeles County for the past

Table 30: Significant Wildfires in Los Angeles County

Date(s)	Name	Declaration #	Type of Event
December 5, 2017 - December 14, 2017	Creek Fire	No Local Declaration	Wildfire
September 1, 2017 – September 9, 2017	La Tuna Fire	No Local Declaration	Wildfire
August 26, 2009 – October 16, 2009	Station Fire	Local Declaration City Resolution No. 09-28	Wildfire

10.2.2 Locations

Identifying hazardous locations is an essential step towards implementing more informed mitigation activities. The entire City of La Cañada Flintridge is at risk to wildfire.

10.2.3 Frequency

As listed under past events, major wildfires in the Los Angeles area have happened multiple times in a decade. The Station fire was a wildfire directly threatening La Cañada Flintridge. With climate change and further development, wildfires continue to increase in frequency, becoming an annual event.

10.2.4 Severity

Wildfires can damage local infrastructure, buildings, property, and the natural environment. They threaten human and wildlife alike and can disrupt or impact the day-to-day lives of those living adjacent to the incident. They also lead to secondary impacts such as landslides and debris flows in the hillsides surrounding the city.

10.2.5 Warning Time

Fires have no explicit warnings and may occur at any time, due to accidental or intentional ignition. Care may be taken to make the environment less conducive for fire, such as reducing the fuel sources, banning open flames during dry weather, or educating the public about the impacts from fireworks, cigarettes, and other accidental sources. Additionally, special caution can be noted during periods where weather may increase the probability of fire.

10.3 Secondary Impacts

The greatest wildfire-related hazard that can affect La Cañada Flintridge are debris flows. The wildfire burns the vegetation that retains the soils. When a storm follows the fire, the loose soils and burnt vegetation are swept away from the hillsides.

Typically, debris flows occur in mountain canyons and the foothills against the San Gabriel Mountains. However, any hilly or mountainous area with intense rainfall and the proper geologic conditions may experience one of these very sudden and devastating events.

10.4 Risk Assessment

La Cañada Flintridge has been designated as being completely in a very high fire hazard severity zone. Thus, the entire city has been identified as a potential for urban interface brush fires. The topography is ranging from gradual slopes to steep hillsides.

Topography influences the movement of air, thereby contributing to the direction of a fire course. For example, fire travels faster upslope. Gulches and canyons can funnel air and act as chimneys, which intensify fire behavior and cause the fire to spread faster. Solar heating of dry, south-facing slopes produces up slope drafts that can complicate fire behavior.

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.

Recent concerns about the effects of climate change, particularly drought, are contributing to concerns about wildfire vulnerability. The term drought is applied to a period in which an unusual scarcity of rain causes a serious hydrological imbalance.

Unusually dry winters, or significantly less rainfall than normal, can lead to relatively drier conditions and leave reservoirs and water tables lower. Drought leads to problems with irrigation and may contribute to additional fires, or additional difficulties in fighting fires.

10.4.1 Exposure Assessment

One challenge Southern California faces regarding the wildfire hazard is from the increasing number of houses being built on the wildland-urban interface. Every year the growing population has expanded further and further into the hills and mountains, including forest lands. The increased "interface" between urban and suburban areas and the open spaces created by this expansion has produced a significant increase in threats to life and property from fires and has pushed existing fire protection systems beyond original or current design and capability. Property owners in the interface are not aware of the problems and threats they face. Therefore, many owners have done very little to manage or offset fire hazards or risks on their own property. Furthermore, human activities increase the incidence of fire ignition and potential damage.

The probability that a wildfire will break out in the City is high a Red Flag Warning day. A Red Flag Day is when weather conditions are such that there is a great potential for a fast-moving brush fire. The conditions are defined as wind speeds 25 mph or more and humidity 15% or less. On any other day, the City is still vulnerable due to the topography and canopy of the community. The City of La Cañada Flintridge requires weed abatement, additional brush clearing and the mandatory use of Class "A" roofs in this area. These precautions will help reduce the spread of any wildfire in the City. Fires could be started by a number of different reasons including; car fires, illegal burning, arcing wires, arson, or lightning strikes. With the tree canopy in the City, the fire could be spread with any winds affecting the area.

10.4.1.1 Population

La Cañada Flintridge has been designated as being completely in a very high fire hazard severity zone. The entire city is at risk for wildfires, a population of over 21,000.

10.4.1.2 Property

The hills and mountainous areas of Southern California are considered to be interface areas. The development of homes and other structures is encroaching onto the wildlands and is expanding the wildland-urban interface. The interface neighborhoods are characterized by a diverse mixture of varying housing structures, development patterns, ornamental and natural vegetation and natural fuels.

In the event of a wildfire, vegetation, structures, and other flammables can merge into unwieldy and unpredictable events. Factors important to the fighting of such fires include access, firebreaks, the proximity of water sources, distance from a fire station and available firefighting personnel and equipment. Reviewing past wildland-urban interface fires shows that many structures are destroyed or damaged by one or more of the following reasons:

- Combustible roofing material;
- Wood construction;
- Structures with no defensible space;
- The fire department with poor access to structures;
- Subdivisions located in heavy natural fuel types;
- Structures located on steep slopes covered with flammable vegetation;
- Limited water supply; and
- Winds over 30 miles per hour.

10.4.1.3 Critical Facilities and Infrastructure

The Very High Fire Hazard Severity Zone that encompasses the entire City of La Cañada Flintridge identifies a residential population that would have a severe economic impact in this jurisdiction. This City is primarily residential structures. The economic impact of a wildfire in this area should homes be lost would be in the tens of millions.

Road Access

Road access is a major issue for all emergency service providers. As development encroaches into the rural areas of the county, the number of houses without adequate turn-around space is increasing. In many areas, there is not adequate space for emergency vehicle turnarounds in single-family residential neighborhoods, causing emergency workers to have difficulty doing their jobs because they cannot access houses. As fire trucks are large, firefighters are challenged by narrow roads and limited access, when there is an inadequate turn around space, firefighters can only work to remove the occupants, but cannot safely remain to save the threatened structures.

Water Supply

Firefighters can be faced with limited water supply and lack of hydrant outlets. Pump supplied water distribution areas can become unusable if the wildfire should disrupt electricity to the area causing the water pumps to fail.

10.4.1.4 Environment

Although communities without an urban/wildland interface are much less likely to experience a catastrophic fire, in Southern California, there is a scenario where any community might be exposed to an urban conflagration similar to the fires that occurred following the 1906 San Francisco earthquake.

Large fires following an earthquake in an urban region are relatively rare phenomena but have occasionally been of catastrophic proportions. The two largest peace-time urban fires in history, 1906 San Francisco and 1923 Tokyo, were both caused by earthquakes.

The fact that fire following earthquake has been little researched or considered in the United States is particularly surprising when one realizes that the conflagration in San Francisco after the 1906 earthquake was the single largest urban fire, and the single largest earthquake loss, in U.S. history. The loss over three days of more than 28,000 buildings within an area of 12 km² was staggering: \$250 million in 1906 dollars or about \$5 billion at today's prices.

The 1989 Loma Prieta Earthquake, the 1991 Oakland Hills Fire, and 2011 Tōhoku Earthquake demonstrate the current, real possibility of a large fire, such as a fire following an earthquake, developing into a conflagration. In the United States, all the elements that would hamper fire-fighting capabilities are present: density of wooden structures, limited personnel, and equipment to address multiple fires, debris blocking the access of fire-fighting equipment, and limited water supply.

Thus in Southern California, this scenario highlights the need for fire mitigation activity in all sectors of the region, wildland-urban interface or not.

10.4.2 Vulnerability Assessment

10.4.2.1 Population

La Cañada Flintridge has been designated as being completely in a Very High Fire Hazard Severity Zone. Therefore, the entire city has been identified as a potential for urban interface brush fires. The topography ranges from gradual slopes to steep hillsides. This puts the population of over 21,000 at risk.

10.4.2.2 Property

As a Tree City USA, the city is heavily populated by trees. These trees increase the risk of wildfires. In addition, the majority of the City is zoned for residential properties. Residential properties are more susceptible to fires.

Growth and development in scrubland and forested areas are increasing the number of human-made

structures in Southern California interface areas. Wildfire has an effect on development, yet development can also influence wildfire. Owners often prefer homes that are private, have scenic views, are nestled in vegetation and use natural materials. A private setting may be far from public roads or hidden behind a narrow, curving driveway. These conditions, however, make evacuation and firefighting difficult. The scenic views found along mountain ridges can also mean areas of dangerous topography. Natural vegetation contributes to scenic beauty, but it may also provide a ready trail of fuel leading a fire directly to the combustible fuels of the home itself.

10.4.2.3 Critical Facilities and Infrastructure

The very high fire hazard severity zone that encompasses the entire City of La Cañada Flintridge identifies a residential population that would have a severe economic impact in this jurisdiction. This City is primarily residential structures. The economic impact of a wildfire in this area should homes be lost would be in the tens of millions.

Road Access

Road access is a major issue for all emergency service providers. As development encroaches into the rural areas of the county, the number of houses without adequate turn-around space is increasing. In many areas, there is not adequate space for emergency vehicle turnarounds in single-family residential neighborhoods, causing emergency workers to have difficulty doing their jobs because they cannot access houses. As fire trucks are large, firefighters are challenged by narrow roads and limited access, when there is an inadequate turn around space, the firefighters can only work to remove the occupants, but cannot safely remain to save the threatened structures.

Water Supply

Firefighters can be faced with limited water supply and lack of hydrant outlets. Pump supplied water distribution areas can become unusable if the wildfire should disrupt electricity to the area causing the water pumps to fail.

10.4.2.4 Environment

The hills and mountainous areas of Southern California are considered to be interface areas. The development of homes and other structures is encroaching onto the wildlands and is expanding the wildland-urban interface. The interface neighborhoods are characterized by a diverse mixture of varying housing structures, development patterns, ornamental and natural vegetation and natural fuels.

In the event of a wildfire, vegetation, structures, and other flammables can merge into unwieldy and unpredictable events. Factors important to the fighting of such fires include access, firebreaks, the proximity

of water sources, distance from a fire station and available firefighting personnel and equipment. Reviewing past wildland-urban interface fires shows that many structures are destroyed or damaged for one or more of the following reasons:

- Combustible roofing material;
- Wood construction;
- Structures with no defensible space;
- The Fire department with poor access to structures;
- Subdivisions located in heavy natural fuel types;
- Structures located on steep slopes covered with flammable vegetation;
- Limited water supply; and
- Winds over 30 miles per hour.

10.5 Mitigation Strategy

10.5.1 Goals and Objectives

Each of the following objectives will be the primary responsibility of the City of La Cañada Flintridge to coordinate. While the Fire Department will take the primary lead on these objectives, other city resources will be called upon to assist. Those resources include, but are not limited to Planning, Public Works, Sheriff, Administration, and Building & Safety Departments.

The wildfire mitigation action items provide direction on specific activities that organizations and residents in Southern California can undertake to reduce risk and prevent loss from wildfire events. Each item is followed by Actions, which can be used by the steering committee and local decision-makers in pursuing strategies for implementation.

Mitigation action items appear in their order of priority at the time of submittal of this plan. This is not to negate the option to re-prioritize as may be necessary due to environmental, economic or policy influences. Priorities were determined by the City departments responsible for the development of mitigation actions and their implementation. Due consideration was given to the importance of each item and evaluated against the estimated costs. Furthermore, these estimated costs were evaluated against projected city revenue.

10.5.2 Previous Mitigation Action Items

Below is a table summarizing the activity since the last plan update. The mitigation activities appear in the same order as before. The previous titles have been renamed into the current plan conventions, where “STA” corresponds to “Short-Term Activity,” “LTA” represents “Long-Term Activity,” and “WFH” stands for “Wildfire Hazard.”

Table 31: Wildfire 2014 LHMP Activities Status

Title	Description	Status
WFH-STA 1	Enhance emergency services to increase the efficiency of wildfire response and recovery activities, and create maps for Alert LCF notification System	The City created the maps for use with the Alert LCF notification system and tests the system regularly.
WFH-STA 2	Educate agency personnel on federal cost-share and grant programs, Fire Protection Agreements and other related federal programs so the full array of assistance available to local agencies is understood.	The City has designated multiple staffers responsible for monitoring and applying for available grants.
WFH-STA 3	Conduct a fire drill at least once every calendar month at the elementary level and at least four times every school year in the higher levels.	The City continues to provide evaluation and emergency response training at City Hall. This practice shall continue.
WFH-LTA 1	Enhance 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.	The City through the planning and permitting process have worked on educating the public of landscape risks.
WFH-LTA 2	Encourage local zoning and planning entities to work closely with landowners and/or developers who choose to build in the wildland/urban interface to identify and mitigate conditions that aggravate wildland/urban interface wildfire hazards.	The City created a development review group for major projects to ensure a complete review of the project can be concluded.

10.5.3 Current Mitigation Action Items

Below, Table 24 summarizes the new mitigation actions since the last plan update. All items appear in the order of priority, grouped by the timeline. In current conventions, “STA” corresponds to “Short-Term Activity,” “LTA” represents “Long-Term Activity,” and “LSH” stands for “Wildfire Hazard.” Each mitigation item addresses the Plan’s mission and one or more of the goals as identified in Section 2.4

Table 32: 2018 Wildfire Hazard Mitigation Strategies

Number	Mitigation Action	Timeline	Coordinating Organization	Goals Addressed	Constraints	Potential Funding	New Strategy
WFH-STA 1	Inventory pools and other potential water resources which can be used during an emergency as water supply.	Short-Term 1-3 Years	Administration, Community Development, Public Works	Collaboration (B)	Funding, Available Personnel	General Fund	Yes
WFH-STA 2	Educate the public on wildfire, providing brochures, public service announcements with information on the hazard	Short-Term 1-3 Years	Administration, Community Development, Public Works	Education (A)	Funding, Available Personnel	General Fund	Yes
WFH-LTA 1	Collaborating with utilities to evaluate areas of improvement to reduce wildfires, such as turning off power or having an adequate water source.	Long-Term 3-5 Years	Administration, Community Development, Public Works	Mitigation (A)	Funding, Available Personnel	General Fund	Yes
WFH-LTA 2	Work with water districts to inventory all fire hydrants and flow testing them. Additionally, create a GIS layer with the resource to use during emergencies.	Long-Term 3-5 Years	Administration, Community Development, Public Works	Mitigation (A)	Funding, Available Personnel	General Fund	Yes
WFH- LT3	Establishing fire breaks or defensible space, or permanent structure(s) in the City to prevent the spread of fires during hazard events	Long-Term 3-5 Years	Administration, Community Development, Public Works	Mitigation (B)	Funding	General Fund Grants	Yes

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WFH-LT4	Establish an outdoor warning system for potential placement in highly vulnerable areas designed to alert residents and visitors of La Cañada Flintridge about possible danger.	Long-Term 3-5 Years	Administration	Mitigation (B)	Funding	Grants	Yes
WFH-LT5	Research the utility of wider streets to facility evaluation and fire responder access during regular Capital Improvement project maintenance including underground utilities, resurfacing, ADA compliance, and like activities	Long-Term 3-5 Years	Administration, Community Development, Public Works	Mitigation (C) Collaboration (B)	Funding, Available Personnel	General Fund	Yes
WFH-LT6	Research fuel reduction methods, codes, and ordinances for especially high-risk wildland-urban interface areas.	Long-Term 3-5 Years	Administration, Community Development, Public Works	Mitigation (C)	Funding, Available Personnel.	Grants	Yes

10.5.4 Action Plan and Implementation

Since the Station Fire of 2009, the community has not been directly exposed to a major wildfire. Most recently, the 2017 Thomas Fire, the largest fire in California’s history, has shown the community the importance of personal preparedness. The goal is to use the recent fires to continue to prepare the community in dealing with wildfires. In addition, lessons learned around communications and power lines during the Thomas Fire will be useful in the development of the City’s Plan.

10.6 Resource Directory


The following resource directory lists information and programs that can assist communities and organizations before, during, or after a hazard incident. The City of La Cañada Flintridge uses the resources and/or services offered by these agencies to achieve and improve mitigation efforts.

10.6.1 Local Resources

Los Angeles County Department of Public Works

The Los Angeles County Department of Public Works protects property and promotes public safety through flood control, water conservation, road maintenance, bridges, buses and bicycle trails, building and safety, land development, waterworks, sewers, engineering, and capital projects.

Address: 900 S. Fremont Ave., Alhambra, CA 91803


URL: www.dpw.lacounty.gov  (626) 458-5100


EMAIL: info@dpw.lacounty.gov

Sanitation Districts of Los Angeles County

The Sanitation Districts of Los Angeles County help to manage wastewater and solid waste. These services protect both the environment and public health and these services may be interrupted in the case of a flood.

Address: 1955 Workman Mill Road Whittier, CA 90607

URL: www.lacsd.org  (562) 699-7411 x2301

EMAIL: info@lacsd.org  (562) 908-4278

10.6.2 State Resources

California Governor’s Office of Emergency Services

The Governor's Office of Emergency Services coordinates overall state agency response to major disasters in support of local government. The office is responsible for assuring the state's readiness to respond to and recover from natural, human-caused, and war-caused emergencies, and for assisting local governments in their emergency preparedness, response and recovery efforts.

Address: 4671 Liberty Ave. Building 283, Los Alamitos, CA 90720

URL: www.caloes.ca.gov  (562) 795-2939

Email: Jim.Acosta@caloes.ca.gov  (562) 795-2877

California Natural Resources Agency

The California Resources Agency restores, protects and manages the state's natural, historical and cultural resources for current and future generations using solutions based on science, collaboration, and respect for all the communities and interests involved.

Address: 1416 Ninth Street, Suite 13 Sacramento, CA 95814


URL: www.resources.ca.gov  (916) 653-5656

Email: secretary@resources.ca.gov  (916) 653-8102

California Department of Water Resources (DWR)

The Department of Water Resources (DWR) is responsible for managing and protecting California’s water resources. They partner with other agencies to protect, restore, and enhance natural and human environments. This includes providing grants and technical assistance to service local water needs.

Address: 1416 Ninth Street, Sacramento, CA 95814

URL: www.water.ca.gov  (916) 653-5791

California Department of Conservation: Southern California Regional Office

The Department of Conservation provides services and information that promote environmental health, economic vitality, informed land-use decisions and sound management of our state's natural resources.

Address: 888 S. Figueroa Street #1475, Los Angeles, CA 90017

URL: www.conservation.ca.gov

☎ (213) 239-0878

📠 (213) 239-0894

10.6.3 Federal Resources

Federal Emergency Management Agency, Region IX

The Federal Emergency Management Agency supports citizens and first responders to ensure that communities work together to build, sustain and improve capabilities to prepare for, protect against, respond to, recover from, and mitigate all hazards

Address: 1111 Broadway, Suite 1200, Oakland, CA 94607

URL: www.fema.gov

☎ (510) 627-7100

📠 (510) 627-7112

10.6.4 Publications

Ready, Set, Go! Retrieved from <https://www.lafd.org/safety/education/ready-set-go>

10.7 Sources

Hirsch, K., Pinedo, M., & Greenlee, J. (1996). An International Collection of Wildland- Urban Interface Resource Materials. *Canadian Forest Service*. Retrieved from <https://cfs.nrcan.gc.ca/publications?id=11794>.

This is a comprehensive bibliography of interface wildfire materials. Over 2,000 resources are included, grouped under the categories of general and technical reports, newspaper articles and public education materials.

Fire Protection in the Wildland/Urban Interface: Everyone's Responsibility. National Wildland/Urban Interface Fire Protection Program, (1998). Washington, D.C.

National Wildland/Urban Interface Fire Protection Program. (1998). Wildland/Urban Interface Fire Hazard Assessment Methodology.

This guide provides a description and understanding of ignition sources of concern, assessing hazards, and provides suggestions for reducing the fire potential.

NFPA. (1997). *NFPA 299: Standard for Protection of Life and Property from Wildfire*. National Fire Protection Association. Retrieved from <https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=299>.

This document presents the minimum planning criteria for the protection of life and property from wildfire. It includes information on safety procedures and practices at the wildland/urban interface or intermix. Useful for fire agencies, land use planners, architects, developers, and local governments.



11 WINDSTORM

11.1 General Background

Severe windstorms pose a significant risk to life and property in the region by creating conditions that disrupt essential systems such as public utilities, telecommunications, and transportation routes. High winds can and do occasionally cause significant damage to local homes and businesses. Windstorms can present a destabilizing effect on the dry brush that covers local hillsides and urban-wildland interface areas. High winds can have destructive impacts, especially to trees, power lines, and other utility services.

11.1.1 Causes and Characteristics

Based on local history, most incidents of high winds in the City of La Cañada Flintridge are the result of the Santa Ana wind conditions or microbursts.

While high impact incidents are not frequent in the area, significant Santa Ana wind events have been known to negatively impact the local community.

Santa Ana Winds

Santa Ana winds are generally defined as warm, dry winds that blow from the east or northeast (offshore). These winds occur below the passes and canyons of the coastal ranges of Southern California and in the Los Angeles basin. The complex topography of Southern California combined with various atmospheric conditions create numerous scenarios that may cause widespread or isolated Santa Ana events. Commonly, Santa Ana winds develop when a region of high pressure builds over the Great Basin (the high plateau east of the Sierra Mountains and west of the Rocky Mountains, including most of Nevada and Utah). The clockwise circulation around the center of this high-pressure area forces air downslope from the high plateau. The air warms as it descends toward the California coast at the rate of 5 degrees Fahrenheit per 1000 feet due to compressional heating. Thus, compressional heating provides the primary source of warming. The air is dry since it originated in the desert, and it dries out even more as it is heated. Santa Ana winds often blow with exceptional speed in the Santa Ana Canyon (the canyon from which it derives its name). Forecasters at the National Weather Service offices in Oxnard and San Diego usually place speed minimums on these winds and reserve the use of “Santa Ana” for winds greater than 28 mph. These winds accelerate to speeds of 35 knots as they move through canyons and passes, with gusts to 57 mph or even 69 mph.

Microburst

Microbursts are strong, damaging winds which strike the ground and often give the impression a tornado has struck. Occurring at a thunderstorm’s core, they typically, affect only a rather small area.

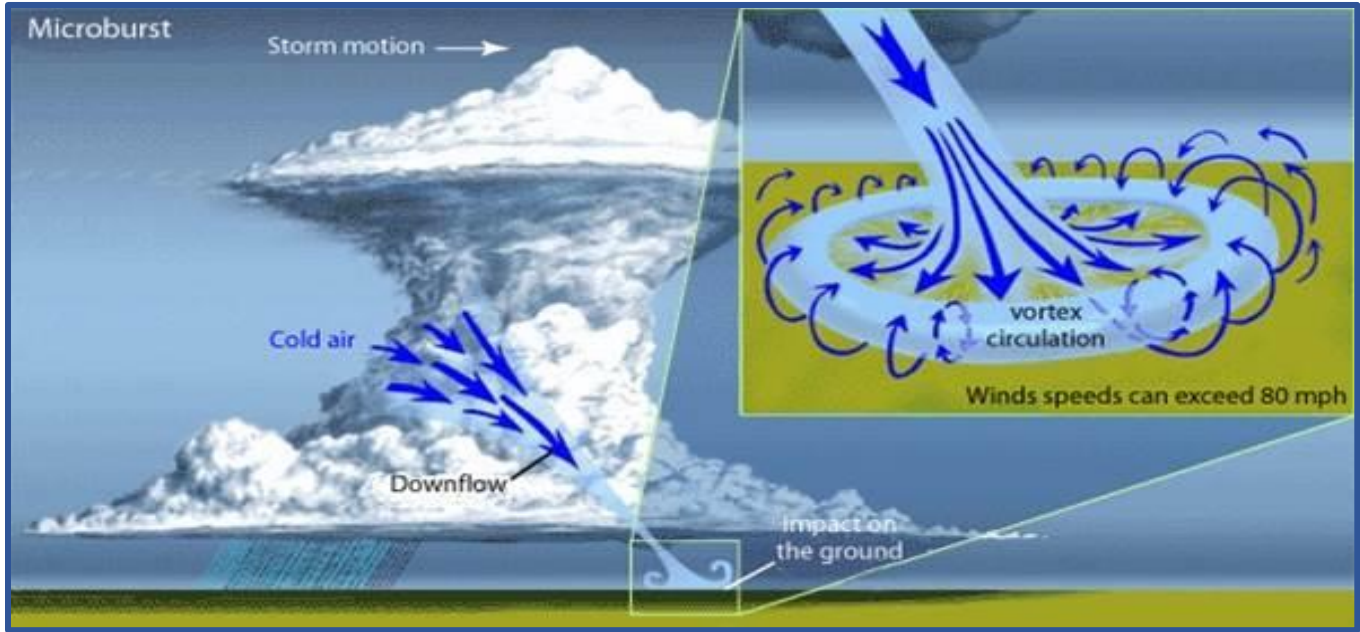


Figure 17: Microburst

Source: https://www.weather.gov/bmx/outreach_microbursts

A downburst is a straight-direction surface wind in excess of 39 miles per hour caused by a small-scale, strong downdraft from the base of convective thundershowers and thunderstorms.

During Dr. Fujita’s investigations into the phenomena, he defined two sub-categories of downbursts: the larger macrobursts and small microbursts.

Macrobursts are downbursts with winds up to 117 miles per hour which spread across a path greater than 2.5 miles wide at the surface and which last from 5 to 30 minutes. The microburst, on the other hand, is confined to a smaller area, less than 2.5 miles in diameter from the initial point of downdraft impact. An intense microburst can result in damaging winds near 170 miles per hour and often lasts for less than five minutes.

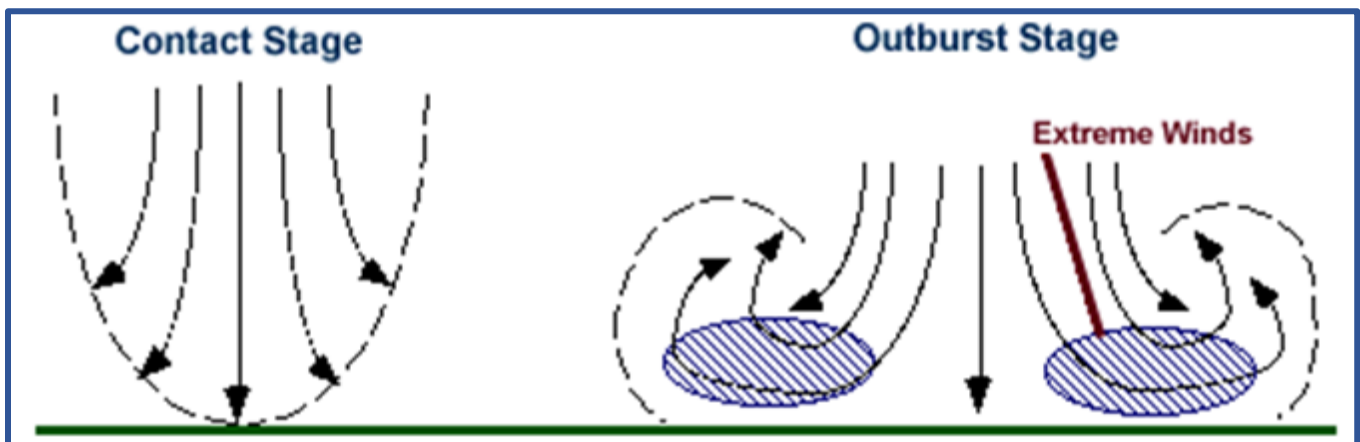


Figure 18: Downbursts

Source: [http://ww2010.atmos.uiuc.edu/\(Gh\)/guides/mtr/svr/comp/out/micro/home.rxml](http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/svr/comp/out/micro/home.rxml)

Downbursts of all sizes descend from the upper regions of severe thunderstorms when the air accelerates downward through either exceptionally strong evaporative cooling or by very heavy rain, which drags dry air down with it. When the rapidly descending air strikes the ground, it spreads outward in all directions, like a fast running faucet stream hitting the bottom of the sink.

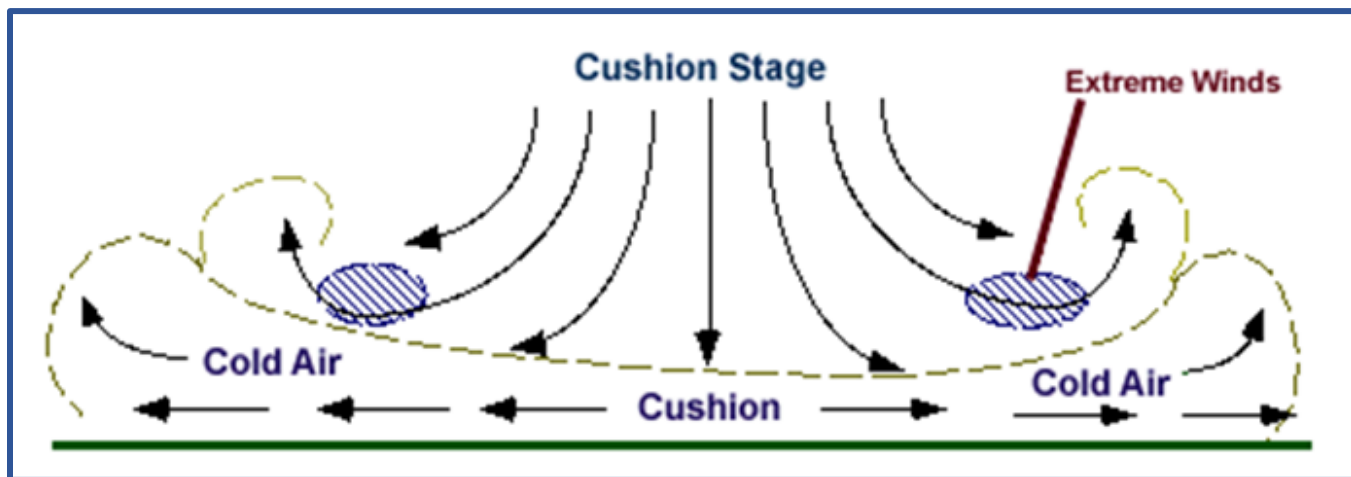


Figure 19: Downburst Cushion Stage

Source: [http://ww2010.atmos.uiuc.edu/\(Gh\)/guides/mtr/svr/comp/out/micro/home.rxml](http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/svr/comp/out/micro/home.rxml)

When the microburst wind hits an object on the ground such as a house, garage, or tree, it can flatten the buildings and strip limbs and branches from the tree. After striking the ground, the powerful outward running gust can wreak further havoc along its path.

Damage associated with a microburst is often mistaken for the work of a tornado, particularly directly under the microburst. However, damage patterns away from the impact area are characteristic of straight-line winds rather than the twisted pattern of tornado damage.

Tornados, like those that occur every year in the Midwest and Southeast portions of the United States, are a rare phenomenon in most of California, with most tornado-like activity coming from microbursts.

11.2 Hazard Profile

11.2.1 Past Events

A windstorm event in the region can range from short-term microburst activity lasting only minutes to a long duration Santa Ana wind condition which may last for several days. This was the case in the December 2011 Santa Ana wind event. Windstorms in the City of La Cañada Flintridge and surrounding areas can cause

extensive damage including the destruction of tree stands, road and highway infrastructure, and critical utility facilities. Fortunately, the City has not suffered any major incidents in the recent past. Since 2003, there have been four major windstorm events warranting news coverage. December 1, 2011 (LA Times), November 17, 2008 (San Gabriel Valley Tribune), November 23, 2007 (San Gabriel Valley Tribune), January 9, 2007 (Pasadena Star-News).

In 2017, Santa Ana winds were a major contributing factor in fueling ferocious California Wildfires.

11.2.2 Locations

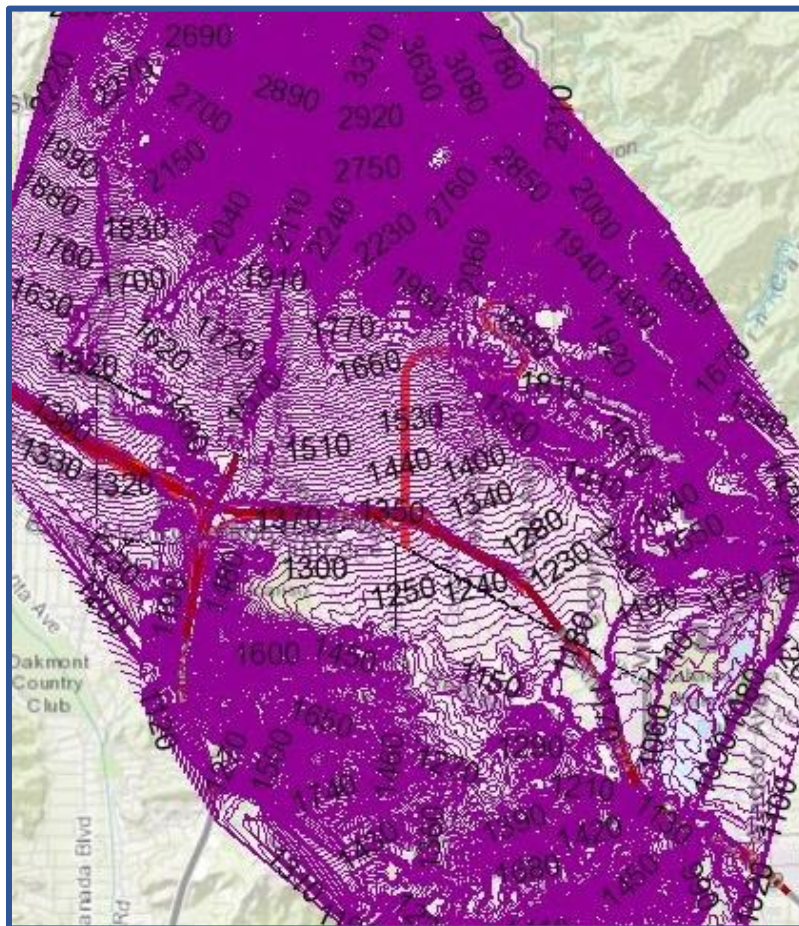


Figure 20: City of La Cañada Flintridge 10ft Contour Source: LCF GIS System

As demonstrated by the diagram above, the City of La Cañada Flintridge is located between two mountains creating a tunnel ideal for significant wind incidents.

11.2.3 Frequency

These regional winds typically occur from September to April, with the peak month being December. The frequency of the windstorm events is annual. However, the severity of the storm does vary on factors like temperature or weather patterns.

11.2.4 Severity

Santa Ana winds originate from high-pressure air masses over the Great Basin and the upper Mojave Desert. Any low-pressure area over the Pacific Ocean, off the coast of California, can change the stability of the Great Basin High, causing a pressure gradient that turns the synoptic scale winds southward into Southern California. Depending on the level of low-pressure and the disruption of Great Basin High, the severity of the Santa Ana winds can increase.

Table 33: Locally Reported Storms and Their Severity

Date	Media Outlet	Severity
January 9, 2007	Pasadena Star-News	<p>MALIBU - A wildfire fanned by Santa Ana winds destroyed four seaside mansions and damaged at least two others as it spread over more than 20 acres in this celebrity enclave Monday, authorities said.</p> <p>Flames boiled furiously out of the skeletons of multimillion-dollar beach homes for about two hours until there was little left to burn. No injuries were reported, fire officials said.</p>
November 23, 2007	San Gabriel Valley Tribune	<p>Fire conditions are critical today as Santa Ana winds are expected to return to much of Los Angeles and Ventura counties.</p> <p>The National Weather Service has issued a red flag warning and high wind advisory for the region.</p> <p>Low humidity - in the teens and single digits - is expected, service announced.</p>
November 17, 2008	San Gabriel Valley Tribune	<p>A wildfire that began Saturday morning in Corona quickly expanded, fueled by gusting Santa Ana winds.</p> <p>The blaze, dubbed the Triangle Complex Fire, chewed through more than 20,000 acres of brush, destroying more than 100 homes and menacing thousands more in Riverside, Orange, San Bernardino, and Los Angeles counties.</p>
December 1, 2011	Los Angeles Times	<p>Pasadena fire inspectors red-tagged 42 units damaged by strong winds, and an additional 200 must be evaluated before a second storm hits the region.</p> <p>Pasadena took the brunt of a windstorm that lashed Southern California on Wednesday night and Thursday morning. About 4,000 customers remained without power Thursday afternoon.</p>
December 4, 2017	Patch	<p>Red flag warnings will be in force Monday through at least Thursday in Los Angeles county denoting a high danger of wildfires due to strong Santa Ana winds and low humidity, according to the National Weather Service</p>
January 29, 2018	Accuweather	<p>Unseasonably warm air will build and challenge records across the southwestern United States into Monday, while Santa Ana winds elevate the fire danger in Southern California.</p>

11.2.5 Warning Time

With the advancement of weather technology, advance warning of high wind weather has dramatically improved. Therefore, most windstorms are predictable. The National Weather Service, part of the National Oceanic and Atmospheric Administration, issues high wind advisory warning on average three to five days in advance. While regional notices give indicators, local effects are difficult to predict.

11.3 Secondary Impacts

Power Outages

High windstorms and the damage they may cause could have secondary impacts including powerlines. Impact on the electric grid system could be significant on the community and its resources.

Increased Fire Threat

Perhaps the greatest danger from windstorm activity in Southern California comes from the combination of the Santa Ana winds with the major fires that occur every few years in the urban/wildland interface. With the Santa Ana winds driving the flames, the speed and reach of the flames are even greater than in times of calm wind conditions. The higher fire hazard raised by a Santa Ana wind condition requires that even more care and attention be paid to proper brush clearances on property in the wildland/urban interface areas. Also with the Santa Ana winds comes an increased potential for dramatic fire spread between structures.

11.4 Risk Assessment

11.4.1 Exposure Assessment

With an analysis of the high wind and tornado events, we can deduce the common windstorm impact areas including the effect on life, property, utilities, infrastructure, and transportation. Additionally, if a windstorm disrupts power to local residential communities, the American Red Cross and City resources critical infrastructure might be called upon for care and shelter duties.



Figure 21: Santa Ana Winds

Figure 21 shows clearly the direction of the Santa Ana winds as they travel from the stable, high-pressure weather system called the Great Basin High through the canyons and towards the low-pressure system off the Pacific. Clearly, the City of La Cañada Flintridge is in the direct path of the ocean-bound Santa Ana winds.

11.4.1.1 Population

Due to the local geography, the entire City population is at risk of windstorm damage. Displacing residents which utilize City resources for shelter staffing and disaster cleanup can cause economic hardship on the community.

11.4.1.2 Property

The City's lush trees poses a greater threat to property damages. The maintenance of the trees is divided between City maintained trees and private trees on private property. Fallen trees due to windstorm can cause significant damage to property. Private properties with private trees have a greater threat of damages. Ongoing maintenance of these trees by property owners is critical to minimizing damages.

11.4.1.3 Critical Facilities and Infrastructure

A windstorm can cause damages to Critical Facilities and Infrastructure mainly through downed power lines due to fallen trees and fallen power poles. This outage could have a significant impact on critical facilities operations such as USC Verdugo Hills Hospital, NASA's JPL and water companies.

11.4.1.4 Environment

The City's geographic location creates a wind tunnel ideal for Santa Ana windstorms. The entire City is at risk of windstorms.

The City of La Cañada Flintridge has a Tree City USA designation. As a Tree City USA designation, protection of trees in the community is a high priority. As a community, the City has lush trees throughout. This poses a threat during major windstorms. Trees are prone to falling in such conditions. Fallen trees could cause down power lines, cause damage to personal property and potentially threaten lives.

11.4.2 Vulnerability Assessment

Based on the history of the region, windstorm events can be expected, perhaps annually, across widespread areas of the region. Obviously, the City of La Cañada Flintridge and surrounding region can be adversely impacted during a windstorm event. This can result in the involvement of the City of La Cañada Flintridge's emergency response personnel during a wide-ranging windstorm or microburst activity.

11.4.2.1 Population

Debris carried along by extreme winds can directly contribute to loss of life and indirectly to the failure of protective building envelopes, siding, or walls. When severe windstorms strike a community, downed trees, power lines, and damaged property can be major hindrances to emergency response and disaster recovery.

11.4.2.2 Property

Both residential and commercial structures with weak reinforcement are susceptible to damage. Wind pressure can create a direct and frontal assault on a structure, pushing walls, doors, and windows inward. Conversely, passing currents can create lift suction forces that pull building components and surfaces outward. With extreme wind forces, the roof or entire building can fail, causing considerable damage.

The Beaufort Scale as shown below illustrates the effect that varying wind speed can have on sea swells and structures.

Table 34: Beaufort Scale

Beaufort Force	Speed (mph)	Wind Description	Effects on Land
0	<1	Calm	Smoke rises vertically
1	1-3	Light	Smoke drift shows the direction of the wind, but wind vanes do not
3	8-12	Gentle Breeze	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 the wind.
8	39-46	Gale	Waves high and moderately long; Crests break into the spindrift, 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 the sea; Poor visibility – broken trees 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.

11.4.2.3 Critical Facilities and Infrastructure

Utilities

Historically, falling trees have been the major cause of power outages in the region. Windstorms such as strong microbursts and Santa Ana Wind conditions can cause flying debris and downed utility lines. For example, tree limbs breaking in winds of only 45 mph can be thrown over 75 feet. As such, overhead power lines can be damaged even in relatively minor windstorm events. Falling trees can bring electric power lines

down to the pavement, creating the possibility of lethal electric shock. Rising population growth and new infrastructure in the region creates a higher probability for damage to occur from windstorms as more life and property are exposed to risk.

Infrastructure

Windstorms can damage buildings, power lines, and other property and infrastructure due to falling trees and branches. During wet winters, saturated soils cause trees to become less stable and more vulnerable to uprooting from high winds.

Windstorms can result in collapsed or damaged buildings or blocked roads and bridges, damaged traffic signals, streetlights, and parks, among others. Roads blocked by fallen trees during a windstorm may have severe consequences for people who need access to emergency services. Emergency response operations can be complicated when roads are blocked or when power supplies are interrupted. Industry and commerce can suffer losses from interruptions in electric services and from extended road closures. They can also sustain direct losses to buildings, personnel, and other vital equipment. There are direct consequences to the local economy resulting from windstorms related to both physical damages and interrupted services.

Table 35: Downed Tree Response by City Crew Historical Data

Year	Public Trees	Private Trees
FY 2013-14	17	8
FY 2014-15	42	1
FY 2015-16	37	5
FY 2016-17	29	6

Source: *City of La Cañada Flintridge*

11.4.2.4 Transportation

Windstorm activity can have an impact on local transportation in addition to the problems caused by downed trees and electrical wires blocking streets and highways. During periods of extremely strong Santa Ana winds, major highways can be temporarily closed to truck and recreational vehicle traffic. However, typically these disruptions are not long lasting, nor do they carry a severe long-term economic impact on the region.

11.4.2.5 Environment

Windstorm activity can damage trees and the natural habitats of birds and animals in the undeveloped regions around the city.

11.5 Mitigation Strategy

The Mitigation Strategy is meant to be a guide in addressing areas of risks as identified in the plan. Mitigation plans will assist in reducing potential impacts from the hazard. The goals and objectives of the mitigation strategy are to keep the plan broad to allow for configuration of the plan to fit Capital Improvement Projects and other city programs. In addition to identified mitigation measures, there are existing mitigations in place to reduce the impact of windstorms.

11.5.1 Previous Plan Mitigation Action Items

Below is a table summarizing the activity since the last plan update. The mitigation activities appear in the same order as before. The previous titles have been renamed into the current plan conventions, where “STA” corresponds to “Short-Term Activity,” “LTA” represents “Long-Term Activity,” and “WSH” stands for “Windstorm Hazard.”

Table 36: Windstorm 2014 LHMP Activities Status

Title	Description	Status
WSH-STA 1	Public awareness campaign to provide residents with materials pertaining to the protection of life and property before, during, and after a windstorm.	The City took on various public information campaigns on educating the community on the mitigating windstorm damages.
WSH-STA 2	Create local City and utility awareness of tree pruning and Fire Code Sections relevant to wind-resistant utility operations.	The City established an annual grid pruning program to trim trees in public right-of-way at least once every five years. The program ensures the health and maintenance of trees. The goal is to reduce the potential of fallen trees during major windstorm events.
WSH-LTA 1	Encourage Critical City Facilities to purchase and/or test backup power facilities for use during a power failure. Create an equipment or testing log to ensure backup power equipment is in working service.	The City’s existing City Hall does have a backup power generator. The generator was tested regularly and logged. In addition, with the newly purchased City Hall is also equipped with backup power generators
WSH-LTA 2	Explore the possibility of undergrounding utility lines throughout the City.	City staff and City Council continue to work with Southern California Edison, in undergrounding utility wires as much as possible. In 2017 the City did a study on the feasibility of undergrounding a

neighborhood near Haskell Street and Big Briar Way neighborhoods. The study showed that residents would bear the cost of the project if it was to move forward. The City does continue to work with utility companies on undergrounding new installments.

Under City’s Municipal Code 7.32.010, the City has placed a requirement to underground residential utility lines under certain condition. This will reduce the potential impact of residential trees impacting utility lines.

11.5.2 Goals and Objectives

One of the most common problems associated with windstorms is a power outage. High winds commonly occur during winter storms, and can cause trees to bend, sag, or fail (tree limbs or entire trees), coming into contact with nearby distribution power lines. Fallen trees can cause short-circuiting and conductor overloading. Wind-induced damage to the power system causes power outages to customers, incurs a cost to make repairs, and in some cases can lead to ignitions that start residential and wildland fires.

One of the strongest and most widespread existing mitigation strategies pertains to tree clearance. Currently, California State Law requires utility companies to maintain specific clearances (depending on the type of voltage running through the line) between electric power lines and all vegetation.

The goals of the new mitigation plans will focus on reducing potential damages and wildfires due to severe windstorm activity. One key strategy is to continue to work with Utility companies and ensuring proper pruning of vegetation around power lines and poles.

Enforcement of the following California Public Resource Code Sections provides guidance on tree pruning regulations.

- 4293: Power Line Clearance Required
- 4292: Power Line Hazard Reduction
- 4291: Reduction of Fire Hazards Around Buildings
- 4171: Public Nuisances

The following pertain to tree pruning regulations and are taken from the California Code of Regulations:

- Title 14: Minimum Clearance Provisions Sections: 1250 – 1258 General Industry Safety Orders
- Title 8: Group 3: Articles 12, 13, 36,3 7, 38 California Penal Code: Section 385

Finally, the following California Public Utilities commission section has additional guidance:

- California Public Utilities Commission General Order 95: Rule 35

Homeowner Liability

Failure to allow a utility company to comply with the law 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.

The power companies, in compliance with the above regulations, collect data about tree failures and their impact on power lines. This mitigation strategy assists the power company in preventing future tree failures. From the collection of this data, the power company can advise residents as to the most appropriate vegetative planting and pruning procedures. The local electric utility, Southern California Edison, provides extensive information on trees and power lines at their website: www.sce.com.

11.5.3 Current Mitigation Action Items

Below is a table summarizing the current mitigation strategies for Windstorms. All items appear in the order of priority, grouped by the timeline. In current conventions, “STA” corresponds to “Short-Term Activity,” “LTA” represents “Long-Term Activity,” and “WSH” stands for “Windstorm Hazard.” Each mitigation item addresses the Plan’s mission and one or more of the goals as identified in Section 2.4

Table 37: 2018 Windstorm Hazard Mitigation Strategies

Number	Mitigation Action	Timeline	Coordinating Organization	Goals Addressed	Constraints	Potential Funding	New Strategy
WSH-STA 1¹	Establish public education campaigns on proper vegetation and landscaping to minimize property damages in case of an event.	Short-Term 1-2 Years, Ongoing	Administration, Public Works	Education (A) Education (B)	Funding, Available Personnel	General Fund	Yes
WSH-LTA 1	Collaborate with utility companies on ways to reduce hazard during an event. Early communication between agencies to mitigate disasters and create unified strategies.	Long-Term 3-5 years	Administration	Collaboration (B)	Available Personnel	General Fund ²	Yes
WSH-LTA 2	Identify and establish a system of shared community resource in case of an emergency.	Long-Term 3-5 years	Administration, Planning, and Public Works	Mitigation (B)	Available Personnel	General Fund	Yes
WSH_LTA 3	Establish a new high frequency for tree pruning program to reduce the potential for property damage.	Long-Term 3-5 years	Public Works	Mitigation (B)	Funding, Available Personnel	General Fund	No

¹ A continuing mitigation activity from previous plan.

² After discovery and evaluation, there may be cost assisted with the determined outcome.

11.5.4 Action Plan and Implementation

The windstorm mitigation action items provide direction on specific activities that organizations and residents in the City of La Cañada Flintridge can undertake to reduce risk and prevent loss from windstorm events. Each action item is followed by ideas for implementation, which can be used by the Hazard Mitigation Planning Committee and local decision-makers in pursuing strategies for implementation.

Mitigation action items appear in their order of priority at the time of submittal of this plan. This is not to negate the option to re-prioritize as may be necessary due to environmental, economic or policy influences. Priorities were determined by the city departments responsible for the development of mitigation actions and their implementation. Due consideration was given to the importance of each item and evaluated against the estimated costs. Furthermore, these estimated costs were evaluated against projected city revenue.

11.6 Resource Directory

The following resource directory lists the information and programs that can assist communities and organizations to address the hazard. The City of La Cañada Flintridge uses the resources and/or services offered by these agencies to achieve and improve mitigation efforts.

11.6.1 Local Resources

West Coast Arborists

West Coast Arborist provides tree maintenance and management services to municipalities and public agencies throughout California and Arizona.

Address: 2200 E. Via Burton Street, Anaheim, CA 92806

URL: www.westcoastarborists.com/ ☎ (800) 521-3714

EMAIL: corporate@wcainc.com 📠 (714) 956-3745

Los Angeles County Department of Public Works (LACoPW)

The Los Angeles County Department of Public Works protects property and promotes public safety through Flood Control, Water Conservation, Road Maintenance, Bridges, Buses and Bicycle Trails, Building and Safety, Land Development, Waterworks, Sewers, Engineering, and Capital Projects.

Address: 900 S. Fremont Ave., Alhambra, CA 91803

URL: www.dpw.lacounty.gov/ ☎ (626) 458-5100

EMAIL: info@dpw.lacounty.gov

11.6.2 State Resources

California Division of Forestry & Fire Protection

The Department of Forestry and Fire Protection serves and safeguards the people and protects the property and resources of California.

Address: 1416 9th Street, Sacramento, CA 94244

Mailing Address: PO Box 944246

URL: www.fire.ca.gov/

 (916) 653-5123


11.6.3 Federal Resources

National Weather Service (NWS)

NWS provides resources to teach the public how to stay safe before, during, and after floods. NWS also has alert and warning systems for potentially dangerous floods.

Address: 520 North Elevar Street, Oxnard, CA 93030

URL: <https://www.weather.gov/lox/>

 (805) 988-6610

EMAIL: w-lox.webmaster@noaa.gov

11.6.4 Publications

Washington State Military Department. (2012). Windstorms [Brochure]. Retrieved from <https://mil.wa.gov/uploads/pdf/Publications/Windstroms-Brochure-Final.pdf>

Washington State Military Department. Windstorms Fact Sheet [Brochure]. Retrieved from <https://mil.wa.gov/uploads/pdf/Publications/windstorms%20factsheet.pdf>

Washington State Military Department. (2015). Windstorms Fact Sheet [Brochure]. Retrieved from <https://mil.wa.gov/uploads/pdf/Publications/windstorms-po-gen-co-2015.pdf>

11.6.5 Resources

Windstorms: Protect your Family and Property from the Hazards of Violent Windstorms. (2006). Camp Murray, WA: Washington State Military Dept., Emergency Management Division. Retrieved from <https://adacounty.id.gov/Portals/Accem/Doc/PDF/windstorms.pdf>.



12 DROUGHT

12.1 General Background

Drought is a significant decrease in water supply relative to what is “normal” in a given location. A part of the climate cycle of most regions, drought originates from a deficiency of precipitation over an extended period of time, usually a season or more. A drought is a gradual phenomenon that occurs over several dry years, depleting reservoirs and groundwater basins without the expected annual recharge from winter precipitation. This leads to a water supply shortage for some activity, group or environmental sector.

12.1.1 Causes and Characteristics

A drought is characterized as a period of below-average precipitation in a particular region which a scarcity of rain causes a serious hydrological imbalance culminating in water supply shortages. Determination of when a drought begins is based on impacts on water users and assessments of the available water supply, including water stored in surface reservoirs or groundwater basins. Different water agencies have different criteria for defining drought. Some issue drought watch or drought warning announcements. The California water code does not include a statutory definition of drought; however, the code frequently focuses on drought conditions during times of water shortages (California Code of Regulations (CCR) 2016).

12.1.2 Monitoring Drought

The National Oceanic and Atmospheric Administration has developed several indices to measure drought impacts and severity and to map their extent and locations:

- The **Palmer Crop Moisture Index** measures weekly short-term drought to quantify drought impacts on agriculture during the growing season. Figure 22 shows this index for the week ending June 23, 2018.
- The **Palmer Z Index** measures monthly short-term drought. Figure 23 shows this index for March 2018.
- The **Palmer Drought Index** measures the duration and intensity of long-term drought-inducing circulation patterns. Long-term drought is cumulative, so the intensity of drought during a given month is dependent on the current weather patterns plus the cumulative patterns of previous months. Weather patterns can change quickly from a long-term drought pattern to a long-term wet pattern, and the Palmer Drought Index can respond fairly rapidly. Figure 24 shows this index for June 25, 2018.
- The hydrological impacts of drought (e.g., reservoir levels, groundwater levels, etc.) take longer to develop and it takes longer to recover from them. The **Palmer Hydrological Drought Index** quantifies long-term hydrological effects. It responds more slowly to changing conditions than the Palmer Drought Index. Figure 25 shows this index for May 2018.

- While the Palmer indices consider precipitation, evapotranspiration, and runoff, the Standardized Precipitation Index considers only precipitation. In the **Standardized Precipitation Index**, an index of zero indicates the median precipitation amount; the index is negative for drought and positive for wet conditions. The Standardized Precipitation Index is computed for time scales ranging from one month to 24 months. Figure 26 shows the 24-month Standardized Precipitation Index map for June 2016 through May 2018.

Note: The following graphics represent snapshots in time of parameters that can change daily. They are provided only as examples of the type and level of detail of mapping available on the drought hazard.

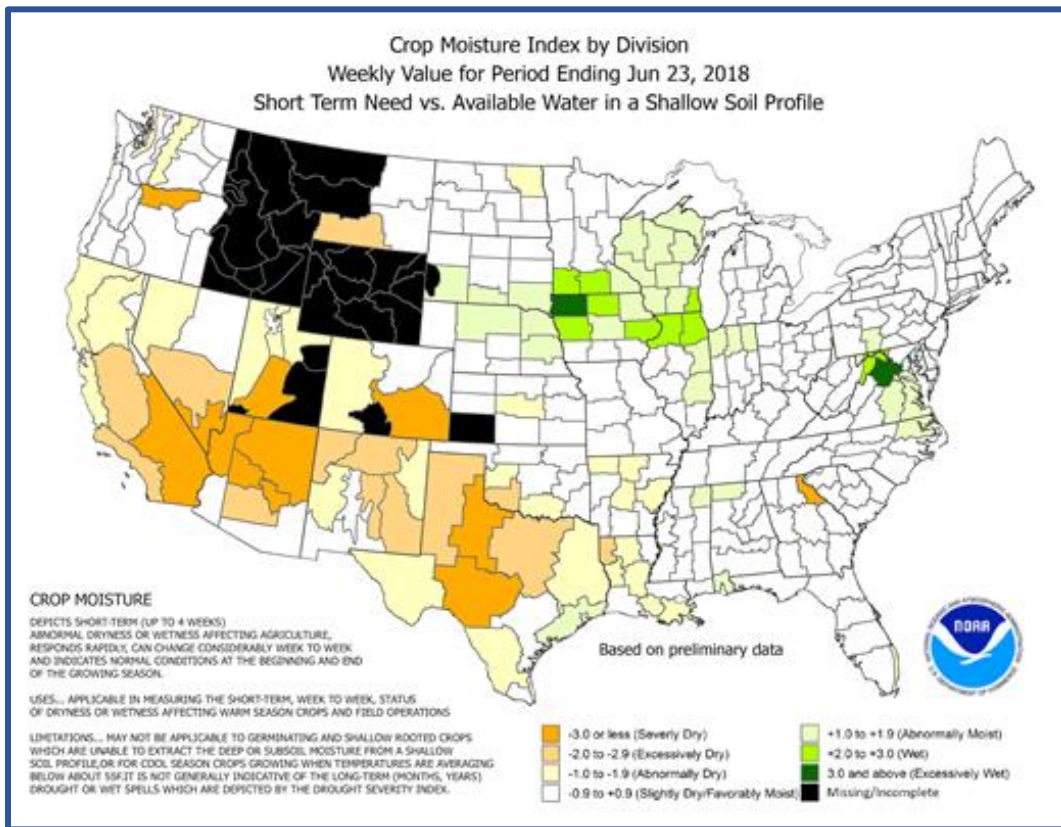


Figure 22: Palmer Crop Moisture Index for Week Ending June 23, 2018
Source: NWS, NOAA. 2018

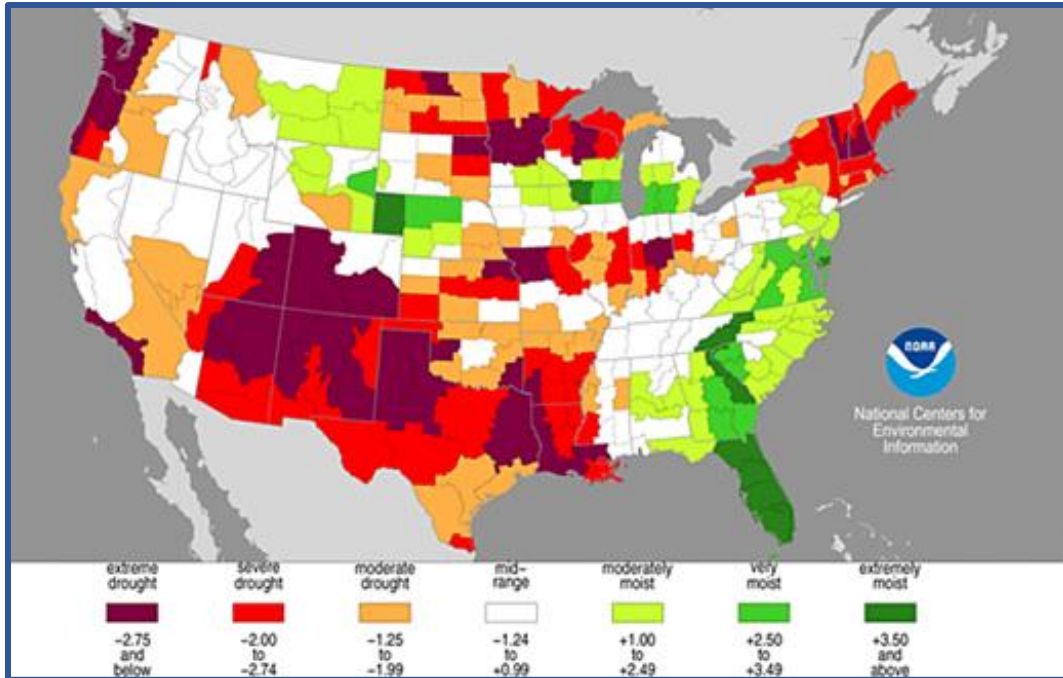


Figure 23: Palmer Z- Index for May 2018

Source: NCEI, NOAA. 2018

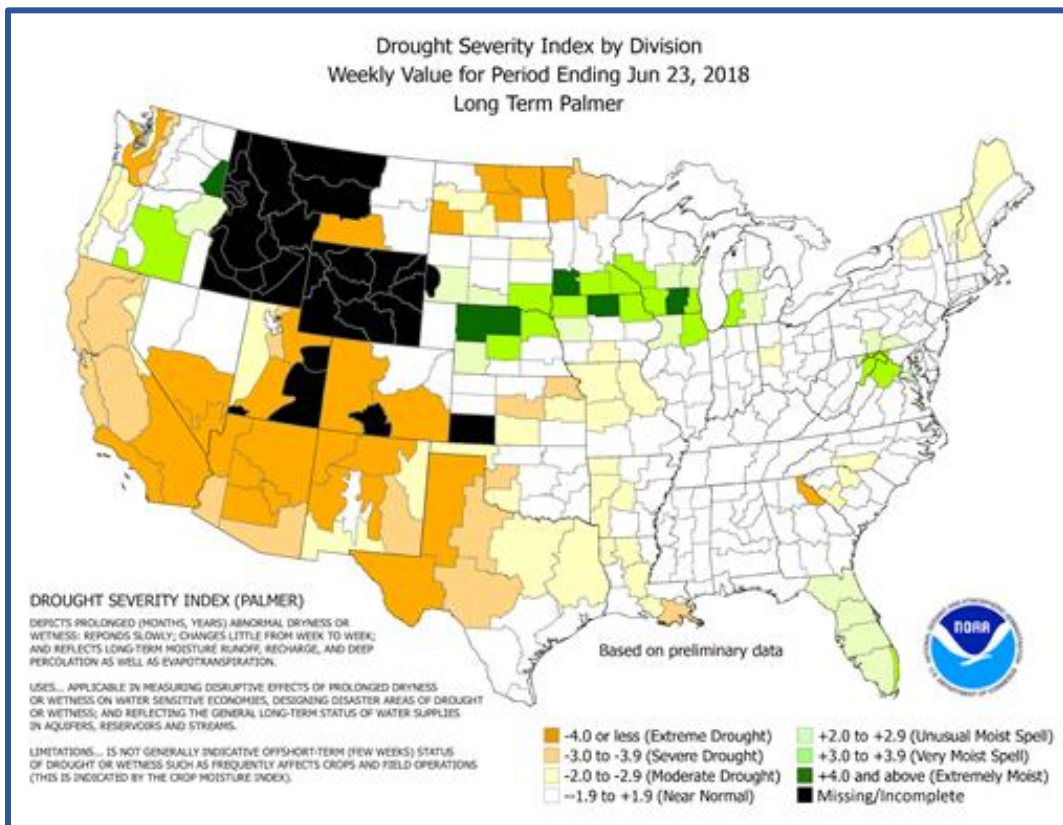


Figure 24: Palmer Drought Severity Index Ending June 23, 2018

Source: NWS, NOAA. 2018

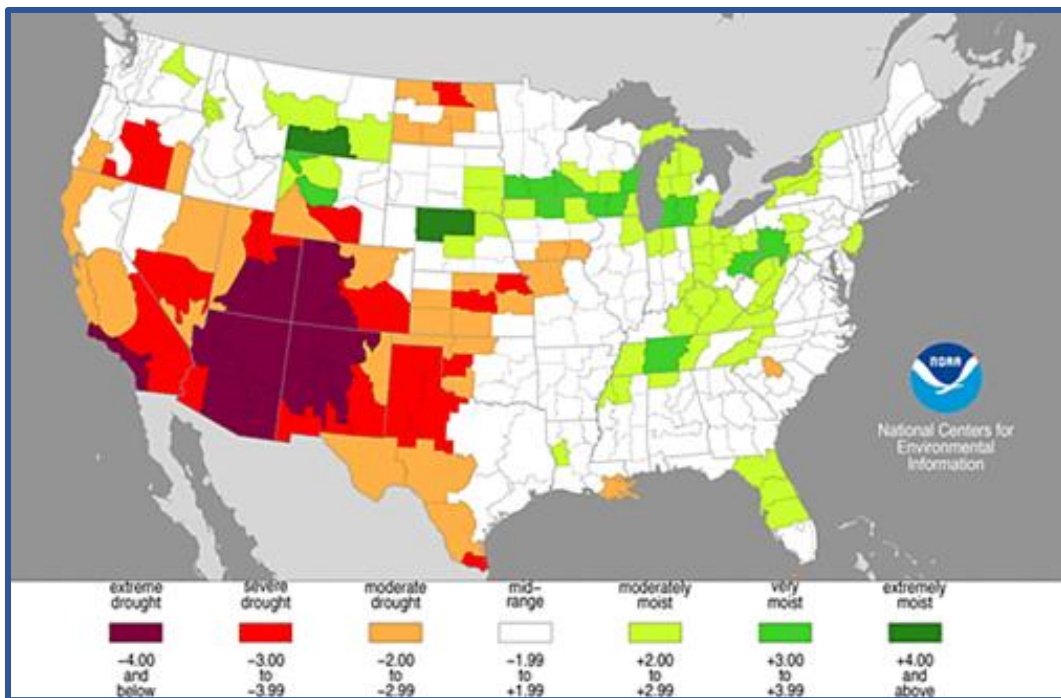


Figure 25: Palmer Hydrological Drought Index May 20

Source: NCEI, NOAA. 2018

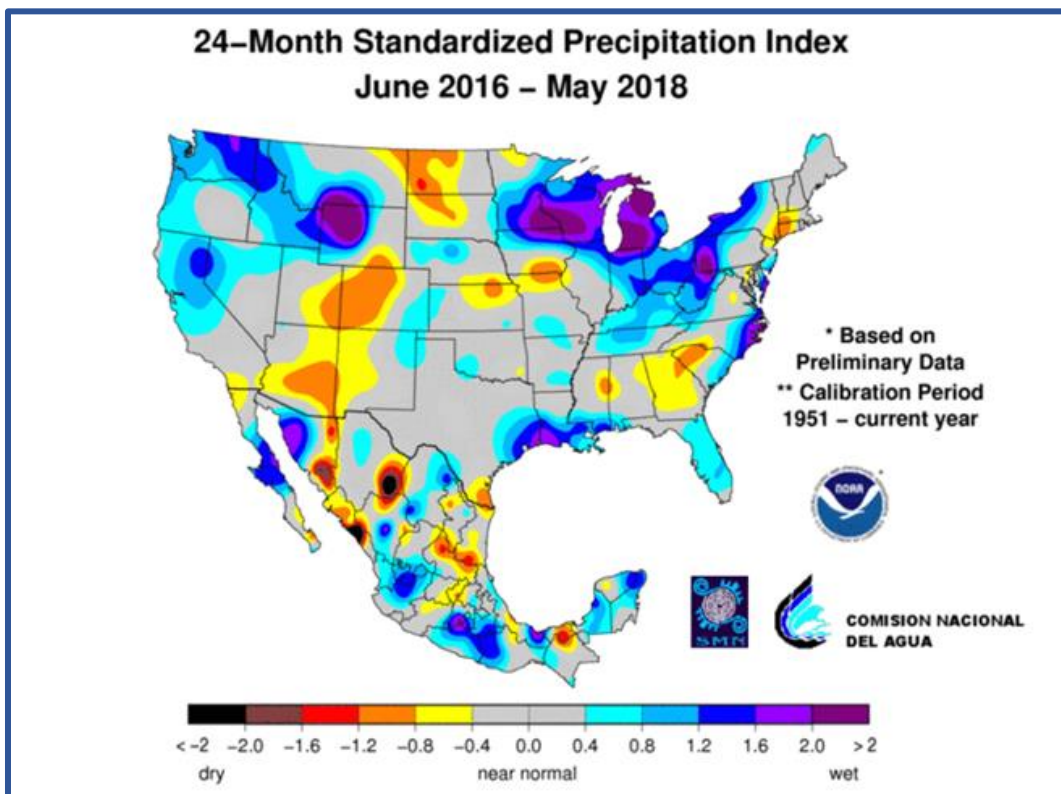


Figure 26: 24-month Standardized Precipitation Index June 2016 through May 2018

Source: NWS, NOAA. 2018

12.1.3 Drought in California

Most of California's precipitation comes from storms moving across the Pacific Ocean. The path followed by the storms is determined by the position of an atmospheric high-pressure belt that normally shifts southward during the winter, allowing low-pressure systems to move into the state. On average, 75 percent of California's annual precipitation occurs between November and March, and 50 percent occurs between December and February. A persistent Pacific high-pressure zone over California in mid-winter signals a tendency for a dry water year.

A typical water year produces about 100 inches of rainfall over the North Coast, 50 inches of precipitation (combination of rain and snow) over the Northern Sierra, 18 inches in the Sacramento area, and 12 to 14 inches in the planning area. In extremely dry years, these totals can fall to as little as a third of these amounts.

12.1.4 Local Water Supply

The City of La Cañada Flintridge has four water providers serving a different section of the City.

1. La Cañada Water District serves approximately 1,400 acres.
2. Valley Water Company serves approximately 2,400 acres.
3. Crescenta Valley Water District serves approximately 45 acres.
4. Mesa Crest Water Company serves approximately 573 acres.

The agencies are all members of the Foothill Municipal Water District (FMWD). FMWD distributes imported water that it receives from the Metropolitan Water District of Southern California (MWD). The MWD imports water supplies to Southern California from two main sources: the Sacramento and San Joaquin Rivers through the State Water Project and the Colorado River via the Colorado River Aqueduct.

12.2 Hazard Profile

Droughts originate from a deficiency of precipitation resulting from an unusual weather pattern. If the weather pattern lasts a short time (a few weeks or a couple of months), the drought is considered short-term. If the weather pattern becomes entrenched and the precipitation deficits last for several months or years, the drought is considered to be long-term. It is possible for a region to experience a long-term circulation pattern that produces drought, and to have short-term changes in this long-term pattern that result in short-term wet spells. Likewise, it is possible for a long-term wet circulation pattern to be interrupted by short-term weather spells that result in short-term drought.

12.2.1 Past Events

The California Department of Water Resources has state hydrologic data back to the early 1900s (CA DWR,

2017). The hydrologic data show multi-year droughts from 1912 to 1913, 1918 to 1920, 1922 to 1924 and 1928 to 1934. The following sections describe additional prolonged periods of drought in California since then, all of which impacted the Los Angeles County area including the City of La Cañada Flintridge to some degree.

1976 to 1977 Drought- California had one of its most severe droughts due to lack of rainfall during the winters of 1976 and 1977. 1977 was the driest period on record in California to that time, with the previous winter recorded as the fourth driest. The cumulative impact led to widespread water shortages and severe water conservation measures throughout the state. Only 37 percent of the average Sacramento Valley runoff was received, with just 6.6 million acre-feet recorded. A federal disaster declaration was declared, but it did not apply to Los Angeles County.

1987 to 1992 Drought- California received precipitation well below average levels for four consecutive years. While the Central Coast was most affected by the lack of rainfall and low runoff, the Sierra Nevada range in Northern California and the City of Los Angeles was also affected. During this drought, only 56 percent of average runoff for the Sacramento Valley was received, totaling just 10 million acre-feet. By February 1991, all 58 counties in California were suffering from drought conditions. Urban areas, as well as rural and agricultural areas, were impacted. In 1988, the City of Los Angeles adopted a plumbing retrofit ordinance to mandate the installation of conservation devices in all properties and require water-efficient landscaping in new construction.

2007 to 2009 Drought- The governor issued an Executive Order that proclaimed a statewide drought emergency on June 4, 2008 after spring 2008 was the driest spring on record and snowmelt runoff was low. On February 27, 2009, the governor proclaimed a state of emergency for the entire state as the severe drought conditions continued widespread impacts and the largest court-ordered water restriction in state history (at the time).

2012 to 2016 Drought- California's latest drought set several records:

- The period from 2012 to 2014 ranked as the driest three consecutive years for statewide precipitation.
- 2014 set new climate records for statewide average temperatures and for record-low water allocations in the State Water Project and federal Central Valley Project.
- 2013 set minimum annual precipitation records for many communities.

On January 17, 2014 the governor declared a state of emergency for drought throughout California. This declaration followed the release of a report that stated that California had had the least amount of rainfall in its 163- year history. Californians were asked to voluntarily reduce their water consumption by 20 percent. Drought conditions worsened into 2015. On April 1, 2015, following the lowest snowpack ever recorded, the governor announced actions to save water, increase enforcement to prevent wasteful water use, streamline the state's drought response, and invest in new technologies to make California more drought-

resilient. The governor directed the State Water Resources Control Board to implement mandatory water reductions in cities and towns across California to reduce water usage by 25 percent on average. MWD implemented its Water Supply Allocation Plan (WSAP) on July 1, 2015 which assigned a 15-percent water cutback of normal supply deliveries. Throughout the allocation period, FMWD consistently tracked lower than its cumulative target and ended conserving more than 18 percent compared to the WSAP baseline.

12.2.2 Drought Impact Reporter

The National Drought Mitigation Center developed the Drought Impact Reporter in response to the need for a national drought impact database for the United States. Information comes from a variety of sources: online, drought-related news stories and scientific publications, members of the public who visit the website and submit a drought-related impact for their region, members of the media, and members of relevant government agencies. The Drought Impact Reporter contains information on 98 impacts from droughts that specifically affected the County of Los Angeles from January 2006 through June 2018. The following are the categories and reported the number of impacts (note that some impacts have been assigned to more than one category):

- Agriculture—8
- Business and Industry—3
- Energy—2
- Fire—6
- Plants and Wildlife—12
- Relief, Response, and Restrictions—28
- Society and Public Health—18
- Tourism and Recreation—2
- Water Supply and Quality—31

12.2.3 Locations

Drought is a regional phenomenon. A drought that affects the planning area would affect the entirety of the area simultaneously and has the potential to directly or indirectly impact every person in the county as well as adversely affect the local economy.

12.2.4 Frequency

Historical drought data for the planning area indicate there have been four significant multi-year droughts in the last 40 years (1976 to 2016). For approximately 12 of the last 40 years, the City has been included in various levels of drought. This equates to a drought every three years on average or a 30 percent chance of drought in any given year. As temperatures increase, the probability of future droughts will likely increase as well.

12.2.5 Severity

Drought can have a widespread impact on the environment and the economy, although it typically does not result in loss of life or damage to property, as do other natural disasters. Nationwide, the impacts of drought occur in the following categories: agriculture; business and industry; energy; fire; plants and wildfire; relief, response and restrictions; tourism and recreation; and water supply and quality sectors. The National Drought Mitigation Center uses three categories to describe likely drought impacts:

- **Economic Impacts** — These impacts of drought cost people or businesses money.
- **Environmental Impacts** — Plants and animals depend on water, just like people. When a drought occurs, their food supply can shrink and their habitat can be damaged.
- **Social Impacts** — These impacts affect people's health and safety. Social impacts include public safety, health, conflicts between people when there is not enough water to go around, and changes in lifestyle. The severity of a drought depends on the degree of moisture deficiency, the duration, and the size and location of the affected area. The longer the duration of the drought and the larger the area impacted, the more severe the potential impacts.

Drought generally does not affect groundwater sources as quickly as surface water supplies, but groundwater supplies generally take longer to recover. Reduced precipitation during a drought means that groundwater supplies are not replenished at a normal rate. This can lead to a reduction in groundwater levels and problems such as reduced pumping capacity or wells going dry. Shallow wells are more susceptible than deep wells. Reduced replenishment of groundwater affects streams. Much of the flow in streams comes from groundwater, especially during the summer when there is less precipitation and after snowmelt ends. Reduced groundwater levels mean that even less water will enter streams when stream flows are lowest.

12.2.6 Warning Time

Drought is a gradual phenomenon. Droughts are climatic patterns that occur over long periods of time. The only generalized warning can take place due to the numerous variables that scientists have not pieced together well enough to make accurate and precise predictions.

Empirical studies conducted over the past century have shown that meteorological drought is never the result of a single cause. It is the result of many causes, often synergistic in nature; these include global weather patterns that produce persistent, upper-level high-pressure systems along the West Coast with warm, dry air resulting in less precipitation.

Scientists at this time do not know how to predict drought more than a month in advance for most locations. Predicting drought depends on the ability to forecast precipitation and temperature. Anomalies of precipitation and temperature may last from several months to several decades. California is currently

finishing a several-year-long drought, while other areas in the United States may undergo droughts as short as 1 or 2 months. How long they last depend on interactions between the atmosphere and the oceans, soil moisture and land surface processes, topography, internal dynamics, and the accumulated influence of weather systems on the global scale.

12.3 Secondary Impacts

The secondary impact most commonly associated with drought is a wildfire. A prolonged lack of precipitation dries out vegetation, which becomes increasingly susceptible to ignition as the duration of the drought extends. Millions of board feet of timber have been lost, and in many cases, erosion occurred, which caused serious damage to aquatic life, irrigation, and power production by heavy silting of streams, reservoirs, and rivers.

Drought also is often accompanied by extreme heat, exposing people to the risk of sunstroke, heat cramps and heat exhaustion. Pets and livestock are also vulnerable to heat-related injuries. Crops can be vulnerable as well.

12.4 Risk Assessment

12.4.1 Exposure Assessment

Drought can affect a wide range of economic, environmental, and social activities. Its impacts can span many sectors of the economy because water is integral to the ability to produce goods and provide services. The impacts can reach well beyond the area undergoing physical drought. The vulnerability of activity to drought depends on its water demand and the water supplies available to meet the demand.

California's 2005 Water Plan and subsequent updates indicate that water demand in the state will increase through 2030. The Department of Water Resources predicts a modest decrease in agricultural water use, but urban water use increase of 1.5 to 5.8 million acre-feet per year (DWR 2005). The 2013 update to the Water Plan explores measures, benchmarks, and successes in increasing agricultural and urban water use efficiency.

12.4.1.1 Population

The City of La Cañada Flintridge is vulnerable to drought events. Drought can affect people's health and safety, including health problems related to low water flows, poor water quality, or dust. Drought can also lead to loss of human life (National Drought Mitigation Center, 2017). Other possible impacts include recreational risks; effects on air quality; diminished living conditions related to energy, air quality, and hygiene; compromised food and nutrition; and increased incidence of illness and disease (Centers for Disease Control and Prevention, 2012). Droughts can also lead to reduced local firefighting capabilities.

FMWD and the four water companies serving the City of La Cañada regional stakeholders have devoted

considerable time and effort to protect life, safety, and health during times of consecutive dry years. Provisions and measures have been taken to analyze and account for anticipated water shortages. With coordination with residents in the planning area, the water companies have the ability to minimize and reduce impacts on residents and water consumers in the City.

12.4.1.2 Property

No structures will be directly affected by drought conditions, though some structures may become vulnerable to wildfires, which are more likely following years of drought. Droughts can also have significant impacts on landscapes, which could cause a financial burden to property owners. However, these impacts are not considered critical in planning for impacts from the drought hazard.

12.4.1.3 Critical Facilities and Infrastructure

Critical facilities and infrastructure as defined for this plan will continue to be operational during a drought. A benefit of water conservation in the City is delaying the need for sewer facility expansions by reducing wastewater discharge into the sewer collection and treatment system. Critical facility elements such as landscaping may not be maintained due to limited resources, but the risk to the planning area's critical facilities inventory will be largely aesthetic. For example, when water conservation measures are in place, landscaped areas will not be watered and may die. These aesthetic impacts are not considered significant.

12.4.1.4 Environment

Environmental losses are the result of damage to plants, animals, wildlife habitat, and air and water quality; forest and range fires; degradation of landscape quality; loss of biodiversity; and soil erosion. Some of the effects are short-term and conditions quickly return to normal following the end of the drought. Other environmental effects linger for some time or may even become permanent. Wildlife habitat, for example, may be degraded through the loss of vegetation. However, many species will eventually recover from this temporary condition. The degradation of landscape quality, including increased soil erosion, may lead to a more permanent loss of biological productivity. Although environmental losses are difficult to quantify, growing public awareness and concern for environmental quality has forced public officials to focus greater attention on these effects.

12.4.2 Vulnerability Assessment

12.4.2.1 Population

Drought can create affects people's health and safety including health problems related to low water flows, poor water quality, or dust. Industries that depended on water sources may be affected.

12.4.2.2 Property

No structures will be directly affected by drought conditions, though some structures may become vulnerable to wildfires, which are more likely following years of drought.

12.4.2.3 Critical Facilities and Infrastructure

Critical facility elements such as landscaping may not be maintained due to limited resources, but the risk to the planning area's critical facilities and infrastructure inventory will be largely aesthetic.

12.4.2.4 Environment

Environmental losses are the result of damage to plants, animals, wildlife habitat, and air and water quality; forest and range fires; degradation of landscape quality; loss of biodiversity; and soil erosion. Environmental losses are the result of damage to plants, animals, wildlife habitat, and air and water quality; forest and range fires; degradation of landscape quality; loss of biodiversity; and soil erosion.

12.5 Mitigation Strategy

This section describes the goals to mitigate drought in the City and the process used to identify the goals. Goals are broad-based and describe the overall direction that the State will take to reduce drought impacts. Some goals have more specific objectives associated with them. The actions described in more detail the activities or projects used to support the accomplishment of the goals. Actions are meant to be implemented and can be tracked over time as a measure of meeting the Plan goals.

12.5.1 Goals and Objectives

During the California drought declaration, the City placed local measures to prohibit wasteful practices and encouraged the community to take water conservation actions. The City will work to increase public awareness and education around drought-resistant landscapes, water conservation, and water-savings measures. Other measures will include reducing drought impacts on the City's economy, people, state assets, cultural resources, and the environment. This can be achieved through the passage of ordinances to prioritize or control water use and evaluate changes in drought frequency and severity related to climate change as a planning issue and incorporate into this LHMP and other relevant City plans.

12.5.2 Action Plan and Implementation

The drought mitigation action items provide direction on specific activities that organizations and residents in the City of La Cañada Flintridge can undertake to reduce risk and prevent loss from drought events. Each mitigation action item is followed by ideas for implementation, which can be used by the Hazard Mitigation Planning Committee and local decision-makers in pursuing strategies for implementation.

Below is a table summarizing the current mitigation strategies for drought. All items appear in the order of priority, grouped by timeline. In current conventions, “STA” corresponds to “Short-Term Activity,” “LTA” represents “Long-Term Activity,” and “DTH” stands for “Drought Hazard.” Each mitigation item addresses the Plan’s mission and one or more of the goals as identified in Section 2.4

Table 38: 2018 Drought Hazard Mitigation Strategies

Number	Mitigation Action	Timeline	Coordinating Organization	Goals Addressed	Constraints	Potential Funding	New Strategy
DTH-STA 1	Increase public awareness and education on water saving measures such as installing rain-capturing devices for irrigation and minimizing daily water usage.	Short-Term 1-3 Years	Community Development	Education (A) Collaboration (B)	Funding, Available Personnel	General Fund, Hazard Mitigation Grant Program, and Pre-Disaster Mitigation	Yes
DTH-STA 2	Review and modify existing ordinances to promote water conservation measures during drought emergencies that restrict the use of public water resources and prioritize, or control water use for emergency situations.	Short-Term 1-3 Years	Community Development	Mitigation (A)	Funding, Available Personnel	General Fund, Hazard Mitigation Grant Program, and Pre-Disaster Mitigation	Yes
DTH-LTA 1	Encourage drought-tolerant landscapes design in public and private spaces by incorporating drought tolerant or xeriscape practices to reduce dependence on irrigation.	Long-Term 3-5 years	Community Development, Public Works	Mitigation (C) Collaboration (B) Education (A)	Funding, Available Personnel	General Fund, Hazard Mitigation Grant Program, and Pre-Disaster Mitigation	Yes
DTH-LTA 2	Develop stormwater capture infrastructures such as green street which captures rainwater as it falls and prevents runoff into impervious surfaces such as streets or sidewalks	Long-Term 3-5 years	Community Development, Public Works	Mitigation (C)	Funding, Available Personnel	General Fund, Hazard Mitigation Grant Program, and Pre-Disaster Mitigation	Yes

12.6 Resource Directory

The following resource directory lists the information and programs that can assist communities and organizations to address the hazard. The City of La Cañada Flintridge uses the resources and/or services offered by these agencies to achieve and improve mitigation efforts.


12.6.1 Local Resources

Crescenta Valley Water District


The District provides water distribution and sewage collection for a small portion of the City of La Cañada Flintridge.

Address: 2700 Foothill Boulevard, La Crescenta, CA 91214

URL: www.cvwd.com

 (818) 248-3925

Email: customerservice@cvwd.com

 (818) 248-1659

Foothill Municipal Water District

The District provides wholesale water distribution retailers serving the City of La Cañada Flintridge.

Address: 4536 Hampton Road, La Cañada Flintridge, CA 91011

URL: www.fmwd.com

 (818) 790-4036

La Cañada Irrigation District

The District provides water distribution portion of the City of La Cañada Flintridge.

Address: 1443 Foothill Boulevard, La Cañada Flintridge, CA 91011

Mailing Address: P.O. Box 39, La Cañada Flintridge, California 91012

URL: www.lacanadairrigation.org


 (818) 790-6749

 (818) 790-8459

Mesa Crest Water Company

The District provides water distribution for a small portion of the City of La Cañada Flintridge.

Address: 4532 Rinetti Lane, La Cañada Flintridge, CA 91011

 818-790-2071

Valley Water Company

The Company provides water distribution for a portion of the City of La Cañada Flintridge.

Address: 4524 Hampton Road, La Cañada Flintridge, CA 91011

URL: www.valleywatercompany.com  (818) 790-5516

Email: info@ValleyWaterCompany.com  (818) 790-6019

12.6.2 State Resources

California Department of Water Resources (DWR)

The Department of Water Resources (DWR) is responsible for managing and protecting California’s water resources. They partner with other agencies to protect, restore, and enhance natural and human environments. This includes providing grants and technical assistance to service local water needs.

Address: 1416 Ninth Street, Sacramento, CA 95814

URL: www.water.ca.gov/  (916) 653-5791

The Metropolitan Water District of Southern California

The mission of the Metropolitan Water District of Southern California is to provide its service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way.

Address: 700 North Alameda Street, Los Angeles, CA 90012-2944


URL: www.mwdh2o.com  (916) 653-5791

12.6.3 Federal Resources

The National Drought Mitigation Center

The Drought Center helps people, organizations, and institutions build resilience to drought through monitoring and planning, and we are the academic partner and web host of the U.S. Drought Monitor map. The Drought Impact Reporter (DIR) is the nation’s first comprehensive database of drought impacts.

Address: 3310 Holdrege Street, Lincoln, NE 68583–0988

URL: www.drought.unl.edu  (402) 472–6707

Email: DIRinfo@unl.edu  (402) 472–2946

NOAA/ National Weather Service NOAA Center for Weather and Climate Prediction

Delivers real-time products and information that predict and describe climate variations on time scales from weeks to years thereby promoting effective management of climate risk and a climate-resilient society.

Address: 5830 University Research Court College Park, Maryland 20740

URL: www.cpc.ncep.noaa.gov/

National Centers for Environmental Information

NOAA's National Centers for Environmental Information (NCEI) hosts and provides access to one of the most significant archives on earth, with comprehensive oceanic, atmospheric, and geophysical data.

Address: 151 Patton Avenue, Asheville, NC 28801-5001

URL: www.ncei.noaa.gov

Email: ncei.info@noaa.gov

12.6.4 Resources

Foothill Municipal Water District Management Report (Rep.). Foothill Municipal Water District Management. Retrieved from https://www.fmwd.com/#Publications_and_Reports.

The annual management report provides general information regarding Foothill Municipal Water District. The District publishes the report to summarize water sales, water use, and other data for the past fiscal year.

Jones, J. (2015). *California's Most Significant Droughts: Comparing Historical and Recent Conditions* (State of California. California Department of Water Resources). Retrieved from https://water.ca.gov/LegacyFiles/waterconditions/docs/California_Significant_Droughts_2015_small.pdf.

This document provides historical data and information on California's historical droughts. It compares the hydrology and impacts experienced during historical droughts, response from local water agencies, and lessons learned that can help California be better prepared for future drought events.



13 EXTREME HEAT

13.1 General Background

Extreme heat is typically recognized as the condition where temperatures consistently stay ten degrees or more above a region's average high temperatures for an extended period. In La Cañada Flintridge, the summers are hot, but the combination of high temperatures and high humidity, which are required for the National Weather Service (NSW) to declare a heat emergency, are relatively rare. The County of Los Angeles Public Health does issue Heat Alerts for the San Gabriel Valley when high temperatures are experienced. Extreme heat events could cause significant impacts to the community. Temperatures in urban areas can exacerbate already warm conditions due to materials, such as asphalt absorbing heat and then releasing it, causing urban heat islands. Increased exposure to heat puts children, elderly, and people with pre-existing health conditions at more serious risk to suffer from heat stroke and heat-related complications.

13.1.1 Causes and Characteristics

Extreme heat is defined as temperatures that hover 10 °F or more above the average high temperatures for a region for several weeks.

According to the California Climate Adaptation Strategy, heat waves have claimed more lives in California than all other declared disaster events combined. Despite this history, not a single heat emergency was proclaimed at the state or federal level between 1960 and 2016. Heat emergencies are often slow to develop and usually hurt vulnerable populations. It could take a number of days of oppressive heat for a heat wave to have a significant or quantifiable impact in the Los Angeles areas. Heat waves do not strike victims immediately, but rather their cumulative effects slowly take the lives of vulnerable populations.

The Los Angeles region is experiencing more heat waves and more extreme heat days. Heat waves have increased by more than three per century and extreme heat days have increased by 23 per century. Both have more than tripled over the past 100 years as a consequence of the steady warming in the Los Angeles region. The average annual maximum temperature in Los Angeles has warmed by 5.0°F, and the average annual minimum temperature has warmed by 4.2°F. The greatest rate of change was during the summer for both maximum and minimum temperature, with late fall and early winter having the least rates of change. There was also an increase in heat wave duration. Heat waves lasting longer than six days occurred regularly after the 1970s but were nonexistent from 1906 until 1956, when the first six-day heat wave was recorded (Tamrazian et al. 2008).

13.1.2 Urban Heat Island Index for California (UHII)

The Urban Heat Island Index, developed by the California Environmental Protection Agency, quantifies the extent and severity of urban heat islands for individual cities, including urban heat island interactive maps that show the urban heat island effect for each census tract in and around most urban areas throughout the state. This can also help identify and prioritize areas across the state for adaptation efforts such as urban

greening and cool roofs and pavements. Heat islands can affect communities by increasing summertime peak energy demand, air conditioning costs, air pollution, and greenhouse gas emissions, heat-related illness and mortality, and water quality.

Because of its expansive urban size, Los Angeles region is identified as an urban heat island (UHI). UHIs develop in urban areas where natural surfaces are paved with asphalt or covered by buildings. Radiation from the sun is absorbed by these surfaces during the day and re-radiated at night, raising ambient temperatures. UHIs have high nighttime minimum temperatures compared to neighboring areas. Waste heat from air conditioners, vehicles, and other equipment contributes to the UHI effect.

13.2 Hazard Profile

13.2.1 Past Events

The Los Angeles region has not been included in any federal declarations for extreme heat, high winds or tornado. According to the Western Regional Climate Center, the planning area averages 20 days a year with temperatures exceeding 90°F, and those days may be included in a heat wave event. A storm event database maintained by NOAA's National Centers for Environmental Information (NCEI) lists three excessive heat events in the planning area:

By the 1990s, average temperatures in Los Angeles had risen to be 5 degrees Fahrenheit warmer than in 1940. This was due to the dramatic loss of Los Angeles County orchards and farmland in favor of buildings and roads. The increased concrete and asphalt served to absorb solar heat and heat up the surrounding atmosphere, causing a massive "urban heat island". Studies suggest that a massive planting of trees in the San Fernando Valley alone could lower average temperatures as much as 9 degrees Fahrenheit.

The worst single heatwave event in Southern California for loss of life occurred in 1955 when an eight-day heat wave is said to have resulted in 946 deaths. The summer 2006 heat wave in California caused the deaths of about 650 people over a 13-day period.

July 2006- In July 2006, California and Nevada were impacted by a heat wave that was unprecedented with respect to the magnitude and duration of high temperatures, especially high nighttime minimums; great areal extent, as it simultaneously impacted both northern and Southern California; and very high humidity levels (Los Angeles Times, 25 July 2006). The events are credited with 163 deaths in California. A temperature of 119°F was recorded in Woodland Hills, with high humidity.

August 30 – September 3, 2007- The combination of above normal temperatures and relative humidity produced excessive heat across the planning area. Eight fatalities occurred related to the heat. Heat index values were between 105 and 112 degrees.

June 20 – 21, 2008- The combination of strong high pressure centered over Arizona and weak offshore flow generated extreme heat conditions across Central and Southern California. Across many sections of the area, afternoon temperatures climbed to between 100°F and 114°F, setting numerous high-temperature records. The extreme heat resulted in several power outages due to excessive electrical use.

13.2.2 Locations

Extreme heat events have the potential to happen anywhere in the City. Extreme heat events may be exacerbated in the City where reduced air flow, reduced vegetation, and increased generation of waste heat can contribute to temperatures that are several degrees higher than in surrounding less urbanized areas.

13.2.3 Frequency

In La Cañada Flintridge extreme heat occurs on an annual basis taking place over a few days during the summer months between June thru September.

13.2.4 Severity

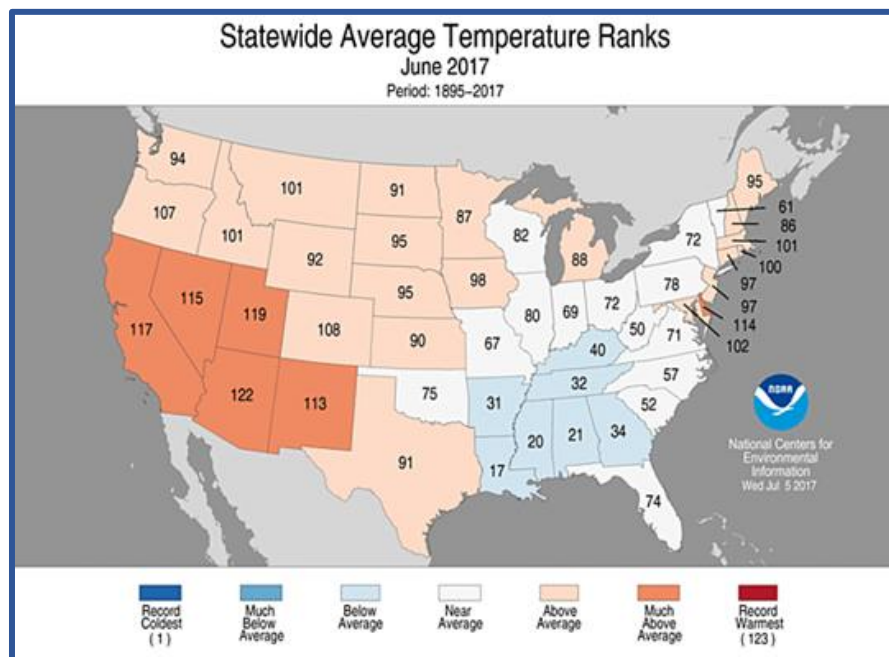


Figure 27: June 2017 Statewide Temperatures Ranks from 1895 to 2017
 Source: NCEI, 2018

The National Center for Environmental Information (NCEI) has documents heat waves affecting California through the years. Figure 27 shows the average temperature for California during the month of June between 1885 to 2017. The Office of Environmental Health Hazard Assessment (OEHHA) finds an increase in annual average temperatures statewide and more specifically in Southern California of 1.5°F per century beginning the year of 1895 (OEHHA 2013).

13.2.5 Warning Time

The National Weather Service (NWS) has developed the experimental forecasts called HeatRisk to assess the heat risk to local thresholds (see Table 31). The numeric (0-4) and color (green, yellow, orange, red and magenta) scales are similar to the NWS air quality index. The HeatRisk provides one value each day that indicates the approximate level of heat risk concern for any location, along with identifying the groups who are most at risk.

Table 39: HeatRisk Table

Value	Meaning	Who/What is at Risk?	How Common is this Heat?	For those at risk, what actions can be taken?
0	Level of heat poses little to no risk	No elevated risk	Very Common	No preventative actions necessary
1	Heat of this type is tolerated by most; however there is a low risk for sensitive groups to experience health effects	Primarily those who are extremely sensitive to heat	Very Common	<p>Increase hydration</p> <p>Reduce time spent outdoors or stay in the shade when the sun is strongest</p> <p>Open windows at night and use fans to bring cooler air inside buildings</p>
2	<p>Moderate risk for members of heat sensitive groups to experience health effects</p> <p>Some risk for the general population who are exposed to the sun and are active</p> <p>For those without air conditioning, living spaces can become uncomfortable during the day, but should cool below dangerous levels at night</p>	<p>Primarily heat sensitive groups, especially those without effective cooling or hydration</p> <p>Some transportation and utilities sectors</p>	<p>Fairly common most locations</p> <p>Very common in southern regions of country</p>	<p>Reduce time in the sun between 10 a.m. and 4 p.m.</p> <p>Stay hydrated</p> <p>Stay in a cool place during the heat of the day</p> <p>Move outdoor activities to cooler times of the day</p> <p>Open windows at night</p>
3	High Risk for much of the population who are 1) exposed to the sun and active	Much of the population, especially people who are heat sensitive and those	Uncommon most locations	Try to avoid being outdoors in the sun

Value	Meaning	Who/What is at Risk?	How Common is this Heat?	For those at risk, what actions can be taken?
	or 2) are in a heat sensitive group	without effective cooling or hydration	Fairly common in southern regions of country	between 10 a.m. and 4 p.m.
	Dangerous to anyone without proper hydration or adequate cooling	Transportation and utilities sectors		Stay hydrated
	Poor air quality is possible			Stay in a cool place especially during the heat of the day
	Power interruptions may occur as electrical demands increase			If you have access to air conditioning, use it. Fans may not be adequate
				Cancel outdoor activities during the heat of the day
4	Very High Risk for entire population			Avoid being outdoors in the sun between 10 a.m. and 4 p.m.
	Very dangerous to anyone without proper hydration or adequate cooling.	Entire population is at risk.	Rare most locations	Stay hydrated
	This is a multi-day excessive heat event. A prolonged period of heat is dangerous for everyone not prepared.	For heat sensitive groups, especially people without effective cooling, this level of heat can be deadly.	Occurs up to a few times a year in southern regions of country, especially the Desert Southwest	Stay in a cool place, including overnight
	Poor air quality is likely.	Most Transportation and utilities sectors		If you have access to air conditioning, use it. Fans will not be adequate
	Power outages are increasingly likely as electrical demands may reach critical levels.			Cancel outdoor activities during the heat of the day

Source: NWS, 2018

The NWS continues to issue excessive heat watches, excessive heat warnings and heat advisories to warn of an extreme heat event (a “heat wave”) within the next 36 hours. If NWS forecasters predict an excessive heat event beyond 36 hours, then the NWS will issue messaging in the form of a special weather statement, partner emails and social media out between the three- to seven-day timeframe. The NWS will use the HeatRisk output to determine if an excessive heat watch/warning or heat advisory is warranted. The NWS issues the following types of heat-related advisories:

- Heat Advisory—Tied to events where the HeatRisk output is on the orange/red (Level 2-3) thresholds (orange will not be an automatic heat advisory).
- Excessive Heat Watch/Warning— Tied to events where the HeatRisk output is on the red/magenta (Level 3-4) thresholds.

These advisories are intended to raise the public’s awareness to prevent heat illnesses from occurring. If significantly hot weather is forecasted, the NWS will issue an excessive heat watch generally two to three days in advance. An excessive heat watch is a way to give the public and emergency officials a warning that extreme temperatures are expected. If significantly hot temperatures remain in the forecast for 24 to 28 hours, the excessive heat watch will be upgraded to an excessive heat warning, indicating that extreme heat has either arrived or is expected soon.

13.3 Secondary Impacts

A secondary impact of extreme heat is an elevated fire danger when a prolonged heat wave occurs. There is an increased threat of fire ignitions and large fire growth. A heat wave combined with low humidity will bring an extended period of elevated fire weather concerns to the region, in particular, the mountains and foothills, where there will be an increased risk of large plume dominated fire behavior.

Another secondary impact of extreme heat is poor air quality, which can occur during summer months when stagnant atmospheric conditions trap humid air and pollutants near the ground and closer to residents. Ozone, a major component of smog, is created in the presence of sunlight via reactions between chemicals in gasoline vapors and industrial smokestacks. Hot weather can increase ozone levels. High ozone levels often cause or worsen respiratory problems. The longer a given heat wave lasts and the hotter the temperature is, the greater the risk of adverse impacts on human health or infrastructure. Additionally, climate change is likely to bring hotter temperatures, more hot days, and more frequent heat waves. As the population ages and climate change brings more extreme heat events, rates of heat-related impairments and deaths may rise.

13.4 Risk Assessment

13.4.1 Exposure Assessment

In most areas of the state, summer temperatures are expected to be warm; however, during certain periods temperatures can rise much higher, to the point of being considered severe or possibly dangerous. Severe heat conditions are much warmer than average for a particular time and place. Severe heat conditions may also include increased humidity. A series of these severe heat days occurring consecutively is referred to as an extreme heat event. Heatwave activity is on the rise in California and humid heat waves, particularly, are becoming more prevalent.

Heat ranks as among the deadliest of all-natural hazards. Even though heat-related deaths and illnesses are largely preventable, many people annually succumb to the extreme and especially humid heat. In a 10-day humid California heat wave in 2006, 655 people died due to heat-related conditions.

13.4.1.1 Population

Due to the natural Mediterranean climate, all residents of La Cañada Flintridge are exposed to some extent to extreme heat each year. Extreme heat can cause heat exhaustion, in which the body becomes dehydrated, resulting in an imbalance of electrolytes. Without intervention, heat exhaustion can lead to collapse and heatstroke. Heatstroke occurs when perspiration cannot occur, and the body overheats. Without intervention, heatstroke can lead to confusion, coma, and death. Extreme heat is the primary weather-related cause of death in the U.S. In a 10-year record of weather fatalities across the nation from (2006-2015), excessive heat claimed more lives each year than floods, lightning, tornadoes, and hurricanes. In 2015, heat claimed 25 lives, though none of them were in California (NWS 2016b). Extreme heat events do not typically impact buildings; however, losses may be associated with the UHI effect and overheating of HVAC systems. These extreme heat events can lead to drought, impact water supplies, and lead to an increase in heat-related illnesses and deaths.

13.4.1.2 Property

According to the Los Angeles County Assessor, there are approximately 7,200 buildings within the census tracts that define the planning area. Most of these buildings are residential. All of these buildings are considered to be exposed to the adverse weather hazard. The frequency and degree of damage will depend on specific locations. Extreme heat generally does not damage property, although it may damage or destroy agricultural crops or landscape plants. Typically, the only impact extreme heat has on general building stock is increased demand on air conditioning equipment, which may cause strain on electrical systems.

13.4.1.3 Critical Facilities and Infrastructure

Park and recreational facilities may be adversely affected by extreme heat. Maintenance and operational schedules may prevent the City from making its facilities and fields available for seasonal use. The lack of shade on many of these areas could affect public use. In addition, during extreme heat events, Southern California Edison substation power plants located in the City could overload causing power outages throughout the City.

13.4.1.4 Environment

The environment is highly exposed to extreme heat events. Natural habitats and park areas are exposed to the elements and risk damage and destruction. Prolonged extreme heat can degrade landscape quality, lakes, and vegetation.

13.4.2 Vulnerability Assessment

The risk assessment is a summary of the City's vulnerability to extreme heat and provides a framework for developing and prioritizing appropriate mitigation actions and strategy to reduce losses.

13.4.2.1 Population

According to the EPA, those at greater risk to the adverse effects of excessive heat events are individuals with physical or mobility constraints, cognitive impairments, economic constraints, and social isolation. Such populations include the elderly, young children, low-income people, people with life-threatening illnesses and those who are overweight. Power outages can be life-threatening to those dependent on electricity for life support. Outdoor recreational users may also be more vulnerable to adverse weather events.

The homeless are particularly vulnerable to extreme heat during the summer when increased humidity keeps nighttime temperatures above 80°F. The cumulative effects over several days of continuous exposure to heat, without relief, put the homeless at serious risk of heat stroke or worse. Others at significant risk are low-income populations who do not have access to air conditioning. This population, like the homeless, would lack nighttime relief from the heat, elevating their risk of heat stroke or other complications. Heat commonly affects certain groups, typically identified as heat sensitive or heat vulnerable, at lower thresholds than other populations. Some of these groups include:

- The elderly and the very young;
- Those on certain medications and/or those with pre-existing conditions which make them more sensitive to heat (your doctor can let you know if this is you);
- Those working outdoors -- especially new workers, temporary workers, or those returning to work after a week or more of;
- Those exercising or doing strenuous activities outdoors during the heat of the day - especially those not used to the level of heat expected, those who are not drinking enough fluids, or those new to that type of activity;
- Those without a reliable source of cooling and/or hydration;
- Those not acclimated to the level of heat expected - especially those who are new to a much warmer climate
- Some economic sectors are also affected by increasing levels of heat, such as energy and transportation.

13.4.2.2 Property

All property is vulnerable to adverse weather, but structures in poor condition or in vulnerable locations may risk the most damage.

13.4.2.3 Critical Facilities and Infrastructure

Power outages or roaming blackouts may occur as a result of extreme heat events that strain and overheat circuits. During a blackout, all critical facilities and infrastructure that are reliant upon electricity for power will be severely impacted unless they are connected to a backup power source.

13.4.2.4 Environment

The vulnerability of the environment to extreme heat is the same as the risk assessment.

13.5 Mitigation Strategy

This section describes the goals to mitigate drought in the City and the process used to identify the goals. Goals are broad-based and describe the overall direction that the State will take to reduce drought impacts. Some goals have more specific objectives associated with them. The actions described in more detail the activities or projects used to support the accomplishment of the goals. Actions are meant to be implemented and can be tracked over time as a measure of meeting the Plan goals

13.5.1 Goals and Objectives

When temperatures reach levels that are extremely high, they pose dangers that can be alleviated by planning for how to handle such situations. The City will work to organize outreach to vulnerable populations and increase public awareness. Education is the key and can be done through a number of forms such as providing information via the web or social media on accessible cooling centers, ways to create formal check-in and buddy systems for vulnerable persons, and strategies and recommendations for staying cool at home and work.

13.5.2 Action Plan and Implementation

The extreme heat mitigation action items provide direction on specific activities that organizations and residents in the City of La Cañada Flintridge can undertake to reduce risk and prevent loss from extreme heat events. Each mitigation action item is followed by ideas for implementation, which can be used by the Hazard Mitigation Planning Committee and local decision-makers in pursuing strategies for implementation.

Below is a table summarizing the current mitigation strategies for extreme temperatures. All items appear in the order of priority, grouped by the timeline. In current conventions, “STA” corresponds to “Short-Term Activity,” “LTA” represents “Long-Term Activity,” and “ETH” stands for “Extreme Temperatures Hazard.” Each mitigation item addresses the Plan’s mission and one or more of the goals as identified in Section 2.4

Table 40: 2018 Extreme Heat Hazard Mitigation Strategies

Number	Mitigation Action	Timeline	Coordinating Organization	Goals Addressed	Constraints	Potential Funding	New Strategy
ETH-STA 1	Increase public awareness of extreme heat risks and safety. Organize outreach and education to vulnerable populations during periods of extreme temperature to inform about the dangers, how to prepare and protect themselves.	Short-Term 1-3 Years	Administration	Mitigation (A)	Funding, Available Personnel	General Fund, Hazard Mitigation Grant Program	Yes
ETH-STA 2	Educate homeowners and builders on cooling methods for homes to reduce urban heat island effect. Inform homeowners on energy-efficient financing programs like the HERO Program.	Short-Term 1-3 Years	Community Development	Education (A) Mitigation (B)	Funding, Available Personnel	General Fund, Hazard Mitigation Grant Program, and Pre-Disaster Mitigation	Yes
ETH-STA 3	Information campaign on backup electric powered generators to prepare homeowners and business for emergencies and when power outages occur. An emergency solar and/or wind-powered power generation system can help homeowners, small business owners, and public facilities generate their own energy for onsite use.	Long-Term 1-3 years	Community Development, Public Works	Mitigation (B) Education (A) Education (B)	Funding, Available Personnel	General Fund, Hazard Mitigation Grant Program, and Pre-Disaster Mitigation	Yes
ETH-LTA 1	Built green streets to incorporate vegetation and sustainable design features to cool ambient temperatures and provide shade and an attractive streetscape for pedestrians. Green streets can help reduce the urban heat island effect.	Long-Term 3-5 years	Community Development, Public Works	Mitigation (A) Mitigation (C)	Funding, Available Personnel	General Fund, Hazard Mitigation Grant Program	Yes

13.6 Resource Directory

The following resource directory lists the information and programs that can assist communities and organizations to address the hazard. The City of La Cañada Flintridge uses the resources and/or services offered by these agencies to achieve and improve mitigation efforts.

13.6.1 Local Resources

National Oceanic and Atmospheric Administration Southwest California-NWS Los Angeles/ Oxnard

Provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public, and the global community.

Address: 520 North Elevar Street, Oxnard, CA 93030

URL: www.weather.gov/losangeles ☎ (805) 988-6610

Email: Eric.Boldt@noaa.gov

13.6.2 State Resources

California Environmental Protection Agency (CalEPA)

Develops, implements and enforces environmental laws that regulate air, water, and soil quality, pesticide use and waste recycling and reduction.

Address: 1001 I Street, P.O. Box 2815, Sacramento, CA 95812-2815


URL: <https://calepa.ca.gov/>

Region 9 (AZ, CA, HI, NV)**U.S. Environmental Protection Agency**

The Environmental Protection Agency protects people and the environment from significant health risks, sponsors and conducts research, and develops and enforces environmental regulations.


Address: 75 Hawthorne Street, San Francisco, CA 94105

URL: <https://calepa.ca.gov/>

 (415) 947-8000

 (866) EPA-WEST (toll free in Region 9)

Email: r9.info@epa.gov

 (415) 947-3553

13.6.3 Federal Resources**National Oceanic and Atmospheric Administration**

Work to understand and predict changes in climate, weather, oceans, and coasts, to share that knowledge and information with others, and to conserve and manage coastal and marine ecosystems and resources.

Address: 1401 Constitution Avenue NW, Room 5128, Washington, DC 20230

URL: <http://www.noaa.gov/>

NOAA/ National Weather Service**NOAA Center for Weather and Climate Prediction Center**

Delivers real-time products and information that predict and describe climate variations on time scales from weeks to years thereby promoting effective management of climate risk and a climate-resilient society.

Address: 5830 University Research Court, College Park, Maryland 20740

URL: <http://www.cpc.ncep.noaa.gov/>

13.6.4 Publications

California Climate Action Team's Public Health Group. (2013). *Preparing for California for Extreme Heat: Guidance and Recommendation*. (pp. 1-24, Publication). Retrieved from https://www.climatechange.ca.gov/climate_action_team/reports/Preparing_California_for_Extreme_Heat.pdf.

This document provides an overview of current climate projections for increased temperature and extreme heat conditions for California, describes the health effects of extreme heat, and presents recommendations

for state and local planners, local governments, emergency response, and public health and health care professionals and institutions

Tamrazian, A., S. LaDochy, J. Willis, & W.C. Patzert, (2008): Heat Waves in Southern California: Are They Becoming More Frequent and Longer Lasting? *APCG YEARBOOK*, 70, 59-69.

This research explores the daily maximum and minimum temperatures from 1906 to 2006 in the Los Angeles area and heat wave duration.

13.7 Sources

California Department of Public Health. (2012) *Climate Action for Health: Integrating Public Health into Climate Action Planning*. Retrieved from:
<https://www.cdph.ca.gov/Programs/OHE/Pages/CCHEP.aspx>



14 HUMAN-MADE HAZARD

14.1 General Background

Human-made hazards differ from natural hazards as they result directly from the actions of people. Human-made hazards like technological hazards and terrorism can affect any community. Technological hazards, such as hazardous material spills, may result from the improper handling or transportation of toxic chemicals, infectious substances, or radioactive materials. With today’s growing technology and integration in every aspect of society, cyber threats are now considered a technological hazard. Cyber threats pose risks not only to operations but it could impact utility services and disruptions to life critical services.

Terrorism encompasses intentional, criminal and malicious acts involving Weapons of Mass Destruction (WMDs) (deployment of biological, chemical, nuclear, and radiological weapons) and conventional weapons (use of arson, incendiary explosives, armed attacks, intentional hazardous material release, and cyber-terrorism). Some human-caused hazards such as aviation disasters, explosions, and even cyber-attacks may fall under the technological or terrorism heading depending upon the circumstances.

While preventing every accident or deliberate attack is not possible, reducing the likelihood and/or the potential effects of an incident through mitigation is well within this Plan.

14.1.1 Causes and Characteristics

For the purposes of this plan, human-made hazards are categorized into the following different areas: hazardous material, aviation disaster, terrorism, and cyber threats. Each category has its own unique cases and characteristics.

Hazardous Material

Hazardous Material incidents involve releases can occur at facilities (fixed site) or along transportation routes (off-site). They can occur because of human carelessness, technological failure, intentional acts (terrorism), and natural acts.

NASA’s JPL is located within the City’s eastern portion. NASA’s JPL, a national, space/aerospace facility houses many hazardous materials and is the highest fixed site hazard risk. The release of any of the hazardous materials from NASA’s JPL will have a major impact on a significant section of the city and surrounding jurisdictions. Although the severity of the occurrence would determine the level of impact on residential neighborhoods, it can be estimated such an occurrence may cause an evacuation of hundreds, potentially thousands of residential properties.

In addition to NASA’s JPL, there are other fixed sites located within City boundaries with potentially hazardous materials housed on site:

Table 41: Locations and Production of Hazardous Material within the City of La Cañada Flintridge

Location	Purpose	Hazardous Waste Product
La Cañada Shell	Gas Station	Gasoline
La Cañada 76	Gas Station	Gasoline
Chevron	Gas Station	Gasoline
ARCO	Gas Station	Gasoline
NASA’s JPL	Research Facility	Various Chemicals
La Cañada High School	Education	Various Chemicals

This list is for illustrative purposes only and should not be construed to be exhaustive.

In addition to fixed sites, the number of transportation corridors through the city increase the likelihood of off-site hazardous material release. La Cañada Flintridge has two major highways (Interstate 210; and State Route 2) that surround it. Both are major transportation corridors in the greater Los Angeles and Southern California area. Daily, many trucks transporting goods throughout the Los Angeles Metropolitan region pass through the city’s jurisdiction, with a number of them carrying hazardous cargo. Any potential accidents which could cause hazardous spill along the 210 or 2 highways could greatly impact the population along the corridors.

Aviation

Aviation disasters that occur in a heavily populated residential area can result in considerable loss of life and property. The impact of a disabled aircraft that strikes the ground creates the likely potential for multiple explosions resulting in intense fires. The resulting explosions and fires have the potential to cause injuries, fatalities, and the destruction of property at and adjacent to the impact point.

Aviation disasters may occur due to mechanical failure, pilot error, or a deliberate act. The number of dead and injured persons along with the amount of property damage that occurs from this type of disaster will be dependent upon the size of the aircraft involved, number of persons on the aircraft, location of the crash (residential, commercial, open field, etc.), and number of persons on the ground in the area of the impact. Damage assessment and disaster relief efforts associated with an air crash incident will require support from local governments, private organizations, and from state and local governmental and regulatory agencies.

Terrorism

Terrorism is a crime where the threat of violence is often as effective as the commission of the violent act itself. Terrorism is a strategy used by individuals or groups to achieve their political goals through fear, physical injuries, economic losses, psychological trauma, and erosion of faith in government. Terrorists

often use WMDs to achieve their goals of causing mass casualties and panicking the public. WMD incidents are unlike other incidents as the situation may not be easily recognizable, there may be multiple events, first responders are placed at a higher risk of becoming casualties, contamination of critical facilities and large geographic areas may result, the scope of the incident may expand geometrically, there will be a stronger reaction from the public than with other types of incidents, support facilities may be affected, and specialized State and local response capabilities may quickly be overwhelmed. There has been a notable increase of assailants utilizing firearms with the intent to harm multiple people, commonly called an Active Shooter attack. While this has not occurred in La Cañada Flintridge efforts must be made to continuously prevent, protect and mitigate City-owned properties from such attacks. Throughout California, there is a limitless number of targets including government offices, shopping areas, religious facilities, water storage facilities, financial institutions, schools, and utility infrastructures. La Cañada Flintridge is no different than other cities in the Los Angeles metropolitan area in that it contains a number of potential terrorist targets.

Cyber Threats

Cyber threats have monetary and operational impacts. Any cyber-attack could affect a community's economy and daily operations. Cyber threats can occur anytime without warning. Cyber threats, un-link other hazards, evolve and change at a growing rate.

This hazard is not geography-based. Attacks can originate from any computer to affect any other computer in the world. If a system is connected to the Internet or operating on a wireless frequency, it is susceptible to exploitation. Targets of cyber-attacks can be individual computers, networks, organizations, business sectors, or governments. Financial institutions and retailers are often targeted to extract personal and financial data that can be used to steal money from individuals and banks. The most affected sectors are finance, energy and utilities, and defense and aerospace, as well as communication, retail, and healthcare. Both public and private operations in the City are threatened on a near-daily basis by the millions of currently engineered cyberattacks developed to automatically seek technological vulnerabilities. In recent years, cyber threats have advanced, modifying tactics to affect as many computers as possible. Some examples include advance phishing, ransomware, malware and traditional viruses.

14.2 Hazard Profile

There are four types of identifiable human-made hazards: hazardous material, aviation disaster, terrorism, and cyber threat. Each type has various effects and impact on the community with different levels of threat.

14.2.1 Hazardous material

Hazardous materials releases, depending on the substance involved and type of release, can directly cause injuries and death, and contaminate air, water, and soils. While the probability of a hazardous materials

release at either a fixed site or along local transportation corridors is exceedingly low, the consequences of the release of these materials are very serious.

14.2.1.1 Locations

The geographic location of Interstate 210 and State Route 2 within the is cause for concern over hazardous material spills. Majority of hazardous material is transported through freight trucks traveling on these two highways. The highways cut the City into three sections in which a hazard spill could affect many properties along those routes.

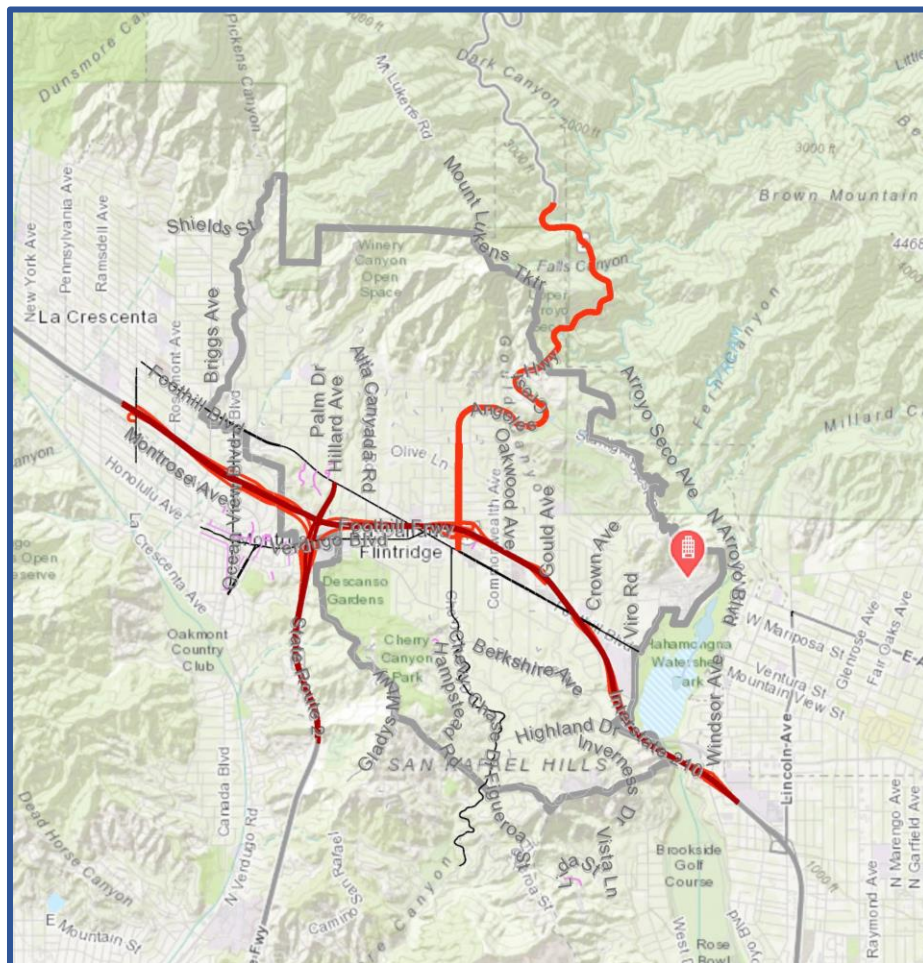


Figure 28: City of La Cañada Flintridge Map of Highways
Source: ArcGIS

14.2.1.2 Frequency

Hazardous materials are transported along the 210 freeway on a daily basis. Although the frequency of a major spill affecting the City is extremely low, bulk truck deliveries still pose a plausible threat of accidents.

14.2.1.3 Severity

Depending on the incident and the nature of the event, the severity of a hazardous material spill could be catastrophic. For example, a chemical spill which could produce harmful gas could travel miles throughout the City causing hundreds of evacuations.

14.2.1.4 Warning Time

In most cases, a hazardous material spill occurs without warning due to an accident on the freeway or mishandling of the waste. However, there could also be scenarios where due to a mishandling of the waste, a temporary containment maybe put in place to give the warning to evacuate the area prior to the full release of the waste.

14.2.2 Aviation

14.2.2.1 Past Events

There has never been an aviation disaster in La Cañada Flintridge.

14.2.2.2 Locations

The City is not along a primary travel path for airlines. However, there is close proximity to Burbank Airport and Ontario Airport that could potentially pose a threat. In addition, there is also the danger of helicopters whether they are news or emergency responder helicopters.

14.2.2.3 Severity

Due to the density of the residential area, an aviation crash could impact hundreds of homes and businesses within the crash site.

14.2.3 Terrorism

14.2.3.1 Past Events

While there is no historical record of terrorist incidents occurring within the City of La Cañada Flintridge, it is not outside the realm of possibility. For Example, on April 16, 2013 the Metcalf electrical substation was attacked in Coyote, CA. The attack took place at night and used 100 rifle rounds to poke holes in 17 critical transformers, draining them of oil causing their failure. In nineteen minutes, the attackers caused \$15 million in damages requiring the local utility to take emergency steps to rebalance the system and avoid a disruption in service. No one has ever been charged with this terrorist attack on critical infrastructure. On

December 2, 2015 two assailants opened fire on a work gathering in San Bernardino, CA, the attack and subsequent pursuit left sixteen dead (including the perpetrators) and twenty-four people wounded.

14.2.3.2 Locations

Terrorism can occur anywhere. In general, highly populated or historically significant areas are high targets for terrorism. Within the City boundaries, there are potential high targets to consider.

14.2.3.3 Severity

The severity of terrorism depends on the type, scale, and target of the attack. It varies from shooting at public places to bombs placed for maximum damage.

14.2.3.4 Warning Time

In most cases, there is little to no forewarning before an event.

14.2.4 Cyber Threat

14.2.4.1 Past Events

Although there has never been a major cyber threat in La Cañada Flintridge, nearby cities are beginning to experience cybercrime. In 2016 Chino Valley Medical Center in Chino, CA, Desert Valley Hospital in Victorville, CA and Hollywood Presbyterian Hospital in Los Angeles, CA had their computer systems and paid the attackers various amounts to regain access to their systems.

14.2.4.2 Locations

Any computer, mobile device, servers and any equipment connected to the internet is a potential target.

14.2.4.3 Frequency

Although a major cyber threat has not occurred. On a daily bases, companies, businesses, NASA's JPL and residents have the potential to be hacked or attacked for their data.

14.2.4.4 Severity

Massive cyber-attack could cripple the City and its residents. A systematic attack could affect critical infrastructure and potentially terminate telecommunication in the City.

14.2.4.5 Warning Time

There are no warnings for a cyber-attack.

14.3 Secondary Impacts

The impact upon the community will depend on the type and breadth of human-made hazard. While specialized resources will respond to the city to assist, it will take time for that assistance to arrive. Local public safety resources may be depleted causing delayed responses to emergency and routine community service requests.

Community panic, intense media interest, and a surge of patients at local hospitals and urgent care centers can be expected. Rapid assessment of the size and type of incident, activation of the ICS emergency management infrastructure, designation of injured field treatment and casualty collection points will be critical. Efforts to assess the situation and provide clear emergency management instructions to the public will be crucial. The following describes some concerns that may be expected from a human-caused hazard incident:

Downwind Evacuation

The release of a caustic substance may cause a plume that travels for miles. Evacuation of local residents, as well as notification to neighboring jurisdictions' emergency agencies, will be necessary.

Traffic Restrictions and Congestion

Roads, freeways, and transit systems may be affected due to a human-made hazard incident. Panic may cause some residents to self-evacuate. As a result of this, traffic congestion and gridlock may occur. These factors will slow the response time for assisting agencies, specialized resources and equipment, and additional emergency services personnel.

Hospital Surge

Injured victims or persons that believe they have been injured or exposed to a toxic substance may leave the area of a human-caused hazard incident and transport themselves to care facilities. The influx of persons seeking treatment will impact the availability of treatment facilities for persons being sent to those facilities by on-site emergency services personnel.

14.4 Risk Assessment

14.4.1 13.4.1 Exposure Assessment

Hazardous Material

As an active lab, NASA's JPL works with hazardous materials on a daily basis, in addition to potential lab accidents, delivery of the material could pose a hazard to the community. If a major leak caused by human error or natural disaster, such as an earthquake, could cause mass evacuations along the eastern portion of the community.

According to the State of California's Traffic Census program, on average over 2100 trucks commute along the 210 and 2 highways daily. With that volume of traffic, there is a possibility that a hazardous materials release will occur as the result of an accident. An accident of this type would close the freeway or street for several hours requiring traffic to detour through La Cañada Flintridge streets. In the event of an accident involving a vehicle carrying hazardous materials such as a toxic gas, the populated business and residential areas adjacent to the highway would have to be evacuated.

Aviation

The skies above La Cañada Flintridge are filled with commercial and private airplanes. La Cañada Flintridge is not in a major flight path of commercial airplanes inbound to the Los Angeles World Airports (LAX) or Hollywood Burbank Airport (BUR). While there has never been an aviation disaster in La Cañada Flintridge, there is a moderate amount of vulnerability and risk that the first aviation disaster will occur due to the existence of surrounding air traffic.

Terrorism

The global probability of being killed in a terrorist attack is approximately 1:14,000,000. The approach experts use to prioritize mitigation and preparedness efforts is to identify critical sites and assess the vulnerability of these sites to terrorist attack. Critical sites include those that are essential to the functioning of the city, contain critical assets, or would cause significant impacts if attacked. The City of La Cañada Flintridge borders the City of Los Angeles, which is often identified as a probable target for terrorism. Depending upon the type of attack, the City of La Cañada Flintridge will likely be affected as it is close to downtown Los Angeles. La Cañada Flintridge also is home to governmental, financial, and utility facilities. However, specific information related to the exact locations, probability, and magnitude of this type of human-caused hazard is considered sensitive homeland security-related information. While the global average approximate property damage during a terrorist attack is less than \$1,000,000, risk and specific local loss estimates cannot be calculated because of the unpredictable and sensitive nature of terrorism.

Cyber Threat

Cyber threat can occur anytime to any agencies or community. Although La Cañada Flintridge may not be a high-profile target, with NASA's JPL and other potentially attractive targets, there is a moderate amount of vulnerability and risk that the first major cyber threat will occur.

14.4.1.1 Population

Due to the geographic location and the nature of the hazard of the City. The entire City population is at risk of human-caused hazards.

14.4.1.2 Property

Although in most cases human-caused hazards will impact individuals, property damage is potential depending on the type of incident. Cyber threats, terrorism, and aviation disasters have the most potential to cause property damage.

14.4.1.3 Critical Facilities and Infrastructure

Cyber threats can cripple Critical Facilities and Infrastructure mainly through attacks on IT infrastructures operating those facilities. This could be forced outages, downed networks, and malfunctioning equipment. An outage of this nature could have a significant impact on critical facilities operations such as USC Verdugo Hills Hospital, NASA's JPL and water companies.

14.4.1.4 Environment

The geographic location of NASA's JPL within the City's borders makes cyber threats a more likely occurrence.

14.4.2 Vulnerability Assessment

14.4.2.1 Population

Human-caused hazards can affect the entire population. However, certain types of hazards, such a cyber threat are more prone to effect high targets and businesses.

14.4.2.2 Property

Although in most cases human-caused hazards will impact individuals, property damage is potential depending on the type of incident. Cyber threats, terrorism, and aviation disasters have the most potential to cause property damage.

14.4.2.3 Critical Facilities and Infrastructure

Cyber threats can cripple Critical Facilities and Infrastructure mainly through attacks on IT infrastructures operating those facilities. This could be forced outages, down networks and malfunctioning of equipment. This outage could have a significant impact on critical facilities operations such as USC Verdugo Hills Hospital, NASA's JPL and water companies.

14.4.2.4 Environment

With today's evolving technology and more inclusion of technology in every facet of life, cyber threats can occur anywhere within the City.

14.5 Mitigation Strategy**14.5.1 Goals and Objectives**

The Mitigation Strategy is meant to be a guide in addressing areas of risks as identified in the plan. Mitigation plans will assist in reducing potential impacts from the hazard. The goals and objectives of mitigation strategy are to keep the plan broad to allow for configuration of the plan to fit future City plans.

The Los Angeles County Sheriff and Fire Departments are a part of the Los Angeles Area Terrorist Early Warning Group (TEW). The City of La Cañada Flintridge contracts with the Los Angeles County Sheriff Department for police services and falls under their mutual aid system. The City contracts with the Los Angeles County Fire Department for fire services and falls under their mutual aid system. The mutual aid groups provide additional personnel and resources to the City of La Cañada Flintridge's emergency services in times of emergency.

The TEW provides integrated threat and net assessment from a multi-jurisdictional perspective. Local law enforcement and city and county fire departments work with emergency management, FBI, Department of Health Services, as well as other state and local agencies. The TEW group supports field response in the preparation for and response to acts of terrorism. The TEW provides Unified Command Structure, gauges resource needs and shortfalls, continuously monitors situational awareness and status, and acts as the point of contact for inter-agency liaison in order to develop options for incident resolution courses of action. TEW also provides support for Terrorism and Infrastructure protection, Public Order (Riots/Disturbances), Civil-

Military Interoperability for Urban Operations, Networked Threats and Emerging Threats, and Counterterrorism Technology Test Bed.

The Human-made Hazards mitigation action items provide direction on specific activities that organizations and residents in the City of La Cañada Flintridge can undertake to reduce risk and prevent loss from human-caused events. Each action item is followed by ideas for implementation, which can be used by the Hazard Mitigation Planning Committee and local decision-makers in pursuing strategies for implementation.

Mitigation action items appear in their order of priority at the time of submittal of this plan. This is not to negate the option to re-prioritize as may be necessary due to environmental, economic or policy influences. Priorities were determined by the city departments responsible for the development of mitigation actions and their implementation. Due consideration was given to the importance of each item and evaluated against the estimated costs. Furthermore, these estimated costs were evaluated against projected city revenue.

14.5.2 Previous Plan Mitigation Action Items

Below is a table summarizing the activity since the last plan update. The mitigation action items appear in the same order as before. The previous titles have been renamed into the current plan conventions, where “STA” corresponds to “Short-Term Activity,” “LTA” represents “Long-Term Activity,” and “HMH” stands for “Human-made Hazard.”

Table 42: Human-Made 2014 LHMP Activities Status

Title	Description	Status
HMH-STA 1	Enhance building access accountability and hardening of City and School District facilities.	City purchased a new City Hall with improved access accountability which will minimize potential threats. The School District continues to focus on Security improvements at their facilities.
HMH-LTA 1	Develop and sustain a first responder cache. Purchase supplies, food stores, and equipment that would accommodate the care and feeding of personnel for the duration of a response for all city employees and their families for a period of ten days.	The city implemented the plan and continuously works on inventory and replenishing supplies.
HMH-LTA 2	Enhance interoperable communications	The city has developed a working relationship with different agencies and continue to identify more way to improve interoperable communications.
HMH-LTA 3	Organize local and regional training with neighboring jurisdictions and agencies.	The city has collaborated with local and regional training including Area C training between neighboring Cities and County of Los Angeles. This will be a continued effort.
HMH-LTA 4	Prepare and keep current an inventory list of all known hazardous substances present in City and School District Facilities.	The City continues to work with the District to compile and update any and all know hazardous present within the City and the District.

14.5.3 Current Mitigation Action Items

Below is a table summarizing the current mitigation strategies for Human-made Hazards. All items appear in the order of priority, grouped by the timeline. In current conventions, “STA” corresponds to “Short-Term Activity,” “LTA” represents “Long-Term Activity,” and “HMD” stands for “Human-made Hazard.” Each mitigation item addresses the Plan’s mission and one or more of the goals as identified in Section 2.4.

Table 43: 2018 Human-made Hazard Mitigation Strategies

Number	Mitigation Action	Timeline	Coordinating Organization	Goals Addressed	Constraints	Potential Funding	New Strategy
HMH-STA 1	Educate the public on cybersecurity threats and ways for individuals to protect themselves.	Short-Term 1-3 Years	Administration, Public Works	Education (A)	Funding, Available Personnel	Grants	Yes
HMH-STA 2	Annual meeting with utility companies to exchange ideas and method of increasing cybersecurity.	Short-Term 1-3 Years	Administration	Collaboration (B)	Funding, Available Personnel	General Fund	Yes
HMH- STA 3	Use a defense in depth model to mitigate the threat from Active Shooters in government-owned properties by hardening spaces, distributing critical equipment, training personnel and better coordinating the response.	Short-Term 1-3 Years	Administration	Mitigation (B) Collaboration (A) Collaboration (B) Education (A)	Funding, Available Personnel	General Fund, Grants	Yes
HMH-LTA 1	Establish a redundancy for voice and data communications for City’s Emergency Operation Center.	Long-Term 3-5 years	Administration	Mitigation (A)	Available Personnel	Grants	Yes
HMH-LTA 2	Maintain a backup data to activate in case of a cyber takeover of current data.	Long-Term 3-5 years	Administration, Planning, and Public Works	Mitigation (A)	Available Personnel	General Fund	Yes

14.5.4 Action Plan and Implementation

The Human-made Hazards mitigation action items provide direction on specific activities that organizations and residents in the City of La Cañada Flintridge can undertake to reduce risk and prevent loss from human-caused events. Each action item is followed by ideas for implementation, which can be used by the Hazard Mitigation Planning Committee and local decision-makers in pursuing strategies for implementation.

Mitigation action items appear in their order of priority at the time of submittal of this plan. This is not to negate the option to re-prioritize as may be necessary due to environmental, economic or policy influences. Priorities were determined by the city departments responsible for the development of mitigation actions and their implementation. Due consideration was given to the importance of each item and evaluated against the estimated costs. Furthermore, these estimated costs were evaluated against projected city revenue.

14.6 Resource Directory

The following resource directory lists the information and programs that can assist communities and organizations to address the hazard. The City of La Cañada Flintridge uses the resources and/or services offered by these agencies to achieve and improve mitigation efforts.

14.6.1 Local Resources

Los Angeles County Department of Public Works

The Los Angeles County Department of Public Works protects property and promotes public safety through flood control, water conservation, road maintenance, bridges, buses and bicycle trails, building and safety, land development, waterworks, sewers, engineering, and capital projects.

Address: 900 S. Fremont Ave., Alhambra, CA 91803

URL: www.dpw.lacounty.gov

☎ (626) 458-5100

Email: info@dpw.lacounty.gov

County of Los Angeles Fire Department
Division 3

The Los Angeles County Fire Department mission is to protect lives, the environment, and property by providing prompt, skillful, and cost-effective fire protection and life safety services The Department. provides initial response to a hazardous waste spill or emergency response.

Address: 19190 Golden Valley Rd., Santa Clarita, CA 91321

URL: www.fire.lacounty.gov


☎ (661) 250-2708

**Los Angeles County Sheriff’s Department
Crescenta Valley Sheriff's Station**

The Los Angeles Sheriff’s Department provides an initial response to a hazardous waste spill or emergency response.

Address: 4554 Briggs Ave. La Crescenta, CA 91214

LASD URL: www.lasd.org

 (818) 248-3464

Crescenta Valley Station URL: www.CrescentaValley.lasd.org

14.6.2 State Resources

California Governor’s Office of Emergency Services


The Governor's Office of Emergency Services coordinates overall state agency response to major disasters in support of local government. The office is responsible for assuring the state's readiness to respond to and recover from natural, human-caused, and war-caused emergencies, and for assisting local governments in their emergency preparedness, response and recovery efforts.

Address: 4671 Liberty Ave. Building 283, Los Alamitos, CA 90720

URL: www.caloes.ca.gov

 (562) 795-2939

Email: Jim.Acosta@caloes.ca.gov

 (562) 795-2877

14.6.3 Federal Resources

Federal Bureau of Investigation

The FBI is a national security organization with both intelligence and law enforcement responsibilities working to help protect communities and business from terrorism, espionage cyber-attacks, and major criminal threats.

Headquarters Address: 935 Pennsylvania Avenue, NW. Washington, D.C. 20535-0001

Field Office: 11000 Wilshire Boulevard, Suite 1700, Los Angeles, CA 90024

URL: <https://www.fbi.gov/>

 **Headquarters:** (202) 324-3000

Field Office URL: losangeles.fbi.gov

 **Field Office:** (310) 477-6565

14.7 Sources

Mueller, J. & Stewart, M.G. (2011). “Terror, Security, and Money: Balancing the Risks, Benefits, and Costs of Homeland Security” Oxford University Press.



15 MULTIPLE HAZARD

15.1 General Background

Multiple hazards are those that pertain to one or more of the hazards listed in this LHMP. This section outlines the goals and action items that mitigate the seven potential natural hazards as well as Human-made hazards. During a hazard event, a single hazard can trigger other hazards causing a multiple hazard response.

15.2 Mitigation Strategy

15.2.1 Goals and Objectives

The action items presented in this section will assist the City of La Cañada Flintridge in mitigating multiple hazards.

15.2.2 Previous Plan Mitigation Action Items

Below is a table summarizing the activity since the last plan update. The mitigation activities appear in the same order as before. The previous titles have been renamed into the current plan conventions, where “STA” corresponds to “Short-Term Activity,” “LTA” represents “Long-Term Activity,” and “MH” stands for “Multi-Hazard.”

Table 44: Multi-Hazard 2014 LHMP Activities Status

Title	Description	Status
MH-STA 1	Ensure the codes and ordinances reflect the intent of the goals and the action items found in the City’s Local Hazard Mitigation Plan.	The City updates building and fire codes on an annual basis. The most recent update was completed in 2017.
MH-STA 2	Develop incentives for local governments, citizens, and businesses to pursue hazard mitigation projects.	This action was not completed and will not be carried over to the 2019 plan as strategies like educational and outreach programs were completed and the City will continue to focus on educating the public.

Title	Description	Status
MH-STA 3	Develop a one-page handout about flood, fire, earthquake, and other forms of natural hazards insurance to distribute among all La Cañada Flintridge property owners.	The City publishes information on hazards on the City’s website and on social media. In addition, the City has brochures and flyers developed by local safety agencies available at City Hall.
MH-STA 4	Develop strategies to mitigate risk to critical facilities, or to utilize alternative facilities should local hazard events cause damage to the facilities in question.	This action item has not been completed due to a lack of available personnel. A review of all critical and alternative facilities will occur with the relocation of the new City Hall and included into the City’s Emergency Management Plan.
MH-LTA 1	Coordinate with neighboring jurisdictions to develop cohesive Local Hazards Mitigation Plans that identify common mitigation areas.	City staff attends Disaster Management Area C meetings which promote the coordination of disaster management, planning, and preparedness efforts among Area C member agencies.
MH-LTA 2	Encourage individual and family preparedness through the La Cañada Valley Sun, La Cañada Outlook Newspaper, city website, community projects, the VERT program, and other public safety events.	The City frequently posts and distributes personal emergency preparedness information via its website, social media platforms, and has brochures/flyers available at City Hall.
MH-LTA 3	Establish partnerships with nongovernmental organizations to secure funding for mitigation activities that would be mutually beneficial.	This action item has not been completed due to a lack of available personnel.
MH-LTA 4	Use the most current technology to pinpoint areas of high hazard probability in order to convey the potential risk among current or prospective property owners and developers.	This action item has been completed by utilizing the Los Angeles County natural disaster area assessment data.
MH-LTA 5	Analyze the tree canopy in the City and develop a program to reduce the potential fuel for fire and windstorm damage.	This action item is completed yearly as an ongoing City maintenance project.
MH-LTA 6	Analyze City ingress and egress to develop potential alternate routes of access through the area.	This action item requires additional research and will be continued in the 2019 plan.

SECTION 15: MULTIPLE HAZARD

15.2.3 Current Plan Mitigation Action Items

The action items listed below include existing or new items. All items appear in the order of priority, grouped by the timeline. In current conventions, “STA” corresponds to “Short-Term Activity,” “LTA” represents “Long-Term Activity,” and “MH” stands for “Multi-Hazard.” Each mitigation item addresses the Plan’s mission and one or more of the goals as identified in Section 2.4.

Table 45: 2018 Multi-Hazard Mitigation Strategies

Number	Mitigation Action	Timeline	Coordinating Organization	Goals Addressed	Constraints	Potential Funding	New Strategy
MH-STA 1	Ensure the codes and ordinances of the city of La Cañada Flintridge reflect the intent of the goals and the action items found in the City’s Local Hazard Mitigation Plan.	Ongoing	City Wide-Administration, Building & Planning, Public Works	Mitigation (A)	Funding, Available Personnel	General Fund	No
MH-STA 2	Develop informational material about flood, fire, earthquake, and other forms of natural hazards to distribute among all La Cañada Flintridge property owners.	Short-Term 1-2 Years	Administration, Planning	Education (A) Education (B)	Funding, Available Personnel	General Fund	No
MH-STA 3	Develop strategies and capabilities to mitigate risk to local government facilities, or to utilize alternative facilities should local hazard events cause damage	Short-Term 1-2 Years, Ongoing	Administration	Mitigation (A) Mitigation (B) Collaboration (B)	Funding, Available Personnel	General Fund	No
MH-LTA 1	Encourage individual and family preparedness.	Short-Term 1-2 Years, Ongoing	Administration, Sheriff, and Fire Departments	Education (B)	Funding, Available Personnel	General Fund	No
MH-LTA 2	Establish partnerships with nongovernmental organizations to secure funding for mitigation activities that would be mutually beneficial.	Long-Term 3-5 Years	Administration	Collaboration (A) Collaboration (B)	Funding, Available Personnel	General Fund	No
MH-LTA 3	Analyze City ingress and egress to develop potential alternate routes of access through the area.	Long-Term 3-5 Years	Public Works	Mitigation (C)	Funding, Available Personnel	General Fund, Grants	No

15.2.4 Action Plan and Implementation

The multiple hazard mitigation action items provide direction on specific activities that organizations and residents in the City of La Cañada Flintridge can undertake to reduce risk and prevent loss from one or more hazard events. Each mitigation action item is followed by ideas for implementation, which can be used by the Hazard Mitigation Planning Committee and local decision-makers in pursuing strategies for implementation.



I PUBLIC PARTICIPATION

I.A Meetings

Meetings were held with the public to guide the Local Hazard Mitigation Plan’s development and report the progress. Throughout the process, the public was invited to meetings through direct mailings, social media posts, Brown Act Compliant posting of regular agendas, and reminders through City newsletters and other City Council and Commission meetings. The City’s official Facebook and Twitter pages were also used to send reminders, (See Figure 30).

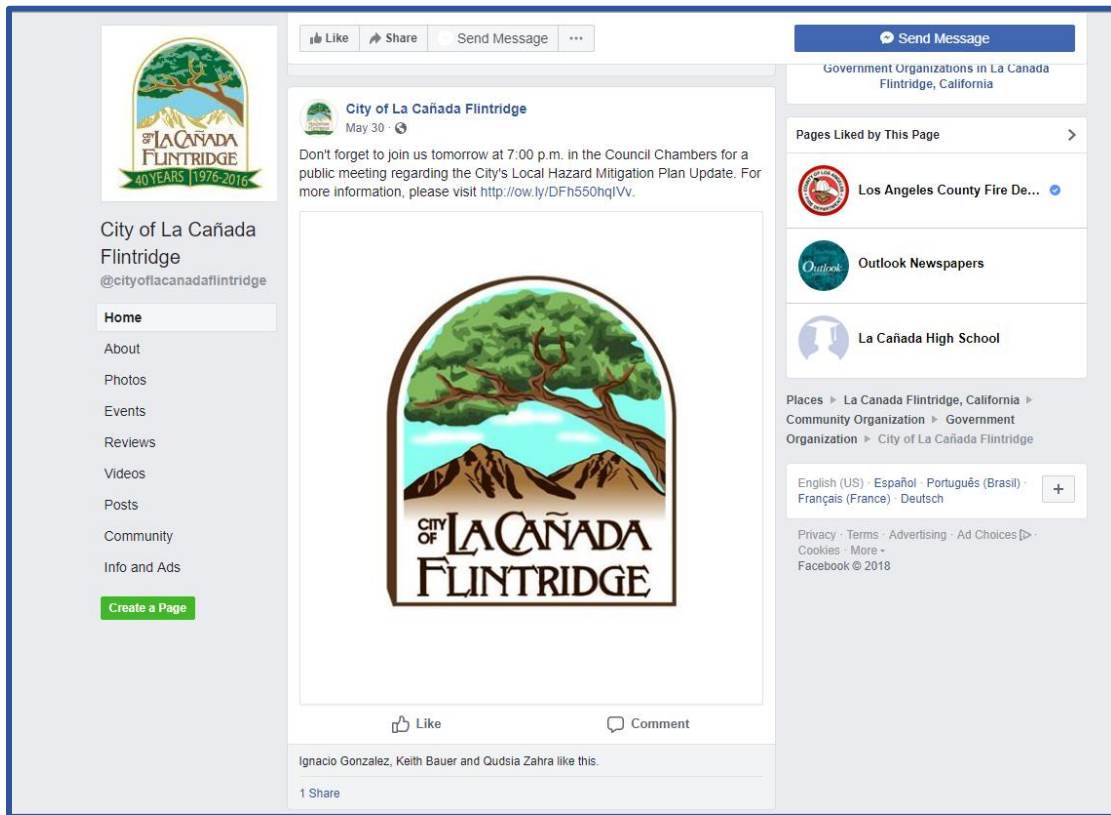


Figure 29: Typical social media post from inviting the Public to the LHMP meeting

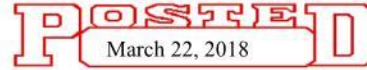
15.2.5 I.A.1 Public Introduction - March 26, 2018

At the March 26, 2018 Regular Meeting of the City of La Cañada Flintridge Public Safety Commission, staff formally introduced the public to the Local Hazard Mitigation Plan update process. Management Analyst Nguyen presented a staff report discussing the need to update the plan and requesting public input on its development. Chair Manning appointed Vice Chair Seastrom and Commissioner Smith as representatives to participate in the stakeholder meetings for the plan.

I.A.1.a Agenda



NOTICE AND AGENDA
PUBLIC SAFETY COMMISSION
REGULAR MEETING



Monday, March 26, 2018, 7:00 p.m.
La Cañada Flintridge City Hall, Council Chambers
1327 Foothill Boulevard

Preliminary Business

- 1. Call to order
2. Roll call
3. Pledge of Allegiance
4. Public Comment on matters not on the Agenda – Public Comment is limited to 3 minutes per speaker. Please submit a “Public Comment Card” to the Staff Liaison.
5. Approval of the February 26, 2018 Regular Meeting Minutes

Presentations

- 6. Fire Activity Report
7. Crime Statistics/Activity Report

New Business

- 8. Update on the Formation of Public Safety Commission Yearly Goals and Action Plan
9. Local Hazard Mitigation Plan Stakeholder Participation

Concluding Business

- 10. Staff comments
11. Items for future Agendas
12. Comments from the Commission

Adjourn

I hereby certify that this agenda was posted in a location accessible to the public at 1327 Foothill Blvd. at least 72 hours prior to the regular meeting in accordance with Government Code Section 54945.2.

AMERICANS WITH DISABILITIES ACT

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the City Clerk’s Office, (818) 790-8880 no later than Friday prior to the Monday meeting. (28 CFR 34.102.104 ADA TITLE II)

Handwritten signature of Christina Nguyen

Christina Nguyen, Management Analyst
(Staff Liaison to the Public Safety Commission)

I.A.1.b Staff Report – Local Hazard Mitigation Plan Stakeholder Participation

Agenda Item 9



**AGENDA STATEMENT
PUBLIC SAFETY COMMISSION**

DATE: March 26, 2018
TO: Public Safety Commission
PRESENTER: Christina Nguyen, Management Analyst
SUBJECT: Local Hazard Mitigation Plan Stakeholder Participation

BACKGROUND:

The City is required by the Disaster Mitigation Act of 2000 (DMA2K), a national program for pre-disaster mitigation, which provides federal funding for projects that are not dependent on presidential disaster for federal relief, to have an approved Local Hazard Mitigation Plan (LHMP). The City’s current approved LHMP is set to expire on June 4, 2019. The City will need to get the updated LHMP approved by the Federal Emergency Management Agency (FEMA) prior to the expiration date.

DISCUSSION:

The LHMP updating process will take approximately one year to complete. The update will allow the City, community, and stakeholders to understand risks from natural hazards and develop long-term strategies in reducing their impacts.

As part of the process, the City will hold meetings and workshops for stakeholders including the public. Community participation plays a key role in developing goals and action items for the plan. Public input is a critical component of a successful and comprehensive update.

At this time, the City is requesting public input. The public is able to provide comments online by visiting the City’s Local Hazard Mitigation Plan site at <http://www.lcf.ca.gov/public-safety/lhmp>.

In addition, staff is requesting for the Chair to appoint a Public Safety Commission representative to participate in the stakeholder meetings.

CONCLUSION:

It is requested that the Public Safety Commission Chair appoint one Commissioner to participate in the stakeholder meetings for the City’s Local Hazard Mitigation Plan update process.

PS Commission – LHMP Stakeholder Participation
March 26, 2018
Page 2

Agenda Item 9

OPTIONS:

It would be appropriate for the Public Safety Commission to consider one of the following actions:

1. Select one Commissioner to participate in the stakeholder meetings for the City's Local Hazard Mitigation Plan update process.
2. Provide alternative direction to staff.

RECOMMENDATION:

Option #1: It is recommended that the Public Safety Commission Chair appoint one Commissioner to participate in the stakeholder meetings for the City's Local Hazard Mitigation Plan update process.

ATTACHMENTS:

None.

I.A.1.c Minutes

**REGULAR MEETING MINUTES OF THE CITY OF LA CAÑADA FLINTRIDGE
PUBLIC SAFETY COMMISSION HELD ON MONDAY, MARCH 26, 2018****1. CALL TO ORDER**

Chair Manning called the meeting to order at 7:01 PM.

2. ROLL CALL

Chair Manning, Vice Chair Seastrom, Commissioner Siegel-Sproles, and Commissioner Smith present. Commissioner Schafer absent.

3. PLEDGE OF ALLEGIANCE

Led by Vice Chair Seastrom.

4. COMMENTS FROM THE PUBLIC

None.

5. APPROVAL OF THE MARCH 26, 2018 REGULAR MEETING MINUTES

M/S/C: Smith/Siegel-Sproles to approve minutes of the March 26, 2018, Regular Meeting.
4-0-1 approved.

PUBLIC SAFETY PRESENTATIONS**6. Fire Activity Report**

Chief Mackey presented the February 2018 Fire Department Activity Report to the Commission. In the month of February 2018, the Fire Department had 102 responses of which 5 were fires, 75 medical, 7 service calls, 1 hazardous condition, and 13 good intent calls. He provided additional details for the fire incidents, traffic collisions, and year-to-date statistics.

Vice Chair Seastrom asked if the increase of traffic collisions was due to construction on the 210-Freeway. Chief Mackey said it he was not sure but drivers should avoid distractions such as being on their phones.

Chair Manning asked about the fatality fire in early March. Chief Mackey informed the Commission that additional information would be provided in the March activity report.

7. Crime Statistics/ Activity Report

Deputy Matejka presented the February 2018 Crime Statistics to the Commission. The February 2018 statistics included 0 homicides, 0 rapes, 0 robberies, 0 aggravated assaults, 4 residential burglaries, 14 larceny-thefts, 3 GTA, 0 arson. The Department captured two burglary suspects through a GPS system attached to a computer.

Commissioner Siegel-Sproles asked if the individuals arrested are still in custody. Deputy Matejka did not have the details on the arrest. The Department's detectives manage the suspects after they are detained. He added that recidivism rates are very high.

Vice Chair Seastrom asked if the narcotics on the report were in relation to the incident at the high school. Deputy Matejka informed the Commission that he could not release any information on juveniles. Vice Chair Seastrom asked if seven narcotics offenses are considered high for a single month. Deputy Matejka said the number is not high. He added that since the incidents at the high school campus, there has been an increase in student's reporting substance use.

Regular Meeting Minutes, Public Safety Commission
March 26, 2018
Page 2 of 2

8. Update on the Formation of Public Safety Commission Yearly Goals and Action Plan

Management Analyst Nguyen presented the staff report.

Commissioner Siegel-Sproles asked if the Youth Program subcommittee could attend the next Youth Council meeting. Management Analyst Nguyen shared the time and date of the April meeting.

M/S/C: Seastrom/Smith to approve the quarterly topic schedule for the 2018 calendar year.
Approved 4-0-1

Commissioner Smith asked what the process for the subcommittee would look like. Management Analyst Nguyen explained the process of subcommittee's meetings and how information would be reported back to the Commission.

9. Local Hazard Mitigation Plan Stakeholder Participation

Management Analyst Nguyen presented the staff report.

Vice Chair Seastrom and Commissioner Smith stated that they would be interested in participating.

Chair Manning appointed Vice Chair Seastrom and Commissioner Smith to participate in the stakeholder meeting for the City's Local Hazard Mitigation Plan update process.

CONCLUDING BUSINESS

10. Staff Comment

Management Analyst, Nguyen informed the Commission that the City Council approved the third phase of the Ring.com Residential Video Doorbell Program during the mid-year budget review. The third phase would be available to residents participating in established Neighborhood Watch groups.

Management Analyst, Nguyen stated that the Los Angeles County Sheriff Department recently changed its reporting process of crimes from a daily to a monthly schedule. Deputy Matejka provided an update on the change.

11. Items for Future Agenda

The Commission has concerns of homeless individuals in the community and requested for the Sheriff's Department to provide information and resources.

12. Comments from the Commission

The Commission commented on the success of the Public Safety Town Hall Forum.

ADJOURN

As there was no further business, the meeting was adjourned at 8:15 PM.



Christina Nguyen, Management Analyst
(Staff Liaison to the Public Safety Commission)

I.A.2 Hazard Mitigation Advisory Committee Meeting - April 23, 2018

The first Hazard Mitigation Advisory Committee meeting was held on April 23, 2018. Staff directly contacted several organizations and partners, including schools, hospitals, public safety agencies, animal welfare groups, and other local agencies who have a vested interest in emergency management. A full list of stakeholder is included in Table 31 below. Invitations were emailed encouraging attendee participation in the meeting. In addition, the public was notified through the City’s standard posting procedure, including physically posting in established bulletin boards and placing the agenda online.

List of Stakeholders		
<p><u>Public Agencies/Entities</u></p> <ul style="list-style-type: none"> • Federal <ul style="list-style-type: none"> - Angeles National Forest - NASA’s Jet Propulsion Laboratory (JPL) • County <ul style="list-style-type: none"> - Los Angeles County Fire Department - Los Angeles County Flood Control District - Los Angeles County Public Works - Los Angeles County Sheriff Department • City <ul style="list-style-type: none"> - City of La Cañada Flintridge Public Safety Commission <p><u>Transportation</u></p> <ul style="list-style-type: none"> • Caltrans 	<p><u>Schools</u></p> <ul style="list-style-type: none"> • Public <ul style="list-style-type: none"> - La Cañada Unified School District • Parochial <ul style="list-style-type: none"> - Flintridge Sacred Heart Academy - St. Bede The Venerable Elementary School - St. Francis High School - St. George’s Preschool • Private <ul style="list-style-type: none"> - Crestview Preparatory School - Flintridge Preparatory School - La Cañada Flintridge Community Center Preschool - La Cañada Pre-School - Parents and Children’s Nursery School - The Hillside School and Learning Center 	<p><u>Utility Companies</u></p> <ul style="list-style-type: none"> • Water <ul style="list-style-type: none"> - Crescenta Valley Water District - Foothill Municipal Water District - La Cañada Irrigation • Electricity <ul style="list-style-type: none"> - Southern California Edison • Gas <ul style="list-style-type: none"> - Southern California Gas Company <p><u>Other</u></p> <ul style="list-style-type: none"> • Chamber of Commerce • Descanso Gardens • Flintridge Riding Club • USC Verdugo Hills Hospital • VERT • YMCA – Foothill Region

Table 30: Invited Stakeholder List

The meeting lasted approximately two hours. It introduced the Local Hazard Mitigation Plan to attendees, explaining the purpose of the update, where projects currently stood, and what mitigations were included in the previous plan. It also established the basic timeline for the update process and gave a tentative date for the next Hazard Mitigation Advisory Committee meeting. The focus was to introduce the plan update and create the process for resident and stakeholder participation.

I.A.2.a Agenda



NOTICE AND AGENDA
LOCAL HAZARD MITIGATION PLAN
ADVISORY COMMITTEE/STACKHOLDERS MEETING

Monday, April 23, 2018; 10:00 a.m.
La Cañada Flintridge City Hall Council Chambers
1327 Foothill Blvd.

Preliminary Business



- 1. Introductions
2. Overview of the Local Hazard Mitigation Plan
3. Review Potential Hazards
i. Mitigation
ii. Education
iii. Collaboration
4. Process of Updating the Local Hazard Mitigation Plan
5. Timeline of the Project
6. Questions and Comments
7. Next Stakeholder Meeting

Adjourn

I do hereby certify that this agenda was posted in a location accessible to the public at 1327 Foothill Boulevard at least 72 hours prior to the regular meeting in accordance with Government Code Section 54945.2.

Arabo Parseghian
Arabo Parseghian, Division Manager

AMERICANS WITH DISABILITIES ACT

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I.A.2.b Sign in Sheet



Stakeholder Meeting #1

Project: City of La Cañada Flintridge Hazard Mitigation Plan Update
Place/Room: LCF City Hall Council Chamber
Date: April 23, 2018
Time: 10:00 a.m.

	MIKE MIRANDA Print Name	LACDPW Agency/Organization	CIVIL ENGINEER Title	mimirand@dpw.lacounty.gov Email	[Signature] Signature
1.	JOHN PENIBO	DISASTER MGMT AREA C	DISASTER MGMT AREA COORD	AreaC@dmac.ca.gov	[Signature]
2.	Maurice Bond	Community Center of CCF	Executive Director	maurice@cccf.org	[Signature]
3.	Bill Pounds	VERT	member	Billpounds@jmi.com	[Signature]
4.	Bryn Oh	VERT	member	brynoalum.mit.edu	[Signature]
5.	Marisa Espinoza	SOCAL GAS	public Affairs	mespinoza2@so-cal.com	[Signature]
6.	MARIA CRONE	FLINTRIDGE RIDING CLUB	EXECUTIVE DIRECTOR	MARIA-FRC@FLINTRIDGE.CA.GOV	[Signature]
7.	Paddy Taber	City Public Works	Senior Mgmt Analyst	Ptaber@lcf.ca.gov	[Signature]
8.	Kendrite Cronin	City Public Works	Public Works Invt	crankin@lcf.ca.gov	[Signature]
9.	Arabo Parsoghian	City of La Cañada Flintridge	Division Manager	aparsoghian@lcf.ca.gov	[Signature]
10.	Pat Anderson	LCF Chamber	CEO	exec@lacañadaflintridge.com	[Signature]
11.	Sergio Vesces	L.A. County Public Works	RD Maint. Supervisor	svsces@dpw.lacounty.gov	[Signature]
12.	Glenn Ramos	L.A. County Public Works	Rel. Maint. Supt.	gramos@dpw.lacounty.gov	[Signature]
13.	Carl Pederson	LA CDPW	RD Engineering Staff	cpederson@dpw.lacounty.gov	[Signature]
14.	Ian Pinkham	JPL/NASA	Emergency Management Administrator	Ian.Pinkham@jpl.nasa.gov	[Signature]
15.	Will Michael	JPL/NASA	Group Supervisor Center EMD	William.L.Michael@jpl.nasa.gov	[Signature]
	DAN DRUGAN Christina Nguyen Focal Hazard Mitigation Plan (LHMP) 2017-18 Update	FOOTHILL MWD LCF	WATER PROGRAM TECH Management Analyst	DDRUGAN@FMWD.CA.GOV	[Signature]

I.A.2.c Presentation

City of La Cañada Flintridge

Local Hazard Mitigation Plan Update
Stakeholder Meeting
April 23, 2018

Christina Nguyen, Management Analyst
Arabo Parseghian, Division Manager



Agenda

- Introductions
- Overview of the Local Hazard Mitigation Plan
- Review Potential Hazards
 - Mitigation
 - Education
 - Collaboration
- Process of Updating the Local Hazard Mitigation Plan
- Timeline of the Project
- Questions and Comments
- Next Stakeholder Meeting

What is Hazard Mitigation?




• "mitigation"

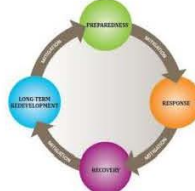
1. to cause to become less harsh or hostile.
2. to make less severe or painful.



• Any sustained **action** taken to reduce or eliminate long-term **risk to people and property** from **natural** hazards and their effects.

Hazard Mitigation = Disaster Mitigation

Mitigation is an ongoing activity that occurs throughout the emergency management cycle.





Types of Hazard Mitigation Activities

- Local Plans and Regulations
 - Government authorities, policies or codes that influence the way land and buildings are developed and built.
- Structure and Infrastructure Projects
 - Modify existing buildings and infrastructure to protect them from hazard or remove them from hazard area.
- Natural System Protection
 - Actions that minimize damage by preserving or restoring functions of natural systems (such as floodplains).
- Education and Awareness Programs
 - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them.

Examples of Mitigation Activities

- Local Plans and Regulations
 - General plan
 - Zoning ordinance
 - Building codes
 - Capital improvement program
- Structure and Infrastructure Projects
 - Acquisition, relocation or evaluation of flood-prone structures
 - Seismic retrofitting of older structures
 - Hardening critical facilities
 - Strengthening roads and bridges
 - Stormwater diversion, retention or detention

Examples of Mitigation Activities

- Natural System Protection
 - Floodplain protection
 - Forest and vegetative management
- Education and Awareness Programs
 - Risk communication
 - Websites with maps & information
 - Presentations to community groups or neighborhood organizations
 - Community outreach projects
 - Training courses



Why Plan for Hazard Mitigation?

- Protect life and property;
- Minimize economic losses;
- Enhance community resiliency and sustainability;
- Reduces the burden on local governments and taxpayers;
- Break the cycle of repetitive disaster damages;
- Speed disaster recovery and redevelopment;
- Integrate hazard mitigation with other local planning and decision-making activities; and
- To comply with federal state requirements, and to qualify for additional grant funding.

Provide guidance for continuous actions to strengthen and protect the community

Local Hazard Mitigation Plan (LHMP)

- Required as a result of the Disaster Mitigation Act (DMA) of 2000 as a condition to receive Hazard Mitigation funding
- LHMP must be prepared and updated every 5 years in order to remain eligible for certain types of disaster assistance, including funding for hazard mitigation projects
 - Plan must be approved by Cal OES and FEMA



City of La Cañada Flintridge Local Hazard Mitigation Plan

- Approved by FEMA on June 4, 2014 and expires June 4, 2019
- Plan is being updated to reflect new data, information, and priorities that may have changed since 2014
- Plan update process is being led by the City of La Cañada Flintridge Administration Department, with support from the Planning and Public Works Departments, and through a collaborative partnership with the key community stakeholders and the public

Key Objectives for the LHMP Plan Update

- Enhance the mitigation strategy to include specific achievable, and measurable hazard mitigation
- Integrate anticipated effects of climate change and identify the risk assessment into the plan
- Improve plan maintenance procedures to establish a sustained, long-term process of increasing the resilience of all communities
- Conduct widespread public outreach and stakeholder involvement to support successful implementation, integration, and maintenance of the plan for all communities

Identified Hazards

Existing Hazards (2014 Plan)	New Hazards (Updated Plan)
Multi-Hazard	Drought
Earthquake	Excessive Heat
Flood	
Landslides	
Wildfires	
Windstorm	
Manmade Hazards	

Multi-Hazard Action Items

Mitigation

Short Term:

- Ensure codes and ordinances reflect the intent of the goals and the action items of the LHMP
- Develop incentives for the community to pursue hazard mitigation projects
- Develop a handout about natural hazards and natural hazards insurance
- Develop strategies to mitigate risk to critical facilities, or to utilize alternate facilities
- Coordinate with neighboring jurisdictions to develop cohesive LHMPs that identify common mitigation areas

Long Term:

- Encourage individual and family preparedness
- Establish partnerships with nongovernmental organizations to secure funding for mitigation activities
- Use the most current technology to pinpoint areas of high hazard probability
- Analyze the tree canopy and develop a program to reduce the potential fuel for fire and windstorm damage
- Analyze ingress and egress to develop potential alternate routes of access through the area

Multi-Hazard Action Items

Education

- Develop information about hazards and natural hazards insurance for property owners
- Utilize technology to pinpoint areas of high hazards to share the potential risk with current and prospective property owners and developers
- Develop a program to reduce the potential tree fuel for fire and windstorm damage

Collaboration

- Fire Department, Sheriff's Department, and City Departments

Earthquake Action Items

Mitigation

Short Term:

- Integrate earthquake hazard mapping data

Long Term:

- Identifying funding sources for retrofitting of structures
- Encourage the purchase of earthquake hazard insurance
- Encourage seismic strength evaluations of critical facilities
- Encourage reduction of nonstructural and structural earthquake hazards in homes, schools, business, and government offices

Education

- Enhance data mapping
- Provide information on retrofitting structures and seismic standards
- Promote the purchase of earthquake hazard insurance
- Provide information on security objects and retrofitting classes

Collaboration

- Property owners, business, organizations, and City Departments

Flood Action Items

Mitigation

Short Term:

- Analyze repetitive flood areas in the city
- Develop better local flood warning systems

Long Term:

- Identify urban drainage problem areas and prepare an inventory

Education

- Incentives to encourage property owners to engage in mitigation
- Utilize Alert LCF and city's website
- Enhance data and mapping of major urban drainage problem areas

Collaboration

- Property owners, Public Works Department, and Administration Department

Landslides Action Items

Mitigation

Short Term:

- Improve knowledge and understanding of the vulnerability of landslide hazard areas

Long Term:

- Review local ordinance regarding building and development in landslide-prone areas

Education

- Conduct a landslide hazard mapping study
- Develop public information on economic risk when building on a potential or historical landslide area

Collaboration

- Community, Planning Department and Building & Safety

Wildfires Action Items

Mitigation

Short Term:

- Enhance emergency services to increase the efficiency of wildfire response and recovery activities
- Educate agency personnel on federal grant programs and assistance programs
- Conduct fire drills at the local schools

Long Term:

- Enhance outreach and education programs
- Encourage local zoning and planning entities to work with landowners and/or developers

Education

- Create maps to use with Alert LCF notification system of at-risk areas
- Distribute federal program information to local agencies
- Fire drill protocol for youth
- Conduct community demonstration project on fire prevention

Collaboration

- Community, Fire Department, and City Departments

Windstorm Action Items

- Mitigation**
 - Short Term
 - Public awareness campaign on protection life and property before, during, and after a windstorm
 - Awareness of tree pruning and Fire Code Sections
 - Long Term
 - Encourage city facilities to purchase and/or test back-up power facilities
 - Explore the possibility of underground utility lines
- Education**
 - Provide public education materials with mitigation materials
- Collaboration**
 - Community, Fire Department, and City Departments

Manmade Hazards Action Items

- Mitigation**
 - Short Term
 - Enhance building access accountability (hardening) of City facilities
 - Long Term
 - Develop and sustain a Fire cache
 - Enhance inter-jurisdictional communications
 - Organize local and regional training with neighboring jurisdictions and agencies
 - Maintain inventory list of all known hazardous substances present in City facilities
- Education**
 - Provide public education materials with mitigation materials
- Collaboration**
 - Fire Department, Sheriff's Department, and City Departments

Hazard Mitigation Updating Process

- LHMP Requirement Elements
 - ✓ Planning process
 - ✓ Hazard identification and analysis
 - ✓ Mitigation strategy
 - ✓ Plan review, evaluation, and implementation
 - ✓ State requirements
 - ✓ Adoption

Timeline

Event	Topics	Time Frame
Project Kickoff	Initial meeting with City staff	March 2018
Public Meeting	Introduction of LHMP	March 2018
Stakeholder Meeting	Overview of LHMP and discussion	April 2018
Public Meeting	Review of LHMP	May 2018
Public Meeting	Mitigation discussion of LHMP	July 2018
Public Meeting	Public review of final LHMP draft	September 2018
Submit to Cal OES/FEMA	Cal OES/FEMA review of document	December 2018
Final LHMP	Public hearing and adoption of approved plan	June 2019

Public Input

- The City is accepting input from the public to help City staff in the planning and update process.
 - Input form - <http://www.lcf.ca.gov/public-safety/lhmp>

Thank you!

Please provide input to help the City update the LHMP.

➤ Questions & Comments

Contact

Christina Nguyen
Management Analyst
cnguyen@lcf.ca.gov
(818) 790-8880 ext. 104

Arabo Parseghian
Division Manager
aparseghian@lcf.ca.gov
(818) 790-8880 ext. 105

I.A.3 Hazard Mitigation Advisory Committee Meeting - May 22, 2018

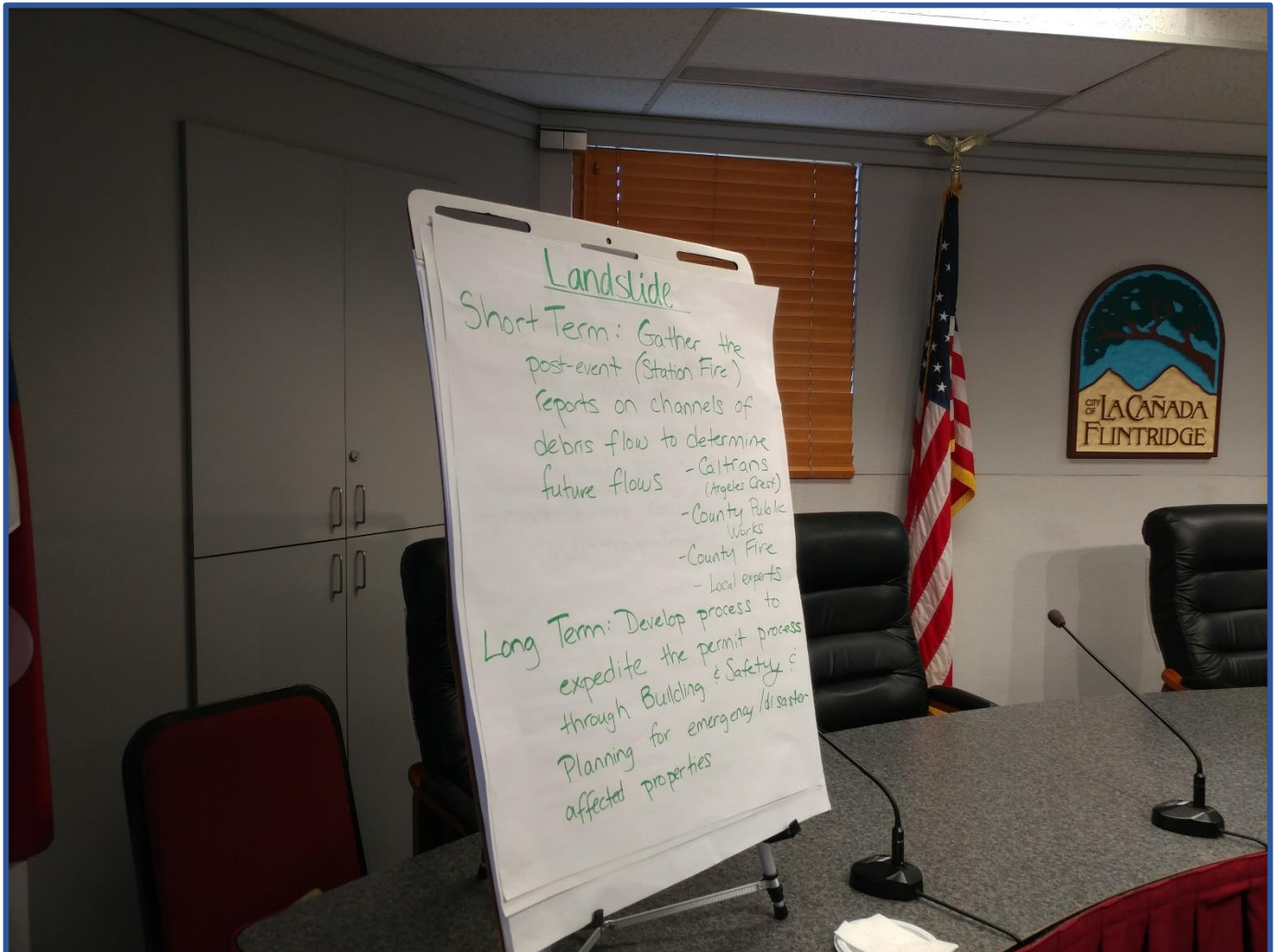


Figure 31: Stakeholder Meeting Agenda

The second Hazard Mitigation Advisory Committee meeting focused on mitigation development. All attendees from the first meeting were directly invited, and the public was invited as well through posting.

Attendees were asked to separate into small groups to discuss their concerns for specific hazards, Small Groups discussed how might the community prevent or prepare for a hazard. They also were asked to come up with long-term and short-term solutions to the hazards, whether that might include education campaigns, new city policies, research, or capital improvement projects. Each group was provided with poster paper and encouraged to write their ideas about the mitigations to share later.




Figure 32: Large Group Discussions

After small group discussions, attendees met at large, to discuss their conversations. Representatives from each group presented their conversations on the hazard, (See Figure 33 above). A staff member facilitated over the conversation and invited all attendees to share their thoughts on how the mitigation suggestions might be improved.

Every hazard was discussed. Some of the ideas developed during the meeting include creating a survey of water, coordinating with neighboring jurisdictions and agencies to provide services, and investigating hazard effects through mapping.

The meeting ended with a brief staff presentation on the remaining timeline and an invitation to attend the subsequent stakeholder and public meetings.

I.A.3.a Press Release – May 17, 2018



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City of La Cañada Flintridge

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City of La Cañada Flintridge Local Hazard Mitigation Plan Update Public Meetings

posted May 17, 2018, 3:27 PM by Arabo Parseghian

La Cañada Flintridge, CA – The City of La Cañada Flintridge is in the process of updating its Local Hazard Mitigation Plan (LHMP). The update will allow the City, community, and stakeholders to understand risks from natural hazards and develop long-term strategies for mitigating their impacts. Community participation plays a key role in developing goals and action items for the plan. Public input is a critical component of a successful and comprehensive plan update.

The City will be holding public meetings to review the LHMP and develop achievable goals. Stakeholders, community members, and residents are encouraged to attend and share their input.

Public Meeting

Date: Tuesday, May 22, 2018

Time: 10:00-11:30 a.m.

Location: La Cañada Flintridge Council Chambers

The meeting will consist of small tabletop discussions with attendees to discuss various hazards in detail with City staff. A large group discussion will follow. The goal of the meeting is to provide the City with information and insight to assist in the update of the LHMP.

Public Meeting

Date: Thursday, May 31, 2018

Time: 7:00 p.m.

Location: La Cañada Flintridge Council Chambers

Held during the Public Safety Commission meeting, attendees will learn why the LHMP is important, its purpose, and review components of the existing plan. Attendees will be able to provide written input.

The public is also able to provide comments online by visiting the City's Local Hazard Mitigation Plan site at www.lcf.ca.gov/public-safety/lhmp.

For questions, please email us at LHMPComments@lcf.ca.gov

I.A.3.b Agenda



NOTICE AND AGENDA
LOCAL HAZARD MITIGATION PLAN
ADVISORY COMMITTEE/STAKEHOLDERS MEETING
Tuesday, May 22, 2018; 10:00 a.m.
La Cañada Flintridge City Hall Council Chambers
1327 Foothill Blvd.



Preliminary Business

- 1. Introductions
2. Small Group Discussions
3. Large Group Discussion
4. Timeline of the Project
5. Comments and Questions
6. Next Stakeholder Meeting

Adjourn

I do hereby certify that this agenda was posted in a location accessible to the public at 1327 Foothill Boulevard at least 72 hours prior to the regular meeting in accordance with Government Code Section 54945.2.

Handwritten signature of Christina Nguyen

Christina Nguyen, Management Analyst

AMERICANS WITH DISABILITIES ACT

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I.A.3.c Sign-In Sheet



Stakeholder Meeting #2

Project: City of La Cañada Flintridge Hazard Mitigation Plan Update
Place/Room: LCF City Hall Council Chambers
Date: Tuesday, May 22, 2018
Time: 10:00 a.m. - 11:30 a.m.

#	Name	Agency/Organization	Title	Email	Signature
1	Arabo Parseghian	City of La Cañada Flintridge	Division Manager	aparseghian@lcf.ca.gov	
2	Bill Ponders	VERT	Member	wmpounders@gmail.com	
3	Bryn Oh	VERT	Member	bryn@alum.mit.edu	
4	Candice Ronkin	City of LCF Public Works	Public Works Intern	crankin@lcf.ca.gov	
5	Carl Pederson	LACDPW	RD Engineering Staff	cpedersonson@dpw.lacounty.gov	
6	Christina Nguyen	City of La Cañada Flintridge	Management Analyst	cnguyen@lcf.ca.gov	
7	Dan Drugan	Foothill MWD	Water Program Tech	ddrugan@fmwd.com	
8	Glenn Ramos	L.A. County Public Works	Road Maintenance Supervisor Superintendent	GRAMOS@dpw.lacounty.gov	
9	Ian Pinkham	JPL/NASA	Emergency Management Administrator	ian.A.Pinkham@jpl.nasa.gov	
10	John Penido	Disaster Management Area C	Disaster Management Area Coordinator	areac@dmac.ca.gov	
11	Joshua Jeffrey	City of La Cañada Flintridge	Management Intern	jjeffrey@lcf.ca.gov	
12	Maria Crone	Flintridge Riding Club	Executive Director	maria_frc@earthlink.net	
13	Marisol Espinoza	SoCALGas	Public Affairs	MEspinoza2@semprautilities.com	
14	Maureen Bond	Community Center of LCF	Executive Director	maureen@cclcf.org	
15	Mike Miranda	LACDPW	Civil Engineer	mmirand@dpw.lacounty.gov	
16	Paddy Taber	City of LCF Public Works	Senior Management Analyst	ptaber@lcf.ca.gov	
17	Pat Anderson	LCF Chamber	CEO	exec@lacañadaflintridge.com	
18	Sergio Yescas	L.A. County Public Works	Road Maintenance Supervisor	SYESCAS@dpw.lacounty.gov	
19	Will Michael	JPL/NASA	Group Supervisor EMO	william.l.michael@jpl.nasa.gov	
20	RANDY SMITH	LCVSD	MEMBER OF M+O	rsmith@lcvsd.net	

Local Hazard Mitigation Plan 2018-19 Update



Stakeholder Meeting #2

Project: City of La Cañada Flintridge Hazard Mitigation Plan Update
Place/Room: LCF City Hall Council Chambers
Date: Tuesday, May 22, 2018
Time: 10:00 a.m. - 11:30 a.m.

#	Name	Agency/Organization	Title	Email	Signature
1	Nina Jazmodia	Foothill	General Manager	nina.jaz@fnwd.com	
2	Ken Horman	Fmwd	DISTRICT ENGINEER	khorman@fnwd	
3	Carl Alameda	City of LCF	Director of Admin. Services	calameda@lcf.ca.gov	CA
4	Hoon Hahn	"	City Eng.	hhahn@lcf.ca.gov	
5	WES SEASTROM	Public Safety Comm.	VICE CHAIR	WES@SEASTROM.NET	
6	Ramil Parial	LA Co. Public Works	Assec. Civil Engr.	rparia@dps.lacounty.gov	Ramil Parial
7	ISA Branch	City of LCF	Sr. Mgmt Analyst	Lbranch@lcf.ca.gov	ISA Branch
8					
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Local Hazard Mitigation Plan 2018-19 Update

I.A.3.d Presentation

City of La Cañada Flintridge

Local Hazard Mitigation Plan Update
Stakeholder Meeting
May 22, 2018

Christina Nguyen, Management Analyst
Arabo Parseghian, Division Manager



Agenda

- Introductions
- Small Table Discussions
- Large Group Discussion
- Timeline
- Comments and Questions
- Next Stakeholder Meeting

Introductions

- Your name
- Your organization
- Your role



Identified Hazards

Existing Hazards (2014 Plan)	New Hazards (Updated Plan)
Multi-Hazard	Drought
Earthquake	Excessive Heat
Flood	
Landslide	
Wildfire	
Windstorm	
Manmade	

Small Table Discussions

- City staff will provide a summary of the hazard and current mitigation goals
- 30 minutes to discuss and complete the objectives
- Summarize the discussion on the large post-it pad
- Select one representative to share the summary

Objectives

1. Identify missing components related to the hazard(s)
2. Create mitigation goals
 - Two (2) short-term (1-3 years)
 - One (1) long-term (5 years)
3. Determine what stakeholder information (processes and services) are important for the City to know about and/or consider including in the plan.
 - Specifically implemented since 2014.

Large Group Discussion

Timeline

Event	Topics	Time Frame
Public Meeting	Introduction of LHMP	March 25, 2018
Project Kickoff	Initial meeting with City staff	March 28, 2018
Stakeholder Meeting	Overview of LHMP and discussion	April 23, 2018
Stakeholder Meeting	Hazards and mitigation discussion	May 22, 2018
Public Meeting	Review of LHMP	May 31, 2018
Public Meeting	LHMP mitigation discussion	July 25, 2018
Stakeholder Meeting	Review of final LHMP draft	September 2018
Public Meeting	Public review of final LHMP draft	September 24, 2018
Submit to Cal OES/FEMA	Cal OES/FEMA review of document	December 2018
Final LHMP	Public hearing and adoption of approved plan	June 2019

Public Input

• The City continues to accept input from the public to help City staff in the planning and update process.

• Input form: <http://www.lcf.ca.gov/public-safety/lhmp>

Questions & Comments

Next Meeting: September 2018

Review final draft of the LHMP update

Thank you!

Contact

Christina Nguyen Management Analyst cnguyen@lcf.ca.gov (818) 790-8980 ext. 104	Arabo Parseghian Division Manager aparseghian@lcf.ca.gov (818) 790-8980 ext. 105
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I.A.4 Public Information Meeting - May 31, 2018

The first Public Information Meeting was held in conjunction with the City of La Cañada Flintridge’s Public Safety Commission Regular May Meeting. Management Analyst Nguyen presented a staff report detailing the history of the process and goals for the meeting. After the Commission briefly discussed the report and the public was given the opportunity to comment, the Chair opened the meeting to the workshop.

The public workshop followed a similar format as the Hazard Mitigation Advisory Committee workshop. The mitigation strategies developed at the previous meetings were posted, and individuals were invited to comment on the goals. Some made check marks next to ideas indicating approval (See Figure 34 below).

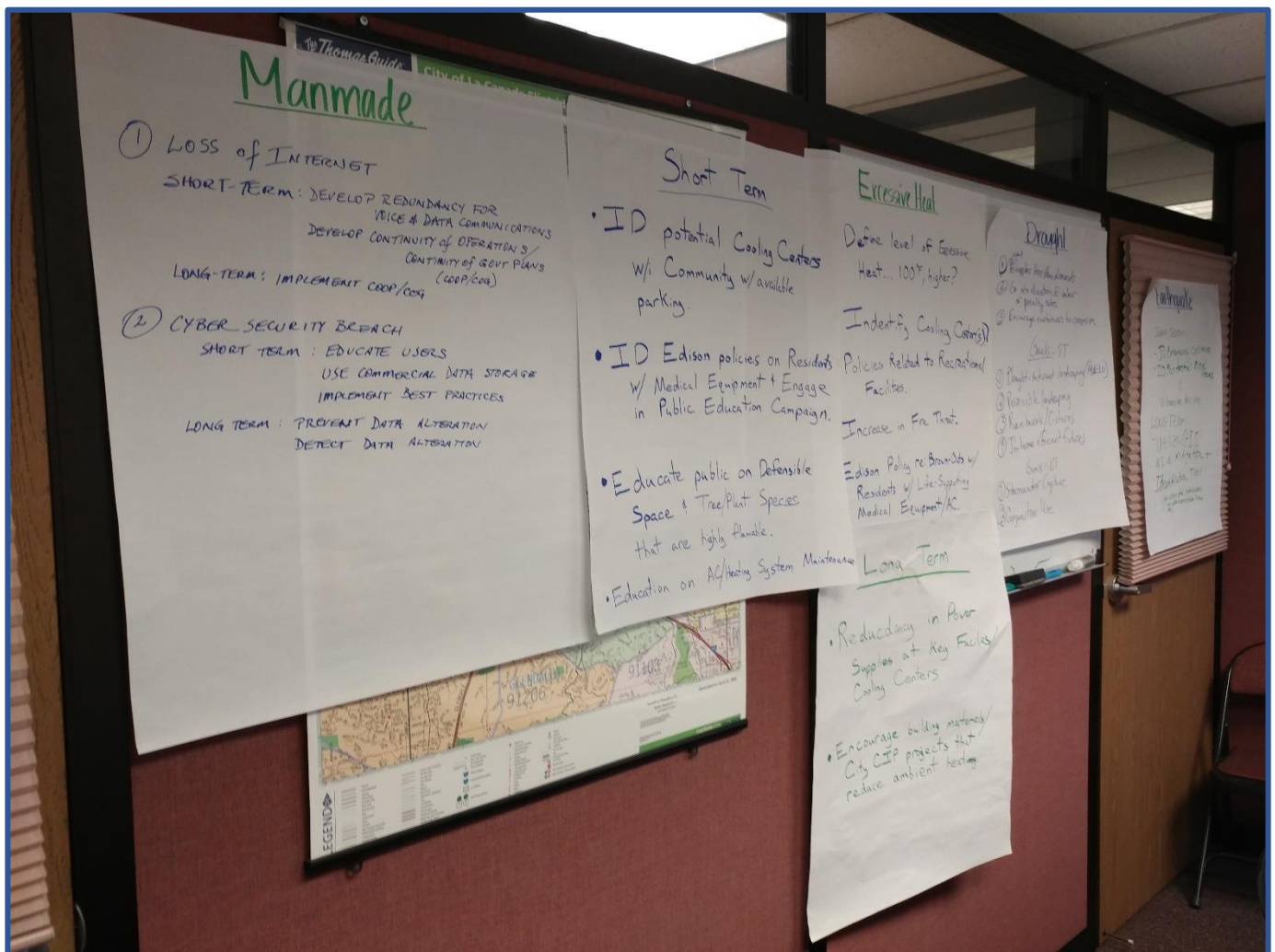


Figure 33: Mitigation Development

At the end of the activity, Management Analyst Nguyen updated the Commission and public on the timeline for approval and encouraged participation in future meetings.

I.A.4.a Agenda



**NOTICE AND AGENDA
PUBLIC SAFETY COMMISSION
SPECIAL MEETING**



Thursday, May 31, 2018, 7:00 p.m.
La Cañada Flintridge City Hall, Council Chambers
1327 Foothill Boulevard

Preliminary Business

1. Call to order
2. Roll call
3. Pledge of Allegiance
4. Public Comment on matters not on the Agenda – Public Comment is limited to 3 minutes per speaker. Please submit a “Public Comment Card” to the Staff Liaison.
5. Approval of the April 23, 2018 Regular Meeting Minutes

Presentations

6. Fire Activity Report
7. Crime Statistics/Activity Report

New Business

8. Public Information Workshop for the Local Hazard Mitigation Plan Update

Concluding Business

9. Staff comments
10. Items for future Agendas
11. Comments from the Commission

Adjourn

I hereby certify that this agenda was posted in a location accessible to the public at 1327 Foothill Blvd. at least 72 hours prior to the regular meeting in accordance with Government Code Section 54945.2.

AMERICANS WITH DISABILITIES ACT

*In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the City Clerk's Office, (818) 790-8880 no later than Friday prior to the Monday meeting.
(28 CFR 34.102.104 ADA TITLE II)*

**Christina Nguyen, Management Analyst
(Staff Liaison to the Public Safety Commission)**

I.A.4.b Staff Report

Agenda Item 8

**AGENDA STATEMENT
PUBLIC SAFETY COMMISSION**

DATE: May 31, 2018

TO: Public Safety Commission

PRESENTER: Christina Nguyen, Management Analyst

SUBJECT: Public Information Workshop for the Local Hazard Mitigation Plan Update

BACKGROUND:

At the March 26, 2018 Public Safety Commission meeting, the Commission was informed that City staff had begun the process of updating the City's Local Hazard Mitigation Plan (LHMP). The City's current approved LHMP is set to expire on June 4, 2019. The City would need to have an updated LHMP approved by the Federal Emergency Management Agency (FEMA) prior to the expiration date.

DISCUSSION:

The LHMP updating process will take approximately one year to complete. The update involves hazard mitigation planning which is a process for state and local governments to identify community-level policies and actions to mitigate and thus reduce the impacts of natural hazards. This process will allow the City, community, and stakeholders to understand risks from natural hazards and develop long-term strategies in reducing or eliminate the impacts of future disasters on people and property as well as to critical facilities and infrastructure. Mitigation plans form the foundation for the City's long-term strategy for reducing disaster losses and breaking the cycle of disaster damage, reconstruction, and repeated damage. In addition, all public agencies are required under the Disaster Mitigation Act of 2000 (DMA2K) a national program for pre-disaster mitigation, which provides federal funding for projects that are not dependent on presidential disaster for federal relief, to have an approved Local Hazard Mitigation Plan (LHMP).

Hazards

The current LHMP identifies six potential hazards which the City of may face such as an earthquake, flood, landslide, wildfire, windstorm, and manmade hazards. The plan also provides an assessment of vulnerabilities and identifies specific action items that address overall goals. City staff has identified two new hazards, drought and excessive heat.

PS Commission – Public Information Workshop LHMP Update
May 31, 2018
Page 2

Agenda Item 8

Opportunities for Public Input and Community Participation

Community participation plays a very important role in developing goals and action items for the LHMP. Public input is a critical component of a successful and comprehensive update. Public participation offers community members the opportunity to voice ideas, interest and opinions, increase one's awareness of hazards, and contribute to the decision-making process of mitigation-related issues.

The City has already held two Stakeholder Meetings in which the public and interested stakeholders participated. Through the year public information workshops will be held as part of the plan development process and members of the community will have opportunities to share their input, review, and comment on the draft of the 2019 LHMP. Tonight's public information workshop will provide the public with an overview of the LHMP, the importance of the LHMP, and a chance to identify mitigation goals and strategies. The City will use the public input sessions to learn about the public's priorities for reducing the effects of hazards. For members of the public that are unable to come in person to the public meeting, the City has created an online comment form on the City's website at <http://www.lcf.ca.gov/public-safety/lhmp>.

CONCLUSION:

It is requested that the Public Safety Commission hold a public meeting to receive feedback and comments from the community.

ATTACHMENTS:

None.

I.A.4.c Minutes

**SPECIAL MEETING MINUTES OF THE CITY OF LA CAÑADA FLINTRIDGE
PUBLIC SAFETY COMMISSION HELD ON THURSDAY, MAY 31, 2018****1. CALL TO ORDER**

Chair Manning called the meeting to order at 7:07 PM.

2. ROLL CALL

Chair Manning, Vice Chair Seastrom, Commissioner Siegel-Sproles, and Commissioner Smith present. Commissioner Schafer absent.

3. PLEDGE OF ALLEGIANCE

Led by Commissioner Smith.

4. COMMENTS FROM THE PUBLIC

None.

5. APPROVAL OF THE APRIL 23, 2018 REGULAR MEETING MINUTES

M/S/C: Smith/Siegel-Sproles to approve minutes of the April 23, 2018, Regular Meeting.
4-0-1 approved.

PUBLIC SAFETY PRESENTATIONS**6. Fire Activity Report**

Management Analyst Nguyen provided a summary of the April 2018 Fire Department Activity Report. She informed the Commission that fire personnel is attending an Awards ceremony and any questions regarding the fire activity report would be noted and sent to the Fire Department Liaison Maria Grycan.

In the month of April 2018, the Fire Department had 89 responses of which 2 were fires, 61 medical, 5 service calls, 0 hazamat condition, 1 hazardous condition, and 20 good intent calls. Management Analyst Nguyen summarized the fire incidents, traffic collisions, and year-to-year statistics.

Chair Manning asked Sergeant Walker if the Sheriff's Department had information on the cause of the structure fire at Milmanda Drive. Sergeant Walker informed the Commission that he did not have information on the case and would notify Deputy Matejka, so he could gather more details.

7. Crime Statistics/ Activity Report

Sergeant Walker presented the April 2018 Crime Statistics to the Commission. The April 2018 statistics included 4 residential burglaries, 1 other structure burglary in which a home gate was open and flooring material was stolen, and 23 larceny-thefts with the majority being from unlocked vehicles.

Vice Chair Seastrom asked if there was a pattern to the residential burglaries that indicates the same people were involved. Sergeant Walker said how the homes were accessed is the only commonality. There is no video footage available, but a possible vehicle has been identified.

Sergeant Walker said that community involvement, the Neighborhood Watch Program, steps Captain Blasnek has taken, and the Ring.com program has helped the Department tremendously.

Special Meeting Minutes, Public Safety Commission
May 31, 2018
Page 2 of 4

The Commission mentioned shoplifting incidents at the T.J. Maxx. Sergeant Walker explained that the Department has a description and pictures of the suspects. They are working with T.J. Maxx to solve the case.

NEW BUSINESS

8. Public Information Workshop for the Local Hazard Mitigation Plan Update

Management Analyst Nguyen presented a staff report detailing the City's process of updating the Local Hazard Mitigation Plan and provided an overview of the existing plan through a PowerPoint presentation.

In response to the new hazard section of the presentation, Commissioner Siegel-Sproles shared that drought is a condition but does not see it rising to the level of a hazard. She asked for an explanation of why it was included as a hazard.

Division Manager Parseghian explained that Governor Arnold Schwarzenegger identified drought as a State hazard. Drought occurs frequently in California and the Governor asked for all local governments to identify it as a hazard and create mitigation goals.

In response to the public input section of the presentation, Chair Manning asked how the City is publicizing the public meetings.

Management Analyst Nguyen shared that the City has posted announcements of the public meetings online to the City website, social media platforms, and reached out to stakeholders to share the information.

Commissioner Siegel-Sproles asked about the participation level for the meetings.

Management Analyst Nguyen informed the Commission that 20 people attended the first stakeholder meeting and around 15 people attended the second meeting.

Commissioner Siegel-Sproles asked if the City had a plan in place to work with the state or residents whose homes are identified as high risk to obtain insurance to rebuild after a disaster. She stated that after the Station Fire some residents had a difficult time obtaining insurance policies.

Division Manager Parseghian informed the Commission that the entire City is considered a high fire location and no specific property will be identified as high risk. He added that the insurance companies utilize risk assessment data created by the County and state. However, he shared that the City will identify issue areas in which action is needed and identify mitigation strategies. Also, depending on the issue, certain information will not be shared with the public due to national security concerns, such as the JPL site.

Division Manager Parseghian emphasized that the Local Hazard Mitigation Plan is not a response plan to a disaster but rather a plan where strategies are developed prior to a disaster event. He also emphasized the success of the plan is based on public participation and resident's experience.

Management Analyst Nguyen explained that staff will open the public comment section in the form of an activity. The public will have an opportunity to review the current mitigation items and create new goals and strategies for each hazard. She concluded the presentation by taking questions from the Commission.

Commissioner Smith asked if the City needs to include hazards identified by the state.

Special Meeting Minutes, Public Safety Commission
May 31, 2018
Page 3 of 4

Division Manager Parseghian said the City is not required to include hazards identified by the state, however not including a hazard like a drought and excessive heat could potentially affect the approval of the plan.

Commissioner Smith shared that during the Station Fire there was a lack of cooperation between agencies to provide the necessary resources. She mentioned not seeing a reference to an action item on how to integrate lines of communication between various agencies.

Division Manager Parseghian suggested that the item could be a goal added into the multi-hazard section of the plan with an emphasize of improving multi-agency collaboration. He provided additional information and possible mitigation ideas.

Chair Manning opened the public comments section.

Elden Horst, a resident and Vice Chair of the Public Works and Traffic Commission, shared that the Public Works and Traffic Commission is working on lessons learned from wildfires that have occurred in the last year. He is particularly interested in water storage for fire events and working with the water companies. Mr. Horst provided details on the project's timeline and action plan.

Commissioner Vice Chair Seastrom said he attended the Local Hazard Mitigation Plan stakeholder meeting and participate in the fire hazard table discussion with individuals from the water companies. He explained that the companies provided useful insight and suggestions for addressing fires.

Division Manager Parseghian provided clarification on the timeline shown during Management Analyst Nguyen's presentation. The timeline is for the Local Hazard Mitigation Plan approval process and after it's approved the City has five years to work on the mitigation goals. He shared information he had on the concerns of the four water companies and feedback regarding the plan.

Jeff Reeb, Director of the Office of Emergency Management for the County of Los Angeles and resident complimented City staff on the presentation and materials prepared to engage the public. He provided the Commission with information on the County's mass notification system including the function of wireless emergency alert to cell phones.

Vice Chair Seastrom asked if only people who opt-in receive a message.

Division Manager Parseghian shared that every landline in the City is in the system. The federal government now allows cell phones to be part of the system regardless if someone opt-in's or not. He still encourages resident to sign up using the opt-in portal to ensure they are in the system.

Management Analyst Nguyen continued the public comments with an activity that focused on gathering public input on mitigation goals and strategies.

Management Analyst Nguyen closed the agenda item by reviewing the plan's timeline and future meeting dates.

CONCLUDING BUSINESS

9. Staff Comment

Management Analyst Nguyen informed the Commission that the third phase of the Ring.com Residential Video Doorbell Program will be opening on Friday, June 1st and provided details on the program's requirements.

Management Analyst Nguyen provided an update on the Youth Program subcommittee and their interest in creating a publication and presentation on drugs and vaping.

Special Meeting Minutes, Public Safety Commission
May 31, 2018
Page 4 of 4

10. Items for Future Agenda

The Commission reviewed the homeless resource sheet created by Deputy Matejka and Sergeant Walker answered questions.

11. Comments from the Commission

Chair Manning shared speeding concerns along Angeles Crest Highway and asked what the process for installing a guardrail would be.

Division Manager Parseghian informed Chair Manning that once staff has been informed, they will contact the City's Public Works Department, and the Department will complete a review. If needed the item will go to the Public Works and Traffic Commission.

Commissioner Smith shared details of the Memorial Day breakfast the Congressional Church has for first responders.

ADJOURN

As there was no further business, the meeting was adjourned at 8:31 PM.



Christina Nguyen, Management Analyst
(Staff Liaison to the Public Safety Commission)

I.A.5 Public Posting of Draft LHMP

The 2019 Local Hazard Mitigation Plan Public Review Draft was posted online between October 4, 2018 thru November 6, 2018 for public review and comment. Physical copies were also left throughout the City at the following locations:

Community Center of La Cañada Flintridge

4469 Chevy Chase Drive
La Cañada Flintridge, CA 91011

La Cañada Flintridge Chamber of Commerce and Community Association

4529 Angeles Crest Hwy., Ste 102
La Cañada Flintridge, CA 91011

La Cañada Flintridge City Hall Lobby

1327 Foothill Boulevard
La Cañada Flintridge, CA 91011

La Cañada Flintridge Library

4545 North Oakwood Avenue
La Cañada Flintridge, CA 91011

I.A.5.a Press Release- October 4, 2018



PRESS RELEASE

City of La Cañada Flintridge

1327 Foothill Boulevard • La Cañada Flintridge • California 91011 • (818) 790-8880 FAX: (818) 790-7536

Press Release

October 4, 2018

Contact:

Christina Nguyen (818) 790-8880

City of La Cañada Flintridge 2019 Local Hazard Mitigation Plan Public Review Draft

La Cañada Flintridge, CA – The City has posted the 2019 La City La Cañada Flintridge Local Hazard Mitigation Plan (LHMP) Public Review Draft and is seeking public feedback.

The LHMP Public Review Draft is available to view/download and provide feedback online by visiting the City’s Local Hazard Mitigation webpage: www.lcf.ca.gov/public-safety/lhmp

The LHMP allows the City, community, and stakeholders to better understand risks from natural hazards and develop long-term strategies for mitigating their impacts. Public input is very valuable and plays a key role in implementing a successful comprehensive plan.

The City will hold public meetings to review the City’s 2018 LHMP Public Review Draft.

Public Meeting

Date: Monday, October 22, 2018

Time: 7:00 p.m.

Location: La Cañada Flintridge Council Chambers

Public Meeting

Date: Tuesday, November 6, 2018

Time 10:00 a.m. -11:30 a.m.

Location: La Cañada Flintridge Council Chambers

**Comments to the 2019 La Cañada Flintridge LHMP Public Review Draft are
DUE BEFORE Tuesday, November 6, 2018**

For questions, please email us at: LHMPComments@lcf.ca.gov

###

I.A.5.b Social Media Post



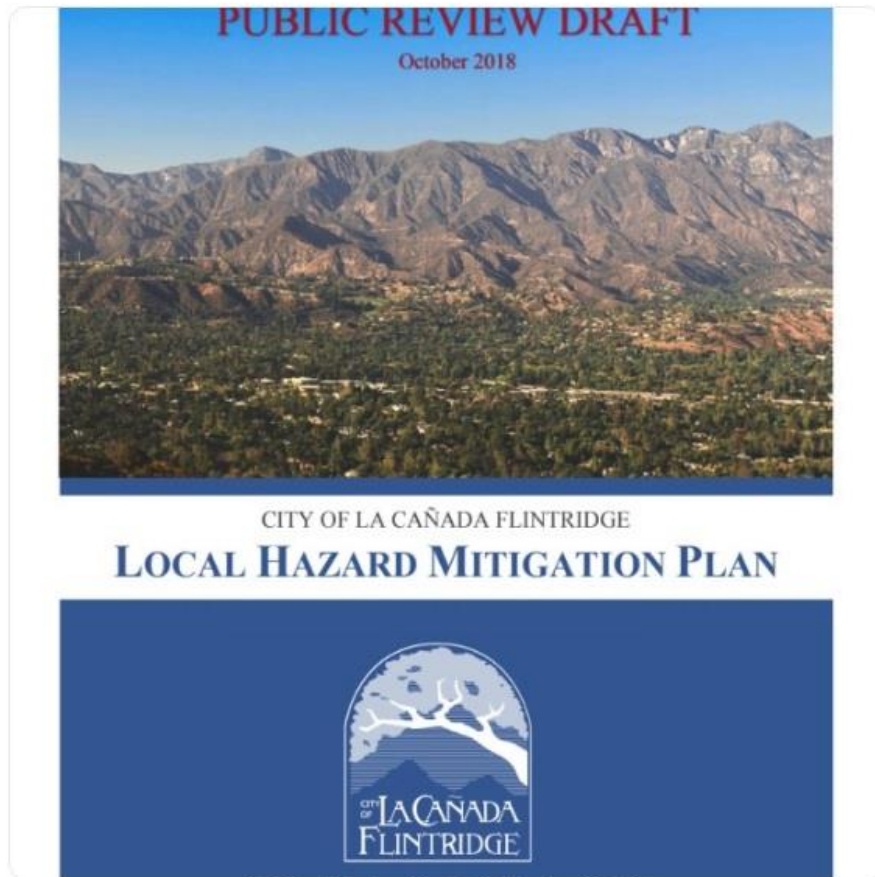
I.A.6 Public Information Meeting - October 22, 2018

The October 22, 2018 Public Information meeting was held in conjunction with the City of La Cañada Flintridge Public Safety Commission meeting. The meeting introduced the public to changes and updates with the plan and provided a forum to discuss the mitigation strategies and Local Hazard Mitigation Draft.

I.A.6.a Social Media Post

 **La Cañada Flintridge** 
@TheCityofLCF Follow 

Tomorrow at 7:00 p.m., the [@TheCityofLCF](#) will be hosting a public meeting in the City Council Chambers to review the City's draft 2019 Local Hazard Mitigation Plan: [lcf.ca.gov/public-safety/....](http://lcf.ca.gov/public-safety/...) Residents are encouraged to submit feedback prior to the deadline on Tue., Nov. 6, 2018.



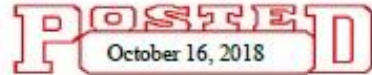
3:00 PM - 21 Oct 2018



I.A.6.b Agenda



NOTICE AND AGENDA
PUBLIC SAFETY COMMISSION
REGULAR MEETING



Monday, October 22, 2018, 7:00 p.m.
La Cañada Flintridge City Hall, Council Chambers
1327 Foothill Boulevard

Preliminary Business

1. Call to order
2. Roll call
3. Pledge of Allegiance
4. Public Comment on matters not on the Agenda – Public Comment is limited to 3 minutes per speaker. Please submit a “Public Comment Card” to the Staff Liaison.
5. Approval of the September 24, 2018 Regular Meeting Minutes

Presentations

6. Fire Activity Report
7. Crime Statistics/Activity Report

Continuing Business

8. Public Draft of the 2019 Local Hazard Mitigation Plan

New Business

9. Discussion of Shared Mobility Devices

Concluding Business

10. Staff comments
11. Items for future Agendas
12. Comments from the Commission

Adjourn

I hereby certify that this agenda was posted in a location accessible to the public at 1327 Foothill Blvd. at least 72 hours prior to the regular meeting in accordance with Government Code Section 54945.2.

AMERICANS WITH DISABILITIES ACT

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the City Clerk's Office, (818) 790-8880 no later than Friday prior to the Monday meeting. (28 CFR 34.102.104 ADA TITLE II)

Christina Nguyen, Management Analyst
(Staff Liaison to the Public Safety Commission)

I.A.6.c Staff Report

Agenda Item 8



**AGENDA STATEMENT
PUBLIC SAFETY COMMISSION**

DATE: October 22, 2018
TO: Public Safety Commission
PRESENTER: Christina Nguyen, Management Analyst
SUBJECT: Public Draft of the 2019 Local Hazard Mitigation Plan

BACKGROUND:

The City’s current approved LHMP is set to expire on June 4, 2019. The City is continuing its update of the Local Hazard Mitigation Plan (LHMP) and has published a draft of the 2019 Plan for the public to review and provide feedback prior to submission for approval to the California Governor’s Office of Emergency Services (Cal OES) and the Federal Emergency Management Agency (FEMA). The City is required by the Disaster Mitigation Act of 2000 (DMA2K), a national program for pre-disaster mitigation, which provides federal funding for projects that are not dependent on presidential disaster for federal relief, to have an approved LHMP.

The Plan’s updating process began in Spring of 2018 with the City’s formation of a Planning and Development Team comprising of eight staff members from various City Departments to lead the update. Over 20 key community groups and service providers were invited to be part of the stakeholders Hazard Mitigation Advisory Committee and provide input for the Plan’s update. Additionally, the public was invited to participate in the development of the Plan through public meetings and online comment portal.

The City’s 2019 LHMP is a result of a collaborative effort between residents, public agencies, non-profit organizations, the private sector, regional and state organizations. The process provided a better understanding of risks from natural hazards and develop long-term strategies in reducing or eliminating their impacts on people, property, critical facilities and infrastructure, and on the environment. The Plan forms a foundation for the City’s long-term strategy for reducing disaster losses and efforts to break the cycle of disaster damage, reconstruction, and repeated damage.

The City’s 2019 LHMP includes the following notable changes and enhancements:

- Two (2) new hazards were included in the Plan:
 - Drought was added as a result of the 2014 Governor of California declared a State of Emergency. The drought emergency declaration was

Public Safety Commission – Public Draft of the 2019 LHMP
October 22, 2018
Page 2 of 2

Agenda Item 8

lifted in 2017, however, local and state measures are in place to prohibit wasteful practices and actions to advance water conservation, (page 135-151); and

- Excessive Heat was added due to the potential impacts heat waves have on vulnerable populations and tax electricity demands in the community, (page 152-165).
- Update to the mitigation action items (summary on page 36-41 and full descriptions can be found within each hazard section);
- The Plan’s mission statement and goals were refined to reflect current priorities, (page 9-10); and
- The Flood Section was updated:
 - The removal of “Community Issues Summary” as all of the special local flood areas mentioned in the 2014 Plan have been modified to mitigate the issue(s), (page 77); and
 - An expanded discussion of the health and safety risks associated with the floods, (page 73-74).

The draft of the City’s 2019 Local Hazard Mitigation Plan along with the online public input form can be found by visiting www.lcf.ca.gov/public-safety/lhmp. The City is accepting public input until Tuesday, November 6, 2018.

CONCLUSION:

It is requested that the Public Safety Commission hold a public meeting to receive feedback and comments from the community.

ATTACHMENTS:


None.

I.A.6.d Presentation

City of La Cañada Flintridge

2019 Local Hazard Mitigation Plan Draft
October 22, 2018

Christie Nagren, Management Analyst
Arabo Paezoglou, Division Manager
Chris Conroy, Emergency Services Coordinator



Local Hazard Mitigation Plan

- The City's current approved Plan expires on June 4, 2019.
- Required as a result of the Disaster Mitigation Act of 2000 (DMA2K) as a condition to qualify and receive Hazard Mitigation funding.
- LHMP must be prepared and updated every 5 years in order to remain eligible for disaster assistance, including funding for hazard mitigation projects.
- Plan must be approved by Cal OES and FEMA.

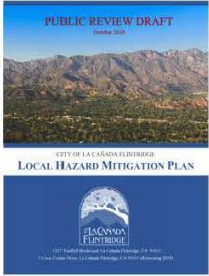


Key Objectives of the Plan's Update

- Enhance the mitigation strategy to include specific, achievable, and measurable hazard mitigation.
- Integrate anticipated effects of new hazards.
- Improve plan maintenance procedures to establish a sustained, long-term process of increasing the resilience of all communities.
- Conduct widespread public outreach and stakeholder involvement to support successful implementation, integration, and maintenance of the plan for all communities.

City's 2019 LHMP Draft

- Plan's update process began in Spring 2018
 - Planning and Development Team- 8 City staff members;
 - Hazard Mitigation Advisory Committee- 23 stakeholders; and
 - Input from the community.



Key Highlights

- Refined the Plan's mission statement and goals
- Updated mitigation action items
- New hazards
 - Drought
 - Extreme Heat
- Updates to the Flood hazard section

Mission Statement

The mission of the City of La Cañada Flintridge Local Hazards Mitigation Plan is to promote sound public policy and practices designed to **protect** citizens, critical facilities, infrastructure, private property, and the environment from natural and human caused hazards. This is achieved by increasing **public awareness**; documenting the resources for **risk reduction** while taking measures to **preserve** life, property, and the environment.

Goals

- The goals guide the direction of the mitigation action items and the City identified three goals.
 - Mitigation-** Work towards the completion of mitigation projects and implement measures to make infrastructure and property more resistant to losses.
 - Collaboration-** Strengthening communications and leadership to increase mitigation efforts among the public and other agencies.
 - Education-** Increase public awareness of hazards and personal recovery measures.

Mitigation Action Items

- The Plan's goals shape the mitigation action items which are designed to minimize the impact of future disasters.
- Developed by examining the history of disasters in the City and surrounding communities.
- Designed using local resources
 - Local plans and regulations
 - Structure and infrastructure projects
 - Natural system protection
 - Education and awareness programs
- Based on a risk assessment that includes an analysis of potential loss, injury and damage.

Mitigation Action Items

- The 2014 Plan had 23 mitigation items
 - 19 items were started or completed
- The 2019 Plan has 36 mitigation items

Identified Hazards

2019 Plan
Earthquake
Flood
Landslide
Wildfire
Windstorm
Drought (New)
Excessive Heat (New)
Human-Made
Multiple-Hazard

Note: Order as it appears in the City's 2019 LHMP

Summary of Mitigation Action Items

Hazard	Mitigation Action
Earthquake	<ul style="list-style-type: none"> Encourage seismic strength evaluations of critical facilities located in the City of La Cañada Flintridge. Identify if the City has critical facilities and review with geologist personnel.
Flood	<ul style="list-style-type: none"> Biennial inspection of catch basins to help identify catch basins that need cleaning and/or repair work. Perform an inventory of storm drains in the city and determine which agency has responsibility for maintenance.
Landslide	<ul style="list-style-type: none"> Educating residents about the importance of proper maintenance of the hillides on their property. Collaborate with resource agencies to regular inspection and maintenance of debris items.
Wildfire	<ul style="list-style-type: none"> Inventory pools and other potential water resources which can be used during an emergency to water nearby. Collaborate with utilities to evaluate areas of impovement to reduce wildfires.
Windstorm	<ul style="list-style-type: none"> Establish public education campaigns on proper vegetation and landscaping to minimize property damages in case of an event. Collaborate with utility companies to review to reduce impact during an event.
Drought	<ul style="list-style-type: none"> Increase public awareness and education on water saving measures. Review and modify existing ordinances to promote water conservation measures during drought emergencies.
Excessive Heat	<ul style="list-style-type: none"> Information campaign on backup electric powered generators to prepare to recoveries and business for emergencies and power outages. Educate businesses and public on cooling methods for homes to reduce urban heat island effect.
Human-Made	<ul style="list-style-type: none"> Annual meeting with utility companies to exchange ideas and method of increasing cybersecurity. Educate the public on cybersecurity threats and ways for individuals to protect themselves.
Multiple-Hazard	<ul style="list-style-type: none"> Develop strategies and capabilities to mitigate risk to local government facilities, or to utilize alternative facilities should local hazard events cause damage. Establish partnerships with non-governmental organizations to secure funding for mitigation activities that would be mutually beneficial.

Note: For a full list of mitigation action items, please refer to the City's 2019 LHMP


Timeline

Event	Topic	Dates
Public Meeting	Introduction of LHMP	March 26, 2018
Project Kickoff	Initial meeting with City staff	March 28, 2018
Stakeholder Meeting	Overview of LHMP and discussion	April 23, 2018
Stakeholder Meeting	Hazard and mitigation discussion	May 23, 2018
Public Information Meeting	Review of LHMP	May 31, 2018
Public Information Meeting	Review of final LHMP draft	October 12, 2018
Stakeholder Meeting	Review of final LHMP draft	November 6, 2018
Submit to Cal OES & FEMA	Review of the document for approval	December 2018
City Council Adoption	Adoption of LHMP via resolution	Spring 2019

Public Input

The City is seeking public feedback prior to submitting the Plan for approval.

Comments are due by November 6, 2018
www.lcfa.gov/public-safety/lhmp



Contact

<p>Christina Nguyen Management Analyst cnguyen@lcfa.gov (818) 790-8880 ext. 104</p>	<p>Arabo Parseghian Division Manager aparaseghian@lcfa.gov (818) 790-8880 ext. 105</p>	<p>Chris Carey Emergency Services Coordinator ccarey@lcfa.gov (818) 790-8880 ext. 501</p>
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I.A.6.e Minutes



REGULAR MEETING MINUTES OF THE CITY OF LA CAÑADA FLINTRIDGE
PUBLIC SAFETY COMMISSION HELD ON MONDAY, OCTOBER 22, 2018

- 1. **CALL TO ORDER:** Chair Seastrom called the meeting to order at 7:00 p.m.
- 2. **ROLL CALL:** Chair Seastrom, Vice Chair Siegel-Sproles, and Commissioner Smith, Commissioner Schafer present. Commissioner Manning absent.
- 3. **PLEDGE OF ALLEGIANCE:** Led by Chamber of Commerce board member Gary Stibal.
- 4. **COMMENTS FROM THE PUBLIC:** None.
- 5. **APPROVAL OF THE SEPTEMBER 24, 2018 REGULAR MEETING MINUTES:** M/S/C: Smith/Siegel-Sproles to approve minutes of the September 24, 2018 Regular Meeting. 4-0-1 approved. Commissioner Manning absent.

REORDERING OF AGENDA: Management Analyst Nguyen requested that Agenda Item No. 8 be recorded and heard before Agenda Item No. 6.

PUBLIC SAFETY PRESENTATIONS

6. Fire Activity Report

Fire Department Community Services Liaison Grycan provided the Commission with the fire activity report for September 2018, which included 113 responses, 66 medical calls, 42 transports, one (1) cooking fire on Foothill Boulevard with no damages, one (1) powerline down and defective wiring, and eight (8) traffic collisions.

She provided an update on brush inspections and reported 24 parcels were not in compliance and received 30-day notices. 23 parcels were cleared by the owner and one (1) parcel was cleared by County Agricultural. The brush inspection cycle will begin in May 2019.

Chair Seastrom asked for an update for a home's condition on Berkshire Avenue which Commissioner Manning raised concerns about during last month's meeting.

Management Analyst Nguyen informed the Commission that a case was filed with the City and Code Enforcement Officer Rodriguez has instructed the homeowner to clear the property and the homeowner is cooperating. Commissioners interested in more information can contact the Code Enforcement directly.

Chair Seastrom asked if power outages that occurred in September and October were part of Edison's power shut-off.

Community Services Liaison Grycan said Edison was preparing to initiate their public safety power shut off program but approximately 24,00 homeowners in the service area would be affected and as a result did not move forward with the shut-off. But there were downed power lines that caused the outages.

7. Crime Statistics/ Activity Report

Deputy Matejka provided the Commission with the crime statistics for September 2018, which included zero (0) homicides, zero (0) rapes, zero (0) robberies, zero (0) aggravated assaults and eight (8) residential burglaries. There were 18 Part 1 crimes. There were two (2) narcotics incidents and four (4) fraud and identity theft incidents.

He noted one of the burglaries was at a construction site. He advised homeowners to inform contractors to put away building supplies and tools. Homeowners should change codes after giving visitors access.

There was a total of seven (7) traffic collisions with five (5) noninjury and two (2) injury. The Department issued 90 warnings and 109 citations.

Deputy Matejka informed the Commission that work has started for Every 15 Minutes, a program to raise awareness for drunk driving that is presented to La Canada High School. The station will be having its annual haunted house and jail on October 26th and 27th.

Chair Seastrom referred to the map in the report and asked for an explanation of the sections.

Deputy Matejka informed the Commission the City is divided into reporting districts and the statistics are recorded for the different areas.

CONTINUING BUSINESS

Agenda Item No. 8 was heard before Agenda Item No. 6.

8. Public Draft of the 2019 Local Hazard Mitigation Plan

Management Analyst Nguyen presented the report to the Commission along with a PowerPoint presentation and request for the item to be opened for public feedback.

Chair Seastrom asked how mitigation actions items were carried over.

Management Analyst Nguyen informed the Commission that mitigation action items from the 2014 Plan were carried over based on needs and priorities. Some were modified to meet the current needs of the community and others were removed if they were completed or were no longer feasible.

Commissioner Smith asked if consideration was given to include terrorism to the Plan.

Division Manager Parseghian said terrorism is included in the Plan as part of the human-made hazard and a detailed list of the mitigation items is in the Plan.

Commissioner Schafer asked if the Commission could be involved in the process of reviewing mitigation actions items to make sure the items are being completed.

Management Analyst Nguyen said that as part of the 2019 Plan, there is a process outlined to hold annual meetings with stakeholders and the community to review the progress of the mitigation actions items. She said the Commission members can be part of those discussions. She added, Emergency Services Coordinator Carey will be the lead in ensuring the action items are completed before the next update.

Division Manager Parseghian added that updates on the Plan's progress can be presented to the Commission during the regularly scheduled meetings.

Chair Seastrom welcomed Emergency Services Coordinator Carey.

Emergency Services Coordinator Carey introduced himself.

NEW BUSINESS

9. Shared Mobility Devices

Director of Administrative Service Alameda presented the report to the Commission.

Vice Chair Siegel-Sproles said the City does not have many sidewalks and is unsure if the devices will be left on streets or curbs or if restrictions will be set to leave the devices in areas such as parking lots.

Director of Administrative Services Alameda said it will be challenging in residential areas. An approach would be to have designed areas around destination points or transit connectors and shared how a City is doing this. He also said companies rebalance the devices and place them where they should be.

Commissioner Schafer said the business model is designed for university, beach, and high-density communities. He does not believe La Canada has the demographics and geography to make it a compelling place for the devices. He said concerns surrounding bicycles are already addressed and suggested expanding the definition of bicycles to include shared mobility devices.

Director of Administrative Services Alameda informed the Commissions that the California Vehicle Code addresses bicycle safety and requirements which apply to the City.

Vice Chair Siegel-Sproles said Sheriff resources would be better utilized patrolling residential neighborhoods instead of removing devices from the public right-of-way. She agreed with Commissioner Schafer, the City is not the model for shared mobility devices.

Commissioner Smith asked if there are gaps between the California Vehicle Code and a city ordinance that regulate the use of the devices.

Director of Administrative Services Alameda said the tools in the California Vehicle Code will address concerns. But there are no established regulations for speed control in areas like schools and shopping areas or the number of devices and operators. The quantity and speed are the biggest issues.

Commissioner Schafer said the speed is maxed out at 25 miles per hour. He asked if there were zones in the City that have less.

Deputy Matejka said it is prima facie speed but depending on the conditions for speed it can be far less than 25 miles per hour.

Director of Administrative Services Alameda said he has spoken to other municipalities whose posted speed is at or lower to the devices' speed. People who use the devices are often unfamiliar with the controls and major collisions have occurred.

Chair Seastrom asked if the City has had requests for the devices.

Director of Administrative Services Alameda said the item was coming to the Commission because the City Council had concerns and wanted the topic to be discussed before it becomes an issue. He said he has not heard of requests from residents.

Commissioner Schafer asked if the intent to address the issue is because the City plans on cutting car use in the future.

Director of Administrative Services Alameda said the City has plans to improve transit transportation, but it does not involve motorized devices.

Commissioner Schafer said based on the City plans, the devices are not an issue and do not see it as being a challenge to the City.

Chair Seastrom said he is considering option three (3) as it does not appear people are using the devices.

Commissioner Smith said no one knows if there is a use for the devices and it should not be dismissed. Her concern is if the devices do show up, there should be something in place to operate the devices like a permit or proof of liability to hold the City harmless.

Chair Seastrom said other cities have had experience with the devices are now trying to get rid of them, the City should not go through the same learning curve.

Commissioner Smith said the City has the infrastructure in place with bike lanes and designed areas. At the moment the business model does not apply but it may at some point. She said it is worth to have a discussion of how to protect the City.

Commissioner Schafer asked about liability and who is responsible. He is not in favor of eliminating the devices and if it is an issue he is fine with having minimum criteria in place.

Director of Administrative Services Alameda said the City can set a policy requiring companies to obtain a business license to operate along with submission of liability insurance.

Director of Administrative Services Alameda concluded that the Commission's recommendation is to take no actions and to use the tools outlined in the California Vehicle Code. If the issue does come up, he said it would be addressed with an ordinance.

Vice Chair Siegel-Sproles asked if companies have approached the City and if the City is inviting companies to come in.

Director of Administrative Services Alameda said no to both questions. The City Council was contacted by a concerned business owner wanting to discuss the issue. Many of the concerns are addressed in the Vehicle Code, but the supplemental tools and control measures are not in place. The intent of the discussion was to see if there was anything else the City should be doing to address the issue.

M/S/C: Commissioner Smith/Schafer to recommend that the City Council take no action and ensure users of shared mobility devices follow the provisions set by the California Vehicle Code. 4-0-1. Commissioner Manning absent.

CONCLUDING BUSINESS

10. Staff Comment

Management Analyst Nguyen said a second meeting will be held to review the draft of the Local Hazard Mitigation Plan on November 6th from 10:00 a.m. to 11:30 a.m. in the City's Council Chambers.

11. Items for Future Agenda

Vice Chair Siegel-Sproles asked for the youth program subcommittee to revisit and discuss topics.

12. Comments from the Commission

The Commission thanked the staff for the updates on the Local Hazard Mitigation Plan and the shared mobility devices and efforts placed on the work.

ADJOURN

As there was no further business, Chair Seastrom adjourned the meeting at 8:09 p.m.



Christina Nguyen, Management Analyst
(Staff Liaison to the Public Safety Commission)

I.A.7 Stakeholder Meeting – November 6, 2018

The final stakeholder meeting was held on November 6, 2018. Staff personally invited previous participants to the meeting, and posted on social media, the City’s website, and throughout the City inviting the public to attend the meeting.



Figure 34: LHMP Draft Review

During the meeting, staff presented the draft for inspection and provided a brief summary of the changes and updates. Afterwards, the attendees were invited to discuss the draft and mitigations. Attendees wanted to review the fire and human-caused mitigations. They stressed the importance of mitigation for both hazards in their communities. Staff answered their questions and explained where and how their ideas were incorporated into the plan. The format allowed attendees to speak when they had suggestions or questions, and space for larger group conversations.

I.A.7.a Social Media Post

The image shows a Facebook post from the City of La Cañada Flintridge. On the left is the city's profile picture, a logo celebrating 40 years (1976-2016) featuring a tree and mountains. Below the profile picture is the name 'City of La Cañada Flintridge' and the handle '@cityoflacanadaflintridge'. A navigation menu on the left includes 'Home', 'About', 'Photos', 'Events', 'Reviews', 'Videos', 'Posts', 'Community', and 'Info and Ads', with a 'Create a Page' button at the bottom. The post itself is dated November 5 at 11:01 AM and contains the following text: 'Tomorrow at 10:00 a.m., join the City of La Cañada Flintridge for a public meeting to review the City's 2019 draft Local Hazard Mitigation Plan. The Plan is available for review at <http://www.lcf.ca.gov/public-safety/lhmp>. Feedback is due tomorrow.' Below the text is a large graphic for the 'PUBLIC REVIEW DRAFT' of the 'LOCAL HAZARD MITIGATION PLAN' for 'October 2018'. The graphic features a scenic view of mountains and a blue sky. At the bottom of the graphic is the city logo and contact information: 'CITY OF LA CAÑADA FLINTRIDGE', '1327 Foothill Boulevard, La Cañada Flintridge, CA. 91011', and '1 Civic Center Drive, La Cañada Flintridge, CA 91011 (Relocating 2019)'.

I.A.7.b Agenda



NOTICE AND AGENDA
LOCAL HAZARD MITIGATION PLAN
ADVISORY COMMITTEE/STAKEHOLDERS MEETING
Tuesday, November 6, 2018; 10:00 a.m.
La Cañada Flintridge City Hall Council Chambers
1327 Foothill Blvd.



Preliminary Business

- 1. Introductions
2. Overview of the Plan's Update Process
3. Review of Key Highlights for the 2019 Plan
4. Comments and Questions

Adjourn

I do hereby certify that this agenda was posted in a location accessible to the public at 1327 Foothill Boulevard at least 72 hours prior to the regular meeting in accordance with Government Code Section 54945.2.

Handwritten signature of Christina Nguyen

Christina Nguyen, Management Analyst

AMERICANS WITH DISABILITIES ACT

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the City Clerk's Office, (818) 790-8880 no later than Tuesday prior to the Wednesday meeting. (28 CFR 34.102.104 ADA TITLE II)

I.A.7.c Sign-In Sheet



Advisory Committee/ Stakeholder Meeting #3

Project: City of La Cañada Flintridge Hazard Mitigation Plan Update
Place/Room: LCF City Hall Council Chamber
Date: November 6, 2018
Time: 10:00 a.m.

	Print Name	Agency/Organization	Title	Email	Signature
1.	CANDICE RANKIN	LCF PUBLIC WORKS	MANAGEMENT INTERN	CRANKIN@LCF.CA.GOV	<i>Candice Rankin</i>
2.	MARIA CRONE	Flintridge Riding Club	EXECUTIVE DIRECTOR	MARIA-FRCD@EARTHKINK	<i>Maria Crone</i>
3.	Maureen Bond	Community Center	Executive Director	maureen@ccfc.org	<i>Maureen Bond</i>
4.	claire PERIGAUD	newly retired from JPL/ NASA weather climate	Principal Investigator sciences	eperigpa@gmail.com	<i>Claire Perigaud</i>
5.	RANDY SMITH	LCUSD	Mgr of MAINT+OPS	rsmith@lcsd.net	<i>Randy Smith</i>
6.	Paddy	LCF Public Works	Senior management Analyst	p@lcf.ca.gov	<i>Paddy</i>
7.	JOHN PENISO	Disaster Mgmt Area C	Disaster Mgmt Area Coordinator	AreaC@dmac.ca.gov	<i>John Peniso</i>
8.	Lisa Branchen	City of LCF Planning Dept	Senior Management Analyst	lbranchen@lcf.ca.gov	<i>Lisa Branchen</i>
9.	Doug CRASTER	La Cañada Inv. Dist.	Mgr.	LACANADAID@caflink.net	<i>Doug Craster</i>

APPENDIX I: PUBLIC PARTICIPATION

CITY OF LA CAÑADA FLINTRIDGE

10.	Ramil Parial	LA County Public Works	Assoc. Civil Engr.	rparial@dpu.lacounty.gov	
11.	Maria Gryn	LA WPD	Comm Svcs Licen	maria.gryn@lacounty.gov	
12.	Mynor Loarca	st george's church	grounds keeper	mynor.loarca@gmail.com	
13.	Arabo Parseghian	City of LCF	Division Manager	aparseghian@lcf.ca.gov	
14.	Ken Hernandez	FmWD	DISTRICT ENGR		
15.	Nina Jazmadarian	Foshill/MWD	General Manager	nina.jaz@fmwd.com	
16.	Pet Anderson	Chamber of Commerce	CEO	exec@lacanadaflintridge.com	
17.	JOSEPH JEFFREY	CITY OF LCF	MANAGEMENT INTERN	jjeffrey@lcf.ca.gov	
18.	Christina Nguyen	City of LCF	Management Analyst	cnguyen@lcf.ca.gov	
19.					
20.					
21.					
22.					
23.					

I.A.7.d Presentation

City of La Cañada Flintridge
2019 Local Hazard Mitigation Plan Draft

Advisory Committee/Stakeholder Meeting
November 6, 2018

Local Hazard Mitigation Plan

- The City's current approved Plan expires on June 4, 2019.
- Required as a result of the Disaster Mitigation Act of 2000 (DMA2K) as a condition to qualify and receive Hazard Mitigation funding.
- LHMP must be prepared and updated every 5 years in order to remain eligible for disaster assistance, including funding for hazard mitigation projects.
- Plan must be approved by Cal OES and FEMA.

Key Objectives of the Plan's Update

- Enhance the mitigation strategy to include specific, achievable, and measurable hazard mitigation.
- Integrate anticipated effects of new hazards.
- Improve plan maintenance procedures to establish a sustained, long-term process of increasing the resilience of all communities.
- Conduct widespread public outreach and stakeholder involvement to support successful implementation, integration, and maintenance of the plan for all communities.

City's 2019 LHMP Draft

- Plan's update process began in Spring 2018
 - Planning and Development Team- 8 City staff members;
 - Hazard Mitigation Advisory Committee- 23 stakeholders; and
 - Input from the community.

Key Highlights

- Refined the Plan's mission statement and goals
- Updated mitigation action items
- New hazards
 - Drought
 - Extreme Heat
- Updates to the Flood hazard section

Mission Statement

The mission of the City of La Cañada Flintridge Local Hazards Mitigation Plan is to promote sound public policy and practices designed to **protect** citizens, critical facilities, infrastructure, private property, and the environment from natural and human caused hazards. This is achieved by increasing **public awareness**; documenting the resources for **risk reduction** while taking measures to **preserve** life, property, and the environment.

Goals

- The goals guide the direction of the mitigation action items and the City identified three goals.

- Mitigation**- Work towards the completion of mitigation projects and implement measures to make infrastructure and property more resistant to losses.
- Collaboration**- Strengthening communications and leadership to increase mitigation efforts among the public and other agencies.
- Education**- Increase public awareness of hazards and personal recovery measures.

Mitigation Action Items

- The Plan's goals shape the mitigation action items which are designed to minimize the impact of future disasters.
- Developed by examining the history of disasters in the City and surrounding communities.
- Designed using local resources
 - Local plans and regulations
 - Structure and infrastructure projects
 - Natural system protection
 - Education and awareness programs
- Based on a risk assessment that includes an analysis of potential loss, injury and damage.

Mitigation Action Items

- The 2014 Plan had 23 mitigation items
 - 19 items were started or completed
- The 2019 Plan has 36 mitigation items

Identified Hazards

2019 Plan
Earthquake
Flood
Landslide
Wildfire
Windstorm
Drought (New)
Excessive Heat (New)
Human-Made
Multiple-Hazard

Note: Order as it appears in the City's 2019 LHMIP

Summary of Mitigation Action Items

Hazard	Mitigation Action
Earthquake	<ul style="list-style-type: none"> Encourage seismic strength evaluations of critical facilities located in the City of La Cañada Flintridge. Identify if the City falls within a fault and work with geological personnel.
Flood	<ul style="list-style-type: none"> Biannual inspection of catch basins to help identify catch basins that need cleaning and/or repair work. Perform an inventory of storm drains in the city and determine which agency has responsibility for maintenance.
Landslide	<ul style="list-style-type: none"> Educating residents about the importance of proper maintenance of the hillsides on their property. Collaborate with resource agencies to regulate inspection and maintenance of debris areas.
Wildfire	<ul style="list-style-type: none"> Inventory jobs and other potential water resources which can be used during an emergency as water supply. Collaborate with utilities to evaluate areas of improvement to reduce wildfires.
Windstorm	<ul style="list-style-type: none"> Establish public education campaigns on proper vegetation and landscaping to minimize property damages in case of an event. Collaborate with utility companies to review related during an event.
Drought	<ul style="list-style-type: none"> Increase public awareness and education in water saving measures. Review and modify existing ordinances to promote water conservation measures during drought emergencies.
Excessive Heat	<ul style="list-style-type: none"> Informative campaign on backup electric powered generators to prepare homeowners and business for emergencies and power outages. Explore new means and building enclosing methods for homes to reduce solar heat island effect.
Human Made	<ul style="list-style-type: none"> Annual meeting with utility companies to exchange ideas and method of increasing cybersecurity. Defence model to mitigate the threat from active shooters in government owned properties by hoarding space, distributing critical equipment, limiting personnel and better coordinating the response.
Multiple Hazard	<ul style="list-style-type: none"> Develop strategies and capabilities to mitigate risk to local government facilities, or to utilize alternative facilities should local hazard events cause damage. Establish partnerships with non-governmental organizations to secure funding for mitigation activities that would be mutually beneficial.

Note: For a full list of mitigation action items, please refer to the City's 2019 LHMIP


Timeline

Event	Topic	Dates
Public Meeting	Introduction of LHMIP	March 16, 2018
Project Kickoff	Initial meeting with City staff	March 28, 2018
Stakeholder Meeting	Overview of LHMIP and discussion	April 23, 2018
Stakeholder Meeting	Hazard and mitigation discussion	May 23, 2018
Public Information Meeting	Review of LHMIP	May 31, 2018
Public Information Meeting	Review of final LHMIP draft	October 12, 2018
Stakeholder Meeting	Review of final LHMIP draft	November 6, 2018
Submit to Cal OES & FEMA	Review of the document for approval	December 2018
City Council Adoption	Adoption of LHMIP via resolution	Spring 2019

Public Input

The City is seeking public feedback prior to submitting the Plan for approval.

Comments are due by November 6, 2018
www.lcfl.ca.gov/public-safety/lhmip



Contact

Christina Nguyen Management Analyst cnguyen@lcf.ca.gov (818) 790-8880 ext. 104	Arabe Parseghian Division Manager aparaseghian@lcf.ca.gov (818) 790-8880 ext. 105	Chris Carey Emergency Services Coordinator ccarey@lcf.ca.gov (818) 790-8880 ext. 501
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I.B Comments

The public was invited to comment at all meetings and through an online submission form. The online comment form was made available between March 29, 2018 thru October 3, 2018. Staff collected and compiled the comments into the summary below. All comments are presented in the language given to staff. No edits have been made to change readability. Personal information has been redacted.

When possible, staff responded directly to questions or concerns that were raised and provided information on the plan update process.

15.2.6 I.B.1 Press Release – March 29, 2018



PRESS RELEASE
City of La Cañada Flintridge

1327 Foothill Boulevard • La Cañada Flintridge • California 91011 • (818) 790-8880 FAX: (818) 790-7536

Press Release
March 29, 2018

Contact:
Christina Nguyen (818) 790-8880

City of La Cañada Flintridge Local Hazard Mitigation Plan Update

La Cañada Flintridge, CA – The City of La Cañada Flintridge is in the process of updating its Local Hazard Mitigation Plan. The update will allow the City, community, and stakeholders to understand risks from natural hazards and develop long-term strategies for mitigating their impacts. Community participation plays a key role in developing goals and action items for the plan. Public input is a critical component of a successful and comprehensive plan update.

As part of the update process, the City is asking the public for input. The public is able to provide comments online by visiting the City’s Local Hazard Mitigation Plan site at www.lcf.ca.gov/public-safety/lhmp.

For questions, please email us at LHMPComments@lcf.ca.gov

###

15.2.7 I.B.2 Summary

Timestamp	Please select the section(s) you are commenting on:	Type in your comment here	Additional Comments
4/4/2018 9:26:16	Section 4: Multi-Hazard Goals and Action Items Section 6: Earthquake Section 9: Wild Fire	<p>The LHMP indicated that there are no inventories of the vulnerabilities of buildings in La Cañada to earthquakes, including no inventory of un-reinforced masonry buildings. This is one of the most deadly threats in an earthquake, and nearby Cities have completed inventories and forced retrofits of these buildings. Given the incredible threat posed by these buildings (and other building types in La Cañada, including soft-story, concrete non-ductile, and open front buildings), why are there no specific items in the Multi-Hazard Goal section addressing this issue. Almost all of the mitigation goals identified by the plan indicate the City will encourage other entities to do things. What exactly will the City do to improve itself? How will it prioritize mitigation efforts that it can control and implement? Overall the goals section has no prioritization based on feasibility, availability of funds, or impact on saving lives, property, and the environment. There is also no clear indication of any prior mitigation actions that have taken place in the City, and how effective they have been. Fire and earthquake drills are not mitigation actions- they are preparedness/response actions.</p>	<p>This plan overall is clearly a "fill in the blank" plan, with LCF added in where appropriate. The lack of local input is blatant and disappointing. Also, it is completely unclear why no action has been taken on this plan since 2013. It does not appear to have been updated in the last five years, which means that for over 5 years, LCF has not been eligible for federal reimbursement for money spent on disaster response, or been even able to apply for matching federal mitigation money to address City mitigation goals, which is highly disturbing.</p>
4/23/2018 9:43:19	Section 7: Flood, Section 9: Wild Fire	<p>The Mass Notification system should include continuing monitoring of the local mountains to warn of current dangers, like the breach of debris basins during heavy rains. Monitors would also deter arsonists during active fires elsewhere. Use of local volunteers, like VERT, would relieve the fire and sheriff personnel.</p>	N/A
5/31/2018 15:13:52	Section 6: Earthquake Section 7: Flood Section 9: Wild Fire Section 10: Windstorm Appendix	<p>Here are my comments:</p> <p>Section 6 - Earthquakes:</p> <p>Delete sentence on Page 6-27 that reads: "While Devils Gate dam is located within the city limits, a failure of the dam would not impact the City." Better to leave this statement out all together - especially if there are unforeseen impacts that occur - and the City can apply for disaster funds. For example (hypothetical) if Devils Gate Dam were to fail, there would be many impacts to surrounding communities, including the City of LCF. Off the top of my head: groundwater operations could possibly be affected, infrastructure located</p>	N/A

immediately downstream of the dam that pumps imported water to the City, our roads could be severely congested until emergency repairs are done, anybody located on Oak Grove Drive (JPL - the Flintridge Riding Club - LC Methodist Church - LCHS) would certainly feel the traffic congestion.

For Short Term Activity No. 1 - GENERAL STATEMENT ON GIS: Utilizing GIS is a great idea. In fact GIS could boost almost every topic in this plan.

Section 7 - Flood:

Delete sentence on Page 7-14 that reads: "For example, each water district has the capability to inter-tie with another district for emergency situation." Replace with "For example, the water agencies periodically conduct tabletop exercises as a group to better understand water supply capabilities and emergency response procedures. The water agencies are also party to a mutual aid agreement."

Section 9 - Wildfire:

Update the table of significant Wildfires on pages 9-2 and 9-3. Include the Station Fire. I would suggest putting an asterisk or other notation on fires that have directly impacted the City of La Cañada Flintridge.

For Long-Term Activity No. 1, what does: "Conduct specific community-based demonstration projects of fire prevention and mitigation in the urban interface" mean? What kinds of projects? Could the City showcase fire-resistant plants & landscaping in areas of the wildland-urban interface - or perhaps help make that information available to affected homeowners?

Also for Long-Term Activity No. 1 (with regards to Education / Outreach), could the City periodically host a Firewise Home & Garden class? If not, Foothill Water District has done this in the past (see link): https://drive.google.com/drive/folders/1_Sj4j4IIQhxUiAX-b15hxkD74I3Agfeg. The City could help publicize these classes when they occur.

Section 10 - Windstorm:

For possible long-term or short-term actions:

Coordinate with local LCF agencies to create a list of existing portable generators or other potentially useful emergency equipment. This could potentially be shared in the event of an emergency.

Update an emergency contact list among the local LCF agencies & utilities.

Create a GIS map or a survey/report of Public Trees within the City. Or study Public Trees that may be more susceptible to a wind event.

Appendix F needs to be updated (in general). I would also add for "Drought": Gov. Schwarzenegger Declared a Drought State of Emergency in Feb. 2009. Gov. Brown Declared a Drought State of Emergency in Jan. 2014. We also experienced some pretty significant Wildfires in Fall/Winter 2017 (La Tuna Fire, Skirball Fire, Creek Fire).

15.2.8 I.B.3 Form

Local Hazard Mitigation Plan Update

The City of La Cañada Flintridge is in the process of updating its Local Hazard Mitigation Plan. The update will allow the City, community, and stakeholders to understand risks from natural hazards and develop long-term strategies in mitigating their impacts.

As part of the update process, the City is asking the public for their input. Please use this form to submit your comments.

If you have any questions, please email us at lhmpcomments@lcf.ca.gov

* Required

1. Please select the section(s) you are commenting on: *

Check all that apply.

- Executive Summary
Section 1: Introduction
Section 2: Community Profile
Section 3: Risk Assessment
Section 4: Multi-Hazard Goals and Action Items
Section 5: Plan Maintenance
Section 6: Earthquake
Section 7: Flood
Section 8: Landslide
Section 9: Wild Fire
Section 10: Windstorm
Section 11: Manmade Hazrads
Appendix

2. Type in your comment here *

Text input area for comments with multiple horizontal lines.

3. Additional Comments

4. Name (Optional)

Text input line for name.

5. Email (Optional)

Text input line for email.

6. Phone Number (Optional)

Text input line for phone number.



II RESOURCE DIRECTORY

The following is a complete resource directory of all programs and organizations mentioned within the hazard sections.

II.A Local Resources


Southern California Earthquake Center (SCEC)

The Southern California Earthquake Center (SCEC) gathers new information about earthquakes in Southern California, integrates this information into a comprehensive and predictive understanding of earthquake phenomena, and communicates this understanding to end-users and the general public in order to increase earthquake awareness, reduce economic losses, and save lives.

Address: 3651 Trousdale Parkway, Suite 169, Los Angeles, CA 90089

URL: www.scec.org

 (213) 740-5843

 (213) 740-0011

Los Angeles County Department of Public Works

The Los Angeles County Department of Public Works protects property and promotes public safety through flood control, water conservation, road maintenance, bridges, buses and bicycle trails, building and safety, land development, waterworks, sewers, engineering, and capital projects.

Address: 900 S. Fremont Ave., Alhambra, CA 91803

URL: www.dpw.lacounty.gov

 (626) 458-5100

Email: info@dpw.lacounty.gov

Sanitation Districts of Los Angeles County


The Sanitation Districts of Los Angeles County help to manage wastewater and solid waste. These services protect both the environment and public health and these services may be interrupted in the case of a flood.

Address: 1955 Workman Mill Road Whittier, CA 90607

URL: www.lacsd.org/

 (562) 699-7411 x2301

EMAIL: info@lacsd.org

 (562) 908-4278


II.B State Resources


California Department of Conservation: Southern California Regional Office

The Department of Conservation provides services and information that promote environmental health, economic vitality, informed land-use decisions and sound management of our state's natural resources.

Address: 888 S. Figueroa Street #1475, Los Angeles, CA 90017

URL: www.conservation.ca.gov

 (213) 239-0878


 (213) 239-0894


California Department of Transportation (Caltrans)

Include a brief description of what this agency/program does and why it is a resource for this hazard.

Address: 100 S. Main Street, Los Angeles, CA 90012

URL: www.caltrans.ca.gov/d7/

 213-897-3656


 (213) 897-3836

California Department of Water Resources (DWR)

The Department of Water Resources (DWR) is responsible for managing and protecting California's water resources. They partner with other agencies to protect, restore, and enhance natural and human environments. This includes providing grants and technical assistance to service local water needs.

Address: 1416 Ninth Street, Sacramento, CA 95814

URL: www.water.ca.gov/

 (916) 653-5791

**California Department of Conservation
Division of Mines and Geology (DMG)**

The California Geological Survey develops and disseminates technical information and advice on California's geology, geologic hazards, and mineral resources.

Address: 801 K Street, Ms12-30, Sacramento, CA 95814

URL: www.conservation.ca.gov

 (916) 445-1825

Email: cgsh@consrv.ca.gov

 (916) 445-5718

California Governor's Office of Emergency Services

The Governor's Office of Emergency Services coordinates overall state agency response to major disasters in support of local government. The office is responsible for assuring the state's readiness to respond to and recover from natural, human-caused, and war-caused emergencies, and for assisting local governments in their emergency preparedness, response and recovery efforts.

Address: 4671 Liberty Ave. Building 283, Los Alamitos, CA 90720

URL: www.caloes.ca.gov  (562) 795-2939

Email: Jim.Acosta@caloes.ca.gov  (562) 795-2877

California Natural Resources Agency

The California Resources Agency restores, protects and manages the state's natural, historical and cultural resources for current and future generations using solutions based on science, collaboration, and respect for all the communities and interests involved.

Address: 1416 Ninth Street, Suite 13 Sacramento, CA 95814

URL: www.resources.ca.gov  (916) 653-5656

Email: secretary@resources.ca.gov  (916) 653-8102

II.C National Resources

American Public Works Association

The American Public Works Association (APWA) serves professionals in all aspects of public works.

Address: 1200 Main Street, Suite 1400, Kansas City, MO 64105-2100

URL: www.apwa.net/  (816) 472-6100

 (816) 472-1610

Army Corps of Engineers

The Army Corps of Engineers is the Nation's environmental engineers. They have expertise in water storage and management.

Address: Los Angeles District, 915 Wilshire Blvd., Los Angeles, CA 90017

URL: www.spl.usace.army.mil/  (213) 452-3333

EMAIL: publicaffairs.spl@usace.army.mil  (213) 452-4209

The Association of State Floodplain Managers (ASFPM)

The mission of ASFPM is to promote education, policies, and activities that mitigate current and future losses, costs and human suffering caused by flooding, and to protect the natural and beneficial functions of floodplains - all without causing adverse impacts.

Address: 575 D’Onofrio Drive, Suite 200, Madison, WI 53719

URL: www.floods.org  (608) 828-3000

EMAIL: asfpm@floods.org  (608) 828-6319

Bureau of Reclamation, Mid Pacific Regional Office

The Mid Pacific Region of the Bureau of Reclamation strives to develop and implement a balanced approach to water allocation, serving users while protecting the environment. The Region’s goal is to balance competing needs among water uses and users.

Address: Federal Office Building 2800 Cottage Way, Sacramento CA 95825-1898

URL: www.usbr.gov/mp/  (916) 978-5001

EMAIL: mppublicaffairs@usbr.gov  (916) 978-5005

The Floodplain Management Association

The association serves as an unbiased forum for the legislature, government, industry, and science to advance best practices, technologies, policies, regulations, and legal strategies, for floodplains with a focus on California, Nevada and Hawaii.

Address: P.O. Box 846, Ramona, CA, 92065


URL: www.floodplain.org  (760) 936-3676

EMAIL: admin@floodplain.org

**National Institute of Building Sciences
Building Seismic Safety Council (BSSC)**

The Building Seismic Safety Council develops and promotes building earthquake risk mitigation regulatory provisions for the nation.

Address: 1090 Vermont Avenue, NW Suite 700, Washington D.C. 20005

URL: www.nibs.org  (202) 289-7800

Email: sstubbs@nibs.org  (202) 289-1092

Federal Emergency Management Agency, Mitigation Division

The Mitigation Division manages the National Flood Insurance Program and oversees FEMA's mitigation programs. It has a number of programs and activities which provide citizens Protection, with flood insurance; Prevention, with mitigation measures and Partnerships, with communities throughout the country.

Address: 500 C Street, S.W., Washington, D.C. 20472


URL: www.fema.gov/fima/planhowto.shtm  (202) 646-2500

Federal Emergency Management Agency, Region IX

The Federal Emergency Management Agency supports citizens and first responders to ensure that communities work together to build, sustain and improve capabilities to prepare for, protect against, respond to, recover from, and mitigate all hazards

Address: 1111 Broadway, Suite 1200, Oakland, CA 94607

URL: www.fema.gov  (510) 627-7100

 (510) 627-7112

Institute for Business & Home Safety

The Institute for Business & Home Safety (IBHS) is a nonprofit association that engages in communication, education, engineering, and research. The Institute works to reduce deaths, injuries, property damage, economic losses and human suffering caused by natural disasters.

Address: 4775 E. Fowler Avenue, Tampa, FL 33617

URL: www.ibhs.org  (813) 286-3400

Email: smillerick@ibhs.org  (813) 286-9960

Western States Seismic Policy Council (WSSPC)

WSSPC is a regional earthquake consortium funded mainly by FEMA. Its website is a great resource, with information clearly categorized - from policy to engineering to education.

Address: 801 K Street, Suite 1236, Sacramento, CA 95814

URL: www.wsspc.org  (916) 444-6816


Email: wsspc@wsspc.org  (916) 444-8077

National Flood Insurance Program (NFIP)

The National Flood Insurance Program (NFIP) aims to reduce the impact of flooding on private and public structures. It does so by providing affordable insurance to property owners and by encouraging communities to adopt and enforce floodplain management regulations. These efforts help mitigate the effects of flooding on new and improved structures.

Address: 500 C Street, S.W., Washington, D.C. 20472

URL: www.floodsmart.gov/

 (202) 566-1600

EMAIL: floodsmart@fema.dhs.gov

National Weather Service (NWS)

NWS provides resources to teach the public how to stay safe before, during, and after floods. NWS also has alert and warning systems for potentially dangerous floods.

Address: 520 North Elevar Street, Oxnard, CA 93030

URL: <https://www.weather.gov/lox/>

 (805) 988-6610


EMAIL: w-lox.webmaster@noaa.gov

Office of Water Prediction, National Weather Service

The Office of Water Prediction (OWP) collaboratively researches, develops and delivers state-of-the-science national hydrologic analyses, forecast information, data, decision-support services, and guidance to support and inform essential emergency services and water management decisions. The OWP helps to coordinate, integrate and support consistent water prediction activities.

Address: 1325 East West Highway, SSMC2, Silver Spring, MD 20910

URL: www.water.noaa.gov/

 (301) 713-1658

EMAIL: nws.nwc.ops@noaa.gov

United States Geological Survey


The USGS provides reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.

Headquarters Address: 12201 Sunrise Valley Drive Reston, VA 20192

Field Office Address: Pasadena USGS- 525 S. Wilson Avenue, Pasadena, CA 91106

URL: www.usgs.gov

 (916) 444-8077


 (888) 275-8747


USGS Water Resources

The U.S. Geological Survey, California Water Science Center provides reliable, impartial, foundational data and scientific analysis to address water issues facing California today. They conduct hydrologic monitoring and investigative studies in partnership with Federal, State, and local agencies to assist them in managing California's water resources.

Address: California Water Science Center, 6000 J Street, Placer Hall, Sacramento, CA 95819-6129

URL: www.ca.water.usgs.gov/

 (916) 278-3000

 (916) 278-3070



III CITY COUNCIL APPROVAL

III.A City Council Staff Report

Agenda Item 7



CM Review: [Signature]
Fiscal Review: _____

CITY COUNCIL AGENDA REPORT

MEETING DATE: July 2, 2019
SUBJECT: Resolution of the City Council of the City of La Cañada Flintridge Adopting the City of La Cañada Flintridge Local Hazard Mitigation Plan
PRESENTER: Christina Nguyen, Management Analyst
PROPOSED ACTION: Approve the attached Resolution 19-XX Adopting the City of La Cañada Flintridge Local Hazard Mitigation Plan in Accordance with the Federal Disaster Mitigation Act of 2000 (Public Law 106-390).
FISCAL IMPACT: None.

BACKGROUND:

The Federal Disaster Act (DMA) of 2000 (Public Law 106-390) requires local governments to develop and adopt pre-disaster mitigation plans in order to minimize property damage and the risk to public health and safety that might otherwise result from the effects of a natural or human-made disaster. A Federal Emergency Management Agency (FEMA) approved plan makes the City eligible for FEMA Pre-Disaster Mitigation and Hazard Mitigation Grant programs. The Plan assesses risk and vulnerabilities and identifies and prioritizes mitigation projects. FEMA requires the plan to be updated every five years to maintain eligibility for grants.

In March 2018, the City created the Planning and Development Team which consisted of staff members from each of the City's Departments. This group began the review process, data research, and analysis to update the Local Hazard Mitigation Plan (LHMP). To ensure the success of the Plan, the community was invited to review the Plan and provide input via public meetings and an online feedback form. A Hazard Mitigation Advisory Committee was created which comprised of key agencies and organizations, both governmental and non-governmental stakeholders to provide input and oversee the plan.

In December 2018, a draft of the 2019 City of La Cañada Flintridge LHMP was completed and sent to the California Office of Emergency Services (Cal OES). Cal OES performed a review and, on May 22, 2019, FEMA determined the plan would meet all criteria pending City Council approval of the Plan (see Attachment 2). FEMA requires that the City submit formal adoption documentation by May 22, 2020, after which the plan will be fully approved.

Resolution Adopting the Local Hazard Mitigation Plan
City Council
July 2, 2019
Page 2 of 2

DISCUSSION:

The Local Hazard Mitigation Plan describes the hazards that can affect the community of La Cañada Flintridge, assess the community's risk from these hazards and provides mitigation goals to address actions or projects to reduce long-term vulnerabilities. The 2019 City of La Cañada Flintridge LHMP will replace the 2014 Plan once it is adopted by City Council. The hazards discussed in the Plan include; Drought, Earthquake, Extreme Heat, Flood, Landslide, Wildfire, Windstorm, and Human-made.

Approving the LHMP, the City will meet the requirement of maintaining updated documentation about local hazards and mitigation efforts to reduce those hazards. In addition, the City will continue to be eligible for FEMA mitigation funding and federal grant funding.

OPTIONS:

1. Approve the attached Resolution 19-XX Adopting the City of La Cañada Flintridge Local Hazard Mitigation Plan in Accordance with the Federal Disaster Mitigation Act of 2000 (Public Law 106-390).
2. Deny the request.
3. Provide alternative direction to staff.

RECOMMENDATION:

Option No. 1 - It is recommended that the City Council take the following action(s):

1. Approve the attached Resolution 19-XX Adopting the City of La Cañada Flintridge Local Hazard Mitigation Plan in Accordance with the Federal Disaster Mitigation Act of 2000 (Public Law 106-390).

FISCAL IMPACT:

There are no costs associated with adopting the updated Local Hazard Mitigation Plan. However, the adoption of the LHMP is a pre-requisite for receiving pre-disaster mitigation grant funds, disaster response reimbursements and mitigation project reimbursements linked to damages resulting from a federal and/or state disaster declaration.

ATTACHMENTS:

1. [Draft] Resolution 19-XX Adopting the City of La Cañada Flintridge Local Hazard Mitigation Plan in Accordance with the Federal Disaster Mitigation Act of 2000 (Public Law 106-390).
2. FEMA Region IX Letter
3. 2019 City of La Cañada Flintridge Local Hazard Mitigation Plan

III.B City Council Resolution

CITY OF LA CAÑADA FLINTRIDGE

RESOLUTION NO. 19-17

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LA CAÑADA FLINTRIDGE, CALIFORNIA, ADOPTING THE LOCAL HAZARD MITIGATION PLAN FOR 2019-2024 IN ACCORDANCE WITH THE FEDERAL DISASTER MITIGATION ACT OF 2000 (PUBLIC LAW 106-390)

WHEREAS, the Disaster Mitigation Act of 2000 (DMA2K) was enacted which required all public agencies to complete a Local Hazards Mitigation Plan in order to qualify for pre- and post-disaster mitigation funds; and

WHEREAS, the DMA2K focuses specifically on planning, and recognized the significance of hazard mitigation planning at the local level and the necessity for effective coordination between State and local entities to promote an integrated, comprehensive approach to mitigation planning; and

WHEREAS, local hazard mitigation planning is essential to the sustainability of the City of La Cañada Flintridge in that it increases the City's disaster resiliency; and

WHEREAS, the DMA2K requires local agencies like the City of La Cañada Flintridge to develop a mitigation plan that includes a detailed city profile; identifies specific threats and vulnerabilities within the City, and sets forth specific mitigation measures to address such threats and vulnerabilities; and

WHEREAS, in order to comply with the requirements of the Federal Government's DMA2K, each jurisdiction must plan, organize and develop the process by which the Local Hazard Mitigation Plan is created; and

WHEREAS, the DMA2K further requires detailed documentation of all actions, meetings, studies and directives undertaken in furtherance of developing and implementing the City's Local Hazard Mitigation Plan; and

WHEREAS, the City adopted Resolution No. 13-07 on April 15, 2013 adopting the City La Cañada Flintridge's Local Hazard Mitigation Plan for 2014-2019; and

WHEREAS, the City has evaluated the hazards, risks, and mitigation measures identified in the previous plan, and incorporated the results of these evaluations into an update of the plan for 2019-2024; and

WHEREAS, the updated Local Hazard Mitigation Plan has been reviewed by all City Department, committees, California Governor's Office of Emergency Services and Federal Emergency Management Agency, Region IX;

I, City Clerk of the City of La Cañada Flintridge, hereby certify that the foregoing is a full, true, and correct copy of the original on file in this office.

[Signature] 7/8/19
City Clerk of the City of La Cañada Flintridge Date

WHEREAS, the updated Local Hazard Mitigation Plan was available for public comment and review for the required time period;

WHEREAS, the City Council desires to rescind Resolution No. 13-07 and adopt the updated Local Hazard Mitigation Plan for 2019-2024 in accordance with the DMA2K; and

WHEREAS, the City of La Cañada Flintridge agrees to adopt this updated Local Hazard Mitigation Plan and urges all officials, employees, public and private organizations, and citizens, individually and collectively, to do their share in furthering the goals and objectives of hazard mitigation within the City of La Cañada Flintridge.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF LA CAÑADA FLINTRIDGE, CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:

Section 1. The recitals set forth above are true and correct and are incorporated herein by reference.

Section 2. Resolution No. 13-07 is hereby rescinded.

Section 3. The City Council of the City of La Cañada Flintridge does hereby adopt the Local Hazard Mitigation Plan for 2019-2024 (dated July 2019), establishing goals and objectives to ensure the health, safety and welfare of its citizens, in the event of a natural or manmade disaster.


Section 4. The Local Hazard Mitigation Plan for 2019-2024 meets the program criteria of the Stafford Act as amended (Disaster Mitigation Act of 2000) in order that the City of La Cañada Flintridge will remain eligible for future pre-disaster and post-disaster mitigation funds.

Section 5. The City Council authorizes the City Manager or designee to perform all duties required to carry out the Local Hazard Mitigation Plan for 2019-2024.

Section 6. The City Council authorizes the City Manager or designee to make necessary administrative and operational changes to the Local Hazard Mitigation Plan for 2019-2024 that are in keeping with the intent of the plan as approved.

Section 7. This resolution shall take effect as of the date of its passage and adoption.

PASSED, APPROVED and ADOPTED this 2nd day of July 2019.



Leonard Pieroni, Mayor

ATTEST:



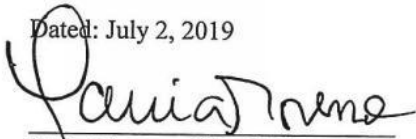
Tania Moreno, City Clerk

State of California)
County of Los Angeles) ss.
City of La Cañada Flintridge)

I, Tania Moreno, City Clerk of the City of La Cañada Flintridge, California, do hereby certify that the foregoing Resolution No. 19-17 was duly adopted by the City Council of the City of La Cañada Flintridge at a Regular Meeting held on the 2nd day of July 2019, by the following vote:

AYES: COUNCILMEMBERS: CURTIS, DAVITT, BROWN AND PIERONI
NOES: COUNCILMEMBERS: NONE
ABSENT: COUNCILMEMBERS: WALKER
ABSTAIN: COUNCILMEMBERS: NONE

Dated: July 2, 2019


Tania Moreno, City Clerk