



CITY COUNCIL REGULAR MEETING AGENDA

CITY COUNCIL CHAMBERS, CITY HALL
7351 ROSANNA STREET, GILROY, CA
95020

MAYOR

Marie Blankley

COUNCIL MEMBERS

Rebeca Armendariz

Dion Bracco

Tom Cline

Zach Hilton

Carol Marques

Fred Tovar

MONDAY, NOVEMBER 4, 2024 | 6:00 PM

CITY COUNCIL PACKET MATERIALS ARE AVAILABLE ONLINE AT www.cityofgilroy.org
AGENDA CLOSING TIME IS 5:00 P.M. THE TUESDAY PRIOR TO THE MEETING

PUBLIC COMMENTS ON AGENDA ITEMS ARE TAKEN BEFORE THE CITY COUNCIL TAKES ACTION. [Please keep your comments to 3 minutes](#). Time restrictions may vary based on the Mayor's discretion.

Send written comments on any agenda item to publiccomments@cityofgilroy.org or City Hall, 7351 Rosanna Street, Gilroy, CA 95020. Comments received by 1 p.m. on the meeting day will be distributed to the City Council before the meeting. Comments are also available at bit.ly/3NuS1IN.



In compliance with the Americans with Disabilities Act, the City will make reasonable arrangements to ensure accessibility to this meeting. If you need special assistance to participate in this meeting, please contact the City Clerk's Office at least 72 hours prior to the meeting at (408) 846-0204 or cityclerk@cityofgilroy.org to help ensure that reasonable arrangements can be made.



If you dispute any planning or land use decision from this meeting in court, you may only raise issues you or someone else presented at this meeting's public hearing or in written letters to the City Council before the hearing. Be aware that the time to seek a judicial review of any final decision made at this meeting is defined by Section 1094.6 of the California Code of Civil Procedure.

During this meeting, a Closed Session may be called under Government Code Section 54956.9 (d)(2). This will happen if, in the City's legislative body's opinion (based on current facts, circumstances, and legal advice), there's a significant risk of a lawsuit against the City.

Additional materials submitted after agenda distribution are available on www.cityofgilroy.org as soon as possible.

KNOW YOUR RIGHTS UNDER THE GILROY OPEN GOVERNMENT ORDINANCE

Government's duty is to serve the public, reaching its decisions in full view of the public. Commissions, task forces, councils and other agencies of the City exist to conduct the people's business. This ordinance assures that deliberations are conducted before the people and that City operations are open to the people's review.

FOR MORE INFORMATION ON YOUR RIGHTS UNDER THE OPEN GOVERNMENT ORDINANCE, TO RECEIVE A FREE COPY OF THE ORDINANCE OR TO REPORT A VIOLATION OF THE ORDINANCE, CONTACT THE OPEN GOVERNMENT COMMISSION STAFF AT (408) 846-0204.

If you need translation assistance, contact the City Clerk 72 hours before the meeting at 408-846-0204 or cityclerk@cityofgilroy.org.

Si necesita un intérprete durante la junta y gustaría dar un comentario público, comuníquese con el Secretario de la Ciudad un mínimo de 72 horas antes de la junta al 408-846-0204 o envíe un correo electrónico a la Oficina del Secretario de la Ciudad a cityclerk@cityofgilroy.org.



To access written translation during the meeting, please scan the QR Code or click this link:

Para acceder a la traducción durante la reunión, por favor escanee el código QR o haga clic en el enlace:

bit.ly/3FBiGA0

Choose Language and Click Attend | *Seleccione su lenguaje y haga clic en asistir*

Use a headset on your phone for audio or read the transcript on your device.

Use sus auriculares para escuchar el audio o leer la transcripción en el dispositivo.

The agenda for this meeting is outlined as follows:

- 1. OPENING**
 - 1.1. Call to Order**
 - 1.2. Pledge of Allegiance**
 - 1.3. Invocation**
 - 1.4. City Clerk's Report on Posting the Agenda**
 - 1.5. Roll Call**
 - 1.6. Orders of the Day**
 - 1.7. Employee Introductions**
- 2. CEREMONIAL ITEMS - Proclamations and Awards**
- 3. COUNCIL CORRESPONDENCE (Informational Only)**
- 4. PRESENTATIONS TO THE COUNCIL**
 - 4.1. PUBLIC COMMENT BY MEMBERS OF THE PUBLIC ON ITEMS NOT ON THE AGENDA BUT WITHIN THE SUBJECT MATTER JURISDICTION OF THE CITY COUNCIL**

This part of the meeting allows public address on non-agenda topics within the Council's jurisdiction. To speak, complete a Speaker's Card from the entrances and give it to the City Clerk. Speaking time ranges from 1-3 minutes based on the Mayor's discretion. Extended discussions or actions on non-agenda items are restricted by law. For Council action, the topic may be listed on a future agenda.

Email written comments on non-agenda topics to publiccomments@cityofgilroy.org or mail them to City Hall, 7351 Rosanna Street, Gilroy, CA 95020, by 1:00 p.m. on the meeting day. These comments, available at City Hall, will be shared with the Council and included in the meeting record. Late submissions will be shared as soon as possible. A 10-page limit applies to hard-copy materials, but electronic submissions are unlimited.

5. REPORTS OF COUNCIL MEMBERS

Council Member Bracco – Downtown Committee, Santa Clara County Library Joint Powers Authority, Santa Clara Valley Water Joint Water Resources Committee, SCRWA

Council Member Armendariz – Downtown Committee, Santa Clara County Library Joint Powers Authority (*alternate*), Santa Clara Valley Habitat Agency Governing Board, Santa Clara Valley Habitat Agency Implementation Board, Silicon Valley Clean Energy Authority JPA Board (*alternate*)

Council Member Marques – ABAG, Downtown Committee, Gilroy Gardens Board of Directors, Santa Clara Valley Habitat Agency Governing Board, Santa Clara Valley Habitat Agency Implementation Board, SCRWA (*alternate*)

Council Member Hilton – CalTrain Policy Group (*alternate*), Silicon Valley Clean Energy Authority JPA Board, VTA Policy Advisory Committee

Council Member Cline – Gilroy Economic Development Partnership (*alternate*), Gilroy Gardens Board of Directors (*alternate*), Gilroy Sister Cities Association, Gilroy Youth Task Force, Silicon Valley Regional Interoperability Authority Board, VTA Policy Advisory Committee (*alternate*), Visit Gilroy California Welcome Center Board, VTA Mobility Partnership Committee

Council Member Tovar – Downtown Committee, Gilroy Youth Task Force (*alternate*), Santa Clara County Expressway Plan 2040 Advisory Board, Santa Clara Valley Water Commission, SCRWA, South County Youth Task Force Policy Team

Mayor Blankley – ABAG (*alternate*), CalTrain Policy Group, Downtown Committee, Gilroy Economic Development Partnership, Gilroy Sister Cities Association (*alternate*), Gilroy Youth Task Force, Santa Clara Valley Water Joint Water Resources Committee, SCRWA, South County Youth Task Force Policy Team, VTA Board of Directors, VTA Mobility Partnership Committee

6. CONSENT CALENDAR

Items under the Consent Calendar are deemed routine and approved with one motion. If a Council member or a member of the public wishes for a separate discussion on an item, it must be requested for removal before the Council's approval vote. If removed, the item will be discussed in its original order.

- 6.1. **Approval of the Action Minutes of the October 21, 2024 City Council Regular Meeting**
- 6.2. **Adoption of a Resolution of the City of Gilroy to approve the Santa Clara County Community Wildfire Protection Plan (CWPP) and the Gilroy Annex**
- 6.3. **Approval of a second Amendment to the Agreement with Circlepoint, Inc. for the Gilroy Data Center Project Environmental Impact Report in the amount of \$36,757.25 for a total project cost of \$244,009.30.**
- 6.4. **Claim of Jesus Diaz Chavez (The City Administrator recommends a "yes" vote under the Consent Calendar shall constitute denial of the claim)**
- 6.5. **Claim of Roberto Patricio Justor (The City Administrator recommends a "yes" vote under the Consent Calendar shall constitute denial of the claim)**

7. BIDS AND PROPOSALS

8. PUBLIC HEARINGS

9. UNFINISHED BUSINESS

- 9.1. **Approval of a Notice of Acceptance of Completion for the FY23 Citywide Pavement Rehabilitation Project No. 23-PW-278 and Approval of a Final Contract with Teichert Construction in the Amount of \$5,977,011.86**

1. Staff Report: Daniel Padilla, City Engineer
2. Public Comment
3. Possible Action:

a) Approve a Notice of Acceptance of Completion for the FY23 Citywide Pavement Rehabilitation Project No. 23-PW-278.

b) Approve a final contract in the amount of \$5,977,011.86 with Teichert Construction for the FY23 Citywide Pavement Rehabilitation Project No. 23-PW-278.

- 9.2. **Zoning Ordinance Update Progress Report**

1. Staff Report: Sharon Goei, Community Development Director
2. Public Comment
3. Possible Action:

Receive the staff report and provide feedback.

10. INTRODUCTION OF NEW BUSINESS

11. FUTURE COUNCIL INITIATED AGENDA ITEMS

12. CITY ADMINISTRATOR'S REPORTS

- 12.1. **VTG Grant Award**

- 12.2. **Santa Teresa Fire Station Update**

- 13. CITY ATTORNEY'S REPORTS**
- 14. CLOSED SESSION**
- 15. ADJOURN TO OPEN SESSION**

Report of any action taken in Closed Session and vote or abstention of each Council Member if required by Government Code Section 54957.1 and GCC Section 17A.13(b); Public Report of the vote to continue in closed session if required under GCC Section 17A.11(5).

- 16. ADJOURNMENT**

FUTURE MEETING DATES

November 2024

18 Regular Meeting - 6:00 p.m

December 2024

9 Regular Meeting - 6:00 p.m

Meetings are live streamed on the City of Gilroy's website at gilroy.city/meetings and on YouTube at <https://bit.ly/45jor03>.

Access the 2024 City Council Meeting Calendar at <https://bit.ly/3LLzY1n>.

**CITY COUNCIL ACTION MINUTES
MONDAY, OCTOBER 21, 2024 | 6:00 PM**

1. OPENING

1.1. Call to Order

1.2. Pledge of Allegiance

Mayor Blankley led the Pledge of Allegiance.

1.3. Invocation

Pastor Malcolm McPhail led the invocation.

1.4. City Clerk's Report on Posting the Agenda Interim City Clerk, Beth Minor advised the revised agenda was posted on Friday, October 18, 2024 at 3:25 P.M.

1.5. Roll Call

Attendance	Attendee Name
	Dion Bracco, Council Member
	Rebeca Armendariz, Council Member
	Carol Marques, Council Member
	Zach Hilton, Council Member
	Tom Cline, Council Member
	Fred Tovar, Council Member
	Marie Blankley, Mayor
Absent	NONE

1.6. Orders of the Day

None

1.7. Employee Introductions

None

2. CEREMONIAL ITEMS - Proclamations and Awards

2.1. Proclaiming October 24, 2024 as Arbor Day

Parks and Recreation Commission Chair, Pat Bentson, accepted the Proclamation.

3. COUNCIL CORRESPONDENCE (Informational Only)

3.1. Memo Regarding the Library Bond Project Schedule.

3.2. Board and Commission Terms Ending December 31, 2025 - Maddy Act 2025.

4. PRESENTATIONS TO THE COUNCIL

4.1. PUBLIC COMMENT BY MEMBERS OF THE PUBLIC ON ITEMS NOT ON THE AGENDA BUT WITHIN THE SUBJECT MATTER JURISDICTION OF THE CITY COUNCIL

Mayor Blankley opened Public Comment.

Elaine Gooding thanked Council Members Marques and Bracco for visiting the Garlic Farm RV Park to see the situation there. She asked the Council for further assistance.

Mike Nagel spoke regarding his property on Monterey Road being landlocked and hoped that the project at 315 Las Animas would include continued access to his property.

Eli Aizerman spoke regarding the 315 Las Animas project litigation against the City.

James Pearson advised the need to reconstitute the Library Bond Oversight Committee and to get new members on the board.

Dennis Jamison requested an apology from the Council to the people who spoke regarding the fair and honest 2024 election resolution discussion.

Eric Mathews spoke regarding the fair and honest 2024 election resolution.

Alicia spoke regarding the fair and honest 2024 election resolution and how she felt about the council discussion.

Judy Hess spoke about her time working at the Registrar of Voters Office and how they handled election materials. She also invited everyone to the Steve Ashford Memorial pancake breakfast at the Miller Red Barn on Saturday.

There being no further speakers, Mayor Blankley closed Public Comment.

4.2. High Speed Rail Update Presented by the California High Speed Rail Authority (Estimated Time: One Hour)

Mayor Blankley opened Public Comment.

There being no speakers, Mayor Blankley closed Public Comment.

5. REPORTS OF COUNCIL MEMBERS

Council Member Bracco

No report.

Council Member Armendariz

Noted her attendance at the recent California League of Cities Conference in

p. 7 of 557

Long Beach.

Council Member Marques

Advised the Downtown Committee has several upcoming recommendations for the Council to review and noted they will not be meeting until after the first of the new year.

Council Member Hilton

Silicon Valley Clean Energy Authority JPA Board approved the allocation of \$6 million to expand decarbonization programs and initiatives.

Council Member Cline

No report.

Council Member Tovar

Advised he also attended the California League of Cities conference and attended workshops regarding the unhoused. The Gilroy Gardens negotiating Committee met with members of the Gilroy Gardens Board and discussed important topics and outlined goals as a City Council.

Mayor Blankley

Noted her attendance at the California League of Cities Conference and also spoke about the Pancake Breakfast to be held at the Miller Red Barn on Saturday.

6. CONSENT CALENDAR

- 6.1. Approval of the Action Minutes of the October 7, 2024 City Council Regular Meeting.**
- 6.2. Adoption of a Resolution of the City Council of the City of Gilroy Approving the 2024 City of Gilroy Emergency Operations Plan (EOP).
Enactment No.: Resolution No. 2024-49**
- 6.3. Adoption of a Joint Resolution Detailing the Representative Governance for South Santa Clara County Cities on Santa Clara Valley Transportation Authority's Board of Directors.
Enactment No.: Resolution No. 2024-50**
- 6.4. * Adopt a Resolution Authorizing a Grant Application to Santa Clara County Parks for the Miller Red Barn Fire Suppression Sprinklers Project.
Enactment No.: Resolution No. 2024-51**

Mayor Blankley opened Public Comment.

There being no speakers, Mayor Blankley closed Public Comment.

MOTION: To approve Agenda Items 6.1-6.4

RESULTS:	PASS: 7-0 ROLL CALL VOTE
MOVER:	Rebeca Armendariz, Council Member
SECONDER:	Fred Tovar, Council Member

AYES:	BRACCO, ARMENDARIZ, MARQUES, HILTON, CLINE, TOVAR, BLANKLEY
NOES:	
ABSENT:	
ABSTAIN:	

- 7. BIDS AND PROPOSALS
- 8. PUBLIC HEARINGS
- 9. UNFINISHED BUSINESS
- 10. INTRODUCTION OF NEW BUSINESS

10.1. Report on Awarded Grants and Adoption of a Resolution Amending the Adopted Budget to Reflect the Grant Awards.

Mayor Blankley opened Public Comment.

There being no speakers, Mayor Blankley closed Public Comment.

MOTION: To adopt the resolution amending the adopted budget to reflect the grant awards.

RESULTS:	PASS: 7-0 ROLL CALL VOTE
MOVER:	Rebeca Armendariz, Council Member
SECONDER:	Carol Marques, Council Member
AYES:	BRACCO, ARMENDARIZ, MARQUES, HILTON, CLINE, TOVAR, BLANKLEY
NOES:	
ABSENT:	
ABSTAIN:	

Enactment No.: Resolution No. 2024-52

11. FUTURE COUNCIL INITIATED AGENDA ITEMS

12. CITY ADMINISTRATOR'S REPORTS

12.1. Santa Teresa Fire Station Update

City Administrator, Jimmy Forbis noted his attendance at the California League of Cities Conference having attended most of the sessions on the unhoused. He advised the Santa Teresa Fire Station project is moving forward and once Council accepts the land, we are on our way. Staff will reengage the architect and the community to look into design modifications.

13. CITY ATTORNEY'S REPORTS

14. CLOSED SESSION

15. ADJOURN TO OPEN SESSION

16. ADJOURNMENT

The meeting was adjourned at 7:14 P.M.

I HEREBY CERTIFY that the foregoing minutes were duly and regularly adopted at a regular meeting of the City Council of the City of Gilroy.

DocuSigned by:
Beth Minor
D4244EA57BF7425...

/s/Beth Minor
Interim City Clerk



DRAFT



City of Gilroy

STAFF REPORT

Agenda Item Title: Adoption of a Resolution of the City of Gilroy to approve the Santa Clara County Community Wildfire Protection Plan (CWPP) and the Gilroy Annex

Meeting Date: November 4, 2024

From: Jimmy Forbis, City Administrator

Department: Administration

Submitted By: Jimmy Forbis, City Administrator

Prepared By: Andrew Young, Emergency Services and Volunteer Coordinator

STRATEGIC PLAN GOALS

Not Applicable

RECOMMENDATION

Adoption of a Resolution of the City of Gilroy to approve the Santa Clara County Community Wildfire Protection Plan (CWPP) and the Gilroy Annex.

EXECUTIVE SUMMARY

The 2023 update to the CWPP is a significant effort to strengthen wildfire preparedness and resilience throughout the county. The supporting Gilroy Annex is tailored to the unique needs of the Gilroy Planning Area. Coordinated by the Santa Clara County FireSafe Council, with support from CAL FIRE, the County of Santa Clara Office of Emergency Management, and other key stakeholders, this update builds on the previous 2016 CWPP.

One of the main focuses of the 2023 update is on enhanced mitigation strategies, which aim to reduce wildfire risk, particularly in wildland-urban interface (WUI) areas. These strategies include improved guidelines for defensible space, ignition-resistant construction standards, and hazardous fuels reduction projects. Another key aspect of the update is its emphasis on community collaboration, incorporating input from various stakeholders and fostering partnerships with local, state, and federal agencies to ensure

the plan meets the community's needs.

The plan also identifies priority areas where mitigation efforts are most critical to protecting lives, property, and infrastructure, ensuring that resources are used effectively. Public awareness and education are also key components, with initiatives like community events and workshops designed to equip residents with the knowledge and tools to mitigate wildfire risks. Overall, the 2023 CWPP update represents a crucial step in enhancing the county's wildfire resilience, safeguarding communities, and ensuring a more effective response to future wildfire threats.

BACKGROUND

The Santa Clara County CWPP was initially developed in 2016 to address the growing threat of wildfires in the region. The plan aimed to enhance wildfire preparedness, reduce risks, and protect lives and property through a collaborative approach involving local communities, government agencies, and other stakeholders. Given the increasing frequency and intensity of wildfires in California, an update to the CWPP was deemed necessary to incorporate new data, strategies, and technologies.

In 2023, the Santa Clara County FireSafe Council, in partnership with CAL FIRE, the County of Santa Clara Office of Emergency Management, and other key stakeholders, undertook a comprehensive update of the CWPP. This update reflects the latest understanding of wildfire behavior, risk assessment, and mitigation techniques, ensuring that the county remains proactive in its wildfire preparedness efforts.

The CWPP is not a regulatory document, but it plays a crucial role in wildfire preparedness and mitigation. The Santa Clara County CWPP Base Plan is an overarching countywide plan, while the Gilroy Annex is tailored to the specific needs and conditions of the community it serves, making the strategies and actions more effective. By developing and implementing a CWPP, communities can significantly enhance their resilience to wildfires, even though the plan itself is not legally binding.

ANALYSIS

The 2023 CWPP update serves as a forward-thinking planning tool aimed at reducing the growing wildfire risk in Santa Clara County, particularly in the Wildland Urban Interface (WUI) areas, including parts of Gilroy. Its focus on mitigation strategies, community collaboration, and targeted resource allocation demonstrates a proactive stance on tackling wildfire threats. By adopting the CWPP base plan and the Gilroy Annex, the City will synchronize local efforts, fostering a safer and more resilient community, well-prepared for future wildfire challenges by:

1. **Mitigating Wildfire Risks:** The CWPP provides a detailed risk assessment and identifies priority areas where mitigation efforts can be implemented. It recommends fuel reduction, defensible space creation, and public education campaigns to reduce the likelihood and severity of wildfire incidents.

2. **Enhancing Community Preparedness:** Adoption of the CWPP will support Gilroy's participation in county-wide public education programs, community preparedness initiatives, and training opportunities to better prepare residents and businesses for wildfire events.
3. **Accessing Funding Opportunities:** Approval of the CWPP is a prerequisite for accessing federal and state grant funding, including those from the Federal Emergency Management Agency (FEMA), for wildfire mitigation projects. This could provide Gilroy with financial support to implement local fire protection measures.
4. **Fostering Interagency Collaboration:** The CWPP emphasizes coordination among local, county, state, and federal agencies, which is critical for ensuring an effective wildfire response. Adoption of the plan will strengthen partnerships between Gilroy and other fire management agencies.
5. **Supporting Long-Term Resilience:** The Gilroy Annex outlines long-term strategies to improve community resilience against wildfires, such as land-use planning, infrastructure hardening, and water resource management. These strategies will help safeguard lives, property, and natural resources in the face of growing wildfire risks.

ALTERNATIVES

Staff recommends approving the resolution to adopt the CWPP and Gilroy Planning Area Annex update, as it will enhance wildfire preparedness and align the city with broader county and state wildfire management efforts. Conversely, not adopting the plan may leave the city vulnerable to wildfire risks and result in missed opportunities for state and federal funding for wildfire mitigation projects. Alternatively, the Council could request specific modifications to the plan before approval, though this may delay implementation and the associated benefits.

FISCAL IMPACT/FUNDING SOURCE

The base document update was grant funded and only staff time was incurred for collaboration and annex development. There are no direct fiscal impacts from adopting the Santa Clara County CWPP and supporting Gilroy Annex. However, it positions the City to apply for state and federal grants aimed at wildfire mitigation, which could provide significant financial resources for implementing the plan's strategies. Additionally, proactive wildfire mitigation can reduce the long-term costs associated with wildfire response and recovery.

PUBLIC OUTREACH

The FireSafe Council, in partnership with Annex stakeholders, led the public outreach efforts for the development of the CWPP. Several outreach and engagement events were organized to educate the community and gather input from residents across the County. In Morgan Hill, the local event was promoted through weekly emails and social

media campaigns. A draft plan, along with a story map, was shared via media outlets to encourage community review and feedback. The supporting annex was developed based on the information and mitigation priorities outlined in the base document and customized for the Gilroy Planning Area. The finalized draft of the Gilroy Annex, along with this staff report, was included in the publicly posted agenda and meeting packet, providing the public an opportunity to review and offer input.

NEXT STEPS

Staff will continue to evaluate the feasibility of mitigation activities outlined in this document and pursue grant funding to implement projects in collaboration with partner agencies and other community stakeholders and monitor progress.

Attachments:

1. Santa Clara County Community Wildfire Protection Plan (CWPP) (Base document)
2. Gilroy Annex to the CWPP (Pending)
3. Resolution to Adopt the CWPP

AUGUST 2023



SANTA CLARA COUNTY

COMMUNITY WILDFIRE PROTECTION PLAN

Working together to build
fire adapted communities,
resilient to wildfire



SWCA[®]
ENVIRONMENTAL CONSULTANTS

Funding for the Community Wildfire Protection Plan (CWPP) is a collaboration between these public and private entities, and is a part of California Climate Investments, a statewide initiative that puts billions of Cap-and-Trade dollars to work reducing greenhouse gas emissions, strengthening the economy, and improving public health and the environment, particularly in disadvantaged communities. The Cap-and-Trade program also creates a financial incentive for industries to invest in clean technologies and develop innovative ways to reduce pollution. California Climate Investments projects include affordable housing, renewable energy, public transportation, zero-emission vehicles, environmental restoration, more sustainable agriculture, recycling, and much more. At least 35 percent of these investments are located within and benefiting residents of disadvantaged communities, low-income communities, and low-income households across California.

For more information, visit the California Climate Investments website at: www.caclimateinvestments.ca.gov.

We would like to formally thank the Santa Clara County FireSafe Council, CWPP Management Team, Advisory Team, and all stakeholders for contributing their time and expertise throughout the planning process. Your participation has contributed to creating resilient landscapes, implementing public education, reducing structural ignitability, and ensuring safe and effective wildfire response. We would also like to acknowledge the work of the Santa Cruz Mountain Stewardship Network in development of the Risk-Hazard Assessment, and especially the contributions of Tukman Geospatial, Esther Mandeno-Digital Mapping Solutions, and Carol Rice-Wildland Resource Management for their contributions to this planning effort.

For additional information, questions, or concerns regarding this project, please contact Project Manager Victoria Amato at vamato@swca.com.

For all your planning and implementation needs, please visit www.swca.com.



Funding for the Community Wildfire Protection Plan (CWPP) is a collaboration between these public and private entities, and is a part of California Climate Investments, a statewide initiative that puts billions of Cap-and-Trade dollars to work reducing greenhouse gas emissions, strengthening the economy, and improving public health and the environment, particularly in disadvantaged communities. The Cap-and-Trade program also creates a financial incentive for industries to invest in clean technologies and develop innovative ways to reduce pollution. California Climate Investments projects include affordable housing, renewable energy, public transportation, zero-emission vehicles, environmental restoration, more sustainable agriculture, recycling, and much more. At least 35 percent of these investments are located within and benefiting residents of disadvantaged communities, low-income communities, and low-income households across California. For more information, visit the California Climate Investments website at: www.caclimateinvestments.ca.gov.

DISCLAIMER

The purpose of this assessment and report is to assess the wildfire risk and hazard existing within the planning area and surrounding environment and to provide a framework for reducing and managing vegetative fuel loads on privately owned open spaces/undeveloped land and adjacent roads to minimize wildfire hazard while avoiding or minimizing negative environmental effects. However, the information provided in this report does not prevent wildfires; instead, it is intended to manage the wildfire risk. On that account, SWCA Environmental Consultants accepts no responsibility and disclaims all liability for any loss or damages that may result from fires and associated effects occurring within and around the planning area.

Observations in the report are based on best available data, satellite imagery, on-the-ground evaluations, previous data from the 2016 CWPP, computer modeling at the community level, and local knowledge.

Treatments recommended in this report are aimed at reducing the threat of and damages from catastrophic wildfire. They are based on California state legislation and best practices and methods researched and developed by the U.S Department of Agriculture. Recommendations were chosen based on vegetation type, topography, current weather trends, current and predicted fire behavior, implementation feasibility, and cost-benefit ratio. There may, however, be alternative site-specific solutions available to protect values at risk (VARs) that may better fit the goals and management of the development.

During the performance of this project work, SWCA and our subconsultants did not unlawfully discriminate, harass, or allow harassment, against any stakeholder on the basis of sex, gender, gender expression, sexual orientation, race, color, religious creed, marital status, ancestry, national origin, medical condition, age, or disability (mental and physical).

The entities listed below participated in the development of and/or reviewed and are in support of the Santa Clara County Community Wildfire Protection Plan:

_____	_____
Signature	Signature
_____	_____
Name (printed)	Name (printed)
_____	_____
Date	Date
_____	_____
Agency/Position (printed)	Agency/Position (printed)

_____	_____
Signature	Signature
_____	_____
Name (printed)	Name (printed)
_____	_____
Date	Date
_____	_____
Agency/Position (printed)	Agency/Position (printed)

Signature

Signature

Name (printed)

Name (printed)

Date**Date**

Agency/Position (printed)

Agency/Position (printed)

Signature

Signature

Name (printed)

Name (printed)

Date _____

Date

Agency/Position (printed)

Agency/Position (printed)



Executive Summary	vii
What Is the Purpose of this Community Wildfire Protection Plan?	vii
What Are the Key Issues Addressed?.....	viii
How Is the Plan Organized?	viii
What Is the Goal of a CWPP?	ix
How Was the Santa Clara County CWPP Update Developed?.....	x
What Happened Since 2016?.....	xi
Why Create a Story Map for the Project?.....	xi
Where Is the Planning Area?.....	xi
Who Participated in Developing the Plan?	xii
What Was the Public Involvement?	xv
What Is the Current Wildfire Situation?	xv
What Is the Risk-Hazard Assessment?	xv
How Is my Community Rated?	xvi
What Are the Strategies to Address Wildfire Hazards?.....	xvii
What Does Post-Fire Response and Recovery Involve?	xix
How Will the Plan be Implemented?.....	xix
Who Will Lead the Implementation of this CWPP?	xx
When Does the CWPP Need to be Updated?.....	xx
Management Team	xx
Advisory Team.....	xxi
Chapter 1 – Introduction.....	1
Planning Oversight	2
CWPP Management Team and Advisory Team	2
Goal of a Community Wildfire Protection Plan	2
Alignment with the National Cohesive Strategy	4
Alignment with Plans and Agreements.....	6

Planning and Regulatory Background	6
Planning Area	6
Land Ownership.....	7
Public Involvement	11
Chapter 2 – Fire Environment.....	13
Wildland Urban Interface	13
Fire Hazard Severity Zones	15
WUI Land Use	17
Social Vulnerability	18
Unhoused Populations	19
Vegetation and Land Cover	19
Topography and Fuels.....	22
Ember Ignition Hazards	25
Fire Regimes	26
Grassland	27
Chaparral and Northern Coastal scrub	28
Oak Woodland	28
Sudden Oak Death.....	29
Riparian Forest and Scrub	29
Conifer Woodland	30
Irrigated Agriculture.....	30
Invasive non-native plant communities	31
Climate and Weather Patterns	32
Fire History	35
Past Fire Management Policies and Land Management Actions	35
Recent Fire Occurrence	36
Extreme Fire Behavior Patterns	40
Fire Response Capabilities	41
Planning Decision and Support.....	42
Fire Resources	42
Chapter 3 – Risk-Hazard Assessment	43
Purpose	43
Field-Based Community Hazard Assessments	44
Firewise Communities	44
Evacuation Capabilities	45
Risk-Hazard Assessment	60
Background	60
Technical Approach	62
Model Inputs.....	63
Model Outputs.....	64
Areas of Concern	67
Collaboration	71
Model Applications	71
Values at Risk.....	72

Natural Values at Risk.....	77
Socioeconomic Values at Risk.....	79
Cultural Values at Risk.....	81
Chapter 4 – Mitigation Strategies	85
Goal 1: Restore and Maintain Landscapes	86
Recommendations for Hazardous Fuel Reduction	88
Goal 2: Fire-Adapted Communities	101
Recommendations for Public Education and Outreach	101
Recommendations for Reducing Structural Ignitability	102
Goal 3: Wildfire Response.....	107
Recommendations for Improving Fire Response Capabilities.....	107
Chapter 5 – Monitoring and Evaluation	113
Fuels Treatment Monitoring.....	115
Implementation	116
Project Tracker	116
CWPP Evaluation	117
Timeline for Updating the CWPP	119
References	134

APPENDICES

Appendix A: Planning and Policy Background
Appendix B: Community Background and Resources
Appendix C: Community Risk-Hazard Assessments for WUI Communities
Appendix D: Tukman Geospatial Santa Clara, Santa Cruz, and San Mateo County Wildfire Risk to Structures and Classified Wildfire Hazard Maps for Fire Prevention Planning
Appendix E: Project Recommendations
Appendix F: Fuel Treatment Types and Methods
Appendix G: Property Owner Resources
Appendix H: Post-Fire Recovery and Restoration
Appendix I: Project Outreach
Appendix J: Additional Mapping
Appendix K: Forms
Appendix L: Funding Sources
Appendix M: List of Preparers

FIGURES

Figure 1.1. CWPP incorporating the three primary goals of the Cohesive Strategy and post-fire recovery and serving as holistic plan for fire prevention and resilience.	5
Figure 1.2. Santa Clara County general location map.	8
Figure 1.3. Santa Clara County community boundaries map, developed through Core Team collaboration.	9
Figure 1.4. Santa Clara County land ownership map.	10
Figure 2.1. WUI with accompanying interface zones of Santa Clara County.	14
Figure 2.2. Example of the WUI in the Santa Clara County.	16
Figure 2.3. An unhoused encampment in San Jose.	17
Figure 2.4. Vegetation types across Santa Clara County.	21
Figure 2.5. Fuel model classes across Santa Clara County.	24
Figure 2.6. 30-year monthly normals for temperature and precipitation for West Almaden, 1981–2010 (Source: PRISM 2023).	33
Figure 2.7. 30-year monthly normals for temperature and precipitation for Gilroy, 1981–2010 (Source: PRISM 2023).	34
Figure 2.8. 30-year monthly normals for temperature and precipitation for North Coyote Reservoir, 1981–2010 (Source: PRISM 2023).	34
Figure 2.9. Recent wildfire history in Santa Clara County.	37
Figure 2.10. Decadal wildfire frequency for Santa Clara County from 1950 through 2022, based on available data.	38
Figure 2.11. Decadal fire size statistics for Santa Clara County based on fire history data from 1950 through 2022.	38
Figure 2.12. Decadal acres burned per decade for Santa Clara County based on fire history data from 1978 through 2022.	39
Figure 2.13. Number of recorded fires per month in Santa Clara County from 1978 through 2022.	39
Figure 2.14. Cause of wildfire ignitions in Santa Clara County from 2014 through 2022.	40
Figure 2.15. Map of fire agency service areas in Santa Clara County.	41
Figure 3.1. CAL FIRE FHSZs across Santa Clara County.	61
Figure 3.2. Schematic of data inputs used to derive both the WRS and CWH layers (Tukman 2022).	62
Figure 3.3. Model inputs for the Tukman model.	63
Figure 3.4. Model outputs for the Tukman model.	64
Figure 3.5. Classified wildfire hazard within Santa Clara County.	65
Figure 3.6. Wildfire risk to structures within Santa Clara County.	66
Figure 3.7. Screenshot of online version of the WRS layer (accessed January 2023).	70
Figure 3.8. Intersect of critical habitat with CWH.	73
Figure 3.9. Intersect of cultural VARs with CWH.	74
Figure 3.10. Intersect of critical infrastructure with CWH.	75
Figure 3.11. Intersect of open space lands with CWH.	76
Figure 3.12. Example of a natural VAR, a scenic viewshed.	77
Figure 3.13. Map of natural VARs across Santa Clara County.	78
Figure 3.14. Socioeconomic VARs across Santa Clara County.	80
Figure 3.15. Example of a cultural VAR, the Lick Observatory.	81
Figure 3.16. Example of a cultural VAR, view from the historic fire tower on Mount Hamilton.	82

Figure 3.17. Cultural VARs across Santa Clara County. 83

Figure 4.1. Past fuel treatments and types across Santa Clara County. 87

Figure 4.2. Planning Team–delineated areas of concern. 90

Figure 4.3. CEQA process. 98

Figure 4.4. Fuel reduction project in Santa Clara County. 99

Figure 4.5. Fuel reduction project in Santa Clara County. 100

TABLES

Table 2.1. Estimated Socially Vulnerable Populations at Risk from Wildfire in Santa Clara County..... 18

Table 2.2. Scott and Burgan 2005 Fuel Model Classes within Santa Clara County 23

Table 2.3. Mean Annual Temperature and Precipitation by Station in Santa Clara County 33

Table 3.1. Communities at Risk Ratings with Community Hazard Assessment Summary 46

Table 3.2. Polygons Exhibiting High Hazard and High Structure Classification 68

Table 4.1. Recommendations to Create Resilient Landscapes (Fuel Treatments) 91

Table 4.2. Recommendations for Creating Fire-Adapted Communities (Public Education and Reducing Structural Ignitability) 103

Table 4.3. Recommendations for Safe and Effective Wildfire Response 109

Table 5.1. Recommended Monitoring Strategies 114

This page intentionally left blank.

EXECUTIVE SUMMARY

WHAT IS THE PURPOSE OF THIS COMMUNITY WILDFIRE PROTECTION PLAN?

Nationally, the 2000 fire season triggered great interest by the federal government in the wildfire issue. In 2003 the U.S. Congress recognized widespread declining forest health and increased wildfire risk nationwide by passing the Healthy Forests Restoration Act of 2003 (HFRA), and President Bush signed the act into law (Public Law 108–148, 2003). The HFRA was revised in 2009 to address changes to funding and provide a renewed focus on wildfire mitigation (H.R. 4233 - Healthy Forest Restoration Amendments Act of 2009). The HFRA expedites the development and implementation of hazardous fuels reduction projects on federal land and emphasizes the need for federal agencies to work collaboratively with communities. A key component of the HFRA is the development of community wildfire protection plans (CWPPs), which facilitate the collaboration between federal agencies and communities in order to develop hazardous fuels reduction projects and place priority on treatment areas identified by communities in a CWPP. A CWPP also allows communities to establish their own definition of the WUI. In addition, communities with an established CWPP are given priority for funding of hazardous fuels reduction projects carried out in accordance with the HFRA.

The purpose of the 2023 Santa Clara County Community Wildfire Protection Plan (CWPP) update is to:

1. Provide a countywide scale of wildfire risk and protection needs,
2. Bring together all responsible wildfire management and suppression entities in the planning area to address the identified needs, and
3. Provide a framework for future planning and implementation of necessary mitigation measures.

This CWPP aims to assist in protecting human life and reducing property loss due to wildfire throughout the county. This 2023 plan was compiled from reports, documents, data, and Planning Team and public input. The plan was developed in response to the HFRA.

The CWPP meets the requirements of the HFRA by addressing the following:

1. Having been developed collaboratively by multiple agencies at the state and local levels in consultation with federal agencies and other interested parties.
2. Prioritizing and identifying fuel reduction treatments and recommending the types and methods of treatments to protect at-risk communities and pertinent infrastructure.
3. Suggesting multi-party mitigation, monitoring, and outreach.
4. Recommending measures and action items that residents and communities can take to reduce the ignitability of structures.
5. Soliciting input from the public on the draft CWPP.

WHAT ARE THE KEY ISSUES ADDRESSED?

Issues addressed in this CWPP include:

- Fuel treatment recommendations for land management agencies and property owners to mitigate hazard and risk
- Prioritizing hazardous fuels reduction in the wildland urban interface (WUI)
- Raising awareness about the natural role that fire plays in the ecosystem and maintaining resilient landscapes
- Public education and outreach to property owners to enable individuals to reduce the risk of fire to their properties, particularly regarding the time required for fire response to remote communities
- Constant and consistent messaging for residents and visitors concerning wildfire risks and mitigation strategies
- Increasing public access to information through the use of online materials, including the story map created for this CWPP
- Investing and supporting fire response at all levels, including resources for local fire departments, to increase capacity to serve the community
- Increasing public understanding of the fire response process
- Continuing to address wildfire issues at the landscape level, across multiple jurisdictions
- Managing fire to protect values and accomplish resource management goals, including protection and enhancement of wildlife habitat, watershed health, water supply and quality, and forest health
- Recent climate patterns and associated changes to the wildland fire environment
- Disease and insect outbreaks associated with tree mortality

HOW IS THE PLAN ORGANIZED?

The CWPP provides a Risk-Hazard Assessment, action items, project recommendations, and background information about the county's wildland fire environment as well as land management plans and agencies. In order to keep the main document focused on the assessment and wildfire recommendations, most of the background information and baseline data from the 2016 CWPP planning effort is housed in several appendices.

Chapter 1: Introduction

Chapter 2: Fire Environment

Chapter 3: Risk-Hazard Assessment

Chapter 4: Mitigation Strategies

Chapter 5: Monitoring and Evaluation

Appendix A: Planning and Policy Background

Appendix B: Community Background and Resources

Appendix C: Community Risk-Hazard Assessments for WUI Communities

Appendix D: Tukman Geospatial Santa Clara, Santa Cruz, and San Mateo County Wildfire Risk to Structures and Classified Wildfire Hazard Maps for Fire Prevention Planning

Appendix E: Project Recommendations

Appendix F: Fuel Treatment Types and Methods

Appendix G: Property Owner Resources

Appendix H: Post-Fire Recovery and Restoration

Appendix I: Project Outreach

Appendix J: Additional Mapping

Appendix K: Forms

Appendix L: Funding Sources

Appendix M: List of Preparers

WHAT IS THE GOAL OF A CWPP?

The goal of a CWPP is to enable local communities to improve their wildfire-mitigation capacity, while working with government agencies to identify high fire risk areas and prioritize areas for mitigation, fire suppression, and emergency preparedness. Another goal of the CWPP is to enhance public awareness by helping residents better understand the natural- and human-caused risks of wildland fires that threaten lives, safety, and the local economy. The minimum requirements for a CWPP, as stated in the HFRA, are (Society of American Foresters [SAF] 2004):

- **Collaboration:** Local and state government representatives, in consultation with federal agencies or other interested groups, must collaboratively develop a CWPP.
- **Prioritized Fuel Reduction:** A CWPP must identify and prioritize areas for hazardous fuels reduction and treatments and recommend the types and methods of treatment that will protect one or more communities at risk (CARs) and their essential infrastructures.
- **Treatments of Structural Ignitability:** A CWPP must recommend measures that property owners and communities can take to reduce the ignitability of structures throughout the area addressed by the plan.

The Management Team and Advisory Team (the Planning Team) developed the following specific goals for the plan:

- **Robust Analysis**
- **Collaboration**
- **Engagement**
- **Adoption**
- **Implementation**

These goals will help address specific concerns and priorities identified by the Planning Team. Concerns and priorities outlined by the Planning Team include:

- **Ingress/Egress:** It is important that roadside vegetation is managed and evacuation routes are planned.
- **Fuel Loading**
- **Defensible Space**
- **Human Ignitions**
- **Public Education**

HOW WAS THE SANTA CLARA COUNTY CWPP UPDATE DEVELOPED?

A group of multijurisdictional agencies (federal, state, and local), organizations, and residents joined together to update and develop this countywide CWPP. Oversight was provided by a CWPP Management Team, responsible for the overall success of the project and composed of members of the FireSafe Council, Santa Clara County, and the California Department of Forestry and Fire Protection (CAL FIRE); a CWPP Advisory Team, comprising subject matter experts who collaborated on the analysis, recommendations, outreach, and deliverables; and CWPP stakeholders who represent the CWPP annex holders and are key agencies, influencers, and partners in support of the overall efforts and implementation. These teams will be jointly referred to as the Planning Team. The composition of these teams is outlined in Appendix M. Several stakeholders with many years of experience working on CWPPs, as well as in-depth knowledge of fire management in the community and surrounding areas, have contributed to the development of this updated CWPP. The Planning Team provided a comprehensive review of the 2016 CWPP and identified needed revisions to strengthen the plan.

The CWPP planning process served multiple purposes. One was to integrate existing wildfire risk and hazard mapping into the revised plan. Utilizing this mapping process allowed the Planning Team to prioritize treatments tailored specifically for the community to reduce fire risk. The development of the 2023 CWPP also included public engagement, and community members were highly engaged in providing input. All public outreach was led by the Santa Clara County FireSafe Council. Various types of public outreach events were held to increase awareness and collect local input, and social media and online forums allowed for further engagement. Information on outreach efforts is included in Appendix I. The CWPP planning process also brought together wildfire responders and land managers into a Planning Team, providing opportunities to build lasting working relationships and encourage collaboration. By incorporating public and Planning Team input into the recommendations, treatments are tailored specifically for the planning area. Overall, the Santa Clara County CWPP emphasizes the importance of collaboration among multijurisdictional agencies and the public in developing fuels mitigation treatment programs to address wildfire hazards.

In addition, this CWPP update was carried out concurrently with the 2023 update to the Santa Clara County Multi-Jurisdictional Hazard Mitigation Plan, and the Santa Clara County General Plan-Safety Element update. Representatives from all planning processes were actively engaged in the development of the CWPP; therefore, projects identified in this CWPP are in alignment with the wildfire-specific hazard mitigation actions identified in those plans.

WHAT HAPPENED SINCE 2016?

Shortly after the 2016 CWPP final draft was produced in the summer of 2016, the county experienced several phenomena, including the Loma Fire in September 2016, that caused projects and goals to become outdated. This immediate change in fire history burned areas that were slated for vegetation management projects. Some of the proposed CWPP fuel breaks were constructed as a contingency plan during the Loma Fire and thus not immediately needed as projects. Upon the heels of the fall fire were 2016–2017 winter rains that created landslides, erosion, and flooding in the proposed planning area. The county government prioritized these emergencies. It also affected outreach and preparedness education for the Santa Cruz Mountain and South County communities.

It was decided to take a tactical pause and update the draft before moving it to the Santa Clara County Board of Supervisors. California entered record-setting years of wildfires spanning from 2017 to 2020, and updates took a lower priority as resources were diverted to higher-priority response and recovery. Next, the unprecedented pandemic of COVID-19 changed the nature of our society permanently. Shelter-in-place health mandates beginning in March 2020 kept collaborators from meeting or traveling through the new project areas, and project design, collaboration, and implementation became very challenging during the early pandemic health orders. Again, the majority of resources in these related fields were diverted to respond to the pandemic.

Although the larger countywide effort was not restarted until 2022 for this update, multiple annex holders were able to pivot on smaller scales. Several annex holders adopted their annexes at the City, Town, or Fire District level. They also produced updates and public guidelines for easier consumption of the information in the initial CWPP. These updates and City, Town, and Fire District-level momentum has supported the current countywide update and will be included in the 2023 CWPP.

More background regarding the planning and policy actions of Santa Clara County is available in Appendix A.

WHY CREATE A STORY MAP FOR THE PROJECT?

The County of Santa Clara has opted to develop a story map (online web content) to disseminate information to the public and provide the community members with an opportunity to make contributions toward building their community's wildfire resilience by providing valuable input. The story map presents the CWPP in a web layout with accompanying web maps and includes a project tracker. In addition to facilitating information sharing, the story map also provides the county with a platform that can be readily revised to keep the CWPP document up to date with current information. The Santa Clara County CWPP story map can be accessed at- <https://santa-clara-cwpp-sccfc.hub.arcgis.com/>

WHERE IS THE PLANNING AREA?

The planning area includes Santa Clara County as delineated by its geographic and political boundaries.

The area covered by a CWPP usually includes communities or parts of communities. This CWPP is developed at the Santa Clara County level and therefore addresses these requirements with a greater variety of participants than the community plans that have been previously completed. As a result, information associated with these requirements will be accessible to other communities in the county as they prepare their CWPPs and annexes, as well as providing a higher overview of wildfire issues,

concerns, and risk reduction solutions throughout the county. The expectation is a set of common countywide strategic goals accompanied with specific target projects at the community level to achieve those goals.

More information regarding the planning area's background and resources is available in Appendix B.

WHO PARTICIPATED IN DEVELOPING THE PLAN?

CWPPs alone provide no authority to enforce findings and conclusions; their value is in the collaboratively developed information and recommendations that can identify and guide activities that mitigate wildfire risk and hazard. The Santa Clara County CWPP can be used by government entities as a reference to guide land use planning and promulgate codes and ordinances in response to its recommendations. It can additionally be used by non-profit groups and residents to apply for grant funding, and all project leads to collaborate timing, economies of scale and shared resources to increase projects effectiveness

The underlying theme of these various plans, and in particular CWPPs, is collaboration among the many stakeholders affected by wildfire. Chief among the components of collaboration is public education to provide not only information concerning the risk of wildfire but also to let stakeholders know about opportunities to participate in the management and mitigation of wildfire risk. CWPPs should be considered "living documents" because of the importance of revisiting and updating these documents periodically as new issues arise and results from recommendations in the CWPP, such as hazard reduction projects, develop. The value of the CWPP is ultimately to provide a framework for collaboration between the public, governments, agencies, and other entities affected by wildfire, so that they can discuss and jointly develop solutions and strategies for its management and mitigation.

Land managers across Santa Clara County participated in the development of this CWPP. Agencies such as the Santa Clara County Fire Department, Santa Clara County Firesafe Council, Santa Clara Valley Water District, California Transportation, and the California Department of Forestry and Fire Protection (CAL FIRE) along with other additional community or organization representatives, served as the Planning Team for this CWPP and drove the decision-making process. Several Planning Team members were involved in previous CWPPs in and around the county and have contributed their expertise to this CWPP. Planning Team members worked together to produce a preliminary areas of concern map (Figure ES.2 that would serve as a basis for further Risk-Hazard Assessment analysis and mitigation recommendations.

Please see Appendix M to see a full list of the preparers of this plan.

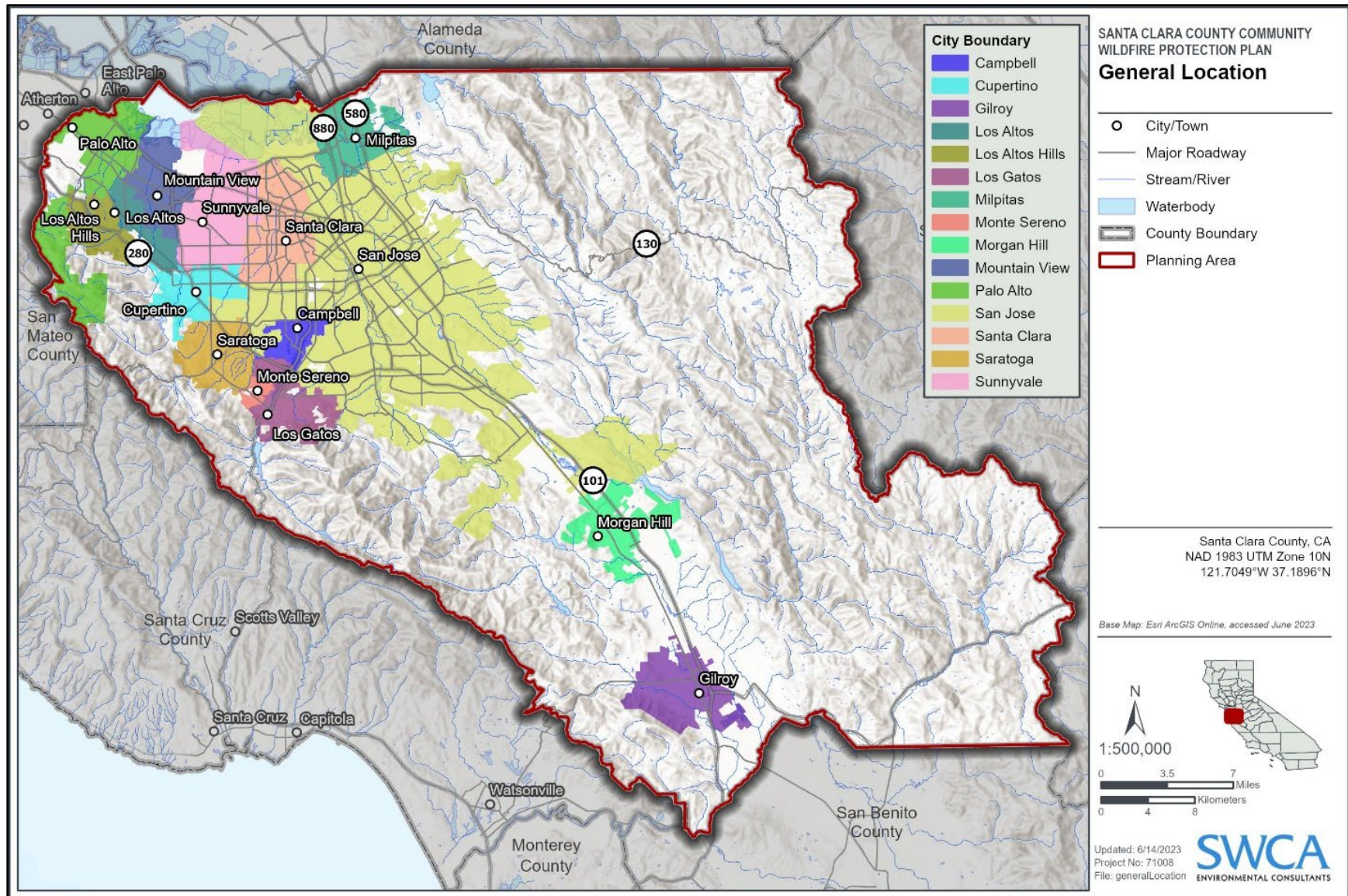


Figure ES.1. Santa Clara CWPP planning area.

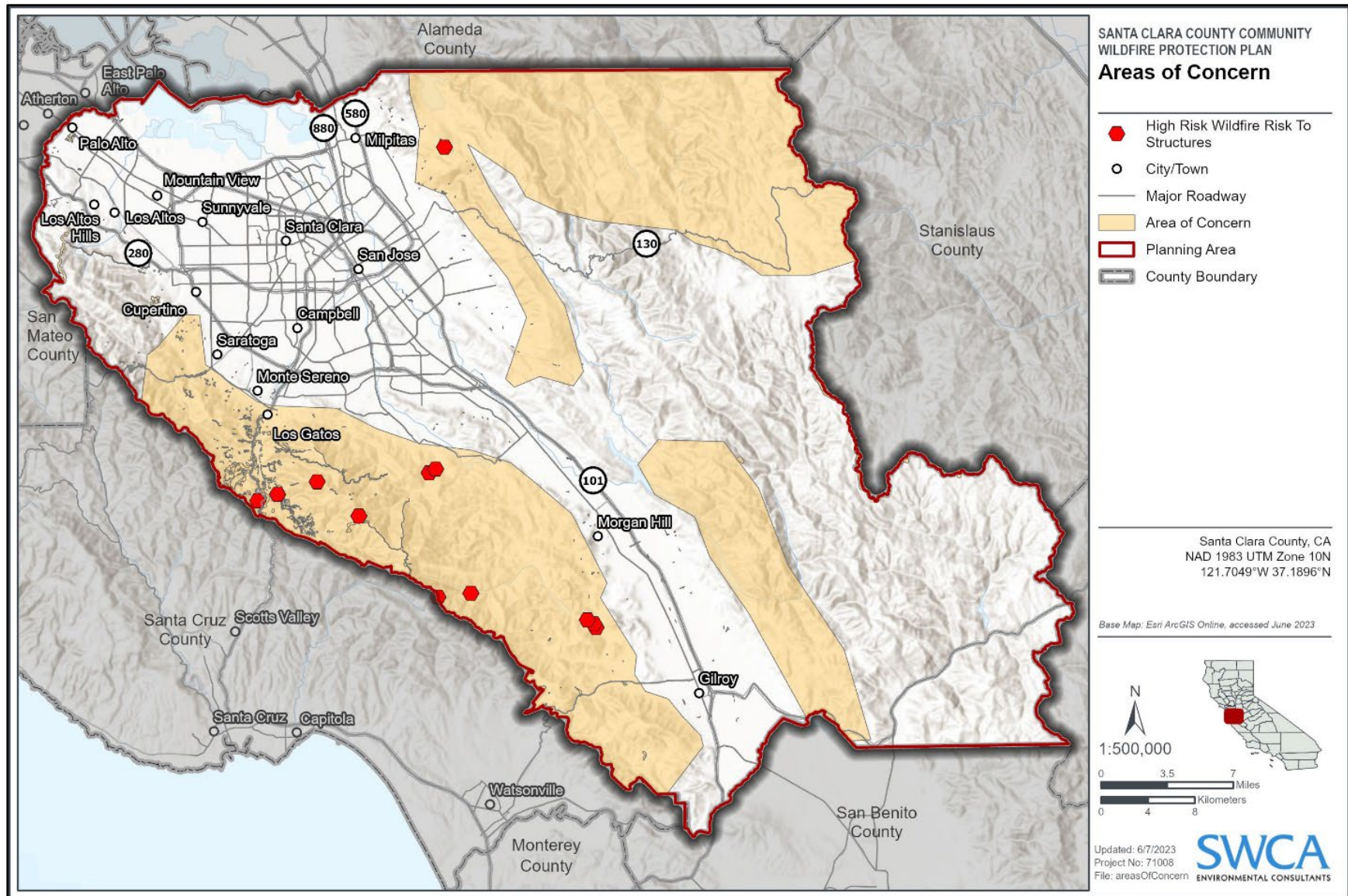


Figure ES.2. A map showing Planning Team–delineated areas of concern.

WHAT WAS THE PUBLIC INVOLVEMENT?

The CWPP process is designed to enhance outreach and education on the wildfire situation to the general public, local governments and agencies that may be unaware of the steps they can take to mitigate the risk of wildfire. The Planning Team engaged in public outreach using a multimedia approach, including the story map created for the project, social media posts, community surveys, and email distribution. In addition, the Planning Team hosted five in-person public meetings from December 1, 2022, through December 15, 2022, located across the county to provide access to all WUI communities. Feedback, comments, and suggestions received from community members during community events, the community survey, and project recommendations review were synthesized and utilized to craft project recommendations for the Santa Clara County CWPP. Therefore, the project recommendations are specifically tailored to address the concerns and priorities of the community. Through the story map and hub site, and adopting the idea that the CWPP remains a “live document”, the FireSafe Council plans to continue to engage the public in implementation of the plan recommendations and in future CWPP updates.

WHAT IS THE CURRENT WILDFIRE SITUATION?

Santa Clara County is situated in northern California and contains a considerable portion of wildfire-prone land. Vegetation types across the county consist of evergreen and deciduous hardwoods, coniferous and deciduous forests, herbaceous plants, grasses, and shrubs. Fires are a natural part of the disturbance cycle for many of the vegetation types present within the county, with woodlands and forests burning more on the order of 30 to 100 years between fires. In the past decade, Santa Clara County has experienced several major wildfire events, including the SCU Lightning Complex, Crews Fire, and Loma Fire. The 2020 SCU Lightning Complex fires occurred in the hardwood stands of the Diablo Range and were the largest to occur within the county and fourth largest in California history, burning 395,000 acres in total (CAL FIRE 2022a). Many of the county’s forested areas comprise abundant fuels and possess highly varied topography, making them especially vulnerable to high severity wildfire. In addition, multiple factors have combined to increase forest susceptibility to wildfire; these include frequent drought, fire suppression-based forest management tactics, and climate change (see climate predicted wildfire hazard Maps 8 and 9 in Appendix J). Removing natural fire from a fire-dependent ecosystem, drought, insects, and diseases have resulted in increased fuel buildup and alterations to vegetation composition (Goodwin et al. 2021). These forest changes have been shown to increase the risk of uncharacteristically large, high-severity fires (Goodwin et al. 2021; Schoennagel 2017). The 2020 LNU and CZU Complex fires took place across Santa Clara County and in neighboring Santa Cruz County, burning through 86,500 acres of vegetative communities. In recent years across the western United States, including California, fires have grown to record sizes and are burning earlier, longer, hotter, and more intensely than they have in the past (Westerling et al. 2006; Westerling 2016).

WHAT IS THE RISK-HAZARD ASSESSMENT?

The purpose of the Risk-Hazard Assessment is to evaluate and provide information pertaining to the risk that wildland fires pose to values within the WUI of Santa Clara County. There are numerous indices and metrics used to assign wildfire risk and hazard ratings to communities, including the CAL FIRE statewide fire hazard severity zone mapping. While this CWPP integrates the FHSZ maps for context, the CWPP update integrates a new fine-scale mapping data set and a comprehensive risk and hazard analysis performed by a consortium of partners- the Santa Cruz Mountains Stewardship Network. The Assessment was completed for Santa Cruz and Santa Clara County and is integrated into this planning effort with the support of those partners.

The assessment of risk and hazard in the CWPP is twofold and combines the Risk-Hazard Assessment previously described and integrates the on-the-ground community hazard assessments that were completed in 2015 and 2016.

The purpose of these assessments is to provide information about wildfire hazard and risk to highly valued resources and assets (HVRAs) and use that information to develop projects and mitigation actions that can reduce that risk.

The Risk-Hazard Assessment approach is described in Chapter 3 and in Appendix D.

HOW WAS THE RISK-HAZARD ASSESSMENT COMPLETED AND HOW DOES IT COMPARE TO CAL FIRE'S FHSZS?

The Risk-Hazard Assessment considers fire hazards from fire behavior characteristics such as flame length, rate of spread, and crown fire activity, burn probability, fire history (occurrence and size), and ember load index. Risk factors have also been incorporated into the assessment. These include suppression difficulty, fire response times, the WUI (a proxy for residences and population), and HVRAs. The previously mentioned fire behavior components are generated by integrating several variables: vegetation (type, density, and condition), topography (aspect, slope, elevation), and weather (wind, temperature, and humidity). All these components are combined and evaluated to produce a comprehensive and integrated model of wildfire risk within and around the County. The final product of the Risk-Hazard Assessment categorizes the landscape into four levels of risk: low, moderate, high, and extreme.

Comparably, CAL FIRE's fire hazard severity zones (FHSZs) are defined based on vegetation, topography, and weather, and represent the probability of the area burning and potential fire behavior in the area. The best available science and data is used by CAL FIRE to develop these zone delineations, with the new iteration of the FHSZs also accounting for land use changes, recent fire history, new wind data, and local climate data. The FHSZ classification ranges from moderate, to high, to very high, and is delineated based on the average hazard present across the landscape (CAL FIRE 2022b, 2022c).

The primary differentiator between the CWPP Risk-Hazard Assessment and CAL FIRE's FHSZs is that the CAL FIRE FHSZs account only for hazard, while the CWPP Risk-Hazard Assessment accounts for hazard and the likelihood of that hazard to cause damage and/or harm (i.e., risk). Hazards are recognized as physical conditions influencing fire behavior across a given landscape, while risk identifies the potential damage a fire can have under baseline conditions (CAL FIRE 2022b, 2022c). For example, the wildfire hazard can be high but if there are no values or assets in close proximity to the hazards, the risk will be low. This is why the incorporation of HVRAs and the WUI is crucial to generating an accurate assessment of hazard and risk. Additionally, the CWPP Risk-Hazard Assessment utilizes fine-scale mapping and data products to produce more customized and accurate model results. Wildfire risk to structures is quantified in 10-acre hexagons.

HOW IS MY COMMUNITY RATED?

Community field evaluations summarizing the hazard and risk for each WUI community within the County are provided in this plan, (Figure 2.1 [WUI and interface zones]). A team from SWCA Environmental Consultants conducted on-the-ground community hazard assessment surveys (field evaluations) throughout the county in the first round of the CWPP and revisited those communities that may have

experienced significant changes to population, fuel composition, and hazard since the 2016 plan was completed. The communities were rated using the NFPA 1144 standard for assessing structure ignitability in the WUI (see Figure 1.3 in Chapter 1). Using this standard provided a consistent process for evaluating wildland fire hazards around existing structures to determine the potential for structure ignition from wildland fire ignitions.

Community evaluations provide a total score of risk and hazard based on various parameters observed during the surveys, and a corresponding descriptive rating of low, moderate, high, or extreme are available in Appendix C.

More specific information at a community level is provided in the CWPP annexes.

HOW WILL THE RISK-HAZARD ASSESSMENT IMPACT MY INSURANCE?

The wildfire Risk-Hazard Assessment conducted for this CWPP is not intended to be used to determine insurance premiums of home and property. Insurance companies utilize their own wildfire risk assessments to write and renew policies. Furthermore, a partnership between Insurance Commissioner Ricardo Lara and the California Governor's Office of Emergency Services (Cal OES), California Public Utilities Commission (CPUC), California Department of Forestry and Fire Protection (CAL FIRE), and California Governor's Office of Planning and Research has led to the development of regulatory action that creates insurance incentives for implementing actions that build up home and community resilience to wildfire. This new wildfire safety regulation aims to make insurance more affordable while increasing public involvement in risk mitigation and awareness regarding local hazards (California Department of Insurance [CDI] 2023a). See Appendix A for more information on the Safer from Wildfire initiative.

Wildfire risk reduction actions identified in this CWPP (such as home hardening, creating defensible space, and community collaboration) are in alignment with the mitigation actions specified in the Safer from Wildfires initiative. Therefore, implementing actions to reduce wildfire risk, such as those identified in this CWPP, may support property owners to qualify for insurance discounts. Although the initiative is not yet fully implemented, this passed the Office of Administrative law in October 2022 and was effective April 2023. All insurance companies in California have to offer discounts to NFPA-recognized Firewise Communities (for more information visit: <https://www.insurance.ca.gov/01-consumers/105-type/95-guides/03-res/Insurers-Currently-Offering-Discounts.cfm>).

In April 2023 the "Bay Area Council announced results from a study conducted by Milliman and CoreLogic on behalf of the Town of Paradise that estimates mitigation measures such as home hardening, zoning reforms, and external buffers could reduce losses due to wildfires up to 75 percent, which could reduce insurance premiums up to 55 percent" (Bay Area Council 2023). Information on home protection, such as defensible space guidelines and vegetation treatments, is provided in Appendix F, Fuel Treatment Types and Methods, and Appendix G, Property Owner Resources.

WHAT ARE THE STRATEGIES TO ADDRESS WILDFIRE HAZARDS?

The CWPP process identifies many types of mitigation strategies, including hazardous fuel modification, defensible space, signage, public education prevention messages, improved road access, water supply,

and building materials and design. It should be noted that while all mitigation strategies will be useful, some will be more important in preventing destruction of a home.

Goal 1 of the Cohesive Strategy and the Western Regional Action Plan is to **Restore and Maintain Landscapes**: Landscapes across all jurisdictions are resilient to fire and other disturbances in accordance with management objectives (see Figure 4.1 in Chapter 4).

Recommendations for hazardous fuels treatments include:

- Fuel treatment and reduction using various strategies
- Alignment with countywide planning
- Strategic fuel break installation
- Roadside treatments and fuel reduction on private land

Goal 2 of the Cohesive Strategy and the Western Regional Action Plan is **Fire-Adapted Communities**: Human populations and infrastructure can withstand a wildfire without loss of life and property (see Map 6 in Appendix J).

Recommendations for public outreach/education and structural ignitability include:

- Decreased ignitions from unhoused populations
- Defensible space and structural hardening improvements
- Scaled-up community education and awareness
- Certification and inspections

Goal 3 of the Cohesive Strategy and the Western Regional Action Plan is **Wildfire Response**: All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions (see Figure B.8 in Appendix B).

Recommendations for improving fire response capabilities include:

- Addressing concerns related to poor ingress and egress in some high-risk communities
- Water supply improvements
- Evacuation planning and route identification
- Wildfire response personnel training and partnerships

Mitigation strategies must include monitoring and follow-up, and often require the development of codes, ordinances, and enforcement. Codes and ordinances help define the type and level of work needed to mitigate wildfire risk. A policy of creation of defensible space needs to have a definition of the amount of vegetation clearance. As noted in the state's General Guidelines for Creating Defensible Space (2006), this definition can change periodically, as was the case with the revision of Public Resources Code (PRC) 4291, which increased the defensible space distance from 30 to 100 feet.

WHAT DOES POST-FIRE RESPONSE AND RECOVERY INVOLVE?

There are many aspects to post-fire response recovery, including but not limited to:

- Returning home and checking for hazards.
- Coordinating and mobilizing a group of teams in the community to respond to emergencies.
- Rebuilding communities and assessing economic needs—securing the financial resources necessary for communities to rebuild homes, business, and infrastructure.
- Restoring the damaged landscape—watershed restoration, soil stabilization, and tree planting.
- Prioritizing the needs of vulnerable and disadvantaged communities during response and disaster recovery efforts.
- Evaluating and updating disaster recovery plans every 5 years to respond to changing needs and characteristics of the community.
- Coordinating with planning, housing, health, and human services, and other local, regional, or state agencies to develop contingency plans for meeting the short-term, temporary housing needs of those displaced during a catastrophic wildfire event.

Information regarding post-fire recovery and restoration can be found within Appendix H.

HOW WILL THE PLAN BE IMPLEMENTED?

The CWPP does not mandate implementation of any of the recommendations, but the message throughout this document is that the greatest fire mitigation can be achieved through the joint actions of individual property owners, tribes, and local, state, and federal governments. The CWPP project tracking tool will be the primary mechanism employed by the Planning Team to steer implementation actions and assess and track accomplishments. The FireSafe Council will be responsible for maintaining the tracking tool and working with partners to ensure it is utilized and kept up to date. Project recommendations have been developed at the county scale during this update, but individual annex holders are encouraged to develop more detailed recommendations for their jurisdictions, ideally tiering to the countywide plan. All annex holders should coordinate closely with the FireSafe Council to update the project tracking tool, but annex documents will be self-governed, meaning that all annex holders are responsible for maintaining their own annexes and engaging the appropriate entities in the implementation of those plans.

The recommendations for fuels reduction projects are general in nature; site-specific planning that addresses location, access, land ownership, topography, soils, and fuels would need to be employed upon implementation. Also, it is important to note that the recommendations are specific to WUI areas and are expected to reduce the loss of life and property.

In addition, implementation of fuels reduction projects need to be tailored to the specific project and will be unique to the location depending on available resources and regulations. In an effort to streamline project implementation, this CWPP has identified the pertinent land management/ownership agencies associated with each recommendation. On-the-ground implementation of the recommendations in the

CWPP planning area will require development of an action plan and assessment strategy for completing each project.

WHO WILL LEAD THE IMPLEMENTATION OF THIS CWPP?

Implementation of most projects identified in this CWPP will require the collaboration and cooperation of multiple individuals and entities such as community residents, fire safe councils, and local, state, and federal agencies. However, to ensure that projects move forward, the plan will be governed by the Santa Clara County FireSafe Council with support from local, municipal, state, and federal partners.

WHEN DOES THE CWPP NEED TO BE UPDATED?

The CWPP should be treated as a living document to be updated annually or immediately following a significant fire event. The plan should continue to be revised to reflect changes, modification, or new information. These elements are essential to the success of mitigating wildfire risk throughout the county and will be critical in maintaining the ideas and priorities of the plan and the communities in the future. The FireSafe Council will coordinate all future CWPP updates. Chapter 5 provides an evaluation framework that can help guide the CWPP update process.

MANAGEMENT TEAM

Name	Organization
Seth Schalet	Santa Clara County FireSafe Council
Amanda Brenner Cannon	Santa Clara County FireSafe Council
Tara Wallich	Santa Clara County FireSafe Council
Stephen Harrington	Santa Clara County FireSafe Council
James Wollbrinck	Santa Clara County FireSafe Council
Dede Smullen	Santa Clara FireSafe Council Board
Dennis Lollie	Santa Clara County Fire Department
Brian Glass	Santa Clara County Fire Department
Mike Mathiesen	Santa Clara County Fire Department
Toma Louay	Santa Clara County Office of Emergency Management
Parastou Najaf	Santa Clara County Office of Emergency Management
Robert Cain	Santa Clara County Department of Planning and Development
Eugenia Woods	Los Altos Hills County Fire District
Ed Orre	CAL FIRE Santa Clara Unit
Topher Byrd	CAL FIRE Santa Clara Unit
George Huang	CAL FIRE Santa Clara Unit
Victoria Amato	SWCA Environmental Consultants
Breanna Plucinski	SWCA Environmental Consultants
Liz Hitzfelder	SWCA Environmental Consultants

ADVISORY TEAM

Name	Organization
Justin Stockman	Santa Clara County Fire Department
Chelsea Young	Santa Clara County Fire Department
George Huang	CAL FIRE Santa Clara Unit
John Reynolds	CAL FIRE Santa Clara Unit
Dale Martin	Santa Clara County Central Fire Department
Michael Alvarez	Santa Clara County Planning & Development, Building Official
Magdalena (Eena) Sta Maria	Santa Clara County Office of Sustainability
Jasneet Sharma	Santa Clara County Office of Sustainability
Don Rocha	Santa Clara County Department of Parks and Recreation
Annie Thomson	Santa Clara County Department of Parks and Recreation
Michael Rhoades	Santa Clara County Department of Parks and Recreation
Brian Christian	Santa Clara County Department of Parks and Recreation
Nathan Greig	Santa Clara Valley Open Space Authority
Gene Zambetti	Saratoga Fire Protection District
Trina Whitley	Saratoga Fire District
John DeLong	South Skyline FireSafe Council
Tamara Jasso	City of Palo Alto
Scott Woodfin	City of Palo Alto
Crystal Bothelio	City of Saratoga
Thomas Chin	City of Cupertino
Meredith Albert	City of Cupertino
Mark Thomas	City of San Jose
Andrew Young	City of Gilroy
Jim Wyatt	City of Gilroy
Johnathan Crick	City of Gilroy
Herb Lee	City of Gilroy
Jennifer Fortino	City of Gilroy Fire Department
Jennifer Ponce	City of Morgan Hill
Nicolle Burnham	Town of Los Gatos
Cody Einfalt	Town of Los Altos Hills
Peter Pirnejad	Town of Los Altos Hills
Sarah Johnston	Aldercroft Heights Firewise
Mike Hacke	Spring Valley Volunteer Fire Department
Alex Leman	Loma Prieta Volunteer Fire Department

Name	Organization
Sunny Williams	Santa Clara Valley Water District (Valley Water)
David Fernandez	San Jose Water Company
Jared Lewis	San Jose Water Company
Bill Nantt	California Department of Transportation (Caltrans)
Helen Blackmore	California Department of Transportation (Caltrans)
Earl Sherman	California Department of Transportation (Caltrans)
Shawn Casteel	California Department of Transportation (Caltrans)
Kevin Conant	Pacific Gas & Electric (PG&E)
Stephanie Moreno	Guadalupe-Coyote Resource Conservation District (GCRCD)
Dina Iden	Loma Prieta Resource Conservation District (LPRCD)
Charlene Nijmeh	Muwekma Ohlone Tribe
Monica Arellano	Muwekma Ohlone Tribe
Ann Marie Sayers	Indian Canyon Mutsun Band of Costanoan
Kanyon Sayers-Roods	Indian Canyon Mutsun Band of Costanoan
Andrew Galvan	The Ohlone Indian Tribe
Quirina Geary	Tamien Nation
Valentin Lopez	Amah Mutsun Tribal Band
Carol Rice	Wildland Resource Management Inc
Esther Mandeno	Digital Mapping Solutions
Brent Kirk	Cattleman's Association
Ramona Garibay	Trina Marine Ruano Family
Michael Gorman	Midpeninsula Regional Open Space District
Zac Harlow	Blue Oak Ranch Reserve
Marjorie Kline	Resident

For additional information on this project, please contact Seth Schalet, CEO of the Santa Clara FireSafe Council at sschalet@sccfiresafe.org or SWCA Project Manager Victoria Amato at vamato@swca.com.



The United States is facing urgent forest and watershed health concerns. The number of annual wildfires throughout the United States has been slightly increasing (58,100 in 2018 and 50,000 in 2019 vs. 59,000 each in 2020 and 2021). Similarly, the number of acres burned has been on the rise (Congressional Research Service [CRS] 2022). An average of 7 million acres is burned every year due to wildfire; more than doubling the annual average of acres burned in the 1990s (CRS 2022). Communities are seeing the most destructive wildfire seasons in history. In the last five years, the 2020 fire season had the most acreage impacted in a single year at 10.1 million acres, and 2017 was the second highest with 10 million acres (CRS 2022). These statistics demonstrate that wildfires are becoming larger and increasingly impactful.

California's Forests and Rangelands 2017 Assessment states that California, like other western states, faces urgent issues concerning frequent and severe pest and wildfire events that are unprecedented and threaten the sustainability of these ecosystems. These issues require reexamination of land and fire management policies and practices as human populations demand more from natural systems and climate change continues (CAL FIRE 2017).

The influence and effects of fire have changed as attempts were made to suppress it, with the consequent accumulation of more continuous and dense wildland fuels as historic burn mosaics were lost. More continuous fuels have led to larger, more intense wildfires, which are increasingly difficult and expensive to suppress, especially during periods of very dry and/or windy fire weather or episodes of widespread lightning activity, such as those that occurred in northern California in 2020 and started many fires, namely the SCU Fire Complex, which largely occurred in Santa Clara County. Either condition can quickly overwhelm local, state, and federal firefighting resources.

As wildfire severity increases, communities need a plan to help prepare for, reduce the risk of, and adapt to wildland fire events. Community wildfire protection plans (CWPPs) help accomplish these goals. A CWPP provides recommendations that are intended to reduce, but not eliminate, the extreme severity or risk of wildland fire.

The development of the CWPP is rooted in meaningful collaboration among many stakeholders, including local, state, and federal officials. The planning process involves looking at past fires and treatment accomplishments using the knowledge and expertise of the professional fire managers who work for the

various agencies and governing entities in the county. From there, the CWPP ultimately identifies the current local wildfire risks and needs that occur in the county, which is further supported with relevant science and literature from the western region of the United States.

The first CWPP for Santa Clara County was developed in 2015–2016 and included a countywide master document and 18 jurisdictional annexes. This document is an update to that plan and is designed to be a more engaging document, integrates new Risk-Hazard Assessment methodologies, and strives to facilitate greater implementation of project recommendations. In addition, this document, the 2023 Santa Clara County CWPP, reviews, verifies, and/or identifies potential new priority areas where mitigation measures are needed to protect from wildfire the irreplaceable life, property, and critical infrastructure in the county. However, this CWPP does not attempt to mandate the type and priority for treatment projects that will be carried out by the land management agencies and private landowners. The responsibility for implementing wildfire mitigation treatments lies with local ordinances and regulations and at the further discretion of the landowner; the 2023 Santa Clara County CWPP will only identify potential treatments and a suggested priority for these projects.

PLANNING OVERSIGHT

CWPP MANAGEMENT TEAM AND ADVISORY TEAM

A Management Team for the CWPP has been collaborating on the CWPP update since the summer/fall of 2021. The Management Team comprises representatives from the FireSafe Council, County, and CAL FIRE. An initial goal of the Management Team was to identify key stakeholders throughout the County to engage in the planning process. Stakeholder involvement is critical in producing a meaningful document that includes all collaborators' diverse perspectives. The Management Team extended invitations to agencies to join the planning process in fall 2022, with a concerted effort to reach beyond those agencies who had been involved in the 2015–2016 planning process. That process led to the establishment of the CWPP Advisory Team that is composed of agency representatives, subject matter experts, and organizations responsible for implementing project recommendations. Many of these Advisory Team members are key annex holders who will be responsible for ensuring that the annexes are developed in alignment with the countywide CWPP.

The Management Team meets on a monthly and sometimes more frequent basis, as needed. The Advisory Team convened for four meetings: November 2, 2022; January 24, 2023; April 4, 2023; and June 8, 2023.

The Management and Advisory Team List is provided in Appendix M and in the Executive Summary. These teams will be jointly referred to as the Planning Team in this document. Detailed descriptions of the jurisdictions that make up Santa Clara County and their roles in fire management are provided in Appendix A.

GOAL OF A COMMUNITY WILDFIRE PROTECTION PLAN

Wildfire continues to be a threat to communities across the United States; in the last few years, most western states have experienced the largest wildfires in their histories. Wildfires with a broad range of

sizes and locations have destroyed hundreds of homes; the cost to suppress wildfires across the nation typically exceeds \$1 billion annually (see Figure 3.6 in Chapter 3).

In recognition of this threat, many communities have worked to develop CWPPs, bringing together many stakeholders to develop strategies to mitigate the occurrence and effects of wildfire.

The goal of a CWPP is to enable local communities to improve their wildfire-mitigation capacity, while working with government agencies to identify high fire risk areas and prioritize areas for mitigation, fire suppression, and emergency preparedness. Another goal of the CWPP is to enhance public awareness by helping residents better understand the natural and human-caused risk of wildland fires that threaten lives, safety, and the local economy. The minimum requirements for a CWPP, as stated in the Healthy Forests Restoration Act of 2003 (HFRA), are:

Collaboration: Local and state government representatives, in consultation with federal agencies or other interested groups, must collaboratively develop a CWPP (SAF 2004).

Prioritized Fuel Reduction: A CWPP must identify and prioritize areas for hazardous fuels reduction and treatments and recommend the types and methods of treatment that will protect one or more communities at risk (CARs) and their essential infrastructures (SAF 2004).

Treatments of Structural Ignitability: A CWPP must recommend measures that property owners and communities can take to reduce the ignitability of structures throughout the area addressed by the plan (SAF 2004).

It is the intent of this 2023 CWPP to provide a countywide scale of wildfire risk and protection needs and then bring together all of the responsible wildfire management and suppression entities in Santa Clara County to address the identified needs and to support these entities in planning and implementing the necessary mitigation measures.

A key role of the Management Team was to develop project goals for the CWPP update. These goals were presented to the Advisory Team during the first Advisory Team meeting, and the final goals are presented below:

- **Robust Analysis** – Perform state-of-the-art analysis to identify wildfire hazard risks and human impact.
- **Collaboration** – Develop cross-jurisdictional collaborations and strategies to mitigate wildfire threats.
- **Engagement** – Ensure wide visibility of the CWPP within WUI communities and gain localized support.
- **Adoption** – Achieve full adoption of the Santa Clara County CWPP by the Santa Clara County Board of Supervisors.
- **Implementation** – Implement the 2023 CWPP successfully and update the Plan regularly to retain relevancy.

These goals will help address specific concerns and priorities identified by the Planning Team. Concerns and priorities outlined by the Planning Team include:

- **Ingress/Egress** – Under typical summer conditions, fire can move quickly in many of the fuels found throughout Santa Clara County. It is important that roadside vegetation is managed and evacuation routes are planned.

- **Fuel Loading** – Hazardous fuels exist throughout many WUI communities in Santa Clara County. Natural fire regimes in the area, such as chaparral and Gambel oak scrub, are conducive to short fire return intervals, and a lack of low and moderate severity fires can result in overgrown vegetation, resulting in hazardous fuels.
- **Defensible Space** – Defensible space is crucial in reducing the structural ignitability of homes and infrastructure. Providing managers and property owners with the knowledge and resources they need to effectively create defensible space will be a key priority of this CWPP.
- **Human Ignitions** – Human ignitions are common throughout Santa Clara County. Fire department chiefs throughout the County have identified areas of concern regarding human ignitions within urban intermix areas and throughout the broader WUI.
- **Public Education** – Through community outreach, local programs, and education campaigns. Many of the goals of this CWPP will require collaboration and engagement with local communities throughout the County. This process will help implement recommendations for solving the concerns highlighted by the Planning Team.

The Advisory Team has identified the following communities in order as having the greatest to lowest risk from wildfire:

- Los Gatos
- Monte Sereno
- Los Altos Hills
- Saratoga
- Western portions of the county
- Cupertino

Additional information on the planning process is available in Appendix A.

ALIGNMENT WITH THE NATIONAL COHESIVE STRATEGY

The 2023 CWPP is aligned with the Cohesive Strategy and its Phase III Western Regional Action Plan by adhering to the nationwide goal “to safely and effectively extinguish fire, when needed; use fire where allowable; manage our natural resources; and as a Nation, live with wildland fire” (Forests and Rangelands 2014:3).

The primary national goals identified as necessary to achieving the vision are:

- **Restore and maintain landscapes:** Landscapes across all jurisdictions are resilient to fire-related disturbances in accordance with management objectives.
- **Fire-adapted communities:** Human populations and infrastructure can withstand wildfire without loss of life and property.
- **Wildfire response:** All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions.

For more information on the Cohesive Strategy, please visit:

<https://www.forestsandangelands.gov/strategy/documents/strategy/CSPPhaseIIINationalStrategyApr2014.pdf>

Alignment with these Cohesive Strategy goals is described in more detail in Chapter 4, Mitigation Strategies.

In addition to aligning with the Cohesive Strategy, the CWPP also incorporates information on post-fire recovery, the significant hazards of a post-fire environment, and the risk that post-fire effects pose to communities (Figure 1.1).



Figure 1.1. CWPP incorporating the three primary goals of the Cohesive Strategy and post-fire recovery and serving as holistic plan for fire prevention and resilience.

ALIGNMENT WITH PLANS AND AGREEMENTS

This CWPP is also aligned with multiple local, state, and federal planning documents, most notably the County Multijurisdictional Hazard Mitigation Plan (MJHMP) and the County General Plan Safety Element. These planning processes were occurring concurrently during development of the CWPP, and representatives from all planning efforts collaborated to ensure alignment in development of the hazard and risk analysis and development of hazard mitigation measures. These documents or agreements are summarized in Appendix A. In addition, fire policy and legislative direction are also summarized in Appendix A.

PLANNING AND REGULATORY BACKGROUND

Detailed information regarding planning and regulatory background and land management strategies can be found in Appendix A, Planning and Policy Background.

PLANNING AREA

“The County of Santa Clara, also referred to as “Silicon Valley”, is unique because of its combination of physical attractiveness and economic diversity. With its numerous natural amenities and one of the highest standards of living in the country, the county has long been considered one of the best areas in the United States in which to live and work.” (County of Santa Clara 2022:1)

Santa Clara County encompasses 1,312 square miles and holds a population of nearly 1.9 million people. The county is located on the southern end of the San Francisco Bay and comprises the fertile Santa Clara Valley, which is fringed on the east by the Diablo Mountain Range and on the west by the Santa Cruz Mountains. The northwestern portion of the County is composed of the Baylands, salt evaporation ponds, salt marsh, and wetlands. Due to the unique proximity of a large population center to montane (mountainous) regions, Santa Clara County faces considerable growth and development in the WUI. In 2021, the county was estimated to have a population of 1,885,508 and contained 646,847 households (U.S. Census Bureau 2021).

Because wildfires often threaten areas much larger than individual communities, it is critically important that planning for the occurrence of wildfire occurs within communities and between communities. In recognition of the advantages of a broader scope of wildfire preparation, multi-jurisdictional agencies, organizations, and residents have joined together to develop this plan, the 2023 Santa Clara CWPP. This larger scale of planning increases the level of coordination and cooperation among stakeholders, which can lead to broader and more efficient wildfire risk mitigation measures. For example, the CWPP can serve as the wildfire component within the Safety Element of the Santa Clara County General Plan, help prioritize and strengthen requests for competitive funding grants to reduce hazardous fuels, and facilitate the adoption of common standards for defensible space across Santa Clara County. Valuable ideas can be more readily shared with all communities within the County, greatly facilitating public education outreach efforts.

Additional detailed information on the County’s geography, infrastructure, demographics, recreation, and wildlife can be found in Appendix B, Community Background and Resources.

The planning area for this CWPP includes all of Santa Clara County as delineated by its geographic and political boundaries (Figure 1.2). Figure 1.3 depicts community polygons delineated during the development of the initial 2016 plan for the purpose of categorizing WUI conditions and carried over to this CWPP update.

LAND OWNERSHIP

Much of both urban and rural Santa Clara County is held by private landowners, although a patchwork of public holdings exists throughout the county. The largest contiguous tract of public land is the section of 89,164-acre Henry W. Coe State Park in the Diablo Range that lies within the southeastern portion of the county (the Park also extends into neighboring Stanislaus County). The Santa Clara County Department of Parks and Recreation, with 28 regional parks covering nearly 52,000 acres, also holds a large portion of public land in the county (Santa Clara County Parks 2022). Other agencies and organizations such as the California Department of Fish and Wildlife (CDFW), U.S. Fish and Wildlife Service (USFWS), Santa Clara Valley Open Space Authority, and University of California manage publicly accessible land throughout the county as well (Figure 1.4).

The Advisory Team also included representatives of local tribes, and the integration of Tribal Ecological Knowledge (TEK) and the protection of tribal values was emphasized throughout the planning process and is strongly encouraged during CWPP implementation.

Landowner	Portion of Santa Clara County
Private	73.66%
Local Government	15.20%
California Department of Parks and Recreation	7.20%
Other State Lands	1.33%
CDFW	1.09%
USFWS	0.96%
Non-Profit Conservancies and Trusts	0.39%
Bureau of Land Management	0.17%
Department of Defense	0.01%
Bureau of Reclamation	0.00%

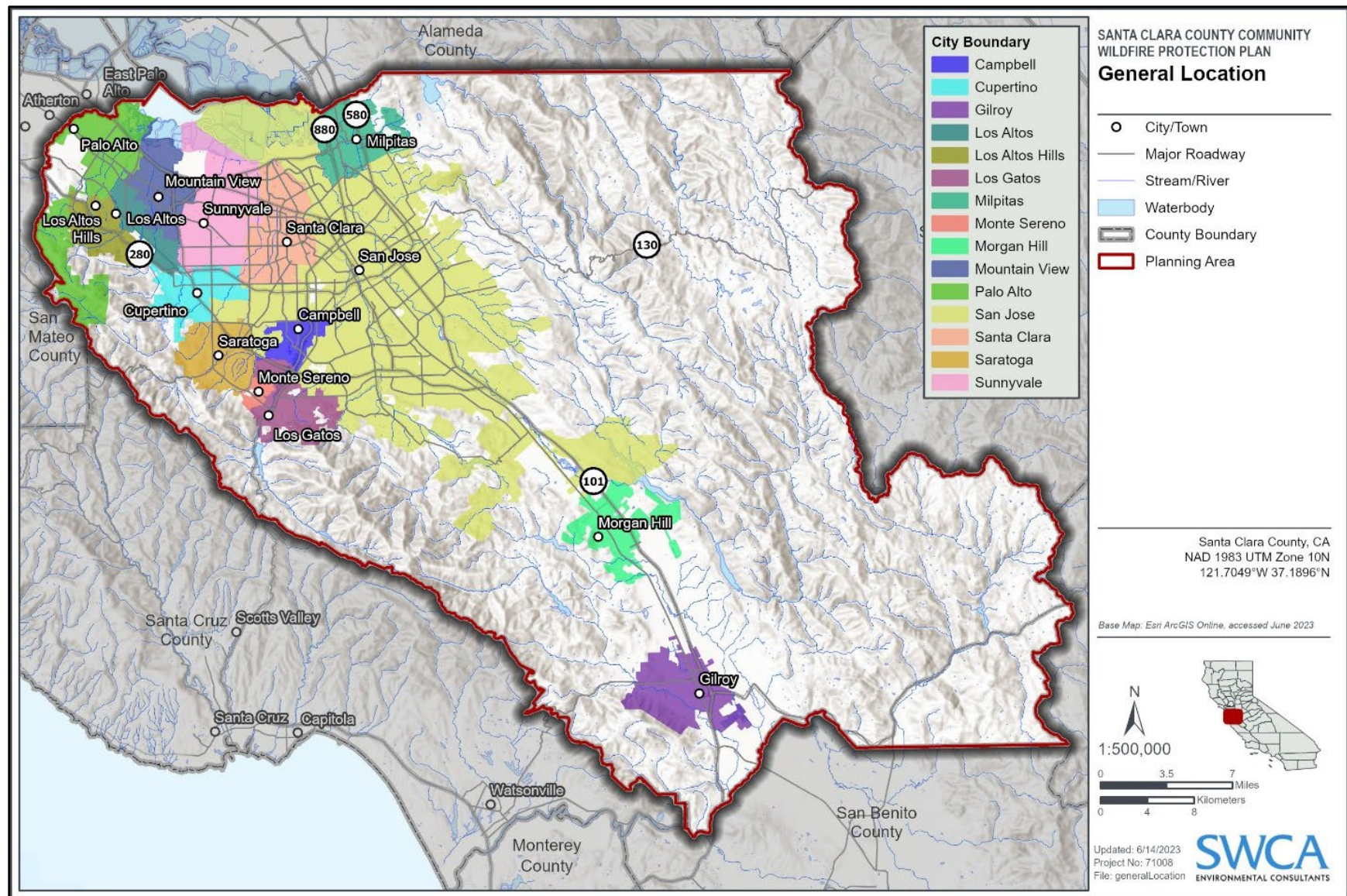


Figure 1.2. Santa Clara County general location map.

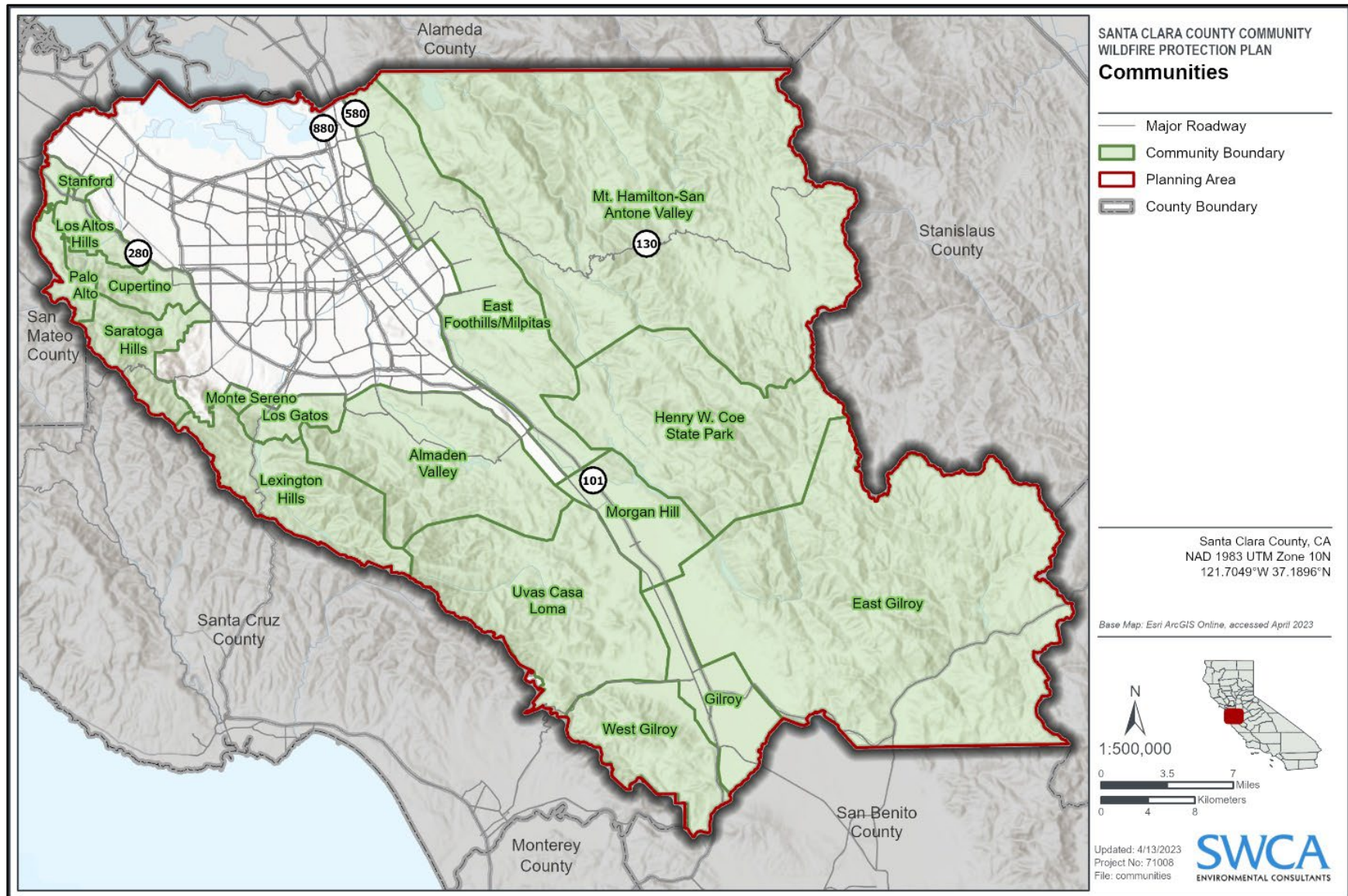


Figure 1.3. Santa Clara County community boundaries map, developed through Core Team collaboration.

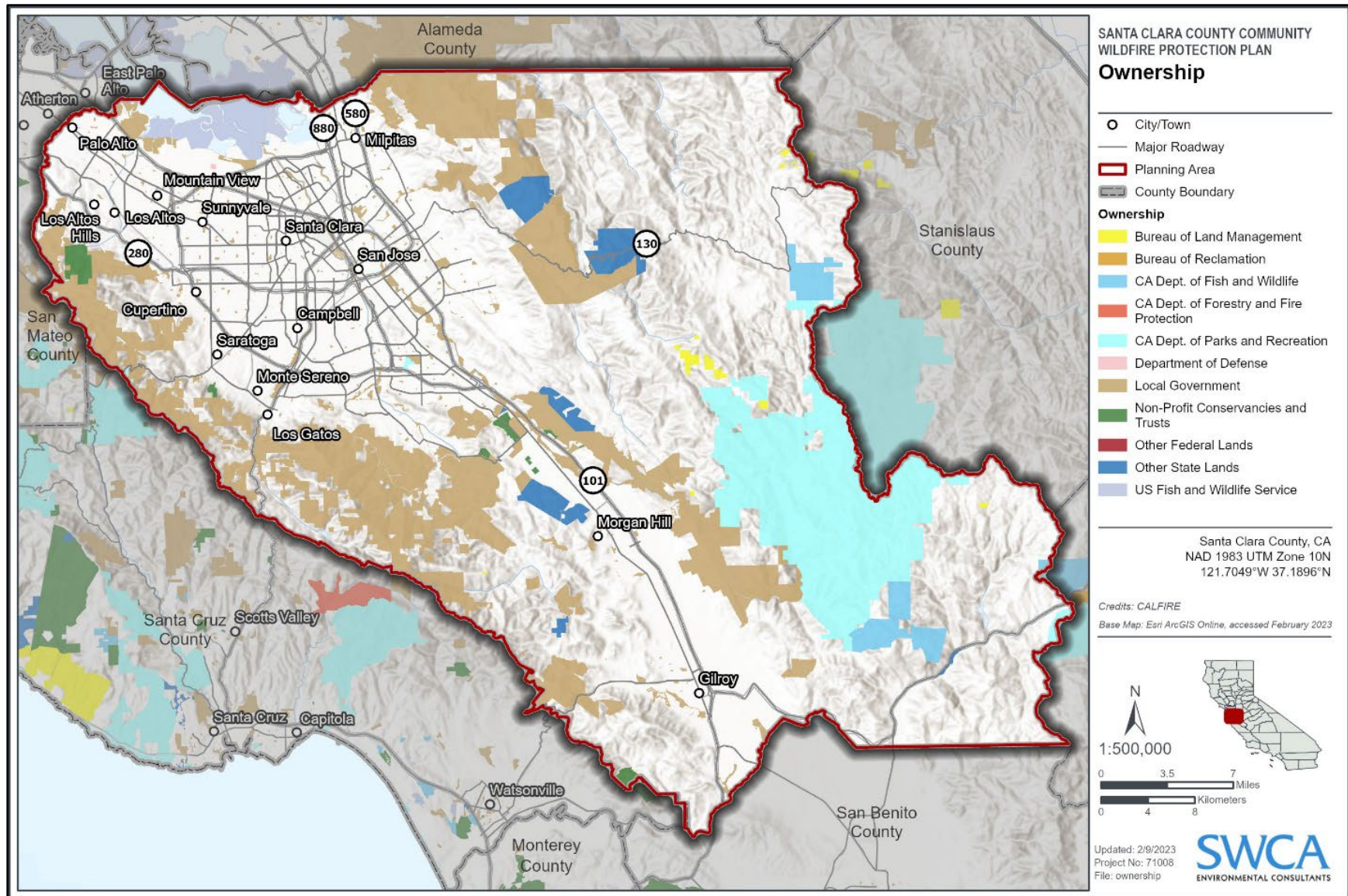


Figure 1.4. Santa Clara County land ownership map.

PUBLIC INVOLVEMENT

A key element in the CWPP process is the meaningful discussions it generates among community members regarding their priorities for local fire protection and forest management (SAF 2004). The draft CWPP was made available for public review from June 19, 2023, through July 2, 2023. In addition to the CWPP report, Santa Clara County developed a CWPP story map (online content) to provide opportunities for information sharing and gathering. The story map and draft were announced through several different media outlets for review (Appendix I).

Every effort was made to include a broad cross section of the community in the outreach process, and different communication channels were used to engage as many members of the public as possible (e.g., social media postings, email distributions, and in-person activities). All community members were welcomed and encouraged to participate in in-person activities such as the community meetings. Moreover, all community members were provided multiple opportunities to provide input, such as the community survey, project recommendations review, and CWPP document review.

Additional information regarding public involvement and outreach can be found in Appendix B.

This page intentionally left blank.



CHAPTER 2 – FIRE ENVIRONMENT

WILDLAND URBAN INTERFACE

The wildland urban interface (WUI) is composed of both interface and intermix communities and is defined as areas where human habitation and development meet or intermix with wildland fuels (U.S. Department of the Interior and U.S. Department of Agriculture [USDA] 2001:752–753).

Interface areas include housing developments that meet or are in the vicinity of continuous vegetation.

Intermix areas are those areas where structures are scattered throughout a wildland area where the cover of continuous vegetation and fuels is often greater than cover by human habitation.

At the national level, identification of WUI communities was initiated following the establishment of the National Fire Plan in 2000, with federal, state, and local agencies involved with this process. Delineation of the location of the WUI is a basic step in the identification of areas at most risk from wildfire, which can trigger requirements for the mandatory use of codes associated with building materials and defensible space.

In addition, the WUI has an area of influence, or influence zone. This area is described with respect to wildland and urban fire; it is an area with a set of conditions that facilitate the opportunity for fire to burn from wildland fuels to the home and or structure ignition zone (National Wildfire Coordinating Group [NWCG] 2021a).

A CWPP offers the opportunity for collaboration of land managers to establish a definition and a boundary for the local WUI; to better understand the unique resources, fuels, topography, and climatic and structural characteristics of the area; and to prioritize and plan fuels treatments to mitigate for fire risks. At least 50% of all funds appropriated for projects under the HFRA must be used within the WUI.

According to the HFRA, the WUI can be defined in a CWPP. In this CWPP (Figure 2.1) utilizing the CAL FIRE WUI, the influence zone from the 2016 delineation was expanded to the ridgeline in the eastern region. Additionally, the influence zone was expanded to fill in gaps west of Morgan Hill.

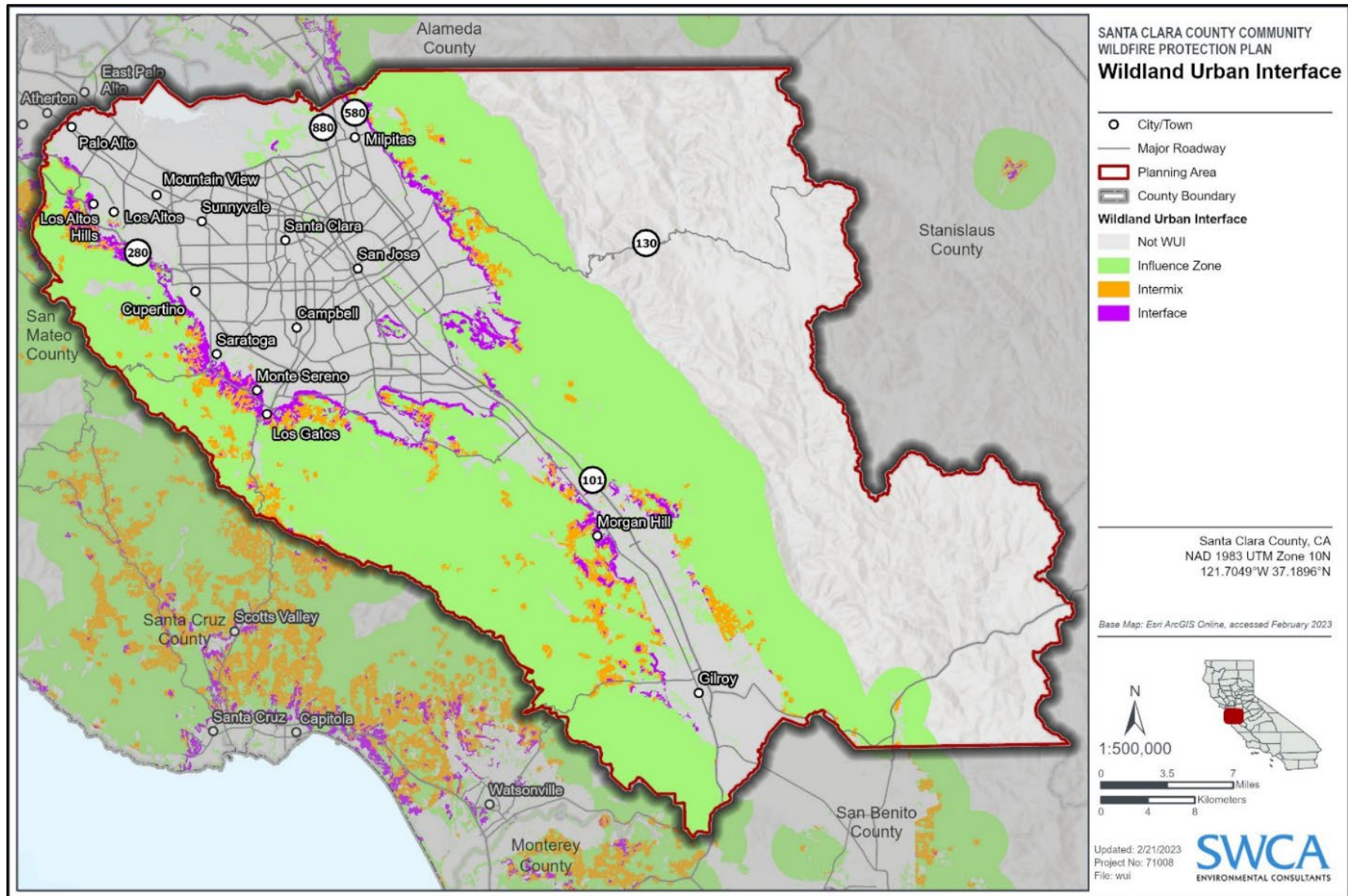


Figure 2.1. WUI with accompanying interface zones of Santa Clara County.

At-risk communities were delineated prior to the on-the-ground community hazard assessments and were based on the presence of homes and structures surrounded by wildland fuels. A team from SWCA Environmental Consultants conducted on-the-ground community hazard assessments throughout the County in the first round of the CWPP and revisited those communities that may have experienced significant changes to population, fuel composition, and hazard since the 2016 plan was completed. Buffers representing the WUI as defined above are presented in Appendix C for each community.

FIRE HAZARD SEVERITY ZONES

In California, WUI is further delineated with respect to Fire Hazard Severity Zones (FHSZs) (see Figure 3.1 in Chapter 3). California law established a classification of FHSZs for wildland areas that rank zones for potential likelihood and severity of wildland fires based on weather, vegetation type, topography, predicted fire behavior, ember production, and other factors. FHSZ ratings impact the nature of community design and building construction in State Responsibility Areas (SRAs), which are non-federally owned, unincorporated areas that have wildland vegetative cover, watershed/range/forest value, and housing densities not exceeding three per acre (California Governor's Office of Emergency Services [CA OES] 2018). In 1991, following the Oakland Hills Tunnel Fire, FHSZ ratings were extended beyond SRAs to include Local Responsibility Areas (LRAs), which are lands within incorporated cities, cultivated agricultural lands, or lands not meeting the criteria for SRAs or Federal Responsibility Areas (FRAs) (National Forest land, Bureau of Land Management [BLM] land, etc.). LRA fire protection is the responsibility of local governments (CA OES 2018) and is usually performed by city fire departments, fire protection districts, county fire departments, or CAL FIRE under contract to local government. LRA jurisdictions typically contain significant quantities of flammable vegetation and classified WUI, and CAL FIRE, in response to legislation, has developed state lists of WUI communities most at risk from wildfire based on fuel hazard assessments, vegetation types, fire behavior, large and damaging fire probability, and housing densities. A city can choose to adopt, modify, or reject CAL FIRE's rating and recommendation, but this process facilitates the identification of locations in greatest need of hazardous fuels reduction projects, public education on wildfire risk and fire prevention, and improvements in the ignition resistance of structures. Federal identification of vulnerable WUI communities has also occurred in response to the National Fire Plan via Executive Order following a destructive 2000 national wildfire season.

The CWPP process is designed to focus on those areas within the county most at risk from wildfire; therefore, it is important to note that FHSZs evaluate wildfire "hazard" and not "risk." As defined by CAL FIRE:

"Hazard" is based on the physical conditions that create a likelihood and expected fire behavior over a 30 to 50-year period without considering mitigation measures such as home hardening, recent wildfire, or fuel reduction efforts. "Risk" is the potential damage a fire can do to the area under existing conditions, accounting for any modifications such as fuel reduction projects, defensible space, and ignition resistant building construction. (CAL FIRE 2023a)

So, while FHSZs help guide the community fire planning and mitigation process, the CWPP also considers how hazard and risk interface across the county using other fine-scale Risk-Hazard Assessment methodology.

It should be noted that CAL FIRE recently updated the FHSZs for the SRA in December 2022. The new FHSZs are currently in the public review process. The new iteration of the FHSZs accounts for land use changes, recent fire history, new wind data, and local climate data. FSHZs for the LRA are currently in development and expected for release in summer 2023 (CAL FIRE 2022b).

Adopted WUI Zones (SRAs/LRAs)

The WUI creates an environment in which fire can move readily between structural and vegetative fuels, increasing the potential for wildland fire ignitions and the corresponding potential loss of life and property. Human encroachment upon wildland ecosystems within recent decades is increasing the extent of the WUI throughout the country (Figures 2.3 and 2.2), which is having a significant influence on wildland fire management practices. Figure 2.3 shows an example of an unhoused encampment within the WUI, which poses increased potential for wildfire ignitions and exposes individuals living in and around these encampments to wildfire spread throughout the WUI intermix. Unhoused encampments can also pose dangerous environments for first responders. Emergency response systems select between wildfire and structural fire when determining which responders to send. Fires within homeless encampments hold the non-natural combustion materials of a structural fire (plastics, medications, structural materials, etc.) but have the ignition dangers of a wildland fire (dense vegetation, no defensible space, no on-site water supply). These hazards greatly impact the type of gear and training needed to respond to this incident, and an incorrectly categorized fire may result in first responders deployed without proper personal protective equipment (PPE). Combined with the collective effects of aggressive suppression policies, resource management practices, land use patterns, climate change, and insect and disease infestations, the expansion of the WUI into areas with high fire risk has created an urgent need to modify fire management practices and policies and to understand and manage fire risk effectively in the WUI (Pyne 2001; Stephens et al. 2005). Mitigation techniques for fuels and fire management can be strategically planned and implemented in WUI areas, for example, with the development of defensible space around homes and structures.



Figure 2.2. Example of the WUI in the Santa Clara County.



Figure 2.3. An unhoused encampment in San Jose.

WUI LAND USE

Cities and counties are continuously challenged to accommodate both current and future residents in need of safe and affordable housing. In California, an estimated 2.5 million homes must be built over the next 8 years to meet demand, including at least 1 million homes suitable for low-income households (California Department of Housing and Community Development 2022). Over the past few decades, jurisdictions across the state have approved many new housing units. These are often placed within or near to wildland areas, creating WUI conditions. Today, more than 46 million residences in 70,000 communities are at risk for WUI fires (U.S. Fire Administration [USFA] 2021a). When it comes to wildfire, this trend is of special concern since WUI conditions are linked with an increased risk of loss of human life, property, natural resources, and economic assets. According to the 2018 Strategic Fire Plan for California, “since the turn of the century there has been a steep increase in structures lost compared to the 1990s” (CAL FIRE 2018).

Additional Fire Code information is described in Appendix A.

Appendix C houses descriptions and hazard ratings for each community evaluated within Santa Clara County. The WUI maps in Chapter 2 depict the entire WUI boundary for each community. The WUI buffer is an area where fuel treatments should be prioritized in order to provide additional protection to the community from potential wildfire spread.

SOCIAL VULNERABILITY

The Federal Emergency Management Agency (FEMA) defines social vulnerability as the susceptibility of social groups to the negative impacts of natural hazards (e.g., wildfire), which include disproportionate death, injury, loss, or disruption of livelihood (FEMA 2022). A sole hazard occurrence can bring about considerably different impacts for distinct individuals, even if the magnitude of the hazard was the same for the entire community. Specific groups of individuals may be more susceptible to natural hazards because of socioeconomic status, physical state, or other factors. For instance, elderly individuals may have more difficulty in quickly evacuating during wildfire emergencies, which may make them more susceptible to entrapment. In other cases, low-income individuals may be less able to harden and upgrade their homes to reduce structural ignitability, indicating that they can face a higher probability of their home being damaged or destroyed should a wildfire event occur.

As defined by the U.S Forest Service's (USFS's) *Wildfire Risk to Communities* (USFS 2022), socially vulnerable populations include the following: families living in poverty, people with disabilities, people over 65 years of age, people who have difficulty with English, households with no car, and people living in mobile homes. Statistics on socially vulnerable populations with the entirety of Santa Clara County as estimated by the USFS's *Wildfire Risk to Communities* is provided in Table 2.1 below. Populations particularly at risk from wildfire include people over 65, people with disabilities, and people dwelling in mobile homes. Visitors and non-local property owners may also be at higher risk if they are not familiar with local guidelines regarding property management (defensible space, fire-resistant vegetation, fire-resistant building materials, etc.) and may not be registered or within reach of local emergency notifications. In addition, renters of these properties may not receive emergency alerts as they are not local residents. Socially vulnerable populations may need additional support with regard to preparing for wildfire, evacuating from wildfire, and returning to their community post-fire.

Table 2.1. Estimated Socially Vulnerable Populations at Risk from Wildfire in Santa Clara County

Population at Risk	Number	Percent
Families in poverty	19,668 ± 1,059	4.3 ± 1.6
People with disabilities	155,216 ± 2,654	8.1 ± 1.5
People over 65 years	259,988 ± 2,946	13.5 ± 2.3
Difficulty with English	158,711 ± 3,531	8.8 ± 0.7
Households with no car	33,974 ± 1,371	5.3 ± 1.4
Mobile homes	18,498 ± 1,002	2.9 ± 2.6

Source: USFS (2022)

Wildland firefighters are also populations at risk from wildfire. Wildland firefighting is an inherently dangerous profession where firefighters risk their health and lives while battling fires. Wildland firefighters are especially vulnerable to medium- and long-term health and safety risks associated with smoke and chemical inhalation and other conditions while firefighting, as well as immediate risks that may endanger their lives due to the fire environment. Historically, fire in Santa Clara County has been responsible for injuries and destruction of property. For example, the Santa Clara Lightning Complex fires of 2020 were responsible for 225 destroyed structures and six injuries over the course of 44 days of active burning (State of California 2020). Mitigating the risks of severe wildfires on the landscape and within the WUI will reduce the chances of wildfire hazards impacting firefighters and other vulnerable populations.

According to the 2017 Santa Clara County Multi-Jurisdictional Hazard Mitigation Plan, social vulnerability for wildfire hazards is elevated for sensitive populations in the County, including children, the elderly, and individuals with underlying respiratory and cardiovascular diseases (Santa Clara County 2017).

See Map 10 in Appendix J for Centers for Disease Control and Prevention (CDC) socially vulnerable populations.

UNHOUSED POPULATIONS

With continued economic and social trends exacerbating the level of housing insecurity, urban areas throughout the United States have recently experienced significant increases in unhoused populations. As a result, fire departments are responding to a growing number of incidents involving fires that impact unhoused people and their shelters or encampments. In order to survive in often harsh environments without adequate protection from the elements, many people living in unhoused communities utilize fire as a tool for general survival. This includes burning open flames to allow themselves to keep warm and cook food. Very few people living under these conditions are aware of fire safety. Additionally, unhoused people are often situated in areas of existing high fire risk, such as densely vegetated riverbank or vacant and unmaintained buildings. Jurisdictions across the country face difficulties addressing the houselessness crisis due to legislative and political barriers, causing the issue to stagnate and fire risk to persist among these vulnerable populations. In search for a solution, nonprofit and research organizations have begun examining the behaviors that contribute to fire risk and establishing programs through which unhoused people are provided fire safety gear and proper training to educate them in fire safety and response. These groups are advocating for increased awareness to both those experiencing houselessness and the wider public, with a push for intervention and assistance to those at risk (NFPA Journal 2023). The increased ignition risk posed by unhoused populations, and the wildfire exposure and risk to these communities has been raised throughout the County, especially in areas throughout the City of San Jose. These areas are not typically classified as WUI, but due to the growing hazards in these areas, mitigation measures to address the hazard are recommended at the CWPP annex level, when appropriate.

In terms of fire response for incidents impacting these groups, the variable nature of fires affecting unhoused people can add complexity to coordinating proper and effective response protocols. Unhoused encampments can be located in areas that demand the exercise of either wildland or urban fire response capabilities, and occasionally may necessitate a hybrid approach. Responders must also account for other safety concerns such as hazardous materials and lack of structural integrity from makeshift shelters.

VEGETATION AND LAND COVER

The landcover in Santa Clara County is diverse and is primarily a function of topography. In the Santa Clara Valley, developed and urbanized land cover types dominate the north half of the valley centered around the City of San Jose. The undeveloped areas around the City of San Jose are mostly tidal wetlands and marshlands. The south half of the valley is home to the communities of Morgan Hill and Gilroy, both of which are surrounded by large swathes of farming and ranching lands intermixed with rural development. The Diablo Mountains are largely undeveloped and contain several parks including Henry W. Coe State Park, along with Joseph D. Grant, Anderson Lake, Coyote Lake Harvey Bear Ranch, and Ed R. Levin county parks. To the west, the Santa Cruz Mountains also contain large sections of public land, such as the Serra Azul Open Space Preserve and several county parks including Calero, Almaden Quicksilver, and Sanborn.

Vegetation zones within the county are primarily a function of elevation, slope, aspect, substrate, and associated climatic regimes. Since a broad range in elevation and topography exists across Santa Clara County, characteristics in vegetative communities are quite variable from site to site (Figure 2.4). Vegetation data, from which fuel models are derived, are sourced from Tukman Geospatial's Pacific Veg Map (Tukman Geospatial 2022).

Dominant vegetation types within the county are described based on a large spatial scale and represent the overall community structure that will play a general role in fire occurrence and behavior. Although the vegetation types are outlined, site-specific evaluations of the vegetative composition and structure in each area of focus should be taken into consideration when planning fuels treatments.

Major vegetation types in the county include evergreen and deciduous hardwoods, both of which are found in the foothills and high country of the Santa Cruz and Diablo Mountains. However, the Santa Cruz Mountains are wetter and support thicker stands of coniferous and deciduous forests than the drier Diablo Range to the east. Large intact stands of California redwoods are endemic to the Santa Cruz Mountains and can be found southwest of Gilroy and along the western border of Santa Clara County. Due to the 2020 SCU Lightning Complex fires that occurred in the Diablo range, much of the vegetation there has transitioned from mature conifers to shrubs and herbaceous plants as post-fire succession is underway. Additionally, herbaceous plants, including grasses, and shrubs are the dominant vegetation components in the lower-elevation foothills and valley ecosystems throughout the county, as depicted in Figure 2.4.

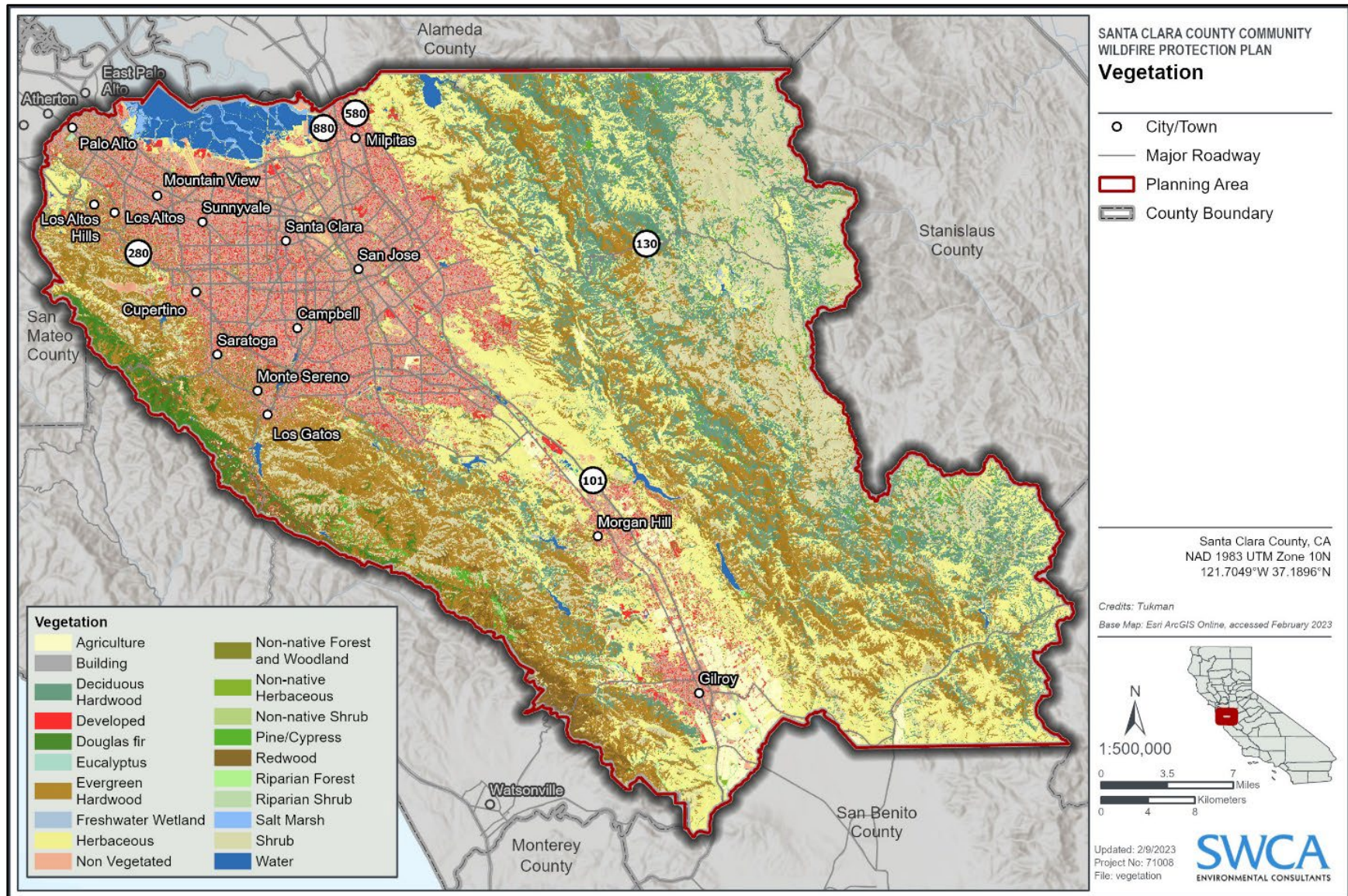


Figure 2.4. Vegetation types across Santa Clara County.

TOPOGRAPHY AND FUELS

Santa Clara County encompasses the fertile Santa Clara Valley, which runs from south to north and contains large swathes of agricultural and urbanized land. The valley is split into two regions, the North Valley and the South Valley. The North Valley is adjacent to San Francisco Bay and contains braided creeks and stream channels that spill into several tidal wetlands, salt marshes, and abandoned salt ponds. The South Valley is slightly higher in elevation at approximately 350 feet above mean sea level and contains many agricultural lands, which are flanked by deep narrow lakes and reservoirs. At its widest in the north, the Santa Clara Valley is about 11 miles wide; at its narrowest in the south, the valley is about 2.5 miles wide. A low saddle near the middle of the valley represents the watershed divide between the Coyote Valley Watershed with its pour point located in San Francisco Bay and several watersheds to the south in which streams flow southward ultimately terminating in Monterey Bay (Santa Clara Valley Habitat Agency 2012). The Advisory Team has identified riparian areas near critical infrastructure and natural resources as areas of concern. Vegetation can build quickly in these riparian corridors, and they often connect wildland fuels to the WUI and urban areas. The Advisory Team has also identified several canyons on the east side of the Santa Clara Valley as having significant brush buildup, which under severe wildfire conditions may endanger the WUI.

The Santa Clara Valley is surrounded by the rolling hills of the Diablo Range to the east and the Santa Cruz Mountains to the west. The Santa Cruz Mountains rise to a maximum elevation of 4,000 feet and are characterized by steep and rugged country that is carved by deep draws and drainages. The foothills of these mountains roll gently downslope to the alluvial fan geomorphology of the flatter valley below. The Diablo Range contains several high points, ranging from 2,500 feet to its highest peak, Mt. Hamilton, at 4,213 feet tall. The Diablo Range is skirted by dissected hills, but the interior of the range still contains alpine features like those of the Santa Cruz Mountains. The two mountain ranges in Santa Clara County greatly influence diurnal (daytime) and orographic (mountainous) winds and dictate precipitation distribution from incoming moisture sourced from the nearby Pacific Ocean to the west (Santa Clara Valley Habitat Agency 2012).

The fuels in the planning area are classified using Scott and Burgan's (2005) Standard Fire Behavior Fuel Model classification system. These fuel classifications were used in determining several model inputs, including predicted flame length (weighted heavily), extreme fire weather potential, and suppression difficulty (weighted lightly). The resulting outputs include classified wildfire risk and structure density, which are used in calculating the overall wildfire risk to structures. Please see Chapter 3 for more information on fine-scale mapping as it pertains to the fuel modeling process. This classification system is based on the Rothermel surface fire spread equations, and each vegetation and litter type are broken down into 40 fuel models within seven fire-carrying fuel types:

- (NB) Non-burnable
- (TU) Timber-Understory
- (SH) Shrub
- (GR) Grass
- (TL) Timber Litter
- (GS) Grass-Shrub
- (SB) Slash-Blowdown

The fuels found in the north half of the Santa Clara Valley (Figure 2.5) are predominantly urban development (NB9) or bare ground (NB1). In the south half, much of the fuel type is made up of agriculture (NB9) surrounded by expansive grasslands (GR1, GR2). Mixed grass and shrub (GS) fuel types are found in the foothills of the Diablo Range. At higher elevations, grass fuel components transition to shrub dominant fuel types (SH) ranging from low (SH1, SH2) to heavy fuel loads with some areas

containing dense and tall shrub fuel types (SH5, SH7). Certain elevational contour bands along western aspects in the Diablo Range support dead and downed wood fuel composed mostly of broad leaf litter (TL2). On the other side of the Santa Clara Valley in the Santa Cruz Mountains more forested fuel types can be found. These include grasses and shrubs intermixed with conifer litter beneath forested canopies (TU1, TU5). Fuel loads decrease slightly with higher elevation transitioning from fuel model TU1 to TU5. Additionally, on the western slopes of the Santa Cruz Mountains denser and wetter broadleaf forests can be found, which contribute to more downed woody debris and litter fuel types with varying densities (TL1–8).

While there are many fuel types within Santa Clara County, a few fuel types make up the dominant landcover across the service territory. These dominant fuels are described below in the Fire Regimes subsection.

Table 2.2. Scott and Burgan 2005 Fuel Model Classes within Santa Clara County

Existing Fuel Type	Acres	Portion of County
GR2	232,739	27.88%
GR1	104,729	12.55%
TU5	100,881	12.08%
NB9	91,327	10.94%
NB1	63,477	7.60%
GS2	43,295	5.19%
TU1	35,631	4.27%
SH7	34,656	4.15%
GS1	34,415	4.12%
SH5	21,149	2.53%
NB3	18,016	2.16%
NB8	17,783	2.13%
GR4	8,007	0.96%
Other	28,663	3.43%
Total	834,774	100%

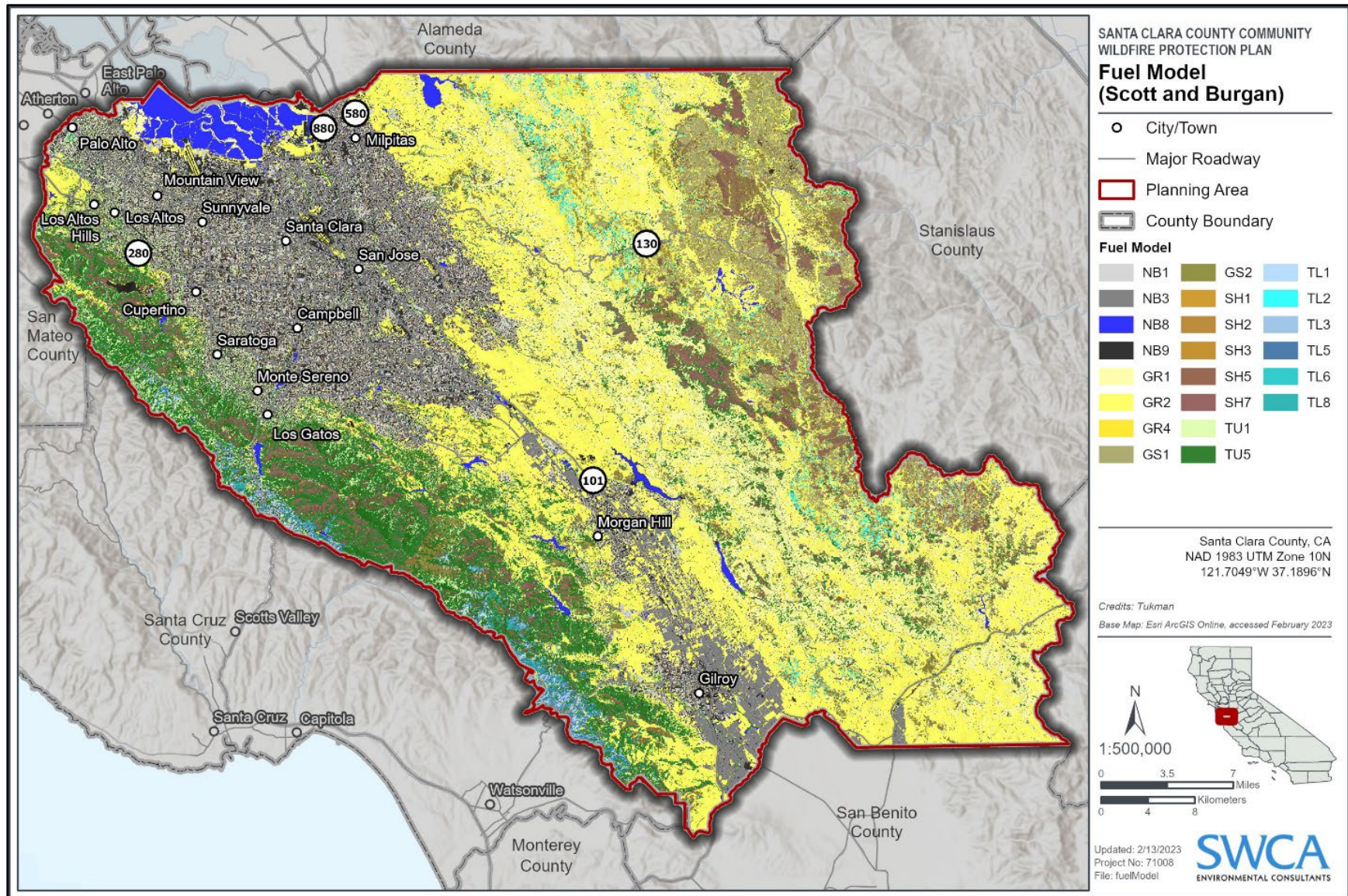


Figure 2.5. Fuel model classes across Santa Clara County.

EMBER IGNITION HAZARDS

Ember exposure from wildland fires can pose a significant threat to homes and other structures in the WUI (Maranghides and Mell 2013). Spotting occurs when embers travel in advance of the flaming front; long-range spotting can be miles ahead of the main fire. Many factors determine whether an ember will result in an ignition (firebrand source and size, wind, receiving materials, exposure duration, etc.). Burning structures and other materials (vehicles and ornamental vegetation) have been identified as another source of embers that can ignite additional combustible materials in the WUI, particularly when there is a low structure separation distance (Maranghides et al 2022; Suzuki and Manzello 2021).

Short-range spotting is not considered significant in the growth of wildfires and is typically accounted for in wildfire spread model outputs. Long-range spotting is differentiated from short-range spotting, primarily because firebrands (flaming or glowing fuel particles that can be carried naturally by wind, convection currents, or gravity into unburned fuels) are being lifted by a convection column and carried beyond the immediate fire area (NWCG 2021j, 2023b). Several factors affect the extinction time of firebrands and the maximum distances they can travel from their origin. Firstly, the canopy characteristics of tree stands such as tree species, canopy height, and diameter at breast height will affect the quantity and size of firebrands produced during a wildfire. The height of downwind tree stands will affect the number of firebrands that reach ignitable vegetation (NWCG 2021j). Thick and ablative bark species (e.g., ponderosa pine and Douglas fir) can produce large firebrands, but maximum spotting distances will be much less than firebrands originating from more resinous species with thinner and lighter bark (e.g., Gambel oak and knobcone pine).

Secondly, several weather- and landscape-related factors influence the distance firebrands can travel. Wind speed and atmospheric stability are functions of firebrand travel distance. Atmospheric stability is defined as the atmosphere's resistance to vertical motion (NWCG 2023a). The potential for wildfire growth can be estimated by measuring the stability and dryness of the air over a fire using the Lower Atmosphere Stability Index (LASI), or Haines Index (USFS 1988). The Haines Index is a numbered scale from 1 to 6, with 6 representing the highest rate of spread (ROS) possible. Hot, dry air over a wildfire can create an unstable atmosphere (Haines Index 5–6) and is conducive to creating a large convective column, which will provide the energy necessary to loft larger embers further away. Therefore, the Haines Index is often a good predictor of large, plume-dominated fire growth and higher firebrand travel distances.

The absolute humidity of the air also greatly influences ember extinction times. Humid conditions can extinguish airborne firebrands before they land, while dry conditions allow firebrands to continue smoldering. This same logic is applied when defending structures. For instance, sprinkler systems that are used for structure protection are meant to raise the relative humidity of the surrounding air rather than wet the actual structure, as ember wash is one of the main causes of structural ignitions and pre-contact ember extinction is ideal for reducing structural ignitability (Nazare et al. 2021). Additionally, local topography can influence where an ember may land. For example, ridges can “catch” firebrands, and steep valleys often “collect” embers. Wind slope alignment, which is common in the western United States, can cause high rates of ember production and lofting distances depending on the burning fuel type. Similarly, the position and orientation of structures can impact the collection of embers and potential ignition potential.

The effect of embers on structure ignitions cannot be overstated, and land managers and property owners should take note of vegetation, landscape, and atmospheric conditions that are conducive to firebrand production and travel, as these directly influence spotting fire behavior and potential loss of

values at risk (VARs). Strategic landscape fuel reduction activities such as fuel breaks and thinning can help reduce the likelihood of firebrand production and spotting. Property owners should note surrounding tree species and implement home hardening practices, such as installing vent covers, regularly clearing gutters, and sweeping leaf litter from decks and foundation, to reduce structural ignitions from ember wash.

See Map 5 in Appendix J for a map of ember load index.

FIRE REGIMES

Wildland fires are a function of the climate in which they occur, the vegetation that drives them, and the occurrence and frequency of ignitions. The nexus of these factors for a particular ecosystem or landscape is considered a fire regime, or the way that fire interacts with and shapes an environment. Fire regime can be described with many parameters that indicate the dynamic forces behind wildland fire events, including seasonality, predictability, spatial patterns, magnitude, frequency, and extent. Fire regimes are important to understand as they can provide insight into the temporal, ecological, and geographic factors that impact fire hazard and risk.

Within Santa Clara County, different vegetation types (see Figure 2.4) exhibit their own unique fire regimes, and each has played an important role in shaping the ecology and landscapes of the area today. Grasslands and introduced species associated with developed areas typically dominate the lowest elevations in the county, while chaparral and coastal scrub occupy slightly higher elevations. Chaparral, scrub, and grasslands also mix with mosaic oak woodlands at low to mid elevations and give way to oak- and conifer-dominated forests at higher elevations, particularly on mesic north-facing slopes.

Throughout history, fire return intervals in Santa Clara County would have varied as a function of these vegetation types. Pre-settlement fire histories of grasslands and chaparral are difficult to determine due to the lack of dendrochronological evidence associated with fire events in the ecosystems (Van de Water and Safford 2011). However, prior to Native American impacts, many areas that are now grasslands are thought to have been more dominated by scrub (Ford and Hayes 2007) due to longer fire return intervals between naturally (lightning) caused events. Following Native American habitation and settlement, fire likely became more common across Santa Clara County. Documentation exists of Native Americans burning shrublands along the California coast to reduce the vegetation type's extent and promote the growth of grasses and forbs (Keeley 2002a). This burning is thought to have resulted in extended ranges of grasslands and mosaic networks of oak and chaparral vegetation of various life stages across the county. The predicted fire return interval of chaparral during this time frame was likely in the range of 20 to 80 years (Van de Water and Safford 2011), while woodlands and forests during this period would have experienced between 30 and 100 years between fires.

Similar to other areas in across the nation and in California, it is likely that fire suppression, changing land use, and changing land management has resulted in more hazardous wildfire conditions in Santa Clara County (Santa Clara Valley Habitat Agency 2012). Grasslands in particular have experienced marked shifts in dominant species assemblages as invasives colonize following grazing and wildfire disturbances. These invasive species are known to hold the potential to significantly shift the patterns and behaviors of wildfires (Klinger et al. 2006). While conversion of fuel type can increase the severity and frequency of fire events, the climatic and ignition components of fire regimes are also shifting notably. Climate change has resulted in precipitation levels that are trending downwards along with increasingly warm and dry summers (CAL FIRE 2022d). While smaller fuels such as grass have historically dried out to highly fire prone levels during warm summer months, these recent weather changes are resulting in more

landscape level shifts in fuel moistures and decreases in 100- and 1000-hour fuel (trees, logs, etc.) moisture contents. For example, Valley Water (SCVWD) has identified riparian corridors as a particular concern of wildfire risk in Santa Clara County. These riparian areas can produce substantial fuel loads over many years and during drought years vegetation turns to kindling and becomes a significant wildfire hazard. Furthermore, an increasing population, particularly in the WUI, has also led to increased ignitions, especially during timeframes when fuel moisture contents are low and use of areas containing wildland fuels are high (e.g., summer). This change has not only resulted in more fires but provided opportunities for large fires with extreme fire behavior to propagate (CAL FIRE 2022d).

Additional information on fire regimes for the different vegetation types found in Santa Clara County can be found in the following sections.

GRASSLAND

Grassland in Santa Clara County consists of herbaceous vegetation dominated by grasses and forbs. Grassland in the county includes the following land cover types:

- **California annual grassland (non-native)** – found in valley bottoms, lower elevations on the eastern side of the county, and on ridges on dry south- and west-facing slopes.
- **Non-serpentine native grassland (native)** – patchily distributed in the county and generally occurs as small patches within the larger annual grassland complex.
- **Serpentine bunchgrass grassland (native)** – occurs on ultramafic soils derived from serpentinite, limited in extent in the county.
- **Serpentine rock outcrop/barrens (native)** – occurs on exposures of serpentine bedrock that typically lack soil and are sparsely vegetated, limited in extent in the county.
- **Serpentine seep** – found in dry areas where water penetrates the surface and creates a small wetland habitat that supports wetland vegetation.
- **Rock outcrop (non-serpentine)** – rare in the county.

Periodic fire is an important influence on the grassland community. Keeley (2002a) suggests that dense scrub or chaparral had little value to Native Americans, so they used periodic burning to clear shrubs and provide habitat for fire-tolerant native grasses. Keeley (2002b) also implies that the current mosaic of grassland is likely a result of historic vegetation management that favored open grasslands over chaparral. Historically and prehistorically, fires from both lightning strikes and human ignition kept woody vegetation from invading grassland (where the soil conditions are appropriate) and converting it to coastal scrub or oak woodland. While prescribed burning is considered an important management tool in grasslands and other natural communities (Santa Clara Valley Habitat Agency 2012), such burning is becoming increasingly difficult to implement due to cost, safety concerns from expanding urban and rural development, and difficulty obtaining permits because of air quality concerns. It has not been feasible in most places to burn frequently enough to control the spread of woody species into existing grassland or to reduce the cover of woody vegetation within grasslands because of the natural resistance and resilience of the woody plants to a single burn (Ford and Hayes 2007). Livestock grazing has continued on most rangelands in Santa Clara County and is regarded as generally beneficial in maintaining suitable habitat conditions for many special-status grassland-dependent species.

Grassland is considered a fire-tolerant community, since the low-intensity prescribed fire moves so quickly that the fire burns only above the lower few centimeters of material, leaving much unburned or

only charred on the ground. Immediately following a grassland fire, areas typically see an increase in annual forb germination and flowering and an increase in overall productivity in response to the light and nutrients made available by the removal of the thatch layer during the following growing season (Harrison et al. 2003). In grasslands that are already dominated by non-native annual grasses, non-natives may increase their dominance following fire by outcompeting natives for the newly available space and light. Native grasses may increase their dominance in serpentine grasslands following fire through the same mechanism (Harrison et al. 2003).

CHAPARRAL AND NORTHERN COASTAL SCRUB

Chaparral shrub communities are found in rocky, porous, nutrient-deficient soils and steep slopes throughout Santa Clara County and are dominated by densely packed evergreen woody shrubs, 1.5 to 4 meters tall. Dominant shrubs in this community in Santa Clara County are chamise (*Adenostoma fasciculatum*), manzanita (*Arctostaphylos* spp.), scrub oak (*Quercus berberidifolia*), and ceanothus (*Ceanothus* spp.).

Northern coastal scrub is characterized by low shrubs that are generally more flexible with higher moisture content and thinner stems than the stiff shrubs of chaparral. The plants range from 0.5 to 2 m tall interspersed with openings favored by native bunch grasses. Common plants of coastal scrub include California sagebrush (*Artemisia californica*), coyote brush (*Baccharis pilularis*), sticky monkey-flower (*Mimulus aurantiacus*), golden yarrow (*Eriophyllum confertifolium*), and California melic grass (*Melica californica*).

Native Americans frequently burned shrublands to encourage grass and forb development (Keeley 2002a). Plants in the chaparral and northern coastal scrub communities have evolved to persist despite periodic wildfire; some of the species are dependent on periodic fire for regeneration (Holland 1986; Hanes 1988; Schoenherr 1992). Some chaparral species have fire adaptations such as peeling bark, volatile oils, and seeds that require fire to initiate growth that promote fire (Rundel and Gustavson 2005; Schoenherr 1992; USFWS 2002). Chaparral is an important refuge for certain sensitive animals (Cornell Lab of Ornithology 2023). Despite the adaptations of many plants to periodic fire intervals, the notion that chaparral “needs to burn” is strongly disputed by some researchers.

Sprawl of human habitation in chaparral and shrub communities poses a great threat to both these plant communities and habitable structures. Similar to the various woodlands and forests, buildup of fuel over many years increases the risk of catastrophic fire (USFWS 2002). Severe topsoil erosion is also a problem after intense fires, particularly if they burn hot enough to kill the burls and lignotubers of woody chaparral plants (Schoenherr 1992).

OAK WOODLAND

Oak woodlands are a common cover type found in Santa Clara County. A number of oak-dominated woodlands can occur:

- **Valley oak woodland** – common in the valley floors but also along ridge tops.
- **Mixed oak woodland and forest** – most geographically widespread of all oak woodlands in the county.
- **Coast live oak woodland and forest** – commonly found abutting grassland areas.

- **Blue oak woodland** – present in scattered locations mostly in the low to mid-elevation hills on dry or well-drained north- or northeast-facing slopes.
- **Foothill pine-oak woodland** – often occurs along valley floors within chaparral communities in the eastern foothills and also adjacent to other oak land cover types and on serpentine soils.
- **Mixed evergreen forest** – occurs on the west side of the Santa Clara Valley, usually on north-facing slopes.

Oak-dominated woodlands are thought to have been more prevalent in Santa Clara County historically and have become fragmented as a result of urban development and agricultural uses (Grossinger et al. 2006).

Oak woodland is a fire-adapted ecosystem, and fire has likely played a large role in maintaining this community type in the county. Fire creates the vegetation structure and composition typical of oak woodlands, and this natural community has experienced frequent, low-severity fires that maintain woodland or savannah conditions. In the absence of fire, the low or open understory that characterizes this land cover type can be lost. Depending on site characteristics closed canopy oak forests can be replaced by shade-tolerant species and conifers if oaks cannot regenerate and compete as shade encroaches. Soil drought may also play a role in maintaining open tree canopy in dry woodland habitat.

Mixed evergreen forests on the northern slopes of the Santa Cruz Mountains are being heavily impacted by drought, sudden oak death (SOD), and bark beetle infestations, resulting in widespread die-off of certain oak species, tanoak (*Notholithocarpus densiflorus*), and Douglas fir (*Pseudotsuga menziesii*) that leaves large openings in the woodlands, full of hazardous fuels where sunlight penetrates and dries out the ground.

SUDDEN OAK DEATH

A recent influence on oak woodlands is SOD. The disease, first identified in 1995, has since spread to 15 counties and killed hundreds of thousands of oaks (California Oak Mortality Task Force 2023).

Research indicates that members of the black oak family such as coast live oaks (*Quercus agrifolia*) and black oaks (*Q. velutina*), as well as tanoak, appear to be the most susceptible to this disease (Rizzo et al. 2003). SOD is caused by the water mold pathogen *Phytophthora ramorum* (*P. ramorum*) and is a serious threat to oak woodlands and mixed evergreen forests in northern California.

The pathogen can kill adult oaks and madrone (*Arbutus menziesii*); California bay (*Umbellularia californica*), buckeye (*Aesculus californica*), and maple (*Acer* spp.) host the pathogen without being killed by it. Members of the white oak family such as blue oak (*Quercus douglasii*) and valley oak (*Q. lobata*) have not shown symptoms of the pathogen.

RIPARIAN FOREST AND SCRUB

Riparian areas of Santa Clara County are broken down into the following:

- **Willow riparian forests, woodland, and scrub** – occur in or along margins of active channels on intermittent and perennial streams.
- **Central Californian sycamore alluvial woodland** – generally present on broad floodplains and terraces along Coyote Creek and Pacheco Creek.

- **Mixed riparian woodland and forest** – occur in or along margins of active channels on intermittent and perennial streams.

These vegetation types are found in association with riverine watercourses along streambanks and floodplains and surrounding open water bodies. Within the last 100 to 150 years, extensive anthropogenic alterations have been made to riparian areas and much of the existing stream networks have been largely developed with human intervention and creation of canals and ditches.

CONIFER WOODLAND

There are three conifer-dominated vegetation communities that occur in Santa Clara County (Santa Clara Valley Habitat Agency 2012):

- **Redwood forest** – coast redwood (*Sequoia sempervirens*) occurring primarily in the Santa Cruz Mountains. Adjacent cover types are mixed oak woodland and mixed evergreen woodland. Occurs in areas that receive substantial rainfall >35 inches per year. Redwood-dominated overstory and tanoak (*Notholithocarpus densiflorus*), madrone, and California bay understory trees; hazelnut (*Corylus cornuta* var. *californica*), thimbleberry (*Rubus parviflorus*), and black huckleberry (*Vaccinium ovatum*) in the shrub layer. In riparian areas, California bay and bigleaf maple (*Acer macrophyllum*) are common, California nutmeg (*Torreya californica*) may occur, and ferns such as sword fern (*Polystichum munitum*) often form a dense layer.
- **Ponderosa pine (*Pinus ponderosa*) woodland** – restricted distribution within the county, only occurring on three high elevation ridges in Henry W. Coe State Park—Pine Ridge, Middle Ridge, and Blue Ridge—and extending downslope into north-facing canyons and valleys.
- **Knobcone pine (*Pinus attenuata*) woodland** – consists of dense stands of knobcone pines that regenerate following fire. Uncommon in the county, occurring only in the Santa Cruz Mountains on ridge top sites, often on serpentine-derived soils. Knobcone pine is an obligate fire-climax species—fire is required to melt the resin that seals the cones, releasing the seed, and fire also creates the bare mineral soil required for the seeds to germinate. Stands of knobcone pine are therefore even-aged, dating back to the last stand-replacing fire.

Prior to European settlement, the Santa Clara Valley supported a mosaic of plant and wildlife communities and the upland regions were heavily forested with redwoods and pine and oak woodlands. In the mid to late 1800s, the foothill forests and woodlands were heavily thinned to support regional population growth.

A major factor influencing the distribution of conifer-dominated land cover types is fire intensity and frequency. The combination of logging and burning at the end of the nineteenth century resulted in the conversion of conifer-dominated forests (redwood and Douglas fir) in the Santa Cruz Mountains to grassland or chaparral and oak-dominated woodlands (Santa Clara Valley Habitat Agency 2012). Periodic stand-replacing fire is required for the regeneration of knobcone pine woodland.

IRRIGATED AGRICULTURE

This cover type encompasses all areas where the native vegetation has been removed for irrigated agriculture (not including rangeland) and includes:

- **Orchards** – apricot, prunes, and walnuts predominantly.

- **Vineyards** – occur throughout the county but predominantly in the southern portion.
- **Agriculture (developed)** – i.e., greenhouses, nurseries, Christmas tree farms; occurs in small patches throughout the county.
- **Grain, row crops, hay, and pasture** – abundant throughout the Santa Clara Valley south of San Jose.

Father Junípero Serra gave Santa Clara Valley its name when he consecrated the Mission Santa Clara de Asis in 1777 (National Park Service 2018). The establishment of the mission also heralded the beginning of large-scale agriculture in the Santa Clara Valley. Soon, the Guadalupe River dam (located near Mission Santa Clara) was constructed for irrigation of wheat, corn, bean, and other crops. Fruit trees and grapes were also cultivated.

Population growth in the county has been continuous since 1850. In order to facilitate the sustained growth in 1870, Los Gatos Creek was diverted to meet water demands for agriculture. Improved access to railroads also led to increased agricultural production in the county at that time. Agricultural products included carrots, almonds, tomatoes, prunes, apricots, plums, walnuts, cherries, pears, grapes, and lumber for the world market (National Park Service 2018). The rural nature of the Santa Clara Valley lasted through to World War II, after which time cultivated lands were reduced to make room for urban expansion.

While irrigated agriculture can burn under the right conditions, such events are typically isolated to when large adjacent wildland fires enter cultivated fields, orchards, and vineyards.

INVASIVE NON-NATIVE PLANT COMMUNITIES

In addition to native grasslands, shrublands, and woodlands, Santa Clara County contains plant communities of species that are not native but exist outside agricultural or developed areas. Scattered non-native escaped plants are not likely to significantly change fire behavior or affect other natural resource values. However, some species can dominate or even completely take over areas, excluding natural vegetation and changing fuel characteristics. Examples of non-native plant communities and invasive species of concern for wildfire include:

- Grassland: wild oats (*Avena* spp.), yellow star thistle, curly dock (*Rumex crispus*)
- Rock outcrops: fennel (*Foeniculum vulgare*), broom species (*Bromus* spp.), cotoneaster (*Cotoneaster* spp.), jubota grass (*Cortaderia jubata*)
- Seeps and riparian: poison hemlock (*Conium maculatum*), teasel (*Dipsacus* spp.), jubota grass, arundo (*Arundo* spp.), Himalayan blackberry (*Rubus armeniacus*), black locust (*Robinia pseudoacacia*)
- Shrublands: French broom (*Genista monspessulana*), Scotch broom (*Cytisus scoparius*), gorse (*Ulex* spp.), fennel
- Mixed oak woodland: Ivy (*Hedera* spp.), locust, privet (*Ligustrum* spp.), acacia (*Acacia* spp.)
- Valley oak woodlands: milk thistle (*Silybum marianum*)
- Mixed evergreen: periwinkle (*Vinca* spp.), English ivy (*Hedera helix*)
- Replacement woodlands: blue gum eucalyptus (*Eucalyptus globulus*), acacia, tree-of-heaven (*Ailanthus altissima*)

Several invasive, non-native plant species are found in riverine land covers within the study area. One of the most prevalent is giant reed (*Arundo donax*), which is often found in large pure stands. Other invasive, non-native plants potentially found in the study area include blue gum eucalyptus, acacia, fennel, periwinkle, French broom, black locust, English ivy, Algerian ivy (*Hedera canariensis*), cape ivy (*Delairea odorata*), Himalayan blackberry, weeds, curly dock, thistle, blackwood acacia (*Acacia melanoxylon*), tree-of-heaven, glossy privet (*Ligustrum lucidum*), fig, and poison hemlock (Santa Clara Valley Habitat Agency 2012).

CLIMATE AND WEATHER PATTERNS

Santa Clara County has a Mediterranean climate, with most precipitation occurring during the winter months and virtually no precipitation from spring through autumn (Santa Clara Valley Habitat Agency 2012). July is typically the hottest month of the year in the county, with average July maximum mean temperatures ranging from 84.4 °F in the West Almaden area to 87.2 °F in the Gilroy area. December is usually the coldest month, with average December minimum temperatures ranging from 37 °F in the Gilroy area to 40.6 °F in the West Almaden area (National Oceanic and Atmospheric Administration [NOAA] 2022). Mean annual temperatures are consistent throughout the valley and into the base of the mountain range, with the valley experiencing more variability in extreme temperatures.

Mean annual precipitation within the county is moderate, ranging from 19.77 inches in the Gilroy area to 32.52 inches in the West Almaden area. The highest precipitation levels usually occur from late fall to early spring in Santa Clara County. The lowest precipitation levels occur from early summer to mid fall, meaning the driest period that the county faces occurs from June to September. However, precipitation levels are contingent on location. Areas closer to the mountains typically receive more precipitation than the valley. For example, the West Almaden area, near the base of the Santa Cruz Mountains, receives a mean total precipitation of 32.53 inches during the drier months, whereas the Gilroy area receives 19.77 inches (Table 2.3) (NOAA 2022).

Higher elevations, however, such as the Santa Cruz Mountains, typically have the highest precipitation totals (40–60 inches/year) compared with the relatively dry Santa Clara Valley, where the city of San Jose has average precipitation of approximately 12 inches per year. The Diablo Range, though drier than the Santa Cruz Mountains, experiences greater precipitation than the adjacent valley, with totals ranging from 20 to 30 inches a year, especially at higher elevations. Various microclimates also occur in the county; for example, canyon areas of north-facing hill slopes and streams with less direct sunlight will have lower evapotranspiration, greater ambient soil moisture, and generally more moderate, cooler temperatures due to higher moisture content and greater shading (Santa Clara Valley Habitat Agency 2012).

The topography of Santa Clara County, coupled with its proximity to the Pacific Ocean, greatly influences wind patterns. Spring and summer see the greatest wind speeds, with sometimes strong afternoon and evening winds on summer days. Summer “Diablo winds” can carry hot, dry air from the Central Valley over the Diablo Range and flow across Santa Clara Valley and then upslope over the Santa Cruz Mountains from a northerly direction toward the Monterey Bay. These winds drove both the Lexington Fire and the Summit Fire.

The United States is experiencing a cycle of the highest average temperatures in recorded history. California shares this phenomenon and is also sustaining an atmospheric temperature increase of 1.4 degrees C, which is creating a dramatic change in the health of native vegetation. Tree mortality from drought stress and pests such as bark beetles and the pathogen that causes SOD have increased significantly (Williams et al. 2019; USFWS 2023). Westering (2016) also notes that western forest wildfire

activity increased abruptly in the 1980s and appears to be strongly associated with warming and changing precipitation patterns attributed to climate change. Although this research focused on lightning-caused fires on western federal lands, widespread changes in the patterns and amounts of precipitation will influence wildland fuel availability and wildfire activity in many areas (Williams et al. 2019). An increase in wildfire activity, such as due to longer fire seasons or due to higher rates of fire spread and intensity as a result of changes in fuel types, will further stress the limited number of fire suppression personnel available for structure protection. This further highlights the importance of pre-fire preparation, such as structural defensibility.

Additional information regarding environmental challenges can be found in Appendix B.

Table 2.3. Mean Annual Temperature and Precipitation by Station in Santa Clara County

Location	Period of Record	Mean Annual Precipitation (Inches)	Mean Annual Temperature (°F)		
			Max	Min	Mean Annual
West Almaden	1991–2020	32.52	70.5	46.9	58.7
Gilroy	1991–2020	19.77	74.3	46.1	60.2
North Coyote Reservoir	1991–2020	21.53	69.1	48.6	58.8

Source: NOAA 2023, PRISM 2023.

Monthly climate normals (30-year averages) for Santa Clara County are graphed by location below (Figures 2.6–2.8).

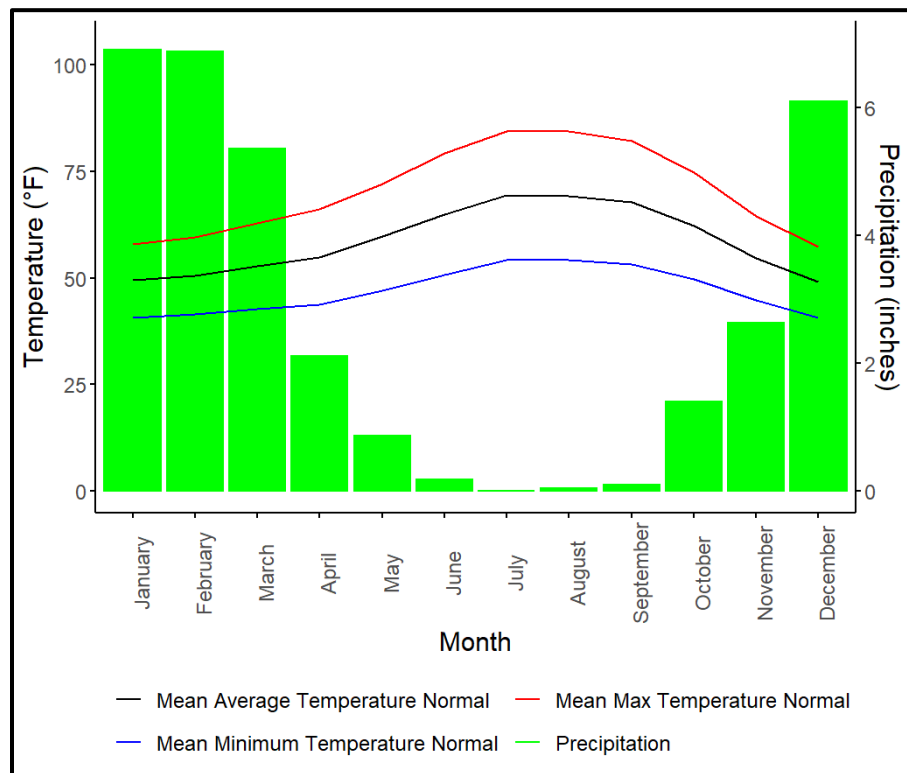


Figure 12.6. 30-year monthly normals for temperature and precipitation for West Almaden, 1981–2010 (Source: PRISM 2023).

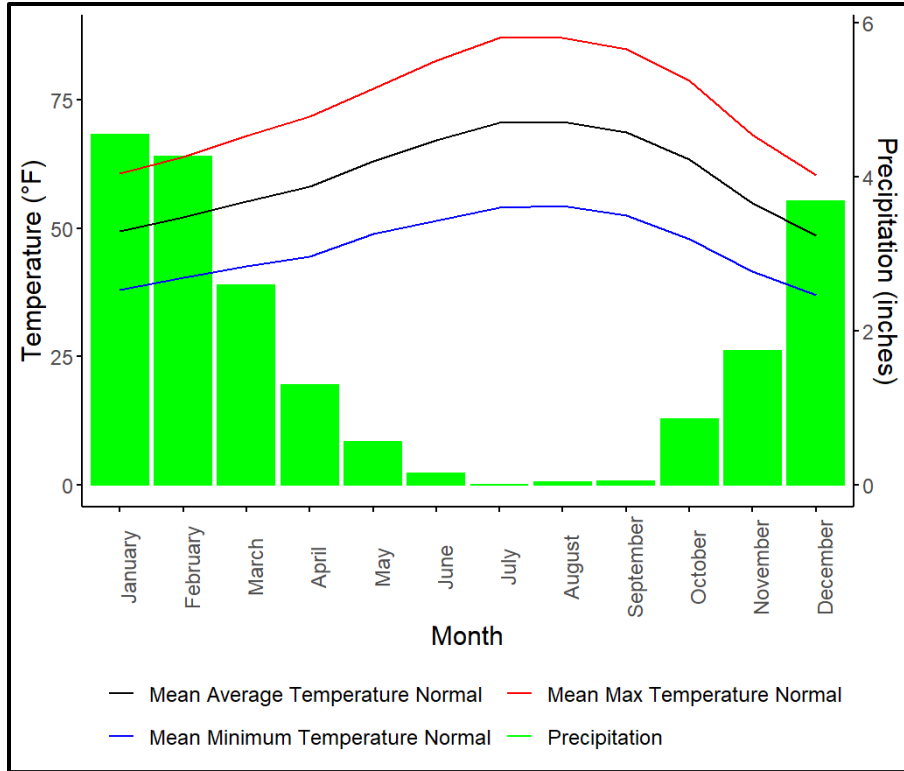


Figure 2.7. 30-year monthly normals for temperature and precipitation for Gilroy, 1981–2010 (Source: PRISM 2023).

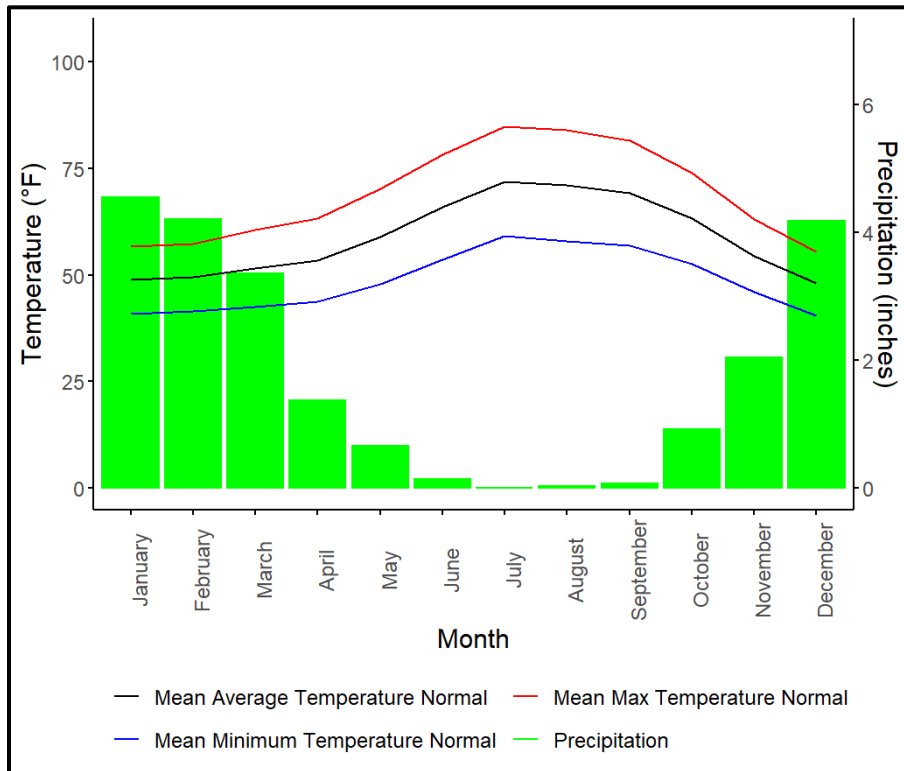


Figure 2.8. 30-year monthly normals for temperature and precipitation for North Coyote Reservoir, 1981–2010 (Source: PRISM 2023)

FIRE HISTORY

Fire is a natural part of California's diverse landscape and ecological history and is essential to many ecosystems across the state. Almost all of California's diverse ecosystems are fire-dependent or fire-adapted. For centuries, many California Native American tribes recognized this interdependence between fire and the ecosystem and used prescribed burning to maintain and restore ecosystem health. However, in the 1800s, a shift in management actions—settlers began enforcing strict fire suppression regimes—led to challenges such as dense stand conditions, unhealthy rangelands, and increased ecosystem and community vulnerability to fire. Evidence suggests that the fire regimes in Santa Clara County have experienced shifts due to changes in land use, land development, invasive and non-native plant establishment, wildland fire suppression. This is supported ample evidence that shows vegetation communities and fire regimes have experienced significant departures from historic conditions due to anthropomorphic interference (Syphard et al. 2007). This trend coupled with the likelihood of increased temperatures and prolonged drought periods perpetuated by climate change increase the risk of wildfire for those in San Francisco Bay Area communities such as Santa Clara (Association of Bay Area Governments 2023).

PAST FIRE MANAGEMENT POLICIES AND LAND MANAGEMENT ACTIONS

Fire management in California and the western United States has adapted over time in response to changing knowledge of forest ecosystems. In 1910, just 5 years after the USFS was established, massive fires burned over 3 million acres of the agency's land in northern Idaho and western Montana, prompting a federal fire suppression policy to protect ecosystem services and timber stands (USFS 2017). The National Park Service and BLM were established in 1916 and 1946, respectively, and adopted similar land management philosophies. In the 1970s, forest management research began to reveal the natural role of wildfire in ecosystems (USFS 2017) and by the turn of the century complete fire suppression tactics on publicly managed lands were mostly replaced with combinations of suppression, containment, and mitigation measures such as fuel treatments and prescribed burning (Forests and Rangelands 2021). CAL FIRE has followed a strategic arc similar to that of the federal agencies responsible for fire response, initially focusing on suppression until eventually incorporating wildfire management practices in line with our modern understanding of fire ecology (CAL FIRE 2022e; Van Wagtenok 2007). Although these practices now protect and restore public lands through more scientifically supported methods, some areas in Santa Clara continue to show signs of these historic management practices, requiring brush removal and abatement for encroaching native brush and long-term buildup (Santa Clara County Fire Department [SCCFD] 2023a). See the map below for a detailed look at past treatments that have occurred in Santa Clara County. The Advisory Team for the CWPP emphasize the importance of integrating Tribal Ecological Knowledge (TEK) into land management practices throughout the County, ensuring that land management strategies consider historic cultural practices for rangeland, watershed, and forest health stewardship.

More information regarding land management strategies can be found in Appendix A.

RECENT FIRE OCCURRENCE

This section was developed using fire history data from CAL FIRE's Fire and Resource Assessment Program (FRAP) (CAL FIRE 2022f). Although the fire history data from CAL FIRE is the most comprehensive digital record of fire perimeters in California, it has its limitations. CAL FIRE states that the earlier data (i.e., prior to 1950) is subject to significant uncertainty due to poor and inconsistent record keeping. In addition, data for some fires may be missing or have incorrect information. This is due to the loss or damage of historical records as well as inadequate documentation (CAL FIRE 2022f). Given the limitations of the data, our fire history analysis may contain discrepancies.

An analysis of Santa County's wildland fire history (1931–2020) (CAL FIRE 2022a) shows that the county's most substantial fires have occurred in forested mountain areas, with smaller fires occurring at a higher frequency in the foothills and valley (Figure 2.9). Though a significant number of fires have taken place throughout the county since 1950, it is worth noting that larger fires began to occur in the 1980s (Figure 2.9). In addition to fires showing an increase in magnitude over time within the county, they are also occurring at a higher frequency. Santa Clara County suffered a higher number of wildfires between the years 2020 and 2022 alone than the entirety of wildfires occurring from 1950 to 2019. This increase in wildfire frequency and severity is shown in Figures 2.9 through 2.14. Representing the largest fire in county history, the SCU Lightning Complex took place in 2020 and burned through a significant portion of the eastern region of the county. Having occurred just outside of the planning area, but within a similar vegetative community as the western region of county, was the 2020 CZU Fire Complex. This highly destructive fire burned through 86,509 acres of Santa Cruz and San Mateo Counties, resulting in a fatality. These occurrences demonstrate the county's and surrounding area's capacity to experience devastating wildfire events given the climate, vegetation, population, and other key risk factors present.

California's peak region fire season has been estimated to occur between May and October (NWCG 2022). Santa Clara County's recent fire history reflects this, as most fires occurred within the period of June to September, which is when high temperatures and drier conditions are more probable across the county (Figure 2.13). Of the fires with known causes, humans have been the primary cause of wildfire ignitions; however, natural ignitions are also common. Since 2022, humans have been responsible for 80.4% of the fires that have occurred within Santa Clara County and have a known ignition source, with many of these human-caused ignitions occurring near the county's municipalities or in areas of recreation (Figure 2.9). This high percentage is likely due to the high number of recreationists in Santa Clara County and the large proportion of WUI within the county.

In the past decade, Santa Clara County has experienced several major wildfire events, two of which took place during the 2020 fire season. Occurring in in the Santa Cruz Mountains and burning 4,474 acres over the course of 357 days, the Loma Fire destroyed 28 structures and required the suppression efforts of 62 firefighter personnel. The cause of ignition for this fire remains uncertain (CAL FIRE 2016). Burning just east of the 101 Highway in the city of Gilroy from July 8 to July 13, the Crews Fire would go on to scorch 5,513 acres of land, claiming four structures. The suppression efforts involved the use of 10 fire engines, 125 firefighting personnel (CAL FIRE 2020a). The cause of ignition for this fire is still under investigation. The SCU Lightning Complex fires burned across Santa Clara, Alameda, Contra Costa, San Joaquin, and Stanislaus Counties over the course of 46 days, claiming 396,624 acres of land. The fires lead to the destruction of 225 structures, damage of 26 structures, and six personnel and civilian injuries (CAL FIRE 2022g). The SCU Lightning Complex is the fourth largest fire in state history (CAL FIRE 2022a).

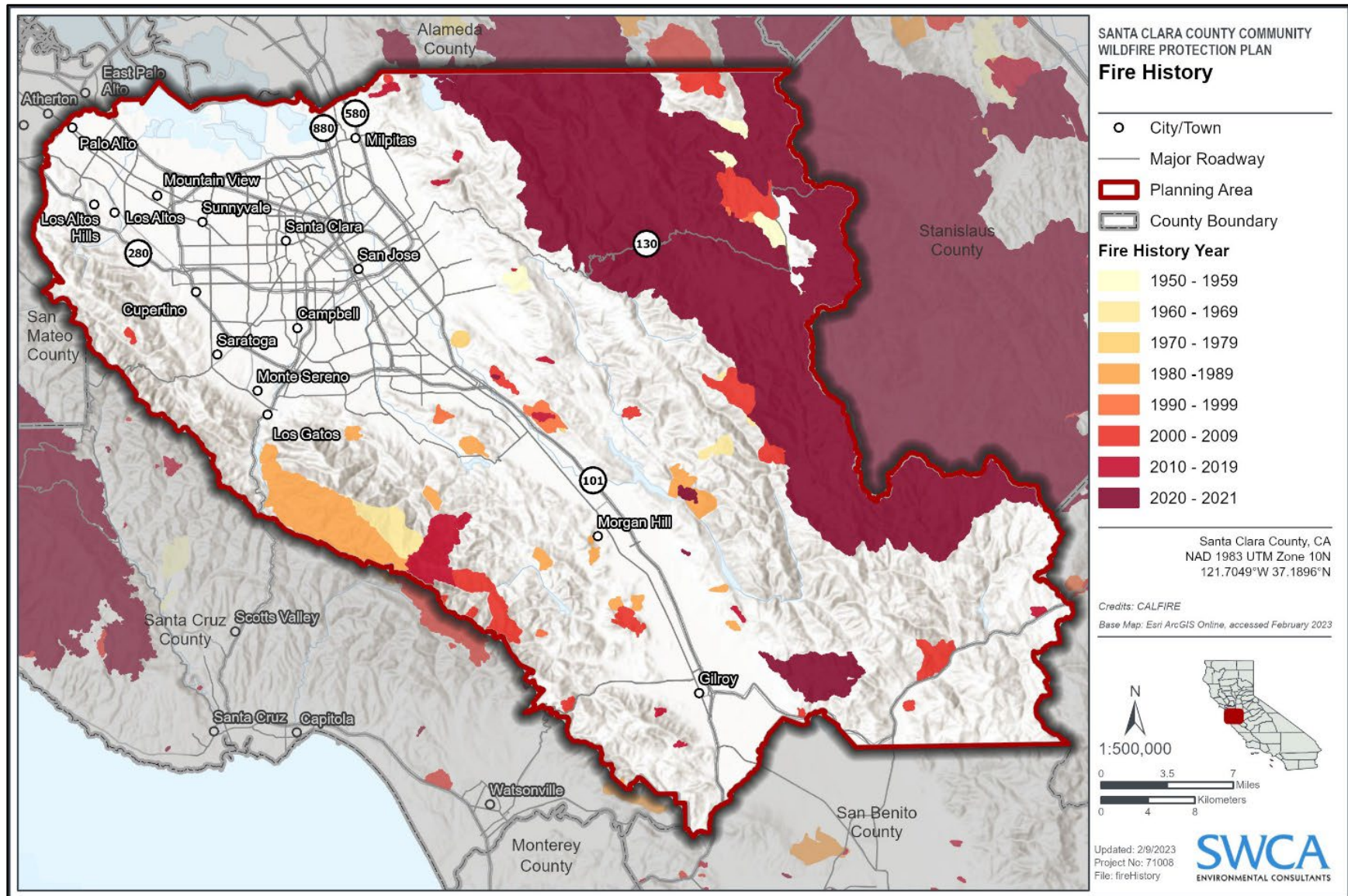


Figure 2.9. Recent wildfire history in Santa Clara County.

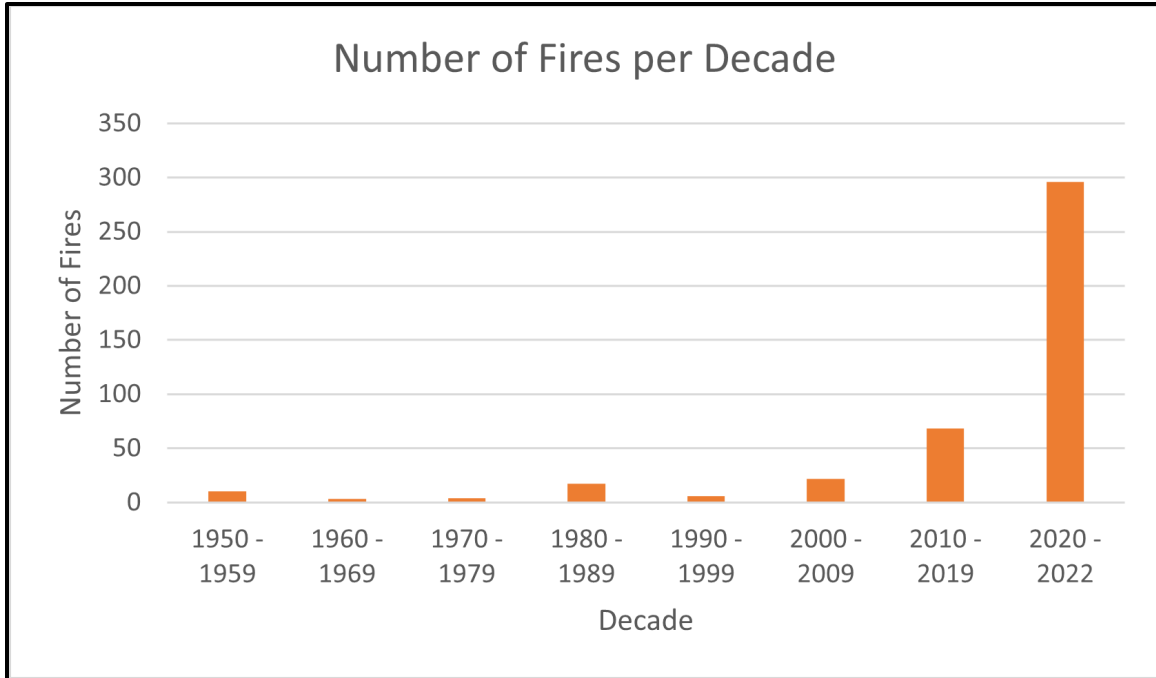


Figure 2.10. Decadal wildfire frequency for Santa Clara County from 1950 through 2022, based on available data.

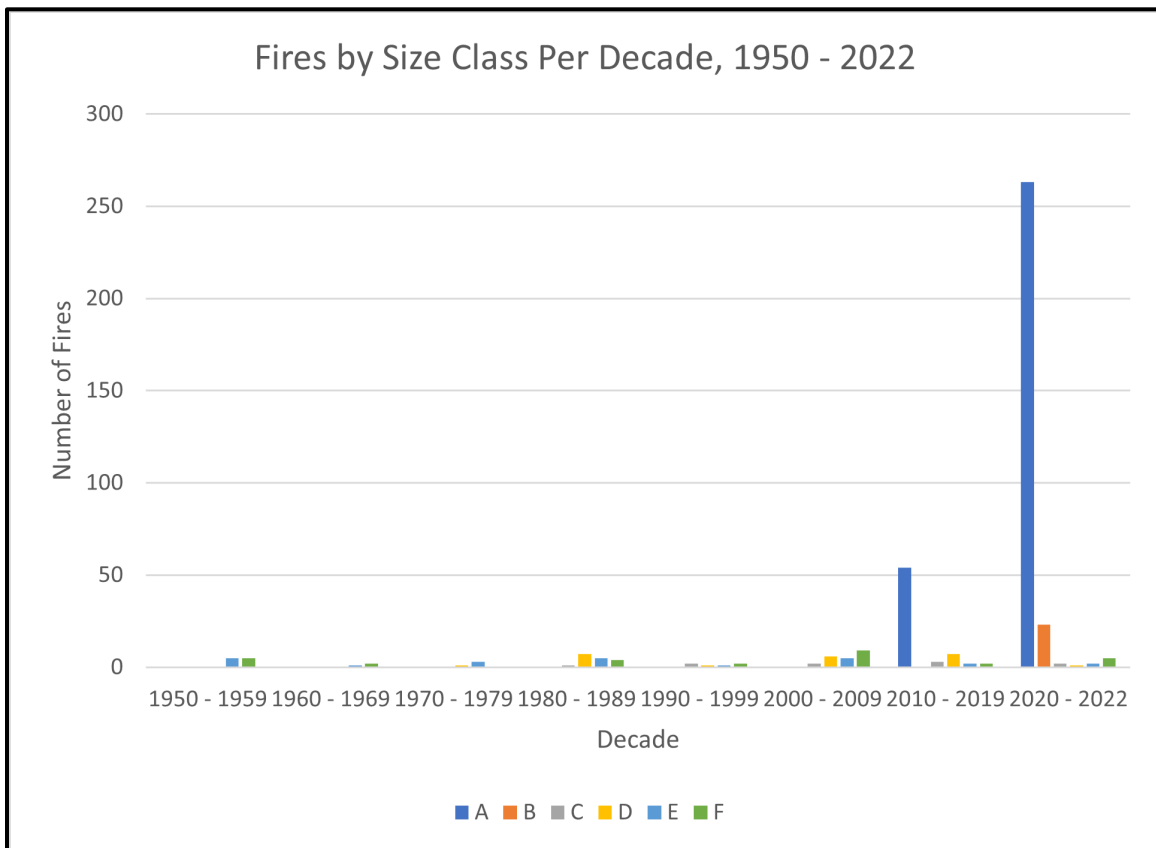


Figure 2.11. Decadal fire size statistics for Santa Clara County based on fire history data from 1950 through 2022.

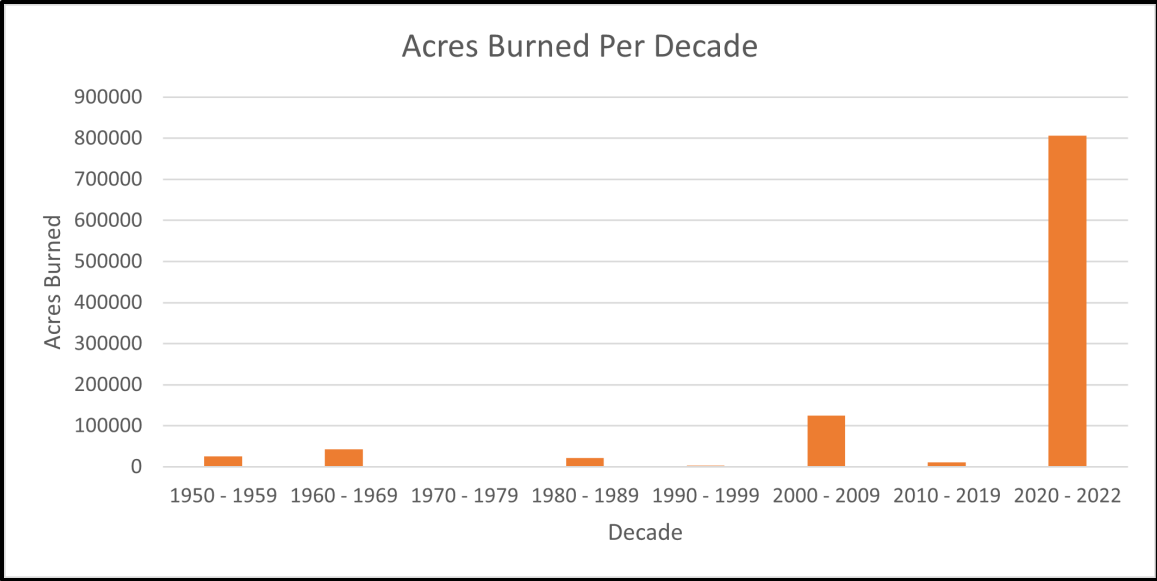


Figure 2.12. Decadal acres burned per decade for Santa Clara County based on fire history data from 1978 through 2022.

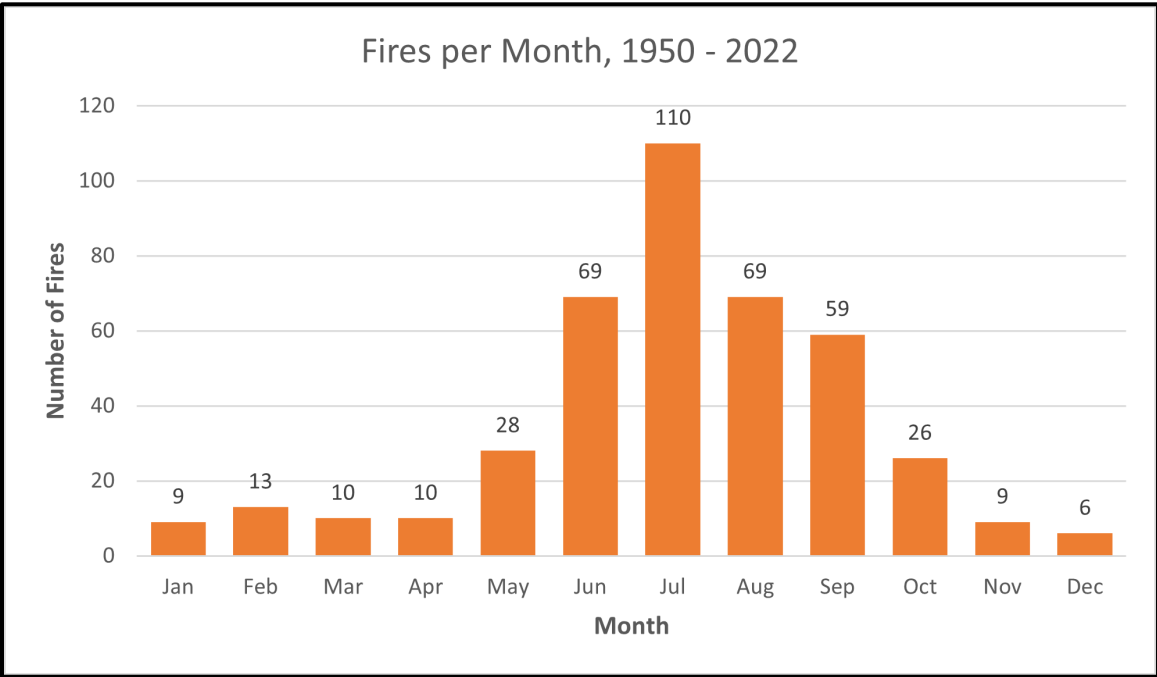


Figure 2.13. Number of recorded fires per month in Santa Clara County from 1978 through 2022

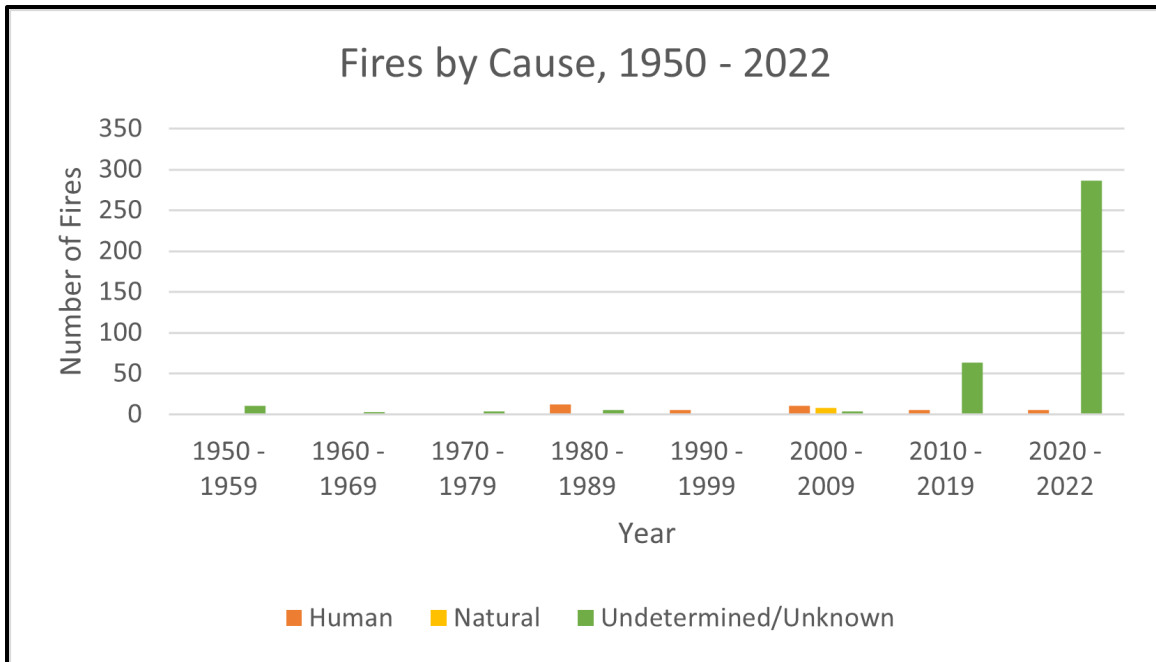


Figure 2.14. Cause of wildfire ignitions in Santa Clara County from 2014 through 2022.

EXTREME FIRE BEHAVIOR PATTERNS

The largest wildfires in Santa Clara County, much like other coastal counties such as San Diego, Santa Barbara, and Los Angeles, tend to be associated with east wind conditions, also referred to as Diablo winds in the Bay Area. Such winds are associated with high-pressure systems over the Sierras and concurrent lows off the coast. The presence of very low relative humidity, warm to hot temperatures, and strong winds, along with continuous wildland vegetation and moderate to steep topography, can quickly lead to disastrous wildfire behavior even if conditions persist for only a few hours. Spotting behavior is especially active because low relative humidity causes extremely dry, receptive fuels to occur, with spot fires often igniting more than a mile in front of the fire itself. Suppression operations are further complicated in high winds because air tankers cannot fly safely, winds disperse retardant before it hits the ground, and/or smoke obscures the location of the fire. Therefore, while relatively rare, extreme fire behavior patterns can cause the vast majority of damage and cost associated with the fire season. Moreover, failure to plan and prepare for this type of fire behavior leaves virtually no time to correct defensible space or communication deficiencies.

FIRE RESPONSE CAPABILITIES

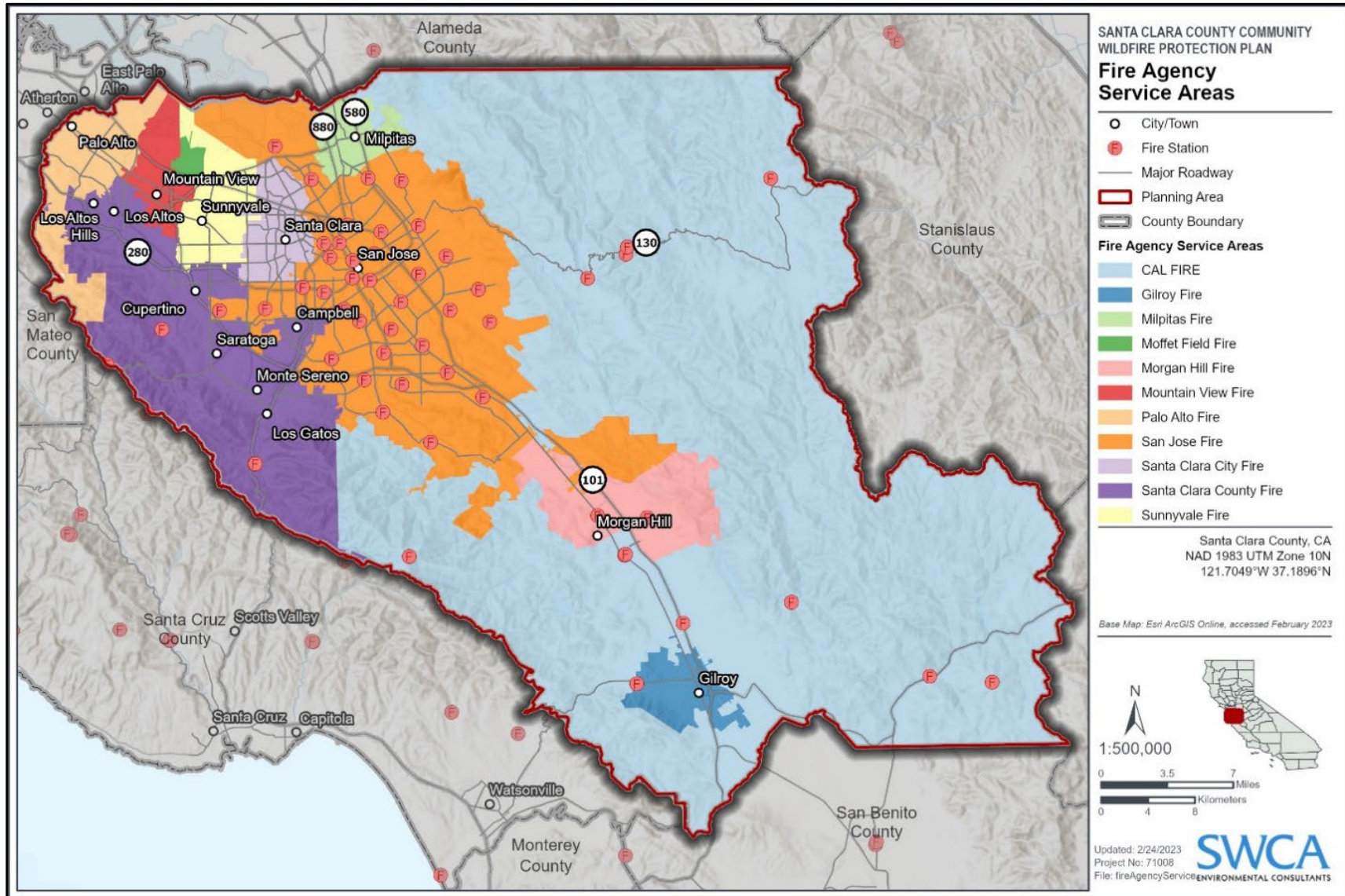


Figure 2.15. Map of fire agency service areas in Santa Clara County.

PLANNING DECISION AND SUPPORT

Wildfires have continued to grow in size and severity over the last decade, requiring fire managers to institute more robust pre-fire planning as well as adapt and improve decision-making tools in order to reduce risk to fire responders and the public, assess impacts on ecological processes and justify the use of local, state, and federal resources (Map 7 in Appendix J).

Significant inequity between political jurisdictions can do more damage than just being a disservice to the less-funded jurisdiction, it can lead to a fractured fire service. Interagency collaboration and cooperation require an equal playing field.

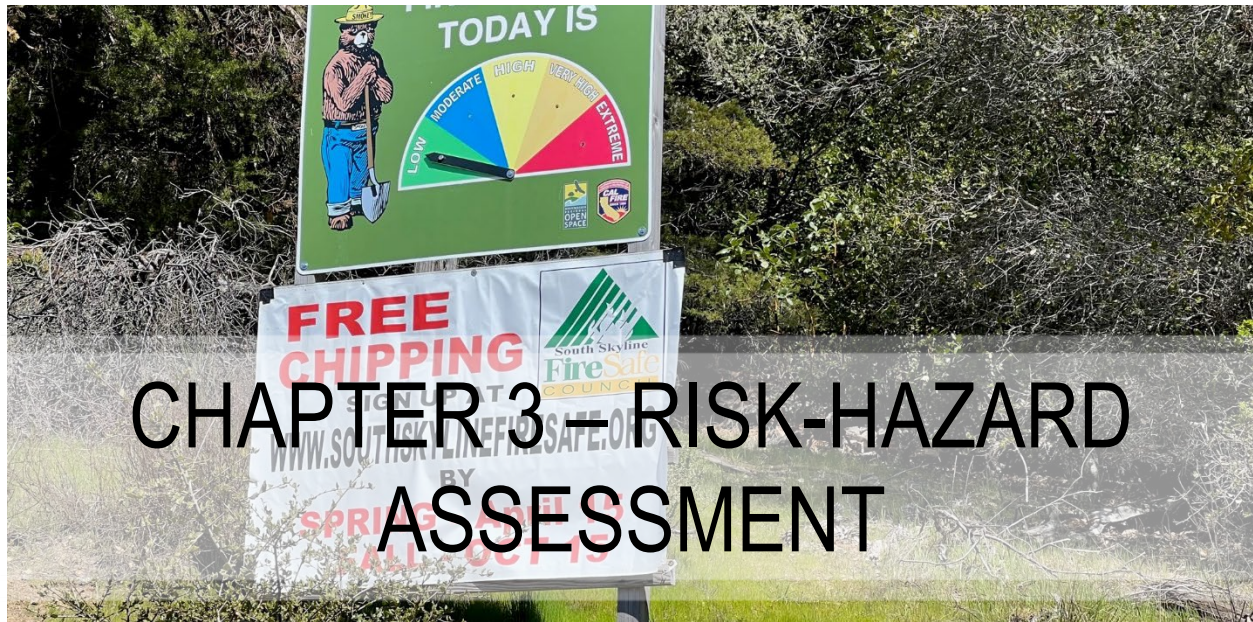
FIRE RESOURCES

California contains many federal, state, and local fire protection organizations that are well integrated through a variety of mutual aid and fire protection agreements and coordinated by organizations such as the California Wildfire Coordinating Group, the Northern and Southern California Geographic Area Coordination Centers (GACCs), and FIREScope. Agencies such as California Emergency Management, USFS, and CAL FIRE form the basis for a very substantial wildfire response capacity that can be deployed in wildfire situations throughout the state. California contains what many regard as the strongest wildfire suppression capability in the nation (Figure B.7 in Appendix B).

The National Wildfire Coordinating Group (NWCG) plays a critical role in providing national leadership to promote interoperable wildland fire operations across federal, state, local, Tribal, and territorial partners. Their duties include establishing national standards for wildland fire operations, position qualifications, and performance support resources. They also support the goals of the National Cohesive Wildland Fire Management Strategy, prioritize information technology capabilities for wildland fire, and ensure that all NWCG activities contribute to safe, effective, and coordinated national interagency operations.

Santa Clara County's fire response services are carried out by a collection of state, county, and city level units, many of which are engaged in auto-aid or cooperative agreements allowing for a strengthened collaborative effort to address fire hazards. The Santa Clara CAL FIRE unit operates across multiple counties, with four battalions located in Santa Clara County: Battalion One (Morgan Hill), Battalion Two (San Jose), Battalion Three (West Santa Clara County), and Battalion Seven (South Santa Clara County Fire District and Morgan Hill Fire Department). The Santa Clara County Fire Department operates within most of Santa Clara County, providing response services to the communities of Campbell, Cupertino, Los Altos, Los Altos Hills, Los Gatos, Monte Sereno, Redwood Estates, Saratoga, and the adjacent unincorporated areas of Lexington and Summit. Equipped with their own city fire departments are the cities of Palo Alto, San Jose, Morgan Hill, and Gilroy (all with WUI designated areas), managing fire response and other forms of emergency services within their service areas.

Detailed information regarding local, state, and federal fire response capabilities for Santa Clara County can be found in Appendix B.



CHAPTER 3 – RISK-HAZARD ASSESSMENT

PURPOSE

The purpose of developing the Risk-Hazard Assessment model described here is to create a unique tool for evaluating the risk of wildland fires to communities within the WUI areas of Santa Clara County. Although many definitions exist for hazard and risk, for the purpose of this document these definitions follow those used by the firefighting community:

Risk is defined as the chance of a fire starting as determined by the presence and activity of causative agents (NWCG 1998).

Hazard is a fuel complex defined by kind, arrangement, volume, condition, and location that forms a special threat of ignition and resistance to control.

The CWPP leverages both a field assessment, completed in 2016, and a revised desktop spatial analysis that is described below and in Appendix D. From these assessments, land use managers, fire officials, planners, and others can begin to prepare strategies and methods for reducing the threat of wildfire, as well as work with community members to educate them about methods for reducing the damaging consequences of fire. The fuels reduction treatments can be implemented on both private and public land, so community members have the opportunity to actively apply the treatments on their properties, as well as recommend treatments on public land that they use or care about.

The purpose of this Risk-Hazard Assessment is to provide a community- and landscape-level overview of wildfire risk and is not recommended for use at smaller scales (such as for a property level analysis). It is also not recommended for use in determining insurance rates or policies. This Risk-Hazard Assessment is a model, and as such has inherent biases, missing data, and other shortcomings, though every effort has been made to include the best available data and use the most robust scientific processes. Also note that just because an area is shown as high or low risk does not mean that that area will be burned or not burned in a wildfire—a low risk area can still be affected by wildfire if the conditions are right. This Risk-Hazard Assessment is also not intended for use during active wildfire events, but rather only as a tool for pre-fire planning. It is not recommended that this Risk-Hazard Assessment be used for any other purpose than what is stated here.

FIELD-BASED COMMUNITY HAZARD ASSESSMENTS

Community Hazard Assessments were conducted in 2015/16 using the NFPA Wildland Fire Risk and Hazard Severity Form 1144 (see Appendix C and Appendix K). This form is based on the NFPA Standard for Reducing Structure Ignition Hazards from Wildland Fire 2013 Edition. The field assessment results were reviewed by the Planning Team and determined accurate and therefore they were not revisited during the CWPP update.

The purpose of the Community Hazard Assessment and subsequent ratings is to identify fire hazard and risks and prioritize areas requiring mitigation and more detailed planning. These assessments should not be seen as tactical pre-suppression or triage plans. The Community Hazard Assessment helps to drive the recommendations for mitigation of structural ignitability, community preparedness, and public education. The assessment also helps to prioritize areas for fuels treatment based on the hazard rating. Each area was rated based on conditions within the community and immediately surrounding structures, including access, adjacent vegetation (fuels), defensible space, adjacent topography, roof and building characteristics, available fire protection, and placement of utilities. Each score was given a corresponding adjective rating of low, moderate, high, or extreme.

The community hazard ratings from the field assessment are provided in Table 3.1. This table also includes a summary of the positive and negative attributes of a community as they relate to wildfire risk. Summaries of each community, including building density, degree of wildfire hazard, dominant fuel types, and NFPA 1144 findings, are provided in Appendix C and can be used to populate content in the jurisdictional annexes.

FIREWISE COMMUNITIES

The following communities within Santa Clara County are participating Firewise communities. The Firewise recognition program contributes to community-level wildfire resilience by providing a framework for adaptive wildfire preparedness. The program facilitates greater community collaboration and provides educational resources for residents to mitigate wildfire impacts on their property and neighborhood as a whole. Dates represent when they were approved as a Firewise community. (NFPA 2023CIT):

- Saddle Mountain Neighborhood – Los Altos Hills, CA. 08/10/2022
- Garrod Heights – Saratoga, CA. 10/23/2020
- Old Oak Way – Saratoga, CA. 10/08/2021
- Brush Road – Lexington Hills, CA. 12/18/2020
- Chemeketa Park – Los Gatos, CA. 06/17/2019
- Aldercroft Heights – Los Gatos, CA. 12/31/2020
- Wilderfield/Whiterock/Bear Mountain Roads – Los Gatos, CA. 12/07/2022
- Jackson Oaks Homeowner Association (HOA) – Morgan Hill, CA. 09/18/2016
- Holiday Lake Estates – Morgan Hill, CA. 12/12/2018
- Riva Ridge HOA – Los Gatos, CA. 09/06/2019

EVACUATION CAPABILITIES

Wildfire response may necessitate the involvement of law enforcement agencies to provide for the safety of life and property during evacuation. Santa Clara County has several evacuation resources to guide citizens and emergency response personnel. The Santa Clara County Local Fire Service and Rescue Mutual Aid Plan is a joint effort among city and county departments led by law enforcement. This plan outlines leadership and joint partnerships during emergency operations and details protective action terms including evacuation resources in the Mutual Aid Plan (Santa Clara County 2017).

The CAL FIRE Santa Clara Unit Fire Plan also identifies pre-response and evacuation planning during a wildfire. An objective of the plan is to maintain an evacuation route between Santa Clara and Santa Cruz counties. CAL FIRE highlights the importance of working in cooperation with the Santa Clara County FireSafe Council, local law enforcement, and other local cooperators to develop evacuation plans and fire plans for communities at risk susceptible to a major incident (CAL FIRE 2018b).

Santa Clara County has resources for informing and involving citizens including AlertSCC and Community Emergency Response Team (CERT) training via the Santa Clara County Fire Department (Santa Clara County 2023d). Road systems and community signage are also important factors in pre-response and evacuation planning. More information on response and evacuation resources can be found in Appendix B.

Many communities throughout the county have been identified as having limited ingress and egress, and as such, the planning team and members of the public have identified the establishment of alternative escape routes and other measures to facilitate safe evacuation of residents, as a priority in this plan.

Disclaimer: Local, County, and State law enforcement evacuation notices should always be followed and supersede any guidance and evacuation information in this CWPP.

Table 3.1. Communities at Risk Ratings with Community Hazard Assessment Summary

Community	Risk Rating	Positives	Negatives
Almaden Valley	50 (Moderate)	• Appears to have a good water system through community • Access is generally good throughout the community • Most homes have well-maintained and irrigated yards with moderate defensible space • Many subdivisions are managed by homeowner associations (HOAs) that provide a conduit for fire prevention and public education	• High concern topography near structures • History of wildfire occurrence in area • Some signage is non-reflective • Lacking widespread fire protection construction practices
Cupertino	81 (High)	• Surfaced roads but some steep routes • Good visible house markers • Well signposted • Surfaced, maintained roads • Reasonable water supply via hydrants but low pressure in some areas • Irrigated lawns and landscaping • Under Santa Clara County Fire Department jurisdiction • HOAs for some subdivisions that can facilitate community organizing • New construction, 7A compliant	• Some heavy fuel loading adjacent to homes as a result of thick underbrush and continuity of tree crowns • Thick fuels in canyon • >30 feet of defensible space around most homes, but <100 feet around many • Steep grades and varied topography • Building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes • Adjacency of some residential structures • Some homes >5 miles from fire response could result in slow response time • Some gated dead-end roads • Single-lane, narrow roads • Wood shake roofs present • Propane tanks aboveground • Number of wineries and CVARs • Heavy population density • Some homes have limited setback from slope

Community	Risk Rating	Positives	Negatives
East Foothills	68 (Moderate)	• Good fire response resources from San Jose Fire • Department and CAL FIRE • Roadside fuel treatments in progress • Large open space areas break up residential areas • Good yard hygiene for most homes, landscaped yards • Non-continuous light fuels • Sparse population in more rural areas • Grazing helps in fuel reduction in some areas where appropriate	• Diverse WUI, from distinct interface with heavily urban area to scattered residences in an intermix • Different planning needed for each type • Scenic roadways may increase ignition potential • Ignition concerns related to Sierra Road—fireworks etc. • CVARs: Grand View Restaurant, Lick Observatory, Copernicus Peak communications site, Alum Rock Park • >30 feet of defensible space around most homes, but <100 feet around many • Mix of construction types; building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes • Wood shake roofs and older construction in some areas • Many dead-end spur roads • Topographic concerns, rolling hills and some steep slopes • Grassland fuels that are highly dynamic and impacted by seasonal climate fluctuations • Flashy shrub fuels present on slopes below homes • Slow response times to some more remote homes in the valley • Improvements to road networks needed • No distinct neighborhood associations to use to develop common interest for neighborhood level interactions for Firewise or CERT

Community	Risk Rating	Positives	Negatives
East Gilroy	72 (High)	• Generally good roads • Good separation of adjacent structures • Response: Station <5 miles from structure	• Some limited access roads to individual properties • Street signs are present, some are non-reflective • Adjacent fuels: Moderate with high flammability • Concerning topography around structure • Non-combustible siding, combustible deck • Both utilities aboveground • Moderate history of fire occurrence and severe weather • Non-combustible sidings but combustible decks present
Gilroy	48 (low)	• Light fuels • Open space: Henry Coe Range • Rolling hills and less extreme grades • Large lots and good separation • Good defensible space around most homes, some <100 feet • Good access • Maintained roads and plentiful turnaround space • Good signage • Low fire occurrence • Hydrants available but density is low	• Livestock evacuation concerns • Gated properties could impede access to emergency responders • Mix of construction types; building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes. • CVARs: farms, grazing, orchards, vineyards, commercial property • Some poorly rated roof materials • Some homes >5 miles from organized fire response • Aboveground utilities

Community	Risk Rating	Positives	Negatives
Lexington Hills (Chemeketa Park, Aldercroft Heights, Redwood Estates, Summit Road, Call of the Wild Road, Call of the Wild Estates Gillette Drive)	Chemeketa Park (131, Extreme), Aldercroft Heights (116, Extreme), Redwood Estates (93, High), Summit Road (88, High), Call of the Wild (High)	Due to variation between communities, readers are advised to see Annex 1 Chapter 1 for sub-community info	- Due to variation between communities, readers are advised to see Annex 1- Chapter 1 for sub-community info. Common hazards that occur across all sub communities include: - Poor ingress/egress- only 1 way in and out for many communities - Steep topography - Combustible roofing construction - Limited setback from slope - Poor fire access- narrow driveways and limited turnaround - Narrow road width - Combustible siding and deck - Limited water supply - Limited defensible space
Los Altos Hills	90 (High)	- Los Altos Hills County Fire District jurisdiction - Good separation of adjacent structures, larger lot sizes - New construction, 7A compliant - Hydrants in most but not all areas - Surfaced roads primarily - Limited recent fire history - Open space areas could serve as shelter-in-place in event of evacuation	- Heavy concentration of eucalyptus trees—treatment program available >30 feet of defensible space around most homes, but <100 feet around many - Some areas have poor yard hygiene - Mix of construction types; building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes. - Single-lane, narrow roads in some areas - Some private roads with poor road maintenance and limited turnaround for fire apparatuses - Narrow gates - Many old structures with wood shake roofs/siding - Heavy fuel loading adjacent to homes as a result of thick underbrush and continuity of tree crowns. - CVARs: farm, retirement homes, open space areas, community horse barn

Community	Risk Rating	Positives	Negatives
Los Gatos	87 (high)	• Many newer 7A-compliant homes • Good signposting, though some non-reflective • <5 miles from fire response • Good yard hygiene for most homes, landscaped yards • Many larger lots with good separation between structures • Number of open space areas to break continuity • Good visible house markers • Reasonable water supply via hydrants but low pressure in some areas • HOAs for some subdivisions that can facilitate community organizing	• Lots of new development • CVARs: wineries, retirement homes, Sacred Heart Novitiate • Very narrow, steep, and windy roads and driveways • No turnaround on many roads and driveways • Heavy fuel loading adjacent to homes as a result of thick underbrush and continuity of tree crowns • Topographic concerns, steep grades • Poor roof materials, some wood shake • >30 feet of defensible space around most homes, but <100 feet around many • Mix of construction types; building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes • Narrow or no staging area for apparatuses, would block evacuation routes • Many dead-end spurs

Community	Risk Rating	Positives	Negatives
Monte Sereno	70 (High)	• New construction, 7A compliant • Property owners have implemented some defensible space work and fuel reduction • Good access on lower slopes • Good proximity to emergency responders • Well-maintained, surfaced roads • Irrigated lawns and landscaping • Reasonable roofing construction • Under Santa Clara County Fire Department jurisdiction	• One way in and out • Long windy road with steep grade • Confusing road layout • Limited turnaround space for fire access and/or narrow driveways • Heavy fuel loading adjacent to homes as a result of thick underbrush and continuity of tree crowns • Reasonable water supply via hydrants in lower elevation areas, but hydrants needed at higher elevations • Encourage water tanks outside of urban service area • Building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes. • Some homes have limited setback from slope • >30 feet of defensible space around most homes, but <100 feet around many

Community	Risk Rating	Positives	Negatives
Morgan Hill	79 (High)	• Firewise sign • Active community in Santa Clara County FireSafe Council • Council and fire prevention activities • Open space areas break continuity and active fuel programs • Surfaced and maintained roads • Mostly good yard hygiene and maintenance of property • Morgan Hills City Water hydrant system • Good signage, some non-reflective • Weed abatement projects in effect • HOA assists with community organizing • Majority belowground utilities	• Dry flammable vegetation type adjacent to homes and below homes on slopes • Popular with visitors, potential large numbers during summer months • One road in and out, evacuation concerns • Narrow roads within residential areas may have limited turnaround space • Small lots, limited separation between structures • Some steep driveways • Some dead-end spurs • Some wood shake roofs • One Engine Company close, but other resources are at some distance • Topographic concerns— significant slope and limited setback for many homes • Single access subdivisions • >30 feet of defensible space around most homes, but <100 feet around many due to small lots • Mix of construction types; building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes

Community	Risk Rating	Positives	Negatives
Mt. Hamilton-San Antonne Valley	84 (High)	• Light adjacent fuels • Good separation between adjacent structures	• Narrow road width • Two roads in and out, but access still a concern • Surfaced road with greater than 5% grade • Poor fire access, dead end spurs, lack turnaround • Street signs are present, some are non-reflective • Defensible space: >70 feet to < 100 feet around structure • High concern topography • Severe fire weather potential • History of fire occurrence • Building not set back >30 feet to slope • Response: Station >5 miles from structure • No internal sprinklers within construction • Aboveground utilities

Community	Risk Rating	Positives	Negatives
New Almaden	79 (High)	- One road in and out - Surfaced roads - Street signs are present, some are non-reflective - Water available - Response: Station <5 miles from structure	- Narrow road width - Poor fire access, dead end spurs, lack turnaround - Adjacent fuels: Moderate with high flammability - Defensible space: >30 feet and < 70 feet around structure - Topography within 300 feet of structure: 41% - High concern topographic features - Moderate history of high fire occurrence - Moderate severe fire weather potential - Poor separation of adjacent structures - Roofing assembly Unrated flammable and Class B - Combustible siding, combustible deck - Building set back <30 feet to slope - Internal sprinklers: for new build properties - Utilities: Both above ground

Community	Risk Rating	Positives	Negatives
Palo Alto	95 (High)	• Surfaced roads and adequate width and turnaround • Low slope in most areas, some steep sections • Adjacent wildland to west and north are grasslands managed every year by the City of Palo Alto • Mixed construction: stucco and wood • Large lot size reducing adjacency issues • Adequate water supply via hydrants • Organized HOA to deliver strong safety message and take action • Good visible house markers • Well signposted • Irrigated lawns and landscaping • New construction, 7A compliant • Most homes have Class A roofs • Community that is active in Santa Clara County • FireSafe Council	• Landscaping concerns due to density of thick junipers and pines in close proximity to homes • Wildlands to the south are heavy untreated brush • Aboveground power lines • Homes old enough that there is no requirement for interior sprinklers • Older homes with single paned windows prone to breaking in wildfire • Presence of some wood shake roofs put homes and neighborhoods at risk

Community	Risk Rating	Positives	Negatives
Saratoga Hills	90 (High)	- County fire water resources are good except for any Lexington Hills commuters - Surfaced road with greater than 5% grade - Low fire weather potential - Low fire occurrence history - Large building lots with good separation	- Coyote brush has encroached on savannas - Two or more roads in and out but access still a concern - Narrow road width - Poor fire access, dead-end road spurs, lack of turnaround - Street signs are present, some non-reflective - Defensible space: >30 feet to <70 feet around structure - Adjacent fuels: Medium - Defensible space: >30 feet to <70 feet around structure - High-concern topography - Non-combustible siding/combustible deck - Building set back <30 feet to slope - Water: available via hydrants, some pressure issues - Response: Station >5 miles from structure - Internal sprinklers: some new homes (7A compliant) - Utilities - One aboveground, one belowground

Community	Risk Rating	Positives	Negatives
Stanford	58 (Moderate)	• Adjacent fuels are light • Surfaced roads and adequate width and turnaround • Low slope in most areas, some steep sections • Adjacent wildland to west and north are grasslands managed every year by the City of Palo Alto • Mixed construction: stucco and wood • Large lot size reducing adjacency issues • Adequate water supply via hydrants • Organized HOA to deliver strong safety message and take action • Good visible house markers • Well signposted • Irrigated lawns and landscaping • New construction, 7A compliant • Most homes have Class A roofs	• >30 feet of defensible space around most homes, but <100 feet around man. • Landscaping has some junipers and pines but lower levels than adjacent Palo Alto • Aboveground power lines • Homes old enough that there is no requirement for interior sprinklers • Older homes with single-paned windows prone to breaking in wildfire • Presence of some wood shake roofs put homes and neighborhoods at risk

Community	Risk Rating	Positives	Negatives
Uvas Casa Loma	88 (High)	• Good separation of structures	• One road in and out • Narrow road width, poor fire access, dead-end spurs, lack turnaround • Unsurfaced road with greater than 5% grade • Street signs are present, some are non-reflective • Vegetation-adjacent fuels: Moderate with high flammability • Defensible space: >30 feet and <70 feet around structure • Defensible space: >30 feet and <70 feet around structure • Topography within 300 feet of structure: 41% • Topographic features: High concern • History of high fire occurrence: Moderate • Severe fire weather potential: Moderate • Building set back less than 30 feet from slope • Response station >5 miles from structure • Internal sprinklers: for new build properties only • Utilities both aboveground

Community	Risk Rating	Positives	Negatives
West Gilroy	88 (High)	• Good separation of adjacent structures	• One road in and out, Redwood Retreat • Narrow road width • Poor fire access, dead-end spurs, lack turnaround • Street signs are present, some are non-reflective • Adjacent fuels: Moderate with high flammability • Defensible space: >30 feet and < 70 feet around structure • High concern topography surrounding structures • Moderate history of severe weather and fire • Non-combustible siding, combustible deck • Water unavailable • Response: Station >5 miles from structure • Internal sprinklers: only for new build properties • Utilities both aboveground

RISK-HAZARD ASSESSMENT

BACKGROUND

This CWPP update leverages the Santa Clara, Santa Cruz, and San Mateo Wildfire Risk to Structures (WRS) and Classified Wildfire Hazard (CWH) Maps for Fire Prevention Planning model and document developed by Tukman Geospatial LLC for the Santa Cruz Mountains Stewardship Network (scmsn.net), which is made up of 24 organizations in the Santa Cruz Mountains. This effort was funded by the California Climate Investments (CCI) and CAL FIRE (Fire Prevention Grant Program). This modeling effort was part of a larger effort to build fine-scale vegetation and landscape databases for each county in the San Francisco Bay Area. This chapter provides a high-level synthesis of a detailed multi-year project.

More detailed information is provided in Appendix D. See Maps 1–5 in Appendix J for fire behavior model outputs such as fireline intensity and rate of spread.

Wildfire Risk to Structures

The WRS map provides a spatially explicit ranking for 10-acre hexagons, assigning each hexagon with a ranking for wildfire hazard and a ranking for housing density. From a risk to structures perspective, hexagons with high housing density and high wildfire hazard are of greatest concern. This layer integrates risk into the CWPP (Figure 3.6).

Classified Wildfire Hazard

In addition to the WRS polygon layer, a second project deliverable is the 6-class, 20-meter CWH raster. This layer integrates hazard into the CWPP.

Both the WRS and the CWH data layers are different than the 2007 adopted CAL FIRE FHSZs (Figure 3.1), as well as the 2023 released draft of those zones. While the WRS and CWH used similar processes, the data sets used to develop each were different than the underlying data sets used to develop CAL FIRE's FHSZs.

The WRS and CWH were completed in 2023 and provided for public access.

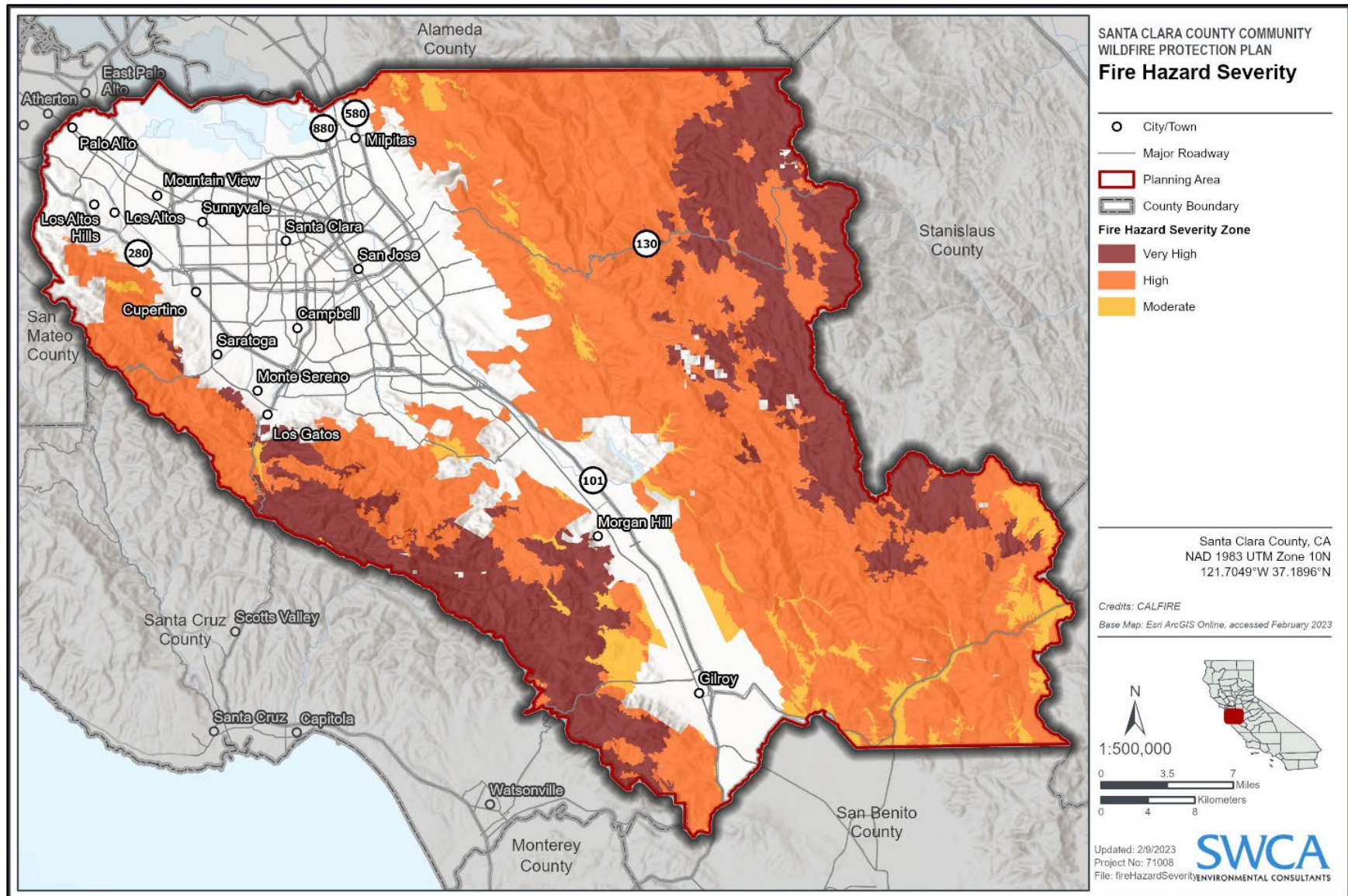


Figure 3.1. CAL FIRE FHSZs across Santa Clara County.

TECHNICAL APPROACH

The WRS and CWH were derived using fire history, vegetation, predicted flame length, ember production, topography, and climate. Figure 3.2. shows each input used, the weight it was assigned, and its source. The Tukman model uses finer-scale data than previous CWPP assessments and the CAL FIRE FHSZs, utilizing 5-meter pixels as opposed to 30-meter resolution. The assessment also integrates weather data specifically derived for the San Francisco Bay area.

Some key features outlined in Figure 3.2. include:

- Wildfire potential was derived by combining five data layers: predicted flame length, extreme fire weather potential, predicted ember load, suppression difficulty, and proximity to wildland veg (referred to as ‘Dense Urban without Wildland Veg’). These data layers were derived at varying resolution and scale and resampled to a common resolution of 20 meters.
- Wildfire probability was derived from 5 data layers: human development proximity, transmission line proximity, distribution line proximity (transmission and distribution lines were treated separately because fire starts from distribution lines are more common than from transmission lines), and historic ignitions.

Together, the wildfire potential and wildfire probability make up the CWH. This is a 20-meter resolution data set that indicates where a severe fire is likely to occur.

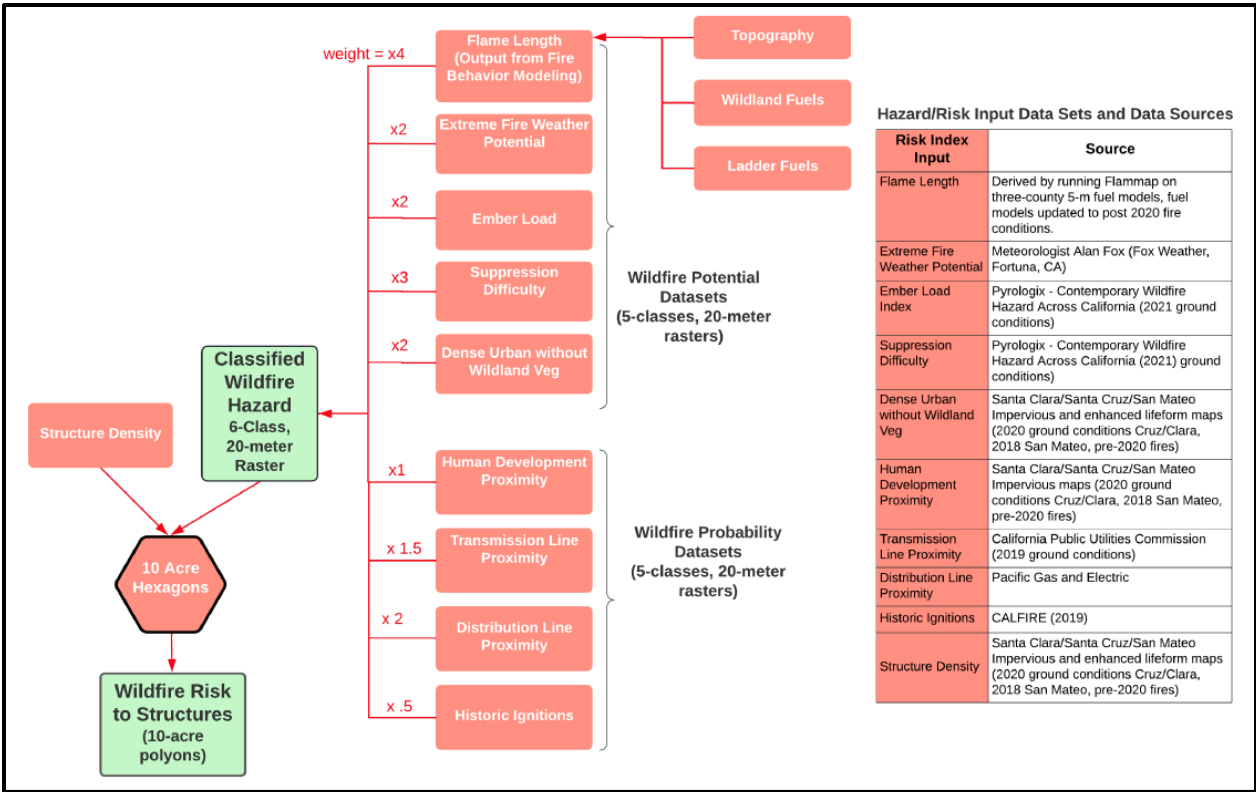


Figure 3.2. Schematic of data inputs used to derive both the WRS and CWH layers (Tukman 2022).

To this final layer structure, density was added to create the WRS. It is important to note that the only values added to this model were structures. Stakeholders and community members understand that there are many other values to consider for protection of wildfire hazard. The Tukman model is intended to be used in conjunction with individual highly valued resources and assets (HVRAs).

Technical Resources

- Rasters/Polygons/Landscape files available for download are here: <https://pacificvegmap.org/>
- The report document detailing the Risk-Hazard Assessment development is here: https://fuelsmapping.com/3county_risk_report as well as in Appendix D.
- The web application to peruse the results is here: https://fuelsmapping.com/sc_sc_sm_risk_map
- Recording to detailed presentation regarding the Risk-Hazard Assessment can be found here:
 - Video link: https://fuelsmapping.com/scu_workshop5_video
 - Slide link: https://fuelsmapping.com/scu_workshop5_slides

MODEL INPUTS

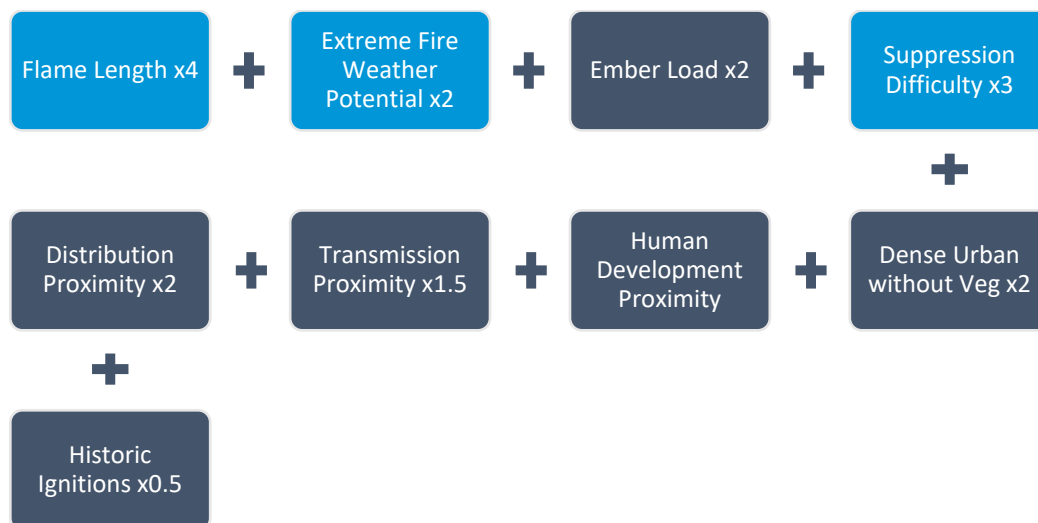


Figure 3.3. Model inputs for the Tukman model.

Predicted flame length is the heaviest weighted layer in the model and is based on fuel model classification for the area. Fuel models were assigned based on vegetation type, percent canopy cover, and ladder fuel ratio, as well as other factors such as grazing. Flame length was predicted by using FlamMap.

Suppression difficulty is an index developed for the entire United States by researchers from the national Wildfire Risk Management Science Team. The suppression difficulty index is a 30-meter resolution data set that takes into consideration many of the factors already described, along with firefighter line production rates in various fuel types and distance from roads and trails.

Extreme fire weather potential is a unique data product developed specifically for this effort. It uses a fire spread index that was calculated from relative humidity and wind speed. The maximum daily fire spread index values were calculated for each pixel in a 1.5-kilometer countywide raster for each day of

September and October in 2017, 2019, and 2020. For each pixel, the 97th percentile index value was found for those 180 days.

MODEL OUTPUTS

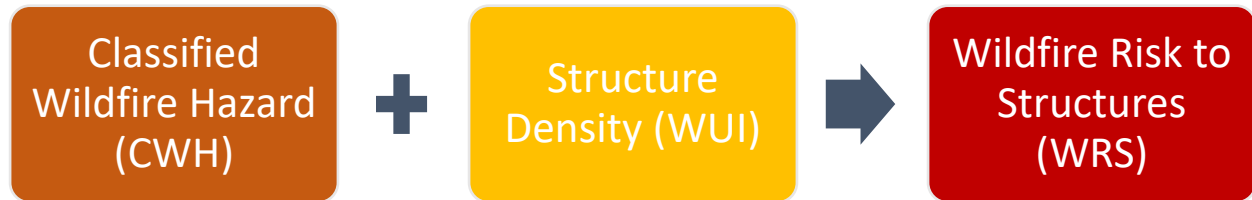


Figure 3.4. Model outputs for the Tukman model.

The main outputs of the model are the resulting CWH layer and, once structure density was added, the WRS layer. These two layers are the result of the model and have been adopted in the Santa Clara CWPP to be used to help prioritize fuel mitigation projects and identify areas of concern for prioritizing projects.

The resulting CWH and WRS layers are presented in Figures 3.5. and 3.6. More information about the methodology is provided in Appendix D.

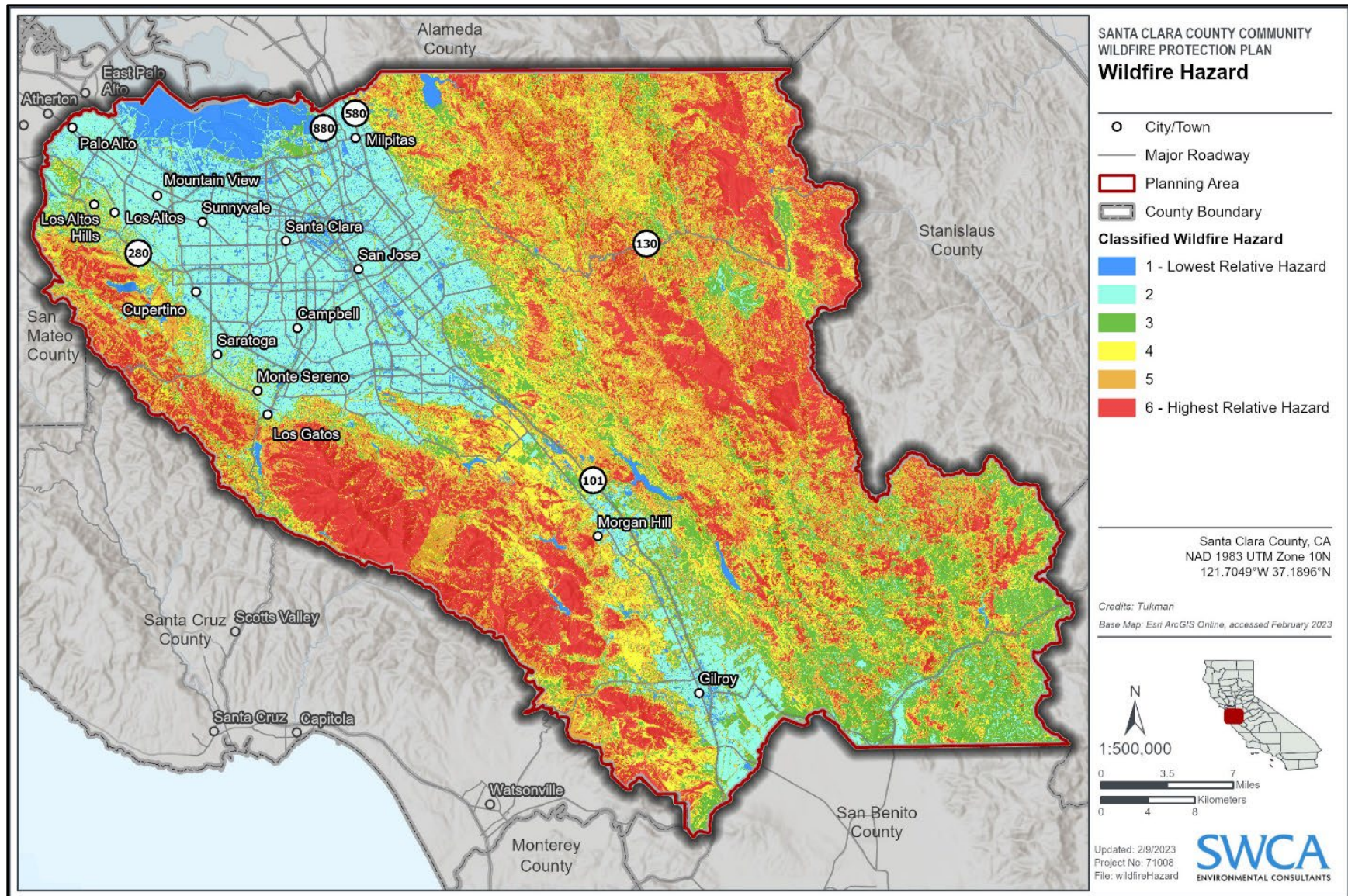


Figure 3.5. Classified wildfire hazard within Santa Clara County.

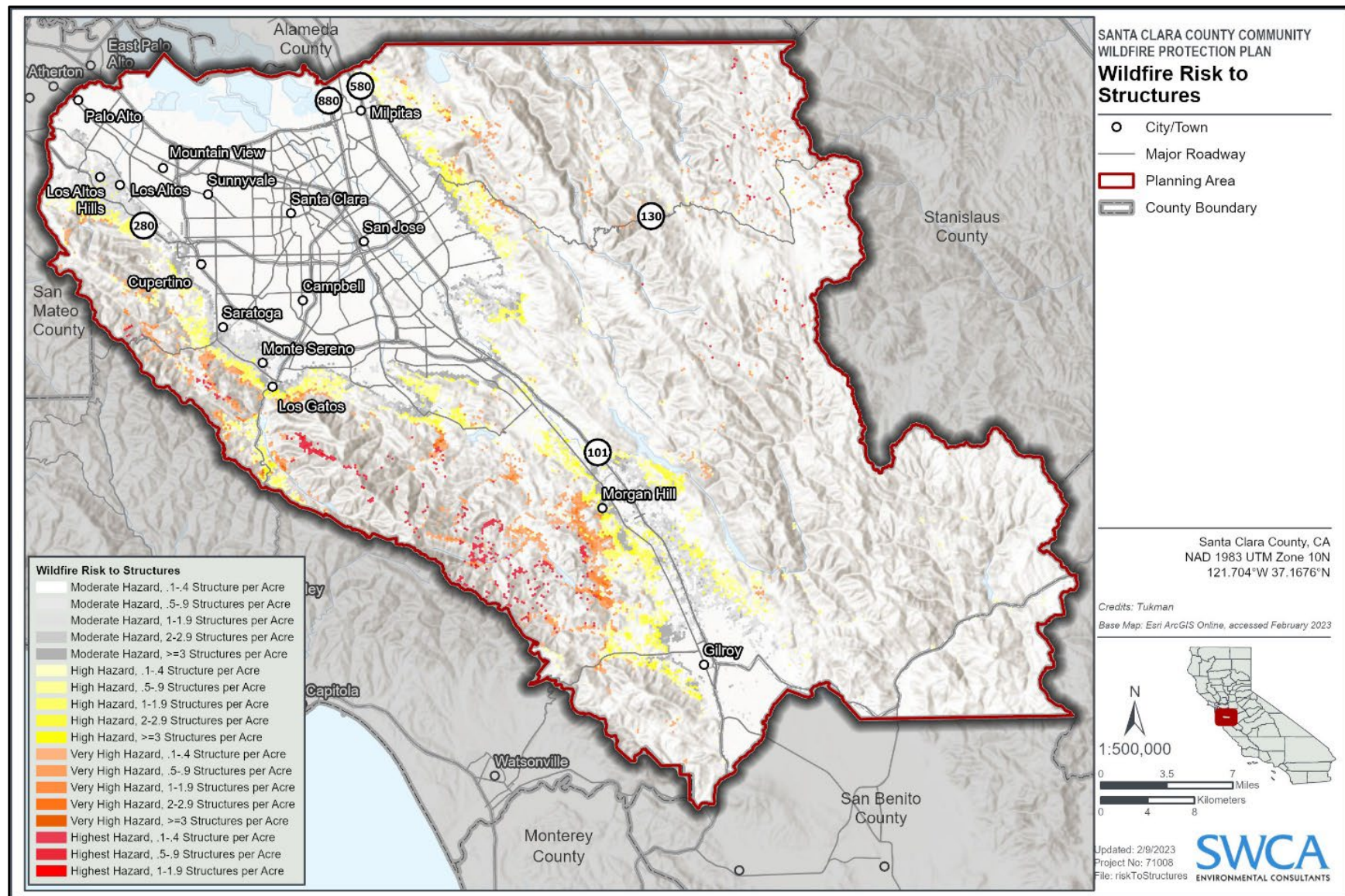


Figure 3.6. Wildfire risk to structures within Santa Clara County.

AREAS OF CONCERN

The WRS layer can be used to identify the highest ranked areas within the county. The Tukman team identified those hexagons that had the highest structural density and the highest fire hazard. Thirteen hexagons were identified. Of those, all had a wildfire hazard rating of 5, or very high, and all had a structural density class of 6 (more than 3 structures per acre). Although the selected hexagons had a relatively high number of structures, they were, by far, not in densely urban areas, as expected, and they were not rated the highest hazard since the greatest hazards occurred in areas with no structures.

Table 3.2 lists each location along with its hazard scores and structure classification. This information was used during Planning Team meetings to identify area of concern polygons at a county scale but can also be utilized by annex holders within these jurisdictions to develop priority treatment areas for reducing structure risk. Please see Figure ES.1 or Figure 4.2 to view areas of concern.

Classified Wildfire Hazard

Each of the nine input spatial data sets related to hazard was scaled from 0 to 4 (for example, very short flame lengths would be assigned a 0 for flame length and very tall flame lengths would be assigned a 4). The classified relative wildfire hazard was calculated by weighting the inputs and adding up the weighted values. Flame length was assigned a weight of 4, extreme fire weather potential and ember load index were assigned weights of 2, suppression difficulty was assigned a weight of 3, wildland vegetation was assigned a weight of 2, human development proximity was assigned a weight of 1, transmission proximity a weight of 1.5, distribution proximity a weight of 2, and historic ignitions 0.5. To synthesize these nine hazard spatial data sets, first the variable's class (0–4) for a given pixel is multiplied by that variable's weight to produce a raw score for each variable. The highest possible index value was 72.

After computing raw hazard, with possible pixel values from 0 to 72 for each pixel, pixels were 'binned' into six hazard classes, 1 through 6, with 1 representing the areas of lowest relative hazard and 6 representing the areas of highest relative hazard. The relative hazard was classified using the following steps:

- Class 1 was automatically assigned to pixels that were mapped as water or salt marsh in the enhanced lifeform map or had a non-burnable (NB) fuel model in the 2020 Scott and Burgan Surface Fuel Model.
- 2 was assigned to the lowest quintile, 3 to the second, 4 to the third, 5 to the fourth, and 6 to the highest quintile. Classes 2 through 6 have a roughly equal number of pixels within each.

The classification was adjusted to account for distinct differences in fire weather, topography, vegetation, and land use observed by experts when comparing results for the Santa Cruz Mountains ecoregion (west of Highway 101) versus the Mt. Hamilton/Diablo Range ecoregion (east of Highway 101).

Table 3.2. Polygons Exhibiting High Hazard and High Structure Classification

Hex ID	Nearest Road	Description	Initial Assessment	Structures Within Classified	Neighborhood Hazard Class	Total Score	Symbology
12067	Heritage Way	Mobile Home Park	Investigate further	6	5	11	Very High Hazard, ≥3 Structures per Acre
12599	Watsonville Rd	Mobile Home Park	Investigate further	6	5	11	Very High Hazard, ≥3 Structures per Acre
12865	Uvas Rd	Mobile Home Park	Investigate further	6	5	11	Very High Hazard, ≥3 Structures per Acre
27781	Mountain View Ct	Redwood Estates	Investigate further	6	5	11	Very High Hazard, ≥3 Structures per Acre
28888	Aldercroft Hts Rd	Aldercroft Heights	Investigate further	6	5	11	Very High Hazard, ≥3 Structures per Acre
31834	Almaden Rd	English Town	Investigate further	6	5	11	Very High Hazard, ≥3 Structures per Acre
32520	Bertram Rd	English Town	Investigate further	6	5	11	Very High Hazard, ≥3 Structures per Acre
76027	Kahler Ct (off Felter Rd)	Agricultural	Mis-identified	6	5	11	Very High Hazard, ≥3 Structures per Acre
15371	Mount Madonna Rd	County boundary	Possible mis-identification	4	6	10	Highest Hazard, 1–1.9 Structures per Acre
15957	Cory Rd	Uvas Canyon	Investigate further	4	6	10	Highest Hazard, 1–1.9 Structures per Acre
25640	Mt Umunhum Rd	Rural	Mis-identified	4	6	10	Highest Hazard, 1–1.9 Structures per Acre
30725	Soda Springs Rd	Ridgetop	Investigate further	4	6	10	Highest Hazard, 1–1.9 Structures per Acre
32785	Soda Springs Rd	Ridgetop	Investigate further	4	6	10	Highest Hazard, 1–1.9 Structures per Acre

Structure Density (WUI)

Structures were derived from the San Mateo (2018), Santa Cruz (2020, pre CZU Fire) and Santa Clara (2020, pre-CZU/SCU Fire) impervious surface maps. The structures in the three impervious surfaces map were derived from the 'best available' LIDAR data for the three counties. In addition, structure footprint data provided by Sanborn also derived from the best available LIDAR data were integrated into the impervious surface map for Santa Clara County. Though the structures used for this analysis are the 'best available' data to spatially represent structure on the landscape, they still contain false positives and false negatives (especially when structures are visibly obscured by tree canopy from an aerial perspective). In addition, the structure footprints were derived from data collected before the 2020 lightning fires in the three-county area. As a result, they depict structures that have since burned down. The LIDAR-derived structures used in this analysis were qualitatively compared with Microsoft Building Footprints (derived from optical data) and were deemed superior in their accuracy, with less false positives and false negatives.

From the impervious surface maps, structure polygons were selected and combined, and structure centroids (points) were created. Then, for each 10-acre hexagon, they were classified by density. The lower the number of structures within the 10-acre hexagon, the lower the density assigned to that hexagon.

It is important to note that structures were not classified by type (i.e., commercial buildings, agricultural buildings, and residential structures were all considered the same in the model). Instead, they were classified by density. The higher the density, the higher the class. However, by classifying the structures, we did not decide that one class is more valuable than another class. Rather than say a low-density area has a higher or lower risk to wildfire, each hexagon, with its assigned structure density class, was assigned a wildfire hazard rating based on the average wildfire hazard within that hexagon along with the average hazard within 1 mile of that hexagon.

This resulted in a layer that allows us to symbolize areas by both structure density and wildfire hazard.

Wildfire Risk to Structures

The 10-acre hexagon mesh that covers the county was then assigned an average CWH and structure density that fell within that 10-acre hexagon. The resulting layer is what is called the WRS. The layer can be symbolized to both show the CWH and structure density.

Important to note about this layer is that, regardless of structure density, areas with the highest wildfire hazard rating still show up. Also, we can see some clear patterns of where high structure density coincides with high wildfire hazard, highlighting areas that may be in need of fuel mitigation projects, if structures are the only value considered.

Using the CWH and WRS layers for the purposes stated above and in the Tukman report (Appendix D) does not make the CAL FIRE FHSZs obsolete. Rather, this Risk-Hazard Assessment provides an additional dataset that can be used to assess projects across the landscape.

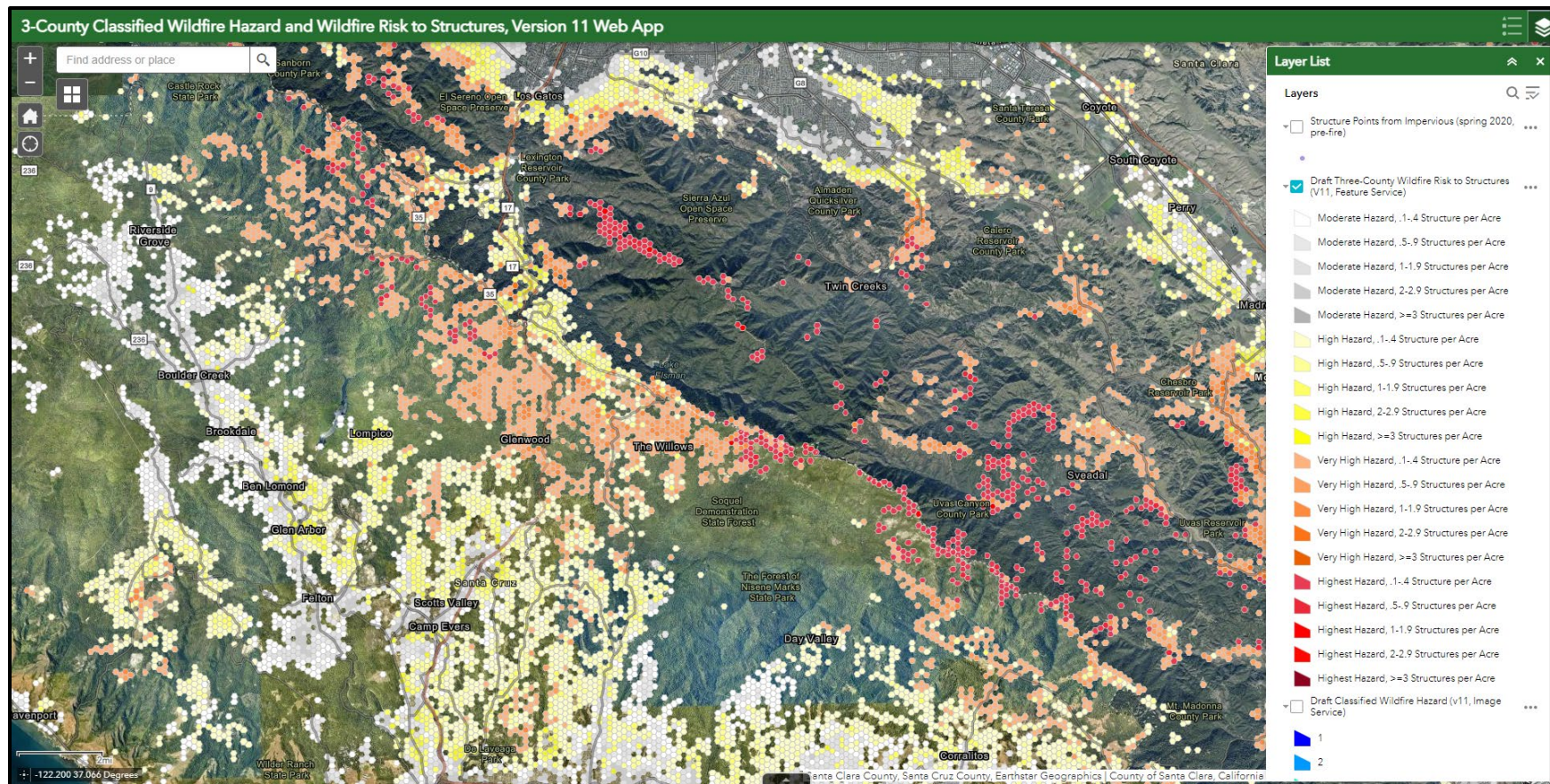


Figure 3.7. Screenshot of online version of the WRS layer (accessed January 2023).

Note: Those hexagons that received less than a moderate hazard rating are not shown on the map in Figure 3.7, but that can be adjusted should the layer be downloaded and viewed via a GIS platform.

COLLABORATION



10 meetings were held
to gather stakeholder
input



Modified model based
on local and expert
input



Consulted with
statewide experts

The WRS polygon map and the CWH 20-meter raster were developed in a collaborative partnership. Tukman Geospatial served as the technical lead and was responsible for implementing the model design, python coding, and geospatial data analysis. Tukman Geospatial partnered with Digital Mapping Solutions (Esther Mandeno) and Wildland Res Mgt (Carol Rice) for technical oversight on the risk model design, its data inputs, and the weights used for the inputs. Drafts of the risk map were reviewed collaboratively by team members and stakeholders resulting in a final WRS map and CWH map, each of which went through 11 iterations.

Stakeholder input and community engagement was critical to the production of these data products. Five workshops were held throughout the course of the project to solicit input from land managers and the fire community. In addition to the workshops, the internal project team had numerous meetings with personnel from the CAL FIRE Santa Clara Unit and San Mateo–Santa Cruz Unit, staff from CAL FIRE’s Fire and Resource Assessment Program (FRAP), land managers, and community-based wildfire groups in Santa Cruz and Santa Clara County to solicit focused input on specific geographies. Workshops and smaller meetings were catalysts for numerous improvements to the wildfire risk map over the course of its evolution.

MODEL APPLICATIONS

The WRS and CWH data products are designed for land managers and fire responders who are interested in relative rankings of wildfire risk and wildfire hazard. The risk and hazard map products are modeled outputs based on the best available data. As such, they provide an interpretation of risk and hazard that is based on a set of input variables and decision rules.

These data are meant to be used as reference datasets for fire prevention planning purposes. Appropriate uses for the WRS dataset are to help to identify areas that have structures at risk from wildfire. This information can be used for prioritizing fuel reduction projects, for planning suppression activities, and for targeting areas for activities to increase ignition resistance of structures. The CWH raster can also be used to assess the risk to other values (such as evacuation routes, sensitive natural or cultural resources, and water storage/delivery infrastructure).

These maps and GIS products are screening level products created from remotely sensed data and modeling. On the ground knowledge and local expertise (where available) should take precedence over these data products for the detailed work of site-specific planning and implementation of fuel reduction projects.

VALUES AT RISK

Earlier compilation of the critical infrastructure in the planning area, coupled with the community assessments, public outreach, and Advisory Team input, has helped in the development of a list of HVRAs at risk from wildland fire. These data are also supplemented with a nationwide data set of HVRAs available through several platforms, including the Interagency Fuel Treatment Decision Support System (IFTDSS). The public was encouraged to provide input on their own valued resources during the initial public outreach periods for development of the 2016 CWPP and again in 2022/2023. Based on feedback provided, this section and the associated mapping was revised.

HVRAs can include natural, social, and cultural resources (mapped below) and critical infrastructure (see Map 6 in Appendix J). More detailed descriptions of VARs are included in the Location and Geography section of Appendix B. It is important to note that although an identification of HVRAs can inform treatment recommendations, a number of factors must be considered in order to fully prioritize areas for treatment; these factors include appropriateness of treatment, land ownership constraints, locations of ongoing projects, available resources, and other physical, social, or ecological barriers to treatment.

The scope of this CWPP does not allow determination of the absolute natural, socioeconomic, and cultural values that could be impacted by wildfire in the planning area. In terms of socioeconomic values, the impact due to wildfire would cross many scales and sectors of the economy and call upon resources locally, regionally, and nationally.

The WRS data layer considered only wildfire risk to structures; therefore, to supplement identification of areas of concern across the county, the following intersects of hazard (CWH) with critical habitat, cultural resources, critical infrastructure, and open space lands were completed for the county (Figures 3.8–3.11). These maps can be used to prioritize mitigation on a county scale for the protection of these HVRAs and can also be used by annex holders to prioritize treatments at an annex/jurisdictional scale.

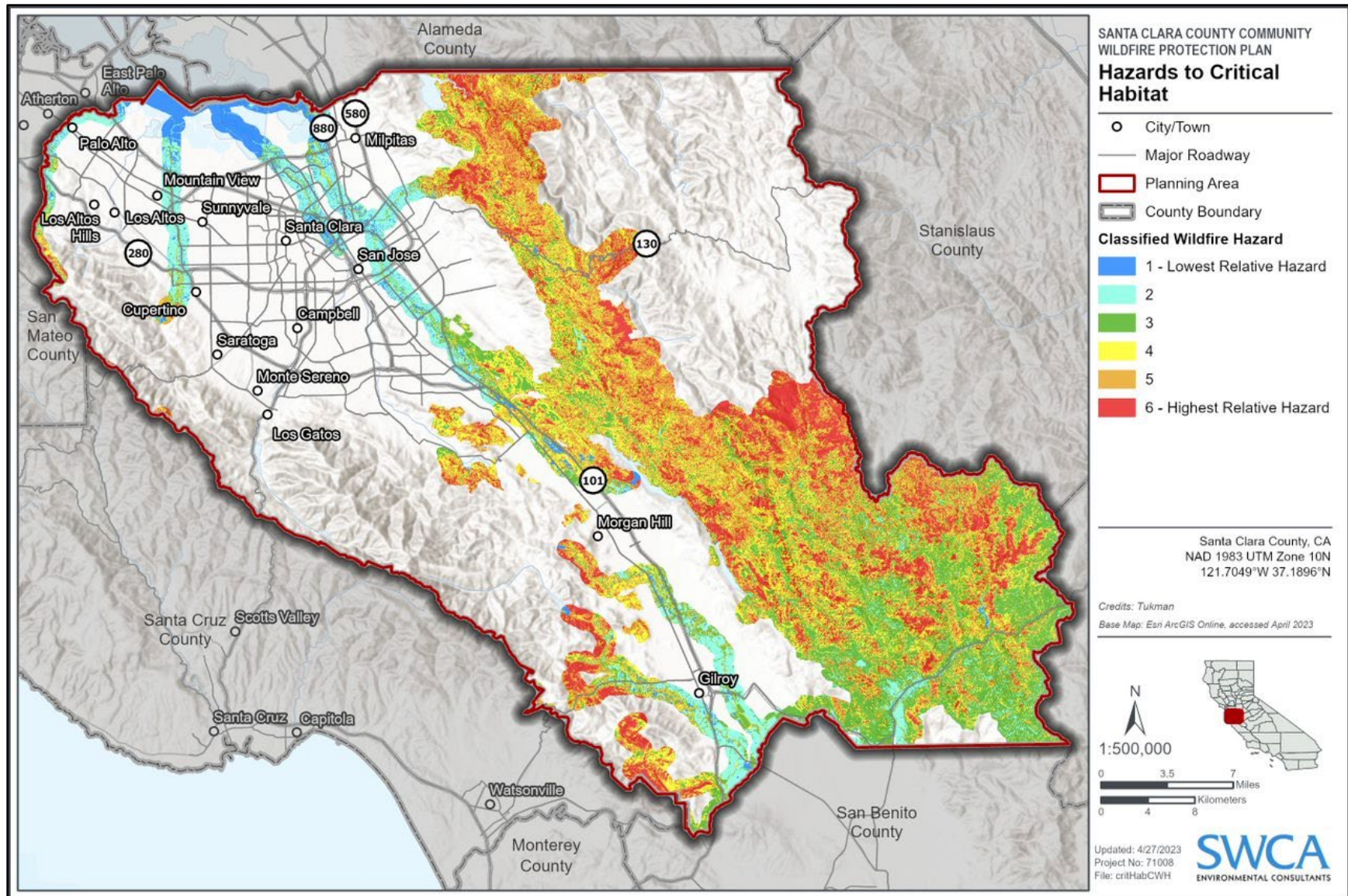


Figure 3.8. Intersect of critical habitat with CWH.

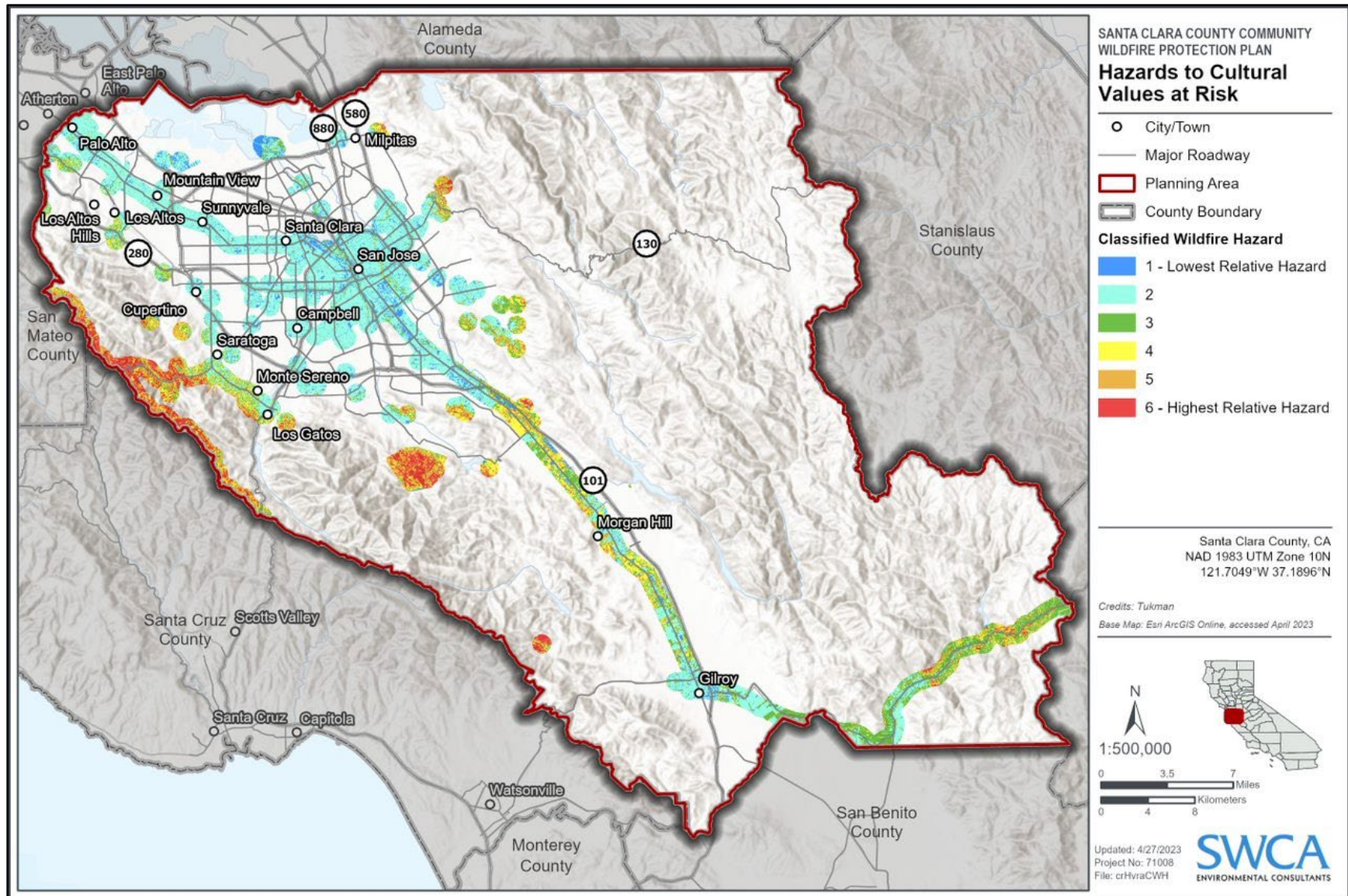


Figure 3.9. Intersect of cultural VARs with CWH.

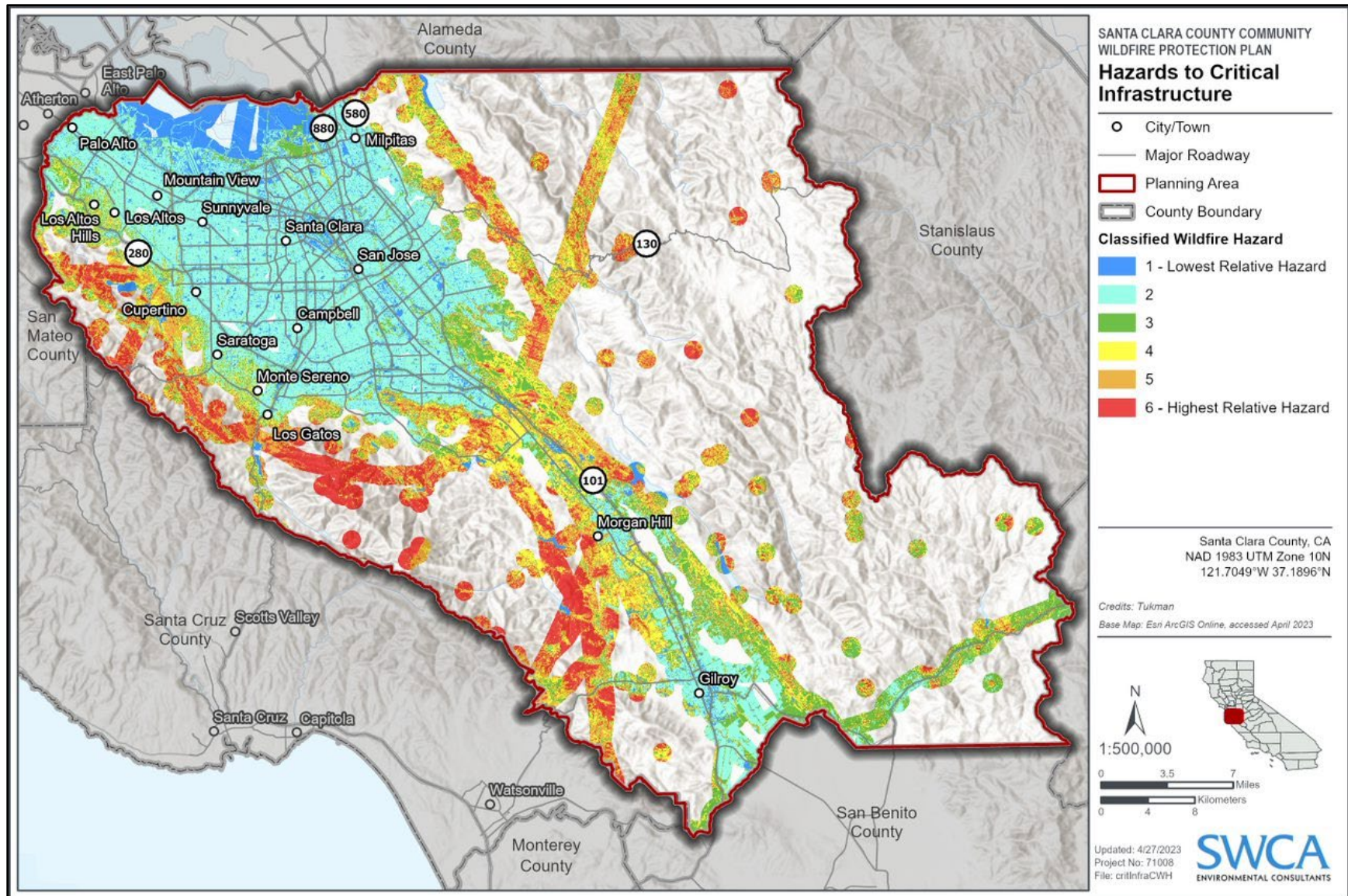


Figure 3.10. Intersect of critical infrastructure with CWH.

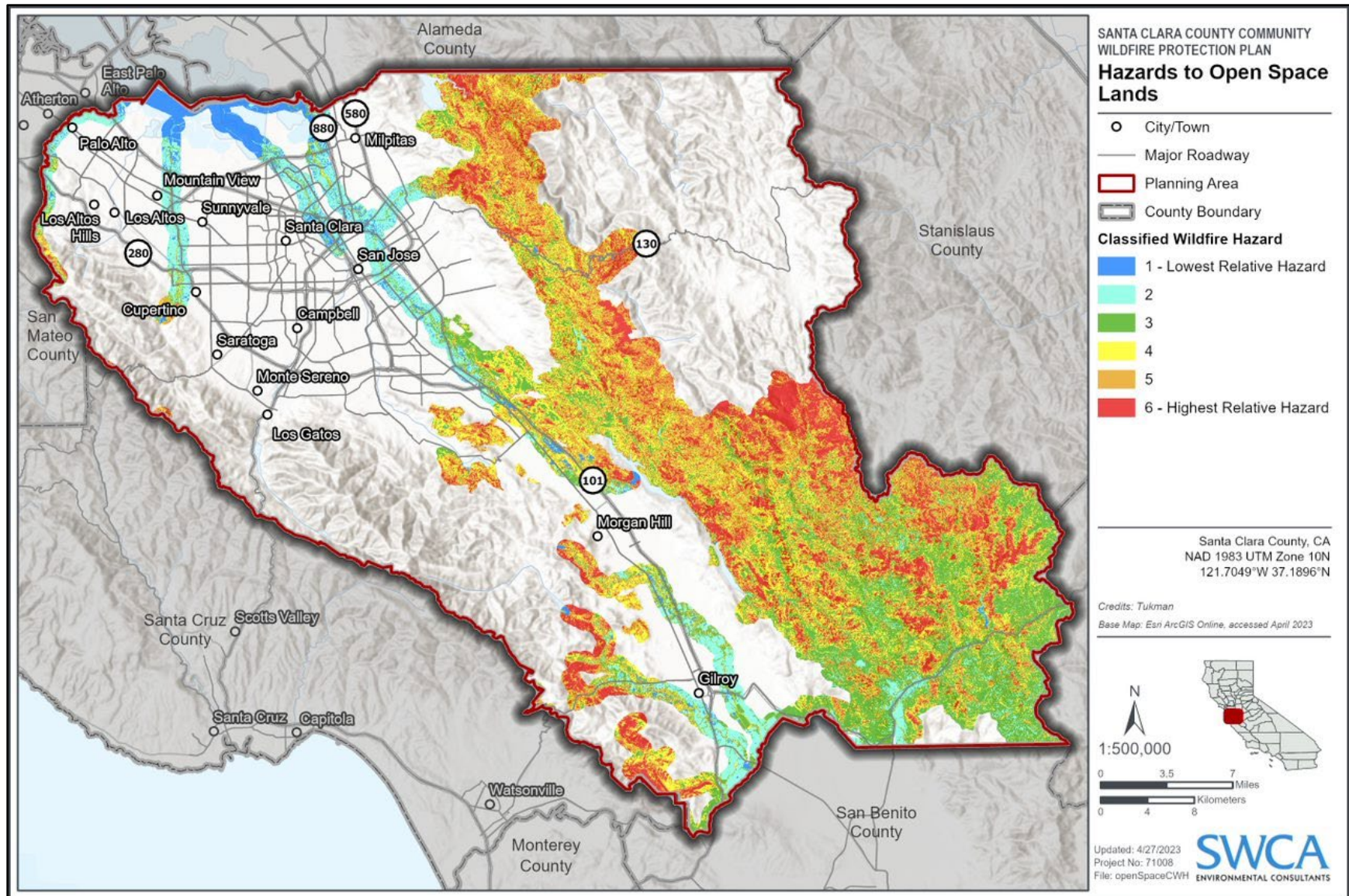


Figure 3.11. Intersect of open space lands with CWH.

NATURAL VALUES AT RISK

The CWPP planning area and the adjacent county parks in the Santa Cruz Mountains and Diablo Range offer a variety of natural resources of particular concern to land managers, such as rare habitats and listed plant and wildlife species. Sensitive species habitat can be damaged or destroyed and potentially overrun with invasive species. Watersheds are a critical resource and wildfire can cause significant erosion and loss of water quality. Several percolation ponds and reservoirs are located throughout the Santa Clara Valley. “Percolation ponds help replenish local groundwater, which supports about 40% of the water used in Santa Clara County” (Santa Clara Valley Water News 2023). Additionally, reservoirs are an important resource for irrigating agricultural crops and flood control. Sedimentation in surface water, as a result of erosion following severe wildfire, can negatively impact percolation ponds and reservoirs. Public outreach throughout the county has emphasized the importance of protecting natural/ecological values to the general public (Figure 3.13). Examples of natural values identified by the public and the Planning Team include the following:

- Public land (e.g., Upper Stevens Creek, Henry Coe State Park)
- Trail systems (e.g., Coyote Creek trail)
- Agricultural land
- Scenic viewsheds
- Wildlife habitat and sensitive species
- Watersheds and preservation of water quality for Santa Clara County
- Percolation ponds
- Reservoirs



Figure 3.12. Example of a natural VAR, a scenic viewshed.

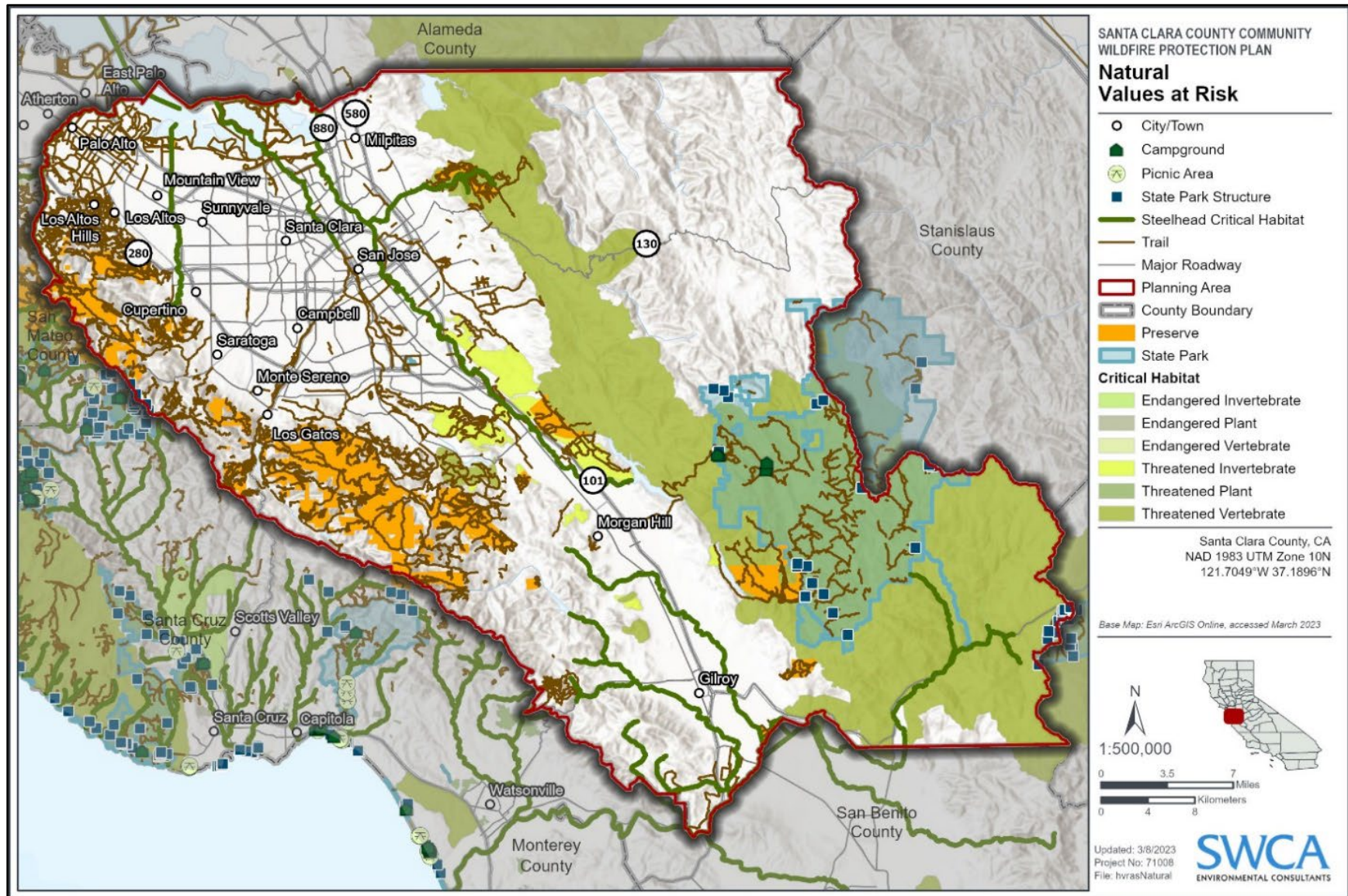


Figure 3.13. Map of natural VARs across Santa Clara County.

SOCIOECONOMIC VALUES AT RISK

The technology industry has grown into a massive job-creating and revenue-generating sector of the state, national, and global economy. Most of what is considered to be Silicon Valley, the coined nickname for the hub of the technology industry, is located within Santa Clara County (California Employment Development Department 2016). Among the major tech companies operating out of Santa Clara County are hardware manufacturers AMD, Cisco Systems, and Intel; computer and consumer electronics companies Apple Inc. and Hewlett-Packard; and internet companies eBay, Facebook, Google, and Yahoo. Many employees of these large tech-based companies choose to locate their homes in the Santa Clara foothills. This has an impact to the WUI due to increased construction pressures, VARs in the wildland areas, and unique concerns such as gated entrances and vegetated landscaping and screening. The economic loss stemming from wildfire catastrophe can be enormous as tourism and recreational sites and access are impacted. Social sense of well-being is affected by concern of impact of WUI fires in neighborhoods. Smoke can cause significant safety and health issues, with many sensitive individuals requiring medical treatment. Please see Appendix G for resources regarding wildfire smoke.

Social values include population, recreation, infrastructure, and the built environment (Figure 3.14). Examples include the following:

- Business centers (office buildings) (e.g., Silicon Valley)
- Communications infrastructure (e.g., cell phone and radio towers)
- Tourism values (e.g., restaurants, recreation facilities)
- Schools
- Public safety infrastructure
- Highways
- Churches
- Care homes, senior housing, day care, and other group homes
- Water storage and water infrastructure
- Recreation sites (e.g., golf courses, lakes and ponds, trails, parks)

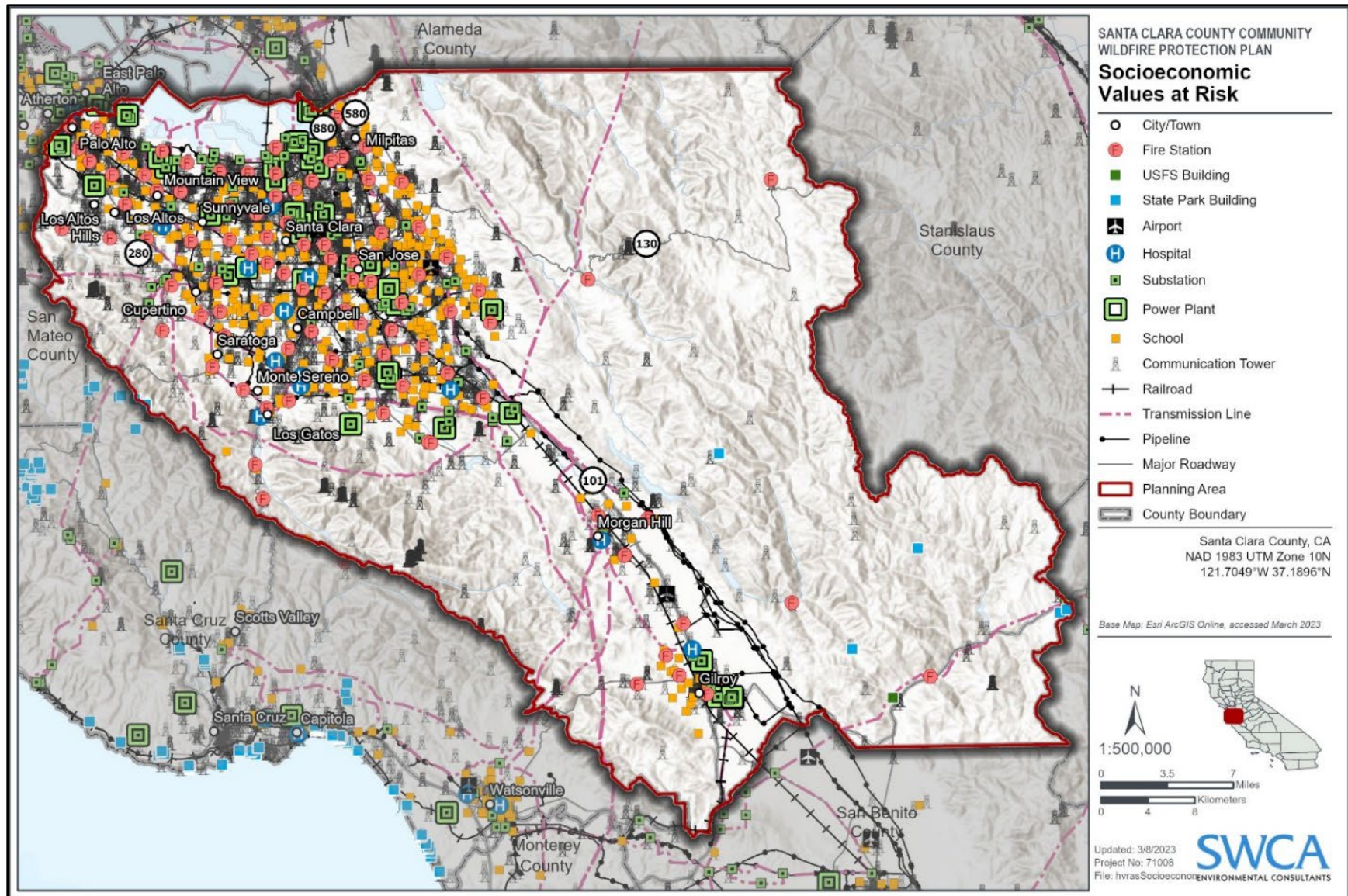


Figure 3.14. Socioeconomic VARs across Santa Clara County.

CULTURAL VALUES AT RISK

There are 119 properties and districts listed on the National Register of Historic Places in Santa Clara County, including five National Historic Landmarks (National Register of Historic Places 2023). Many of these sites are located in the urban areas of the county, but some are located within the WUI. Particular cultural VARs that have been identified by the Planning Team and the public in the CWPP planning area are the following:

- Paul Masson Mountain Winery
- Picchetti Brothers winery
- Villa Montalvo in Saratoga
- The Lick Observatory
- Fire towers
- Libraries
- Churches



Figure 3.15. Example of a cultural VAR, the Lick Observatory



Figure 3.16. Example of a cultural VAR, view from the historic fire tower on Mount Hamilton.

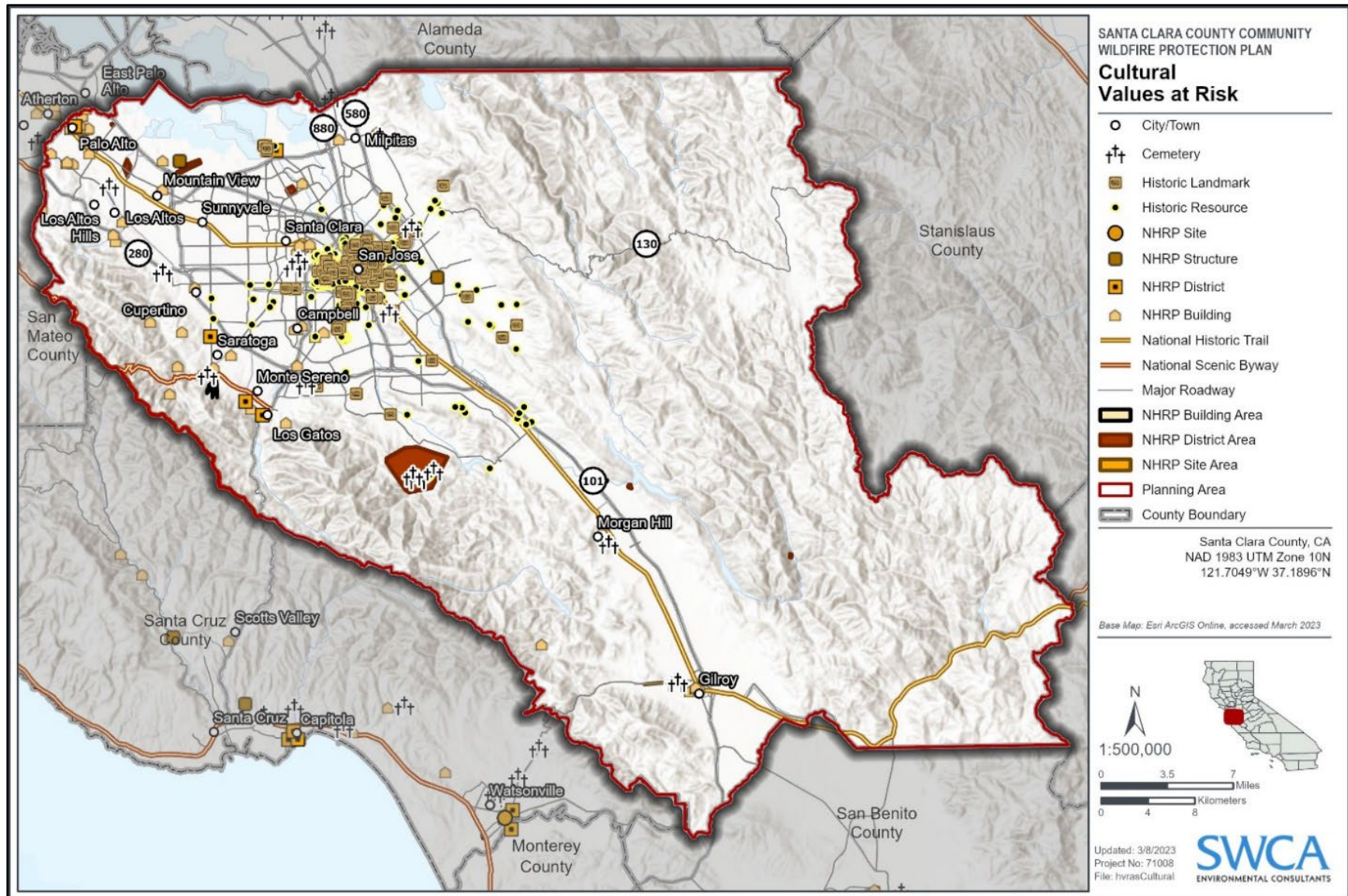


Figure 3.17. Cultural VARs across Santa Clara County.

This page intentionally left blank.



This chapter provides project recommendations and implementation guidance; however, mitigation does not stop there. In addition to the recommendations, recognizing wildfire mitigation, preparedness, and resilience means being prepared both pre- and post-fire. Post-fire response and rehabilitation information can be found at the end of this chapter.

This plan has been aligned with the Cohesive Strategy and its Phase III Western Regional Action Plan by adhering to the nationwide goal:

“To safely and effectively extinguish fire, when needed; use fire where allowable; manage our natural resources; and as a Nation, live with wildland fire.” (Forests and Rangelands 2014:3).

Thus, CWPP recommendations have been structured around the three main goals of the Cohesive Strategy: restoring and maintaining landscapes, fire-adapted communities, and wildfire response. Many of the recommendations listed below can be implemented at the property owner or community level. Projects requiring large-scale support can be prioritized based on the Risk-Hazard Assessment.

Recommendation matrixes are used throughout this chapter to serve as an action plan for implementation. Recommendations have been aligned with the strategies in the 2021 California’s Wildfire and Forest Resilience Action Plan (California Forest Management Task Force 2021) wherever possible.



GOAL 1: RESTORE AND MAINTAIN LANDSCAPES

In this CWPP, recommendations to restore and maintain landscapes focus on vegetation management and hazardous fuel reduction.

It has become increasingly apparent that mitigating wildfire risk requires much more than a simple reliance on suppression response. Thoughtful planning, conducted as a collaborative effort by the many people and organizations affected by wildfire, is required to develop and implement short- and long-term solutions and strategies. The CWPP process is a means by which many individuals and organizations can plan together in a structured format.

This region has been home to an active and committed fuel treatment program by land managers for many years. Figure 4.1 shows existing fuel treatments that have been completed or planned in and around the planning area. This information is derived from Cal Mapper, CAL FIRE, as well as County Fire Departments, County Parks, and Midpeninsula Regional Open Space District (Midpen). The Advisory Team also contributed and confirmed data sources. The FireSafe Council, County Fire, Midpen, County Parks, San Jose Water, Valley Water, and other land managers and agencies throughout the county have been involved in many large fuel treatment projects throughout the County.

The treatment momentum already observed surrounding the planning area should be built upon in order to increase fuel treatment effectiveness across the landscape.

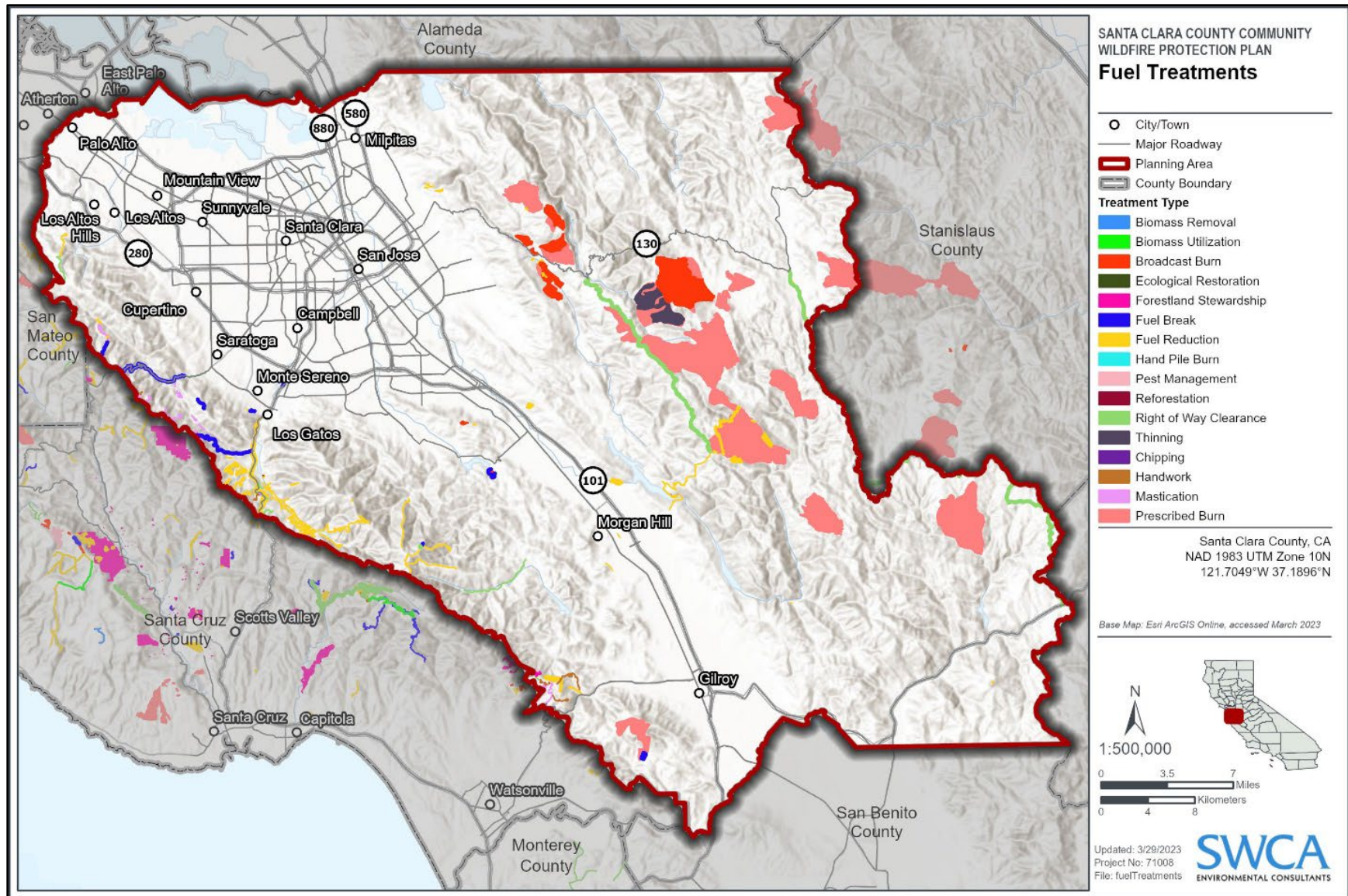


Figure 4.1. Past fuel treatments and types across Santa Clara County.

RECOMMENDATIONS FOR HAZARDOUS FUEL REDUCTION

The purpose of any fuel reduction treatment is to protect life and property by reducing the potential for and outcome of catastrophic wildfire, and to restore landscapes to a sustainable and healthy condition. Moderating extreme fire behavior, reducing structural ignitability, creating defensible space, providing safe evacuation routes, and maintaining all roads for firefighting access are methods of fuels reduction likely to be used around communities located in a WUI zone. Use of multiple treatment methods often magnifies the benefits.

Santa Clara County has a very strong team of career and volunteer firefighters, who work arduously and cooperatively to protect the life and property of the citizens, but these resources can be severely stretched if property owners do not take on some of the responsibility of reducing fire hazards in and around their own homes and business properties. Without reduction of fire hazards by property owners before a fire occurs, it may be impossible for firefighters to safely defend structures when wildfire threatens an area. Public entities are limited in their ability to conduct fuel reduction on private properties and therefore cooperation by property owners as well as community awareness, public education, cross boundary agency collaboration, and fuel treatments on adjacent public lands are necessary to fully reduce wildfire risk.

CWPPs provide stakeholders not only the opportunity to identify fuel reduction projects but also to assign priorities to them. While it is true that communities with an established CWPP are given priority for federal funding of hazardous fuels reduction projects carried out in accordance with the HFRA, a collaboratively developed list of such projects is simply more efficient in terms of planning, funding, and execution given the large amount of fuels reduction that could be done across Santa Clara County. A list and detailed descriptions of fuels treatment types and methods, including defensible space practices and larger-scale projects, is housed in Appendix F.

Fuels Management

Fuels management of public and private land in the WUI is key to the survival of homes during a wildfire event, as well as the means to meet the criteria of Goal 1. Research has shown how fuel treatments in the WUI can change fire behavior to support suppression activities and protect homes (Evans et al. 2015).

Fuels should be modified with a strategic approach to reduce the threat that high-intensity wildfires pose to lives, property, and other values. This section provides information on fuel treatment methodologies that can be applied to first protect structures (defensible space), then near community boundaries (fuel breaks, cleanup of adjacent open spaces), and finally in the wildlands beyond community boundaries (larger-scale forest health and restoration treatments). The emphasis of each of these treatment types is unique. Proximate to structures, the recommendations focus on reducing fire intensity consistent with Firewise and International Fire Code standards. Further into open space areas, treatments tend to emphasize forest health and increasing resiliency to catastrophic wildfire and other disturbances.

There are many approaches to reducing fuels in the wildland setting. Traditional methods include utilizing people and machines to mechanically remove vegetation as determined by a management prescription. Engaging local tribal entities in land management decisions is a valuable way to integrate Traditional Ecological Knowledge (TEK) into the promotion and maintenance of resilient landscapes. For example, cultural and prescribed burning, is often the best way to maintain natural vegetation composition and fuel loading in fire adapted landscapes. However, in some areas, for example the WUI, these methods may be too risky, expensive, and difficult to implement. Knowing this, land management agencies are

beginning to incorporate the use of prescribed herbivory (intentional use of domestic livestock to remove, rearrange, or convert vegetation on wildlands to reduce hazardous fuels) for fuel reduction projects. The California Vegetation Treatment Program (CalVTP) in conjunction with the Range Management Advisory Committee (RMAC) are working to implement prescribed herbivory on fuel reduction projects across the state. Benefits of prescribed herbivory include better air quality, less noise, ability to be utilized close to structures and on steep slopes, and reduced soil compaction. Limitations include timing constraints on treatment implementation regarding vegetation maturity and seasonal variations, treatment of 1-hour and 10-hour fuels only, and the possibility of herbivores girdling certain tree species (California Board of Forestry & Fire Protection [BOF] 2015).

The California Department of Transportation (Caltrans) has a robust roadside vegetation control program that reduces the risk of wildfire and “increases safety for motorists, cyclists and pedestrians” (Caltrans 2023). To control vegetation, Caltrans implements a plan called the Integrated Vegetation Management Plan composed of assorted methods for keeping vegetation in check, including herbicide spraying, mowing, weed whacking, hand removal. See Chapter 4 to explore areas of concern and find out more about the Integrated Vegetation Management Plan here: <https://dot.ca.gov/caltrans-near-me/district-4/d4-projects/roadside-vegetation-control>.

Various land management strategies implemented by local, county, state, and federal partners in the County are discussed in more detail in the Land Management Strategies section of Appendix A.

Recommended Treatments

Table 4.1 summarizes the types of treatments recommended throughout the planning area. Most treatments are focused on higher risk areas, as defined by the Risk-Hazard Assessment and Planning Team input. Many of these treatment recommendations are general across the communities because similar conditions occur in those areas. Tables 4.1, 4.2, and 4.3 also address the requirement for an action plan and assessment strategy by providing monitoring guidelines and a timeline for implementation. This timeline is obviously dependent on available funding and resources, as well as the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) protocols for any treatments pursued on public land. See Figure 4.3 to view the CEQA process for CalVTP implementation.

In addition, areas of concern (Figure 4.2) have been delineated based on the Risk-Hazard Assessment and Planning Team input. Areas of concern include regions with high concentrations of HVRAs that coincide with high potential exposure to wildfire (see Figure 3.5) and/or areas where land management agencies have ongoing vegetation management treatments that could be enhanced by adjacent projects. These are areas where land managers should consider employing mitigation measures to protect life, property, and other values. It is recommended that treatment plans be developed to execute mitigation measures in these areas. Treatment types will be site specific but should address a need to slow fire spread or mitigate potential extreme fire behavior parameters, such as high flame lengths or fireline intensity.

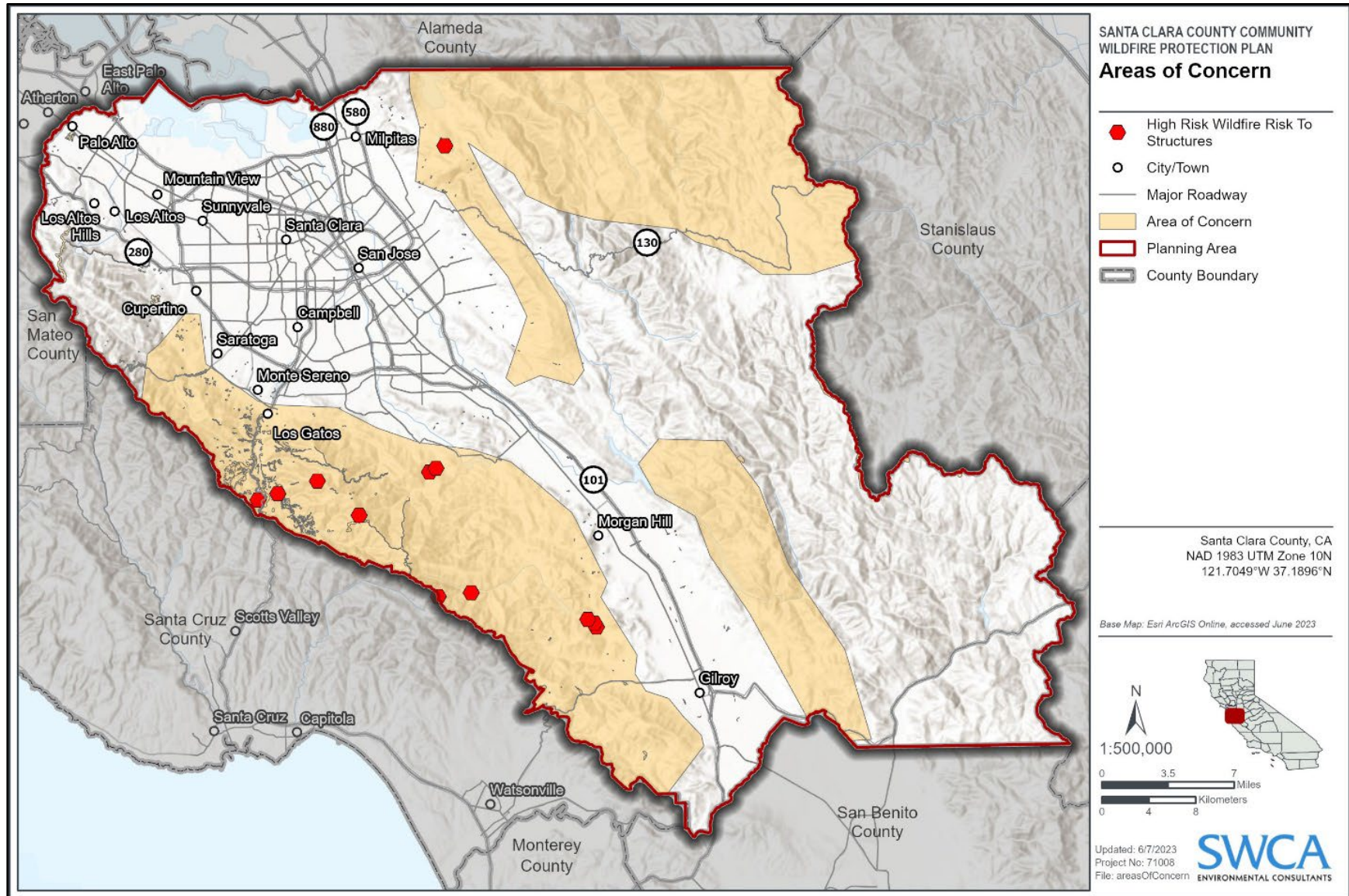


Figure 4.2. Planning Team–delineated areas of concern.

Table 4.1. Recommendations to Create Resilient Landscapes (Fuel Treatments)

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
RL1		M	2023-2033	Continue to align the CWPP, MJHMP, and General Plan Safety Element updates and revisions to build consistency and leverage funding opportunities for hazardous fuel treatments.	Countywide	Santa Clara County OES	Build and retain partnerships between agencies and decision-making bodies across the county to develop solutions that mitigate the risks of common hazards faced by the entire County - Assess values at risk - Build upon existing hazard mitigation planning from other agencies - Use story map and project tracking tool to increase accessibility and public awareness - Utilize the established CWPP Management Team to foster collaboration	Protect life by identifying hazards and reducing associated risks Protect public and first responder life and safety	Updates to materials as needed Convene Management Team on an annual basis Update the CWPP project tracking tool with progress	- FEMA BRIC Grants - EMPG - RCP - Firewise grants National Urban and Community Forest Program - FP&S (FEMA) - California Fire Safe Council Grants - NFPA Firewise Grants
RL2		H	Ongoing	Install strategic fuel breaks and fuel reduction areas throughout the county based on findings of the Risk-Hazard Assessment.	Open Space Authority, Midpen, State Parks, County Parks, Palo Alto Parks, San Jose Parks, and other public lands that bound up to the WUI. Consider Assembly Bill 2911	County, private landowners (private roads), state and federal agencies	Install fuel breaks in high-risk areas and prioritize underserved and rural areas. Potential fuel break locations include: - Buffer roads, natural fuel breaks (rivers, creeks, and ridgelines), and designated rights-of-way to increase fuel break effectiveness. Areas that support the protection of the WUI - Valley floors, where grasslands meet or intermingle with communities - Around communities surrounded with rolling hills and grasslands - Communities surrounded by steep topography and heavy fuel loading - Around critical facilities and infrastructure (e.g., communications) - Aim for 300-foot shaded fuel breaks around communities - Implement and maintain shaded fuel breaks and reduce ladder fuels and greenbelts - Perform roadside fuels treatments to maximize effectiveness of roadways as fuel breaks and reduce wildfire behavior along major ingress and egress routes. - Fuel breaks should be designed according to site-specific conditions - Potential methods include prescribed burning, grazing, and mechanical Implement a maintenance program for the Highway 17 shaded fuel break.	Protect life and property by reducing the spread of high severity wildfire and improving access for emergency vehicles.	Regular maintenance schedule should be implemented to ensure clearance levels are maintained and remain effective. Update the CWPP project tracking tool with progress and relevant statistics.	- USFS CWDG Grants - CAL FIRE Grant Programs - FEMA BRIC Grants - California Fire Safe Council Grants - NFPA Firewise Grants

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
RL3		H	Ongoing	Evaluate existing native surface (unpaved) fire roads for use as fuel breaks/fuel reduction areas as appropriate	Open Space Authority, Midpen, State Parks, County Parks, Palo Alto Parks, San Jose Parks, and other municipal parks that bound up to the WUI. Consider Assembly Bill 2911	Depends on jurisdiction/easement	Identify existing gaps in fuel breaks or large-scale treatments meant for connectivity and implement and determine most effective treatment methods - Consider road type and ownership - Fire dept with jurisdiction/easement access would evaluate road condition and suitability - Maintenance would be assigned based on jurisdiction. - Implement maintenance - road/trail width for fire and park patrol vehicles where possible - Refer to RL1 for other fuel break considerations. - Consider bridge access, ratings and maintenance	Protect life and property by improving access for emergency vehicles to open space areas and WUI areas adjacent to open space.	Regular maintenance schedule should be implemented to ensure clearance levels are maintained and remain effective. Update the CWPP project tracking tool with progress and relevant statistics.	- USFS CWDG Grants - CAL FIRE Grant Programs - FEMA BRIC Grants - California Fire Safe Council Grants - NFPA Firewise Grants

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
RL4		M	Ongoing	Identify-continued prescribed herbivory in open spaces, targeting grasses and light fuels throughout the Unit.	County-wide	County Parks, Milpden, Open Space Authority, State Parks, water company/district properties, Cattleman's association, ranching community, private landowners	Utilize prescribed herbivory as fuel reduction and maintenance technique, especially adjacent to WUI areas. • Work with Santa Clara Cattleman's Association to develop a regional grazing plan. • Implement grazing plans to eliminate dry grass and remove weeds and/or establish irrigation to regreen the parcel. • Employ grazing as a solution for treating areas of high concern topography that would be unsafe for hand treatment • Work with RCDs to investigate locations where grazing would be most effective Collaborate with California Department of Fish and Wildlife for beaver conservation and population/habitat restoration efforts that could provide benefits for forest health/hazardous fuels reduction • Conduct a comprehensive assessment of existing beaver populations and study benefit to forest resilience • Secure funding and resources through partnerships, grants, and fundraising initiatives to support beaver conservation and habitat restoration projects • Develop and implement a monitoring program to track the population dynamics, behavior, and habitat conditions Establish communication and collaboration with the California Department of Fish and Wildlife (CDFW) or CalTrans to initiate discussions on the potential for expanding the elk population in targeted regions with a view to provided benefit for forest and grassland resilience. • Conduct an assessment of suitable habitat areas • Collaborate with CDFW to develop a comprehensive elk management plan • Coordinate with CalTrans to identify potential areas for wildlife crossings through transportation corridors • Assess need for habitat restoration and long-term monitoring program	Reduce fuel loading of fine fuels that could increase wildfire spread to WUI areas.	Regular monitoring needed to ensure against environmental damage and invasive species Update the CWPP project tracking tool with progress and relevant statistics.	• SRA • CA Fire Safe Council • CFIP • NRCS • FEMA • GHGRF

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
RL5		H	Ongoing	Encourage use of intentional fire (i.e. – broadcast burning, pile burning, cultural burning, biochar and carbonator) where ecologically sound and feasible	County-wide Following an assessment of feasibility, prioritize treatments in areas of concern (Figure ES.1), and specifically in locations where treatment would alleviate 'high and extreme risk to structures' in the risk-hazard assessment, and would provide positive impacts to watershed and ecological health	All jurisdictions where appropriate Tribes Federal agencies, CAL FIRE	Utilize prescribed burn planning that follows agency and regulator protocols. - Engage with tribal entities to promote the use of cultural burning when appropriate and feasible. - Train personnel to be NWCG-certified burn bosses (RXB2). - Reach out to surrounding fire agencies to collaborate on prescribed burns. This will improve the capacity to accomplish many/large acreage burns. Assess opportunities to use prescribed fire for restoration (e.g., oak woodlands) to increase wildfire resiliency.	Reduce fuel loading of fine fuels and understory species to mitigate potential for intense fire behavior in the event of an unplanned ignition. Increase capacity and training for fire departments. Promote healthy successional vegetation Provide habitat for fire-adapted species.	Regular monitoring needed to ensure against environmental damage and invasive species into burned areas. Establish annual goals and objectives for prescribed burning operations. Update the CWPP project tracking tool with progress and relevant statistics.	- CAL FIRE VMP program - SRA - CA Fire Safe Council - CFIP - NRCS - GSA Federal Excess Personal Property (FEPP) - Firewise Grants - BRIC - RCP - Fire Prevention and Safety (FP&S) Grants (FEMA) - Community Wildfire Defense Grants (CWDG) - National Urban and Community Forestry Challenge Cost Share Grant Program - U.S. Endowment for Forestry and Communities
RL6		H		Develop roadside fuel treatment program (paved public roads), including suite of methods available and sustainability mechanism.	County Wide Prioritize treatment in areas of concern (Figure ES.1), and specifically adjacent to areas classified as 'extreme risk to structures' in the risk-hazard assessment	Caltrans, County and city road agencies; private road associations, PG&E, cable and phone companies	Highest risk roadways as identified in the risk assessment Determine suite of treatment methods allowed and restriction for roadside hazard reduction including mowing, mastication, chemical, plantings, mulching, etc. Develop treatment plan and rotation schedule for roadside treatments, focusing on primary evacuation or access/egress corridors. - Annual spring maintenance of right-of-way - Treat surface fuels for a minimum 10-foot buffer and up to 30 feet where possible - Trim fuels (limbing-up timber) to allow safe passage of emergency vehicles - Control for invasive species that may contribute to rapid fire spread (i.e., weeds and grasses). - Utilize CalVTP to expedite treatments - Develop map that highlights critical routes. - Align with evacuation modeling and planning Collaborate with Santa Clara County Roads Dept. to identify areas of elevated fire risk and implement necessary treatment (e.g., Old Santa Cruz Highway, Idylwild Road)	Reduce fuel loading around roads and highways to ensure safe passage of vehicles in event of evacuation and reduce unplanned ignitions from vehicles and highway users.	Regular maintenance schedule should be implemented to ensure clearance levels are maintained. Develop standards for road crews, including removal of slash. Update the CWPP project tracking tool with progress and relevant statistics.	- SRA - CA Fire Safe Council - CFIP - NRCS - FEMA - GHGRF

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
RL7		M	Within 18 months and ongoing	Mobilize private landowners to reduce fuels around homes and communities	Private lands across all communities	FireSafe Council County and private lands.	- Planning Team entities should collaborate on development of a property owner "play book" to encourage and support property owner actions. Playbook would include technical information on best management practices for mechanical thinning and manual clearing. - Access to a database of contractors - Project costs within county- knowledge of common fuel treatment methodologies and their associated costs Empower property owners through other mechanisms: - Develop an enforcement program providing the County with cause to clean up derelict or abandoned lots. - Develop an incentive program for property owners. - Identify treatment burdens and address with outreach - Establish a community bulletin for property owners to post information on abandoned structures and vegetation buildup on privately owned yards. - Consider working with local volunteer groups to increase capacity.	Provide residents with information that helps them prioritize treatments and plan their defensible space projects.	Monitor effectiveness of different treatment approaches and implement adaptive approach for updating the list depending on uptake of various methods. Update the CWPP project tracking tool with progress and relevant statistics.	- NPS - U.S. Forest Service - CAL FIRE - PG&E
RL8		L	Ongoing	Continue established agency partnerships that retain hand crews for fire hazard reduction	Countywide	County Fire, CAL FIRE, County Sheriff (Weekend Work Program), CCC	Fuels management crews can be utilized as a countywide resource to provide support during incident response, and they can achieve significant progress in fuels reduction projects. Continue crew work in fire defense improvement work throughout the county. - Develop equipment needs to accomplish work (including maintenance) and seek funding for purchase. - Create an educational tool for land/property owners re: various methods, techniques, and cost for various fuel treatments. - Cultivate and support partnerships with NGOs and volunteer groups to support implementation of projects.	Create resilient landscapes and address potential for extreme wildfire behavior in and around the WUI. Create and maintain accountability with local landowners/ managers.	Monitor cost effectiveness through benefit cost ratio approach Update the CWPP project tracking tool with progress and relevant statistics.	- CAL FIRE Grant Programs - SRA - CA Fire Safe Council - CFIP - NRCS - FEMA - GHGRF
RL9		M	Within 5 years	Feasibility study for biomass reduction and utilization	Countywide	Public-Private Partnerships	Convene public and private industry partners to explore potential methods for biomass reduction and utilization. - Conduct benefit analysis to ensure that the energy production potential outweighs transportation costs - Work with local biomass utilization centers for future partnerships with fuel managers and fire agencies	Address a need for removal of hazardous fuels resulting from treatments Increase opportunities for treatment funding by creating a carbon benefit Create resilient landscapes through increased fuel treatments.	Bi-monthly or quarterly review of progress Monitor cost and carbon benefit and develop standards for biomass utilization from fuel treatments. Update the CWPP project tracking tool with progress	- CAL FIRE Grant Programs - SRA - CA Fire Safe Council - CFIP - NRCS - FEMA - GHGRF

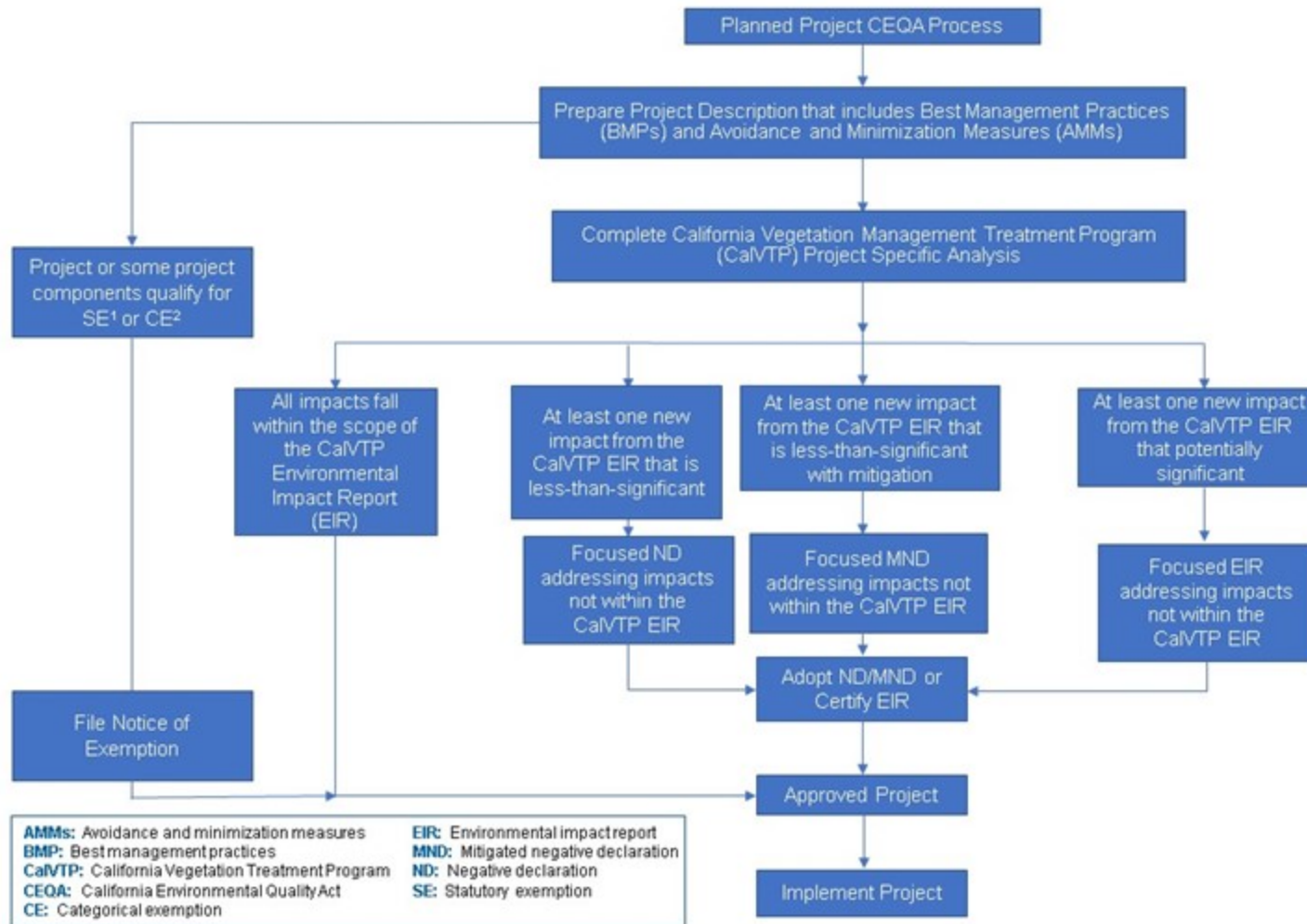
Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
RL10		H	Ongoing	Create a full-time permanent funded Countywide Wildfire Coordinator Position	Countywide	Santa Clara County, FireSafe Council	Establish funding for a full-time Santa Clara County Wildfire Coordinator to increase wildfire planning efforts, implement trainings for residents and county agencies, and coordinate mitigation efforts with greater effectiveness. - Must receive budget approval from Board of Supervisors - FSC would provide list of responsibilities of position	Increase local and county level planning Build resilient landscape by scaling up wildfire planning, coordination, and training on a county level	Update the CWPP project tracking tool with progress.	- Internal County funds - CAL FIRE Grant Programs - SRA - CA Fire Safe Council - CFIP - NRCS - FEMA - GHGRF
RL 11		H	Within 5 years	Survey for dead and dying trees and conduct removal projects throughout	County Wide Lexington Hills area	Santa Clara County	Conduct a thorough visual survey of the designated area to identify dead and dying tree, recording coordinates, tree characteristics, and overall density. - Prioritize removal projects based on immediate threats to infrastructure, public safety, or high-value areas - Develop a detailed plan for the safe and efficient removal of dead and dying trees Coordinate with trained personnel and monitor progress	Build resilient landscape by reducing dry fuel loads throughout County	Update the CWPP project tracking tool with progress and relevant statistics.	- SRA - CA Fire Safe Council - CFIP - NRCS - FEMA - GHGRF

When applying fuel treatments, every effort should be made to align treatments with the State Forest Action Plan Assessment and Strategy (CAL FIRE 2017, 2018) with consideration of all appropriate best management practices and sound science. In addition, treatments should be strategically located in areas to maximize effectiveness of other existing and ongoing projects (see Figure 4.1) and to address watershed and forest health. Consideration of environmental challenges should be built into recommendations, for example treating areas to reduce the impact of insect and disease or treating in a way that acknowledges and is sensitive to the trajectory of vegetation communities faced with drought and climate change. More information on forest health considerations and environmental challenges and how they might impact treatment choices is provided in Appendix B.

A list and detailed descriptions of fuels treatment types and methods, including defensible space practices and larger-scale projects, is housed in Appendix F.

When possible, simultaneously planning for the management of multiple resources while reducing fuels will ensure that the land remains viable for multiple uses in the long term. The effectiveness of any fuel reduction treatment depends on the degree of maintenance and monitoring that is employed. Monitoring will also ensure that objectives are being met in a cost-effective manner.

The treatment list is by no means exhaustive and should be considered purely a sample of required projects for the future management of the planning area. More detailed fuel treatment projects should be delineated and described in the jurisdictional annexes, at a scale more appropriate for developing site specific project recommendations. Many projects may be eligible for grant funds available from federal and/or state sources. For a list of funding sources, please refer to Appendix L.



¹ Statutory Exemption (SE) that may apply is State CEQA Guidelines Section 15269 SE for Emergency Projects, including emergency repairs to publicly owned service facilities necessary to maintain service essential to the public health, safety, or welfare and/or specific actions necessary to prevent or mitigate an emergency.

² Categorical Exemptions (CEs) that may apply include State CEQA Guidelines Section 15301 Class 1 CE for the operation, repair, maintenance, or minor alteration of existing facilities involving negligible or no expansion of an existing use and/or State CEQA Guidelines Section 15304 Class 4 CE for minor public or private alterations in the condition of land, water, and/or vegetation that do not involve removal of healthy, mature, or scenic trees except for forestry and agricultural purposes. Class 4 CE includes fuel management activities within 30 feet of structures to reduce the volume of flammable vegetation, provided that the activities will not result in the taking of endangered, rare, or threatened plant or animal species or significant erosion and sedimentation of service waters. This exemption also applies to fuel management activities within 100 feet of a structure if the public agency having fire protection responsibility for the area has determined that 100 feet of fuel clearance is required due to extra hazardous fire conditions.

Figure 4.3. CEQA process.

Ongoing, Planned, and Proposed Fuels Treatments in Santa Clara County

As previously stated, fuel treatments are an effective means of reducing fire risk to communities in the WUI. Fuel treatments such as mastication, thinning, prescribed burning, and dead tree removal serve to remove or lessen fuel loading and continuity and result in reduced fire behavior. For example, reducing ladder fuels minimizes transmission of fire from the surface into the crowns, and reducing tree density to increase crown spacing mitigates active crown fire spread through the tree canopies. In addition, treated areas enhance firefighter safety and accessibility, allowing firefighters to reach fires quickly and safely for early suppression.



Figure 4.4. Fuel reduction project in Santa Clara County.



Figure 4.5. Fuel reduction project in Santa Clara County.



GOAL 2: FIRE-ADAPTED COMMUNITIES

In this CWPP, recommendations for fire-adapted communities include public education and outreach actions and actions to reduce structural ignitability.

RECOMMENDATIONS FOR PUBLIC EDUCATION AND OUTREACH

Just as environmental hazards need to be mitigated to reduce the risk of fire loss, so do human hazards. Lack of knowledge, lack of positive actions (e.g., failing to create adequate defensible space), and negative actions (e.g., keeping leaf litter and exposed propane tanks close to structures) all contribute to increased risk of loss in the WUI.

Most residents in the WUI understand the risk that wildfire poses to their communities. However, it is important to continually engage the community as a partner in order to expand wildfire mitigation options across land ownership (McCaffrey 2004, 2020; McCaffrey and Olsen 2012; Winter and Fried 2000).

Methods to improve public education could include increasing awareness about fire department response and resource needs; providing workshops at demonstration sites showing Firewise landscaping techniques or fuels treatment projects; organizing community cleanups to remove green waste; publicizing availability of government funds for treatments on private land; and, most importantly, improving communication between property owners and local land management agencies to improve and build trust, particularly since the implementation of fuel treatments and better maintenance of existing treatments needs to occur in the interface between public and private land.

Within Santa Clara County, residents are most concerned about the extreme risk that wildfire poses to the community as well as to individual residences within the WUI. For those citizens who have engaged in the planning process and/or are familiar with CWPPs, many agree that the County needs the following wildfire support: home ignition zone inspections, chipping, community engagement, education, grant writing/funding, and evacuation planning. More detailed results of community surveys can be found in Appendix I.

The SCCFD already carries out many public education activities throughout the County, such as an education page and several fire-prevention programs (SCCFD 2023a). The fire department is a great resource for information and contacts regarding wildfire mitigation and wildfire prevention. Fire Safe Councils such as South Skyline Firesafe Council and Santa Clara County FireSafe Council both offer free chipping programs and provide a plethora of resources to educate the residents and inform them on best management practices for the goal of reducing wildfire hazards. See the Public Education and Outreach Programs section in Appendix B for more information.

Please see Appendix B, Public Education and Outreach Programs for a detailed list of educational resources within the County.

Table 4.2 lists public education recommendations to be implemented in the County.

RECOMMENDATIONS FOR REDUCING STRUCTURAL IGNITABILITY

Table 4.2 provides a list of community-based recommendations to reduce structural ignitability that should be implemented throughout the Santa Clara County CWPP planning area. Reduction of structural ignitability depends largely on public education which provides property owners the information they need to take responsibility for protecting their own properties. A list of action items that individual property owners can follow can be found below. Carrying out fuels reduction treatments on public land may only be effective in reducing fire risk to some communities. The Casualty Actuarial Society (CAS) compared the impact of individual and community-level mitigation on individual property owner risks. They found that “the model indicates that all mitigation measures reduce the individual risk, but individual home mitigation – which individual property owners control – can have a bigger impact than any community mitigation alone” (CAS 2023). If property owners have failed to provide mitigation efforts on their own land, the risk of home ignition remains high, and firefighter lives are put at risk when they carry out structural defense. Detailed information regarding defensible space practices as well as a list of actions for reducing structural ignitability can be found in Appendix G.

Preparing for wildland fire by creating defensible space around the home is an effective strategy for reducing structural ignitability as discussed under Cohesive Strategy Goal 1: Resilient Landscapes. For example, “Clearing an area of 30-100 feet from the home of combustible material creates the most effective buffer zone” (CAS 2023). Studies have shown that burning vegetation beyond 120 feet of a structure is unlikely to ignite that property through radiant heat (Butler and Cohen 1996), but fire bands that travel independently of the flaming front have been known to destroy houses that had not been impacted by direct flame impingement. Hardening the home to ignition from embers, including maintaining vent coverings and other openings, is also strongly advised to protect a home from structural ignitability. See Ember Ignition Hazards in Chapter 2. Managing the landscape around a structure by removing weeds and debris within a 30-foot radius and keeping the roof and gutters of a home clean are two maintenance measures proven to limit combustible materials that could provide an ember bed and ignite the structure. In essence, reducing structural ignitability and creating defensible space are key for protecting from the potential loss and damage done, as was seen during the 2020 SCU Lightning Complex fires.

See Appendix F for details on implementing defensible space and other treatments.

Below you will find pertinent information regarding recent legislation related to Goal 2 of the Cohesive Strategy. A detailed list of pertinent legislation is provided in Appendix A, Legislative Direction.

Assembly Bill 38: Assembly Bill 38 (2019) amended sections of the Civil, Government, and Public Resources Codes to set forth a comprehensive wildfire mitigation financial support program, which facilitates cost-effective home/structure hardening and retrofitting to create fire-resistant homes, businesses, and public structures. The amendments require the State Fire Marshal, in consultation with the Director of Forestry and Fire Protection and the Director of Housing and Community Development to identify building retrofits and hardening measures eligible for financial assistance under the program. Additionally, the amendments require that CAL FIRE identify defensible space, vegetation management, and fuel treatment procedures eligible for financial assistance. Wildfire hazard areas eligible for financial assistance under the program include LRAs situated within very high FHSZs and SRAs within any FHSZ (CA GOPR 2020).

Table 4.2. Recommendations for Creating Fire-Adapted Communities (Public Education and Reducing Structural Ignitability)

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
FAC 1		H	Ongoing	Decrease ignitions from unhoused populations.	WUI areas with significant unhoused populations including parks and open space areas countywide.	Santa Clara County, private and state lands.	Create a task force or team of PIOs and County officials including members of the community to create and disseminate outreach materials. - Unify coordination. - Create consistent messaging. - Create goals and objectives. - Evaluate areas of concern - Provide information and resources guiding individuals in the safe use of heating and cooking materials. - Provide unhoused populations with more opportunities to make use of fuel sources that reduce the risk of wildland ignitions. - Consider implementing a fuel canister recycling program for the purpose of reducing the use of open flames and canister waste. - Apply for Community Resilience Centers Program	Reduce wildland ignitions resulting from unhoused populations.	PIOs meet once a quarter or once a month. Evaluate goals and objectives. Update the CWPP project tracking tool with progress and relevant statistics.	- Firewise grants - FP&S (FEMA) - EPA Environmental Education Grants - CWDG
FAC2		L	Ongoing	Create collaborative relationships with local agricultural and ranching communities.	Countywide	County, state, and private lands.	County planning collaborative community practice – they have a heat and air quality group; this could be a starting point for a steering committee. Collect a list of organizations that work with communities and identify ways to collaborate. Analyze and address trends in shifting livestock types to offset hurdles associated with climate change and wildfire. The Firesafe Council can facilitate meetings between the CWPP Advisory Team and ranchers after the CWPP is developed.	Raise awareness of wildfire risks and hazards in rural areas throughout the County.	Establish regular steering committee meetings. Update the CWPP project tracking tool with progress	- Firewise grants - FP&S (FEMA) - EPA Environmental Education Grants - CWDG
FAC3		M	Ongoing	Provide wildland fire overview classes to local reporters and news press employees to ensure the information that is being disseminated is correct and not misleading.	Countywide	Local news stations, reporters, newspapers, and public bulletins.	Create a curriculum in collaboration with County PIOs and FPD officials. - Provide training on proper language regarding wildland fire. - Provide an overview of the incident command system and decision-making process. - Provide example press releases and methods for disseminating information to the public. - Reduce the use of dramatic language and provide context and clarity in a way that reduces fear and panic in the community.	Create more trust between the community and fire agencies. Increase the likelihood of residents to follow evacuation orders.	Provide Annual refreshers or classes to reporters, editors, PIOs, and other press-related employees. Update the CWPP project tracking tool with progress	- Firewise grants - FP&S (FEMA) - EPA Environmental Education Grants - CWDG
FAC4		H	Ongoing	Work with local fire departments and communities to attain and maintain Firewise USA recognition.	Santa Clara County fire departments and communities. Santa Clara County FireSafe Council	County and private.	SCCFSC working directly with CALFIRE and NFPA as a Regional Coordinator SCCFSC in conjunction with FPDs will work with local community leaders and HOAs for attaining and maintaining Firewise certifications.	Reduce the risk and hazards of wildfire to the WUI. Empower residents to work with their neighbors to build greater wildfire resiliency on the community level.	Work with communities to establish new Firewise USA recognition and assist community Firewise committees to evaluate progress towards annual Firewise USA recognition. Update the CWPP project tracking tool with progress and relevant statistics.	- Coastal Conservancy - CWDG - California Firesafe Council - CAL FIRE

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
FAC5	Ongoing	H	Ongoing	Form a task force to do parcel-level inspection work to enhance risk modeling and be an educational resource; utilize portable data collection and ArcGIS as analysis tools.	Countywide	Private homes and businesses.	Must have an agency champion to be accepted by the public. Agency responsibility would fall to the County Fire Department and would expand to SCCFSC and other entities to increase capacity. Carry out parcel-level assessments to enhance risk assessment model components at a finer scale. Add data to the risk-hazard model and re-run as necessary.	Create a comprehensive database of parcel-level inspection data. Inform decision-makers on risks to structures throughout the county.	Set a target number of parcels to be assessed each year. Review the number of parcels assessed each year at the annual CWPP meeting. Update the CWPP project tracking tool with progress	- Firewise grants - FP&S (FEMA) - EPA Environmental Education Grants - CWDG - SRA - GHGR
FAC6	Ongoing	H	Ongoing	Establish and enforce defensible space standards.	County-wide, but prioritize high and risk areas as delineated by the risk-hazard assessment and specifically, 'risk to structures' layer.	Local fire protection districts, HOAs, Private landowners	Promote defensible spaces: - Make sure new homes/structures are made with non-combustible materials (i.e., encourage structural hardening) - Enforce a minimum of 100 feet of defensible space around structures. - Clean and maintain ingress/egress routes. - Ensure there are two ways out of a community. - Consider landscaping methods across multiple properties that reduce fire potential (e.g., connect fuel treatments across different properties) - Create a defensible space program. Include pre-determined inspection frequency and education/outreach efforts. - Develop a staffing plan to support enforcement and seek funding to implement the plan. - Educate property owners on real actions that could mitigate their wildfire hazard and risk. - Provide tax incentives for defensible space actions. - Work with insurance companies to determine the potential to provide incentives for defensible space associated with reduced insurance premiums. - Consider green waste pickup/disposal options. - Promote and educate residents on home hardening using NFPA, IBHS, or NIST standards	Reduce loss of life and structures through defensible space.	Annual program evaluation and updates as necessary. Consider updates to the building code, where needed Update the CWPP project tracking tool with progress	- Firewise grants - FP&S (FEMA) - EPA Environmental Education Grants - CWDG - BRIC - SRA - GHGR
FAC7	Ongoing	L	Ongoing	Add hyperspectral and LiDAR imaging to periodic aerial photography flights.	Countywide and surrounding jurisdictions.	Private, county, and state lands.	Work in conjunction with the County Assessor or other agency that acquires aerial photography of the county and add additional sensing cameras to flights to acquire specialized vegetation data.	Hyperspectral and LiDAR can provide in-depth identification and analysis of hazards and risks associated with fuels and topography. These methods may work well to evaluate the efficacy of fuel treatments and fuel breaks.	Periodic new flights to update data sets. Update the CWPP project tracking tool with progress	- Firewise grants - FP&S (FEMA) - EPA Environmental Education Grants - CWDG - BRIC - SRA - GHGR

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
FAC8	Ongoing	H	Ongoing	Educate citizens on how to achieve contemporary WUI code compliance in retrofits/cost: benefit ratio. Provide workshops and/or demonstration site.	Countywide	Fire Safe Councils, County Fire, CAL FIRE	Estimate costs for workshops and/or webinars. Provide opportunities for the public to learn about WUI code and strategies for implementing home hardening upgrades. See Chapter 4: Reducing Structural Ignitability and Appendix G, Property Owner Resources. Refer to reports by Headwaters Economics on recent home hardening upgrade options and costs for CA Strategize on ways to coordinate this project with parcel level inspection work. Strategize avenues for engaging the public. Be opportunistic- engage residents following a local wildfire or at existing well-attended events, i.e., annual BBQ, Pancake Breakfasts, and open days offered by Fire Departments. Acquire resources through the Community Resilience Centers Program to establish neighborhood-level resilience centers.	Increase compliance with County code. Reduce fire risk levels for individual parcels and the community.	Update the CWPP project tracking tool with progress and relevant statistics.	- Firewise grants - FP&S (FEMA) - EPA Environmental Education Grants - CWDG - BRIC - SRA - California Fire Safe Council
FAC9		H	Ongoing	Track Firewise USA recognized communities, home inspections, outreach events, fuel mitigation work, Firesafe Council activities, and CWPP action items in the CWPP project tracking tool.	N/A	Santa Clara County SCCFSC	Establish dedicated county personnel to evaluate project progress, collect information from PIOs and fire departments on outreach and education, and compile data on home inspections and Firewise USA community. Regularly update the CWPP project tracking tool with relevant statistics to be reviewed by the public and monitored by county officials. Align actions and updates across the county hub site, story map, and CWPP project tracking tool. Collaborate with groups countywide to incorporate regular updates to the CWPP hub site and story map. Coordinate regular meetings to discuss projects and CWPP updates. Develop and maintain countywide FAC practitioner database	Track the progress of different projects, programs, and initiatives. Provide a centralized database of certifications, inspections, and mitigation activities that can help with future grant work and funding goals.	Utilize the CWPP project tracking tool at annual CWPP meetings, Firesafe Council meetings, and Emergency Management Planning meetings. Reach out to SWCA Environmental Consultants for guidance and training on using the tracking tool.	- Firewise grants - FP&S (FEMA) - EPA Environmental Education Grants - CWDG - BRIC - SRA - California Fire Safe Council
FAC10		M	Ongoing	Increase and encourage attendance of the Ag pass program	Rural Santa Clara County	Santa Clara County, commercial agriculture producers	The existing Ag pass program is effective in addressing post-fire concerns for ranchers and farmers in the area. Conduct outreach and marketing for the Ag Pass program in relevant areas throughout the county. The program allows eligible Santa Clara County cattle producers access to their livestock in the event of a wildfire.	Inform commercial ranchers and farmers of opportunities to access livestock in the event of a wildfire.	Evaluate attendance of outreach events and fire safety trainings associated with the Ag pass program.	- Firewise grants - FP&S (FEMA) - EPA Environmental Education Grants - CWDG - BRIC - SRA - California Fire Safe Council
FAC11		M	Ongoing	Incorporate local Resource Conservation Districts (RCDs) in the planning and outreach process for CWPP updates and implementation.	Countywide and surrounding RCDs.	Santa Clara County	Ensure RCDs are given a place at the table. RCDs can provide connections and referrals and often have good information on communities that can help inform land managers during decision-making processes. The Guadalupe-Coyote RCD has a new staff member who can support outreach. They are looking to fill gaps, not provide redundant resources.	Provide the county with more support and information regarding local communities. Support outreach regarding wildfire risk.	Establish an RCD representative on the Advisory Team.	- Firewise grants - FP&S (FEMA) - EPA Environmental Education Grants - CWDG - BRIC - SRA - California Fire Safe Council

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
FAC12		H	Ongoing	Utilize NextDoor as an outreach tool	Countywide		NextDoor now has a public agency platform that can link citizens to their neighborhoods and view agency messaging. Guadalupe-Coyote RCD has 1/3 of its population viewing messages and has seen an increased trend in people signing up for alerts and newsletters. Collaborate with RCDs and PIOs on using NextDoor.	Provide county residents with a reliable and centralized outreach system.	Conduct quarterly meetings to coordinate outreach efforts through the program.	- Firewise grants - FP&S (FEMA) - EPA Environmental Education Grants - CWDG - BRIC - SRA - California Fire Safe Council
FAC 13		H	Ongoing	Create smoke-ready communities through facilitating smoke education and providing resources.	Countywide, focus on smoke prone areas and disadvantaged communities	County Fire Departments and Fire Safe Councils	Identify smoke-prone regions and socioeconomically disadvantaged communities that are most vulnerable to impacts of smoke. Work with FDs and Fire Safe Councils to develop education materials Work with County Air Quality and Extreme Heat Working Group to develop materials Provide resources (e.g. air cleaners) to vulnerable and at-risk communities Disseminate information through various channels, including: - Social Media - Public Events - In-Person Training and Workshops - School Curriculum integration	Provide the community with knowledge and strategies to reduce the health impacts associated with smoke from wildfires	Annual program evaluation and updates as necessary.	- CWDG - Coastal Conservancy - CAL FIRE - California Firesafe Council
FAC 14		M	Ongoing	Research the need for a Prescribed Burn Association (PBA) or a Prescribed Burn Council (PBC), and work with partners to implement a program.	Countywide	SCCFSC, RCDs, CAL FIRE, county fire departments, landowners, etc.	Evaluate existing legal and regulatory framework surrounding prescribed burns in Santa Clara Research the approach used by other existing PBAs/PBCs in California organize their efforts mitigate wildfire risk Garner public involvement and interest, disseminate educative materials to spread awareness of the benefits of prescribes fires Determine resource availability and additional needs to establish and operate of PBA/PBC: - Trained personnel - Equipment - Funding - Partnership	Educate communities about the use of prescribed fire Reduce loss of life and structures through decrease fuel loads	Annual program evaluation and updates as necessary.	- Coastal Conservancy - CAL FIRE - California Firesafe Council
FAC 15		H	Ongoing	Continued FAC education for people residing, working, and recreating in Santa Clara County.	County Wide	County Fire Departments and Fire Safe Councils	Educating members of the community on wildfire science, fuels reduction, home hardening through: - Training programs and workshops - Community guidelines - Train-the-trainer programs - Forest health education programs Promoting knowledge about smoke and its impact with: - Local alerts - Public service announcements - Guidance for indoor air quality measure (e.g. air purifiers, closing windows) Collaborate with FDs to develop plans and communicate strategies that will help maximize evacuation readiness	Provide those living, working, and taking part in recreation within the County with proper wildfire education Increase community resilience to wildfire impacts	Annual program evaluation and updates as necessary.	- CWDG - CAL FIRE - California Firesafe Council



GOAL 3: WILDFIRE RESPONSE

Goal 3 of the Cohesive Strategy/Western Regional Action Plan is Wildfire Response: All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions:

“A balanced wildfire response requires integrated pre-fire planning with effective, efficient, and coordinated emergency response. Pre-fire planning helps tailor responses to wildfires across jurisdictions and landscape units that have different uses and management objectives. Improved prediction and understanding of weather, burning conditions, and various contingencies during wildfire events can improve firefighting effectiveness, thereby reducing losses and minimizing risks to firefighter and public health and safety. Wildfire response capability will consider the responsibilities identified in the Federal Response Framework. Local fire districts and municipalities with statutory responsibility for wildland fire response are not fully represented throughout the existing wildland fire governance structure, particularly at the NWCG, NMAC, and GACC levels.” (WRSC 2013:15).

This section provides recommended actions that jurisdictions could undertake to improve wildfire response.

RECOMMENDATIONS FOR IMPROVING FIRE RESPONSE CAPABILITIES

Local fire departments are often the first on the scene to suppress wildland fires in the WUI in Santa Clara County. Therefore, it is important that local fire departments train personnel and maintain equipment for the specific purpose of suppressing wildland fire.

Based on Fire Department surveys administered as a part of this 2023 CWPP update, the San Jose, Palo Alto, and Gilroy fire departments together employ a total of 781 fire fighters. Of these, 85% are red-carded, with 654 red-carded fire fighters stationed in San Jose. This leaves 127 fire fighters stationed in rural parts of the County without proper NWCG training. These departments have voiced a need for NWCG courses and live fire exercises which will better prepare them for wildland fire operations such as burn outs, fire line construction, and hazard tree mitigation. Santa Clara County fire departments also recognize the importance of fuel reduction treatments for the purpose of limiting the growth of catastrophic wildfires and subsequently lessening the burden on local wildland fire suppression resources.

Furthermore, educating the public so they can reduce dependence on fire departments is essential because fire department resources are often stretched thin due to limited personnel, especially during busy periods, like what was observed during the SCU Lightning Complex. Education to enhance community preparedness is a key factor in supporting local fire departments in fire response, particularly educating residents about emergency notifications and evacuation protocols so that residents are able to safely evacuate an area while emergency responders prepare to protect life and property. There are several organizations that provide public education and outreach programs throughout the County. The Santa Clara County and South Skyline FireSafe Councils both provide chipping and home advisory services as well as several wildfire community education events. In addition, several fire departments throughout the valley provide training and educational materials on wildfire prevention. To learn more about public education and outreach programs, see Appendix B.

Detailed descriptions of fire response across the various levels of government in the County are provided in Appendix B, Fire Response Capabilities. This includes information on fire department resources, evacuation, and emergency preparedness.

Table 4.3 provides recommendations for improving firefighting capabilities and emergency response. Many of these recommendations are general in nature and are designed to be tiered to at the jurisdictional annex level where additional specific details can be developed.

Table 4.3. Recommendations for Safe and Effective Wildfire Response

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
FR1		M	Ongoing	Reestablish protocols for preplanned water sources for fire suppression operations during times of drought.	Countywide	Fire Safe Councils or Fire Wise Communities, consultation with SJW, Valley Water and other water providers	Ensure adequate water resources are placed and identified in strategic locations around the county during peak wildfire season. Locations of water resources should be cataloged in an online mapping program. Water infrastructure should be considered during permitting processes and implemented into pre-attack plans. - Implement temporary water storage solutions on private lands (dip tanks, pumpkins, cisterns). - Conduct portable dip tank training with fire personnel. - Create a countywide GIS and map of temporary water resources. - Improve existing fire flows in remote areas to meet fire flow requirements - Make sure fire flows in new developments meet fire flow requirements - Install water tanks where feasible. In locations water tanks cannot be installed, have tanks filled and pre-loaded to be transported to areas of need in the event of a fire - Install additional tanks and standpipes - Install helicopter dip tanks where appropriate - Initiate a detailed study of feasible locations for water development improvements - Install hand pumps or other methods independent of the grid for accessing private well water - Ensure suppression crews have the appropriate "keys" for hydrants or standardized water fittings - Consult with SJW, Valley Water and other water providers	Improve fire-fighting response Alleviate public and agency concerns for limited water supply in certain areas during times of drought Aligns with the following plans: Santa Clara County Operational Area Hazard Mitigation Plan (2017)	Update the CWPP project tracking tool with progress and relevant statistics.	- CAL FIRE – Grant Portal - AFG - HMGP - EMPG - FMAG - RCP - SAFER - BRIC
FR2		L	Ongoing	Determine the feasibility of implementing a drone program for the purpose of monitoring wildfire ignitions and Initial Attack operations.	Countywide	Local and state fire agencies	Conduct a cost benefit analysis determining the economic viability of a UAS program. Identify and/or establish appropriate training protocols and certifications. Create or identify a UAS job hazard analysis (JHA). Emphasize to public that unauthorized UASs in active fire areas interfere with Initial Attack operations	Improve fire reporting of small and remote fires. Notify fire suppression agencies of wildfire ignitions and spread.	Certified UAS pilots are required. Notify local civilian and fire related aviation authorities of flight operations.	- CAL FIRE – Grant Portal - AFG - HMGP - EMPG - FMAG - RCP - SAFER - BRIC
FR3		L	Ongoing	Install a Countywide fire detection camera system.	Countywide	Santa Clara County Office of Emergency Management	Determine costs, upkeep, and operational capacity of a fire detection camera system. Consider using a combination of UAS, Landscape cameras, and satellite data.	Improve early detection of new wildfire ignitions in Santa Clara County.	Yearly testing and maintenance before peak wildfire season.	- CAL FIRE – Grant Portal - AFG - HMGP - EMPG - FMAG - RCP - SAFER

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
FR4		H	Within 1 year	Develop WUI Pre-Plans for public safety agencies to utilize in fire response	Countywide	County Fire Agencies	Utilize Zonehaven software. Ground truth Zonehaven information by entity.	Facilitate safe and effective wildfire response	Yearly testing and maintenance before peak wildfire season.	- CAL FIRE – Grant Portal - AFG - HMGP - EMPG - FMAG - RCP - SAFER
FR5		H	Within 1 year	Develop a Countywide evacuation plan	Countywide	County Fire Agencies	Utilize Zonehaven software. Ground truth Zonehaven by entity. Use Assembly Bill 2911 subdivision review for ingress/egress.	Notify citizens of evacuation plans expeditiously. Aligns with the following plans: Santa Clara County Operational Area Hazard Mitigation Plan (2017)	Yearly testing and maintenance before peak wildfire season.	- CAL FIRE – Grant Portal - AFG - HMGP - EMPG - FMAG - RCP - SAFER
FR6	Ongoing	M	Ongoing	Identify populations with disabilities or access needs during evacuations.	Countywide	Santa Clara County Office of Emergency Management	Integrate consideration and approaches for evacuation of vulnerable populations into the design of education and outreach programs as well as preplanning processes.	Assist in the safe evacuation of vulnerable populations Aligns with the following plans: - Santa Clara County Operational Area Hazard Mitigation Plan (2017) - Strategic Visioning Plan (EOP) (2022)	Yearly assessment of data quality.	- CAL FIRE – Grant Portal - AFG - HMGP - EMPG - FMAG - RCP - SAFER
FR7		H	Within 1 year	Identify communities that have poor ingress and egress routes or one-way-out communities and determine potential solutions	Countywide	Local Fire Protection Districts	Develop a working group- outreach to annex holders- to address community concerns Address specific ingress concerns in appropriate annexes Utilize existing CAL FIRE maps Explore and implement a permitting process Align with the Safety Element and HMP Incorporate findings into/from jurisdictional annexes and other evacuation related studies or assessments	Improve the evacuation of remote communities and people with poor ingress and egress options. Aligns with the following plans: - Santa Clara County Operational Area Hazard Mitigation Plan (2017) - Strategic Visioning Plan (EOP) (2022) - Santa Clara County General Plan Safety Element (2023)	Yearly meeting of annex holders to evaluate egress and ingress needs.	- CAL FIRE – Grant Portal - AFG - HMGP - EMPG - FMAG - RCP - SAFER
FR8		H	Within 1 year	Repaint or establish new evacuation arrow markers in neighborhoods.	Countywide	Santa Clara County Office of Emergency Management	Paint arrows red or yellow. Align markers with evacuation planning and identify temporary refuge areas.	Improve the efficiency and safety of evacuations. Aligns with the following plans: - Santa Clara County Operational Area Hazard Mitigation Plan (2017) - Strategic Visioning Plan (EOP) (2022)	Repaint arrows every 10 years	- CAL FIRE – Grant Portal - AFG - HMGP - EMPG - FMAG - RCP - SAFER

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
FR9		M	Ongoing	Improve and provide wildland fire specific training opportunities to local firefighters.	Santa Clara County	Fire Protection Districts, Fire Stations, Rural Volunteer Fire Departments.	Expand certifications and qualifications for fire department personnel. Ensure that all firefighters are trained in basic wildfire behavior, basic fire weather, and that all company officers and chief level officers are trained in the wildland command and strike team leader level. Develop agreements between agencies to provide training opportunities for fire staff. Ensure fire departments require all firefighters to be red carded. A red card is required for firefighters to work on an active federal fire incident. Increase funds for volunteer Fire Department training for response to fires in the WUI. Reach out to the National Wildfire Coordination Group (NWCG) for training materials, online courses, and instructor needs. Provide training opportunities for firefighter trainees to meet NWCG standards. Expand chainsaw operation training programs.	Improve local fire department wildland fire response and suppression capabilities. Reduce the damage caused by wildfires. Reduce the likelihood of firefighter injuries and fatalities. Aligns with the following plans: • Santa Clara County Operational Area Hazard Mitigation Plan (2017) • Strategic Visioning Plan (EOP) (2022)	Provide annual red card training/refresher/pack test events before the start of fire season. Provide online wildfire training classes/refresher courses. Establish Inter-agency training cooperation.	• CAL FIRE – Grant Portal • AFG • HMGP • EMPG • FMAG • RCP • SAFER
FR10	New	L	Ongoing	Create partnerships with local ranchers. Increase cooperation between CAL FIRE, Incident Management Teams, and local landowners.	Santa Clara County FSC	Rural areas, ranchlands, agricultural lands, privately owned open spaces.	Many local ranchers have private access roads, gates, and bridges that can aid Incident Management Teams with fire suppression operations and expedite Initial Attack resource response. Private access roads are not publicly mapped, and local landowners would like it to stay that way. Consider implementing an NDA to acquire private access information without making it publicly available. Ag Pass Contacts: Stephanie Moreno Sheila Barry	Improve Initial attack response capabilities. Improve fire agencies data on ingress and egress routes.	Conduct pre-fire season meetings with local ranch and agricultural leaders.	• CAL FIRE – Grant Portal • AFG • HMGP • EMPG • FMAG • RCP • SAFER

This page intentionally left blank.



CHAPTER 5 – MONITORING AND EVALUATION

Developing an action plan and an assessment strategy that identifies roles and responsibilities, funding needs, and timelines for completing highest-priority projects is an important step in organizing the implementation of the Santa Clara County CWPP. The previous chapter identifies tentative timelines and monitoring protocols for project recommendations, the details of which are outlined below. The CWPP story map, hub site, and project tracking tools that accompany the CWPP are designed to help sustain the plan and encourage frequent updates and monitoring of the recommended projects. They also increase transparency to the public, showing the actions of land managers and agencies toward wildfire mitigation and thereby building community buy-in and support. The FireSafe Council will be the main entity providing CWPP coordination and encouraging long-term sustainability of project recommendations through the project tracking tool.

All stakeholders and signatories to this CWPP desire worthwhile outcomes. It is also known that risk reduction work on the ground, for the most part, is often not attainable in a few months—or even years. The amount of money and effort invested in implementing a plan such as this requires that there be a means to describe, quantitatively and/or qualitatively, if the goals and objectives expressed in this plan are being accomplished according to expectations.

Monitoring and reporting contribute to the long-term evaluation of changes in ecosystems, as well as the knowledge base about how natural resource management decisions affect both the environment and the people who live in it. Furthermore, as the CWPP evolves over time, there may be a need to track changes in policy, requirements, stakeholder changes, and levels of preparedness. These can be significant for any future revisions and/or addendums to the CWPP and will be facilitated through use of the project tracker.

It is recommended that project monitoring be a collaborative effort. There are many resources for designing and implementing community based, multi-party monitoring that could support and further inform a basic monitoring program for the CWPP (Egan 2013).

Table 5.1 Identifies monitoring strategies for various aspects of all categories of CWPP recommendations and the effects of their implementation, both quantifiable and non-quantifiable, for assessing the progress of the CWPP and increase sustainability of projects. It must be emphasized that these strategies are 1) not exhaustive and 2) dependent on available funds and personnel to implement them.

Table 5.1. Recommended Monitoring Strategies

Strategy	Task/Tool	Lead	Remarks
Project tracking system	On-line web app to track hazardous fuels projects spatially, integrating wildfire risk layer to show progress towards wildfire hazard and risk reduction. Web app would include attribute tables that outline project details	FireSafe Council	Interactive tool will be easily updated and identify areas that require additional efforts
Photographic record (documents pre- and post-fuels reduction work, evacuation routes, workshops, classes, field trips, changes in open space, treatment type, etc.)	Establish field global positioning system (GPS) location; photo points of cardinal directions; keep photos protected in archival location	Advisory or FireSafe Council Team member	Relatively low cost; repeatable over time; used for programs and tracking objectives
Number of acres treated (by fuel type, treatment method)	GPS/GIS/fire behavior prediction system	Advisory or FireSafe Council Team member	Evaluating costs, potential fire behavior
Number of home ignition zones/defensible space treated to reduce structural ignitability	GPS	Property owner	Structure protection
Number of residents/citizens participating in any CWPP projects and events	Meetings, media interviews, articles	Advisory or FireSafe Council Team member	Evaluate culture change objective
Number of property owner contacts (brochures, flyers, posters, etc.)	Visits, phone	Agency representative	Evaluate objective
Number of jobs created	Contracts and grants	Advisory or FireSafe Council Team member	Evaluate local job growth
Education outreach: number, kinds of involvement	Workshops, classes, field trips, signage	Advisory or FireSafe Council Team member	Evaluate objectives
Emergency management: changes in agency response capacity	Collaboration	Agency representative	Evaluate mutual aid
Codes and policy changes affecting CWPP	Qualitative	Advisory Team or FireSafe Council	CWPP changes
Number of stakeholders	Added or dropped	Advisory Team or FireSafe Council	CWPP changes
Wildfire acres burned, human injuries/fatalities, infrastructure loss, environmental damage, suppression, and rehabilitation costs	Wildfire records	Advisory Team or FireSafe Council	Compare with 5- or 10-year average

FUELS TREATMENT MONITORING

It is important to evaluate whether fuel treatments have accomplished their defined objectives and whether any unexpected outcomes have occurred.

The strategies outlined in this section consider several variables:

- Do the priorities identified for treatment reflect the goals stated in the plan? Monitoring protocols can help address this question.
- Can there be ecological consequences associated with fuels work? Items to consider include soil movement and/or invasive species encroachment post-treatment. Relatively cost-effective monitoring may help reduce long term costs and consequences.
- Vegetation will grow back. Thus, fuel break maintenance and fuels modification in both the home ignition zone and at the landscape scale require periodic assessment. Monitoring these changes can help decision-makers identify appropriate treatment intervals.
- Monitoring for all types of fuels treatment is recommended. For example, in addition to monitoring mechanical treatments, it is important to carry out comprehensive monitoring of burned areas to establish the success of pre-fire fuels reduction treatments on fire behavior, as well as monitoring for ecological impacts, repercussions of burning on wildlife, and effects on soil chemistry and physics. Adaptive management is a term that refers to adjusting future management based on the effects of past management. Monitoring is required to gather the information necessary to inform future management decisions. Economic and legal questions may also be addressed through monitoring. In addition, monitoring activities can provide valuable educational opportunities for students.
- As the CWPP, landscape, and community evolve over time, there may be a need to track changes in policy, codes, requirements, stakeholder changes, and levels of preparedness. These can be significant for any future revisions and/or addendums to the CWPP.

The monitoring of each fuels reduction project would be site-specific, and decisions regarding the timeline for monitoring and the type of monitoring to be used would be determined by the project. The most important part of choosing a fuels project monitoring program is selecting a method appropriate to the people, place, and type of project. Several levels of monitoring activities meet different objectives, have different levels of time intensity, and are appropriate for different groups of people. They include the following:

Minimum—Level 1: Pre- and Post-project Photographs

Appropriate for many individual property owners who conduct fuels reduction projects on their properties.

Moderate—Level 2: Multiple Permanent Photo Points

Permanent photo locations are established using rebar or wood posts, global positioning system (GPS)-recorded locations, and photographs taken on a regular basis. Ideally, this process would continue over several years. This approach might be appropriate for more enthusiastic property owners or for agencies conducting small-scale, general treatments.

High—Level 3: Basic Vegetation Plots

A series of plots can allow monitors to evaluate vegetation characteristics such as species composition, percentage of cover, and frequency. Monitors then can record site characteristics such as slope, aspect, and elevation. Parameters would be assessed pre- and post-treatment. The monitoring agency should establish plot protocols based on the types of vegetation present and the level of detail needed to analyze the management objectives. This method is appropriate for foresters or other personnel monitoring fuel treatments on forested lands.

Intense—Level 4: Basic Vegetation Plus Dead and Downed Fuels Inventory

The protocol for this level would include the vegetation plots described above but would add more details regarding fuel loading. Crown height or canopy closure might be included for live fuels. Dead and downed fuels could be assessed using other methods, such as Brown's transects (Brown 1974), an appropriate photo series (Ottmar et al. 2000), or fire monitoring (Fire Effects Monitoring and Inventory System [FIREMON]) plots. This method is ideal for foresters or university researchers tracking vegetation changes in forested lands.

More information regarding fuel treatment types and methods can be found in Appendix F.

IMPLEMENTATION

The Santa Clara County CWPP makes recommendations for prioritized fuels reduction projects, for the purpose of reducing structural ignitability, as well as methods with which to carry out public education and outreach. Implementation projects need to be tailored to the specific project and will be unique to the location depending on available resources and regulations. As aforementioned, on-the-ground implementation of the recommendations in the Santa Clara County CWPP planning area will require the development of an action plan and assessment strategy for completing each project. This step will identify the roles and responsibilities of the people and agencies involved, as well as funding needs and timetables for completing the highest-priority projects (SAF 2004). Information pertaining to funding is provided in Appendix L.

PROJECT TRACKER

As described previously, within the hub site is a project tracking system designed to provide real-time updates and the ability for multi-agency coordination and collaboration. The tracking system is available for internal use and comes with the following features:

- Project database
- Project entries and sub-entries into the database
- Funding tracking
- Milestone and goal tracking
- Project constraint/opportunity tracking
- Project progress tracking
- Agency delegation
- Attach images or other files to project records

- Spatially delineated project locations/working areas

Externally, the project tracker holds the ability to display statistics to the public, such as acres treated, dollars spent, or the number of meetings held.

CWPP EVALUATION

CWPPs are intended to reduce the risk of wildfire for a community and the surrounding environment. However, over time, communities change and expand, vegetation grows back, and forests and wildlands evolve. As such, the risk of wildfire to communities is constantly changing. The plans and methods to reduce risk must be dynamic to keep pace with the changing environment. An evaluation of the CWPP will gather information and identify whether the plans and strategies are on course to meet the desired outcomes or if modifications are needed to meet expectations.

Four general steps can be used to evaluate the CWPP:

1. **Identify objectives:** What are the goals identified in the plan? How are they reached? Is the plan performing as intended?
 - a. Structural ignitability
 - b. Fuel treatments
 - c. Public education and outreach
 - d. Multi-agency collaboration
 - e. Emergency response
2. **Assess the changing environment:** How have population characteristics and the wildfire environment changed?
 - a. Population change
 - i. Increase or decrease
 - ii. Demographics
 - b. Population settlement patterns
 - i. Distribution
 - ii. Expansion into the WUI
 - c. Vegetation
 - i. Fuel quantity and type
 - ii. Drought and disease impacts
3. **Review action items:** Are actions consistent with the plan's objectives?
 - a. Check for status, i.e., completed/started/not started
 - b. Identify completed work and accomplishments
 - c. Identify challenges and limitations
 - d. Identify next steps
 - e. Update the project tracker
 - f. Convene annex holders

4. **Assess results:** What are the outcomes of the action items?
- a. Multi-agency collaboration
 - i. Who was involved in the development of the CWPP?
 - ii. Have partners involved in the development process remained involved in the implementation?
 - iii. How has the planning process promoted implementation of the CWPP?
 - iv. Have CWPP partnerships and collaboration had a beneficial impact on the community?
 - v. What is the status of CWPP annexes? Have annex holders been engaged in periodic update meetings?
 - vi. Have stakeholders been providing project updates for inclusion in the project tracker?
 - b. Risk-Hazard Assessment
 - i. How is the Risk-Hazard Assessment utilized to make decisions about fuel treatment priorities?
 - ii. Have there been new wildfire-related regulations?
 - iii. Are at-risk communities involved in mitigating wildfire risk?
 - iv. Has there been an update to the Risk-Hazard Assessment that should be integrated into the CWPP?
 - v. When is the last time the CWPP Management Team communicated with the Risk-Hazard Assessment authors?
 - c. Hazardous fuels
 - i. How many acres have been treated?
 - ii. How many projects are cross-boundary?
 - iii. How many residents have participated in creating defensible space?
 - d. Structural ignitability
 - i. Have there been updates to fire codes and ordinances?
 - ii. How many structures have been lost to wildfire?
 - iii. Has the CWPP increased public awareness of structural ignitability and reduction strategies?
 - e. Public education and outreach
 - i. Has public awareness of wildfire and mitigation strategies increased?
 - ii. Have residents been involved in wildfire mitigation activities?
 - iii. Has there been public involvement?
 - iv. Have vulnerable populations been involved?
 - v. What is the traffic on the CWPP Story Map?
 - f. Emergency response
 - i. Has the CWPP continued to be integrated into relevant plans (e.g., hazard mitigation or emergency operations)?
 - ii. Does the CWPP remain congruent with other hazard mitigation planning efforts?
 - iii. Has the availability and capacity of local fire departments changed since the CWPP was developed?

TIMELINE FOR UPDATING THE CWPP

The HFRA allows for maximum flexibility in the CWPP planning process, permitting the Planning Team to determine the time frame for updating the CWPP. The Planning Team members are encouraged to meet on an annual basis to review the project list, discuss project successes, and strategize regarding project implementation funding. It is suggested that the evaluation framework above be used annually to make plan updates, and a more formal revision be made on the fifth anniversary of signing and every 5 years following. The Santa Clara County FireSafe Council will facilitate and oversee this process.

This page intentionally left blank.

ABBREVIATIONS AND ACRONYMS

°F	degrees Fahrenheit
AMMs	avoidance and minimization measures
ATV	all-terrain vehicle
BAER	Burned Area Emergency Rehabilitation
BLM	Bureau of Land Management
BMP	best management practice
BTU/ft/sec	British thermal units per foot per second
CA GOPR	California Governor's Office of Planning and Research
CAL FIRE	California Department of Forestry and Fire Protection
California SJT	California Silver Jackets Team
CalVTP	California Vegetation Treatment Program
CAR	community at risk
CARB	California Air Resources Board
CAS	Casualty Actuarial Society
CCI	California Climate Investments
CCICC	Central California Interagency Communications Center
CDC	Centers for Disease Control and Prevention
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CDI	California Department of Insurance
CDPR	California Department of Parks and Recreation
CE	categorical exemption
CERT	Community Emergency Response Team
CEQA	California Environmental Quality Act
ch/hr	chains per hour
CIG	Conservation Innovation Grants
Cohesive Strategy	National Cohesive Wildland Fire Management Strategy
County	Santa Clara County
CPUC	California Public Utilities Commission
CRS	Congressional Research Service
CUSP	Coalition for the Upper South Platte
CVAR	community value at risk
CWA	Clean Water Act
CWH	classified wildfire hazard

CWPP	community wildfire protection plan
DEM	digital elevation model
DHS	Department of Homeland Security
EAS	Emergency Alert System
EIR	Environmental Impact Report
EMS	Emergency Management System
EPA	U.S. Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
ESRI	Environmental Systems Research Institute
FAC	fire-adapted community
FHSZ	fire hazard severity zone
FEMA	Federal Emergency Management Agency
FLAME	Federal Land Assistance, Management and Enhancement Act
FP&S	Fire Prevention and Safety
FRA	Federal Responsibility Area
FRI	fire return interval
GAID	Geographic Area Interagency Division
GIS	geographic information system
GPS	global positioning system
HFRA	Healthy Forests Restoration Act of 2003
HIZ	home ignition zone
HMP	hazard mitigation plan
HOA	homeowner association
HVRA	highly valued resource or asset
IBHS	Insurance Institute for Business & Home Safety
ICC	International Code Council
IFTDSS	Interagency Fuel Treatment Decision Support System
ISO	Insurance Services Office
JPA	Joint Powers Agreement
LAFC	Local Agency Formation Commission
LHMP	Local Hazard Mitigation Plan
LRA	Local Responsibility Area
MFI	mean fire interval
Midpen	Midpeninsula Regional Open Space Authority
MND	mitigated negative declaration
MROCD	Midpeninsula Regional Open Space District

MVFD	Mountain View Fire Department
NEPA	National Environmental Policy Act
ND	negative declaration
NFP	National Fire Plan
NFPA	National Fire Protection Association
NIFC	National Interagency Fire Center
NIOSH	National Institute for Occupational Safety and Health
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NWCG	National Wildfire Coordinating Group
OES	Office of Emergency Services
OSCC	Southern California Geographic Coordination Center
PERI	Public Entity Risk Institute
PFCG	Post-Fire Coordination Group
PPE	personal protective equipment
PRC	Public Resources Code
PSPS	public safety power shutoff
RAWS	remote automated weather station
RCD	Resource Conservation District
RFA	Rural Fire Assistance
SAF	Society of American Foresters
SAFER	Staffing for Adequate Fire and Emergency Response
SCCFD	Santa Clara County Fire Department
SE	statutory exemption
SHPO	State Historic Preservation Office
SJFD	San José Fire Department
SOD	sudden oak death
SRA	State Responsibility Area
SWCA	SWCA Environmental Consultants
Task Force	California Forest Management Task Force
UCANR	University of California, Agriculture and Natural Resources
ULI	Urban Land Institute
USDA	U.S. Department of Agriculture
USDOJ	U.S. Department of the Interior
USFS	U.S. Forest Service

USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VAR	value at risk
VCC	Vegetation Condition Class
VDEP	Vegetation Departure
VMP	vegetation management program
WRS	wildfire risk to structures
WRSC	Western Regional Strategy Committee
WUI	wildland urban interface

GLOSSARY

Aspect: Cardinal direction toward which a slope faces in relation to the sun (NWCG 2021b).

Active Crown Fire: A crown fire in which the entire fuel complex is involved in flame, but the crowning phase remains dependent on heat released from surface fuel for continued spread. An active crown fire presents a solid wall of flame from the surface through the canopy fuel layers. Flames appear to emanate from the canopy as a whole rather than from individual trees within the canopy. Active crown fire is one of several types of crown fire and is contrasted with **passive crown fires**, which are less vigorous types of crown fire that do not emit continuous, solid flames from the canopy (SWCA).

Available Canopy Fuel: The mass of canopy fuel per unit area consumed in a crown fire. There is no post-frontal combustion in canopy fuels, so only fine canopy fuels are consumed. We assume that only the foliage and a small fraction of the branchwood is available (Wooten 2021).

Available Fuel: The total mass of ground, surface and canopy fuel per unit area available fuel consumed by a fire, including fuels consumed in postfrontal combustion of duff, organic soils, and large woody fuels (Wooten 2021).

Backfiring: Intentionally setting fire to fuels inside a control line to contain a fire (Wooten 2021).

Biomass: Organic material. Also refers to the weight of organic material (e.g., biomass roots, branches, needles, and leaves) within a given ecosystem (Wooten 2021).

Burn Severity: A qualitative assessment of the heat pulse directed toward the ground during a fire. Burn severity relates to soil heating, large fuel and duff consumption, consumption of the litter and organic layer beneath trees and isolated shrubs, and mortality of buried plant parts (SWCA).

Canopy: The more or less continuous cover of branches and foliage formed collectively by adjacent trees and other woody species in a forest stand. Where significant height differences occur between trees within a stand, formation of a multiple canopy (multi-layered) condition can result (SWCA).

Chain: Unit of measure in land survey, equal to 66 feet (20 m) (80 chains equal 1 mile). Commonly used to report fire perimeters and other fireline distances. Popular in fire management because of its convenience in calculating acreage (example: 10 square chains equal 1 acre) (New Mexico Future Farmers of America 2010).

Climate adaptation: Adaptation is an adjustment in natural or human systems to a new or changing environment. Adaptation to climate change refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities (CA GOPR 2020).

Climate Change: A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods (CA GOPR 2020).

Community Assessment: An analysis designed to identify factors that increase the potential and/or severity of undesirable fire outcomes in WUI communities (SWCA).

Communities at Risk: Defined by the HFRA as “Wildland-Urban Interface Communities within the vicinity of federal lands that are at high risk from wildfire.”

- CAL FIRE expanded on this definition for California including all communities (regardless of distance from federal lands) for which a significant threat to human life or property exists as a

result of a wildland fire event. California uses the following three factors to determine at risk communities: 1) high fuel hazard, 2) probability of a fire, and 3) proximity of intermingled wildland fuels and urban environments that are near fire threats (CA GOPR 2020).

Community Emergency Response Team (CERT): The CERT program educates volunteers about disaster preparedness for the hazards that may impact their area and trains them in basic disaster response skills, such as fire safety, light search and rescue, team organization, and disaster medical operations. CERT offers a consistent, nationwide approach to volunteer training and organization that professional responders can rely on during disaster situations, allowing them to focus on more complex tasks (Ready 2021).

Community Wildfire Protection Plan (CWPP): A planning document that seeks to reduce the threat to life and property from wildfire by identifying and mitigating wildfire hazards to communities and infrastructure located in the WUI. Developed from the HFRA, a CWPP addresses issues such as wildfire response, hazard mitigation, community preparedness, or structure protection (SWCA).

Conditional Surface Fire: A potential type of fire in which conditions for sustained conditional surface fire active crown fire spread are met but conditions for crown fire initiation are not. If the fire begins as a surface fire, then it is expected to remain so. If it begins as an active crown fire in an adjacent stand, then it may continue to spread as an active crown fire (Wooten 2021).

Contain: A tactical point at which a fire's spread is stopped by and within specific contain features, constructed or natural; also, the result of stopping a fire's spread so that no further spread is expected under foreseeable conditions. For reporting purposes, the time and date of containment. This term no longer has a strategic meaning in federal wildland fire policy (Wooten 2021).

Control: To construct fireline or use natural features to surround a fire and any control spot fires therefrom and reduce its burning potential to a point that it no longer threatens further spread or resource damage under foreseeable conditions. For reporting purposes, the time and date of control. This term no longer has a strategic meaning in federal wildland fire policy (Wooten 2021).

Cover type: The type of vegetation (or lack of it) growing on an area, based on cover type minimum and maximum percent cover of the dominant species, species group or non-living land cover (such as water, rock, etc.). The cover type defines both a qualitative aspect (the dominant cover type) as well as a quantitative aspect (the abundance of the predominant features of that cover type; Wooten 2021).

Creeping Fire: A low-intensity fire with a negligible rate of spread (Wooten 2021).

Crown Fire: A fire that advances at great speed from crown to crown in tree canopies, often well in advance of the fire on the ground (National Geographic 2021).

Defensible Space: An area around a structure where fuels and vegetation are modified, cleared, or reduced to slow the spread of wildfire toward or from a structure. The design and distance of the defensible space is based on fuels, topography, and the design/materials used in the construction of the structure (SWCA).

- In California, PRC Section 4291, "defensible space" refers to a 100-foot perimeter around a structure in which vegetation (fuels) must be maintained in order to reduce the likelihood of ignition. This space may extend beyond property lines, or 100 feet as required by State law as well as local ordinances, rules, and regulations (CA GOPR 2020).

Duff: The layer of decomposing organic materials lying below the litter layer of freshly fallen twigs, needles, and leaves and immediately above the mineral soil (SWCA).

Ecosystem: An interacting natural system including all the component organisms together with the abiotic environment and processes affecting them (SWCA).

Environmental Conditions: That part of the fire environment that undergoes short-term changes: weather, which is most commonly manifest as windspeed, and dead fuel moisture content (Wooten 2021).

Escape Route: A preplanned and understood route firefighters take to move to a safety zone or other low-risk area. When escape routes deviate from a defined physical path, they should be clearly marked (flagged; SWCA).

Evacuation: The temporary movement of people and their possessions from locations threatened by wildfire (SWCA).

Federal Responsibility Area (FRA): A term specific to California, designating areas where the federal government is responsible for fire response efforts. These areas include lands under federal ownership (CA GOPR 2020).

Fire-Adapted Community: A fire-adapted community collaborates to identify its wildfire risk and works collectively on actionable steps to reduce its risk of loss. This work protects property and increases the safety of firefighters and residents (USFA 2021b).

Fire Behavior: The manner in which fuel ignites, flame develops, and fire spread and exhibits other related phenomena as determined by the interaction of fuels, weather, and topography (Fire Research and Management Exchange System 2021).

Fire Break: Areas where vegetation and organic matter are removed down to mineral soil (SWCA).

Fire Environment: The characteristics of a site that influence fire behavior. In fire modeling the fire environment is described by surface and canopy fuel characteristics, windspeed and direction, relative humidity, and slope steepness (Wooten 2021).

Fire Frequency: A broad measure of the rate of fire occurrence in a particular area. For historical analyses, fire frequency is often expressed using the fire return interval calculation. For modern-era analyses, where data on timing and size of fires are recorded, fire frequency is often best expressed using fire rotation (SWCA).

Fire Hazard: Fire hazard is the potential fire behavior or fire intensity in an area, given the type(s) of fuel present – including both the natural and built environment – and their combustibility (CA GOPR 2020).

Fire Hazard Severity Zones: Fire hazard severity zones are defined based on vegetation, topography, and weather (temperature, humidity, and wind), and represents the likelihood of an area burning over a 30- to 50-year time period without considering modifications such as fuel reduction efforts. In California, CAL FIRE maintains fire hazard severity zone (FHSZ) data for the entire state. There are three classes of fire hazard severity ratings within FHSZs: Moderate, High, and Very High (CA GOPR 2020).

Fire History: The chronological record of the occurrence of fire in an ecosystem or at a specific site. The fire history of an area may inform planners and residents about the level of wildfire hazard in that area (SWCA).

Fire Intensity: A general term relating to the heat energy released in a fire (SWCA).

Fireline Intensity: Amount of heat release per unit time per unit length of fire front. Numerically, the product of the heat of combustion, quantity of fuel consumed per unit area in the fire front, and the rate of spread of a fire, expressed in kilowatts per minute (SWCA). This expression is commonly used to

describe the power of wildland fires, but it does not necessarily follow that the severity, defined as the vegetation mortality, will be correspondingly high (Wooten 2021).

Fire Prevention: Activities such as public education, community outreach, planning, building code enforcement, engineering (construction standards), and reduction of fuel hazards that is intended to reduce the incidence of unwanted human-caused wildfires and the risks they pose to life, property, or resources (CA GOPR 2020).

Fire Regime: A measure of the general pattern of fire frequency and severity typical to a particular area or type of landscape: The regime can include other metrics of the fire, including seasonality and typical fire size, as well as a measure of the pattern of variability in characteristics (SWCA).

Fire Regime Condition Class: Condition classes are a function of the degree of fire regime condition class departure from historical fire regimes resulting in alterations of key ecosystem components such as composition structural stage, stand age, and canopy closure (Wooten 2021).

Fire Return Interval: Number of years (interval) between two successive fires in a designated area (SWCA).

Fire Severity: A qualitative measure of the immediate effects of fire on the fire severity ecosystem. It relates to the extent of mortality and survival of plant and animal life both aboveground and belowground and to loss of organic matter. It is determined by heat released aboveground and belowground. Fire Severity is dependent on intensity and residence dependent of the burn. For trees, severity is often measured as percentage of basal area removed. An intense fire may not necessarily be severe (Wooten 2021).

Fire Risk: “Risk” takes into account the intensity and likelihood of a fire event to occur as well as the chance, whether high or low, that a hazard such as a wildfire will cause harm. Fire risk can be determined by identifying the susceptibility of a value or asset to the potential direct or indirect impacts of wildfire hazard events (CA GOPR 2020).

Flammability: The relative ease with which fuels ignite and burn regardless of the quantity of the fuels (SWCA).

Flame Length: The length of flames in the propagating fire front measured along the slant of the flame from the midpoint of its base to its tip. It is mathematically related to fireline intensity and tree crown scorch height (Wooten 2021).

Foliar Moisture content: Moisture content (dry weight basis) of live foliage, foliar moisture content expressed as a percent. Effective foliar moisture content incorporates the moisture content of other canopy fuels such as lichen, dead foliage, and live and dead branchwood (Wooten 2021).

Forest Fire: uncontrolled burning of a woodland area (National Geographic 2021).

Fuel Break: A natural or manmade change in fuel characteristics which affects fire behavior so that fires burning into them can be more readily controlled (NWCG 2021c).

Fuel Complex: The combination of ground, surface, and canopy fuel strata (Wooten 2021).

Fuel Condition: Relative flammability of fuel as determined by fuel type and environmental conditions (SWCA).

Fuel Continuity: A qualitative description of the distribution of fuel both horizontally and vertically. Continuous fuels readily support fire spread. The larger the fuel discontinuity, the greater the fire intensity required for fire spread (Wooten 2021).

Fuel Loading: The volume of fuel in a given area generally expressed in tons per acre (SWCA). Dead woody fuel loadings are commonly described for small material in diameter classes of 0 to 0.25, 0.25 to 1, and 1 to 3 inches and for large material greater than 3 inches (Wooten 2021).

Fuel Management/Fuel Reduction: Manipulation or removal of fuels to reduce the likelihood of ignition and to reduce potential damage in case of a wildfire. Fuel reduction methods include prescribed fire, mechanical treatments (mowing, chopping), herbicides, biomass removal (thinning or harvesting of trees, harvesting of pine straw), and grazing. Fuel management techniques may sometimes be combined for greater effect (SWCA). More information about fuel management and fuel reduction can be found in Appendix F.

Fuel Model: A set of surface fuel bed characteristics (load and surface-area-to- fuel model volume-ratio by size class, heat content, and depth) organized for input to a fire model (Wooten 2021).

Fuel Modification: The manipulation or removal of fuels (i.e., combustible biomass such as wood, leaves, grass, or other vegetation) to reduce the likelihood of igniting and to reduce fire intensity. Fuel modification activities may include lopping, chipping, crushing, piling and burning, including prescribed burning. These activities may be performed using mechanical treatments or by hand crews. Herbicides and prescribed herbivory (grazing) may also be used in some cases. Fuel modification may also sometimes be referred to as “vegetation treatment” (CA GOPR 2020).

Fuel Moisture Content: This is expressed as a percent or fraction of oven dry fuel moisture content weight of fuel. It is the most important fuel property controlling flammability. In living plants, it is physiologically bound. Its daily fluctuations vary considerably by species but are usually above 80 to 100 percent. As plants mature, moisture content decreases. When herbaceous plants cure, their moisture content responds as dead fuel moisture content, which fluctuates according to changes in temperature, humidity, and precipitation (Wooten 2021).

Fuel Treatment: The manipulation or removal of fuels to minimize the probability of ignition and/or to reduce potential damage and resistance to fire suppression activities (NWCG 2021d). Synonymous with fuel modification.

Grazing: There are two types of grazing: 1) traditional grazing, and 2) targeted grazing. Traditional grazing refers to cattle that are managed in extensive pastures to produce meat. Targeted grazing involves having livestock graze at a specific density for a given period of time for the purpose of managing vegetation. Even though both kinds of grazing manage fuel loading in range- and forested lands, targeted grazing is different in that its sole purpose is to manage fuels. Targeted grazing is done by a variety of livestock species such as sheep, goats, or cows (UCANR 2019).

Ground Fire: Fire that burns organic matter in the soil, or humus; usually does not appear at the surface (National Geographic 2021).

Ground Fuels: Fuels that lie beneath surface fuels, such as organic soils, duff, decomposing litter, buried logs, roots, and the below-surface portion of stumps (Wooten 2021).

Hazard: A “hazard” can be defined generally as an event that could cause harm or damage to human health, safety, or property (CA GOPR 2020).

Hazardous Areas: Those wildland areas where the combination of vegetation, topography, weather, and the threat of fire to life and property create difficult and dangerous problems (SWCA).

Hazardous Fuels: A fuel complex defined by type, arrangement, volume, condition, and location that poses a threat of ignition and resistance to fire suppression (NWCG 2021e).

Hazardous Fuels Reduction: Any strategy that reduces the amount of flammable material in a fire-prone ecosystem. Two common strategies are mechanical thinning and controlled burning (Wooten 2021).

Hazard Reduction: Any treatment that reduces the threat of ignition and spread of fire (SWCA).

Highly Valued Resources and Assets: Landscape features that are influenced positively and/or negatively by fire. Resources are naturally occurring, while Assets are human-made (Interagency Fuel Treatment Decision Support System [IFTDSS] 2021).

Ignition: The action of setting something on fire or starting to burn (SWCA).

Incident: An occurrence or event, either natural or person-caused, which requires an emergency response to prevent loss of life or damage to property or natural resources (Wooten 2021).

Influence Zone: An area that, with respect to wildland and urban fire, has a set of conditions that facilitate the opportunity for fire to burn from wildland fuels to the home and or structure ignition zone (NWCG 2021a).

Initial Attack: The actions taken by the first resources to arrive at a wildfire to protect lives and property, and prevent further extension of the fire (SWCA).

Invasive Species: An introduced, nonnative organism (disease, parasite, plant, or animal) that begins to spread or expand its range from the site of its original introduction and that has the potential to cause harm to the environment, the economy, or to human health (USGS 2021).

Ladder Fuels: Fuels that provide vertical continuity allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease (SWCA).

Litter: Recently fallen plant material that is only partially decomposed and is still discernible (SWCA).

Local Responsibility Area: A term specific to California, designating areas where the local government is responsible for wildfire protection. The Local Responsibility Area (LRA) includes incorporated cities, cultivated agricultural lands, and portions of the desert. LRA fire protection is typically provided by city fire departments, fire protection districts, counties, and by CAL FIRE under contract to local government (CA GOPR 2020).

Manual Treatments: Felling and piling of fuels done by hand. The volume of material generated from a manual fuel treatment is typically too small to warrant a biomass sale therefore collected material is disposed of by burning or chipping. The work can be performed by either a single individual or a large organized crew with powered equipment (UCANR 2021a).

Mechanized Treatments: Mechanical treatments pulverize large continuous patches of fuel to reduce the volume and continuity of material. Mechanical treatments can be applied as either mastication or chipping treatments. Both treatments shred woody material, but mastication leaves residue on-site while chipping collects the particles for transportation off site. Similar to hand treatments, mechanical treatments can target specific areas and vegetation while excluding areas of concern. In addition, mechanical treatment is easily scalable to large areas (>30 acres) with little added cost (UCANR 2021b).

Mitigation: Action that moderates the severity of a fire hazard or risk (SWCA).

Mutual Aid: Assistance in firefighting or investigation by fire agencies, irrespective of jurisdictional boundaries (NWCG 2021f).

Native Revegetation: The process of replanting and rebuilding the soil of disturbed land (e.g., burned) with native plant species (USDA 2005).

Native Species: A species that evolved naturally in the habitat, ecosystem, or region as determined by climate, soil, and biotic factors (USDA 2005).

National Cohesive Strategy: The National Cohesive Wildland Fire Management Strategy is a strategic push to work collaboratively among all stakeholders and across all landscapes, using best science, to make meaningful progress toward three goals:

- Resilient Landscapes
- Fire-Adapted Communities
- Safe and Effective Wildfire Response

Vision: To safely and effectively extinguish fire when needed; use fire where allowable; manage our natural resources; and as a nation, to live with wildland fire (Forests and Rangelands 2021).

Overstory: That portion of the trees in a forest which forms the upper or uppermost layer (SWCA).

Passive Crown Fire: A type of crown fire in which the crowns of individual trees or small groups of trees burn, but solid flaming in the canopy cannot be maintained except for short periods. Passive crown fire encompasses a wide range of crown fire behavior, from occasional torching of isolated trees to nearly active crown fire. Passive crown fire is also called torching or candling. A fire in the crowns of the trees in which trees or groups of trees torch, ignited by the passing front of the fire. The torching trees reinforce the spread rate, but these fires are not basically different from surface (SWCA).

Prescribed Burning: Any fire ignited by management actions under specific, predetermined conditions to meet specific objectives related to hazardous fuels or habitat improvement. Usually, a written, approved prescribed fire plan must exist, and NEPA requirements must be met, prior to ignition (USFS 2021a).

Prescribed Herbivory: Prescribed herbivory for hazardous fuel reduction is the intentional use of domestic livestock to remove, rearrange, or convert vegetation on wildlands to reduce the costs and losses associated with wildfires and to enhance the condition of forests, rangelands, and watersheds. The types of domestic livestock considered include sheep, goats, and cattle.

Rate of Spread: The relative activity of a fire in extending its horizontal dimensions. It is expressed as rate of increase of the total perimeter of the fire, as rate of forward spread of the fire front, or as rate of increase in area, depending on the intended use of the information. Usually, it is expressed in chains or acres per hour for a specific period in the fire's history (NWCG 2021g).

Resilience: Resilience is the capacity of any entity – an individual, a community, an organization, or a natural system – to prepare for disruptions, to recover from shocks and stresses, and to adapt and grow from a disruptive experience (CA GOPR 2020).

Response: Movement of an individual firefighting resource from its assigned standby location to another location or to an incident in reaction to dispatch orders or to a reported alarm (SWCA).

Safety Element: One of the seven mandatory elements of a local general plan (a county plan that forms the foundation for future development), the safety element must identify hazards and hazard abatement provisions to guide local decisions related to zoning, subdivisions, and entitlement permits. The element should contain general hazard and risk reduction strategies and policies supporting hazard mitigation measures (CA GOPR 2020).

Slash: Debris left after logging, pruning, thinning, or brush cutting. Slash includes logs, chips, bark, branches, stumps, and broken trees or brush that may be fuel for a wildfire (SWCA).

Slope Percent: The ratio between the amount of vertical rise of a slope and horizontal distance as expressed in a percent. One hundred feet of rise to 100 feet of horizontal distance equals 100 percent (NWCG 2021h).

State Responsibility Area: A term specific to California, designating areas where the state has financial responsibility for wildland fire protection. Incorporated cities and lands under federal ownership are not included in the SRA. Lands under federal ownership are in the federal responsibility area (CA GPR 2020).

Suppression: The most aggressive fire protection strategy, it leads to the total extinguishment of a fire (SWCA).

Surface Fire: fire that typically burns only surface litter and undergrowth (National Geographic 2021).

Surface Fuel: Fuels lying on or near the surface of the ground, consisting of leaf and needle litter, dead branch material, downed logs, bark, tree cones, and low stature living plants (SWCA).

Structural Ignitability: The ability of structures (such as homes or fences) to catch fire (SWCA).

Topography: The arrangement of the natural and artificial physical features of an area (SWCA).

Total Fuel Load: The mass of fuel per unit area that could possibly be consumed in a hypothetical fire of the highest intensity in the driest fuels (Wooten 2021).

Tree Crown: The primary and secondary branches growing out from the main stem, together with twigs and foliage (SWCA).

Understory: Low-growing vegetation (herbaceous, brush or reproduction) growing under a stand of trees. Also, that portion of trees in a forest stand below the overstory (SWCA).

Understory Fire: A fire burning in the understory, more intense than a surface fire with flame lengths of 1 to 3 m (Wooten 2021).

Values and Assets at Risk: The elements of a community or natural area considered valuable by an individual or community that could be negatively impacted by a wildfire or wildfire operations. These values can vary by community and can include public and private assets (natural and manmade) – such as homes, specific structures, water supply, power grids, natural and cultural resources, community infrastructure-- as well as other economic, environmental, and social values (CA GPR 2020).

Vulnerable Community: Vulnerable communities experience heightened risk and increased sensitivity to natural hazard and climate change impacts and have less capacity and fewer resources to cope with, adapt to, or recover from the impacts of natural hazards and increasingly severe hazard events because of climate change. These disproportionate effects are caused by physical (built and environmental), social, political, and/ or economic factor(s), which are exacerbated by climate impacts. These factors include, but are not limited to, race, class, sexual orientation and identification, national origin, and income inequality (CA GPR 2020).

Wildfire: A “wildfire” can be generally defined as any unplanned fire in a “wildland” area or in the wildland-urban interface (WUI) (CA GPR 2020).

Wildfire Exposure: During fire suppression activities, an exposure is any area/property that is threatened by the initial fire, but in National Fire Incident Reporting System (NFIRS) a reportable exposure is any fire that is caused by another fire, i.e., a fire resulting from another fire outside that building, structure, or vehicle, or a fire that extends to an outside property from a building, structure, or vehicle (USFA 2020).

Wildfire Influence Zone: A wildland area with susceptible vegetation up to 1.5 miles from the interface or intermix WUI (CA GOPR 2020).

Wildland: Those unincorporated areas covered wholly or in part by trees, brush, grass, or other flammable vegetation (CA GOPR 2020).

Wildland Fire: Fire that occurs in the wildland as the result of an unplanned ignition (CA GOPR 2020).

Wildland Fuels (aka fuels): Fuel is the material that is burning. It can be any kind of combustible material, especially petroleum-based products, and wildland fuels. For wildland fire, it is usually live, or dead plant material, but can also include artificial materials such as houses, sheds, fences, pipelines, and trash piles. In terms of vegetation, there are 6 wildland fuel types (Fuel Type: An identifiable association of fuel elements of distinctive species, form, size, arrangement, or other characteristics that will cause a predictable rate of spread or resistance to control under specified weather conditions.) The 6 wildland fuel types are (NWCG 2021i):

- Grass
- Shrub
- Grass-Shrub
- Timber Litter
- Timber-Understory
- Slash-Blowdown

Wildland Urban Interface (WUI): The WUI is the zone of transition between unoccupied land and human development. It is the line, area or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels (USFA 2021a). In the absence of a CWPP, Section 101 (16) of the Healthy Foresters Restoration Act defines the wildland urban interface as “(I) an area extending ½ mile from the boundary of an at-risk community; (II) an area within 1 ½ miles of the boundary of an at-risk community, including any land that (1) has a sustained steep slope that creates the potential for wildfire behavior endangering the at-risk community; (2) has a geographic feature that aids in creating an effective fire break, such as a road or ridge top; or (3) is in condition class 3, as documented by the Secretary in the project-specific environmental analysis; (III) an area that is adjacent to an evacuation route for an at-risk community that the Secretary determines, in cooperation with the at-risk community, requires hazardous fuels reduction to provide safer evacuation from the at-risk community.” A CWPP offers the opportunity to establish a localized definition and boundary for the WUI (USFS 2021a, 2021b).



REFERENCES

- Ainsworth, Jack, and Alan Doss. 1995. Natural History of Fire & Flood Cycles. Available at: <https://www.coastal.ca.gov/fire/ucsbfire.html>. Accessed April 2023.
- Airey-Lauvaux, Catherine, Andrew D. Pierce, Carl N. Skinner, and Alan H. Taylor. 2022. Changes in fire behavior caused by fire exclusion and fuel build-up vary with topography in California montane forests. *Journal of Environmental Management* (304):114255.
- Association of Bay Area Governments. 2010. Taming Natural Disasters: A Multi-Jurisdictional Local Government Hazard Mitigation Plan for the San Francisco Bay Area. Available at: <https://abag.ca.gov/sites/default/files/theplan-chapters-intro.pdf>. Accessed April 2023.
- . 2023. Wildfire. Available at <https://abag.ca.gov/our-work/resilience/data-research/wildfire>. Accessed April 2023.
- Bay Area Council. 2023. New study shows how communities in the Wildland Urban Interface can drastically reduce fire risk and reduce insurance premiums. Available at: <https://www.bayareacouncil.org/press-releases/new-study-shows-how-communities-in-the-wildland-urban-interface-can-drastically-reduce-fire-risk-and-reduce-insurance-premiums/>. Accessed April 2023.
- Bureau of Land Management. 2022a. BLM Fire Program. Available at: <https://www.blm.gov/programs/fire>. Accessed April 2023.
- . 2022b. Fuels Management. Available at: <https://www.blm.gov/programs/public-safety-and-fire/fire/fuels-management#:~:text=The%20BLM's%20Fuels%20Management%20program%20conducts%20a%20wide,mechanical%2C%20biological%2C%20and%20chemical%20tools%2C%20and%20prescribed%20fire>. Accessed April 2023.
- . 2023a. Central Coast Field Office. Available at: <https://www.blm.gov/office/central-coast-field-office>. Accessed April 2023.
- . 2023b. BLM National NEPA Register. Available at: <https://eplanning.blm.gov/eplanning-ui/search?searchText=central%20coast>. Accessed April 2023.

- Balaraman, Kavya. 2021. California IOUs plan to spend \$11B on wildfire prevention in 2021 and 2022 after record-breaking fire season. Available at: <https://www.utilitydive.com/news/california-iou-plan-to-spend-11b-on-wildfire-prevention-in-2021-and-2022/594823/>. Accessed April 2023.
- Bartolome, J.W., W.J. Barry, T. Griggs, and P. Hopkinson. 2007. Valley grassland. In *Terrestrial Vegetation of California*, edited by M.G. Barbour, T. Keeler-Wolf, and A. Schoenherr, pp. 367–393. 3rd ed. Berkeley: University of California Press.
- Brown, J.K. 1974. *Handbook for Inventorying Downed Woody Material*. Gen. Tech. Rep. No. GTR-INT-16. Ogden, Utah: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station.
- Burned Area Emergency Response (BAER). 2021. French Post-Fire BAER Soil Burn Severity Map Released. Available at: <https://burnseverity.cr.usgs.gov/baer/>. Accessed April 2023.
- Butler, B.W., and J.D. Cohen. 1996. An Analytical Evaluation of Firefighter Safety Zones. 12th Fire and Forest Meteorology Conference, Lorne, Australia, 1996.
- California Air Resources Board (CARB). 2003. Prescribed Burning and Smoke Management. Available at: <https://ww2.arb.ca.gov/our-work/programs/prescribed-burning>. Accessed April 2023.
- California Board of Forestry & Fire Protection (BOF). 2015. Prescribed Herbivory for Vegetation Treatment Projects. Available at: <https://bof.fire.ca.gov/media/nc4n1xgj/4-4-rmac-prescribed-herbivory-white-paper.pdf>. Accessed April 2023.
- California Department of Conservation. 2019. Post-Fire Debris Flow Facts. Available at: <https://www.conservation.ca.gov/index/Pages/Fact-sheets/Post-Fire-Debris-Flow-Facts.aspx>. Accessed April 2023.
- _____. 2023. Regional Forest and Fire Capacity Program. Available at: <https://www.conservation.ca.gov/dlrp/grant-programs/Pages/Regional-Forest-and-Fire-Capacity-Program.aspx>. Accessed April 2023.
- California Department of Fish and Wildlife (CDFW). 2021a. CDFW Initiates Massive Wildfire Protection Effort at Wildlife Areas, Ecological Reserves Statewide. Available at: <https://wildlife.ca.gov/News/cdfw-initiates-massive-wildfire-protection-effort-at-wildlife-areas-ecological-reserves-statewide>. Accessed April 2023.
- _____. 2021b. Science: Wildfire Impacts. Available at: <https://wildlife.ca.gov/Science-Institute/Wildfire-Impacts>. Accessed April 2023.
- _____. 2023. Ecological Reserves and Wildlife Areas of California. Available at: <https://wildlife.ca.gov/Lands/Places-to-Visit>. Accessed April 2023.
- California Department of Food and Agriculture (CDFA). 2021. Invasive Pest & Diseases. Available at: <https://www.cdfa.ca.gov/invasives/>. Accessed April 2023.
- California Department of Forestry and Fire Protection (CAL FIRE). 2016. Incidents, Loma Fire Incident. Available at: <https://www.fire.ca.gov/incidents/2016/9/26/loma-fire/>. Accessed April 2023.
- _____. 2017. California's Forests and Rangelands 2017 Assessment. Available at: <https://frap.fire.ca.gov/media/4babn5pw/assessment2017.pdf>. Accessed April 2023.
- _____. 2018. Strategic Fire Plan for California. Available at: https://osfm.fire.ca.gov/media/5590/2018-strategic-fire-plan-approved-08_22_18.pdf. Accessed April 2023.

- . 2019a. Community Wildfire Prevention & Mitigation Report. Available at: <https://www.srta.ca.gov/DocumentCenter/View/4764/CAL-FIRE-Community-Wildfire-Prevention--Mitigation-Report>. Accessed May 2023.
- . 2019b. Strategic Fire Plan for California. Available at: <https://www.fire.ca.gov/media/bo2fdzfs/strategicplan2019-final.pdf>. Accessed April 2023.
- . 2019c. CAL FIRE Prescribed Fire Guidebook. Available at: <https://ucanr.edu/sites/Mariposa/files/339359.pdf>. Accessed April 2023.
- . 2019d. Post Wildfire Recovery. Available at: <https://www.readyforwildfire.org/post-wildfire/after-a-wildfire/>. Accessed April 2023.
- . 2020a. Incidents, Crews Fire Incident. Available at: <https://www.fire.ca.gov/incidents/2020/7/5/crews-fire/>. Accessed April 2023.
- . 2020b. California Cooperative Forest Management Plan. Available at: <https://ucanr.edu/sites/forestry/files/326560.pdf>. Accessed May 2023.
- . 2020c. 2020 Incident Archive. Available at: <https://www.fire.ca.gov/incidents/2020/>. Accessed May 2023.
- . 2020d. Returning Home After a Wildfire. Available at: <https://www.readyforwildfire.org/post-wildfire/after-a-wildfire/>. Accessed April 2023.
- . 2022a. Top 20 Largest California Wildfires. Available at: https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/featured-items/top20_acres.pdf?rev=be2a6ff85932475e99d70fa9458dca79&hash=A355A978818640DFACE7993C432ABF81. Accessed April 2023.
- . 2022b. Frequently Asked Questions About: 2022 Fire Hazard Severity Zones. Available at: <https://osfm.fire.ca.gov/media/fmcgpc2z/2022-fhsz-faqs-july-2022.pdf>. Accessed April 2023.
- . 2022c. State Responsibility Area (SRA) Fire Hazard Severity Zones (FHSZ). Available at: https://osfm.fire.ca.gov/media/nnhd0ft1/fhsz_county_sra_11x17_2022_santaclara_ada.pdf. Accessed April 2023.
- . 2022d. CAL FIRE Santa Clara Unit Strategic Fire Plan. Available at: <https://osfm.fire.ca.gov/media/hjndvue2/2022-santa-clara-contra-costa-alameda-west-stanislaus-west-sann-joaquin-unit-fire-plan.pdf>. Accessed April 2023.
- . 2022e. Vegetation Management Program. Available at: <https://www.fire.ca.gov/programs/resource-management/resource-protection-improvement/vegetation-management-program/>. Accessed April 2023.
- . 2022f. Fire Perimeters. Available at: <https://frap.fire.ca.gov/frap-projects/fire-perimeters/>. Accessed February 2023.
- . 2022g. Incidents, SCU Lightning Complex Incident. Available at: <https://www.fire.ca.gov/incidents/2020/8/16/scu-lightning-complex>. Accessed April 2023.
- . 2022h. State Responsibility Area (SRA) Fire Hazard Severity Zones (FHSZ). Available at: https://osfm.fire.ca.gov/media/nnhd0ft1/fhsz_county_sra_11x17_2022_santaclara_ada.pdf. Accessed April 2023.

- . 2022i. Defensible Space. Available at: <https://www.fire.ca.gov/programs/communications/defensible-space-prc-4291/>. Accessed April 2023.
- . 2023a. Fire Hazard Safety Zones (FHSZ). Available at: <https://osfm.fire.ca.gov/divisions/community-wildfire-preparedness-and-mitigation/wildfire-preparedness/fire-hazard-severity-zones/>. Accessed April 2023.
- . 2023b. Fire Risk Reduction Community List. Available at: <https://bof.fire.ca.gov/projects-and-programs/fire-risk-reduction-community-list/>. Accessed April 2023.
- . 2023c. Vegetation Management Program. Available at: <https://www.fire.ca.gov/what-we-do/natural-resource-management/vegetation-management-program>. Accessed April 2023.
- California Department of Housing and Community Development. 2022. 2022 Statewide Housing Plan. Available at: <https://storymaps.arcgis.com/stories/94729ab1648d43b1811c1698a748c136>. Accessed April 2023.
- California Department of Insurance (CDI). 2023a. Claims and Loss Management. Available at: <http://www.insurance.ca.gov/01-consumers/140-catastrophes/WildfireAfter.cfm>. Accessed April 2023.
- . 2023b. Safer from Wildfires Initiative. Available at: <https://www.insurance.ca.gov/01-consumers/200-wrr/saferfromwildfires.cfm>. Accessed April 2023.
- California Department of Parks and Recreation (CDPR). 2023. California State Parks. Available at: <https://www.parks.ca.gov/>. Accessed April 2023.
- California Department of Public Health. 2017. Reduce Exposure to Ash When Returning Home After a Fire. Available at: <https://www.cdph.ca.gov/Programs/CCDCPHP/DEODC/CDPH%20Document%20Library/ReturnHomeAshGuide.pdf>. Accessed April 2023.
- California Department of Transportation (Caltrans). 2023. Roadside Vegetation Control. Available at: <https://dot.ca.gov/caltrans-near-me/district-4/d4-projects/roadside-vegetation-control>. Accessed April 2023.
- California Department of Water Resources. 2021. Flood Preparedness. Available at: <https://water.ca.gov/What-We-Do/Flood-Preparedness/Flood-Preparedness-Week>. Accessed April 2023.
- California Employment Development Department 2016. Employment by Industry Data. Available at: <http://www.labormarketinfo.edd.ca.gov/data/employment-by-industry.html>. April 2023.
- California Fire Safe Council. 2021. Fire Safe Councils. Available at: <https://cafiresafecouncil.org/resources/fire-safe-councils/>. Accessed April 2023.
- California Forest Pest Council. 2020. California Forest Pest Conditions. Available at: <https://bof.fire.ca.gov/media/nrtj2dif/2020-california-forest-pest-conditions.pdf>. Accessed April 2023.
- California Governor's Office of Emergency Services (CA OES). 2018. California State Hazard Mitigation Plan. Available at: https://www.caloes.ca.gov/wp-content/uploads/002-2018-SHMP_FINAL_ENTIRE-PLAN.pdf. Accessed April 2023.

- California Governor's Office of Planning and Research (CA GOPR). 2019. Final Report of the Commission on Catastrophic Wildfire Cost and Recovery. Available at: https://opr.ca.gov/docs/20190618-Commission_on_Catastrophic_Wildfire_Report_FINAL_for_transmittal.pdf. Accessed April 2023.
- . 2020. Fire Hazard Planning Technical Advisory. Available at: https://www.opr.ca.gov/docs/20201109-Draft_Wildfire_TA.pdf. Accessed April 2023.
- . 2022a. Fire Hazard Planning Technical Advisory. Available at: https://opr.ca.gov/docs/20220817-Fire_Hazard_Planning_TA.pdf. Accessed April 2023.
- . 2022b. Wildland Urban Interface Planning Guide. Available at: https://www.opr.ca.gov/docs/20220817-Complete_WUI_Planning_Guide.pdf. Accessed April 2023.
- California Invasive Plant Council (CalIPC). 2023. About. Available at: <https://www.cal-ipc.org/about/>. Accessed June 2023.
- California Oak Mortality Task Force. 2023. What is Sudden Oak Death? Available at: <https://www.suddenoakdeath.org/about-sudden-oak-death/>. Accessed April 2023.
- California Office of Environmental Health Hazard Assessment (COEHHA). 2023. SB 535 Disadvantaged Communities. Available at: <https://oehha.ca.gov/calenviroscreen/sb535>. Accessed April 2023.
- California Public Law. 2023. California Public Resources Code Sec. 4291. Available at: https://california.public.law/codes/ca_pub_res_code_section_4291. Accessed April 2023.
- California Silver Jackets Team (California SJT). 2019. After Wildfire, A Guide for California Communities. Available at: http://www.readyforwildfire.org/wp-content/uploads/After-Wildfire-Guide-10JUNE2019_draft_final-ADA-compliant.pdf. Accessed April 2023.
- California Wildfire and Forest Management Task Force. 2021. California's Wildfire and Forest Resilience Action Plan. Available at: <https://wildfiretaskforce.org/wp-content/uploads/2022/04/californiawildfireandforestresilienceactionplan.pdf>. Accessed April 2023.
- California Wildfire and Forest Management Task Force. 2023. Available at: <https://wildfiretaskforce.org>. Accessed April 2023.
- Casualty Actuarial Society (CAS). 2023. Mitigation That Matters: A Wildfire Case Study. Available at: <https://ar.casact.org/mitigation-that-matters-a-wildfire-case-study/>. Accessed April 2023.
- Centers for Disease Control and Prevention (CDC). 2023. Public Health Strategies to Reduce Exposure to Wildfire Smoke during the COVID-19 Pandemic. Available at: https://www.cdc.gov/disasters/covid-19/reduce_exposure_to_wildfire_smoke_covid-19.html#:~:text=Top%20of%20Page-,Limiting%20Time%20Spent%20Outdoors,time%20when%20air%20quality%20improves. Accessed April 2023.
- City of Gilroy. 2023a. Fire Stations. Available at: <https://www.cityofgilroy.org/754/Fire-Stations>. Accessed April 2023.
- . 2023b. Fire Stations. Available at: <https://www.cityofgilroy.org/165/Fire-Department>. Accessed April 2023.
- City of Milpitas. 2023. Milpitas Fire Department. Available at: <https://www.ci.milpitas.ca.gov/milpitas/departments/fire/>. Accessed April 2023.

- City Of Morgan Hill. 2023. Welcome to Morgan Hill Fire. Available at: <https://www.morganhill.ca.gov/445/Fire#:~:text=Fire%20Stations.%20El%20Toro%20Fire%20Station%2018300%20Old,Street%20Morgan%20Hill%2C%20CA%2095037%20Business%3A%20408-779-2121%20Directions>. Accessed April 2023.
- City of Mountain View. 2023. Fire. Available at: <https://www.mountainview.gov/depts/fire/default.asp>. Accessed April 2023.
- City of Palo Alto. 2023. Palo Alto Fire Department. Available at: <https://www.cityofpaloalto.org/Departments/Fire/Operations>. Accessed April 2023.
- City of San Jose. 2023. Fire Stations. Available at: <https://emergencymanagement.sccgov.org/multi-jurisdictional-hazard-mitigation-plan-mjhmp>. Accessed April 2023.
- City of Santa Clara. 2023. Santa Clara Fire Department. Available at: <https://www.santaclaraca.gov/our-city/departments-a-f/fire-department>. Accessed April 2023.
- . CERT (Community Emergency Response Team). Available at: <https://www.santaclaraca.gov/our-city/departments-a-f/fire-department/community-resources/cert-community-emergency-response-team>. Accessed April 2023.
- Coalition for the Upper South Platte (CUSP). 2016. The Phoenix Guide. Available at: https://cusp.ws/wp-content/uploads/2016/12/phoenix_guide.pdf. Accessed April 2023.
- Coastal Conservancy. 2023. Wildfire Resilience Program. Available at: <https://scc.ca.gov/wildfire-resilience-program/>. Accessed April 2023.
- Congressional Research Service (CRS). 2022. Wildfire Statistics. Available at: <https://sgp.fas.org/crs/misc/IF10244.pdf>. Accessed April 2023.
- Cornell Lab of Ornithology. 2023. Wrentit. All About Birds website. Available at: <https://www.allaboutbirds.org/guide/Wrentit/lifehistory>. Accessed April 2023.
- Eco Adapt. 2021. Oak Woodlands, Climate Change Vulnerability Assessment for the Santa Cruz Mountains Climate Adaptation Project. Available at: http://ecoadapt.org/data/documents/EcoAdapt_SantaCruzMtnsVASummary_OakWoodlands_FIN_AL_Mar2021.pdf. Accessed April 2023.
- Egan, Dave. 2013. Monitoring- Organizing a Landscape-Scale Forest Restoration Multi-Party Monitoring Program. 38pp. Available at: https://openknowledge.nau.edu/id/eprint/2501/1/Dubay_C_etal_2013_HandbookBreakingBarriers3.pdf. Accessed April 2023.
- Environmental Protection Agency (EPA). 2022. Basic Information and Answers to Frequent Questions. Available at: <https://www.epa.gov/hwp/basic-information-and-answers-frequent-questions#:~:text=A%20healthy%20watershed%20is%20one,support%20native%20aquatic%20and%20riparian>. Accessed April 2023.
- Evans, A., S. Auerbach, L.W. Miller, R. Wood, K. Nystrom, J. Loevner, A. Argon, M. Piccarello, E. Krasilovsky. 2015. Evaluating the Effectiveness of Wildfire Mitigation Activities in the Wildland Urban Interface. Forest Guild, October 2015.
- Federal Emergency Management Agency (FEMA). 2022. Social Vulnerability. Available at: <https://hazards.fema.gov/nri/social-vulnerability>. Accessed April 2023.

- Fire Research and Management Exchange System. 2021. Applied Wildland Fire Behavior Research and Development. Available at: <https://www.frames.gov/applied-fire-behavior/home>. Accessed April 2023.
- Ford, L.D. and G.F. Hayes. 2007. Northern Coastal Scrub and Coastal Prairie. In *Terrestrial Vegetation of California*, edited by M.G. Barbour, T. Keeler-Wolf, and A. Schoenherr, pp. 180–207. 3rd ed. Berkeley, California: University of California Press.
- Forests and Rangelands. 2000. Managing the Impact of Wildfires on Communities and the Environment. Available at: <https://www.forestsandrangelands.gov/documents/resources/reports/2001/8-20-en.pdf>. Accessed April 2023.
- . 2006. A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Strategy Implementation Plan. Available at: https://www.forestsandrangelands.gov/documents/resources/plan/10-yearstrategyfinal_dec2006.pdf. Accessed April 2023.
- . 2014. The National Strategy: The Final Phase in the Development of the National Cohesive Wildland Fire Management Strategy. Available at: <https://www.forestsandrangelands.gov/documents/strategy/strategy/CSPHaseIIINationalStrategyApr2014.pdf>. Accessed April 2023.
- . 2021. The National Strategy. Available at: <https://www.forestsandrangelands.gov/strategy/thestrategy.shtml>. Accessed April 2023.
- Graham, R., S. McCaffrey, and T. Jain. 2004. Science Basis for Changing Forest Structure to Modify Wildfire Behavior and Severity. Gen. Tech Rep. RMRS-GTR-120. Fort Collins, Colorado: U.S. Department of Agriculture Forest Service, Rocky Mountain Research Station.
- Grossinger, R.M., R.A. Aaskevold, C.J. Striplen, E. Brewster, S. Pearce, K.N. Larned, L.J. McKee, and J.N. Collins. 2006. Coyote Creek Watershed Historical Ecology Study: Condition, Landscape Change, and Restoration Potential in the Eastern Santa Clara Valley, California. (SFEI Publication 426.) San Francisco Estuary Institute, Oakland, California. Prepared for the Santa Clara Valley Water District.
- Hanes, T.L. 1988. California chaparral. In *Terrestrial Vegetation of California*, edited by M.G. Barbour and J. Major, pp. 417–469. Sacramento, California: California Native Plant Society.
- Harrison, S., B.D. Inouye, and H.D. Safford. 2003. Ecological heterogeneity in the effects of grazing and fire on grassland diversity. *Conservation Biology* 17(3):837–845.
- Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Vegetation of California. Sacramento, California: California Resources Agency, Department of Fish and Game.
- Höllermann, P.W. 1993. Fire Ecology in the Canary Islands and Central California—A Comparative Outline (Feuerökologie auf den Kanarischen Inseln und in Kalifornien, ein vergleichender Überblick). *Erdkunde*, pp.177-184.
- The Independent*. 2021. East Bay Regional Park District, Save Mount Diablo Study Shows Fire Impact on Local Land. Available at: https://www.independentnews.com/news/east-bay-regional-park-district-save-mount-diablo-study-shows-fire-impact-on-local-land/article_5653da68-0048-11ec-83f2-bb4b8149ac4a.html. Accessed April 2023.

- Interagency Fuel Treatment Decision Support System (IFTDSS). 2021. About Map Values - Highly Valued Resources or Assets (HVRAs). Available at: <https://iftdss.firenet.gov/firenetHelp/help/pageHelp/content/30-tasks/qwra/mapvalues/hvraabout.htm>. Accessed April 2023.
- International Association of Fire Chiefs. 2021. Ready, Set, Go! Available at: <http://wildlandfirersg.org/>. Accessed April 2023.
- Keeley, J. E. 2002a. Native American impacts on fire regimes of the California Coastal Ranges. *Journal of Biogeography* 29:303–320.
- . 2002b. Fire management of California shrubland landscapes. *Environmental Management* 29:395–408.
- Klinger, R.C., M. Brooks, and J. Randall. 2006. Fire and Invasive Species. In *Fire in California's Ecosystems*, edited by N.G. Sugihara, J.W. van Wagtendonk, J. Fites-Kaufman, K.E. Shaffer, and A.E. Thode, pp. 499–519. Berkeley, California: University of California Press.
- Long, J.W., F.K. Lake, and R.W. Goode. 2021. The importance of Indigenous cultural burning in forested regions of the Pacific West, USA. *Forest Ecology and Management* 500(2021):119597, ISSN 0378-1127, <https://doi.org/10.1016/j.foreco.2021.119597>.
- Lovreglio, R., O. Meddour-Sahar, and V. Leone. 2014. Goat grazing as a wildfire prevention tool: a basic review. *iForest* 7:260–268. doi: 10.3832/for1112-007.
- Maranghides, Alexander, and William Mell. 2013. Framework for Addressing the National Wildland Urban Interface Fire Problem – Determining Fire and Ember Exposure Zones using a WUI Hazard Scale. National Institute of Standards and Technology. NIST Technical Note 1748.
- Maranghides, Alexander, E.D. Link, S. Hawks, J. McDougald, S.L. Quarles, D.J. Gorham, and S. Nazare. 2022. WUI Structure/Parcel/Community Fire Hazard Mitigation Methodology. National Institute of Standards and Technology. NIST Technical Note 2205.
- Martinson, Erik J.; Omi, Philip N. 2013. Fuel treatments and fire severity: A meta-analysis. Res. Pap. RMRS-RP-103WWW. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 38 p.
- McCaffrey, S.M. 2004. Fighting fire with education: what is the best way to reach out to homeowners? *Journal of Forestry* 102:12–19.
- . 2020. What motivates Homeowners to Mitigate Fire Risk? Lessons from Social Science [conference presentation]. Bill Lane Center for the American West, Virtual Wildfire Series: Wildfire management during COVID. <https://www.youtube.com/watch?v=3dmbenV-ZsM>. Accessed April 2023.
- McCaffrey, S.M., and C.S. Olsen. 2012. Research Perspectives on the Public and Fire Management: A Synthesis of Current Social Science on Eight Essential Questions. Northern Research Station GTR -104. Available at: https://www.firescience.gov/projects/06-4-1-26/project/06-4-1-26_gtr_nrs104.pdf. Accessed April 2023.
- Midpeninsula Regional Open Space (Midpen). 2021a. Wildland Fire Resiliency. Available at: <https://www.openspace.org/what-we-do/projects/wildland-fire-resiliency>. Accessed April 2023.

- . 2021b. Vegetation Management Plan. Available at: <https://www.openspace.org/sites/default/files/Wildland%20Fire%20Resiliency%20Program%20Vegetation%20Management%20Plan%20with%20maps.pdf>. Accessed April 2023.
- Muma, R., L.A. Webb, H.S. Zald, K. Boston, C.M. Dagley, and J.P. Berrill. 2022. Dynamics of stump sprout regeneration after transformation to multiaged management in coast redwood forests. *Forest Ecology and Management* 515(9):120236.
- NASA Ames Fire Department. 2023. NASA Ames Fire Department. Available at: http://www.yourfiredepartment.org/MOF/NASA_Ames_Fire_Department.html. Access April 2023.
- National Fire Protection Association (NFPA). 2023. Firewise USA sites. Available at: <https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Firewise-USA>. Accessed April 2023.
- National Geographic. 2021. Resource Library, Wildfires. Available at: <https://www.nationalgeographic.org/encyclopedia/wildfires/>. Accessed April 2023.
- National Interagency Fire Center (NIFC). 2021a. Wildland Fire Statistics. Available at: https://www.nifc.gov/fireInfo/fireInfo_stats_totalFires.html. Accessed April 2023.
- . 2021b. Suppression Costs. Available at: <https://www.nifc.gov/fire-information/statistics/suppression-costs>. Accessed April 2023.
- . 2021c. About Us. Available at: <https://www.nifc.gov/about-us>. Accessed April 2023.
- . 2021d. Wildfire Education. Available at: <https://www.nifc.gov/fire-information/fire-prevention-education-mitigation/wildfire-education>. Accessed April 2023.
- . 2021e. Fire Prevention, Education and Mitigation. Available at: <https://www.nifc.gov/fire-information/fire-prevention-education-mitigation>. Accessed April 2023.
- . 2022. Post Fire Recovery. Available at: <https://www.nifc.gov/programs/post-fire-recovery>. Accessed April 2023.
- National Oceanic and Atmospheric Administration (NOAA). 2022. Past Weather. National Weather Service. Available at: <https://www.weather.gov/wrh/Climate?wfo=bou>. Accessed April 2023.
- National Park Service. 2018. Santa Clara Early History. Available at: <https://www.nps.gov/articles/early-history.htm>. Accessed April 2023.
- National Register of Historical Places. 2023. Santa Clara County. Available at: <https://www.nationalregisterofhistoricplaces.com/ca/Santa+Clara/state.html>. Accessed April 2023.
- National Wildfire Coordinating Group (NWCG). 1998. Fireline Handbook. NWCG Handbook 3. PMS 410-1. NFES 0065. Boise: National Interagency Fire Center.
- . 2020. Smoke Management Guide for Prescribed Fire. Available at: <https://www.nwcg.gov/sites/default/files/publications/pms420-3.pdf>. Accessed April 2023.
- . 2021a. NWCG Glossary of Wildland Fire, PMS 205, I-Zone. Available at: <https://www.nwcg.gov/term/glossary/i-zone>. Accessed April 2023.
- . 2021b. NWCG Glossary of Wildland Fire, PMS 205, Aspect. Available at: <https://www.nwcg.gov/term/glossary/aspect>. Accessed April 2023.

- . 2021c. NWCG Glossary of Wildland Fire, PMS 205, fuel break. Available at: <https://www.nwcg.gov/term/glossary/fuel-break>. Accessed April 2023.
 - . 2021d. NWCG Glossary of Wildland Fire, PMS 205, fuel treatment. Available at: <https://www.nwcg.gov/term/glossary/fuel-treatment>. Accessed April 2023.
 - . 2021e. NWCG Glossary of Wildland Fire, PMS 205, hazard fuel. Available at: <https://www.nwcg.gov/term/glossary/hazard-fuel>. Accessed April 2023.
 - . 2021f. NWCG Glossary of Wildland Fire, PMS 205, mutual aid. Available at: <https://www.nwcg.gov/term/glossary/mutual-aid>. Accessed April 2023.
 - . 2021g. NWCG Glossary of Wildland Fire, PMS 205, rate of spread. Available at: <https://www.nwcg.gov/term/glossary/rate-of-spread>. Accessed April 2023.
 - . 2021h. NWCG Glossary of Wildland Fire, PMS 205, slope percent. Available at: <https://www.nwcg.gov/term/glossary/slope-percent>. Accessed April 2023.
 - . 2021i. Instructor Guide, S-190 Unit 2: Fuels. Available at: <https://www.nwcg.gov/sites/default/files/training/docs/s-190-ig02.pdf>. Accessed April 2023.
 - . 2021j. Spotting Fire Behavior. Available at: <https://www.nwcg.gov/publications/pms437/crown-fire/spotting-fire-behavior#TOC-Evaluating-Spotting-Behavior>. Accessed April 2023.
 - . 2022. Fire Season Climatology, Peak regional Fire Seasons. Available at: <https://www.nwcg.gov/publications/pms437/weather/fire-season-climatology#TOC-Northern-California>. Accessed April 2023.
 - . 2023a. Atmospheric Stability. Available at: <https://www.nwcg.gov/publications/pms425-1/atmospheric-stability#:~:text=The%20degree%20of%20stability%20or,rate%20of%205.5%C2%B0F>. Accessed April 2023.
 - . 2023b. Fire Brands. Available at: <https://www.nwcg.gov/term/glossary/firebrand>. Accessed April 2023.
- Nazare, S., I. Leventon, and R. Davis. 2021. Ignitibility of Structural Wood Products Exposed to Embers During Wildland Fires: A Review of Literature. Available at: https://tsapps.nist.gov/publication/get_pdf.cfm?pub_id=931279. Accessed April 2023.
- New Mexico Future Farmers of America. 2010. Introduction to Wildland Fire Behavior for NM Forestry CDE. Available at: http://www.nmffa.org/uploads/4/1/0/7/41075673/wildland_fire_behavior.pdf#:~:text=Wildland%20fuels%20are%20basically%20live%20and%20For%20dead%20plant,fire%20behavior%20is%20dependent%20on%20certain%20fuel%20characteristics%3A. Accessed April 2023.
- North, M.P., J.T. Stevens, D.F. Greene, M. Coppoletta, E.E. Knapp, A.M. Latimer, C.M. Restaino, R.E. Tompkins, K.R. Welch, R.A. York, D.J.N. Young, J.N. Axelson, T.N. Buckley, B.L. Estes, R.N. Hager, J.W. Long, M.D. Meyer, S.M. Ostojka, H.D. Safford, L.E. Shive, C.L. Tubbesing, H. Vice, D. Walsh, C.M. Werner, and P. Wyrsh. 2019. Tamm Review: Reforestation for resilience in dry western U.S. forests. *Forest Ecology and Management* 432:209–224.
- Open Space Authority. 2023. Santa Clara Valley – Tribal Partnership. Available at: <https://www.openspaceauthority.org/about-us/partnerships/tribal-partnership.html>. Accessed April 2023.

- Ottmar, R., R. Vihnanek, and J. Regelbrugge. 2000. Wildland Fire in Ecosystems: Effects of Fire on Fauna. Vol. 1. Gen. Tech. Rep. RMRS-GTR-42. Ogden, Utah: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- Pacific Gas & Electric (PG&E). 2023. Community Wildfire Safety Program. Available at: https://www.pge.com/en_US/safety/emergency-preparedness/natural-disaster/wildfires/community-wildfire-safety.page?WT.pgeac=Wildfire_CrossPromo-Community. Accessed April 2023.
- Pine Ridge Association. 2023. Henry W. Coe State Park. Available at: <https://coepark.net/>. Accessed April 2023.
- Pollet J., and P.N. Omi. 2002 Effect of thinning and prescribed burning on crown fire severity in ponderosa pine forests. *International Journal of Wildland Fire* 11:1–10.
- Prichard, S. J., D. L. Peterson, and K. Jacobson. 2010. Fuel treatments reduce the severity of wildfire effects in dry mixed conifer forest, Washington, USA. *NRC Research Press*. 40:1615–1626
- PRISM Climate Group (PRISM). 2023. PRISM Climate Data. Northwest Alliance for Computational Engineering. Oregon State University. Available at: <https://prism.oregonstate.edu/>. Accessed April 2023.
- Pyne, S.J. 2001. The fires this time, and next. *Science* 294(2):12–17.
- Ready. 2021. Community Emergency Response Team. Available at: <https://www.ready.gov/cert>. Accessed April 2023.
- Rizzo, D.M., and M. Garbelotto. 2003. Sudden oak death: endangering California and Oregon forest ecosystems. *Frontiers in Ecology and the Environment* 1(4):197–204.
- Rundel, P.W., and R. Gustafson. 2005. Introduction to the Plant Life of Southern California. California Natural History Guide Series No. 85. Berkeley and Los Angeles, California: University of California Press.
- Safford, H.D., Schmidt, D.A., and Carlson, C. H. 2009. Effects of fuel treatments on fire severity in an area of wildland-urban interface, Angora Fire, Lake Tahoe Basin, California. *Forest Ecology and Management* 258:773–787.
- Safford, H.D., Stevens, J.T., Merriam, K., Meyer, M.D., and Latimer, A.M. 2012. Fuel treatment effectiveness in California yellow pine and mixed conifer forests. *Forest Ecology and Management* 274:17–28; <https://doi.org/10.1016/j.foreco.2012.02.013>.
- San José Fire Department (SJPD). 2023. City And Department Overview. Available at: <https://sjff.org/sjfd>. Accessed April 2023.
- Santa Clara County. 1994. General Plan. Available at: <https://plandev.sccgov.org/ordinances-codes/general-plan>. Accessed April 2023.
- . 2012. ORDINANCE NO. NS-1100.116. Fire Code. Available at: https://stgenpln.blob.core.windows.net/document/BuildingCode_Ord_Amendment.pdf. Accessed April 2023.

- _____. 2016. Santa Clara County Community Wildfire Protection Plan. Available at: https://www.sccfd.org/wp-content/uploads/documents/fire_prevention/CWPP/CWPP_Strategic_Countywide_Document_08_29_16.pdf. Accessed April 2023.
- _____. 2017. Fire Department – XSC Mutual Aid Plan Appx. 13. Available at: https://www.sccfd.org/wp-content/uploads/documents/mutual_aid_plan/app_13_01-17.pdf. Accessed April 2023.
- _____. 2018a. County of Santa Clara Integrated Pest Management Program Annual Report 2017/2018. Available at: <https://ipm.sccgov.org/sites/g/files/exjcpb1006/files/IPM-Annual-Report-Final-2017-2018.pdf>. Accessed July 2023.
- _____. 2018b. Department of Parks and Recreation, Strategic Plan. Available at: <https://parks.sccgov.org/sites/g/files/exjcpb961/files/strategic-plan-santa-clara-county-parks-19-0219.pdf>. Accessed April 2023.
- _____. 2023a. Development Information and Guidelines for Fire Standards. Available at: <https://plandev.sccgov.org/how/development-information-and-guidelines/fire-standards>. Accessed April 2023.
- _____. 2023b. Division of Agriculture, Endangered Species. Available at: <https://ag.sccgov.org/endangered-species#:~:text=Santa%20Clara%20County%20has%20designated,the%20San%20Joaquin%20Kit%20Fox>. Accessed April 2023.
- _____. 2023c. Department of Planning and Development. Tree Preservation and Removal. Available at: <https://plandev.sccgov.org/how/build-or-improve-property/tree-preservation-and-remova>. Accessed April 2023.
- _____. 2023d. Community Emergency Response Teams (CERT). Available at: <https://emergencymanagement.sccgov.org/residents/community-emergency-response-teams-cert>. Accessed April 2023.
- _____. 2023e. Large Animal Evacuation Team. Available at: <http://www.scclaet.org/default.aspx>. Accessed April 2023.
- _____. 2023f. Department of Planning and Development. Fire Marshal Permits and Clearances. Available at: <https://plandev.sccgov.org/how/build-or-improve-property/fire-marshal-permits-and-clearances>. Accessed April 2023.
- Santa Clara County Fire Department (SCCFD). 2020. Strategic Plan 2020-2022. Available at: https://www.sccfd.org/wp-content/uploads/documents/key_reports_documents/SCCFD_2020-2022_StrategicPlan.pdf. Accessed April 2023.
- _____. 2023a. Fire Prevention: Brush Abatement Program. Available at: <https://www.sccfd.org/fire-prevention/fire-prevention-overview/#:~:text=The%20Santa%20Clara%20County%20Fire%20Department%20manages%20and%20implements%20a,home%20to%20create%20defensible%20space>. Accessed April 2023.
- _____. 2023b. Community Education Programs. Available at: <https://www.sccfd.org/education-and-preparedness-overview/community-education-programs/>. Accessed April 2023.

- Santa Clara County FireSafe Council (SCCFSC). 2019. State Route 17 Shaded Fuel Break Project Completed. Available at: [https://sccfiresafe.org/projects/past-projects/sr-17/#:~:text=The%20SR17%20Shaded%20Fuel%20Break,public%20health%20and%20the%20environment](https://sccfiresafe.org/projects/past-projects/sr-17/#:~:text=The%20SR17%20Shaded%20Fuel%20Break,public%20health%20and%20the%20environment.). Accessed April 2023.
- _____. 2023. Santa Clara County FireSafe Council Awarded County Coordinator Grant. Available at: <https://sccfiresafe.org/>. Accessed April 2023.
- Santa Clara County Parks. 2022. About Us. Available at: <https://parks.sccgov.org/about-parks>. Accessed April 2023.
- _____. 2023. Endangered Species. Available at: <https://parks.sccgov.org/endangered-species#3925188384-493692223>. Accessed April 2023.
- Santa Clara Local Agency Formation Commission (LAFC). 2015. Service Reviews, 22. Focus Area: Sprawl Prevention/Infill Development. Available at: <http://www.santaclaralafco.org/>. Accessed April 2023.
- _____. 2019. Cities Information. Available at: [https://santaclaralafco.org/cities-and-special-districts/cities-information#:~:text=Santa%20Clara%20County%20and%20Cities,County's%20population%20lives%20in%20cities](https://santaclaralafco.org/cities-and-special-districts/cities-information#:~:text=Santa%20Clara%20County%20and%20Cities,County's%20population%20lives%20in%20cities.). Accessed April 2023.
- Santa Clara Office of Emergency Management (SCC OES). 2017. Santa Clara County Operational Area Hazard Mitigation Plan. Available at: <https://emergencymanagement.sccgov.org/sites/g/files/exjcpb261/files/For%20Partners/Local-Hazard-Mitigation-Plan-LHMP-Vol-1.pdf>. Accessed April 2023.
- Santa Clara Resource Conservation District (RCD). 2020. Watershed Emergency Response Team Evaluation SCU LIGHTNING COMPLEX. Available at: https://www.rcdsantaclara.org/files/55dc0948d/7.2_a_SCU+Complex+WERT+Report+%28low+res%29.pdf. Accessed April 2023.
- Santa Clara Valley Habitat Agency. 2012. Santa Clara Valley Habitat Plan. Available at: <https://scv-habitatagency.org/178/Santa-Clara-Valley-Habitat-Plan>. Accessed April 2023.
- Santa Clara Valley Water District (Valley Water). 2023. Available at: [https://www.valleywater.org/drought-FAQ#:~:text=On%20June%209%2C%202021%2C%20Valley%20Water%E2%80%99s%20Board%20of,15%25%20reduction%20in%20water%20use%20compared%20to%202019](https://www.valleywater.org/drought-FAQ#:~:text=On%20June%209%2C%202021%2C%20Valley%20Water%E2%80%99s%20Board%20of,15%25%20reduction%20in%20water%20use%20compared%20to%202019.). Accessed April 2023.
- _____. 2023b. Where Your Water Comes From. Available at: <https://www.valleywater.org/your-water/where-your-water-comes>. Accessed April 2023.
- _____. 2023c. Where Your Water Comes From. Available at: <https://www.valleywater.org/your-water/local-dams-and-reservoirshttps://www.valleywater.org/your-water/where-your-water-comes>. Accessed April 2023.
- Santa Clara Valley Water News (Valley Water News). 2023. Valley Water Filling Up Many Percolation Ponds Across Santa Clara County. Available at: [https://valleywaternews.org/2023/01/24/valley-water-filling-up-many-percolation-ponds-across-santa-clara-county/#:~:text=These%20percolation%20ponds%20help%20replenish%20local%20groundwater%2C%20which,sand%20allow%20water%20to%20seep%20into%20our%20aquifers](https://valleywaternews.org/2023/01/24/valley-water-filling-up-many-percolation-ponds-across-santa-clara-county/#:~:text=These%20percolation%20ponds%20help%20replenish%20local%20groundwater%2C%20which,sand%20allow%20water%20to%20seep%20into%20our%20aquifers.). Accessed April 2023.

- Scott, J.H., and R.E. Burgan. 2005. *Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model*. Gen. Tech. Rep. RMRS-GTR-153. Fort Collins, Colorado: U.S. Department of Agriculture, U.S. Forest Service, Rocky Mountain Research Station.
- Schoenherr, A.A. 1992. *A Natural History of California* (California Natural History Guide 56). Berkeley, California: University of California Press.
- Sierra Nevada Conservancy. 2021. 2020 megafires create risks for California's water supply. Available at: <https://sierranevada.ca.gov/2020-megafires-create-risks-for-californias-water-supply/>. Accessed April 2023.
- Society of American Foresters (SAF). 2004. *Preparing a Community Wildfire Protection Plan: A Handbook for Wildland Urban Interface Communities*. Sponsored by Communities Committee, National Association of Counties, National Association of State Foresters, Society of American Foresters, and Western Governors' Association. Available at: <https://www.forestsandrangelands.gov/documents/resources/communities/cwpphandbook.pdf>. Accessed April 2023.
- South Skyline FireSafe Council. 2023. Who We Are. Available at: <https://www.southskylinefiresafe.org/about/who-we-are/>. Accessed May 2023
- State of California. 2020. SCU lightning Complex. Available at: <https://www.fire.ca.gov/incidents/2020/8/16/scu-lightning-complex/>. Accessed April 2023.
- Stephens, S.L., and L.W. Ruth. 2005. Federal forest-fire policy in the United States. *Ecological Applications* 15(2):532–542.
- Sunnyvale. 2023. Fire Prevention Services. Available: <https://www.sunnyvale.ca.gov/your-government/departments/public-safety/public-safety-services/fire-prevention-services>. Accessed April 2023.
- Suzuki, Sayaka and Samuel L. Manzello. 2021. Ignition Vulnerabilities of Combustibles around Houses to Firebrand Showers: Further Comparison of Experiments. *Sustainability* 13(4).
- Syphard, A.D., V.C. Radeloff, J.E. Keeley, T.J. Hawbaker, M.K. Clayton, S.I. Stewart, and R.B. Hammer. 2007. Human influence on California fire regimes. *Ecological Applications* 17(5):1388–1402.
- Team Rubicon. 2022. Capabilities and Services. Available at: <https://teamrubiconusa.org/capabilities-services/>. Accessed January 2023.
- Town of Los Gatos 2021. 2040 General Plan. Available at: http://losgatos2040.com/images/docs/LGGPU_PD_PRD_Full_2021_06_24.pdf. Accessed April 2023.
- Tukman Geospatial. 2022. Pacific Vegetation Map “One stop for California land cover and fuels data”. Available at: <https://pacificvegmap.org/>. Accessed April 2023.
- University of California, Agriculture and Natural Resources (UCANR). 1994. The Role of Fire in California's Oak Woodlands. Available at: <https://oaks.cnr.berkeley.edu/the-role-of-fire-in-californias-oak-woodlands-2/>. Accessed April 2023.

- . 2019. Cattle grazing reduces fuel and leads to more manageable fire behavior. Available at: <https://calag.ucanr.edu/Archive/?article=ca.2022a0011#:~:text=CAL%20FIRE%27s%20California%20Vegetation%20Treatment%20Program%20%28CaVTP%29%20utilizes,plays%20an%20important%20role%20in%20fuel%20load%20reductions>. Accessed April 2023.
- . 2021a. Manual. Available at: <https://ucanr.edu/sites/fire/Prepare/Treatment/Manual/>. Accessed April 2023.
- . 2021b. Mechanical. Available at: <https://ucanr.edu/sites/fire/Prepare/Treatment/Mechanical/>. Accessed April 2023.
- . 2022. Emergency Access Program Available to Ventura/Santa Barbara Ag. Available at: <https://ucanr.edu/blogs/blogcore/postdetail>. Accessed April 2023.
- U.S. Bureau of Reclamation. 2010. Wildland Fire Management (WFM) Directives and Standards. Available at: <https://www.usbr.gov/recman/lnd/lnd14-01.pdf>. Accessed April 2023.
- U.S. Census Bureau. 2021. Santa Clara County Quick Facts. Available at: <https://www.census.gov/quickfacts/santaclaracountycalifornia>. Accessed April 2023.
- . 2022. Income in the United States: 2021. Available at: <https://www.census.gov/library/publications/2022/demo/p60-276.html#:~:text=Highlights,and%20Table%20A%2D1>. Accessed April 2023.
- U.S. Department of Agriculture (USDA). 2005. Terminology and Definitions Associated with Revegetation. Available at: <https://www.nrcs.usda.gov/plantmaterials/wapmctn6333.pdf>. Accessed April 2023.
- . 2022. Introduced, Invasive, and Noxious Plants. Available at: <https://plantsorig.sc.egov.usda.gov/java/noxiousDriver>. Accessed April 2023.
- U.S. Department of the Interior and U.S. Department of Agriculture (USDA). 2001. Urban Wildland Interface Communities within Vicinity of Federal Lands that are at High Risk from Wildfire. Federal Register 66(3):751–777.
- U.S. Environmental Protection Agency (EPA). 2019. Wildfire Smoke: A Guide for Public Health Officials. Available at: <https://www.airnow.gov/sites/default/files/2021-05/wildfire-smoke-guide-revised-2019.pdf>. Accessed May 2023.
- U.S. Fire Administration (USFA). 2020. Exposures. Available at: <https://www.usfa.fema.gov/nfirs/coding-help/nfirsgrams/nfirsgram-including-exposures.html>. Accessed April 2023.
- . 2021a. What is the WUI? Available at: <https://www.usfa.fema.gov/wui/what-is-the-wui.html>. Accessed March 2023.
- . 2021b. Fire-Adapted Communities. Available at: <https://www.usfa.fema.gov/wui/communities/>. Accessed April 2023.
- U.S. Fish and Wildlife Service (USFWS). 2002. Draft Recovery Plan for Chaparral and Scrub Community Species East of San Francisco Bay, California. Portland, Oregon: U.S. Fish and Wildlife Service Region 1.
- . 2023. Native Plants and Climate Change. Available at: <https://wildlife.ca.gov/Conservation/Plants/Climate#:~:text=Across%20California%E2%80%99s%20varied%20geography%2C%20native%20plant%20species%20are,seasonal%20and%20annual%20mean%20temperature%20in%20the%20deserts>. Accessed April 2023.

- U.S. Forest Service (USFS). 1988. Wildland Fire Assessment System (WFAS). 1988. Haines Index. Available at: <https://www.wfas.net/index.php/haines-index-fire-potential--danger-34>. Accessed April 2023.
- . 2017. Sustainability and Wildland Fire: The Origins of Forest Service Wildland Fire Research. Available at: https://www.fs.usda.gov/sites/default/files/fs_media/fs_document/sustainability-wildlandfire-508.pdf. Accessed April 2023.
- . 2021a. Fire Terminology. Available at: <https://www.nwcg.gov/publications/pms205>. Accessed April 2023.
- . 2021b. Setting Priorities and Collaborating. Available at: https://www.fs.usda.gov/sites/default/files/fs_media/fs_document/UnderstandingCollaboration%20v5.0_0.pdf. Accessed April 2023.
- . 2021c. California Forest Pest Conditions. Available at: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd1008290.pdf. Accessed April 2023.
- . 2021d. Postfire Restoration Framework for National Forests in California. Available at: https://www.fs.usda.gov/psw/publications/documents/psw_gtr270/psw_gtr270.pdf. Accessed April 2023.
- . 2019. California Forest Pest Conditions. Available at: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd736355.pdf. Accessed April 2023.
- . 2021b. After the Fire. Available at: <https://www.fs.usda.gov/science-technology/fire/after-fire>. Accessed April 2023.
- . 2022. Wildfire Risk to Communities. Available at: <https://wildfirerisk.org/explore/3/06/06085/>. Accessed April 2023.
- . 2022b. Aerial Detection Survey, Pacific Southwest Region Central Coast, Preliminary Report. Available at: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd1062409.pdf. Accessed April 2023.
- . 2022c. Hazard Tree Identification and Mitigation, Region 5. Available at: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd1006739.pdf. Accessed April 2023.
- U.S. Geological Survey (USGS). 2021. What is an invasive species and why are they a problem? Available at: https://www.usgs.gov/faqs/what-invasive-species-and-why-are-they-a-problem?qt-news_science_products=0#qt-news_science_products. Accessed April 2023.
- Van de Water, K.P., and H.D. Safford. 2011. A summary of fire frequency estimates for California vegetation before Euro-American settlement. *Fire Ecology* 7:26–58.
- Van Wagtenonk, J.W. 2007. The History and Evolution of Wildland Fire Use. *Fire Ecology* 3:3–17
- Wayman, R.B. and H.D. Safford. 2021. Recent bark beetle outbreaks influence wildfire severity in mixed-conifer forests of the Sierra Nevada, California, USA. Available at: <https://static1.squarespace.com/static/545a90ede4b026480c02c5c7/t/603c49958186fa554e5a8517/1614563733542/Wayman+and+Safford+2021+Eco+Apps.pdf>. Accessed April 2023.

- Waltz, A.E.M., M.T. Stoddard, E.L. Kalies, J.D. Springer, D.W. Huffman, and A.S. Meador. 2014. Effectiveness of fuel reduction treatments: Assessing metrics of forest resiliency and wildfire severity after the Wallow Fire, AZ. *Forest Ecology and Management* 334:43–52; <https://doi.org/10.1016/j.foreco.2014.08.026>.
- Westerling, A.L., H.G. Hidalgo, D.R. Cayan, and T.W. Swetnam. 2006. Warming and earlier spring increase in western U.S. Forest wildfire activity. *Science* 313(5789):940–943. Accessed March 2023.
- Westerling, 2016. Increasing western US forest wildfire activity: sensitivity to changes in the timing of spring. Available at: http://ulmo.ucmerced.edu/pdffiles/16RSTB_Westerling.pdf. Accessed March 2023.
- Western Regional Strategy Committee (WRSC). 2013. Western Regional Action Plan. Available at: https://www.forestsandrangelands.gov/documents/strategy/rsc/west/WestRAP_Final20130416.pdf. Accessed April 2023.
- Wildfire Ready Watersheds. 2023. Wildfire Ready Watersheds. The Colorado Water Conservation Board. Available at: <https://www.wildfirereadywatersheds.com/>. Accessed April 2023.
- Williams, A.P., J.T. Abatzoglou, A. Gershunov, J. Guzman-Morales, D.A. Bishop, J.K. Balch, and D.P. Lettenmaier. 2019. Observed impacts of anthropogenic climate change on wildfire in California. *Earth's Future* 7(8):892–910.
- Winter, G., and J.S. Fried. 2000. Homeowner perspectives on fire hazard, responsibility, and management strategies at the wildland-urban interface. *Society and Natural Resources* 13:33–49.
- Wooten, George. 2021. Fire and fuels management: Fire and fuels management: Definitions, ambiguous terminology and references. Available at: <https://www.nps.gov/olym/learn/management/upload/fire-wildfire-definitions-2.pdf>. Accessed April 2023.

APPENDIX A:

Planning and Policy Background

This page intentionally left blank.

PLANNING PROCESS

The planning process has served to identify many physical hazards throughout the planning area that could increase the threat of wildfire to communities. The public also has helped to identify community values that it would most like to see protected. By incorporating public and Planning Team input into the recommendations, treatments are tailored specifically for the planning area so that they are sensitive to local residents' concerns. The CWPP emphasizes the importance of collaboration among multi-jurisdictional agencies in order to develop fuels mitigation treatment programs to address wildfire hazards. Tribal input for the planning process is especially crucial for preserving cultural heritage and traditional knowledge. Many Native American Tribal communities have sustainably managed wildfire and protected natural resources through a collection of ecologically sound practices developed and passed down over generations. It's important for the Advisory Team and annex authors to consider TEK and engage with tribal communities throughout the plan's lifespan to continue building out this important knowledge base.

The SAF, in collaboration with the National Association of Counties and the National Association of State Foresters, developed a guide entitled *Preparing a Community Wildfire Protection Plan: A Handbook for Wildland-Urban Interface Communities* (SAF 2004) to provide communities with a clear process in developing a CWPP. The guide outlines eight steps for developing a CWPP and has been followed in preparing the Santa Clara County CWPP:

Step One: Convene Decision-makers. Form a Planning Team made up of representatives from the appropriate local governments, local fire authorities, and state agencies responsible for forest management.

Step Two: Involve Federal Agencies. Identify and engage local federal representatives and contact and involve other land management agencies as appropriate.

Step Three: Engage Interested Parties. Contact and encourage active involvement in plan development from a broad range of interested organizations and stakeholders.

Step Four: Establish a Community Base Map. Work with partners to establish a base map(s) defining the community's WUI and showing inhabited areas at risk, wildland areas that contain critical human infrastructure, and wildland areas at risk for large-scale fire disturbance.

Step Five: Develop a Community Risk-Hazard Assessment. Work with partners to develop a community Risk-Hazard Assessment that considers fuel hazards; risk of wildfire occurrence; homes, businesses, and essential infrastructure at risk; other values at risk (VARs); and local preparedness capability. Rate the level of risk for each factor and incorporate this information into the base map as appropriate.

Step Six: Establish Community Priorities and Recommendations. Use the base map and community Risk-Hazard Assessment to facilitate a collaborative community discussion that leads to the identification of local priorities for treating fuels, reducing structural ignitability and other issues of interest, such as improving fire response capability. Clearly indicate whether priority projects are directly related to the protection of communities and essential infrastructure or to reducing wildfire risks to other community values.

Step Seven: Develop an Action Plan and Assessment Strategy. Consider developing a detailed implementation strategy to accompany the CWPP as well as a monitoring plan that will ensure its long-term success.

Step Eight: Finalize Community Wildfire Protection Plan. Finalize the CWPP and communicate the results to community and key partners.

This is not an exhaustive list and SWCA strides to ensure client expectations and goals are met with a custom CWPP that is streamlined to fit the needs of the community.

FIRE MANAGEMENT POLICY

The primary responsibility for WUI fire prevention and protection lies with property owners and state and local governments. Property owners must comply with existing state statutes and local regulations. These primary responsibilities should be carried out in partnership with the federal government and the private sector. The current federal Fire Policy states that protection priorities are 1) life, 2) property, and 3) natural resources. These priorities often limit flexibility in the decision-making process, especially when a wildland fire occurs within the WUI.

Santa Clara County has a complex arrangement of public and private fire protection organizations that provide preparedness planning and response to wildland fires and other emergencies. These organizations deserve commendation for the level of cooperation and coordination they employ to deliver high level of fire protection to Santa Clara County in a complicated jurisdictional environment. For purposes of wildland fire protection, California law segregates lands within the state into three categories for jurisdictional and financial responsibility (Figure B.8): 1) FRAs, wherein a federal government agency has jurisdiction for wildland fire protection on federally owned land; 2) SRAs, wherein CAL FIRE has jurisdiction for wildland fire protection on all lands within this zone whether public or private ownership; and 3) LRAs, wherein neither the federal government nor the state have jurisdiction for wildland fire protection. All lands within an incorporated city, whether wildland or not, are designated LRAs by California law. Separate from jurisdiction for wildland fire protection is the jurisdiction for “all hazard” fire/rescue emergencies (structure fires, vehicle fires, vehicle accidents, rescues, medical emergencies, etc.). All hazard response is usually the jurisdictional responsibility of a local government organization. When land development occurs and population increases, a WUI fire protection situation is created. Local government (county, special district, or city) is responsible for delivering all hazard fire protection. Where SRA designated lands are involved, there can be dual, or layered, responsibility for delivering fire protection to the community. This layering occurs in the unincorporated areas of the Central Fire Protection District, Los Altos Hills County Fire Protection District, and South Santa Clara County Fire Protection District. Additionally, there are private, not-for-profit volunteer fire companies (Spring Valley, Casa Loma, Uvas, and Stevens Creek) in SRAs that, while having no governmental jurisdiction, are actively involved in planning and response to emergencies in their communities.

Areas in the eastern part of the county, portions of Almaden Valley and the Stanford University campus, are not within the normal response jurisdiction of any local fire agency (fire protection district, county service area, or county department (see Figure 1.4). Since these are unincorporated areas, the County Board of Supervisors has ultimate responsibility for provision of local fire protection and administration of building/fire codes. General Plan, local hazard mitigation planning, and land use development are also the responsibility of the County Board of Supervisors. Absent other agreement, the South Santa Clara County Fire Protection District, the Central Fire Protection District, or CAL FIRE will normally respond as a Good Samaritan to all hazard emergencies in these areas with no local government fire organization.

Local, State, and Federal Organizations

Santa Clara County Fire Department

Established in 1947, the Santa Clara County Fire Department has fire and life safety code responsibilities for the communities of Campbell, Cupertino, Los Altos, Los Altos Hills, Los Gatos, Monte Sereno,

Saratoga, and all of unincorporated Santa Clara County. The Fire Chief of the Santa Clara County Fire Department is the County Fire Marshal.

All planned construction projects within the seven cities and towns and the entire unincorporated areas of the County are submitted to the local planning and building departments. Each of these jurisdictions forward the proposed development and building permit applications to Santa Clara County Fire Department's Fire Prevention Division for our review and comments. Prior to the issuance of building permits by the communities served, projects must meet all fire department requirements, including meeting California Building Code Chapter 7A requirements for buildings located in in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland-Urban Interface Fire Area to resist the intrusion of flames or boring embers projected by a vegetation fire. New development also must meet appropriate fire apparatus access and water supply requirements.

Every spring the Santa Clara County Fire Department sends defensible space letters to all residents within the jurisdiction living in locally identified Wildland-Urban Interface Areas and within the SRA of the District. Local engine companies perform field inspections, with follow up inspections from the Fire Prevention Division. Enforcement of defensible space is performed in coordination with each community's code enforcement program.

City Fire Departments

Santa Clara County contains 15 cities (Campbell, Cupertino, Gilroy, Los Altos, Los Altos Hills, Los Gatos, Milpitas, Monte Sereno, Morgan Hill, Mountain View, Palo Alto, San Jose, Santa Clara, Saratoga, and Sunnyvale). Most of these communities are considered to be at risk from wildfire. City fire departments typically work within a mutual aid framework to respond to emergencies in various jurisdictions as the incident evolves. The Milpitas Fire Department, for example, is able to respond to a wide variety of incidents, as well as enforcing fire and life safety codes, similar to the functions of other city fire departments.

Fire Safe Councils

Santa Clara County FireSafe Council

The Santa Clara County FireSafe Council is a non-profit 501(c)(3) organization that was chartered in 2001 and works countywide with a variety of partners at the federal, state, and local levels. Communities served by the FireSafe Council include the designated communities at risk: Stanford, Palo Alto, Los Altos Hills, Cupertino, Saratoga, Monte Sereno, Los Gatos, Lexington Hills, San Jose, Morgan Hill, Gilroy, East Foothills, and Milpitas, as well as parts of the region near the named communities listed that are also WUI areas with values at risk. The Santa Clara County FireSafe Council partners with agencies, jurisdictions, or organizations that share in its mission, which is “mobilizing the people of Santa Clara County to protect their homes, communities and environment from wildfires.”

The Santa Clara County FireSafe Council, as a non-government organization, has no legal authority or responsibility to enforce laws or policies adopted by agencies having jurisdiction. The FireSafe Council serves its communities in four active program areas: Planning, Community Outreach and Education, Hazardous Fuel Reduction, and Fundraising. Funding for the FireSafe Council's work is provided by federal, state, and other grants, as well as by the county, cities, fire agencies, and other community partners and individuals. The Council builds its work plan around implementing recommended programs and projects in this CWPP (see Section 6).

The Santa Clara County FireSafe Council works cooperatively in the region served by the South Skyline FireSafe Council to support and enhance its work.

South Skyline FireSafe Council

The South Skyline FireSafe Council serves communities within San Mateo, Santa Cruz, and Santa Clara Counties, generally along Skyline Boulevard (California Highway 35). The area served in Santa Clara County is from Page Mill Road to Bear Creek Road, above Palo Alto, Saratoga, and the western edges of Lexington Hills. Its mission is to “provide education and outreach programs for fire prevention and preparedness to all South Skyline residents within the Council area in order to prevent the loss of lives and reduce losses of personal and public property and natural resources from wildfire” (South Skyline FireSafe Council 2023). The South Skyline FireSafe Council is funded through grants, donations, and in-kind contributions of time from a committed group of volunteers.

San Jose Water Company

Founded in 1866, the San Jose Water Company is an investor-owned public utility, serving over 1 million people in the San Jose metropolitan area. It provides groundwater from more than 100 wells for 40% of its supply and purchases treated water from the Santa Clara Valley Water District for 50% of its supply. An additional 10% of its supply comes from its watershed in the Santa Cruz Mountains, treated at two water treatment plants.

The San Jose Water Company owns extensive watershed lands in the WUI, including upper Los Gatos Creek and a tributary of Saratoga Creek.

Santa Clara Valley Water District

Founded in 1929, the Santa Clara Valley Water District contains 10 reservoirs that impound water from storm runoff, as well importing water from the Sierra Nevada and pumping water from aquifers. The water district manages about 275 miles of creeks in Santa Clara County, or about one-third of the county’s 800 miles of creeks and rivers. In partnership with cities and Santa Clara County Parks Department, the water district also provides open space and recreational opportunities at many of its reservoirs and creeks.

Santa Clara County Department of Parks and Recreation

Formed in 1956, the Santa Clara Department of Parks and Recreation oversees regional parks, usually larger than local neighborhood or community parks and often more than 200 acres. The county park system has expanded to 28 regional parks covering approximately 52,000 acres since its first parkland, the 400-acre Stevens Creek County Park, was acquired in 1924. Parklands of significant size in the WUI include:

- Ed Levin County Park
- Joseph D. Grant
- Motorcycle & Field Sports
- Anderson Lake
- Coyote Lake Harvey Bear Ranch
- Mt. Madonna
- Uvas Reservoir
- Uvas Canyon
- Calero
- Almaden Quicksilver
- Santa Teresa
- Lexington Reservoir
- Villa Montalvo
- Sanborn

- Stevens Creek
- Rancho San Antonio

Santa Clara Valley Open Space Authority

The Santa Clara Valley Open Space Authority is an independent special district and not part of county government. Its purpose is to preserve key portions of the natural environment using a variety of tools, including land and easement acquisition, as well as participating in planning and conservation activities. Established in 1993 by the state legislature and Governor Wilson, its jurisdiction is all of Santa Clara County, except Gilroy and lands and communities within the boundaries of the Midpen. The Santa Clara Valley Open Space Authority currently protects over 28,000 acres and has four open space preserves that are open to the public:

- Coyote Valley Open Space Preserve
- Rancho Cañada del Oro Open Space Preserve
- Sierra Vista Open Space Preserve
- Máyyan 'Ooyákma – Coyote Ridge

The Santa Clara Valley Open Space Authority participates with the cities of Milpitas, Santa Clara, San Jose, Campbell, and Morgan Hill.

County Roads and Airports

The County's Roads and Airports Department operates and maintains 635 miles of rural and urban roadways in unincorporated areas (<https://www.sccgov.org/sites/rda/about/Pages/standards.aspx>).

County Roads Standard Specifications state that erosion control and highway planting shall conform to the provisions in Section 20 "Erosion Control and Highway Planting" of the most current edition of the State Standard Specifications.

County Agriculture Weed Abatement

The mission of the Santa Clara County Department of Agriculture Weed Abatement Program is to protect lives, property, and the environment by providing education and hazard abatement for the communities served. The purpose of the Weed Abatement Program is to prevent fire hazards created by vegetative growth and the accumulation of combustible debris through voluntary compliance.

See weed abatement standards at <https://www.sccgov.org/sites/wap/Pages/standards.aspx>.

The Department of Agriculture's Weed Abatement Program inspects parcels that have been declared a public nuisance and are included in the program throughout the year. Abatement work is ordered by an inspector on properties when the minimum fire safety standards have not been satisfied or if the owner has requested that the county contractor perform the necessary work. The abatement charges for any work performed by the contractor and a county administrative fee are included on property tax statements as a special assessment.

San Francisco Public Utilities Commission

The San Francisco Public Utilities Commission–owned watershed lands include the Alameda Watershed, with 13,000 acres in northeastern Santa Clara County.

See <http://www.sfwater.org/index.aspx?page=198>.

Municipal Roads Departments

Cities with significant road maintenance responsibility in the WUI include Palo Alto, Los Altos Hills, Cupertino, Saratoga, Los Gatos, Monte Sereno, San Jose, Morgan Hill, Gilroy, and Milpitas.

Midpeninsula Regional Open Space District

Founded in 1972, the Midpeninsula Regional Open Space District, or Midpen, is a regional greenbelt system, covering over 70,000 acres in 26 open space preserves in three counties. The district manages a wide variety of vegetation, including chaparral, oak woodlands, fir and redwood forests, riparian corridors, grasslands, and wetlands, with over 250 miles of trails. The Sierra Azul area southeast of Los Gatos is the largest unit in the district. The following preserves are located in Santa Clara County:

- Bear Creek Redwoods Open Space Preserve
- Coal Creek Open Space Preserve
- El Sereno Open Space Preserve
- Foothills Open Space Preserve
- Fremont Older Open Space Preserve
- Los Trancos Open Space Preserve
- Monte Bello Open Space Preserve
- Picchetti Ranch Open Space Preserve
- Rancho San Antonio Open Space Preserve
- Saratoga Gap Open Space Preserve
- Sierra Azul Open Space Preserve
- St Joseph's Hill Open Space Preserve

City Parks and Open Space

Several cities own large parks and open space areas with unmaintained natural wildland environments, including:

- Palo Alto Foothills Park and Arastradero Preserve
- Palo Alto Baylands
- City of San Jose Alum Rock Park

Regional Trail Corridors and Urban Open Space Parks

WUI is a term used to describe human development that is surrounded by natural wildland environment. In Santa Clara County there also exists the converse arrangement: natural wildland environments that remain but have become enveloped by the urban environment. This includes regional trails, creek corridors, and pocket parks that have unmaintained areas with open space characteristics.

These ribbons of wildland/creek/trail corridors, as well as urban parks with unmaintained open space characteristics, are often outside designated WUIs or FHSZs, which result in complications.

A partial list of regional trails with wildland characteristics include:

- Bay Trail
- Penitencia Creek Trail
- Guadalupe River Parkway
- Coyote Creek Trail
- Calero/Los Alamitos Creek Trails
- Los Gatos Creek Trail

See information regarding the City of San Jose's trail network: <https://www.sanjoseca.gov/your-government/departments-offices/parks-recreation-neighborhood-services/parks-trails/trail-network>

Also see Santa Clara County's regional trails system at: <https://parks.sccgov.org/about-parks/plans-projects/countywide-trails>

A partial list of urban parks with unmaintained natural areas include:

- Hellyer
- Communications Hill
- Martial Cottle
- Lake Cunningham
- Vasona Lake
- Guadalupe River
- Las Animas Veterans Park
- Christmas Hill Park
- Dennis Debell Uvas Creek Preserve
- Byrne Preserve

California Department of Parks and Recreation

The California Department of Parks and Recreation (CDPR) manages 280 units. Two of these units are located in Santa Clara County: Martial Cottle State Park, comprising 256 acres of farmland (managed by Santa Clara County Parks Department), and Henry W. Coe State Park. The Coe unit is the largest state park in northern California at 89,164 acres, with 22,000 acres of land designated as a wilderness area. In August 2020, 55,000 acres of the state park were burned by the SCU Lightning Complex fires. After a period of closure to allow for crews to clear various hazards and for the vegetation to begin recovery, the park was re-opened in March 2021 (CDPR 2023).

California Department of Fish and Wildlife

The CDFW manages over 1 million acres of fish and wildlife habitat in 711 properties around the state, with habitats from every major ecosystem in the state. Within Santa Clara County, the agency manages the 5,800-acre Cañada de los Osos Ecological Reserve, near Henry W. Coe State Park. The property, formally known as the Stevenson Ranch, was acquired by the Nature Conservancy in 2000 and sold to the agency in 2001. The unit is a mixture of grasslands, oak and montane woodland, chaparral, and

riparian and wetland habitats. Prescription grazing and burning may be employed if the need is determined to exist.

University California Natural Reserve System

The University of California Natural Reserve System encompasses 41 sites covering 47,000 acres of protected natural area throughout California, which is the largest university-administered reserve system in the world. Within Santa Clara County, the Blue Oak Ranch Reserve is located on the slopes of Mt. Hamilton. Covering 3,259 acres, four plant communities are found in the reserve, which are becoming rare in California: valley oak woodland, blue oak woodland, wildflower fields, and native perennial grassland. The Blue Oak Ranch Reserve contains a rich variety of plant families, more than 130 species of birds, and many species of terrestrial and aquatic animals, including the rare river otter (*Lontra canadensis*). Prescribed fire may play a role in facilitating valley oak regeneration, which has become rare.

State Highways / Caltrans

The Vegetation Management Program at Caltrans is scaling up and facilitates collaboration with external partners. Caltrans should be included in planning efforts where the state highway bisects the county priorities, so that the Caltrans right-of-way can become part of the fire adapted community effort to ensure safe ingress and egress during a wildfire event.

National Fire Protection Association

The National Fire Protection Association (NFPA) is a global nonprofit organization devoted to eliminating death, injury, and property and economic loss due to fire, electrical, and related hazards. Its 300 codes and standards are designed to minimize the risk and effects of fire by establishing criteria for building, processing, design, service, and installation around the world (NFPA 2023).

The NFPA develops easy-to-use educational programs, tools, and resources for all ages and audiences, including Fire Prevention Week, an annual campaign that addresses a specific fire safety theme.

The NFPA's Firewise Communities program encourages local solutions for wildfire safety by involving property owners, community leaders, planners, developers, firefighters, and others in the effort to protect people and property from wildfire risks.

The NFPA is a premier resource for fire data analysis and research. The Fire Analysis and Research division conducts investigations of fire incidents and produces a wide range of annual reports and special studies on all aspects of the nation's fire problem.

U.S. Fish and Wildlife Service

Don Edwards National Wildlife Refuge is a federally managed property located on the southern end of San Francisco Bay. The refuge comprises a 30,000-acre oasis for millions of migratory birds and endangered species. The refuge, created in 1974, was largely the result of grassroots efforts by the local community to protect the San Francisco Bay ecosystem.

Roads Agencies

Generally, roads are maintained primarily to serve the transportation needs of the public; however, road rights-of-way include the vegetation adjacent to the pavement, which could be considered a type of wildland to be managed for wildfire prevention. Roadsides are frequently the site of ignition for wildfires, and evacuees may need to use the roadways to leave the area even if the vegetation on both sides of the road is on fire.

In addition, due to the critical importance of roads for providing ingress for firefighting apparatuses while simultaneously evacuating the public, certain factors such as width, grade, and turning radius need to be addressed.

Private Organizations

Insurance Institute for Business & Home Safety

The Insurance Institute for Business & Home Safety (IBHS) is an independent, nonprofit, scientific research and communications organization supported solely by property insurers and reinsurers. The IBHS's building safety research leads to real-world solutions for home and business owners, helping to create more resilient communities. Its mission is to conduct objective, scientific research to identify and promote the most effective ways to strengthen homes, businesses, and communities against natural disasters and other causes of loss.

The IBHS conducts laboratory and field experiments in structural ignitability and has helped develop new guidelines for defensible space zones to emphasize ember resistance and a "home ignition zone."

Insurance and Loss Reduction Research Associations

The insurance and fire prevention industries have committed significant resources to studying wildfires and structural ignitions. Their cutting-edge research findings help drive the adoption or modification of new building codes.

Water Purveyor and Watershed Management Organizations

Wildfire can cause serious degradation of both watershed management infrastructure and water quality. Burned watersheds can result in greater runoff, erosion, and sedimentation, with a loss of water quality and increased cost of water treatment. Since heavier amounts of vegetation will burn more severely than lighter wildland fuels, allowing an accumulation of untreated wildland fuels to occur in watersheds and riparian areas can lead to a loss of water quality and significant environmental degradation, which can be very expensive to repair. As is the case with property owners, risk mitigation is dependent on fuels treatment performed before a wildfire occurs and cannot rely solely on the timely arrival of fire suppression resources.

LEGISLATIVE DIRECTION

County Direction

Santa Clara County Fire Code

The current Santa Clara County Fire Code was amended in 2012 and became effective January 17, 2013. The Fire Code of the County is adopted from the 2010 edition of the California Fire Code and the 2009 International WUI Code and is amended to suit the needs of the county. The Fire Code is effective within the county boundaries where a municipal code does not have jurisdiction, including private land. Implementation, administration, and enforcement of the code are carried out by the building official of Santa Clara County. The code pertains to all construction that will be used for human habitation including new construction, additions, repairs, and renovations (Santa Clara County 2012).

Santa Clara County also has specific fire standards and practices for various project types. These include land development, construction, special events and tents/canopies, fireworks, and care facilities. Many of the Santa Clara County Fire Standards are currently under revision. Assistance from the County Fire Marshall's Office is available at (408) 299-5760 (Santa Clara County 2023a).

Santa Clara County Fire Marshal

Section A33-47 of the Santa Clara County Code and Section 101 of the California Fire Code gives the County Fire Marshal the authority to make and enforce such rules and regulations for the prevention and control of fire and fire hazards as may be necessary to carry out the intent of the Code. The Fire Marshal's Office also has the responsibility for enforcing Title 19 of the California Code of Regulations, and portions of the California Building Code, as adopted by the County of Santa Clara.

The County Fire Marshal has the authority to make and enforce such rules and regulations for the prevention and control of fire and fire hazards.

As noted by CAL FIRE, California's building codes have two parts relevant to wildfire: remove flammable vegetation from around the building; and construct the building of fire-resistant material.

With regard to clearance, the law requires that property owners conduct fuels modification to 100 feet or to the property line if this distance is less than 100 feet. This provides both defensible space for firefighters in which to work and protection for the home.

With regard to building codes, standards have been developed to improve the resistance of buildings to ignition from airborne embers. New buildings located in any FHSZ within SRAs (building permit submitted after January 1, 2008), in any LRA-very high FHSZ (building permit submitted after July 1, 2008), or in any WUI fire area designated by the enforcing agency (building permit submitted after January 1, 2008) will comply with all sections of California Code of Regulations Title 24, Part 2, 701A.3.2 (New Buildings Located in Any Fire Hazard Severity Zone).

For LRAs, in which local government has responsibility for wildland fire protection, CAL FIRE provides recommendations for very high FHSZs. Local government, in turn, uses these recommendations to designate very high FHSZs within its jurisdiction. Local government may exclude fire protection requirements prompted by the map designation and may adopt, modify, or deny the very high FHSZ recommendation.

Taken together, these building codes are intended to improve the resilience of a building to ignition from either direct flame contact or from airborne embers. In incidents in which the rate of wildfire spread, and the number of homes at risk from the wildfire, exceeds suppression capacity, this resilience may determine whether the building survives.

It is essential to know the correct municipal jurisdiction for your parcel to determine fire prevention jurisdiction. Use the following link to find out: <https://plandev.sccgov.org/how/research-property/find-jurisdiction>

*Past Amendments to the Santa Clara County Fire Code***Sec. B7-13. - Chapter 49 Amendments.**

(c)

Section 4907.1 is amended to read as follows:

4907.1 General. Defensible space shall be maintained around all buildings and structures in State Responsibility Area (SRA) as required in Public Resources Code 4290 and "SRA Fire Safe Regulations" California Code of Regulations, Title 14, Division 1.5, Chapter 7, Subchapter 2, Section 1270 and this section.

Buildings and structures within the Very-High Fire Hazard Severity Zones of a Local Responsibility Area (LRA) shall maintain defensible space as outlined in Government Code sections 51175 to 51189 and this section.

Defensible space shall be provided around water tank structures, water supply pumps and pump houses.

Persons owning, leasing, controlling, operating or maintaining buildings or structures in the Wildland-Urban Interface Fire Area Zone and persons owning, leasing or controlling land adjacent to such buildings or structures, shall at all times:

1. Maintain an effective defensible space by removing and clearing away flammable vegetation and combustible growth from areas within distances of such buildings or structures as outlined below:

Fire Hazard Severity Zone	Distance
Very High	50 feet
All others	30 feet

- Exception: Single specimens of trees, ornamental shrubbery or similar plants used as ground covers, provided that they do not form a means of rapidly transmitting fire from the native growth to any structure.
2. Maintain additional effective defensible space by removing brush, flammable vegetation and combustible growth located 30 feet to 100 feet (9,144 mm to 30,480 mm) when required by the fire code official due to steepness of terrain or other conditions that would cause a defensible space of only 30 feet (9,144 mm) to be insufficient. Exception: Grass and other vegetation located more than 30 feet (9,144 mm) from buildings or structures and less than 18 inches (457 mm) in height above the ground need not be removed where necessary to stabilize the soil and prevent erosion.
 3. Remove portions of trees, which extend within 10 feet (3,048 mm) of the outlet of a chimney.
 4. Maintain trees adjacent to or overhanging a building free of deadwood; and
 5. Maintain the roof of a structure free of leaves, needles or other dead vegetative growth.
 6. Remove flammable vegetation a minimum of 10 feet around liquefied petroleum gas tanks/containers.

7. Firewood and combustible materials shall not be stored in unenclosed spaces beneath buildings or structures, or on decks or under eaves, canopies or other projections or overhangs. The storage of firewood and combustible material within the defensible space shall be located a minimum of 30 feet (6,096 mm) from structures and separated from the crown of trees by a minimum horizontal distance of 15 feet (4,572 mm). Exception: Firewood and combustible materials not for consumption on the premises shall be stored as approved by the fire code official.
8. Clear areas within 10 feet (3,048 mm) of fire apparatus access roads and driveways to of non-fire-resistive vegetation growth. Exception: Grass and other vegetation located more than 30 feet (9,144 mm) from buildings or structures and less than 18 inches (457 mm) in height above the ground need not be removed where necessary to stabilize the soil and prevent erosion.

County IPM and Pesticide Use Reduction Ordinance Division B-28

The purpose of the County Integrated Pest Management (IPM) and Pesticide Use Reduction Ordinance Division B-28 is to regulate and provide guidelines for pest control on County-owned properties, including regional parks, roads, airports, office complexes, hospitals, prisons, and animal shelters. The ordinance addresses various common IPM challenges, such as ants, bedbugs, flies, roaches, wasps, termites, rodents, birds, weeds, and plant insects and diseases. It is important to note that the IPM ordinance does not extend to private property or other jurisdictions (Santa Clara County 2018a).

State Direction

Direction from Plans

CAL FIRE Santa Clara Unit Fire Plan

The Santa Clara Unit of CAL FIRE provides fire protection to many areas within Santa Clara County, as well as to Contra Costa, Alameda, and the western portions of San Joaquin and Stanislaus counties. The 2015 CAL FIRE Santa Clara Unit Fire Plan uses the Seven Strategic Goals and Fire Plan Framework identified in the California Strategic Fire Plan and translates them into work to be done within its area of responsibility. Tactically, the Santa Clara Unit has an objective of keeping all wildland fires to 10 acres or less. Strategically, the primary goal of wildland fire protection in the unit is to safeguard the wide ranges of values found within the unit from the effects of wildfire.

The Santa Clara Unit employs multiple programs to accomplish this goal, including development of pre-fire management tactics, fire prevention, a defensible space inspection (LE-100) program for fire safe clearance around structures, information and education programs, and the vegetation management program (VMP) to reduce hazardous fuels and achieve natural resource management goals with within an SRA.

California Wildfire and Forest Resilience Action Plan

The 2021 California Wildfire and Forest Resilience Action Plan recognizes that California faces continued and urgent threats from catastrophic wildfire. The purpose of this plan is to provide a foundation for supporting healthy, resilient, fire adapted forests. The plan is organized into four overarching goals which

break down into sub-goals and their respective action items. Some of the goals/strategies specific to wildfire include:

1. **Increase Fuel Breaks:** Reduce the risk of wildfire and slow fire spread within the WUI.
2. **Protect Wildfire-Prone homes and Neighborhoods:** Expand and extend defensible space programs.
3. **Improve Utility related wildfire risk:** Ensure electrical corporations are compliant with wildfire regulations.
4. **Create Fire-Safe Roadways:** Ensuring emergency evacuation routes and acts as a fuel break.

Like the 2014 national strategy, California's 2019 Strategic Plan, California's Wildfire and Forest Resilience Action Plan, and Federal Emergency Management Agency (FEMA) Disaster Mitigation Act of 2000, all mandate community-based planning efforts with full stakeholder participation, coordination, project identification, prioritization, funding review, and multiagency cooperation. In compliance with Title 1 of the HFRA, a CWPP must be mutually agreed upon by the local government, local fire departments, and the state agency responsible for forest management. As outlined in HFRA, this CWPP is developed in consultation with interested parties and the federal agencies managing land surrounding the at-risk communities. See Figure A.1 for an overview of California's wildfire regulatory environment.

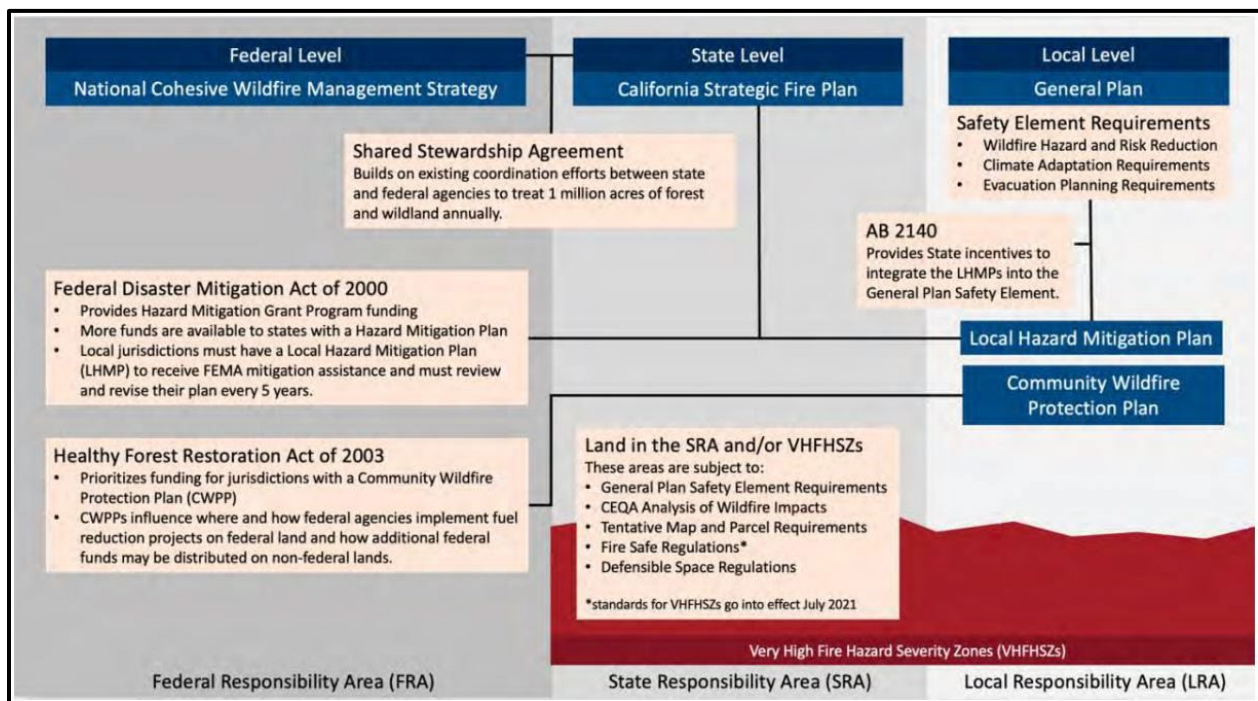


Figure A.1. California's wildfire regulatory framework. Source: California Governor's Office of Planning and Research (CA GOPR 2022)

California Bills and Regulations

Assembly Bill 179: In September of 2022, Governor Newsom signed budget bill AB 179 authorizing \$1.3 billion dollars over the next two years to build wildfire resilience and bolster forest health throughout the state. The bill allocates \$472 million dollars toward forest health and fire prevention planning, \$130 million toward state-owned land stewardship, \$50 million for post-fire reforestation, \$170 million for state conservancy forest health projects, \$70 million for fire crews and prescribed burning activities,

\$40 million for the Regional Forest and Fire Capacity Program, \$30 million for workforce development, and \$25 million to assist small landowners (California Wildfire & Forest Resilience Task Force 2022). This plan is part of the governor's Wildfire and Forest Resilience Action plan which aims to increase and expedite forest health projects to sustain and protect communities and meet economic and environmental goals (Department of Water Resources 2021).

Assembly Bill 1823: The Bill amended PRC 4290.1 to require that on or before July 1, 2022, the State Board of Forestry and Fire Protection to develop criteria for and maintain a "Fire Risk Reduction Community" list of local agencies located in a State Responsibility Area (SRA) or a very high hazard severity zone that meet best practices for local fire planning. The existing law requires the State board to consider specific factors when developing the criteria for the list, including recently developed or updated community wildfire protection plans (CWPPs) (CA GOPR 2022a). This CWPP is in alignment with the requirement stipulated by Assembly Bill (AB) 1823 (2019).

PRC 4124.7: Public Resources Code 4124.7 requires CAL FIRE to prioritize local agencies in the "fire risk reduction community" list for Fire Prevention Grants. (CAL FIRE 2023b).

Senate Bill 1241: Senate Bill 1241 (2012) revised the safety element stipulations in State law to instruct all cities and counties whose planning area is within the SRA or a very high fire hazard severity zone to address and include specific information concerning wildfire hazards and risk, and strategies and policies to address and minimize unreasonable risks associated with wildfire. The specific requirements are codified in chapter 311 of the Bill. As a result, CAL FIRE maintains fire hazard severity zone maps and data for the entire State. Three classes of fire hazard severity classifications exist: moderate, high, and very high. Fire hazard severity considers the amount of vegetation, temperature, wind, humidity, and topography, and represents the likelihood of an area burning over a 30 to 50-year interval (CA GOPR 2022a).

Senate Bill 379: Senate Bill 379 (2015) amended Government Code Section 65302(g)(4) to require that all general plans in California address climate change adaptation and resilience as part of the safety portion of the plan. This amendment requires local jurisdictions to add this change as part of the next revision to their local hazard mitigation plan or, if a local hazard mitigation plan has not been adopted, the safety element must be reviewed and updated to include applicable climate adaptation and resilience strategies (CA GOPR 2022a). This CWPP may be integrated into the Safety Element of the City General Plan during the next scheduled revision.

Senate Bill 246: As established by Senate Bill 246 in 2015, the Integrated Climate Adaptation and Resiliency Program (ICARP) is the leading program responsible for coordinating response to climate change impacts on a local, regional, and state scale. ICARP utilizes the Adaptation Clearing House, an online database of climate resources, and coordinates with the Technical Advisory Council to aid in facilitation of resiliency efforts. CA GOPR recommends that climate change-related safety updates be made in alignment with ICARP vision, principals, definitions, and wildfire requirements where applicable (CA GOPR 2022a).

Senate Bill 901: Senate Bill 901 (2018) requires the State Board to regularly update regulations for fuel breaks and greenbelts close to communities to enhance fire safety within the State Responsibility Area or areas designated as Very High Fire Hazard Severity Zones. The Bill also requires that the updated regulations include measures to maintain undeveloped ridgelines to minimize fire risk and enhance fire protection (CA GOPR 2022a).

PRC 4290: Public Resources Code Section 4290 confers the State Board with the authority to adopt regulations for base level fire safety standards with respect to State Responsibility lands and to lands

designated as Very High Fire Hazard Severity Zone. The fire safety standards address multiple issues, including fuel modification standards for fuel breaks and greenbelts; road and driveway standards for emergency response access and public evacuation; minimum private water supply reserves for fire suppression; and standards for street, road, and building signage. However, these standards do not replace local regulations that meet or exceed minimum requirements adopted by the State Board (CA GOPR 2022a).

PRC Section 4291: Public Resources Code Section 4291 details mandatory defensible space requirements for any person who owns, leases, controls, operates, or maintains a building in an SRA or very high FHSZ within a Local Responsibility Area (LRA). The requirements include, but are not limited to, 100 feet of defensible space around homes, removal of vegetation debris from the perimeter and the roof of homes/structures, and removal of vegetation from chimneys or stovepipes. This code was updated in January 2021 to require an ember-resistant zone within 5 feet of a home/structure on or before January 1, 2023 (CA GOPR 2022a).

Assembly Bill 38: Assembly Bill 38 (2019) amended sections of the Civil, Government, and Public Resources Codes to set forth a comprehensive wildfire mitigation financial support program, which facilitates cost-effective home/structure hardening and retrofitting to create fire-resistant homes, businesses, and public structures. The amendments require the State Fire Marshal, in consultation with the Director of Forestry and Fire Protection and the Director of Housing and Community Development, to identify building retrofits and hardening measures eligible for financial assistance under the program. Additionally, the amendments require that CAL FIRE identify defensible space, vegetation management, and fuel treatment procedures eligible for financial assistance. Wildfire hazard areas eligible for financial assistance under the program include LRAs situated within very high FHSZs and SRAs within any FHSZ (CA GOPR 2022a).

Senate Bill 1035: Senate Bill 1035 (2018) amended Section 65302 of the California Government Code to require local agencies to update the climate adaptation section (safety element) of the general plan at least every eight years. This mandate would require local agencies to identify new information relating to fire hazards, climate adaptation, and resiliency measures that were not available during the last revision of the safety element (CA GOPR 2022a).

Senate Bill 535: Senate Bill 535 (2012) outlines the initial funding requirements to communities that have been identified as “Disadvantaged Communities” (DACs). The designation is based on pollution burden, prior designation as a disadvantaged community, and federal land status (i.e., federally recognized tribes) (California Office of Environmental Health Hazard Assessment 2023). 6,936 people have been designated under a disadvantaged community within the City of Santa Clara, census tract number 6085505202, by CalEPA (COEHHA 2022). Through their designation as a DAC, these communities will receive priority for funding through the California Climate Investments Program (CCIP), including the Wildfire Prevention Grants Program, which is a part of the CCIP and is administered by CAL FIRE (State of California 2022).

Evacuation Planning Requirements: Assembly Bill 747 (2019), Assembly Bill 1409 (2020), and Senate Bill 99 (2019) were signed into law to enhance evacuation planning at the local level. Assembly Bills 747 and 1409 require local agencies to assess evacuation routes and locations under a variety of emergency scenarios. Whereas Senate Bill 99 requires municipalities to identify communities with less than two evacuation routes. These planning mandates should be considered when assessing wildfire risk in the safety element of the general plan (CA GOPR 2022a).

PRC 4290.5: Assembly Bill 2911 (2018) added Section 4290.5 to the PRC, which requires the State Board, in consultation with the State Fire Marshal and the local jurisdiction, to identify existing

subdivisions with more than 30 dwelling units in the State Responsibility Area or areas designated as Very High Fire Hazard Severity Zones without secondary egress routes, that are at high risk for fire. Following identification of subdivisions without secondary egress routes, the State Board must provide recommendations to the local government to enhance public safety in such subdivisions. This process must begin on or before July 1, 2021 and repeat every five years thereafter. If available, recommendations made by the Board should feed directly into the community's general plan update (CA GOPR 2022a).

Agricultural Pass Program: Section 2350 of California Food and Agricultural Code provides local government authorities with the ability to set up pass programs with the aim of allowing vetting agricultural operators with the necessary access to closed areas during emergency or for conducting eligible activities. The decision-making process for agriculture pass considerations will be carried out by incident commanders and law enforcement that have jurisdiction for the site. Eligible activities that prompt access to these restricted zones include livestock care and evacuation, water system management, access to agricultural properties or facilities, and the transportation of necessary equipment for reestablishing water systems (UCANR 2022).

PRC 4202: Public Resources Code Section 4202 mandates that the State Fire Marshal classify lands within the planning area into FHSZs. There are three classes of fire hazard severity ratings within FHSZs: Moderate, High, and Very High (CA GOPR 2022a). FHSZs are used for many purposes, such as to identify areas where California's defensible space standards, WUI codes, and the State Minimum Fire Safe Regulations are mandated as well as to identify the level of hazard in a specified area or region. It's important to note that mitigation requirements apply to all zones within the planning area (CAL FIRE 2022c).

CAL FIRE 2022 Fire Hazard Severity Zones Update: In accordance with PRC 4202, CAL FIRE maintains fire hazard severity zone (FHSZ) data for the entire state. FHSZs were originally determined and released in 2007; however, CAL FIRE recently updated these zones for the SRA in December 2022. The new FHSZs are currently in the public review process. Fire hazard severity zones are defined based on vegetation, topography, and weather, and represent the probability of the area burning and potential fire behavior in the area. The new iteration of the FHSZs also accounts for land use changes, recent fire history, new wind data, and local climate data. FSHZs for the LRA are currently in development and expected for release in summer of 2022 (CAL FIRE 2022b, 2022c).

Federal Direction

In response to a landmark fire season in 2000, the National Fire Plan (NFP) was established to develop a collaborative approach among various governmental agencies to actively respond to severe wildland fires and ensure sufficient firefighting capacity for the future. The NFP was followed by a report in 2001 entitled *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: A 10-year Comprehensive Strategy*, which was updated in 2002 to include an implementation plan. This plan was updated once more in 2006, with a similar focus on using a collaborative framework for restoring fire-adapted ecosystems, reducing hazardous fuels, mitigating risks to communities, providing economic benefits, and improving fire prevention and suppression strategies. The 2006 implementation plan also emphasizes information sharing and monitoring of accomplishments and forest conditions, a long-term commitment to maintaining the essential resources for implementation, a landscape-level vision for restoration of fire-adapted ecosystems, the importance of using fire as a management tool, and continued improvements to collaboration efforts (Forests and Rangelands 2006). Progress reports and lessons learned reports for community fire prevention are provided annually.

In 2003, the U.S. Congress recognized widespread declining forest health by passing the Healthy Forests Restoration Act (HFRA), and President Bush signed the act into law (Public Law 108–148, 2003).

The HFRA was revised in 2009 to address changes to funding and provide a renewed focus on wildfire mitigation (H.R. 4233 - Healthy Forest Restoration Amendments Act of 2009). The HFRA expedites the development and implementation of hazardous fuels reduction projects on federal land and emphasizes the need for federal agencies to work collaboratively with communities. A key component of the HFRA is the development of Community Wildlife Protection Plans (CWPPs), which facilitate the collaboration between federal agencies and communities in order to develop hazardous fuels reduction projects and place priority on treatment areas identified by communities in a CWPP. A CWPP also allows communities to establish their own definition of the WUI, which is used to delineate priority areas for treatment.

In addition, priority is placed upon municipal watersheds, critical wildlife habitat, and areas impacted by wind throw, insects, and disease. Communities with an established CWPP are given priority for funding of hazardous fuels reduction projects carried out in accordance with the HFRA.

In 2014, the final stage of the development of a national cohesive strategy for wildfire was developed: *The National Strategy: The Final Phase in the Development of the National Cohesive Wildland Fire Management Strategy* (Forests and Rangelands 2014). The national strategy takes a holistic approach to the future of wildfire management:

To safely and effectively extinguish fire, when needed; use fire where allowable; manage our natural resources; and as a Nation, live with wildland fire.

In order to achieve this vision, the national strategy goals are:

1. Restore and maintain landscapes: Landscapes across all jurisdictions are resilient to fire-related disturbances in accordance with management objectives.
2. Fire-adapted communities: Human populations and infrastructure can withstand a wildfire without loss of life and property.
3. Wildfire response: All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions (Forests and Rangelands 2014:3).

PAST PLANNING EFFORTS

Local

Santa Clara County Community Wildfire Protection Plan (CWPP): The Santa Clara CWPP was originally developed in 2016 in response to the federal Healthy Forests Restoration Act (HFRA) of 2003. The plan is designed to assist in protecting human life and reducing property loss due to wildfire and emphasizes the importance of collaboration among multi-jurisdictional agencies in order to develop fuels mitigation treatment programs to address wildfire hazards (Santa Clara County 2016).

Community Scale CWPPs

Several community scale CWPPs have been developed throughout the County over the last 2 decades. Most of these plans have since been transitioned to annex documents that tier from the County CWPP and provide more fine scale data and recommendations that can be applied at a local level, but these documents still contain information that can inform future planning and should be considered a resource for annex authors.

Lexington Hills Community Wildfire Protection Plan (CWPP): The Lexington Hills CWPP was developed in 2009 in accordance with the requirements set forth by the HFRA. The plan is an example of a community scale document, based on a scientifically rigorous analysis of wildfire hazards and risks and provided recommendations to help stakeholders effectively prevent and mitigate the threat of wildfires to the area's assets. The analysis and content of this plan have since been updated through the 2016 Santa Clara CWPP Annexes. Hazard conditions in some Lexington Hills communities have elevated since the completion of the 2009 CWPP and many recommendations are still applicable and should play a role in guiding future mitigation actions in the Lexington Hills Annex (Annex 1- Chapter 1).

Santa Clara County General Plan: The Santa Clara County General Plan was developed in 1994 and serves to guide land use changes in a manner that provides for proper and safe community development. Several "elements" in the General Plan (e.g., safety, housing, circulation, and open space) have a direct relationship to the WUI fire problem. The General Plan can serve to reduce the threat of natural or human-caused disasters by directing land use policies for hazard prone areas (i.e., proper community design, open space land use, and reducing population in areas prone to wildfire). Its policies can direct government agencies to carry out community and agency education programs, alerting citizens and staff as to what to do in the event of an emergency. The Plan also identifies that much of the mountainous areas of Santa Clara County are considered "high or extreme fire hazard areas," and identifies that access issues, water supply, building requirements, and defensible space are the most critical wildfire hazards that should be addressed through policy and planning. These areas are identified as "Resource Conservation Areas" where new development is limited to low density and low intensity uses. (Santa Clara County 1994). The General Plan Safety Element is being revised concurrently with this planning effort and alignment between these efforts has been a goal of the CWPP Planning Team. The Housing Element is also undergoing an eight-year periodic review, and the County has identified areas for housing growth that are outside of the WUI.

Emergency Operations Plan: The 2022 Santa Clara County Emergency Operations Plan (EOP) is an all-hazards document that is an update to the previous 2017 EOP and describes the County's incident management structure, relevant guidelines, community engagement, and compliance with relevant legal statutes. The plan also states the County of Santa Clara as the Operation Area lead agency regarding California's standardized Emergency Management Systems (SEMS). The EOP establishes an incident management organization for the County and overall operational concepts associated with emergency management. The EOP provides a flexible platform for planning and response to all hazards and incidents important to the operational area including wildfire. A comprehensive hazard analysis overview of wildfire is provided including purpose, scope, assumptions, and a situational overview of wildfire hazards.

Multi-Jurisdictional Local Government Hazard Mitigation Plan: In 2005, the Association of Bay Area Governments adopted Taming Natural Disasters: A Multi-Jurisdictional Local Government Hazard Mitigation Plan for the San Francisco Bay Area. This plan addresses methods to mitigate the risk from several types of hazards on eight commitment areas (infrastructure, health, housing, economy, government services, education, environment, and land use). The 2005 plan was updated in 2010 with the participation of 116 cities, counties, and special districts. The update was supported by numerous regional and sub-regional workshops, forums, and public outreach campaigns, and further enhanced both the consistency in approach to hazard mitigation planning and the participation rate of local jurisdictions (Association of Bay Area Governments 2010).

Santa Clara County Local Hazard Mitigation Plan (LHMP): In response to the Multi-Jurisdictional Local Government Hazard Mitigation Plan for the San Francisco Bay Area, the Association of Bay Area Governments counties, including Santa Clara County, developed an LHMP as an annex to the

Association of Bay Area Governments plan. The LHMP was last updated in 2017 and a 2022 update is currently under way with a renaming of the plan to Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) per new guidance from FEMA (Santa Clara County 2017). Many of the mitigation strategies identified in the plan have been, or can be, used in CWPPs, and the responsible entities are also identified. Items include ensuring reliable sources of water for existing and new developments, developing defensible space programs, providing adequate access roads that meet California Fire Code standards, tying public education on defensible space with a defensible space ordinance and field enforcement, adopting or amending California Building and Fire Codes, and expanding VMPs (Santa Clara County 2017). The MJHMP is being revised concurrently with this planning effort and alignment between these efforts has been a goal of the CWPP Planning Team.

City General Plans and city LHMPs: General Plans exist for cities throughout Santa Clara County. These Plans provide a general overview of wildfire hazard in terms of emergency response and direction for local and county hazard planning. They contain information on the local wildfire situation and associated hazards, although the level of detail varies among cities. The Los Gatos 2021 General Plan, for example, lists wildfire-related goals in its Safety Element that are associated with planning for both fire safety and fire risk reduction. These, in turn, are further developed into general policies and actions (Town of Los Gatos 2021). Cities within Santa Clara County also have LHMPs, which are annexes to the County's LHMP. The various city LHMPs, following a standard template, discuss the local nature of various hazards, values at risk from these hazards, and actions to take to mitigate this risk.

Santa Clara County Department of Parks and Recreation 2018 Strategic Plan: The department's mission is to "Provide, protect, and preserve regional parklands for the enjoyment, education and inspiration of this and future generations." (Santa Clara County 2018b). The 2018 SCC Department of Parks and Recreation Strategic Plan includes the planning process, a needs assessment, goals & strategies, an action plan with 66 items, and fiscal planning for a sustainable future; the Department has been funded by the Park Charter Fund since 1972 (Santa Clara County 2018b).

Santa Clara Valley Habitat Plan: The Santa Clara Valley Habitat Agency is responsible for administering and implementing the Santa Clara Valley Habitat Plan, a federally approved Habitat Conservation Plan and state approved Natural Communities Conservation Plan. Chapter 3 in the Habitat Plan provides for the protection and recovery of 18 plant and animal species of special conservation concern e.g., species listed by the federal or state government as threatened or endangered. In depth conservation strategies are provided in chapter 5 such as the creation of reserve units with corresponding management plans that will outline objectives contributing to "reducing the fuel load of the reserve so that the risk to biological resources of catastrophic wildfire is at an acceptable level and the risk to adjacent urban areas is minimized". Each reserve unit management plan will include a section on fire management that will include a description of "minimum impact suppression techniques" to accomplish fire management objectives. The jurisdictions participating in the Habitat Plan include the cities of Gilroy, Morgan Hill and San Jose, Santa Clara County, the Santa Clara Valley Transportation Authority and the Santa Clara Valley Water District (Santa Clara Valley Habitat Agency 2012).

Santa Clara County Wildfire Preparedness Guide: In 2021 The Santa Clara County Office of Emergency Management created a wildfire preparedness guide to be hosted on the County website. The Guide is designed to provide residents and visitors with information on preparing for wildfires. Preparedness resources include home hardening and defensible space, tips to strengthen financial capabilities, evacuation planning, guidance on staying safe during a wildfire and returning home after a wildfire. The guide also outlines resources for livestock owners, hazardous waste and debris management, and wildfire recovery. Several links, brochures, and a FAQ are available to help with questions regarding wildfire preparedness and recovery.

DRAFT Unincorporated Santa Clara County Climate Vulnerability Assessment: The Santa Clara County Department of Planning and Development is currently preparing an assessment on various climate induced hazards that affect the residents and environment throughout Santa Clara County. The bulk of the plan is dedicated to describing local climate trends and how changes in temperature, precipitation, and vegetation when paired with wildfire hazards can contribute to increased wildfire danger. Critical data on vulnerable populations is included along with detailed health impacts as a result of exposure to wildfire hazards. Also included are narratives describing the direct and indirect impacts of wildfire on major community elements such as transportation systems, lifeline utility systems, economic elements, and natural resource areas. This document will inform the Safety Element update of the General Plan. The document was in drafting stages during the CWPP development and therefore content may be revised.

State

Strategic Fire Plan for California: In 2018, CAL FIRE, along with the State Board of Forestry and Fire Protection, developed the Strategic Fire Plan for California (CAL FIRE 2018). The plan was developed to create a more wildfire resistant environment and community, to increase the understanding of wildfires, and increase cooperation amongst local, state, federal, tribal, and private partnerships. Goals outlined within the plan include identifying natural resources at risk, integrating fire and fuels management tactics with landowners, and implementing post-fire assessments and programs (CAL FIRE 2018).

California State Hazard Mitigation Plan: In 2018 the CA OES released the latest California State Hazard Mitigation Plan. The intention of the plan was to provide a current update of all past and potential hazards and disasters within California and outline mitigation strategies, risk reduction methods, goals, objectives, strategies, and priorities (CA OES 2018). Mitigation strategies recommended include strengthening interagency coordination, incorporating climate change into future planning efforts, and establishing a mitigation registry (CA OES 2018).

Fire Hazard Planning Technical Advisory: In 2022, the California Office of Planning and Research updated the Fire Hazard Planning Technical Advisory. The goal of the guide is to provide a framework for planners and decision makers in addressing hazards, increasing resilience, and reducing risks associated with fire. This guide provides a brief history of fire in the state, impacts to communities, and implications of climate change as well as describes several local, state, and federal wildfire policies and regulations to inform on required planning elements and available resources. This regulatory overview sets the stage for the fire hazard planning guidance chapter, which has recommendations regarding the integration of fire hazard specific elements into general plans. This guide also contains directions to align hazard plans with broader plans and connect fire hazard planning to relevant matters such as climate adaptation (CA GOPR 2022a).

Wildland Urban Interface Planning Guide: In 2022, in accordance with the requirements of AB 75, the California Governor's Office of Planning and Research, with the Community Wildfire Planning Center and CAL FIRE, created the WUI planning guide to provide recommendations and examples to aid communities in planning for living in the WUI (CA GOPR 2022a). The guide serves as a supplement to the Fire Hazard Planning Technical Advisory and discusses several plan categories, detailing their respective purpose, and how they relate to WUI planning. Some plan types referenced include, general, hazard, climate, and wildfire plans. The regulation section of the guide provides required and recommended codes for resilient WUI planning and rationale for how these measures promote a fire safe community. Additional tools and programs that enhance community resilience are detailed in the plan (CA GOPR 2022a).

California Cooperative Forest Management Plan: In 2020 the California Cooperative Forest Management Plan was developed to be used by CAL FIRE, the USFS, and the Natural Resources Conservation Service. This plan is more of a template for fire management plans. The plan outlines topics that should be discussed while planning for fires, such as road systems, property history and conditions, wildlife, water resources, and others (CAL FIRE 2020b).

California's Forests and Rangelands 2017 Assessment: In 2017, CAL FIRE published California's Forests and Rangelands 2017 Assessment. CAL FIRE's Fire and Resource Assessment Program evaluates the amount and size of California's forests and rangelands and analyzes their conditions to establish management and regulatory guidelines. The assessment is used to delineate priority landscapes that aid in focusing investments and other programs to ameliorate issues. The goal of the assessment is to meet both state and federal mandates for natural resource inventories and planning (CAL FIRE 2018a).

Community Wildfire Prevention & Mitigation Report: In 2019 CAL FIRE published the Community Wildfire Prevention & Mitigation Report in response to Executive Order N-05-19, which directs CAL FIRE and other state agencies to recommend administrative, regulatory, and policy changes to prevent and mitigate wildfires. The order stresses taking necessary actions to protect vulnerable populations and to identify backlogs in fuels treatments projects. CAL FIRE identified 35 priority projects that could be implemented right away to reduce public safety risk for over 200 communities. Potential projects included removal of dead trees, vegetation clearing, creation of ingress and egress paths, and creation of fuel breaks and community defensible spaces (CAL FIRE 2019a).

California's Wildfire and Forest Resilience Action Plan: In 2021 the California Forest Management Task Force (CA FMTF) developed California's Wildfire and Forest Resilience Action Plan (CA FMTF 2021). The purpose of the plan was to sustain economic strength of the forests, improve forest health and resilience, and increase the level of fire safety within communities. The plan is broken up into four major goals and strategies to achieve said goals (CA FMTF 2021). The goals include increasing the pace and scale of forest health projects, strengthening the protection of communities, managing the forest to achieve the state's economic and environmental goals, and driving innovation while measuring progress. Strategies for increasing community fire safety include increasing fuel breaks, creating fire-safe roadways, and supporting community risk reduction (CA FMTF 2021).

Vegetation Management Program: In addition to the Strategic Fire Plan, CAL FIRE operates a VMP that focuses on addressing resource management and wildfire fuel hazards within SRA lands (CAL FIRE 2022e). The program has three management objectives with various sub-goals. The management objectives are the reduction of conflagration of fires, optimization of soil and water productivity, and the protection and improvement of intrinsic floral and faunal species (CAL FIRE 2022e).

California Vegetation Treatment Program: In addition to planning documents, the State of California operates the California Vegetation Treatment Program (CalVTP). This program was developed by the Board of Forestry and Fire Protection to create healthy fire regimes, reduce hazardous vegetation that increases wildfire risk, and reduce risk within communities. Prescribed burning, prescribed herbivory, herbicides, mechanical treatments, and manual treatments are used for vegetation management. In addition, you can visit the CalVTP Implementation Database to find current and approved projects. To learn more about this program, visit the following URL: <https://bof.fire.ca.gov/projects-and-programs/calvtp/>

Safer from Wildfire Initiative: This partnership program was established to increase home hardening and defensible space efforts on homes that were not built to current CAL FIRE Standards. The program was developed in a partnership with the CA OES, Planning and Research, Department of Insurance,

Public Utilities Commission, and CAL FIRE to create pathways for more accessible home insurance by requiring insurers to reward safety and mitigation actions (CDI 2023b). The program works within the three mitigation topics of protecting the structure, protecting the surroundings, and working as a community to identify actionable steps to improving community resilience in a cost-effective way. Each topic has specific measures, such as upgrading to ember resistant vents, clearing under deck vegetation, or working as a community to achieve a Firewise rating (CDI 2023b). The list of actions creates consistency in home hardening. This program has been used to negotiate insurance discounts for individuals and communities based on mitigation achievements at each level. For example, State Farm offers a discount to communities that achieve a Firewise Community rating (CDI 2023b). More information about the Safer from Wildfires initiative and currently available insurance discounts are available at the following URL: <https://www.insurance.ca.gov/01-consumers/200-wrr/saferfromwildfires.cfm>

Federal

The National Cohesive Wildland Fire Management Strategy: The Strategy outlines a holistic approach to the future of wildfire management, with the goal of managing forests to coexist with wildland fire but containing incidents when necessary. The Strategy maintains that this goal will be achieved by restoring and maintaining landscapes, developing fire-adapted communities, and maintaining sufficient wildfire response capabilities (Forests and Rangelands 2021).

A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: A 10-year Implementation Strategy: This Plan was most recently updated in 2006 and focuses on using a collaborative framework for restoring fire-adapted ecosystems, reducing hazardous fuels, mitigating risks to communities, providing economic benefits, and improving fire prevention and suppression strategies. The Plan also emphasizes information sharing, monitoring of accomplishments and forest conditions, a long-term commitment to maintaining the essential resources for implementation, a landscape-level vision for restoration of fire-adapted ecosystems, the importance of using fire as a management tool, and continued improvements to collaboration efforts (Forests and Rangelands 2006).

National Fire Plan: The National Fire Plan (Managing the Impact of Wildfires on Communities and the Environment) was implemented by the U.S. Department of the Interior and the USFS in 2000. The Plan was established to develop a collaborative approach among various governmental agencies to actively respond to severe wildland fires and ensure sufficient firefighting capacity for the future. Focuses of the Plan are on firefighting preparedness and accountability, forest restoration, hazardous fuels reduction, community assistance, and research (Forests and Rangelands 2000).

Bureau of Land Management: The BLM does not have a general fire management plan; however, the BLM has a fire management program in California and is a member of the California Forest Management Task Force (BLM 2022a; California Wildfire and Forest Management Task Force 2023). The BLM also collaborates with several federal, state, and local organizations to develop and implement wildland fire programs. For instance, the BLM's fuels management program directs a wide range of active management vegetation treatments using mechanical, biological, and chemical tools, and prescribed fire. The program consists of creating fuel breaks, reducing fuel loads, reducing fire risk near communities, targeted grazing, and herbicide to break fire-grass cycles. Fuels treatments are planned and implemented jointly with other BLM programs, and with federal, state, local, and non-governmental collaborators (BLM 2022b). Within Santa Clara County, the BLM manages a patchwork of small land parcels in the Diablo Range.

PUBLIC LAND MANAGEMENT

LAND MANAGEMENT STRATEGIES

Forest managers in the region are addressing land management objectives through the use of prescribed fire, mechanical, and manual treatments to promote more resilient forest lands. Private, state, and federal lands are interspersed creating a matrix of land ownership, which is often a hurdle to implementation of landscape level treatments. By working with private landowners, forest managers are enhancing landscape-scale efforts to create more resilient forest communities.

Local Land

Santa Clara County Department of Parks and Recreation

The Santa Clara County Department of Parks and Recreation manages 52,000 acres of County Park lands in 28 different parks comprising 27% of the open space within Santa Clara County. The Department uses the 2018 Santa Clara County Strategic Plan as a guiding land management document (Santa Clara County 2018b). A key wildfire mitigation item in the plan's action list is action item number 35 which directs the preparation and execution of Natural Resource Management and Grazing Management plans. These guiding documents will help facilitate better management of annual grasslands, serpentine habitats, oak woodlands, forests, and aquatic habitats. This will create healthier vegetation communities with greater resilience to wildfire. Additionally, the County has stressed that all natural resource management actions should align with the objectives and strategies of the Valley Habitat Plan (Santa Clara County 2018b).

Santa Clara Valley Habitat Agency

The Santa Clara Valley Habitat Agency uses the 2012 Santa Clara Valley Habitat Plan as a guiding document. The Agency has prepared guidelines for fuel treatments that incorporate the Habitat Plan's requirements for protecting covered habitats and species (Santa Clara Valley Habitat Agency 2012). The guidelines will be used to plan fuel treatments within conservation reserves. They may also be used to plan fuel treatments outside of reserves or to place conditions on discretionary projects if fuel reduction is proposed as part of the project. The following projects may be subject to the permit requirements of the Habitat Plan:

- Land development within the Habitat Plan boundaries requiring discretionary approval from participating jurisdictions.
- Vegetation management projects subject to environmental analysis pursuant to the CEQA.
- Vegetation management is covered activity under the Habitat Plan such as management within county parks and land managed by the Santa Clara Valley Open Space Authority.

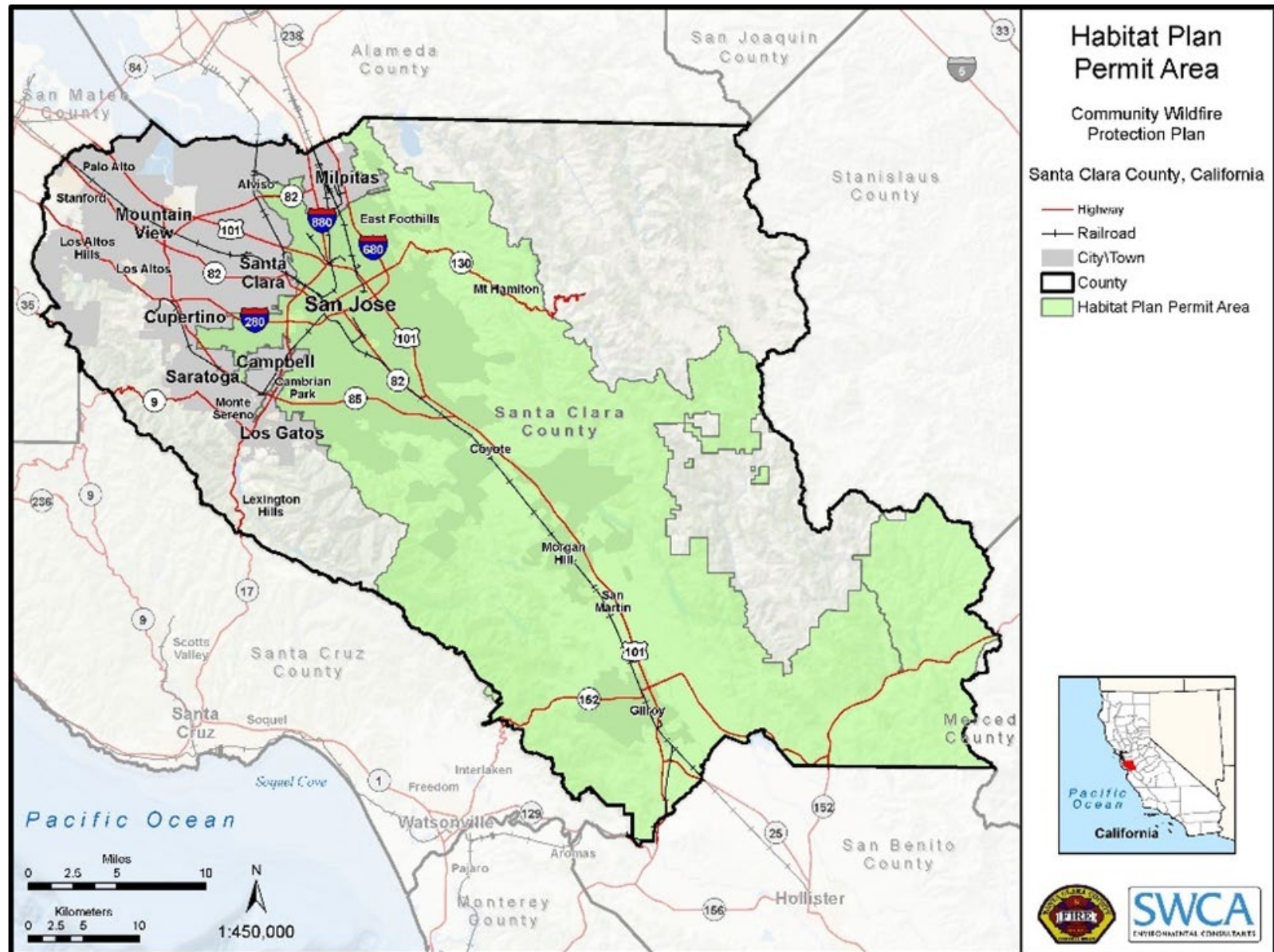


Figure 1A.2. Santa Clara Valley Habitat Plan permit area.

Fuel treatments proposed by the CWPP may be subject to the Habitat Plan permit requirements if they are funded by public agencies such as CAL FIRE or otherwise require discretionary permits from participating jurisdictions. Permits are required for discretionary projects affecting habitat and species covered by the Habitat Plan. Fees are collected to compensate for impacts on covered species and habitats. The fees in turn, are used to acquire properties with equivalent habitat to compensate for the losses. These properties become part of the conservation reserve system that will eventually encompass over 46,000 acres of oak woodland, serpentine grassland, annual grassland and other habitat types (Santa Clara Valley Habitat Agency 2012). It is the intent of this CWPP that if and when fuel treatments are planned within the conservation plan area and/or within habitats or potentially affecting species covered by the Habitat Plan that those treatments will conform to the degree possible to the recommendations of the Habitat Agency's guidelines (Santa Clara Valley Habitat Agency 2012).

Midpeninsula Regional Open Space Authority (Midpen)

Midpen reduces wildland fire severity and risk throughout the Santa Cruz Mountains by managing vegetation in preserves with a focus on ecological health and wildland fire resilience. "Wildland fire prevention, preparation and response are part of Midpen's ongoing land stewardship" (Midpen 2021a).

Wildland Fire Resiliency

In 2021 Midpen's Wildland Fire Resiliency Program was approved. This program aims to increase vegetation management actions by six-fold over the course of 10 years (Midpen 2021a).

Goals and Objectives:

- Promote healthy, resilient, fire-adapted ecosystems
- Reduce wildland fire risk
- Facilitate the response of fire agencies

The program outlines the creation of a Vegetation Management Plan (Midpen 2021b) that will expand management of environmentally sensitive vegetation into new areas of Midpen preserves for the purpose of preserving ecological health and public safety. Preserve maps will be updated and expanded to provide critical information to fire agencies responding to wildland fire events, including water resources, roads and gates, and sensitive natural and cultural resources. A monitoring plan will also be developed for the purpose of collecting scientific data to ensure the program is adaptable and meets goals. Finally, in partnership with CAL FIRE, Midpen will be reintroducing prescribed fire as a land management tool in 2023.

Watch a presentation on the prescribed fire aspect of the program from a July 2022 virtual community open house event: <https://www.youtube.com/watch?v=E3LRwfdGjr>

Current Projects

- Los Gatos Creek Watershed Forest Health Project: The project will include removing and reducing vegetation to meet forest health and wildfire fuel management goals. Work may involve using heavy machinery, including, but not limited to, masticators, mowers, chainsaws, and woodchippers.

- Chamise Trail Shaded Fuel Break: Work is planned along the Chamise Trail from Rhus Ridge junction to Ravensbury junction and will generally follow close to the ridge line where fuel breaks are most effective to reduce heavy fuel loads of brush, small trees, and accumulated, dead vegetation.

Ongoing Wildland Fire Prevention and Response

- Maintaining hundreds of miles of fuel breaks and fire roads throughout our preserves, some of which are used as emergency ingress and egress routes for neighbors.
- Annually training Midpen field staff as fire first responders
- Outfitting ranger trucks with water pumpers during fire season
- Reducing vegetation using conservation grazing on more than 6,500 acres on the San Mateo County Coast
- Enforcing regulations against smoking, fires and guns in the preserves

Santa Clara Valley Open Space Authority

Tribal Partnerships

The Santa Clara Valley Open Space Authority is partnering with local Tribes to reconnect them with their ancestral and traditional lands, to promote their role as partners in land stewardship, and to find shared solutions to today's conservation challenges for future generations. The Santa Clara Valley Open Space Authority recognizes that the lands of the Santa Clara Valley along with the Santa Cruz and Diablo Range Mountains are the ancestral and unceded territories of the Awaswas-, Chochenyo-, Mutsun-, Tamien-, and Yokuts-speaking peoples. Tribal partners are currently engaged in active research and conservation work. Tribes offer traditional ecological knowledge that contributes to sustainable managing open spaces and addressing climate challenges such as fire (Open Space Authority 2023).

The Goals of the Open Space Authority Tribal Partnership are as follows:

- Acknowledge and learn from the past, and listen to current and future Indigenous voices and perspectives
- Make sure Tribal partners have a voice in public processes that affect open spaces within the Authority's jurisdiction
- Provide Tribes with access to culturally significant lands
- Identify opportunities to support Tribal stewardship of these lands in the future
- Amplify the voices of Indigenous Peoples and their role as leaders in conservation in our region and the Bay Area

State Land

California Department of Forestry and Fire Protection (CAL FIRE)

A part of CAL FIRE's mission is protecting California's resources, including the health of the state's woodlands and forests. Charged with protecting the forest resources of all the wildland areas of California that are not under federal jurisdiction is the Board of Forestry and Fire Protection, a

government-appointed body within CAL FIRE. It is responsible for developing the general forest policy of the state, determining the guidance policies of CAL FIRE, and representing the state's interest in federal forestland in California. Together, the Board and the Department work to carry out the California Legislature's mandate to protect and enhance the state's unique forest and wildland resources.

State Responsibility Area (SRA) is a legal term defining the area where the State has financial responsibility for the prevention and suppression of wildfire. The majority of Santa Clara County (67.5%) is within SRAs (CAL FIRE 2022h).

In California, CAL FIRE maintains fire hazard severity zone (FHSZ) data for the entire state. There are three classes of fire hazard severity ratings within FHSZs: moderate, high, and very high (CA GOPR 2020). Fire hazard severity zones are defined based on vegetation, topography, and weather, and represent the probability of the area burning and potential fire behavior in the area. A significant portion of Santa Clara County falls under high and very high FHSZs. FHSZs within the County are contained in two distinct areas. The first is in the northern and eastern foothills of the Santa Cruz mountains where fire hazard is very high from the Santa Clara Valley to the Santa Cruz County border in the Santa Cruz Mountains. Continuing, fire hazard severity is high to very high from Stevens Creek Park south of San Jose to the unincorporated lands immediately west of Gilroy. The second area of very high FHSZ within the county is located along and throughout the Diablo Hills; fire hazard severity becomes less in areas bordering the valley floor.

CAL FIRE 2019 Strategic Plan: The 2019 Strategic Plan, a guiding document in regard to land management strategies, states that a key objective of CAL FIRE is to "Expand forestry and fire prevention through effective natural resource management programs, education, inspections, and land use planning" (CAL FIRE 2019b). The following land management action items are outlined in the Strategic Plan:

- Increase by 20% the acreage of projects implemented under the California Forest Improvement Program.
- Implement fuels reduction projects on at least 50,000 acres annually.
- Continue to work with the Stewardship Council, conservation easement holder designees, other collaborators, and stakeholders to complete the successful donation and transfer of designated watershed lands to CAL FIRE for management as Demonstration State Forests.

Vegetation Management Program (VMP): The VMP is a cost sharing program that allows private landowners to enter a contract with CAL FIRE to use prescribed fire and mechanical treatments to accomplish management goals. The program utilizes prescribed fire and mechanical treatments for managing wildland fire fuel hazards and other resource management issues regarding vegetation on SRA lands. The program has treated about 25,000 acres per year since 1982 (CAL FIRE 2022e). The goal of the program is to reduce the change of large, damaging wildfires in California. To accomplish this the Board of Forestry and Fire Protection has established 3 management objectives:

- Reduction of conflagration fires.
- Optimization of soil and water productivity.
- Protection and improvement of intrinsic floral and faunal values.

Additionally, the VMP also aims to increase water quantity and maintain water quality in managed watersheds, protect and improve soil productivity, propagate rare or endangered fire adapted plant species, and decrease the risk to firefighters and other responders during wildland fires.

The laws enacted in support of this program are found in Title 14, California Code of Regulations, Chapter 9.8 Chaparral Management, Sections 1560 to 1569.6. The program is further defined in the Public Resources Code Sections 4461 to 4473, 4475 to 4480 and 4491 to 4494 (CAL FIRE 2022e).

California Department of Fish and Wildlife Lands

The CDFW manages well over 1 million acres of fish and wildlife habitat across 749 properties throughout California. These properties serve as habitat for a great diversity of fish, wildlife, and plant species and include varied habitats from major ecosystems in the state. Furthermore, various private land conservation programs assist landowners with the management of riparian environments, native grasslands, wetlands, and wildlife-friendly farmlands (CDFW 2023).

In 2021, the CDFW initiated the largest wildfire protection and resiliency endeavor in its history, with a focus to improve wildfire protection and resiliency in most of its ecological reserves, wildlife areas, and surrounding communities. Methods employed by the CDFW to accomplish its wildfire resiliency goals include the installation of fire breaks, brush removal, vegetation thinning, utilizing livestock grazing, and controlled burns (CDFW 2021a).

Federal Land

Bureau of Reclamation

Reclamation Manual – Directives and Standards 2010 (D&S)

Wildland Fire Management (WFM): The purpose of the WFM Directives and Standards is to provide direction for implementing and managing the Bureau of Reclamation's WFM Program in compliance with existing law and Department of the Interior requirements. The Bureau of Reclamation outlines WFM activity standards in compliance with the Department of the Interior standards on fuels management, burned area rehabilitation, prescribed fire, and wildfire suppression work. The Bureau of Reclamation outlines the following activities in their WFM (U.S. Bureau of Reclamation 2010):

- **Environmental Compliance** - Reclamation will complete and submit the necessary National Environmental Policy Act (NEPA) documentation and verify compliance with the National Historic Preservation Act of 1966 (NHPA)
- **Fuels Management** - Reclamation will establish fuels management programs, especially in WUI areas and near at-risk Reclamation facilities.
- **Post-Fire Recovery** - Associated activities are intended to protect and sustain ecosystems, public health and safety, community infrastructures, and operational and water storage/conveyance facilities or features.
- **Prescribed Fire Activities** - All prescribed fire planning, preparation, and implementation will adhere to the Department's approved standards. No prescribed fire ignition will be undertaken without an approved burn plan
- **Wildfire Response Strategies and Suppression** – Reclamation will establish agreements or contracts with federal agencies, non-federal land management entities, or other wildland firefighting organizations for wildfire response strategies and suppression on Reclamation land.

U.S. Fish and Wildlife Service

The USFWS has three primary areas of focus regarding fire management strategies, including: fuels management, wildfire management, and wildfire prevention. The USFWS aims to carry out fire management and land improvements in a safe and cost-effective manner to benefit both people and the landscapes. This will be achieved through the prioritization of fuel management programs such as prescribed burns, fuel treatment projects, maintaining previous projects, leveraging funding, and promoting safety and security.

Private Land

Pacific Gas & Electric (PG&E)

PG&E launched their Community Wildfire Safety Program in 2018 to help keep customers and communities safe (PG&E 2023). They have recognized that wildfire risk is increasing in California and are working to make their system safer.

PG&E is taking action on the following items:

- Underground powerlines: powerlines are being moved underground in high fire-threat areas.
- Electric grid: electric systems are being made safer with stronger poles and covered powerlines.
- Enhancing powerline safety settings: power lines turn off within one-tenth of a second if a problem is detected.
- Public safety power shutoff (PSPS): A PSPS follows a detailed stepwise process. Once severe weather is forecasted, addresses that may be affected by a power shutoff will be notified. Warning notifications are issued 1 to 2 days before power is shut off. Once power is shut off, “power is off” notifications will be sent 24 hours per day. After severe weather passes a weather “all-clear” notification is issued closely followed by an estimated restoration notification. Finally, customers will be notified once power is restored.
- Installing microgrids: distribution microgrids can safely power some areas during a PSPS event. Distribution microgrids are used to power central community corridors, gas stations, schools, and grocery stores. These microgrids are used in targeted areas that are served by underground power lines, outside of high fire-threat areas, and outside of the PSPS weather footprint.
- Vegetation management: PG&E is conducting enhanced vegetation safety work in High Fire-Threat District, which are designated by the California Public Utilities Commission (CPUC). The goal of our Enhanced Vegetation Management (EVM) Program is to keep trees, limbs, and branches away from powerlines and electric equipment.

Stewardship Agreements

In 2020, California and the federal government signed an agreement of the shared stewardship for California forests and rangelands. The agreement sets many goals for the state of California and the federal government to accomplish together (CA Office of the Governor 2020). These goals include treating at least 1 million acres of California lands per year to reduce the risk of wildfires, developing a 20-year cooperative forest management plan which will outline projects and priorities, encouraging and increasing the use of sustainable land management practices such as prescribed fire, increase the forest management workforce and in turn increase the pace and scale of forest management, and prioritizing

forest health benefits such as carbon sequestration and healthy watersheds. Funding for this agreement will be provided from the Great American Outdoors Act (CA Office of the Governor 2020).

The shared stewardship agreement includes a commitment to coordinate and share tools, processes, and innovative approaches in respect to fire management. You can find the stewardship agreement here: <https://www.gov.ca.gov/wp-content/uploads/2020/08/8.12.20-CA-Shared-Stewardship-MOU.pdf>

APPENDIX B:

Community Background and Resources

This page intentionally left blank.

CONTENTS

Location and Geography	B-1
Topography	B-2
Roads and Transportation	B-2
Water Availability and Supply	B-4
Population	B-6
Recreation	B-8
Wildlife	B-10
Forest Health Considerations	B-11
Insects	B-11
Diseases	B-12
Environmental Challenges	B-12
Drought and Climate	B-12
Tree Mortality	B-13
Ecosystem Services	B-15
Fire Response Capabilities	B-17
Local Response	B-18
State Response	B-23
Federal Response	B-24
Mutual Aid	B-26
Evacuation Resources	B-26
Public Education and Outreach Programs	B-32
Local and State Programs	B-32
National Programs	B-34

Figures

Figure B.1. Photograph showing a winding rural road with blind turns.....	B-3
Figure B.2. A washed-out road (due to heavy rain and snow storms) within a residential community.	B-4
Figure B.3. A view of a partially filled Alamos Pond at Valley Water headquarters on Almaden Expressway (Source: Valley Water 1/23/23).	B-6
Figure B.4. Slides from a promotional film created by a real estate company for the Redwood Estates in 1926 (Source: YouTube).....	B-7
Figure B.5. Fire agency service areas.	B-17
Figure B.6. Map of suppression difficulty index.	B-21
Figure B.7. Fire station service areas.	B-22
Figure B.8. Fire responsibility areas and fire station locations.	B-25
Figure B.9. Example of a narrow mountain community road.....	B-30
Figure B.10 Some areas have been identified as having extremely limited ingress and egress, and in an emergency, residents may need to evacuate through locked gates.....	B-31

Tables

Table B.1. Breakdown of Land Ownership in Santa Clara County. B-1

LOCATION AND GEOGRAPHY

Santa Clara County encompasses 835,449 acres (1,305 square miles) and is located at the southern end of the San Francisco Bay (Santa Clara County 2016). Santa Clara County borders six other California counties: San Mateo, Alameda, Stanislaus, Merced, San Benito, and Santa Cruz. The Santa Clara Valley is generally divided into two geographic regions, the North Valley and the South Valley. The predominantly urban North Valley houses approximately 90% of the county's residents and 13 of its 15 cities (Santa Clara Valley Habitat Agency 2012). The South Valley is primarily rural, except for Morgan Hill, Gilroy, San Martin (unincorporated community), and scattered low-density residential areas.

Until the mid-twentieth century, orchards and other agriculture dominated the area, but in recent decades the valley has been transformed into "Silicon Valley," a global center for high-tech development resulting from the 1990s internet boom. Since that time the county has seen extensive population growth, focused mostly within the North Valley cities of Campbell, Cupertino, Los Altos, Los Altos Hills, Los Gatos, Milpitas, Monte Sereno, Mountain View, Palo Alto, Santa Clara, Saratoga, and Sunnyvale; nearly 95% of the county population lives in its cities (Santa Clara Local Agency Formation Commission [LAFC] 2019). The county has the largest population of any of the nine Bay Area counties, and it provides more than 25% of all jobs in the Bay Area (Santa Clara Valley Habitat Agency 2012).

Although the population is expected to continue to grow, the rate of growth is projected to slow (Santa Clara Valley Habitat Agency 2012). Recognizing the population boom in the 1970s, Santa Clara County implemented policies to help curtail potential sprawl and protect the county's natural resources. Policies were enacted that focused growth inside of cities, controlling sprawl into unincorporated areas of the county. At the same time, the Midpen, Santa Clara County Parks, and the Santa Clara Valley Open Space Authority began acquiring undeveloped land in the foothills for a permanent greenbelt of wildlands.

Santa Clara County's General Plan includes many measures to address land use issues involving the rural unincorporated areas of the county over which Santa Clara County has direct land use authority. Policy direction is to maintain the scenic rural character of these areas and to promote conservation and productive use of their natural resources for agriculture, ranching, watershed, public recreation, and wildlife habitat (Santa Clara Valley Habitat Agency 2012).

The county has a rich culture and many community facilities and attractions that serve the residents and attract visitors, including museums and art galleries, performing arts venues, educational facilities, cultural and recreational opportunities, vineyards, orchards, and abundant natural resources.

Table B.1. Breakdown of Land Ownership in Santa Clara County

Landowner	Portion of Santa Clara County
Private	73.66%
Local Government	15.20%
CDPR	7.20%
Other State Lands	1.33%
CDFW	1.09%
USFWS	0.96%
Non-Profit Conservancies and Trusts	0.39%
BLM	0.17%

Landowner	Portion of Santa Clara County
Department of Defense	0.01%
Bureau of Reclamation	0.00%

TOPOGRAPHY

Santa Clara County encompasses the fertile Santa Clara Valley, which runs from south to north and contains large swathes of agricultural and urbanized land. The valley is split into two regions, the North Valley and the South Valley. The North Valley is adjacent to San Francisco Bay and contains braided creeks and stream channels that spill into several tidal wetlands, salt marshes, and abandoned salt ponds. The South Valley is slightly higher in elevation at approximately 350 feet above sea level and contains many agricultural lands, which are flanked by deep narrow lakes and reservoirs. The valley is approximately 93 miles long. At its widest in the north, the Santa Clara Valley is about 11 miles wide; at its narrowest in the south, the valley is about 2.5 miles wide. A low saddle near the middle of the valley represents the watershed divide between the Coyote Valley Watershed with its pour point located in San Francisco Bay and several watersheds to the south in which streams flow southward ultimately terminating in Monterey Bay (Santa Clara Valley Habitat Agency 2012).

The Santa Clara Valley is surrounded by the rolling Diablo hills to the east and the Santa Cruz Mountains to the west. The Santa Cruz Mountains rise to a maximum elevation of 4,000 feet and are characterized by steep and rugged country that is carved by deep draws and drainages. The foothills of these mountains roll gently downslope to the alluvial fan geomorphology of the flatter valley below. The Diablo Mountain range contains several high points, ranging from 2,500 feet to the highest peak of Mt. Hamilton at 4,213 feet tall. The Diablo Range is skirted by dissected hills, but the interior of the range still contains alpine features like those of the Santa Cruz mountains. The two mountain ranges in Santa Clara County greatly influence diurnal and orographic winds and dictate precipitation distribution from incoming moisture sourced from the nearby Pacific Ocean to the west (Santa Clara Valley Habitat Agency 2012).

ROADS AND TRANSPORTATION

As outlined in the Santa Clara County General Plan, an adequate transportation system is essential to the county’s economy, environment, and overall quality of life (Santa Clara County 1994). The Transportation section of the General Plan provides measures to reduce congestion in the county, improve air quality, encourage compact urban development, and improve social and economic well-being. Specific to the CWPP, roads and transportation are important for evacuation purposes and emergency response, providing ingress and egress to emergency responders. Conversely, they also contribute to patterns of ignition, by bringing people in contact with the wildlands. Santa Clara County has updated the Circulation and Mobility Element of the General Plan, which will provide updates and policies to support and implement road improvements to the county’s expressways and unincorporated road system. These updates were enacted to create consistency with the California Streets Act of 2008. Santa Clara County’s main airport is Norman Y. Mineta San Jose International Airport with numerous international connections. Santa Clara Train Station is served by Caltrans and provides service throughout Santa Clara Valley and the Bay Area. The San Jose Diridon Station is the transit hub for Santa Clara County/Silicon Valley. This station serves Altamont Commuter Express (ACE), Amtrak Capitol Corridor, Amtrak Coast Starlight, VTA, Light Rail, Highway 17 Express) and Monterey-San Jose Express. The Santa Clara Valley Transportation Authority operates the regional light rail system connecting towns throughout the valley.

Santa Clara County has an extensive freeway system and separate expressways. The expressways are maintained as county roads, not by Caltrans. The major state highways in the county are U.S. Route 101 that runs through the center of the valley, State Route 17 that runs from San Jose through the Santa Cruz Mountains to Santa Cruz, Interstate 280 that connects San Jose to San Francisco, Interstate 880 that connects San Jose with Oakland to the north, Interstate 680 that connects San Jose to communities to the northeast and State Route 85 (West Valley Freeway) that connects south San Jose to Mountain View and all the West Valley cities.

Many arterial roads and highways are critical to transportation in the WUI. These include Skyline/Highway 35, Summit Road, Junipero Serra Blvd/Foothill Expressway, Blossom Hill Road, Almaden Road, Old Monterey Highway, Page Mill Road, Black Road, Stevens Canyon Road, Highway 9, Highway 17, Old Santa Cruz Highway, Watsonville Road, Hecker Pass/Highway 152 West, Pacheco Pass/Highway 152 East, and Mt. Hamilton Road/Highway 130. Many subdivisions in the county are located within a private road network. Maintenance of these private roads is a concern for emergency response because poorly maintained roads, steep grades, and unsurfaced routes may be inaccessible to some emergency apparatuses. Some of these communities have a road committee that provides oversight of road conditions.

Rural areas such as Croy and in the Hamilton Range have critical access routes for residents that are on private land and maintenance and improvements are the responsibility of the landowner. Inholdings with access easements on these roads may have limited influence on improving road conditions or opening locked gates for alternate escape routes if no road association or agreement exists.



Figure B.1. Photograph showing a winding rural road with blind turns.



Figure B.2. A washed-out road (due to heavy rain and snow storms) within a residential community.

WATER AVAILABILITY AND SUPPLY

Water supply is variable around the county and may be provided by hydrants, wells, cisterns, and reservoirs. However, many fire planning documents developed by various entities in the county on the wildfire issue commonly cite water availability as a concern. The 2010 Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, for example, calls for the development of “a coordinated approach between fire jurisdictions and water supply agencies to identify needed improvements to the water distribution system, initially focusing on areas of highest wildfire hazard” (Association of Bay Area Governments 2010). All new structures in the county are required to have a reliable water supply, whether by a water purveyor or private tanks. According to the Santa Clara County Fire Department, 10 fire hydrants are added to the county network on average each year. The fire department also coordinates with neighboring jurisdictions annually to update fire resource information.

Compatibility of cistern connections to fire apparatuses and vegetation clearance to allow fire apparatus to access cisterns are other common water supply issues. However, as was noted previously, homes are more likely to survive a wildfire due to existing fire-resistant building materials and designs, and vegetation clearance around the dwelling, than by a reliance on suppression resources. However, it must be noted that a lack of access to water supply, and roads that are too narrow to allow transport of water by fire apparatus to structures threatened by wildfire, will complicate the suppression of wildfire and the protection of structures.

The Santa Clara County Operational Area Mitigation Plan identifies water availability in high-risk wildfire areas as a major issue and recognizes climate change as a potential threat to overall water supply within the county. Increased occurrence of drought events leading to lower levels of precipitation could reduce the county’s snowpack runoff and groundwater storage. Rising global atmospheric heating could lead to

sea level rise and saltwater intrusion into freshwater systems, thus decreasing freshwater supply. Escalating temperatures may also cause an increase in net evaporation losses from the county's reservoirs by as much 37 percent (Santa Clara County Office of Emergency Management 2017).

Watersheds

Healthy watersheds consist of the natural land cover that supports and facilitates naturally occurring hydrologic and geomorphic processes (EPA 2022). Additionally, a watershed's land cover and its hydrologic and geomorphic processes also promote the physical and chemical conditions that are necessary to support the habitat requirements for its native ecological communities. Healthy watersheds typically consist of functioning headwater streams, floodplains, riparian corridors, biotic refugia, instream habitat, biotic communities, and the natural vegetation of the landscape. These healthy watershed components should support the hydrology, sediment transport, fluvial geomorphology, and disturbance regimes that are required to maintain a healthy aquatic ecosystem (EPA 2022). For societal purposes, healthy watersheds provide invaluable ecosystem services, such as clean drinking water and predictable water supplies. Additionally, they also provide invaluable recreation opportunities and can bolster property values (EPA 2022).

Under certain conditions, wildfires can have substantial impacts on the health of a watershed. For instance, if a watershed experiences a large and unnatural high severity wildfire, watershed health indicators, such as native vegetative land cover, sediment transport, stream flows, and aquatic habitat, can differ dramatically compared to the pre-fire environment. These changes can result in deleterious impacts to watershed health (Wildfire Ready Watersheds 2023). As such, when considering wildfire and watershed planning, it is important to consider the current watershed environment's health and assess and the potential impacts from wildfire to it.

Reservoirs and Percolation Ponds

Water is a precious resource in the Santa Clara Valley, and systems and infrastructure are in place to protect and maintain water resources, as well to mitigate potential disasters like floods. 50% of the water supplies in Santa Clara County is imported from the San Joaquin Delta and Hetch Hetchy water system. The other 50% of water supplies comes from local reservoirs and ground water (30%), recycled water (5%), and water conservation (15%) (Valley Water 2023b). Valley Water operates 10 reservoirs throughout the county with a total storage capacity of 170,000 acre-feet. These reservoirs were constructed in the 1930s and 1950s and catch storm runoff that would otherwise flow into the San Francisco Bay. "The reservoirs do also provide incidental flood protection by containing runoff early in the rainfall season, serve recreational needs, and benefit the environment by storing water to maintain flow in the creeks" (Valley Water 2023c). In the event of a watershed wide wildfire, impacts to water infrastructure and resources are possible. Sedimentation of water intake locations can occur and may result in flooding due to blocked drainage pipes.

Percolation ponds are a passive water saving and ground water recharging strategy utilized by Valley Water. Imported water supplies and surplus water in reservoirs are funneled into 102 percolation ponds across the county for the purposes of recharging groundwater and reducing losses to evapotranspiration (Valley Water News 2023). The floor of a percolation pond is made of well-draining substrate suitable for percolating and filtering large quantities of water in groundwater aquifers. Water can be captured and stored during the rainy season to later be used during the summer and under drought conditions. Sediment and debris can clog percolation ponds (Valley Water News 2023). Severe wildfire can create conditions favorable for mass wasting events, which can inundate waterways with sedimentation, causing

an extreme increase in turbidity. This can cause issues for percolation ponds as fine sediments can clog drainage pipes and even reduce the effectiveness of percolation.

See the Values at Risk section in Chapter 3 for additional information on water resources.



Figure B.3. A view of a partially filled Alamitos Pond at Valley Water headquarters on Almaden Expressway (Source: Valley Water 1/23/23).

POPULATION

According to census estimates (U.S. Census Bureau 2021), the population of Santa Clara County is 1,885,508 people, with a 5.8% increase in population from 2010 to 2021. Population density is 1,499 persons per square mile. As of 2021, there were an estimated 646,847 households in the county, with an average 2.93 persons per household. Over half (54.4%) of the population aged 25 years or older hold a bachelor's degree or higher; the tech industry is a considerable employer and draw to the area. At \$140,258, Santa Clara County has a median household income that is among the highest in the nation and nearly twice the national average (U.S. Census Bureau 2021, 2022).

Urban Encroachment

Santa Clara County has been a leader in urban planning for decades, starting with the adoption in the early 1970s of the Countywide Urban Development Policies and the use of city USA boundaries. In the 1990s, Santa Clara County and interested cities worked together to adopt urban growth boundaries for several cities, delineating areas intended for future urbanization (Santa Clara LAFC 2015). Though strong efforts have been implemented by many cities in Santa Clara County to prevent geographic expansion, many have still accommodated substantial residential growth.

The WUI is closely interrelated to urban sprawl, which, according to the American Planning Association, is characterized by low-density residential and commercial development at the urban fringe (Santa Clara

LAFC 2015). Sprawl is often contrasted with “smart growth,” which is generally defined as focusing moderate to higher density development near existing infrastructure, especially transit. Smart growth has been promoted throughout the county to counter the effects of urban sprawl on the county’s natural resources; this in turn helps to prevent the expansion of the WUI. Because of the economic draw of the Santa Clara Valley, however, reduced expansion has led to housing production being out of pace with the expansive job market. As a result, commuting through the WUI from distant housing in areas such as Santa Cruz County brings wildfire-related concerns with motorist entrapment on highways and increased evacuation concerns due to congestion of arterial roads in the Santa Cruz Mountains.

Conversion of Historical Summer Vacation Homes

A large number of homes, particularly in the Lexington Basin, originated as summer homes that were built in the last century that are now being used as full-time residences. Redwood Estates, for example, was established as a summer home community in the mid-1920s designed for wealthy Bay Area residents to escape to the cooler Santa Cruz Mountains during the summer.

Figure B.4. shows two still captures taken from a real estate promotional video for Redwood Estates filmed in 1926.

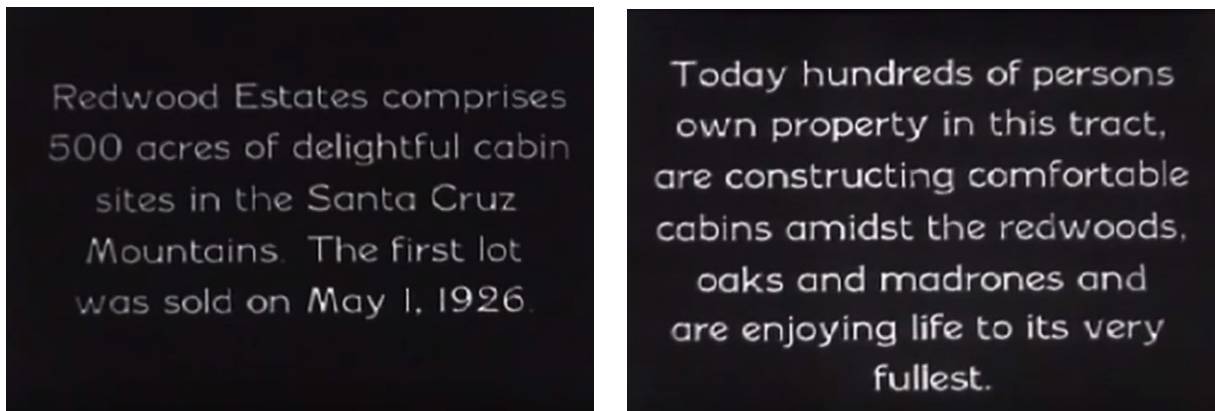


Figure B.4. Slides from a promotional film created by a real estate company for the Redwood Estates in 1926 (Source: YouTube).

The implication of this twentieth-century summer home development to wildfire management is that many of these homes were built in the WUI before WUI codes were enacted and many have structural ignitability issues related to construction materials and close adjacency to neighboring properties.

Nonpermitted Homes

In addition, many homes have been built on parcels without planning permission and, as such, are not documented in county assessor records, particularly in remote areas in the Lexington Hills and Croy area. These inhabited and agricultural/industrial structures are a concern for emergency responders, who may fear for their safety when approaching or entering illegal facilities due to the possibility of poor structural integrity or other hazards presented by unlicensed construction. In addition, the roads leading to these structures are often substandard, unmarked, and blocked by locked gates without fire access keys. All of these factors create serious concerns around the issue of notifying residents and workers and effectively conducting mandatory evacuations.

RECREATION

Outdoor recreation is extremely popular in the county, with the regional park's recreation area spanning 52,000 acres of urban and mountain parks, trails, lakes, streams, and open space. Santa Clara County is home to many county and state parks, cultural attractions, and other park spaces attracting thousands of visitors. The county offers a diverse natural environment, with the park system encompassing woodlands in the Diablo Range to wetlands in the San Francisco Bay, the redwoods of the Santa Cruz Mountains. Camping, swimming, and fishing are popular on public land (Figure B.5) (Santa Clara County Parks 2022). During peak seasons and large events, a significant number of people can congregate in relatively small areas, which results in large populations potentially needing to evacuate should an emergency occur.

Description of the state parks and federally managed recreation sites within the county are listed below. In addition, there are 28 regional parks within the county. Recreation is crucial to the Santa Clara County economy as it draws in thousands of tourists and recreationalists, and therefore, their spending dollars. Increased recreation and tourism may also pose as additional risk due to incidental human-caused ignitions in wildland areas.

Castle Rock State Park

Castle Rock State Park encompasses 5,150 acres of wilderness and 34 miles of trails, providing visitors with panoramic views of Monterey Bay from one of the highest ridges of the Santa Cruz mountains. The park houses a variety of native and non-native vegetative communities, ranging from chaparral and grassland to black oak and mixed evergreen forests. Throughout its rich history, the park has provided spiritual and natural resources for Indigenous communities, logging resources for Gold Fever immigrants, and more recently, arable land for nearby residents. Today the park provides recreational opportunities such as picnics, hiking and backpacking, camping, and rock climbing.

To learn more about Castle Rock State Park, please visit:

<https://www.parks.ca.gov/pages/538/files/CastleRockSPFinalWebLayout082117.pdf>

Henry W. Coe State Park

Henry W. Coe State Park is the largest state park in northern California, with over 87,000 acres of open spaces including 22,000 acres of wilderness areas. The park is found in the Diablo Range east of Morgan Hill deep in the backcountry (CDPR 2023). The terrain of the park is rugged, varied, and beautiful, with lofty ridges and steep canyons. Once the home of Ohlone Indians, the park is now home to a fascinating variety of plants and animals, including the elusive mountain lion. The park is home to a wide variety of trees including giant live oaks, large stands of blue oaks, and gray pines. Ponderosa pine dominates the western ridges while blue oak is the most common and widespread. Pacific madrone, western Sycamore, California bay laurel, and California buckeye are also present (Pine Ridge Association 2023).

The expansive Santa Clara (SCU) Lightning Complex fire burned through a majority of Henry W. Coe State Park lands in 2020. However, East Bay Regional Park District and Save Mount Diablo monitored the fire impact in park district lands and found that the burn was mostly beneficial for the ecology of the region (*The Independent* 2021).

The park encompasses parts of three watersheds: Orestimba Creek, Coyote Creek, and Pacheco Creek. All the park's creeks are ephemeral, although ponds and riparian areas can be found year-round depending on annual rainfall. The park contains many water sources in the form of reservoirs that were

created by former ranch owners. The largest of these is Mississippi Lake, measuring about 32 acres (Pine Ridge Association 2023).

Canada de los Osos Ecological Reserve

Santa Clara County is also home to the Canada de los Osos Ecological Reserve located southeast of Henry W. Coe State Park. The property was designated as an ecological reserve in 2003 and encompasses 5,800 acres of grasslands, oak and montane woodland, chaparral, and riparian habitats.

You can read more about the Canada de los Osos Ecological Reserve here:
(<https://wildlife.ca.gov/Lands/Places-to-Visit/Canada-de-los-Osos-ER>)

Don Edwards San Francisco Bay National Wildlife Refuge

Where Santa Clara County meets the San Francisco Bay, there is the Don Edwards San Francisco Bay National Wildlife Refuge. Established through local activism in 1972 and encompassing 30,000 acres of protected habitat, the landscape provides sanctuary for migratory birds and other endangered species. In addition to serving wildlife, the refuge provides opportunities for people to enjoy the region's natural beauty.

Regional Parks

The regional parks offering outdoor recreational opportunities for residents and visitors of Santa Clara County include:

- Almaden Quicksilver County Park, San Jose
- Alviso Marina County Park, San Jose
- Anderson Lake County Park, Morgan Hill
- Calero County Park, San Jose
- Chesbro Reservoir County Park, Morgan Hill
- Chitactac-Adams Heritage County Park, Gilroy
- Coyote Creek Parkway, San Jose
- Coyote Lake Harvey Bear Ranch County Park, Gilroy
- Ed R. Levin County Park, Milpitas
- Field Sports Park, San Jose
- Hellyer County Park, San Jose
- Joseph D. Grant County Park, San Jose
- Lexington Reservoir County Park, Los Gatos
- Los Gatos Creek County Park, Campbell
- Martial Cottle Park, San Jose
- Metcalf Motorcycle County Park, San Jose
- Mt. Madonna County Park, Watsonville

- Penitencia Creek, San Jose
- Rancho San Antonio County Park, Cupertino
- Sanborn County Park, Saratoga
- Santa Teresa County Park, San Jose
- Stevens Creek County Park, Cupertino
- Sunnyvale Baylands Park, Sunnyvale
- Upper Stevens Creek County Park, Palo Alto
- Uvas Canyon County Park, Morgan Hill
- Uvas Reservoir County Park, Morgan Hill
- Vasona Lake County Park, Los Gatos
- Villa Montalvo, Saratoga

WILDLIFE

Vegetation management treatments are commonly applied throughout the county to benefit habitat for general wildlife species or game habitat. Most native wildlife species found in the region evolved with a frequent fire regime. However, impacts to wildlife should still be considered when planning fuel treatments. For more understanding about fuel management practices, please see Appendix F.

Wildfire management is an important component of wildlife management because of the impacts, both adverse and beneficial, that wildfire can have on wildlife habitat. The focus of most wildlife management is on the preservation of biodiversity and healthy functioning ecosystems; fire management and the application of prescribed fire can play an integral part in the preservation of biodiversity.

Projects to reduce wildfire risk that involve physical changes to the landscape such as creating fuel breaks or modifying vegetation types can have positive or negative impacts to wildlife. These impacts should be evaluated when projects are proposed and plans to implement the projects are developed.

The National Audubon Society is an organization advocating for healthy bird populations through conservation plans, actions, and policies. Over the past half century, a multitude of environmental threats such as land conversions, poor management, invasive species, and climate change have all contributed to a severe decline in bird populations. This trend has prompted the development of the Audubon Conservation Ranching Initiative. The National Audubon Society hopes to improve the health of grassland bird populations Santa Clara County by creating market-based incentives that encourage ranchers to take part in protecting and enhancing bird habitats.

Threatened and Endangered Species

Several threatened and endangered species reside in and around Santa Clara County. The County has designated habitat for five endangered species: California clapper rail, salt marsh harvest mouse, California tiger salamander, Bay checkerspot butterfly, and the San Joaquin kit fox (Santa Clara County 2023b). Additionally, the Almaden Quicksilver and Calero County Parks provide prime habitat for mountain lions, an apex predator in the region. The California Fish and Wildlife Commission is considering listing the Central Coast mountain lions under the state's Endangered Species Act

(Santa Clara County Parks 2023). In addition to mammals, amphibians, fish, lizards, and birds, many of the natural areas (e.g., county parks and conservation areas) contain various listed plants.

FOREST HEALTH CONSIDERATIONS

INSECTS

Native insect epidemics within plant communities are usually part of a natural disturbance cycle similar to wildfire. They are often cyclic in nature and are usually followed by the natural succession of vegetation over time. Of primary interest are those that attack tree species because of the implications for fire management.

In addition to native insect epidemics, exotic pests also pose a significant threat to forest ecosystems. Invasive species are organisms that are introduced into an area beyond their natural range and become pests in the new environment. They are also referred to as exotic pests, alien, non-native, or introduced pests. The majority of introductions have been unintentional and accidental. Having evolved in a different environment, these invasive species may have few natural enemies in their new locations, which can often lead to rapid population increases that can out-compete native species for resources.

The introduction of exotic pests is likely to cause economic, environmental, and agricultural harm as well as harm to human health (California Department of Food and Agriculture [CDFA] 2021). In general, traits of invasive species include fast growth, rapid reproduction, rapid adaptability, tolerating a wide range of environmental conditions, and utilizing a variety of different foods (CDFA 2021).

Insects that have infested or have the potential to infect the forests within and around the Santa Clara County CWPP planning area include:

- Asian gypsy moth (*Lymantria dispar asiatica*)
- California oakworm (*Phryganidia californica*)
- Fruittree leafroller (*Archips argyrospila*)
- Bark beetles (*Ips* spp. and *Dendroctonus* spp.)
- Western Cedar bark beetle (*Phloeosinus punctatus*)
- Mountain pine beetle (*Dendroctonus ponderosae*)
- Fir engraver beetle (*Scolytus ventralis*)
- Walnut twig beetle (*Pityophthorus juglandis*)
- Black pineleaf scale (*Nuculaspis californica*)

“On June 16, 2020, one male Asian gypsy moth was trapped in Sunnyvale (Santa Clara County). Delimitation trapping continued through October and will resume next year. The delimitation project triggered by the 2018 find in Santa Cruz County resulted in no new finds this year and will likely resume in 2021” (USFS 2021c).

DISEASES

Diseases of trees, such as parasitic plants, fungi, and bacteria, can also affect forests in the Santa Clara County CWPP planning area. These diseases impact forest systems by degrading the productivity and health of the forest. Some of the more common forest diseases that are found in the county are listed below. Trees that are killed by disease have the similar potential to increase fire hazards.

- Sudden oak death (*Phytophthora ramorum*)
- Canker rots (*Inonotus andersonii*)
- Sulfur fungus (*Laetiporus gilbertsonii*)
- Red-belted conk (*Fomitopsis pinicola*)
- Mistletoe (*Arceuthobium* spp., *Phoradendron* spp.)

In 2021 the USFS observed several cases of the invasive disease sudden oak death (SOD) in the Bay area caused by *Phytophthora ramorum*. “Mortality was observed in new or expanded locations in Santa Clara and Santa Cruz counties, including both sides of the ridge between Watsonville and Morgan Hill along Highway 152” (USFS 2019). In 2020 along the border between Santa Cruz and Santa Clara counties high visible mortality was observed due to *P. ramorum*. According to the California Forest Pest Council, “open oak woodlands had scattered coast live oak mortality, while more heavily wooded areas had patches of continuous tanoak mortality and numerous understory tanoaks with [SOD] symptoms.” (California Forest Pest Council 2020). Furthermore, multiple significant outbreaks were identified in the Santa Cruz Mountains (USFS 2021c).

Treatments on federal land would be subject to the National Environmental Policy Act (NEPA) and associated analysis of impacts to these species. Treatments in areas that may impact threatened and endangered species would require application of certain mitigation measures to prevent degradation to habitat.

ENVIRONMENTAL CHALLENGES

DROUGHT AND CLIMATE

Frequent drought, suppression-based forest management tactics, and climate change have all worked together to increase forest vulnerability. Removing natural fire from a fire-dependent ecosystem, drought, insects, and diseases have resulted in increased fuel build-up and alterations to vegetation composition. These forest changes can increase the risk of uncharacteristically large high-severity fires (CDFW 2021b). In the past few years, fires have grown to record sizes and are burning earlier, longer, hotter, and more intensely than they have in the past (Westerling et al. 2006; Westerling 2016).

According to the National Interagency Fire Center (NIFC), occurrence of catastrophic wildfires has greatly increased over the last 20 years. Westerling et al. (2006) claim that a study of large (>1,000 acres) wildfires throughout the western United States for the period of 1970 to 2003 saw a pronounced increase in fire frequency since the mid-1980s (1987–2003 fires were four times more frequent than the 1970–1986 average). In addition, the length of the fire season increased by 78 days (comparing 1970–1986 data with that from 1987–2003). An update to Westerling et al.’s 2006 work found that the frequency of large wildfires has continued to increase with each decade since 1970 (Westerling 2016). Within just the

last 10 years, a record number of acres have burned, and numbers are continually increasing (NIFC 2021a). In 2020, 58,950 fires were reported nationwide, burning 10.1 million acres (NIFC 2021a). The same year in California, 4,304,379 acres were burned by wildfire (CAL FIRE 2020c). With increased fires comes increased suppression costs; 2018 beat all previous records, with federal firefighting costs hitting \$3,143,256,000 (NIFC 2021b).

Moreover, as energy companies responded to the growing threat of wildfire events and likely risk of ignition by electrical transmission equipment, communities across the state were impacted by public safety power shutoff events. Furthermore, utility credit reductions result in higher consumer rates and homeowner's insurance in the wildland-urban interface is also becoming more difficult and expensive to obtain in California (CA GOPR 2019).

In addition to direct damage (e.g., structure and property damage) caused by wildfires, uncharacteristically large and severe wildfires also cause indirect impacts on the environment and ecosystem services. Wildfires are known to deteriorate local and regional air quality, pollute waterways, displace native species (animal and plant), and increase greenhouse gas emissions, such as carbon dioxide emissions. Greenhouse gases are a critical concern because they are the primary cause of the recent observed climate change, and climate change is a critical factor exacerbating frequency and severity of wildfires (CA GOPR 2019). Please see Appendix A for more information on the Safer from Wildfire initiative.

The shifting climate, particularly rising temperatures, changing wind patterns, and increasing temporal and spatial variability of water availability, are considerably escalating wildfire risk across the state. The recurrence of severe fire weather during the autumn months has more than doubled in California since the 1980s, and considering climate change, this prevalence is projected to increase in the future. As stated by California's Fourth Climate Change Assessment, if greenhouse gas emissions continue to increase, California is expected to experience a 50% increase in fires larger than 25,000 acres, as well as a potential 77% increase in average area burned by 2100. The state has already begun to encounter the impacts of increased fire occurrence and severity. In fact, the five largest wildfires in California occurred in the last 3 years, including the August Complex fire (August 2020) and the Dixie fire (July 2021), burning a combined total of nearly 2 million acres and destroying over 2,000 structures (CAL FIRE 2022a). Catastrophic wildfire events continue to present a significant threat to California's communities.

Check out the Silicon Valley 2.0 Climate Change Preparedness Tool to find out about the vulnerability, risk, and impacts of climate change to your local community.

Silicon Valley 2.0: <https://siliconvalleytwopointzero.org/setup?step=1>

It is important to note that fire is a natural part of California's diverse landscapes and is essential to many ecosystems across the state. Almost all of California's diverse ecosystems are fire-dependent or fire-adapted (CDFW 2021b). Frequent, uncharacteristically large, high-severity wildfires are the primary source of the catastrophic damage listed above.

TREE MORTALITY

A recent aerial detection survey completed by the USFS shows that California's coastal forests have sustained significant levels of tree mortality. Surveyors drew polygons delineating tree stands and observed the percentage of trees affected. In the Santa Cruz Mountains tree mortality was observed to be widespread with most stands registering tree mortality as very light (1%–3%) to moderate (11%–29%) with secluded stands registering as severe (30%–50%) and very severe (>50%). In the Diablo Range,

tree mortality was only observed on lower west facing slopes with tree mortality being very light (1%–3%) to light (4%–10%). Tree mortality was most likely not observed in the interior of the Diablo Range due to the Santa Clara Lightning Complex fires of 2020 burning most of the vegetation that was present. The major species observed with mortality in the planning area include tanoak, Douglas fir, mixed oaks, and other conifer mortality (USFS 2022b).

Generally, tree mortality can be attributed to the cumulative impacts of overstocked forest conditions, extended drought, insect outbreaks, and disease. The State's decreased forest health can be largely attributed to California having experienced its driest and warmest weather conditions on record between 2020 and 2022, leading to low water intake and escalated tree vulnerability. This trend coupled with excessive vegetative crowding and higher temperatures has further applied pressure to forests and making them more susceptible to insects and diseases. Dead tree accumulation and overstocked forest stands provide an abundance of dry and densely packed fuels, thus increasing the risk of high-severity wildfire. Since releasing these reports, the Forest Service has developed a 10-year strategy to address this issue through fuel reduction practices such as the removal of dead trees and reduction of live tree crowding near at-risk communities. This issue highlights the importance of properly managing hazardous fuels throughout the State, as the impacts of hot and dry conditions will continue to negatively affect forest health until the landscape receives multiple years of at or above average precipitation (USFS 2022b).

Researchers from the University of California Davis and the USFS conducted the Recent bark beetle outbreaks influence wildfire severity in mixed-conifer forests of the Sierra Nevada, California, USA study to answer this question. The researchers focused on the 2015 Rough Fire and the 2016 Cedar Fire areas for their assessment. These areas presented the perfect opportunity to study the effects of tree mortality on wildfire severity since they had recently burned and had existing tree mortality. They found that two measures of wildfire severity (area killed by fire and canopy torch) were significantly influenced by pre-fire tree mortality. That is, the higher the degree of tree mortality in an area, the higher the potential for a canopy fire and fire-killed trees. Considering that deceased trees pose an increased risk of intense wildfire, the researchers emphasized that fuel reduction treatments, such as thinning and prescribed fire, not only reduce the risk of catastrophic wildfire but can also reduce the severity of future bark beetle outbreaks (Wayman and Safford 2021).

Oak woodlands, which can be found distributed throughout the CWPP planning area, are sensitive to climate stressors including water availability and changes in precipitation. Under normal conditions oaks are well-adapted to surviving wildfire disturbances. However, due to climate stressors and reduced habitat extent caused by anthropogenic changes, the ability of oaks to recover from wildfire is greatly diminished. This has the potential to alter natural fire regimes in the area and may promote the succession of less fire tolerant species such as shrubs and grasses. Management strategies that may increase the resilience of oak woodlands to climate impacts include increased use of prescribed fire, restoration of native perennial grasses and forbs, climate-informed management of livestock grazing, and protection of oak woodlands within climatically suitable areas and/or potential refugia (Eco Adapt 2021).

Hazardous Trees

Hazardous trees come in all shapes and sizes and are often responsible for wildland fire ignitions, as well as damage to property and injury to people. It is important to be able to identify and report hazardous trees within the WUI or along critical infrastructure such as power lines. During high wind events, hazard trees have the potential to fall on powerlines and property potentially causing wildfire ignitions during conditions suitable for high intensity and rates of spread. It is advised that property owners and land

management groups understand how to identify hazard trees and the best course of action for removing them. There are two steps that can be taken to identify the hazard potential of a tree (USFS 2022c).

1. Assess the target potential for each tree: Tree height should be used to assess the potential impact zone. Trees are known to fall unpredictably and may slide, roll, or cause a domino effect in thicker stands. The potential impact zone should be surveyed for values at risk such as power lines, vehicles, sleeping areas, structures, and high traffic zones.
2. Assess the tree defect potential: It is best to look at trees from 2 or 3 perspectives: close, at a distance, and all around. Be on the lookout for characteristics such as dead tops, split trunks, and fungal fruiting bodies. Accurately determining tree defects requires advanced knowledge and skill. If a tree is suspected of having defects, it is advised to consult a licensed arborist or similar tree care professional.

If a tree on county land is suspected of having a combination of potential targets and tree defects, it should be reported to the Department of Planning and Development (Santa Clara County 2023c). The County of Santa Clara offers tree removal permits that can be applied for free of charge. Property owners that have identified hazardous trees on their land are encouraged to consult licensed tree care professionals and utilize the Santa Clara County FireSafe Council's free chipping program. The removal of hazardous trees is highly dangerous and should not be attempted without proper experience, knowledge, and equipment.

Eligible candidates for the Tree Risk Assessment Qualification (ISA TRAQ) to be recognized as a public tree care professional and gain specialized knowledge in tree risk assessments. More information on the ISA TRAQ can be found here: <https://www.isa-arbor.com/Credentials/ISA-Tree-Risk-Assessment-Qualification>

A link to the SCC tree removal permit can be found here:
<https://stgenpln.blob.core.windows.net/document/TreeRemovalPermitApplication.pdf>.

A link to the NWCG Hazard Tree Identification guide can be found here:
<https://www.nwcg.gov/committee/6mfs/felling-safety/hazard-tree-identification>

ECOSYSTEM SERVICES

Fire has been a component of California's natural history for millennia, with natural and anthropogenically caused fires being a common occurrence in most parts of the state. Fire was used by Native Americans for a variety of purposes, as well as by settlers, ranchers, and loggers. In some vegetation types, frequent fires resulted in a mosaic of burned areas of various ages, with the more recently burned areas tending to impede the spread of new fires (Klinger et al. 2006). There are very few areas in the state that were not affected by fire. In addition, many California native plant species have adapted to periodic fires.

Despite the recognized role that fire plays as a natural occurrence and land management tool in the United States, fire can become detrimental once reaching extreme magnitudes and intensities. In addition to directly damaging structures and properties, large high-severity wildfires can also cause indirect impacts on the environment and ecosystem services. Large high-severity wildfires are known to deteriorate local and regional air quality, pollute waterways, displace native species (animal and plant), and increase carbon dioxide emissions. The increased carbon dioxide emissions are of special concern as carbon dioxide is a greenhouse gas. Greenhouse gases are implicated in climate change, and climate change is a critical factor exacerbating frequency and severity of wildfires.

Low severity wildfire is also acknowledged as a keystone process for many ecosystem types. Frequent low-severity fire restores and maintains forest composition, structure, and functions to their natural conditions which leads to a greater resilience to large-scale disturbances, high-severity fire, insects, disease, drought, and climate change (North et al. 2019). Reduction of tree density as a result of healthy fire decreases the risk of loss to disturbances and increases the growth rate of retained trees, biodiversity, nutrient cycling, and spatial heterogeneity across the landscape (North et al. 2019).

Santa Clara exists within the North American Mediterranean Climate Zone (NAMCZ) that encompasses most of the State, displaying a high degree of variety with respect to the with major fire regimes it facilitates (Höllermaun et al. 1993). Historically, fire regimes in coastal areas of California with Mediterranean climates and chaparral as the dominant vegetation typically burned every 30 to 65 years, as chaparral is adapted to infrequent but high-severity fires (Ainsworth and Doss 1995). By contrast, California oak woodlands are well adapted for low-intensity groundfires, as their seedlings can resprout after experiencing top-fire (UCANR 1994). These differing regimes exemplify the complexity of fire and its role as a key ecosystem service within the county, which has been obscured by suppressive wildfire management. A century of intense fire suppression, the introduction of nonnative plants such as eucalyptus, and climate change have altered historic vegetation conditions and fire behavior in the state (Airey-Lauvaux et al. 2022). This progression coupled with the occurrence of California's fourth largest wildfire on record burning through massive portions of the Diablo Range in the eastern portion of the county emphasizes the need to shift fire management focuses toward restoring key ecosystem functions.

FIRE RESPONSE CAPABILITIES

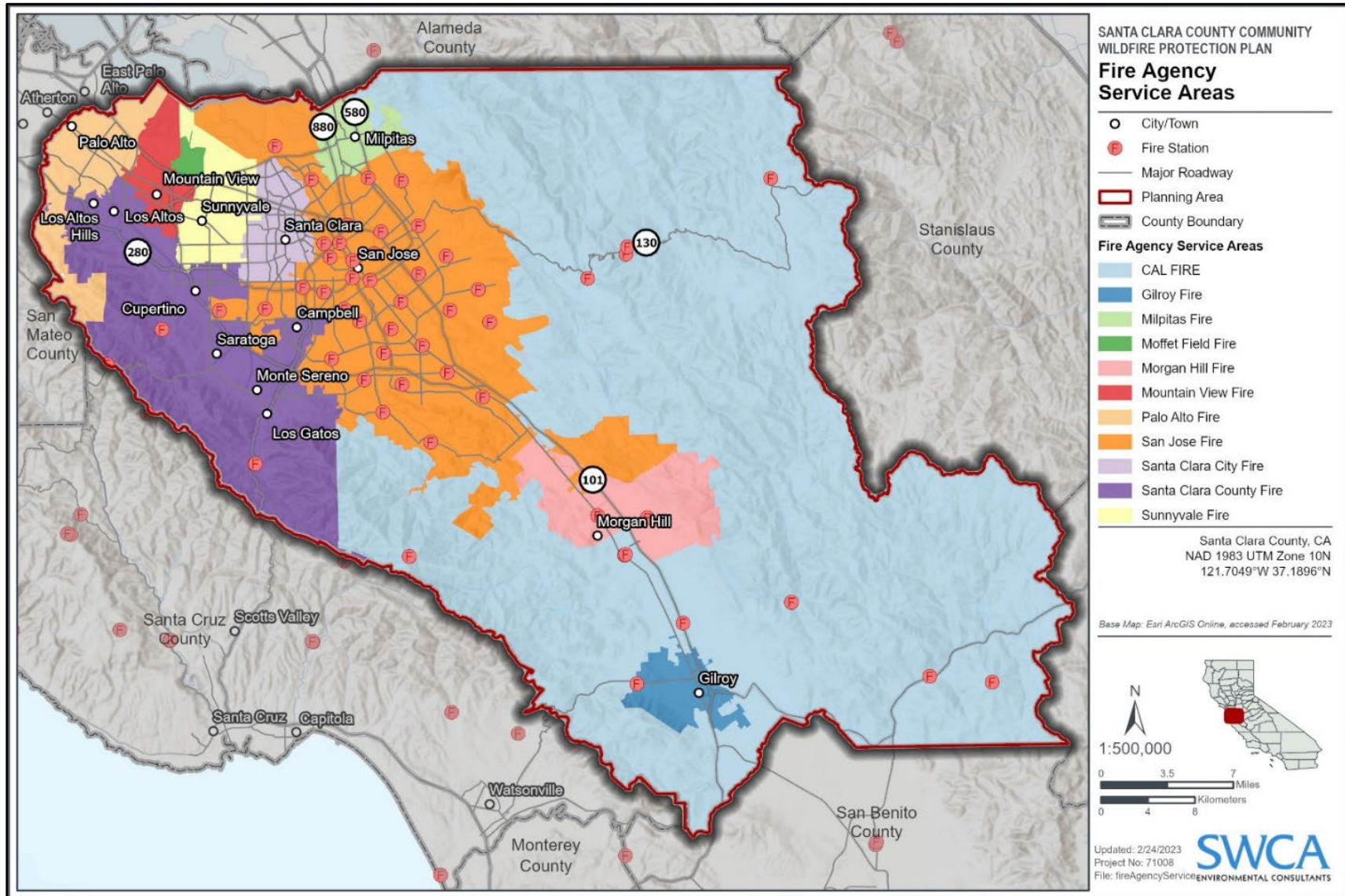


Figure B.5. Fire agency service areas.

LOCAL RESPONSE

The City and County Fire Departments in Santa Clara County work collaboratively to provide effective fire response services to communities throughout the county. Visually represented within Figure B.7 are the service areas of the local fire stations, showcasing the extent of their coverage across the county. In addition to service area, estimated response times are depicted, illustrating the departments' commitment to swift and efficient emergency assistance.

Santa Clara County Fire Department

The Santa Clara County Fire Department is the leading fire response agency serving majority of Santa Clara County. Within their jurisdiction are the communities of Campbell, Cupertino, Los Altos, Los Altos Hills, Los Gatos, Monte Sereno, Redwood Estates, Saratoga and the adjacent unincorporated areas of Lexington and Summit. Staffing for the service area's 24-hour response is composed of an operational minimum of 66 firefighters and officers operating from 15 fire stations with 31 front-line fire apparatus, as well as three command vehicles. The total response service area covers about 130 square miles with a population of approximately 225,000 people. The department has 300 employees staffing community education, prevention, investigation, operations, emergency management, maintenance, and administration (SCCFD 2020).

City Fire Departments

The cities of Palo Alto, San Jose, Morgan Hill, and Gilroy (all with WUI designated areas) provide their own fire departments, which manage a wide variety of emergency incidents.

City of Santa Clara

The City of Santa Clara Fire Department is responsible for the staffing of nine fire stations throughout the service area, with another planned to be added in 2025. The department comprises five divisions: the Fire Administration Division, the Emergency Medical Division, the Community Risk Reduction Division, the Field Operations Division, and the Training Division. Available resources response and other activities include eight engines, two trucks, one rescue unit, one hazardous materials unit, and two command vehicles. The Department has achieved accreditation through a process developed by the Center for Public Safety Excellence and the Commission on Fire Accreditation International (City of Santa Clara 2023).

City of Milpitas

The Milpitas Fire Department provides fire suppression, rescue, hazardous materials response, disaster coordination, and emergency medical services for the City of Milpitas. Its mission is to protect the community through the preservation of life, property, and the environment while upholding a high level of the public's trust. The department is staffed with 11 full-time employees across four fire stations (City of Milpitas 2023).

Mountain View Fire Department

The Mountain View Fire Department (MVFD) provides the community with education, training, fire prevention, and life safety services. The department emphasizes the importance of applying best practices, highlighting innovative emergency response and environmental protection as key components

of its activities. Through independent evaluations of its fire protection efforts by the Insurance Services Office, MVFD has become 1 of 35 fire agencies in California to receive a Class 1 Public Protection Classification rating. The department's apparatus includes seven engines, one rescue unit, one hazardous materials vehicle, and one truck (City of Mountain View 2023)

Sunnyvale Fire Department

The Sunnyvale Fire Department provides emergency services for the City of Sunnyvale, reducing the loss of life and property through inspections, enforcement of codes, permitting, and public education. The department disseminates educative materials and carries out actions for businesses, new construction, and homes. Annual fire safety inspections are conducted by the Fire Prevention Service year-round (Sunnyvale 2023).

Palo Alto Fire Department

The Palo Alto Fire Department staffs six full-time stations located strategically throughout the City of Palo Alto (City of Palo Alto 2023). The Palo Alto Fire Department has been recognized as one of ten municipal fire departments in California and one of 259 in the world to achieve international accreditation. This accomplishment places the department among less than 1% of fire departments in the world. The Palo Alto Fire Department is the only fire agency in Santa Clara County that also provides ambulance services (City of Palo Alto 2023).

The Palo Alto Fire Department provides emergency fire and life safety response services to the community of Palo Alto through means of automatic and mutual aid agreements. Each of the six total stations incorporate three shifts of professional firefighters working 24/7, allowing for constant fire suppression, emergency medical services, ambulance transport, hazardous material management, technical and water rescue, and other life- and property-protecting actions to fulfill community safety needs. The Standards of Cover and Deployment Plan provides a community risk analysis, assessing the necessary resource distribution to ensure effective response capabilities within the service area. To learn more about the Standards of Cover and Deployment Plan please visit:

<https://www.cityofpaloalto.org/Departments/Fire/Operations> (City of Palo Alto 2023).

San José Fire Department

The San José Fire Department (SJFD) is the third largest in California, protecting the City of San José and some unincorporated areas of Santa Clara County. This department covers approximately 200 square miles and 1 million residents, with high-hazard occupancies such as the San José International Airport, hospitals, San José State University, and high-rise structures throughout the city within its jurisdiction. The SJFD offers emergency response and medical services across the service area through the usage of 34 fire stations (SJFD 2023; City of San José 2023).

Morgan Hill Fire Department

The Morgan Hill Fire Department has three stations: Dunne Hill Station, El Toro Station, and the Headquarters. The department is assisted by a local CAL FIRE station located in Morgan Hill. In addition to fire prevention, the department also conducts first responder paramedic response, rescue response, fire response, and support for coordinating other activities promoting public safety. Fire prevention

responsibilities outlined by the Morgan Hill Fire Marshall are achieved through the following practices (City of Morgan Hill 2023):

- Regulating the use and maintenance of buildings
- Controlling potentially dangerous materials, products, and processes
- Providing oversight for fire prevention in wildland areas
- Reviewing regulations and building standards
- Providing training and education to both Fire Staff and the general public

Gilroy Fire Department

The Gilroy Fire Department operates out of three stations: Chestnut, Las Animas, and Sunset (City of Gilroy 2023a). The department responds to calls in residential, commercial, industrial, and agricultural areas within the city. To alert the public of onset or possible onset fire risk characterized by critical weather or dry conditions, the department issues notices of local high fire risk. During times of heightened risk, the Gilroy Fire Department increases their staffing and equipment capabilities and urges the public to exercise caution when performing any activities that may pose a fire risk (City of Gilroy 2023b).

NASA AMES Fire Department

The NASA AMES Fire Department was formerly known as Moffet Field Fire Department and provides emergency services in a portion of northern Santa Clara County. The department is located near an airport, having airport crash tenders and protective structural equipment to prevent damage to the NASA Ames Research Center. The department's apparatuses include three engines, four aircraft rescue and firefighting trucks, one battalion vehicle, one chief vehicle, and one support vehicle (NASA Ames Fire Department 2023).

Volunteer Fire Departments

Several volunteer fire companies participate in wildfire activities in Santa Clara County. These include the Uvas Volunteer Fire Department (Morgan Hill), the Casa Loma Volunteer Fire Association (Croy area), the Loma Prieta Volunteer Fire and Rescue (Summit area of Lexington Hills), the Spring Valley Volunteer Fire Department (San Jose/Milpitas), and the Stevens Creek Volunteer Fire Department (Cupertino). Volunteer fire companies are private, not for profit-public benefit organizations that provide service to their neighborhoods. Local jurisdictional authority for fire protection resides with a county agency as follows: County of Santa Clara (Spring Valley), South Santa Clara County Fire Protection District (Casa Loma and Uvas), Santa Clara County/Central Fire Protection District (Stevens Creek), and Santa Cruz County (Loma Prieta). The County of Santa Clara provides some fiscal and insurance support for these volunteer fire companies.

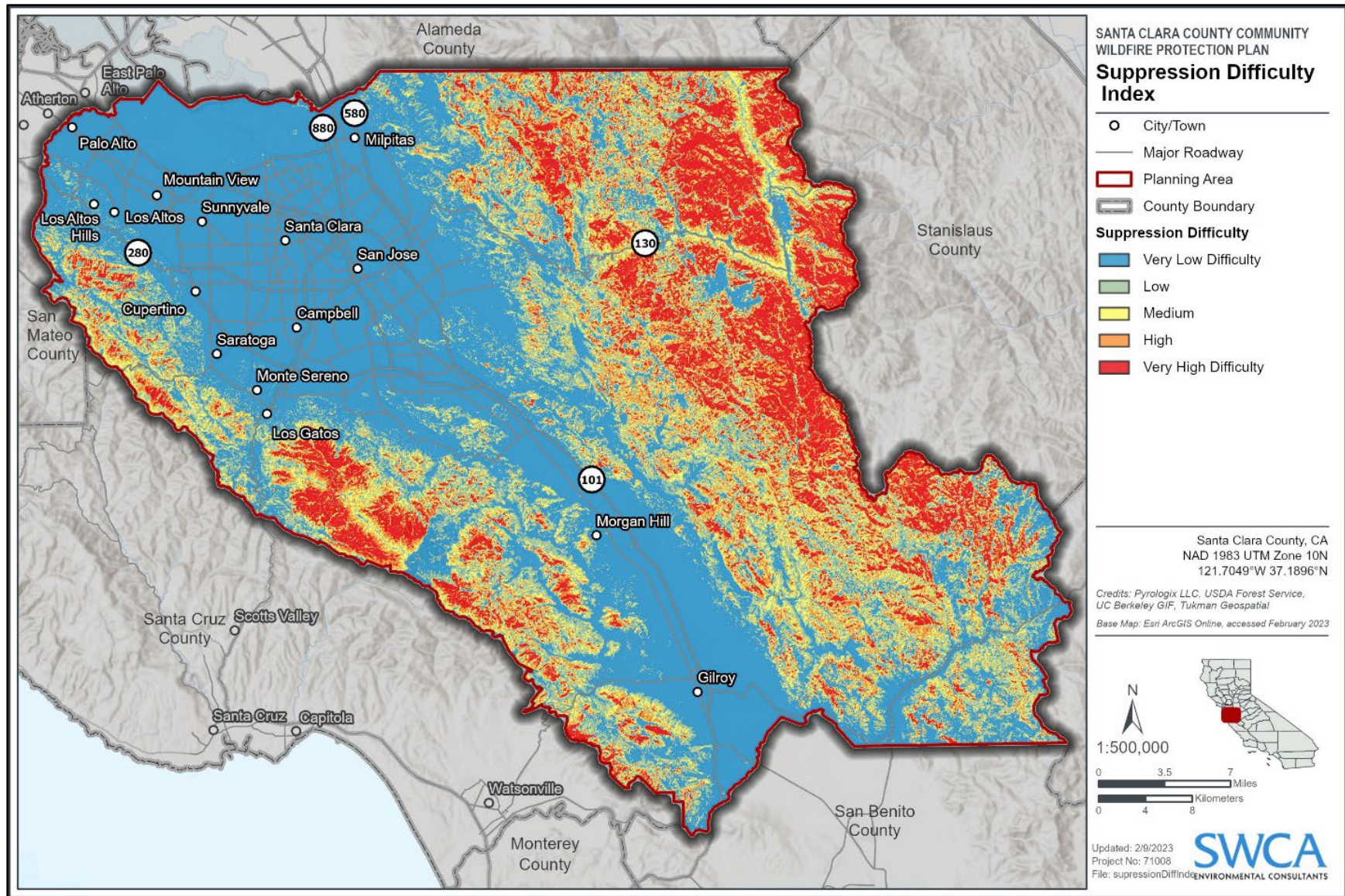


Figure B.6. Map of suppression difficulty index.

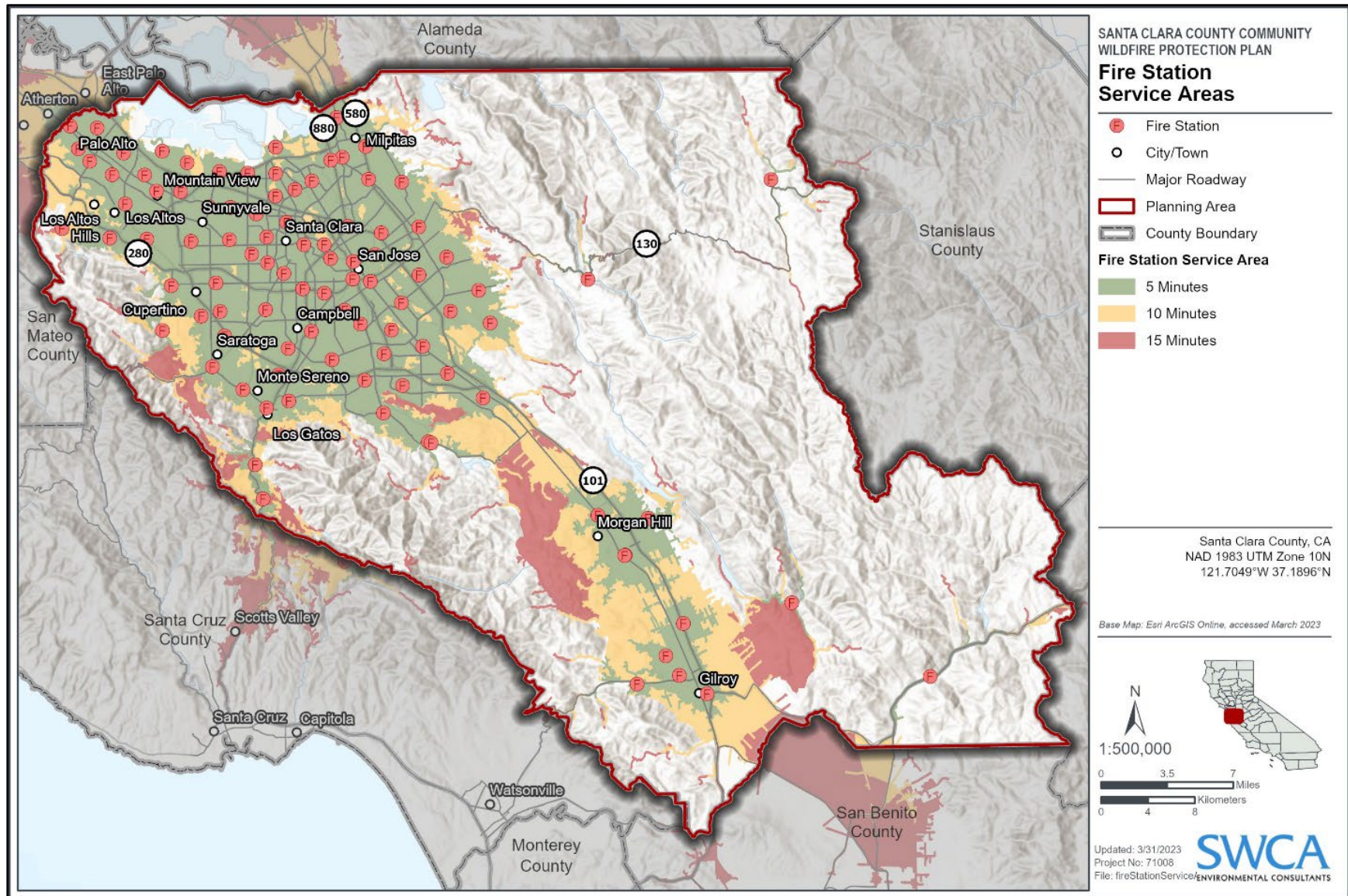


Figure B.7. Fire station service areas.

STATE RESPONSE

California Department of Forestry and Fire Protection (CAL FIRE)

CAL FIRE is responsible for initial fire response within SRAs, or where the State is responsible for fire response, in California. SRAs fall to the east and west sides of the county, encompassing the foothill and mountainous regions of the Diablo Range and Santa Cruz Mountains (CAL FIRE 2022c). Dispatch, coordination, and logistical support is provided via the Morgan Hill Command Center (SCCC) (SCGCC 2022), which operates under the Southern California GACC, also known as Operations Southern California (OSCC). The OSCC is a partnership among the USFS, U.S. Department of the Interior, and CAL FIRE. The cooperative organization carries out a collection of important wildfire preparedness duties in support of management agencies, such as intelligence reports, fire weather data reports, equipment, and supplies distribution.

CAL FIRE Santa Clara Unit

CAL FIRE's Santa Clara Unit covers several counties, including Contra Costa, Alameda, Santa Clara, and the western portions of Stanislaus and San Joaquin Counties. The unit is responsible for 1.3 million acres of direct protection area, with a population of 5.5 million people, operating through the Morgan Hill Command Center for dispatch services. Four of the unit's battalions are located in Santa Clara County: Battalion One (Morgan Hill), Battalion Two (San Jose), Battalion Three (West Santa Clara County), and Battalion Seven (South Santa Clara County Fire District and Morgan Hill Fire Department).

The CAL FIRE Santa Clara Unit is operating out of the following 11 stations:

- CAL FIRE Santa Clara Unit Station 11 Morgan Hill
- CAL FIRE Santa Clara Unit Station 12 Smith Creek
- CAL FIRE Santa Clara Unit Station 13 Alma
- CAL FIRE Santa Clara Unit Station 15 Del Puerto
- CAL FIRE Santa Clara Unit Station 16 Sunshine
- CAL FIRE Santa Clara Unit Station 21 Coyote
- CAL FIRE Santa Clara Unit Station 22 Almaden
- CAL FIRE Santa Clara Unit Station 23 Stevens Creek
- CAL FIRE Santa Clara Unit Station 25 Sweetwater
- CAL FIRE Santa Clara Unit Station 26 Castle Rock
- CAL FIRE Santa Clara Unit Station 31 Pacheco

CAL FIRE Supporting Units

CAL FIRE units from adjacent counties provide additional resources and fire protection services within Santa Clara County. The CAL FIRE San Mateo-Santa Cruz Unit to the west has fire stations on the county line near Highways 17, 35, and 9 and is the primary source of fire agency hand crew resources used in Santa Clara County. The CAL FIRE San Benito-Monterey Unit also has fire stations close to the county in Hollister and Aromas, as well as the Hollister Air Attack Base that supports Santa Clara County

with fixed-wing air tankers and air tactical aircraft. Additional CAL FIRE ground and air resources are available to assist in the county SRA wildland areas.

FEDERAL RESPONSE

Within Santa Clara County are two areas designated as FRAs (Figure B.8). One area, within the Diablo Range, is owned and managed by the BLM Central Coast Field Office (BLM 2023a). The Central Coast Field Office does not have a fire management plan at this time (BLM 2023b). The other area, which is located in the northern sector of Santa Clara County, is the Don Edwards San Francisco Bay National Wildlife refuge, which is owned and managed by the USFWS. Fire incident response is coordinated by the USFWS for occurring within lands that it owns and operates.

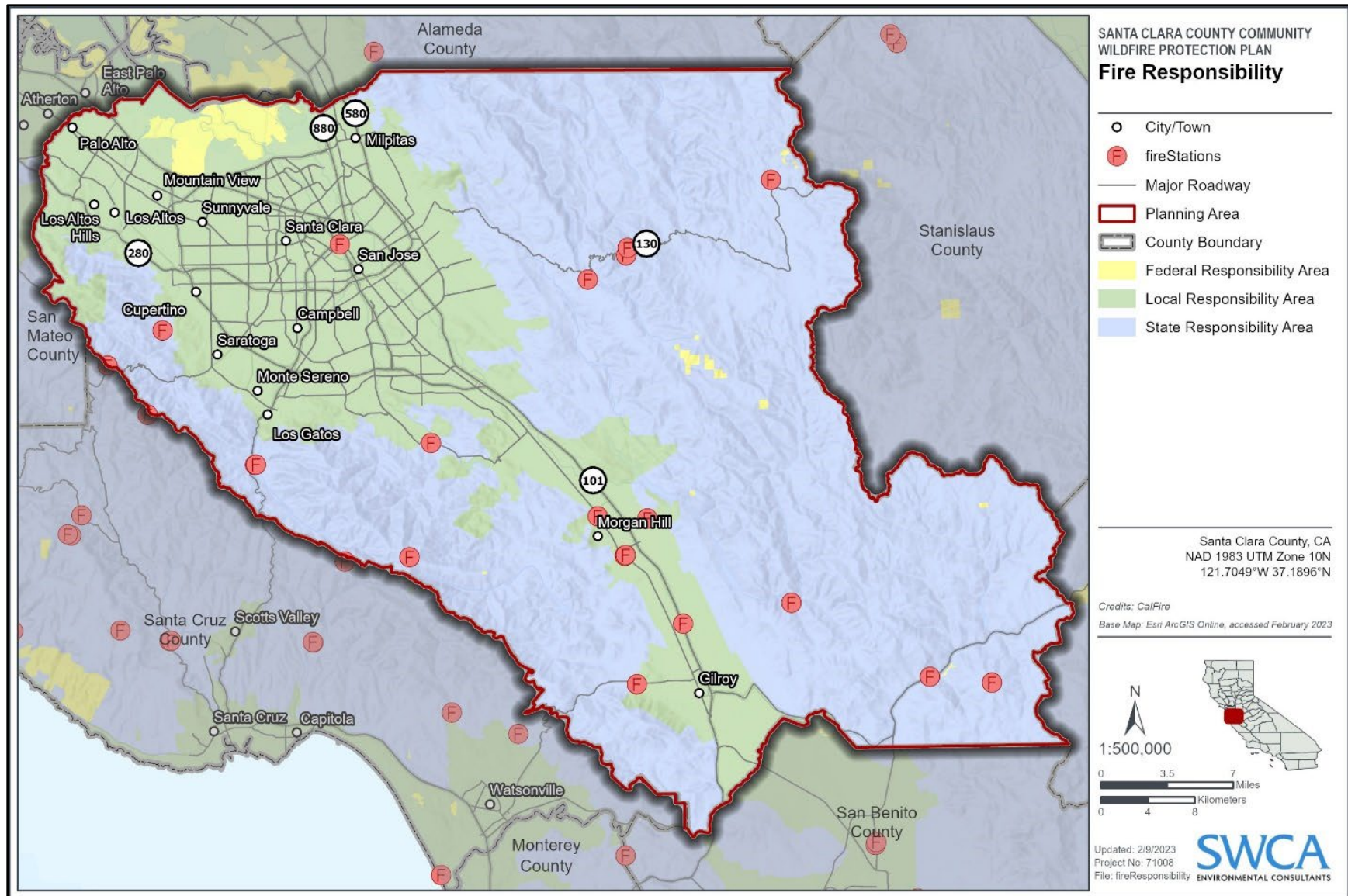


Figure B.8. Fire responsibility areas and fire station locations.

MUTUAL AID

The wildland fire community is well known for its development of mutual aid agreements at the federal, state, and local levels. Such automatic aid agreements allow for the closest forces to respond to an incident as quickly as possible regardless of jurisdiction. Such agreements may also describe how reimbursement will be conducted; state resources responding to wildfires on federal land may have their associated costs reimbursed by the responsible federal agency, and the reverse is true for federal resources suppressing a wildfire on state land.

The Santa Clara Unit has auto-aid or cooperative agreements with several local fire protection entities, including the South Santa Clara County Fire District, Santa Clara Fire Department, Gilroy Fire Department, Palo Alto Fire Department, Milpitas Fire Department, San Jose Fire Department, and Morgan Hill Fire Department.

Santa Cruz County Fire Department, Alameda County Fire Department, San Mateo County Fire Department, and other local government fire agencies in adjoining counties are frequently first responders to wildfires in Santa Clara County due to proximity and concern for mutual threat.

All fire agencies in Santa Clara County participate countywide automatic and/or mutual aid plans for response to incidents outside their own jurisdiction. The County also participates in the California Fire Service and Rescue Emergency Mutual Aid System, which provides a practical and flexible pattern for the orderly development and operation of mutual aid on a voluntary basis between cities, cities and counties, fire districts, special districts, county fire departments, and applicable state agencies.

EVACUATION RESOURCES

The possibility of fatal entrapments exists, and therefore planning for the sudden occurrence of a fire under extreme conditions is a vital part of plans developed by local jurisdictions, as well as families. Particular attention must be paid to the location of locked gates, which will slow, and possibly block, the use of evacuation routes. Likewise, overgrown evacuation routes with high fuel loading near the road edge may be unusable due to intense heat and long flame lengths, falling trees and power poles, or other hazards that an active fire can create and may lead to fatal results. In addition, local storms can cause issues for evacuation. Washed out roads, downed trees and power lines, flood zones, and other post-storm impacts can delay or even prevent evacuation. Post-storm clean-up is a lengthy process requiring a plethora of resources from multiple departments. Emergency services and first responders are commonly stretched thin when natural disasters strike, and therefore compounding natural disasters can cause major impacts in regard to response and recovery.

Wildfire response may necessitate the involvement of law enforcement agencies to provide for the safety of life and property during evacuation. Firefighters prioritize protecting human life and will urge people to evacuate from areas threatened by wildfire to reduce the risk of loss of life. Under California law, the responsibility for evacuation rests with law enforcement. Firefighters do not have the legal authority to order people to leave their property or to close public roads. Close coordination between law enforcement and fire agencies in planning and implementing evacuations is critical. Most frequently the task is under the jurisdiction of the sheriff, who also coordinates all law enforcement mutual aid.

Evacuation planning is a joint effort among city and county departments with law enforcement as the lead agency. If a fire does break out and spread rapidly, residents may need to evacuate within days or hours. A fire's peak burning period generally is between 1 p.m. and 6 p.m. Once a fire has started, fire alerting is

reasonably rapid in most cases (Santa Clara County 2017). Evacuation information and links to Alert signups can be found here: <https://www.sccfd.org/be-evacuation-ready/>

During emergency operations, there may be several lead and support agencies involved. A single incident commander will be assigned from the responsible agency. If law enforcement and the fire department both have substantial responsibilities a Unified Incident Command structure will be established to integrate incident objectives and develop an Incident Action Plan (Santa Clara County 2017). The following are protective action terms for the Santa Clara County Local Fire Service and Rescue Mutual Aid Plan:

1. Evacuation Warning – The alerting of people in an affected area(s) of potential threat to life and property. An Evacuation Warning considers the probability that an area will be affected within a given timeframe and prepares people for a potential evacuation order. Evacuation Warnings are particularly necessary when dealing with a variety of issues such as special needs populations and large animals.
2. Evacuation Order – Requires the immediate movement of people out of an affected area due to an imminent threat to life.
3. Shelter-In-Place – Advises people to stay secure at their current location. This tactic shall only be used if the evacuation will cause a higher potential for the loss of life. Consideration should be given to assigning incident personnel to monitor the safety of citizens remaining in place.
4. Rescue – Emergency actions taken within the affected area to recover and remove injured or trapped citizens. Responders have specific training and personal protective equipment necessary to accomplish the mission, i.e., hazardous material spill, swift water rescue, etc. Boundaries of the areas where rescue is planned should be identified on the incident map with notation that entry is restricted to rescue workers only.
5. Community Refuge Area – A designated location that is considered to provide a greater level of survivability than Shelter-In-Place. If unable to make it to a designated Evacuation Shelter, civilians should be directed to seek shelter at a Community Refuge Area.

Evacuation checklists re-entry planning checklists, and decision support checklists can be found in Santa Clara County Local Fire Service and Rescue Mutual Aid Plan Appendix 13 – Protective Action Guidelines (revised 2017): https://www.sccfd.org/wp-content/uploads/documents/mutual_aid_plan/app_13_01-17.pdf.

Santa Clara County has also developed the Operational Area Emergency Operations Plan (2008), which describes the purpose and history of the statewide mutual aid program. The statewide mutual aid system includes several specific mutual aid systems for fire, rescue, and law enforcement services. As emergency incidents escalate in size and complexity, mutual aid agreements facilitate the acquisition of increased levels of staff in support of various components of the incident, including law enforcement responsibilities.

Please note that the public should follow the latest guidance from trusted sources, such as official government agencies, in regard to evacuation orders, especially as emergency response plans change rapidly. Current evacuation orders should always be adhered to and supersede all information presented in the CWPP.

Wildland Urban Interface Pre-Plans and Evacuation Guides

The 2018 CAL FIRE Santa Clara Unit Fire Plan identifies a number of pre-fire projects within the county for the period of 2015–2018 (CAL FIRE 2018: Appendix A). The Santa Clara County CWPP was identified as a project for 2016. Pre-fire projects include Vegetation Management Plans at Henry Coe, defensible space projects for Santa Clara County communities at risk, and defensible space and fuel break projects for the Santa Cruz Mountains. Further the pre-fire projects include a Santa Clara Unit Incident Pre-Attack and Evacuation Plan.

Pre-response and evacuation planning is identified in the CAL FIRE Santa Clara Unit Fire Plan (CAL FIRE 2018) for a number of communities and open space areas, including Pacheco Pass, Henry Coe Park, Mt. Hamilton, Lexington Basin, Saratoga, Los Altos, Stevens Canyon, and Montevina Road. Collaborative work has also been underway with the South Skyline FireSafe Council in Santa Cruz County along Skyline Road (Highway 35) including fuel modification work to maintain an evacuation route between Santa Clara and Santa Cruz Counties.

The goal of the pre-response and evacuation plans would be to provide new personnel, CAL FIRE Emergency Command Center staff, and incident management teams with the location of strategic control points and access into remote SRA land.

Many communities have already been the focus of pre-planning efforts, including the Holiday Lakes/Jackson Oaks communities where a pre-response and evacuation plan was completed in January 2016.

CAL FIRE highlights the importance of working in cooperation with the Santa Clara County FireSafe Council, local law enforcement, and other local cooperators to develop evacuation plans and fire plans for communities at risk susceptible to a major incident.

Community Signage

Fire prevention signs can be useful media through which to share with the public the current fire danger. Sign messages should be adjusted regularly to reflect seasonal changes and deliver fresh messages. Signage can be missing, indistinct, or at risk of combustion. Confusing signage impeding access due to narrow roads. Signs are currently located at:

- The CAL FIRE Alma Helitack Base on Santa Cruz Highway
- Dunne Hill Fire Station
- Strategic locations in Morgan Hill
- Summit Road/Loma Prieta

Please note that the public should follow the latest guidance from trusted sources, such as official government agencies, in regard to evacuation orders, especially as emergency response plans change rapidly. Current evacuation orders should always be adhered to and supersede all information presented in the CWPP.

Road Systems

Road systems play a large part in evacuation procedures. Roads in the WUI vary in characteristics but are sometimes unpaved. Private driveways can be mistaken for roads, turnarounds and pullouts are limited, and dead ends provide particularly dangerous situations for evacuations. Overhanging vegetation,

and the possibility of long driveways being mistaken for evacuation routes were cited in community CWPPs.

Due to the wildfire and roadside ignition history in Lexington Hills and the high commute traffic volumes on Highway 17 between Los Gatos and Santa Cruz, compounded by very narrow alternative roads, additional coordination between Santa Cruz County law enforcement agencies and Santa Clara is needed. The county line creates challenges because not only are two County Sheriff's and County Roads Departments involved, but the California Highway Patrol and Caltrans have district boundaries at the county line. Local municipal police departments from Los Gatos and Scotts Valley (Santa Cruz County) may also be engaged in evacuation efforts in the Highway 17 corridor.

Information on specific road systems can be found in Appendix B.

People

The safe and efficient evacuation of people from wildfire requires several factors, including:

- **Emergency notification methods:** AlertSCC is the County of Santa Clara's official emergency alert and warning system. This system will allow county citizens to receive the right information at the right time which will help in emergency decision making. The alerts are available in a multitude of languages including English and Spanish. AlertSCC provides alerts regarding fire, earthquakes, severe weather, crime, and instructions during an ongoing disaster. Information provided by AlertSCC should be used in addition to local, state, and federal alert and warning systems. This can be accomplished by monitoring television, radio, and government websites for important announcements.
 - To sign up for AlertSCC in Santa Clara County, follow this link: <https://member.everbridge.net/453003085615038/new>.
- **Preplanning by the public about how to evacuate and where to go:** Locked gates, poor or missing signage, and conflicts with emergency vehicles driving into the community versus the public trying to leave complicate evacuation. Uncertainty about where to find temporary refuge can cause families to become separated and delay reunions. Some individuals without transportation or with limited mobility may be accidentally left behind.
- **Public awareness:** These two items will fail to occur throughout the county if the residents are unaware of notification methods: 1) the need for preplanning and 2) the elements that should be included in preplanning. Therefore, public education and outreach on these topics should be part of all efforts conducted by agencies such as fire departments in a wide variety of venues. Given the wide variety of communities, languages, and cultures found within the county, and its broad range of urban to rural settings, a "one size fits all" public awareness program will miss portions of the public.

Community Emergency Response Team

Developed by FEMA, the Community Emergency Response Team (CERT) training is a program that educates community members about disaster preparedness for hazards that may impact their area and trains them in basic disaster response skills, such as fire safety, light search and rescue, team organization, and disaster medical. Supplemental training modules are available to better assist professional responders in a variety of emergency situations. Advanced training includes such topics as animal response, emergency communications, traffic and crowd management, and flood response.

CERT academies are offered in the communities served by the Santa Clara County Fire Department and are offered on a rotating basis throughout the year. This training supplies CERT members with the knowledge and ability to mobilize neighborhood resources, deliver immediate assistance to victims, organize emergency communications, and provide support to first responders. Using classroom and simulation-based education, CERT members can assist others in their neighborhood or workplace immediately following an event when emergency responders may not be immediately available to help. CERT training is accomplished in about 21-hours culminating with a final disaster simulation exercise applying the skills participants have learned (Santa Clara County 2023d).

For more information on County CERT membership and training, call (408) 808-7800 or email <mailto:cert@sccfd.org>

The City of Santa Clara also offers training through the CERT Citizens' Academy Program. This program is sponsored through a partnership between Santa Clara City Officials, Fire Department Staff, and Firefighters' Local Union #1171 for the citizens of Santa Clara. The Santa Clara CERT program is designed to help the citizens of Santa Clara to be self-sufficient after a major disaster, when the scope of incidents can be overwhelming, and the need for a well-trained civilian work force can be invaluable. The program began in 1995, and an estimated 1,500 participants have taken part since (City of Santa Clara 2023).

For more information on City CERT membership and training, call (408) 615-4942 or email FDCERT@santaclaraca.gov



Figure B.9. Example of a narrow mountain community road.



Figure B.10 Some areas have been identified as having extremely limited ingress and egress, and in an emergency, residents may need to evacuate through locked gates.

Animals and Livestock

In the event of a wildfire, it is important that residents, fire responders, and the County have a plan for evacuation of pets and livestock. Evacuation planning often neglects to describe how animals will be evacuated and where they will be taken. The loading of horses, for example, during a fire and smoke situation, and transport of stock vehicles down narrow roads under stressful situations, can be very difficult. Public education could emphasize the need for individuals to have a plan for the evacuation of pets in addition to their family, ensuring a lack of planning doesn't slow or prevent evacuation.

The County is fortunate to have the Santa Clara County Large Animal Evacuation Team, which is a volunteer resource of the CA OES and available upon request by first responders responsible for emergency incidents. Volunteers are sworn in as disaster service workers and are kept up to date with training sessions, including the ICS 100, IS 200, and IS 700 courses (Santa Clara County 2023e).

The Large Animal Evacuation Team website provides helpful information guiding livestock owners in the event of a natural disaster including wildfire. A few of these documents are listed below:

What to do with a horse in fire, flood, and earthquake:

<http://www.scclaet.org/Download/What%20to%20do%20with%20Horse%20in%20Fire%20Flood%20Earthquake.pdf>.

The Agricultural Pass Program (Section 2350 of California Food and Agricultural Code) allows for agricultural workers carry out essential agricultural activities in restricted areas upon passing the vetting process. For more information on The Agricultural Pass Program, please see Appendix A “Legislative Direction”.

Wildland Fire Safety for Your Livestock and Pets: <http://www.scclaet.org/Download/Animalevacuation.pdf>.

Please see Appendix G for additional resources regarding evacuation preparation.

PUBLIC EDUCATION AND OUTREACH PROGRAMS

Public education and outreach programs are a common factor in virtually every agency and organization involved with the wildfire issue. A primary goal in the original Santa Clara County Community Wildfire Protection Plan is to provide a tool that helps educate the public and provide guidance in treating areas of concern. The plan states that “A combination of property owners and community awareness, public education, agency collaboration, and fuel treatments are necessary to fully reduce wildfire risk.” (Santa Clara County 2016).

LOCAL AND STATE PROGRAMS

Santa Clara County FireSafe Council

The Santa Clara County FireSafe Council is a 501 (c)3 nonprofit with a 20-year history that aims to mobilize the people of Santa Clara County to protect their homes, communities, and environment from wildfires (Santa Clara County FireSafe Council 2023).

The Santa Clara County FireSafe Council's education and outreach programs work to motivate and educate individuals, public and private agencies and companies that share a common, vested interest in preventing and reducing losses from wildfires. The Santa Clara County FireSafe Council has a board of directors and advisory board with deep expertise across the wildfire ecosystem and has led some of the most complex hazardous fuel reduction projects in the region.

Santa Clara County FireSafe Council programs and projects are focused on protecting the 14 designated communities at risk; it works actively in the community and offers education and outreach programs as outlined on its website (<http://www.sccfiresafe.org>). Target audiences for outreach include adult and youth residents in the WUI, youth in schools and outdoor education programs, landscaping and tree contractors, businesses, and civic organizations with ties to interests at risk from wildfire.

Santa Clara County FireSafe Council offers a community chipping program that is designed to assist residents and communities in their efforts to create and maintain adequate and safe defensible space by processing or disposing vegetative material such as brush and tree branches. The following types of scheduled chipping services are offered through the program:

- At Home Chipping – Residents submit an application for chipping services to be performed at their homes. Brush must be prepared in advance of the chipping appointment and must meet all specified guidelines
- Community Chipping Piles – Residents drop off piles of brush at a specific location and chipping is performed on a scheduled date

- Drive Up Chipping Event – A date the community has previously selected, at a location within the community, residents drive the brush up in their own vehicle and it is chipped on the spot.

A link to the Chipping Program Registration can be found here: <https://www.chipperday.com/lah>

Santa Clara County FireSafe Council was recently awarded a County Coordinator Grant. This grant, to the amount of \$175,000 will allow the County to lead County-Wide collaboration and coordination among all wildfire mitigation groups (Santa Clara County FireSafe Council 2023).

Additionally, Santa Clara County FireSafe Council has formed an exclusive partnership with the leading wildfire sensor manufacturers, N5 Sensors and Dryad Networks. Through early detection, these sensors aim to dramatically cut firefighting costs, prevent economical damage, reduce risk and insurance, and save human life and wildlife. As part of this agreement, the council will handle consulting, pilot testing, sales, and implementation for both companies in Santa Clara, Santa Cruz, and San Mateo Counties.

South Skyline FireSafe Council

The South Skyline FireSafe Council is another non-profit organization whose mission is to provide education and outreach programs for fire prevention and preparedness to residents in the Santa Cruz Mountains west of San Jose (South Skyline FireSafe Council 2023). The Council sponsors two valuable programs:

- Free Chipping Program: In the spring and fall, the South Skyline FireSafe Council will send professional crews to member homes and turn brush and trees into chips to be used as mulch or ground cover.

For questions contact Ed Hayes at edandcarolynhayes@gmail.com, John DeLong at johnmdelong@gmail.com, or Monty Boyer at montyboyer@gmail.com

- Home Advisory Program: The South Skyline FireSafe Council offers free home advisory reviews of defensible space as well as homes and other structures within SSFCS boundaries. Results will help inform wildfire mitigation decisions and all personal information remains private.

For questions and to schedule a home advisory visit email: homeadvisory.ssfsc@gmail.com

Santa Clara County Fire Department (SCCFD)

A top priority for the SCCFD is to educate the community on fire, life safety, and preparedness. SCCFD offers comprehensive fire preparedness training programs in the following cities: Campbell, Cupertino, Los Altos, Los Altos Hills, Los Gatos, Monte Sereno, and Saratoga. The Community Education Office of the SCCFD will connect individuals interested in learning more about fire to organizations and agencies within Santa Clara County (SCCFD 2023). SCCFD offers several community education programs involving fire including:

- Fire extinguisher training
- Fire station tours
- The Youth Firesetter Intervention Program (YFIP)

Midpeninsula Regional Open Space Authority (Midpen)

Neighbor Defensible Space Permits

For those who choose to live in the wildland-urban interface, creating defensible space and hardening your home are some of the most important things you can do to protect your property. Neighbors can apply for a free permit allowing them to reduce vegetation on Midpen land, within 100 feet of occupied structures, to create defensible space around homes (Midpen 2021).

Application Process:

- Obtain a free fire hazard inspection from your local fire agency.
- Fill out this online form: <https://mrosd01.wufoo.com/forms/x1chgtwr0g3f6r5>
- Midpen staff will schedule a site visit with you to discuss your project and program details.

Program Details

- The occupied structure should be in compliance with applicable planning, building, and zoning laws.
- Applicants and contractors must have general liability insurance and any required licenses.
- The cost of vegetation removal and any required environmental review are the applicant's responsibility.
- Other requirements may be identified in the permit for consistency with Midpen's resource management policies and practices.

NATIONAL PROGRAMS

Ready, Set, Go!

The Ready, Set, Go! Program, which is managed by the International Association of Fire Chiefs, was launched in 2011 at the WUI conference. The program seeks to develop and improve the dialogue between fire departments and residents, providing teaching for residents who live in high-risk wildfire areas—and the WUI—on how to best prepare themselves and their properties against fire threats (International Association of Fire Chiefs 2021). The County utilizes the Ready, Set, Go Program for their public outreach with a focus on making communities “fire adapted”.

The tenets of Ready, Set, Go! as included on the website (<http://www.wildlandfirersg.org>) are:

Ready – Take personal responsibility and prepare long before the threat of a wildland fire so your home is ready in case of a fire. Create defensible space by clearing brush away from your home. Use fire-resistant landscaping and harden your home with fire-safe construction measures. Assemble emergency supplies and belongings in a safe place. Plan escape routes and ensure all those residing within the home know the plan of action.

Set – Pack your emergency items. Stay aware of the latest news and information on the fire from local media, your local fire department, and public safety.

Go – Follow your personal wildland fire action plan. Doing so will not only support your safety but will allow firefighters to best maneuver resources to combat the fire.

National Fire Protection Association

The NFPA is a global non-profit organization devoted to eliminating death, injury, property, and economic loss due to fire, electrical, and related hazards. Its 300 codes and standards are designed to minimize the risk and effects of fire by establishing criteria for building, processing, design, service, and installation around the world.

The NFPA develops easy-to-use educational programs, tools, and resources for all ages and audiences, including Fire Prevention Week, an annual campaign that addresses a specific fire safety theme. The NFPA's Firewise Communities program (www.firewise.org) encourages local solutions for wildfire safety by involving property owners, community leaders, planners, developers, firefighters, and others in the effort to protect people and property from wildfire risks.

The NFPA is a premier resource for fire data analysis, research, and analysis. The Fire Analysis and Research Division conducts investigations of fire incidents and produces a wide range of annual reports and special studies on all aspects of the nation's fire problem.

National Interagency Fire Center

The National Interagency Fire Center (NIFC) provides a wide array of fire resources and services. The National Interagency Coordination Center offers communication assistance to over 32,000 firefighters and 50 major events at one given time (NIFC 2021c). The Predictive Services Group creates wildfire forecasts and predictions from fuel and weather data. The NIFC has a Remote Automated Weather Base with over 2,000 weather stations which help inform the Predictive Services Group. The National Wildfire Coordinating Group, which is nested under the NIFC, provides operational coordination to federal, state, local, tribal, and territorial partners (NIFC 2021c). The NIFC also has a training branch where training curriculums are developed to be used across the nation. For those too young to participate in the standard trainings, the NIFC offers FireWorks, an educational program designed for kids K-12. The program teaches children topics such as wildland fire science, ecosystem fluctuations, human interaction on the environment, and other environmental science topics (NIFC 2021d). The NIFC also provides public education resources (NIFC 2021e):

- [Wildfire Readiness – Home](#)
- [Wildfire Readiness – Business](#)
- [Wildfire Readiness – Farm and Ranch](#)
- [Weekend Wildfire Preparedness](#)
- [What to Do if a Wildfire is Approaching](#)
- [Wildfire Risk – Community](#)
- [Prepare and Protect Your Home](#)
- [Prepare Your Community](#)
- [One Less Spark, One Less Wildfire](#)
- [Only You Can Prevent Wildfires](#)

U.S. Fire Administration's WUI Toolkit

The U.S. Fire Administration (USFA) is an entity of FEMA that aids in the preparation for and response to fire. Their WUI toolkit consists of a list of websites and other information regarding risk assessments, public outreach, and community training. Find the toolkit here: <https://www.usfa.fema.gov/wui/>.

Wildfire Research Center (WiRē)

Wildfire Research Center (WiRē) is a non-profit organization that works with local wildfire services to achieve community-tailored pathways which reduce risk to wildfire while simultaneously promoting pathways to fire adaptation. WiRē's mission states that fire adaptation is "about living with fire", while "creating safe and resilient communities that reduce wildfire risk on their properties before a fire, and supporting effective response when fires threaten a community." WiRē states that wildfire is an integral component of many ecosystems, and that fire must be allowed, when safe, as to ensure the health of forests. Core to WiRē's approach are four main concepts: 1) residents are critical actors in the WUI wildfire problem; 2) action is central to adaptation; 3) people and their decisions are complex; and 4) decisions are not made in a vacuum. To achieve its goals and serve communities, WiRē will typically conduct a "rapid wildfire risk assessment," which assesses what contributes to wildfire risk, such as, building materials, vegetation near homes, background fuels, local topography, and access to emergency fire services. Additionally, they also conduct "social surveys", which assess residents' perceptions about wildfire, wildfire risk, risk mitigation behavior, and assess their willingness towards taking action to reduce wildfire risk.

For more information, please visit <https://wildfireresearchcenter.org/>.

APPENDIX C:

Community Risk-Hazard Assessments for WUI Communities

This page intentionally left blank.

2016 VS. 2023 ASSESSMENT PROCESS

In the 2016 CWPP, WUI communities were assessed via the NFPA 1144 assessment forms. Many of the WUI communities were revisited in 2023 but not formally reassessed and therefore 2016 NFPA 1144 scores are presented throughout. While the 1144 assessments were not revised in 2023, the desktop risk-hazard assessment (described in Chapter 3) generally finds that all communities display an elevated risk from the 2016 assessment. In addition, SWCA toured most WUI communities with the Santa Clara County Wildland Division Fire Chief during April 2023 and confirmed the increase in risk. The information presented in this appendix can be used in jurisdictional annexes.

Please refer to Chapter 2, Fire Environment, and Chapter 3, Risk-Hazard Assessment, for additional information.

POLYGON SUMMARY STATISTICS DEFINITIONS

Total 2016 Score: This is the score that the community received in the 2016 CWPP, which assessed communities using the NFPA 1144 Assessment form. These scores were developed from the negative and positive attributes that were identified during the NFPA 1144 survey that was conducted for the 2016 CWPP assessments.

Rating: This rating is based on the Total 2016 score. A lower score is associated with lower wildfire risk whereas a higher score is associated with high wildfire risk (Low X-49, Moderate 50-70, High 71-111, Extreme 112+).

Building Density: Building is quantified by units per square mile. Building density is a critical factor in assessing wildfire risk because higher building densities can result in a greater risk of fire spread and increased difficulty in firefighting and evacuation efforts due to structures. Conversely lower densities may signify that a community is more prone to risks associated with WUI environments, such as higher fuel loads and increased difficulty in firefighting and evacuation efforts due to infrastructure limitations.

Dominant Fuel Type: The dominant vegetative fuel type plays a significant role in determining wildfire risk, as different fuel types varying characteristics that can influence the behavior and intensity of wildfires. The dominant fuel type was identified as a specific fuel code used in the wildfire assessment modeling process for each community.

Percent of Community by Modeled/Calculated Wildfire Risk Inputs (Drive Time from Fire Station): This percentage indicated the proportion of the community that is within each increment of drive time from the nearest fire station (0 mins to 15 mins). Fire station response time is a critical factor in addressing wildfire risk. The time it takes for firefighters to reach a wildfire incident directly impacts their ability to initiate suppression efforts and mitigate the fire's spread. Additionally, this can be used to identify areas where infrastructure investments may be needed to increase wildfire response capabilities.

COMMUNITY ASSESSMENT SUMMARIES

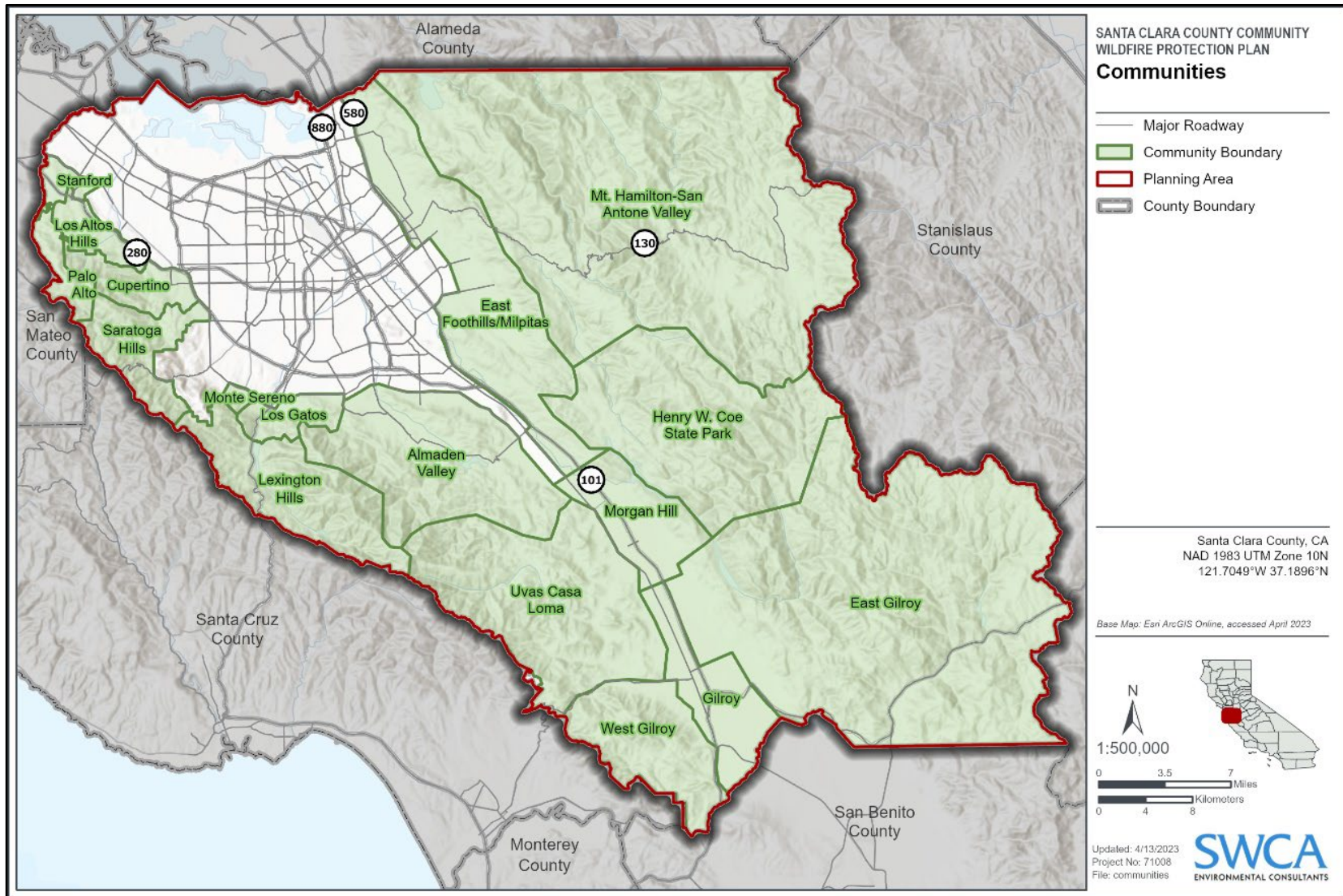


Figure C.1. Planning area WUI community polygon delineations.

ALMADEN VALLEY WILDLAND URBAN INTERFACE COMMUNITIES

ALMADEN VALLEY POLYGON SUMMARY STATISTICS

Community Polygon Background

Community Polygon Name: Almaden Valley *New **Total 2016 Score:** 90 **Rating:** Moderate
Almaden information is included in CWPP Annex #1

Building Density (Building Units per square mile): 383.63

Percentage of Wildfire Hazard: (lowest relative hazard (1) to highest relative hazard (6)) (based on 2023 desktop wildfire hazard assessment data) (based on 2023 desktop wildfire hazard assessment data):

1: 3.00%; 2: 9.30%; 3: 8.29%; 4: 20.83%; 5: 24.58%; 6: 33.99%

Dominant Fuel Type

Grass

Grass/Shrub

Shrub

Timber Understory

Timber Litter

GR2

Percent of Community by Modeled/Calculated Wildfire Risk Inputs

Drive Time from Fire Station

0-5 mins: 16.91%

5-10 mins: 17.16%

10-15 mins: 18.09%

>15 mins: 47.83%

1144 Survey Summary Highlights

Positive Attributes (Low Scores)

- Good separation of adjacent structures

Negative Attributes (High Scores)

- Narrow road width
- One road in and out
- Unsurfaced road with greater than 5% grade
- Poor fire access, dead end spurs, lack turnaround
- Street signs are present, some are non-reflective
- Adjacent fuels: Moderate with high flammability
- High concern topographic feature
- Moderate fire weather potential
- Building set back
- Water unavailable
- Response: Station >5 miles from structure
- Internal sprinklers: For new build properties
- Both utilities aboveground

Fires Within Polygon Based on Recent Fire History

- Austria Gulch Fire, 1961
 - Extends into Lexington Hills, Uvas Casa Loma, and south outside of the planning area
- Almaden Fire, 1988
- PG & E #2 Fire, 1989
- Loma Fire, 2016
 - Extends into Lexington Hills and Uvas Casa Loma

CUPERTINO

WILDLAND URBAN INTERFACE COMMUNITIES

CUPERTINO POLYGON SUMMARY STATISTICS

Community Polygon Background				
<u>Community Polygon Name:</u> Cupertino		<u>Total 2016 Score:</u> 81		<u>Rating:</u> High
Building Density (Building Units per square mile): 410.92				
Percentage of Wildfire Hazard: (lowest relative hazard (1) to highest relative hazard (6)) (based on 2023 desktop wildfire hazard assessment data):				
1: 8.88%; 2: 14.35%; 3: 9.30%; 4: 14.85%; 5: 28.56%; 6: 24.06%				
Dominant Fuel Type				
<u>Grass</u>	<u>Grass/Shrub</u>	<u>Shrub</u>	<u>Timber Understory</u>	<u>Timber Litter</u>
TU5				
Percent of Community by Modeled/Calculated Wildfire Risk Inputs				
<u>Drive Time from Fire Station</u>				
0-5 mins: 28.86%				
5-10 mins: 5.00%				
10-15 mins: 0.36%				
>15 mins: 65.78%				

1144 Survey Summary Highlights

Positive Attributes (Low Scores)

- Surfaced roads but some steep routes
- Good visible house markers
- Well signposted
- Surfaced, maintained roads
- Reasonable water supply via hydrants but low pressure in some areas
- Irrigated lawns and landscaping
- Under Santa Clara County Fire Department jurisdiction
- HOAs for some subdivisions that can facilitate community organizing
- New construction, 7A compliant

Negative Attributes (High Scores)

- Some heavy fuel loading adjacent to homes (on both public and private property) as a result of thick underbrush and continuity of tree crowns
- Thick fuels in canyon (on public and private property)
- >30 feet of defensible space around most homes, but <100 feet around many
- Steep grades and varied topography
- Building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes
- Adjacency of some residential structures
- Some homes >5 miles from fire response could result in slow response time
- Some gated dead-end roads
- Single lane, narrow roads
- Wood shake roofs present
- Propane tanks aboveground
- Number of wineries and CVAR
- Heavy population density
- Some homes have limited set-back from slope

Fires Within Polygon Based on Recent Fire History

- NONE

EAST FOOTHILLS/MILPITAS WILDLAND URBAN INTERFACE COMMUNITIES

EAST FOOTHILLS/MILPITAS POLYGON SUMMARY STATISTICS

Community Polygon Background		
<u>Community Polygon Name:</u>	East Foothills/Milpitas	<u>Total 2016 Score:</u> 68
		<u>Rating:</u> Moderate
Building Density (Building Units per square mile): 639.21		
Percentage of Wildfire Hazard: (lowest relative hazard (1) to highest relative hazard (6)) (based on 2023 desktop wildfire hazard assessment data):		
1: 5.47%; 2: 22.11%; 3: 21.31%; 4: 23.71%; 5: 18.44%; 6: 8.95%		

Dominant Fuel Type				
<u>Grass</u>	<u>Grass/Shrub</u>	<u>Shrub</u>	<u>Timber Understory</u>	<u>Timber Litter</u>
GR2				

Percent of Community by Modeled/Calculated Wildfire Risk Inputs	
<u>Drive Time from Fire Station</u>	
0-5 mins:	35.91%
5-10 mins:	16.91%
10-15 mins:	4.67%
>15 mins:	42.50%

1144 Survey Summary HighlightsPositive Attributes (Low Scores)

- Good fire response resources from San Jose Fire Department and CAL FIRE
- Roadside fuel treatments in progress
- Large open space areas break up residential areas
- Good yard hygiene for most homes, landscaped yards
- Non-continuous light fuels
- Sparse population in more rural areas
- Grazing helps in fuel reduction in some areas where appropriate

Negative Attributes (High Scores)

- Diverse WUI, from distinct interface with heavily urban area to scattered residences in an intermix
- Different planning needed for each type
- Scenic roadways may increase ignition potential—ignition concerns related to Sierra Road—fireworks etc.
- CVAR: Grand View Restaurant, Lick Observatory, Copernicus Peak communications site, Alum Rock Park
- >30 feet of defensible space around most homes, but <100 feet around many
- Mix of construction types—building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes
- Wood shake roofs and older construction in some areas
- Many dead-end spur roads
- Topographic concerns, rolling hills and some steep slopes
- Grassland fuels that are highly dynamic and impacted by seasonal climate fluctuations
- Flashy shrub fuels present on slopes below homes
- Slow response times to some more remote homes in the valley
- Improvements to road networks needed
- Car ignition potential is high concern
- No distinct neighborhood associations to use to develop common interest for neighborhood level interactions for Firewise or CERT

Fires Within Polygon Based on Recent Fire History

- Isabel Valley Ranch Fire, 1951
 - Extends into Mt. Hamilton-San Antonne Valley
- Sheriff Fire, 1979
- Ford Road Fire, 1979
- Shea Fire, 1997
 - Extends into Henry W. Coe State Park
- Melech Fire, 1999
- Silver Fire, 2004
- Ranch Fire, 2011
- Sierra Fire, 2016
- Felipe Fire, 2017
- Lariat Fire, 2017
- Piercy Fire, 2021

EAST GILROY WILDLAND URBAN INTERFACE COMMUNITIES EAST GILROY POLYGON SUMMARY STATISTICS

Community Polygon Background		
<u>Community Polygon Name:</u> East Gilroy	<u>Total 2016 Score:</u> 72	<u>Rating:</u> High
Building Density (Building Units per square mile): 21.14		
Percentage of Wildfire Hazard: (lowest relative hazard (1) to highest relative hazard (6)) (based on 2023 desktop wildfire hazard assessment data):		
1: 0.67%; 2: 6.57%; 3: 38.44%; 4: 21.40%; 5: 17.74%; 6: 15.18%		

Dominant Fuel Type				
<u>Grass</u>	<u>Grass/Shrub</u>	<u>Shrub</u>	<u>Timber Understory</u>	<u>Timber Litter</u>
GR2				

Percent of Community by Modeled/Calculated Wildfire Risk Inputs
<u>Drive Time from Fire Station</u>
0-5 mins: 2.34%
5-10 mins: 5.23%
10-15 mins: 6.64%
>15 mins: 85.78%

1144 Survey Summary Highlights	
<u>Positive Attributes (Low Scores)</u>	<u>Negative Attributes (High Scores)</u>
- Generally good roads - Good separation of adjacent structures - Response: Station <5 miles from structure	- Some limited access roads to individual properties - Street signs are present, some are non-reflective - Adjacent fuels: Moderate with high flammability - Concerning topography around structure - Non-combustible siding, combustible deck - Both utilities aboveground - Moderate history of fire occurrence and severe weather - Non-combustible sidings but combustible decks present

Fires Within Polygon Based on Recent Fire History

- Bollinger Ranch Fire, 1961
 - Extends into Henry W. Coe State Park and east outside of the planning area
- Wolfe Fire, 1980
- Squirrel Fire, 1989
- Redfern Fire, 2000
- Casa Fire, 2000
- Lick Fire, 2007
 - Extends into Mt. Hamilton-San Antonio Valley, Henry W. Coe State Park, and east outside of the planning area
- Bull Head Fire, 2008
- Pacheco Fire, 2009Bridal Fire, 2018
- Crews Fire, 2020
- SCU Lighting Complex Fire, 2020
 - Extends into Mt. Hamilton-San Antonio Valley, Henry W. Coe State Park, and outside of the planning area to the north and east
- Paseo Fire, 2021

GILROY

WILDLAND URBAN INTERFACE COMMUNITIES

GILROY POLYGON SUMMARY STATISTICS

Community Polygon Background		
<u>Community Polygon Name:</u> Gilroy	<u>Total 2016 Score:</u> 48	<u>Rating:</u> Low
Building Density (Building Units per square mile): 410.56		
Percentage of Wildfire Hazard: (lowest relative hazard (1) to highest relative hazard (6)) (based on 2023 desktop wildfire hazard assessment data):		
1: 7.91%; 2: 62.31%; 3: 18.44%; 4: 7.14%; 5: 3.65%; 6: 0.55%		

Dominant Fuel Type					
<u>Grass</u>	<u>Grass/Shrub</u>	<u>Shrub</u>	<u>Timber Understory</u>	<u>Timber Litter</u>	<u>Non-Burnable</u>
					NB3

Percent of Community by Modeled/Calculated Wildfire Risk Inputs	
<u>Drive Time from Fire Station</u>	
0-5 mins:	36.17%
5-10 mins:	46.68%
10-15 mins:	6.84%
>15 mins:	10.30%

1144 Survey Summary Highlights	
<u>Positive Attributes (Low Scores)</u>	<u>Negative Attributes (High Scores)</u>
• Light fuels • Open space: Henry Coe Range • Rolling hills and less extreme grades • Large lots and good separation • Good defensible space around most homes, some <100 feet • Good access • Maintained roads and plentiful turnaround space • Good signage • Low fire occurrence • Hydrants available but density is low	• Livestock evacuation concerns • Gated properties could impede access to emergency responders • Mix of construction types—building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes • CVAR: Farms, grazing, orchards, vineyards, commercial property • Some poorly rated roof materials • Some homes >5 miles from organized fire response • Aboveground utilities • Some oil and gas infrastructure

Fires Within Polygon Based on Recent Fire History
• NONE

LEXINGTON HILLS WILDLAND URBAN INTERFACE COMMUNITIES

LEXINGTON HILLS POLYGON SUMMARY STATISTICS

The Lexington Hills polygon includes the following communities which were individually assessed in 2016:

- Chemeketa Park (131, Extreme), Aldercroft Heights (116, Extreme), Redwood Estates (93, High), Summit Road (88, High) and Call of the Wild.

The table below accounts for the entire polygon. For information on the individual sub-communities (Chemeketa Park, Aldercroft Heights, Redwood Estates, Summit Road, Call of the Wild), please see Annex 1- Chapter 1, and Lexington Hills CWPP (2009) for detailed analysis and recommendations.

Community Polygon Background				
Community Polygon Name: Lexington Hills				
Building Density (Building Units per square mile): 8.87				
Percentage of Wildfire Hazard: (lowest relative hazard (1) to highest relative hazard (6)) (based on 2023 desktop wildfire hazard assessment data):				
1: 1.43%; 2: 0.88%; 3: 6.17%; 4: 10.49%; 5: 18.67%; 6: 62.36%				

Dominant Fuel Type				
<u>Grass</u>	<u>Grass/Shrub</u>	<u>Shrub</u>	<u>Timber Understory</u>	<u>Timber Litter</u>
			TU5	

Percent of Community by Modeled/Calculated Wildfire Risk Inputs	
<u>Drive Time from Fire Station</u>	
0-5 mins:	7.95%
5-10 mins:	12.78%
10-15 mins:	10.94%
>15 mins:	68.34%

Fires Within Polygon Based on Recent Fire History	
• Austrian Gulch Fire, 1961	○ Extends to Almaden Valley, Uvas Casa Loma, and south outside of the planning area
• Lexington Hill Fire, 1985	○ Extends to Uvas Casa Lomas and south outside of the planning area

LOS ALTOS HILLS WILDLAND URBAN INTERFACE COMMUNITIES

LOS ALTOS HILLS POLYGON SUMMARY STATISTICS

Community Polygon Background

Community Polygon Name: Los Altos Hills

Total 2016 Score: 90

Rating: High

Building Density (Building Units per square mile): 290.12

Percentage of Wildfire Hazard: (lowest relative hazard (1) to highest relative hazard (6)) (based on 2023 desktop wildfire hazard assessment data):

1: 3.38%; 2: 19.78%; 3: 26.65%; 4: 27.28%; 5: 18.63%; 6: 4.28%

Dominant Fuel Type

Grass

Grass/Shrub

Shrub

Timber Understory

Timber Litter

TU5

Percent of Community by Modeled/Calculated Wildfire Risk Inputs

Drive Time from Fire Station

0-5 mins: 44.23%

5-10 mins: 33.69%

10-15 mins: 1.77%

>15 mins: 20.31%

1144 Survey Summary Highlights

Positive Attributes (Low Scores)

- Los Altos Hills County Fire District jurisdiction
- Good separation of adjacent structures, larger lot sizes
- New construction, 7A compliant
- Hydrants in most but not all areas
- Surfaced roads primarily
- Limited recent fire history
- Open space areas could serve as shelter-in-place in event of evacuation

Negative Attributes (High Scores)

- Heavy concentration of eucalyptus trees—treatment program available
- >30 feet of defensible space around most homes, but <100 feet around many
- Some areas have poor yard hygiene
- Mix of construction types—building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes
- Single-lane, narrow roads in some areas
- Some private roads with poor road maintenance and limited turnaround for fire apparatuses
- Narrow gates
- Many old structures with wood shake roofs/siding
- Heavy fuel loading adjacent to homes as a result of thick underbrush and continuity of tree crowns
- CVAR: Farm, retirement homes, open space areas, community horse barn

Fires Within Polygon Based on Recent Fire History

- NONE

LOS GATOS

WILDLAND URBAN INTERFACE COMMUNITIES

LOS GATOS POLYGON SUMMARY STATISTICS

Community Polygon Background		
Community Polygon Name: Los Gatos	Total 2016 Score: 87	Rating: High
Building Density (Building Units per square mile): 476.29		
Percentage of Wildfire Hazard: (lowest relative hazard (1) to highest relative hazard (6)) (based on 2023 desktop wildfire hazard assessment data):		
1: 2.08%; 2: 18.78%; 3: 16.11%; 4: 17.45%; 5: 30.09%; 6: 15.40%		

Dominant Fuel Type				
<u>Grass</u>	<u>Grass/Shrub</u>	<u>Shrub</u>	<u>Timber Understory</u>	<u>Timber Litter</u>
			TU5	

Percent of Community by Modeled/Calculated Wildfire Risk Inputs
<u>Drive Time from Fire Station</u>
0-5 mins: 40.95%
5-10 mins: 34.84%
10-15 mins: 8.93%
>15 mins: 15.28%

1144 Survey Summary Highlights	
<u>Positive Attributes (Low Scores)</u>	<u>Negative Attributes (High Scores)</u>
- Many newer 7A compliant homes - Good signposting, though some non-reflective - Less than 5 miles from fire response - Good yard hygiene for most homes, landscaped yards - Many larger lots with good separation between structures - Number of open space areas to break continuity - Good visible house markers - Reasonable water supply via hydrants but low pressure in some areas - HOAs for some subdivisions that can facilitate community organizing	- Lots of new development - Cultural Values at risk - Very narrow, steep, and windy roads and driveways - No turnaround on many roads and driveways - Heavy fuel loading adjacent to homes as a result of thick underbrush and continuity of tree crowns - Topographic concerns, steep grades - Poor roof materials, some wood shake >30 feet of defensible space around most homes, but <100 feet around many - Mix of construction types—building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes - Narrow or no staging area for apparatuses, would block evacuation routes - Many dead ends spurs

Fires Within Polygon Based on Recent Fire History
NONE

MONTE SERENO WILDLAND URBAN INTERFACE COMMUNITIES

MONTE SERENO POLYGON SUMMARY STATISTICS

Community Polygon Background		
Community Polygon Name: Monte Sereno	Total 2016 Score: 70	Rating: High
Building Density (Building Units per square mile): 10.50		
Percentage of Wildfire Hazard: (lowest relative hazard (1) to highest relative hazard (6)) (based on 2023 desktop wildfire hazard assessment data):		
1: 1.60%; 2: 13.52%; 3: 19.53%; 4: 23.89%; 5: 28.51%; 6: 12.95%		

Dominant Fuel Type				
<u>Grass</u>	<u>Grass/Shrub</u>	<u>Shrub</u>	<u>Timber Understory</u>	<u>Timber Litter</u>
			TU5	

Percent of Community by Modeled/Calculated Wildfire Risk Inputs	
<u>Drive Time from Fire Station</u>	
0-5 mins:	74.86%
5-10 mins:	17.18%
10-15 mins:	0.00%
>15 mins:	7.97%

1144 Survey Summary Highlights	
<u>Positive Attributes (Low Scores)</u>	<u>Negative Attributes (High Scores)</u>
- New construction, 7A compliant - Property owners have implemented some defensible space work and fuel reduction - Good access on lower slopes - Good proximity to emergency responders - Well-maintained, surfaced roads - Irrigated lawns and landscaping - Reasonable roofing construction - Under Santa Clara County Fire Department jurisdiction	- One way in and out - Long windy road with steep grade - Confusing road layout - Limited turnaround space for fire access and/or narrow driveways - Heavy fuel loading adjacent to homes as a result of thick underbrush and continuity of tree crowns - Reasonable water supply via hydrants in lower elevation areas, but hydrants needed at higher elevations; encourage water tanks outside of urban service area - Building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes - Some homes have limited setback from slope >30 feet of defensible space around most homes, but <100 feet around many

Fires Within Polygon Based on Recent Fire History
NONE

MORGAN HILL
WILDLAND URBAN INTERFACE COMMUNITIES

MORGAN HILL POLYGON SUMMARY STATISTICS

Community Polygon Background				
<u>Community Polygon Name:</u> Morgan Hill		<u>Total 2016 Score:</u> 79		<u>Rating:</u> High
Building Density (Building Units per square mile): 431.30				
Percentage of Wildfire Hazard: (lowest relative hazard (1) to highest relative hazard (6)) (based on 2023 desktop wildfire hazard assessment data):				
1: 7.94%; 2: 20.22%; 3: 29.50%; 4: 21.20%; 5: 14.78%; 6: 6.35%				
Dominant Fuel Type				
<u>Grass</u>	<u>Grass/Shrub</u>	<u>Shrub</u>	<u>Timber Understory</u>	<u>Timber Litter</u>
GR2				
Percent of Community by Modeled/Calculated Wildfire Risk Inputs				
<u>Drive Time from Fire Station</u>				
0-5 mins: 47.58%				
5-10 mins: 20.60%				
10-15 mins: 0.23%				
>15 mins: 31.59%				

1144 Survey Summary Highlights

Positive Attributes (Low Scores)

- Firewise sign
- Active community in Santa Clara County Fire Safe
- Council and fire prevention activities
- Open space areas break continuity and active fuel programs
- Surfaced and maintained roads
- Mostly good yard hygiene and maintenance of property
- Morgan Hills City Water hydrant system
- Good signage, some non-reflective
- Weed abatement projects in effect
- HOA assists with community organizing
- Majority belowground utilities

Negative Attributes (High Scores)

- Dry flammable vegetation type adjacent to homes and below homes on slopes
- Popular with visitors, potential large numbers during summer months
- One road in and out, evacuation concerns
- Narrow roads within residential areas may have limited turnaround space
- Small lots, limited separation between structures
- Some steep driveways
- Some dead-end spurs
- Some wood shake roofs
- One Engine Company close, but other resources are at some distance
- Topographic concerns—significant slope and limited setback for many homes
- Single-access subdivisions
- >30 feet of defensible space around most homes, but <100 feet around many due to small lots
- Mix of construction types— building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes

Fires Within Polygon Based on Recent Fire History

- Paseo Fire, 2021

MT. HAMILTON-SAN ANTONE VALLEY WILDLAND URBAN INTERFACE COMMUNITIES

MT. HAMILTON-SAN ANTONE VALLEY POLYGON SUMMARY STATISTICS

Community Polygon Background

Community Polygon Name: Mt. Hamilton-San Antone Valley **Total 2016 Score:** 84 **Rating:** High

Building Density (Building Units per square mile): 1.11

Percentage of Wildfire Hazard: (lowest relative hazard (1) to highest relative hazard (6)) (based on 2023 desktop wildfire hazard assessment data):

1: 0.74%; 2: 0.53%; 3: 10.53%; 4: 20.55%; 5: 33.45%; 6: 34.21%

Dominant Fuel Type

Grass

Grass/Shrub

Shrub

Timber Understory

Timber Litter

GR2

Percent of Community by Modeled/Calculated Wildfire Risk Inputs

Drive Time from Fire Station

0-5 mins: 0.56%

5-10 mins: 0.72%

10-15 mins: 1.23%

>15 mins: 97.49%

1144 Survey Summary Highlights

Positive Attributes (Low Scores)

- Light adjacent fuels
- Good separation between adjacent structures

Negative Attributes (High Scores)

- Narrow road width
- Two roads in and out but access still a concern
- Surfaced road with greater than 5% grade
- Poor fire access, dead-end spurs, lack turnaround
- Street signs are present, some are non-reflective
- Defensible space: >70 feet to <100 feet around structure
- High concern topography
- Severe fire weather potential
- History of fire occurrence
- Building not set back >30 feet to slope
- Response: Station >5 miles from structure
- No internal sprinklers within construction
- Aboveground utilities

Fires Within Polygon Based on Recent Fire History

- Trout Creek Fire, 1950
- Mount Stakes Fire, 1950
 - Extends east outside of the planning area
- Isabell Valley Ranch Fire, 1951
- Menzel Fire, 1952
- Saunders Fire, 1952
- Bollinger Ridge Fire, 1961
 - Extends into Henry W. Coe State Park, East Gilroy, and east outside of the planning area
- Beauregard Fire, 1963
- Shanti Ashrama Fire, 1952
 - Extends south outside the planning area
- Shearer Fire, 1954
- Isabel Burn Escape Fire, 1954
- Fletcher Fire, 1955
- Venable Fire, 1955
- N3 Cattle Co. Fire #2, 1971
- N3 Cattle Co. Fire #3, 1971
- Sweeny Fire, 1982
- Nunes Fire, 1984
- Devil Fire, 1985
 - Extends north outside of the planning area
- Long Gulch Fire, 1990
- Mines Road Fire, 1996
- Kincaid Fire, 2003
- Kincaid Fire, 2004
- San Antone Fire, 2004
- Canyon Fire, 2006
 - Extends east outside of the planning area
- Ledoit Fire, 2008
- Hamilton Fire, 2003
 - Extends north outside of the planning area
- Lick Fire, 2007
 - Extends into Henry W. Coe State Park, East Gilroy, and east outside of the planning area
- SCU Lightning Complex Fire, 2020
 - Extends into East Gilroy, Henry W. Coe State Park, and east outside of the planning area

PALO ALTO

WILDLAND URBAN INTERFACE COMMUNITIES

PALO ALTO POLYGON SUMMARY STATISTICS

Community Polygon Background		
Community Polygon Name: Palo Alto	Total 2016 Score: 95	Rating: High
Building Density (Building Units per square mile): 17.89		
Percentage of Wildfire Hazard: (lowest relative hazard (1) to highest relative hazard (6)) (based on 2023 desktop wildfire hazard assessment data):		
1: 0.37%; 2: 1.77%; 3: 15.53%; 4: 22.68%; 5: 38.49%; 6: 21.16%		

Dominant Fuel Type				
<u>Grass</u>	<u>Grass/Shrub</u>	<u>Shrub</u>	<u>Timber Understory</u>	<u>Timber Litter</u>
			TU1	

Percent of Community by Modeled/Calculated Wildfire Risk Inputs
<u>Drive Time from Fire Station</u>
0-5 mins: 0.92%
5-10 mins: 2.93%
10-15 mins: 7.49%
>15 mins: 88.66%

1144 Survey Summary Highlights	
<u>Positive Attributes (Low Scores)</u>	<u>Negative Attributes (High Scores)</u>
• Surfaced roads and adequate width and turnaround • Low slope in most areas, some steep sections • Adjacent wildland to west and north are grass and managed every year by the City of Palo Alto • Mixed construction—stucco and wood • Large lot size reducing adjacency issues • Adequate water supply via hydrants • Organized HOA to deliver strong safety message and take action • Good visible house markers • Well signposted • Irrigated lawns and landscaping • New construction, 7A compliant • Most homes have Class A roofs • Community that is active in Santa Clara County • Fire Safe Council	• Landscaping concerns due to density of thick junipers and pines in close proximity to homes • Wildlands to the south are heavy untreated brush • Power lines aboveground • Homes old enough that there is no requirement for interior sprinklers • Older homes with single-pane windows prone to breaking in wildfire • Presence of some wood shake roofs put homes and neighborhoods at risk

Fires Within Polygon Based on Recent Fire History
• NONE

SARATOGA HILLS WILDLAND URBAN INTERFACE COMMUNITIES

SARATOGA HILLS POLYGON SUMMARY STATISTICS

Community Polygon Background		
Community Polygon Name: Saratoga Hills	Total 2016 Score: 90	Rating: High
Building Density (Building Units per square mile): 120.15		
Percentage of Wildfire Hazard: (lowest relative hazard (1) to highest relative hazard (6)) (based on 2023 desktop wildfire hazard assessment data):		
1: 1.14%; 2: 4.99%; 3: 6.36%; 4: 15.20%; 5: 35.45%; 6: 36.86%		

Dominant Fuel Type				
<u>Grass</u>	<u>Grass/Shrub</u>	<u>Shrub</u>	<u>Timber Understory</u>	<u>Timber Litter</u>
			TU5	

Percent of Community by Modeled/Calculated Wildfire Risk Inputs	
<u>Drive Time from Fire Station</u>	
0-5 mins:	8.28%
5-10 mins:	16.80%
10-15 mins:	6.48%
>15 mins:	68.44%

1144 Survey Summary Highlights	
<u>Positive Attributes (Low Scores)</u>	<u>Negative Attributes (High Scores)</u>
- Santa Clara County fire water resources are good except for any Lexington Hills commuters - Surfaced road with greater than 5% grade - Low fire weather potential - Low fire occurrence history - Large building lots with good separation	- Coyote brush has encroached on savannas - Two or more roads in and out but access still concern - Narrow road width - Poor fire access, dead end road spurs, lack of turnaround - Street signs are present, some non-reflective - Defensible space: >30 feet to <70 feet around structure - Adjacent fuels: Medium - High concern topography - Non-combustible siding/combustible deck - Building set back <30 feet to slope - Water: Available via hydrants, some pressure issues - Response: Station >5 miles from structure - Internal sprinklers: Some new homes (7A compliant) - Utilities: One aboveground, one belowground

Fires Within Polygon Based on Recent Fire History
Stevens Fire, 2007

STANFORD

WILDLAND URBAN INTERFACE COMMUNITIES

STANFORD POLYGON SUMMARY STATISTICS

Community Polygon Background

Community Polygon Name: Stanford**Total 2016 Score:** 58**Rating:** Moderate**Building Density (Building Units per square mile):** 79.17**Percentage of Wildfire Hazard: (lowest relative hazard (1) to highest relative hazard (6)) (based on 2023 desktop wildfire hazard assessment data):****1: 4.80%; 2: 42.77%; 3: 37.26%; 4: 12.74%; 5: 2.34%; 6: 0.10%**

Dominant Fuel Type

GrassGrass/ShrubShrubTimber UnderstoryTimber Litter

GR2

Percent of Community by Modeled/Calculated Wildfire Risk Inputs

Drive Time from Fire Station

0-5 mins: 21.17%

5-10 mins: 78.77%

10-15 mins: 0.00%

>15 mins: 0.07%

1144 Survey Summary Highlights

Positive Attributes (Low Scores)

- Adjacent fuels are light
- Surfaced roads and adequate width and turnaround
- Low slope in most areas, some steep sections
- Adjacent wildland to west and north are maintained grasslands
- Mixed construction—stucco and wood
- Large lot size reducing adjacency issues
- Adequate water supply via hydrants
- Organized HOA to deliver strong safety message and take action
- Good visible house markers
- Well signposted
- Irrigated lawns and landscaping
- New construction, 7A compliant
- Most homes have Class A roofs

Negative Attributes (High Scores)

- >30 feet of defensible space around most homes, but <100 feet around many
- Landscaping has some junipers and pines but lower levels than adjacent Palo Alto
- Power lines are aboveground
- Homes old enough that there is no requirement for interior sprinklers
- Older homes with single-pane windows prone to breaking in wildfire
- Presence of some wood shake roofs put homes and neighborhoods at risk

Fires Within Polygon Based on Recent Fire History

- NONE

UVAS CASA LOMA WILDLAND URBAN INTERFACE COMMUNITIES

UVAS CASA LOMA POLYGON SUMMARY STATISTICS

Community Polygon Background		
<u>Community Polygon Name:</u> Uvas Casa Loma	<u>Total 2016 Score:</u> 88	<u>Rating:</u> High
Building Density (Building Units per square mile): 131.47		
Percentage of Wildfire Hazard: (lowest relative hazard (1) to highest relative hazard (6)) (based on 2023 desktop wildfire hazard assessment data):		
1: 1.69%; 2: 2.64%; 3: 5.61%; 4: 18.59%; 5: 26.18%; 6: 45.28%		

Dominant Fuel Type				
<u>Grass</u>	<u>Grass/Shrub</u>	<u>Shrub</u>	<u>Timber Understory</u>	<u>Timber Litter</u>
			TU1	

Percent of Community by Modeled/Calculated Wildfire Risk Inputs	
<u>Drive Time from Fire Station</u>	
0-5 mins:	10.82%
5-10 mins:	21.74%
10-15 mins:	11.59%
>15 mins:	55.84%

1144 Survey Summary Highlights	
<u>Positive Attributes (Low Scores)</u>	<u>Negative Attributes (High Scores)</u>
Good separation of structures	- One road in and out - Narrow road width poor fire access, dead-end spurs, lack turnaround - Unsurfaced road with greater than 5% grade - Street signs are present, some are non-reflective - Adjacent fuels: Moderate with high flammability - Defensible space: >30 feet and <70 feet around structure - Defensible space: >30 feet and <70 feet around structure - Topography within 300 feet of structure: 41% - Topographic features: High concern - History of high fire occurrence: Moderate - Severe fire weather potential: Moderate - Building set back less than 30 feet from slope - Response station >5 miles from structure - Internal sprinklers: For new build properties only - Utilities are both aboveground

Fires Within Polygon Based on Recent Fire History

- Austrian Gulch Fire, 1961
 - Extends into Almaden Valley, Lexington Hills, and south beyond the planning area
- Uvas Fire, 1988
- Dahlberg Fire, 1989
- Dunne Fire, 1985
- Hayes Fire, 1985
- Henry W. Coe State Park Fire, 1989
- Redwood Retreat Fire, 1997
- Croy Fire, 2002
- White Hurst Fire, 2008
 - Extends into West Gilroy
- Hummingbird Fire, 2008
- Summit Fire, 2008
 - Extends south outside of the planning area
- Loma Fire, 2016
 - Extends into Lexington Hills and Almaden Valley

WEST GILROY WILDLAND URBAN INTERFACE COMMUNITIES WEST GILROY POLYGON SUMMARY STATISTICS

Community Polygon Background

Community Polygon Name: West Gilroy

Total 2016 Score: 88

Rating: High

Building Density (Building Units per square mile): 81.95

Percentage of Wildfire Hazard: (lowest relative hazard (1) to highest relative hazard (6)) (based on 2023 desktop wildfire hazard assessment data):

1: 1.38%; 2: 2.92%; 3: 13.94%; 4: 24.26%; 5: 25.90%; 6: 31.60%

Dominant Fuel Type

Grass

Grass/Shrub

Shrub

Timber Understory

Timber Litter

GR2

Percent of Community by Modeled/Calculated Wildfire Risk Inputs

Drive Time from Fire Station

0-5 mins: 5.80%

5-10 mins: 9.66%

10-15 mins: 1.94%

>15 mins: 82.60%

1144 Survey Summary Highlights

Positive Attributes (Low Scores)

- Good separation of adjacent structures

Negative Attributes (High Scores)

- One road in and out
- Narrow road width
- Poor fire access, dead-end spurs, lack turnaround
- Street signs are present, some are non-reflective
- Adjacent fuels: Moderate with high flammability
- Defensible space: >30 feet and <70 feet around structure
- High concern topography surrounding structures
- Moderate history of severe weather and fire
- Non-combustible siding, combustible deck
- Water unavailable
- Response: Station >5 miles from structure
- Internal sprinklers: Only for new build properties
- Utilities both aboveground

Fires Within Polygon Based on Recent Fire History

- Rocha VMP Escape #2 Fire, 1984
 - Extends south outside of the planning area
- White Hurst Fire, 2008
 - Extends into Uvas Casa Loma
- Castro Valley Fire, 2017
- Bally Fire, 2017

APPENDIX D:

Tukman Geospatial Santa Clara, Santa Cruz, and
San Mateo County Wildfire Risk to Structures and
Classified Wildfire Hazard Maps for Fire Prevention Planning

This page intentionally left blank.

Santa Clara, Santa Cruz, and San Mateo County Wildfire Risk to Structures and Classified Wildfire Hazard Maps for Fire Prevention Planning

Final Report

Prepared by Tukman Geospatial, Digital Mapping Solutions, Wildland Res Mgt & the Santa Cruz Mountains Stewardship Network

Suggested citation: 2020 Santa Clara, Santa Cruz, San Mateo County Wildfire Risk to Structures and Classified Wildfire Hazard Maps for Fire Prevention Planning, Santa Cruz Mountains Stewardship Network, et al.

November 7, 2022

Contents

1. Introduction	6
2. Definitions – Hazard versus Risk.....	6
3. Wildfire Risk and Hazard Data – Intended Uses.....	9
4. Data Limitations.....	10
4.1. Time/date limitations of foundational data.....	10
4.2. Example misapplications.....	10
4.3. Value of field verification/validation.....	10
4.4. Limits of fire behavior modeling	11
4.5. Building footprint errors of omission and commission.....	12
4.6. Houses versus warehouses and the inability to assess structure type.....	12
4.7. Areas that burned in the 2020 CZU and SCU lightning complex fires	12
4.8. Accuracy Assessment	13
5. Mapping Methods	14
5.1. Methods development and community engagement	14
5.2. Overview	16
5.3. Hazard mapping methods	16
5.4. Hazard mapping geospatial dataset details	22
5.4.1. Flame length	22
5.4.2. Flame length – processing steps.....	22
5.4.3. Extreme fire weather potential	26
5.4.4. Extreme fire weather potential – processing steps.....	26
5.4.5. Ember load index	28
5.4.6. Ember load index – processing steps.....	28
5.4.7. Suppression difficulty index.....	30
5.4.8. Suppression difficulty index – processing steps	30
5.4.9. Dense urban without wildland vegetation	32
5.4.10. Dense urban without wildland vegetation – processing steps.....	32
5.4.11. Human development proximity	35

5.4.12.	Human development proximity – processing steps	35
5.4.13.	Transmission line proximity	37
5.4.14.	Transmission line proximity – processing steps.....	37
5.4.15.	Distribution line proximity	39
5.4.16.	Distribution line proximity – processing steps.....	39
5.4.17.	Historic ignitions.....	41
5.4.18.	Historic ignitions – processing steps	41
5.5.	Combining wildfire hazard with structure density to create the Wildfire Risk to Structures map	43
5.5.1.	Structure data	43
5.5.2.	Combining structures and hazard into hexagons	43
5.6.	Spatial data attributes – risk and hazard datasets.....	48
6.	Results and Key Findings	51
7.	Conclusions and Next Steps.....	51
8.	Comparison to Other Assessments	52
9.	Case Study: City of Santa Cruz Watershed Lands Example Risk Assessment.....	59
10.	Acknowledgements	62
11.	References	63
12.	Disclaimer	65

LIST OF TABLES

Table 1.	Stakeholder workshops to support three-county risk mapping.....	15
Table 2.	Classification ranges for the final classified hazard raster (hazard version 10)	20
Table 4.	Classes for flame length	23
Table 5.	Links to datasheets for impervious surface maps of the three-county area	35
Table 6.	Classification of raw distance to impervious features to classified human development proximity	35
Table 7.	Classification of raw distance to transmission lines to classified transmission line proximity	37

Table 8.	Classification of raw distance to impervious features to classified distribution line proximity	39
Table 9.	Structure density breaks assigned to each hexagon to characterize structure density within the hexagon and structure density in the hexagon's 1-mile buffer	45
Table 10.	Wildfire Risk to Structures attributes.....	49
Table 11.	Classified Wildfire Hazard raster attributes	50
Table 12.	Hazard within 500 feet of water pipelines	61
Table 13.	Hazard within source watersheds	61
Table 14.	Mean Classified Wildfire Hazard for 1,000-foot buffers of facility centroids.....	61

LIST OF FIGURES

Figure 1.	Santa Cruz – Santa Clara – San Mateo Wildfire Risk to Structures	8
Figure 2.	2020 CZU and SCU lightning complex fires	14
Figure 3.	Three county wildfire classified wildfire hazard and Wildfire Risk to Structures logic model	17
Figure 4.	Theoretical maximum pixel value for the wildfire hazard index.....	18
Figure 5.	Geographic areas (roughly following pyromes and ecoregion boundaries) used for assigning relative hazard class.	19
Figure 6.	Classified Wildfire Hazard for the three-county area (version 11 Hazard)	21
Figure 8.	Parameters for FLAMMAP flame length predictions	24
Figure 9.	Modeled flame length for the three-county area	25
Figure 10.	Workflow for creating extreme fire weather potential raster	26
Figure 11.	Classified extreme fire weather potential.....	27
Figure 12.	Ember load index for the-three county area.....	29
Figure 13.	Suppression Difficulty for the-three county area.....	31
Figure 14.	Dense urban without wildland vegetation for the three-county area	33

Figure 15.	Workflow for creating dense urban without wildland vegetation for the three-county area	34
Figure 16.	Human development proximity for the three-county area	36
Figure 17.	Transmission line proximity for the three-county area	38
Figure 18.	Distribution line proximity for the three-county area	40
Figure 19.	Classified historic ignitions > 5 acres density map for the three-county area	42
Figure 20.	Conceptual process of combining wildfire hazard with structure density for the three-county area to create the Wildfire Risk to Structures map.....	44
Figure 21.	Example hexagon, the 1-mile hexagon buffer, and attributes of the wildfire risk to structure map	47
Figure 22.	CWH (left) v. SC CWPP (right) in the Lexington Hills Community south of Los Gatos along Highway 17. Green represents low hazard/risk and red represents the highest hazard/risk.	53
Figure 23.	CWH (left) v. SC CWPP (right) in the area east of Gilroy . Green represents low hazard/risk and red represents the highest hazard/risk.....	54
Figure 24.	CWH (left) v. SC CWPP (right) in the area in the Saratoga Hills . Green represents low hazard/risk and red represents the highest hazard/risk.....	54
Figure 25.	CWH (left) v. SC CWPP (right) in the area in the Monte Sereno and Los Gatos area. Green represents low hazard/risk and red represents the highest hazard/risk.....	55
Figure 26.	CWH (left) v. SC CWPP (right) in the area in the Milpitas and Arroyo De Los Coches area. Green represents low hazard/risk and red represents the highest hazard/risk.....	56
Figure 27.	CWH (left) v. SC CWPP (right) in the area in the Aldercroft Creek area. Green represents low hazard/risk and red represents the highest hazard/risk.....	57
Figure 28.	CWH (left) v. SC CWPP (right) in the area in the Anderson Lake area. Green represents low hazard/risk and red represents the highest hazard/risk.....	58
Figure 29.	City of Santa Cruz water supply infrastructure in four panes. See text for more details the contents of the panes and refer to the legend at bottom of the map.	60

1. Introduction

Santa Cruz, Santa Clara and San Mateo Counties are home to a wide variety of land cover, ranging from moist coastal headlands to very dense urban areas, to dry, interior forest and shrublands, to intensive agriculture, to the redwood forest of the Santa Cruz Mountains. The pattern of human development in these counties has been both concentrated in urban areas and dispersed across the landscape, with rural communities and homes surrounded by wildlands. This pattern of development results in the three-county area facing significant challenges to wildfire response and fire prevention planning. The potential for wildfire requires land managers, public officials, and Fire Safe Councils to seek decision-support tools for managing landscapes, prioritizing fuel treatments, and planning evacuation routes. Because it is neither economically nor ecologically viable to treat hazardous fuels across the entire landscape, the purpose of this project was to reduce negative impacts from wildfires by providing a suite of fine-scale wildfire hazard and risk spatial data layers to support efficient and effective wildfire risk planning throughout each county.

The primary deliverable and subject of this document is the Wildfire Risk to Structures map for the three-county area (see Figure 1, or [here](#) for larger format PDF maps). The Wildfire Risk to Structures map provides a spatially explicit ranking for 10-acre hexagons, assigning each hexagon with a ranking for wildfire hazard and a ranking for housing density. From a risk to structures perspective hexagons with high housing density and high wildfire hazard are of greatest concern. The map displayed in Figure 1 shows only hexagons that have greater than or equal to ‘Moderate’ hazard and at least one structure. These areas represent approximately 17% of the three-county area. The rationale for including moderate hazard and above is to focus on structures with the most risk and is explained further in section 6. Note that the GIS deliverables for the Wildfire Risk to Structures can be symbolized to show all levels of hazard (including low hazard), even though Figure 1 only shows moderate hazard and above.

In addition to the Wildfire Risk to Structures polygon map, a second project deliverable is the 6-class, 20-meter Classified Wildfire Hazard raster. Methods for development of both the Wildfire Risk to Structures polygons map and the Classified Wildfire Hazard raster are the main subject of this report.

For links to download the Classified Wildfire Hazard and Wildfire Risk to Structures data, open this [product datasheet](#) or go to [pacificvegmap.org](#).

2. Definitions – Hazard versus Risk

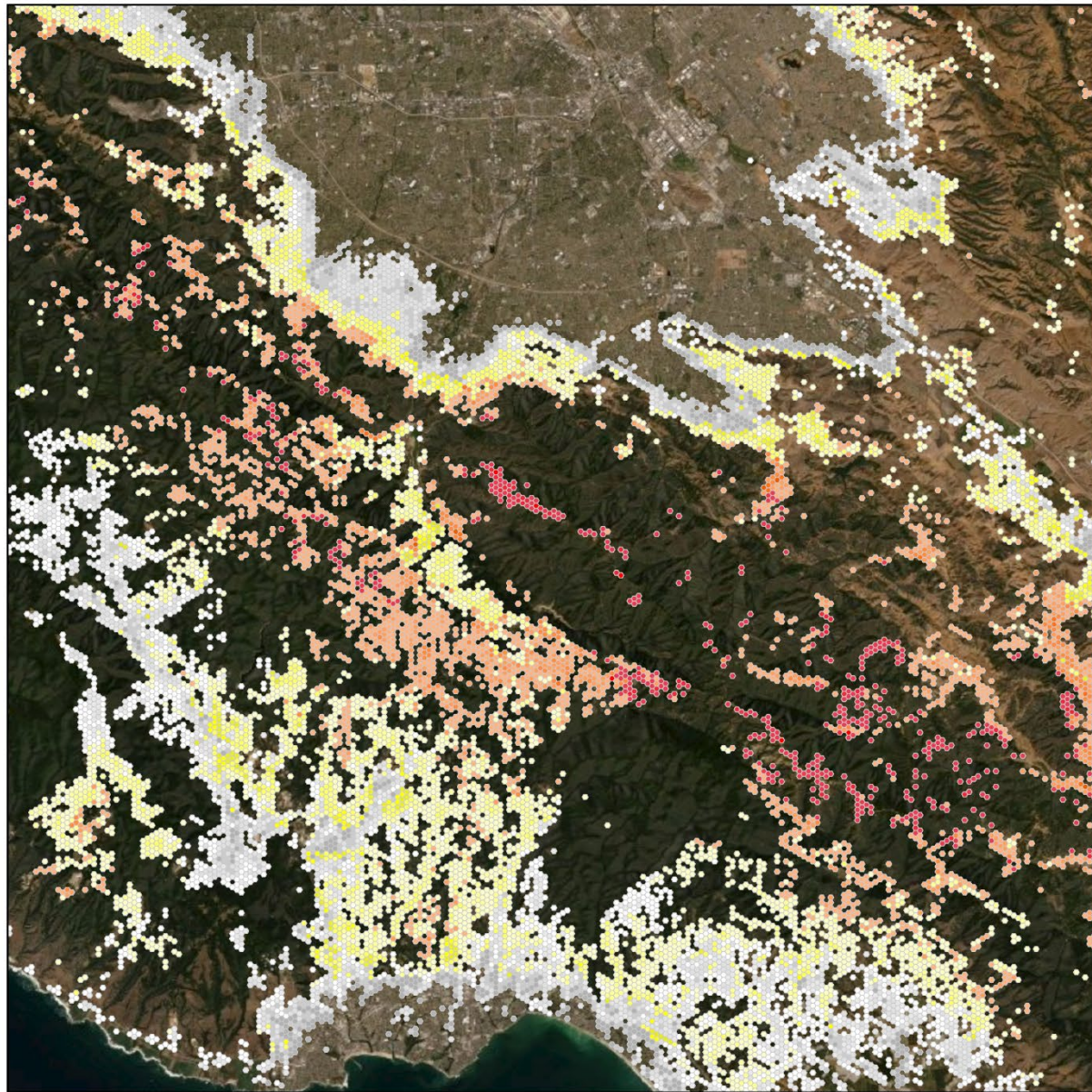
The term “hazard” in the context of this work is the potential for hazardous wildfire. Wildfire hazard can be described qualitatively as the fire environment – fuel, weather, topography, and ignitions – and quantitatively by two characteristics (Scott et al, 2013):

1. the probability of a fire occurring at a specific point during a specified time period
2. the expected distribution of intensity

Hazard combines fuel characteristics such as the volume, arrangement, moisture, and sizes of the fuels, all of which contribute to how the fire will burn. Information about the fuels is combined with physical landscape characteristics such as weather, topography, and the distribution of ignitions across the landscape. The logic model for wildfire hazard as implemented for this project is shown in Figure 3.

Wildfire hazard can be very high, but if no resources or assets are exposed to the hazard, there is no risk. Wildfire risk is the potential for realization of adverse consequences to valued resources or assets. Wildfire risk considers not only the potential for hazardous wildfire, but the values exposed to the hazard. Some risk assessments consider all relevant all types of values, including socio-economic, along with ecological elements. For the purposes of this project, the “risk” aspect of the model applied to one value: structures. As such, the risk assessment portion of this work is only relevant for wildfire risk to structures, not wildfire risk to other resources and assets. It is important to point out that the structure data used for this work is the best available, but it does have errors and limitations. More details about the structure data are provided in sections 4.5-4.7.

Figure 1. Santa Cruz – Santa Clara – San Mateo Wildfire Risk to Structures



Version 11 Risk to Structures

White	Moderate Hazard, .1-.4 Structure per Acre
Light Gray	Moderate Hazard, .5-.9 Structures per Acre
Medium Gray	Moderate Hazard, 1-1.9 Structures per Acre
Dark Gray	Moderate Hazard, 2-2.9 Structures per Acre
Black	Moderate Hazard, >=3 Structures per Acre
Light Yellow	High Hazard, .1-.4 Structure per Acre
Yellow	High Hazard, .5-.9 Structures per Acre
Orange	High Hazard, 1-1.9 Structures per Acre
Dark Orange	High Hazard, 2-2.9 Structures per Acre
Red	High Hazard, >=3 Structures per Acre
Light Orange	Very High Hazard, .1-.4 Structure per Acre
Orange	Very High Hazard, .5-.9 Structures per Acre
Dark Orange	Very High Hazard, 1-1.9 Structures per Acre
Red	Very High Hazard, 2-2.9 Structures per Acre
Dark Red	Very High Hazard, >=3 Structures per Acre
Light Red	Highest Hazard, .1-.4 Structure per Acre
Red	Highest Hazard, .5-.9 Structures per Acre
Dark Red	Highest Hazard, 1-1.9 Structures per Acre
Black	Highest Hazard, 2-2.9 Structures per Acre
Black	Highest Hazard, >=3 Structures per Acre

This report is organized into the following sections:

- **Section 3. Wildfire Risk and Hazard Data Intended Uses**
- **Section 4. Data Limitations**
- **Section 5. Mapping Methods**
- **Section 6. Results and Key Findings**
- **Section 7. Conclusions and Next Steps**
- **Section 8. Comparison to Other Assessments**
- **Section 9. Case Study – Santa Cruz Water Risk Assessment**
- **Section 10. Acknowledgements**
- **Section 11. References**
- **Section 12. Disclaimer**

3. Wildfire Risk and Hazard Data – Intended Uses

The Wildfire Risk to Structures and Classified Wildfire Hazard data products are designed for land managers and fire responders who are interested in relative rankings of wildfire risk and wildfire hazard. The risk and hazard map products are *modeled* outputs based on the best available data. As such, they provide an interpretation of risk and hazard that is based on a set of input variables and decision rules (see Methods Section 5 below). Though we are using the best available input data there are many approaches to modeling wildfire risk and hazard, all of which are both complex and imperfect, and these data should be used with this in mind.

These data are meant to be used as reference datasets for fire prevention planning purposes.

Appropriate uses for Wildfire Risk to Structures dataset is to help to identify areas that have structures at risk from wildfire. This information can be used for prioritizing fuel reduction projects, for planning suppression activities, and for targeting areas for activities to increase ignition resistance of structures. While outside the scope of work for this project, the Classified Wildfire Hazard raster can also be used to assess the risk to other values (such as evacuation routes, sensitive natural or cultural resources, and water storage/delivery infrastructure). See Section 9 for an example of such an application.

These maps and GIS products are screening level products created from remotely sensed data and modeling. On the ground knowledge and local expertise (where available) should take precedence over these data products for the detailed work of site-specific planning and implementation of fuel reduction projects in the three-county area.

4. Data Limitations

4.1. Time/date limitations of foundational data

The Wildfire Risk to Structures and Classified Wildfire Hazard data products represent the state of the landscape when the foundational input datasets were created (see section 5.4 for a discussion of these datasets). These input datasets generally represent the state of the landscape in mid-2020. With this in mind, it is important to note several temporal constraints and limitations of the data. These are:

- When using the Wildfire Risk to Structures map in the future, it is important to note that changes to the landscape **post summer-2020** will not be reflected in the risk maps. Hence, subsequent changes to wildfire risk resulting from wildfire, forest thinning, prescribed burning, construction, property improvements, land cover change, or other events will not be reflected in this data product.
- Building footprints and housing density represent the state of the landscape **just before** the CZU and SCU Lightning Complex Fires burned in 2020. As such, structures within these footprints that exist in the datasets used for the risk map may no longer exist.

4.2. Example misapplications

The three-county Wildfire Risk to Structures map and the Classified Wildfire Hazard data products are models meant to approximate real-world conditions. Users should keep in mind the adage *‘All models are wrong, but some models are useful.’* In the relative risk and hazard maps presented here, there are almost surely structures that are mapped as very high risk and high hazard that will not burn during the next 100 years. Likewise, there are structures mapped as low risk that will burn in the next 10 years. With that in mind, an inappropriate use of the risk maps would be to try and identify with 100% certainty structures or areas that will or will not burn.

4.3. Value of field verification/validation

A number of input datasets were used to create the Wildfire Risk to Structures and Classified Wildfire Hazard data products (these are discussed in section 5.4). These input datasets are the best available datasets for the things that they represent. Despite this, the input datasets are spatial approximations of the things that they represent and have errors, inaccuracies, and varying levels of resolution and precision. In addition, there are variables and datasets that could be useful but were excluded from the logic model and from the hazard mapping because spatial data for them did not exist. For example, at the time of this work no spatial dataset representing home ignition resistance existed. Consequently, this variable, which is an important variable for Wildfire Risk to Structures mapping, was not included in the three-county Wildfire Risk to Structures map.

Because the input datasets used to create the Wildfire Risk to Structures and Classified Wildfire Hazard data products aren't perfectly accurate, always highly resolute, or totally comprehensive, there will always be a need to assess risk on the ground at a much finer scale than is reasonable or possible in a three-county (or even single-county) mapping exercise.

4.4. Limits of fire behavior modeling

One of the most important inputs to the three-county Wildfire Risk to Structures map was modeled flame length. Modeled (predicted) flame length is proxy for fire severity – the longer/taller the modeled flame length the more severe the wildfire in a given area. Flame length was predicted using fire behavior modeling software called FLAMMAP. For FLAMMAP to provide spatial predictions of flame length (and other indices such as rate of spread, heat per unit area, fireline intensity, etc.), it requires a landscape file which is composed of a fuelscape (a map of surface fuels) along with elevation, slope, aspect, canopy height, canopy density, canopy base height, and canopy bulk density. Other required inputs include information about dead and live fuel moisture, and an initial wind speed and direction for the simulation. FLAMMAP calculates potential fire behavior based on the inputs listed above. The FLAMMAP software uses the same surface fire spread and crown fire initiation/spread equations (or models) as all the standard fire behavior software packages available today ([Rothermel 1972](#), [Van Wagner 1977](#), Albini 1979, and others). FLAMMAP applies these fire behavior prediction models to each pixel independently, regardless of potential activity in adjacent pixels. This allows for a comparison across a landscape in which the environmental conditions are constant, and the only difference is the fuel and surface characteristics.

Though this type of analysis can provide valuable information for planning, FLAMMAP has limitations. Primary is the limiting factor of fuel models and the equations themselves. Not all fuel on the landscape is represented in the surface fuel models nor is all that fuel available to burn in any given scenario. For example, if the *predicted* flame length for any given pixel is below the canopy base height assigned to that pixel, then the crown fire initiation model is not applied. Likewise, if the heat per unit area for a given pixel does not reach the crown fire spread threshold, the crown fire spread model will not be initiated. While in the model, the conditions may be true that a fire doesn't get "hot" enough to predict crown fire conditions, we know from experience that in reality, these conditions have been met and may do so again in the future.

Second among limitations is the use of fuel models, which themselves are stylized representation of biomass. There is a finite set of models to choose from, and there are conditions not represented by the model.

4.5. Building footprint errors of omission and commission

Of all the inputs to the three-county Wildfire Risk to Structures map, the building footprints input is perhaps the most important since it identifies the location of structures and structures are overlaid with the Classified Wildfire Hazard data to assess their risk. Though the building footprints are the best available data representing structure locations and they are derived from high density lidar data, they still have limitations. These limitations are as follows:

- **Structures occluded by overhanging vegetation are sometime omitted.** Buildings with trees, branches, or other vegetation that partially or totally obscure their view from above are sometime missed from the algorithms that were used to extract building features from the lidar point cloud. These homes exist on the ground, but do not exist in the risk mapping. Errors of building omissions are less common in Santa Clara County, where the County paid extra for human interpreters to manually improve the County's lidar derived building footprints layer.
- **Features that aren't habitable can be mapped as structures.** Features such as water towers, silos, tree houses, and other objects that aren't habitable are mapped as structures. Users of the map should bear in mind that these types of features aren't discriminated from their habitable counterparts in the risk assessment, which treats habitable and uninhabitable structures equally. It is important to note that non-habitable structures are not houses, but many are both ignition risks and valued assets.

4.6. Houses versus warehouses and the inability to assess structure type

In our risk maps, structures are defined as any *single* structure. As a result, an outbuilding counts the same as a small house, which counts the same as a large house, or a ½ acre commercial building. This was done by design, so that bias in the risk assessment and risk mapping wasn't given to larger structures versus smaller structures. Instead, risk is assessed based on density of structures irrespective of their size.

4.7. Areas that burned in the 2020 CZU and SCU lightning complex fires

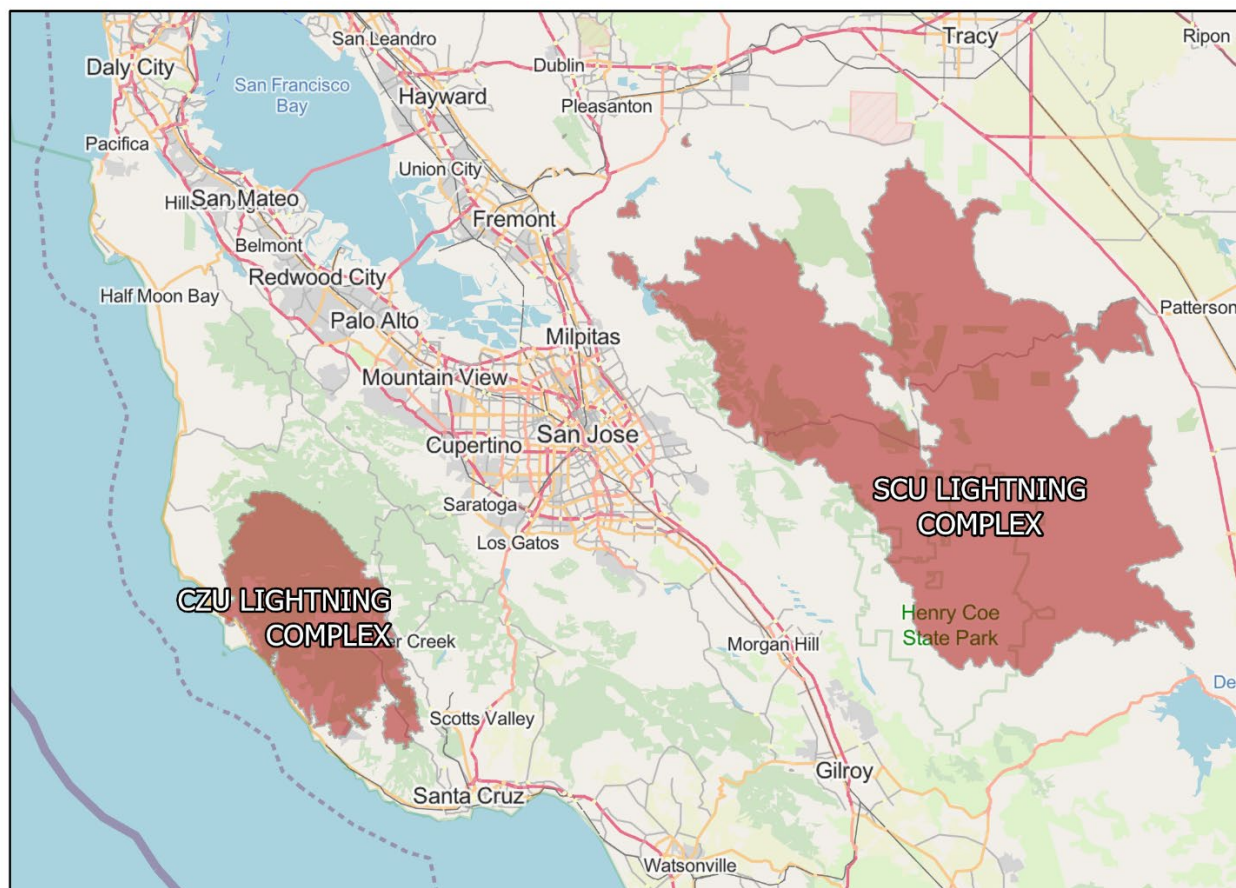
In areas that burned in the 2020 CZU and SCU fires (these areas are shown in Figure 2), fire hazard and risk was especially difficult to map because the imagery and lidar data critical to fuels mapping predated these wildfires. The fuelscape, a critical input to the fire behavior model, was updated to reflect reduced fuels in the burned areas, but updates to the fuel model were based on expert analysis instead of measurable attributes. The quantitative forest structure components of the fuelscape (canopy density, canopy cover, canopy base height, and canopy bulk density) were not updated at all since lidar would need to have been collected post-fire to derive these forest structure metrics. Instead, the Scott and Burgan fuel model was

changed by incorporating estimated changes to canopy and resulting vegetation height, volume, and arrangement based on available burn severity data.

4.8. Accuracy Assessment

It is important to note that though we believe that the data presented here are the ‘best available’ countywide datasets of their type, these data and maps depict large areas and are produced using models and semi-automated methods. They are not based on detailed ground surveys. Also, accuracy assessments have not been completed to date for the Classified Wildfire Hazard, the Wildfire Risk to Structures, or their inputs (those created by this team, Pyrologix, or others). However, in June 2023, an accuracy assessment will be published for the enhanced lifeform map, which is a critical input to the 5-meter fuel model, the Classified Wildfire Hazard, and the Wildfire Risk to Structures.

Figure 2. 2020 CZU and SCU lightning complex fires



5. Mapping Methods

5.1. Methods development and community engagement

The three-county Wildfire Risk to Structures polygon map and the Classified Wildfire Hazard 20-meter raster were developed in collaborative partnership. Tukman Geospatial served as the technical lead and was responsible for implementing the model design, python coding, and geospatial data analysis. Tukman Geospatial partners Digital Mapping Solutions (Esther Mandeno) and Wildland Res Mgt (Carol Rice) provided guidance on the risk model design, its data inputs, and the weights used for the inputs. Drafts of the risk map were reviewed by all team members, who balanced internal team input with inputs from stakeholders. The final Wildfire Risk to Structures map is **version 11** and represents 11 rounds of iterative improvements to the logic model, model inputs, model weights, and the python code that produces the model. The Classified Wildfire Hazard raster is also **version 11**.

Stakeholder input and community engagement was critical to the production of the three-county risk map. Five workshops were held throughout the course of the project to solicit input

from land managers and the fire community. Table 1 below lists the workshops and provides links to the slide deck and video (if applicable) for each meeting. In addition to the workshops, the internal project team had numerous meetings with personnel from the CAL FIRE Santa Clara Unit (SCU) and San Mateo - Santa Cruz Unit (CZU), staff from CAL FIRE Fire and Resource Assessment Program (FRAP), land managers, and community-based wildfire groups in Santa Cruz and Santa Clara County to solicit focused input on specific geographies. Workshops and smaller meetings were catalysts for numerous improvements the wildfire risk map over the course of its ten version evolution.

Table 1. *Stakeholder workshops to support three-county risk mapping*

Workshop	Link to Slides	Link to Video (if available)
CZU Workshop #1 (3-4-21)	https://fuelsmapping.com/czu_workshop1_slides	https://fuelsmapping.com/czu_workshop1_video
CZU Workshop #2 (9-9-21)	https://fuelsmapping.com/czu_workshop2_slides	https://fuelsmapping.com/czu_workshop2_video
CZU Workshop #3 (1-18-22)	https://fuelsmapping.com/czu_workshop3_slides	https://fuelsmapping.com/czu_workshop3_video
CZU Workshop #4 (3-10-22)	https://fuelsmapping.com/czu_workshop4_slides	https://fuelsmapping.com/czu_workshop4_video
CZU Workshop #5	https://fuelsmapping.com/czu_workshop5_slides	https://fuelsmapping.com/czu_workshop5_video
SCU Workshop #1 (9-15-21)	https://fuelsmapping.com/scu_workshop1_slides	https://fuelsmapping.com/scu_workshop1_video
SCU Workshop #2 (2-25-22)	https://fuelsmapping.com/scu_workshop2_slides	https://fuelsmapping.com/scu_workshop2_video
SCU Workshop #3 (1-18-22)	https://fuelsmapping.com/scu_workshop3_slides	https://fuelsmapping.com/scu_workshop3_video
SCU Workshop #4 (3-8-22)	https://fuelsmapping.com/scu_workshop4_slides	https://fuelsmapping.com/scu_workshop4_video
SCU Workshop #5	https://fuelsmapping.com/scu_workshop5_slides	https://fuelsmapping.com/scu_workshop5_video

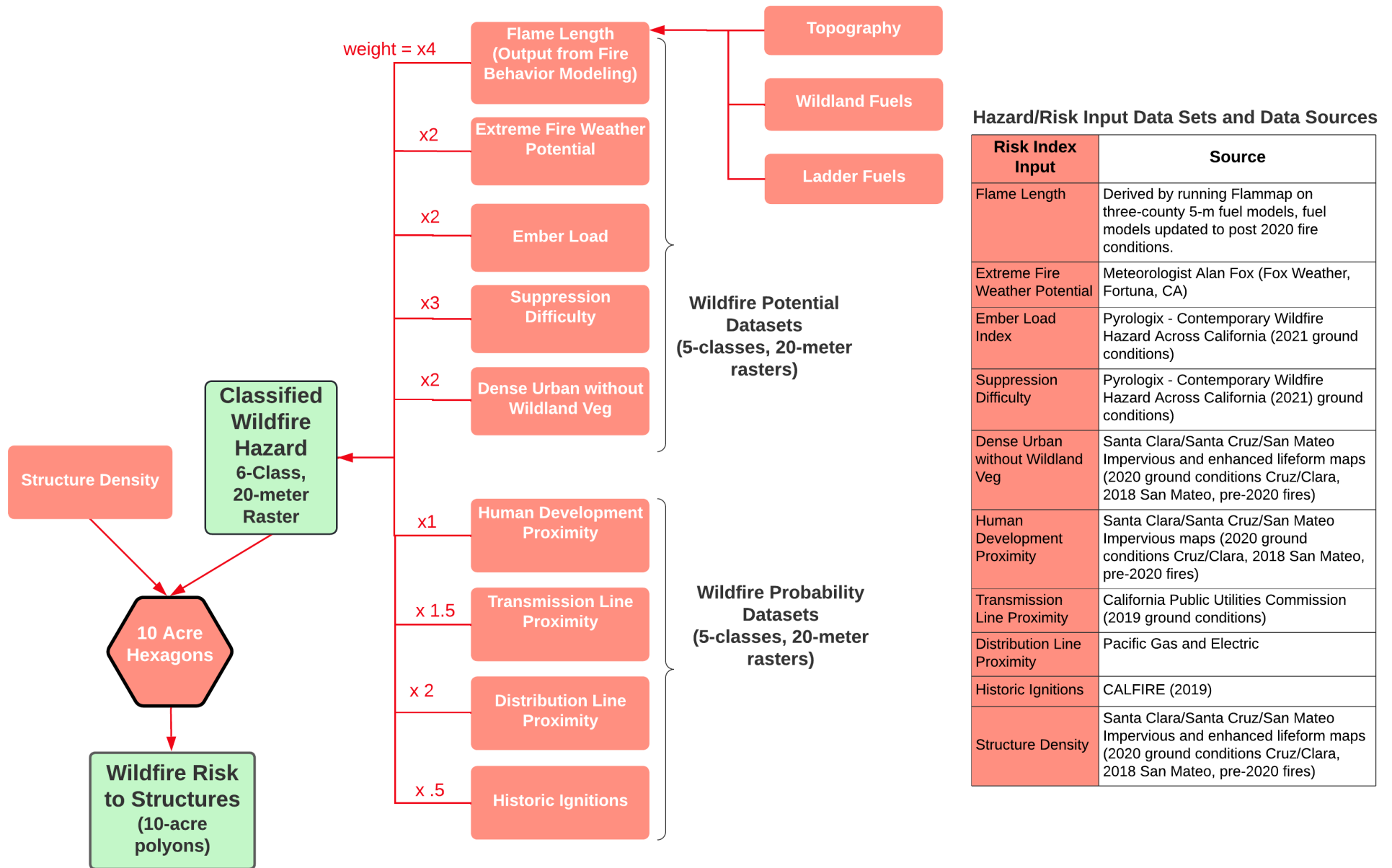
5.2. Overview

The logic model for the Santa Cruz – Santa Clara – San Mateo Wildfire Risk to Structures map and the classified wildfire hazard map is shown in Figure 3. The risk mapping process synthesizes wildfire hazard together with structure density to produce the final Wildfire Risk to Structures map. We will first discuss the methods for creating Classified Wildfire Hazard (section 5.3), then provide details on each of the 9 geospatial datasets that represent wildfire hazard (section 5.4), and finally illustrate how Classified Wildfire Hazard (a 20-meter raster product) is combined with structure density using 10-acre hexagons as mapping units to produce the final Wildfire Risk to Structures map. Note that the two final deliverables (Wildfire Risk to Structures and Classified Wildfire Hazard) are shown as green blobs in the logic model.

5.3. Hazard mapping methods

In the logic model, input geospatial datasets are shown with white type. In this section we will discuss the hazard portion of the logic model, which is represented by the input spatial datasets to the right of the blob labelled 'Classified Wildfire Hazard'. The logic model includes 5 input spatial datasets that characterize wildfire potential and 3 input spatial datasets that are related to wildfire probability. Collectively, these 9 input spatial datasets are synthesized into a **raw hazard score** in a 20-meter raster environment.

Figure 3. Three county wildfire classified wildfire hazard and Wildfire Risk to Structures logic model



Each of the 9 input spatial datasets related to hazard is scaled from 0-4 (for example, very short flame lengths would get a 0 for flame length and very tall flame lengths would get a 4).

Classified relative wildfire hazard was calculated by weighting the inputs and adding up the weighted inputs. Flame length was assigned a weight of 4, extreme fire weather potential and ember load index were assigned weights of 2, suppression difficulty was assigned a weight of 3, wildland vegetation was assigned a weight of 2, human development proximity was assigned a weight of 1, transmission proximity a weight of 1.5, distribution proximity a weight of 2, and historic ignitions 0.5. To synthesize these 9 hazard spatial datasets together, first the variable's class (0-4) for a given pixel is multiplied by that variable's weight to produce a raw score for each variable. The highest possible index value was 72. Figure 4 shows how a theoretical pixel value of 64 would be assigned if all inputs had a value of 'Very High (4)'.

Figure 4. Theoretical maximum pixel value for the wildfire hazard index

Flame Length	Extreme Fire Weather Potential	Ember Load	Suppression Difficulty	Dense Urban without Veg	Human Development Proximity	Transmission Proximity	Distribution Proximity	Historic Ignitions	Total Possible Hazard
$4 \times 4 = 16$	$2 \times 4 = 8$	$2 \times 4 = 8$	$3 \times 4 = 12$	$2 \times 4 = 8$	$1 \times 4 = 4$	$1.5 \times 4 = 6$	$2 \times 4 = 8$	$.5 \times 4 = 2$	$16+8+8+12+8+4+6+8+2 = 72$

After computing raw hazard, with possible pixel values from 0 to 64 for each pixel, pixels were 'binned' into 6 hazard classes, 1 through 6, with 1 representing the areas of lowest relative hazard and 6 representing the areas of highest relative hazard. This classification was done using the following steps:

1. Class 1 was automatically assigned to pixels that were mapped as water or salt marsh in the enhanced lifeform map or had a non-burnable (NB) fuel model in the 2020 Scott and Burgan Surface Fuel Model.
2. The classification was adjusted to account for distinct differences in fire weather, topography, vegetation, and land use observed by experts when comparing results for the Santa Cruz Mountains ecoregion (west of Hwy. 101) versus the Mt. Hamilton/Diablo Range ecoregion (east of Hwy. 101). Figure 5 shows these two areas. For each of these two areas, the mapping team used the slice command to slice the pixels into quintiles using the raw hazard value. 2 was assigned to the lowest quintile, 3 to the second, 4 to the third, 5 to the fourth, and 6 to the highest quintile. Classes 2-6 have a roughly equal number of pixels within each of the two areas shown in figure 5.

Table 2 shows the class breaks used for the reclassification of raw hazard to classified hazard. Note that areas mapped as 'Water' or 'Tidal Marsh' in the enhanced lifeform map, or areas that are 'Non Burnable' in the surface fuel model, were automatically assigned a hazard class of '1' (the lowest hazard class).

Figure 5. *Geographic areas (roughly following pyromes and ecoregion boundaries) used for assigning relative hazard class.*

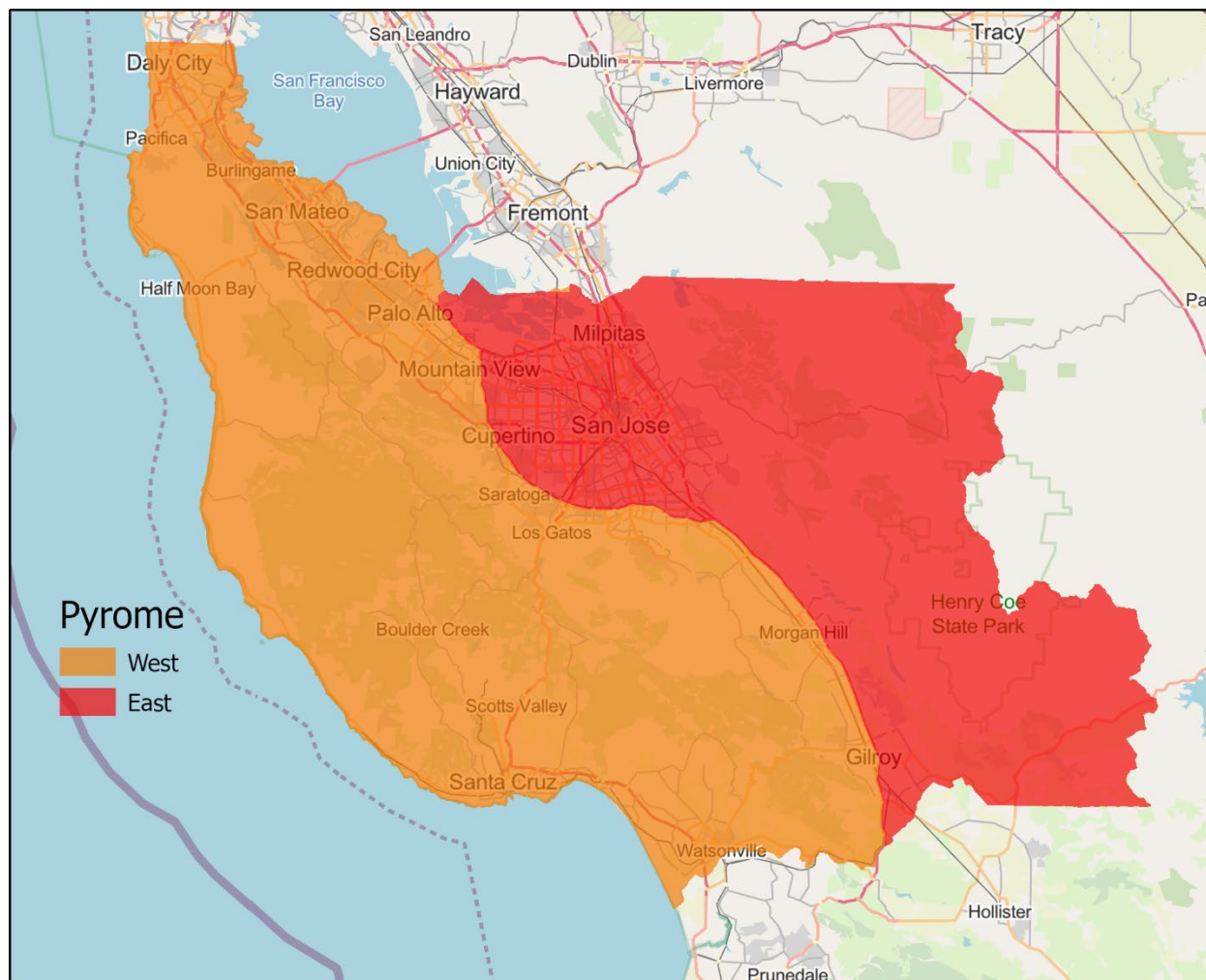
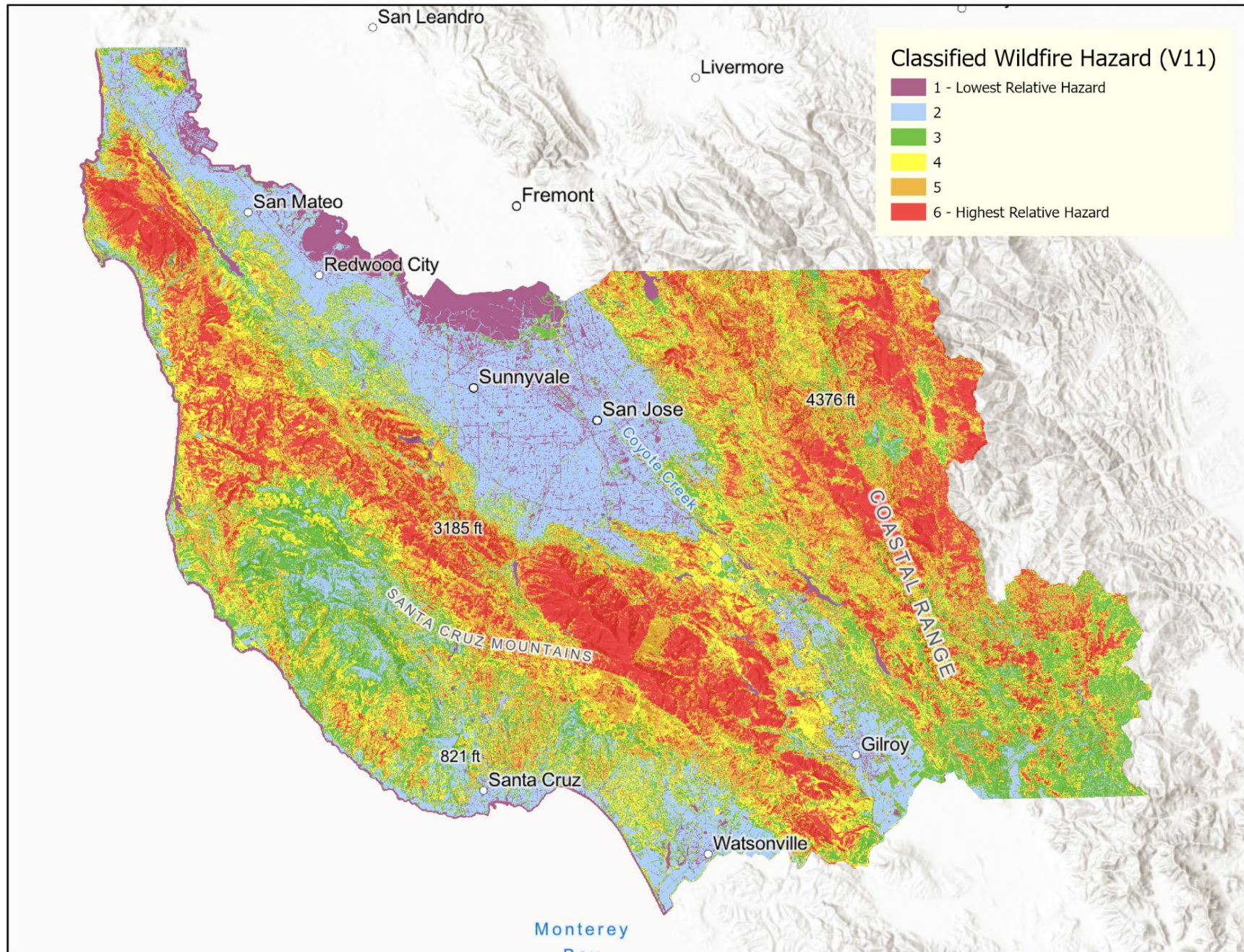


Table 2. *Classification ranges for the final classified hazard raster (hazard version 10)*

West of 101		East of 101	
Raw Range	Hazard Index Value	Raw Range	Hazard Index Value
Non-burnable, Water or Tidal Marsh	1	Non-burnable, Water or Tidal Marsh	1
0-22.5	2	0-26	2
23-30	3	26.5-33	3
30.5-36	4	33.5-37	4
36.5-43.5	5	37.5-43	5
44-72	6	43.5-72	6

The classified wildfire hazard dataset, a 20-meter resolution raster dataset with pixel values ranging from 1 (lowest relative wildfire hazard) to 6 (highest relative wildfire hazard). Is shown in Figure 6.

Figure 6. *Classified Wildfire Hazard for the three-county area (version 11 Hazard)*



5.4. Hazard mapping geospatial dataset details

5.4.1. Flame length

Flame length is an important variable for characterizing wildfire potential and has the highest weight (x4) of the 9 hazard input spatial datasets. FLAMMAP was used to model flame length using the 2020 5-meter resolution fuelscape produced by Tukman Geospatial. The fuelscape includes a Scott and Burgan Fuel Surface Fuel Model, as well as the other components of the fuelscape (derived from 2020 lidar for Santa Cruz and Santa Clara, and 2017 lidar for San Mateo): slope, aspect, elevation, canopy base height, canopy bulk density, canopy height, and canopy density. The San Mateo and Santa Cruz/Santa Clara County Fuel Models are 5-meter spatial resolution fuel models that adhere to Scott and Burgan's classification (Scott and Burgan, 2005). The fuel model provides a fine scale map of fuel conditions on the landscape and is a required input for fire behavior and fire spread models. The fuel model provides a higher spatial resolution than the existing, publicly available fuel models, which are based on the LANDFIRE data derived from 30-meter Landsat data. The fuel model was updated to post CZU and SCU fire conditions using Sentinel-derived burn severity data. For a more in-depth technical report on the methods used to create the fuel models, and to download the fuel models, visit these links:

Santa Cruz/Santa Clara County Fuel Model

Full Report: https://fuelsmapping.com/santa_cruz_clara_fuels_full_report

Datasheet: https://vegmap.press/scc_scz_5_meter_fuel_model_datasheet

San Mateo County Fuel Model

Full Report: https://fuelsmapping.com/san_mateo_fuels_full_report

Datasheet: https://fuelsmapping.com/san_mateo_fuels_datasheet

5.4.2. Flame length – processing steps

Modeled flame length was created as a 5-meter raster and resampled to 20 meters for the relative hazard mapping effort. The parameters used in FLAMMAP to predict flame length are shown in Figure 8. The output flame length raster from FLAMMAP was classified into 5 classes (0-4) using the hauling charts (Andrews and Rothermel, 1982). The classification is shown in Table 4. Modeled flame length for the three-county area is shown in Figure 9.

Table 4. *Classes for flame length*

Raw Modelled Flame Length	Classified Flame Length
0 Feet	0
>0 Feet and <=4 Feet	1
>4 Feet and <= 8 Feet	2
>8 Feet and <=11 Feet	3
>11 Feet	4

The parameters used for the FLAMMAP runs were chosen based on consultations with local CAL FIRE units and Tadashi Moody and Dave Sapsis at CAL FIRE's Fire and Resource Assessment Program (FRAP).

Figure 8. Parameters for FLAMMAP flame length predictions

Run : New Run

Inputs | Fire Behavior Options | Minimum Travel Time | Treatment Optimization Model

Run Name:

 Fuel Moisture File

☐ Use Custom Fuels (*.fmd)

 Fuel Model File

Winds

☐ Wind Direction Wind Speed:

☒ Wind Blowing Uphill Default Wind Azimuth (Degrees):

☐ Wind Blowing Downhill Wind Speed Units:

☐ Generate Gridded Wind

☐ Gridded Wind Files

 Direction File

 Speed File

Canopy Characteristics

Foliar Moisture Content (%):

Crown Fire Calculation Method:

Fuel Moisture Settings

☒ Use Fixed Fuel Moistures from Fuel Moisture File

☐ Use Weather Stream

 WXS File

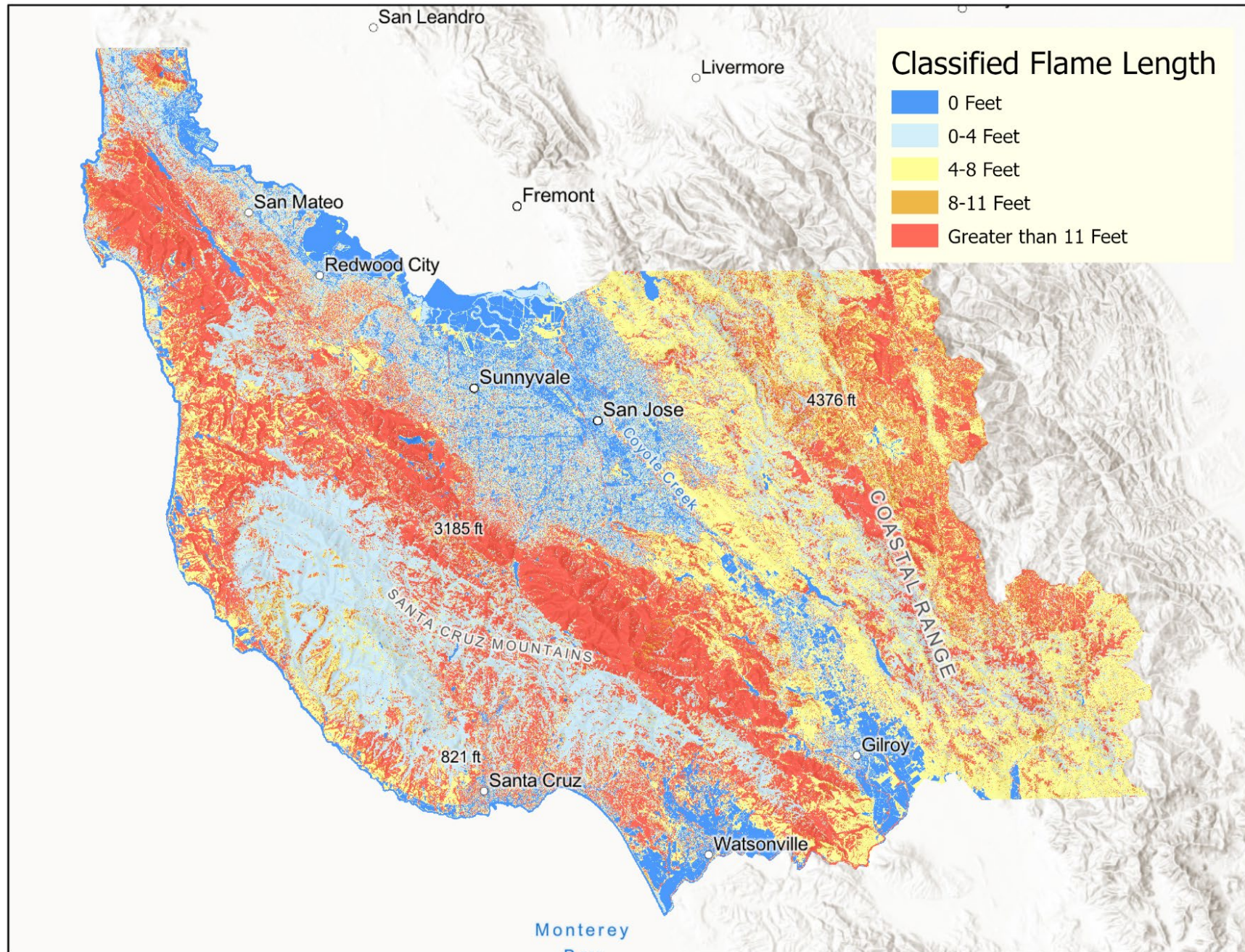
Fuel Moisture Conditioning Period

	Day	Time
Start	3/ 2	12:40 PM
End	3/ 2	12:40 PM

OK Cancel Apply Help

Inputs OK 12 outputs selected No existing outputs

Figure 9. *Modeled flame length for the three-county area*



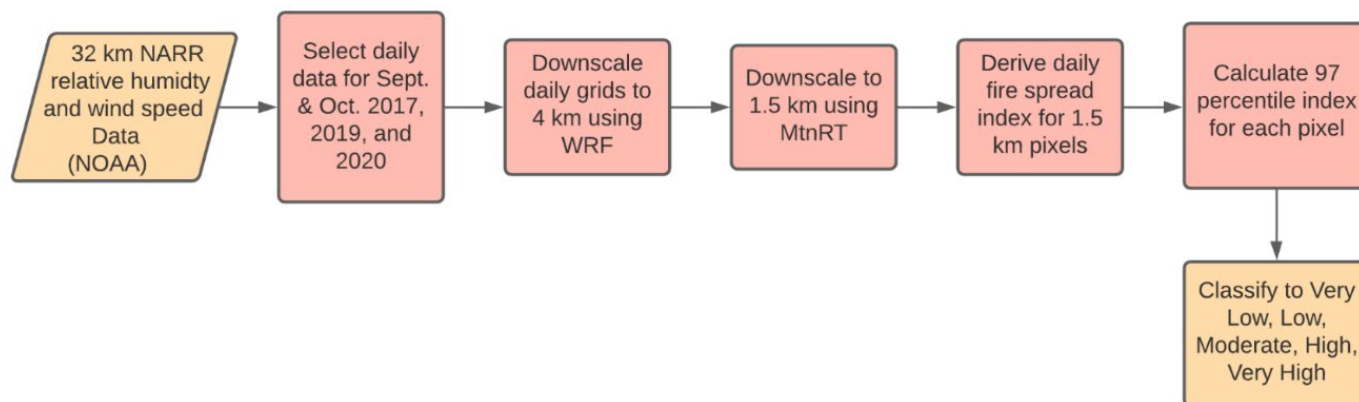
5.4.3. Extreme fire weather potential

Extreme fire weather potential was created by Alan Fox (Fox Weather LLC) and Tukman Geospatial. Extreme fire weather potential represents the relative potential across the county for very windy, very dry weather.

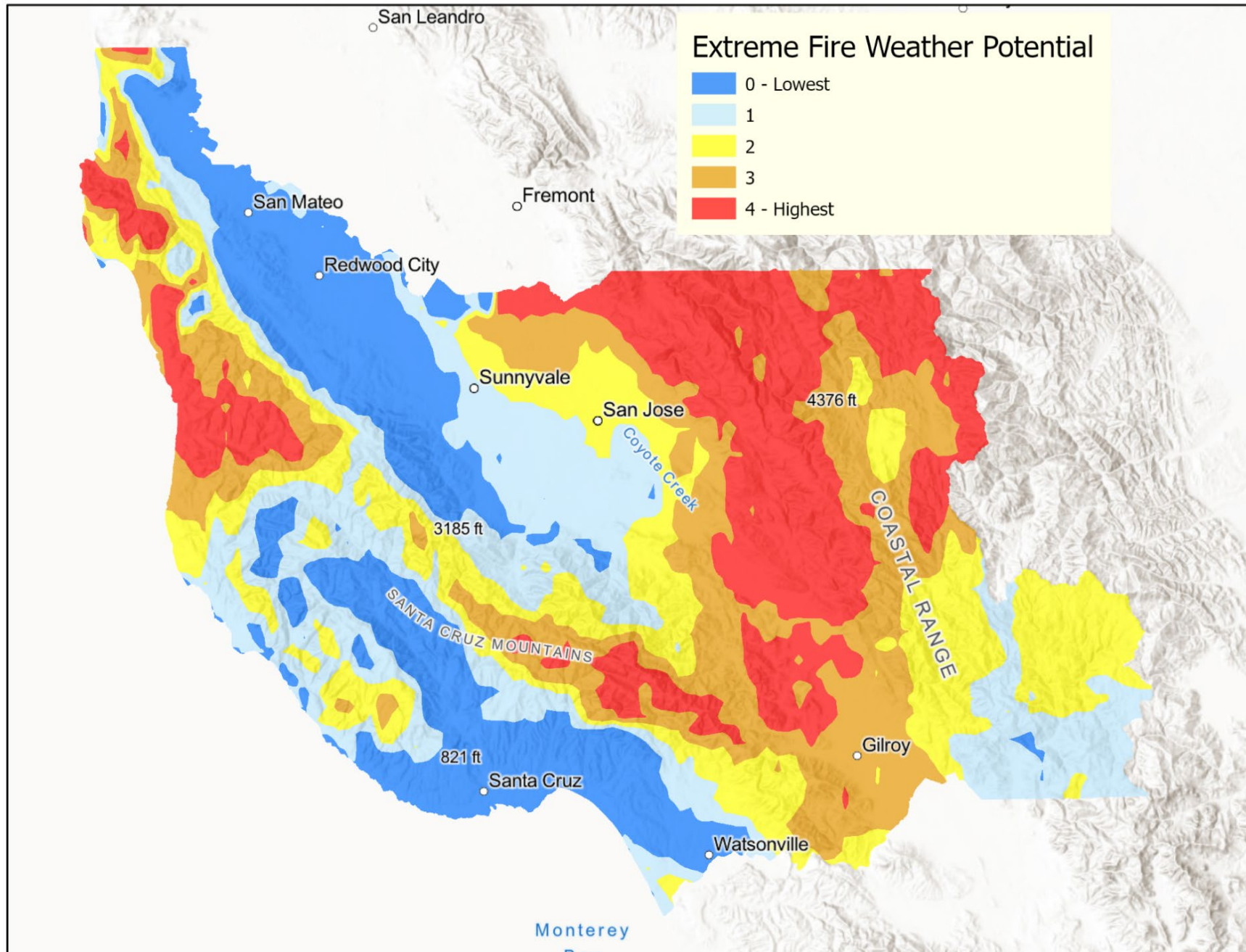
5.4.4. Extreme fire weather potential – processing steps

Figure 10 shows a conceptual diagram of the workflow to create the extreme fire weather potential dataset. The extreme fire weather potential dataset uses a fire spread index that was calculated from relative humidity and wind speed (adapted from Nelson, 1964). Maximum daily fire spread index values were calculated for each pixel in a 1.5-kilometer countywide raster for each day of September and October 2017, 2019, and 2020. For each pixel, the 97th percentile index value was found for these 180 days. The resulting 97th percentile value for all pixels was in the three-county area was then classified into quantiles; the lowest quantile was assigned class of Very Low (0), the second quantile a class of Low (1), the third a class of Moderate (2), the fourth a class of High (3), and the top quantile a class of Very High (4). Figure 10 shows classified extreme fire weather potential for the three-county area.

Figure 10. *Workflow for creating extreme fire weather potential raster*



The raw data for this analysis is from NOAA's North American Regional Reanalysis (NARR). Fox Weather processed the NARR data (32 km resolution) using the Weather Research and Forecasting Model (WRF) to downscale it to 4 km resolution. The 4 km data from WRF was then downscaled to 1.5 km using Fox Weather's proprietary MtnRT software.

Figure 11. *Classified extreme fire weather potential*

5.4.5. Ember load index

The ember load index was obtained from [Pyrologix's Contemporary Wildfire Hazard Across California](#) analysis and geospatial datasets, which were updated to reflect the post-2020 fire season fuelscape. The Pyrologix/USDA Forest Service ember load index raster can be found [here](#). The ember load index provides information about the relative amount of embers that would be deposited at any location in the three-county landscape in the event of a wildfire.

From Pyrologix's documentation:

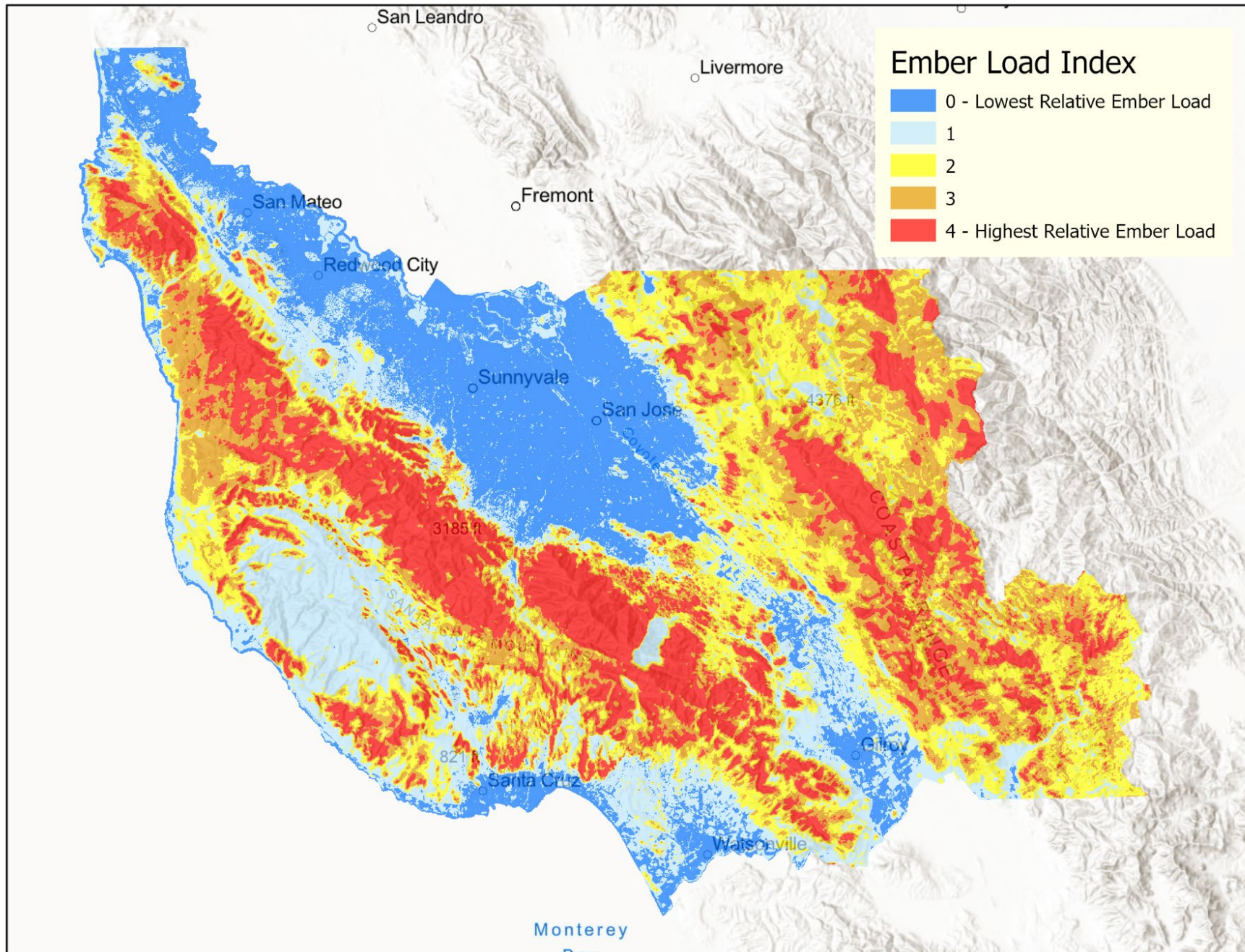
The ember load indices represent relative ember load at a pixel. Similar to ember production, ember load is also based on surface and canopy fuel characteristics, climate, and topography at the pixel. Ember load incorporates downwind ember travel.

5.4.6. Ember load index – processing steps

For our modeling, we chose to use conditional ember load (cELI), which does not account for burn probability. Ember load index was resampled from its native resolution of 30-meters to 20-meters for use in our model. It was then classified across the three-county area into quantiles; the lowest quantile was assigned class of Very Low (0), the second quantile a class of Low (1), the third a class of Moderate (2), the fourth a class of High (3), and the top quantile a class of Very High (4).

Classified ember load index for the three-county area is shown in Figure 12.

Figure 12. *Ember load index for the three county area*



5.4.7. Suppression difficulty index

Suppression Difficulty and Ember Load Index come from Pyrologix and the USDA Forest service's [Contemporary Wildfire Hazard Across California](#). The Pyrologix/USDA Forest Service suppression difficulty index raster can be found [here](#).

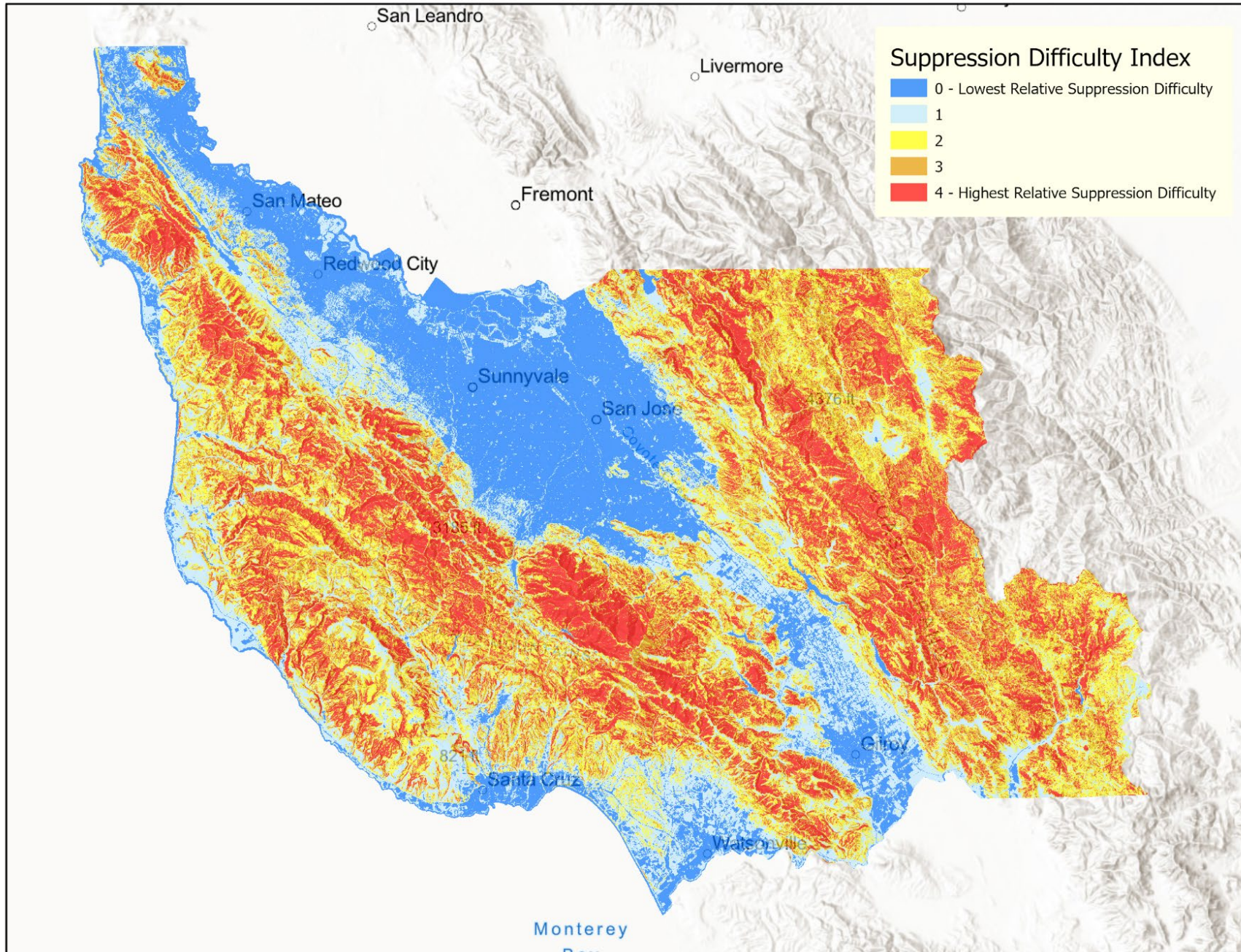
Suppression Difficulty factors in topography, fuels, expected fire behavior under severe fire weather conditions, firefighter line production rates in various fuel types, and accessibility (distance from roads/trails) to assess relative suppression effort (Rodriguez et al., Vogler et al.). The raw suppression difficulty index delivered from Pyrologix has a continuous value distribution from 1-10.

5.4.8. Suppression difficulty index – processing steps

Suppression difficulty index was resampled from its native resolution of 30-meters to 20-meters for use in our model. It was then classified across the three-county area into quantiles; the lowest quantile was assigned class of Very Low (0), the second quantile a class of Low (1), the third a class of Moderate (2), the fourth a class of High (3), and the top quantile a class of Very High (4).

Figure 13 shows the suppression difficulty index for the three-county area.

Figure 13. *Suppression Difficulty for the three county area*



5.4.9. Dense urban without wildland vegetation

The ‘Dense urban without wildland vegetation’ geospatial dataset for the three-county area depicts areas with high structure density that aren’t close to contiguous areas of vegetation with a value of Very Low (0). This reflects the situation in urban areas where wildfires are rare due to a lack of vegetative fuel. All other areas, which include areas of contiguous woody or non-woody vegetation, are assigned a Very High (4). In addition, dense areas of urban land cover near contiguous areas of vegetation are also assigned a value of 4.

Vegetation fire potential was the last input spatial dataset to be included in the model. It was developed based on suggested input from CAL FIRE analysts from the CZU unit, who observed that hazard predictions were unexpectedly high for some urban areas with dense housing. This input from CAL FIRE prompted the mapping team to develop a geospatial dataset that differentiates dense urban areas without nearby wildland vegetation from other areas.

5.4.10. Dense urban without wildland vegetation – processing steps

The output dataset representing dense urban areas without wildland vegetation v. other areas is shown in Figure 14. The workflow diagram for producing this geospatial dataset is shown in Figure 15. As shown in the workflow diagram, the dataset was created by combining two intermediate datasets in a 20-meter resolution raster environment: a three-county ‘urban mask’ raster and a ‘wildland vegetation’ raster. The urban mask depicts areas representing impervious land cover greater than 50% and was developed from the San Mateo (2018), Santa Cruz (2020, pre-CZU fire) and Santa Clara County (2020, pre-CZU/SCU fires) impervious surface maps. The wildland vegetation raster was created by selecting vegetated land covers from the San Mateo, Santa Cruz, and Santa Clara enhanced lifeform maps (same ground condition dates as shown above for the impervious surface maps). Wildland vegetation areas were defined as areas greater than 300 acres and include both woody and non-woody vegetation. The result of combining the urban mask and the wildland vegetation rasters is shown in Figure 14: dense urban areas that are not within 500 feet of wildland vegetation are shown in blue; other areas are shown in red.

Figure 14. *Dense urban without wildland vegetation for the three-county area*

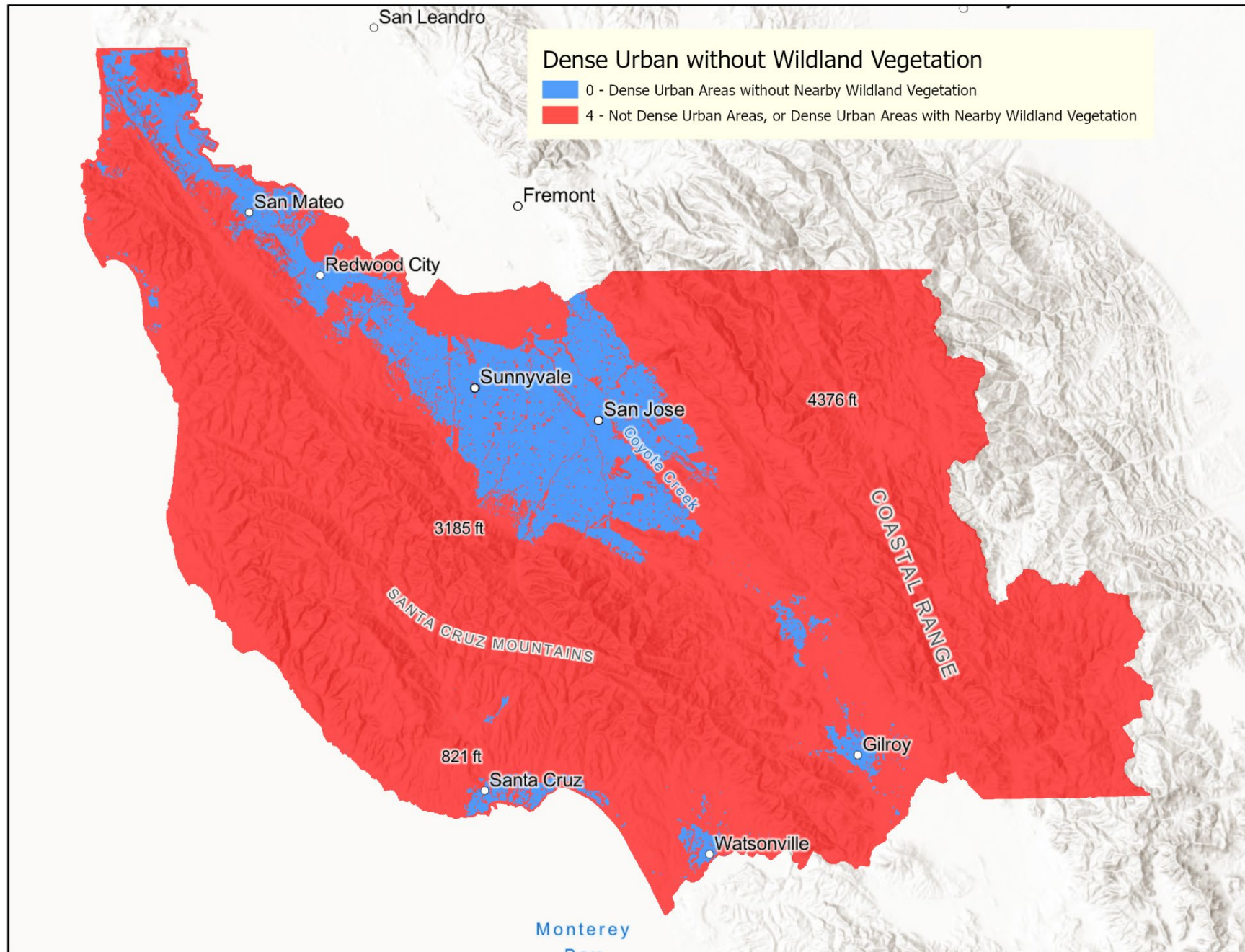
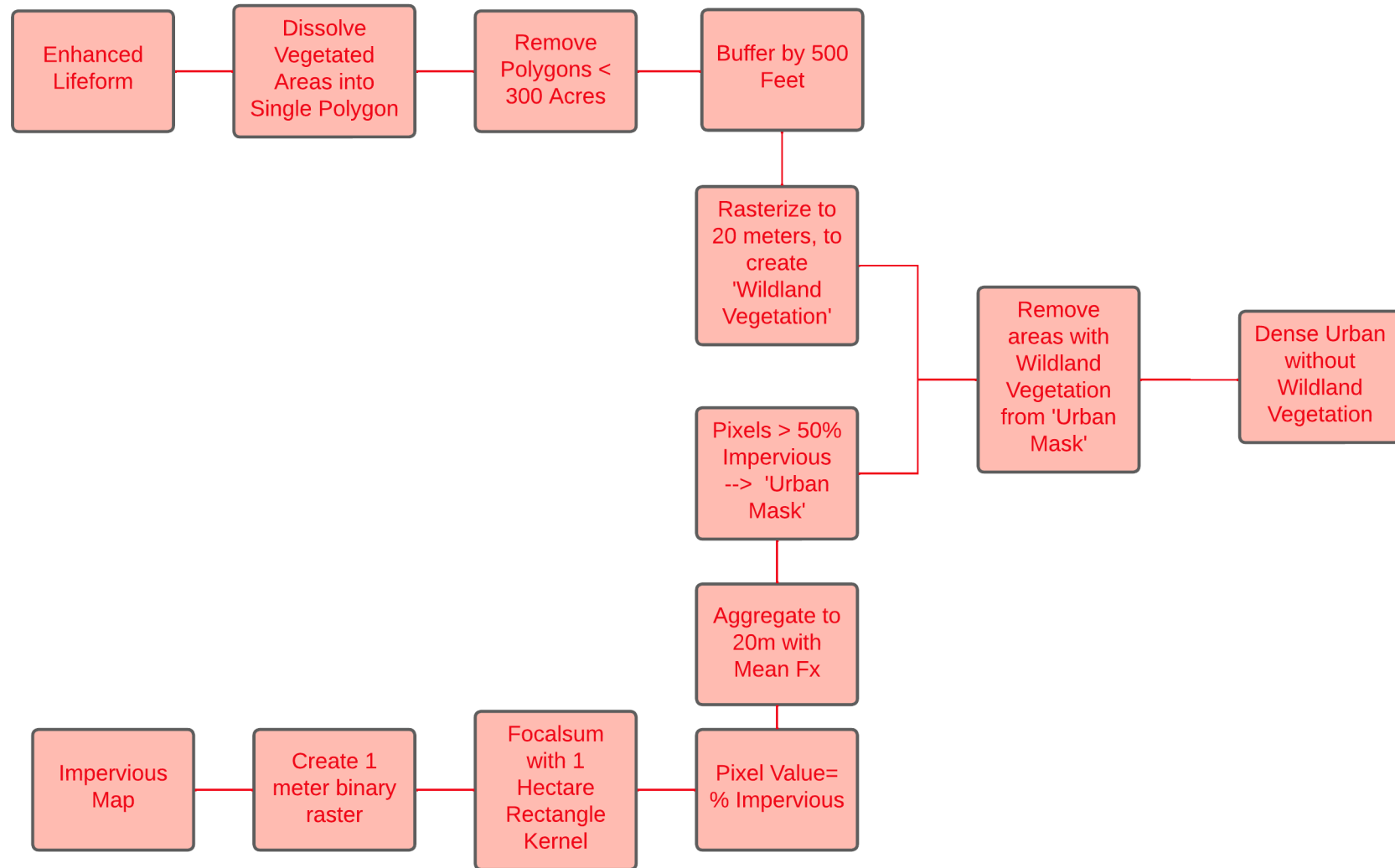


Figure 15. *Workflow for creating dense urban without wildland vegetation for the three-county area*



5.4.11. Human development proximity

Proximity to human development, such as roads, structures, and other infrastructure increases the chance a fire will occur since many wildfires are sparked in and around these areas. Human development proximity was derived from the San Mateo (2018), Santa Cruz (2020, pre-CZU fire) and Santa Clara (2020, pre CZU/SCU fire) impervious surface maps. These maps are fine scale vector polygon map of buildings, paved and dirt/gravel roads, other paved areas (like parking lots), and other dirt impervious areas. Table 5 provides links to the datasheets for the impervious surface maps across the three counties.

Table 5. *Links to datasheets for impervious surface maps of the three-county area*

County	Link to Datasheet/Download Info for Impervious Map
San Mateo	https://vegmap.press/san_mateo_impervious_datasheet
Santa Cruz	https://vegmap.press/Santa_Cruz_Impervious_Datasheet
Santa Clara	https://vegmap.press/Santa_Clara_Impervious_Datasheet

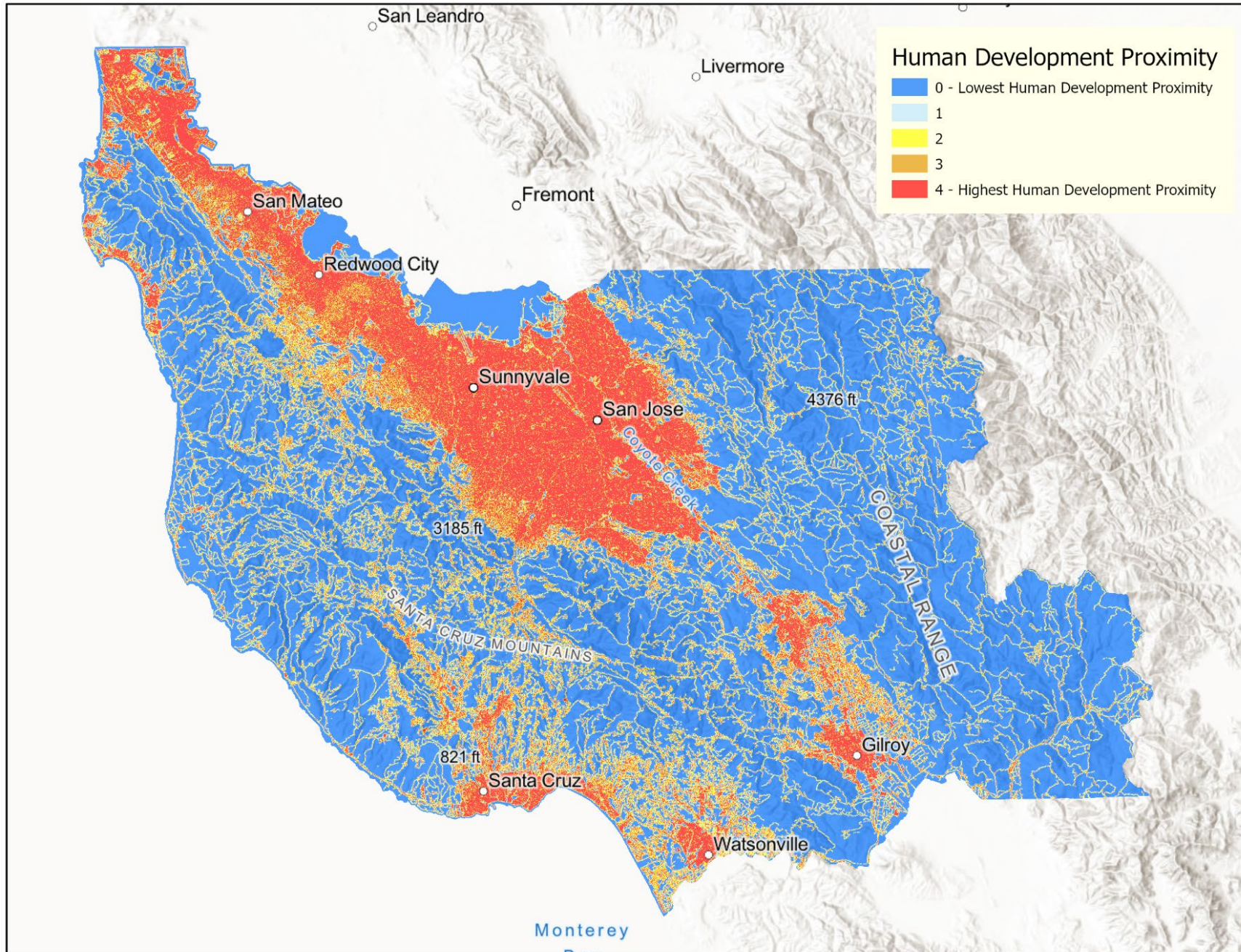
5.4.12. Human development proximity – processing steps

To create the human development proximity 20-meter raster that was used as one of the geospatial input datasets for hazard classification, Tukman Geospatial combined the vector impervious surface maps for the three counties, and then created a Euclidian distance raster at 20-meter raster resolution. The Euclidian distance raster's pixel values represent that pixel's distance in feet to the nearest impervious feature. Raster values representing these distances were reclassified into 4 values (from Very Low (0) to Very High (4) impervious proximity). Table 6 shows the details of how raw values were binned to create the classified human development proximity geospatial dataset used for hazard and risk mapping. Figure 16 shows a map of classified human development proximity for the three-county area.

Table 6. *Classification of raw distance to impervious features to classified human development proximity*

Proximity to Impervious Feature	Classified Value
0-25 Feet	Very High (4)
25-50 Feet	High (3)
50-100 Feet	Moderate (2)
100-200 Feet	Low (1)
Greater than 200 Feet from Impervious Feature	Very Low (0)

Figure 16. Human development proximity for the three-county area



5.4.13. Transmission line proximity

Proximity to transmission lines increases fire probability since some wildfires are sparked by transmission lines, especially during wind events. As power safety shutoffs continue, transmission will likely play a lesser role in sparking wildfires, but we have still included proximity to transmission lines as an input to the Classified Wildfire Hazard dataset. However, we did not include transmission lines that traversed urbanized areas without wildland vegetation – these lines were masked out of our dataset since they generally aren’t ignition sources for wildland vegetation fires.

5.4.14. Transmission line proximity – processing steps

Transmission line data was acquired by the California Public Utilities Commission (2021, [link here](#)). Proximity to transmission lines was created (using the Euclidian distance function) and classified in the same manner as for human development proximity (see Table 7 for class breaks). As noted above, transmission lines traversing dense urban areas without contiguous wildland vegetation were not included in this analysis. See section 5.4.10 for a discussion of how these dense urban areas were mapped for this project.

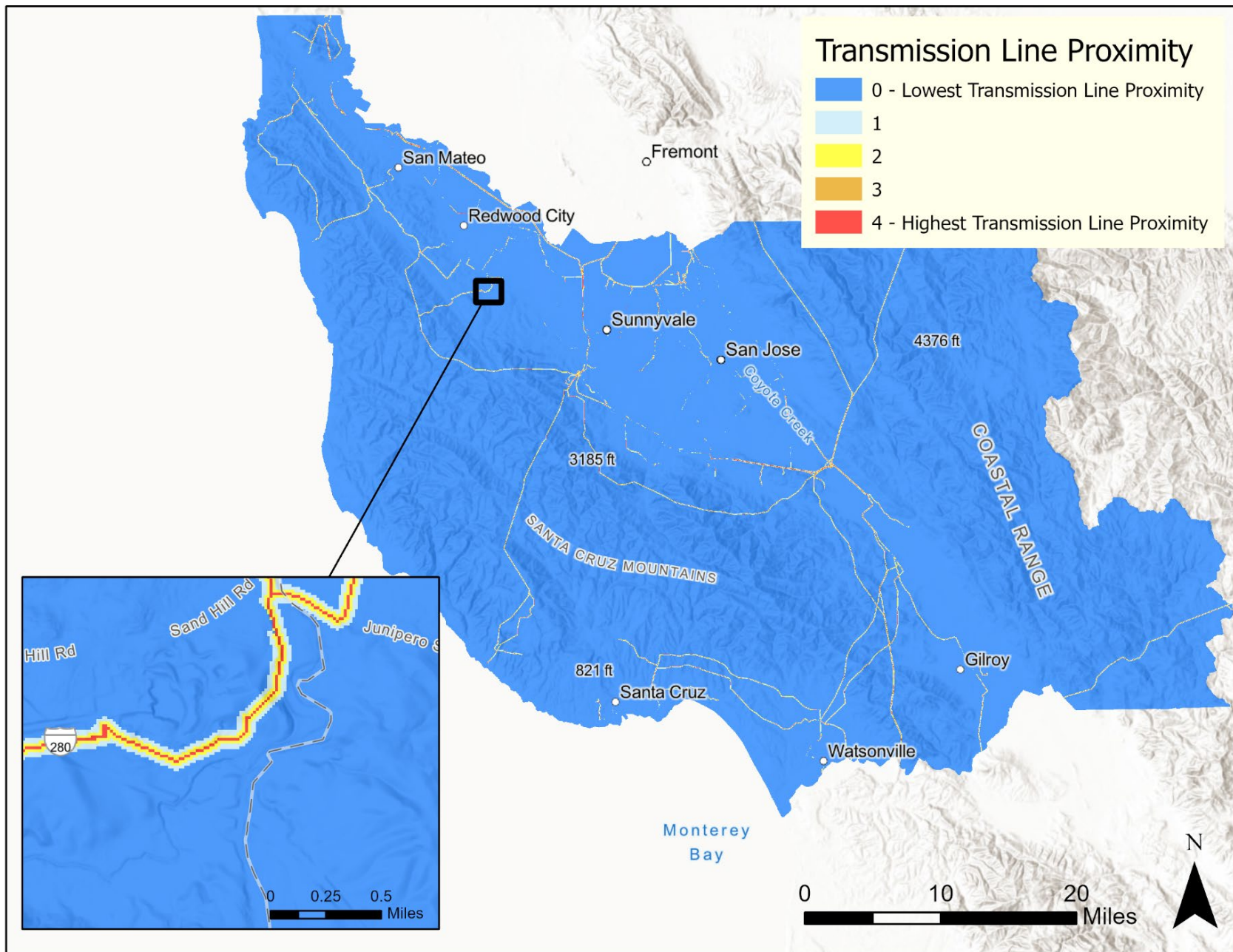
To create the transmission line proximity 20-meter raster that was used as one of the geospatial input datasets for hazard classification, Tukman Geospatial rasterized the CPUC vector transmission line dataset for the three-county area and then created a Euclidian distance raster at 20-meter raster resolution. The Euclidian distance raster’s pixel values represent that pixel’s distance in feet to the nearest transmission line feature. Raster values representing these distances were reclassified into 4 values (from Very Low (0) to Very High (4) impervious proximity). Table 7 shows the details of how raw values were binned to create the classified transmission line proximity geospatial dataset used for hazard and risk mapping.

Table 7. *Classification of raw distance to transmission lines to classified transmission line proximity*

Proximity to Transmission Line Feature	Classified Value
0-25 Feet	Very High (4)
25-50 Feet	High (3)
50-100 Feet	Moderate (2)
100-200 Feet	Low (1)
Greater than 200 Feet from Impervious Feature	Very Low (0)

Figure 17 shows classified transmission line proximity for the three-county area.

Figure 17. *Transmission line proximity for the three-county area*



5.4.15. Distribution line proximity

Proximity to distribution lines increases fire probability since some wildfires are sparked by distribution lines, especially during wind events. As power safety shutoffs continue, distribution lines will likely play a lesser role in sparking wildfires, but we have still included proximity to distribution lines as an input to the Classified Wildfire Hazard dataset. However, we did not include distribution lines that traversed urbanized areas without wildland vegetation – these lines were masked out of our dataset since they generally aren’t ignition sources for wildland vegetation fires. Because distribution lines are a much more common cause of ignitions than their higher voltage counterparts, transmission lines, distribution line proximity was given a higher weight in the model than transmission line proximity (see Figure 3).

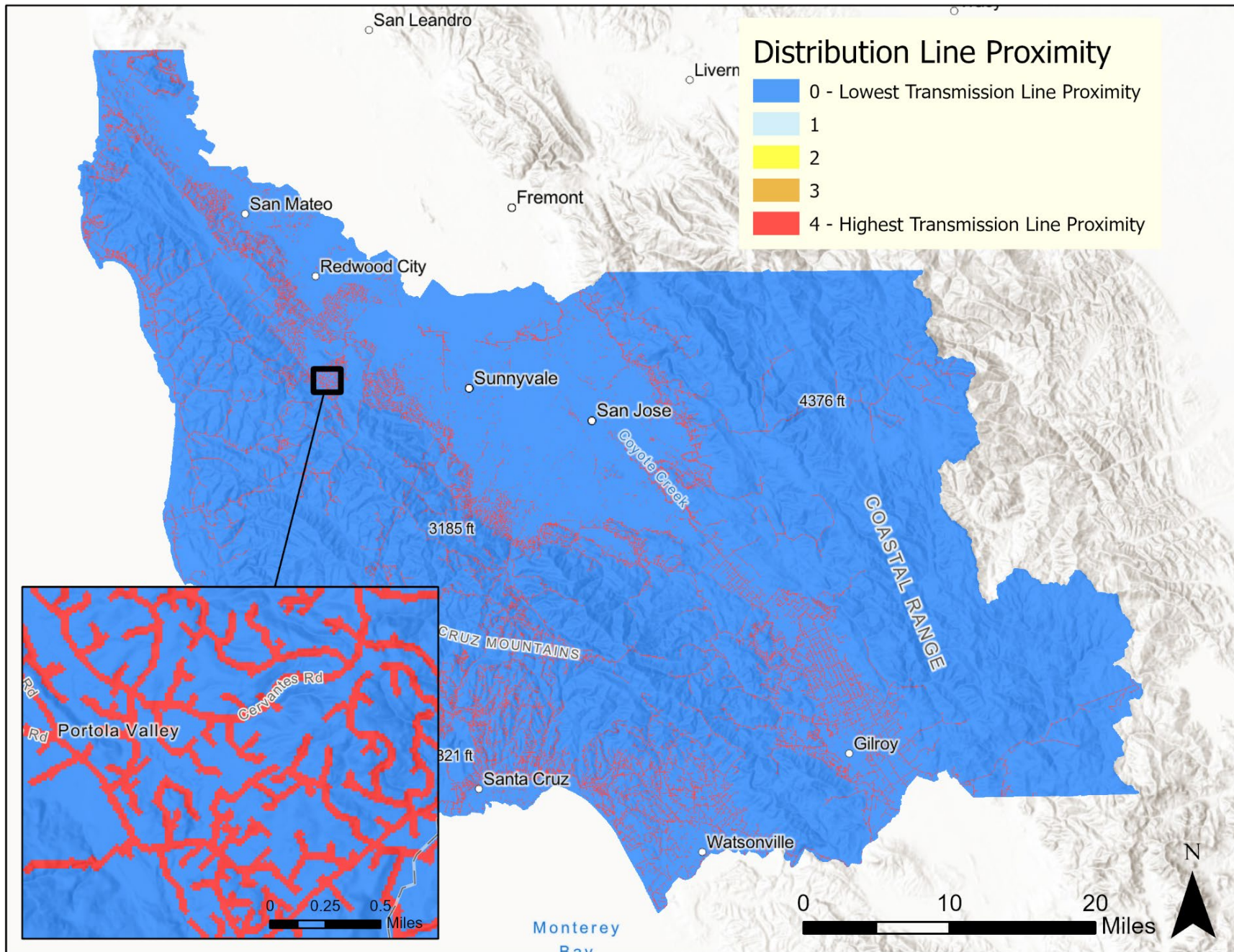
5.4.16. Distribution line proximity – processing steps

Distribution line data was acquired by PG&E’s Integration Capacity Analysis webmap as a vector line feature class (link [here](#)). Proximity to distribution lines was created (using the Euclidian distance function) and then classified (see Table 8 for class breaks). As noted above, distribution lines traversing dense urban areas without contiguous wildland vegetation were not included in this analysis. See section 5.4.10 for a discussion of how these dense urban areas were mapped for this project. Figure 18 shows classified distribution line proximity .

To create the distribution line proximity 20-meter raster that was used as one of the geospatial input datasets for hazard classification, Tukman Geospatial rasterized the PG&E vector distribution line dataset for the three-county area and then created a Euclidian distance raster at 20-meter raster resolution. The Euclidian distance raster’s pixel values represent that pixel’s distance in feet to the nearest transmission line feature. For distribution lines, Raster values representing these distances were reclassified into 4 values (from Very Low (0) to Very High (4) impervious proximity). Table Table 8 shows the details of how raw values were binned to create the classified transmission line proximity geospatial dataset used for hazard and risk mapping. Areas within 66 feet of a transmission line were assigned a Very High (4); areas further from the line were assigned Very Low (0). This ‘binary’ assignment was chosen to reflect the fact that increased ignition hazard from distribution lines, and the efficacy of reducing ignition hazard by clearing vegetation along distribution lines, is limited to a relatively narrow strip of land adjacent to the line.

Table 8. *Classification of raw distance to impervious features to classified distribution line proximity*

Proximity to Transmission Line Feature	Classified Value
0-66 Feet	Very High (4)
Greater than 66 Feet from Impervious Feature	Very Low (0)

Figure 18. *Distribution line proximity for the three-county area*

5.4.17. Historic ignitions

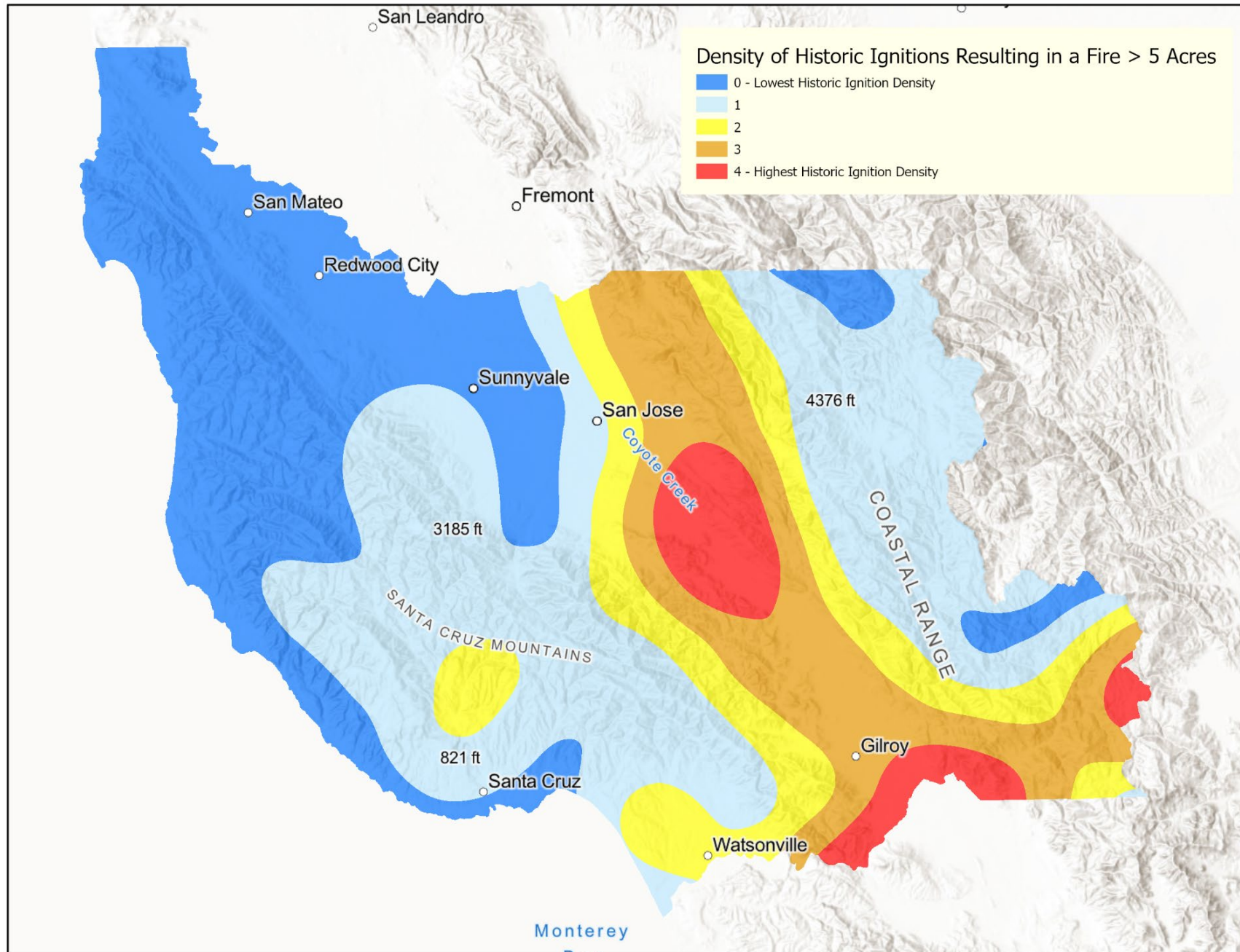
Historic ignitions were the final geospatial input dataset used to map wildfire hazard. Historic ignitions provide insight into where ignitions occurred in the past. Historic ignition data was used where the wildfire resulting from an ignition was greater than 5 acres in size. The input dataset used for historic ignitions was acquired from the CAL FIRE Fire and Resource Assessment Program and includes historic ignition point locations through the middle of the 2019 fire season.

5.4.18. Historic ignitions – processing steps

The historic ignitions data acquired from FRAP depicts ignition locations across the state of California between 2004 and 2019. The FRAP points were clipped to the three-county area. From the clipped layer, analysts selected out the ignition locations that resulted in wildfires greater than 5 acres. From the resulting point layer, the kernel density function was used to create a density map of ignition points over 5 acres. The historic ignitions density map was then classified across the three-county area into quantiles; the lowest quantile was assigned class of Very Low (0), the second quantile a class of Low (1), the third a class of Moderate (2), the fourth a class of High (3), and the top quantile a class of Very High (4).

Figure 19 shows the historic ignitions classified density map.

Figure 19. *Classified historic ignitions > 5 acres density map for the three-county area*



5.5. Combining wildfire hazard with structure density to create the Wildfire Risk to Structures map

5.5.1. Structure data

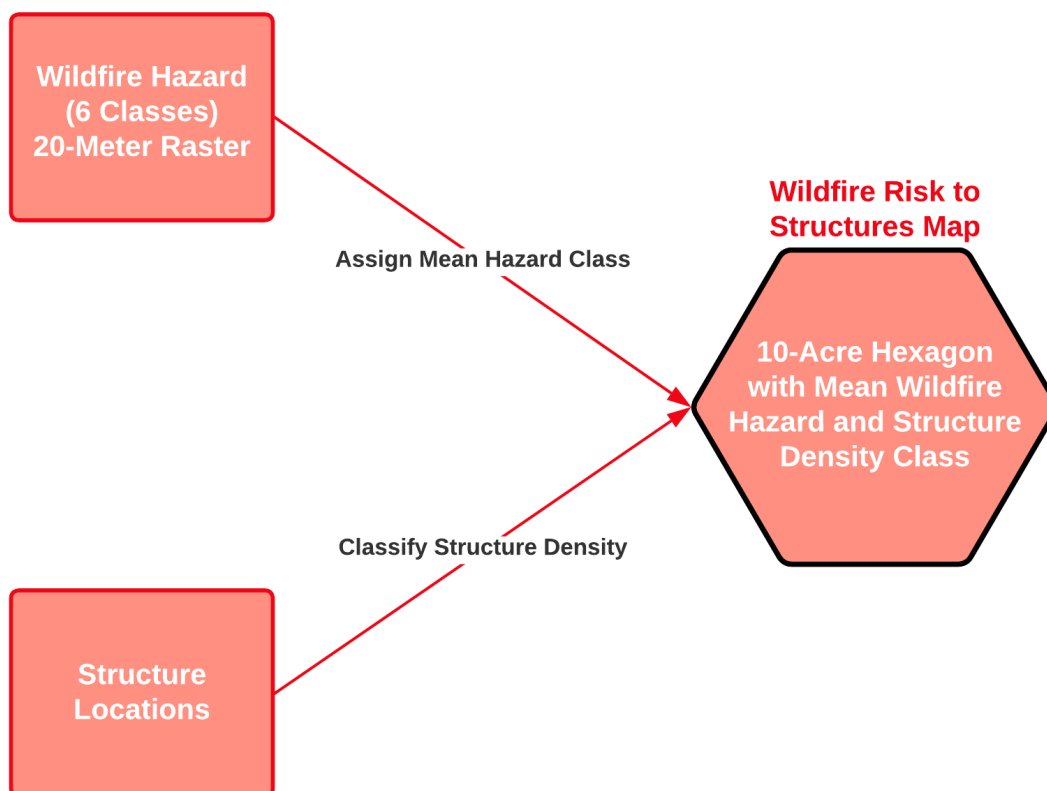
Structures were derived from the San Mateo (2018), Santa Cruz (2020, pre CZU fire) and Santa Clara (2020, pre-CZU/SCU fire) impervious surface maps. The structures in the three impervious surfaces map were derived from the ‘best available’ lidar data for the three counties. In addition, structure footprint data provided by Sanborn also derived from the best available lidar data was integrated into the impervious surface map for Santa Clara County. Though the structures used for this analysis are the ‘best available’ data to spatially represent structure on the landscape, they still contain false positives and false negatives (especially when structures are visibly obscured by tree canopy from an aerial perspective). In addition, the structure footprints were derived from data collected before the 2020 lightning fires in the three-county area. As a result, they depict structures that have since burned down. The lidar derived structures used in this analysis were qualitatively compared to Microsoft Building Footprints (derived from optical data) and were deemed superior in their accuracy, with less false positives and false negatives.

From the impervious surface maps, structures polygons were selected and combined, and structure centroids (points) were created.

5.5.2. Combining structures and hazard into hexagons

The Classified Wildfire Hazard map, which is described above in Sections 5.3 and 5.4, was combined with the structure data to create the final deliverable for this project: a Wildfire Risk to Structures map. Figure 20 is a high-level conceptual diagram of this process.

Figure 20. *Conceptual process of combining wildfire hazard with structure density for the three-county area to create the Wildfire Risk to Structures map*



The Wildfire Risk to Structures map uses 10-acre hexagons as its map units. There were 144,626 10-acre hexagons across the three-county area. Each hexagon was assigned both a count of structure centroids that fall inside of it, as well as a structure density class for structures that fall inside of it. Structure density class breaks were determined by adapting recommendations from the current literature (Maranghides et al.), along with recommendations from the project team and CAL FIRE. Table 9 shows the structure density breaks used to assign classified structure density. Each hexagon was also assigned (using zonal statistics) the mean Classified Wildfire Hazard of the pixels that the hexagon overlapped and the mean Classified Wildfire Hazard of the pixels that the hexagon's 1-mile outside only buffer overlapped.

Then, each hexagon was assigned a hazard value the following way:

$(\text{Mean Hazard Value of Pixels Inside the Hexagon} + \text{Mean Hazard Value of Pixels in the 1-Mile Hexagon Buffer})/2$

Figure 20 shows an example hexagon with its 1 mile outside only buffer, the structure locations, and the attributes assigned for structures within the hexagon, structure density within the hexagon, and hazard as calculated in the formula above and rounded to the nearest integer.

Table 9. *Structure density breaks assigned to each hexagon to characterize structure density within the hexagon and structure density in the hexagon's 1-mile buffer*

Structure Density (Structures/Acre)	Structure Density Class
<.1	1
0.1-.4	2
.5-.9	3
1-1.9	4
2-2.9	5
>=3	6

Figure 21 helps clarify the process of assigning the final 'Hazard to Structures' classification, which is the result of the Wildfire Risk to Structures map. In Figure 21, the single example hexagon shown in the center of the map received a 'Hazard to Structures' classification of 'High Hazard, .5-.9 Structures per Acre.' Reading left to right along the table at the top of Figure 21, the attributes are as follow:

Mean Hazard Within: This is the mean wildfire hazard (1-6) of the pixels within the hexagon (the hexagon is shown in the center of the map). The value for this is **3.49**.

Mean Hazard 1 Mile: This is the mean wildfire hazard (1-6) of the pixels within the 1-mile buffer around the example hexagon. The 1-mile buffer is shown as the large purple circle in the map. The value for this is **4.31**, which reflects the higher hazard in the buffer relative to within the hexagon itself.

Neighborhood Hazard Class: This is calculated by rounding the result of the following to the nearest integer (as shown on the previous page):

(Mean Hazard Value of Pixels Inside the Hexagon + Mean Hazard Value of Pixels in the 1-Mile Hexagon Buffer)/2

The value for this is **4 (High)**.

Structures Within: The count of structures within the example 10-acre hexagon. The value is **6**.

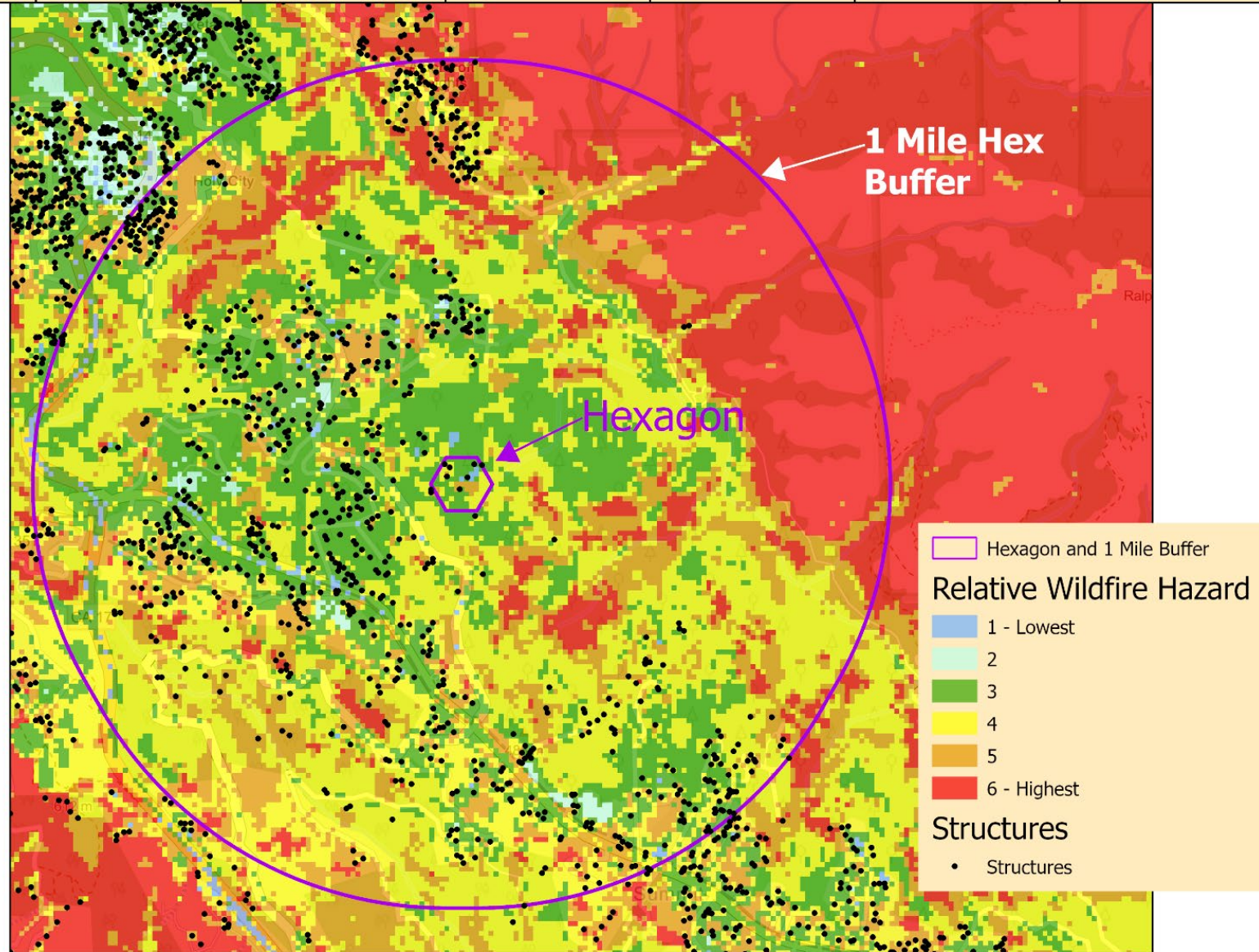
Structures per Acre: Structure density (structures per acre) within the example 10-acre hexagon. The value is **.6**.

Structures within Description: Structure density, binned into classes for the example 10-acre hexagon. The value is '**.5-.9 Structures per Acre**'.

Hazard to Structures: A combination of 'Hazard Class', which is '**4 (High Hazard)**' and 'Structures within Description', which is '**.5-.9 Structures per Acre**'.

Figure 21. Example hexagon, the 1-mile hexagon buffer, and attributes of the wildfire risk to structure map

Mean Hazard Within	Mean Hazard 1 Mile	Hazard Class	Structures Within	Structures per Acre	Structures Within Description	Hazard to Structures
3.49	4.31	4	6	0.6	.5-.9 Structures per Acre	High Hazard, .5-.9 Structures per Acre



5.6. Spatial data attributes – risk and hazard datasets

Tables 10 and 11 below show the attributes of the Classified Wildfire Hazard raster and the Wildfire Risk to Structures vector dataset. When using this wildfire risk to structures dataset, we recommend symbolizing using the ‘symbology’ attribute, which combines classified hazard and classified structure density into a single attribute. This symbology is included in an ArcGIS Pro map package that is distributed with the project geodata. See the [project datasheet](#) for details and download information.

Table 10. *Wildfire Risk to Structures attributes*

Attribute Name	Attribute Alias	Description
HAZARD_WITHIN_CLASS	Mean Hazard Within	Mean wildfire hazard within hexagon, calculated by overlaying wildfire hazard raster with hexagon vector polygons.
HAZARD_WITHIN_1MILE_CLASS	Mean Hazard 1 Mile	Mean wildfire hazard for the one-mile buffer outside of the hexagon, calculated by overlaying wildfire hazard with hexagon vector polygons.
STRUCTURES_WITHIN	Structures Within	Count of structures within the hexagon.
STRUCTURES_PER_ACRE	Structures per Acre	Structures per acre within the hexagon.
STRUCTURES_WITHIN_1MILE	Structures in 1 Mile Buffer	Count of structures for the one-mile buffer outside of the hexagon.
STRUCTURES_WITHIN_1MILE_CLASS	Structures w/in 1 Mile Classified	Classified structure density (1-6) for the one-mile buffer outside of the hexagon. See Table 9 for structure density class breaks.
STRUCTURES_WITHIN_CLASS	Structures Within Classified	Classified structure density (1-6) inside of the hexagon. See Table 9 for structure density class breaks.
STRUCTURES_WITHIN_DESC	Structures Within Description	Classified structure density description (e.g., .5-.9 structure per acre) inside of the hexagon. See Table 9 for structure density class breaks.
STRUCTURES_WITHIN_1MILE_DESC	Structures w/in 1 Mile Description	Classified structure density description (e.g., .5-.9 structure per acre) for the one-mile buffer outside of the hexagon. See Table 9 for structure density class breaks.
NEIGHBORHOOD_HAZARD_CLASS	Neighborhood Hazard Class	This is calculated by rounding the result of the following expression to the nearest integer: (Mean Hazard Value of Pixels Inside the Hexagon + Mean Hazard Value of Pixels in the 1-Mile Hexagon Buffer)/2
TOTAL_SCORE	Total Score	The sum of 'Structures Within Classified' + 'Neighborhood Hazard Class'
SYMBOLOLOGY	Symbology	Attribute that combines 'Neighborhood Hazard Class' and 'Structures within Description'

Table 11. *Classified Wildfire Hazard raster attributes*

Attribute Name	Description
HAZ_CLASS	Hazard class (1-6) for each 20-meter pixel.
HAZARD	Classified values for hazard input variables, providing the details behind the hazard class ranking.

6. Results and Key Findings

The Wildfire Risk to Structures map shown in Figure 1 (and [here](#) as countywide PDFs), symbolizes the Wildfire Risk to Structures map in a way that displays only the hexagons with Moderate, High, Very High, and Highest Hazard (classes 3, 4, 5, and 6) that also have structures within their boundaries. By looking at this subset of hexagons, only areas that have moderate or greater hazard AND at least one structure per 10 acres are shown. By limiting the data shown in this way, only 24,880 hexagons, or **17.2%** of the three-county area, is shown. This subset focuses the user on the areas of the landscape of greatest concern in the context of structures at risk to wildfire. To further focus on the highest risk areas, by removing the 'Moderate' hazard class and focusing on the High, Very High, and Highest Hazard classes where hexagons have at least one structure within their 10-acre boundary, we limit our selection of hexagons to 12,217 hexagons, or **8.4%** of the three-county area. Note that these are the hexagons that actually contain the structures, and that management opportunities that provide benefits to these areas in terms of hazard mitigation will extend to hexagons nearby that aren't shown because they do not have structures (or have low hazard).

7. Conclusions and Next Steps

The first step any land manager should take is to review the data and results carefully. Where the input layers accurately represent on-the-ground conditions, confidence in the results is high. While all locations should be considered at risk of fire, those identified as moderate or above should be considered for mitigation projects (i.e., home hardening, defensible space, shaded fuel break construction, forest thinning/management, etc.).

It is also important to remember that treatments designed to protect structures should not be limited to hexagons with a structure; reducing hazard with treatments in hexagons with no structures can also reduce risk to nearby hexagons with structures.

A user can use this Wildfire Risk to Structures map to either sequence activities to reduce hazard or determine locations for which funding for such activities should be sought. In almost all cases, activities would be aimed at reducing hazard, as it is improbable to reduce the number of structures or other inputs that influence risk (weather, distribution powerlines, or impervious surfaces).

Natural resource managers may choose to use the Classified Wildfire Hazard map to guide treatments across the larger landscape as a way to mitigate the effect of the 'halo' of high hazard. Additionally, the Classified Wildfire Hazard map can be used to evaluate risk to other resources and assets besides structures, such as wildlife habitat, watershed function, and more. See Section 9 for a case study that illustrates this way of using the hazard data.

Further, users of the Wildfire Risk to Structures dataset can observe and compare the aggregate level of risk in certain locations. For example, the communities east of the Junipero Serra Freeway are uniformly included in the mapped areas of risk (albeit lower levels of risk), as compared to smaller pockets of the highest levels of risk along Skyline Blvd. This information can be used to inform local hazard mitigation plans or justify applications for large-scale treatments.

8. Comparison to Other Assessments

During stakeholder review, input was provided to the mapping team about places where members of the Santa Cruz/Santa Clara County fire and/or land management community observed differences between the Wildfire Risk to Structures/Classified Wildfire Hazard data products and other existing hazard and/or risk assessments. This Section provides a discussion of some of these areas, comparing the existing assessments with the wildfire and hazard maps created in this project, and addressing the differences.

One main area of questions was with regards to differences between the Classified Wildfire Hazard dataset presented here and the maps provided as part of the 2016 Santa Clara County Community Wildfire Protection Plan (SC CWPP), produced by SWCA Environmental Consultants.

When the Classified Wildfire Hazard (CWH for the remainder of this discussion) dataset presented here is compared directly with the SC CWPP risk model (filename 'RAwo_final.tif'), the results are quite similar (though the CWH is more refined). The SC CWPP model is heavily weighted on hazard, with only 5% of the rating based on fire occurrence, or risk. As such, the SC CWPP is directly comparable to the CWH presented here.

Initial reviewers of the CWH noted that the SC CWPP risk assessment model typically classified areas at higher risk.

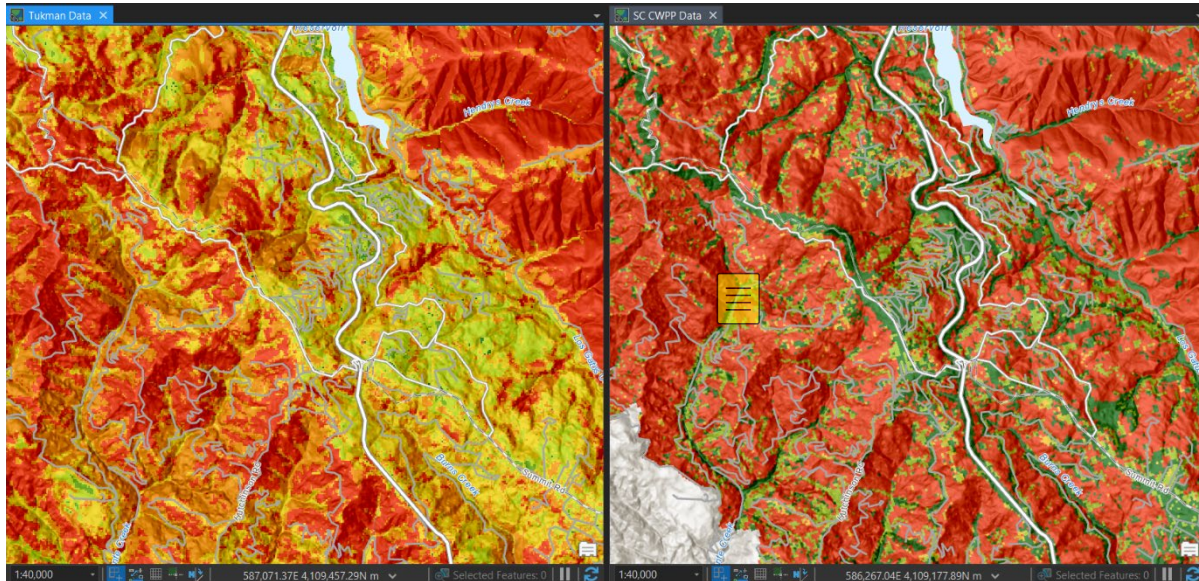
The inputs of the CWH include datasets that the SC CWPP risk model does not, which may explain why the two data products differ in some locations. The CWH includes extreme fire weather potential, and ember load index for example, which are lacking in the SC CWPP risk model. The extreme fire weather potential results in heightened hazard in the northern portion of the Santa Clara Valley, and on the coast by Half Moon Bay (see section 5.4 for details on model inputs).

In general, on a landscape scale, there is not a large difference between the two models in terms of overall risk/hazard. However, at the fine-scale, differences become apparent, which is to be expected given the different resolution of the data (30 meters for the SC CWPP risk versus 20 meters for the CWH) and the evolution of the modeling since 2016, when the SC CWPP dataset was created. It should also be noted that the SC CWPP model used LANDFIRE fuelscape

and the CWH uses a fuelscape derived from lidar and fine scale vegetation mapping. Even so, the overall distribution of hazard is generally similar.

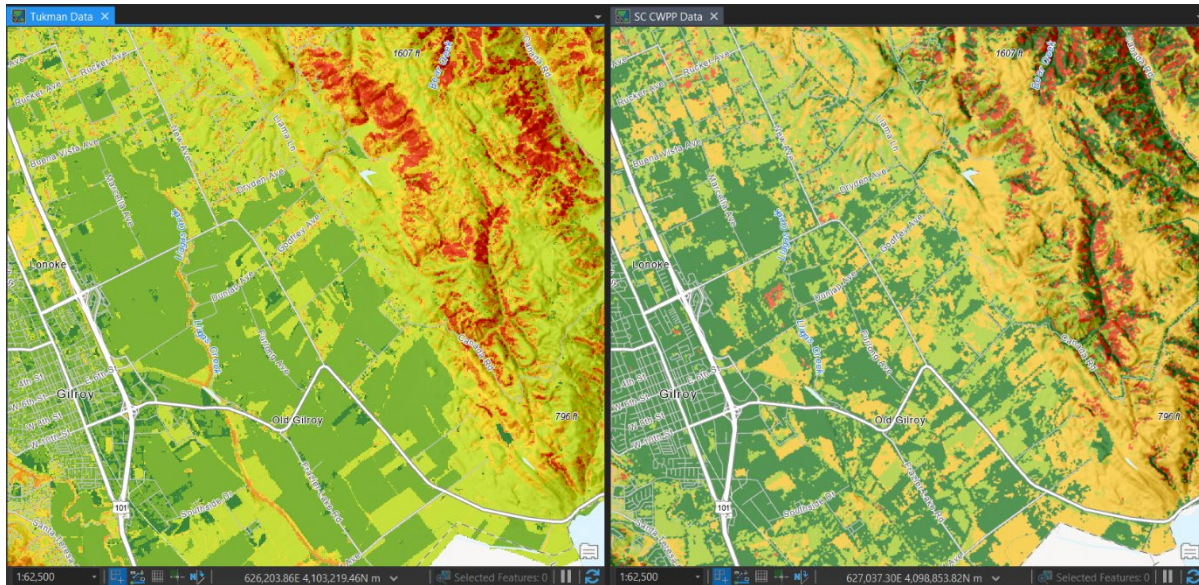
Below we compare the portion of the CWH presented here with the SC CWPP hazard/risk model from 2016.

Figure 22. CWH (left) v. SC CWPP (right) in the **Lexington Hills Community** south of Los Gatos along Highway 17. Green represents low hazard/risk and red represents the highest hazard/risk.



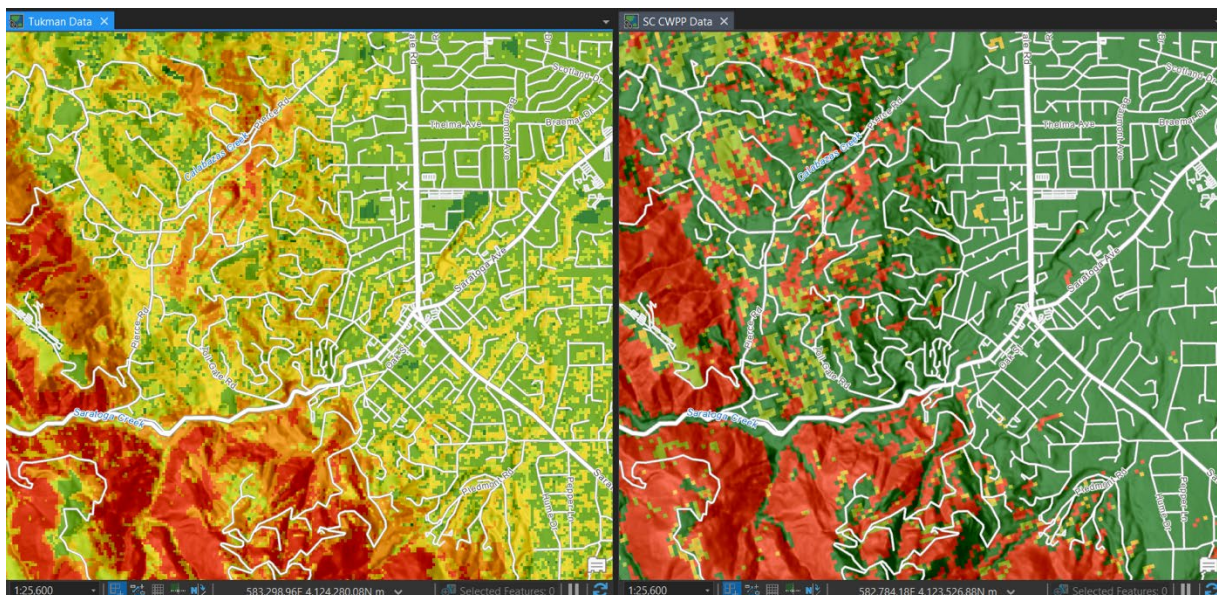
Both models show lower hazard/risk within the community at the very center of the map extents above. The surrounding hills are predicted at moderate to high in the CWH and mostly high in the SC CWPP model. There is more nuance in the CWH, but overall, the resulting pattern of hazard/risk is similar.

Figure 23. CWH (left) v. SC CWPP (right) in the area **east of Gilroy**. Green represents low hazard/risk and red represents the highest hazard/risk.



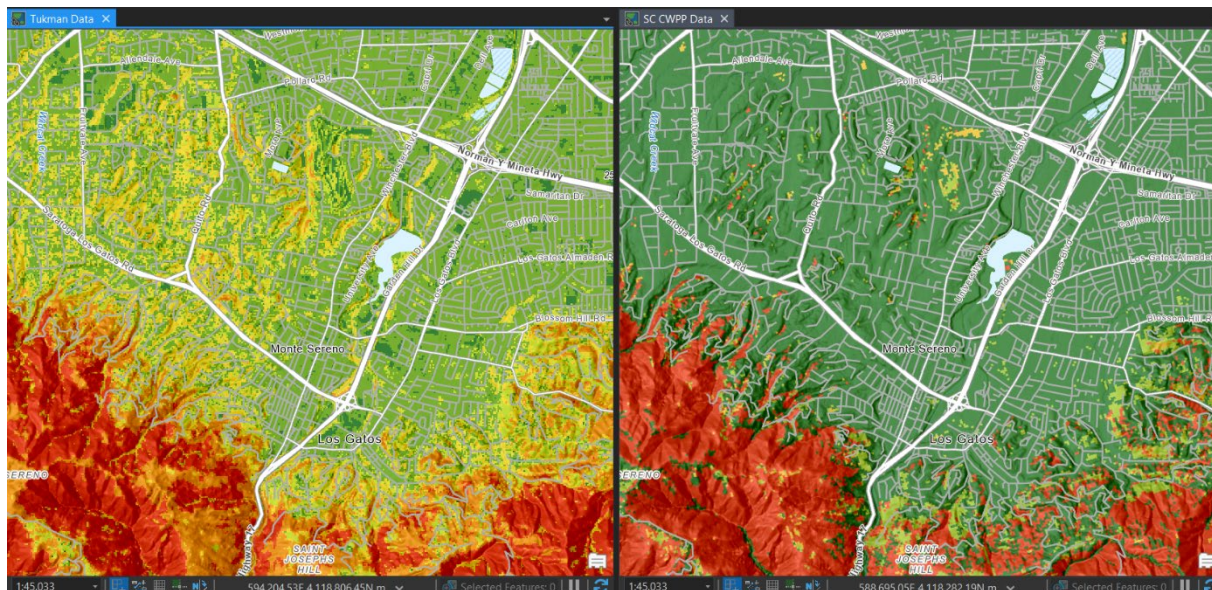
Both models show elevated hazard/risk in the hills east of Gilroy in a patchwork pattern, likely due to the distribution of shrub and forested lands in that area. Notably, the SC CWPP gave the grazed grasslands in that area a higher risk rating than the CWH. In the CWH, the team compensated for the heavily grazed grassland in the south-eastern portion of Santa Clara County by assigning those areas a grass fuel model with the lowest fuel loading.

Figure 24. CWH (left) v. SC CWPP (right) in the area in the **Saratoga Hills**. Green represents low hazard/risk and red represents the highest hazard/risk.



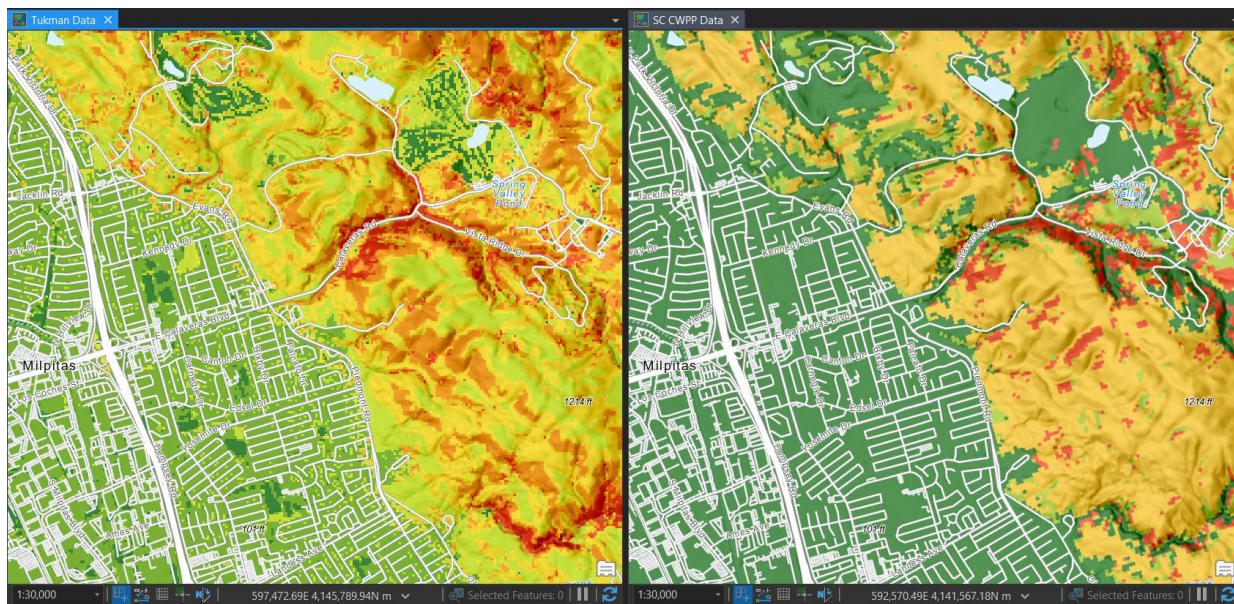
In the Saratoga Hills (west of Saratoga Sunnyvale Road), the SC CWPP model shows a scattering of high risk in the neighborhood whereas the CWH indicates mostly moderate hazard, with patches of high hazard. However, in the CWH, more of the area is assigned moderate and above hazard, whereas the SC CWPP model has much of the area mapped as low risk/hazard. In the hills in the south and southeast of the map, the pattern of hazard/risk between the two data products is similar.

Figure 25. *CWH (left) v. SC CWPP (right) in the area in the **Monte Sereno and Los Gatos** area. Green represents low hazard/risk and red represents the highest hazard/risk.*



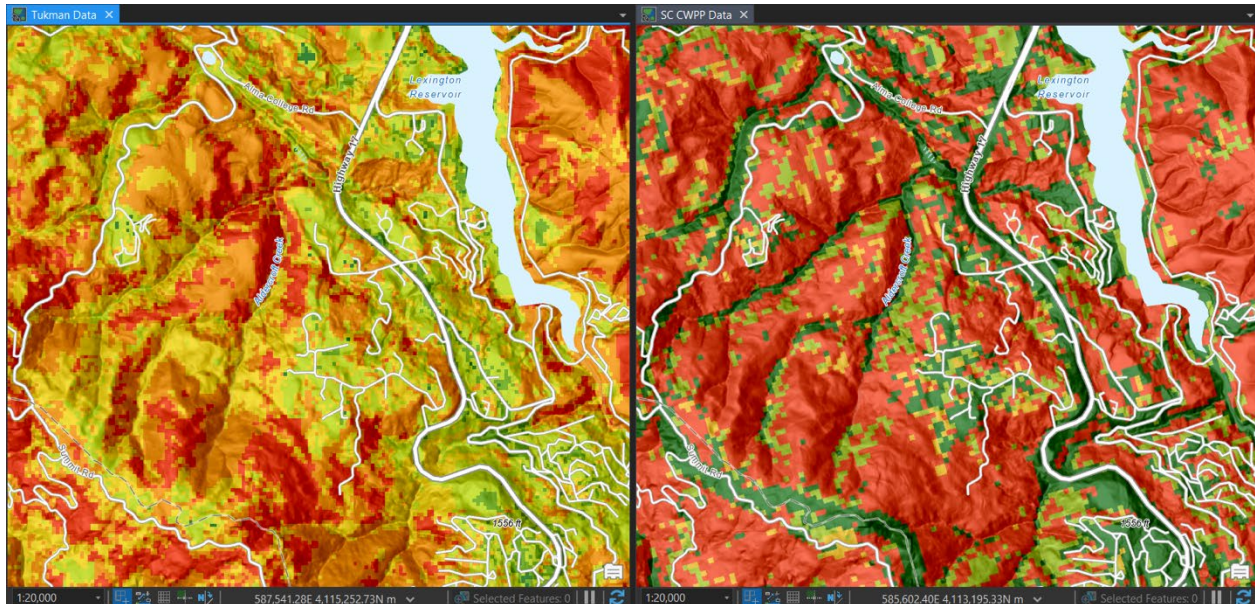
In the Monte Sereno/Los Gatos area, the CWH shows low to moderate hazard within the suburban community in the center-left of the map images (between Quito Rd. and Winchester Blvd.) in contrast with the SC CWPP risk/hazard, which shows the area at the lowest risk/hazard rating (dark green). This likely because the CWH takes into consideration burnable vegetation along riparian corridors and within the neighborhood itself, whereas the LANDFIRE based fuelscape that underpins SC CWPP often doesn't represent small pockets of burnable vegetation within the urban mosaic.

Figure 26. CWH (left) v. SC CWPP (right) in the area in the **Milpitas and Arroyo De Los Coches** area. Green represents low hazard/risk and red represents the highest hazard/risk.



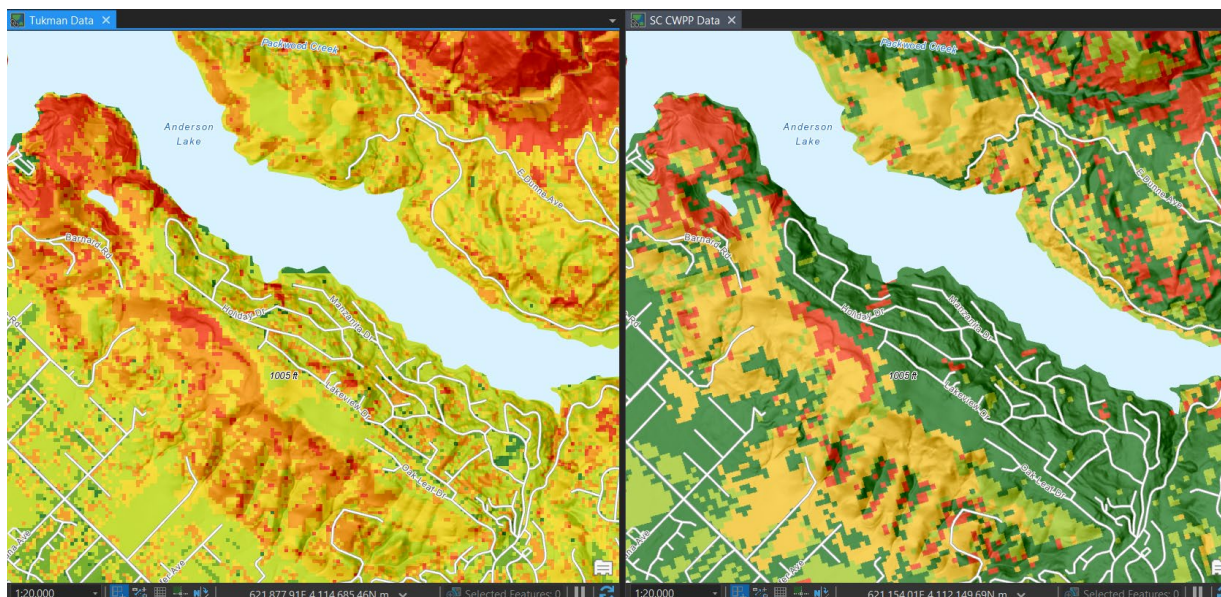
For the Milpitas area, the results are quite similar between the two models with much of the urban portion of the area in the lowest hazard rating in the CWH and in the SC CWPP model. Along Calaveras Rd. in the Arroyo De Los Coches area, both models indicate areas of high hazard/risk. Along the edges of the valley, both show moderate hazard/risk. In the hills, there is more nuance in the CWH, most likely because of the finer scale vegetation and fuel model mapping that serves as the foundation of the CWH.

Figure 27. CWH (left) v. SC CWPP (right) in the area in the **Aldercroft Creek** area. Green represents low hazard/risk and red represents the highest hazard/risk.



At Aldercroft Creek along Highway 17, the two models show significant differences. The SC CWPP hazard/risk classifies much of the area in the highest risk/hazard class. The CWH, on the other hand, scores the area between moderate and high. However, the SC CWPP's risk also shows some areas of low (in the flatter valleys) where the CWH does not.

Figure 28. CWH (left) v. SC CWPP (right) in the area in the **Anderson Lake** area. Green represents low hazard/risk and red represents the highest hazard/risk.



Near Anderson Lake, along Manzanita Dr. in Santa Clara County, the CWH mostly indicates moderate hazard whereas the SC CWPP risk/hazard rating is low.

In summary, the Classified Wildfire Hazard (CWH) presented here and the SC CWPP hazard/risk models are broadly similar in most areas of Santa Clara County. Since the CWH is based on fine scale vegetation and lidar, it has more nuance and tends to capture pockets of hazard that the SC CWPP misses, especially in and around urban areas.

It is important to remember that these are both models, and that differences in models are to be expected. Paul Hansen, The Board Chair of the Santa Clara County FireSafe Council opined on the emergence of many risk models, with this comment:

I am very comfortable using the new models, even when there are slight discrepancies from prior predictive algorithms. Just like the "best" hurricane path models, no single model is perfect. Mother Nature simply won't allow for that. But the CWH information is our latest, most refined, and most comprehensive analysis available, and that will allow us to identify and subsequently focus on specific neighborhoods / communities / associations of highest risks. There we can follow up with a "ground-level" dialogue - or better, a community assessment - to quantify their specific risks in more detail. At that time, we will discuss any discrepancies or irregularities we find in a positive way, and use any learnings to improve the modeling results to better characterize specific locational differences. Importantly, this multi-dimensional risk assessment and graphical hazard mapping allows our organization to effectively educate participants on their various elements of wildfire hazards and risks so that we can follow up with a prioritize selection of mitigation efforts to address those highest risk points; offering advice for the DIYers, or products and paid services for those who want it done professionally.

The Santa Clara County FireSafe Council will leverage the all new CWH model as the basis for our Risk Assessment in our forthcoming update to the Santa Clara County CWPP, replacing 2016 CWPP version, planned for publishing in 2023. Using the fine scale mapping and interactive tools, our communications to residents will amplify the importance of multi-home participation, and ask communities to take a collaborative and holistic approach to mitigating local wildfire risks. The CWH modeling will help individuals explore and understand the broader risks they face, and that will hopefully lead to better results than a one-home-at-a-time defensible zone campaign. Our objective is to have our prioritized wildfire mitigation recommendations based on both highly-scientific top-down modeling, validated with bottoms-up refinements at the local community level, leading to the most accurate risk assessments available anywhere. We believe this will offer compelling motivation for community action, leading to significant long-term benefits for all Santa Clara County residents.

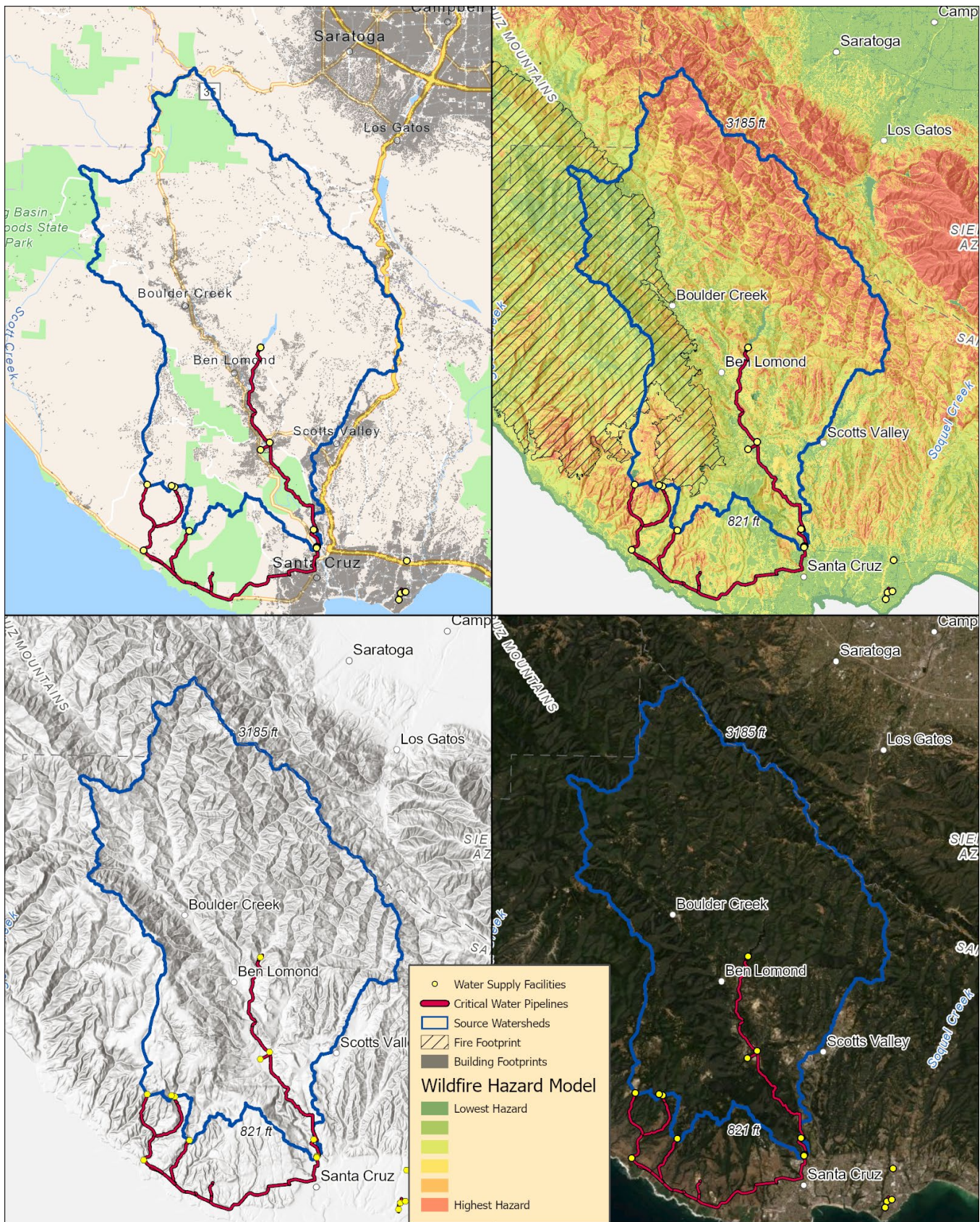
9. Case Study: City of Santa Cruz Watershed Lands Example Risk Assessment

The Wildfire Risk to Structures dataset described in this report is a risk assessment that analyzes only structures as values at risk. This section provides an example of using the Classified Wildfire Hazard dataset to assess risk to other values: in this case the infrastructure of the City of Santa Cruz Water Department. This is not a comprehensive exercise and is meant to demonstrate how the Classified Wildfire Hazard raster can be used to model risk to values other than structures.

The City of Santa Cruz Water department manages land and infrastructure to deliver drinking water to Santa Cruz residents. About half of the city's water comes from the San Lorenzo River and 32% of it from local creeks that include Majors Creek, Laguna Creek, and Liddell Creek. Water infrastructure includes Loch Lomond Reservoir, an impoundment on a tributary of the San Lorenzo River, and numerous other assets. Facilities include 4 wells, 2 water treatment plants, pump stations, a dam on Loch Lomond Reservoir, intakes to draw water from local streams, and a series of pipelines to transport water from the water sources to treatment plants and the end users.

For this exercise, we overlaid the Classified Wildfire Hazard raster with the City of Santa Cruz's water infrastructure to generally assess which components of the infrastructure are exposed to high wildfire hazard. Figure 1 on the next page shows a 4-pane map (with all panes showing the water supply infrastructure). The upper left pane includes roads and public lands with lidar derived building footprints and their 100-foot buffers. The upper right pane shows Classified Wildfire Hazard, the watershed that supplies the city's water, and the footprint of the 2020 CZU lightning complex fire. The lower left pane displays a hillshade, and the lower right pane shows aerial imagery.

Figure 29. City of Santa Cruz water supply infrastructure in four panes. See text for more details the contents of the panes and refer to the legend at bottom of the map.



Tables 12 and 13 show the distribution of hazard from the Classified Wildfire Hazard layer for the pipelines and the entire source watershed (shown in blue in Figure 29). 11% of the area within 500 feet of the water pipelines is very high (class 5), or highest (class 6) hazard, with 25% of it in the high (class 4 hazard class). For the entire watershed, hazard is higher, with 36% of the source watershed area in the two highest hazard classes and 61% of the area in the three highest hazard classes. This is explained by the fact that the upper northern and eastern parts of the watershed (up-catchment of the infrastructure) have very high wildfire hazard.

Table 12. *Hazard within 500 feet of water pipelines*

Hazard Class	Acres	Percent of Area
1 - Lowest	128	4%
2	1081	30%
3	1050	29%
4	905	25%
5	334	9%
6 - Highest	69	2%

Table 13. *Hazard within source watersheds*

Hazard Class	Acres	Percent of Area
1 - Lowest	62	1%
2	945	12%
3	2172	26%
4	2029	25%
5	1679	20%
6 - Highest	1320	16%

Table 14 shows a list of facilities, with the mean hazard for a 1500-foot buffer of the facility's centroid. The table is ranked in descending order of mean hazard, showing facilities with the highest mean Classified Wildfire Hazard at the top of the list.

Table 14. *Mean Classified Wildfire Hazard for 1,000-foot buffers of facility centroids*

Water Facilities	Mean Classified Wildfire Hazard
Liddell Spring Intake	4.7
Reggiardo Creek Intake	4.3
Laguna Creek Intake	3.9
Graham Hill Water Treatment Plant	3.6
Loch Lomond Dam	3.6
Lagun Recirc	3.4

Water Facilities	Mean Classified Wildfire Hazard
Majors Creek Intake	3.4
Felton Diversion	2.9
Tait 1 Well Site	2.9
San Lorenzo River Intake	2.8
Tait 4 Well Site	2.8
Felton Booster Pump Station	2.7
Beltz 10 Well Site	2.2
Beltz 12 Well Site	2.1
Beltz 9 Well Site	2.1
Beltz 8 Well Site	2.0
Beltz Groundwater Treatment Plant	2.0

The information presented in this section shows how this data can be used to prioritize fuel reduction projects in a way that addresses infrastructure most at risk from wildfire. This type of prioritization would also be informed by local knowledge and field reconnaissance, in addition to other data such as the feasibility of treating the landscape (also known as ‘Treatment Feasibility’), slope, aspect, vegetation type, and forest structure datasets. In addition, fire behavior modeling can be used to simulate fires on the landscape at selected ignition points and the information gleaned from fire behavior modeling can aid in prioritizing treatments.

10. Acknowledgements

The project team would like to thank the Santa Cruz Mountains Stewardship Network, California Department of Forestry and Fire Protection (CAL FIRE) Wildfire Prevention Grants Program, and California Climate Investments for supporting this work.

Thank you to all the individual stakeholders and workshop attendees for providing thoughtful review and feedback throughout the process.

Special thanks to strategic consultant Kass Green of Kass Green & Associates for her exceptional vision and unyielding commitment to excellence.

Thanks to the broad group of funders, stakeholders, and leaders supporting development of the Santa Clara-Santa Cruz Countywide Fine Scale Vegetation Map and Landscape Database Project, of which this wildfire hazard and risk mapping effort has been a significant component. This includes:

- Big Creek Lumber
- California Department of Fish and Wildlife
- California Department of Parks and Recreation

- California Native Plant Society
- California State Coastal Conservancy
- County of Santa Clara
- County of Santa Cruz
- Golden Gate National Parks Conservancy
- Gordon and Betty Moore Foundation
- Jasper Ridge Biological Preserve
- Midpeninsula Regional Open Space District
- NOAA Office for Coastal Management
- Peninsula Open Space Trust
- Quantum Spatial/NV5
- Resources Legacy Fund
- San Mateo FireSafe Council
- San Mateo RCD
- San Francisco Bay Area Network of National Parks
- San Francisco Public Utilities Commission
- Santa Clara County Open Space Authority
- Santa Clara County FireSafe Council
- Santa Clara Valley Water District
- Save the Redwoods League
- UC Santa Cruz
- US Geological Survey

11. References

Andrews, P.L. and Rothermel, R. 1982. Charts for Interpreting Wildfire Fire Behavior Characteristics. General Technical Report INT-131. U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station, Ogden, Utah

Maranghides, A., Link E.D., et al. 2022. WUI/Structure/Parcel/Community Fire Hazard Mitigation Methodology. NIST Technical Note 2205. National Institute of Standards and Technology, U.S. Department of Commerce, Washington, D.C.

Nelson, R.M., 1964. The National Fire Danger Rating System: Derivation of Spread Index for Eastern and Southern States, U.S. Forest Service Research Paper SE-13. September 1964, pp. 1-37.

Rodríguez y Silva, F., J. R. M. Martínez, et al. 2014. "A methodology for determining operational priorities for prevention and suppression of wildland fires." International Journal of Wildland Fire 23(4): 544-55.

Scott, J.H., Thompson, M.P., and Calkin, D.E. 2013. A Wildfire Risk Assessment Framework for Land and Resource Management. General Technical Report RMRS-GTR-315. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, Colorado

Vogler, K. C., Brough, A., et al. (2021, June 30). Contemporary Wildfire Hazard Across California. Retrieved February 28, 2022, from <http://pyrologix.com/reports/Contemporary-Wildfire-Hazard-Across-California.pdf>

12. Disclaimer

Tukman Geospatial makes no representation or warranty as to the accuracy, timeliness, or completeness of these data. Tukman Geospatial makes no warranty of merchantability or warranty for fitness of use for a particular purpose, expressed or implied, with respect to these products or the underlying data. Any user of this data, accepts same as is, with all faults, and assumes all responsibility for the use thereof, and further covenants and agrees to defend, indemnify, and hold Tukman Geospatial harmless from and against all damage, loss or liability arising from any use of these data products, in consideration of Tukman Geospatial and its partners having made this information available. Independent verification of all data contained herein should be obtained by any user of these products, or the underlying data. Tukman Geospatial disclaims, and shall not be held liable for, any and all damage, loss, or liability, whether direct, indirect, or consequential, which arises or may arise from these products or the use thereof by any person or entity.

This page intentionally left blank.

APPENDIX E:

Project Recommendations

This page intentionally left blank.

Table E.1. Recommendations to Create Resilient Landscapes (Fuel Treatments)

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
RL1		M	2023-2033	Continue to align the CWPP, MJHMP, and General Plan Safety Element updates and revisions to build consistency and leverage funding opportunities for hazardous fuel treatments.	Countywide	Santa Clara County OES	Build and retain partnerships between agencies and decision-making bodies across the county to develop solutions that mitigate the risks of common hazards faced by the entire County - Assess values at risk - Build upon existing hazard mitigation planning from other agencies - Use story map and project tracking tool to increase accessibility and public awareness - Utilize the established CWPP Management Team to foster collaboration	Protect life by identifying hazards and reducing associated risks Protect public and first responder life and safety	Updates to materials as needed Convene Management Team on an annual basis Update the CWPP project tracking tool with progress	- FEMA BRIC Grants - EMPG - RCP - Firewise grants National Urban and Community Forest Program - FP&S (FEMA) - California Fire Safe Council Grants - NFPA Firewise Grants
RL2		H	Ongoing	Install strategic fuel breaks and fuel reduction areas throughout the county based on findings of the Risk-Hazard Assessment.	Open Space Authority, Midpen, State Parks, County Parks, Palo Alto Parks, San Jose Parks, and other public lands that bound up to the WUI. Consider Assembly Bill 2911 Prioritize treatment in areas of concern (Figure ES.1, Figure 4.2), and specifically adjacent to areas classified as 'extreme risk to structures' in the Risk-Hazard Assessment	County, private landowners (private roads), state and federal agencies	Install fuel breaks in high-risk areas and prioritize underserved and rural areas. Potential fuel break locations include: - Buffer roads, natural fuel breaks (rivers, creeks, and ridgelines), and designated rights-of-way to increase fuel break effectiveness. Areas that support the protection of the WUI - Valley floors, where grasslands meet or intermingle with communities - Around communities surrounded with rolling hills and grasslands - Communities surrounded by steep topography and heavy fuel loading - Around critical facilities and infrastructure (e.g., communications) - Aim for 300-foot shaded fuel breaks around communities - Implement and maintain shaded fuel breaks and reduce ladder fuels and greenbelts - Perform roadside fuels treatments to maximize effectiveness of roadways as fuel breaks and reduce wildfire behavior along major ingress and egress routes. - Fuel breaks should be designed according to site-specific conditions - Potential methods include prescribed burning, grazing, and mechanical Implement a maintenance program for the Highway 17 shaded fuel break.	Protect life and property by reducing the spread of high severity wildfire and improving access for emergency vehicles.	Regular maintenance schedule should be implemented to ensure clearance levels are maintained and remain effective. Update the CWPP project tracking tool with progress and relevant statistics.	- USFS CWDG Grants - CAL FIRE Grant Programs - FEMA BRIC Grants - California Fire Safe Council Grants - NFPA Firewise Grants

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
RL3		H	Ongoing	Evaluate existing native surface (unpaved) fire roads for use as fuel breaks/fuel reduction areas as appropriate	Open Space Authority, Midpen, State Parks, County Parks, Palo Alto Parks, San Jose Parks, and other municipal parks that bound up to the WUI. Consider Assembly Bill 2911	Depends on jurisdiction/easement	Identify existing gaps in fuel breaks or large-scale treatments meant for connectivity and implement and determine most effective treatment methods - Consider road type and ownership - Fire dept with jurisdiction/easement access would evaluate road condition and suitability - Maintenance would be assigned based on jurisdiction. - Implement maintenance - road/trail width for fire and park patrol vehicles where possible - Refer to RL1 for other fuel break considerations. - Consider bridge access, ratings and maintenance	Protect life and property by improving access for emergency vehicles to open space areas and WUI areas adjacent to open space.	Regular maintenance schedule should be implemented to ensure clearance levels are maintained and remain effective. Update the CWPP project tracking tool with progress and relevant statistics.	- USFS CWDG Grants - CAL FIRE Grant Programs - FEMA BRIC Grants - California Fire Safe Council Grants - NFPA Firewise Grants

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
RL4		M	Ongoing	Identify-continued prescribed herbivory in open spaces, targeting grasses and light fuels throughout the Unit.	County-wide	County Parks, Milpden, Open Space Authority, State Parks, water company/district properties, Cattleman's association, ranching community, private landowners	Utilize prescribed herbivory as fuel reduction and maintenance technique, especially adjacent to WUI areas. • Work with Santa Clara Cattleman's Association to develop a regional grazing plan. • Implement grazing plans to eliminate dry grass and remove weeds and/or establish irrigation to regreen the parcel. • Employ grazing as a solution for treating areas of high concern topography that would be unsafe for hand treatment • Work with RCDs to investigate locations where grazing would be most effective Collaborate with California Department of Fish and Wildlife for beaver conservation and population/habitat restoration efforts that could provide benefits for forest health/hazardous fuels reduction • Conduct a comprehensive assessment of existing beaver populations and study benefit to forest resilience • Secure funding and resources through partnerships, grants, and fundraising initiatives to support beaver conservation and habitat restoration projects • Develop and implement a monitoring program to track the population dynamics, behavior, and habitat conditions Establish communication and collaboration with the California Department of Fish and Wildlife (CDFW) or CalTrans to initiate discussions on the potential for expanding the elk population in targeted regions with a view to provided benefit for forest and grassland resilience. • Conduct an assessment of suitable habitat areas • Collaborate with CDFW to develop a comprehensive elk management plan • Coordinate with CalTrans to identify potential areas for wildlife crossings through transportation corridors • Assess need for habitat restoration and long-term monitoring program	Reduce fuel loading of fine fuels that could increase wildfire spread to WUI areas.	Regular monitoring needed to ensure against environmental damage and invasive species Update the CWPP project tracking tool with progress and relevant statistics.	• SRA • CA Fire Safe Council • CFIP • NRCS • FEMA • GHGRF

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
RL5		H	Ongoing	Encourage use of intentional fire (i.e. – broadcast burning, pile burning, cultural burning, biochar and carbonator) where ecologically sound and feasible	County-wide Following an assessment of feasibility, prioritize treatments in areas of concern (Figure ES.1), and specifically in locations where treatment would alleviate 'high and extreme risk to structures' in the risk-hazard assessment, and would provide positive impacts to watershed and ecological health	All jurisdictions where appropriate Tribes Federal agencies, CAL FIRE	Utilize prescribed burn planning that follows agency and regulator protocols. - Engage with tribal entities to promote the use of cultural burning when appropriate and feasible. - Train personnel to be NWCG-certified burn bosses (RXB2). - Reach out to surrounding fire agencies to collaborate on prescribed burns. This will improve the capacity to accomplish many/large acreage burns. Assess opportunities to use prescribed fire for restoration (e.g., oak woodlands) to increase wildfire resiliency.	Reduce fuel loading of fine fuels and understory species to mitigate potential for intense fire behavior in the event of an unplanned ignition. Increase capacity and training for fire departments. Promote healthy successional vegetation Provide habitat for fire-adapted species.	Regular monitoring needed to ensure against environmental damage and invasive species into burned areas. Establish annual goals and objectives for prescribed burning operations. Update the CWPP project tracking tool with progress and relevant statistics.	- CAL FIRE VMP program - SRA - CA Fire Safe Council - CFIP - NRCS - GSA Federal Excess Personal Property (FEPP) - Firewise Grants - BRIC - RCP - Fire Prevention and Safety (FP&S) Grants (FEMA) - Community Wildfire Defense Grants (CWDG) - National Urban and Community Forestry Challenge Cost Share Grant Program - U.S. Endowment for Forestry and Communities
RL6		H		Develop roadside fuel treatment program (paved public roads), including suite of methods available and sustainability mechanism.	County Wide Prioritize treatment in areas of concern (Figure ES.1), and specifically adjacent to areas classified as 'extreme risk to structures' in the risk-hazard assessment	Caltrans, County and city road agencies; private road associations, PG&E, cable and phone companies	Highest risk roadways as identified in the risk assessment Determine suite of treatment methods allowed and restriction for roadside hazard reduction including mowing, mastication, chemical, plantings, mulching, etc. Develop treatment plan and rotation schedule for roadside treatments, focusing on primary evacuation or access/egress corridors. - Annual spring maintenance of right-of-way - Treat surface fuels for a minimum 10-foot buffer and up to 30 feet where possible - Trim fuels (limbing-up timber) to allow safe passage of emergency vehicles - Control for invasive species that may contribute to rapid fire spread (i.e., weeds and grasses). - Utilize CalVTP to expedite treatments - Develop map that highlights critical routes. - Align with evacuation modeling and planning Collaborate with Santa Clara County Roads Dept. to identify areas of elevated fire risk and implement necessary treatment (e.g., Old Santa Cruz Highway, Idylwild Road)	Reduce fuel loading around roads and highways to ensure safe passage of vehicles in event of evacuation and reduce unplanned ignitions from vehicles and highway users.	Regular maintenance schedule should be implemented to ensure clearance levels are maintained. Develop standards for road crews, including removal of slash. Update the CWPP project tracking tool with progress and relevant statistics.	- SRA - CA Fire Safe Council - CFIP - NRCS - FEMA - GHGRF

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
RL7		M	Within 18 months and ongoing	Mobilize private landowners to reduce fuels around homes and communities	Private lands across all communities	FireSafe Council County and private lands.	- Planning Team entities should collaborate on development of a property owner "play book" to encourage and support property owner actions. Playbook would include technical information on best management practices for mechanical thinning and manual clearing. - Access to a database of contractors - Project costs within county- knowledge of common fuel treatment methodologies and their associated costs Empower property owners through other mechanisms: - Develop an enforcement program providing the County with cause to clean up derelict or abandoned lots. - Develop an incentive program for property owners. - Identify treatment burdens and address with outreach - Establish a community bulletin for property owners to post information on abandoned structures and vegetation buildup on privately owned yards. - Consider working with local volunteer groups to increase capacity.	Provide residents with information that helps them prioritize treatments and plan their defensible space projects.	Monitor effectiveness of different treatment approaches and implement adaptive approach for updating the list depending on uptake of various methods. Update the CWPP project tracking tool with progress and relevant statistics.	- NPS - U.S. Forest Service - CAL FIRE - PG&E
RL8		L	Ongoing	Continue established agency partnerships that retain hand crews for fire hazard reduction	Countywide	County Fire, CAL FIRE, County Sheriff (Weekend Work Program), CCC	Fuels management crews can be utilized as a countywide resource to provide support during incident response, and they can achieve significant progress in fuels reduction projects. Continue crew work in fire defense improvement work throughout the county. - Develop equipment needs to accomplish work (including maintenance) and seek funding for purchase. - Create an educational tool for land/property owners re: various methods, techniques, and cost for various fuel treatments. - Cultivate and support partnerships with NGOs and volunteer groups to support implementation of projects.	Create resilient landscapes and address potential for extreme wildfire behavior in and around the WUI. Create and maintain accountability with local landowners/ managers.	Monitor cost effectiveness through benefit cost ratio approach Update the CWPP project tracking tool with progress and relevant statistics.	- CAL FIRE Grant Programs - SRA - CA Fire Safe Council - CFIP - NRCS - FEMA - GHGRF
RL9		M	Within 5 years	Feasibility study for biomass reduction and utilization	Countywide	Public-Private Partnerships	Convene public and private industry partners to explore potential methods for biomass reduction and utilization. - Conduct benefit analysis to ensure that the energy production potential outweighs transportation costs - Work with local biomass utilization centers for future partnerships with fuel managers and fire agencies	Address a need for removal of hazardous fuels resulting from treatments Increase opportunities for treatment funding by creating a carbon benefit Create resilient landscapes through increased fuel treatments.	Bi-monthly or quarterly review of progress Monitor cost and carbon benefit and develop standards for biomass utilization from fuel treatments. Update the CWPP project tracking tool with progress	- CAL FIRE Grant Programs - SRA - CA Fire Safe Council - CFIP - NRCS - FEMA - GHGRF

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
RL10		H	Ongoing	Create a full-time permanent funded Countywide Wildfire Coordinator Position	Countywide	Santa Clara County, FireSafe Council	Establish funding for a full-time Santa Clara County Wildfire Coordinator to increase wildfire planning efforts, implement trainings for residents and county agencies, and coordinate mitigation efforts with greater effectiveness. - Must receive budget approval from Board of Supervisors - FSC would provide list of responsibilities of position	Increase local and county level planning Build resilient landscape by scaling up wildfire planning, coordination, and training on a county level	Update the CWPP project tracking tool with progress.	- Internal County funds - CAL FIRE Grant Programs - SRA - CA Fire Safe Council - CFIP - NRCS - FEMA - GHGRF
RL 11		H	Within 5 years	Survey for dead and dying trees and conduct removal projects throughout	County Wide Lexington Hills area	Santa Clara County	Conduct a thorough visual survey of the designated area to identify dead and dying tree, recording coordinates, tree characteristics, and overall density. - Prioritize removal projects based on immediate threats to infrastructure, public safety, or high-value areas - Develop a detailed plan for the safe and efficient removal of dead and dying trees Coordinate with trained personnel and monitor progress	Build resilient landscape by reducing dry fuel loads throughout County	Update the CWPP project tracking tool with progress and relevant statistics.	- SRA - CA Fire Safe Council - CFIP - NRCS - FEMA - GHGRF

Table E.2. Recommendations for Creating Fire-Adapted Communities (Public Education and Reducing Structural Ignitability)

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
FAC 1		H	Ongoing	Decrease ignitions from unhouesd populations.	WUI areas with significant unhouesd populations including parks and open space areas countywide.	Santa Clara County, private and state lands.	Create a task force or team of PIOs and County officials including members of the community to create and disseminate outreach materials. - Unify coordination. - Create consistent messaging. - Create goals and objectives. - Evaluate areas of concern - Provide information and resources guiding individuals in the safe use of heating and cooking materials. - Provide unhouesd populations with more opportunities to make use of fuel sources that reduce the risk of wildland ignitions. - Consider implementing a fuel canister recycling program for the purpose of reducing the use of open flames and canister waste. - Apply for Community Resilience Centers Program	Reduce wildland ignitions resulting from unhouesd populations.	PIOs meet once a quarter or once a month. Evaluate goals and objectives. Update the CWPP project tracking tool with progress and relevant statistics.	- Firewise grants - FP&S (FEMA) - EPA Environmental Education Grants - CWDG
FAC2		L	Ongoing	Create collaborative relationships with local agricultural and ranching communities.	Countywide	County, state, and private lands.	County planning collaborative community practice – they have a heat and air quality group; this could be a starting point for a steering committee. Collect a list of organizations that work with communities and identify ways to collaborate. Analyze and address trends in shifting livestock types to offset hurdles associated with climate change and wildfire. The Firesafe Council can facilitate meetings between the CWPP Advisory Team and ranchers after the CWPP is developed.	Raise awareness of wildfire risks and hazards in rural areas throughout the County.	Establish regular steering committee meetings. Update the CWPP project tracking tool with progress	- Firewise grants - FP&S (FEMA) - EPA Environmental Education Grants - CWDG

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
FAC3		M	Ongoing	Provide wildland fire overview classes to local reporters and news press employees to ensure the information that is being disseminated is correct and not misleading.	Countywide	Local news stations, reporters, newspapers, and public bulletins.	Create a curriculum in collaboration with County PIOs and FPD officials. - Provide training on proper language regarding wildland fire. - Provide an overview of the incident command system and decision-making process. - Provide example press releases and methods for disseminating information to the public. - Reduce the use of dramatic language and provide context and clarity in a way that reduces fear and panic in the community.	Create more trust between the community and fire agencies. Increase the likelihood of residents to follow evacuation orders.	Provide Annual refreshers or classes to reporters, editors, PIOs, and other press-related employees. Update the CWPP project tracking tool with progress	- Firewise grants - FP&S (FEMA) - EPA Environmental Education Grants - CWDG
FAC4		H	Ongoing	Work with local fire departments and communities to attain and maintain Firewise USA recognition.	Santa Clara County fire departments and communities. Santa Clara County FireSafe Council	County and private.	SCCFSC working directly with CALFIRE and NFPA as a Regional Coordinator SCCFSC in conjunction with FPDs will work with local community leaders and HOAs for attaining and maintaining Firewise certifications.	Reduce the risk and hazards of wildfire to the WUI. Empower residents to work with their neighbors to build greater wildfire resiliency on the community level.	Work with communities to establish new Firewise USA recognition and assist community Firewise committees to evaluate progress towards annual Firewise USA recognition. Update the CWPP project tracking tool with progress and relevant statistics.	- Coastal Conservancy - CWDG - California Firesafe Council - CAL FIRE
FAC5	Ongoing	H	Ongoing	Form a task force to do parcel-level inspection work to enhance risk modeling and be an educational resource; utilize portable data collection and ArcGIS as analysis tools.	Countywide	Private homes and businesses.	Must have an agency champion to be accepted by the public. Agency responsibility would fall to the County Fire Department and would expand to SCCFSC and other entities to increase capacity. Carry out parcel-level assessments to enhance risk assessment model components at a finer scale. Add data to the risk-hazard model and re-run as necessary.	Create a comprehensive database of parcel-level inspection data. Inform decision-makers on risks to structures throughout the county.	Set a target number of parcels to be assessed each year. Review the number of parcels assessed each year at the annual CWPP meeting. Update the CWPP project tracking tool with progress	- Firewise grants - FP&S (FEMA) - EPA Environmental Education Grants - CWDG - SRA - GHGR

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
FAC6	Ongoing	H	Ongoing	Establish and enforce defensible space standards.	County-wide, but prioritize high and risk areas as delineated by the risk-hazard assessment and specifically, 'risk to structures' layer.	Local fire protection districts, HOAs, Private landowners	Promote defensible spaces: • Make sure new homes/structures are made with non-combustible materials (i.e., encourage structural hardening) • Enforce a minimum of 100 feet of defensible space around structures. • Clean and maintain ingress/egress routes. • Ensure there are two ways out of a community. • Consider landscaping methods across multiple properties that reduce fire potential (e.g., connect fuel treatments across different properties) • Create a defensible space program. Include pre-determined inspection frequency and education/outreach efforts. • Develop a staffing plan to support enforcement and seek funding to implement the plan. • Educate property owners on real actions that could mitigate their wildfire hazard and risk. • Provide tax incentives for defensible space actions. • Work with insurance companies to determine the potential to provide incentives for defensible space associated with reduced insurance premiums. • Consider green waste pickup/disposal options. • Promote and educate residents on home hardening using NFPA, IBHS, or NIST standards	Reduce loss of life and structures through defensible space.	Annual program evaluation and updates as necessary. Consider updates to the building code, where needed Update the CWPP project tracking tool with progress	• Firewise grants • FP&S (FEMA) • EPA Environmental Education Grants • CWDG • BRIC • SRA • GHGR
FAC7	Ongoing	L	Ongoing	Add hyperspectral and LiDAR imaging to periodic aerial photography flights.	Countywide and surrounding jurisdictions.	Private, county, and state lands.	Work in conjunction with the County Assessor or other agency that acquires aerial photography of the county and add additional sensing cameras to flights to acquire specialized vegetation data.	Hyperspectral and LiDAR can provide in-depth identification and analysis of hazards and risks associated with fuels and topography. These methods may work well to evaluate the efficacy of fuel treatments and fuel breaks.	Periodic new flights to update data sets. Update the CWPP project tracking tool with progress	• Firewise grants • FP&S (FEMA) • EPA Environmental Education Grants • CWDG • BRIC • SRA • GHGR

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
FAC8	Ongoing	H	Ongoing	Educate citizens on how to achieve contemporary WUI code compliance in retrofits/cost: benefit ratio. Provide workshops and/or demonstration site.	Countywide	Fire Safe Councils, County Fire, CAL FIRE	Estimate costs for workshops and/or webinars. Provide opportunities for the public to learn about WUI code and strategies for implementing home hardening upgrades. See Chapter 4: Reducing Structural Ignitability and Appendix G, Property Owner Resources. Refer to reports by Headwaters Economics on recent home hardening upgrade options and costs for CA Strategize on ways to coordinate this project with parcel level inspection work. Strategize avenues for engaging the public. Be opportunistic- engage residents following a local wildfire or at existing well-attended events, i.e., annual BBQ, Pancake Breakfasts, and open days offered by Fire Departments. Acquire resources through the Community Resilience Centers Program to establish neighborhood-level resilience centers.	Increase compliance with County code. Reduce fire risk levels for individual parcels and the community.	Update the CWPP project tracking tool with progress and relevant statistics.	- Firewise grants - FP&S (FEMA) - EPA Environmental Education Grants - CWDG - BRIC - SRA - California Fire Safe Council
FAC9		H	Ongoing	Track Firewise USA recognized communities, home inspections, outreach events, fuel mitigation work, Firesafe Council activities, and CWPP action items in the CWPP project tracking tool.	N/A	Santa Clara County SCCFSC	Establish dedicated county personnel to evaluate project progress, collect information from PIOs and fire departments on outreach and education, and compile data on home inspections and Firewise USA community. Regularly update the CWPP project tracking tool with relevant statistics to be reviewed by the public and monitored by county officials. Align actions and updates across the county hub site, story map, and CWPP project tracking tool. Collaborate with groups countywide to incorporate regular updates to the CWPP hub site and story map. Coordinate regular meetings to discuss projects and CWPP updates. Develop and maintain countywide FAC practitioner database	Track the progress of different projects, programs, and initiatives. Provide a centralized database of certifications, inspections, and mitigation activities that can help with future grant work and funding goals.	Utilize the CWPP project tracking tool at annual CWPP meetings, Firesafe Council meetings, and Emergency Management Planning meetings. Reach out to SWCA Environmental Consultants for guidance and training on using the tracking tool.	- Firewise grants - FP&S (FEMA) - EPA Environmental Education Grants - CWDG - BRIC - SRA - California Fire Safe Council
FAC10		M	Ongoing	Increase and encourage attendance of the Ag pass program	Rural Santa Clara County	Santa Clara County, commercial agriculture producers	The existing Ag pass program is effective in addressing post-fire concerns for ranchers and farmers in the area. Conduct outreach and marketing for the Ag Pass program in relevant areas throughout the county. The program allows eligible Santa Clara County cattle producers access to their livestock in the event of a wildfire.	Inform commercial ranchers and farmers of opportunities to access livestock in the event of a wildfire.	Evaluate attendance of outreach events and fire safety trainings associated with the Ag pass program.	- Firewise grants - FP&S (FEMA) - EPA Environmental Education Grants - CWDG - BRIC - SRA - California Fire Safe Council
FAC11		M	Ongoing	Incorporate local Resource Conservation Districts (RCDs) in the planning and outreach process for CWPP updates and implementation.	Countywide and surrounding RCDs.	Santa Clara County	Ensure RCDs are given a place at the table. RCDs can provide connections and referrals and often have good information on communities that can help inform land managers during decision-making processes. The Guadalupe-Coyote RCD has a new staff member who can support outreach. They are looking to fill gaps, not provide redundant resources.	Provide the county with more support and information regarding local communities. Support outreach regarding wildfire risk.	Establish an RCD representative on the Advisory Team.	- Firewise grants - FP&S (FEMA) - EPA Environmental Education Grants - CWDG - BRIC - SRA - California Fire Safe Council

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
FAC12		H	Ongoing	Utilize NextDoor as an outreach tool	Countywide		NextDoor now has a public agency platform that can link citizens to their neighborhoods and view agency messaging. Guadalupe-Coyote RCD has 1/3 of its population viewing messages and has seen an increased trend in people signing up for alerts and newsletters. Collaborate with RCDs and PIOs on using NextDoor.	Provide county residents with a reliable and centralized outreach system.	Conduct quarterly meetings to coordinate outreach efforts through the program.	- Firewise grants - FP&S (FEMA) - EPA Environmental Education Grants - CWDG - BRIC - SRA - California Fire Safe Council
FAC 13		H	Ongoing	Create smoke-ready communities through facilitating smoke education and providing resources.	Countywide, focus on smoke prone areas and disadvantaged communities	County Fire Departments and Fire Safe Councils	Identify smoke-prone regions and socioeconomically disadvantaged communities that are most vulnerable to impacts of smoke. Work with FDs and Fire Safe Councils to develop education materials Work with County Air Quality and Extreme Heat Working Group to develop materials Provide resources (e.g. air cleaners) to vulnerable and at-risk communities Disseminate information through various channels, including: - Social Media - Public Events - In-Person Training and Workshops - School Curriculum integration	Provide the community with knowledge and strategies to reduce the health impacts associated with smoke from wildfires	Annual program evaluation and updates as necessary.	- CWDG - Coastal Conservancy - CAL FIRE - California Firesafe Council
FAC 14		M	Ongoing	Research the need for a Prescribed Burn Association (PBA) or a Prescribed Burn Council (PBC), and work with partners to implement a program.	Countywide	SCCFSC, RCDs, CAL FIRE, county fire departments, landowners, etc.	Evaluate existing legal and regulatory framework surrounding prescribed burns in Santa Clara Research the approach used by other existing PBAs/PBCs in California organize their efforts mitigate wildfire risk Garner public involvement and interest, disseminate educative materials to spread awareness of the benefits of prescribes fires Determine resource availability and additional needs to establish and operate of PBA/PBC: - Trained personnel - Equipment - Funding - Partnership	Educate communities about the use of prescribed fire Reduce loss of life and structures through decrease fuel loads	Annual program evaluation and updates as necessary.	- Coastal Conservancy - CAL FIRE - California Firesafe Council
FAC 15		H	Ongoing	Continued FAC education for people residing, working, and recreating in Santa Clara County.	County Wide	County Fire Departments and Fire Safe Councils	Educating members of the community on wildfire science, fuels reduction, home hardening through: - Training programs and workshops - Community guidelines - Train-the-trainer programs - Forest health education programs Promoting knowledge about smoke and its impact with: - Local alerts - Public service announcements - Guidance for indoor air quality measure (e.g. air purifiers, closing windows) Collaborate with FDs to develop plans and communicate strategies that will help maximize evacuation readiness	Provide those living, working, and taking part in recreation within the County with proper wildfire education Increase community resilience to wildfire impacts	Annual program evaluation and updates as necessary.	- CWDG - CAL FIRE - California Firesafe Council

Table E.3. Recommendations for Safe and Effective Wildfire Response

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
FR1		M	Ongoing	Reestablish protocols for preplanned water sources for fire suppression operations during times of drought.	Countywide	Fire Safe Councils or Fire Wise Communities, consultation with SJW, Valley Water and other water providers	Ensure adequate water resources are placed and identified in strategic locations around the county during peak wildfire season. Locations of water resources should be cataloged in an online mapping program. Water infrastructure should be considered during permitting processes and implemented into pre-attack plans. - Implement temporary water storage solutions on private lands (dip tanks, pumpkins, cisterns). - Conduct portable dip tank training with fire personnel. - Create a countywide GIS and map of temporary water resources. - Improve existing fire flows in remote areas to meet fire flow requirements - Make sure fire flows in new developments meet fire flow requirements - Install water tanks where feasible. In locations water tanks cannot be installed, have tanks filled and pre-loaded to be transported to areas of need in the event of a fire - Install additional tanks and standpipes - Install helicopter dip tanks where appropriate - Initiate a detailed study of feasible locations for water development improvements - Install hand pumps or other methods independent of the grid for accessing private well water - Ensure suppression crews have the appropriate "keys" for hydrants or standardized water fittings - Consult with SJW, Valley Water and other water providers	Improve fire-fighting response Alleviate public and agency concerns for limited water supply in certain areas during times of drought Aligns with the following plans: Santa Clara County Operational Area Hazard Mitigation Plan (2017)	Update the CWPP project tracking tool with progress and relevant statistics.	- CAL FIRE – Grant Portal - AFG - HMGP - EMPG - FMAG - RCP - SAFER - BRIC
FR2		L	Ongoing	Determine the feasibility of implementing a drone program for the purpose of monitoring wildfire ignitions and Initial Attack operations.	Countywide	Local and state fire agencies	Conduct a cost benefit analysis determining the economic viability of a UAS program. Identify and/or establish appropriate training protocols and certifications. Create or identify a UAS job hazard analysis (JHA). Emphasize to public that unauthorized UASs in active fire areas interfere with Initial Attack operations	Improve fire reporting of small and remote fires. Notify fire suppression agencies of wildfire ignitions and spread.	Certified UAS pilots are required. Notify local civilian and fire related aviation authorities of flight operations.	- CAL FIRE – Grant Portal - AFG - HMGP - EMPG - FMAG - RCP - SAFER - BRIC
FR3		L	Ongoing	Install a Countywide fire detection camera system.	Countywide	Santa Clara County Office of Emergency Management	Determine costs, upkeep, and operational capacity of a fire detection camera system. Consider using a combination of UAS, Landscape cameras, and satellite data.	Improve early detection of new wildfire ignitions in Santa Clara County.	Yearly testing and maintenance before peak wildfire season.	- CAL FIRE – Grant Portal - AFG - HMGP - EMPG - FMAG - RCP - SAFER

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
FR4		H	Within 1 year	Develop WUI Pre-Plans for public safety agencies to utilize in fire response	Countywide	County Fire Agencies	Utilize Zonehaven software. Ground truth Zonehaven information by entity.	Facilitate safe and effective wildfire response	Yearly testing and maintenance before peak wildfire season.	- CAL FIRE – Grant Portal - AFG - HMGP - EMPG - FMAG - RCP - SAFER
FR5		H	Within 1 year	Develop a Countywide evacuation plan	Countywide	County Fire Agencies	Utilize Zonehaven software Ground truth Zonehaven by entity. Use Assembly Bill 2911 subdivision review for ingress/egress.	Notify citizens of evacuation plans expeditiously. Aligns with the following plans: Santa Clara County Operational Area Hazard Mitigation Plan (2017)	Yearly testing and maintenance before peak wildfire season.	- CAL FIRE – Grant Portal - AFG - HMGP - EMPG - FMAG - RCP - SAFER
FR6	Ongoing	M	Ongoing	Identify populations with disabilities or access needs during evacuations.	Countywide	Santa Clara County Office of Emergency Management	Integrate consideration and approaches for evacuation of vulnerable populations into the design of education and outreach programs as well as preplanning processes.	Assist in the safe evacuation of vulnerable populations Aligns with the following plans: - Santa Clara County Operational Area Hazard Mitigation Plan (2017) - Strategic Visioning Plan (EOP) (2022)	Yearly assessment of data quality.	- CAL FIRE – Grant Portal - AFG - HMGP - EMPG - FMAG - RCP - SAFER
FR7		H	Within 1 year	Identify communities that have poor ingress and egress routes or one-way-out communities and determine potential solutions	Countywide	Local Fire Protection Districts	Develop a working group- outreach to annex holders- to address community concerns Address specific ingress concerns in appropriate annexes Utilize existing CAL FIRE maps Explore and implement a permitting process Align with the Safety Element and HMP Incorporate findings into/from jurisdictional annexes and other evacuation related studies or assessments	Improve the evacuation of remote communities and people with poor ingress and egress options. Aligns with the following plans: - Santa Clara County Operational Area Hazard Mitigation Plan (2017) - Strategic Visioning Plan (EOP) (2022) - Santa Clara County General Plan Safety Element (2023)	Yearly meeting of annex holders to evaluate egress and ingress needs.	- CAL FIRE – Grant Portal - AFG - HMGP - EMPG - FMAG - RCP - SAFER
FR8		H	Within 1 year	Repaint or establish new evacuation arrow markers in neighborhoods.	Countywide	Santa Clara County Office of Emergency Management	Paint arrows red or yellow. Align markers with evacuation planning and identify temporary refuge areas.	Improve the efficiency and safety of evacuations. Aligns with the following plans: - Santa Clara County Operational Area Hazard Mitigation Plan (2017) - Strategic Visioning Plan (EOP) (2022)	Repaint arrows every 10 years	- CAL FIRE – Grant Portal - AFG - HMGP - EMPG - FMAG - RCP - SAFER

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
FR9		M	Ongoing	Improve and provide wildland fire specific training opportunities to local firefighters.	Santa Clara County	Fire Protection Districts, Fire Stations, Rural Volunteer Fire Departments.	Expand certifications and qualifications for fire department personnel. Ensure that all firefighters are trained in basic wildfire behavior, basic fire weather, and that all company officers and chief level officers are trained in the wildland command and strike team leader level. Develop agreements between agencies to provide training opportunities for fire staff. Ensure fire departments require all firefighters to be red carded. A red card is required for firefighters to work on an active federal fire incident. Increase funds for volunteer Fire Department training for response to fires in the WUI. Reach out to the National Wildfire Coordination Group (NWCWG) for training materials, online courses, and instructor needs. Provide training opportunities for firefighter trainees to meet NWCWG standards. Expand chainsaw operation training programs.	Improve local fire department wildland fire response and suppression capabilities. Reduce the damage caused by wildfires. Reduce the likelihood of firefighter injuries and fatalities. Aligns with the following plans: • Santa Clara County Operational Area Hazard Mitigation Plan (2017) • Strategic Visioning Plan (EOP) (2022)	Provide annual red card training/refresher/pack test events before the start of fire season. Provide online wildfire training classes/refresher courses. Establish Inter-agency training cooperation.	• CAL FIRE – Grant Portal • AFG • HMGP • EMPG • FMAG • RCP • SAFER
FR10	New	L	Ongoing	Create partnerships with local ranchers. Increase cooperation between CAL FIRE, Incident Management Teams, and local landowners.	Santa Clara County FSC	Rural areas, ranchlands, agricultural lands, privately owned open spaces.	Many local ranchers have private access roads, gates, and bridges that can aid Incident Management Teams with fire suppression operations and expedite Initial Attack resource response. Private access roads are not publicly mapped, and local landowners would like it to stay that way. Consider implementing an NDA to acquire private access information without making it publicly available. Ag Pass Contacts: Stephanie Moreno Sheila Barry	Improve Initial attack response capabilities. Improve fire agencies data on ingress and egress routes.	Conduct pre-fire season meetings with local ranch and agricultural leaders.	• CAL FIRE – Grant Portal • AFG • HMGP • EMPG • FMAG • RCP • SAFER

This page intentionally left blank.

APPENDIX F:

Fuel Treatment Types and Methods

This page intentionally left blank.

FUELS TREATMENT TYPES

DEFENSIBLE SPACE

Defensible space is perhaps the fastest, most cost-effective, and most efficacious means of reducing the risk of loss of life and property. Although fire agencies can be valuable in providing guidance and assistance, creating defensible space is the responsibility of the individual property owner (Figure F.1). The Casualty Actuarial Society (CAS) compared the impact of individual and community-level mitigation on individual property owner risks. They found that “the model indicates that all mitigation measures reduce the individual risk, but individual home mitigation – which individual property owner control – can have a bigger impact than any community mitigation alone” (CAS 2023).

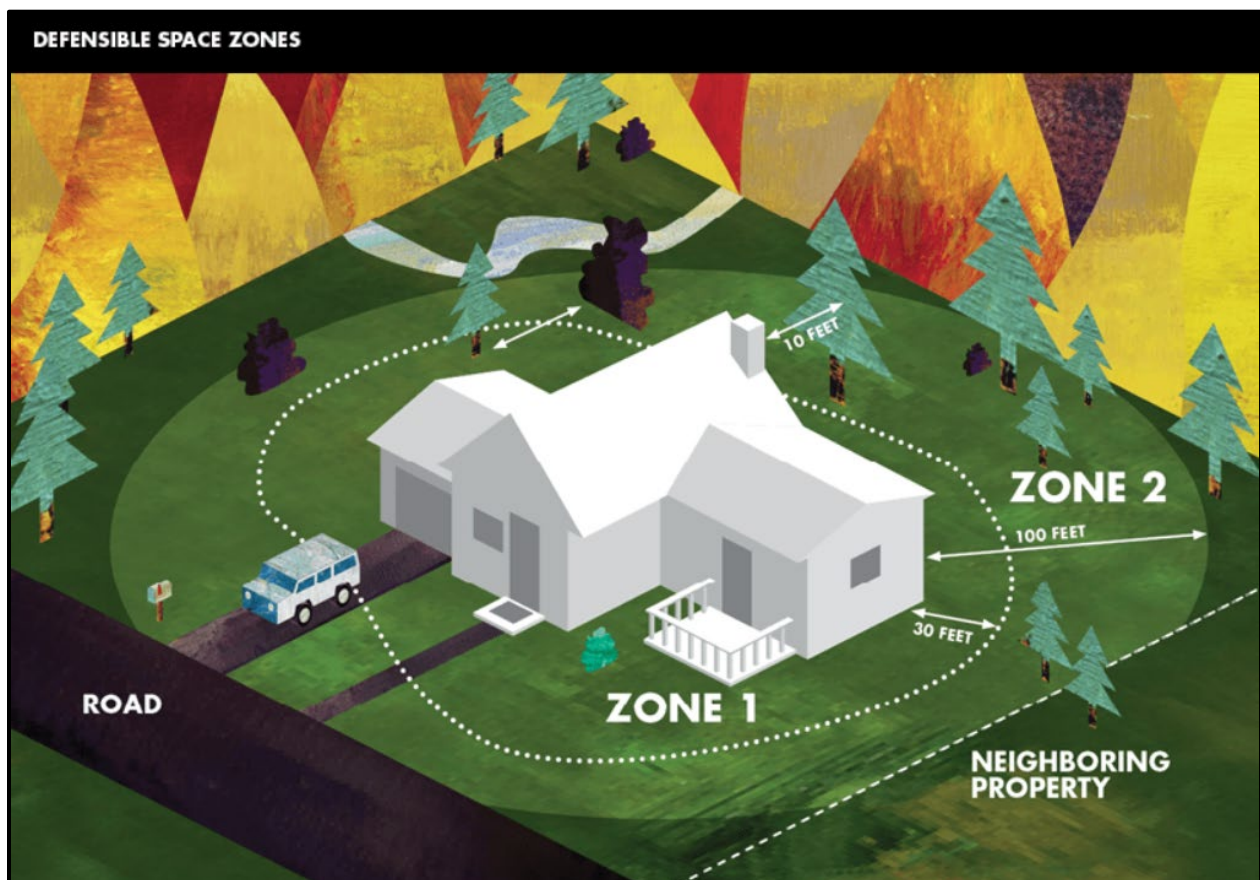


Figure F.1. Defensible space zones providing clearance between a structure and adjacent woodland or forest fuels. This figure does not depict Zone 0.

Source: CAL FIRE 2022i

Effective defensible space consists of creating an essentially fire-free zone adjacent to the home (Zone 0), a treated secondary zone that is thinned and cleaned of surface fuels (Zone 1), and (if the parcel is large enough) a transitional third zone that is basically a managed forest area (Zone 2). These components work together in a proven and predictable manner. Zone 0 keeps fire from burning directly to the home; Zone 1 reduces the adjacent fire intensity and the likelihood of torching, crown fire, and ember production; and Zone 2 provides the same at a broader scale, keeping the fire intensity lower by maintaining a more natural, historic condition (see Figure F.1).

It should be emphasized that defensible space is just that—an area that allows firefighters to work effectively and with some degree of safety to defend structures. While defensible space may increase a home's chance of surviving a fire on its own, a structure's survival is not guaranteed, with or without firefighter protection. Nevertheless, when these principles are consistently applied across a neighborhood, everybody benefits.

The definition of defensible space via state and local codes, its maintenance by property owners, and enforcement by fire agencies as needed is a common part of wildfire risk mitigation. The California State Board of Forestry issued General Guidelines for Creating Defensible Space in 2008, following a change in [Public Resources Code 4291](#) that expanded defensible space clearance requirements from 30 to 100 feet around buildings and structures within SRAs or very high fire hazard severity zones within LRAs. The guidelines were updated again in January 2021 to require an ember-resistant zone within 5 feet of the home. Some aspects about WUI defensible space that are often overlooked include:

- Greater defensible space may be needed due to local conditions, such as slope, fuel density, building materials, or location.
- Fuel reduction has more to do with disrupting fuel continuity so that the spread of fire is impeded, rather than creating a denuded zone around a home. For example, pruning the lower limbs of trees creates a break between ground fuels and tree canopies, reducing the chances that a fire will move from a ground fire to a crown fire.
- Communities may wish to develop defensible space areas that are greater than 100 feet for even better protection; the code sets only a minimum distance. However, expanding treatments beyond property lines can only be done if allowed by state law, local ordinance, rule, or regulation.
- Defensible space also provides a safer environment within which firefighters can work. This environment is more than vegetation clearance; defensible space also involves emergency vehicle access, water supply, and clear street signs and addresses. All these factors, and many more as identified by previous community-level CWPPs, affect the usefulness of defensible space in structure protection.
- Vegetation fuel reduction projects require compliance with all federal, state, or local environmental protection laws.

Additionally, the Public Resources Code was amended in January 2021 to require an ember-resistant zone within 5 feet of the home/structure on or before January 1, 2023. This translates to having a clearance of 5 feet between the home/structure and any materials that would likely be ignited by embers CA Public Resources Code Section 4291 (California Public Law 2023).

The three zones for defensible space actions are described below (CAL FIRE 2022)i:

Zone 0 Immediate Zone–Ember Resistant: As of January 1, 2023, Assembly Bill 3074 requires the Board of Forestry and Fire Protection to develop the regulation for Zone 0. This zone has been proven to be the most important defensible space zone for protecting your home against wildfire. This zone consists of the immediate area around a home and is defined as 0 to 5 feet from the property structure, including areas under and around all structure attachments, such as sheds or decks. Zone 0 requires the most stringent wildfire fuel reduction methods as actions taken within this zone can directly influence whether a property ignites. See Ember Ignition Hazards in Chapter 2. Recommendations for treating Zone 0 include (CAL FIRE 2022i):

- Use non-combustible landscaping materials, such as gravel, in place of mulch.

- Clear all dead and dying debris from around a structure, including branches, dead leaves, pinecones, pine needles, grasses, and shrubs. Remember to check areas where the debris can accumulate, such as gutters, stairways, porches, and roofs.
- Clear all branches or vegetation within 10 feet of any chimney or stovepipe outlet.
- To keep vegetation within the 5-foot buffer around all structures, make sure plants are thoroughly watered, and keep non-woody, low-growing plant species if possible.
- Limit the use of combustible materials, such as outdoor furniture, on decks or patios.
- Relocate firewood or lumber to Zone 2.
- Replace structures attached to a home, such as fencing or gates, with non-combustible materials.
- If possible, keep garbage receptacles outside of Zone 0.
- If possible, keep all vehicles, boats, ATVs, and any other machines outside of Zone 0.

Zone 1 Intermediate Zone—Clean and Green: Zone 1 consists of the first 30 feet from structures, including the home, decks, garages, etc. If a property line extends less than 30 feet, Zone 1 would be the distance from structures to property line. This zone features fuel reduction efforts and serves as a transitional area between Zones 0 and 2. Recommendations for treating Zone 1 include (CAL FIRE 2022i):

- Remove all dead and dying vegetation, including vegetation debris such as leaf litter. Be sure to check roof and gutters as well.
- Maintain a minimum buffer of 10 feet between a chimney and any vegetation, including dead or overhanging branches. Be sure to remove all branches that hang over the roof.
- Maintain trees by trimming them regularly and keep a minimum 10-foot buffer between tree canopies.
- Relocate fire or lumber to Zone 2.
- Trim or remove any flammable vegetation near windows.
- Remove any items or vegetation that could catch fire and ignite other property structures, such as vegetation under decks or stairs.
- Separate any items that could ignite, such as trees, shrubs, swing sets, patio furniture, etc.

Zone 2 Extended Zone—Reduced Fuel: This zone encompasses an area 30 feet from a structure out to 100 feet, or the property line, whichever is closer. This zone addresses fuel reduction to prevent wildfires from spreading. Recommendations for treating Zone 2 include (CAL FIRE 2022i):

- Maintain all grasses to reach a maximum height of 4 inches.
- For shrubs or trees, maintain horizontal space between plants of at least two times a plant's size (Figure F.3). Additional space between vegetation is needed for properties on slopes.
 - Flat to mild slope (less than 20%): Minimum distance of 10 feet between trees and two times the size of other plants. Example: For shrubs 2 feet in diameter, at least 4 feet are needed between shrubs.
 - Mild to moderate slope (20%–40%): Minimum distance of 20 feet between trees and four times the size of other plants. Example: For shrubs 2 feet in diameter, at least 8 feet are needed between shrubs.

- Moderate to steep slope (greater than 40%): Minimum distance of 30 feet between trees and six times the size of other plants. Example: For shrubs 2 feet in diameter, at least 12 feet are needed between shrubs.
- Create vertical space between vegetation by clearing all branches at least 6 feet from the ground for isolated trees, or for trees with nearby shrubs, clear at least 3 times the shrub height (Figure F.4).
 - Example: A 4-foot shrub is growing near a tree. A clearance of 12 feet (3×4) is needed between the top of the shrub and the lowest tree branch.
- Vegetation debris such as dead leaves, branches, twigs, pinecones, etc., may be allowed up to 3 inches in depth. However, it is best to remove vegetation debris.
- All wood or lumber piles must have a 10-foot buffer of bare mineral soil in all directions; no vegetation is allowed.

In addition to the recommendations listed above, CAL FIRE suggests maintaining a clearance zone of 10 feet around any outbuildings or liquid propane gas storage tanks, and an additional 10-foot clearance zone with no flammable vegetation (CAL FIRE 2022i).

A defensible space of 100 feet is required by California State law. Figure F.2 provides a brief synopsis of the 100-foot defensible space requirement for California residents living in the WUI.

Property owners are encouraged to take advantage of local resources for fire prevention and mitigation. Property owner actions have been found to also motivate neighbors to act, increasing the scope of the wildfire mitigation across a community (Evans et al. 2015). Adopting a phased approach can make the process more manageable and encourage maintenance.

The Santa Clara County Fire Department and CAL FIRE provide defensible space recommendations on their websites at:

- <https://sccfiresafe.org/prepare/creating-defensible-space/>
- <https://www.fire.ca.gov/dspace>

The Santa Clara Fire Council has created a defensible space presentation to assist educating county residents: <https://sccfiresafe.org/learn/defensible-space-presentation/>



Figure F.2. Defensible space.

Source: CAL FIRE 2022i

Specific recommendations should be based on the particular hazards adjacent to a structure such as slope steepness and fuel type. Local fire authorities or CAL FIRE should be contacted if a professional assessment seems warranted. Firewise guidelines are an excellent resource, but creating defensible

space does not have to be an overwhelming process. Assisting neighbors may be essential in many cases. Property owners should consider assisting the elderly, sharing ladders for gutter cleaning, and assisting neighbors with large thinning needs. Adopting a phased approach can make the process more manageable and encourage maintenance (Table F.1).

Table F.1. Example of a Phased Approach to Defensible Space

Year	Project	Actions
1	Basic yard cleanup (annual)	Dispose of clutter in the yard and under porches. Remove dead branches from yard. Mow and rake. Clean roofs and gutters. Remove combustible vegetation near structures. Coordinate disposal as a neighborhood or community. Post 4-inch reflective address numbers visible from road.
2	Understory thinning near structures	Repeat basic yard cleanup. Limb trees up to 6–10 feet. Trim branches back 15 feet from chimneys. Trim or cut down brush. Remove young trees that can carry fire into forest canopy. Coordinate disposal as a neighborhood or community.
3	Understory thinning on private property along roads and drainages	Limb trees up to 6–10 feet. Trim or cut down brush. Remove young trees that can carry fire into forest canopy. Coordinate disposal as a neighborhood or community.
4	Overstory treatments on private property	Evaluate the need to thin mature or diseased trees. Prioritize and coordinate tree removal within neighborhoods to increase cost effectiveness.
5	Restart defensible space treatment cycle	Continue the annual basic yard cleanup. Evaluate need to revisit past efforts or catch those that were bypassed.

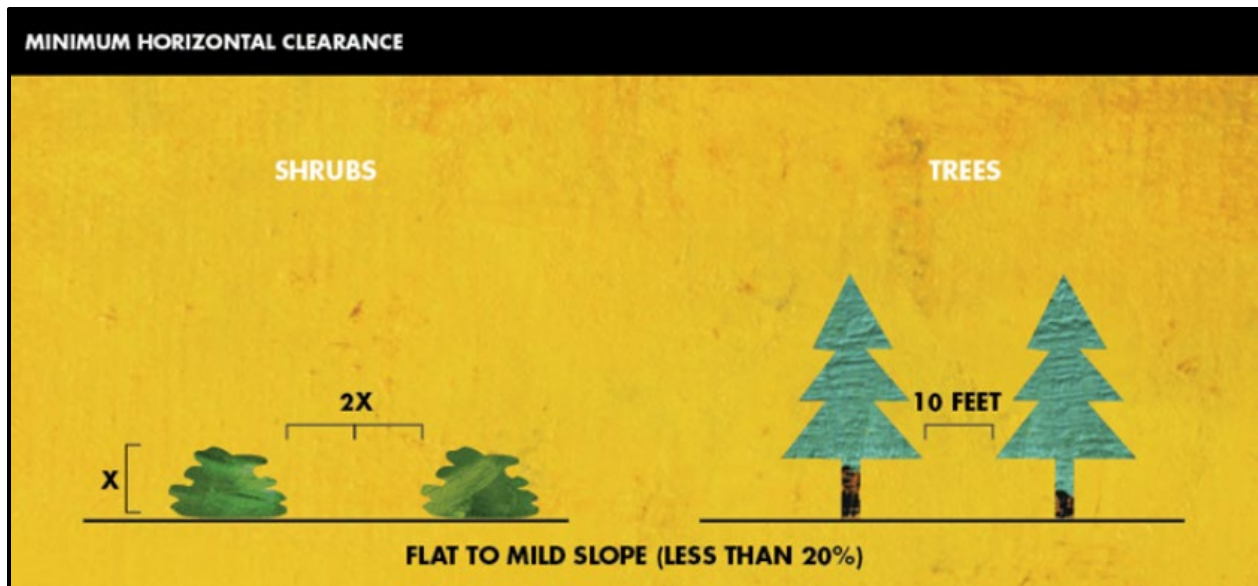


Figure F.3. Minimum horizontal clearance.

Source: CAL FIRE 2022i



Figure F.4. Minimum vertical clearance.

Source: CAL FIRE 2022i

Specific recommendations should be based on the hazards adjacent to a structure such as slope steepness and fuel type. Firewise guidelines and the Property Owner Resources Appendix (see Appendix G) are excellent resources but creating defensible space does not have to be an overwhelming process. The NFPA offers a free [Community Wildfire Risk Assessment Tutorial](#) and an online learning module:

[Understanding the Wildfire Threat to Homes](#). Both tools are great resources for learning about and implementing defensible space.

Adopting a phased approach can make the process more manageable and encourage maintenance (Table F.2).

Table F.2. Example of a Phased Approach to Mitigating Home Ignitability

Year	Project	Actions
1	Basic yard cleanup (annual)	Dispose of clutter in the yard and under porches. Remove dead branches from yard. Mow and rake. Clean roofs and gutters. Remove combustible vegetation near structures. Coordinate disposal as a neighborhood or community. Post 6-inch reflective address numbers visible from road.
2	Understory thinning near structures	Repeat basic yard cleanup. Limb trees up to 6–10 feet. Trim branches back 15 feet from chimneys. Trim or cut down brush. Remove young trees that can carry fire into forest canopy. Coordinate disposal as a neighborhood or community.
3	Understory thinning on private property along roads and drainages	Limb trees up to 6–10 feet. Trim or cut down brush. Remove young trees that can carry fire into forest canopy. Coordinate disposal as a neighborhood or community.
4	Overstory treatments on private property	Evaluate the need to thin mature or diseased trees. Prioritize and coordinate tree removal within neighborhoods to increase cost effectiveness.
5	Restart defensible space treatment cycle	Continue the annual basic yard cleanup. Evaluate need to revisit past efforts or catch those that were bypassed.

Current Structural Ignitability Reduction Programs

Defensible Space Enforcement

The Santa Clara County Fire Department carries out defensible space assessments of homes within their jurisdiction that fall within the designated WUI of the communities they serve. The assessments are carried out on a rotating basis. The department sends mailings to each identified residence prior to fire season, announcing the measures that the resident should take in implementing defensible space practices. State law requires a defensible space of 100 feet around homes and all accessory structures in the very high FHSZ and on all identified properties in the SRA. The Santa Clara County Fire Chiefs Association has developed the following list of required and recommended preventative measures that are included in the mailing.

Enforced Safety Measures:

- A. Create 100 feet of defensible space around home. To accomplish this, create a Green Zone by clearing flammable vegetation 30 feet around structures. Additionally create a Reduced Fuel Zone for remaining 70 feet or to your property line.
- B. Clear ornamental shrubs and trees of dead leaves and branches.
- C. Remove all pine needles and leaves from roofs, eaves, and rain gutters.
- D. Trim tree limbs 10 feet from chimneys or stovepipes and remove dead limbs that hang over rooftops.
- E. Cover chimney outlets or flues with a ½-inch mesh spark arrestor.
- F. Post a clearly visible house address, using at least 6-inch-high numbers, for easy identification.

Additional Recommended Measures:

- A. Trees 18 feet or taller should be limbed up 6 feet from the ground.
- B. Stack woodpiles a minimum of 30 feet from buildings, fences, and combustible materials.
- C. Clear vegetation and other flammable materials from underneath decks. Enclose elevated decks with fire-resistive materials.
- D. If you have any trees near power lines, please contact PG&E at 1-800-PGE-5000 for a free inspection. State law requires vegetation clearance from electrical lines. For more information, visit <http://www.PGE.com>. In most cases, PG&E will remove the tree at no cost to you.
- E. The Santa Clara County Fire Safe Council offers defensible space chipping programs to assist property owners, including special programs for qualified low-income seniors and disabled property owners. For more information, visit <http://www.sccfiresafe.org>.

Santa Clara County fire personnel carry out the inspections beginning in the spring each year. For those properties that are non-compliant, the department will advise the property owner that work is necessary to be in compliance with the applicable regulations. Residents who are unable to complete the measures due to physical disabilities, etc., are asked to contact the department. The resident is welcome to complete the necessary work on their own or they can use a contractor. Follow-up inspections are completed in early summer for properties that did not meet the Enforced Safety Measures (see above) during the first inspection. If residents do not comply with items A through F of the Enforced Safety Measures, the compliance work is completed by an authorized contractor of the relevant municipality, and the charges for the service are applied to the next property tax bill for the property.

Home Ignition Zone Assessments

The Santa Clara County Fire Safe Council offers on-site assessments of structural ignitability and home ignition zone vulnerabilities to residents in its service area. This program brings consultants to see the home and yard in person and to review checklists and recommendations to reduce the risk of the structure being ignited from flying embers, as well as flames in the yard and neighboring structures.

The assessment is based on NFPA's 1144 Standard for Reducing Structure Ignition Hazards from Wildland Fire.

HAZARDOUS FUEL

Fuels should be modified with a strategic approach across the planning area to reduce the threat that high intensity wildfires pose to lives, property, and other values. Pursuant to these objectives, the CWPP contains recommendations developed in the context of existing and planned fuels management projects. These recommendations initially focus on areas adjacent to structures (defensible space), then near community boundaries (fuel breaks, cleanup of adjacent open spaces), and finally in the wildlands beyond community boundaries (larger-scale forest health and restoration treatments). A common focus of fuels treatment is to reduce brush, diseased trees, dead fuels, and immature trees in favor of healthy, more mature trees and shrubs.

While not necessarily at odds with one another, the emphasis of each of these treatment types is different. Proximate to structures, the recommendations focus on reducing fire intensity consistent with County and code standards. Further into open space areas, treatments will tend to emphasize the restoration of historic conditions and general forest health. Cooperators in fuels management should include federal, state, and local agencies, as well as interested members of the public.

Fire management cannot be a one-size-fits-all endeavor; this plan is designed to be flexible. Treatment approaches and methods will be site-specific and should be adapted to best meet the needs of the landowner and the resources available. Moreover, each treatment recommendation should address protection of CVARs, protection of people, critical infrastructure, cultural icons, economic engines, and threatened and endangered species. It is the intent of this plan to be an evolving document that will incorporate additional areas of the CWPP planning area as they change in risk category over time.

Current Hazardous Fuel Mitigation Programs

Vegetation Management Program

CAL FIRE's Vegetation Management Program (VMP) is a formal cost-sharing program that applies prescribed fire and various mechanical treatment methods to reduce wildland hazardous fuels and to achieve other natural resource management goals within SRAs (CAL FIRE 2023c). The Santa Clara Unit has a long history of partnering under such agreements with local landowners to reduce hazardous fuels, improve range and wildlife habitat, and maintain natural ecosystems dependent upon periodic fires. Vegetation management focuses on the volume, structure, and distribution of vegetation on a landscape. Fuel treatments mainly focus on only the surface and ladder fuels.

The CAL FIRE Santa Clara Unit Fire Plan identifies the following priority areas for VMP projects:

- VMP projects where property owners meet the criteria for a cost share agreement and have a signed agreement with CAL FIRE;
- areas with high hazardous fuel loading near WUI zones;
- areas with no recent fire history;
- areas with protected species requiring burning for habitat improvement; and
- areas needing improvement to range capacity or hydrologic production.

OPEN SPACE CLEANUP

The next location priority for fuels treatments should be where the community meets wildland. This may be the outer margins of a town or an area adjacent to occluded open spaces such as a park. Fuel breaks (also known as shaded fuel breaks) are strips of land where fuel (for example, living trees and brush, dead branches, leaves, or downed logs) has been modified or reduced to limit the fire's ability to spread rapidly. Fuel breaks should not be confused with firebreaks, which are areas where vegetation and organic matter are removed down to mineral soil. Shaded fuel breaks may be created to provide options for suppression resources or to provide opportunities to introduce prescribed fire. In many cases, shaded fuel breaks may be created by thinning along roads. This provides access for mitigation resources and firefighters, as well as enhancing the safety of evacuation routes.

Fuel Breaks and Roadside Treatments

After defensible space, the next location priority for fuels treatments is where the community meets the wildland. This may be the outer margins of a town or an area adjacent to open spaces such as a park. Fuel breaks are strips of land where natural vegetation fuels have been modified or reduced to limit the fire's ability to spread rapidly and generate large amounts of embers.

Fuel modifications can include removing dead trees, branches, and downed logs; reducing the amount of deep duff such as needles, leaves, and twigs; mowing or plowing grasses; and pruning or thinning living trees and shrubs. Fuel breaks can be underneath trees where they are called shaded fuel breaks, or out in the sunlight, such as through chaparral, shrublands, or grasslands.

Fuel breaks are typically at least 75 feet wide and can be as much as 200 feet wide, however they retain some vegetation within the fuel break and its habitat values. They should not be confused with fire breaks, which are areas where vegetation and organic matter are removed down to mineral soil.

Fuel breaks may be created to provide options for suppression resources, opportunities to introduce prescribed fire, or to create a zone where crown fire will be forced to the ground where it is more easily contained.

In some cases, fuel breaks may be created by treating vegetation along roadsides where the road is located on a ridge or other geographic feature that helps interrupt wildfire growth. The road surface is included in the width of the fuel break, which can be on one or both sides of the road.

Another type of roadside treatment is evacuation route clearance and thinning. This treatment generally is more modest than a fuel break and is used in locations where fire may easily cross the road, such as where the road traverses a slope, or where homes, fencing, and other features prevent full-width fuel break clearing.

Evacuation route treatments include removing weak trees that lean into or over the road, pruning branches high and wide enough to ensure fire engine and truck passage, and then mowing grasses, removing or thinning shrubs and small trees, removing dead branches, trees and logs, and removing low branches on larger living trees to clear ladder fuels next to the road. Where roads are narrow, bulges and turnouts are cleared to help provide places to pass. Generally, evacuation route treatments extend 6 to 30 feet from both road edges.

Evacuation route treatments make the road safer to use during a wildfire, even when it is burning next to the road, by keeping flame lengths low and the fire on the ground instead of in the crown of the trees, which reduces heat, and by reducing the likelihood of burning trees and utility poles falling into and blocking the roadway. They also help responding fire apparatuses pass evacuating residents.

Evacuation routes that have been treated are also less likely to be sites of fire starts from vehicle fires, sparking trailer chains, burning cigarettes, or similar causes.

The Fire Safe Council has a robust fuel break and evacuation route vegetation treatment program that it coordinates with private landowners, parks and open space managers, and roads departments. Funding for these treatments comes from federal, state, county, and local sources, as well as road associations, utilities, and other corporate or private grants. CAL FIRE also provides in-kind support through the use of conservation/fire crews to provide manual treatments at low cost, which extends grant funds to treat more ground.

LARGER-SCALE TREATMENTS

Farther away from WUI communities, the emphasis of treatments often becomes broader. While reducing the buildup of hazardous fuels remains important, other objectives are often included, such as forest health and resiliency to catastrophic wildfire and climate change considerations. Wildfires frequently burn across jurisdictional boundaries, sometimes on landscape scales. As such, these larger treatments need to be coordinated on a strategic level. This requires coordination between projects and jurisdictions, as is currently occurring.

ACTION ITEMS FOR PROPERTY OWNERS TO REDUCE STRUCTURAL IGNITABILITY

Limited Investment (<\$250)
Regularly check fire extinguishers and have a 100-foot hose available to wet perimeter of home.
Maintain defensible space within 30 feet around home. Collaborate with neighbors to provide adequate fuels mitigation in the event of overlapping property boundaries.
Ensure that house numbers are easily readable from the street.
Keep wooden fence perimeters free of combustible materials. If possible, non-combustible material should link the house and fence.
Store combustible materials (propane, grills, firewood) away from the house.
Remove flammable material from around propane tanks.
Clear out materials from under decks and near structures. Stack firewood at least 30 feet away from the house.
Reduce your workload by considering local weather conditions. First, consider mitigating hazards on the side of your property that faces the prevailing wind direction. Then work around to cover the whole property.

- Keep gutters free of combustible material. Gutters can act as collection points for embers. Gutter cleaning costs: \$0.50 to \$1.50 per square foot; \$110 to \$185 for a one-story home; \$125 to \$250 for a two-story home (national average).
- Maintain roofs by installing flashing, fixing holes, replacing shingles, and closing gaps: \$150 to \$400 for minor repairs (national average).
- Purchase or use a National Oceanic and Atmospheric Administration weather alert radio to hear fire weather announcements: \$25 to \$100.

Moderate Investment (<\$1,500)

- When landscaping in the home ignition zone (HIZ) (approximately 30 feet around the property), select non-combustible plants, lawn furniture, and landscaping material. Combustible plant material like junipers and ornamental conifers should be pruned and kept away from siding. If possible, trees should be planted in groups and no closer than 10 feet to the house. Tree crowns should have a spacing of at least 18 feet when within the HIZ. Vegetation at the greatest distance from the structure and closest to wildland fuels should be carefully trimmed and pruned to reduce ladder fuels, and density should be reduced with approximately 6-foot spacing between trees and crowns.
- Work on mitigating hazards on adjoining structures (sheds, garages, barns, etc.). These can act as ignition points to your home.
- Clear and thin vegetation along driveways and access roads so they can act as a safe evacuation route and allow emergency responders access to the home.
- Construct a gravel turnaround in your driveway to improve access and mobilization of fire responders. Single-car turnaround: \$400 to \$600. Two-car turnaround: \$800 to \$1200.
- Install a roof irrigation system: \$230 to \$1500.

High Investment (\$1,500+)

- Install an environmentally friendly and fire-resistant xeriscape yard: \$5 to \$20 per square foot.
- Install screen vents with non-combustible meshing. Mesh openings should not exceed nominal $\frac{1}{8}$ - $\frac{1}{16}$ -inch size: \$2.50 per square foot. Average cost per home: approximately \$5,000.
- Enclose open space underneath permanently located manufactured homes using non-combustible skirting: \$300 to \$3,000 with an average of \$1,700. Added features include home egress: \$50 to \$85; skirting vents: \$7 to \$25 each.
- Construct a non-combustible wall or barrier between your property and wildland fuels. This could be particularly effective at mitigating the effect of radiant heat and fire spread where 30 feet of defensible space is not available around the structure.
- Install fire resistant soffits and under eave vents to protect your home from heat and embers that can be trapped beneath roof overhangs. Soffit and fascia: \$7,000. Vents: \$1,500.
- Replace exterior windows and skylights with tempered glass or multilayered glazed panels: Average cost per home: \$11,500.
- Update your roof to a non-combustible construction. Look for materials that have been treated and given a fire-resistant roof classification of Class A: \$10,000 to 15,000+.
- Upgrade exterior walls with fire resistant materials. Siding: \$12,000+. Sheathing: \$4,000+.
- Relocate propane tanks underground: \$1,500 to \$ 8,150.

Additional resources regarding home hardening can be found in Appendix G.

FUEL TREATMENT METHODS

Several treatment methods are commonly used for hazardous fuels reduction, including manual treatments, mechanized treatments, prescribed fire, and grazing (Table F.3). This brief synopsis of treatment options is provided for general knowledge; specific projects will require further planning. The appropriate treatment method and cost will vary depending on factors such as the following:

- Diameter of materials
- Proximity to structures
- Acreage of project
- Fuel costs
- Steepness of slope
- Area accessibility
- Density of fuels
- Project objectives

It is imperative that long-term monitoring and maintenance of all treatments are implemented. Post-treatment rehabilitation, such as seeding with native plants and erosion control, may be necessary. In addition, post-treatment fuel clean-up is a must as neglected piles of vegetation may result in increased fire risk.

Table F.3. Summary of Fuels Treatment Methods

Treatment	Comments
Machine mowing	Appropriate for large, flat, grassy areas on relatively flat terrain.
Manual treatment with chipping or pile burning	Requires chipping, hauling, and pile burning of slash in cases where lop and scatter is inappropriate. Pile burning must comply with smoke management policy.
Brush mastication	Brush species tend to re-sprout vigorously after mechanical treatment. Frequent maintenance of treatments is typically necessary. Mastication (ground-up timber) tends to be less expensive than manual (chainsaw) treatment and eliminates disposal issues.
Timber mastication	Materials up to 10 inches in diameter and slopes up to 30% can be treated. Eliminates disposal issues. Environmental impact of residue being left on-site is still being studied.
Prescribed fire	Can be very cost effective for public land but not close to the city. Ecologically beneficial. Can be used as training opportunities for firefighters. May require manual or mechanical pretreatment. Carries risk of escape. Unreliable scheduling due to weather and smoke management constraints.

Treatment	Comments
Feller buncher	Mechanical treatment on slopes more than 30% or of materials more than 10 inches in diameter may require a feller buncher rather than a masticator. Costs tend to be considerably higher than masticator.
Grazing (goats)	Can be cost effective. Ecologically beneficial. Can be applied on steep slopes and shrubby and flashy fuels. Requires close management.

MANUAL TREATMENT

Manual treatment refers to crew-implemented cutting with chainsaws. Although it can be more expensive than mechanized treatment, crews can access many areas that are too steep or otherwise inaccessible with machines. Treatments can often be implemented with more precision than prescribed fire or mechanized methods allow. Merchantable materials and firewood can be removed while non-merchantable materials are often lopped and scattered, chipped, or piled and burned on-site. Care should be exercised to not increase the fire hazard by failing to remove or treat discarded material in a site-appropriate manner.

Strategic timing and placement of fuel treatments are critical for effective fuel management practices and should be prescribed based on the conditions of each treatment area. Some examples of this would be to place fuel breaks in areas where the fuels are heavier and in the path of prevailing winds and to mow grasses just before they cure and become flammable. Also, fuel reductions on slopes/ridgelines extending from the WUI are important to enhance community protection. In areas where the vegetation is sparse and not continuous, fuel treatments may not be necessary to create a defensible area where firefighters can work. In this situation, where the amount of fuel to carry a fire is minimal, it is best to leave the site in its current condition to avoid the introduction of exotic species.

MECHANIZED TREATMENTS

Mechanized treatments include mowing, mastication, and whole tree felling. These treatments allow for more precision than prescribed fire and are often more cost-effective than manual treatment.

Mowing, including ATV and tractor-pulled mower decks, can effectively reduce grass fuels adjacent to structures and along highway rights-of-way and fence lines. For heavier fuels, several different masticating machines can be used, including drum or blade-type masticating heads mounted on machines and ranging in size from a small skid-steer to large front-end loaders. Some masticators can grind standing timber up to 10 inches in diameter. Other masticators are more effective for use in brush or surface fuels. Mowing and mastication do not actually reduce the amount of on-site biomass but alter the fuel arrangement to a less combustible profile.

In existing fuel break areas maintenance is crucial, especially in areas of encroaching shrubs or trees. In extreme risk areas more intensive fuels treatments may be necessary to keep the fire on the ground surface and reduce flame lengths. Within the fuel break, shrubs should be removed, and the branches of trees should be pruned from the ground surface to a height of 4 to 8 feet, depending on the height of the fuel below the canopy, and thinned with a spacing of at least two to three times the height of the trees to avoid movement of an active fire into the canopy.

Mechanical shears mounted on feller bunchers are used for whole tree removal. The stems are typically hauled off-site for utilization while the limbs are discarded. The discarded material may be masticated, chipped, or burned to reduce the wildfire hazard and to speed the recycling of nutrients.

GRAZING

Fuel modifications targeted toward decreasing both vertical and horizontal continuity in fuels is critical as a prevention method against fire proliferation. The primary objectives for these modifications are treating surface fuels and producing low-density and vertically disconnected stands. Goat grazing is an effective, nontoxic, nonpolluting, and practically carbon-neutral vegetation treatment method. A goat grazing system typically consists of a high density of goats enclosed by a metallic or electrified fence guided by herders. Goats feed on a variety of foliage and twigs from herbaceous vegetation and woody plants (Lovreglio et al. 2014).

FUEL BREAKS

Fuel breaks, or shaded fuel breaks, are strips of land where fuel (for example, living trees and brush, dead branches, leaves, or downed logs) has been modified or reduced to limit the fire's ability to spread rapidly. Because fuel breaks may not stop a fire under extreme fire behavior or strong winds, they should be considered a mitigating measure rather than a fail-safe method for fire containment. Furthermore, fuel break utility is contingent upon regular maintenance, as regrowth in a fuel break can quickly reduce its effectiveness and vegetation in this ecosystem is known to quickly re-sprout and reestablish. Maintenance of existing breaks could be more cost efficient than installation of new features.

It is not possible to provide a standard treatment prescription for the entire landscape because fuel break dimensions should be based on the local fuel conditions and prevailing weather patterns. For example, in some areas, clearing an area too wide could open the landscape to strong winds that could generate more intense fire behavior and/or create wind throw.

Strategic placement of fuel breaks is critical to prevent fire from moving from wildland fuels into adjacent neighborhoods. For effective management of most fuels, fuel breaks should be prescribed based on the conditions in each treatment area. Some examples of this would be to place fuel breaks in areas where fuels are heavier or in areas with easy access for fire crews. In areas where the vegetation is discontinuous, fuel treatments may not be necessary. In these situations, it is best to leave sites in their current conditions to avoid the introduction of more flammable, exotic species that may respond readily following disturbance.

Well-managed fuels reduction projects often result in ecological benefits to wildlife and watershed health. Simultaneously, planning and resource management efforts should occur when possible while reducing fuels to ensure that the land remains viable for multiple uses in the long term. The effectiveness of any fuels reduction treatment will increase over time with a maintenance and monitoring plan. Monitoring will also ensure that objectives are being met in a cost-effective manner.

One example of a large fuel break in Santa Clara County is the State Route 17 Shaded Fuel break, which was completed in May of 2019. The project represented the largest vegetative fuel reduction pursuit among Governor Newsom's priority wildfire protection projects for the year, amassing a cost of \$9 million. With the treatment of over 400 acres, the fuel break aimed to improve wildfire resiliency for the neighborhoods along the Highway 17 corridor. This project was a collaborative effort between a collection of public agencies as part of the California Climate Investments statewide initiative, funneling billions of

Cap-and-Trade dollars toward projects that help facilitate meaningful climate benefits such as the reduction of greenhouse gas emissions and improving the health the environment (Santa Clara County Fire Safe Council 2019).

PREScribed BURNING

Prescribed burning (Figure 4.5) is also a useful tool to reduce the threat of extreme fire behavior by removing excessive standing plant material, litter, and woody debris while limiting the encroachment of shrubby vegetation. Where possible, prescribed fire could occur on public land since fire is ecologically beneficial to this fire-adapted vegetation community and wildlife habitat. However, there is minimal opportunity to apply prescribed fire within or close to city limits. Prescribed burning requires detailed planning and coordination. In 2019, the CAL FIRE Prescribed Fire Working Group developed the CAL FIRE Prescribed Fire Guidebook with the intent of educating CAL FIRE employees on how the department utilizes prescribed fire to reduce fuels at a landscape scale while improving ecosystem health in California (CAL FIRE 2019c).

Although the focus of wildfire risk mitigation is often on the reduction and removal of vegetation, and the prevention and suppression of wildfire, fire under the right circumstances can be not only a useful tool to reduce hazardous amounts of fuel but also an important factor in wildland ecosystems. Many fire and resource management agencies at the local, state, and federal levels include the use of fire in their programs.

The use of prescribed fire has several requirements to be successful, including:

- Planning documents include approval authority, burn objectives, preparation requirements, weather and fuel conditions under which the burn will be performed, operational responsibilities, contingency planning in the event of an escape, and post-burn monitoring to document the attainment of burn objectives and other potential fire effects, such as the occurrence of invasive species.
- Specific attention must be given to smoke management and weather forecasts concerning smoke direction and atmospheric mixing patterns. Review of prescribed burn plans and smoke management techniques need to be performed by the Bay Area Air Quality Management District. Consultation between the agencies involved with the burn and the air district needs to occur early in the planning cycle, especially regarding identification of suitable weather periods for the burn to be conducted. Conditions suitable for the fire agency may not be suitable from the perspective of the air district.
- Public education and outreach are vital given the frequent concern by the public over smoke, risk of escape, and post-fire appearance of the burn unit. It is unlikely that all the public will support the prescribed fire program, but outreach conducted through social media and on-site visits to the post-burn areas as they recover can develop a broad base of support, especially if the fire has stimulated the occurrence of desirable species considered to be rare.



Figure F.5. Prescribed fire being used to reduce grass loads on public open space land in Santa Clara County.

More typically, hazardous fuels are managed with a variety of tools, including goats, disking, hand cutting and piling, herbicides, mowing, and weed whips. As is the case with prescribed fire, the need remains to define the objectives of the treatment, measurement to document that the objectives were met, and follow-up monitoring to discover any unexpected deleterious effects on natural resources.

Cultural Burning

Within the Pacific West, fire has historically been a means of forest management and restoration by Indigenous communities (Long et al. 2021). Cultural burning has been defined as the “purposeful use of fire by a cultural group (e.g., family unit, Tribe, clan/moiety, society) for a variety of purposes and outcomes,” and is included under the terms Indigenous fire management, Indigenous burning, and Indigenous stewardship (Long et al. 2021).

Rather than focusing solely on fuel reduction, or as a means of wildfire mitigation, cultural burning is done with a more holistic view, under the philosophy of “reciprocal restoration,” meaning, as stewardship responsibilities to the land are fulfilled, those actions will in turn benefit the peoples who depend on those ecosystems (Long et al. 2021). Cultural burning is typically performed with a variety of objectives, such as landscape management, ecosystem and species biodiversity and health, transmission of environmental and cultural knowledge, ceremonies and spiritual wellbeing, a sense of place, and material services (i.e., food, medicine, plant materials). Extensive site preparation is typically done before a burn, and post-burn monitoring and additional cultural practices are a common factor of the land stewardship tradition (Long et al. 2021).



Figure F.6. Photograph showing a prescribed burn carried out by San Jose Fire Department.

Thinning and Prescribed Fire Combined

Combining thinning and prescribed fire can be the most effective treatment (Graham et al. 2004). In forests where fire exclusion or disease has created a buildup of hazardous fuels, prescribed fire cannot be safely applied, and pre-burn thinning is required. The subsequent use of fire can further reduce residual fuels and reintroduce this ecologically imperative process.

IMPACTS OF PRESCRIBED FIRE AND WILDFIRE SMOKE ON COMMUNITIES

Prescribed burning produces smoke that is composed of toxic particulate and gaseous pollutants. Inappropriate management of prescribed fires can be bothersome to residents, and it can negatively affect community health. Smoke from burning vegetation produces air pollutants that are regulated by both the U.S Environmental Protection Agency (EPA) and the State of California (EPA 2019). Additionally, smoke can increase ambient air pollution levels to a point where it exceeds air quality standards (California Air Resources Board [CARB] 2003). Therefore, effective smoke management is a vital component of planning and conducting prescribed fires. In Santa Clara County, a Miscellaneous Fire Marshal Review Application must be obtained to carry out a burn (Santa Clara County 2023f).

All prescribed fire operations will be conducted in accordance with federal and state laws and regulations. Public safety would be the primary consideration in the design of any prescribed burn plan so as to not negatively impact the WUI. Agency use of prescribed fire on public land would be carried out within the confines of the agency's fire management planning documents and would require individual prescribed burn plans that are developed for specific burn units and consider smoke management concerns and sensitive receptors within the WUI. Smoke monitors could be placed in areas where smoke concerns have been raised in the past.

In addition, the NWCG released the NWCG Smoke Management Guide for Prescribed Fire in 2020 (NWCG 2020). This plan is designed to act as a guide to all those who use prescribed fire. Smoke management techniques, air quality regulations, public perception of prescribed fire, foundational science behind prescribed fire, modeling, smoke tools, air quality impacts, and more are all discussed in this plan. The document is meant to pair with NWCG's Interagency Prescribed Fire Planning and Implementation Procedures Guide for planning and addressing smoke when prescribed fire is used (NWCG 2020). To view the plan, please visit: <https://www.nwcg.gov/sites/default/files/publications/pms420-3.pdf>.

Following any type of fuels reduction treatment, post-treatment monitoring should continue to ensure that management actions continue to be effective throughout the fire season. The vegetation within this ecosystem can change rapidly in response to drought or moisture from year to year and during the course of the season, so fuels treatments should be adjusted accordingly. To learn more about firing techniques, visit the EFIRE Fire Techniques webpage: <https://efire.cnr.ncsu.edu/efire/fire-techniques/>.

Several burns may be needed to meet full resource management objectives, so a solid maintenance plan is needed to ensure success.

The CDC recommends taking personal steps to limit risk and exposure to wildfire smoke (CDC 2023). These include buying an air filter cleaner to be used in sleeping areas, limiting outdoor activities, seeking out clean air spaces if they are not available at home, and wearing a fit-tested, NIOSH-approved N95 or P100 respirator. It is important to stay current on air quality in your area and plan appropriately for outdoor activities. See Appendix G for links to property owner resources regarding smoke safety and risk mitigation.

Santa Clara County current air quality conditions: <http://baaqmdmapsprod.azurewebsites.net/map-air-quality.html?baaqmdZoom=11&baaqmdLat=37.189396&baaqmdLng=-121.705327>.

MANAGEMENT OF NON-NATIVE PLANTS

California Invasive Plant Council

California Invasive Plant Council (Cal-IPC) is a nonprofit organization dedicated to protecting California's natural ecosystems from the harmful impacts of invasive plants. They actively prevent the introduction and spread of invasive plants through research, education, and collaboration with government agencies, land managers, and the public. Cal-IPC provides resources, information, and training programs to raise awareness and knowledge about invasive plants. The organization promotes science-based management practices to control invasive plants, restore native habitats, and preserve California's biodiversity (CAL IPC 2023).

USDA Noxious Weed Program

The USDA maintains a list of introduced, invasive, and noxious plants by state (USDA 2022). Fuel treatment approaches should always consider the potential for introduction or proliferation of invasive non-native species as a result of management actions.

The California Department of Food and Agriculture maintains a list of noxious weeds rated from A to C based on the current degree of infestation of the species and the potential for eradication (California Department of Food and Agriculture 2021).

Fuel Management

Fuel treatment approaches should always consider the potential for introduction or proliferation of invasive non-native species because of management actions. Several non-native plants present significant fire hazards and will spread in fuel reduction areas when other vegetation is removed. When feasible, fuel reduction projects should attempt to permanently remove scotch and French broom species, eucalyptus trees, and acacia trees. Eradication can be achieved by manual pulling and/or herbicide use followed up with long-term monitoring of the seed bank and re-sprouts.

SUSTAINABILITY CHALLENGE

Well-managed fuel reduction projects often result in ecological benefits to wildlife and watershed health. Simultaneously, planning and resource management efforts should occur when possible while reducing fuels to ensure that the land remains viable for multiple uses in the long term.

Fuel break and fuel treatment utility is contingent upon regular maintenance, as regrowth in a treated area can quickly reduce its effectiveness. Input provided during public outreach activities identified a need for maintenance of existing fuel breaks that have become overgrown. Maintenance of existing breaks could be more cost efficient than installation of new features.

The effectiveness of any fuel reduction treatment will increase over time with a maintenance and monitoring plan. Monitoring will also ensure that objectives are being met in a cost-effective manner. For information on monitoring and sustainability for CWPP projects, see Chapter 5.

This page intentionally left blank.

APPENDIX G:

Property Owner Resources

This page intentionally left blank.

SANTA CLARA COUNTY

SANTA CLARA COUNTY FIRESAFE COUNCIL

- Is Your Home in a WUI Area of Concern? <https://sccfiresafe.org/resources/do-you-reside-in-santa-clara-countys-wildland-urban-interface-wui/>
- General Resource Guide for Wildfire Safety: <https://sccfiresafe.org/resources/>
- Wildfire Evacuation Workshop: <https://sccfiresafe.org/learn/wildfire-evacuation-workshop/>
- How to Create Defensible Space: <https://www.fire.ca.gov/programs/communications/defensible-space-prc-4291/>
- Community Chipping Program: <https://sccfiresafe.org/prepare/community-chipping-program/>
- Hazardous Tree Removal Application: <https://sccfiresafe.org/prepare/saratoga-tree-removal-app/>
- Home Hardening Guide: <https://sccfiresafe.org/prepare/home-hardening/>
- Hazardous Fuels Reduction Guide: <https://sccfiresafe.org/prepare/defensible-space-and-hazardous-fuel-reduction-hfr/>

SAN JOSE FIRE DEPARTMENT

- Create a Defensible Space: <https://www.sanjoseca.gov/your-government/departments-offices/fire-department/public-education/wildfire-preparedness/defensible-space>
- Harden Your Home: <https://www.sanjoseca.gov/your-government/departments-offices/fire-department/public-education/wildfire-preparedness/hardening-your-home>
- Install a Fire-Resistant Landscape: <https://www.sanjoseca.gov/your-government/departments-offices/fire-department/public-education/wildfire-preparedness/fire-resistant-landscaping>
- Check if You Live in a WUI: <https://www.sanjoseca.gov/your-government/departments-offices/fire-department/public-education/wildfire-preparedness/wildland-urban-interface>
- Draw up a Wildfire Action Plan: <https://www.sanjoseca.gov/your-government/departments-offices/fire-department/public-education/wildfire-preparedness/wildfire-action-plan>
- Assemble an Emergency Supply Kit: <https://www.sanjoseca.gov/your-government/departments-offices/fire-department/public-education/wildfire-preparedness/emergency-supply-kit>
- Prepare Your Insurance: <https://www.sanjoseca.gov/your-government/departments-offices/fire-department/public-education/wildfire-preparedness/insurance-preparedness>
- Create a Pre-Evacuation List: <https://www.sanjoseca.gov/your-government/departments-offices/fire-department/public-education/wildfire-preparedness/pre-evacuation>
- Review Evacuation Steps: <https://www.sanjoseca.gov/your-government/departments-offices/fire-department/public-education/wildfire-preparedness/wildfire-evacuation>

GILROY FIRE DEPARTMENT

- Wildfire Preparedness and Local High Fire Risk Notices: <https://www.cityofgilroy.org/911/Wildfire-Preparedness-Local-High-Fire-Ri>
- Fireworks Information: <https://www.cityofgilroy.org/910/Fireworks-Information>
 - Fireworks Prohibited Locations: <https://www.cityofgilroy.org/DocumentCenter/View/6655/Fireworks-Prohibited-Locations?bidId=>

MORGAN HILL DEPARTMENT

- Wildfire Preparedness: <https://www.morganhill.ca.gov/1396/Wildfire-Preparedness>
- Be Ember Aware: <https://www.morganhill.ca.gov/1596/Be-Ember-Aware>
- Ready, Set, Go!: <https://www.morganhill.ca.gov/1799/Ready-Set-Go>
- PG&E Public Safety Power Shutoff: <https://www.morganhill.ca.gov/1848/Public-Safety-Power-Shutoff>

OTHER

- Wildfire Preparedness Resources: <https://www.sccfd.org/education-and-preparedness-overview/safety-information-referral-assistance/wildfire-preparedness/>
- Santa Clara Fire Department Resources and Learning: <https://www.santaclaraca.gov/our-city/departments-a-f/fire-department/community-resources>
- Wildfire Disaster Debris Removal: <https://ehinfo.sccgov.org/wildfire-disaster-debris-removal>
- Animal Evacuation Team: www.scclaet.org/default.aspx
- Sign Up for Emergency Notifications: <https://emergencymanagement.sccgov.org/AlertSCC>
- Resources for Wildfire Smoke Exposure: <https://publichealth.sccgov.org/health-information/emergency-preparedness/avoid-breathing-wildfire-smoke>

CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION (CAL FIRE)

Home and Fuels Management

Homeowners Checklist; How to Make Your Home Fire Safe:
https://www.lakeshastina.com/Docs_PDFs/Checklist.pdf

- Hardening Your Home: <https://www.readyforwildfire.org/prepare-for-wildfire/get-ready/hardening-your-home/>

- Home Hardening Toolkit: <https://www.readyforwildfire.org/campaign-toolkits/home-hardening-toolkit/>
- Defensible Space: <https://www.readyforwildfire.org/prepare-for-wildfire/get-ready/defensible-space/>
- Defensible Space Toolkit: <https://www.readyforwildfire.org/campaign-toolkits/defensible-space-toolkit/>
- Defensible Space Self-Assessment Survey: <https://survey123.arcgis.com/share/77d52e2c982e480990320eb5bd53f5fc?portalUrl=https://CALFIRE-Forestry.maps.arcgis.com>
- Fire-Resistant Landscaping: <https://www.readyforwildfire.org/prepare-for-wildfire/get-ready/fire-resistant-landscaping/>
- What Property Owners Need to Know to Reduce Wildfire Risk Each Season: <https://www.readyforwildfire.org/forest-health/seasonal-actions/>
- Prescribed Fire Toolkit: <https://www.readyforwildfire.org/campaign-toolkits/prescribed-fires-toolkit/>

Preparing for Wildfire

- Wildfire Action Plan: <https://www.readyforwildfire.org/prepare-for-wildfire/get-set/wildfire-action-plan/>
- How to Prepare to Evacuate from a Wildfire: <https://www.readyforwildfire.org/prepare-for-wildfire/get-set/prepare-your-family/>
- Pre-Evacuation Preparation Steps: <https://www.readyforwildfire.org/prepare-for-wildfire/go-evacuation-guide/pre-evacuation-preparation-steps/>
- Evacuation Steps: <https://www.readyforwildfire.org/prepare-for-wildfire/go-evacuation-guide/evacuation-steps/>
- Animal Evacuation: <https://www.readyforwildfire.org/prepare-for-wildfire/go-evacuation-guide/animal-evacuation/>
- GO! Evacuation Guide: <https://www.readyforwildfire.org/prepare-for-wildfire/go-evacuation-guide/>
- GO! Evacuation Toolkit: <https://www.readyforwildfire.org/campaign-toolkits/go-evacuation-toolkit/>
- Emergency Supply Kit: <https://www.readyforwildfire.org/prepare-for-wildfire/get-set/emergency-supply-kit/>
- Insurance Preparedness: <https://www.readyforwildfire.org/prepare-for-wildfire/get-set/insurance-preparedness/>
- Power Outage Information: <https://www.readyforwildfire.org/prepare-for-wildfire/go-evacuation-guide/power-outage-information/>
- What To Do If Trapped: <https://www.readyforwildfire.org/prepare-for-wildfire/go-evacuation-guide/what-to-do-if-trapped/>

Preventing Wildfire

- Equipment Use: <https://www.readyforwildfire.org/prevent-wildfire/equipment-use/>

- Debris Burning: <https://www.readyforwildfire.org/prevent-wildfire/debris-burning/>
- Vehicle Use: <https://www.readyforwildfire.org/prevent-wildfire/vehicle-use/>
- Campfire Safety: <https://www.readyforwildfire.org/prevent-wildfire/campfire-safety/>
- Target Shooting Safety: <https://www.readyforwildfire.org/prevent-wildfire/target-shooting-safety/>
- One Less Spark, One Less Wildfire Toolkit: <https://www.readyforwildfire.org/prevent-wildfire/one-less-spark-campaign/>
- Forest Health: <https://www.readyforwildfire.org/forest-health/>
- Forest Health Toolkit: <https://www.readyforwildfire.org/campaign-toolkits/forest-health-toolkit/>

After the Fire

- Returning Home After a Wildfire: <https://www.readyforwildfire.org/post-wildfire/>
- What to Expect After a Wildfire: <https://www.readyforwildfire.org/post-wildfire/after-a-wildfire/>
- Immediate Safety: <https://www.readyforwildfire.org/post-wildfire/returning-home/>
- Rebuilding, Mobilizing Your Community: <https://www.readyforwildfire.org/post-wildfire/rebuilding/>
- Who Can Help? <https://www.readyforwildfire.org/post-wildfire/who-can-help/>

Miscellaneous

- Non-Renewals for California Homeowners: <https://strongerca.com/wp-content/uploads/2021/06/Non-renewals-for-CA-Homeowners.pdf>
- Safer from Wildfires Insurance Partnership: <https://www.insurance.ca.gov/01-consumers/200-wrr/saferfromwildfires.cfm>
- Mass Tree Mortality, Fuels, and Fire: A Guide for Sierra Nevada Forest Landowners: <https://anrcatalog.ucanr.edu/pdf/8683.pdf>
- State Fire Marshal Listed Wildland Urban Interface (WUI) Products Handbook: <https://www.fire.ca.gov/media/5e4drz1r/2021-sfm-wui-listed-products-handbook-12-14-2021.pdf>
- Community Alliance with Family Farms (CAFF): www.caff.org
- Wildfire resilience program: <https://caff.org/wildfire-resilience-program/>
- Farm Resilience Resources: <https://caff.org/resilience-resources/>
- Stronger California Tax Fact sheet: <https://strongerca.com/non-renewal/>
 - While property insurance frequently acts as the largest financial safety net in the event of an emergency, many California homeowners are being denied home insurance renewal options in areas deemed high risk, where they would need a financial safety net the most. Finding home insurance with adequate coverage at an affordable price can be challenging. An insurance trade coalition in California, Stronger California, produced a fact sheet to help homeowners understand their coverages under California law and connect homeowners with resources to find new insurance.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

Protecting Your Home

- Understanding the Wildfire Threat to Homes: <https://www.nfpa.org/News-and-Research/Publications-and-media/Blogs-Landing-Page/Fire-Break/Blog-Posts/2020/12/08/Interactive-online-resource-helps-build-understanding-of-wildfire-risks>
- Preparing Homes for Wildfire: <https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Preparing-homes-for-wildfire>
- If your Home Doesn't Ignite, It Can't Burn: <https://www.youtube.com/watch?v=RqKFDDBGd5o>
- How do Homes Burn in a Wildfire? <https://www.youtube.com/watch?v=3QthynXympl>
- Wildfire Community Preparedness Day Toolkit: <https://go.nfpa.org/l/14662/2022-01-11/8j6nqh>
- 5 Key Areas Around the Home You Must Examine When Assessing Wildfire Risk: <https://www.youtube.com/watch?v=MIUQVL3BvVg>
- Your Home and Wildfire, Choices That Make a Difference: <https://www.youtube.com/watch?v=pfbEcMeYFFA>
- Home Hardening Fact Sheets: <https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Firewise-USA/Firewise-USA-Resources/Research-Fact-Sheet-Series>

Preparation and Evacuation

- Wildfire Preparedness Tips: <https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Wildfire-safety-tips>
- Wildfire Preparedness for Household Pets: <https://www.nfpa.org/-/media/Files/Public-Education/Campaigns/TakeAction/TakeActionPetsChecklist.pdf>
- Wildfire Preparedness for Horses and Livestock: <https://www.nfpa.org/-/media/Files/Public-Education/Campaigns/TakeAction/TakeActionHorseChecklist.ashx>
- Backpack Emergency GO! Kit: <https://www.nfpa.org/-/media/Files/Public-Education/Campaigns/TakeAction/TakeActionBackPackGoKit.ashx>
- Outthink a Wildfire; Wildfire Action Policies: <https://www.nfpa.org/wildfirepolicy>
- National Fire Protection Association (NFPA):

WILDFIRE SMOKE

- Smoke Ready Toolbox for Wildfires EPA: <https://www.epa.gov/smoke-ready-toolbox-wildfires>
- AirNow: <https://www.airnow.gov/>
- AirNow Fire and Smoke Map: <https://fire.airnow.gov/>
- Smoke Advisories: <https://www.airnow.gov/air-quality-and-health/fires/smoke-advisories/>
- Fires and Your Health: <https://www.epa.gov/pm-pollution/fires-and-your-health>

- Wildfires and Indoor Air Quality: <https://www.epa.gov/indoor-air-quality-iaq/wildfires-and-indoor-air-quality-iaq>
- Frequent Questions About Wildfire Smoke: https://usepa.servicenow.com/airnow?id=kb_search&kb_knowledge_base=798f5d172fa050102be2d2172799b6d8&spa=1&kb_category=23bbbd9f1b681c104614ddb6bc4bcb70
- Smoke Sense App: <https://www.epa.gov/air-research/smoke-sense-study-citizen-science-project-using-mobile-app>
- Wildfire Smoke and COVID-19: https://www.cdc.gov/disasters/covid-19/wildfire_smoke_covid-19.html
- Air Monitoring in Santa Clara County: <http://baaqmdmapsprod.azurewebsites.net/map-air-monitoring.html?baaqmdZoom=11&baaqmdLat=37.189396&baaqmdLng=-121.705327>
- Bay Area Air Quality Management District: <https://www.baaqmd.gov/about-the-air-district/in-your-community/santa-clara-county>



Figure G.1. Santa Clara Public health flyer: Air Quality and Health.

Make a filter fan in 10 minutes

- A filter fan is portable and affordable. It is quick and easy to build on your own.
- All the materials needed cost about \$50.
- You can purchase all the supplies at your local hardware or home improvement store.

Items: 1 Box fan and 1 filter with a "MERV-rating" of at least 13.
Tools: Fitted clasps, duct tape, packing tape, or short bungee cords.



Steps:

- Attach the filter to the back of the fan by placing tape along the sides or wrapping bungee cords across the front and around the back. Make sure the arrows on the filter are pointing towards the fan.
- Place the fan at least 12 inches away from the wall.
- Make sure the fan faces the middle of the room, away from walls and big objects.
- Cover cords properly. Make sure they are not tripping hazards.


 Scan the QR code for more information and a YouTube demonstration video
 

Figure G.2. Santa Clara Public Health flyer: Make a filter in 10 mins.

FEMA

- Protective Actions for Wildfires FEMA: <https://community.fema.gov/ProtectiveActions/s/article/Wildfire>
- Flood Insurance Information: <https://www.fema.gov/flood-insurance>
- Explore FEMA's National Risk Index by County for risk, expected annual loss, social vulnerability, and community resilience: <https://hazards.fema.gov/nri/map>

RED CROSS

- Red Cross – How to Prepare For Emergencies: <https://www.redcross.org/get-help/how-to-prepare-for-emergencies.html>
- Red Cross – Colorado Wildfire Handbook: <https://sheriff.mesacounty.us/globalassets/divisions/emergency-services/arc-brochure.pdf>

- Red Cross – Wildfire Checklist (English): <https://sheriff.mesacounty.us/globalassets/divisions/emergency-services/arc-wildfire.pdf>
- Red Cross – Wildfire Checklist (Spanish): https://sheriff.mesacounty.us/globalassets/divisions/emergency-services/arc-wildfire_spn.pdf
- Red Cross – Preparing for Disaster for People with Disabilities and Other Special Needs: <https://sheriff.mesacounty.us/globalassets/divisions/emergency-services/arc-special-needs.pdf>

ENVIRONMENTAL PROTECTION AGENCY

- Prepare For Natural Disasters and Recovery: <https://www.epa.gov/natural-disasters>

READY.GOV

- Wildfires Ready.gov: <https://www.ready.gov/wildfires>
- Family Disaster Readiness: <https://www.ready.gov/kids>
- Kids: <https://www.ready.gov/kids/be-ready-kids>
- Teens: <https://www.ready.gov/kids/teens>
- Families: <https://www.ready.gov/kids/prepare-your-family>
- Educators and Organizations: <https://www.ready.gov/kids/educators-organizations>
- Wildfire Information Sheet: https://www.ready.gov/sites/default/files/2021-12/ready_wildfire_info-sheet.pdf

MISCELLANEOUS

- Non-Renewals for California Homeowners: <https://strongerca.com/wp-content/uploads/2021/06/Non-renewals-for-CA-Homeowners.pdf>
- Mass Tree Mortality, Fuels, and Fire: A Guide for Sierra Nevada Forest Landowners: <https://anrcatalog.ucanr.edu/pdf/8683.pdf>
- Instructor Guide: The ability to identifying, analyzing, and using relevant situational information about topographic features can help predict wildland fire behavior is the responsibility of everyone on the fireline: <https://www.nwcg.gov/sites/default/files/training/docs/s-190-ig04.pdf>
- WiRē – Wildfire Research, an interdisciplinary collaboration on community adaptability to wildland fire: <https://wildfireresearchcenter.org/>
- Wildfire Ready App:
 - App Store: <https://apps.apple.com/us/app/wildfire-ready-virtual/id1540773278?msclkid=4eac0069a71411ecb26fa03c0b08eba2>
 - Google Play: <https://play.google.com/store/apps/details?id=com.BaltiVirtual.Wildfire&gl=US&msclkid=4eabc8f6a71411ecbfe27aa64cd6d835>

APPENDIX H:

Post-Fire Recovery and Restoration

This page intentionally left blank.

POST-FIRE RESPONSE AND REHABILITATION

The recent increase in severe fires has highlighted the numerous complexities of post-fire response. Research indicates that high-severity burn areas may produce erosion and runoff rates 5 to 10 times higher than the rates produced by moderate-severity burn areas (Sierra Nevada Conservancy 2021). Following a fire, heavy rains may result in widespread floods carrying trees, boulders, and soil through canyons, ultimately damaging communities and critical infrastructure. In Santa Clara, the areas that are susceptible to debris flows and mudslides include the mountain and foothill areas, e.g., the Santa Cruz Mountains and Diablo Range (SCC OES 2017).

The SCU Lightning Complex occurred from August to October 2020 and burned approximately 396,624 acres across Alameda, Contra Costa, Santa Clara, San Joaquin, Stanislaus, and Merced Counties. Of those acres burned, 165,205 acres were burned within Santa Clara County, with a total of 222 structures destroyed and 26 structures experiencing damages from the fire complex's impacts. According to a Santa Clara Resource Conservation District (RCD) Watershed Emergency Response Team evaluation, the SCU Lightning Complex resulted in 70.6% of the burned area sustaining low burn severity and 7.3% moderate burn severity (Santa Clara RCD 2020). In general, the soil burn severity from this incident was limited by the type of fuels present in the region. Because the burned area largely displayed mostly low density fuels, the rate of spread was greater, resulting in a lower burn severity. Despite this, there were still occurrences of moderate soil burn severity (SBS), which can dramatically reduce soil cover, leading to increased water repellency and runoff. By contrast, soil cover is nearly non-existent in areas experiencing high SBS and the surface mineral soil has been burned to fine powder. Exposed, granular mineral soil is readily transported during rain events resulting in elevated soil erosion and sediment loading in streams, creeks, and rivers (Burned Area Emergency Response [BAER] 2021). Areas affected by the SCU Lightning Complex experience post-fire hazards such as debris flows, flooding, and sediment loading that may pose a threat to infrastructure and general public safety. Despite being located outside of the burned area, sections of San Benito County were still identified as having post-fire flooding impacts.



Figure H.1. Burn scar from the SCU Lightning Complex.



Figure H.2. Burn scar from the SCU Lightning Complex.

There are many facets to post-fire recovery, including but not limited to:

- Ensuring public health and safety—prompt removal of downed and hazard trees, addressing watershed damage, and mitigating potential flooding.

- Rebuilding communities and assessing economic needs—securing the financial resources necessary for communities to rebuild homes, business, and infrastructure.
- Restoring the damaged landscape—restoration of watersheds, soil stabilization, and tree planting.
- Reducing fire risk in the future—identifying hazard areas and implementing mitigation.
- Prioritizing the needs of vulnerable and disadvantaged communities during response and disaster recovery efforts.
- Reducing post-fire recovery time by replanting native species.
- Ensuring fire protection measures enhance sustainability of restoration projects e.g., introducing prescribed fire to a fire-dependent ecosystem where fire had previously been excluded.
- Retaining downed logs for erosion control and habitat maintenance.
- Evaluating and updating disaster recovery plans every 5 years to respond to changing needs and characteristics of the community.
- Coordinating with planning, housing, health, and human services, and other local, regional, or state agencies to develop contingency plans for meeting short-term, temporary housing needs of those displaced during a catastrophic wildfire event.
- Incorporating forecasted impacts from climate change into trends and projections of future risk and consideration of policies to address identified risk.
- Updating codes and ordinances to specify procedures and standards for planning and permitting the reconstruction of buildings destroyed by wildfire.

The USFS provides a science-based framework to guide post-fire restoration efforts in National Forest lands in California. The framework is based on a five-step process that leads to the development of a restoration portfolio that can inform project planning and monitoring (USFS 2021d). The framework is available at: https://www.fs.usda.gov/psw/publications/documents/psw_gtr270/psw_gtr270.pdf

COMMUNITY RESPONSE AND RECOVERY

Recovery of the vegetated landscape is often more straightforward than recovery of the human environment. Assessments of the burned landscape are often well-coordinated through the use of interagency crews who are mobilized immediately after a fire to assess the post-fire environment and make recommendations for rehabilitation efforts.

For the community impacted by fire, however, there is often very little planning at the local level to guide their return after the fire. Residents impacted by the fire need assistance making insurance claims; finding temporary accommodation for themselves, pets, and livestock; rebuilding or repairing damaged property; removing debris and burned trees; stabilizing the land for construction; mitigating potential flood damage; repairing infrastructure; reconnecting to utilities; and mitigating impacts to health. Oftentimes, physical impacts can be mitigated over time, but emotional impacts of the loss and change to surroundings are long-lasting and require support and compassion from the community.

After the Fire

Rebuilding and recovery from wildfire can vary greatly across income levels and demographics. Rural areas, low-income neighborhoods, and immigrant communities generally do not have the necessary resources to cover insurance and rebuilding expenses that occur after a fire. Due to this, many of these areas take more time to recover than those with greater access to resources. In addition, the occurrence of wildfire can worsen existing mental health conditions and lead to post-traumatic stress (PTS), low self-esteem, and depression for at-risk populations (CA GOPR 2020).

Emergency Assistance: Before, During, and After a Fire

Team Rubicon is a veteran-led humanitarian organization that serves communities around the world before, during, and after disasters such as earthquakes, floods, hurricanes, tornadoes, and wildfire. Team Rubicon focuses on serving vulnerable and at-risk populations affected by disasters, and all services are provided free of charge. Services include incident management, debris management, hazard mitigation, volunteer management, home repair, and emergency medicine. With respect to fire-related assistance, Team Rubicon assists with any action that would limit the impact of a wildfire, such as helping property owners to make their home fire safe, providing staff to assist with mitigation projects (e.g., fuels reduction), and removing debris and hazardous trees (Team Rubicon 2022).

To find out more about Team Rubicon, please visit <https://teamrubiconusa.org/capabilities-services/>.

Returning Home

First and foremost, follow the advice and recommendations of emergency management agencies, fire departments, utility companies, and local aid organizations regarding activities following the wildfire. Do not attempt to return to your home until fire personnel have deemed it safe to do so.

When driving, watch for trees, brush, and rock which may have been weakened or loosened by the fire. Be aware of any damage or debris on roads and driveways. Traffic may be delayed, or lanes closed due to firefighter operations. Use extreme caution around trees, power poles, and any other tall objects that may have been weakened by the fire (CAL FIRE 2020d).

Even if the fire did not damage your house, do not expect to return to normal routines immediately. Expect that utility infrastructure may have been damaged and repairs may be necessary. When you return to your home, check for hazards, such as gas or water leaks and electrical shorts. Turn off damaged utilities if you did not do so previously. Request that the fire department or utility companies turn the utilities back on once the area is secured. Similarly, water supply systems may have been damaged; do not drink from the tap until you have been advised that it is safe to do so. Finally, keep a “fire watch”; look for smoke or sparks in houses and other buildings. Once at home, check for the following (CAL FIRE 2019d):

- Check the roof and exterior areas for sparks or embers
- Check grounds for hot spots, smoldering stumps, and vegetation
- Check for fire damage to your home, turn off all appliances and make sure the meter is not damaged before turning on the main circuit breaker
- Check the attic and throughout your house for any hidden burning sparks or embers

- Do not drink water from the faucet until emergency officials say it is okay, water supply systems can be damaged and become polluted during wildfires
- Discard any food that has been exposed to heat, smoke, flood water, or soot
- If you have a propane tank or natural gas, leave valves closed until the supplier or utilities can inspect your system
- If you have a solar electrical system, this system should be inspected by a licensed technician to verify that the solar panels and electrical wiring are safe for continued operation
- Consult local experts on the best way to restore and plant your land with fire-safe landscaping
- Contact 911 if any danger is perceived
- Ash contains toxic substances and may be irritating to the eyes, nose, throat, and skin. Ash is harmful to breathe and may trigger asthma attacks. Follow these tips to reduce your exposure to ash (California Department of Public Health 2017):
 - Do not allow children to play in ash and wash off children's toys before children play with them.
 - Immediately wash any part of your body that touches ash to avoid irritation.
 - Wash fruits and vegetables from your garden thoroughly before eating them.
 - Keep pets out of ash areas.
 - Frequently clean indoor surfaces by wet mopping.
 - Wear protective clothing and a respirator when working outside.

Insurance Claims

Your insurance agent is the best source of information for submitting a claim. It is recommended you take photos of your home, of both the inside and outside, in preparation of an emergency. Keep the photos in a safe place as this will make the insurance claim process easier. Most expenses incurred during the time you are forced to live elsewhere may be reimbursed, so be sure to keep all receipts. Additional items that may be covered are extra transportation costs to and from work or school, telephone installation, furniture rental, extra food costs, and water damage. Do not start any repairs without the approval of your claims adjuster (California Department of Insurance 2021).

Natural disasters aren't always predictable, but there are steps property owners can make to better prepare for an emergency.

- Review your insurance policy annually to see if your home is adequately insured
- Know your "loss of use" section – this covers living expenses should your home become unlivable due to fire, smoke, or otherwise

You can view a guide on creating a home inventory here: <https://www.iii.org/article/how-create-home-inventory>

Community Safety: Post-Fire Floods and Debris Flows

There are numerous natural hazards after a wildfire. Perhaps most dangerous are potential flash floods and landslides following rainfall in a burned area upstream of a community. Wildfires increase risk of

flooding because burned soil is unable to absorb rainfall and it becomes hydrophobic. Factors that contribute to flooding and debris flows are steep slopes, heavy rainfall, weak or loose rock and soil, and improper construction and grading. Even small rainfall can cause a flash flood, transporting debris and damaging homes and other structures. Listen and look for emergency updates, weather reports, and flash flood warnings (California Department of Conservation 2019). Develop an evacuation plan with your family and stay away from waterways, storm channels, and arroyos. Be aware of your risk, pay attention to weather forecasts, listen to local authorities, and have a household inventory with copies of critical documents (California Department of Water Resources 2021).

Mobilizing Your Community

Wildfires that produce extensive damage require a community-scale response for recovery efforts. The local Emergency Manager will collaborate with state and federal partners to manage disaster response and urgent needs. Still, mobilizing a response and recovery team or a group of teams in a community can function as a vital part of the recovery procedure. Coordinated and informed direction throughout community-level volunteers and all levels of government are necessary for successful recovery (California Silver Jackets Team [California SJT] 2019).

As opposed to wildfire response, post-fire response is not typically managed by a unified state or federal team. Rather, each organization and each tier of government acts on its own authority. This produces a greater demand for coordination at the local level and the sharing of information between organizations to coordinate recovery efforts (California SJT 2019).

Residents throughout California are encouraged to join forces to create local Fire Safe Councils to minimize and prevent wildfire losses. Fire Safe Councils are community-based organizations that mobilize residents to protect their properties, communities, and environments from disastrous wildfires. Fire Safe Councils educate property owners about community wildfire preparedness activities while collaborating with local fire officials to plan and implement projects that increase the wildfire resilience of their communities (California Fire Safe Council 2021).

In addition, each community is encouraged to create its own type of a Post-Fire Coordination Group (PFCG) to direct the response to any ensuing post-wildfire natural hazards and aid in determining post-fire mitigation actions. The PFCG should work directly with local, state, or federal agencies, emergency response officials, and others to aid in a coordinated response. Primary duties of the PFCG include coordinating the exchange of information among agencies and the risk assessment, assembling and exchanging geospatial data, assisting public communications, and coordinating with elected officials (California SJT 2019).

Communities are also encouraged to establish a post-fire coordinator. The post-fire coordinator is appointed by the community to assist a coordinated response to a wildfire and to aid the community's post-fire recovery efforts. The post-fire coordinator is likely to collaborate with local, state, and federal organizations that participate in emergency response and post-fire recovery efforts. It is important that the post-fire coordinator have demonstrated management, internet, and social media skills, community knowledge, and experience with government agencies and programs (California SJT 2019).

The recovery coordinator should become familiar with representatives from local, state, and government agencies that will be helping with coordination or funding of post-fire recovery. The following resources may be helpful for the post-fire and volunteer coordinators (California SJT 2019):

1. Housing
 - a. FEMA

- b. Federal Housing Administration
 - c. California Department of Housing and Community Development
 - d. The Salvation Army
- 2. Debris Removal
 - a. California Department of Resources Recycling and Recovery
 - b. USACE
- 3. Debris Modeling
 - a. USGS
- 4. Hazardous Waste and Pollution
 - a. California Environmental Protection Agency
- 5. Pets and Livestock
 - a. American Society for the Prevention of Cruelty to Animals
 - b. CDFA
- 6. Food
 - a. USDA Supplemental Nutrition Assistance Program
 - b. California Department of Social Services, Disaster CalFresh
- 7. Social Services
 - a. California Employment Development Department
 - b. FEMA Disaster Unemployment Assistance
 - c. U.S. Administration for Children and Families
 - d. Office of Access and Functional Needs
 - e. California Foundation for Independent Living Centers
- 8. Farm Rehabilitation
 - a. Farm Service Agency
 - b. USDA Rural Development Disaster Assistance
 - c. Natural Resources Conservation Service (NRCS) General Environmental Quality Incentives Program Financial Assistance
- 9. General
 - a. The American Red Cross
 - b. CA OES
 - c. USFS
 - d. NPS
 - e. CAL FIRE

Any large wildfire will also involve an Incident Command System (ICS), an appropriately sized team assigned to aid in post-fire recovery. Learn more are <https://www.nps.gov/articles/wildland-fire-incident-command-system-levels.htm>.

Communication

After a team is assembled and immediate tasks are identified, find the best way to spread information in your community. You may distribute flyers, set up a voicemail box, work to find pets or livestock that have been displaced, develop a mailing list for property owners, hold regular public meetings, etc. It is important that a long-term communications plan is developed (California SJT 2019). Applying the following steps can aid in successful communication (California SJT 2019):

- Convey post-wildfire hazards to the public.
- Develop and maintain emergency notification systems that allow authorized official to alert residents of emergency situations.
- Hold public meetings to inform the public about programs and services available in the community.
- Determine the best way to relay information, e.g., phone calls, radio, TV, or social media.
- Find out how emergency response teams, local officials, and volunteers will communicate with the community.

Post-Fire Rehabilitation and Resources for Landowners

Wildfires that cause extensive damage necessitate dedicated efforts to avert issues afterwards. As aforementioned, loss of vegetation increases soil susceptibility to erosion; water runoff may increase and lead to flooding; sediments and debris may be transported downstream and damage properties or saturate reservoirs putting endangered species and water reserves at risk (USFS 2021a). Following a fire, the primary priority is emergency stabilization to prevent additional damage to life, property, or natural resources. The soil stabilization work starts immediately and may proceed for up to a year. The rehabilitation effort to restore damage caused by the fire starts after the fire is out and may persist for various years. For the most part, rehabilitation efforts focus on the lands not likely to recover naturally from wildfire damage (USFS 2021a).

The USFS's post-fire emergency stabilization program is called the Burned Area Emergency Response (BAER) program. The goal of the BAER program is to discover post-wildfire threats to human life and safety, property, and critical natural or cultural resources on USFS lands and take appropriate actions to mitigate unacceptable risks (NIFC 2022). BAER teams are composed of trained professionals in different fields: soil scientists, engineers, hydrologists, biologists, botanists, archaeologists, and others who quickly assess the burned area and advise emergency stabilization treatments (NIFC 2022).

The NRCS Emergency Watershed Protection (EWP) program provides technical and financial services for watershed repair on **public (state and local) and private land**. The goal is reduced flood risk via funding and expert advice for land treatments. The EWP program can provide up to 75% of funds; remaining funds can be paid with in-kind volunteer labor (Coalition for the Upper South Platte [CUSP] 2016). This funding is used by the State Emergency Rehabilitation Team (a multi-agency group assembled by the NRCS) to develop specific recovery and treatment plans.

Examples of potential treatments include (USFS 2021b):

- Hillside stabilization (for example, placing bundles of straw parallel to the slope to slow erosion)
- Hazard tree cutting
- Felling trees perpendicular to the slope contour to reduce runoff
- Mulching areas seeded with native vegetation
- Stream enhancements and construction of catchments to control erosion, runoff, and debris flows
- Planting or seeding native species to limit spread of invasive species

The USFS provides a science-based framework to guide post-fire restoration efforts in National Forest lands in California. The framework is based on a five-step process that leads to the development of a restoration portfolio that can inform project planning and monitoring (USFS 2021a). The framework is available at: https://www.fs.fed.us/psw/publications/documents/psw_qtr270/psw_qtr270.pdf

A comparison of potential hillside, channel, and road treatments is available at: <https://www.afterwildfirenm.org/post-fire-treatments/which-treatment-do-i-use>

The California state Watershed Emergency Response Teams (WERTs) play a crucial role in post-fire assessments. Their duties involve identifying threats caused by debris flows, flooding, rockfall, and surface erosion, which are exacerbated by wildfires. WERT members analyze the types and locations of these threats to life, safety, and property, collectively known as "Values-at-Risk" (VARs), and propose initial emergency protection measures for the affected areas. They then communicate their findings to the relevant local emergency management agencies, ensuring effective coordination and response.

More information on post-wildfire recovery and what to expect after a wildfire can be found at: <https://www.readyforwildfire.org/post-wildfire/after-a-wildfire/>

Specific Treatment Details

While the following is a description of treatment activity types, many of the areas for which one would do these are under the jurisdiction of public agencies. In addition, these areas may also require additional local, state and federal permits to perform such work.

Hillslope Treatments

Cover Applications:

Dry mulch: provides immediate ground cover with mulch to reduce erosion and downstream flow.

Wet mulch (hydromulch): provides immediate cover to hold moisture and seeds on slopes using a combination of organic fibers, glue, suspension agents, and seeds (most effective on inaccessible slopes).

Slash spreading: provides ground cover to reduce erosion by felling trees in burned areas.

Seeding: reduces soil erosion over time with an application of native seed mixtures (most successful in combination with mulching). Breaking up and loosening topsoil to break down the hydrophobic layer on top of the soil is also effective.

Erosion Barrier Applications:

Erosion control mat: organic mats staked on the soil surface to provide stability for vegetation establishment.

Log erosion barrier: trees felled perpendicular to the hillslope to slow runoff.

Fiber rolls (wattles): rolls placed perpendicular to the hillslope to reduce surface flows and reduce erosion.

Silt fencing: permeable fabric fencing installed parallel to the slope contour to trap sediment as water flows down the hillslope.

Channel Treatments

Check dam: small dams built to trap and store sediment in stream channels.

In-channel tree felling: felling trees in a staggered pattern in a channel to trap debris and sediment.

Grade stabilizer: structures made of natural materials placed in ephemeral channels for stabilization.

Stream bank armoring: reinforcing streambanks with natural materials to reduce bank cutting during stream flow.

Channel deflector: an engineered structure to direct flow away from unstable banks or nearby roads.

Debris basin: constructed to store large amounts of sediment moving in a stream channel.

Road and Trail Treatments

Outsloping and rolling dips (water bars): alter the road shape or template to disperse water and reduce erosion.

Overflow structures: protect the road by controlling runoff and diverting stream flow to constructed channels.

Low water stream crossing: culverts replaced by natural fords to prevent stream diversion and keep water in the natural channel.

Culvert modification: upgrading culvert size to prevent road damage.

Debris rack and deflectors: structure placed in a stream channel to collect debris before reaching a culvert.

Riser pipes: filter out debris and allow the passage of water in stream channels.

Catchment-basin cleanout: using machinery to clean debris and sediment out of stream channels and catchment basins.

Trail stabilization: constructing water bars and spillways to provide drainage away from the trail surface.

These treatments and descriptions are further detailed at: <https://afterwildfirenm.org/post-fire-treatments/treatment-descriptions>

For more information about how to install and build treatments, see the Wildfire Restoration Handbook at: https://www.rmfi.org/sites/default/files/hero-content-files/Fire-Restoration-HandbookDraft_2015_2.compressed_0.pdf

Timber Salvage

Many private landowners may decide to harvest trees killed in the fire, a decision that can be highly controversial. Trees remaining post-fire can be instrumental for soil and wildlife habitat recovery, but dead standing trees may also pose safety concerns and fuel loadings may still be conducive to future high intensity wildfires. Burned soils are especially susceptible to soil compaction and erosion so it is recommended to have professionals perform the timber salvage. Several programs assist landowners with timber salvage, including the NRCS Environmental Quality Incentives Program (EQIP) (CUSP 2016).

Invasive Species Management and Native Revegetation

Wildfire provides opportunity for many invasive species to dominate the landscape because many of these species thrive on recently burned landscapes. It is imperative that landowners prevent invasive establishment by eradicating weeds early, planting native species, and limiting invasive seed dispersal (CUSP 2016).

Planting native seeds is an economical way to restore a disturbed landscape. Vegetation provides protection against erosion and stabilizes exposed soils. In order to be successful, seeds must be planted during the proper time of year and using correct techniques. Use a native seed mixture with a diversity of species and consider the species' ability to compete with invasive species. Before planting, the seedbed must be prepared with topsoil and by raking to break up the hydrophobic soil layer. If you choose to transplant or plant native species, consider whether the landscape has made a sufficient recovery to ensure the safety of the individuals (CUSP 2016).

Long-Term Community Recovery

On non-federal land, recovery efforts are the responsibility of local governments and private landowners. Challenges associated with long-term recovery include homes that were severely damaged or were saved but are located in high-severity burn areas. Furthermore, homes saved but located on unstable slopes or in areas in danger of flooding or landslides present a more complicated challenge.

Economically, essential businesses that were burned or were otherwise forced to close pose a challenge to communities of all sizes. Given these complications, rebuilding and recovery efforts can last for years, with invasive species control and ecosystem restoration lasting even longer (CUSP 2016). It is critical that a long-term plan is in place and there is sufficient funding and support for all necessary ecosystem and community recovery. To learn about more post-fire recovery resources, visit the Ready for Wildfire website here: <https://www.readyforwildfire.org/post-wildfire/after-a-wildfire/>.

Additional resources regarding post-fire return and recovery can be found in Appendix G.

This page intentionally left blank.

APPENDIX I:

Project Outreach

This page intentionally left blank.

COMMUNITY OUTREACH

Table I.1 presents examples of the public outreach completed as part of the CWPP development prior to the public review period – June 19th-July 2nd, 2023. Online resources were used to provide information to the public and solicit feedback. Figures I.1 through I.10 show examples of outreach materials and online posts.

Feedback, comments, and suggestions received from community members during community events (e.g., meetings and walkthroughs), the community survey, and project recommendations review were synthesized and utilized to craft project recommendations for the Santa Clara County CWPP. Therefore, the project recommendations (see Chapter 4 or Appendix E) are specifically tailored to address the concerns and priorities of Santa Clara County.

Table I.1. Public Outreach Resources

Resource Description	Location	URL	Date
Meetings			
Community Outreach Public Meeting	Saratoga	https://www.youtube.com/watch?v=27eu79RkYlo&feature=youtu.be	12/1/2022
Community Outreach Public Meeting	Campbell	https://www.youtube.com/watch?v=5SMU0ehnxOc	12/6/2022
Community Outreach Public Meeting	Downtown San Jose	https://www.youtube.com/watch?v=uKytyYWllxs&feature=youtu.be	12/7/2022
Community Outreach Public Meeting	Milpitas	https://www.youtube.com/watch?v=cQWu5ToGKjU	12/13/2022
Community Outreach Public Meeting	Morgan Hill	https://www.youtube.com/watch?v=oFCC3Hw-66Y&feature=youtu.be	12/15/2022
Community Wildfire Meeting	Redwood Estates Pavilion, Lexington Basin		2/22/2023
Facebook Posts			
CWPP Town Hall Meetings FB post	Facebook	https://www.facebook.com/photo/?fbid=505925448241271&set=a.215499980617154	11/10/2022
CWPP Saratoga Town Hall Meeting FB post	Facebook	https://www.facebook.com/photo?fbid=522225716611244&set=a.215499980617154	11/30/2022
CWPP Campbell Town Hall Meeting FB post	Facebook	https://www.facebook.com/photo?fbid=526585952841887&set=a.215499980617154	12/05/2022
CWPP Downtown San Jose Town Hall Meeting FB post	Facebook	https://www.facebook.com/photo?fbid=527381356095680&set=a.215499980617154	12/06/2022
CWPP Milpitas Town Hall Meeting FB post	Facebook	https://www.facebook.com/photo?fbid=532525728914576&set=a.215499980617154	12/12/2022
CWPP Morgan Hill Town Hall Meeting FB post	Facebook	https://www.facebook.com/photo?fbid=534375715396244&set=a.215499980617154	12/14/2022
Lexington Basin Community Wildfire Meeting FB post	Facebook	https://www.facebook.com/events/573356257745399/?ref=newsfeed	2/3/2023
Outreach Materials			
CWPP Public Meeting Presentation	Multiple; public meetings	https://sccfiresafe.org/wp-content/uploads/2022/12/CWPP-public-meeting_web.pdf	
Santa Clara County CWPP FAQ	FireSafe Council website and hub	https://sccfiresafe.org/cwpp/faqs/	

Resource Description	Location	URL	Date
CWPP FAQ Flyer	FireSafe Council website and hub	https://sccfiresafe.org/wp-content/uploads/2022/11/CWPP_FAQ-791x1024.jpg	
CWPP Town Hall Meeting Flyer	FireSafe Council website and hub	https://sccfiresafe.org/wp-content/uploads/2022/11/CWPP-TownHallMtgsFlier-791x1024.png	
CWPP Press Release	FireSafe Council website and hub	https://sccfiresafe.org/wp-content/uploads/2022/11/CWPP-Press-Release-Final-11-10-22.pdf	11/10/2022
CWPP Update Newsletter	FireSafe Council website and hub	https://myemail.constantcontact.com/CWPP-Update-Newsletter.html?soid=1101807391718&aid=Xz1lmHkHSj8	
CWPP Advisory Team		https://sccfiresafe.org/cwpp/advisory-team/	
CWPP Survey	Multiple; public meetings and FireSafe Council website	https://docs.google.com/forms/d/e/1FAIpQLSfeTqYvfvH4Ex1Liik5HCKbxHP264BSCdl59etGbUNmQL3a2A/viewform	
CWPP Story Map	Online	https://sccfiresafe.org/cwpp/cwpp-story-map/	

For Immediate Release

Contact: [Seth Schalet](#)
 Santa Clara County FireSafe Council
 408-975-9591 or
CWPPteam@sscfiresafe.org



Santa Clara County FireSafe Council leads collaboration with County wildfire officials to update important wildfire preparedness document

November 10, 2022, Saratoga, CA—Santa Clara County FireSafe Council announced today it is leading a project to update the county's Community Wildfire Protection Plan (CWPP) with support from partners including CAL FIRE, Santa Clara County Fire, County of Santa Clara Office of Emergency Management, County of Santa Clara Department of Planning and Development and others. Five public information meetings have been scheduled.

CAL FIRE awarded a \$250,000 grant to the Santa Clara County FireSafe Council (SCCFSC) to lead the 2022/2023 Community Wildfire Protection Plan (CWPP) update. With this grant, SWCA Environmental Consultants (SWCA) has been selected to update the current CWPP (drafted in 2016) in coordination with regional stakeholders. SWCA also worked on the 2016 CWPP led by the Santa Clara County Fire Department (SCCFD). The CWPP update will build on the current CWPP and will cover the entire county. The planning process is expected to go through August 2023.

CWPPs are a critical element for county wildfire preparedness. According to Seth Schalet, Chief Executive Officer for Santa Clara County FireSafe Council, "Wildfire frequency and severity is on the rise, causing further risk to our local communities. Public safety, property, air quality from toxic wildfire smoke, critical infrastructure such as cell towers, the electrical grid, reservoirs, and water systems along with vital industries such as the county's agriculture producers can all be compromised by a large wildfire. Updating the CWPP will strengthen the ability of Santa Clara County to be more resilient and prepared for wildfires."

By having this strategic plan for all the local agencies, it allows them to prioritize forest health projects, shaded fuel breaks, escape routes, and public education campaigns. The CWPP will

Figure I.1. CWPP press release.



Figure I.2. CWPP update newsletter.

WILDFIRE PROTECTION PLAN

TOWN HALL MEETINGS

JOIN US!

Wildfire can effect you and your community. The CWPP can help you prepare. We want to hear from you as we work to update the current CWPP. Join us at any of our five community meetings:

DECEMBER 1, 2022 6:00 - 7:30PM
DISTRICT 5 - SUPERVISOR JOE SIMITIAN
SARATOGA COMMUNITY CENTER
19655 ALLENDALE AVE, SARATOGA, CA 95070

DECEMBER 6, 2022 6:00 - 7:30PM
DISTRICT 4 - SUPERVISOR SUSAN ELLENBERG
CAMPBELL COMMUNITY CENTER
1 W. CAMPBELL AVE, CAMPBELL, CA 95008

DECEMBER 7, 2022 6:00 - 7:30PM
DISTRICT 2 - SUPERVISOR CINDY CHAVEZ
SANTA CLARA COUNTY DISTRICT OFFICE
70 W. HEDDING ST, SAN JOSE, CA 95110

DECEMBER 13, 2022 6:00PM - 7:30PM
DISTRICT 3 - SUPERVISOR OTTO LEE
MILPITAS SENIOR CENTER AUDITORIUM
40 N. MILPITAS BLVD, MILPITAS, CA 95035

DECEMBER 15, 2022 6:00PM - 7:30PM
DISTRICT 1 - SUPERVISOR MIKE WASSERMAN
CITY COUNCIL CHAMBER BUILDING
17555 PEAK AVE, MORGAN HILL, CA 95037

www.sccfiresafe.org/cwpp

Figure I.3. Town hall meeting flyer.




Community Wildfire Protection Plan Update Project

What is a Community Wildfire Protection Plan (CWPP)?
A CWPP is a plan designed to identify wildfire risks and hazards to communities and develop recommendations to address that risk. The CWPP is a countywide guiding document for wildfire prevention activities.

What is the CWPP update project?
CWPPs are a critical element for county wildfire preparedness. Santa Clara County FireSafe Council (SCCFSC) has received a \$250,000 grant from CAL FIRE and California Climate Investment (CCI) funds to manage the project to update the current Santa Clara County CWPP. Updating the CWPP creates a strategic wildfire preparedness plan and allows county agencies to identify projects and seek funding to support project implementation.

Why is the CWPP important to me?
The CWPP identifies how to protect communities from wildfire and allows representatives to take action. Information in a CWPP can help protect and prepare communities and it is a helpful tool to gain community support for raising awareness and getting work done.

Who is updating the CWPP?
The Santa Clara FireSafe Council is leading the project with support from CAL FIRE, CCI Cap & Trade Dollars, County Fire, Santa Clara County Office of Emergency Management, and other key stakeholder agencies.

Project schedule?
The project is currently underway and is expected to be complete by August 2023.

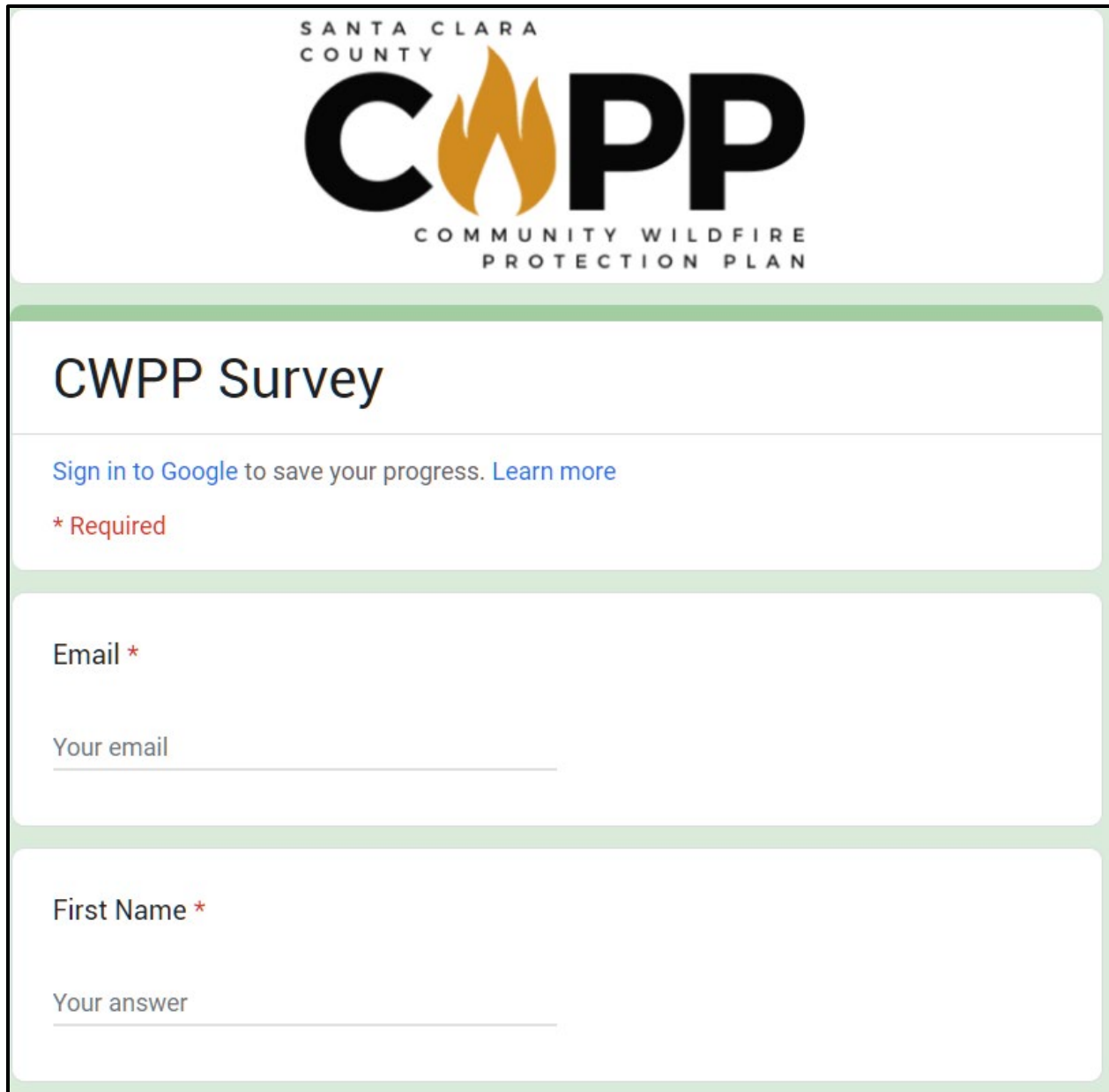
Where can I find updates?
For more information, FAQs, and to sign up for updates visit SCCFireSafe.org/CWPP
For questions, please contact the CWPP team at CWPPteam@sccfiresafe.org or (408) 975-9591








Figure I.4. Frequently asked questions flyer.



The screenshot displays the CWPP online web survey interface. At the top, the logo for Santa Clara County Community Wildfire Protection Plan (CWPP) is shown, featuring the text "SANTA CLARA COUNTY" above a large "C" with a flame icon inside, followed by "PP", and "COMMUNITY WILDFIRE PROTECTION PLAN" below. The main heading "CWPP Survey" is prominently displayed. Below this, a link encourages users to "Sign in to Google to save your progress. Learn more". A red asterisk indicates a required field. The first required field is "Email", with a placeholder text "Your email" and a text input line. The second required field is "First Name", with a placeholder text "Your answer" and a text input line.

Figure I.5. CWPP online web survey.

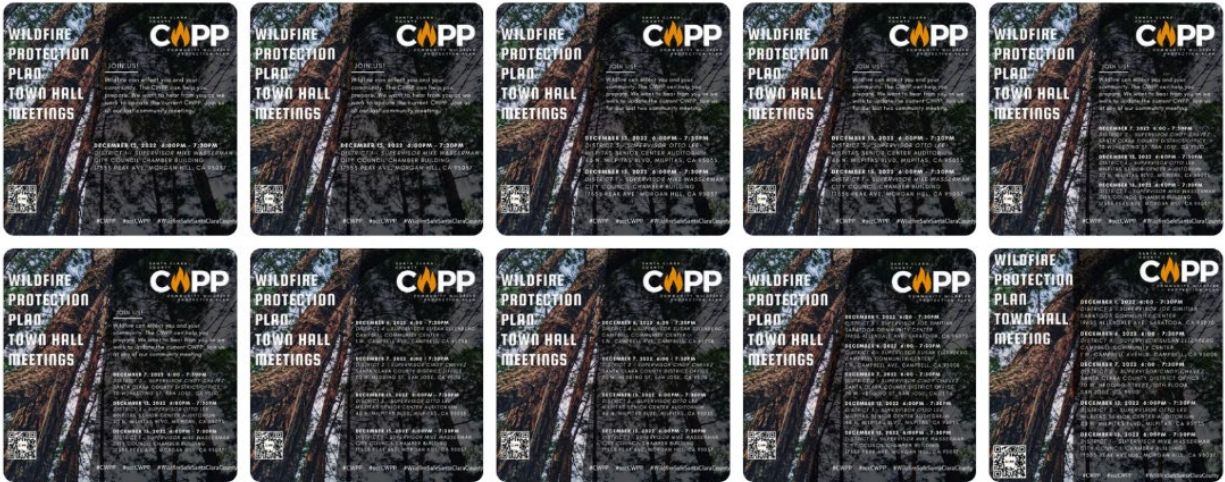


Figure I.6. Santa Clara County FireSafe Council CWPP community meetings Facebook posts.

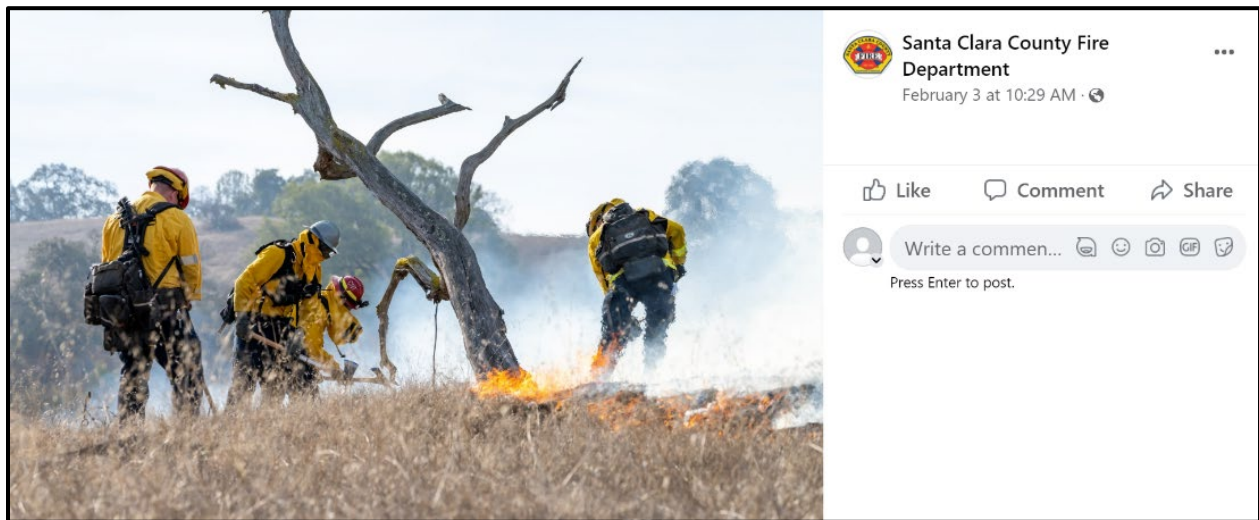


Figure I.7. Santa Clara County Fire Department Lexington Hills community meeting Facebook post.



Figure I.8. 2023 Santa Clara County CWPP Advisory Team meeting.



Figure I.9. San Jose FireSafe Council community outreach meeting.



Figure I.10. Saratoga FireSafe Council community outreach meeting.

COMMUNITY MEETING SURVEY RESULTS

Survey Results (in percentage of respondents, 16 total respondents) from the Morgan Hill and Saratoga Community Meetings - December 2022

How familiar are you with CWPPs?	
Very Familiar	44%
Somewhat Familiar	44%
Not Familiar	12%
What is a CWPP?	0
Have you seen the current 2016 CWPP?	
yes	69%
no	31%
Did you participate in the 2016 CWPP?	
Yes, as a resident	0
Yes, as a Government, Special District, Non-profit, or Company Rep	10%
No	90%

How great of a risk do you think wildfire poses to your community?	
Extreme Risk	75%
Moderate Risk	25%
Low Risk	
No Risk	
How great of a risk do you think wildfire poses to your residence?	
Extreme Risk	70%
Moderate Risk	12.5%
Low Risk	12.5%
No Risk	
How do you feel that your residence is prepared for wildfire?	
Not Prepared	
Somewhat Prepared	80%
Hardened & Prepared	20%
What kind of wildfire support do you need?	
Home ignition zone inspection	55%
Chipping	55%
Community Engagement	50%
Education	60%
None	10%
Other	Evacuation planning 20%, Grant writing and funding help 40%.

STORY MAP

Santa Clara County developed the CWPP story map (online content, link in Table I.1) to accommodate engagement with the public. The story map provides opportunities for both information sharing and gathering between the public and the Advisory Team. The story map has several tabs, each demonstrating information from various chapters in the CWPP document. The introductory tab presents the purpose of the story map, project history, instructions for navigating the content, and the National Cohesive Wildland Fire Management Strategy framework (Figure I.11). Next, the public involvement tab invites viewers to view past and future event announcements and recordings, funding information, and links to additional communication tools. The fire environment, values at risk, WUI hazard and Risk-Hazard Assessment, mitigation strategies, and monitoring and evaluation strategies tabs present the bulk of the CWPP content. These tabs introduce the WUI concept, fire regimes and fire history in the county, information regarding county fire planning and response, county values at risk from wildfire, areas with high versus low risk, wildfire mitigation actions, and monitoring strategies for applied treatments.

The story map also links the viewer to the CWPP document and contact information for the Santa Clara County Advisory Team. Each map is interactive, with several clickable layers providing information on numerous aspects of wildfire, including but not limited to communities in high-risk areas, vegetation and fuels, current mitigation projects, and fire behavior.

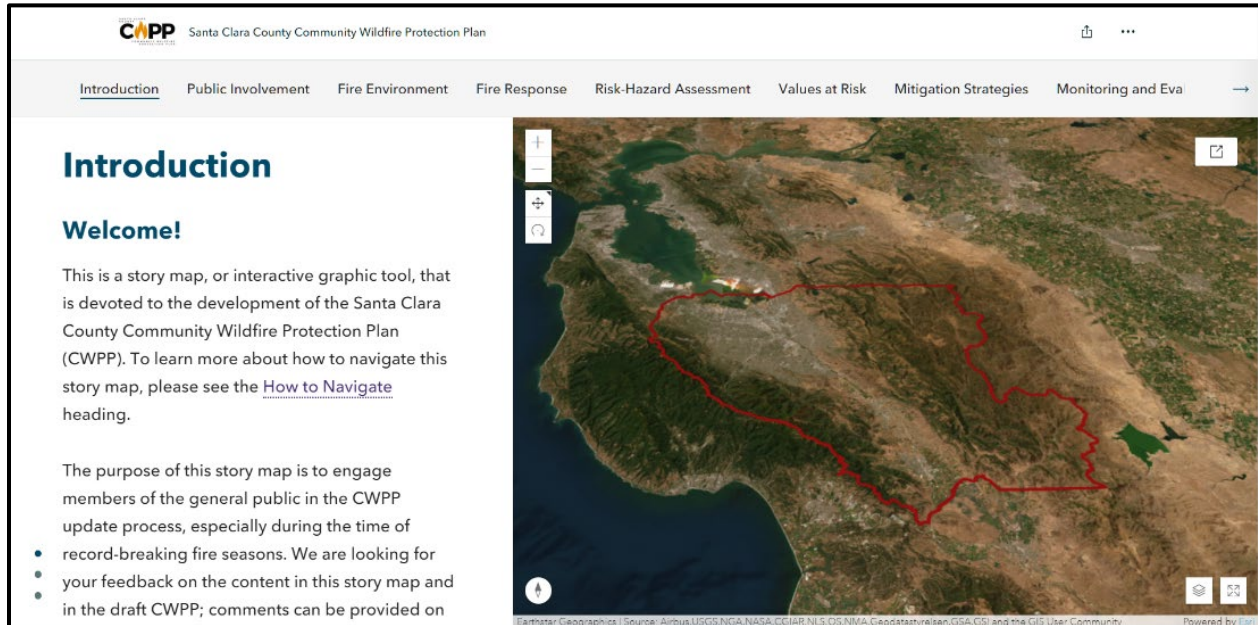


Figure I.11. CWPP story map introduction tab sample.

STAKEHOLDER OUTREACH

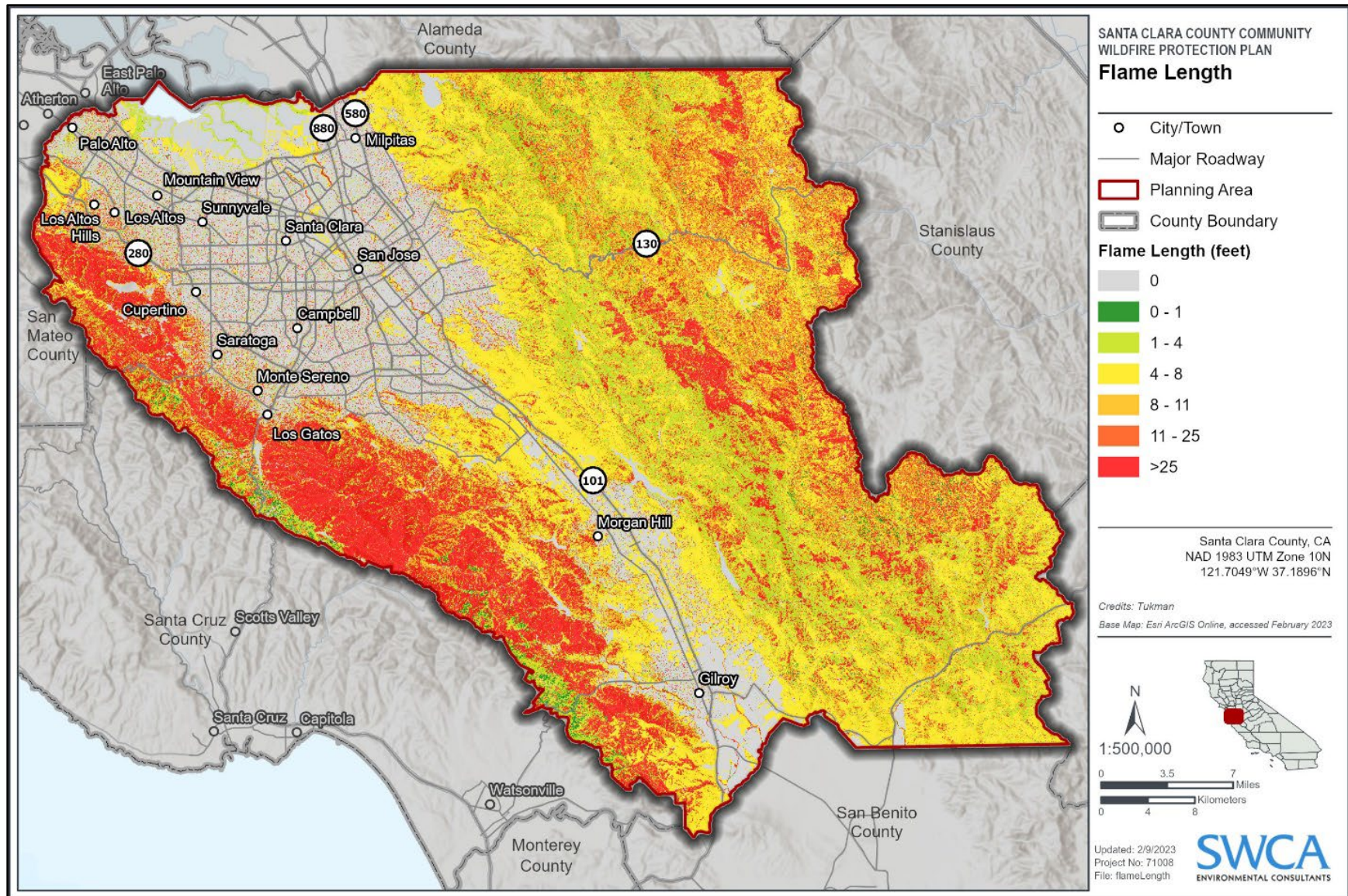
Attempts to engage stakeholders and agencies in outreach were made through an email invitation process, inviting stakeholders to participate as an Advisory Team member. If stakeholders accepted the invitation, they were added to the Advisory Team list and included on all Advisory Team meetings and communication. Advisory Team members served the role as local SME/Advisor to ensure local knowledge and concerns for each community within Santa Clara County were represented. Advisory Team members were given opportunities throughout the project to discuss/inform the planning approach, data needs, the Risk-Hazard Assessment, mapping, and document narrative. As additional stakeholders were identified, they were offered to be an Advisory Team member at any point in the planning process. In addition, one-on-one calls were held to gather stakeholder perspectives throughout the planning process.

This page intentionally left blank.

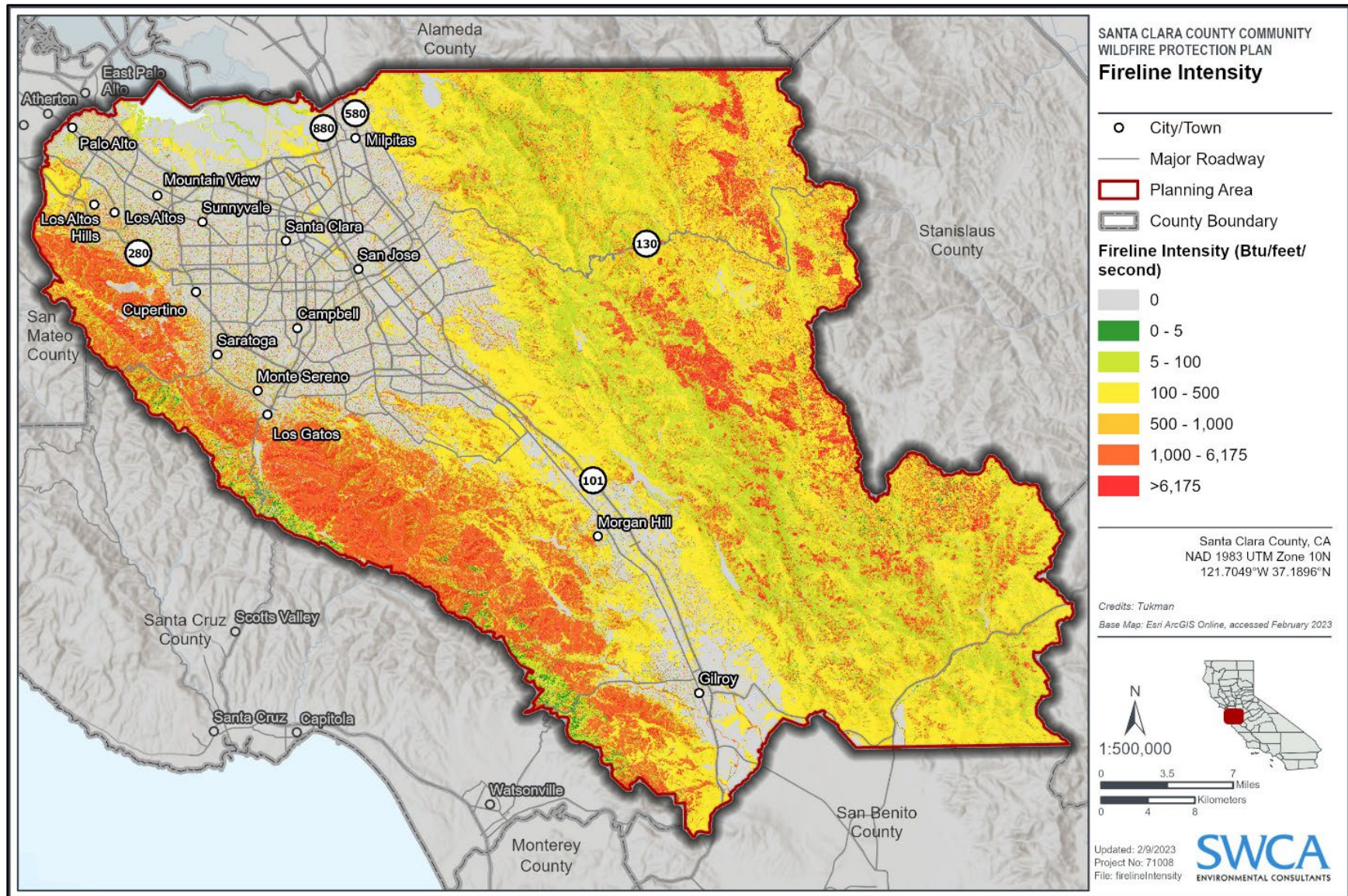
APPENDIX J:

Additional Mapping

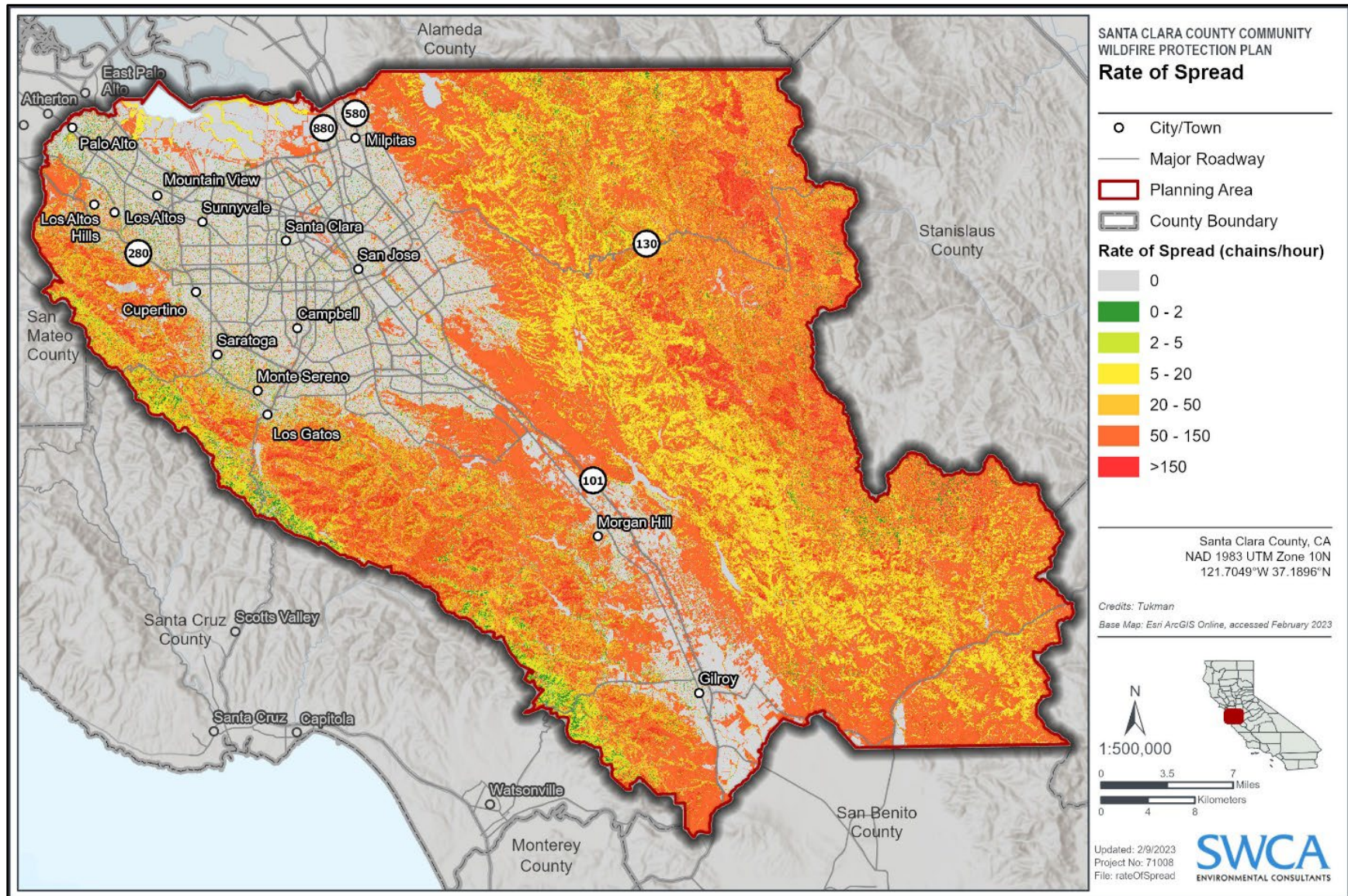
This page intentionally left blank.



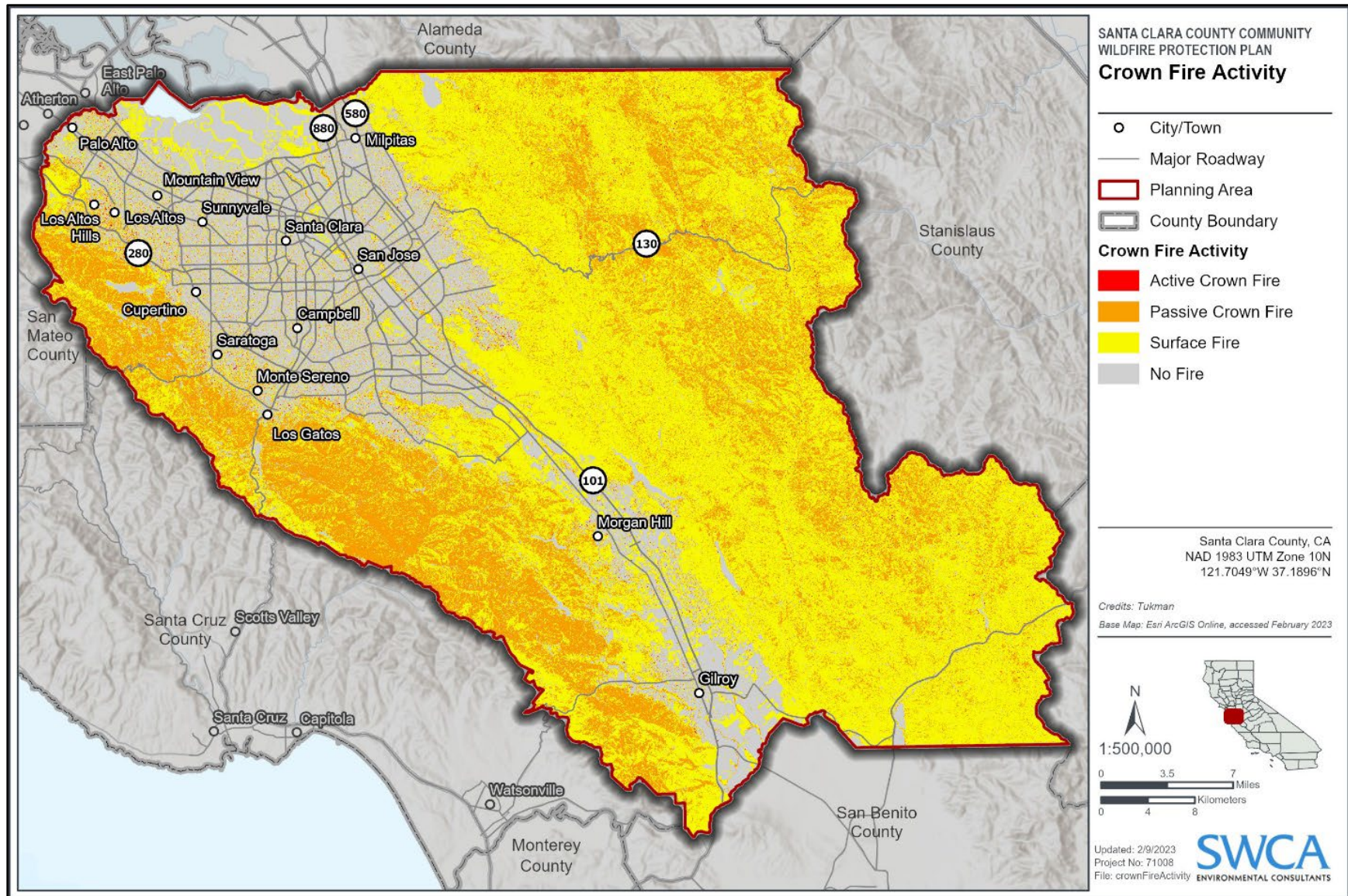
Map 1. Risk-Hazard Assessment inputs obtained from fire behavior analysis: flame length.



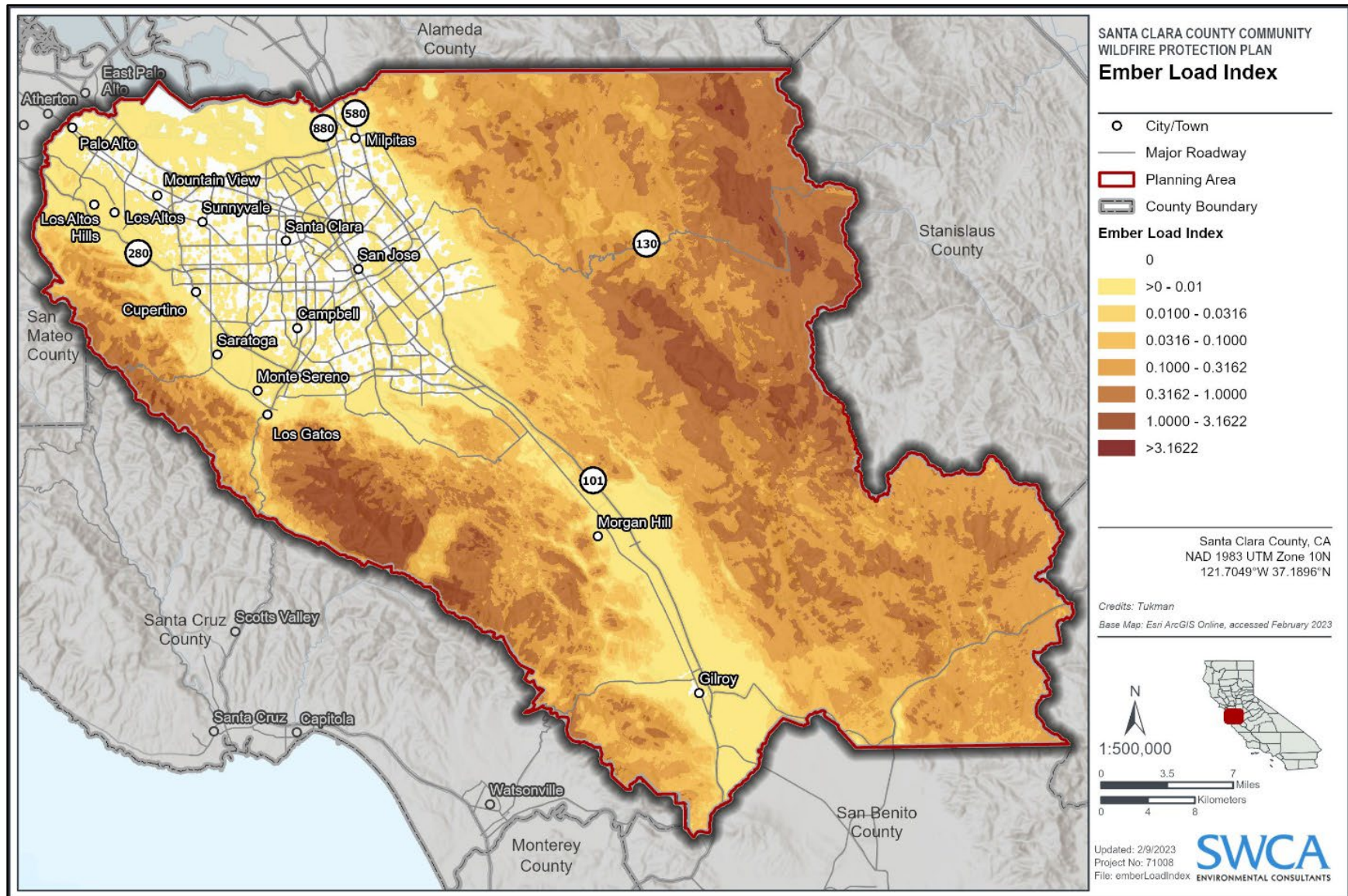
Map 2. Risk-Hazard Assessment inputs obtained from fire behavior analysis: fireline intensity.



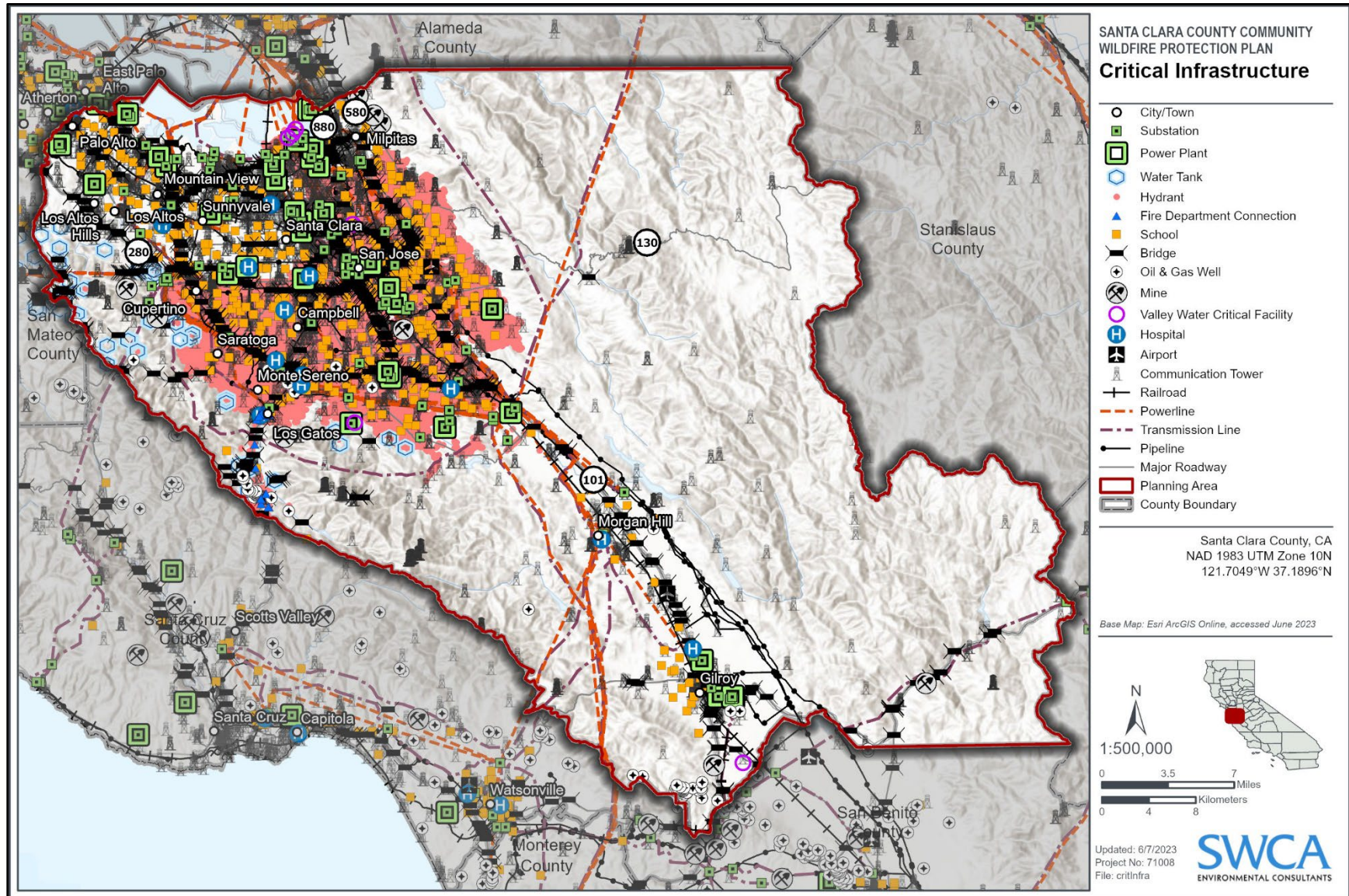
Map 3. Risk-Hazard Assessment inputs obtained from fire behavior analysis: rate of spread.



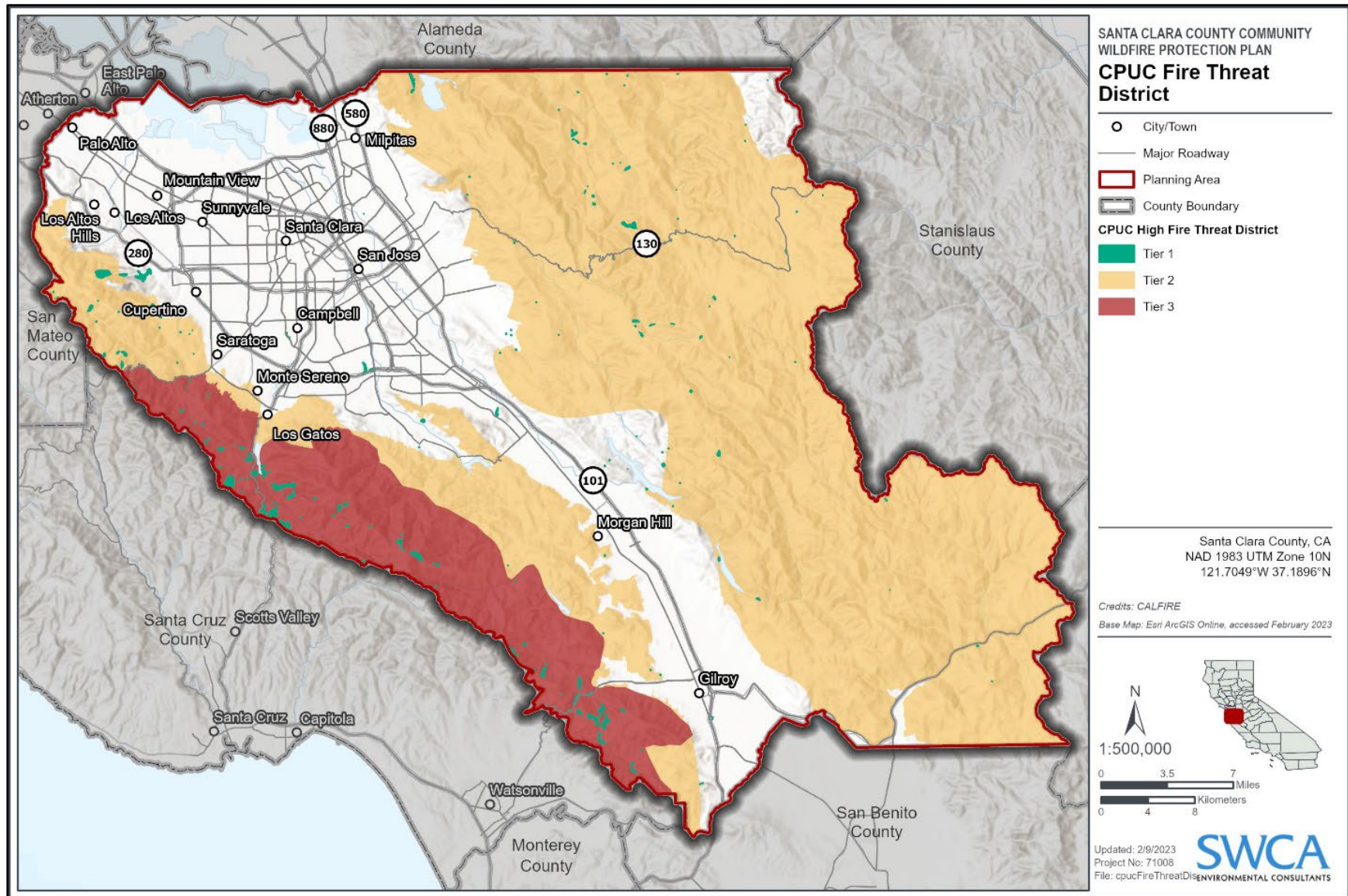
Map 4. Risk-Hazard Assessment inputs obtained from fire behavior analysis: crown fire activity.



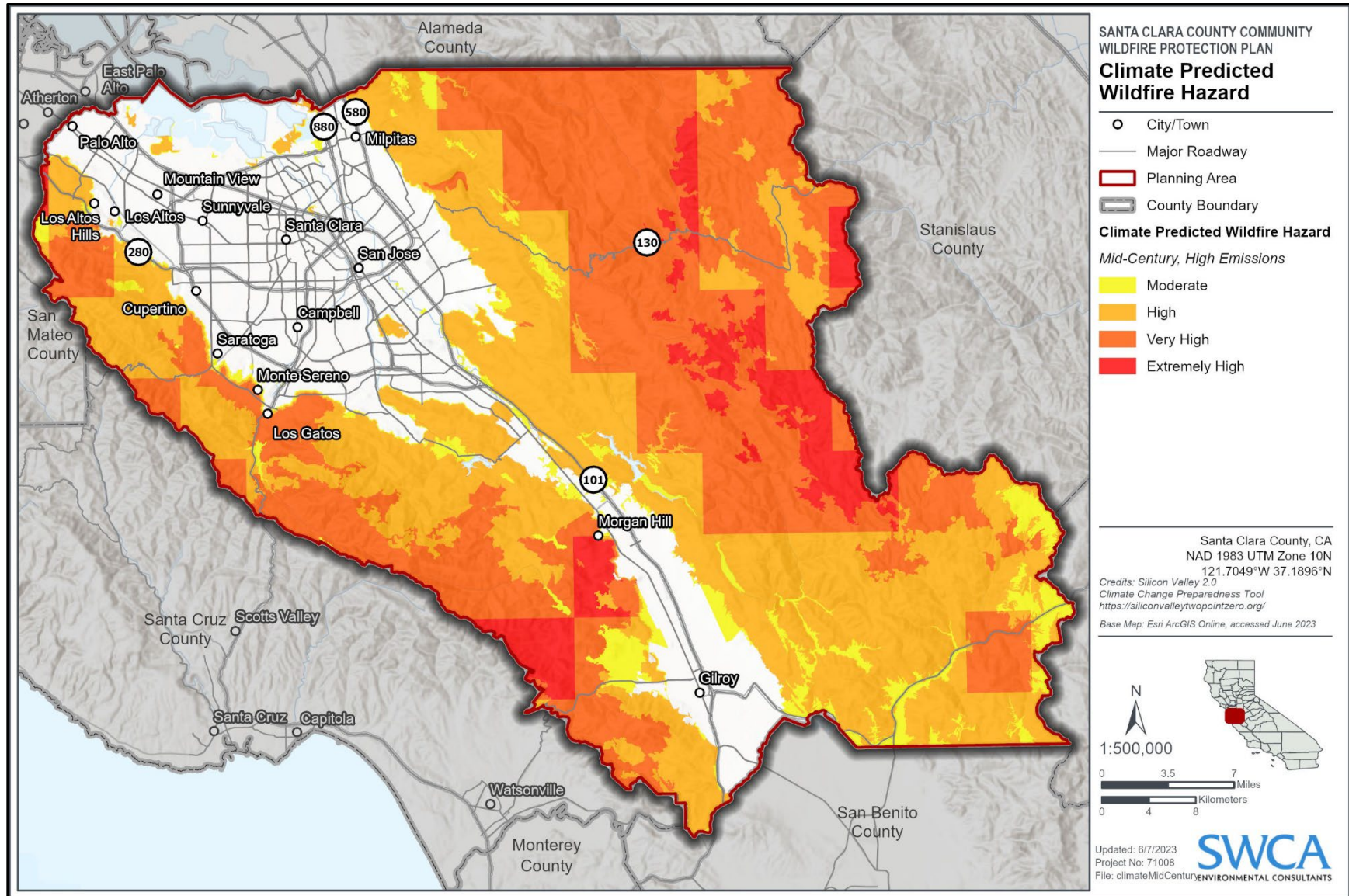
Map 5. Risk-Hazard Assessment inputs obtained from fire behavior analysis: ember load index.



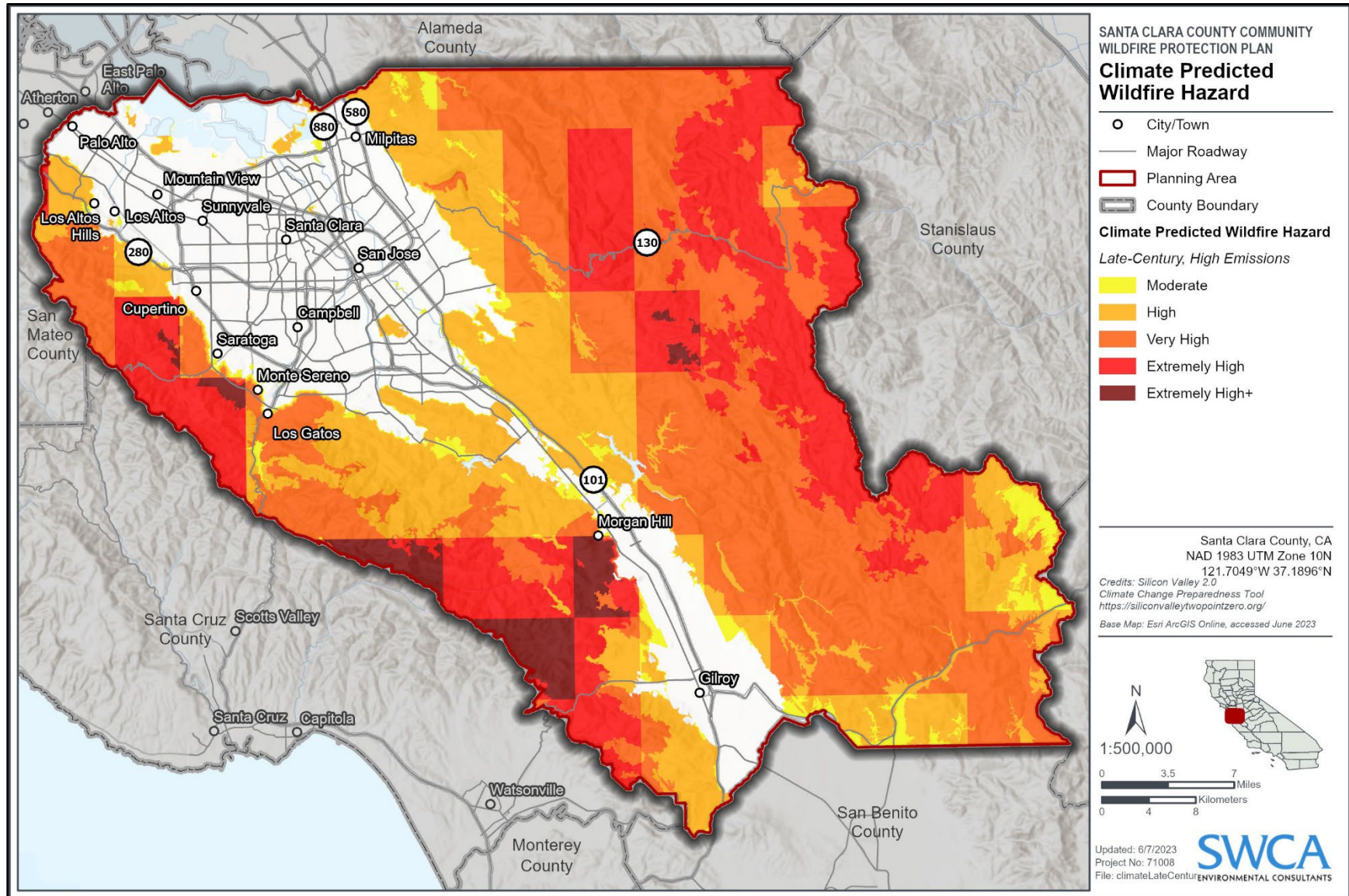
Map 6. Critical infrastructure.



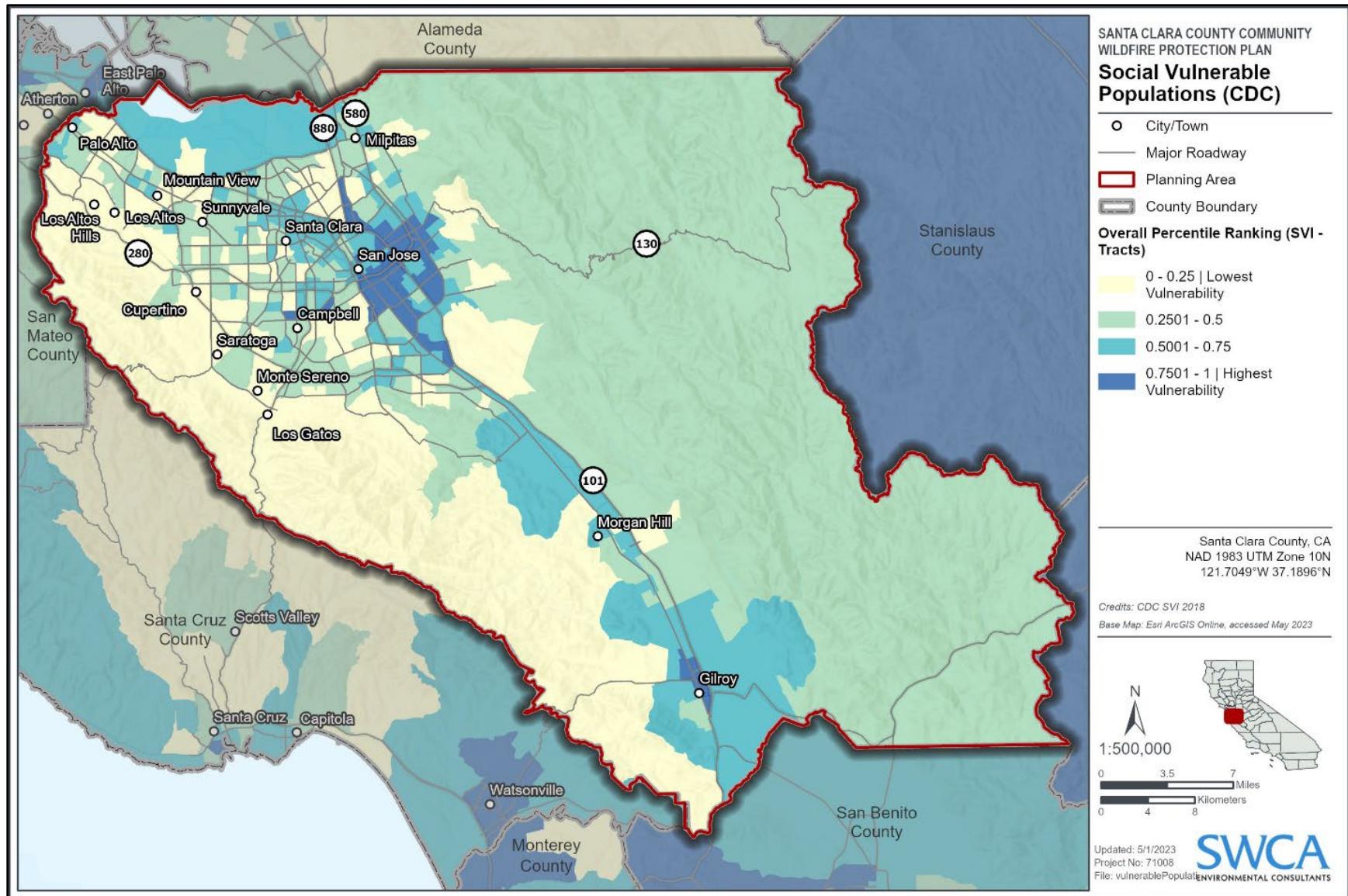
Map 7. CPUC fire threat districts.



Map 8. Climate predicted wildfire hazard – mid-century.



Map 9. Climate predicted wildfire hazard – late century.



Map 10. Social vulnerability within Santa Clara County.

APPENDIX K:

Forms

This page intentionally left blank.

1144 NATIONAL FIRE PROTECTION ASSOCIATION ASSESSMENT FORM

The NFPA 1144 Assessment was used in the 2016 CWPP to evaluate each community and assign a corresponding risk score of low, moderate, high, or extreme.

SWCA – 1144 Assessment		
Community		Notes:
Surveyor		
Survey Date/Time		
Means of Access		
Ingress and Egress		
2 or more roads in and out score 0		
1 road in and out 7		
Road Width		
> 24 ft 0		
> 20 ft < 24 ft 2		
< 20 ft 4		
Road Conditions		
Surfaced road, grade < 5% 0		
Surfaced road, grade > 5% 2		
Non-surfaced road, grade < 5% 2		
Non-surfaced road, grade > 5% 5		
Other than all season 7		
Fire Access		
< 300 ft with turnaround 0		
> 300 ft with turnaround 2		
< 300 ft with no turnaround 4		
> 300 ft with no turnaround 5		
Street Signs		
Present – reflective 0		
Present – non-reflective 2		
Not present 5		
Notes:		

Vegetation (Fuel Models)	
<i>Predominant Vegetation</i>	
Primary Predominant Vegetation	
Non-Burnable (NB) Score 2	
Grass (GR) Score 5	
Grass-Shrub (GS) Score 10	
Shrub (SH) Score 15	
Timber-Understory (TU) Score 20	
Timber-Litter (TL) Score 25	
Slash-Blow (TU) Score 30	
Notes:	
<i>Defensible Space</i>	
> 100 ft around structure 1	
> 70 ft < 100 ft around structure 3	
> 30 ft < 70 ft around structure 10	
< 30 ft around structure 25	
Topography Within 300 ft of Structures	
<i>Slope</i>	
< 9% 1	
10% to 20% 4	
21% to 30% 7	
31% to 40% 8	
>41% 10	
<i>Additional Rating Factors (rate all that apply)</i>	
Topographic features 1-5	
History of high fire occurrence 1-5	
Severe fire weather potential 1-5	
Separation of adjacent structures 1-5	
Notes:	
Roofing Assembly	
<i>Roofing</i>	
Class A - metal roof, clay/concrete tiles, slate, asphalt shingles 0	
Class B - pressure treated composite shakes and shingles 3	
Class C - untreated wood shingle, plywood, particle board 15	
Unrated - Extremely poor roofing conditions 25	

Notes:	
Building Construction	
Siding Materials (predominant)	
Non-combustible (brick/concrete) 5	
Fire Resistive (stucco/adobe) 10	
Combustible (wood or vinyl) 12	
Deck and fencing (predominant)	
No deck or fence/non-combustible 0	
Combustible deck and fence 5	
Building Set-Back	
> 30 ft to slope 1	
< 30 ft to slope 5	
Notes:	
Available Fire Protection	
Water Sources	
Water Source? yes/no	
Water Source Type hydrant, water tank, other	
Other Water Source	
Water Source Score Hydrant = 1 Water Tank = 3	
Organized Response	
Station < 5 mi from community 1	
Station > 5 mi from community 3	
Notes:	
Placement of Gas and Electric Utilities	
Both underground 0	
One above, one below 3	
Both above ground 5	
Values at Risk Observations	
Forest Health Observations	
Land Use Observations	

<i>Misc Observations</i>				
Total				
Hazard Rating Scale	<40 Low	>40 Moderate	>70 High	>112 Extreme

APPENDIX L:

Funding Sources

This page intentionally left blank.

FUNDING SOURCES

The following section provides information on federal, state, and private funding opportunities for conducting wildfire mitigation projects.

FEDERAL FUNDING INFORMATION

Source: 2022 Infrastructure Investments and Jobs Act

Agency: Multiple

Website: <https://www.congress.gov/bill/117th-congress/house-bill/3684>

Description: The Infrastructure Investments and Jobs act allocated funding through various departments for infrastructure projects including, but not limited to roads, bridges, and major projects; passenger and freight rail; highway and pedestrian safety; public transit; broadband; ports and waterways; airports; water infrastructure; power and grid reliability and resiliency; resiliency, including funding for coastal resiliency, ecosystem restoration, and weatherization; clean school buses and ferries; electric vehicle charging; addressing legacy pollution by cleaning up Brownfield and Superfund sites and reclaiming abandoned mines; and Western Water Infrastructure.

Specifically, the Community Wildfire Defense Grant Program is a \$1 billion program where the Department of Agriculture will provide grants to communities at risk from wildfire to develop or revise their community wildfire protection plans and carry out projects described within those plans. It will include a mix of formula and competitive funds. Applications are expected to open early in 2023.

Section 40803 addresses wildfire risk reduction, section 40804 deals with ecosystem restoration, section 40806 handles the establishment of fuel breaks in forests and other wildland vegetation, and section 70302 addresses reforestation. To learn more about the Act, please see guidebook located here https://www.whitehouse.gov/wp-content/uploads/2022/01/BUILDING-A-BETTER-AMERICA_FINAL.pdf?msclkid=48f8f465b51911ec85e010228d808d4d.

Source: Access to Ancestral Lands Grant Opportunity (AALG)

Agency: First Nations Development Institute

Website: <https://www.firstnations.org/>

Description: For more than 41 years, First Nations Development Institute (First Nations), a Native-led 501(c)(3) nonprofit organization, has worked to strengthen American Indian economies to support healthy Native communities by investing in and creating innovative institutions and models that strengthen asset control and support economic development for American Indian people and their communities. First Nations began its national grantmaking program in 1993. Through mid-year 2021, First Nations has successfully managed 2,276 grants totaling more than \$46 million to tribal and community institutions across Indian Country. The California Tribal Fund was created to support California-based, California-Native-led nonprofits and tribal programs in controlling and protecting their food systems, water, languages, traditional ecological knowledge, and land. Currently, the fund is operated as a project of First Nations Development Institute. You can find more information on the AALG here: <https://www.firstnations.org/rfps/california-tribal-fund-access-to-ancestral-lands-grant-opportunity/>

Source: Building Resilient Infrastructure and Communities (BRIC) Grant Program

Agency: Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA)

Website: <https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities>

Description: BRIC will support states, local communities, tribes, and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. The BRIC program guiding principles are supporting communities through capability- and capacity-building; encouraging and enabling innovation; promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency. You can find more information on the BRIC program here: <https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities>

Source: Hazard Mitigation Grant Program (HMGP)

Agency: FEMA

Website: <https://www.fema.gov/grants/mitigation/hazard-mitigation>

Description: The HMGP provides funding to state, local, tribal, or territorial governments (and individuals or businesses if the community applies on their behalf) to rebuild with the intentions to mitigate future losses due to potential disasters. This grant program is available after a presidentially declared disaster.

Source: Hazard Mitigation Grant Program (HMGP) – Post Fire

Agency: FEMA

Website: <https://www.fema.gov/grants/mitigation/post-fire>

Description: The HMGP Post Fire grant program provides assistance to communities for the purpose of implementing hazard mitigation measures following a wildfire. Mitigation measures may include:

- Soil stabilization
- Flood diversion
- Reforestation

Source: Flood Mitigation Assistance (FMA) Grant

Agency: FEMA

Website: <https://www.fema.gov/grants/mitigation/floods>

Description: The Flood Mitigation Assistance Program is a competitive grant program that provides funding to states, local communities, federally recognized tribes, and territories. Funds can be used for projects that reduce or eliminate the risk of repetitive flood damage to buildings insured by the National Flood Insurance Program. FEMA chooses recipients based on the applicant's ranking of the project and the eligibility and cost-effectiveness of the project.

Source: Emergency Management Performance Grant (EMPG)

Agency: FEMA

Website: <https://www.fema.gov/grants/preparedness/emergency-management-performance>

Description: The EMPG program provides funding to state, local, tribal, and territorial emergency management agencies with the overall goal of creating a safe and resilient nation. The two main objectives of the program are 1) closing capability gaps that are identified in the state or territory's most recent Stakeholder Preparedness Review (SPR); and 2) building or sustaining those capabilities that are identified as high priority through the Threat and Hazard Identification and Risk Assessment (THIRA)/SPR process and other relevant information sources. The grant recipient and Regional Administrator must come to an agreement on program priorities, which are crafted based on National, State, and regional priorities.

Source: Fire Management Assistance Grant (FMAG)

Agency: FEMA

Website: <https://www.fema.gov/assistance/public/fire-management-assistance>

Description: Fire Management Assistance is available to state, local, and tribal governments for the mitigation, management, and control of fires on publicly or privately owned forests or grasslands, which threaten such destruction as would constitute a major disaster. The Fire Management Assistance declaration process is initiated when a state submits a request for assistance to the FEMA Regional Director at the time a "threat of major disaster" exists. The entire process is accomplished on an expedited basis and a FEMA decision is rendered in a matter of hours. Before a grant can be awarded, a state must demonstrate that total eligible costs for the declared fire meet or exceed either the individual fire cost threshold, which applies to single fires, or the cumulative fire cost threshold, which recognizes numerous smaller fires burning throughout a state.

Source: Regional Catastrophic Preparedness (RCP) Grants

Agency: FEMA

Website: <https://www.fema.gov/grants/preparedness/regional-catastrophic>

Description: The Regional Catastrophic Preparedness Grant program provides funding to increase collaboration and capacity in regard to catastrophic incident response and preparation.

Source: Emergency Forest Restoration Program (EFRP)

Agency: USDA Farm Service Agency (FSA)

Website: <https://www.fsa.usda.gov/programs-and-services/disaster-assistance-program/emergency-forest-restoration/index>

Description: The Emergency Forest Restoration Program (EFRP) helps the owners of non-industrial private forests restore forest health damaged by natural disasters. The EFRP does this by authorizing payments to owners of private forests to restore disaster damaged forests. The local FSA County Committee implements EFRP for all disasters with the exceptions of drought and insect infestations. Eligible practices may include debris removal, such as down or damaged trees; site preparation, planting materials, and labor to replant forest stand; restoration of forestland roads, fire lanes, fuel breaks, or erosion-control structures; fencing, tree shelters; wildlife enhancement.

To be eligible for EFRP, the land must have existing tree cover; and be owned by any nonindustrial private individual, group, association, corporation, or other private legal entity.

Source: Emergency Conservation Program (ECP)**Agency:** USDA Farm Service Agency (FSA)**Website:** <https://www.fsa.usda.gov/programs-and-services/conservation-programs/emergency-conservation/index>

Description: The Emergency Conservation Program (ECP) helps farmers and ranchers to repair damage to farmlands caused by natural disasters and to help put in place methods for water conservation during severe drought. The ECP does this by giving ranchers and farmers funding and assistance to repair the damaged farmland or to install methods for water conservation. The grant could be used for restoring conservation structures (waterways, diversion ditches, buried irrigation mainlines, and permanently installed ditching system).

Source: Environmental Quality Incentives Program (EQIP)**Agency:** National Resource Conservation Service (NRCS)**Website:** <https://www.nrcs.usda.gov/wps/portal/nrcs/main/co/programs/financial/eqip/>

Description: The Environmental Quality Incentives Program (EQIP) is a voluntary program authorized under the Agricultural Act of 2014 (2014 Farm Bill) that helps farmers, ranchers and forest landowners who own or rent agricultural land to implement practices and/or install measures to protect soil, water, plant, wildlife, and other natural resources while ensuring sustainable production on their farms, ranches, and working forest lands. California EQUIP ranking pools include [Catastrophic Fire Recovery](#) and [Forest Tree Mortality](#).

Source: Emergency Watershed Protection (EWP) Program**Agency:** National Resource Conservation Service (NRCS)**Website:** <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/ewpp/>

Description: The program offers technical and financial assistance to help local communities relieve imminent threats to life and property caused by floods, fires, windstorms, and other natural disasters that impair a watershed.

Eligible sponsors include cities, counties, towns, conservation districts, or any federally recognized Native American tribe or tribal organization. Interested public and private landowners can apply for EWP Program recovery assistance through one of those sponsors.

EWP Program covers the following activities.

- Debris removal from stream channels, road culverts, and bridges
- Reshape and protect eroded streambanks
- Correct damaged drainage facilities
- Establish vegetative cover on critically eroded lands
- Repair levees and structures
- Repair conservation practices

Source: Funding for Fire Departments and First Responders**Agency:** DHS, U.S. Fire Administration**Website:** <https://www.usfa.fema.gov/grants/>

Description: Includes grants and general information on financial assistance for fire departments and first responders. Programs include the Assistance to Firefighters Grant Program, Reimbursement for Firefighting on Federal Property, State Fire Training Systems Grants, and National Fire Academy Training Assistance.

Source: Tribal Environmental General Assistance Program (GAP)**Agency:** Environmental Protection Agency (EPA)**Website:** <https://www.epa.gov/tribal-pacific-sw/epa-region-9-tribal-environmental-gap-funding>

Description: Funding under this program is used to aid Native American tribes in establishing and implementing their own reservation-specific environmental protection programs. To find out more about this funding opportunity please contact Tribal Branch Manager, Jeremy Bauer, at bauer.jeremy@epa.gov.

Source: Specific EPA Grant Programs**Agency:** Environmental Protection Agency (EPA)**Website:** <https://www.epa.gov/tribal-pacific-sw/epa-region-9-tribal-environmental-gap-funding>

Description: Various grant programs are listed under this site. Listed below are examples of grants offered:

- Multipurpose Grants to States and Tribes: <https://www.epa.gov/grants/multipurpose-grants-states-and-tribes>
- Environmental Education Grants: <https://www.epa.gov/education/grants>
- Environmental Justice Grants: <https://www.epa.gov/environmentaljustice/environmental-justice-grants-funding-and-technical-assistance>

Source: Conservation Innovation Grants (CIG)**Agency:** National Resource Conservation Service**Website:** [Conservation Innovation Grant \(CIG\) | NRCS California \(usda.gov\)](#)

Description: CIG State Component. CIG is a voluntary program intended to stimulate the development and adoption of innovative conservation approaches and technologies while leveraging federal investment in environmental enhancement and protection, in conjunction with agricultural production. Under CIG, Environmental Quality Incentives Program (EQIP) funds are used to award competitive grants to non-federal governmental or nongovernmental organizations, tribes, or individuals. CIG enables the Natural Resources Conservation Service (NRCS) to work with other public and private entities to accelerate technology transfer and adoption of promising technologies and approaches to address some of the nation's most pressing natural resource concerns. CIG will benefit agricultural producers by providing more options for environmental enhancement and compliance with federal, state, and local regulations. The NRCS administers the CIG program. The CIG requires a 50/50 match between the agency and the applicant. The CIG has two funding

components: national and state. Funding sources are available for water resources, soil resources, atmospheric resources, and grazing land and forest health.

Source: Urban and Community Forestry Program, National Urban and Community Forestry Challenge Cost Share Grant Program

Agency: U.S. Forest Service

Website: <https://www.fs.usda.gov/managing-land/urban-forests/ucf>

Description: U.S. Forest Service funding will provide for Urban and Community Forestry Programs that work with local communities to establish climate-resilient tree species to promote long-term forest health. The other initiative behind this program is to promote and carry out disaster risk mitigation activities, with priority given to environmental justice communities. For more information, contact a Forest Service Regional Program Manager.

Source: Catalog of Federal Funding Sources; Land Resources

Agency: Multiple

Website: <https://ordspub.epa.gov/ords/wfc/f?p=165:512:10535656593775:::512::>

Description: The Land Finance Clearing House is a catalogue of Federal funding sources for all things land related.

Examples of the types of grants found at this site are:

- Forest and Woodlands Resource Management Grant: https://sam.gov/fal/a798ad78cac749639b48270db3e86fdc/view?index=cfd&page=2&organization_id=100011100
- Environmental Education Grant: <https://www.epa.gov/education/grants>
- Public Assistance Grant Program: <https://www.fema.gov/assistance/public>
- Hazard Mitigation Grant: <https://www.fema.gov/grants/mitigation/hazard-mitigation>

Source: Catalog of Federal Funding Sources; Water Resources

Agency: Multiple

Website: <https://ofmpub.epa.gov/apex/wfc/f?p=165:12:6483383318137:::12::>

Description: The Water Finance Clearing House is a catalogue of Federal funding sources for all things water related.

Examples of the types of grants found at this site are:

- Water Conservation Field Services Program: <https://www.usbr.gov/waterconservation/>
- California Community Development Block Grant: <https://www.grants.ca.gov/grants/community-development-block-grant-cdbg/>
- California Clean Water State Revolving Fund Program (CWSRF): https://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/index.html

Source: Firewise Communities

Agency: Multiple

Website: <http://www.firewise.org>

Description: Many different Firewise Communities activities are available to help homes and whole neighborhoods become safer from wildfire without significant expense. Community cleanup days, awareness events, and other cooperative activities can often be successfully accomplished through partnerships among neighbors, local businesses, and local fire departments at little or no cost.

The kind of help you need will depend on who you are, where you are, and what you want to do. Among the different activities that individuals and neighborhoods can undertake, the following often benefit from seed funding or additional assistance from an outside source:

- Thinning/pruning/tree removal/clearing on private property—particularly on very large, densely wooded properties
- Retrofit of home roofing or siding to non-combustible materials
- Managing private forest
- Community slash pickup or chipping
- Creation or improvement of access/egress roads
- Improvement of water supply for firefighting
- Public education activities throughout the community or region

Source: The National Fire Plan (NFP)

Agency: DOI & USDA

Website: <http://www.forestsandrangelands.gov/>

Description: Many states are using funds from the NFP to provide funds through a cost-share with residents to help them reduce the wildfire risk to their private property. These actions are usually in the form of thinning or pruning trees, shrubs, and other vegetation and/or clearing the slash and debris from this kind of work. Opportunities are available for rural, state, and volunteer fire assistance.

Source: Staffing for Adequate Fire and Emergency Response (SAFER)

Agency: FEMA

Website: <https://www.fema.gov/grants/preparedness/firefighters/safer>

Description: The purpose of SAFER grants is to help fire departments increase the number of frontline firefighters. The goal is for fire departments to increase their staffing and deployment capabilities and ultimately attain 24-hour staffing, thus ensuring that their communities have adequate protection from fire and fire-related hazards. The SAFER grants support two specific activities: (1) hiring of firefighters and (2) recruitment and retention of volunteer firefighters. The hiring of firefighters activity provides grants to pay for part of the salaries of newly hired firefighters over the five-year program.

Source: The Fire Prevention and Safety Grants (FP&S)

Agency: FEMA

Website: <https://www.fema.gov/grants/preparedness/firefighters/safety-awards>

Description: FP&S offers support to projects that enhance the safety of the public and firefighters who may be exposed to fire and related hazards. The primary goal is to target high risk populations and mitigate high incidences of death and injury. Examples of the types of projects supported by FP&S include fire-prevention and public-safety education campaigns, juvenile fire-setter interventions, media campaigns, and arson prevention and awareness programs. In fiscal year 2005, Congress reauthorized funding for FP&S and expanded the eligible uses of funds to include firefighter safety research and development.

Source: Federal Excess Personal Property

Agency: USFS

Website: <https://gsaccess.gov/>

Description: The Federal Excess Personal Property (FEPP) program refers to Forest Service-owned property that is on loan to State Foresters for the purpose of wildland and rural firefighting. Most of the property originally belonged to the Department of Defense (DoD). Once acquired by the Forest Service, it is loaned to State Cooperators for firefighting purposes. The property is then loaned to the State Forester, who may then place it with local departments to improve local fire programs. State Foresters and the USDA Forest Service have mutually participated in the FEPP program since 1956.

Source: Assistance to Firefighters Grants (AFG)

Agency: FEMA

Website: <https://www.fema.gov/grants/preparedness/firefighters>.

Description: The AFG program provides resources to assist fire departments in attaining critical resources such as training and equipment.

Source: Community Wildfire Defense Grant

Agency: USDA Forest Service

Website: <https://www.fs.usda.gov/managing-land/fire/grants>

Description: The community Wildfire Defense Grant is a program aimed at assisting local communities and Tribes within the Wildland Urban Interface (WUI) in their planning efforts to reduce wildfire risk. The Forest Service intends to do this through the implementation of three goals from the National Cohesive Wildland Fire Management Strategy (Cohesive Strategy). Included in these three goals is restoring and maintaining landscapes, creating fire adapted communities, and improving wildfire response within the specific at-risk community. Grant funding of no more than \$250k will be awarded for the development and revision of Community Wildfire Protection Plans (CWPPs) and no more than \$10 million will be awarded for the implementation of projects outline in CWPPs that are less than ten years old. Communities, Tribes, states, non-profits, and Alaska Native Corporations are all considered eligible for this grant.

Source: Property Owners and the Hazard Mitigation Grant Program

Agency: FEMA

Website: <https://www.fema.gov/grants/mitigation/hazard-mitigation/property-owners>

Description: The Hazard Mitigation Grant Program (HMGP) provides funding to homeowners whose properties are located in states that have received a Presidential Disaster Declaration. Eligibility requires an approved hazard mitigation plan, compliance with relevant regulations, and a cost-effective and technically feasible rebuilding project. Homeowners work with their local community to develop an HMGP grant proposal, and if approved, FEMA reimburses up to 75% of mitigation costs. The benefits of mitigation include reducing future losses, strengthening homes against natural hazards, lowering insurance premiums, increasing property value, and reducing personal expenses. The application review process involves FEMA assessing cost-effectiveness and compliance, and approved projects are implemented by the local community. Reimbursement is granted upon completion of approved work. The process for businesses to be included in HMGP grant applications is the same as for homeowners.

STATE FUNDING INFORMATION

Source: CAL FIRE Grant Programs

Agency: CAL FIRE

Website: <https://www.fire.ca.gov/grants/>

Description: The CAL FIRE Grant Program offers a range of forest-related grants with differing scopes and funding details. Some of the Grants include:

1. Forest Health Grants: <https://www.fire.ca.gov/grants/forest-health-grants/>
2. California Forest Improvement Program: <https://www.fire.ca.gov/grants/california-forest-improvement-program-cfip/>
3. Fire Prevention Grants Program: <https://www.fire.ca.gov/grants/fire-prevention-grants/>
4. Urban & Community Forestry Grant Programs: <https://wwwresponse.fire.ca.gov/grants/urban-and-community-forestry-grant-programs/>
5. Wildfire Resilience and Forestry Assistance Grant- Prop 68: <https://www.fire.ca.gov/programs/resource-management/resource-protection-improvement/landowner-assistance/forest-stewardship/>

Source: California Fire Safe Council Grant Programs

Agency: California Fire Safe Council

Website: <https://cafiresafecouncil.org/grants-and-funding/apply-for-a-grant/>

Description: The California Fire Safe Council provides a range of Federal, State, and Private funding sources in addition to administering the USFS State Fire Assistance (SFA) Grant Programs.

Source: California Environmental Protection Agency (EPA) Loans and Grants

Agency: Multiple

Website: <https://calepa.ca.gov/loansgrants/>

Description: The California EPA Loans and Grants hosts a wide variety of EPA grants specifically for California. While these funding sources may not tie directly to fuel management or fire recovery, there is a wide array of funding opportunities for water and air resources which are directly impacted by wildfire.

Source: Northern California Forests and Watersheds Program

Agency: Multiple

Website: <https://www.nfwf.org/programs/northern-california-forests-and-watersheds>

Description: The National Fish and Wildlife Foundations and the U.S. Forest Service have partnered to restore and enhance National Forests and watersheds affected by wildfires in northern California. This program will administer an initial \$6 million in grants to projects that increase wildfire resiliency for northern California National Forests and watersheds.

Source: Adaptation Clearinghouse

Agency: Multiple

Website: <https://resilientca.org/>

Description: This resource has numerous wildfire-related resources such as funding opportunities, assessments, case studies, educational materials, data and tools, example plans and strategies, and additional policy guidance.

Source: State of California's Grants Portal

Agency: Multiple

Website: <https://www.grants.ca.gov/>

Description: The California Grants Portal helps users identify the latest grants that could support fire hazard planning or related implementation efforts that support wildfire risk mitigation, fuels management, and other related projects.

Source: California Air Resources Board Funding Wizard

Agency: Multiple

Website: <https://fundingwizard.arb.ca.gov/web/>

Description: The Funding Wizard aggregates current federal, state, regional, private, and other funding opportunities for environmental and sustainability projects.

Source: California Grant Programs

Agency: California Fire Foundation

Website: <https://www.cafirefoundation.org/programs/fireprevention/>

Description: The California Fire Foundation (CFF) offers grant opportunities to fire departments, firefighter associations, and community-based organizations whose projects help address wildfire and disaster prevention, preparedness, relief, and recovery needs within the state of California. The CFF directly supports high fire threat and/or under-resourced communities.

Source: Wildfire Recovery Fund

Agency: California Community Foundation

Website: <https://www.calfund.org/wildfirerecoveryfund/>

Description: The Wildfire Recovery Fund supports intermediate and long-term recovery efforts for major California wildfires. The Fund also supports wildfire prevention and preparedness efforts. Since 2003, the fund has granted more than \$32 million to support relief and recovery efforts in the aftermath of destructive wildfires.

Source: Wildfire Recovery Fund

Agency: California Community Foundation

Website: <https://www.calfund.org/wildfirerecoveryfund/>

Description: The Wildfire Recovery Fund supports intermediate and long-term recovery efforts for major California wildfires. The Fund also supports wildfire prevention and preparedness efforts. Since 2003, the fund has granted more than \$32 million to support relief and recovery efforts in the aftermath of destructive wildfires.

Source: Regional Forest and Fire Capacity Grant Program

Agency: California Department of Conservation

Website: <https://www.conservation.ca.gov/dlrp/grant-programs/Pages/Regional-Forest-and-Fire-Capacity-Program.aspx>

Description: The Department of Conservation has announced the release of the 2022 Regional Forest and Fire Capacity (RFFC) Program Final Grant Guidelines. The RFFC Program is made possible through the Public Resources Code section 4208.1 (California Department of Conservation 2023). The Department provides block grants to regional entities and eligible coordinating organizations to support large and small scale project implementation. The Program aims to achieve community wildfire resilience that is consistent with the California Wildfire and Forest Resilience Action Plan, California Forest Carbon Plan, and Executive Order B-52-18. The State Coastal Conservancy (SCC) is the current grantee for the Central Region.

Source: Wildfire Resilience Program

Agency: State Coastal Conservancy

Website: <https://www.conservation.ca.gov/dlrp/grant-programs/Pages/Regional-Forest-and-Fire-Capacity-Program.aspx>

Description: This program supports local partners for the purpose of implementing projects that will improve forest health and reduce the risk of catastrophic wildfire from occurring in developed areas. The Conservancy has provided over \$17 million to support forest management projects that reduce wildfire risk (Coastal Conservancy 2023). The goal of the Wildfire Resilience Program is to “build organizational capacity at the local and regional level to implement forest health and fire risk reduction projects” (Coastal Conservancy 2023). The Coastal Conservancy funds these projects from a block grant through the Department of Conservation’s Regional Fire and Forest Health Capacity

Program, the California Climate Initiative Program, Proposition 68, and Proposition 84. Priorities for the grant program include projects that:

- are in high wildfire risk areas, such as those identified in the CalFire Fire Hazard Severity Zones or the FRAP Priority Landscape Maps
- implement the California Wildfire and Forest Resilience Action Plan
- provide significant public benefit

Source: ReCoverCA

Agency: California Department of Housing and Community Development

Website: <https://www.hcd.ca.gov/grants-and-funding/recoverca>

Description: The ReCoverCA program offers financial assistance and construction management services to assist homeowners in rebuilding single-family homes and manufactured housing units. It focuses on community development beyond new construction, aiding communities in recovering from various disasters like droughts, fires, and floods. By administering federal funds for recovery and mitigation, the program collaborates with local governments and organizations to support long-term recovery initiatives for housing, infrastructure, economic revitalization, and disaster risk reduction.

PRIVATE FUNDING INFORMATION

Source: State Farm Good Neighbor Citizenship (GNC) Grants

Agency: State Farm

Website: <https://www.statefarm.com/about-us/corporate-responsibility/community-grants/good-neighbor-citizenship-grants>

Description: State Farm funding is directed at:

- Auto and roadway safety
- Teen Driver Education
- Home safety and fire prevention
- Disaster preparedness
- Disaster recovery

Source: The Urban Land Institute (ULI)

Website: <http://www.uli.org>

Description: ULI is a 501(c)(3) nonprofit research and education organization supported by its members. The institute has more than 22,000 members worldwide, representing the entire spectrum of land use and real estate development disciplines, working in private enterprise and public service. The mission of the ULI is to provide responsible leadership in the use of land to enhance the total environment. ULI and the ULI Foundation have instituted Community Action Grants that could be used for Firewise Communities activities. Applicants must be ULI members or part of a ULI District Council. Contact actiongrants@uli.org or review the web page to find your District Council and the application information.

Source: Environmental Systems Research Institute (ESRI)

Website: <http://www.esri.com/grants>

Description: ESRI is a privately held firm and the world's largest research and development organization dedicated to geographic information systems. ESRI provides free software, hardware, and training bundles under ESRI-sponsored Grants that include such activities as conservation, education, and sustainable development, and posts related non-ESRI grant opportunities under such categories as agriculture, education, environment, fire, public safety, and more. You can register on the website to receive updates on grant opportunities.

Source: Matching Awards Program

Agency: National Forest Foundation (NFF)

Website: <https://www.nationalforests.org/grant-programs/map>

Description: The NFF is soliciting proposals for its Matching Awards Program (MAP) to provide funds for direct on-the-ground projects benefitting America's National Forests and Grasslands. By pairing federal funds provided through a cooperative agreement with the U.S. Forest Service with non-federal dollars raised by award recipients, MAP measurably multiplies the resources available to implement stewardship projects that benefit the National Forest System.

Source: Patagonia Environmental Grants and Support

Agency: Patagonia

Website: <https://www.patagonia.com/how-we-fund/>

Description: Patagonia supports innovative work that addresses the root causes of the environmental crisis and seeks to protect both the environment and affected communities. Patagonia focuses on places where they have built connections through outdoor recreation and through their network of retail stores, nationally and internationally.

Source: Leonardo DiCaprio Foundation Grants

Agency: Leonardo DiCaprio Foundation

Website: <https://www.rewild.org/>

Description: The foundation supports projects around the world that build climate resiliency, protect vulnerable wildlife, and restore balance to threatened ecosystems and communities.

Source: U.S. Endowment for Forestry and Communities

Agency: U.S. Environmental Protection Agency, Natural Resources Conservation Service (NRCS), U.S. Forest Service, U.S. Department of Defense, U.S. Economic Development Agency

Website: <https://www.usendowment.org/>

Description: As the nation's largest public charity dedicated to keeping our working forests working and ensuring their bounty for current and future generations, the Endowment deploys the creativity and power of markets to advance their mission: The Endowment works collaboratively with partners in the public and private sectors to advance systemic, transformative and sustainable change for the health and vitality of the nation's working forests and forest-reliant communities.

OTHER FUNDING INFORMATION

The following resources may also provide helpful information for funding opportunities:

- Western Forestry Leadership Coalition: <https://www.thewflc.org/>
- USDA Information Center: <https://www.nal.usda.gov/main/information-centers>
- Forest Service Fire Management website: <https://www.fs.usda.gov/managing-land/fire>
- Insurance Services Office Mitigation Online (town fire ratings): <http://www.isomitigation.com/>
- National Fire Protection Association: <http://www.nfpa.org>
- Wildland Fire Prevention/Education: <https://www.nifc.gov/fire-information/fire-prevention-education-mitigation>
- Department of Homeland Security U.S. Fire Administration: <https://www.usfa.fema.gov/index.html>

APPENDIX M:

List of Preparers

This page intentionally left blank.

LIST OF PREPARERS

Name	Organization
Victoria Amato	SWCA Environmental Consultants
Breanna Plucinski	SWCA Environmental Consultants
Ryan Saggese	SWCA Environmental Consultants
Montiel Ayala	SWCA Environmental Consultants
Sam Lashley	SWCA Environmental Consultants
Liz Hitzfelder	SWCA Environmental Consultants
Peggy Ford	SWCA Environmental Consultants
Kimberly Proa	SWCA Environmental Consultants
Esther Mandeno	Digital Mapping Solutions
Carol Rice	Wildland Resource Management

For additional information on this project, please contact Project Manager Victoria Amato at vamato@swca.com.

ANNEX 12: CITY OF GILROY

Organization and Jurisdiction

The City of Gilroy is a charter city governed by a publicly elected city council and has authority for General Plan land use planning, code adoption, and permit processing. The City of Gilroy operates a municipal fire department that provides fire suppression, emergency medical services, and rescue response to incorporated areas and unincorporated areas through automatic and mutual aid agreements. The Gilroy Fire Department works with the City's Community Development Department to provide hazardous material and fire inspection and investigation, fire prevention, and building safety assessments. The Gilroy Fire Department works with the City's Office of Emergency Management to provide public outreach, education, and wildfire resiliency.

Lying within the southernmost extension of Santa Clara County's Santa Clara Valley at about 200 feet above sea level and bounded by the Santa Cruz Mountains to the west and the Diablo Mountains to the east, the City of Gilroy covers 16.54 square miles. At the time of the 2020 US Census, the City had a population of 59,520.

The Gilroy Planning Area, like other Planning Areas defined in the base CWPP, is not confined to a single jurisdiction's boundary to encourage cooperation, communication, coordination, and collaboration with other agencies and community stakeholders involved with wildfire mitigation activities. The California Resources Code defines State Responsibility Areas (SRAs) and Local Responsibility Areas (LRAs). Gilroy Fire Department provides fire protection to incorporated Gilroy, and the South Santa Clara Fire Protection District, under contract with CAL FIRE, provides fire protection to unincorporated areas surrounding Gilroy within the LRA, while CAL FIRE is responsible for fire protection in the SRA directly west of Gilroy's jurisdiction boundaries. All departments provide automatic and mutual aid within the Gilroy Planning Area, as shown in Figure 12.1. The City of Gilroy and parts of unincorporated Santa Clara County are within the Gilroy Planning Area and designated LRA.

Planning Team Participation

The City of Gilroy has contributed to the development of the Community Wildfire Protection Plan (CWPP) through collaboration with various stakeholders across the County of Santa Clara, including the Santa Clara County FireSafe Council, CWPP Management and Advisory Team, and other stakeholders from local government jurisdictions, nongovernmental organizations, and the private sector. The City of Gilroy engaged adjoining jurisdictions and the community in developing Annex 12. To update the annex, the City of Gilroy utilized a risk and hazard assessment completed during the initial planning process to identify wildfire hazard and risk potential and support wildfire prevention planning and mitigation priorities. A community information meeting was held in South County with representatives from the Santa Clara County Fire/Safe Council, CAL FIRE, South Santa Clara County Fire District, County of Santa Clara Office of Emergency Management, City of Morgan Hill Office of Emergency Services, and the City of Gilroy Office of Emergency Management at the City on December 15, 2022. This meeting allowed community members to receive information, review CWPP planning progress and maps, provide input on areas of concern, and have their questions answered.

Risk-Hazard Summary

The City of Gilroy is identified as an at-risk community by the California Office of the State Fire Marshal. The Planning Area has a complex wildfire environment, especially along the western wildland-urban interface, that presents a significant risk to public safety and the built environment. The Planning Area experiences a Mediterranean climate characterized by warm, dry summers and mild, wet winters. This climate is conducive to

wildfire as vegetation is often driest during the warmer summer and fall months. Extreme fire weather is also possible, notably during wind events, which bring warm, dry air and high wind speeds along the hills, mountains, and valley. Vegetation within the Planning Area includes woodlands, shrublands, grasslands, and non-native urban vegetation associated with residential development that can facilitate wildfire spread.

The Planning Area and adjacent lands feature relatively flat and hilly terrain contributing to fire hazard. Fires can spread more rapidly uphill, and steep terrain and valleys can channel and intensify winds, further exacerbating wildfire risk. Steep slopes and limited accessibility can also make firefighting efforts more challenging. The Planning Area also includes an extensive wildland urban interface (WUI). The development along the WUI results in homes, roads, and other assets interspersed with vegetation with varying degrees of fuel loading increasing hazard vulnerability in those areas. Large adjacent open space areas (primarily along the west edge of the Planning Area) expose the community to wildfires originating outside the Planning Area and burning toward it. If not quickly suppressed, these ignitions could move into the Planning Area and cause significant wildfire impacts to the community.

Most of the homes in the Planning Area are not located within the WUI area. Homes along the WUI typically maintain a defensible space of at least 30 feet, though many still need to achieve and maintain defensible space treatment out to 100 feet from structures. Limited defensible space and combustible building materials increase wildfire susceptibility and risk. Roads and narrow driveways are present within the Planning Area. Some properties are accessed via dead-end public roads and private roads that rely solely on one route for emergency evacuation, and some lots have limited space for turning around, posing a potential risk of entrapment for community members and emergency responders.

The City of Gilroy is actively addressing wildfire risk reduction in the Planning Area through various methods. This CWPP Annex also identifies recommended actions that can be implemented to reduce wildfire risk to the community. These plans, programs, and actions are summarized below:

- Resident Programs: Includes debris removal and chipping when the Fire Safe Council makes this opportunity available in South County.
- Community Education: Includes wildfire safety and personal preparedness education through workshops and tabling events.
- Community Emergency Preparedness: Includes support of Community Emergency Response Teams (CERT) and Amateur Radio Emergency Services (ARES), maintaining disaster tools and emergency supplies, and utilizing AlertSCC for delivering critical emergency and evacuation information.
- Funding and Staffing: Includes vegetation assessment and abatement within City-owned parcels and evaluating grant funding opportunities surrounding wildfire reduction projects and staff augmentation to support community resilience efforts.

WUI Area Description

The wildland-urban interface (WUI) is an area where wildfire risk mitigation projects may be conducted to reduce wildland fire threats to at-risk communities. The development pattern and land use within the Planning Area create conditions that can be described as either a wildland-urban interface or a wildland-urban intermix. Urban areas are predominantly built-up environments with little or no exposure to natural vegetative fuels. The area where urban development abuts vegetative fuels would be characterized as a wildland-urban interface. This condition exists where structures abut City parks, privately owned land, and open space. Areas where the density of housing units and structures is lower and the space between structures consists of vegetative fuels

capable of propagating fire are more typically characterized as a wildland-urban intermix. The wildland fire risk associated with Interface and Intermix areas include:

- Fire propagation via structure-to-structure fire spread.
- Landscaping-to-structure fire spread.
- Ember intrusion.

Most of the Planning Area is away from the WUI but shares borders with the surrounding WUI and intermix.

WUI Area Defined

Much of the City of Gilroy is considered non-WUI. However, portions of the Planning Area are designated as WUI and are assigned a low-risk rating. State wildland fire and defensible space laws apply outside City limits but not within the City. The City of Gilroy has the authority to adopt wildland fire and defensible space regulations throughout the City. The Countywide CWPP provides maps of WUI areas within the County, including the Planning Area. The extent of these WUI areas is presented in Figure 2.1 in the base Santa Clara County CWPP document (SWCA 2023). Figure 12.1 shows the Planning Area for the City of Gilroy.

Fire History

Fire history is an essential component of fire planning. It can provide an understanding of various fire-related factors, including frequency, type, and behavior, as well as the most vulnerable community areas and significant ignition sources. One important use for this information is as a tool for pre-planning. It is advantageous to know which areas may have burned recently and, therefore, may provide a tactical defense position, what type of fire burned in the area, and how fires may spread. Gilroy's Planning Area has no history of notable wildfires. However, several notable wildfires have occurred in the west Gilroy and east Gilroy Planning Areas that border the Gilroy Planning Area. Additional fire history information is shown in Figure 2.9 in the base CWPP document.

Hazardous Fuel Characteristics

The City of Gilroy is classified primarily as an urban fuel model with pockets of grass and timber interspersed throughout the city boundary. The hillside areas are mainly grass and shrub fuels intermixed with agricultural and grazed lands. The dominant vegetation in the hillside areas includes annual grassland, coastal live oak woodland, and coastal scrub. The scrub fuel types burn with high intensity in the event of ignition, particularly during periods of drought that follow a wet spring, where grass fuel loads provide the fine fuel layer capable of carrying wildfire. According to the Tuckman Risk Assessment, most of the Planning Area is rated as being in a moderate to high hazard area. The assessment indicates that most of the City is not within a hazard zone.

Appendix D of the base CWPP document provides additional details on the Tuckman Risk Assessment and Wildfire Hazard.

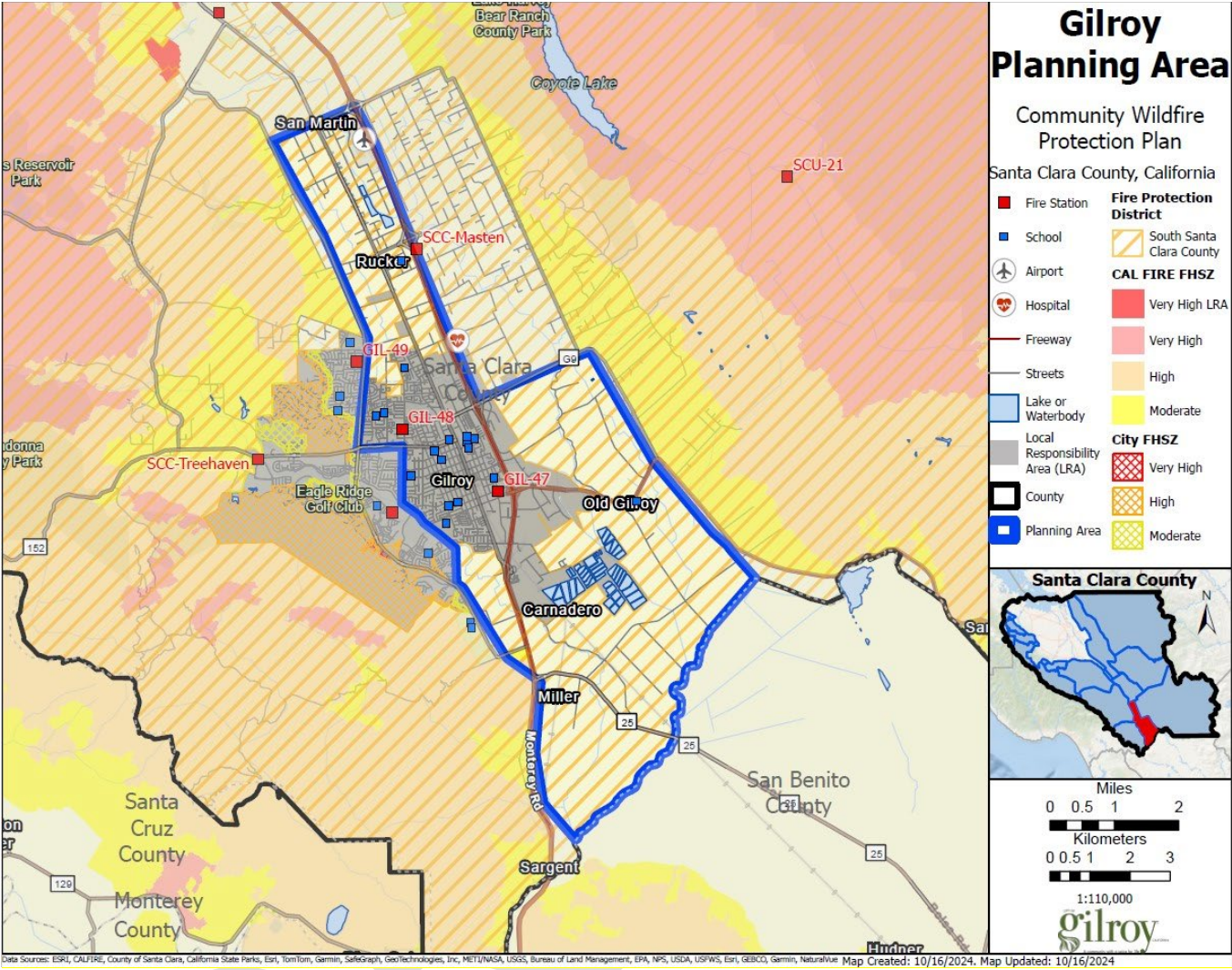


Figure. 12.1 Gilroy Planning Area.

Neighborhood and Structural Characteristics

Gilroy is a diverse community composed of retail/commercial core, medium to high-density residential areas with small lots, and larger single-family homes. The areas of greatest concern are where structures in proximity to open space preserves, certain parks, and open parcels with heavy vegetation have the greatest risk to wildfire.

Water Supply: Gilroy has a good water supply through a hydrant system linked to the City's supply system. Some newer development areas have community water systems with fire hydrants. However, by and large there are little to no fire hydrants in the less densely development areas. Water supplies are very limited except for the reservoirs in the area. However, many property owners recognize this danger and have private water tanks with fittings for use by fire engines. CAL FIRE helicopters use the reservoirs as a source of water to fight fires in this area.

Roads and Access: Access is generally good throughout the community with well-maintained roads. However, there are communities within the Planning Area that are accessed via one artery. In the event this road becomes unpassable, safe evacuation and emergency access will be compromised.

Defensible Space Characteristics: Most homes in WUI areas throughout the Planning Area have well maintained and irrigated yards with adequate defensible space. Parcel owners who fail to adequately maintain vegetation are assessed and notified annually to act. Notable in the neighborhoods at the base of the west hills are homes with minimal setbacks from the slope and adjacency to open space property with long grass, chaparral, and oak trees. Most homes in these areas are newer and subject to ordinances that specify building construction in the WUI.

Figure. 12.2. The images below depict the physical environments along the WUI in and around the Planning Area.



Figure 12.2.1. Gilroy and the WUI surrounding.



Figure 12.2.2. Recreation trail and housing development along the WUI.



Figure 12.2.3. View near Christmas Hill Park and Uvas Park Preserve with grass and oak trees.



Figure 12.2.4 Development along the WUI looking towards West Hills.

Emergency Response Capacity

Fire Suppression Resources

Fire response for the incorporated City of Gilroy is provided by the Gilroy Fire Department and operates out of three full-time fire stations and one part-time fire station. The following resources are available at each station staffed with one crew:

- Chestnut Station, 7070 Chestnut Street, Gilroy.
 - Type 1 Engine.
 - Type 1 Truck.
 - Type 6 Engine (OES).
- Las Animas Station, 8383 Wren Avenue, Gilroy.
 - Type 1 Engine.
 - Type 3 Engine.
 - Type 1 Engine (Reserve).
- Sunrise Station, 880 Sunrise Drive, Gilroy.
 - Type 1 Engine.
 - Type 1 Engine (Reserve).
- Santa Teresa Station, 7049 Miller Ave, Gilroy.*
 - Type 1 Engine.
 - Type 6 Engine.

* The Santa Teresa Station operates on a part-time basis year-round, with staffing during periods of heightened public safety concerns, such as:

- Local emergency declarations.
- Red flag warnings.
- 4th of July and surrounding weekend.

- Potential flood or other disaster.
- Public events or gatherings in which there is a significant public safety concern.

The South Santa Clara County Fire District handles both automatic and mutual aid, as well as primary response duties within the Planning Area. It operates from the Masten Fire Station, Treehaven Fire Station, and Morgan Hill CAL FIRE Headquarters. Additionally, the CAL FIRE Santa Clara Unit, based at the Morgan Hill Headquarters, is responsible for unincorporated areas not covered by the district and can provide resources through mutual aid. CAL FIRE can provide additional resources by type to meet specific wildfire response needs through mutual aid.

Water Availability

The City's water supply and fire department connection system is complex and built with many redundancies to support firefighting efforts. The South Santa Clara County Fire District also has water tenders available through mutual aid in any areas where hydrant access may be limited.

Fire Response

Federal Responsibility Area (FRA): A term designating areas where the federal government is responsible for fire response efforts. These areas include land under federal ownership (CA GOPR 2020).

Local Responsibility Area (LRA): A term designating areas where the local government is responsible for wildfire protection. The LRA includes incorporated cities, cultivated agricultural land, and portions of the desert. LRA fire protection is typically provided by city fire departments, fire protection districts, counties, and by CAL FIRE under contract to local government (CA GOPR 2020).

State Responsibility Area (SRA): A term designating areas where the state has financial responsibility for wildland fire protection. Incorporated cities and land under federal ownership are not included in the SRA. Land under federal ownership is in the federal responsibility area (CA GOPR 2020).

Source for more information- California Governor's Office of Planning and Research (CA GOPR). 2020. Fire Hazard Planning Technical Advisory. Available at: https://www.opr.ca.gov/docs/20201109-Draft_Wildfire_TA.pdf [Accessed August 2021].

Agricultural Pass Program

The County of Santa Clara has established a Livestock Pass program to enable commercial livestock producers in the City of Gilroy and unincorporated areas to access their livestock during wildfire emergencies. The Livestock Pass program provides a standardized identification system for commercial livestock producers, enabling firefighting personnel, law enforcement officers, and emergency responders to facilitate access during a wildfire or similar disaster. With a Livestock Pass, ranchers may have limited emergency access to restricted areas for feeding, watering, caring for livestock that is sheltering in place, or evacuation. To qualify for the Livestock Pass program, eligible livestock owners must complete a 4-hour fire safety training workshop. To find more information about the Livestock pass program visit: <https://ag.santaclaracounty.gov/apply-ranchers-livestock-pass>

Public Education and Outreach Programs

The City of Gilroy recognizes and supports the Ready Set, Go! program and is actively involved with the Santa Clara County FireSafe Council (<http://www.SCCFireSafe.org>). This organization provides

information regarding chipping programs, defensible space mitigation, forest health issues, and much more. They also offer public meetings and forums to support wildfire awareness.

The Gilroy Fire Department provides comprehensive wildfire preparedness information on the City Website: <https://www.cityofgilroy.org/165/Fire-Department>.

The City of Gilroy's Fire Prevention Division, under the Community Development Department provides comprehensive information regarding fire codes and regulations, wildfire hazard awareness and preparedness on the City's website: <https://www.cityofgilroy.org/166/Fire-Prevention>.

The City of Gilroy's Emergency Services Division, under the Administration Department, provides comprehensive emergency preparedness information on the City website: <http://www.cityofgilroy.org/174/Emergency-Preparedness>.

Social Vulnerabilities

Key Issues

There are multiple census tracts identified as being exposed to multiple hazards and having increased social vulnerability that are indicated on Cal OES' Hazard Exposure and Vulnerability Map: <https://www.arcgis.com/apps/dashboards/3c78aea361be4ea8a21b22b30e613d6e>. Disadvantaged communities often face heightened risks and long-term impacts from wildfire and smoke due to a combination of socioeconomic and systemic factors.

Below is a brief overview of increased community risk during wildfires:

- Economic Vulnerabilities – Substandard housing is increasingly susceptible and potential barriers to resource access to transportation and emergency information that can hinder awareness, preparedness, and response may exist.
- Health and Mobility Issues – Those with pre-existing health conditions may be impacted by smoke and those with physical limitations may require additional assistance.

Below is a brief overview of the long-term impacts post-wildfire:

- Economic Recovery – Wildfires can destroy residences, businesses, and critical infrastructure resulting in a phased recovery with prolonged hardship.
- Health and Well-being – Mental health may be adversely impacted, and smoke inhalation may exacerbate respiratory conditions or other health issues.
- Community and Social Dynamics – Social networks and community cohesion can be disrupted and barriers to accessing recovery services and support is possible.

Addressing these challenges requires targeted interventions that consider the unique needs of disadvantaged communities, including equitable risk reduction strategies, community engagement, and policy changes to support long-term recovery and resilience.

Response and Recovery Priorities

Essential services support the health, safety, and economic security of a community. The absence of these essential services can have adverse impacts during and post-wildfire. These elements have been

identified under FEMA's Community Lifelines and should be considered when prioritizing and focusing efforts during response and recovery.

FEMA's Community Lifelines address the following key impacts:

- Safety and Security
- Food, Hydration, and Shelter
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials
- Water Systems

Additional information on Community Lifelines can be found at <https://www.fema.gov/emergency-managers/practitioners/lifelines>.

Policies, Regulations, Ordinances, and Codes

City of Gilroy General Plan

Hilly areas in the northern and western portions of the city, as well as the adjacent areas outside of the city limits, are prone to wildfires. Gilroy is susceptible to wildfires in the "wildland-urban interface" areas of Gilroy. In addition, wildfires locally and regionally could lead to heavy smoke conditions in Gilroy that would require emergency management. Policies in this section are designed to minimize urban wildfire risks through public education, fire prevention codes, and hillside management practices that reduce the potential for wildfires.

The City of Gilroy's General Plan identifies the following goals within the Potential Hazards element under wildfire hazards:

- **Goal PH 4** – Protect life and minimize property damage from wildfires in the wildland/urban interface area and hazardous fire areas.
 - **PH 4.1 – Fire Hazard Severity Zones** – Ensure the development in the Gilroy Wildland/Urban Interface area conforms to the most current standards for wildfire protection.
 - **PH 4.2 – Development Review** – Provide plan checks for new construction, remodels, tenant improvements, and demolitions to ensure compliance with applicable life safety and fire protection system requirements, including special requirements for fire safety in areas with wildfire risk.
 - **PH 4.3 – Roofing Requirements** – Require "Class A" fire-rated roofs on all new construction or re-roofing in the following areas:
 - West of Santa Teresa Boulevard, and south of Mantelli Drive.

- West of Rancho Hills Drive.

In all other areas, “Class C” or better fire rated roofs shall be required for new construction and re-roofing.

- PH 4.4 – Hillside Areas – Require development in hillside areas to comply with the fire hazard policies and codes adopted into the Gilroy Fire Code for wildland/urban interface areas.
- PH 4.5 – Fire Safety Education and Training – Provide information on wildfire safety and prevention to raise public awareness on fire hazard issues and encourage preventive measures.

City of Gilroy Municipal Code

The City of Gilroy uses the updated California Fire Code, published by the International Code Council, Inc. and the California Building Standards Commission in Part 9 of Title 24 of the California Code of Regulations, was adopted by resolution in 2022 and incorporated into Chapter 10, Section 10 of the Gilroy City Code (<https://www.codepublishing.com/CA/Gilroy/#!/Gilroy10.html#10.10>).

The City of Gilroy Fire Prevention Program enforces the City’s Fire Codes. This consists of providing development review services for new streets and subdivisions, providing plan check and inspection services for new and modified construction, managing the fireworks and the weed abatement programs, conducting regulatory inspections of new businesses and existing businesses that are required by the code to have a regulatory permit, complaint investigation and code enforcement and providing training, consultation, and technical assistance to the Fire Department.

Extracts from this code relating to WUI are provided below:

103.2.1 General. The Fire Marshal Carries out the functions of the fire code official on behalf of and under the direction of the Fire Chief and implements, administers and enforces the provisions of this code. The Fire Marshal’s Office is established within the City of Gilroy as the Office of Fire Prevention. The Fire Marshal carries out the functions of the fire code official on behalf of and under the direction of the Fire Chief and implements, administers and enforces the provisions of this code.

The Residential Hillside Zoning areas are designated as the “City of Gilroy Wildland-Urban Interface Fire Area” and subject to the construction methods of Section 4905.2 of the Gilroy City Code.

The establishment of limits for the Wildland-Urban Interface Area’s required construction methods shall be designated pursuant to the California Public Resources Code for SRAs, and in the City of Gilroy the areas designated as Residential Hillside (RH) zoning are designated based on their topography, vegetation, climatic and proximity to SRAs which make these methods necessary for effective fire protection within this area.

4906.2.1 Application. Buildings and structures located in the following areas shall maintain the required hazardous vegetation and fuel management:

1. All unincorporated lands designated by the State Board of Forestry and Fire Protection as State Responsibility Areas (SRA) including:
 - 1.1. Moderate Fire Hazard Severity Zones
 - 1.2. High Fire Hazard Severity Zones

2023 Santa Clara County Community Wildfire Protection Plan: Annex 12 City of Gilroy

- 1.3. Very High Fire Hazard Severity Zones
 - 1.4. Land designated as a Very-High Fire Hazard Severity Zone or designated “City of Gilroy Wildland-Urban Interface Fire Area” as established in Section 4905.3.
2. Areas designated as High Fire Hazard Severity Zones and adjacent to “City of Gilroy Wildland-Urban Interface Fire Area” may be subject to all or part of the hazardous vegetation and fuel management requirements when determined necessary by the Fire Chief.

In addition to the Fire Code there are several policies and guidance documents:

- Fire Code Policies
- Allowable Grade
- Electric Security Gates (Width and KNOX requirement)
- Fire Service Access Roads (road length and turn around requirements)
- Fire Works Booths
- Key Box / KNOX Box Requirement
- Private Fire Underground Main
- Spark Arrestors for Chimneys
- Tents, Canopies and Membrane structures
- Fire Hydrant Distance to buildings and intervals on public street
- Fuel Transition Zone for Hillside Development
- Large Family Day Care Facilities
- Residential Hillside Development and Construction

Additional information and resources can be found on the City of Gilroy’s Fire Prevention Program webpage at <https://www.cityofgilroy.org/166/Fire-Prevention-Division>.

Risk-Hazard Assessment

A regionally specific wildfire hazard and risk assessment was conducted for the Planning Area to supplement the existing countywide risk assessment (Tukman 2022). This assessment incorporated additional inputs that are believed to represent wildfire hazards specifically for the Planning Area.

The Tukman Risk Assessment is a third-party risk assessment based on fire behavior modeling derived from fuel mapping classified at a 5m resolution, as well as historic weather, topographic conditions, and ignition history. The risk assessment has been developed as part of a collaborative effort with multi-jurisdictional participation. The County CWPP presents data on the Wildfire Hazard and Wildfire Risk to Structure layers.

Additional information about this assessment can be found in Appendix D of the base CWPP document.

County Risk Assessment

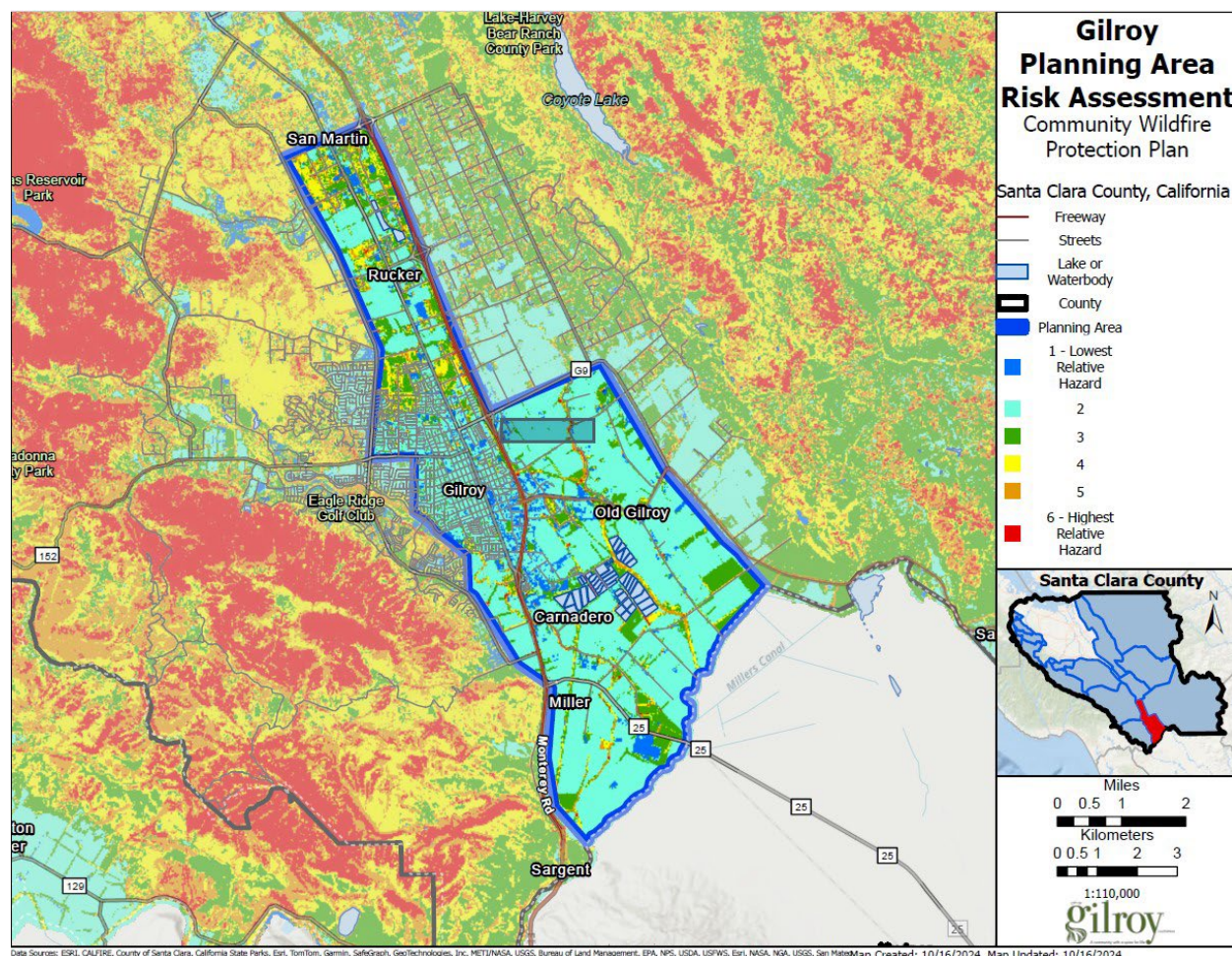


Figure 12.3. Composite Risk/Hazard Assessment for the Gilroy Planning Area.

Fire Hazard Severity Zones (FHSV)

The CAL FIRE FHSZ system is a science-based system where severity zones are defined based on vegetation, topography, and weather (temperature, humidity, and wind) and represent the likelihood of an area burning over a 30- to 50-year period without considering modifications such as fuel reduction efforts. The CAL FIRE FHSZ maps present wildfire hazard and not wildfire risk. In California, CAL FIRE maintains FSHZ data within the SRA. There are three classes of fire hazard severity ratings within FHSZs: Moderate, High, and Very High (CA GOPR 2020). The CAL FIRE FSHZ is shown in Figure 12.1. The City's FSHZ, also shown in Figure 12.1., highlights the areas where local authorities manage and enforce regulations to improve fire safety and building standards in the identified wildfire hazard areas.

Gilroy Community Level Risk Assessment

Community hazard assessments include ratings of community conditions compared to best practices for WUI fire mitigation. These ratings consider applicable state codes, local ordinances, and recognized best practices guidelines.

The National Fire Protection Association Standard 144 (NFPA 144) defines WUI hazards and risks at community and parcel levels. This plan utilized components of NFPA 11444, California laws, and local

2023 Santa Clara County Community Wildfire Protection Plan: Annex 12 City of Gilroy

ordinances to evaluate neighborhood WUI hazards and risks. California PRC 4290 and 4291 sections address WUI community design and defensible space standards.

The community risk assessment conducted in 2016 reflects the average risk to communities in the Planning Area. The NFPA 144 community risk assessment for the Gilroy Community assigned the WUI community a risk rating of Moderate with a score of 48 (<40 = low, >40 = moderate, >70 = High, >112 = Extreme). Averages are recorded across the community for each of these parameters. There were no changes to this assessment upon review in 2023. Factors that contributed to the risk are illustrated below in Figure 12.4.

Parameter	Condition	Rating
Access	Two roads in and out	+
	Narrow road width	+
	Surfaced road with greater than 5% grade	+
	Poor fire access, dead end spurs, lack turnaround	+/-
	Street signs are present, some are non-reflective	
Vegetation	Adjacent fuels: Medium	+
	Defensible space: >30 feet, <70 feet around structure	+/-
Topography within 300 feet of structure	21%–30 %	+/-
Topographic features	Moderate to high concern	+
History of high fire occurrence	Moderate	+
Severe fire weather potential	Low	+
Separation of adjacent structures	Good separation	+
Roofing assembly*	Class C	+/-
Building construction	Combustible siding and deck	+/-
	Building set back <30 feet to slope	+
Available fire protection*	Water: hydrants present with variable pressure	+/-
	Response: Station <5 miles from structure	+
	Internal sprinklers: none	+/-
Utilities	One above and one below ground	+/-
Risk Rating- Moderate (48)		

Figure 12.4. Gilroy Community Risk Assessment.

*Since the early 2000s, all new construction within the City of Gilroy's WUI is required to have Class A roofing, and internal fire protection sprinkler systems.

Critical Infrastructure and Community Values at Risk

The critical utility infrastructure in Gilroy, including electric generation facilities, substations, power distribution and supply lines, natural gas lines, water supply systems, and communications lines, plays a vital role in supplying essential services to the community. These services, which are often critical to health and life safety, are at risk from the significant threat of wildfire to the electric utility supply.

The project area has several watersheds that are community values at risk. Watersheds must be protected and maintained from catastrophic wildfire damage to prevent mass movement, erosion, sedimentation, and water contamination. Several open space preserves and parks within and adjacent to the Planning Area exist. Several transportation routes serve as potential ingress for fire response resources and evacuation routes, and the roadways require maintenance to ensure adequate vegetation clearance. Critical firefighting infrastructure includes access and egress routes, fire hydrants, water storage tanks and lakes, ponds, and swimming pools that can be used as water sources to fight wildfire. Other crucial public welfare and emergency facilities, such as radio repeaters, also occur in this area. Other community values at risk include places of worship, life safety, homes and property, infrastructure, recreation facilities, wildlife habitat, watershed protection, and environmental resources.

Commercial operations proximal to or within WUI areas, including several farms, ranches, and vineyards, are at risk. Loss of services from infrastructure sites can also be far-reaching and affect people and operations at a considerable distance from the fire itself. Potential losses include but are not limited to human and animal casualties, crop loss, facility loss, and associated economic losses.

Mitigation Projects and Prioritizations

The following project matrices have been developed by the community and Core Team to direct specific project implementation for the City of Gilroy (Table 12-1.1–Table 12-1.3). The matrices below are tiered to the strategic goals presented in the body of the CWPP through project IDs in the first column of each matrix. The matrices are broken down into projects for addressing public education and outreach, reducing structural ignitability, improving fire response capability, and reducing hazardous fuels.

Table 12-1.1. Recommended Projects for Creating Resilient Landscapes (Fuel Reduction Projects) in the Gilroy Planning Area.

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
GIL RL1	Ongoing	M	Ongoing	Continue to align the CWPP, MJHMP, General Plan, and other relevant plans to maintain consistency across all plans and leverage funding opportunities for hazardous fuel treatments.	Citywide and Countywide.	City, County, State	Build and retain partnerships between agencies and decision-making bodies at the City and County government level to develop solutions that mitigate the risks of common hazards: - Assess values at risk. - Build upon existing hazard mitigation planning from other agencies. - Use CWPP story map and projected tracking tools to increase accessibility and public awareness. - Utilize the established CWPP Management Team to foster collaboration.	Protect life and property by identifying hazards and reducing associated risks. Protect public and first responder safety.	Review and updated plans as indicated. Update the CWPP project tracking tool.	General fund, Grants
GIL RL2	Upcoming	M	Ongoing	Identify and evaluate areas where herbivory prescribed fuel treatments should occur.	Prioritize highest risk areas.	City, County, State, Federal, Private landowners	Utilize prescribed herbivory as fuel reduction and maintenance technique, especially adjacent to WUI areas: - Collaborate with organizations to develop fuel reduction projects. - Employ grazing as a solution to where topography may not allow for safe treatment utilizing alternative methods. - Identify and evaluate fuel reduction projects that eliminate invasive plant species and restore areas back to their natural environment.	Protect life and property by mitigating fuels, providing defensible space for firefighters protecting structures. Create a fuel arrangement to reduce wildfire spread. Ensure the protection of vulnerable ecosystems and values at risk.	Regular monitoring is needed to mitigate environmental damage and invasive species. Continued management of fire breaks maintained by grazing, brush breaking, controlled burns. Update the CWPP project tracking tool.	Grants
GIL RL3	Upcoming	M	Ongoing	Encourage the use of intentional fire where ecologically sound and feasible.	Prioritize highest risk areas.	City, County, State, Private Landowners	Utilize prescribed burn planning that follows agency and regulatory protocols. - Reach out to other surrounding fire agencies to collaborate on prescribed burns. This will improve the capacity to accomplish larger acreage burns. - Assess opportunities to use prescribed fire for habitat restoration to increase wildfire resilience.	Reduce fuel load of fine fuels and understory species to mitigate potential for intense fire behavior in the event of an unplanned ignition. Increase capacity and training for fire departments. Promote healthy successional vegetation. Provide habitat for fire-adapted species.	Regular monitoring is needed to mitigate environmental damage and invasive species in burned areas. Establish annual goals and objectives for prescribed burning operations Update the CWPP project tracking tool.	Grants
GIL RL4	Upcoming	M	Ongoing	Encourage landowners to reduce fuel around homes and communities.	Prioritize highest risk areas.	City, County, State, FireSafe Council, Local Landowners	Work with the FireSafe Council to empower property owners to conduct mitigation: Assist with assessment and identify best mitigation practices. Consider working with community-based organizations and volunteers to provide support and increase capacity.	Provide residents with information that helps them prioritize and plan their defensible space projects.	Evaluate and monitor cost effectiveness through a cost-benefit analysis. Assess completed work post assessment. Update CWPP project tracking tool.	General Fund, Grants

Table 12-1.2. Recommended Projects for Creating Fire Adapted Communities (Public Education and Outreach and Structural Ignitability Projects) in the Gilroy Planning Area

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
GIL FAC1	Ongoing	H	Ongoing	Identify vulnerable populations located in the WUI	Prioritize high risk areas.	Santa Clara County OEM, Fire Department, Community Development, Administration Department	The City and County needs to identify vulnerable populations (elderly, disabled, low income) who may need additional help to mitigate home hazards and to evacuate during a wildfire. Seek grant opportunities to support assistance for vulnerable populations.	Protect life and property of the most vulnerable members of the community.	Annual review of the number of actions taken to address vulnerable populations.	General Fund, Grants
GIL FAC2	Upcoming	M	Ongoing	Identify priority ignition concerns.	Prioritize high risk areas.	Fire Department, Community Development, Public Works Department, Utilities Department, Administration Department	Utilize fire history data to identify areas with frequent fire starts and develop a strategy to reduce incidence of ignitions. Convene a working group to develop strategies to reduce human ignitions: • Education campaign • Signage • Fire response plans	Reduce unnecessary ignition through unlawful or irresponsible behavior.	Annual evaluation of priority ignition concerns. 5-year re-run of risk assessment to determine success in mitigating hazards. Review fire history data on a 2-year frequency to monitor trends.	General Fund, Grants
GIL FAC3	Ongoing	H	Ongoing	Improve wildfire awareness and preparedness.	All Planning Area with focus along WUI.	Fire Department, Community Development Department, Administration Department, Local Partners	Continue and expand awareness and education to residents in the following areas: • Social media • Newsletter • Webpage • Tabling Events • Workshops	Prepare and educate community and promotes safety and resilience.	Annually evaluate the effectiveness of outreach efforts on an annual basis.	General Fund, Grants
GIL FAC4	Ongoing	M	Ongoing	Provide support to assess and educate property owners on wildfire prevention compliance including defensible space and home hardening.	Prioritize high risk areas.	Fire Department, Community Development, Utilities Department, Public Works Department, Administration Department, Local Partners	Promote defensible space and home hardening standards: • Encourage new structures follow applicable codes outlined in City ordinance and ensure older structure owners are aware of emerging wildfire mitigation standards. • Educate and encourage compliance with 30-100 feet of defensible space around structures. • Clean and maintain ingress/egress routes and ensure alternate routes when possible. • Continue educating property owners on tangible actions to mitigate their risk to wildfire hazards.	Reduce loss of life and structures through defensible space and property hygiene and maintenance education and outreach programs.	Annual program review and consider updates to City code as required.	General Fund, Grants
GIL FAC 5	Ongoing	H	Ongoing	Improved air quality and smoke awareness and education.	All Planning Area with a focus on vulnerable populations.	Fire Department, Community Development, Administration Department, Local Partners	Identify individuals and portions of the community most vulnerable to the impacts of smoke. Work with Fire Departments and FireSafe Council to develop materials and provide resources to at-risk communities. Disseminate information through various platforms: • Social media • Newsletter • Outreach and training events	Empower the community with knowledge to mitigate health-related impacts from smoke.	Annually evaluate and update program as indicated.	General Fund, Grants

Table 12-1.3. Recommended Projects for Safe and Effective Wildfire Response (Fire Fighting Capability Projects) in the Gilroy Planning Area.

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
GIL FR1	Upcoming	M	Ongoing	Develop a coordinated approach between the fire department and water district to identify needed improvements to the water distribution system, initially focusing on areas of highest wildfire hazard as determined in the risk assessment and areas with limited water pressure or no existing water supply.	Prioritize high risk areas.	Santa Clara County, City of Gilroy, Valley Water, Private landowners	Initiate a detailed study of feasible locations for water development improvements including but not limited to additional distribution and supply lines with hydrants in difficult to access locations. Install hand pumps or other methods independent of the grid for accessing private well water. Evaluate and consider heli hydrants and mapping out potential drafting locations.	Improve fire-fighting response if water is more readily available or closest locations could be identified on a GIS map on a tablet/computer. Alleviates public and agency concern for limited water supply in some WUI areas	Convene annually Document number of meetings held Document number of actions taken	General Fund, Grants
GIL FR2	Upcoming	H	Ongoing	Develop strategies to enhance safe wildfire response in areas with poor ingress and egress.	Prioritize high risk areas.	City, County, State, SSCCFD, CAL FIRE	Address narrow access concerns for wildfire apparatus through road improvements, new egress points, or development of response plans. Identify alternative apparatus for access into narrow areas. Identify potential areas that threaten entrapment of response crews and develop response plans and/or safety zones. Map all alternative ingress/egress. Identify areas with limited all-weather access and develop response plans. Work with HOAs and Community Associations to address locked gates and access concerns	Improve fire-fighting response if smaller more agile vehicles are available to navigate narrow unimproved roads	Annually evaluate areas of concern and address ads required.	General fund, Grants
GIL FR3	Upcoming	M	Ongoing	Participate with County, CAL FIRE, and SSCCFD to support a countywide early warning fire detection system.	Prioritize high risk areas.	City, County, SSCCFD, CAL FIRE	Determine costs, upkeep, and operational capacity of an early warning fire detection system. Consider feasibility of early warning fire detection technologies for use in the West Gilroy Hills.	Improve early detection of new wildfire ignitions.	Yearly testing and maintenance.	Grants
GIL FR4	Upcoming	L	Ongoing	Determine the feasibility of implementing a drone program for the purpose of monitoring wildfire ignitions, reignitions, and initial attack operations.	City WUI areas that are not easily or safely accessible.	City OEM, County OEM, GFD	Conduct a cost-benefit analysis determining the economic viability of a UAS program. Identify and establish training protocols and required licensure. Emphasize to the public that unauthorized UASs in active fire area could interfere with firefighting operations.	Improve fire reporting of difficult to access fires. Notify fire suppression agencies of wildfire ignition and spread.	Pilots will be required to maintain licensure and operate consistent with FAA Part 107 rules. Notify local civilian and fire-related aviation authorities of the program and during flight operations.	Grants
GIL FR5	Upcoming	H	Ongoing	Collaborate to implement an evacuation platform.	All areas within Planning Area	City OEM, County OEM	Implement evacuation software and create evacuation maps based on a zone configuration.	Notify community members of evacuation status and provide links to additional information	Requires annual community outreach and testing.	Grants
GIL FR6	Upcoming	M	Ongoing	Improve and provide wildland fire-specific training opportunities to firefighters	Countywide	City, County, State	Expand certification and qualifications for fire department personnel. Ensure that all firefighters are training in basic wildfire behavior, basic fire weather, and that all company, officers and chief level officers are trained in the wildland command and strike team leader level. Develop agreements between agencies to provide training opportunities to fire staff. Ensure fire departments require all firefighters to be red card. A red card is a requirement to work on an active federal fire incident. Reach out to the National Wildfire Coordination Group (NCWG) for training materials, online courses, and instructor needs. Provide training opportunities for firefighter trainees to meet NCWG standards,	Improve department and wildland fire response and suppression capabilities. Reduce damage caused by wildfires. Reduce the likelihood of firefighter casualties.	Provide annual red card training/refresher/pack test events before the start of fire season. Provide online wildfire training courses/refresher courses. Establish inter-agency training.	Grants

RESOLUTION NO. 2024-XX

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF GILROY ADOPTING THE SANTA CLARA COUNTY COMMUNITY WILDFIRE PROTECTION PLAN AND THE GILROY ANNEX

WHEREAS, wildfires pose a significant threat to the safety, property, and environment of communities within Santa Clara County, particularly in the wildland-urban interface (WUI); and

WHEREAS, the development of a comprehensive wildfire protection plan is critical to reducing the risk of wildfires and enhancing community preparedness, resilience, and recovery; and

WHEREAS, the Santa Clara County Community Wildfire Protection Plan (CWPP) was updated in 2023, through the collaboration of the Santa Clara County FireSafe Council, CAL FIRE, the County of Santa Clara Office of Emergency Management, local stakeholders, and community input; and

WHEREAS, the 2023 CWPP update builds upon the previous 2016 plan, incorporating enhanced mitigation strategies, priority areas for wildfire risk reduction, community collaboration, and public education initiatives to address the increasing wildfire threat; and

WHEREAS, a supporting annex was developed specifically for the Gilroy Planning Area (the “Gilroy Annex”), outlining tailored mitigation measures and priorities to protect the lives, property, and critical infrastructure within the City of Gilroy; and

WHEREAS, the CWPP and Gilroy Annex were developed through a robust public engagement process that included multiple community outreach events, public feedback opportunities, and the participation of various stakeholders to ensure that the plan reflects local needs and priorities; and

WHEREAS, the City of Gilroy has reviewed the Santa Clara County CWPP and the Gilroy Annex, both of which provide essential strategies and resources for wildfire prevention and preparedness within the city; and

WHEREAS, the adoption of the CWPP and Gilroy Annex will help the City of Gilroy align with regional wildfire prevention efforts, secure potential funding for mitigation projects, and enhance coordination with state and local agencies during wildfire emergencies.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Gilroy hereby adopts the Santa Clara County Community Wildfire Protection Plan (CWPP) and the Gilroy Annex, and directs city staff to incorporate the provisions of these plans into the City’s hazard mitigation strategies, land-use planning, and emergency preparedness efforts.

PASSED AND ADOPTED this 4th day of November 2024 by the following roll call vote:

AYES: COUNCIL MEMBERS:

NOES: COUNCIL MEMBERS:

ABSENT: COUNCIL MEMBERS:

APPROVED:

Marie Blankley, Mayor

ATTEST:

Beth Minor, Interim City Clerk



City of Gilroy

STAFF REPORT

Agenda Item Title: **Approval of a second Amendment to the Agreement with Circlepoint, Inc. for the Gilroy Data Center Project Environmental Impact Report in the amount of \$36,757.25 for a total project cost of \$244,009.30.**

Meeting Date: November 4, 2024

From: Jimmy Forbis, City Administrator

Department: Community Development

Submitted By: Sharon Goei, Community Development Director

Prepared By: Cindy McCormick, Planning Manager

STRATEGIC PLAN GOALS

Not Applicable

RECOMMENDATION

Approve a Second Amendment to the Agreement with Circlepoint, Inc. for the Gilroy Data Center Project Environmental Impact Report in the amount of \$36,757.25 for a total project cost of \$244,009.30 and authorize the City Administrator to execute the contract amendment and associated documents.

EXECUTIVE SUMMARY

Amazon Web Services (AWS), the applicant for the Gilroy Data Center project, made modifications to their project description that result in out-of-scope work and additional costs associated with preparation of the Environmental Impact Report (EIR) by Circlepoint, Inc. (Consultant). The requested modifications by AWS require the Consultant to complete additional research, make modifications to work already completed on the Draft EIR (DEIR), review the entire Draft EIR to ensure or remedy any consistency or methodological issues, coordinate with City staff and the applicant, and attend additional meetings with City staff and the applicant. The requested amendment is necessary to allow the Consultant to complete the final EIR documentation. The requested modifications result in \$36,757.25 of additional costs for a total project cost of \$244,009.30 for the Gilroy Data Center Project EIR.

BACKGROUND

Amazon Web Services (AWS) submitted an application to construct and operate a data center on an industrial zoned vacant property, located on Camino Arroyo near the Gilroy Outlets. The 50-acre Gilroy Data Center project will consist of the following components to be constructed in two phases. Phase I would include the first single-story (approximately 35-foot high) data center building of approximately 218,000 square feet (Building 1), a security building, a substation/switchyard, offsite transmission upgrades to the existing Pacific Gas and Electric transmission and distribution system, potentially a future Battery Energy Storage System (Phase I BESS) of up to 50-megawatt (MW), and other utility interconnections. Phase II would include a similar single-story, 35-foot-high data center building of 218,000 square feet (Building 2) that would utilize the aforementioned utilities that would be constructed in Phase I.

The project required preparation of an Environmental Impact Report (EIR) in compliance with the California Environmental Quality Act (CEQA) and the CEQA Guidelines. On June 6, 2022, the City Council awarded a contract to Circlepoint, Inc. (Consultant), in the amount of \$175,000 (\$158,988 plus a \$16,012 contingency budget). The contract was executed on June 27, 2022. On January 8, 2024, the City Council approved a first amendment to the agreement for an additional \$32,252.05 to cover costs associated with a request by AWS to include additional tasks in the EIR.

ANALYSIS

The applicant for the Gilroy Data Center project, Amazon Web Services (AWS), made modifications to their project description that has resulted in out-of-scope work and additional costs associated with preparation of the Environmental Impact Report (EIR) by the consultant.

- Extensive coordination, meetings, phone calls and research: The changes to the project description require substantial research regarding relevant case law, technological specifications and considerations, and past investigations. The changes also require extensive coordination with AWS and City staff (e.g., Community Development and Fire Department) including at least 2 additional meetings and several phone calls, to resolve consistency and/or methodological issues.
- Additional DEIR drafts: The changes also require additional drafts of the DEIR be prepared and reviewed and commented on by City staff, as well as printing and delivering two hardcopies of the DEIR to the City for public access at the City Library and City Hall.

ALTERNATIVES

Approval of a second Amendment to the Agreement with Circlepoint, Inc. for the Gilroy Data Center Project Environmental Impact Report in the amount of \$36,757.25 for a total project cost of \$244,009.30. ^{6.3}

The City Council may choose not to approve the amendment to the contract. Circlepoint, Inc. would not be able to adequately complete the EIR for the Gilroy Data Center Project. Staff does not recommend this action.

FISCAL IMPACT/FUNDING SOURCE

Staff does not anticipate any net costs to the City as this is an applicant-paid project.

Attachments:

1. Draft Circlepoint Agreement for Services – Second Amendment
2. Circlepoint Agreement for Services – First Amendment, January 9, 2024
3. Circlepoint Agreement for Services, June 27, 2022

**SECOND AMENDMENT TO THE AGREEMENT FOR SERVICES BETWEEN THE CITY
OF GILROY AND CIRCLEPOINT, INC.**

WHEREAS, the City of Gilroy, a municipal corporation (“City”), and Circlepoint, Inc. entered into that certain agreement entitled Agreement for Services, effective on 6/27/2022, hereinafter referred to as “Original Agreement”; and

WHEREAS, on January 9, 2024, a First Amendment to the Original Agreement was executed between City and Circlepoint, Inc. to modify the scope of work and project cost to perform additional tasks associated with the Gilroy Data Center Environmental Impact Report (EIR); and

WHEREAS, City and Circlepoint, Inc. have determined it is in their mutual interest to execute a second amendment to certain terms of the Original Agreement.

NOW, THEREFORE, FOR VALUABLE CONSIDERATION, THE PARTIES AGREE AS FOLLOWS:

1. Article 1. Term of the Agreement of the Original Agreement shall be amended to read as follows:

“This agreement will become effective on June 27, 2022 and will continue into effect through December 31, 2025 unless terminated in accordance with the provisions of **Article 7** of this Agreement.”

2. Article 3, Section A (Specific Services) of the Original Agreement shall be amended to include Exhibit “B-2” (“Scope of Services”).

3. Article 4, Section A (Consideration) of the Original Agreement shall be amended to include Exhibit “D-2” (“Payment Schedule”).

4. Article 4, Section A (Consideration) of the Original Agreement shall be amended to read as follows:

“In consideration for the services performed by CONSULTANT, CITY agrees to pay CONSULTANT the amounts set forth in Exhibit “D” (Payment Schedule”). In no event however shall the total compensation paid to CONTRACTOR exceed \$244,009.30.”

4. This Amendment shall be effective retroactively on 10/21/2024.

5. Except as expressly modified herein, all of the provisions of the Original Agreement shall remain in full force and effect. In the case of any inconsistencies between the Original Agreement and this Amendment, the terms of this Amendment shall control.

6. This Amendment may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

[Signatures on the next page.]

IN WITNESS WHEREOF, the parties have caused this Amendment to be executed as of the dates set forth besides their signatures below.

CITY OF GILROY

By:

[signature]

Jimmy Forbis

[employee name]

City Administrator

[title/department]

Date: _____

Approved as to Form

City Attorney

CIRCLEPOINT, INC.

By:

[signature]

Audrey Zagazeta

[name]

President and CEO

[title]

Date: _____

ATTEST:

City Clerk

EXHIBIT “B-2”

SCOPE OF SERVICES

Changes in the project description: Between February 2024 and July 2024, a number of changes to the project description were proposed by the applicant (“Amazon”), including:

- Removal of the use of recycled water and recycled water pipeline from the project description
- Change in the function of the Battery Energy Storage Systems from backup power supply to peak power management/power demand management
- Description of the BESS facilities changed to allow these facilities to be optional in nature
- Relocation of Phase 1 BESS from the southwest building façade to the southeast building facade
- Inclusion of lithium-ion batteries as a transitory power source for the data racks
- Removal of hydrogen as a potential energy source for the BESS facilities

Each of the changes identified above require Circlepoint to edit the project description in the DEIR and update the entire EIR to ensure or remedy any consistency or methodological issues. Revisions to document graphics are also required.

Extensive coordination, meetings, phone calls and research: The changes to the project description require substantial research regarding relevant case law, technological specifications and considerations, and past investigations. The changes also require extensive coordination with AWS and City staff (e.g., Community Development and Fire Department) including at least 2 additional meetings and several phone calls, to resolve consistency and/or methodological issues.

Additional DEIR drafts: The changes also require additional drafts of the DEIR to be prepared and reviewed and commented on by city staff. Print and deliver two hardcopies of the DEIR to the City for public access at the City Library and City Hall.

EXHIBIT “D-2”**PAYMENT SCHEDULE**

Consultant will reallocate funds within the existing budget and receive \$36,757.25 in additional funds, for a total contract amount of \$244,009.30

Task #: Name	Description of Work Left to be Done	Cost to Complete
Task 1: Kickoff and Meetings	Up to 6 more meetings with the City and Amazon to provide status updates and discuss environmental issues as they arise. Up to two total Planning Commission/City Council Meetings.	\$8,150.00
Task 4: Project Management	Ongoing project management activities including monthly progress reports, coordination via email with the City, Amazon, and technical subconsultants, etc.	\$9,720.00
Task 7: Final EIR	Preparation of the Final EIR consisting of a project description, summary of the environmental process, identification of the preferred alternative, response to public comments, erratum to address minor changes to the Draft EIR, and any necessary appendices. Circlepoint will revise the Final EIR package in response to two rounds of comments from the City.	\$26,320.00
	Total Cost to Complete	\$44,190.00
	Circlepoint Budget Remaining Under Existing Task Orders (including ODCs)	\$7,432.75
	Delta	(\$36,757.25)

Assumptions:

- Circlepoint anticipates responding to two (2) rounds of revisions from the City on the FEIR, including one (1) administrative draft and one (1) Screencheck draft prior to publication.
- Comments on draft documents will be provided to Circlepoint electronically using Microsoft Word's Track Change feature and will be compiled into a single file. Any conflicting comments between City reviewing staff will be resolved prior to forwarding to Circlepoint.
- All submittals will be conducted electronically (PDF and Microsoft Word versions). Electronic versions will be provided in both word and pdf format. Additional hard copies and electronic versions can be provided upon request by the City, on a time and materials basis.
- Circlepoint assumes that all edits and revisions between the Draft and Final EIR would be minor in nature, would not require any new technical studies, and would not introduce any new significant environmental effects or substantial changes to previously identified mitigation. Should any such revisions be necessary, the Draft EIR may need to be recirculated pursuant to CEQA Guidelines Section 15088.5 under an amended scope and budget.

**FIRST AMENDMENT TO THE AGREEMENT FOR SERVICES BETWEEN THE CITY OF
GILROY AND CIRCLEPOINT, INC.**

WHEREAS, the City of Gilroy, a municipal corporation ("City"), and Circlepoint, Inc. entered into that certain agreement entitled Agreement for Services, effective on 6/27/2022, hereinafter referred to as "Original Agreement"; and

WHEREAS, City and Circlepoint, Inc. have determined it is in their mutual interest to amend certain terms of the Original Agreement.

NOW, THEREFORE, FOR VALUABLE CONSIDERATION, THE PARTIES AGREE AS FOLLOWS:

1. Article 1. Term of the Agreement of the Original Agreement shall be amended to read as follows:

"This agreement will become effective on June 27, 2022 and will continue into effect through December 31, 2024 unless terminated in accordance with the provisions of **Article 7** of this Agreement."

2. Article 3, Section A (Specific Services) of the Original Agreement shall be amended to include Exhibit "B-1" ("Scope of Services").

3. Article 4, Section A (Consideration) of the Original Agreement shall be amended to include Exhibit "D-1" ("Payment Schedule").

4. Article 4, Section A (Consideration) of the Original Agreement shall be amended to read as follows:

"In consideration for the services performed by CONSULTANT, CITY agrees to pay CONSULTANT the amounts set forth in Exhibit "D" (Payment Schedule"). In no event however shall the total compensation paid to CONTRACTOR exceed \$207,252.05."

4. This Amendment shall be effective retroactively on 12/1/2023.

5. Except as expressly modified herein, all of the provisions of the Original Agreement shall remain in full force and effect. In the case of any inconsistencies between the Original Agreement and this Amendment, the terms of this Amendment shall control.

6. This Amendment may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties have caused this Amendment to be executed as of the dates set forth besides their signatures below.

[Signatures on the next page.]

CITY OF GILROY

By:

DocuSigned by:

*Jimmy Forbis*CC6456EF9B054DC...
[signature]

Jimmy Forbis

[employee name]

City Administrator

[title/department]

Date: 2/8/2024

CIRCLEPOINT, INC.

By:

DocuSigned by:

*Audrey Zagazeta*9D9D1053181B4A3...
[signature]

Audrey Zagazeta

[name]

President and CEO

[title]

Date: 1/17/2024

Approved as to Form

DocuSigned by:

Andy Faber

1979C9EB5B68470...

City Attorney

ATTEST:

DocuSigned by:

[Signature]

1E54AA19B46C4BB...

City Clerk

EXHIBIT “B-1”**SCOPE OF SERVICES****Attendance at Meetings in Exceedance of Original Assumptions:**

- Consultant attendance at nine (9) additional meetings, with additional meeting(s) anticipated.

Public Scoping Meeting:

- Prepare an agenda and slides for the scoping meeting presentation.

Air Quality Impact Assessment (AQIA):

- Two additional reviews and coordination of the required revisions for each version of the AQIA (with the exception of Consultant’s initial review), which are necessary to ensure legal defensibility in the case of a challenge to the EIR.

Transportation Analysis Memorandum:

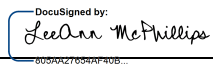
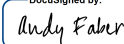
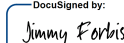
- Coordinate with Hexagon Transportation Consultants, Inc. to walk the City through their peer review of the original Transportation assessment and to ultimately prepare a new assessment to support the EIR.
- Review and incorporate a new memorandum, prepared by Hexagon, into the EIR.

EXHIBIT “D-1”**PAYMENT SCHEDULE**

Consultant will reallocate funds within the existing budget and receive \$32,252.05 in additional funds, for a total contract amount of \$207,252.05.

	Total Budget Approved	Remaining Budget (as of 11/9/2023)	Cost to Complete	Proposed Change to Total Budget	New Total Budget in Each Task
Task 100: Kickoff Project Description, and Other Meetings	\$ 15,278.00	\$ 11,203.50	\$ 15,004.00	\$ 3,800.50	\$ 19,078.50
Task 200: Public Scoping and NOP	\$ 5,520.00	\$ (3,524.75)	\$ -	\$ 3,524.75	\$ 9,044.75
Task 300: Project Description	\$ 4,878.00	\$ 1,049.00	\$ -	\$ (1,049.00)	\$ 3,829.00
Task 400: Project Management	\$ 20,540.00	\$ 3,877.75	\$ 4,440.00	\$ 562.25	\$ 21,102.25
Task 500: Technical Studies	\$ 8,580.00	\$ 2,957.50	\$ -	\$ (2,957.50)	\$ 5,622.50
Task 600: Admin Draft EIR	\$ 77,210.00	\$ (21,604.25)	\$ 24,248.00	\$ 45,852.25	\$ 123,062.25
Task 700: Final EIR	\$ 18,512.00	\$ 18,512.00	\$ 18,512.00	\$ -	\$ 18,512.00
Task 800: Contingency	\$ 16,012.00	\$ 16,012.00	\$ -	\$ (16,012.00)	\$ -
Direct Costs	\$ 8,470.00	\$ 8,289.20	\$ 6,820.00	\$ (1,469.20)	\$ 7,000.80
Total	\$ 175,000.00	\$ 36,771.95	\$ 69,024.00	\$ 32,252.05	\$ 207,252.05

City of Gilroy
Agreement/Contract Tracking

Today's Date:	June 27, 2022	Your Name:	Monica Sendejas
Contract Type:	Services over \$5k - Consultant	Phone Number:	408-846-0266
Contract Effective Date: (Date contract goes into effect)	6/27/2022		
Contract Expiration Date:	12/30/2023		
Contractor / Consultant Name: (if an individual's name, format as last name, first name)	Circlepoint, Inc.		
Contract Subject: (no more than 100 characters)	Prepare an Environmental Impact Report (EIR) for the Gilroy Data Center Project (AWS)		
Contract Amount: (Total Amount of contract. If no amount, leave blank)	\$175,000.00		
By submitting this form, I confirm this information is complete:	➤ Date of Contract ➤ Contractor/Consultant name and complete address ➤ Terms of the agreement (start date, completion date or "until project completion", cap of compensation to be paid) ➤ Scope of Services, Terms of Payment, Milestone Schedule and exhibit(s) attached ➤ Taxpayer ID or Social Security # and Contractors License # if applicable ➤ Contractor/Consultant signer's name and title ➤ City Administrator or Department Head Name, City Clerk (Attest), City Attorney (Approved as to Form)		
Routing Steps for Electronic Signature			
Risk Manager	 DocuSigned by: LeeAnn McPhillips 8059A1270540F40B...		
City Attorney Approval As to Form	 DocuSigned by: Andy Faber 1879C5E0300970...		
City Administrator or Department Head	 DocuSigned by: Jimmy Fortis C0645AEE030540C...		
City Clerk Attestation	 DocuSigned by: [Signature] 1E54AA19D46C4BD...		

AGREEMENT FOR SERVICES
(For contracts over \$5,000 - CONSULTANT)

This AGREEMENT made this 27th day of June, 2022, between:

CITY: City of Gilroy, having a principal place of business at
7351 Rosanna Street, Gilroy, California

and CONSULTANT: Circlepoint, Inc., having a principal place of business at 200 Webster Street, Suite 200, Oakland, CA 94607.

ARTICLE 1. TERM OF AGREEMENT

This Agreement will become effective on June 27, 2022 and will continue in effect through December 30, 2023 unless terminated in accordance with the provisions of **Article 7** of this Agreement.

Any lapse in insurance coverage as required by Article 5, Section D of this Agreement shall terminate this Agreement regardless of any other provision stated herein.


Initial

ARTICLE 2. INDEPENDENT CONTRACTOR STATUS

It is the express intention of the parties that CONSULTANT is an independent contractor and not an employee, agent, joint venturer or partner of CITY. Nothing in this Agreement shall be interpreted or construed as creating or establishing the relationship of employer and employee between CITY and CONSULTANT or any employee or agent of CONSULTANT. Both parties acknowledge that CONSULTANT is not an employee for state or federal tax purposes. CONSULTANT shall not be entitled to any of the rights or benefits afforded to CITY'S employees, including, without limitation, disability or unemployment insurance, workers' compensation, medical insurance, sick leave, retirement benefits or any other employment benefits. CONSULTANT shall retain the right to perform services for others during the term of this Agreement.

ARTICLE 3. SERVICES TO BE PERFORMED BY CONSULTANT

A. Specific Services

CONSULTANT agrees to: Perform the services as outlined in **Exhibit "A"** ("Specific Provisions") and **Exhibit "B"** ("Scope of Services"), within the time periods described in **Exhibit "C"** ("Milestone Schedule").

B. Method of Performing Services

CONSULTANT shall determine the method, details and means of performing the above-described services. CITY shall have no right to, and shall not, control the manner or determine the method of accomplishing CONSULTANT'S services.

C. Employment of Assistants

CONSULTANT may, at the CONSULTANT'S own expense, employ such assistants as CONSULTANT deems necessary to perform the services required of CONSULTANT by this Agreement, subject to the prohibition against assignment and subcontracting contained in **Article 5** below. CITY may not control, direct, or supervise CONSULTANT'S assistants in the performance of those services. CONSULTANT assumes full and sole responsibility for the payment of all compensation and expenses of these assistants and for all state and federal income tax, unemployment insurance, Social Security, disability insurance and other applicable withholding.

D. Place of Work

CONSULTANT shall perform the services required by this Agreement at any place or location and at such times as CONSULTANT shall determine is necessary to properly and timely perform CONSULTANT'S services.

ARTICLE 4. COMPENSATION

A. Consideration

In consideration for the services to be performed by CONSULTANT, CITY agrees to pay CONSULTANT the amounts set forth in **Exhibit "D"** ("Payment Schedule"). In no event however shall the total compensation paid to CONSULTANT exceed \$175,000 including a base budget of \$158,988 and a contingency budget of \$16,012.

B. Invoices

CONSULTANT shall submit invoices for all services rendered.

C. Payment

Payment shall be due according to the payment schedule set forth in **Exhibit "D"**. No payment will be made unless CONSULTANT has first provided City with a written receipt of invoice describing the work performed and any approved direct expenses (as provided for in **Exhibit "A", Section IV**) incurred during the preceding period. If CITY objects to all or any portion of any invoice, CITY shall notify CONSULTANT of the objection within thirty (30) days from receipt of the invoice, give reasons for the objection, and pay that portion of the invoice not in dispute. It shall not constitute a default or breach of this Agreement for CITY not to pay any invoiced amounts to which it has objected until the objection has been resolved by mutual agreement of the parties.

D. Expenses

CONSULTANT shall be responsible for all costs and expenses incident to the performance of services for CITY, including but not limited to, all costs of equipment used or provided by CONSULTANT, all fees, fines, licenses, bonds or taxes required of or imposed against CONSULTANT and all other of CONSULTANT'S costs of doing business. CITY shall not be

responsible for any expenses incurred by CONSULTANT in performing services for CITY, except for those expenses constituting “direct expenses” referenced on **Exhibit “A.”**

ARTICLE 5. OBLIGATIONS OF CONSULTANT

A. Tools and Instrumentalities

CONSULTANT shall supply all tools and instrumentalities required to perform the services under this Agreement at its sole cost and expense. CONSULTANT is not required to purchase or rent any tools, equipment or services from CITY.

B. Workers’ Compensation

CONSULTANT agrees to provide workers’ compensation insurance for CONSULTANT’S employees and agents and agrees to hold harmless, defend with counsel acceptable to CITY and indemnify CITY, its officers, representatives, agents and employees from and against any and all claims, suits, damages, costs, fees, demands, causes of action, losses, liabilities and expenses, including without limitation reasonable attorneys’ fees, arising out of any injury, disability, or death of any of CONSULTANT’S employees.

C. Indemnification of Liability, Duty to Defend

1. As to professional liability, to the fullest extent permitted by law, CONSULTANT shall defend, through counsel approved by CITY (which approval shall not be unreasonably withheld), indemnify and hold harmless CITY, its officers, representatives, agents and employees against any and all suits, damages, costs, fees, claims, demands, causes of action, losses, liabilities and expenses, including without limitation attorneys’ fees, to the extent arising or resulting directly or indirectly from any willful or negligent acts, errors or omissions of CONSULTANT or CONSULTANT’S assistants, employees or agents, including all claims relating to the injury or death of any person or damage to any property.

2. As to other liability, to the fullest extent permitted by law, CONSULTANT shall defend, through counsel approved by CITY (which approval shall not be unreasonably withheld), indemnify and hold harmless CITY, its officers, representatives, agents and employees against any and all suits, damages, costs, fees, claims, demands, causes of action, losses, liabilities and expenses, including without limitation attorneys’ fees, arising or resulting directly or indirectly from any act or omission of CONSULTANT or CONSULTANT’S assistants, employees or agents, including all claims relating to the injury or death of any person or damage to any property.

D. Insurance

In addition to any other obligations under this Agreement, CONSULTANT shall, at no cost to CITY, obtain and maintain throughout the term of this Agreement: (a) Commercial Liability Insurance on a per occurrence basis, including coverage for owned and non-owned automobiles, with a minimum combined single limit coverage of \$1,000,000 per occurrence for all damages due to bodily injury, sickness or disease, or death to any person, and damage to property,

including the loss of use thereof; and (b) Professional Liability Insurance (Errors & Omissions) with a minimum coverage of \$1,000,000 per occurrence or claim, and \$2,000,000 aggregate; provided however, Professional Liability Insurance written on a claims made basis must comply with the requirements set forth below. Professional Liability Insurance written on a claims made basis (including without limitation the initial policy obtained and all subsequent policies purchased as renewals or replacements) must show the retroactive date, and the retroactive date must be before the earlier of the effective date of the contract or the beginning of the contract work. Claims made Professional Liability Insurance must be maintained, and written evidence of insurance must be provided, for at least five (5) years after the completion of the contract work. If claims made coverage is canceled or non-renewed, and not replaced with another claims-made policy form with a retroactive date prior to the earlier of the effective date of the contract or the beginning of the contract work, CONSULTANT must purchase so called "extended reporting" or "tail" coverage for a minimum of five (5) years after completion of work, which must also show a retroactive date that is before the earlier of the effective date of the contract or the beginning of the contract work. As a condition precedent to CITY'S obligations under this Agreement, CONSULTANT shall furnish written evidence of such coverage (naming CITY, its officers and employees as additional insureds on the Comprehensive Liability insurance policy referred to in (a) immediately above via a specific endorsement) and requiring thirty (30) days written notice of policy lapse or cancellation, or of a material change in policy terms.

E. Assignment

Notwithstanding any other provision of this Agreement, neither this Agreement nor any duties or obligations of CONSULTANT under this Agreement may be assigned or subcontracted by CONSULTANT without the prior written consent of CITY, which CITY may withhold in its sole and absolute discretion.

F. State and Federal Taxes

As CONSULTANT is not CITY'S employee, CONSULTANT shall be responsible for paying all required state and federal taxes. Without limiting the foregoing, CONSULTANT acknowledges and agrees that:

- CITY will not withhold FICA (Social Security) from CONSULTANT'S payments;
- CITY will not make state or federal unemployment insurance contributions on CONSULTANT'S behalf;
- CITY will not withhold state or federal income tax from payment to CONSULTANT;
- CITY will not make disability insurance contributions on behalf of CONSULTANT;
- CITY will not obtain workers' compensation insurance on behalf of CONSULTANT.

ARTICLE 6. OBLIGATIONS OF CITY

A. Cooperation of City

CITY agrees to respond to all reasonable requests of CONSULTANT and provide access, at reasonable times following receipt by CITY of reasonable notice, to all documents reasonably necessary to the performance of CONSULTANT'S duties under this Agreement.

B. Assignment

CITY may assign this Agreement or any duties or obligations thereunder to a successor governmental entity without the consent of CONSULTANT. Such assignment shall not release CONSULTANT from any of CONSULTANT'S duties or obligations under this Agreement.

ARTICLE 7. TERMINATION OF AGREEMENT

A. Sale of Consultant's Business/ Death of Consultant.

CONSULTANT shall notify CITY of the proposed sale of CONSULTANT's business no later than thirty (30) days prior to any such sale. CITY shall have the option of terminating this Agreement within thirty (30) days after receiving such notice of sale. Any such CITY termination pursuant to this **Article 7.A** shall be in writing and sent to the address for notices to CONSULTANT set forth in **Exhibit A, Subsection V.H.**, no later than thirty (30) days after CITY' receipt of such notice of sale.

If CONSULTANT is an individual, this Agreement shall be deemed automatically terminated upon death of CONSULTANT.

B. Termination by City for Default of Consultant

Should CONSULTANT default in the performance of this Agreement or materially breach any of its provisions, CITY, at CITY'S option, may terminate this Agreement by giving written notification to CONSULTANT. For the purposes of this section, material breach of this Agreement shall include, but not be limited to the following:

1. CONSULTANT'S failure to professionally and/or timely perform any of the services contemplated by this Agreement.
2. CONSULTANT'S breach of any of its representations, warranties or covenants contained in this Agreement.

CONSULTANT shall be entitled to payment only for work completed in accordance with the terms of this Agreement through the date of the termination notice, as reasonably determined by CITY, provided that such payment shall not exceed the amounts set forth in this Agreement for the tasks described on Exhibit C" which have been fully, competently and timely rendered by CONSULTANT. Notwithstanding the foregoing, if CITY terminates this Agreement due to CONSULTANT'S default in the performance of this Agreement or material breach by CONSULTANT of any of its provisions, then in addition to any other rights and remedies CITY

may have, CONSULTANT shall reimburse CITY, within ten (10) days after demand, for any and all costs and expenses incurred by CITY in order to complete the tasks constituting the scope of work as described in this Agreement, to the extent such costs and expenses exceed the amounts CITY would have been obligated to pay CONSULTANT for the performance of that task pursuant to this Agreement.

C. Termination for Failure to Make Agreed-Upon Payments

Should CITY fail to pay CONSULTANT all or any part of the compensation set forth in Article 4 of this Agreement on the date due, then if and only if such nonpayment constitutes a default under this Agreement, CONSULTANT, at the CONSULTANT'S option, may terminate this Agreement if such default is not remedied by CITY within thirty (30) days after demand for such payment is given by CONSULTANT to CITY.

D. Transition after Termination

Upon termination, CONSULTANT shall immediately stop work, unless cessation could potentially cause any damage or harm to person or property, in which case CONSULTANT shall cease such work as soon as it is safe to do so. CONSULTANT shall incur no further expenses in connection with this Agreement. CONSULTANT shall promptly deliver to CITY all work done toward completion of the services required hereunder, and shall act in such a manner as to facilitate any the assumption of CONSULTANT's duties by any new consultant hired by the CITY to complete such services.

ARTICLE 8. GENERAL PROVISIONS

A. Amendment & Modification

No amendments, modifications, alterations or changes to the terms of this Agreement shall be effective unless and until made in a writing signed by both parties hereto.

B. Americans with Disabilities Act of 1990

Throughout the term of this Agreement, the CONSULTANT shall comply fully with all applicable provisions of the Americans with Disabilities Act of 1990 ("the Act") in its current form and as it may be amended from time to time. CONSULTANT shall also require such compliance of all subcontractors performing work under this Agreement, subject to the prohibition against assignment and subcontracting contained in Article 5 above. The CONSULTANT shall defend with counsel acceptable to CITY, indemnify and hold harmless the CITY OF GILROY, its officers, employees, agents and representatives from and against all suits, claims, demands, damages, costs, causes of action, losses, liabilities, expenses and fees, including without limitation reasonable attorneys' fees, that may arise out of any violations of the Act by the CONSULTANT, its subcontractors, or the officers, employees, agents or representatives of either.

C. Attorneys' Fees

If any action at law or in equity, including an action for declaratory relief, is brought to enforce or interpret the provisions of this Agreement, the prevailing party will be entitled to reasonable attorneys' fees, which may be set by the court in the same action or in a separate action brought for that purpose, in addition to any other relief to which that party may be entitled.

D. Captions

The captions and headings of the various sections, paragraphs and subparagraphs of the Agreement are for convenience only and shall not be considered nor referred to for resolving questions of interpretation.

E. Compliance with Laws

The CONSULTANT shall keep itself informed of all State and National laws and all municipal ordinances and regulations of the CITY which in any manner affect those engaged or employed in the work, or the materials used in the work, or which in any way affect the conduct of the work, and of all such orders and decrees of bodies or tribunals having any jurisdiction or authority over the same. Without limiting the foregoing, CONSULTANT agrees to observe the provisions of the Municipal Code of the CITY OF GILROY, obligating every contractor or subcontractor under a contract or subcontract to the CITY OF GILROY for public works or for goods or services to refrain from discriminatory employment or subcontracting practices on the basis of the race, color, sex, religious creed, national origin, ancestry of any employee, applicant for employment, or any potential subcontractor.

F. Conflict of Interest

CONSULTANT certifies that to the best of its knowledge, no CITY employee or officer of any public agency interested in this Agreement has any pecuniary interest in the business of CONSULTANT and that no person associated with CONSULTANT has any interest that would constitute a conflict of interest in any manner or degree as to the execution or performance of this Agreement.

G. Entire Agreement

This Agreement supersedes any and all prior agreements, whether oral or written, between the parties hereto with respect to the rendering of services by CONSULTANT for CITY and contains all the covenants and agreements between the parties with respect to the rendering of such services in any manner whatsoever. Each party to this Agreement acknowledges that no representations, inducements, promises or agreements, orally or otherwise, have been made by any party, or anyone acting on behalf of any party, which are not embodied herein, and that no other agreement, statement or promise not contained in this Agreement shall be valid or binding.

No other agreements or conversation with any officer, agent or employee of CITY prior to execution of this Agreement shall affect or modify any of the terms or obligations contained in any documents comprising this Agreement. Such other agreements or conversations shall be considered as unofficial information and in no way binding upon CITY.

H. Governing Law and Venue

This Agreement shall be governed by and construed in accordance with the laws of the State of California without regard to the conflict of laws provisions of any jurisdiction. The exclusive jurisdiction and venue with respect to any and all disputes arising hereunder shall be in state and federal courts located in Santa Clara County, California.

I. Notices

Any notice to be given hereunder by either party to the other may be effected either by personal delivery in writing or by mail, registered or certified, postage prepaid with return receipt requested. Mailed notices shall be addressed to the parties at the addresses appearing in **Exhibit "A", Section V.H.** but each party may change the address by written notice in accordance with this paragraph. Notices delivered personally will be deemed delivered as of actual receipt; mailed notices will be deemed delivered as of three (3) days after mailing.

J. Partial Invalidity

If any provision in this Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions will nevertheless continue in full force without being impaired or invalidated in any way.

K. Time of the Essence

All dates and times referred to in this Agreement are of the essence.

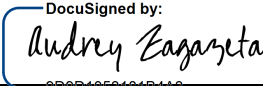
L. Waiver

CONSULTANT agrees that waiver by CITY of any one or more of the conditions of performance under this Agreement shall not be construed as waiver(s) of any other condition of performance under this Agreement.

Executed at Gilroy, California, on the date and year first above written.

CONSULTANT:

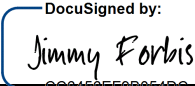
CIRCLEPOINT, INC.

By: 
DocuSigned by: 9D9D1055181B4A3...
 Name: Audrey Zagazeta
 Title: President and CEO

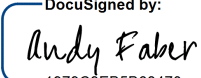
Social Security or Taxpayer
 Identification Number 94-3171809

CITY:

CITY OF GILROY

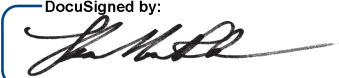
By: 
DocuSigned by: CC0450EF98054DC...
 Name: Jimmy Forbis
 Title: City Administrator

Approved as to Form

DocuSigned by:

1979C9EB5B68470...

City Attorney

ATTEST:

DocuSigned by:

1E54AA19B46C4BB...

City Clerk

EXHIBIT “A”
SPECIFIC PROVISIONS

I. PROJECT MANAGER

CONSULTANT shall provide the services indicated on the attached **Exhibit “B”**, Scope of Services (“Services”). (All exhibits referenced are incorporated herein by reference.) To accomplish that end, CONSULTANT agrees to assign Andrew Metzger, who will act in the capacity of Project Manager, and who will personally direct such Services.

Except as may be specified elsewhere in this Agreement, CONSULTANT shall furnish all technical and professional services including labor, material, equipment, transportation, supervision and expertise to perform all operations necessary and required to complete the Services in accordance with the terms of this Agreement.

II. NOTICE TO PROCEED/COMPLETION OF SERVICE

A. NOTICE TO PROCEED

CONSULTANT shall commence the Services upon delivery to CONSULTANT of a written “Notice to Proceed”, which Notice to Proceed shall be in the form of a written communication from designated City contact person(s). Notice to Proceed may be in the form of e-mail, fax or letter authorizing commencement of the Services. For purposes of this Agreement, Cindy McCormick shall be the designated City contact person(s). Notice to Proceed shall be deemed to have been delivered upon actual receipt by CONSULTANT or if otherwise delivered as provided in the **Section V.H.** (“Notices”) of this **Exhibit “A”**.

B. COMPLETION OF SERVICES

When CITY determines that CONSULTANT has completed all of the Services in accordance with the terms of this Agreement, CITY shall give CONSULTANT written Notice of Final Acceptance, and CONSULTANT shall not incur any further costs hereunder. CONSULTANT may request this determination of completion when, in its opinion, it has completed all of the Services as required by the terms of this Agreement and, if so requested, CITY shall make this determination within two (2) weeks of such request, or if CITY determines that CONSULTANT has not completed all of such Services as required by this Agreement, CITY shall so inform CONSULTANT within this two (2) week period.

III. PROGRESS SCHEDULE

The schedule for performance and completion of the Services will be as set forth in the attached **Exhibit “C”**.

IV. PAYMENT OF FEES AND DIRECT EXPENSES

Payments shall be made to CONSULTANT as provided for in **Article 4** of this Agreement.

Direct expenses are charges and fees not included in **Exhibit “B”**. CITY shall be obligated to pay only for those direct expenses which have been previously approved in writing by CITY. CONSULTANT shall obtain written approval from CITY prior to incurring or billing of direct expenses.

Copies of pertinent financial records, including invoices, will be included with the submission of billing(s) for all direct expenses.

V. OTHER PROVISIONS

A. STANDARD OF WORKMANSHIP

CONSULTANT represents and warrants that it has the qualifications, skills and licenses necessary to perform the Services, and its duties and obligations, expressed and implied, contained herein, and CITY expressly relies upon CONSULTANT’S representations and warranties regarding its skills, qualifications and licenses. CONSULTANT shall perform such Services and duties in conformance to and consistent with the standards generally recognized as being employed by professionals in the same discipline in the State of California.

Any plans, designs, specifications, estimates, calculations, reports and other documents furnished under this Agreement shall be of a quality acceptable to CITY. The minimum criteria for acceptance shall be a product of neat appearance, well-organized, technically and grammatically correct, checked and having the maker and checker identified. The minimum standard of appearance, organization and content of the drawings shall be that used by CITY for similar purposes.

B. RESPONSIBILITY OF CONSULTANT

CONSULTANT shall be responsible for the professional quality, technical accuracy, and the coordination of the Services furnished by it under this Agreement. CONSULTANT shall not be responsible for the accuracy of any project or technical information provided by the CITY. The CITY’S review, acceptance or payment for any of the Services shall not be construed to operate as a waiver of any rights under this Agreement or of any cause of action arising out of the performance of this Agreement, and CONSULTANT shall be and remain liable to CITY in accordance with applicable law for all damages to CITY caused by CONSULTANT’S negligent performance of any of the services furnished under this Agreement.

C. RIGHT OF CITY TO INSPECT RECORDS OF CONSULTANT

CITY, through its authorized employees, representatives or agents, shall have the right, at any and all reasonable times, to audit the books and records (including, but not limited to, invoices, vouchers, canceled checks, time cards, etc.) of CONSULTANT for the purpose of verifying any and all charges made by CONSULTANT in connection with this Agreement. CONSULTANT shall maintain for a minimum period of three (3) years (from the date of final payment to CONSULTANT), or for any longer period required by law, sufficient books and records in accordance with standard California accounting practices to establish the correctness of all charges submitted to CITY by CONSULTANT, all of which shall be made available to CITY at the CITY’S offices within five (5) business days after CITY’S request.

D. CONFIDENTIALITY OF MATERIAL

All ideas, memoranda, specifications, plans, manufacturing procedures, data (including, but not limited to, computer data and source code), drawings, descriptions, documents, discussions or other information developed or received by or for CONSULTANT and all other written and oral information developed or received by or for CONSULTANT and all other written and oral information submitted to CONSULTANT in connection with the performance of this Agreement shall be held confidential by CONSULTANT and shall not, without the prior written consent of CITY, be used for any purposes other than the performance of the Services, nor be disclosed to an entity not connected with the performance of the such Services. Nothing furnished to CONSULTANT which is otherwise known to CONSULTANT or is or becomes generally known to the related industry (other than that which becomes generally known as the result of CONSULTANT'S disclosure thereof) shall be deemed confidential. CONSULTANT shall not use CITY'S name or insignia, or distribute publicity pertaining to the services rendered under this Agreement in any magazine, trade paper, newspaper or other medium without the express written consent of CITY.

E. NO PLEDGING OF CITY'S CREDIT.

Under no circumstances shall CONSULTANT have the authority or power to pledge the credit of CITY or incur any obligation in the name of CITY.

F. OWNERSHIP OF MATERIAL.

All material including, but not limited to, computer information, data and source code, sketches, tracings, drawings, plans, diagrams, quantities, estimates, specifications, proposals, tests, maps, calculations, photographs, reports and other material developed, collected, prepared (or caused to be prepared) under this Agreement shall be the property of CITY, but CONSULTANT may retain and use copies thereof subject to **Section V.D** of this **Exhibit "A"**.

CITY shall not be limited in any way in its use of said material at any time for any work, whether or not associated with the City project for which the Services are performed. However, CONSULTANT shall not be responsible for, and City shall indemnify CONSULTANT from, damages resulting from the use of said material for work other than PROJECT, including, but not limited to, the release of this material to third parties for work other than on PROJECT.

G. NO THIRD PARTY BENEFICIARY.

This Agreement shall not be construed or deemed to be an agreement for the benefit of any third party or parties, and no third party or parties shall have any claim or right of action hereunder for any cause whatsoever.

H. NOTICES.

Notices are to be sent as follows:

CITY: Cindy McCormick
City of Gilroy
7351 Rosanna Street
Gilroy, CA 95020

CONSULTANT: Andrew Metzger
Circlepoint, Inc.
42 South First Street, Suite D
San Jose, CA 95113

I. FEDERAL FUNDING REQUIREMENTS.

- ☐ If the box to the left of this sentence is checked, this Agreement involves federal funding and the requirements of this **Section V.I.** apply.
- ☐ If the box to the left of this sentence is checked, this Agreement does not involve federal funding and the requirements of this **Section V.I.** do not apply.

1. DBE Program

CONSULTANT shall comply with the requirements of Title 49, Part 26, Code of Federal Regulations (49 CFR 26) and the City-adopted Disadvantaged Business Enterprise programs.

2. Cost Principles

Federal Acquisition Regulations in Title 48, CFR 31, shall be used to determine the allowable cost for individual items.

3. Covenant against Contingent Fees

The CONSULTANT warrants that he/she has not employed or retained any company or person, other than a bona fide employee working for the CONSULTANT, to solicit or secure this Agreement, and that he/she has not paid or agreed to pay any company or person, other than a bona fide employee, any fee, commission, percentage, brokerage fee, gift or any other consideration, contingent upon or resulting from the award or formation of this Agreement. For breach or violation of this warranty, the Local Agency shall have the right to annul this Agreement without liability or, at its discretion, to deduct from the agreement price or consideration, or otherwise recover, the full amount of such fee, commission, percentage, brokerage fee, gift or contingent fee.

EXHIBIT “B”
SCOPE OF SERVICES

Attached

EXHIBIT B—SCOPE OF WORK

Thank you for this exciting opportunity to work with the City of Gilroy (City). We are pleased to provide this proposal, which outlines Circlepoint's approach to preparing an Environmental Impact Report (EIR) for the Gilroy Data Center (project) proposed by Amazon Data Services (the Applicant).

PROJECT UNDERSTANDING

Circlepoint understands that the project will consist of the following components to be constructed in two phases:

- Two data center buildings and one security building totaling approximately 438,500 square feet;
- Backup generating facilities to provide electricity to critical data center operations in the event of a loss of utility power;
- Two battery energy storage systems;
- A new substation/switchyard and a double circuit transmission upgrade;
- A new recycled water pipeline;
- Ancillary utility infrastructure for connection to existing stormwater and potable water pipelines;
- Security fencing;
- General Site Grading, Stormwater and Landscaping.

Phase I will be a traditional data center set up, requiring the use of diesel-powered backup generators. Circlepoint understands that the Applicant is committed to Tier-4 compliant backup generators, as required by the Bay Area Air Quality Management District (BAAQMD). Phase II will utilize an emerging technology to provide backup energy in the event of a power failure. Given that Phase I will have a maximum electrical demand of 49 MW and Phase II would leverage an alternative energy supply instead of diesel generators, the California Energy Commission (CEC) would not have jurisdiction over the project. Therefore, the project is not required to seek a Small Power Plant Exemption (SPPE) from CEC's jurisdiction, and the project can follow the normal CEQA clearance process at the local level.

The project will require water for cooling when outside air temperatures exceed 83 degrees F. The data center will be designed to use recycled water provided by the City of Gilroy, once available, and a potable water connection will serve as a back-up source to the recycled water supply. Given the level of water demand required for the project, both potable and recycled, it is critical that the availability of water resources to meet project demand is adequately analyzed.

The project site's former use for agricultural production indicates that vehicle miles traveled (VMT) generated from construction and operations of the project would be considered net new to the project site. The project is expected to include 25 employees to operate the data center and 37 employees to assemble the data equipment. Circlepoint will use the peer-reviewed VMT analysis to carefully consider impacts.

APPROACH

Our approach focuses on working collaboratively with City staff, the Applicant, and other stakeholders. This collaborative approach can streamline the environmental process by ensuring an efficient response to changes in the project and allowing us to address significant issues early. We also focus on making the environmental review process and environmental document as clear and straightforward as possible, so the general public and agencies understand the process, analysis, and issues being addressed.

Based on the Request for Proposal (RFP) Letter provided by the City, Circlepoint understands that the City envisions preparing an Environmental Impact Report (EIR) that conservatively assesses the potential impacts of the project. While other less robust environmental document options (such as an Initial Study/Mitigated Negative Declaration) may also be feasible, Circlepoint agrees with the City's preferred approach because an EIR will allow maximum public and agency involvement and be more legally defensible in the event of a challenge. Circlepoint anticipates that the project will face the greatest scrutiny surrounding impacts associated with water supply and demand, air quality and greenhouse gas emissions, fire hazard from battery systems, increased VMT from project operation, and noise introduced to the project site. Strong project management will be required to execute the preparation of a timely and meticulous document that will withstand legal and public scrutiny with regards to these topics. This requires experience and the right skills which Circlepoint possesses based on our extensive history working on data centers in Santa Clara, San José, and Los Angeles.

For resource topics where impacts that are not considered potentially significant, Circlepoint would identify opportunities for environmental streamlining. The EIR could address topics such as Mineral Resources, Recreation, and Population/Housing by briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR, pursuant to the CEQA Guidelines Section 15128.

Circlepoint understands the Applicant has submitted a detailed project description that includes a “mitigation incorporated into the project design” approach. This approach is common within the CEC’s SPPE process, but presents legal concerns from a local agency CEQA perspective (such as Lotus v. Department of Transportation (223 Cal. App. 4th 645)). Circlepoint will work closely with the City to review the applicable standard conditions of approval along with existing local, regional, state, and federal policies and best practices that could support the use of some Applicant-provided measures as “project features.” Circlepoint will apply our robust understanding of managing legal risk and applying current case law to ensure the EIR appropriately identifies environmental impacts and discloses necessary mitigation.

QUALITY ASSURANCE/QUALITY CONTROL PROCESS

Circlepoint’s quality assurance/quality control (QA/QC) process ensures the continuing integrity and quality of all services and deliverables. Our QA/QC process includes senior review responsibilities for both the Project Manager and the Principal-in-Charge. The Project Manager directs and reviews project team work on deliverables and work products. The Principal-in-Charge then reviews and approves interim and final work products. Finally, a proofreader completes a final review, following specific directives to verify and assure quality printed work products before a work product is delivered to a client or printer. The following table summarizes the management structure that Circlepoint uses to ensure the quality of every document we produce.

ROLE	RESPONSIBILITIES
Principal-in-Charge	• Overall quality control and quality assurance of all work products
Project Manager	• Primary client contact • Oversees document preparation and coordination with technical subconsultants • Provides intermediate QA review and technical editing prior to PIC review
Senior Associate	• Secondary client contact, often acting in a Deputy Project Manager capacity • Coordinates information requests, delivery schedules, and day-to-day communication with technical consultant • Lead reviewer and proofreader for most documents

ROLE	RESPONSIBILITIES
Associate / Assistant	• Authorship of individual document sections • Research for document sections not covered by a technical report • Technical editing / formatting / production of all work products
Coordinator / Graphics	• Preparation of graphics and maps

WORK PLAN

TASK 1: KICKOFF AND MEETINGS

Circlepoint will participate in one (1) kickoff meeting with the City to introduce team members, discuss initial data requests, and develop the project schedule. Circlepoint will confirm the scope of environmental analysis and methodologies with the City at the kickoff meeting and submit a comprehensive data request. Circlepoint anticipates attendance at the following meetings:

- Kickoff meeting
- Twenty four (24) Bi-weekly Check In Meetings with City (Based on anticipated project schedule)
- Up to five (5) Planning Commission/City Council Meetings

TASK 2: SCOPING MEETING AND NOTICE OF PREPARATION

Circlepoint will prepare a Notice of Preparation (NOP) to inform the public and applicable stakeholders that environmental documentation is being prepared for the project. Consistent with Section 15082 of the CEQA Guidelines, the NOP materials shall include a description of the project, the location of the project, and probable environmental effects of the project. The NOP is anticipated to screen out some environmental topics where no impacts are anticipated, such as mineral and forestry resources. Following distribution of the NOP, Circlepoint will work closely with the City to facilitate a Public Scoping Meeting and provide recommendations in meeting materials and presentation and in developing meeting notifications. Circlepoint will record comments received in response to the Public Scoping Meeting and the NOP and strategize with the City on incorporating these “known issues” into the EIR.

TASK 3: PROJECT DESCRIPTION

Circlepoint will prepare and submit a project description for City review and approval. Circlepoint will build upon the project description prepared by the Applicant and ensure it meets the requirements of CEQA Guidelines Section 15124. Circlepoint anticipates that the existing project description contains the majority of information needed for CEQA analysis. Circlepoint will revise the project description in response to one round of comments from the City. Circlepoint will utilize the following background materials (to be provided by the City/Applicant) to complete the project description:

- Preliminary geotechnical feasibility report
- Technical specifications for backup generators (including exhaust details), rooftop equipment, and cooling systems
- Commissioning test details (duration, number of generators) and maintenance testing plan
- Average rack power rating and power usage efficiency

- Utility “will-serve” letters for electrical and water utilities and/or supply assessments if required by the City or utility provider
- Total anticipated power consumption (average, daily or annual)
- Total daily water demand ; can be prorated from annual demand
- Sanitary sewer capacity study, if required by City
- Arborist report, if required by City
- Construction assumptions, including duration, phasing, construction start and end months, and review of construction equipment list

Key Deliverable: Project Description

TASK 4: PROJECT MANAGEMENT

Circlepoint will provide ongoing project management throughout the environmental review process including coordination with subconsultants, City staff, and outside regulatory agencies as applicable. Circlepoint will maintain a project schedule and provide regular updates to the City. Circlepoint will also prepare monthly progress reports to accompany monthly invoices containing the following information: the beginning and ending dates of the billing period; budget summary including budget spent to date and budget remaining; and a Task Summary for each work task, containing the name of the person doing the work, the hours spent by each person, and a brief description of the work.

TASK 5: TECHNICAL STUDIES

Based on the background materials provided with the City's RFP, Circlepoint understands that the Applicant has provided several background documents for consideration including aesthetics, biological resources, cultural resources, geology and soils, land use, mineral resources, public services, recreation, hazardous materials, transportation, tribal resources, utilities, and wildfire. Additionally, the following technical studies have been prepared by the Applicant and/or City:

- Air Quality Impact Assessment
- Natural Resources Memorandum
- Archaeological Literature Search
- Geotechnical Desktop Review
- Geotechnical Considerations Report
- Phase I Environmental Site Assessment
- Phase II Environmental Site Assessment
- Environmental Noise & Vibration Assessment
- Environmental Noise & Vibration Assessment Addendum
- Transportation Attachments, VMT Analysis, including Peer Review of VMT Assessment
- California Energy Commission Tribal Outreach Letters
- City of Gilroy Assessment of Water Supply
- Arborist Report

Circlepoint will conduct a gap analysis to ensure each of these technical studies provides the information necessary to support and complete the EIR per CEQA guidelines. If additional technical analysis is required, Circlepoint will coordinate with the City to strategize on the best course of action. Additional studies would require an amendment to this scope and fee. We assume all reports listed above will be provided to Circlepoint in a format acceptable for use in supporting a CEQA document and can be publicly circulated.

TASK 6: DRAFT EIR

Circlepoint will prepare a Draft EIR consistent with CEQA Guidelines Article 9. The Draft EIR will meet all City standards for content and formatting.

Task 6.1: Administrative Draft EIR

The background materials provided with the City's RFP Letter included CEQA-related documents which assess and analyze project impacts for a number of resources. Circlepoint will rely upon the analysis already prepared to the maximum extent feasible, expanding only where required for the purposes of CEQA sufficiency. Circlepoint will prepare the setting, impacts, and mitigation discussions for each environmental topic area set forth in Appendix G of the CEQA Guidelines. Circlepoint will prepare a summary of existing conditions, pertinent regulations, and a description of the regional setting, placing special emphasis on any rare or unique environmental resources in the project area. Circlepoint will review and reference relevant policies and regulations from the City's General Plan and Zoning Code, and other documents required for the analysis as applicable. The EIR will also include an analysis of alternatives to the project, an assessment of cumulative impacts associated with the project, and a description of comments received during the scoping period. Circlepoint assumes that up to three alternatives will be evaluated in the EIR, including (for example) a reduced development alternative, a reduced backup electric generation alternative, and/or a backup electric generation technology alternative. For the cumulative impacts analysis, Circlepoint will use the City's General Plan as a guide for reasonably foreseeable projects in the surrounding area.

Circlepoint will prepare a draft mitigation monitoring and reporting program (MMRP) to be submitted with the Administrative Draft EIR for City review. The draft MMRP will develop and present feasible mitigation for significant impacts identified in the Administrative EIR, identify the responsible party for implementing and monitoring each mitigation measure, and identify monitoring triggers and reporting frequency for each measure.

The Administrative Draft and MMRP will be provided in electronic formats to the City.

Key Deliverables: Administrative Draft EIR, draft MMRP

Task 6.2: Screencheck Draft EIR

Circlepoint will amend the Administrative Draft EIR based on up to two (2) rounds of review by City staff. Circlepoint will then provide clean, compiled PDF and MS Word versions of the screencheck draft EIR to verify that all requested changes have been made and all appendix materials, references and final graphics are acceptable.

Key Deliverables: Second Administrative Draft EIR, Screencheck Draft EIR.

Task 6.3: Public Draft EIR

Circlepoint will make final amendments to the Screencheck Draft EIR based on a single set of consolidated comments and submit web-ready versions of the EIR and all associated appendices. Hardcopies of the EIR can be provided on a time and materials basis, if requested by the City. Circlepoint will also prepare the combined Notice of Availability/Release and a Notice of Completion in accordance with Section 15087 of the CEQA Guidelines, and provide advice as needed to the City regarding distribution of the Draft EIR pursuant to CEQA and City review procedures. Consistent with Section 15087, notice availability of the Draft EIR will be published in a newspaper of general circulation in the affected area, posted on and off the site in the area where the

project is to be located, and mailed to the owners and occupants of property contiguous to the parcel or parcels on which the project is located.

The Draft EIR will be circulated for a minimum of 45 days. While public hearings are not required as an element of the CEQA process, they are encouraged to facilitate the public commenting process and address known issues of the project. Circlepoint recommends that the City hold a public hearing during the circulation period given the anticipated public controversy surrounding the project. This scope includes a public hearing as an optional task.

OPTIONAL TASK: Public Hearing

Key Deliverables: Draft EIR, NOA, NOC

TASK 7: FINAL EIR

Task 7.1: Response to Public Comments

Circlepoint will prepare written responses to comments on the Draft EIR following the public review period. Circlepoint assumes the City will provide copies of all written comments. Should the City decide to advance with the public hearing, which is included in this scope as an optional task, Circlepoint will assist the City in recording written and verbal comments at the hearing. Circlepoint will compile all comments with alpha-numeric codings and develop a list of major issues/concerns. Circlepoint will attend one (1) meeting with City staff following the close of the comment period to discuss the best approach, which may include the use of master responses to facilitate the response to similar or repeated comments. Comment responses will be incorporated to the Final EIR for the City's review.

Circlepoint hours listed in the proposed budget for responses to comments are an allowance. If an unusually large volume of comments are received (over 15 distinct comment letters), Circlepoint will confer with the City to determine an appropriate path forward. The scope and budget also assumes responses do not require substantial additional research, analysis, or meetings with commenters.

Task 7.2: Final EIR

Circlepoint will prepare a Final EIR which includes responses to all public comments received during the circulation period. Consistent with Section 15132 of the CEQA Guidelines, the Final EIR will comprise the following elements:

- Project Description
- A Summary of the Environmental Process
- Identification of the Preferred Alternative
- Responses to Comments, including a list of persons, organizations, and public agencies commenting on the draft EIR; the comments received, and the City's responses to each comment
- An Erratum to address any necessary changes to the Draft EIR that may result from public comments
- Appendices (as needed)

Based on up to two (2) sets of consolidated comments from the City, Circlepoint will revise the responses to comments document and will provide electronic copies of the final EIR to the City.

Key Deliverables: Response to Public Comments, Final EIR.

ASSUMPTIONS

The following assumptions apply to this project:

- » Circlepoint anticipates responding to three (3) rounds of revisions from the City on the EIR including two (2) administrative drafts and one (1) screencheck draft prior to publication.
- » Comments on draft documents will be provided to Circlepoint electronically using Microsoft Word's Track Change feature and will be compiled into a single file. Any conflicting comments between City reviewing staff will be resolved prior to forwarding to the consultants.
- » All submittals will be conducted electronically (PDF and Microsoft Word versions). Electronic versions will be provided in both word and pdf format. Additional hard copies and electronic versions can be provided upon request by the City.
- » Circlepoint assumes that all edits and revisions between the Draft and Final EIR would be minor in nature, would not require any new technical studies, and would not introduce any new significant environmental effects or substantial changes to previously identified mitigation. Should any such revisions be necessary, the Draft EIR may need to be recirculated pursuant to CEQA Guidelines Section 15088.5.
- » Circlepoint assumes the City will lead scheduling, securing the venue, and notification development and distribution for the Public Scoping Meeting. Should the City request additional support in this task, this can be addressed in coordination with the City and the preparation of a scope addendum.

EXHIBIT “C”
MILESTONE SCHEDULE

Attached

EXHIBIT C—MILESTONE SCHEDULE

The Circlepoint team will initiate work on this project upon contract execution. Background research, site visits, and reporting will commence immediately. The completion of the EIR process typically takes 10 to 12 months, depending on the City's review time.

MILESTONE	ESTIMATED COMPLETION DATE
Kick Off Meeting and Submittal of Data Request	Mid-to-Late June, 2022
Receipt of Requested Data	Early July, 2022
Submittal of Draft Project Description	Late July, 2022
City Comments on Draft Project Description	Mid-to-Late August, 2022
Finalization of Project Description	August/September, 2022
Technical Reports Gap Analysis	September, 2022
NOP Preparation	September/October, 2022
City Reviews NOP materials	Early-To-Mid October, 2022
Scoping Meeting	Early November, 2022
Compilation of NOP Comments to be included in EIR	Late November, 2022
Submittal of Administrative Draft EIR	December, 2022
City Provides Comments on Administrative Draft EIR (4 weeks for first review)	January 2023
Submittal of Second Administrative Draft EIR	January/February, 2023
City Provides Comments on Second Administrative Draft EIR (3 week review)	February, 2023
Submittal of Screencheck Draft EIR	March, 2023
Public Circulation of Draft EIR	March, 2023
Public Meetings (Optional)	April, 2023
Meeting with City to discuss Public Comments received	May, 2023
Submittal of First Draft of Final EIR	May, 2023
City Review Provides Comments on First Draft of Final EIR (3 week review)	June, 2023
Submittal of Final EIR	June/July, 2023

EXHIBIT “D”
PAYMENT SCHEDULE

Attached

EXHIBIT D—PAYMENT SCHEDULE

Circlepoint would complete the tasks described above for a not-to-exceed fee of **\$158,988**.

Circlepoint Budget

M5528 Gilroy AWS Data Center

Tasks	Principal	Comms Sr. PM	PM	Sr. Assoc	Associate	Assistant / Coordinator	Sr. Web/ Graphics	Total Hours	Total Dollars
	Rates \$ 252	\$ 197	\$ 173	\$ 138	\$ 118	\$ 103	\$ 144		
Task 1 Kickoff, Project Description, and other Meetings									
1.1 Kick Off Meeting	1	-	4	3	-	-	-	8	\$ 1,244.00
1.2 Bi-Weekly Check In Meetings	-	-	24	24	-	-	-	48	\$ 7,464.00
1.3 Planning Comissions/City Council Meetings	4	-	27	6	-	-	-	37	\$ 6,570.00
Subtotal Task 1 Kickoff, Project Description, and other Meetings	5	-	55	33	-	-	-	93	\$ 15,278.00
Task 2 Public Scoping and NOP									
2.1 Public Scoping Meeting	1	4	2	-	2	8	2	19	\$ 2,608.00
2.2 NOP materials	1	-	6	7	8	-	-	20	\$ 2,912.00
Subtotal Task 2 Public Scoping and NOP	1	-	6	7	8	-	-	39	\$ 5,520.00
Task 3 Project Description									
3.1 Project Description	2	-	10	8	8	6	-	34	\$ 4,878.00
Subtotal Task 3 Project Description	2	-	10	8	8	6	-	34	\$ 4,878.00
Task 4 Project Management									
4.1 Project Management and Coordination	8	18	72	18	-	-	-	116	\$ 20,540.00
Subtotal Task 4 Project Management	8	18	72	18	-	-	-	116	\$ 20,540.00
Task 5 Technical Studies									
5.1 Gap Analysis	4	-	20	18	15	-	-	57	\$ 8,580.00
Subtotal Task 5 Technical Studies	4	-	20	18	15	-	-	57	\$ 8,580.00
Task 6 Admin Draft EIR									
6.1 Admin Draft EIR	10	-	40	85	92	100	-	327	\$ 42,270.00
6.2 Screencheck Draft EIR	4	-	20	30	40	50	-	144	\$ 18,500.00
6.3 Public Draft EIR	4	-	20	28	38	38	-	126	\$ 16,440.00
Subtotal Task 6 Admin Draft EIR	18	-	80	142	170	188	-	597	\$ 77,210.00
Task 7 Final EIR									
7.1 Response to Public Comments and Final EIR	2	-	20	20	22	22	-	85	\$ 11,386.00
7.2 Final EIR	4	-	10	12	12	14	-	52	\$ 7,126.00
Subtotal Task 7 Final EIR	2	-	20	20	22	22	-	137	\$ 18,512.00
Labor Subtotal	37	18	257	240	215	216	-	1,072	\$ 150,518.00
Labor Contingency									\$ -
Total Labor									\$ 150,518.00

ODCs

Travel	\$ 500.00
Scoping Meeting (Printing, Materials, Misc)	\$ 1,000.00
Notification Mailer (NOA)	\$ 5,000.00
Display Ad Placement	\$ 1,200.00
	\$ -
	\$ -
	\$ -
	\$ -

Subtotal ODCs	\$ 7,700.00
10.0% Mark-Up on ODCs	\$ 770.00
Total ODCs	\$ 8,470.00
TOTAL	\$ 158,988.00

Assumptions

Rates are effective through December 31, 2022 and are subject to annual escalation
Please see scope of work for detailed assumptions



CERTIFICATE OF LIABILITY INSURANCE

6.3

DATE (MM/DD/YYYY)

5/13/2022

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an **ADDITIONAL INSURED**, the policy(ies) must have **ADDITIONAL INSURED** provisions or be endorsed. If **SUBROGATION** IS **WAIVED**, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Risk Strategies Company 700 Airport Boulevard, Suite 300 Burlingame, CA 94010	CONTACT NAME: Emily Elsbree PHONE (A/C, No. Ext): (650) 762-0425 E-MAIL ADDRESS: eelsbree@risk-strategies.com	FAX (A/C, No): (650) 762-0490
	INSURER(S) AFFORDING COVERAGE	
INSURED Circlepoint 200 Webster Street, Suite 200 Oakland CA 94607	INSURER A: Sentinel Ins. Co.	
	INSURER B: Hartford Accident and Indemnity Company	
	INSURER C: AXIS Insurance Company	
	INSURER D: Berkley Assurance Company	
	INSURER E:	
INSURER F:		NAIC # 11000 22357 37273 39462

COVERAGES

CERTIFICATE NUMBER: 68221062

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	☒ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☒ OCCUR ☒ Contractual Liability GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☒ PRO-JECT ☐ LOC OTHER:	☒		57SBARI3554	10/1/2021	10/1/2022	EACH OCCURRENCE \$2,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$1,000,000 MED EXP (Any one person) \$10,000 PERSONAL & ADV INJURY \$2,000,000 GENERAL AGGREGATE \$4,000,000 PRODUCTS - COMP/OP AGG \$4,000,000 \$
A	AUTOMOBILE LIABILITY ☐ ANY AUTO ☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS ☒ HIRED AUTOS ONLY ☒ NON-OWNED AUTOS ONLY			57SBARI3554	10/1/2021	10/1/2022	COMBINED SINGLE LIMIT (Ea accident) \$2,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
A	☒ UMBRELLA LIAB ☒ OCCUR ☐ EXCESS LIAB ☐ CLAIMS-MADE ☐ DED ☒ RETENTION \$10,000			57SBARI3554	10/1/2021	10/1/2022	EACH OCCURRENCE \$3,000,000 AGGREGATE \$3,000,000 \$
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY / RENTRAP / ROTEIRPOR / Y N A OFFICER/MEMBER EXCLUDED? ☐ Y/N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below			57WECGH2835	10/1/2021	10/1/2022	☒ PER STATUTE ☐ OTH-ER E.L. EACH ACCIDENT \$1,000,000 E.L. DISEASE - EA EMPLOYEE \$1,000,000 E.L. DISEASE - POLICY LIMIT \$1,000,000
C	Professional Liability Retroactive Date 1: 11/01/1987 Retroactive Date 2: 05/14/2015			DP004180032021	10/1/2021	10/1/2022	Per Claim \$2,000,000 Annual Aggregate \$2,000,000 Pollution Liability Included Per Claim \$2,000,000
D	Cyber Liability			BCRS1RS40009500	7/16/2021	7/16/2022	Per Claim \$2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

City of Gilroy, its officers and employees are included as additional insured/s per form SS00080405.

CERTIFICATE HOLDER

 City of Gilroy
 7351 Rosanna Street
 Gilroy CA 95020-6197

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

RSC Insurance Brokerage

p. 535 of 557

© 1988-2015 ACORD CORPORATION. All rights reserved.

ACORD 25 (2016/03)

The ACORD name and logo are registered marks of ACORD

BUSINESS LIABILITY COVERAGE FORMCirclepoint
57SBARI3554

6.3

2. Applicable To Medical Expenses Coverage

We will not pay expenses for "bodily injury":

a. Any Insured

To any insured, except "volunteer workers".

b. Hired Person

To a person hired to do work for or on behalf of any insured or a tenant of any insured.

c. Injury On Normally Occupied Premises

To a person injured on that part of premises you own or rent that the person normally occupies.

d. Workers' Compensation And Similar Laws

To a person, whether or not an "employee" of any insured, if benefits for the "bodily injury" are payable or must be provided under a workers' compensation or disability benefits law or a similar law.

e. Athletics Activities

To a person injured while practicing, instructing or participating in any physical exercises or games, sports or athletic contests.

f. Products-Completed Operations Hazard

Included with the "products-completed operations hazard".

g. Business Liability Exclusions

Excluded under Business Liability Coverage.

C. WHO IS AN INSURED**1. If you are designated in the Declarations as:**

- a.** An individual, you and your spouse are insureds, but only with respect to the conduct of a business of which you are the sole owner.
- b.** A partnership or joint venture, you are an insured. Your members, your partners, and their spouses are also insureds, but only with respect to the conduct of your business.
- c.** A limited liability company, you are an insured. Your members are also insureds, but only with respect to the conduct of your business. Your managers are insureds, but only with respect to their duties as your managers.
- d.** An organization other than a partnership, joint venture or limited liability company, you are an insured. Your "executive officers" and directors are insureds, but only with respect to their duties as your officers or directors. Your stockholders are also insureds, but only with respect to their liability as stockholders.

- e.** A trust, you are an insured. Your trustees are also insureds, but only with respect to their duties as trustees.

2. Each of the following is also an insured:**a. Employees And Volunteer Workers**

Your "volunteer workers" only while performing duties related to the conduct of your business, or your "employees", other than either your "executive officers" (if you are an organization other than a partnership, joint venture or limited liability company) or your managers (if you are a limited liability company), but only for acts within the scope of their employment by you or while performing duties related to the conduct of your business.

However, none of these "employees" or "volunteer workers" are insureds for:

(1) "Bodily injury" or "personal and advertising injury":

- (a)** To you, to your partners or members (if you are a partnership or joint venture), to your members (if you are a limited liability company), or to a co-"employee" while in the course of his or her employment or performing duties related to the conduct of your business, or to your other "volunteer workers" while performing duties related to the conduct of your business;
- (b)** To the spouse, child, parent, brother or sister of that co-"employee" or that "volunteer worker" as a consequence of Paragraph **(1)(a)** above;
- (c)** For which there is any obligation to share damages with or repay someone else who must pay damages because of the injury described in Paragraphs **(1)(a)** or **(b)** above; or
- (d)** Arising out of his or her providing or failing to provide professional health care services.

If you are not in the business of providing professional health care services, Paragraph **(d)** does not apply to any nurse, emergency medical technician or paramedic employed by you to provide such services.

(2) "Property damage" to property:

- (a)** Owned, occupied or used by,

p. 536 of 557

- (b) Rented to, in the care, custody or control of, or over which physical control is being exercised for any purpose by you, any of your "employees", "volunteer workers", any partner or member (if you are a partnership or joint venture), or any member (if you are a limited liability company).

b. Real Estate Manager

Any person (other than your "employee" or "volunteer worker"), or any organization while acting as your real estate manager.

c. Temporary Custodians Of Your Property

Any person or organization having proper temporary custody of your property if you die, but only:

- (1) With respect to liability arising out of the maintenance or use of that property; and
- (2) Until your legal representative has been appointed.

d. Legal Representative If You Die

Your legal representative if you die, but only with respect to duties as such. That representative will have all your rights and duties under this insurance.

e. Unnamed Subsidiary

Any subsidiary and subsidiary thereof, of yours which is a legally incorporated entity of which you own a financial interest of more than 50% of the voting stock on the effective date of this Coverage Part.

The insurance afforded herein for any subsidiary not shown in the Declarations as a named insured does not apply to injury or damage with respect to which an insured under this insurance is also an insured under another policy or would be an insured under such policy but for its termination or upon the exhaustion of its limits of insurance.

3. Newly Acquired Or Formed Organization

Any organization you newly acquire or form, other than a partnership, joint venture or limited liability company, and over which you maintain financial interest of more than 50% of the voting stock, will qualify as a Named Insured if there is no other similar insurance available to that organization. However:

- a. Coverage under this provision is afforded only until the 180th day after you acquire or form the organization or the end of the policy period, whichever is earlier; and

- b. Coverage under this provision does not apply to:

- (1) "Bodily injury" or "property damage" that occurred; or
- (2) "Personal and advertising injury" arising out of an offense committed before you acquired or formed the organization.

4. Operator Of Mobile Equipment

With respect to "mobile equipment" registered in your name under any motor vehicle registration law, any person is an insured while driving such equipment along a public highway with your permission. Any other person or organization responsible for the conduct of such person is also an insured, but only with respect to liability arising out of the operation of the equipment, and only if no other insurance of any kind is available to that person or organization for this liability. However, no person or organization is an insured with respect to:

- a. "Bodily injury" to a co-"employee" of the person driving the equipment; or
- b. "Property damage" to property owned by, rented to, in the charge of or occupied by you or the employer of any person who is an insured under this provision.

5. Operator of Nonowned Watercraft

With respect to watercraft you do not own that is less than 51 feet long and is not being used to carry persons for a charge, any person is an insured while operating such watercraft with your permission. Any other person or organization responsible for the conduct of such person is also an insured, but only with respect to liability arising out of the operation of the watercraft, and only if no other insurance of any kind is available to that person or organization for this liability.

However, no person or organization is an insured with respect to:

- a. "Bodily injury" to a co-"employee" of the person operating the watercraft; or
- b. "Property damage" to property owned by, rented to, in the charge of or occupied by you or the employer of any person who is an insured under this provision.

6. Additional Insureds When Required By Written Contract, Written Agreement Or Permit

The person(s) or organization(s) identified in Paragraphs a. through f. below are additional insureds when you have agreed, in a written

p. 537 of 557

BUSINESS LIABILITY COVERAGE FORM

contract, written agreement or because of a permit issued by a state or political subdivision, that such person or organization be added as an additional insured on your policy, provided the injury or damage occurs subsequent to the execution of the contract or agreement, or the issuance of the permit.

A person or organization is an additional insured under this provision only for that period of time required by the contract, agreement or permit.

However, no such person or organization is an additional insured under this provision if such person or organization is included as an additional insured by an endorsement issued by us and made a part of this Coverage Part, including all persons or organizations added as additional insureds under the specific additional insured coverage grants in Section F. – Optional Additional Insured Coverages.

a. Vendors

Any person(s) or organization(s) (referred to below as vendor), but only with respect to "bodily injury" or "property damage" arising out of "your products" which are distributed or sold in the regular course of the vendor's business and only if this Coverage Part provides coverage for "bodily injury" or "property damage" included within the "products-completed operations hazard".

- (1) The insurance afforded to the vendor is subject to the following additional exclusions:

This insurance does not apply to:

- (a) "Bodily injury" or "property damage" for which the vendor is obligated to pay damages by reason of the assumption of liability in a contract or agreement. This exclusion does not apply to liability for damages that the vendor would have in the absence of the contract or agreement;
- (b) Any express warranty unauthorized by you;
- (c) Any physical or chemical change in the product made intentionally by the vendor;
- (d) Repackaging, except when unpacked solely for the purpose of inspection, demonstration, testing, or the substitution of parts under instructions from the manufacturer, and then repackaged in the original container;

- (e) Any failure to make such inspections, adjustments, tests or servicing as the vendor has agreed to make or normally undertakes to make in the usual course of business, in connection with the distribution or sale of the products;

- (f) Demonstration, installation, servicing or repair operations, except such operations performed at the vendor's premises in connection with the sale of the product;

- (g) Products which, after distribution or sale by you, have been labeled or relabeled or used as a container, part or ingredient of any other thing or substance by or for the vendor; or

- (h) "Bodily injury" or "property damage" arising out of the sole negligence of the vendor for its own acts or omissions or those of its employees or anyone else acting on its behalf. However, this exclusion does not apply to:

- (i) The exceptions contained in Subparagraphs (d) or (f); or

- (ii) Such inspections, adjustments, tests or servicing as the vendor has agreed to make or normally undertakes to make in the usual course of business, in connection with the distribution or sale of the products.

- (2) This insurance does not apply to any insured person or organization from whom you have acquired such products, or any ingredient, part or container, entering into, accompanying or containing such products.

b. Lessors Of Equipment

- (1) Any person or organization from whom you lease equipment; but only with respect to their liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by your maintenance, operation or use of equipment leased to you by such person or organization.

- (2) With respect to the insurance afforded to these additional insureds, this insurance does not apply to any "occurrence" which takes place after you cease to lease that equipment.

c. Lessors Of Land Or Premises

- (1) Any person or organization from whom you lease land or premises, but only with respect to liability arising out of the ownership, maintenance or use of that part of the land or premises leased to you.
- (2) With respect to the insurance afforded to these additional insureds, this insurance does not apply to:
- (a) Any "occurrence" which takes place after you cease to lease that land or be a tenant in that premises; or
- (b) Structural alterations, new construction or demolition operations performed by or on behalf of such person or organization.

d. Architects, Engineers Or Surveyors

- (1) Any architect, engineer, or surveyor, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by your acts or omissions or the acts or omissions of those acting on your behalf:
- (a) In connection with your premises; or
- (b) In the performance of your ongoing operations performed by you or on your behalf.
- (2) With respect to the insurance afforded to these additional insureds, the following additional exclusion applies:
- This insurance does not apply to "bodily injury", "property damage" or "personal and advertising injury" arising out of the rendering of or the failure to render any professional services by or for you, including:
- (a) The preparing, approving, or failure to prepare or approve, maps, shop drawings, opinions, reports, surveys, field orders, change orders, designs or drawings and specifications; or
- (b) Supervisory, inspection, architectural or engineering activities.

e. Permits Issued By State Or Political Subdivisions

- (1) Any state or political subdivision, but only with respect to operations performed by you or on your behalf for which the state or political subdivision has issued a permit.
- (2) With respect to the insurance afforded to these additional insureds, this insurance does not apply to:
- (a) "Bodily injury", "property damage" or "personal and advertising injury" arising out of operations performed for the state or municipality; or
- (b) "Bodily injury" or "property damage" included within the "products-completed operations hazard".

f. Any Other Party

- (1) Any other person or organization who is not an insured under Paragraphs **a.** through **e.** above, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by your acts or omissions or the acts or omissions of those acting on your behalf:
- (a) In the performance of your ongoing operations;
- (b) In connection with your premises owned by or rented to you; or
- (c) In connection with "your work" and included within the "products-completed operations hazard", but only if
- (i) The written contract or written agreement requires you to provide such coverage to such additional insured; and
- (ii) This Coverage Part provides coverage for "bodily injury" or "property damage" included within the "products-completed operations hazard".
- (2) With respect to the insurance afforded to these additional insureds, this insurance does not apply to:
- "Bodily injury", "property damage" or "personal and advertising injury" arising out of the rendering of, or the failure to render, any professional architectural, engineering or surveying services, including:

p. 539 of 557

BUSINESS LIABILITY COVERAGE FORM

- (a) The preparing, approving, or failure to prepare or approve, maps, shop drawings, opinions, reports, surveys, field orders, change orders, designs or drawings and specifications; or
- (b) Supervisory, inspection, architectural or engineering activities.

The limits of insurance that apply to additional insureds are described in Section **D. – Limits Of Insurance**.

How this insurance applies when other insurance is available to an additional insured is described in the Other Insurance Condition in Section **E. – Liability And Medical Expenses General Conditions**.

No person or organization is an insured with respect to the conduct of any current or past partnership, joint venture or limited liability company that is not shown as a Named Insured in the Declarations.

D. LIABILITY AND MEDICAL EXPENSES LIMITS OF INSURANCE

1. The Most We Will Pay

The Limits of Insurance shown in the Declarations and the rules below fix the most we will pay regardless of the number of:

- a. Insureds;
- b. Claims made or "suits" brought; or
- c. Persons or organizations making claims or bringing "suits".

2. Aggregate Limits

The most we will pay for:

- a. Damages because of "bodily injury" and "property damage" included in the "products-completed operations hazard" is the Products-Completed Operations Aggregate Limit shown in the Declarations.
- b. Damages because of all other "bodily injury", "property damage" or "personal and advertising injury", including medical expenses, is the General Aggregate Limit shown in the Declarations.

This General Aggregate Limit applies separately to each of your "locations" owned by or rented to you.

"Location" means premises involving the same or connecting lots, or premises whose connection is interrupted only by a street, roadway or right-of-way of a railroad.

This General Aggregate limit does not apply to "property damage" to premises while rented to you or temporarily occupied by you with permission of the owner, arising out of fire, lightning or explosion.

3. Each Occurrence Limit

Subject to **2.a.** or **2.b.** above, whichever applies, the most we will pay for the sum of all damages because of all "bodily injury", "property damage" and medical expenses arising out of any one "occurrence" is the Liability and Medical Expenses Limit shown in the Declarations.

The most we will pay for all medical expenses because of "bodily injury" sustained by any one person is the Medical Expenses Limit shown in the Declarations.

4. Personal And Advertising Injury Limit

Subject to **2.b.** above, the most we will pay for the sum of all damages because of all "personal and advertising injury" sustained by any one person or organization is the Personal and Advertising Injury Limit shown in the Declarations.

5. Damage To Premises Rented To You Limit

The Damage To Premises Rented To You Limit is the most we will pay under Business Liability Coverage for damages because of "property damage" to any one premises, while rented to you, or in the case of damage by fire, lightning or explosion, while rented to you or temporarily occupied by you with permission of the owner.

In the case of damage by fire, lightning or explosion, the Damage to Premises Rented To You Limit applies to all damage proximately caused by the same event, whether such damage results from fire, lightning or explosion or any combination of these.

6. How Limits Apply To Additional Insureds

The most we will pay on behalf of a person or organization who is an additional insured under this Coverage Part is the lesser of:

- a. The limits of insurance specified in a written contract, written agreement or permit issued by a state or political subdivision; or
- b. The Limits of Insurance shown in the Declarations.

Such amount shall be a part of and not in addition to the Limits of Insurance shown in the Declarations and described in this Section.

p. 540 of 557

BUSINESS LIABILITY COVERAGE FORM

This Paragraph **f.** applies separately to you and any additional insured.

3. Financial Responsibility Laws

- a. When this policy is certified as proof of financial responsibility for the future under the provisions of any motor vehicle financial responsibility law, the insurance provided by the policy for "bodily injury" liability and "property damage" liability will comply with the provisions of the law to the extent of the coverage and limits of insurance required by that law.
- b. With respect to "mobile equipment" to which this insurance applies, we will provide any liability, uninsured motorists, underinsured motorists, no-fault or other coverage required by any motor vehicle law. We will provide the required limits for those coverages.

4. Legal Action Against Us

No person or organization has a right under this Coverage Form:

- a. To join us as a party or otherwise bring us into a "suit" asking for damages from an insured; or
- b. To sue us on this Coverage Form unless all of its terms have been fully complied with.

A person or organization may sue us to recover on an agreed settlement or on a final judgment against an insured; but we will not be liable for damages that are not payable under the terms of this insurance or that are in excess of the applicable limit of insurance. An agreed settlement means a settlement and release of liability signed by us, the insured and the claimant or the claimant's legal representative.

5. Separation Of Insureds

Except with respect to the Limits of Insurance, and any rights or duties specifically assigned in this policy to the first Named Insured, this insurance applies:

- a. As if each Named Insured were the only Named Insured; and
- b. Separately to each insured against whom a claim is made or "suit" is brought.

6. Representations**a. When You Accept This Policy**

By accepting this policy, you agree:

- (1) The statements in the Declarations are accurate and complete;
- (2) Those statements are based upon representations you made to us; and

- (3) We have issued this policy in reliance upon your representations.

b. Unintentional Failure To Disclose Hazards

If unintentionally you should fail to disclose all hazards relating to the conduct of your business at the inception date of this Coverage Part, we shall not deny any coverage under this Coverage Part because of such failure.

7. Other Insurance

If other valid and collectible insurance is available for a loss we cover under this Coverage Part, our obligations are limited as follows:

a. Primary Insurance

This insurance is primary except when **b.** below applies. If other insurance is also primary, we will share with all that other insurance by the method described in **c.** below.

b. Excess Insurance

This insurance is excess over any of the other insurance, whether primary, excess, contingent or on any other basis:

(1) Your Work

That is Fire, Extended Coverage, Builder's Risk, Installation Risk or similar coverage for "your work";

(2) Premises Rented To You

That is fire, lightning or explosion insurance for premises rented to you or temporarily occupied by you with permission of the owner;

(3) Tenant Liability

That is insurance purchased by you to cover your liability as a tenant for "property damage" to premises rented to you or temporarily occupied by you with permission of the owner;

(4) Aircraft, Auto Or Watercraft

If the loss arises out of the maintenance or use of aircraft, "autos" or watercraft to the extent not subject to Exclusion **g.** of Section **A.** – Coverages.

(5) Property Damage To Borrowed Equipment Or Use Of Elevators

If the loss arises out of "property damage" to borrowed equipment or the use of elevators to the extent not subject to Exclusion **k.** of Section **A.** – Coverages.

p. 541 of 557

(6) When You Are Added As An Additional Insured To Other Insurance

That is other insurance available to you covering liability for damages arising out of the premises or operations, or products and completed operations, for which you have been added as an additional insured by that insurance; or

(7) When You Add Others As An Additional Insured To This Insurance

That is other insurance available to an additional insured.

However, the following provisions apply to other insurance available to any person or organization who is an additional insured under this Coverage Part:

(a) Primary Insurance When Required By Contract

This insurance is primary if you have agreed in a written contract, written agreement or permit that this insurance be primary. If other insurance is also primary, we will share with all that other insurance by the method described in c. below.

(b) Primary And Non-Contributory To Other Insurance When Required By Contract

If you have agreed in a written contract, written agreement or permit that this insurance is primary and non-contributory with the additional insured's own insurance, this insurance is primary and we will not seek contribution from that other insurance.

Paragraphs (a) and (b) do not apply to other insurance to which the additional insured has been added as an additional insured.

When this insurance is excess, we will have no duty under this Coverage Part to defend the insured against any "suit" if any other insurer has a duty to defend the insured against that "suit". If no other insurer defends, we will undertake to do so, but we will be entitled to the insured's rights against all those other insurers.

When this insurance is excess over other insurance, we will pay only our share of the amount of the loss, if any, that exceeds the sum of:

- (1) The total amount that all such other insurance would pay for the loss in the absence of this insurance; and
- (2) The total of all deductible and self-insured amounts under all that other insurance.

We will share the remaining loss, if any, with any other insurance that is not described in this Excess Insurance provision and was not bought specifically to apply in excess of the Limits of Insurance shown in the Declarations of this Coverage Part.

c. Method Of Sharing

If all the other insurance permits contribution by equal shares, we will follow this method also. Under this approach, each insurer contributes equal amounts until it has paid its applicable limit of insurance or none of the loss remains, whichever comes first.

If any of the other insurance does not permit contribution by equal shares, we will contribute by limits. Under this method, each insurer's share is based on the ratio of its applicable limit of insurance to the total applicable limits of insurance of all insurers.

8. Transfer Of Rights Of Recovery Against Others To Us**a. Transfer Of Rights Of Recovery**

If the insured has rights to recover all or part of any payment, including Supplementary Payments, we have made under this Coverage Part, those rights are transferred to us. The insured must do nothing after loss to impair them. At our request, the insured will bring "suit" or transfer those rights to us and help us enforce them. This condition does not apply to Medical Expenses Coverage.

b. Waiver Of Rights Of Recovery (Waiver Of Subrogation)

If the insured has waived any rights of recovery against any person or organization for all or part of any payment, including Supplementary Payments, we have made under this Coverage Part, we also waive that right, provided the insured waived their rights of recovery against such person or organization in a contract, agreement or permit that was executed prior to the injury or damage.



City of Gilroy

STAFF REPORT

Agenda Item Title: **Claim of Jesus Diaz Chavez (The City Administrator recommends a "yes" vote under the Consent Calendar shall constitute denial of the claim)**

Meeting Date: November 4, 2024

From: Jimmy Forbis, City Administrator

Department: Administrative Services

Submitted By: LeeAnn McPhillips, Administrative Services and Human Resources Director / Risk Manager

Prepared By: LeeAnn McPhillips, Administrative Services and Human Resources Director / Risk Manager

STRATEGIC PLAN GOALS

Not Applicable

RECOMMENDATION

Based on the recommendation from Municipal Pooling Authority (MPA) and/or legal counsel, this claim is recommended for rejection.

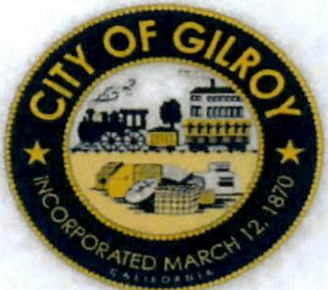
EXECUTIVE SUMMARY

Based on the recommendation from Municipal Pooling Authority (MPA) and/or legal counsel, the following claim is submitted to the City Council for rejection at the November 4, 2024 meeting:

- Claim of Jesus Diaz Chavez

Attachments:

1. Claim of Jesus Diaz Chavez

File With: City Clerk's Office 7351 Rosanna Street Gilroy, CA 95020-6141		CITY OF GILROY CLAIM FOR DAMAGES To Person Or Property		CLAIM No. _____
INSTRUCTIONS 1. Claims for death, injury to person or to personal property must be filed not later than six months after the occurrence. (Gov. Code Sec. 911.2) 2. Claims for damages to real property must be filed not later than 1 year after the occurrence. (Gov. Code Sec. 911.2) 3. Read entire claim before filing. 4. See page 2 for diagram upon which to locate place of accident. 5. This claim form must be signed on page 2 at bottom. 6. Attach separate sheets, if necessary, to give full details. SIGN EACH SHEET.				
RECEIVED SEP 12 2024				
TO: CITY OF GILROY		Date of Birth of Claimant 10/13/66		
Name of Claimant Jesus J Diaz Chavez		Occupation of Claimant Landscaping		
Home Address of Claimant 1068 Clark Way Gilroy, CA 95020		Home Telephone Number (408) 284-9394		
Business Address of Claimant N/A		Business Telephone Number		
Give address and telephone number to which you desire notices or communications to be sent regarding this claim: 1068 Clark Way, Gilroy, CA 95020		Claimant's e-mail address no email		
When did DAMAGE or INJURY occur? Date: 08-06-2024 Time: Night		Names of any city employees involved in INJURY or DAMAGE:		
If claim is for Equitable Indemnity, give date claimant served with the complaint: Date:				
Where did DAMAGE or INJURY occur? Describe fully, and locate on diagram on reverse side of this sheet. Where appropriate, give street names and address and measurements from landmarks: Damage Occured near my home at where city workers were cutting down trees/branches. Ultimately, causing damage to my 2006 Ford Explorer				
Describe in detail the DAMAGE or INJURY occurred: - Broke the windshield - on the passenger side scratched the passenger side door - The truck's chest was also damaged - The top part of the truck broke - The passenger side mirror was also scratched. The paint on the passenger side was damaged.				
Why do you claim the city is responsible? Was caused due to the city work occurring near my home.				
Describe in detail each INJURY or DAMAGE:				
SEE PAGE 2 (OVER)		THIS CLAIM MUST BE SIGNED ON REVERSE SIDE		

The amount claimed, as of the date of presentation of this claim, is computed as follows:

Damages incurred to date (exact):

Damage to property..... \$ 5,196.02
 Expense for medical and hospital care..... \$ 0
 Loss of earnings..... \$ 0
 Special damages for..... \$ 0
 General damages..... \$ 0
 Total damages incurred to date \$ 0

Estimated prospective damages as far as known:

Future expenses for medical and hospital care..... \$ 0
 Future loss of earnings..... \$ 0
 Other prospective special damages..... \$ 0
 Prospective general damages..... \$ 0
 Total estimate prospective damages ... \$ 0

Total amount claimed as of date of presentation of this claim: \$ 5,196.02

Was damage and/or injury investigated by police? yes If so, what city? City of Gilroy

Were paramedics or ambulance called? N/A If so, name city of ambulance N/A

If injured, state date, time, name and address of doctor of your first visit N/A

WITNESSES to DAMAGE or INJURY: List all persons and address of persons known to have information:

Name Richard Address 1070 Oakway Phone N/A
 Name Steve Address 1081 Clarkway Phone N/A
 Name _____ Address _____ Phone _____

DOCTORS and HOSPITALS:

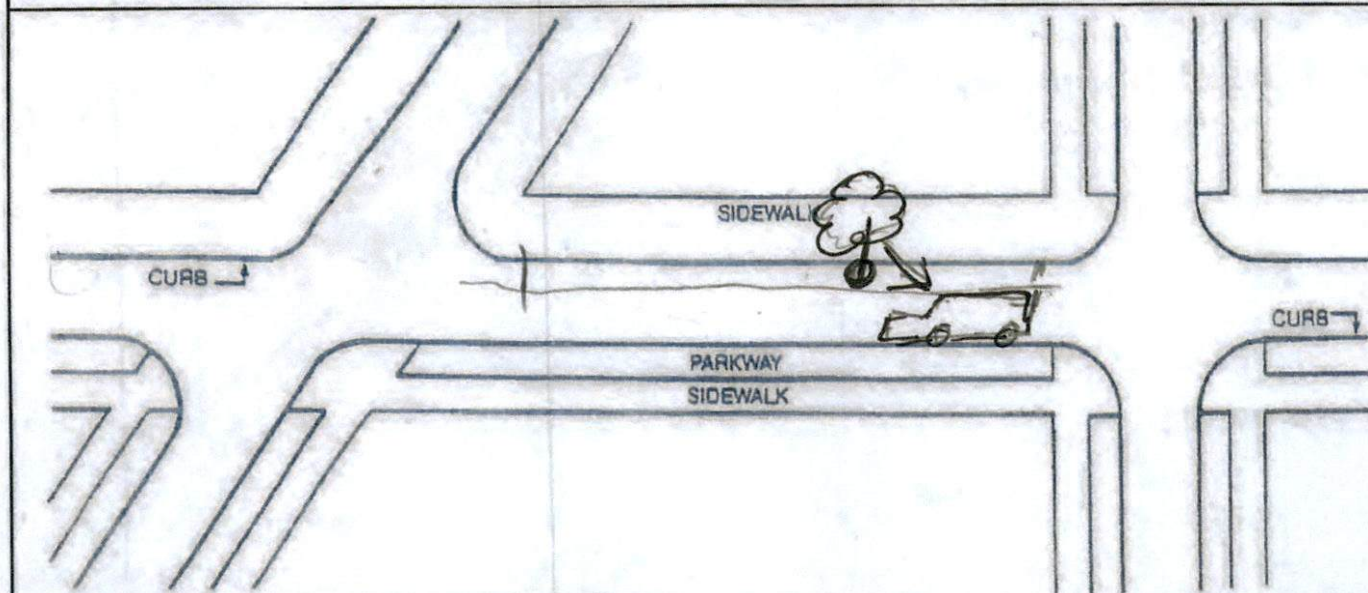
Hospital N/A Address _____ Date Hospitalized _____
 Doctor N/A Address _____ Date of Treatment _____
 Doctor N/A Address _____ Date of Treatment _____

READ CAREFULLY

For all accident claims, place on following diagram names of streets, including North, East, South and West: Indicate place of accident by "X" and by showing house numbers or distances to street corners. If City vehicle was involved, designate by letter "A" location of City vehicle when you first saw it, and by "B" location of yourself or your vehicle when you first saw City vehicle:

Location of City at time of accident by "A-1" and location of yourself or your vehicle at the time of the accident by "B-1" and the point of impact by "X".

NOTE: If diagrams below do not fit the situation, attach hereto a proper diagram signed by claimant.



Signature of Claimant or person filing on his behalf giving relationship to claimant:

Typed Name:

Date:

Jesus Diaz

Jesus Diaz

8-15-24

NOTE: CLAIMS MUST BE FILED WITH CITY CLERK (Gov. Code Sec. 915a). Presentation of a false claim is a felony (Pen. Code Sec. 72)



City of Gilroy

STAFF REPORT

Agenda Item Title: **Claim of Roberto Patricio Justor (The City Administrator recommends a "yes" vote under the Consent Calendar shall constitute denial of the claim)**

Meeting Date: November 4, 2024

From: Jimmy Forbis, City Administrator

Department: Administrative Services

Submitted By: LeeAnn McPhillips, Administrative Services and Human Resources Director / Risk Manager

Prepared By: LeeAnn McPhillips, Administrative Services and Human Resources Director / Risk Manager

STRATEGIC PLAN GOALS

Not Applicable

RECOMMENDATION

Based on the recommendation from Municipal Pooling Authority (MPA) and/or legal counsel, this claim is recommended for rejection.

EXECUTIVE SUMMARY

Based on the recommendation from Municipal Pooling Authority (MPA) and/or legal counsel, the following claim is submitted to the City Council for rejection at the November 4, 2024 meeting:

- Claim of Roberto Patricio Justor

Attachments:

1. Claim of Roberto Patricio Justor

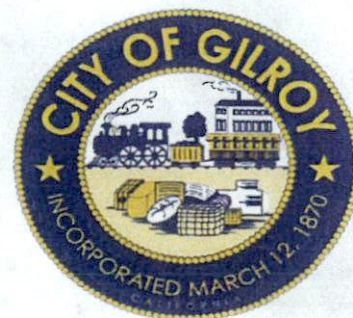
File With:
City Clerk's Office
7351 Rosanna Street
Gilroy, CA 95020-6141

CITY OF GILROY

CLAIM FOR DAMAGES

To Person Or Property

CLAIM No. _____

**INSTRUCTIONS**

1. Claims for death, injury to person or to personal property must be filed not later than six months after the occurrence. (Gov. Code Sec. 911.2)
2. Claims for damages to real property must be filed not later than 1 year after the occurrence. (Gov. Code Sec. 911.2)
3. Read entire claim before filing.
4. See page 2 for diagram upon which to locate place of accident.
5. This claim form must be signed on page 2 at bottom.
6. Attach separate sheets, if necessary, to give full details. SIGN EACH SHEET.

TO: CITY OF GILROY

Date of Birth of Claimant

6-22-1980

Name of Claimant

Roberto Patricio Justor

Occupation of Claimant

Home Address of Claimant

1050 3rd St.

City and State

Gilroy CA

Home Telephone Number

Business Address of Claimant

City and State

Business Telephone Number

Give address and telephone number to which you desire notices or communications to be sent regarding this claim:

408-394-7408

Claimant's e-mail address

justor2012@gmail.com

When did DAMAGE or INJURY occur?

Date 5-6-24

Time 7:00 am

Names of any city employees involved in INJURY or DAMAGE:

Jason Greathead Detective #201
 Jason.Greathead@cityofgilroy.org

If claim is for Equitable Indemnity, give date claimant served with the complaint:

Date

Where did DAMAGE or INJURY occur? Describe fully, and locate on diagram on reverse side of this sheet. Where appropriate, give street names and address and measurements from landmarks:

Describe in detail the DAMAGE or INJURY occurred:

On my 2023 Toyota Highlander, the cops/detectives removed the center console out of my vehicle. They took out the transceiver and ecu components and made my vehicle not operable without it.

Why do you claim the city is responsible?

The cop/detective told us to make a claim with the city for the damages. The detective's name is Jason Greathead #201. The case number is 240318

Describe in detail each INJURY or DAMAGE:

The amount claimed, as or the date of presentation of this claim, is computed as follows:

Damages incurred to date (exact):

Damage to property \$ 2,910.70
 Expenses for medical and hospital care \$ _____
 Loss of earnings \$ _____
 Special damages for \$ _____
 General damages \$ _____
 Total damages incurred to date \$ _____

Estimated prospective damages as far as known:

Future expenses for medical and hospital care . . . \$ _____
 Future loss of earnings \$ _____
 Other prospective special damages \$ _____
 Prospective general damages \$ _____
 Total estimate prospective damages \$ _____

Total amount claimed as of date of presentation of this claim: \$ 2,910.70

Was damage and/or injury investigated by police? _____ If so, what city? _____

Were paramedics or ambulance called? _____ If so, name city or ambulance _____

If injured, state date, time, name and address of doctor of your first visit _____

WITNESSES to DAMAGE or INJURY: List all persons and addresses of persons known to have information:

Name _____ Address _____ Phone _____
 Name _____ Address _____ Phone _____
 Name _____ Address _____ Phone _____

DOCTORS and HOSPITALS:

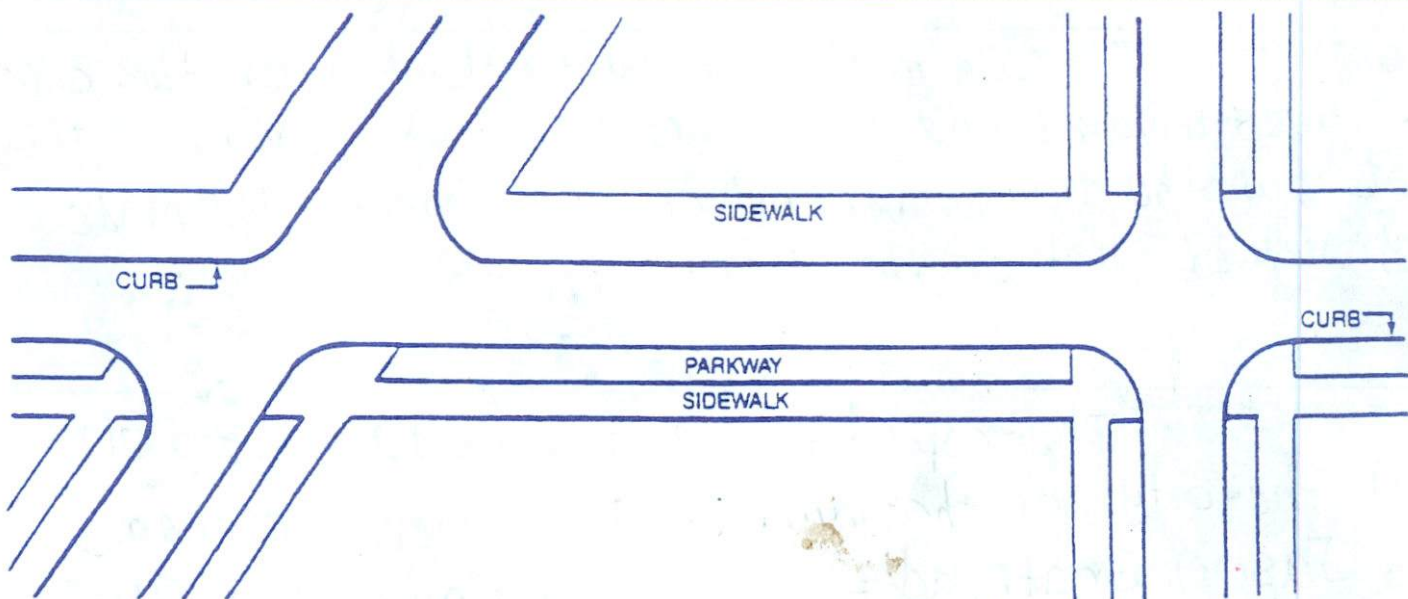
Hospital _____ Address _____ Date Hospitalized _____
 Doctor _____ Address _____ Date of Treatment _____
 Doctor _____ Address _____ Date of Treatment _____

READ CAREFULLY

For all accident claims, place on following diagram names of streets, including North, East, South and West: Indicate place of accident by "X" and by showing house numbers or distances to street corners. If City Vehicle was involved, designate by letter "A" location of City Vehicle when you first saw it, and by "B" location of yourself or your vehicle when you first saw City Vehicle:

Location of City at time of accident by "A-1" and location of yourself or your vehicle at the time of the accident by "B-1" and the point of impact by "X."

NOTE: If diagrams below do not fit the situation, attach hereto a proper diagram signed by claimant.



Signature of Claimant or person filing on his behalf giving relationship to Claimant:

Typed Name:

Date:

[Signature]

ROBERTO

7/24/24

NOTE: CLAIMS MUST BE FILED WITH CITY CLERK (Gov. Code Sec. 915a). Presentation of a false claim is a felony (Pen. Code Sec. 72).



City of Gilroy

STAFF REPORT

Agenda Item Title: **Approval of a Notice of Acceptance of Completion for the FY23 Citywide Pavement Rehabilitation Project No. 23-PW-278 and Approval of a Final Contract with Teichert Construction in the Amount of \$5,977,011.86**

Meeting Date: November 4, 2024
 From: Jimmy Forbis, City Administrator
 Department: Public Works
 Submitted By: Daniel Padilla, City Engineer
 Prepared By: Julie Oates, Engineer II

STRATEGIC PLAN GOALS

Maintain and Improve City Infrastructure

RECOMMENDATION

- a) Approve a Notice of Acceptance of Completion for the FY23 Citywide Pavement Rehabilitation Project No. 23-PW-278.
- b) Approve a final contract in the amount of \$5,977,011.86 with Teichert Construction for the FY23 Citywide Pavement Rehabilitation Project No. 23-PW-278.

EXECUTIVE SUMMARY

The Public Works Department has completed construction of the FY23 Citywide Pavement Rehabilitation Project (Project) and has reviewed and approved all Project documentation. The Project scope of work included preventive maintenance and rehabilitation of 119 street segments, installation of 57 ADA-compliant curb ramps, pavement striping and markings, and associated work. The street segments were selected based on the City's Pavement Management Program, StreetSaver, which evaluates and prioritizes maintenance of the City's overall road network. Staff also received feedback from Public Works street maintenance crews.

Staff recommends the City Council approve the Notice of Acceptance of Completion

and approve a final contract in the amount of \$5,977,011.86 with Teichert Construction for the FY23 Citywide Pavement Rehabilitation Project No. 23-PW-278.

BACKGROUND

The City of Gilroy Fiscal Year 2024 to Fiscal Year 2028 Capital Improvement Program (FY24-FY28 CIP) was adopted by the City Council on June 5, 2023. The FY23 Citywide Pavement Rehabilitation Project is included in the FY24-FY28 CIP as Project #800060.

On May 1, 2023, the City Council awarded a construction contract for the Project to Teichert Construction in the amount of \$6,080,374.35 with a project contingency of \$608,037.65 (10%) for a total construction allocation of \$6,688,413.00 and authorized the City Administrator to execute the contract and associated documents.

ANALYSIS

The Project scope of work included preventive maintenance and rehabilitation of 119 street segments, installation of 57 ADA-compliant curb ramps, pavement striping and markings, and associated work. The Project's total construction change orders resulted in a net decrease of \$103,362.49 to the contract amount.

The original construction schedule for the Project was May 31, 2023 to October 5, 2023. The contractor reported the work as complete in September 2023. However, based on the City's inspection of the slurry seal work, the contractor was required to perform repairs on 39 street segments. Repair work began in November 2023. The repair work was subsequently suspended due to inclement weather conditions. Repair work resumed in July 2024 and the City deemed the Project Substantially Complete on August 1, 2024. Project documentation has been completed and all punch list items have been addressed by the contractor.

Staff recommends the City Council approve the Notice of Acceptance of Completion and the final contract in the amount of \$5,977,011.86 with Teichert Construction for the FY23 Citywide Pavement Rehabilitation Project No. 23-PW-278.

FISCAL IMPACT/FUNDING SOURCE

The Project's final construction cost was \$5,977,011.86. The Project was under budget by \$103,362.49. In addition, the \$608,037.65 in contingency funds that were allocated to the Project were not used. It is recommended that the savings from this FY23 project be allocated to expand the City's FY25 Citywide Pavement Rehabilitation Project, which is currently under development. Staff will bring forward the recommendation as part of the comprehensive mid-cycle budget adjustments report at the November 18 City Council meeting. The Project's funding sources are summarized below.

Approval of a Notice of Acceptance of Completion for the FY23 Citywide Pavement Rehabilitation Project No. 23-PW-278 and Approval of a Final Contract with Teichert Construction in the Amount of \$5,977,011.86

Funding Source	Amount
Gas Taxes (205)	\$2,887,660.00
Road Funds SB1 (210)	\$1,300,752.00
Measure B (212)	\$900,000.00
General Fund (100)	\$888,599.86
Total	\$5,977,011.86

Attachments:

1. 23-PW-278 NOC

RECORDING REQUESTED BY:

City of Gilroy

WHEN RECORDED, MAIL TO:

City Clerk's Office

City of Gilroy

7351 Rosanna Street

Gilroy, CA 95020

(SPACE ABOVE THIS LINE FOR RECORDER'S USE)

**RECORD WITHOUT FEE UNDER SECTION 27383
GOVERNMENT CODE OF STATE OF CALIFORNIA**

Notice of Acceptance of Completion

FY23 Citywide Pavement Maintenance Project
Project No. 23-PW-278
Teichert Construction

SEPARATE PAGE PURSUANT TO GOVT. CODE 27361.6

NOTICE OF ACCEPTANCE OF COMPLETION

NOTICE IS HEREBY GIVEN that, as of the 4th day of November, 2024, the City of Gilroy, California ("City") has accepted as completed the work required to be performed under the following agreement ("Agreement") by and between Teichert Construction ("Contractor") and City:

FY23 Citywide Pavement Maintenance Project
Project No. 23-PW-278
Teichert Construction

Project No.: 23-PW-278

Contractor Name: Teichert Construction

Contractor Address: 5200 Franklin Dr., Ste. 115, Pleasanton, CA 94588

Surety on Contract: Liberty Mutual Insurance Company

Location of Project: Gilroy, California

Description of Work:

The work includes furnishing of all labor, materials, incidentals, and equipment necessary to perform pavement rehabilitation of the various roads with pavement milling, associated pavement resurfacing and restriping, associated concrete flatwork, installation of ADA-compliant curb ramps, adjustment of utilities to grade, slurry seal, microsurfacing, striping, signage, traffic signal loops, concrete improvements, and other Work as indicated in the Plans and Specifications.

Interest of City: ☐ Owner in Fee
☐ Vendee under Agreement to Purchase
☐ Lessee
☐ Owner of Easements
☐ Holder of License
☒ Owner of Streets
☐ Owner of Utilities, Water, Sewer, Storm Systems

Owner's Name/Address: City of Gilroy, 7351 Rosanna Street, Gilroy, CA 95020

Work Done: See above, Description of Work

This notice is given in accordance with the provisions of Section 3093 of the Civil Code of the State of California.

The undersigned, being duly sworn, deposes and say:

That I am an officer of the City of Gilroy, that I have read the foregoing Notice of Acceptance of Completion and know the contents thereof; and that the same is true of my own knowledge, except as to those matters that I believe to be true. I certify under penalty of perjury that the foregoing is true and correct.

Executed at the City of Gilroy, County of Santa Clara, State of California, on 10-16-24.

CITY OF GILROY

BY: Daniel Padilla

Daniel Padilla

TITLE: City Engineer

CALIFORNIA ACKNOWLEDGMENT

CIVIL CODE § 1189

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

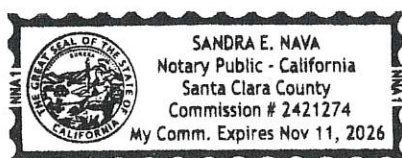
State of California

County of Santa Clara }

On October 16, 2024 before me, Sandra E. Nava, Notary Public,
Date Here Insert Name and Title of the Officer

personally appeared Daniel Padilla
Name(s) of Signer(s)

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.



I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature Sandra E. Nava
Signature of Notary Public

Place Notary Seal and/or Stamp Above

OPTIONAL

Completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: Notice of Acceptance of Completion

Document Date: October 16, 2024 Number of Pages: _____

Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer(s)

Signer's Name: _____

☐ Corporate Officer – Title(s): _____

☐ Partner – ☐ Limited ☐ General

☐ Individual ☐ Attorney in Fact

☐ Trustee ☐ Guardian or Conservator

☐ Other: _____

Signer is Representing: _____

Signer's Name: _____

☐ Corporate Officer – Title(s): _____

☐ Partner – ☐ Limited ☐ General

☐ Individual ☐ Attorney in Fact

☐ Trustee ☐ Guardian or Conservator

☐ Other: _____

Signer is Representing: _____



City of Gilroy

STAFF REPORT

Agenda Item Title:	Zoning Ordinance Update Progress Report
Meeting Date:	November 4, 2024
From:	Jimmy Forbis, City Administrator
Department:	Community Development
Submitted By:	Sharon Goei, Community Development Director
Prepared By:	Cindy McCormick, Planning Manager

<u>STRATEGIC PLAN GOALS</u>	Not Applicable
------------------------------------	----------------

RECOMMENDATION

Receive the staff report and provide feedback.

EXECUTIVE SUMMARY

The Gilroy Planning Division of the Community Development Department is drafting amendments for a comprehensive update to Gilroy City Code, Chapter 30 (Zoning Ordinance). The City has traditionally completed a comprehensive code update following adoption of a new General Plan. For example, in November 2003 the City Council adopted a comprehensive update to the entire Zoning Ordinance following adoption of the 2020 General Plan in June 2002. In addition to minor amendments following the 2003 update, a major update was completed in 2013, followed by minor amendments between 2013 and 2024, to primarily address state legislation that affected City regulations (e.g., Accessory Dwelling Units).

The Gilroy 2040 General Plan was adopted in November 2020 and a comprehensive Zoning Ordinance update is being proposed.

Given the length and complexity of the Zoning Ordinance, the draft will be developed and presented to the general public, the Planning Commission, and the City Council, over a series of public meetings. It is anticipated that the public review process will take approximately nine months, followed by a recommendation by the Planning Commission in late summer / early fall 2025. During this time, staff will also be hosting

community meetings for public feedback on the more substantive sections of the Zoning Ordinance, including, for example, downtown uses and development standards. Staff will incorporate feedback from the Planning Commission and the public into a comprehensive draft that is anticipated to be presented to the City Council during the last quarter of the 2025 calendar year. In the meantime, staff will provide the City Council with periodic updates on the Zoning Ordinance update progress, including links to the draft sections of code that the Planning Commission has reviewed.

BACKGROUND

On September 5, 2024, Planning staff provided an introduction of the update to the public and the Planning Commission. To date, the Planning Commission has reviewed the following preliminary drafts: [Enactment and Administration](#), [Non-Conforming Uses and Structures](#), and [Application Procedures](#). The following drafts will be reviewed in the next few meetings: [Architectural and Site Review](#), [Conditional Use Permits](#), [Minor Use Permits](#), [Temporary Use Permits](#), and [Variances and Minor Deviation Permits](#). Because the Zoning Ordinance will have a completely new format, it is not possible to provide track changes. However, staff is providing a summary of the changes during each Planning Commission meeting (e.g., Section 30.1.030 [Application of the Zoning Ordinance] can now be found in Section 30.10.050 [Applicability]). When new provisions or substantive changes are proposed, these will be noted in the summary document for discussion at the public meeting.

ANALYSIS

While the General Plan sets forth a wide-ranging and long-term vision for the City, the Zoning Ordinance is the primary tool used to implement General Plan goals and policies, through guidance and regulation of land use development. The current Zoning Ordinance lacks regulations for new General Plan land uses including the new City Gateway District, Industrial Park, Employment Center and Mixed-Use districts. The update is also intended to implement community goals identified in the General Plan, including but not limited to ensuring orderly development and land use compatibility, housing needs, employment needs, recreational opportunities, commercial growth, and downtown revitalization.

The update will also address noise impacting residential properties and drive-throughs near residential areas.

In addition to addressing new land uses and policies adopted under the new General Plan, the update is intended to be responsive to needs identified by the Planning Division in their daily interactions with residents and businesses. For example, new provisions in the Temporary Use Permit Division will allow existing businesses to expand while applying for planning and building permits. The City's current regulations generally restrict temporary uses to 30 or fewer days.

The update will also include a new format intended to make the Zoning Ordinance more user-friendly by adding subtitles for easy navigation, clarifying or revising language to limit misinterpretation and adding figures to better depict standards. The new Zoning Ordinance will also provide more transparency to the public regarding how City staff and decision makers process and make decisions on development applications.

PUBLIC OUTREACH

On September 12, 2024, the City advertised the zoning update in the Gilroy Dispatch. A dedicated website <https://www.cityofgilroy.org/1004/Zoning-Code-Update> has also been created and will be updated as new preliminary drafts are developed and reviewed by the Planning Commission. Staff also intends to conduct more extensive outreach to the business community, residential stakeholders, and other stakeholders who must comply with the Zoning Code (e.g., development standards and downtown uses). These community meetings will most likely be virtual to supplement the in-person meetings being held by the Planning Commission.

NEXT STEPS

In addition to the planning permit drafts linked in the background section, the Planning Commission will review the remaining planning permit drafts, including but not limited to Historic Resource Permits and Planned Development Permits. Future meetings will introduce preliminary drafts of the more substantive sections of the Zoning Ordinance, including definitions; zoning districts, allowed uses, and development standards; standards applicable to all zones (e.g., noise standards); and standards for specific land uses (e.g., drive-through facilities). Once all preliminary drafts have been reviewed and revised pursuant to Planning Commission direction, a comprehensive draft of the entire ordinance will be brought back to the Commission for a recommendation to the City Council. In the meantime, staff will provide the City Council with periodic updates on the Zoning Ordinance update progress.