



TOWN OF TRUCKEE

COMPREHENSIVE LARGE-SCALE EVACUATION STUDIES

OCTOBER 24, 2025



SHAPING A SMARTER
TRANSPORTATION EXPERIENCE™

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COVER LETTER

OCT 24, 2025



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SUBJECT: TOWN OF TRUCKEE COMPREHENSIVE LARGE-SCALE EVACUATION STUDIES

Dear Members of the Selection Panel,

The Town of Truckee and Tahoe Donner confront a critical operational challenge: evacuating populations from a constrained mountain valley during wildfires requires moving thousands of residents through bottlenecks with limited egress routes and competing traffic flows, all while managing seasonal population swings that make predictive modeling exceptionally difficult. This RFP represents an essential step toward building the data, analysis, and community consensus needed to improve evacuation capacity and outcomes.

We understand that this initiative is multi-faceted: **(1)** to evaluate current evacuation capacity, signage, notification systems, and clearance times; **(2)** to identify community and infrastructure vulnerabilities; and **(3)** to create robust, simulation-based evacuation frameworks with clear recommendations for operational improvements and capital investments. By integrating technical fire and traffic evacuation modeling with meaningful community engagement and input from multiple stakeholders, including CAL FIRE, Truckee Fire Protection District, Nevada County Sheriff's Office, and Caltrans, this project will provide a practical and defensible roadmap for safer evacuations across the Town and Tahoe Donner.

The DKS Team Advantage

DKS's team combines practical evacuation preparedness and transportation planning expertise, with hands-on expertise in the Town of Truckee and other communities in the Sierras. Our team has delivered award-winning evacuation studies, such as the El Dorado County Wildfire Evacuation Study, which supported the County's designation on the Fire Risk Reduction Community List (FRRCL). That project earned the CAL FIRE Director's Award for Partnership, demonstrating our ability to deliver results that not only improve local safety but also strengthen competitive positioning for state and federal funding.

For Truckee and Tahoe Donner, we have strategically partnered with:

- **Mark Thomas** to lead the development of recommended infrastructure improvements and planning level cost estimates grounded by their substantial Town of Truckee corridor and trail project experience;
- **Phillips Consulting Services** to support local fire safe and emergency management planning, supported by Ron Phillips' 40 years of fire industry experience with deep first-hand knowledge of Truckee and the surrounding Sierra Nevada;
- **Fireshed Forestry Solutions** to support fire behavior modeling near and within the WUI of Truckee, along with advisory of wildfire evacuation operations leveraging Chris Water's career long expertise that included CAL FIRE Division Chief and South Lake Tahoe Battalion Chief;
- **FM3 Research** to lead a statistical community survey to support future funding mechanisms that will bring near-term resilience project solutions to better facilitate evacuations within the communities.

Together, this team offers unmatched technical expertise, practical experience with real-world evacuation events, and local/regional insights into transportation constraints, fire hazards, and interagency coordination.

Local and Regional Experience

Our firm's work throughout Northern California, including wildfire evacuation planning and regional transportation modeling, equips us with an acute understanding of the Sierra Nevada's unique geography and evacuation challenges. We are familiar with Truckee's transportation network, the constraints of the connections to I-80, and the operational realities of serving both permanent residents and seasonal populations, both within the Truckee and Tahoe Donner areas, as well as serving two key routes to the Lake Tahoe Basin. Our team is currently coordinating with the Town of Truckee and CAL FIRE as key stakeholders to support wildfire evacuation planning in the northeast Placer County and south Truckee as part of the Placer County Evacuation and Transportation Resilience Study. We will ensure that analysis reflects Truckee's demographics, roadway system, and hazard context, while delivering clear recommendations and cost-benefit-based prioritization of projects.

Commitment to Truckee and Tahoe Donner

DKS recognizes the urgency of this effort. Our approach emphasizes:

- Rigorous traffic and fire behavior modeling to identify and prioritize constraints.
- Integration of qualitative community input through statistical surveys and outreach.
- Development of feasible recommendations—ranging from signage and communication to new evacuation routes and fuels management—that are ready for implementation and funding.
- Clear, separate deliverables tailored to the Town of Truckee and Tahoe Donner Association, while ensuring consistency and efficiency across both studies.

I, Randy Johnson, will serve as Project Manager, ensuring close coordination with the Town, Tahoe Donner, and partner agencies. Jim Damkowitch will serve as Principal-in-Charge and QA/QC Manager. Our work will be conducted primarily from the DKS Oakland and Portland offices, with additional support from our Sacramento office.

We affirm that neither DKS nor our partners have any conflicts of interest relative to the services requested in this RFP. We acknowledge receipt of all addenda and have reviewed the sample agreements provided by the Town of Truckee and Tahoe Donner Association.

We appreciate the opportunity to partner with Truckee and Tahoe Donner on this critical project and look forward to bringing our expertise to support the safety and resilience of your communities. Please contact me at your convenience with any questions or to request further information.

Sincerely,

Randy Johnson

Randy Johnson, PE, PTOE
Project Manager, DKS Associates

John Bosket

John Bosket, PE
Senior Vice President, DKS Associates

ORGANIZATIONAL INFORMATION

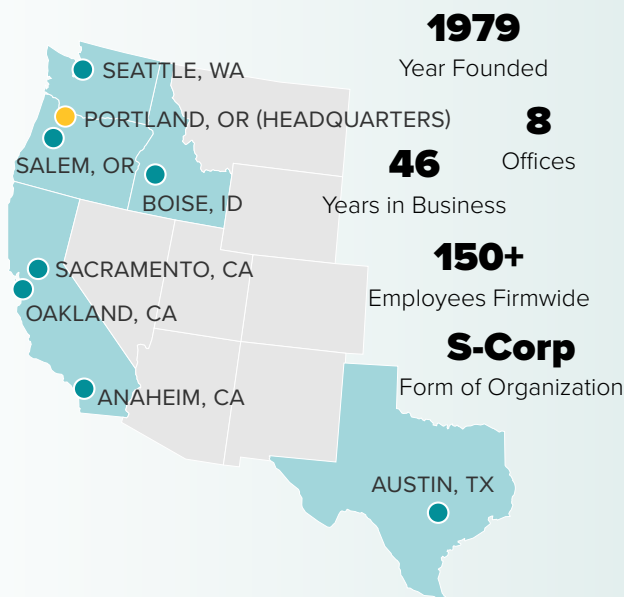
PROJECT TEAM

DKS ASSOCIATES

Founded in 1979, DKS has been in business for over 46 years and provides specialized transportation planning, design, and engineering services to public agencies across the country. Firmwide, our staff includes 150+ professionals with offices in Sacramento, Oakland, and Anaheim, CA; Portland and Salem, OR; Seattle, WA; Boise, ID; and Austin, TX.

Today, our transportation planning services include traffic impact studies, emergency evacuation analysis, traffic analysis, travel demand modeling, traffic simulation, long-range system planning, operations, intersection analysis, report preparation, stakeholder outreach, and public meeting support. We implement state-of-the-art models and data mining to facilitate better transportation decisions, allowing communities to create a plan for the future. DKS brings together complex analysis, findings, and decision-making to successfully prepare transportation plans for regions, cities, corridors, and sub-areas.

DKS brings decades of experience supporting public agencies across California, including communities in the Sierra Nevada, giving our team a clear understanding of regional transportation conditions and priorities. This experience positions us to effectively assess and address the Town’s transportation needs



OUR TEAM AT A GLANCE

600+ COMBINED EXPERTS

70+ YEARS COLLECTIVE EXPERIENCE

COMPREHENSIVE WILDFIRE & EVACUATION EXPERTISE

DATA DRIVEN & COMMUNITY FOCUSED

STATEWIDE REACH, LOCAL INSIGHT

MARK THOMAS

MARK THOMAS is a California-based firm providing transportation planning, civil and structural engineering, strategic funding and grant writing, landscape architecture, surveying, and construction management services. With more than 450 professionals across 11 offices statewide, services for this project will be conducted from the Walnut Creek, Sacramento, Irvine, and Ontario offices, with support available from additional offices if needed.

PHILLIPS CONSULTING SERVICES

Phillips Consulting Services, founded in 2018 by Ron Phillips, provides comprehensive fire and emergency management planning for development teams, landowners, agencies, and builders. With more than 40 years in the fire service, including six years as Fire Chief and Assistant Director of Emergency Management for the City of Folsom, Ron offers deep expertise in wildfire behavior, emergency response, and evacuation strategy. The firm develops fire protection and prevention plans, wildfire risk and behavior analyses, evacuation and access evaluations, defensible space and fuel reduction strategies, and Community Wildfire Protection Plans. His work spans Placer, Sutter, El Dorado, and Nevada Counties, supporting counties, nonprofits, and developers with practical, site-specific fire resilience solutions. Ron also



Placer County Evacuation and Transportation Resilience Virtual Incident Comment Center Workshop in Truckee, CA

leads and facilitates Tabletop Exercises and simulations using tools such as SimTable to model complex wildfire and evacuation scenarios and strengthen regional preparedness.



FIRESHED FORESTRY SOLUTIONS

Fireshed Forestry Solutions, based in Hailey, Idaho, is a wildland fire consultancy firm established in 2021 by owner/principal Chris Waters. With 25 years of experience working for CAL FIRE in all-hazard and wildland fire suppression, incident management, prescribed fire, fire weather program planning, and fire behavior projects, the firm specializes in community resiliency, community wildfire protection plans, evacuation planning, fire weather planning, and wildland fire behavior modeling services. Chris has extensive experience working in the Sierras and at one time was the CAL FIRE Battalion Chief for South Lake Tahoe having supervised wildland fire incident management operations and wildland fire related planning in the Tahoe Basin. Chris will be the only one working on this portion of the project.

As an operational Chief Officer for CAL FIRE, **Chris has real world experience managing evacuation operations for numerous wildland fires and various all-hazard incidents**, some of which are listed below.

- 2017 – Oroville Spillway, Butte County
- 2017 – Napa Lightning Complex, Napa and Sonoma Counties
- 2018 – Delta Fire, Shasta County

- 2019 – Kincade Fire, Sonoma County
- 2020 - LNU Lightning Complex, Sonoma, Lake, Napa, Solano, Colusa, Yolo, and Marin Counties.
- 2020 – Zogg Fire, Shasta County
- 2020 – West Castle, Tulare County
- 2021 – Dixie Fire, Butte, Lassen, and Modoc Counties



FM3 RESEARCH

Fairbank, Maslin, Maullin, Metz & Associates (FM3) is a California-based

firm that has conducted public policy opinion research since 1981. The firm provides data-driven insights to help policymakers understand public attitudes and make informed decisions. For this project, FM3 Partner Dr. Richard Bernard and Senior Vice President Adam Sonenshein will lead survey design, data analysis, and presentation of results. FM3's in-house Statistical Analysis and Graphics teams support all phases of research.

QUALIFICATIONS & EXPERTISE

TEAM ORGANIZATION

Our team has a strong record of collaboration on evacuation and resilience projects. Additional staff may be called upon if required. We have provided resumes for key staff in the Appendix, detailing their experience, qualifications, and similar work performed.



Key:

- ① DKS Associates Staff
- ② Phillips Consulting Services Staff
- ③ Mark Thomas Staff
- ④ FM3 Staff
- ⑤ Fire and Forestry Staff
- Bold**-Key Staff



Evacuation/ Transportation Analysis & Modeling	Fire Modeling / Emergency Management	Community Outreach	Infrastructure Concepts / Cost Estimating
<ul style="list-style-type: none"> ① Alex Haag, AICP Evacuation Analysis Lead ① Aaron Berger Modeling Lead ① Emily D'Antonio Evacuation Analysis Support ① Ryan Peterson GIS Lead 	<ul style="list-style-type: none"> ② Ron Phillips Fire Safe / Emergency Management Planning ⑤ Chris Waters Fire Behavior Modeling / Evacuation Subject Matter Expert 	<ul style="list-style-type: none"> ① Kendall Flint Community Engagement Lead ① Elise Brockett Community Engagement ① Melissa Abadie, AIGA PD Visual Communications Lead ① Kathryn Miller Visual Communications ④ Dr. Richard Bernard Opinion Research Co-Lead ④ Adam Sonenshein Opinion Research Co-Lead 	<ul style="list-style-type: none"> ③ Stephen Decker Civil Lead ③ Jae Riddle, PTP Civil Support ③ Jonathan Hernandez, PE Civil Support ③ Serena Straub, EIT Civil Support

KEY STAFF EXPERIENCE

The following section summarizes key staff qualifications and experience. Comprehensive resumes are included in the Appendix.



RANDY JOHNSON, PE, PTOE | PROJECT MANAGER/EVACUATION PLANNING LEAD

Randy has 22 years of experience in traffic engineering, operations, and resilience planning. A nationally recognized expert in multi-resolution modeling and dynamic traffic assignment, he brings a strong command of travel demand modeling, roundabout and signal timing analysis, evacuation, and alternative intersection design. As a former wildland firefighter, Randy offers unique insight into fire behavior and evacuation risk, making him especially effective in bridging transportation planning with emergency response. Randy will support this project on his successful foundation of evacuation planning studies in the Sierra Nevada.

As Project Manager, Randy will be the point of contact and lead all aspects of project delivery, including coordination with Town staff, partner agencies, and subconsultants to ensure the development of a technically sound and operationally effective evacuation plan.



JIM DAMKOWITCH | PRINCIPAL IN CHARGE/ QA/QC

Jim brings over 30 years of experience in multimodal transportation planning, corridor studies, evacuation planning, and travel demand modeling. He has led projects for Caltrans, MPOs, and local agencies, including PSRs, PA-EDs, traffic mitigation, safety, and air quality studies. Jim was a transportation planner for the Tahoe Regional Planning Agency (TRPA) in the 1990's and has supported TRPA on many projects since becoming a consultant in 2005. He has led transportation projects in Placer County El Dorado County, and Nevada County including its 2025 Regional Transportation Plan.

Recent projects include the Greater Placerville Wildfire Evacuation Preparedness, Community Safety, and Resiliency Study; SB 99 and AB 747 compliance analyses for Lompoc and Bakersfield; and the ongoing PCTPA Placer County Evacuation and Transportation Resilience Study. As Principal-in-Charge and QA/QC Manager, Jim leads senior oversight, ensures compliance with technical and regulatory standards, and facilitates interagency coordination to develop actionable, resilient transportation plans.



ALEX HAAG, AICP, RSP1 | DEPUTY PM, EVACUATION ANALYSIS LEAD

Alex is a transportation planner with expertise in multimodal planning, transportation resilience, and community engagement. She brings experience in corridor studies, grant strategy, resilience, and electromobility planning. As Deputy Project Manager, Alex will coordinate project activities, facilitate communication among team members, stakeholders, and the client, and support evacuation modeling and traffic analysis.



KENDALL FLINT | STAKEHOLDER/ COMMUNITY ENGAGEMENT LEAD

Kendall brings over 30 years of experience in marketing, advertising, and public engagement. She has led communication, economic development, and outreach campaigns for public and private agencies.

Before joining the public sector, Kendall owned a marketing and film production firm serving entertainment, travel, and automotive clients. At PMC, she built the firm's public affairs division and strategic planning program, later establishing similar practices at Regional Government Services. She has managed more than 20 outreach programs supporting 218 compliance, including

Transportation Impact Mitigation Fee efforts for San Joaquin and El Dorado Counties and the Cities of Elk Grove and Rancho Cordova.



STEPHEN DECKER | MARK THOMAS - CIVIL LEAD

Stephen brings 25 years of experience leading multimodal transportation and corridor plans across California and the western U.S. His expertise spans engineering, environmental and climate adaptation, safety, and emergency evacuation analysis. He has delivered over 40 alternatives analyses evaluating climate, equity, economic, and mobility outcomes for multimodal and roadway corridors. Stephen provides leadership in planning, traffic and economic analysis, demand forecasting, outreach, and environmental and PEL studies focused on resilient, performance-based transportation solutions.



RON PHILLIPS | WILDFIRE AND EMERGENCY OPERATIONS SUBJECT MATTER EXPERT

With over 40 years of fire service experience in California, Ron has served in a variety of fire operations and administrative positions. As a consultant to a number of developers, builders, and communities over the last eight years, Ron has provided support and guidance on wildfire and other local hazard issues on over 25 projects in both new and existing communities in Placer, Nevada, Sutter, and El Dorado Counties. Ron will be leading coordination on emergency management and evacuation operations planning.



CHRIS WATERS | FIRESHED FORESTRY SOLUTIONS - FIRE MODELING

Chris Waters brings over 20 years of experience with CAL FIRE in all-hazard emergency management, specializing in evacuation planning and operations. He has served as Fire Behavior Analyst, Operations Chief, and Incident Commander, leading evacuation planning and response during major wildfire incidents.

Combining technical fire behavior modeling expertise with extensive field experience, Chris provides analytical support for real-time evacuation decision-making. A certified Fire Behavior Analyst, he continues to work on major California fires and serves as a technical expert with Technosylva, applying the Wildfire Analyst tool suite to support utility and emergency operations.



**DR. RICHARD BERNARD, PARTNER,
OPINION RESEARCH CO-LEAD |
FM3**

Dr. Richard Bernard is a leading California public opinion researcher specializing in issues affecting public agencies and their services. He advises cities, counties, school districts, nonprofits, and others on public sentiment around topics such as public safety, finance, housing, water, and transportation.

His research has guided successful ballot measures raising billions for transportation, public safety, schools, clean water, parks, and libraries—including Los Angeles County’s Measures W, M, and A, the largest local funding measures of their kind in U.S. history.



RYAN PETERSON | GIS LEAD

Ryan is a GIS specialist with experience supporting public agency projects using both ESRI and QGIS platforms. For this project, he will manage spatial data, conduct analyses such as network-based buffering, and produce GIS deliverables and web-based maps to support evacuation zone planning and visualization.



**ELISE BROCKETT | STAKEHOLDER/
COMMUNITY ENGAGEMENT
SUPPORT**

Elise is a strategic communications specialist with over four years of experience leading outreach for infrastructure and land use projects across Northern California. She excels in crafting effective messaging, facilitating workshops, and managing public engagement Campaigns. Elise will help coordinate agency and community input, support public-facing deliverables, and ensure the plan reflects local priorities and whole community planning standards. Prior to joining DKS, Elise also worked as a Forestry Aide with CalFire where she provided education to the public on environmental stewardship, resource management, and wildfire prevention and land management practices.



**MELISSA ABADIE | VISUAL
COMMUNICATIONS LEAD**

Melissa leads DKS’s Creative Services Group with over 25 years of experience in strategic branding and visual design for public agencies. As Visual Communications Lead, she will oversee the design of clear, accessible, and professional materials, ensuring technical content, maps, and graphics are visually engaging and aligned with project equity and communication goals.

WORK SAMPLES

EL DORADO COUNTY TRANSPORTATION COMMISSION (EDCTC) GREATER PLACERVILLE WILDFIRE PLAN

[Link to Project Sample](#)

DKS developed a Wildfire Evacuation Preparedness and Resiliency Plan for the Greater Placerville Area, identifying infrastructure vulnerabilities, hazards, and at-risk communities. Working with fire and emergency agencies, the team modeled wildfire scenarios, assessed evacuation plans, and pinpointed bottlenecks. Recommendations included operational strategies and infrastructure improvements, such as intelligent signals and capacity upgrades. This is to support safe evacuations and reduce responder burden. The plan strengthens regional coordination and addresses the needs of vulnerable populations.

Contract Amount: \$322,887

Date of Services: 11/2021 – 03/2024

Key Staff: Randy Johnson (PM) | Jim Damkowitz, Kendall Flint, Melissa Abadie (Key Staff) | Ron Phillips (Agency Stakeholder)

EL DORADO COUNTY HAZARD MITIGATION PLAN

[Link to Project Sample](#)

The study evaluated evacuation safety and viability for high-hazard communities in El Dorado County, aligning with AB 747 and AB 1409 to inform updates to the County’s Multi-Jurisdictional Hazard Mitigation Plan and Safety Element. DKS worked with CAL FIRE, El Dorado County Fire, and County OES to define evacuation scenarios and parameters. Using dynamic traffic assignment (DTA) modeling and qualitative assessment, the team identified clearance times, bottlenecks, and recommended operational and infrastructure improvements to enhance evacuation performance.

Contract Amount: \$85,000

Date of Services: 3/2024 – 06/2024

Key Staff: Randy Johnson (PM)

PLACER COUNTY TRANSPORTATION PLANNING AGENCY - PLACER COUNTY EVACUATION AND TRANSPORTATION RESILIENCE STUDY

[Link to Project Outreach Survey](#)

[Link to Project Website](#)

This study aims to enhance emergency evacuation and the resilience of Placer County’s transportation network during wildfires, floods, and extreme weather. It identifies vulnerable communities, assesses disaster risks, and recommends strategies to protect residents. Led by PCTPA with the Placer County Office of Emergency Services, the project’s first phase focuses on existing conditions and public outreach through a website, branding, surveys, and events. Project Manager Randy Johnson is developing evacuation scenarios and has led workshops with local agencies to define disaster parameters. Over the next year, the project will advance technical analyses, recommend infrastructure and operational strategies, continue stakeholder engagement, and prepare an implementation plan.

Contract Amount: \$600,000

Date of Services: 7/2025 – 12/2026 (scheduled)

Key Staff: Randy Johnson (PM) | Jim Damkowitch, Alex Haag, Emily D’Antonio, Elise Brockett (Key Staff) | Ron Phillips, Stephen Decker (subs)

TAHOE TRUCKEE WALDORF SCHOOL EMERGENCY RESPONSE AND EVACUATION PLAN PHILLIPS CONSULTING SERVICES

Project Sample in attachment.

Tahoe Truckee Waldorf School is a private K-12 education facility located in Truckee, CA. The school is increasing

its student population significantly. The Town of Truckee has required the school to prepare a comprehensive emergency response and evacuation plan to deal with all-hazards that may require the school to evacuate while it is in session. Phillips Consulting Services prepared a plan that includes a wide-ranging wildfire vulnerability assessment, qualitative pre-evacuation planning analysis, fire resistive building construction strategies, and fuel modification efforts for the Project.

Dates: 1/2023 – Present

Contact Amount: \$3,500

Key Staff: Ron Phillips

GENERATIONS AT GREEN VALLEY WUI FIRE PROTECTION PLAN PHILLIPS CONSULTING SERVICES

Project Sample in attachment.


Generations at Green Valley is a 280-acre development project located in the unincorporated area of El Dorado County north of the El Dorado Hills community region. The project will contain 379 residential units and a variety of other land uses. The project is located within a Very-High Fire Hazard Severity Zone (VHFHSZ) for the threat of a catastrophic wildfire. Phillips Consulting Services provided a comprehensive Wildland Urban Interface (WUI) Fire Protection Plan for use by the project to reduce the wildfire risk to the residents and visitors of the future community. The plan includes a wide-ranging wildfire vulnerability assessment, qualitative pre-evacuation planning analysis, fire resistive building construction strategies, and fuel modification efforts in open space areas of the project.












Dates: 1/2024 – Present

Contact Amount: \$5,000

Key Staff: Ron Phillips

REFERENCES

Firm Reference	Project Title	Contact Name, Phone, Email	Scope/description, current status, cost, dates of services
  	Placer County Evacuation and Transportation Resiliency Study	Cory Peterson, Project Manager Placer County Transportation Planning Agency 530.823.4032 cpeterson@pctpa.net	Information can be found in the work sample section
	El Dorado County Transportation Commission (EDCTC) Greater Placerville Wildfire Plan Evacuation Study	Lt. Troy Morton Emergency Services Manager mortont@edso.org 530.642.4705	Information can be found in the work sample section

Firm Reference	Project Title	Contact Name, Phone, Email	Scope/description, current status, cost, dates of services
	EDCTC Greater Placerville Wildfire Plan	Woodrow Deloria Executive Director wdeloria@edctc.org 530.642.5265	Information can be found in the work sample section
	Friends of Tahoe Truck Waldorf School Expansion	Jonathan Jung, Project Manager, Friends of Tahoe Truckee Waldorf 510.847.9068 Jonathan.jung@gmail.com	Information can be found in the work sample section
	Generations at Green Valley Wui Fire Protection Plan	Green Valley Road Benefits LLC, C/O TK Consulting, Jaren Nuzman 949.285.7730 jnuzman@tkcteam.com	Information can be found in the work sample section
	Climate Change Adaptation Mitigation Study: Kern Area Regional Goods Movement Operations (KARGO)	Karl Davisson Regional Planner Kern Council of Governments 661.635.2919 kdavisson@kerncog.org	Period of Performance: 2022 - 2023 Fee: \$2,899,485 Leading the third phase of the KARGO initiative, building on the work from earlier studies. This phase identifies climate-vulnerable areas in Kern County and advances roadway and railway projects to 30% design, incorporating stakeholder input to strengthen climate resilience and goods-movement infrastructure.
	Emergency Evacuation and Access Needs Assessment Plan	Melissa Raggio Executive Director Calaveras Council of Governments 209.754.2094 mraggio@calacog.org	Period of Performance: 2022 - Ongoing Fee: \$418,954 Leading Phase 3 of the KARGO initiative to identify climate-vulnerable areas in Kern County and advance roadway and rail projects to 30% design, integrating stakeholder input to enhance climate resilience and goods movement.
	Hawaii Electric Company Wildfire Mitigation Plan	Tim Metzger, Fire Management Specialist and Consultant, Firescape Solutions 801.564.8335	Period of Performance: 10/2025 Fee: \$6,000 Fire Behavior Analyst
	Fire Behavior Analytical Services and Incident Fire Behavior Modeling Services for California Electric Utilities	Scott Purdy, Meteorologist, Technosylva 732.814.5479	Period of Performance: 6/2022-Ongoing Fee: \$30,000 (2025) Fire Behavior Analytical Services for California Electric Utilities and Fire Behavior Analyst
	Texas New Mexico Power - Fire Danger Operating Plan and Wildfire Mitigation Plan Review,	Randy Lyle, Wildfire Mitigation Strategies 619.964.7460	Period of Performance: 9/2025-Ongoing Fee: \$6,000 Fire Danger Analysis and Wildfire Mitigation Planning Support for Utility Operations
	Rancho Santa Fe Association Member Satisfaction and Priorities	Dominique Albrecht, Chief Executive Officer, 858.756.1174 Dominique@RSFAssociation.org,	Period of Performance: 1/2022-7/2022 Fee: \$30,000 Conducted an online survey among members of the Rancho Santa Fe Association to explore residents' attitudes about the Association and community issues and amenities, as well as their priorities for what the Association should focus on.
	South Lake Tahoe, Opinions on Cannabis Policies	Heather Stroud, City Attorney 530.542.6046 hstroud@cityofslt.us,	Period of Performance: 1/2022-3/2022 Fee: \$33,500 Conducted a variety of research for South Lake Tahoe in the past several years. In 2022, FM3 conducted a dual-mode (telephone and online) survey to assess voters' attitudes toward what ultimately became Measure G (2022), a successful cannabis business tax.
	UCLA LA Wildfire Evacuee Survey	Madeline Brozen Deputy Director, Lewis Center for Regional Policy Studies 310.562.7356 mbrozen@luskin.ucla.edu,	Period of Performance: 5/2025-7/2025 Fee: \$36,750 FM3 recently consulted on and provided data collection services for UCLA's Lewis Center for Regional Policy Studies. The survey explored the evacuation experiences of residents in the Palisades and Altadena areas during the wildfires earlier this year.

PROJECT APPROACH AND WORK SCHEDULE

PROJECT UNDERSTANDING

The Town of Truckee and Tahoe Donner Association (TDA) face evacuation challenges driven by wildfire risk, complex terrain, and population variability. With the entire Town classified within moderate to very high fire hazard severity zones and designated as Wildland Urban Interface, evacuation planning must address fast-moving wildfires, limited egress routes, steep grades, narrow roads, and weather conditions that reduce capacity or block access.

Population dynamics compound these challenges. Approximately 50% of Truckee's units and 85% of TDA's 6,500 residences are second homes, meaning many residents and visitors may be unfamiliar with evacuation routes. Additionally, 10.3% of Truckee households lack vehicle access. Potential disruptions such as downed trees, fire-damaged infrastructure, and Public Safety Power Shutoffs further complicate mobility. TDA's two main access points (Northwoods Blvd. and Alder Creek Rd.) create additional bottleneck concerns given the number of units with limited egress routes.

Success requires close collaboration among the Town, TDA, TFPD, NCSO, CAL FIRE, CHP, and Caltrans. Our team understands these agencies' operational realities and has delivered wildfire evacuation studies in similar mountain settings with direct experience coordinating multi-discipline stakeholders. Chris Waters (CAL FIRE Division Chief, South Lake Tahoe Battalion Chief) and Ron Phillips (40+ years fire operations, Truckee/Tahoe Basin experience) bring direct evacuation management experience ensuring our modeling translates into procedures that work under actual emergency conditions, not just theoretical scenarios.

OUR APPROACH

Fire Behavior and Traffic Modeling. Model evacuation scenarios for high-priority areas using fire behavior simulation and traffic analysis. Leverage our adjacent Sierra Nevada studies (El Dorado County, ongoing Placer County with the Town and CAL FIRE) to apply validated methodologies for constrained mountain communities with limited access and seasonal population swings.

Community Engagement. Deploy statistically rigorous surveys (FM3 Research) to measure community support for mitigation measures and identify constraints not apparent in modeling, including accessibility barriers, communication gaps, and vulnerable populations. Field surveys and stakeholder feedback inform both technical priorities and funding mechanism development for TDA.



Key route along Alder Drive with narrow lanes, heavy road-side fuels and overhead utilities across road.

Implementable Recommendations. Develop ranked recommendations across signage, evacuation routes, vegetation management, refuge areas, and communication platforms with cost estimates, timelines, and funding sources. Prioritize using cost-benefit analysis balanced with community preference and operational feasibility. Leverage Mark Thomas Town of Truckee project experience to ensure clear, actionable procedures.

Coordination and Deliverables. Deliver two separate studies to the Town and Tahoe Donner Association, with shared methodology ensuring regional consistency while addressing each entity's specific needs.

PROJECT MANAGEMENT & COORDINATION

Project Manager Randy Johnson will serve as the Town's primary point of contact, ensuring consistent communication and decision-making throughout the study. Our team will maintain regular coordination with Town and TDA staff through:

- Monthly progress video calls
- Bi-monthly written progress reports
- Two in-person stakeholder check-in meetings
- Immediate notification of issues requiring decisions

All deliverables will undergo technical review, peer review, and professional editing before submittal. We will track all comments in a response matrix and incorporate accepted revisions while maintaining document quality and consistency.

TECHNICAL APPROACH BY TASK

Our team acknowledges the following technical approach as separate, but parallel efforts for the Town of Truckee and Tahoe Donner. The following technical approach applies to both efforts unless otherwise noted, with parallel task execution and separate final deliverables.

TASK 1: PROJECT INITIATION AND KICK-OFF

DKS will participate in a joint in-person kickoff with the Town, TDA, and key stakeholders to confirm project objectives, study boundaries, communication protocols, and deliverable milestones.

Before the meeting, DKS will review the Town's Evacuation Annex, Hazard Mitigation Plan, and CWPPs to identify data sources, key questions, and gaps in existing evacuation capacity metrics (e.g., traffic control points, AFN resources, communication systems, shelter logistics).

DKS will confirm project roles, decision-making, data access, coordination protocols, and key assumptions, including seasonal and AFN considerations. The kickoff will define where datasets, methods, and outreach tools align or differ between studies and list distinct deliverables. DKS will document meeting outcomes in a Kickoff Summary Memo outlining decisions, action items, and the schedule.

Deliverables: Meeting agenda, presentation materials, and summary memo.

TASK 2: BACKGROUND RESEARCH AND DATA COLLECTION

Background review and data collection under Task 2 will establish a comprehensive technical foundation for both evacuation studies.

Document Review and Data Inventory. DKS will catalog and cross-reference Town and regional plans, including the Evacuation Annex (2025), 2040 General Plan, Safety and Noise Element, Nevada County MJHMP, and CWPPs. Population, vehicle ownership, roadway capacity, critical facilities, AFN populations, and agency procedures will be integrated into a unified database. DKS will coordinate with Town staff and partner agencies (TFPD, CAL FIRE, CHP, Caltrans, NCSO) to verify and supplement datasets on signage, alert systems, alternate routes, and single-egress areas using CAL FIRE's Subdivision Review Program and AB 2911 assessments. This database will serve as a central input for later evacuation modeling (Task 4.6), and outreach mapping (Task 5) tasks.

Coordination and Community Considerations. DKS will document AFN, animal, and school evacuation needs and summarize mutual-aid and communication protocols

using the Town's Whole Community framework. Existing materials will be mapped by Evacuation Management Zone to support modeling. A compliance matrix will summarize consistency with AB 747, AB 1409, and SB 99. DKS will review prior TDA evacuation studies to confirm data integration points and avoid duplicating analyses.

Deliverables:

- Draft Document and Data Inventory chapter for inclusion in the Final Studies
- GIS database of spatial data mapped by EMZ

TASK 3: SCOPE REFINEMENT AND WORK PLAN UPDATE

DKS will synthesize Tasks 1 and 2 findings into a summary identifying key findings, data gaps, and potential scope adjustments. Based on this review, DKS will outline candidate modeling scenarios and, if needed, propose adjustments to maintain the approved budget. A coordination meeting with the Town and TDA will confirm assumptions, schedule, and next steps.

Deliverables:

- Revised scope of work summary document
- Coordination meeting materials (agenda, presentation materials, meeting notes)

TASK 4: FIRE BEHAVIOR AND TRAFFIC ANALYSIS

Task 4 represents the analytical core of both studies and directly depends on the data and scope refinements from Tasks 2 and 3.

4.1 DEMOGRAPHICS ASSESSMENT

DKS will estimate population and vehicle demand within the defined EMZs for Truckee and Tahoe Donner using available Census, assessor, employment, and short-term rental datasets. The analysis will quantify resident, worker, and visitor populations for five representative temporal scenarios (summer/winter, weekday/weekend, and shoulder season).

AFN populations will be mapped using local and state data, incorporating age, disability, language, and income indicators. Critical facilities will be inventoried and cross-checked with the Nevada County HMP and Truckee FPD CWPP. Results will include zone-level tables and GIS layers suitable for modeling and targeted outreach.

Deliverables:

- Tabulated and spatial (GIS) database of demographic data for Truckee and Tahoe Donner
- Summary presentation of demographic assessment

- Draft chapter for inclusion in final study documents

4.2 EVACUATION ZONE ASSESSMENT AND REFINEMENT

DKS will review existing Genasys EMZs to assess alignment with topography, network constraints, population clusters, wildfire risk, and key facilities. Where zones misalign with operational realities, we will propose refinements supporting phased evacuation, route capacity balance, and recognizable boundaries.

Using disaggregated regional model zones (i.e., travel model traffic analysis zones), we will enable fine-grained clearance-time modeling consistent with Genasys standards. Proposed refinements will be validated through simulation and agency review.

Deliverables:

- Updated EMZ shapefiles and zone profiles summarizing boundaries, route characteristics, and AFN data.

4.3 ASSESSMENT OF CURRENT EVACUATION INFRASTRUCTURE

DKS will assess evacuation infrastructure for Truckee and TDA, documenting conditions, gaps, and opportunities for improvement across signage, notification systems, routes, and traffic-management resources. Using GIS and aerial imagery, we will integrate existing datasets into a unified database, catalog key assets, and verify findings through limited field review. The assessment will include:

- Existing communication systems to understand their coverage, redundancy, and coordination across agencies.
- Key roadway characteristics, constraints, and bottlenecks to assess how routes function under emergency conditions.
- Available staff, staging areas, and equipment that support traffic management and evacuation operations.
- Potential vulnerabilities such as limited egress routes such as limited egress routes both in terms of number of access points as well as vehicle or person per travel lane (i.e., SB 99), and vulnerable infrastructure assets susceptible to fire or flood impacts.
- Coordination and communication practices among participating emergency and transportation partners.

Deliverables:

- Infrastructure assessment summary presentation
- GIS inventory documenting existing conditions across signage, notification systems, routes, traffic management resources

- Draft infrastructure assessment chapters for inclusion in final study documents

4.4 FIRE SCENARIO DEVELOPMENT AND FIRE MODELLING

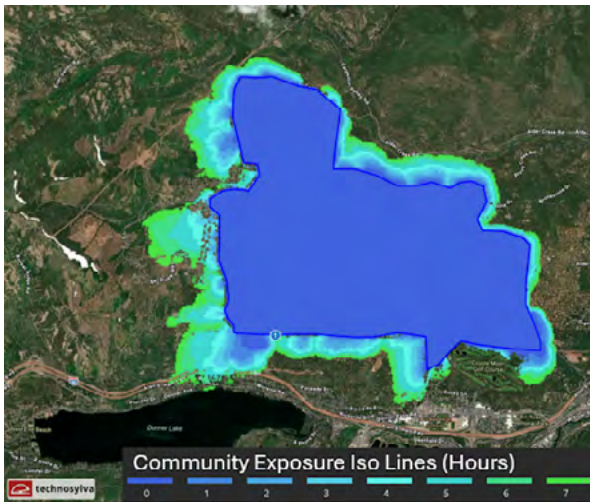
Led by Fireshed Forestry Solutions, the first phase of the evacuation planning effort involves assessing and analyzing the potential impact of wildland fire behavior in Truckee and TDA. The critical component for ensuring resident safety is developing a fire behavior modeling scenario that captures potential fire intensity and the timing needed to initiate safe and efficient evacuation operations. The following project outline details the specific tasks required to develop the initial fire behavior inputs for a comprehensive evacuation analysis.

Project Tasks for Evacuation Planning: Fire Behavior Analysis

- Acquire GIS layers, including fuels, weather, topography, climatology, critical infrastructure, population centers, large fire and historic ignition occurrence data.
- Analyze historic fire occurrence and large fire data to identify local ignition patterns and fire growth history.
- Perform a comprehensive climatology analysis to establish critical fire weather thresholds for fire behavior analytics.
- Evaluate local anomalous fire weather scenarios and their impacts on fire behavior.
- Conduct a thorough assessment of wildland fuels in the surrounding area and the community fuel characteristics within Truckee and TDA.
- Conduct real-time fire spread modeling scenarios during Virtual Incident Command Center Workshop (Task 4.5) with critical stakeholders.
- Generate fire spread modeling outputs, including



Fire spread modeling using Technosylva Wildfire Analyst



Example TDA Fire Exposure modeling under a moderate SW wind scenario using Technosylva Wildfire Analyst

projections under multiple fire weather scenarios using Technosylva WildFire Analyst, to develop timing profiles for evacuation planning.

- Produce mapping and data products for exposure thresholds, minimum travel time, arrival time, flow path data, and fire spread modeling scenarios to determine evacuation timing thresholds.

Deliverables:

- Digital Geospatial WildFire Analyst Fire Behavior Analysis Outputs
- Draft Fire Modeling Analysis chapter for inclusion in final study documents

4.5 EVACUATION SCENARIO DEVELOPMENT AND VIRTUAL INCIDENT COMMAND CENTER WORKSHOP

Using outputs from the fire modeling task, corresponding evacuation scenarios will be defined to guide this effort, Randy Johnson and Ron Phillips will lead a Virtual Incident Command Center Workshop with representatives from emergency management, law enforcement, fire agencies, and other relevant stakeholders. Participants will review fire scenarios and fire modeling results and progression timelines to collaboratively determine evacuation scenarios based on:

- Disaster event type and fire scenarios (origin, spread direction and rate)
- Time variables (season, day of week, time of day)
- Evacuation zone size and progression
- Population groups present
- Emergency evacuation strategies (route closures, contra-flow, traffic control, ITS operations)
- Human behavior (departure timing by population group, destinations)
- Future development
- Compounding events (construction, incidents)

The Virtual Incident Command Center Workshop will define key assumptions and establish up to five evacuation scenarios, each with up to four operational alternatives. The process will also strengthen interagency coordination, build consensus around analysis inputs, and serve as a practical preparedness exercise for partners who rarely collaborate outside training or real emergencies. These scenarios will directly inform the evacuation modeling task (Task 4.6).

Deliverables:

- Fire Scenario Summary Presentation
- Draft Fire Scenario chapter for inclusion in final study documents



Placer County Virtual Incident Command Center Workshop in Truckee

4.6 EVACUATION SCENARIO MODELING APPROACH

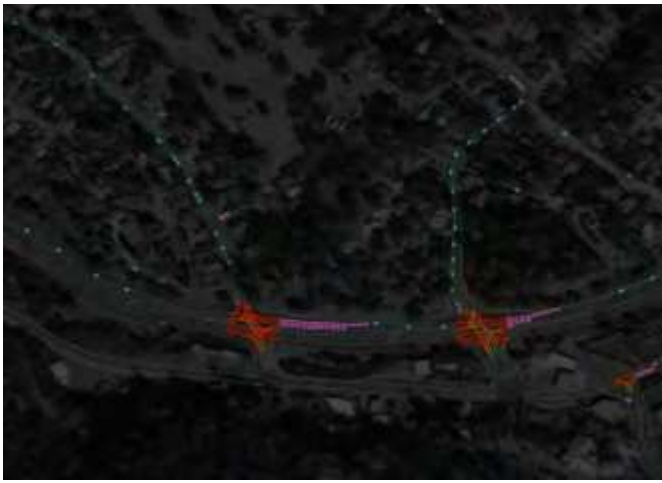
To evaluate the capacity, safety, and viability of evacuation routes under varying emergency conditions, the team will apply a Simulation-Based Dynamic Traffic Assignment (SBA/DTA) model in PTV Visum. The model quantifies clearance times, identifies bottlenecks, and tests operational strategies to improve evacuation performance.

Modeling Platform and Capabilities. Visum’s SBA framework captures the time-dependent traffic dynamics needed for realistic evacuation analysis. Using 10-minute simulation intervals, can reflect traffic build-up, adaptive routing, and congestion dissipation. The platform integrates with regional travel-demand models and big-data sources, supports time-variable conditions (signal-timing changes, closures, manual control), and produces visual outputs (videos and heatmaps) for rapid scenario testing.

This modeling approach meets AB 747 and AB 1409 requirements and has been validated in wildfire evacuation studies for El Dorado, Placer, and Sacramento Counties. Calibration procedures, adjusted speeds on steep or smoky routes, merge saturation, and driver-behavior parameters, will be fully documented for transparency and defensibility.

Model Inputs. The Evacuation Scenario Modeling is based on the following inputs:

- **Transportation Network.** A base network will include local streets, posted speeds, intersection controls,



Visum SBA Evacuation Model Simulation in Placerville, CA

and lane configurations. Model extents will encompass evacuation and warning zones, downstream routes, and key discharge points where traffic dissipates or reaches stable flow. These boundaries will be confirmed through coordination with project partners during scenario development.

- **Population and Vehicle Demand Loading.** For each scenario, population and vehicle loading will vary by season, day of week, and time of day. Demand estimates will use demographic, employment, and visitor data integrated with regional travel models and other available datasets.
- **Evacuation Behavior Modeling.** Behavioral assumptions will reflect departure timing patterns, route choice, and destination selection based on empirical data and stakeholder input gathered through workshops and previous studies.

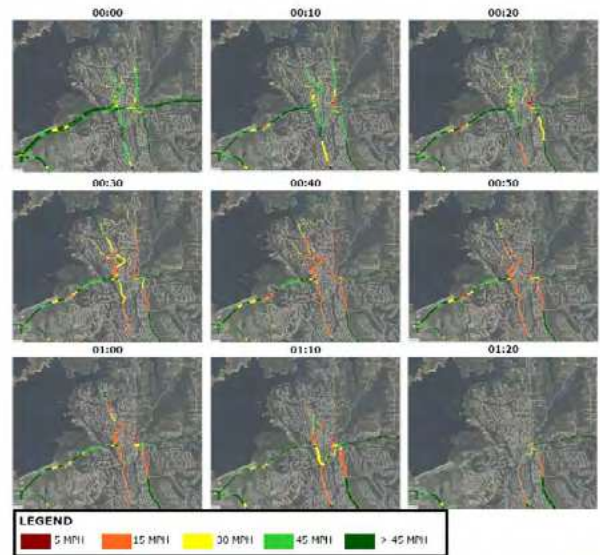
Scenario Testing. For each priority scenario (up to 5), we will base scenarios with current infrastructure, alternative strategies such as phased evacuations, traffic control operations, and mitigation testing will be modeled.

Model Outputs and Visualizations. The evacuation model will result in key performance measures including Evacuation Time Estimates, the time from evacuation order to when the last vehicle leaves the zone, and Study Area Evacuation Travel Time Estimates capturing downstream bottlenecks. Visual simulations, videos, and heat maps communicate evacuation progression, allowing the team to visually identify deficiencies, develop infrastructure or operational strategies, and test mitigation scenarios.

TDA-Specific Analysis. We will provide TDA-specific infrastructure assessment including analysis of private and public access roads, gate procedures, and dual evacuation routes. Member survey findings (Task 5) will be integrated into recommendations regarding communication systems and infrastructure priorities within the TDA Evacuation Study.

Deliverables:

- Community Identified Evacuation Constraints Summary



Lakehills evacuation heatmap time series plot.

Presentation

- Draft Community Identified Evacuation Constraints chapter and appendix for inclusion in final study documents

4.7 COMMUNITY-IDENTIFIED EVACUATION CONSTRAINTS

We will gather and analyze evacuation constraints identified by community members (via Task 5 Outreach) and local staff to complement technical modeling. Local knowledge reveals challenges beyond modeling, including vegetation encroachment, access issues, seasonal problems, and behavioral factors.

We will collect input through online surveys for residents and TDA members (via Task 5 Outreach), plus targeted interviews with emergency management officials, public works staff, fire personnel, law enforcement, and community representatives. Each constraint will be documented with location, type, description, and severity, then mapped in GIS. High-priority constraints will receive field verification through site visits. As part of Task 4 we will compare community-identified constraints with model results to identify alignment, single-method identification, and discrepancies requiring investigation.

Deliverables:

- Analysis Results summary presentations
- Draft Analysis Summary chapters and technical appendix for inclusion in final study documents

TASK 4.8: RECOMMENDED ACTIONS AND IMPLEMENTATION STRATEGY

The DKS team, led by partner Mark Thomas, will translate modeling, fire behavior, traffic analysis, and community feedback findings into a clear, prioritized set of recommendations to enhance evacuation safety, capacity, and coordination for both the Town of Truckee and TDA. Using the validated analyses from earlier tasks, the team

will identify infrastructure, operational, and procedural measures to address constraints and vulnerabilities identified throughout the study.

- Purpose and benefit (how it addresses modeled or community-identified constraints);
- Action type (infrastructure, operational, communication, or policy);
- Agency responsibility for implementation;
- Relative priority based on effectiveness, feasibility, and community benefit; and
- Planning-level cost range (low, moderate, high) to distinguish order-of-magnitude investment needs.

The team will also develop a cost-benefit analysis (BCA) framework consistent with Caltrans, FHWA, and FEMA guidance. This will quantify the economic and safety benefits of the highest-priority projects—such as reduced evacuation times, improved emergency access, and avoided losses from wildfire and other hazards—compared to a no-action scenario. The resulting prioritization will support a funding and implementation strategy that aligns recommended projects with applicable state and federal grant programs (e.g., PROTECT, BRIC, LTCAP, RRGP).

Recommendations will be summarized in tables and GIS-based maps illustrating their geographic distribution and relationship to evacuation zones. Together, these products will form a cohesive, actionable Implementation Strategy to guide near-, mid-, and long-term investments in Truckee's evacuation and climate-resilience network.

Deliverables:

- Spatial (GIS) Dataset of Recommendations
- Recommendations Summary Presentation
- Draft Recommended Actions and Implementation Strategy chapter and appendix for inclusion in final study documents

4.9 EVACUATION ANNEX REVIEW (TOWN-SPECIFIC COMPONENT)

The DKS team will review the Town's Evacuation Annex under the Emergency Operations Plan for consistency with state mandates (AB 747, AB 1409, SB 99), the Town's Safety Element, and established best practices. The review will assess plan organization, clarity of roles and responsibilities, coordination procedures among responding agencies, and integration with regional and state plans will be identified. Any opportunities for improvement and provide recommended update language with rationale, priority, and implementation guidance will be identified. Town-specific considerations include coordination with the Nevada County Sheriff's Office and regional partners, highway corridor management, and communication strategies for both residents and visitors.

Deliverables: Evacuation Annex Review Summary Memo

TASK 5: COMMUNITY OUTREACH AND ENGAGEMENT

Effective evacuation planning depends on inclusive community participation. Building on the DKS team's engagement efforts and lessons learned from the Placer County ETRS, our approach emphasizes accessibility, multilingual communication, and intentional outreach to vulnerable populations.

5.1 JOINT TOWN AND TDA OUTREACH AND ENGAGEMENT PROGRAM

The objectives of the community engagement program will be to gather input on evacuation awareness, needs, and infrastructure challenges, build public understanding of evacuation risks and constraints, and validate and refine draft findings and recommendations.

Target Audiences and Engagement Plan. Target audiences include residents, businesses, vulnerable populations, second homeowners, visitors, and community organizations. The engagement plan will define the number and type of activities, outreach timeline, and success metrics, developed in coordination with Town and TDA staff to avoid overlap with other community initiatives.

Online Survey and Digital Engagement. A bilingual, mobile-optimized survey will collect input on evacuation challenges and needs, and will reopen for feedback on draft recommendations. Interactive mapping tools will identify perceived barriers and high-risk areas. Digital engagement includes a bilingual project website with interactive maps (Social Pinpoint), supported by coordinated social media and email communications to reach part-time residents and visitors.

Pop-Up Events. Up to six pop-up events at farmers markets, community festivals, HOA meetings, and local gatherings will provide informal opportunities for residents and visitors to share feedback.

Public Workshops. Two open house events (one in Truckee, one in Tahoe Donner) will present findings and recommendations through interactive displays, mapping stations, and input opportunities, with hybrid/virtual participation options.

Targeted Outreach to Vulnerable Populations. Special efforts will reach the Spanish-speaking community through translated materials, interpretation, and partnerships with Latino organizations. All outreach will provide language access, physical accessibility, format variety, and both digital and non-digital options.

Deliverables:

- Community Engagement Plan

- Bilingual survey, project website, and social media materials
- Translated and accessible outreach materials
- Pop-up and workshop materials with post-event summaries
- Outreach metrics summary
- Draft Community Engagement Summary chapter (separate Town and TDA versions)

5.2 TAHOE DONNER MEMBER SURVEY (TDA-SPECIFIC COMPONENTS)

The DKS team, including FM3, will conduct a survey of property owners to assess perceptions regarding emergency evacuation access in and out of Truckee during natural disasters. We recommend a dual-mode methodology combining telephone (cellular/landline) and online (email and text-to-web) interviews to ensure representative sampling. If Tahoe Donner Association provides email-only contact lists, an online-only survey will be conducted. Alternatively, property rolls from the Town of Truckee can be matched with current contact information via public and commercial databases. The survey will be 15-20 minutes in length with a sample size of 400 property owners, providing a margin of error of $\pm 4.9\%$.

Deliverables:

- Survey instrument, complete data collection from property owners
- Summary chapter for inclusion in final TDA study document, including key findings, analysis, and recommendation

OPTIONAL TASK 5.3: ONLINE FOCUS GROUPS FOR TAHOE DONNER ASSOCIATION

As an optional task to supplement the Tahoe Donner member survey, the DKS team will conduct one or two online focus groups to add qualitative depth to the quantitative survey data. Focus groups can be scheduled either before the survey to inform questionnaire development or after the survey to explore unexpected findings and better understand the reasoning behind respondent answers.

Deliverables:

- Preparation and facilitation of two online focus groups
- Summary of key themes and insights for inclusion in final study documents

TASK 6: MAPPING AND VISUALIZATION

We will develop a master geodatabase including study boundaries, evacuation zones and routes, fire scenario progressions, demographics and AFN populations, critical facilities, infrastructure, constraints, and recommended

improvements. Maps will cover study area context, evacuation planning, demographics and vulnerabilities, fire scenario progressions, constraints and bottlenecks, and recommendations by priority and phase. Draft maps will be provided with interim deliverables, with one revision round based on feedback.

Deliverables:

- Master geodatabase with shapefiles, metadata, and documentation
- Map series in multiple formats: high-resolution PDFs, presentation files, large-format posters, web-optimized images, and editable source files

TASK 7: STAKEHOLDER CHECK-IN MEETINGS

We will conduct two stakeholder check-in meetings at key project milestones with Town staff, TDA, TFPD, NCSO, CAL FIRE, CHP, and Caltrans. The mid-project check-in (Month 5-6) will present existing conditions findings, preliminary fire scenarios, modeling approaches, and community engagement progress. The draft study check-in (Month 9-10) will present modeling results, constraint analysis, draft recommendations, implementation priorities and costs, funding strategies, TDA survey results, and Evacuation Annex components.

Deliverables:

- Two in-person stakeholder meetings with agendas and presentation materials
- Meeting notes, attendance rosters, and action item trackers

TASK 8: FINAL DELIVERABLES AND PROGRESS REPORTING

The team will provide up to 10 monthly oral updates via 30-minute video calls and up to 5 bi-monthly written reports (3-5 pages) with invoices, including executive summaries, work status, schedule and budget tracking, risk identification, and stakeholder coordination. Draft study chapters will be prepared as tasks are completed and incorporated into comprehensive final study documents for the Town of Truckee and Tahoe Donner Association. Following submission, clients will have one 30-day review period, after which the team will prepare a response matrix and incorporate one round of accepted revisions.

Deliverables:

- Draft and final study reports for Town of Truckee and TDA, each including main report with executive summary (5-10 pages), technical appendices, and compliance matrix for AB 747, AB 1409, SB 99, and General Plan Safety Element requirements
- Supporting materials including PDF maps, GIS databases, editable files, presentations, fact sheets

SCHEDULE

The DKS Team recommends extending the schedule through 2026 to ensure sustained community participation. Effective evacuation planning requires consistent engagement with residents, businesses, visitors, and vulnerable populations. A longer timeline enables two survey rounds, public workshops, and targeted outreach to underrepresented communities. Summer field observations are necessary to assess evacuation constraints when roads are clear of snow and to observe actual traffic patterns during peak visitor season. Summer pop-up events are also critical for reaching second homeowners and visitors who comprise a significant portion of the community.

SECTION 4 ▶

IDENTIFICATION OF SUBCONTRACTORS

The following subcontractors, will make up the DKS project team.

FIRM NAME PERCENTAGE OF OVERALL WORK	ROLE AND SERVICES PROVIDING
MARK THOMAS 15%	Provide resilience-focused projects that involved technical and corridor level analyses, concept development, alternatives screening and prioritization frameworks, and implementation strategies.
PHILLIPS CONSULTING SERVICES 5%	Strategic advisor and subject matter expert to coordinate with stakeholders and agencies on developing fire protection plans, wildfire risk assessments, and emergency evacuation strategies to improve site preparedness for large-scale disasters.
FIRESHED FORESTRY SOLUTIONS 3%	Will provide expert advice on wildland fire behavior, prescribed fire, fire modeling, and all-hazard incident management.
FM3 RESEARCH 5%	FM3 will be providing polling and surveys for public policy.

TASKS	2026												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1. Project Initiation and Kick-Off	K												
2. Background Research and Data Collection		D											
3. Scope Refinement and Work Plan Update													
4. Fire Behavior and Traffic Analysis													
4.1 Demographics Assessment			W	D									
4.2 Evacuation Zone Assessment & Refinement				D									
4.3 Assessment of Current Evacuation Infrastructure													
4.4 Fire Scenario Development & Fire Modeling													
4.5 Evacuation Scenario Development & Virtual Incident Command Center Workshop													
4.6 Evacuation Scenario Modeling & Constraint Prioritization													
4.7 Community-Identified Evacuation Constraints													
4.8 Recommended Actions & Implementation Strategy													
4.9 Evacuation Annex Review (Town-Specific Component)													
5. Community Outreach & Engagement													
6. Mapping & Visualization													
7. Stakeholder Check-in Meetings													
8. Progress Reporting & Final Deliverables													
8.1 Project Check-In Meetings		B	B	B	B	B	B	B	B	B	B	B	B
8.2 Draft Plans													
8.3 Final Plans													

K/B Kickoff & Check in Meetings
 W Workshop
 D Deliverables/ Review period
 M Stakeholder Meeting
 P Pop up event (2) per week

ADDITIONAL INFORMATION



WILDFIRE EVACUATION PREPAREDNESS

Principal and Project Manager, Randy Johnson with DKS Associates, is a subject matter expert on wildfire evacuation planning. He has published material on wildfire evacuation preparedness and has been interviewed on the subject.



Randy's article on evacuation preparedness planning was published in *The Sacramento Bee*.



Article

Scan the QR code to access the article, or click on this [link](#).

Scan the QR code to access the PDF article, or click on this [link](#).



DKS Article



Randy was interviewed on Jefferson Public Radio to discuss how cities prepare for evacuation in times of disaster.



Interview

Scan the QR code to access the interview, or click on this [link](#).

RESUME



50% PROJECT AVAILABILITY

EDUCATION

MS, Civil Engineering, Oregon State University

BS, Civil Engineering, Oregon State University

REGISTRATION

Texas Professional Engineer No. 125441

Oregon Professional Civil Engineer No. 74483

Professional Traffic Operations Engineer® (PTOE) No. 3512

YEARS OF EXPERIENCE

Total: 22

With DKS: 12

RANDY JOHNSON, PE, PTOE

PROJECT MANAGER

Randy is a senior transportation engineer and nationally-recognized multi-resolution modeling expert who brings over 20 years of experience in traffic engineering and resilience planning to DKS. His expertise includes dynamic traffic assignment, capacity assessment, alternative intersection concept development, roundabout analysis, advanced signal timing development, special event traffic control, and traffic impact studies. Through his resilience planning work, Randy has a knack for facilitating discussions between engineering and planning professionals with emergency service professionals to support effective project delivery. In addition to Randy's strong project management skills and extensive experience with city-wide demand modeling and operations, he brings a unique perspective to wildfire evacuation modeling as a former wildland firefighter for the US Forest Service. Through this experience and training, Randy has a keen understanding of fire-weather behavior and the extreme hazard a wildfire poses for a community. Randy will bring his full enthusiasm and passion for transportation and community preparedness to deliver an effective Evacuation Study.

SELECT EXPERIENCE

PCTPA Placer County Evacuation and Transportation Resiliency Study, CA. As Project Manager, Randy Johnson leads the day-to-day management and technical execution of the Placer County Evacuation and Transportation Resiliency Plan. Randy brings extensive experience in transportation systems planning, evacuation modeling, and emergency operations coordination, with a proven record of managing complex regional resiliency projects. For this effort, Randy is currently leading the completion of the Existing Conditions Report, including hazard and disaster event analysis, transportation network assessment, and documentation of high-risk and isolated communities. His collaborative approach with PCTPA, Placer County OES, Cal Fire, and local agencies ensures that project findings are grounded in real-world conditions and informed by stakeholder expertise. Randy's leadership combines technical rigor with practical emergency response insight, providing a strong foundation for subsequent phases of the ETRP.

El Dorado County Wildfire Evacuation Study, El Dorado County, CA. Randy served as project manager to lead the El Dorado County Wildfire Evacuation Study for the El Dorado County Sheriff's Office of Emergency Management. The purpose of the study was to assess evacuation viability for several high hazard communities across the County. This study complied with AB 747 and 1409 to support the County's Multi-Jurisdictional Hazard Mitigation Plan and Safety Element update for the General Plan. Randy worked with CalFire, El Dorado County Fire and County OES to determine evacuation scenario locations and parameters. The study included both qualitative assessment and dynamic traffic assignment (DTA) modeling to determine evacuation time estimates for larger communities at risk



with limited access. Randy and his team identified key evacuation bottlenecks and provided recommendations for operational strategies and infrastructure improvements to better facilitate evacuations.

Greater Placerville Wildfire Evacuation Preparedness, Community Safety, and Resiliency Study, CA.

Led by project manager Randy, the Greater Placerville Wildfire Evacuation Preparedness, Community Safety, and Resiliency Study addresses escalating wildfire risks in El Dorado County. Randy's team identified existing hazards and vulnerable populations within the greater Placerville area. Substantial public outreach was undertaken throughout the project to understand community concerns and communicate project results using a variety of methods from pop-up events, presentations at Fire Safe Councils, community workshops and Social Pinpoint online comment mapping. Randy facilitated a Virtual Incident Command Center with representatives from fire, emergency management and departments of transportation to identify wildfire scenarios and developed evacuation plans to analyze. The analysis utilized dynamic traffic assignment (DTA) to assess evacuation time estimates for each scenario. Randy identified over 38 locations with a need for operational strategies and/or infrastructure improvements to better facilitate evacuations. These projects were then prioritized and cost estimates developed and aligned with funding sources to allow local agencies to seek grant funding to construct the projects.

Generations at Green Valley Development Wildfire Evacuation Study, El Dorado Hills, CA.

Randy led the wildfire evacuation study for a development of over 300 housing units. Randy worked closely with El Dorado Hills Fire Dept., Cal Fire, County DOT, and County OES to identify the wildfire and evacuation scenario parameters. Randy developed an area simulation-based model to assess evacuation time estimates for the existing community with and without the development. Randy analyzed a variety of evacuation scenarios to determine the need and effectiveness of emergency access egress routes. He was able to determine successful evacuation conditions and worked with OES and DOT to identify connected traffic signal infrastructure to be able to provide additional response time needed for emergency responders to reduce the amount of emergency resources necessary to control traffic. Randy also presented at community open house meetings to communicate how the development would not significantly impact the surrounding community's ability to evacuate within target evacuation periods.

Rancho Murieta Resilience Plan, Sacramento County, CA.

Randy Johnson serves as the Evacuation Planning Lead for the Rancho Murieta Resilience Plan, directing the development of dynamic evacuation modeling and scenario analysis for flood and wildfire events. He leads coordination with Metro Fire, Sacramento County Sheriff, Public Works, and Caltrans through Virtual Incident Command Center workshops to define and test realistic evacuation strategies. With over 20 years of experience in transportation systems planning and emergency operations, Randy applies data-driven modeling and practical field insight to deliver defensible, actionable solutions that enhance community preparedness and response.

Clackamas County Earthquake Disaster Response Plan, Clackamas, OR.

Randy led a multi-disciplinary team to identify potential population islands as a result of bridge failures and landslides following a major seismic event. Randy led the prioritization plan for both the post-disaster response and infrastructure improvements to minimize disruptions. Post-disaster repair focuses on emergency transportation routes that serve the greatest populations, vulnerable populations, and access to critical facilities, such as public health and emergency services, as well as debris dump sites.

Gearhart Transportation System Plan, Gearhart, OR.

Randy provided operations analysis for the Gearhart transportation system plan that identified improvements needed for improved connectivity for all travel modes, supported planned land uses and economic development. The City of Gearhart is located in a rural coastal area that faces the challenge of balancing seasonal traffic congestion issues with providing quality facilities for rural communities that commute into small urban areas. The project improvements also considered projects to expedite multi-modal evacuation routes for a tsunami event.

RESUME



40% PROJECT AVAILABILITY

EDUCATION

MS, Geography, University of California, Santa Barbara

BA, Geography (Honors), University of California, Santa Barbara

YEARS OF EXPERIENCE

Total: 34

With DKS: 4

JIM DAMKOWITCH

PRINCIPAL-IN-CHARGE

Jim has over 30 years of experience in regional and interregional multimodal transportation planning including multidisciplinary corridor studies, safety analysis, evacuation studies, transit studies, active transportation studies, traffic, operational analyses, macro/micro transportation, air quality modeling, and performance measure applications. He has served as project manager for state highway infrastructure improvement Project Study Reports (PSR) and Project Approval and Environmental Document (PA-ED) phases, traffic impact mitigation fee programs and updates, travel demand modeling, air quality modeling, transportation operational studies and safety studies for a variety of clients including Caltrans, MPO's and various cities and counties in California.

SELECT EXPERIENCE

Greater Placerville Wildfire Evacuation Preparedness, Community Safety, and Resiliency Study, CA. Jim served as a Senior Technical Advisor for the Greater Placerville Wildfire Evacuation Preparedness, Community Safety, and Resiliency Study. The study addressed the escalating wildfire risks in El Dorado County. DKS identified existing hazards and vulnerable populations within the greater Placerville area. Substantial public outreach was undertaken throughout the project to understand community concerns and communicate project results using a variety of methods from pop-up events, presentations at Fire Safe Councils, community workshops and Social Pinpoint online comment mapping. Jim assisted with the analysis approach which utilized dynamic traffic assignment (DTA) to assess evacuation time estimates for each scenario. Over 38 locations were identified with a need for operational strategies and/or infrastructure improvements to better facilitate evacuations. These projects were then prioritized and cost estimates developed and aligned with funding sources to allow local agencies to seek grant funding to construct the projects.

Nevada County Transportation Commission 2025 RTP Update CA. DKS performed the 2025 NCTC RTP update. This entailed reviewing/refining demographic projections; developed revenue projections anticipated over the 25-year planning horizon; assisted NCTC in developing financially constrained Tier I CIP list relative to project revenues; developed/refined NCTC's RTP/SCS performance measures. DKS developed travel forecasts and analysis relative to NCTC's RTP performance measures. DKS also provided support for EIR traffic section. Both the RTP and EIR are anticipated to be adopted in November 2025.

City of Lompoc AB 747 Evacuation Scenario Analysis, CA. Jim managed DKS for the Circulation and Safety Element updates of the City of Lompoc's General Plan Update. To satisfy the AB 747



requirements, an analysis of emergency evacuation vulnerability was performed. Three generalized evacuation scenarios were analyzed: wildfire, earthquake, Vandenberg Space Force Base mishap. The source location and directionality of each event was the primary distinguishing factor for a given evacuation assessment. The purpose of this analysis was to identify specific roadways that under a given evacuation scenario would need to accommodate excess demand. The anticipated degree of traffic over-saturation (as defined by the ratio of traffic volume to roadway capacity) was estimated by modifying the SBCAG regional travel demand model

to emulate evacuation flows specific to each scenario. Recognizing the evacuation events can occur suddenly without much warning time or gradually over time that allows for adequate warning and evacuation management, evacuation efficiency was modeled under two temporal assumptions: 1) All-At-Once evacuation (spanning 3 hours); and, 2) Metered Evacuation where designated zones of the city are evacuated sequentially (spanning 3 hours for each city zone for a total of a 12-hour evacuation). Potential strategies for creating and/or maintaining adequate roadway capacity to facilitate an efficient evacuation under either of these temporal scenarios were described.

City of Bakersfield SB 99 and AB 747 Evacuation Scenario Analysis, CA. Jim is managing DKS for the Circulation and Safety Element updates of the City of Bakersfield's General Plan Update. Jim managed both the SB 99 accessibility and vulnerable communities assessment as well as the AB 747 analysis of emergency evacuation vulnerability. Three generalized evacuation scenarios were analyzed: wildfire, flood, and rail line toxic spill mishap. The source location and directionality of each event was the primary distinguishing factor for a given evacuation assessment. The purpose of the analysis was to identify specific roadways that under a given evacuation scenario would need to accommodate excess demand. The anticipated degree of traffic over-saturation (as defined by the ratio of traffic volume to roadway capacity) was estimated by modifying the Kern COG's regional travel demand model to emulate evacuation flows specific to each scenario. The resulting degree of over-burdened roadways that would hinder evacuation efficiency was surmised. Recognizing the evacuation events can occur suddenly without much warning time or gradually over time that allows for adequate warning and evacuation management, evacuation efficiency was modeled under two temporal assumptions: 1) All-At-Once evacuation (spanning 3 hours); and, 2) Metered Evacuation where designated zones of the city are evacuated sequentially (spanning 3 hours for each city zone for a total of a 12-hour evacuation). Potential strategies for creating and/or maintaining adequate roadway capacity to facilitate an efficient evacuation under either of these temporal scenarios were described.

TRPA/TMPO 2025 RTP/SCS & EIR Support, CA. As Project Manager, Jim led the peer review TMPO's Trip Reduction Impact Analysis (TRIA) Excel Workbook and recommended modifications to eight off-model trip reduction strategies. Jim's team developed the analysis to re-quantify the trip reduction benefits of these eight strategies. Jim also incorporated average trip lengths so that TRIA could generate an estimate of associated VMT reductions of each off-model strategy. This can be used to gauge the reasonableness of the TMPO/RTPA model VMT results when TRIA is used to modify trip tables prior to model assignment. Jim's team also performed an LOS analysis of approximately 30 regionally significant roadways. The methodology and assumptions used to develop the TRIA VMT reductions were documented including the VMT reduction results in a technical memorandum.

TRPA/TMPO Transportation Equity Study for the Tahoe Region, CA. Jim was technical lead for several elements of the Transportation Equity Plan for the Tahoe Region. As part of the study, input from stakeholders was summarized to identify key criteria and inform the development of an Equity Index (EI) and a Resiliency Index (RI). The EI and RI scores will be used to evaluate existing and proposed transportation infrastructure assets, projects, and programs relative to social equity, environmental justice, and climate change resiliency. The EI and RI scores serve as a connectivity impact assessment score associated with identified at-risk infrastructure assets. This analysis was applied to identify the top 10 at-risk infrastructure assets and their related improvements. The EI and RI help inform the relative benefits related to accessibility, communities served, affected populations, disadvantage communities served, and other equity considerations. This will facilitate how the vulnerabilities and therefore improvement priorities are to be sorted into immediate, near-term and longer-term needs. Study was adopted by TRPA/TMPO in 2023.

RESUME



65% PROJECT AVAILABILITY

EDUCATION

MS, Community and Regional Planning, University of Toronto

BASc, Civil Engineering, University of British Columbia

REGISTRATION

AICP No. 401821

RSP1 No. 1411

EIT (BC, CAN) No. 178177

YEARS OF EXPERIENCE

Total: 7

With DKS: 3

ALEXANDRA (ALEX) HAAG, AICP

DEPUTY PROJECT MANAGER | EVACUATION ANALYSIS

Alex is a transportation planner and project manager specializing in multimodal planning and the development of sustainable and resilient transportation solutions. Her experience includes grant strategy and support, multimodal corridor planning, community engagement, and electromobility infrastructure development. Alex is particularly passionate about projects that encourage the adoption of sustainable transportation modes.

Current Projects: Placer County Evacuation and Transportation Resilience Study, PCPTA, CA

SELECT EXPERIENCE

Rancho Murieta Resilience Plan, Rancho Murieta, CA. Alexandra is leading the traffic analysis and dynamic evacuation modeling using PTV Visum’s Simulation-Based Assignment (SBA) framework to evaluate wildfire and flood evacuation scenarios. The work includes developing the network, defining evacuation demand using Census, Caltrans, SacSIM, and Replica data, coordinating with Sacramento County OES and partner agencies on scenario parameters, and producing evacuation time estimates and mitigation strategies..

Monterey Bay Electric Vehicle Climate Adaptation and Resiliency (EVCAR) Framework, Monterey County, CA. Alexandra serves as the DKS project manager for the EVCAR Framework, designed to strengthen Monterey Bay’s Electric Vehicle charging infrastructure against climate-related vulnerabilities. This framework addresses risks posed by extreme weather events, wildfires, and sea-level rise, focusing on grid reliability, charging station accessibility, and roadway connectivity.

SCVTA SR-17 Corridor Congestion Relief Project, CA. As part of a team studying congestion relief improvements to SR 17 south of I-280, DKS prepared Project Initiation Documents including Traffic Engineering Performance Assessment and Intersection Control Evaluation for the critical SR 17/SR 9 interchange. Alexandra supported traffic operations analysis and safety benefit assessments for proposed interchange modifications.

Pleasant Hill Climate Action Plan, Contra Costa County, CA. Alexandra serves as the DKS project manager for the Climate Action Plan (CAP) in Pleasant Hill, CA, scheduled for completion by Summer 2025. Key components include assessing current conditions and the development of a GHG emissions inventory encompassing both community-wide activities and municipal operations. Alexandra also leads the vehicle miles traveled (VMT) assessment and is guiding the creation of an implementation plan with strategies to achieve the CAP’s goals.

US 101 North County Mobility Master Plan (NCMMCP), San Luis Obispo County, CA. Alexandra conducted climate adaptation and resiliency assessments for this comprehensive transportation plan along the US 101 corridor. Her work included vulnerability analysis evaluating wildfire risks, precipitation impacts, and extreme heat exposure on transportation infrastructure while ensuring alignment with state guidelines for grant funding eligibility.

RESUME



RYAN PETERSON

GIS LEAD

Ryan is a skilled GIS specialist who brings experience with a variety of public agencies. Ryan will organize the extensive existing and newly generated spatial data associated with the study into well-documented GIS deliverables, conduct spatial analyses such as network distance-based buffering, and publish spatial data and maps online as needed. Ryan is adept at both the ESRI software suite and open- sourced QGIS.

60% PROJECT AVAILABILITY

EDUCATION

BS, Geography/GIS, University of Oregon

GIS Graduate Certificate, Portland State University

Web Development Certificate, Epicodus Vocational School

YEARS OF EXPERIENCE

Total: 10

With DKS: 1

SELECT EXPERIENCE

Douglas County Transportation Safety Action Plan, OR. DKS is developing a Transportation Safety Action Plan (TSAP) that provides long-term goals and policies and near-term strategies to eliminate transportation-related fatalities and serious injuries throughout Douglas County, Oregon, while satisfying the requirements of the USDOT Safe Streets for All (SS4A) program. Ryan is supporting the team through applications of GIS to identify crashes that occurred specifically on county roads. This data will be invaluable to the analysis of the safety of these roadways.

Tigard Speed Study & SS4A Safety Action Plan, Tigard, OR. DKS is working with the City of Tigard to develop a Safety Action Plan to meet SS4A eligibility requirements. This includes compiling and analyzing crash data and community input to identify risk factors and locations with a high risk for severe and fatal crashes on the City street system. As a GIS Specialist, Ryan is assisting in cleaning up speed related data and identifying roads with a high differential between the posted speed limit and the 85th percentile.

CAMPO Regional Safety Action Plan (RSAP), TX. DKS is assisting the Capital Area Metropolitan Planning Organization (CAMPO) in developing 5 County-level Safety Action Plans, coordinating with the Travis County Safety Plan, and completing a Regional Safety Action Plan on a single aggressive schedule. The DKS team will assist in developing region-wide traffic safety goals which will directly align to several funding sources, including the Highway Safety Improvement Program (HSIP). All plans will address equitable investment in the safety needs of historically disadvantaged communities and will incorporate safety considerations such as low-cost, high-impact strategies, inclusive public engagement, and public safety campaigns, adoption of innovative technologies and strategies, and inclusion of evidence-supported projects and strategies. Ryan is supporting the team by implementing methodology to fix frontage road crash data that was provided by the MPO to be more efficiently used in the analysis of these datasets.

SeaTac 2024 Transportation Master Plan Update, WA. DKS led the development of the City of SeaTac's Transportation Master Plan and Transportation Element in support of the Comprehensive Plan Update (SeaTac2044). As GIS Lead, Ryan developed maps to show future transit conditions in the area for public outreach meetings.

RESUME



40% PROJECT AVAILABILITY

EDUCATION

English Major, University of California, Los Angeles

YEARS OF EXPERIENCE

Total: 33

With DKS: 4

KENDALL FLINT

COMMUNITY OUTREACH LEAD

Kendall is an industry professional with over 30 years of marketing, advertising and public engagement experience. She has created and implemented a broad range of communication, economic development and outreach campaigns for both public and private agencies. Ms. Flint owned and operated her own marketing firm specializing in marketing, advertising and film production for entertainment, travel and automotive companies for over ten years before joining PMC, a municipal consulting firm. While at PMC she built the firm’s public affairs division, created a program for strategic planning for government agencies and served on the firm’s management team. She later joined Regional Government Services, establishing similar practices there. Ms. Flint has managed more than 20 outreach programs as part of 218 compliance including Transportation Impact Mitigation Fees for San Joaquin and El Dorado Counties as well as the Cities of Elk Grove and Rancho Cordova.

SELECT EXPERIENCE

Transportation Agency of Monterey County, US 101 South of Salinas, CA. Kendall serves as the Outreach Task Manager for this project for the Transportation Agency of Monterey County. The purpose of the project is to improve safety, operations, interregional traffic flow, and local circulation of goods movement on the US 101 corridor through an expressway to freeway conversion. Kendall was able to successfully transition the entire effort from traditional to virtual outreach midproject beginning in March – actually increasing participation throughout the corridor.

Santa Cruz Corridors Study, CA. Kendall completed bilingual outreach programs for the City of Santa Cruz in support of its recent Housing Element Update and its ongoing zoning code update to improve connectivity and safety in the City’s four main arterial corridors. Work included meeting facilitation in “lively settings”, interactive click polling sessions, presentation to local community groups and media relations. She also developed a completely virtual workshop online with multiple stations and opportunities for comments.

Transportation Agency of Monterey County, SR68 Corridor Study, CA. Kendall managed a comprehensive outreach program in support of TAMC’s SR68 Scenic Corridor Study. This included evaluating current travel patterns and demands and identifying appropriate solutions to increase safety, protect wildlife, and retain the route’s natural beauty.

Shoreline Boulevard Corridor Study, CA. Kendall served as project manager for an outreach program for the City of Mountain View’s Shoreline Boulevard Corridor Study, an effort to support public safety and determine the feasibility of, and develop a conceptual design for



an integrated transit, bicycle, and pedestrian facility in the Shoreline Boulevard Corridor. The outreach plan included mobile workshops, transit rider interviews, social media and a series of public workshops.

MTC 2035 Regional Transportation Plan, CA. Kendall served as project manager and lead facilitator for MTC's comprehensive public involvement program for its 2035 Regional Transportation Plan, a three-year program designed to engage residents, stakeholders and elected officials throughout the nine-county Bay

Area. Her involvement included planning and staffing for a joint MTC/ABAG Regional Summit attended by 800 people, development of fact sheets, facilitation of public meetings, technical committee facilitation, e mail advisories, interactive click polling, and supervision of the agency's online database used by member agencies to propose transportation projects.

City of Modesto and Stanislaus County Association of Governments, SR132 Expressway, CA. Kendall managed the outreach effort for the final years of an extended CEQA process that involved in-depth coordination with the Department of Toxic Substances and Chemicals. The project was controversial and involved a series of heated meetings and exchanges, which were diffused through proactive engagement efforts. Kendall subsequently managed the outreach for the preliminary design-build of the project for the City of Modesto.

San Mateo County Comprehensive Transportation Management Plan (CTMP), San Mateo County, CA. Kendall was the Outreach Task Manager for the development of a CTMP for Highway 1, SR 92, and other arterial roads on the San Mateo County Unincorporated Midcoast. Her responsibilities included the development of a comprehensive outreach program, presentations to stakeholders and the public, and developing a project-based website and regular e-newsletters for more stakeholders.

TRPA Transportation Equity Study, CA. Kendall is the project manager for the Transportation Equity Study, is a comprehensive effort to utilize industry research and creative outreach to understand how accessible Tahoe's transportation system and recreational amenities are for seniors, disadvantaged communities, and visitors. DKS's approach includes using quantitative and qualitative data to assess the Basin's identified Community Priority Zones; vet ideas for policies, programs, and investments; and develop an Equity Index to quantify benefits and impacts to underserved communities in Community Priority Zones identified in the Tahoe Basin and potential visitors the region. Kendall's approach includes consistent communication and coordination with TRPA staff; an aggressive multicultural outreach program designed specifically for underserved populations; a quantifiable tool to create an equity index specifically for TRPA; and the development of policies and strategies explicitly related to the implementation of a holistic equity program.

Placer County Transportation Planning Agency On-Call Public Engagement Services, CA. Kendall is currently serving as the Project Manager for the agency's on-call services for Community Engagement. Current efforts included the development of a new social media policy, updated branding, support for agency projects and programs and initiatives which included the current Regional Transportation Plan Update, development of an Equity Index and update of all community stakeholder databases, media lists and social media platforms.

RESUME



65% PROJECT AVAILABILITY

EDUCATION

BS, International Agricultural Development, University of California, Davis

YEARS OF EXPERIENCE

Total: 4

With DKS: 1

ELISE BROCKETT

COMMUNITY OUTREACH SUPPORT

Elise Brockett is a skilled Project Manager with a strong background in strategic communications, community engagement, and environmental outreach. With five years of experience, she has led the development and execution of complex public outreach programs for transportation projects across California, facilitating collaboration among local agencies, stakeholders, and the public. Prior to joining DKS, Elise also worked as a Forestry Aide with CalFire where she provided education to the public on environmental stewardship, resource management, and wildfire prevention and land management practices.

SELECT EXPERIENCE

PCTPA Placer County Evacuation and Transportation Resiliency Study, CA. Elise Brockett leads community outreach for the PCTPA Placer County Evacuation and Transportation Resiliency Study, organizing pop-up events across Placer County to engage residents on wildfire evacuation and transportation resilience. She coordinates in-person and online workshops, develops outreach materials, and gathers public feedback to inform the plan's recommendations. Elise brings strong expertise in strategic communications, event coordination, and public engagement to every project.

City of Sacramento Howe Avenue Transportation and Vision Zero Plan, CA. The goal of the project is to eliminate fatal and severe injury crashes on Howe Avenue between Fair Oaks Blvd and the Power Inn light rail station south of Folsom Blvd by identifying needs and recommendations to make it safer and more multimodal. The project, funded by Caltrans grant money, is focused on improving access and connectivity for all users, especially to nearby Sac State University and the American River Bicycle Trail. The analysis aims to identify and evaluate alternatives through balancing mobility, safety, and equity considerations, all in concert with a robust public outreach process to increase community buy-in. As Community Engagement Project Manager, Elise is currently planning an in-person and a virtual open house to present findings from the first phase of work and solicit community feedback to help refine the plan. To effectively promote and advertise this round of engagement, Elise is developing marketing materials such as a flyer, social media graphic, content for the project website, and email content to increase awareness.

City of Sacramento Norwood Avenue Complete Streets Transportation Plan, CA. The goal of the project is to provide increased multimodal connectivity and safety along Norwood Avenue from Main Avenue to Arcade Creek by identifying needs and project recommendations for increasing user safety and mobility. The project, funded by Caltrans grant money, is focused on improving access and connectivity for all users. The analysis aims to identify and evaluate alternatives through balancing mobility, safety, and equity considerations, all in concert with a robust public outreach process to increase community buy-in. As Community Engagement Project Manager, Elise is currently planning an in-person and a virtual open house to present findings from the first phase of work and solicit community feedback to help refine the plan. To effectively



promote and advertise this round of engagement, Elise is developing marketing materials such as a flyer, social media graphic, content for the project website, and email content to increase awareness.

County of Inyo Electric Vehicle Charging Infrastructure Network Plan, CA. Inyo County and the Inyo County Local Transportation Commission are developing a plan to determine the best potential sites for building charging stations for electric vehicles (EVs). The Plan will provide detailed implementation guidance for installing these

and other strategically-located stations throughout Inyo County to support the travel needs of residents and visitors. As Community Engagement Project Manager, Elise helped plan and facilitate a virtual Stakeholder Focus Group meeting with representatives from local agencies, tribal governments, utility providers, and community organizations to present project information and gather feedback from them about the EV plan. Additionally, Elise planned and facilitated a Virtual Public Workshop to inform community members about the project and encourage them to share any input on potential locations for EV chargers through the online interactive map. Elise also developed an informational project fact sheet that includes a broad overview of the planning process and how stakeholders and members of the public can continue to participate in the project.

Transportation Agency for Monterey County Regional Vision Zero Action Plan, CA. The Monterey County Regional Vision Zero Action Plan is a transformative initiative intended to eliminate fatalities and serious injuries on Monterey County roadways. This plan will outline the strategies needed for achieving safer roads, safer speeds, safer people, safer vehicles, and post-crash care. The Transportation Agency for Monterey County (TAMC) is leading the plan in close collaboration with staff from each city and the county. Throughout the plan each community will be engaged to ensure the plan reflects the diverse needs of populations throughout Monterey County. As Community Engagement Project Manager, Elise is planning a series of workshops taking place in each jurisdiction throughout the County to educate community members about the initiative and encourage their feedback and participation. Additionally, Elise is developing an informational project fact sheet to be shared with community partners and through the project website to increase public awareness of the plan.

***City of Sacramento Fruitridge Road Improvements Project, CA.** The City of Sacramento is improving safety and connectivity for those walking, biking, taking transit and driving on Fruitridge Road between 65th Street and Power Inn Road. The project ultimately aims to safely accommodate all modes of travel through pavement rehabilitation, continuous bike lanes, reconstructing curb ramps, upgrading signal equipment, and other improvements. As Project Manager, Elise developed and implemented a public engagement program to involve the community in identifying roadway improvements that would improve their travel experience along the corridor. Elise planned and launched a public notification campaign to advertise a Community Meeting at Earl Warren Elementary School to nearby residents, employees, businesses, and other users on Fruitridge Road. Prior to the Community Meeting, Elise organized a pop-up workshop at the nearby Welco Supermarket to engage with community members about the project and promote the workshop.

***City of West Sacramento Sacramento Avenue Complete Street Plan, CA.** The Plan is a roadmap to implement community-driven improvements to the Sacramento Avenue corridor to provide safer and more comfortable transportation options for people of all ages and abilities while enhancing public spaces for community activity along the corridor. Improvement recommendations for Sacramento Avenue were developed in partnership with the community to create a plan that works for residents, business owners, and visitors of the corridor. As Project Manager, Elise planned and helped facilitate two Community Workshops, one during the early phase of the project to identify the community's travel patterns, infrastructure needs, and safety challenges along the corridor, and one during the later phase of the plan development to present and gather public feedback on potential roadway and infrastructure improvements. To further engage the community in the planning process, Elise organized two pop-up workshops at the 2023 Yolo County Children's Alliance's Back-to-School Family Resource Fair and at the 2024 Breathe Bike Festival.

RESUME



50% PROJECT AVAILABILITY

EDUCATION

BFA in Graphic Design,
University of Illinois

REGISTRATION

Professional Designer,
American Institute of Graphic
Arts

Leadership & Public Speaking,
Dale Carnegie | Essential of
Management, AmeriBen/IEC
Group

YEARS OF EXPERIENCE

Total: 27

With DKS: 7

MELISSA ABADIE, AIGA PD

VISUAL COMMUNICATIONS LEAD

Melissa leads a team of graphic designers at DKS that develops strategic branding, report layouts, communications materials, and data visualizations grounded in storytelling to make complex ideas more relatable and engaging. With over 25 years of experience, she brings expertise in creative direction, project management, branding, and graphic design for both public agencies and private companies. Her innovative approach to layout, typography, and color enhances readability and creates pieces that are organized and visually compelling. Melissa is also deeply committed to equity, ensuring her design work not only communicates clearly but also reflects inclusive practices. By crafting accessible graphics and documents, she and the DKS design team use their skills to better reach and connect with historically underserved communities.

SELECT EXPERIENCE

El Dorado County Transportation Commission Greater Placerville Wildfire Evacuation Preparedness, Community Safety, and Resiliency Plan, CA. DKS prepared the Greater Placerville Wildfire Evacuation Preparedness, Community Safety, and Resiliency Plan that addresses escalating wildfire risks in El Dorado County. Melissa worked on the community engagement component of this project to create public-friendly materials that build awareness and create consistency across all the project communication channels, including the creation of a project logo, handouts, social media, event signage, and a postcard. Melissa also designed the final report document that presented the plan in an engaging and informative way.

Tahoe Regional Planning Agency (TRPA) Equity Policies & Actions, CA.

The development of Equity Policies & Actions for TRPA required clear communication, strategic storytelling, and innovative presentation to reach and present the diverse community of Lake Tahoe. Melissa helped develop an equity dashboard that presented critical demographic and transportation information in an engaging, interactive website. She also created the community engagement materials that included public open house flyers, social media posts, banner signage, handouts, and presentation boards. The project also culminated with a policy and actions document that Melissa designed using engaging graphics and page layout that are compliant with Section 508 of the Rehabilitation Act. This project was honored with the Rosa Parks Diversity Leadership Award from WTS Sacramento, acknowledging the organization's dedication to fostering diversity and cultural awareness within the transportation industry.

Placer County Transportation Planning Agency (PCTPA) On-Call Public Engagement Services, CA.

To support PCTPA's goals of bringing transportation to communities that need it the most and providing equitable transportation alternatives to their region, DKS provides ongoing communication and graphic support. As part of this public engagement on-call, Melissa developed a social media strategy with accompanying event announcements and boosted online posts, including communication to



promote PCTPA's attendance at several community events to provide information to the public about Measure B, a new proposed sales tax aimed at reducing traffic congestion and build transportation projects in Roseville, Rocklin, and Lincoln. Melissa also created public-facing communication pieces for the Regional Transportation Plan, including a project logo, banner, info cards, and website updates. To provide people-centered storytelling for PCTPA, Melissa developed an online equity dashboard that highlights regional demographic information and insights.

City of Big Bear Lake Community Vision Plan, CA. To capture the unique character and spirit of Big Bear Lake, Melissa developed a distinctive project logo and visual identity that reflects the community's shared vision for the future. Building on this foundation, she led the design of a suite of community engagement materials, including event collateral, social media content, a project website, and an interactive comment map, designed to inform and inspire participation. These tools helped residents and businesses share their ideas, provide input on community priorities, and shape a long-term vision that celebrates Big Bear Lake's identity while guiding future planning efforts.

Tahoe El Dorado Area Plan Public Outreach Materials, CA. DKS partnered with El Dorado County to develop a comprehensive suite of outreach materials and engagement strategies for this long-term land use plan serving the Tahoe Basin. To reflect the community's unique identity, Melissa and her team created a distinctive project brand that quickly conveyed key themes and values. This branding carried through a wide range of materials, including a project website, online survey, interactive comment map, postcards, social media content, flyers, and signage, designed to clearly communicate project details, promote events, and encourage meaningful public participation.

Nevada County Transportation Commission 2025 Regional Transportation Plan Update, CA. Melissa led the design and development of community engagement materials for an update to Nevada County's Regional Transportation Plan, which evaluates the county's current transportation system and identifies key projects to improve mobility, safety, and connectivity for the future. Using the County's established branding, Melissa produced visually engaging public meeting materials, flyers, social media posts, and an interactive comment map, each designed to make technical concepts accessible and encourage meaningful participation. All materials were developed in both English and Spanish to effectively reach and engage the County's diverse community.

Solano County Safe Routes to School Plan Update 2024, CA. DKS is working with the Solano Transportation Authority to update a Safe Routes to School Plan for all seven school districts in Solano County. Melissa created outreach materials that work within the County's SRTS branding to maintain a consistent look for this effort across all communication channels. She is also creating the final plan layout to clearly communicate the plan's goals and objectives, equity and evaluation framework, and priority recommendations using engaging graphics, icons, and page layout solutions.

San Joaquin County Alternative Fuels Vision Plan, CA. Melissa worked with the San Joaquin Council of Governments on the San Joaquin County Alternative Fuels Vision Plan by developing a full suite of public outreach materials designed to increase awareness and encourage participation. Working within the County's established brand, she created a project logo, presentation materials, social media posts, and flyers that provided a consistent and recognizable identity for the plan. To ensure accessibility and reach across the region's diverse communities, all outreach materials were produced in both English and Spanish, broadening engagement and building stronger connections with residents throughout San Joaquin County.



STEPHEN DECKER

Project Manager

EDUCATION

MS, City and Regional Planning, Boston University
 BA, International Relations, Boston University

REGISTRATION

N/A

Stephen brings 25 years of experience leading multimodal transportation system and corridor plans, policies, strategies, including engineering, environmental and climate adaptation, safety, and emergency evacuation analysis and concepts for regional agencies throughout California and the western US. He has experience in alternatives analysis, transportation mobility, performance-based planning, and climate adaptation planning. **He has successfully delivered over 40 alternative analysis studies that assess climate adaptation, environmental, equity, economic and transportation mobility, and accessibility benefits for multimodal and roadway corridors.** Throughout his career, Stephen has provided guidance and leadership in planning, economic and traffic analysis, demand forecasting, outreach programs, and alternatives analysis components of transportation environmental corridors, including Climate Adaptation, state and federal environmental analyses, and PEL studies.

REPRESENTATIVE PROJECTS

Pajaro Bridge Infrastructure Resilient Design (BIRDS) Study, Monterey County

Project manager evaluating roadway and bridge infrastructure concepts integrated with nature-based climate adaptation solutions to mitigate the impacts of storm surge, flooding, sea level rise, and climate change to prime agricultural land in the Pajaro Valley. He is working with the client to develop solutions for this project while positioning the agencies for future funding, implementation, and construction. He is leading the transportation planning, prioritization, concept design, climate adaptation, and outreach elements of the study, including preparing existing conditions, conducting future alternatives analysis, conducting public and stakeholder agency engagement.

Evacuation and Transportation Resiliency Study, Placer County

Managing, as a subconsultant, elements of the Placer County Evacuation and Transportation Resiliency Study, including assessing and prioritizing roadway and multimodal (transit, ped and bicycle connection) network strategies and safe staging zones to efficiently and safely move residents and visitors out of the region in case of storm surge/flooding, wildfire, drought, and other extreme events. He is supporting the implementation plan development with phasing for short-, medium-, and long-term systemwide projects and concepts, funding, and grant strategies to support the study.

Tri-County Transportation Resilience Plan, San Joaquin, Stanislaus, and Merced Counties

Project manager preparing the Tri-County Transportation Resilience Plan to identify infrastructure priorities required to address flooding/storm surge and wildfire resiliency needs in the Tri-County region of San Joaquin, Stanislaus, and Merced counties. He is identifying short-term and long-term strategies through a comprehensive public engagement process and available plans to identify hazard risks and vulnerabilities, emergency evacuation route needs, and screening and prioritizing projects that address hazards and evacuation needs. The Plan will advance a cohesive vision for enhancing resilience of transportation infrastructure in the San Joaquin River Basin.

Highway 1 Waddell and San Vicente Creeks Coastal Resilience Plan, Santa Cruz County

Transportation planning lead assessing the vulnerability to coastal climate change impacts of the Highway 1 bridges over Waddell and San Vicente Creeks, and Santa Cruz Branch Rail Line and future Monterey Bay Sanctuary Scenic Trail at San Vicente Creek. He is identifying near-, medium-, and long-term transportation infrastructure strategies to be integrated with ecological restoration strategies at both Creeks. He also is assessing and prioritizing alternative project concepts for transportation infrastructure to support the coastal resilience plans for both Creeks.

RONALD A. PHILLIPS

PHILLIPS CONSULTING SERVICES

CONTACT

- 530-217-7432
- Rphillips3401@yahoo.com
- 4328 Empire Creek Circle
Georgetown, CA, 95634, US

EXPERIENCE

- Phillips Consulting Services**
Owner – Sole Proprietor
2017-2025
- Interim Fire Marshal**
El Dorado Hills Fire Department
2020-2023
- Fire Chief, Assistant Director of
Emergency Management**
City of Folsom, CA
2010 – 2016

SKILLS

- Community Fire & Rescue
Master Planning
- Wildfire Protection Plan
Development
- Community Wildfire
Assessments and Plans
- WUI Site Assessments
- Emergency Evacuation
Planning & Preparedness

EDUCATION

**Bachelor's Degree in Fire
Administration**
Cogswell Polytechnical College
2010

PROFESSIONAL OVERVIEW

With over 40 years of fire service experience in California, Ronald Phillips has served in a variety of fire operations and administrative positions. As a consultant to a number of developers, builders and communities over the last 8 years, Mr. Phillips has provided support and guidance on wildfire and other local hazard issues on over 25 projects in both new and existing communities in Placer, Nevada, Sutter, and El Dorado Counties.

RELEVANT PROJECT EXPERIENCE

Placer County Evacuation and Transportation Resiliency Study

Placer County, CA | 2025– present

- Emergency Evacuation Planning

El Dorado Senior Village Apartments Development

El Dorado, CA | 2025 – present

- Fire Protection and Emergency Evacuation Planning

East Ridge Village of El Dorado Hills Subdivision Project

El Dorado Hills, CA | 2024– present

- Fire Protection and Emergency Evacuation Planning

Friends of Tahoe Truck Waldorf School Expansion

Truckee, CA | 2023– present

- Emergency Response and Evacuation Planning

Generations at Green Valley Subdivision Project

El Dorado Hills, CA | 2023– present

- Fire Protection and Emergency Evacuation Planning

Ridge Subdivision Map Project

Penryn, CA | 2018-2019

- Fire Protection and Emergency Evacuation Planning

Placer Vineyards Specific Plan

West Roseville | 2018-2020

- Fire Protection and Emergency Evacuation Planning



N. Chris Waters



Summary of Qualifications

Chris Waters has been in the Fire Service for 26 years working for CAL FIRE in the Amador-El Dorado Unit, Sacramento Headquarters, Fresno-Kings Unit, and Sonoma-Lake-Napa Unit. Chris' final assignment with CAL FIRE was as Division Chief – Mountain Home Conservation Camp where he was responsible for the Tulare Unit inmate and Firefighter I handcrew programs. He has been a Registered Professional Forester (RPF) since 1994 working in both private sector professional forestry and as an RPF during the development of CAL FIRE community resiliency projects. Chris spent much of his career involved with Pre-Fire Management, wildland fire mitigation planning, and was instrumental in providing the organizational leadership for the creation of the Fire Safe Councils for Amador and El Dorado Counties. He has also been successful in securing grant funds for the support of community resiliency projects. Chris has been assigned to both Interagency and CAL FIRE Incident Management Teams reaching the position of Type I Operations Section Chief for CAL FIRE IMT 1 (Kavanaugh). His final CAL FIRE IMT assignment was on the 2021 Dixie Fire as IC (T). Chris is currently the Principal at Fireshed Forestry Solutions, a wildland fire and forestry consulting firm.

Professional Development & Education

- B.S., Forestry, Humboldt State University

Licensure & Certifications

- California Registered Professional Forester – RPF #2556
- Fire Behavior Analyst, Prescribed Fire Incident Commander, Operations Section Chief, and Incident Commander

Experience

- 23 years of diverse CAL FIRE Fire Service and Pre-Fire Management experience.
- 30 years of prescribed fire planning and implementation experience including private lands prescribed fire management.
- Responsible for the development, review, and advice on approval of Community Wildfire Protection Plans for Amador County CWPP, El Dorado County CWPP, and numerous other satellite community CWPP's within CAL FIRE jurisdiction.
- Coordinator for the Amador-El Dorado County fuels reduction project cooperation strategy between CAL FIRE, USFS, BLM, Fire Safe Councils, private landowners, and local government fire agencies.
- Technical Advisor for the development of the Community Wildfire Mitigation Plan for the Southern Sierra Nevada Bark Beetle infestation.
- Community fuels reduction projects in Amador, El Dorado, Fresno, Solano, Colusa, and Yolo Counties.
- Fire Behavior Subject Matter Expert for the California-Nevada Tahoe Basin Fire Commission Sub-Committees.

Associated Professional Accomplishments

- Developed integrated fuels management and community resiliency projects; Sly Park Vegetation Management Project in central El Dorado County and Fresno County/Highway 168 Bark Beetle Mitigation and Fuels Reduction projects being two examples.
- Markleeville Wildland Fire Pre-Attack and Evacuation Plan.
- Supervised the development of the CAL FIRE 7800 Fire Environment Handbook.
- Coordinated and developed the Amador-El Dorado, Fresno-Kings, and Sonoma Lake Napa Unit Fire Danger Operating Plans (FDOP).
- Developed the King Fire Entrapment Staff Ride.
- Project Lead – Witch/Guejito Fire Progression Analysis and Fire Behavior Review, San Diego, CA.
- CAL FIRE statewide implementation of the National Fire Danger Rating System (NFDRS) and associated Fire Danger Operating Plans, as well as expansion of the CAL FIRE Fire Behavior program.
- Organized the El Dorado County and Amador County Fire Safe Councils.

Note: This is a brief summary of Mr. Waters' CV. A complete version can be made available on request.



Education

Honors B.A. at York University

M.A. at McGill University

Ph.D. at UCLA in Sociology

Areas of Expertise

Public Opinion Research

Resident Surveys

Planning Research



RICHARD BERNARD, PH.D., FM3 PARTNER

Dr. Richard Bernard is one of California’s foremost public opinion researchers on issues related to public agencies, their services, and the funding they need to provide those services. Richard provides strategic advice for a diverse set of clients including cities, counties, special districts, K-12 and community college districts, nonprofits, businesses, and labor unions. He has been the lead researcher on projects examining resident satisfaction with local government services, as well as branding and marketing public agencies, nonprofit organizations, and development projects.

Richard has led numerous research projects on topics such as general plan updates, strategic plans, resident satisfaction, finance measure feasibility, and budget priorities for a variety of local jurisdictions throughout California. His municipal clients have included the cities of Agoura Hills, Alhambra, Bellflower, Burbank, Calabasas, Camarillo, Cathedral City, Coronado, Costa Mesa, Diamond Bar, Duarte, Elk Grove, Fresno, Folsom, Goleta, Grover Beach, Hawaiian Gardens, Hemet, Hermosa Beach, Huntington Beach, La Cañada Flintridge, La Mesa, Lakewood, Livermore, Lomita, Long Beach, Los Angeles, Montebello, Montclair, Monterey Park, Moreno Valley, Morro Bay, Norwalk, Ontario, Palmdale, Palm Springs, Palo Alto, Paramount, Pasadena, Pomona, Rancho Palos Verdes, Rancho Santa Margarita, Riverside, San Clemente, San Diego, San Gabriel, San Juan Capistrano, San Luis Obispo, Santa Monica, Santa Paula, South El Monte, Torrance, Taft, Tehachapi, Ventura, Vista, Walnut, West Hollywood, Wildomar, and Whittier, among many others.

Richard’s public opinion research efforts have also helped ballot measure campaigns raise billions of dollars for school facilities; transportation improvements; clean water and open space protection; libraries; and public safety funding initiatives. In the past several years, his research led to the passage of the largest-ever local annual water quality and water supply parcel tax (Los Angeles County Measure W), local transportation sales tax (Los Angeles County Measure M), and local park and open space parcel tax measure (Los Angeles County Measure A) in U.S. history.

Richard joined the firm after being on the faculty at the University of Toronto from 1999 to 2002, where he taught research methods and statistics. He has published in such journals as *East Asian Pacific Migration Journal*, *International Migration Review*, and the *Canadian Journal of Sociology*. Prior to joining the faculty at University of Toronto, Dr. Bernard was a Sloan Foundation post-doctoral fellow at the National Opinion Research Center (NORC) based at The University of Chicago.

Richard is also a former transportation commissioner for the City of West Hollywood.

CONTRACT TERMS

DKS has reviewed the contract terms and conditions and would like to request the following changes.

3.5.2.12.4 - LIABILITY FOR NON-COMPLIANCE

(A) Indemnity: Failure to comply with laws, regulations, and ordinances listed in Section 3.2.12.2 of this Agreement is a violation of federal and state law. Notwithstanding any other indemnity contained in this Agreement, Consultant agrees to indemnify and hold harmless the Town, its officials, officers, agents, employees **and authorized volunteers** from and against any and all claims, demands, losses or liabilities of any kind or nature which the Town, its officials, officers, agents, employees **and authorized volunteers** may sustain or incur for noncompliance with the laws, regulations, and ordinances listed above, arising out of or in connection with the Services, except for liability resulting from the sole established negligence, willful misconduct or active negligence of the Town, its officials, officers, agents, employees or authorized volunteers.

(B) Defense: Town reserves the right to defend any enforcement action or civil action brought against the Town for Consultant's failure to comply with any applicable water quality law, regulation, or policy. Consultant hereby agrees to be bound by, and to reimburse the Town for the costs associated with, any settlement reached between the Town and the relevant enforcement entity.

~~(C) Damages: Town may seek damages from Consultant for delay in completing the Services caused by Consultant's failure to comply with the laws, regulations and policies described in Section 3.2.12.2 of this Agreement, or any other relevant water quality law, regulation, or policy.~~

3.5.6.1 SCOPE OF INDEMNITY.

To the fullest extent permitted by law, Consultant shall defend, indemnify and hold the Town, its directors, officials, officers, employees, **volunteers** and agents free and harmless from any and all claims, demands, causes of action, costs, expenses, liability, loss, damage or injury of any kind, in law or equity, to property or persons, including wrongful death, in any manner arising out of, pertaining to, or incident to any alleged acts, errors or omissions, or willful misconduct of Consultant, its officials, officers, employees, subcontractors, consultants or agents in connection with the performance of the Consultant's Services, the Project or this Agreement, including without limitation the payment of all consequential damages, expert witness fees and attorneys fees and other related costs and expenses. Notwithstanding the foregoing, to the extent Consultant's Services are subject to Civil Code Section 2782.8, the above indemnity shall be limited, to the extent required by Civil Code Section 2782.8, to claims that arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of the Consultant.

3.5.6.2 ADDITIONAL INDEMNITY OBLIGATIONS.

Consultant shall defend, with counsel of Town's choosing and at Consultant's own cost, expense and risk, any and all claims, suits, actions or other proceedings of every kind covered by Section 3.5.6.1 that may be brought or instituted against Town or its directors, officials, officers, employees, volunteers and agents. Consultant shall pay and satisfy any judgment, award or decree that may be rendered against Town or its directors, officials, officers, employees, volunteers and agents as part of any such claim, suit, action or other proceeding. Consultant shall also reimburse Town for the cost of any settlement paid by Town or its directors, officials, officers, employees, agents or volunteers as part of any such claim, suit, action or other proceeding. Such reimbursement shall include payment for Town's attorney's fees and costs, including expert witness fees. Consultant shall reimburse Town and its directors, officials, officers, employees, agents, and/or volunteers, for any and all legal expenses and costs incurred by each of them in connection therewith or in enforcing the indemnity herein provided. Consultant's obligation to indemnify shall not be restricted to insurance proceeds, if any, received by the Town, its directors, officials officers, employees, agents, or volunteers.

ADD: Notwithstanding any other provision in this Agreement including but not limited to the indemnification provisions, Contractor's total liability and responsibility for any cause of action, claim, loss, or damage is limited to: (1) for claims covered by insurance, the total amount of insurance required under the Agreement then available at the time of settlement or judgment; or (2) for claims not covered by insurance, the total amount of fees paid to Contractor for the Project.

GENERAL CONDITIONS 2.04 DEFECTIVE WORK; WARRANTIES.

Contractor warrants that all construction services shall be performed in accordance with generally accepted professional standards of good and sound construction practices, all Contract Documents requirements, and all laws, codes, standards, licenses, and permits. Contractor warrants that all materials and equipment shall be new, of suitable grade of their respective kinds for their intended uses, and free from defects. Contractor hereby grants to Owner for a period of one year following the date of completion its unconditional warranty of the quality and adequacy of all of the Work including, without limitation, all labor, materials and equipment provided by Contractor and its Subcontractors of all tiers. If either prior to completion of the Work, or within one year after completion, any Work (completed or incomplete) is found to violate any of the foregoing warranties (Defective Work), Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions, correct, remove and replace the Defective Work with conforming Work, and correct, remove and replace any damage to other Work or other property resulting therefrom. If Contractor fails to do so, Contractor shall pay all of the Owner's resulting claims, costs, losses and damages. Where Contractor fails to correct Defective Work, or defects are discovered outside the correction period, Owner shall have all rights and remedies granted by law.

ADD: Notwithstanding any other provision in this Agreement including but not limited to the indemnification provisions, Contractor's total liability and responsibility for any cause of action, claim, loss, or damage is limited to: (1) for claims covered by insurance, the total amount of insurance required under the Agreement then available at the time of settlement or judgment; or (2) for claims not covered by insurance, the total amount of fees paid to Contractor for the Project.

SIGNATURE CERTIFICATE



REFERENCE NUMBER

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Reference Number

74C29E05-D975-448F-92D1-0B9A6F9003EA

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<p>Name John Bosket</p> <p>Email jab@dksassociates.com</p> <p>Components 1</p>	<p>Status signed</p> <p>Multi-factor Digital Fingerprint Checksum 4f53cda18c2baa0c0354bb5f9a3ecbe5ed12ab4d8e11ba873c2f11161202b945</p> <p>IP Address 73.96.120.72</p> <p>Device Chrome via Mac</p> <p>Typed Signature </p> <p>Signature Reference ID BF7BF27A</p>	<p>Viewed At 10/24/2025 04:59:31 PM EDT</p> <p>Identity Authenticated At 10/24/2025 04:59:43 PM EDT</p> <p>Signed At 10/24/2025 04:59:43 PM EDT</p>

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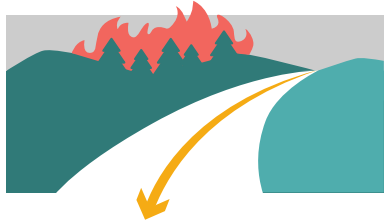
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Greater Placerville
**WILDFIRE
EVACUATION
PREPAREDNESS
STUDY**

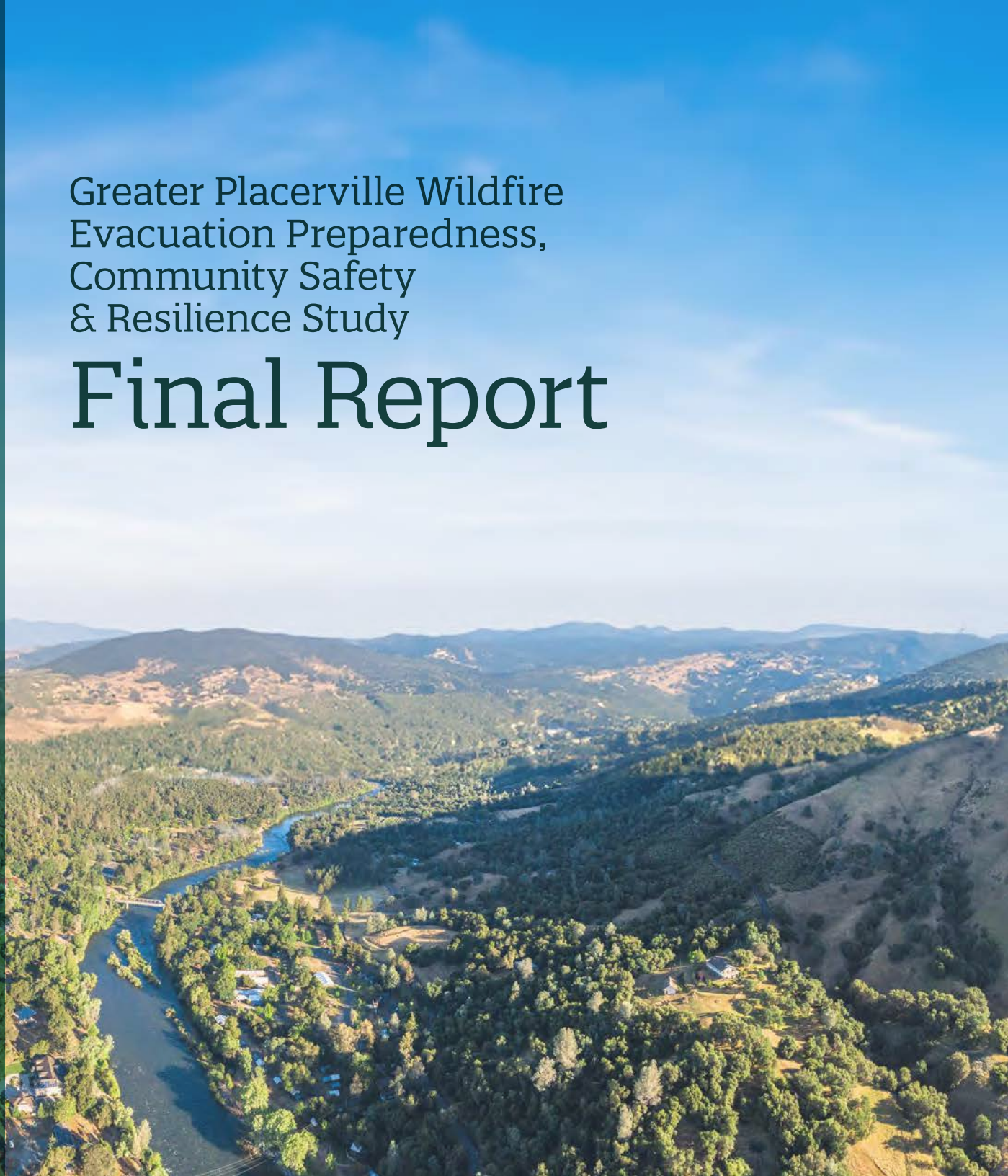
*Envisioning a Fire
Adaptive Community*

**EL DORADO COUNTY
TRANSPORTATION
COMMISSION**

JUNE 2024

Greater Placerville Wildfire
Evacuation Preparedness,
Community Safety
& Resilience Study

Final Report



Acknowledgments

PREPARED FOR
**EL DORADO COUNTY
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IN ASSOCIATION WITH
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Executive Summary

EL DORADO COUNTY'S GREATEST RISK TO ITS POPULATION, PROPERTY, AND CRITICAL INFRASTRUCTURE IS WILDFIRE. IN RESPONSE TO THE SIZE AND FREQUENCY OF WILDFIRES IN CALIFORNIA IN RECENT YEARS, EDCTC IS TAKING STEPS TO ASSESS THE REGION'S PREPAREDNESS AND IDENTIFY CRITICAL INFRASTRUCTURE IMPROVEMENTS TO MAXIMIZE THE EFFICIENCY AND RELIABILITY OF EXISTING EMERGENCY EVACUATION SYSTEMS. BASED ON THE ANALYSIS OF THIS REGION'S EXISTING INFRASTRUCTURE, CURRENT EMERGENCY RESPONSE SYSTEMS, AND VARIOUS WILDFIRE SCENARIOS, THIS STUDY SHOULD BE USED TO INFORM EDCTC AND OTHER REGIONAL AGENCIES AS THEY PLAN FOR THE NEXT STEPS TO ADDRESS WILDFIRE HAZARDS AND IMPROVE EVACUATION PREPAREDNESS.

Importance of Wildfire Evacuation Preparedness

Wildfires will continue to be a pressing threat to California's communities, and thorough preparation and education will play a key role in increasing the safety of community members and reducing the chance of catastrophe. Wildfires act unpredictably and do not adhere to boundaries set by municipalities or private landowners, but each of us has a role to play in preparing for wildfire events. Residents can take measures to safeguard their properties and prepare their families for evacuations. Local agencies should coordinate with each other and the state to identify critical weaknesses or hazards to their communities and facilitate evacuation plans that will ultimately save lives.

Objectives of the Study

This study identifies major evacuation routes within the project area in El Dorado County assess the performance of the road networks under specific evacuation scenarios based on different criteria, including evacuation time estimates (ETE) and potential bottlenecks based on model simulations. Evacuation strategies and projects are included in this assessment to identify potential future and ongoing efforts to prepare for wildfire emergency situations. However, the study is not an evacuation route plan and does not identify specific routes to be used during an evacuation. The El Dorado County Sheriff's Office of Emergency Services will define specific evacuation routes at the time of an evacuation order during an event.

WILDFIRE SCENARIOS

Given the high wildfire hazard surrounding the Greater Placerville Community, there are many potential fire scenarios that pose potential threats. The consultant team built upon the wildfire hazard map created for the existing conditions analysis and worked with local fire, forestry, traffic, and emergency management agencies to identify four wildfire and evacuation scenarios to analyze for the evacuation assessment. These fire scenarios are the Chili Bar Fire, Slab Creek Fire, Martinez Creek Fire, and Bucks Bar Fire. These scenarios represent four real potential threats to the Greater Placerville Community. Each wildfire scenario is defined by different parameters, including origin, direction, rate of spread, season, and time of day. Working as a virtual Incident Command Center, the El Dorado County Sheriff's Office of Emergency Management staff developed evacuation zone and warning zone boundaries for each wildfire scenario. They also provided key evacuation order details, such as road closures and access restrictions, and how that may influence the presence of background traffic conditions during an evacuation event and how the order parameters may influence specific evacuation routes for each fire. Ultimately the wildfire parameters and the evacuation order parameters served as inputs for the wildfire evacuation assessment.

EVACUATION ANALYSIS KEY OBSERVATIONS

Building on the wildfire parameters and the evacuation order parameter, each fire was assessed for traffic evacuation using a simulation-based dynamic traffic assignment model. This modeling approach accounts for the time dynamics associated with a wildfire

evacuation event, the departure time distribution, which is the time from when an evacuee received the evacuation order to the time they actually depart after gathering belongings and completing necessary tasks as required. The model also includes all streets in the transportation system and accounts for capacity constraints, such as stop signs, traffic signals, and low speeds due to narrow and steep roads. The model assigns traffic in 15-minute time intervals based on the departure time distribution with evacuees heading to preselected evacuation destinations coordinated with El Dorado County Sheriff's Office of Emergency Management staff. As traffic progresses through the model during an evacuation congestion builds, which then influences the route choice and travel time of each evacuee. For each wildfire evacuation assessment, the model provides key observations on evacuation time estimates, key transportation facilities for evacuation, and bottleneck identification.

RECOMMENDATIONS

Using the key observations from each evacuation scenario assessment, recommendations for operational strategies and infrastructure improvements to better facilitate evacuation events in the Greater Placerville Study Area are developed. Operational strategies may include developing evacuation-specific signal timing plans or providing emergency resources to manually flag traffic through an intersection. Strategies also include how technology and communications can be used to maintain and improve alert messaging and monitor conditions during an evacuation, such as providing real-time camera and weather information along key evacuation routes.

Recommended infrastructure projects seek to improve evacuation travel times and reduce congestion levels that may impact emergency response. Each project also balances providing additional evacuation capacity, while not supplying excess capacity that may induce vehicle demand during non-emergency conditions. Some of the projects include converting all-way stop controlled intersections to roundabouts, which under certain conditions can increase evacuation flows without the need for manual flagging of traffic by emergency personnel. This approach can reduce emergency personnel resource needs during an evacuation event, while also providing year-round safety benefits. Another important recommendation of this project is to repurpose the existing US 50 shoulder as a hard-shoulder emergency-use only evacuation lane along westbound US 50 from Missouri Flat Road to Cameron Park interchange. An initial planning-level assessment indicates that this project can primarily be implemented as a signing and striping project without major road reconstruction. This project provides a substantial increase in vehicle evacuation capacity along a critical evacuation route, while not providing excess capacity during non-emergency conditions.





1.0 Introduction

THIS ANALYSIS SUPPORTS THE GREATER PLACERVILLE WILDFIRE EVACUATION PREPAREDNESS STUDY THROUGH MODELING AND ANALYSIS OF VARIOUS SCENARIOS. THE MAIN OBJECTIVES OF THIS STUDY ARE TO ASSESS THE MAJOR EVACUATION ROUTES FOR THE IDENTIFIED EVACUATION SCENARIOS, CALCULATE EVACUATION TIME ESTIMATES (ETE), AND IDENTIFY POTENTIAL BOTTLENECKS. THIS STUDY ALSO INCLUDES EVACUATION STRATEGIES AND PROJECTS TO IMPROVE THE PERFORMANCE OF THE ROAD NETWORK DURING EVACUATIONS, AS WELL AS POTENTIAL FUTURE OR ONGOING EFFORTS IN PREPAREDNESS FOR WILDFIRE EMERGENCY SITUATIONS.

1.1. Study Area

The study area is in El Dorado County approximately 40 miles northeast from the Sacramento metropolitan area. The Placerville Project Study Area (PPSA) is located on the western slope of the foothills of the Sierra Nevada

mountain range and is bisected by US 50 from east to west and CA 49 from north to south. **Figure 1** on the following page shows the project study area.

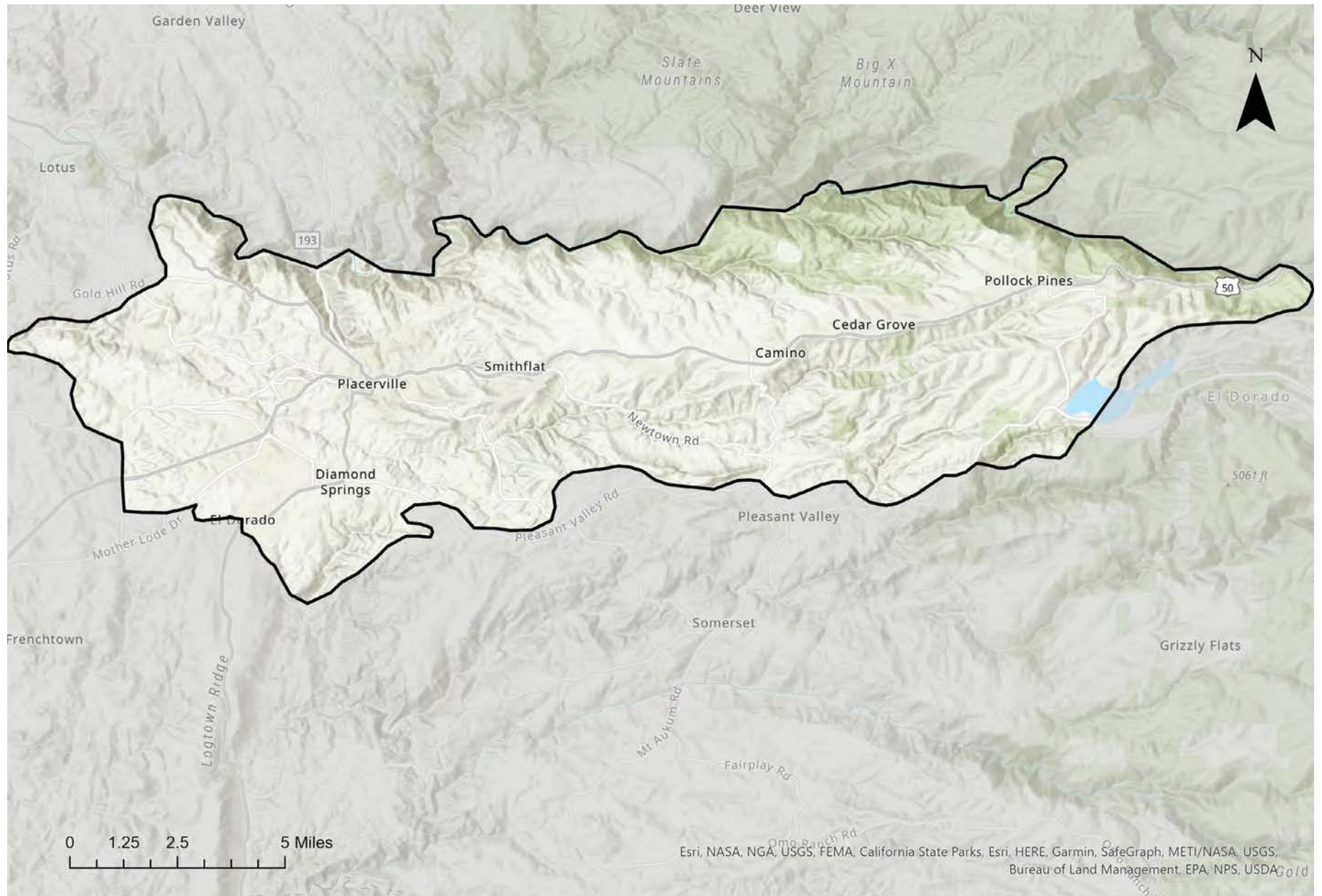


FIGURE 1. STUDY AREA

1.2. Disclaimer

This study has been conducted by DKS Associates and the El Dorado County Transportation Commission (EDCTC) to support the Greater Placerville Wildfire Evacuation Preparedness, Community Safety, and Resiliency Study. This study is intended to provide an understanding of EDCTC's preparedness for wildfire evacuation and provide recommendations based on the described scenarios.

The intent of this study is to evaluate multiple wildfire scenarios, identify high-risk communities, assess the transportation network for points of catastrophic failure, engage and inform the community of these findings, and present an account of these conditions and recommendations in a wildfire evacuation preparedness study for the Greater Placerville area. The scope of this wildfire evacuation assessment is based on the behavior and movement of motor vehicles during evacuation events.

The contents of this study are founded on precise data and likely wildfire scenarios within El Dorado County. They are not intended as a forecast or comprehensive compilation of all conceivable wildfire situations in the area. This study does not ensure that wildfires or evacuation routes will unfold precisely as depicted in this study nor does it identify any evacuation routes to be taken by the public. Evacuation orders and evacuation route designation are the purview and responsibility of the El Dorado County Sheriff's Office.

1.4. Legislative Requirements

In accordance with California state legislature, which requires the inclusion and/or review of emergency evacuation routes and plans when adopting General Plans or other emergency planning documents, this study meets the following legislative requirements:

- California Assembly Bill 747 [Government Code section 65302.15 (a)] – This study identifies and analyzes evacuation routes for capacity under a range of emergency scenarios.
- California Assembly Bill 1409 – This study meets the required criteria as stated in AB 1409, which requires local agencies to, “revise the safety element of the local hazard mitigation not less than once every eight years to identify new information relating to fire hazards that was not available during the previous revision.”

This study does not cover a vulnerability assessment as outlined in California Senate Bill 99 to identify residential developments in hazard areas that do not have at least two emergency evacuation

routes. At the outset of this study, the CalFire Office of the State Fire Marshall was in the process of mapping single access neighborhoods in El Dorado County as part of their Subdivision Review Program to meet this requirement.

In addition, the El Dorado County Planning and Building Department is in the process of updating their General Plan Safety Element that further addresses SB 99 requirements. This EDCTC Evacuation Study also checks the box for the County's wildfire evacuation requirement in support of the Safety Element Update process currently underway pursuant to Government Code section 65302.15(a).

1.5. Wildfire Evacuation Assessment Approach

This study considers four potential wildfire scenarios that have been identified as a hazard to the Greater Placerville Community, as determined by local fire and emergency management

professionals. For each of these wildfire scenarios, the following evacuation assessment approach was followed:

- Define wildfire scenario parameters
- Define evacuation order parameters
- Determine evacuation trip estimates
- Simulate evacuation using full roadway capacity and reduced roadway capacity scenarios
- Identify key evacuation transportation facilities
- Determine Evacuation Time Estimates (ETEs)
- Identify key evacuation bottlenecks
- Recommend operational strategies and/or infrastructure improvements to better facilitate wildfire evacuation

A photograph of a wooden bridge crossing a stream in a forested area. The bridge has a metal truss structure and wooden decking. The surrounding area is lush with green trees and vegetation, with a rocky hillside in the background.

2.0 Approach & Methodology

THIS SECTION DETAILS THE PRIMARY PROCESS AND COMPONENTS OF THE GREATER PLACERVILLE WILDFIRE EVACUATION PREPAREDNESS, COMMUNITY SAFETY, AND RESILIENCY STUDY.

Wildfire Evacuation and Preparedness Assessment Approach

The Greater Placerville Wildfire Evacuation Preparedness, Community Safety, and Resiliency Study has four primary components:

1. Existing Conditions Assessment
2. Public Outreach
3. Wildfire Scenario Development
4. Wildfire Evacuation Assessment

2.1 Existing Conditions

The Existing Conditions Report provided a baseline of the following elements to support the technical analysis and understanding of the expected impacts future improvements may have on the community. The Existing Conditions Report included the following subsections:

- Physical Geography, Terrain, Climate, and Wildfire Hazard
- Demographics and High-Hazard Communities
- Transportation Network
- Utility Networks
- Policies and Plan Review

PUBLIC OUTREACH

With concurrent efforts underway by the County, the City of Placerville, the El Dorado and Georgetown Resource Conservation Districts, and CAL FIRE and other first responders, it was important to facilitate a collaborative engagement process, sharing information and engagement opportunities across agencies. This was accomplished by holding regular meetings with all interested parties and planning efforts together. The group shared opportunities at a variety of events including the County Fair and Fire Safe Events in the County.

Outreach efforts specific to the Evacuation Preparedness Study were guided by the El Dorado County Transportation Commission and two advisory committees: a Project Development Team (PDT) composed of partner agencies and a Stakeholder Advisory Committee (SAC) made up of a diverse range of groups and organizations in the project area. A series of three PDT meetings were held over the course of the project.

Participants included:

- CAL FIRE
- California Highway Patrol
- California Office of Emergency Services
- Caltrans
- Office of the State Fire Marshall
- United States Forest Service
- City of Placerville
- El Dorado Irrigation District
- El Dorado County Chief Administrative Office
- El Dorado County Resource Conservation District
- El Dorado County Fire Safe Council
- El Dorado County Fire District
- El Dorado County Office of Emergency Services
- El Dorado County Emergency Services Authority Joint Powers Authority
- El Dorado County Sheriff's Office
- El Dorado County Transportation Department
- El Dorado County Planning and Building Department
- El Dorado County Air Quality Management District
- El Dorado County Health Department
- El Dorado County Disaster Preparedness and Response
- El Dorado County Office of Education
- El Dorado County Animal Shelter
- El Dorado County Transit Authority
- El Dorado Communications Networks
- Marshall Hospital
- Pacific Gas and Electric Company (PG&E)
- Sacramento Area Council of Governments (SACOG)
- Sacramento Municipal Utility District (SMUD)
- Sierra Pacific Industries

Four rounds of presentations were also made to local Fire Safe Councils and business interests to address specific concerns for their local communities. These included:

- Camino Fire Safe Council
- Cedar Grove Fire Safe Council
- Gold Hill Estates Fire Safe Council
- Rancho Del Sol Fire Safe Council
- Sierra Springs Fire Safe Council
- Diamond Springs Fire Safe Council
- Patterson Ranch Fire Safe Council
- Placerville Fire Safe Council
- Texas Hill Estates Fire Safe Council
- Oak Hill Area Fire Safe Council
- Fort Jim Fire Safe Council
- Apple Hill Growers Association

All efforts were supported by a project-specific webpage on the EDCTC website which included project information, draft documents, and a unique interactive mapping tool. This mapping tool, created with Social Pinpoint, captured community concerns regarding potential impacts on roadways and infrastructure in the event of an emergency evacuation. More than 50 comments were received online in addition to those shared at the numerous meetings and workshops.

Social media platforms, including Facebook, Twitter, NextDoor, and Instagram, were also used to allow community members to participate, collaborate, and inform decision-making online.

Two public workshops were also held; one at the project’s initiation to provide information on the scope and purpose of the study and a second to communicate the results of the study.

Finally, a postcard was prepared and mailed to all residents and businesses in the project area, informing them of the availability of the Final Plan for their review on the project webpage.

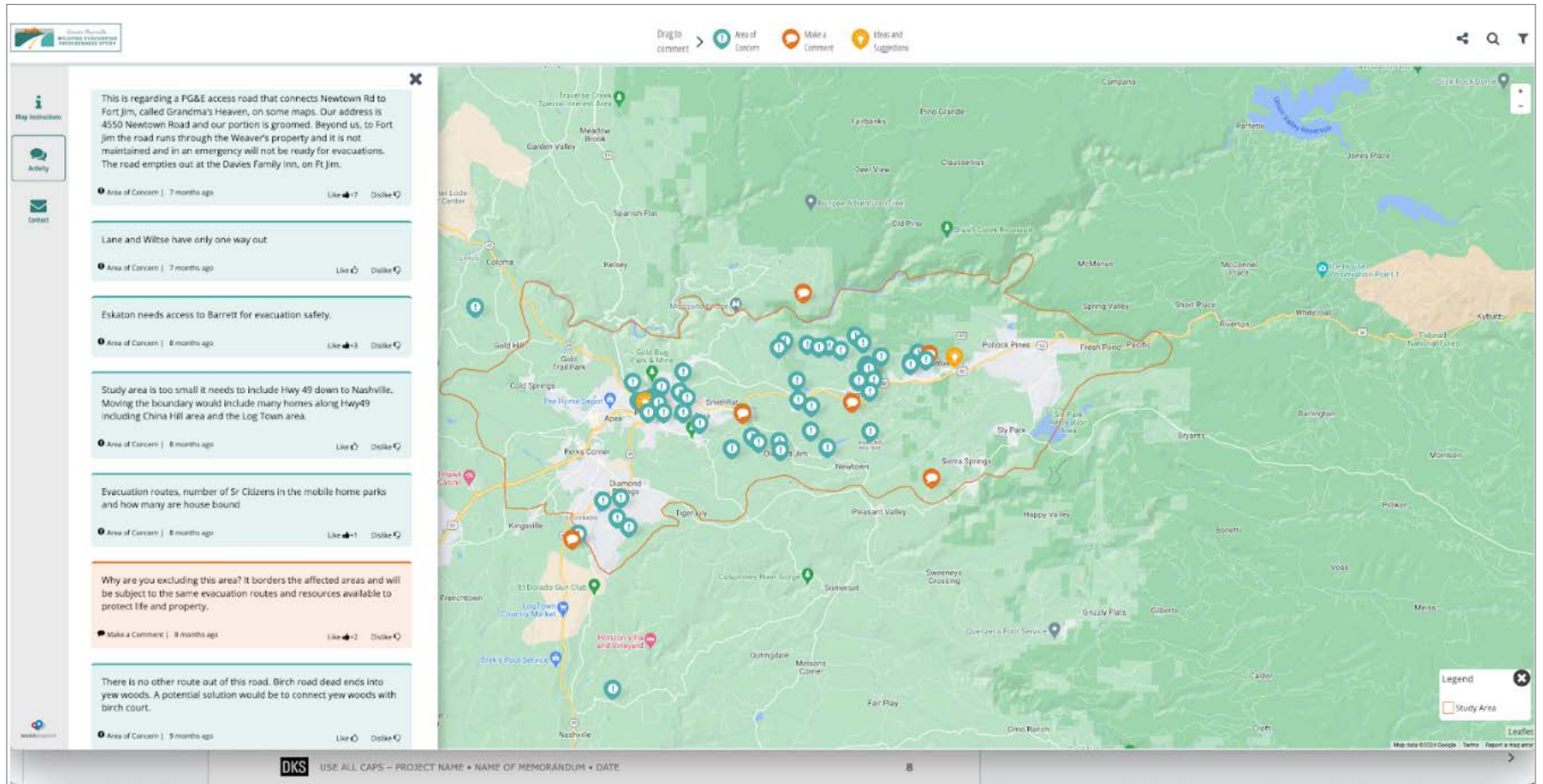


FIGURE 2. SOCIAL PINPOINT MAP

WILDFIRE SCENARIO DEVELOPMENT

Given the high wildfire hazard surrounding the Greater Placerville Community, there are many potential fire scenarios that pose potential threats. The project team built upon the wildfire hazard map created for the existing conditions analysis and worked with local fire, forestry, traffic, and emergency management agencies to identify four wildfire and evacuation scenarios to analyze for the evacuation assessment. These agencies included CalFire, El Dorado County Fire Department, El Dorado Hills Fire Department, County of El Dorado DOT, EDCTC, City of Placerville, El Dorado County Office of Wildfire Preparedness and Resilience, and the El Dorado County Sheriff's Office of Emergency Services. The key assumptions surrounding each wildfire scenario and subsequent evacuation parameters were developed during a Virtual Incident Command Team workshop on Sep 7, 2023. Similar to a real wildfire incident command center, all agencies collaborated to identify each fire scenario's key fire parameters and evacuation order parameters:

Fire Parameters: Origin, direction, rate of spread, season, and time of day

Evacuation Order Parameters: Evacuation zones, evacuation destinations (by zone or sub-zone), road closures (for evacuation routes and/or to background traffic), warning zones

This collaboration enabled the traffic modeling team to work closely with local emergency management experts, providing a better

understanding of local wildfire evacuation practices. Detailed descriptions of each of the four wildfire scenarios are described in **Section 3**.

EVACUATION ASSESSMENT METHODOLOGY

The four identified wildfire scenarios were analyzed using a Dynamic Traffic Assignment (DTA) simulation model, with PTV Visum software, to capture and analyze key parameters surrounding an evacuation:

- **Evacuation Demand:** The total number of vehicle trips evacuating evacuation zones and warning zones.
- **Evacuation Destination:** Where the vehicle trips are evacuating to.
- **Departure Time Distribution:** The time period over which evacuees depart.
- **Roadway Network:** The roadway capacity available during an evacuation to influence evacuation route selection considering road closures, traffic congestion, and other factors that may reduce capacity, such as visibility.

The benefits of using a DTA simulation model for wildfire evacuation analysis is to capture the time dynamics of the evacuee's departure and route choice to their evacuation destination using discrete 15-minute intervals, while also considering the roadway capacity and intersection control to capture build-up and dissipation of evacuation traffic and the resulting congestion. The key model outcomes and performance measures for each wildfire scenario include:

- Evacuation Time Estimates to clear evacuation zones

- Travel Time Estimates to reach study area boundary destinations
- Identification of key evacuation transportation facilities
- Identification of congestion bottleneck locations

The specific methodologies for the key components of the wildfire evacuation model are described in the following sections.

EVACUATION VEHICLE TRIP ESTIMATION

Estimating the total vehicular demand during an evacuation is critical to understanding the evacuation time estimate to clear the evacuation zone. The evacuation population may include households, visitors, and workers. The demand of these populations can be highly variable depending on the geography of the evacuation zone, season, day of the week, and time of day. For example, a fire in the middle of the night may have little to no visitor or employee trips to evacuate, whereas a fire on a weekend afternoon during peak tourism season will have employee and visitor trips to evacuate in addition to households.

It should be noted that during a wildfire evacuation event, there may be vulnerable populations that do not have access to a motor vehicle, and it is important to develop strategies and identify resources to assist these populations during an evacuation. However, the scope of this wildfire evacuation assessment is based on the roadway capacity of the evacuation network and the identification of strategies and infrastructure projects to better facilitate motor vehicle

evacuation. The Existing Conditions Report (2) for this project identifies vulnerable populations within the Greater Placerville Community, including households with no vehicle, retirement communities, transit-dependent populations, and houseless populations.

The evacuation demand is estimated by census block groups that serve as the transportation analysis zones (TAZ) in the model, as shown in **Figure 3**.

EVACUATION ZONE HOUSEHOLD TRIP ESTIMATION

2020 US Census Data¹ was used to estimate the total number of households in each zone. The next step is to determine how many vehicles per household will evacuate, as some households may choose to use multiple vehicles if available. The US Census data includes the number of households that do not have a vehicle, how many have 1 vehicle, and how many have multiple vehicles. Households with no vehicle access generate zero trips and households with 1 vehicle generate one trip per household. For all other households, the value of 1.75 vehicles evacuating per household was used. This value of 1.75 is consistent with the Santa Rosa Post-Fire Survey and more conservative than the 2022 City of Sammamish Evacuation Survey value of 1.41 vehicles per household. Per the direction of El Dorado County Sheriff's Office of Emergency Services (OES), once an evacuation order is given, no return trips are allowed into the evacuation zone.

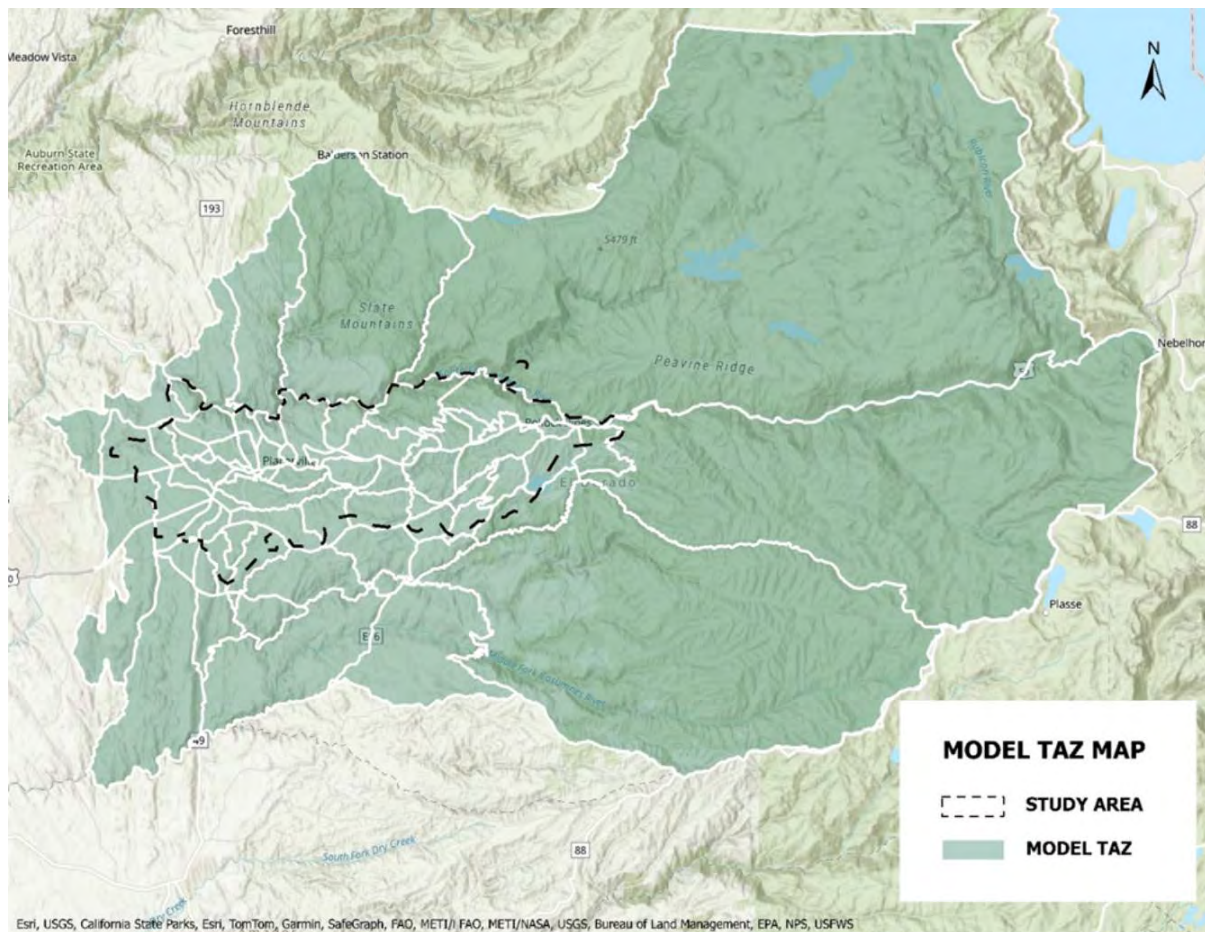


FIGURE 3. MODEL TAZ MAP

EVACUATION ZONE EMPLOYEE AND VISITOR TRIP ESTIMATION

Evacuation demand for employee and visitor trips was estimated using seasonal and disaggregated trip data from Replica. Replica data provides complete trip tables representing typical weekday and weekend days in the modeled season for

resident, worker, visitor, and commercial travel, all modes, trip characteristics, trip-taker characteristics, and routing information. For this analysis, 2019 weekend Fall (September to October) data was used to estimate peak visitor trips coinciding with Apple Hill tourism season and peak wildfire season. Employee trips from this time period are also included.

1 United States Census Bureau, Census Data 2020, <https://data.census.gov>

WARNING ZONE EVACUATION TRIP ESTIMATION

Warning zones are areas near the evacuation zones that are provided notification that a potential wildfire incident may require people to leave the area. It is issued as a precautionary



measure to provide sufficient time for people to prepare themselves for a potential evacuation. It is also intended to give advance notice to those evacuees who may require additional time to vacate due to medical conditions, caring for livestock or pets, or other responsibilities. The wildfire scenario modeling assumes a percentage of the warning zone population will evacuate at the same time as the evacuation

zones, creating additional evacuation demand near the vicinity of the evacuation zones. The percentage of total trips voluntarily evacuating a warning zone is defined by fire scenario and that percentage is applied to the household, employee, and visitor trips estimated using the aforementioned methodology.

BACKGROUND TRIP ESTIMATION

Some fire scenarios may include background traffic that adds to the total traffic level near evacuation and warning zones. Ultimately, the presence of background traffic depends on the time of day and the details of the evacuation orders as they pertain to road closures and non-emergency access. For example, OES may close down US 50 and/or other key routes in the region to non-emergency traffic to expedite an evacuation. For some fire scenarios, these key routes may remain open and the evacuation traffic will encounter background traffic. For some of the wildfire scenarios, it is assumed that US 50, SR 49, and SR 193 remain open to all traffic during the evacuation period. CalTrans PeMS data was used to estimate background traffic during the specific season and time of day per the definitions of the wildfire scenario. Specific details on facility closures for each fire scenario are defined in **Section 4**.

EVACUATION DEPARTURE TIME ESTIMATE

A critical element in determining how quickly a population can evacuate from an evacuation zone depends on how soon the evacuees depart following an evacuation order and over what time

period. This is known as the evacuation departure time distribution. This includes the time it takes for evacuees to receive the order, gather belongings, and perform any other necessary duties before departing their household. For visitors and employees, this departure time period is much shorter. The following departure time distributions were developed using a combination of survey data from the 2021 City of Ashland Evacuation Study, the 2022 City of Sammamish Evacuation Study, and input from El Dorado County Fire, CalFire, and El Dorado County Sheriff’s OES. These departure time distributions represent a typical response under an urgent wildfire scenario and are applied to 3 of the 4 wildfire scenarios in this study.

TABLE 1. PERCENT OF TRIPS BEGINNING EVACUATION AFTER EVACUATION ORDER

ELAPSED TIME (MIN)	RESIDENTIAL TRIPS	VISITOR AND WORKER TRIPS
15	5%	45%
30	25%	80%
45	50%	95%
60	70%	100%
75	85%	
90	90%	
105	95%	
120	100%	



The Chili Bar wildfire scenario, described in **Section 3.0**, represents an extreme scenario where the fire can burn across the evacuation zone in approximately one hour. Under the assumption of heightened urgency and to stress-test the roadway network under high evacuation volumes under a shorter period of time, this fire scenario uses a condensed departure time distribution where all evacuation trips depart within one hour.

TABLE 2. ONE HOUR SCENARIO – PERCENT OF TRIPS BEGINNING EVACUATION AFTER EVACUATION ORDER

ELAPSED TIME (MIN)	RESIDENTIAL TRIPS	VISITOR AND WORKER TRIPS
15	15%	45%
30	40%	80%
45	75%	95%
60	100%	100%

EVACUATION TRIP ASSIGNMENT & ANALYSIS

The Evacuation Assessment uses a Dynamic Traffic Assignment (DTA) simulation model using PTV Visum software to capture all elements of a wildfire evacuation. The roadway network in the model includes all streets within the study area with key attributes, including the number of lanes, posted speed limits, intersection control (including stop signs, signal timing, and yield signs), and facility capacity. The evacuation and background trips are then assigned to the network in 15-minute intervals over the assignment period. The assignment period includes a one-hour warm-up

period to preload background traffic, a two-hour evacuation period following the evacuation order, and a one-hour cool-down period to capture the time to clear any remaining traffic. The evacuation destinations are defined by trip type (i.e. household, visitor, and employee) and by scenario as detailed in **Section 3.0** Wildfire Scenario Development.

As the traffic is assigned to the network from the evacuation zones, the fastest path to the evacuation destination is selected considering the key attributes of the roadway network. As traffic congestion builds, slow moving traffic and queuing from intersections and bottlenecks will influence the route selection allowing evacuation trips to utilize the most efficient route based on the current conditions of the 15-minute interval being assigned. The evacuation orders provided by OES may include select directional or full roadway closures that will influence the available routes for an evacuation scenario. During the model development process, a quality control review was performed with first responders to validate the evacuation routes being selected by the simulation model to ensure routes were reasonable based on the demand and facility type. This ensured streets that were excessively narrow, low speed, steep grades, and/or unpaved were not being used as primary routes.

During a wildfire evacuation there are many factors that can influence the capacity of the system that may result in the evacuation traffic not flowing at the same rate as under ideal non-emergency conditions. These factors may include



heavy smoke conditions that limit visibility, the presence of emergency response vehicles, and non-typical driver behaviors as a result of the emergency conditions. To capture these effects, each wildfire scenario is run under two conditions, 1) Typical traffic capacity, and 2) Reduced traffic capacity. For the reduced traffic capacity scenario, the roadway capacity is reduced by approximately 40 percent. This 40 percent reduction in capacity was selected based on the professional judgment of the consultant team. Under the reduced capacity scenarios, additional congestion builds that influences both the evacuation route assignment and the evacuation time estimates.

With each evacuation and wildfire scenario, the model allows the consultant team to identify critical evacuation routes and congestion bottlenecks along those routes. Performance measures are also included for each scenario,

including evacuation time estimates to show the time from when the evacuation order is in place to the time the evacuation zones are clear. Even after the evacuation zones are clear or substantially evacuated, there may still be significant congestion in the region downstream of the evacuation zones as the various routes converge on the roadway facilities leading to the evacuation zones, such as US 50. As a measure of overall evacuation congestion within the greater Placerville region, and not just within the evacuation zones, the average and maximum evacuation trip travel time from the evacuation zone to the study area boundary on routes to key evacuation destinations is provided.

The bottleneck identification allows the consultant team to develop recommendations for operational strategies and infrastructure projects that better help the facilitation of evacuation and/or reduce

the number of emergency service resources necessary to manage evacuation traffic. The scope of this project included the analysis of 10 evacuation scenarios. The four wildfire scenarios with two evacuation capacity scenarios each account for eight of the available scenarios. The remaining two scenarios in the project scope are used to evaluate mitigation scenarios for two of the fire scenarios under reduced capacity to evaluate the benefits of the infrastructure projects and recommended strategies. Further analysis and study would be required to assess the benefits of all operational strategies and infrastructure projects recommended through this study.

3.0

Wildfire Scenario Development

THERE ARE FOUR WILDFIRE EVACUATION SCENARIOS THAT WERE IDENTIFIED BY THE VIRTUAL INCIDENT COMMAND TEAM, REPRESENTING FOUR UNIQUE AND REAL POTENTIAL THREATS TO THE GREATER PLACERVILLE COMMUNITY.

These scenarios have been named based on the fire origin location:

- CHILI BAR FIRE
- SLAB CREEK FIRE
- MARTINEZ CREEK FIRE
- BUCKS BAR FIRE

For each wildfire scenario, the following parameters have been defined by the Virtual Incident Command Team:

Fire Parameters: Origin, direction, rate of spread, season, and time of day

Evacuation Order Parameters: Evacuation zones, evacuation destinations (by zone or sub-zone), road closures (for evacuation routes and/or to background traffic), warning zones.

An Evacuation Zone is an area that has been given an evacuation order to leave immediately due to an imminent emergency. Once an evacuation order has been placed, there are no trips allowed to enter the evacuation zone,

therefore no return-to-home trips are assumed as part of the evacuation traffic. Warning zones are areas near the evacuation zones that are provided notification that a potential wildfire incident may require people to leave the area. It is also intended to give advance notice to those evacuees who may require additional time to vacate due to medical conditions, caring for livestock or pets, or other responsibilities. The wildfire scenario modeling assumes a percentage of the warning zone population will evacuate at the same time as the evacuation zones, creating additional evacuation demand. Details on these assumptions are outlined by each fire scenario below.

Given the location of the study area and the roadway network around the area, the evacuation destinations were selected to be the boundary points of major highway and regional roadway facilities within the model area to represent evacuation traffic flow. The primary evacuation destination is west toward Sacramento via US 50 with additional destinations using SR 49 north and

south of Greater Placerville, E16 south as a route to ultimately connect to SR 49 south and SR 16 west, and US 50 east toward South Lake Tahoe and points beyond. Depending on the fire origin and direction of spread, one or more of these destinations may not be available in the evacuation orders.

The key parameters of each fire scenario are detailed as follows:

3.1. Chili Bar Wildfire Scenario

Origin: Near SR 193 and Chili Bar by the South Fork American River Crossing

Direction: Burning south/southeast toward Downtown Placerville

Rate of Spread: Reaching Placerville City Limits in one hour

Season: Fall

Time of Evacuation Order: Middle of night

Closures:

- SR 193 full closure (US 49 to Chili Bar, resident evacuation only);
- SR 49 direction closure near Old Toll Road (traffic north of closure must evacuate north on SR 49, traffic south of closure must evacuate south on SR 49);
- US 50 east of Bedford Avenue must evacuate south or east;
- US 50 eastbound and westbound approaching

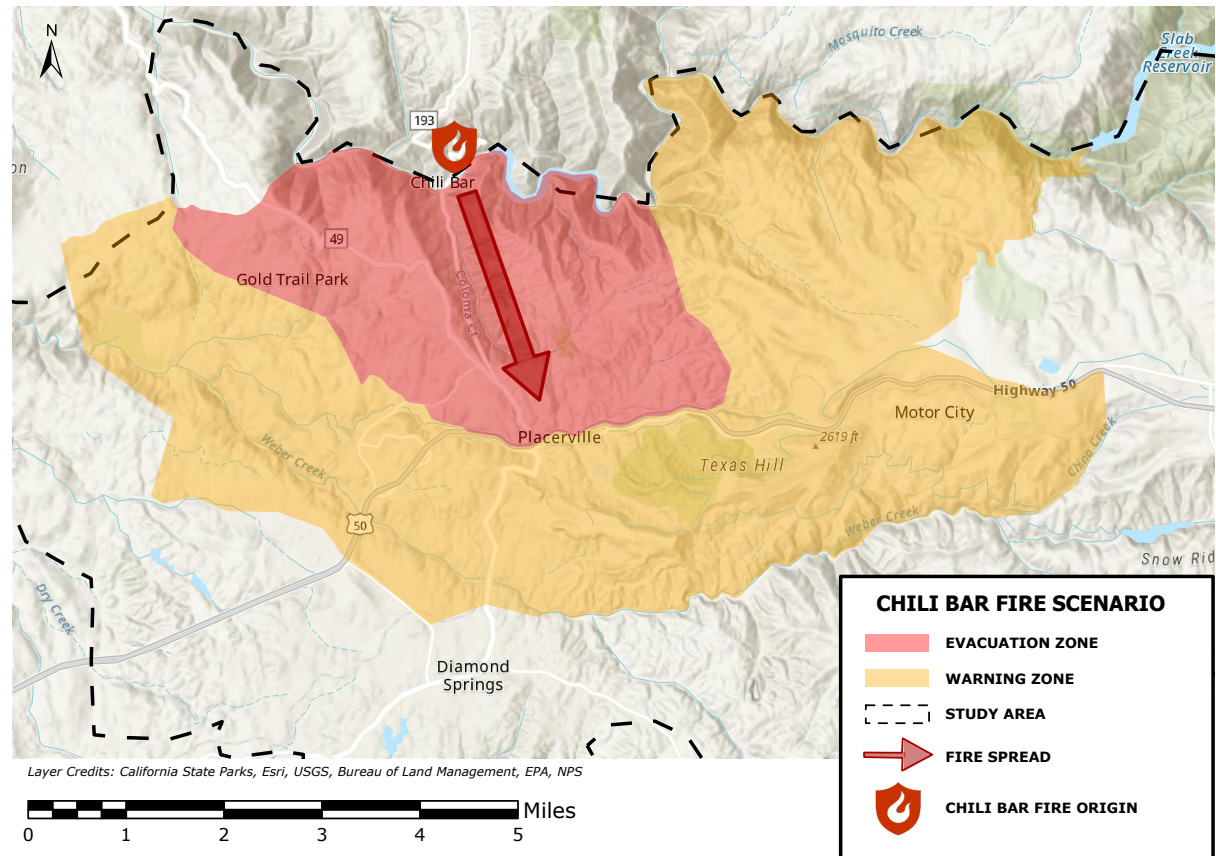


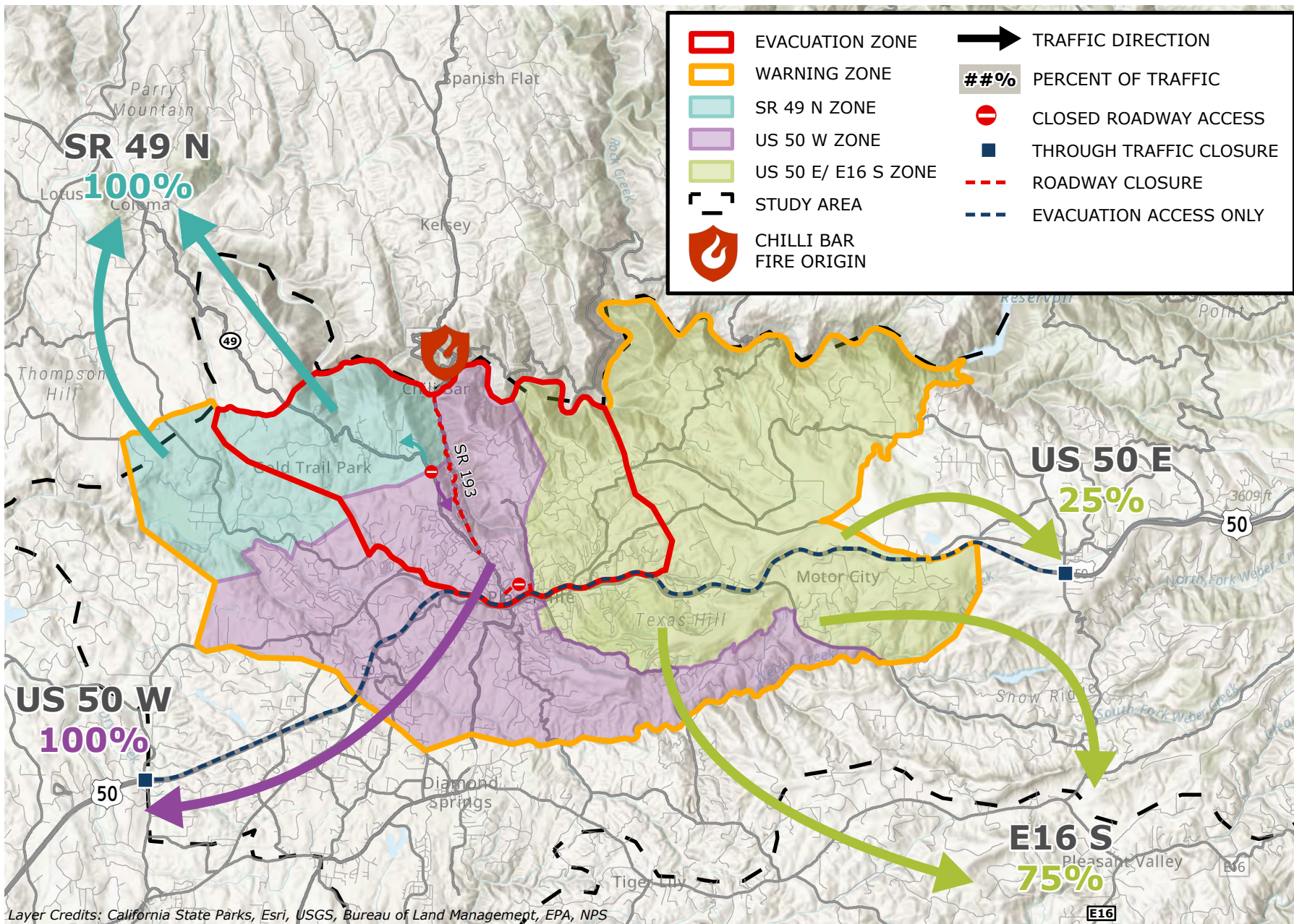
FIGURE 4. CHILI BAR FIRE SCENARIO – FIRE ORIGIN, EVACUATION & WARNING ZONES

Placerville closed to all non-emergency vehicles.

Background Traffic Condition: No background traffic. Household evacuation only given the middle-of-night order with US 50 closed to non-evacuating traffic.

Evacuation Destinations: 100% of evacuation zone households are assumed to evacuate to the destinations as shown in **Figure 5**. 25 percent of

households in the warning zone are anticipated to voluntarily evacuate at the same time as the evacuation zones using the same evacuation destinations as shown on **Figure 5**. The primary evacuation destination leaving the study area is westbound on US 50. Secondary evacuation destinations are north on SR 49, south on E16, or east on US 50.



Layer Credits: California State Parks, Esri, USGS, Bureau of Land Management, EPA, NPS

FIGURE 5. CHILI BAR FIRE SCENARIO – EVACUATION DESTINATIONS AND CLOSURES

3.2. Slab Creek Wildfire Scenario

Origin: Near Slab Creek Dam on the South Fork American River

Direction: Burning southeast toward Camino and Cedar Grove

Rate of Spread: Reaching extent of evacuation zones over several hours

Season: Saturday in October (peak Apple Hill demand)

Time of Evacuation Order: Afternoon

Closures: No Closures in effect.

Background Traffic Condition: US 50 remains open to through traffic. Evacuation zones assume household, visitor and employee evacuation demand

Evacuation Destinations: 100% of evacuation zone households are assumed to evacuate to the destinations as shown in **Figure 7**. All visitors and employees within the evacuation zones are assumed to evacuate west on US 50 toward Sacramento. 50 percent of households in the warning zone are anticipated to voluntarily evacuate at the same time as the evacuation zones using the same evacuation destinations as shown on **Figure 7**. All evacuation zone and west warning zone trips are headed west primarily on US 50. Eastern warning zone trips primarily head south toward E16 with some heading east on US 50.

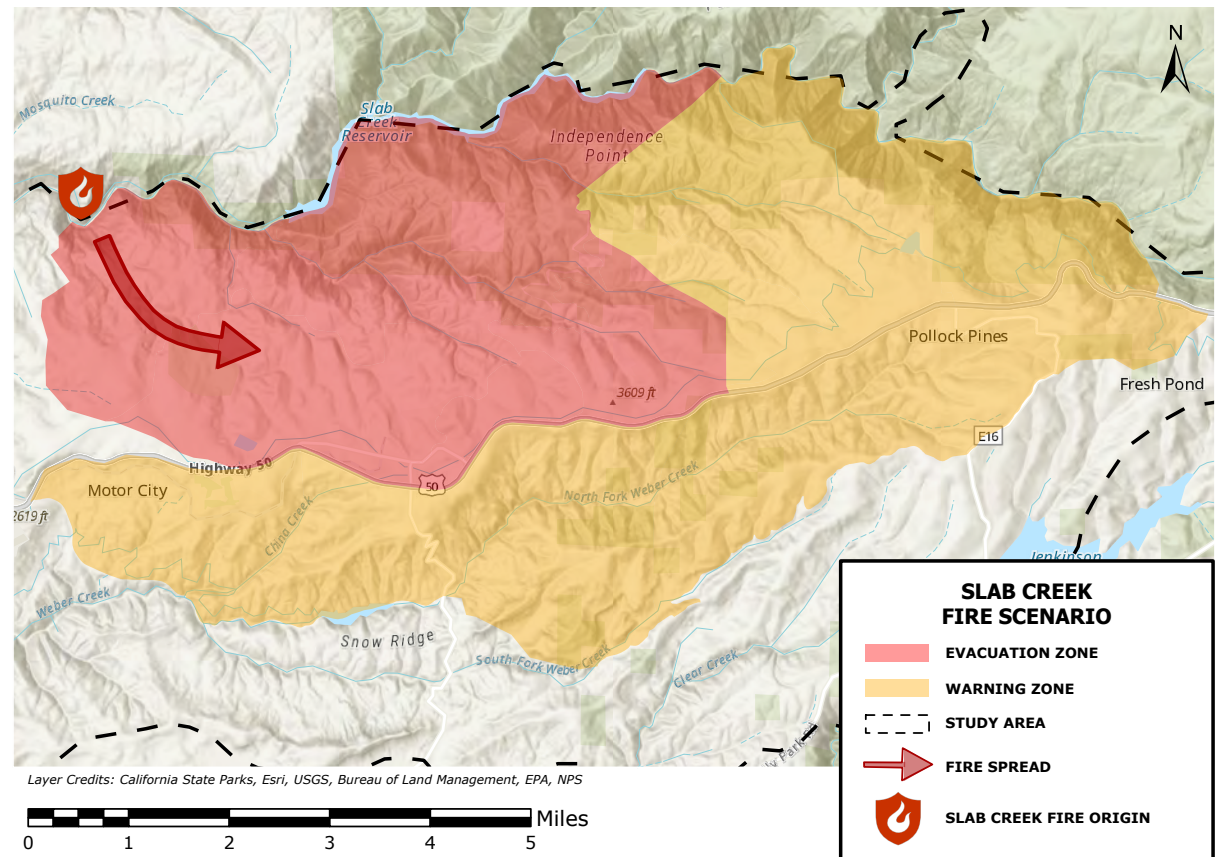


FIGURE 6. SLAB CREEK FIRE SCENARIO – FIRE ORIGIN, EVACUATION & WARNING ZONES

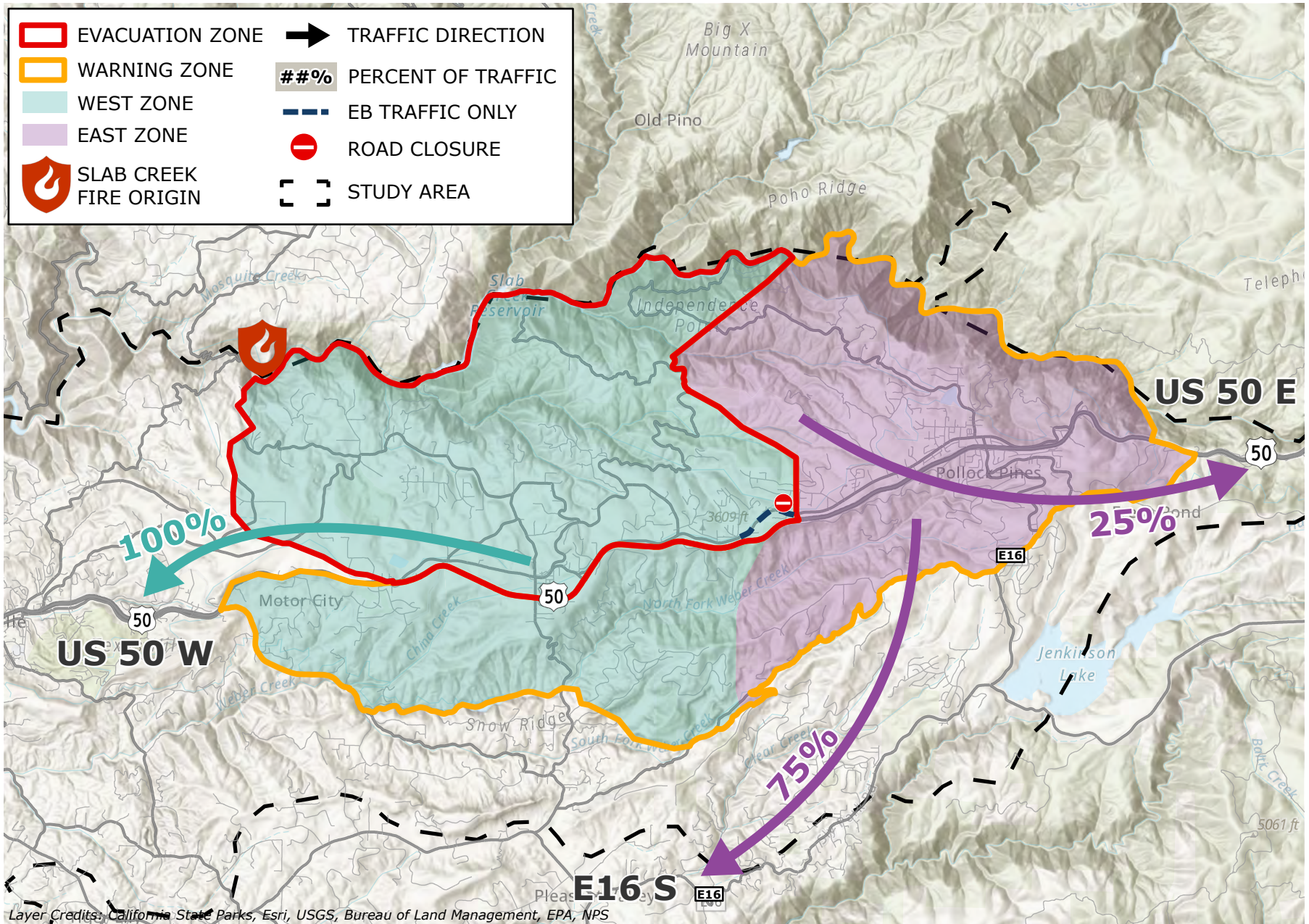


FIGURE 7. SLAB CREEK FIRE SCENARIO – EVACUATION DESTINATIONS

3.3. Martinez Creek Wildfire Scenario

Origin: Martinez Creek Drainage near the intersection of Martinez Creek Road and Church Mine Road

Direction: Burning north/northeast toward Diamond Springs and Tiger Lily

Rate of Spread: Reaching extent of evacuation zones over several hours

Season: Saturday in October

Time of Evacuation Order: Afternoon

Closures: No Closures in effect.

Background Traffic Condition: US 50 remains open to through traffic. Evacuation zones assume household, visitor, and employee evacuation demand.

Evacuation Destinations: 100% of evacuation zone households are assumed to evacuate to the destinations as shown in **Figure 9**. All visitors and employees within the evacuation zones are assumed to evacuate west on US 50 toward Sacramento. 50 percent of households in the warning zone are anticipated to voluntarily evacuate at the same time as the evacuation zones using the same evacuation destinations as

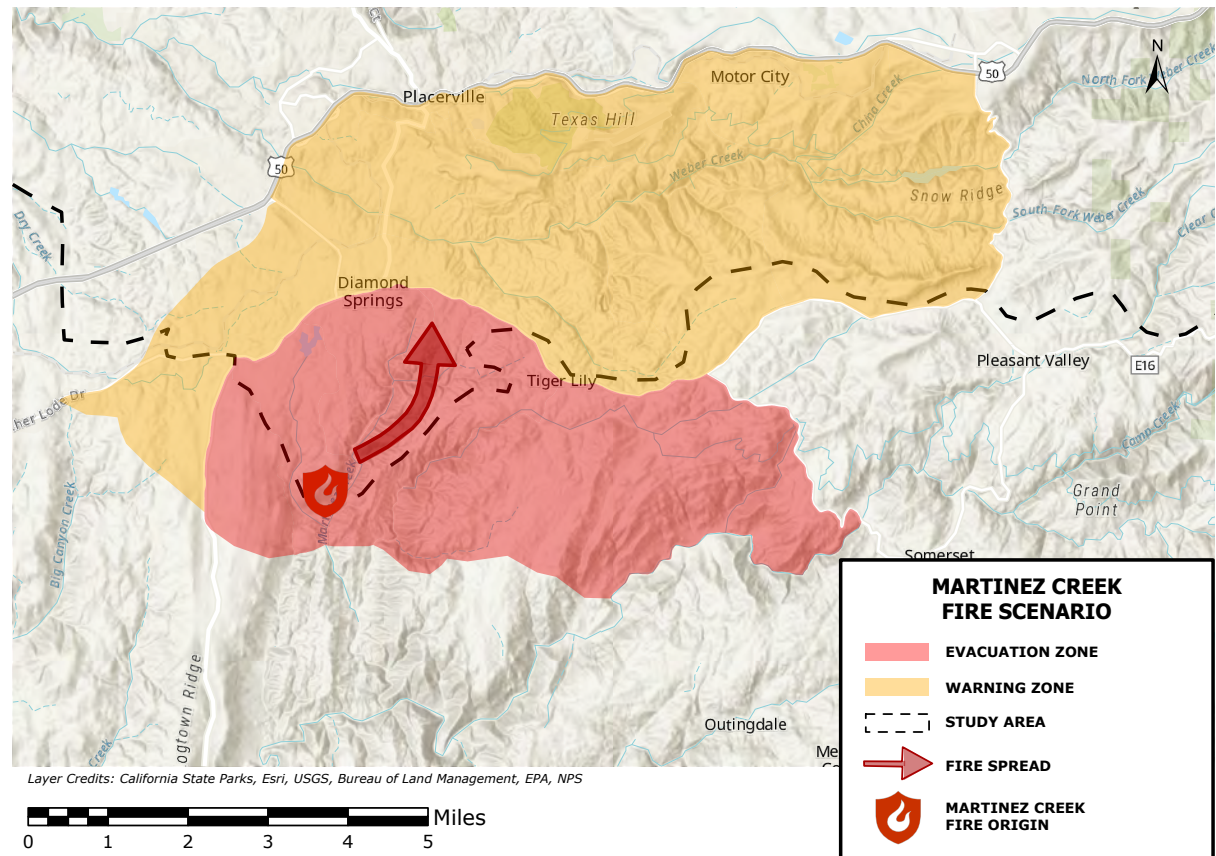


FIGURE 8. MARTINEZ CREEK FIRE SCENARIO – FIRE ORIGIN, EVACUATION & WARNING ZONES

shown on **Figure 9**. Evacuation trips in western part of the evacuation and warning zones primarily head west on US 50 with some trips heading south on SR 49. The central zones primarily evacuate

west toward US 50 with some trips evacuating north on SR 49 or south on E16. The eastern zones primarily evacuate south on E16, with some trips evacuating west on US 50 or north on SR 49.

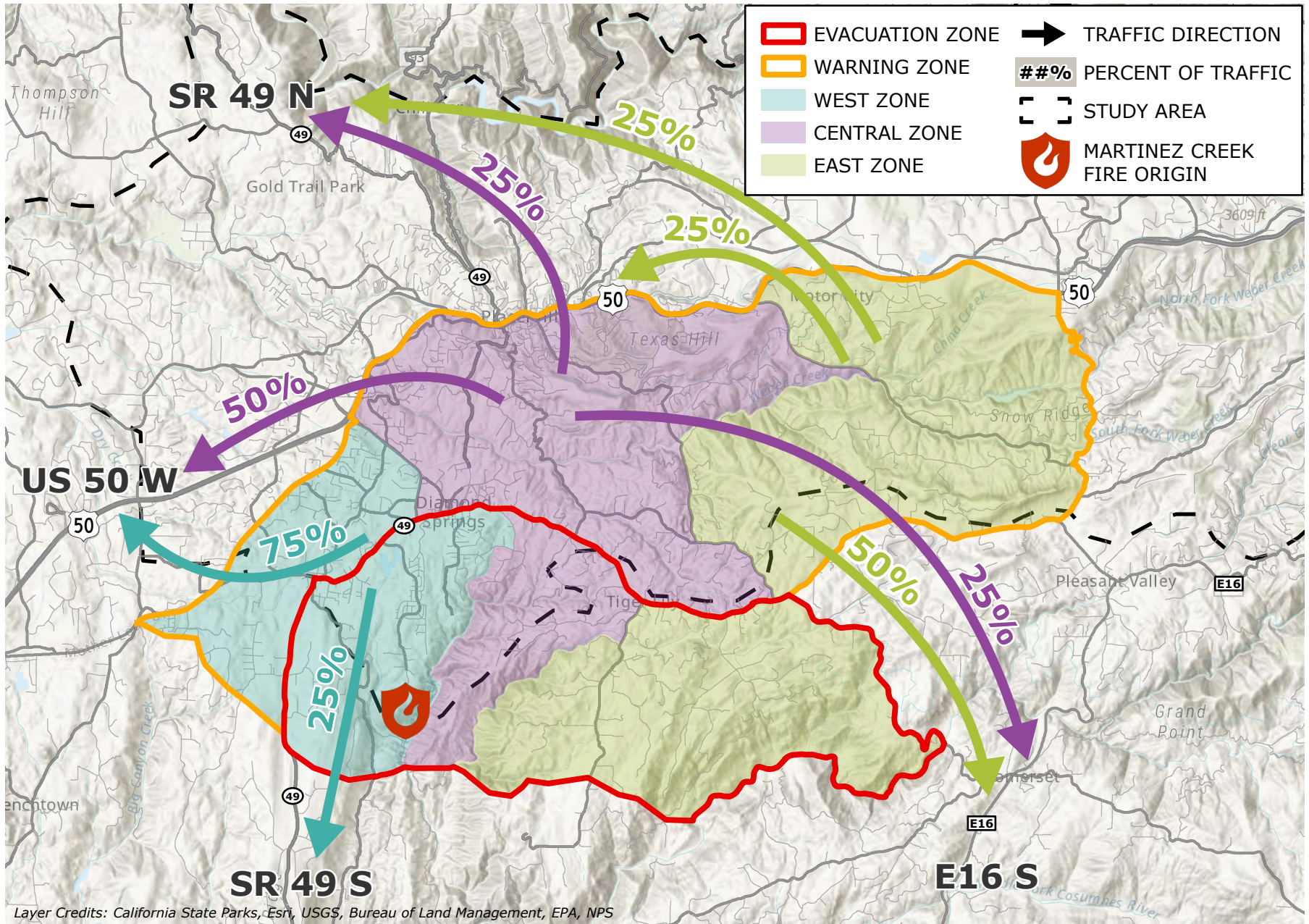


FIGURE 9. MARTINEZ CREEK FIRE SCENARIO – EVACUATION DESTINATIONS

3.4. Bucks Bar Wildfire Scenario

Origin: Bucks Bar near Buck Bar Road crossing of Cosumnes River

Direction: Burning northeast toward Pleasant Valley

Rate of Spread: Reaching extent of evacuation zones over several hours

Season: Saturday in October

Time of Evacuation Order: Afternoon

Closures: E16 between Bucks Bar Road and Pleasant Valley Road (northbound evacuation traffic and emergency traffic only)

Background Traffic Condition: US 50 remains open to through traffic. Evacuation zones assume household, visitor and employee evacuation demand

Evacuation Destinations: 100% of evacuation zone households are assumed to evacuate to the destinations as shown in **Figure 11**. All visitors and employees within the evacuation zones are assumed to evacuate west on US 50 toward Sacramento. 25 percent of households in the warning zone are anticipated to voluntarily evacuate at the same time as the evacuation zones using the same evacuation destinations as shown on **Figure 11**. 90 percent of all evacuation and warning zone trips have a destination west, primarily toward US 50. 10 percent of the trips are assumed to head east along US 50. The closure of E16 at Bucks Bar Road due to the proximity of the fire origin restricts evacuation traffic from using E16 south.

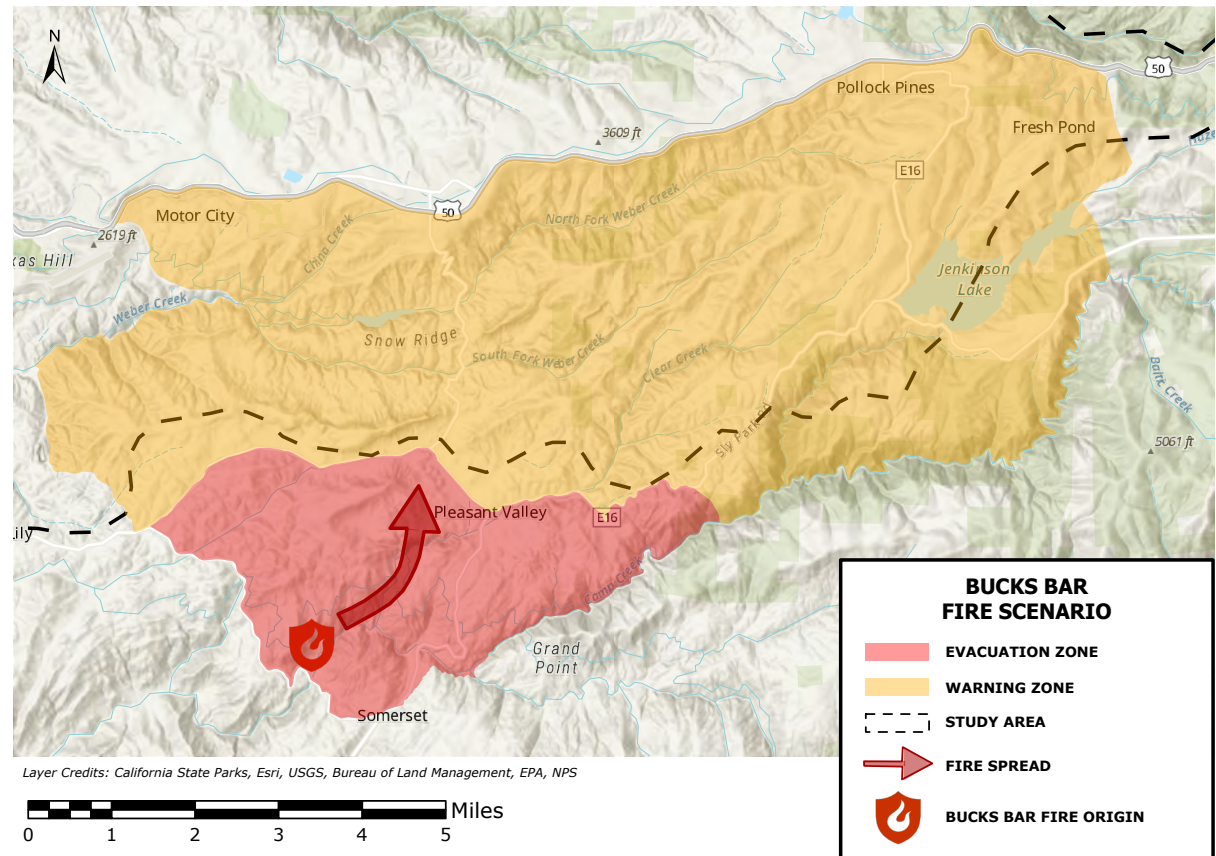


FIGURE 10. BUCKS BAR FIRE SCENARIO – FIRE ORIGIN, EVACUATION & WARNING ZONES

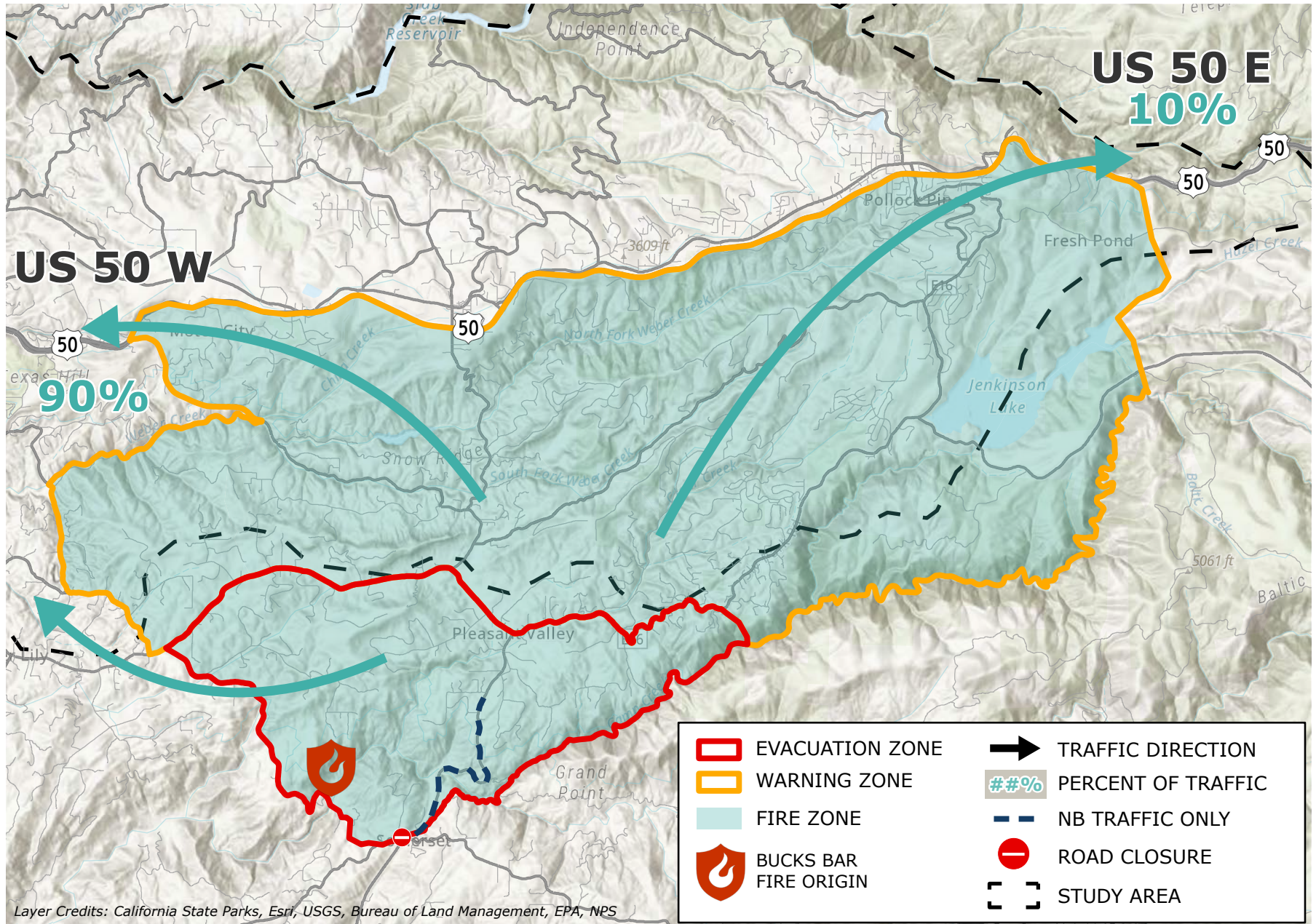


FIGURE 11. BUCKS BAR FIRE SCENARIO – EVACUATION DESTINATIONS AND CLOSURES

4.0

Wildfire Evacuation Assessment

THIS SECTION DETAILS THE WILDFIRE EVACUATION ASSESSMENT FOR EACH FIRE SCENARIO BASED ON THE ANALYSIS METHODOLOGY AND FIRE SCENARIOS PARAMETERS DETAILED IN THE PRECEDING SECTIONS.

For each wildfire evacuation assessment, the following results and observations are provided for both the full roadway capacity and reduced roadway capacity scenarios:

- Evacuation time estimates
- Key transportation facilities for evacuation
- Bottleneck identification

4.1. Wildfire Evacuation Assessment #1: Chili Bar Fire

The Chili Bar fire scenario represents a fast-moving fire towards downtown Placerville where all evacuation trips depart within one hour of the evacuation order. This is a middle-of-the-night evacuation order, so only household evacuation trips are assumed with no background traffic present.



4.1.1. EVACUATION TIME ESTIMATES

EVACUATION ZONE CLEARANCE TIMES

Figure 12 shows the accumulated percentage of trips that have cleared the evacuation zone by time intervals from the start of the evacuation order. The evacuation trips depart from the start of the evacuation order using the one hour departure time distribution detailed in the *Evacuation Departure Time Estimate* section. The results are shown for both the full roadway capacity and reduced roadway capacity scenarios. Under the reduced roadway capacity scenario, additional congestion leads to less vehicles being evacuated during the earlier time intervals of the evacuation period, but 100 percent of the vehicles are evacuated within 90 minutes under both capacity scenarios.

KEY OBSERVATIONS:

- All evacuation trips have cleared the evacuation zone by 90 minutes after the start of the evacuation order.
- After 60 minutes, all evacuation trips have departed their origin and 81 percent of the trips have cleared the evacuation zone under the ideal conditions of full roadway capacity and 75 percent of the trips have cleared the evacuation zone under the reduced capacity scenario.
- After 75 minutes, nearly all trips have cleared the evacuation zone with 98 percent under the full evacuation.

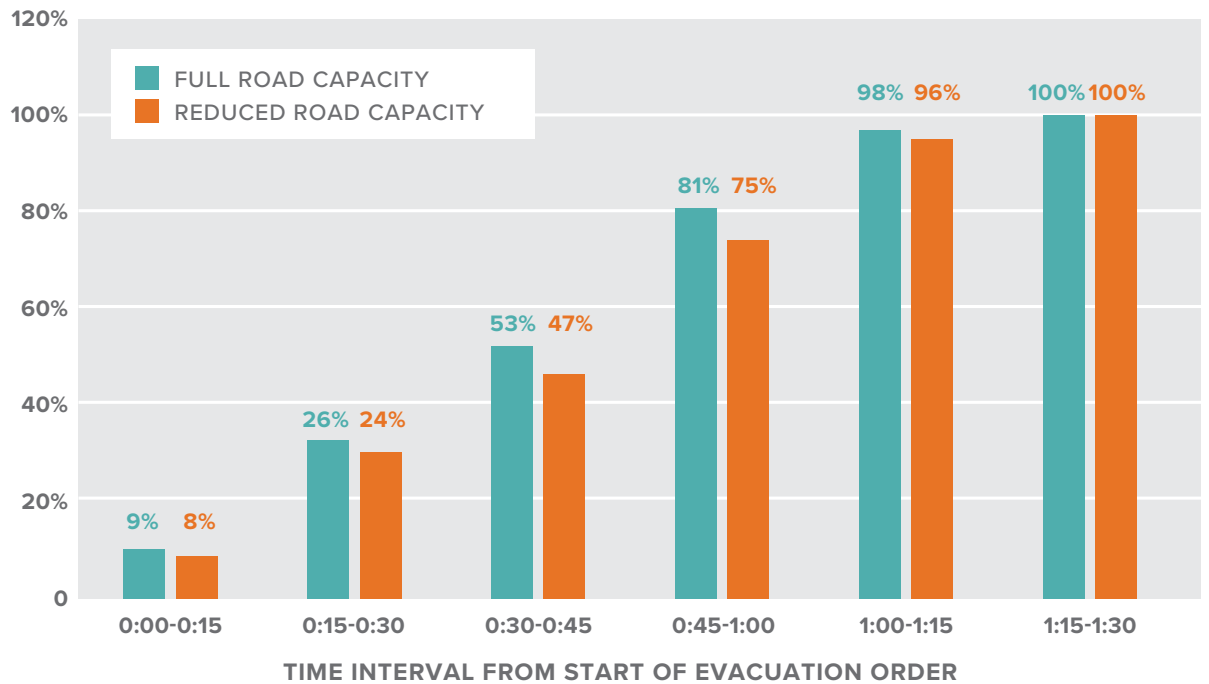


FIGURE 12. ACCUMULATED PERCENTAGE OF CHILI BAR FIRE EVACUATION ZONE TRIPS EVACUATED BY TIME INTERVAL

4.1.2. STUDY AREA EVACUATION TRAVEL TIME ESTIMATES

Study area evacuation travel times provide an estimate of how long it takes an evacuation trip to clear the Greater Placerville Study Area. After an evacuation trip clears the evacuation zone, there can be considerable downstream congestion that can substantially impact the route choice and the travel time along that route for that trip to clear the study area. Downstream evacuation effects can

also result in congestion that impacts emergency response or potentially spillback near or into the evacuation zone and impact the evacuation zone clearance times.

Figure 13 shows the study area evacuation travel time for the full roadway capacity scenario, and **Figure 14** shows the travel time results for the reduced roadway capacity scenario.

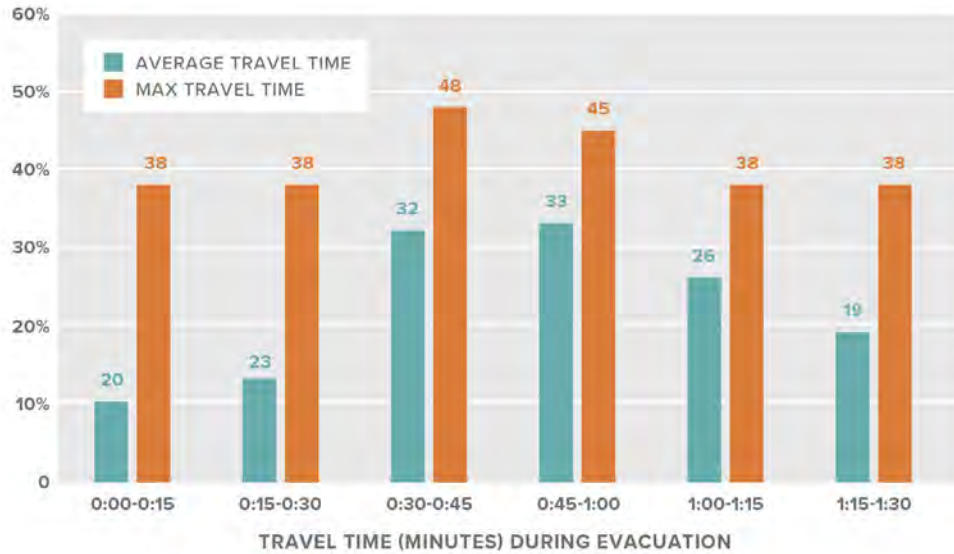


FIGURE 13. STUDY AREA EVACUATION TRAVEL TIME ESTIMATES FOR CHILI BAR FIRE SCENARIO (FULL ROADWAY CAPACITY)

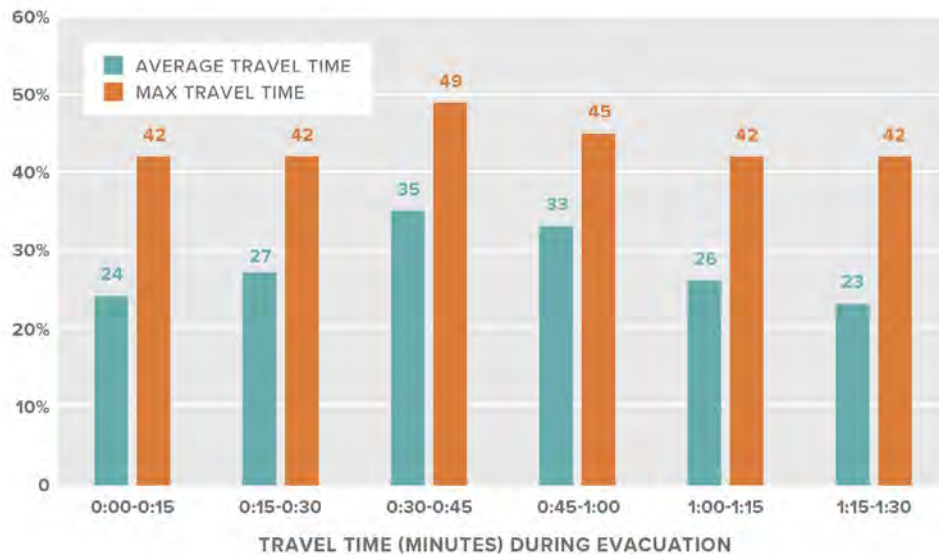


FIGURE 14. STUDY AREA EVACUATION TRAVEL TIME ESTIMATES FOR CHILI BAR FIRE SCENARIO (REDUCED ROADWAY CAPACITY)

KEY OBSERVATIONS:

- Average travel times from the evacuation zone to the destinations along the study area boundary jump from 20 minutes to 32 minutes under full capacity conditions, with maximum travel time peaking at 48 minutes.
- The reduced roadway capacity scenario adds approximately 4 minutes of additional travel time over the full roadway capacity scenario.
- Note that these average and maximum travel time values by interval are from the evacuation zone to all destination zones across all possible routes between the zones.

4.1.3. KEY EVACUATION ROUTES

For the Chili Bar Fire scenario there are many key transportation facilities that serve as evacuation routes from the evacuation zone to the various evacuation destinations. Evacuation routes that serve over 150 vehicles per hour during the evacuation are shown on Figure 15. The core evacuation routes within the evacuation zone destined for westbound US 50 are Middletown Road, Coloma Road (SR 49) to Spring Street and Bedford Avenue. These routes either access US 50 directly or connect to Placerville Drive, Green Valley Road, and El Dorado Road to reach US 50. As congestion builds on US 50, some evacuation traffic heads south of downtown Placerville on SR 49 to double back on Missouri Flat Road to reach US 50. East of Bedford Avenue all evacuation traffic is required to head south or east. For the east section of the evacuation zone, Mosquito Road, Union Ridge Road, Carson Road, and Jacquier Road provide primary routes to US 50 east or the southern evacuation routes. The southern evacuation routes connect to E16 (Mt Aukum Road), where evacuees can ultimately make their way south before connecting to many western destinations. Newtown Road to Pleasant Valley Road and Cedar Ravine Road to Bucks Bar Road are the primary connections for the southern evacuation route.

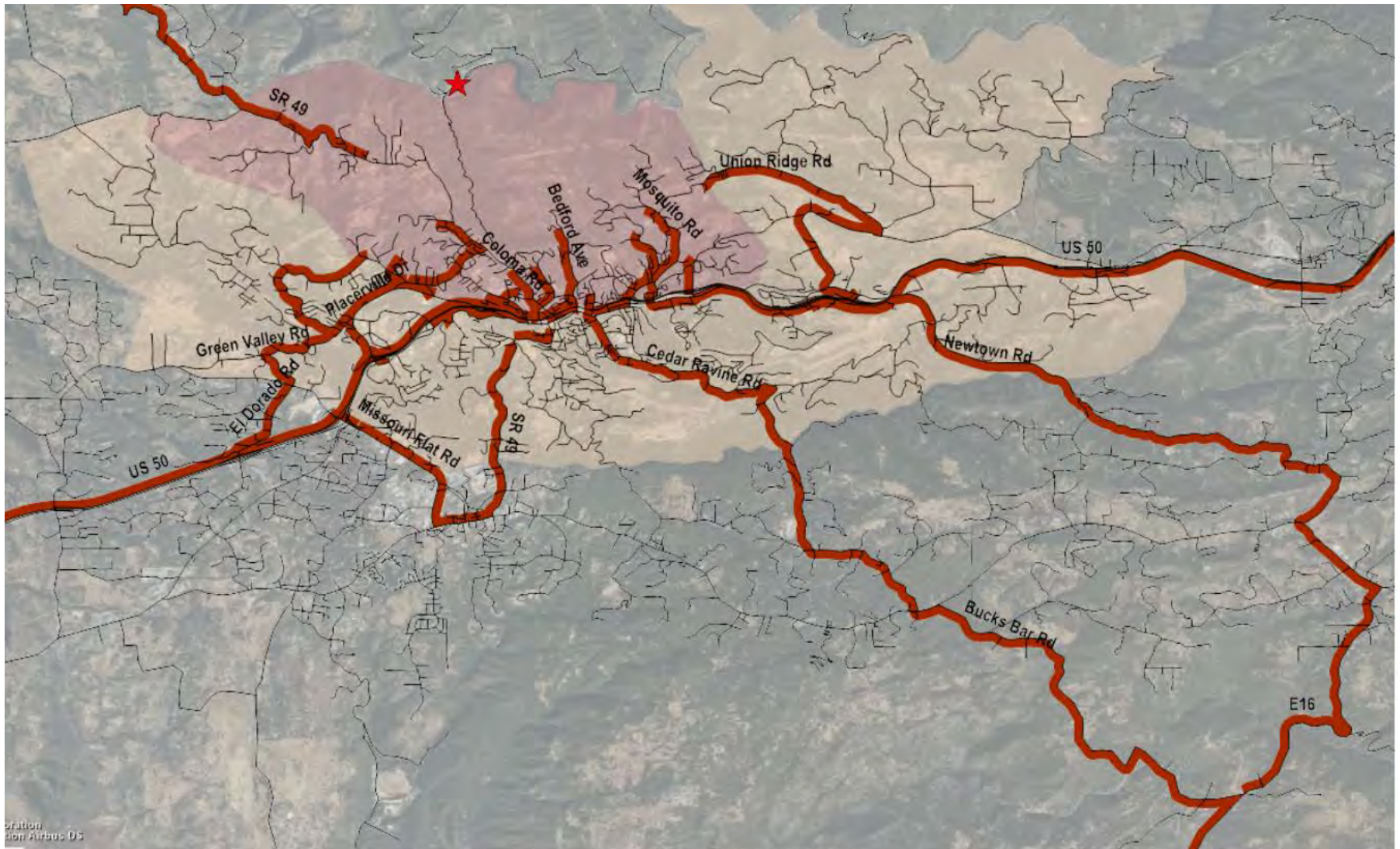


FIGURE 15. KEY MODEL EVACUATION ROUTES FOR CHILI BAR FIRE SCENARIO

4.1.4. EVACUATION TRAFFIC BOTTLENECK IDENTIFICATION

There are several traffic bottlenecks that impact queuing, route choice, and travel time during the Chili Bar Fire scenario. The key bottleneck areas are described in this section. Recommendations for operational strategies and infrastructure projects are listed under **Section 5**.

- **Downtown Placerville:** Evacuation traffic congestion in the downtown area directly impacts the evacuation zone clearance times. Southbound traffic from Bedford Avenue queues at the US 50 traffic signal, but this flow benefits from the restricted westbound US 50 traffic at this location. Southbound Spring Street backs up from the US 50 traffic signal to the all-way stop controlled intersection with Coloma Road/SR 49. The traffic signal at Spring Street and US 50 needs to serve westbound traffic primarily from Bedford Ave alternating with Spring Street traffic. While this flow results in significant queuing on Coloma Road, the queues do clear within 90 minutes. Canal Street also queues back from the US 50 traffic signal as this signal needs to serve the westbound flows from Spring St/Coloma Rd and Bedford Avenue. Canal Street evacuation traffic is primarily from adjacent land use as the west end of Canal Street can use Middletown Road to Placerville Drive. As congestion builds some traffic crosses downtown to SR 49 South and connects to US 50 further west via Missouri Flat.
- **Placerville Drive to westbound US 50:** Evacuation traffic congestion in the Placerville Drive area directly impacts the evacuation zone clearance times. Another primary evacuation flow route stems from Coloma Road to Middletown Road to Placerville Drive via Pierroz Road or Cold Springs Road. Congestion builds along this route stemming from the stopped controlled and signalized approaches. Downstream at the Placerville Drive and Green Valley Road traffic signal, additional southbound green time is assumed to accommodate the evacuation demand. Further downstream the westbound on-ramp for Placerville Drive to US 50 queues back toward Green Valley Road as the Placerville Drive evacuation traffic merges with the westbound US 50 evacuation traffic coming from downtown Placerville. As the congestion builds on westbound US 50 and the Placerville Drive interchange, alternative evacuation routes start to be used, such as Green Valley Road to El Dorado Road
- **Cedar Ravine Road:** Evacuation traffic from the east section of the evacuation zone relies on Cedar Ravine Road and Newtown Road to ultimately reach E16 south. Cedar Ravine Road has multiple stop controlled approaches that result in queuing and travel time impacts, notably at Darlington Avenue, Country Club Road, and Pleasant Valley Road.
- **US 50 eastbound at Jacquier Road:** Evacuation traffic from the east section of the evacuation zone relies on Cedar Ravine Road and Newtown Road to ultimately reach E16 south. The traffic flow that uses Newtown Road stems from the eastbound US 50 off-ramp at Jacquier Road and southbound Jacquier Road to connect to Broadway and onto Newtown. The closely spaced intersections with the off-ramp terminal and Broadway, along with the stop controlled approach result in queuing on the off-ramp back onto mainline US 50.
- **Bucks Bar Road and E16 (Mt Aukum Road):** The Newtown Road and Cedar Ravine Road evacuation routes heading toward E16 south, ultimately converge at the all-way stop controlled intersection of Bucks Bar Road and E16. This results in significant queuing on both approaches. While this convergence of flows results in significant traffic congestion, it should be noted that this location is a considerable distance from the evacuation zone and warning zone areas.

4.2. Wildfire Evacuation Assessment #2: Slab Creek

The Slab Creek fire scenario originates near the Slab Creek Dam burning southeast toward Camino and Cedar Grove. This fire occurs during an October Saturday in the late afternoon, coinciding with peak Apple Hill tourism season and peak fire season. In addition to household evacuation trips, visitor and employee trips in the evacuation zone must also evacuate. All employee and visitor evacuation trips are assumed to evacuate west on US 50, whereas household evacuation trips are assumed to evacuate to the evacuation destinations as detailed in **Section 3.2**. 50 percent of households in the warning zone are anticipated to voluntarily evacuate at the same time as the evacuation zones using the same evacuation destinations. The voluntary evacuation trips from the warning zones combined with through traffic of US 50 account for the background traffic condition that is present while evacuation trips are leaving the evacuation zone.

4.2.1. EVACUATION TIME ESTIMATES

Figure 16 shows the accumulated percentage of trips that have cleared the evacuation zone by time intervals from the start of the evacuation order. The evacuation trips depart from the start of the evacuation order using the two hour departure time distribution detailed in **Section 2.4.2**, where 70 percent of the trips depart in the first hour and the remaining 30 percent of trips depart in the second hour. The results are shown for both the full roadway capacity and reduced roadway

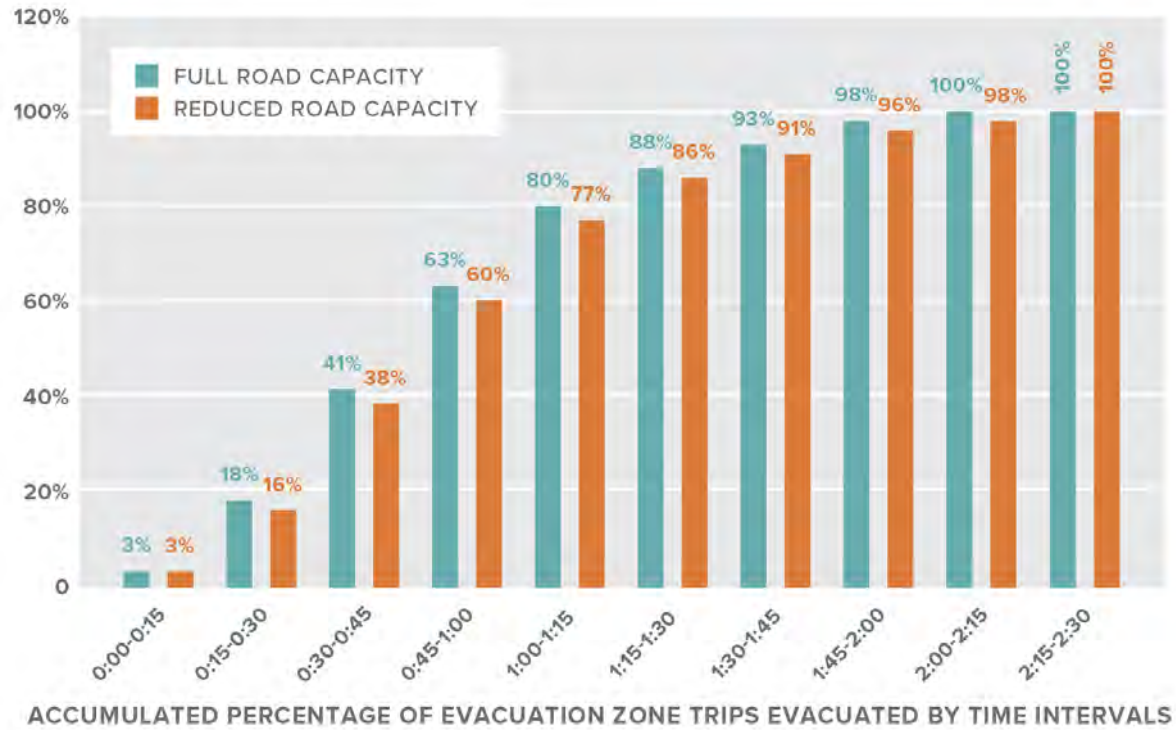


FIGURE 16. ACCUMULATED PERCENTAGE OF SLAB CREEK EVACUATION ZONE TRIPS EVACUATED BY TIME INTERVALS

capacity scenarios. Under the reduced roadway capacity scenario additional congestion leads to longer evacuation times.

KEY OBSERVATIONS:

All evacuation trips have cleared the evacuation zone by 135 minutes after the start of the evacuation order under the ideal conditions of full roadway capacity. It takes 150 minutes to fully clear the evacuation zone under the reduced capacity scenario.

The reduced roadway capacity scenario results in an average of 3 percent less traffic being evacuated during the peak of the evacuation as compared to the full roadway capacity.

After 60 minutes, approximately 60 percent of all trips have been evacuated from the evacuation zone.

After 120 minutes, approximately 96 percent of all trips have been evacuated from the evacuation zone.

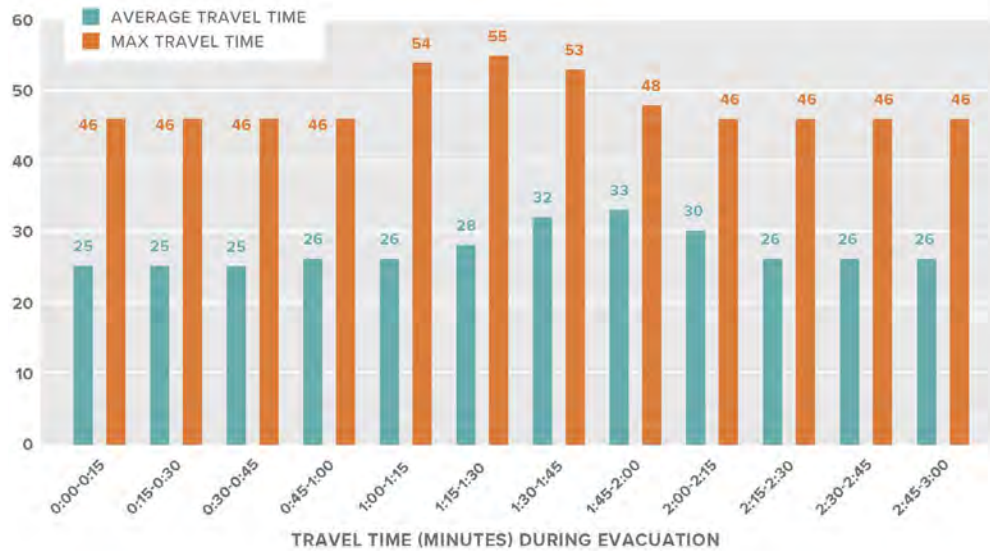


FIGURE 17. STUDY AREA EVACUATION TRAVEL TIME ESTIMATES FOR SLAB CREEK FIRE SCENARIO (FULL ROADWAY CAPACITY)

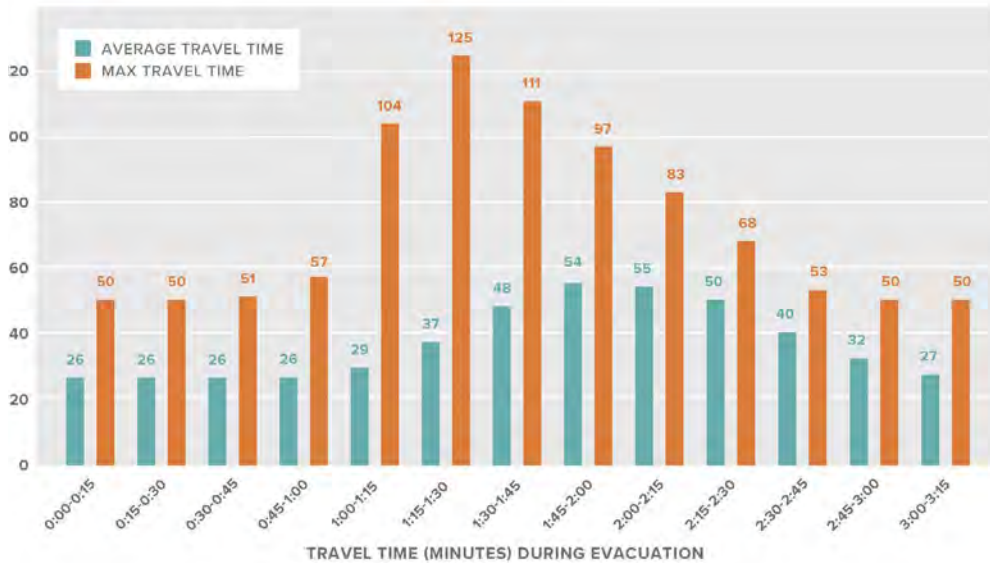


FIGURE 18. STUDY AREA EVACUATION TRAVEL TIME ESTIMATES FOR SLAB CREEK FIRE SCENARIO (REDUCED ROADWAY CAPACITY)

4.2.2. STUDY AREA EVACUATION TRAVEL TIME ESTIMATES

Study area evacuation travel times provide an estimate of how long it takes an evacuation trip to clear the Greater Placerville Study Area. After an evacuation trip clears the evacuation zone, there can be considerable downstream congestion that can substantially impact the route choice and the travel time along that route for that trip to clear the study area. Downstream evacuation effects can also result in congestion that impacts emergency response or potentially spillback near or into the evacuation zone and impact the evacuation zone clearance times.

Figure 17 shows the study area evacuation travel time for the full roadway capacity scenario and Figure 18 shows the travel time results for the reduced roadway capacity scenario.

KEY OBSERVATIONS:

Average travel times from the evacuation zone to the destinations along the study area boundary jump from 26 minutes to 33 minutes under full capacity conditions, with maximum travel time peaking at 55 minutes.

With the Slab Creek fire occurring east of Placerville, the evacuation traffic is primarily funneled westbound on US 50 with limited parallel routes. Under the reduced capacity scenario, the lack of network resiliency results in a substantial increasing the average travel times by 20 minutes and the maximum travel times by 30 minutes.

Note that these average and maximum travel time values by interval are from the evacuation zone to all destination zones across all possible routes between the zones.

4.2.3. KEY EVACUATION ROUTES

For the Slab Creek Fire scenario there are many key transportation facilities that serve as evacuation routes from the evacuation zone to the various evacuation destinations. Evacuation routes that serve over 150 vehicles per hour during the evacuation are shown in **Figure 19**. The core evacuation routes within the evacuation zone destined for westbound US 50 are North Canyon Road to Carson Road to Schnell School Road. From Camino, key routes are Carson Road west to US 50 and for destinations south on E16 to bypass westbound US 50 congestion, Snows Road to Pleasant Valley to Bucks Bar Road to Connect to E16 south. Note, Snows Road was coded in the model with a reduced posted speed of 19 mph to account for the narrow lanes, grade, and sharp curves. East of Camino, routes in the evacuation zone primarily head south to Pony Express Trail to connect to US 50. Pollock Pines is located in the warning zone to the east and includes voluntary evacuation trips. These trips primarily head south on Sly Park Road to continue south on E16, with a small percentage of trips heading east on US 50.

4.2.4. EVACUATION TRAFFIC BOTTLENECK IDENTIFICATION

There are several traffic bottlenecks that impact queuing, route choice, and travel time during the Slab Creek Fire scenario. The key bottleneck areas are described in this section. Recommendations for operational strategies and infrastructure projects are listed under **Section 5**.

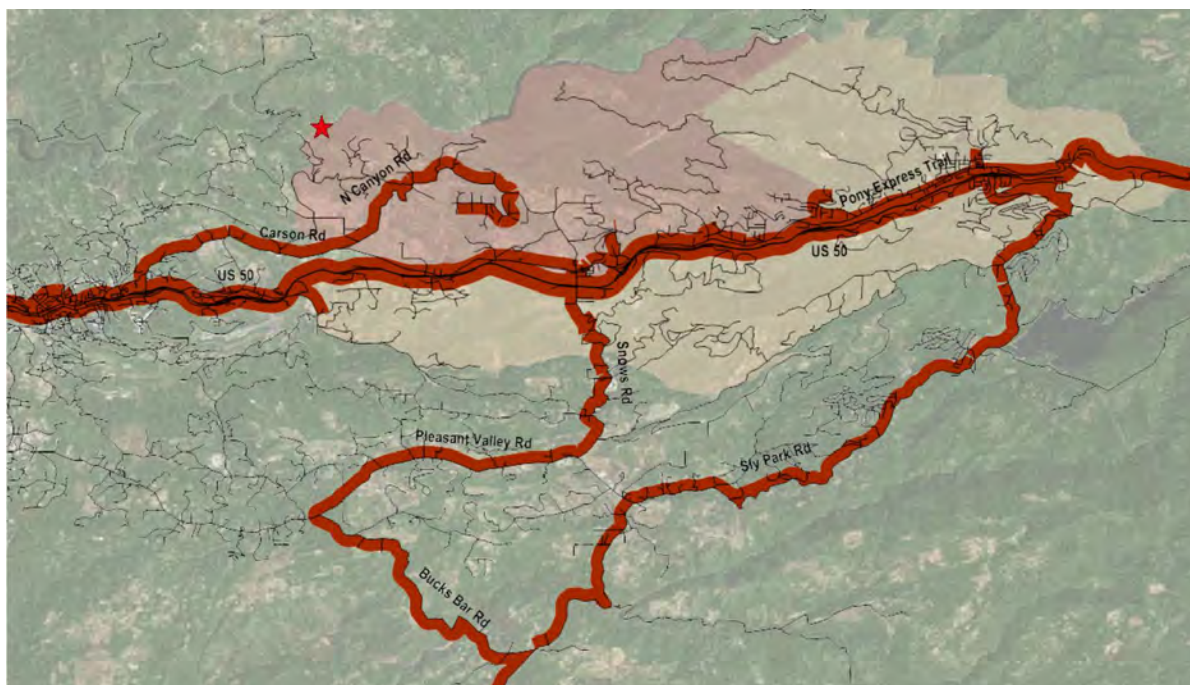


FIGURE 19. KEY EVACUATION ROUTES FOR SLAB CREEK FIRE SCENARIO

Downtown Placerville: The majority of the evacuation traffic, including households, employees, and visitors evacuate west along US 50. The three traffic signals pose a significant bottleneck for the evacuation demand. The dynamic traffic assignment model seeks to find parallel route capacity, but there are limited options. Some traffic uses Main Street to Forni Road or Spring Street to bypass congestion on US 50.

Westbound US 50: Significant westbound traffic west of downtown Placerville on US 50 results in stop-and-go congestion toward Cameron Park with queue shockwaves that can reach downtown Placerville, further impacting the westbound capacity of US 50 through Placerville.

Pony Express Trail at Ridgeway Drive:

Westbound evacuation traffic from and to the north of Pollock Pines heads west on Pony Express Trail. Model observations as well as comments from the Social Pinpoint survey both highlighted that westbound Pony Express Trail traffic can impede evacuation of downstream routes, such as Mace Road. A base model assumption and recommendation in the operational strategies is to have manual traffic control flag all westbound Pony Express Trail traffic onto westbound US 50 at Ridgeway Drive.

Pollock Pines: Westbound Pony Express Trail turning right onto Sly Park Road queues past Forebay Road. Heavy and queued westbound traffic on Pony Express Trail also makes it challenging for Forebay traffic to turn left to continue along evacuation destinations.

Eastbound US 50 at Sly Park Road Interchange: Traffic moving eastbound on the US 50 off-ramp to Sly Park Road to continue south on E16 results in significant queuing from the stop controlled movements, and the southbound through evacuation traffic on Sly Park Road. Additional queuing is on eastbound Ridgeway Drive at the stop controlled approach to Sly Park Road. This traffic is headed for southbound E16 and conflicting with the southbound slows on Sly Park Road and from the US 50 off-ramp.

Bucks Bar Road and E16 (Mt Aukum Road): The Snows Road and Sly Park Road evacuation routes heading toward E16 south, ultimately converge at the all-way stop controlled intersection of Bucks Bar Road and E16. Note the model assigned traffic from Snows Road to Pleasant Valley to Bucks Bar, as direct routing to Sly Park Road from Pleasant Valley Road would result in a greater bottleneck at Sly Park Road and Pleasant Valley Road. This results in significant queuing on both approaches. While this convergence of flows results in significant traffic congestion, it should be noted that this location is a considerable distance from the evacuation zone and warning zone areas.

4.2.5. SLAB CREEK FIRE MITIGATION ANALYSIS

The Slab Creek wildfire evacuation scenario was evaluated with recommended mitigation strategies and infrastructure projects, as outlined in **Section 5**, to mitigate the bottlenecks identified through the modeling. Due to constraints with the scope of this project, mitigation analysis could only be included for two of the wildfire scenarios (Slab Creek and Martinez Creek). The following operational strategies and infrastructure projects were included as part of the mitigation analysis. Further details on the operational strategies and infrastructure projects can be found in **Section 5**.

- US 50 “Trip to Green”: Downtown Placerville traffic signals remain green east/westbound with side streets restricted to right-in, right-out.
- Hard shoulder emergency-use only lane from Missouri Flat to Cameron Park, with Placerville Drive to Missouri Flat westbound auxiliary lane flagged through Missouri Flat ramp traffic signal to provide third lane capacity from Placerville Drive along US 50.
- Capacity improvements to represent manual flagging of traffic or construction of traffic signals or roundabouts to reduce stop sign delay at the intersections of Sly Park Road at Ridgeway Drive, US 50 eastbound ramp, Pony Express Trail, and the intersection of Pony Express Trail and Forebay Road.

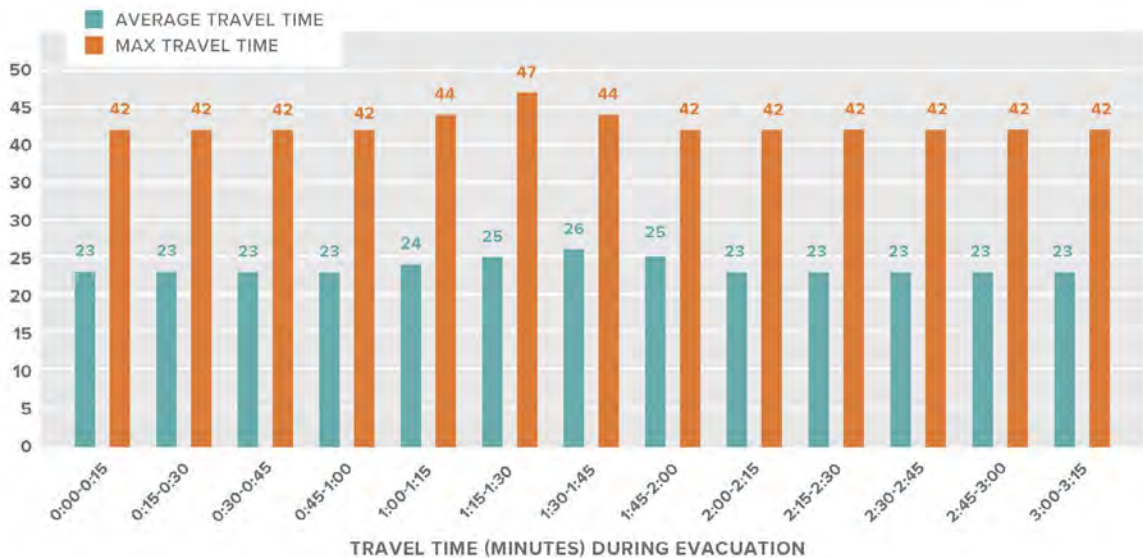


FIGURE 20. MITIGATED STUDY AREA EVACUATION TRAVEL TIME ESTIMATES FOR SLAB CREEK FIRE SCENARIO (REDUCED ROADWAY CAPACITY)

- Capacity improvements to represent manual flagging of traffic or right turn lane with acceleration lane from Bucks Bar Road at the intersection with E16.
- Westbound flagging of Pony Express Trail traffic onto US 50 at Ridgeway Drive included in baseline and mitigation models.

The mitigation scenario is evacuated only under the reduced roadway capacity scenario to evacuate the maximum effect of the proposed strategies and infrastructure projects.

KEY OBSERVATIONS:

- The recommended mitigation strategies and infrastructure projects have a substantial reduction in evacuation travel times in the greater Placerville study area.
- Average travel times are reduced by 29 minutes and maximum travel times are reduced by 78 minutes as shown in **Figure 20**.
- The evacuation zone clearance time was not substantially different under the mitigation scenario as the evacuation congestion that occurred in the baseline evacuation scenarios occurred downstream of the evacuation zones.

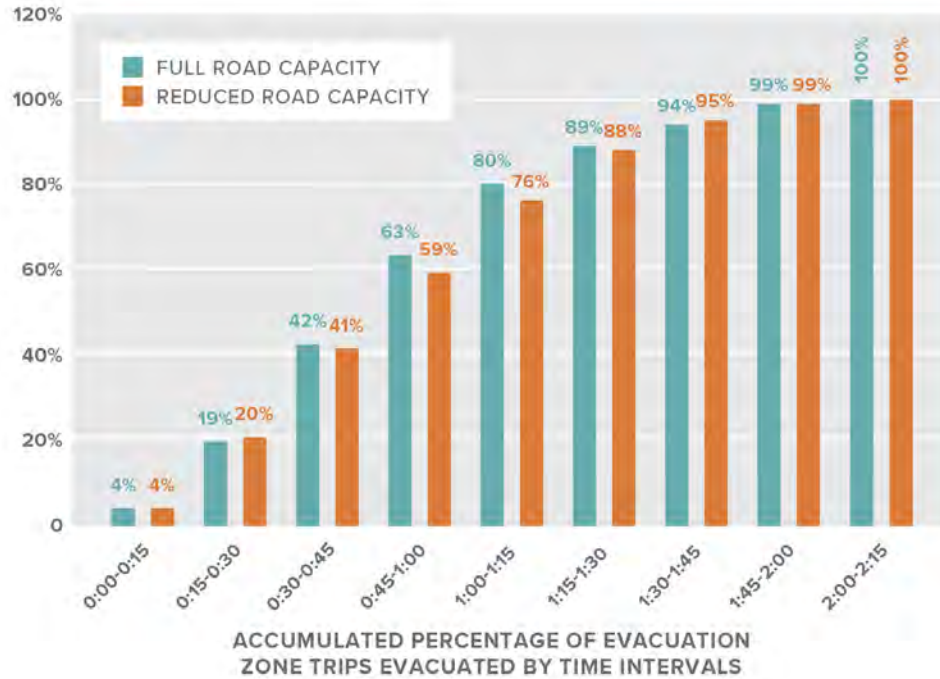


FIGURE 21. ACCUMULATED PERCENTAGE OF MARTINEZ CREEK EVACUATION ZONE TRIPS EVACUATED BY TIME INTERVALS

4.3. Wildfire Evacuation Assessment #3: Martinez Creek

The Martinez Creek fire scenario represents a wildfire originating near the intersection of Martinez Creek Road and Church Mine Road that burns north/northeast toward Diamond Springs and Tiger Lily. The fire occurs on a Saturday during an October weekend during the afternoon. While the evacuation analysis does account for visitor and employee trips to be evacuated, the evacuation

zone is largely residential and the majority of the evacuation trips are household-based.

4.3.1. EVACUATION TIME ESTIMATES

Figure 21 shows the accumulated percentage of trips that have cleared the evacuation zone by time intervals from the start of the evacuation order. The results are shown for both the full roadway capacity and reduced roadway capacity scenarios. Under the reduced roadway capacity scenario additional congestion leads to longer evacuation times.

KEY OBSERVATIONS:

- All evacuation trips have cleared the evacuation zone by 135 minutes after the start of the evacuation order under both capacity scenarios.
- The reduced roadway capacity scenario results in an average of 4 percent less traffic being evacuated during the peak of the evacuation as compared to the full roadway capacity.
- After 60 minutes, approximately 60 percent of all trips have been evacuated from the evacuation zone.
- After 120 minutes, approximately 99 percent of all trips have been evacuated from the evacuation zone.

4.3.2. STUDY AREA EVACUATION TRAVEL TIME ESTIMATES

Study area evacuation travel times provide an estimate of how long it takes an evacuation trip to clear the Greater Placerville Study Area. After an evacuation trip clears the evacuation zone, there can be considerable downstream congestion that can substantially impact the route choice and the travel time along that route for that trip to clear the study area. Downstream evacuation effects can also result in congestion that impacts emergency response or potentially spills back near or into the evacuation zone and impacts the evacuation zone clearance times.

Figure 22 shows the study area evacuation travel time for the full roadway capacity scenario and **Figure 23** shows the travel time results for the reduced roadway capacity scenario.

KEY OBSERVATIONS:

- Average travel times from the evacuation zone to the destinations along the study area boundary jump from 23 minutes to 44 minutes under full capacity conditions, with maximum travel time peaking at 86 minutes.

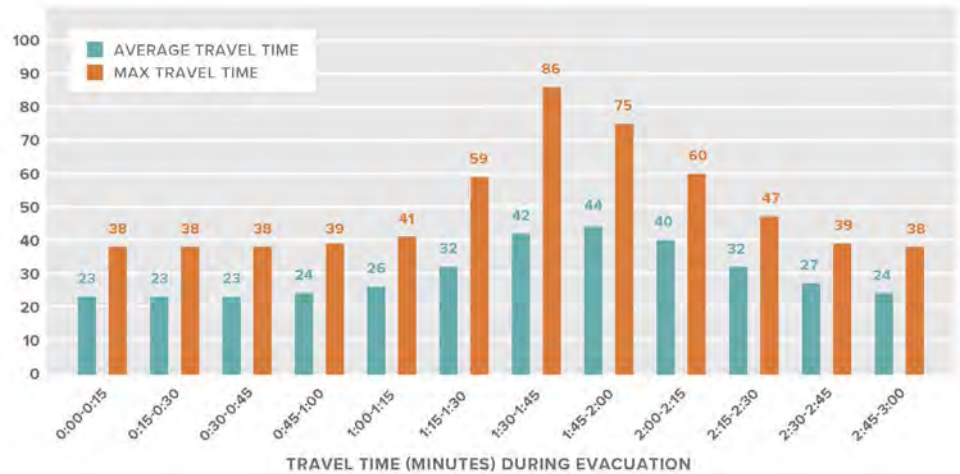


FIGURE 22. STUDY AREA EVACUATION TRAVEL TIME ESTIMATE FOR MARTINEZ CREEK FIRE SCENARIO (FULL ROADWAY CAPACITY)

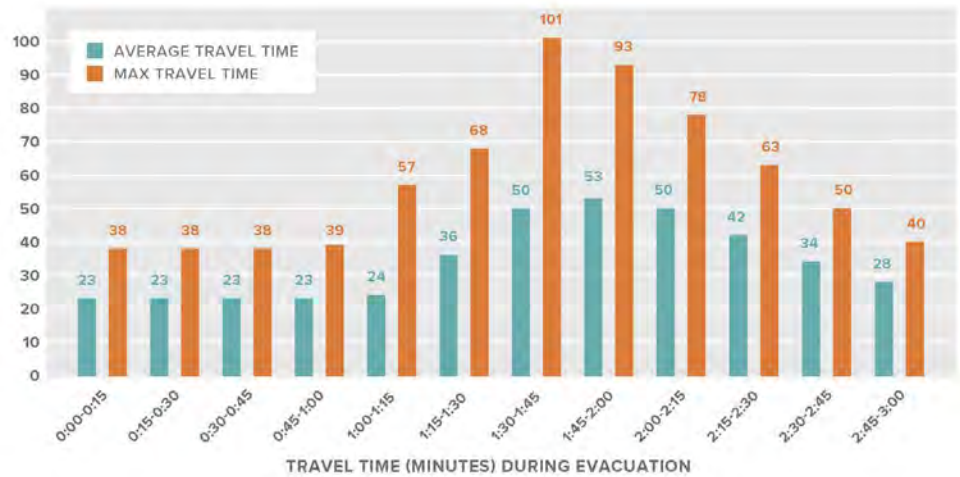


FIGURE 23. STUDY AREA EVACUATION TRAVEL TIME ESTIMATE MARTINEZ CREEK FIRE SCENARIO (REDUCED ROADWAY CAPACITY)

- Under the reduced roadway capacity scenario the average travel times increase by 9 minutes to 53 minutes approximately two hours after the start of the evacuation order, whereas the maximum travel time jumps by 15 minutes over the full roadway capacity scenario to 101 minutes.
- Note that these average and maximum travel time values by interval are from the evacuation zone to all destination zones across all possible routes between the zones.

4.3.3. KEY EVACUATION ROUTES

For the Martinez Creek Fire scenario there are many key transportation facilities that serve as evacuation routes. The evacuation zone for this fire is east of SR 49, south of Pleasant Valley Road and west of Buck Bar Road. Evacuation of the primarily residential area uses the following key routes to access Pleasant Valley Road before heading to an evacuation destination of SR 49 South, US 50 West, SR 49 North or E16 South; Union Mine Road, Patterson Drive, Fowler Lane, Canyon Valley Road, Oak Hill Road, and Hanks Exchange Road. Primary routes west are Mother Lode Drive, El Dorado Road, or Missouri Flat Road to US 50. Primary routes to SR 49 north are direct via SR 49 or Cold Springs Road to Lotus Road, with evacuation trips on the eastern side of the evacuation zone using Cedar Ravine Road. For destinations that use SR 49 south, that is directly accessed from Pleasant Valley Road. Evacuation trips that head south on E16 use Pleasant Valley to Bucks Bar Road, but as congestion builds from the intersection at E16, some trips loop around via Pleasant Valley Road to Sly Park Road (E16) before heading south.

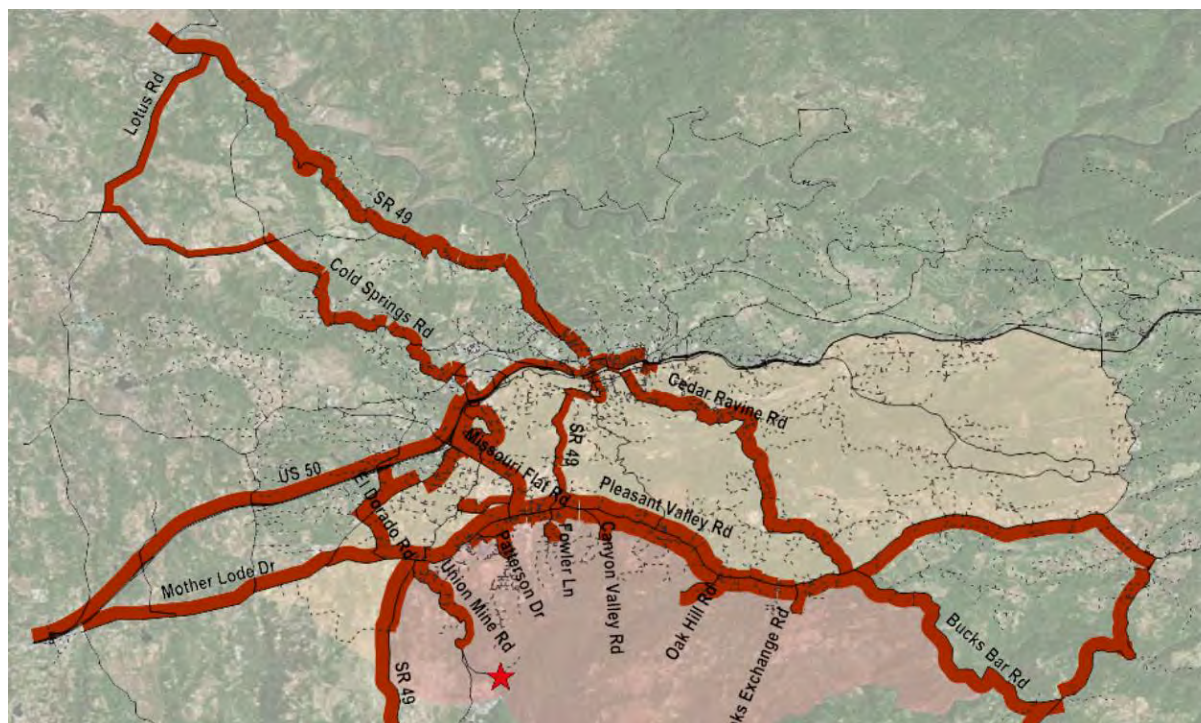


FIGURE 24. KEY EVACUATION ROUTES FOR MARTINEZ CREEK FIRE SCENARIO

4.3.4. EVACUATION TRAFFIC BOTTLENECK IDENTIFICATION

There are several traffic bottlenecks that impact queuing, route choice, and travel time during the Martinez Creek Fire scenario. The key bottleneck areas are described in this section. Recommendations for operational strategies and infrastructure projects are listed under **Section 5**.

Patterson Drive: Patterson Drive serves a large neighborhood that under existing conditions has a single access. Under both capacity scenarios, this route queues up and takes multiple traffic signal

cycles to exit the neighborhood. Note future development plans may include a secondary access, but also add additional residential units.

Fowler Lane and Canyon Valley Road: Fowler Lane evacuation traffic accesses a traffic signal at Pleasant Valley Road. Fowler Lane substantially queues back as a result of limited green time competing with heavy evacuation traffic on Pleasant Valley Road and a short left turn lane on Fowler Lane with leading left turn phasing that is often blocked by the through queue. There is secondary access to Canyon Valley Road via North

Circle Drive. Canyon Valley Road can be challenging to turn left onto Pleasant Valley Road during peak evacuation conditions as westbound queuing may block access and there is no center turn lane for a two-stage left turn.

US 50 Westbound: Significant evacuation traffic on westbound US 50 results in heavy traffic congestion from Missouri Flatt Road interchange to Cameron Park interchange.

Mother Lode Drive: Significant evacuation traffic on westbound Mother Lode Drive results in queuing west of Pleasant Valley Road with notable queuing at French Creek Road and Shingle Road.

Pleasant Valley Road: Between Mother Lode Drive and the traffic signal at SR 49 North, there is significant queuing in both directions during the evacuation as traffic is heading in both directions depending on the evacuation destination. Significant westbound queuing occurs at SR 49 / Fowler Lane as there are multiple evacuation flows converging at this intersection.

Bucks Bar Road and E16 (Mt Aukum Road): Evacuation traffic significantly queues back from the stop controlled intersection of Bucks Bar Road and E16.

North SR 49: North SR 49 results in significant northbound queuing stemming from the stop controlled approaches at Marshall Road and Lotus Road.

4.3.5. MARTINEZ CREEK FIRE MITIGATION ANALYSIS

The Martinez Creek wildfire evacuation scenario was evaluated with recommended mitigation strategies and infrastructure projects, as outlined in **Section 5**, to mitigate the bottlenecks identified through the modeling. Due to constraints with the scope of this project, mitigation analysis could only be included for two of the wildfire scenarios (Slab Creek and Martinez Creek). The following operational strategies and infrastructure projects were included as part of the mitigation analysis. Further details on the operational strategies and infrastructure projects can be found in **Section 5**.

- Hard shoulder emergency-use only lane from Missouri Flat to Cameron Park to provide a third lane of evacuation capacity from Missouri Flat interchange along westbound US 50.
- Construction of the Diamond Springs Parkway.
- Capacity improvements to represent manual flagging of traffic or evacuation signal timing plans on Mother Lode Drive at Shingle Road, French Creek Road, and on Pleasant Valley Road at Koki Lane, Patterson Drive, and Missouri Flat Road.
- Capacity improvements to represent manual flagging of traffic or construction of a roundabout at Mother Lode Drive and Pleasant Valley Road, Pleasant Valley Road and SR 49 South, SR 49 and Marshall Road, and SR 49 and Lotus Rd.
- Capacity improvements to represent manual flagging of traffic or right turn lane with

acceleration lane from Bucks Bar Road at the intersection with E16.

- Second access to Pleasant Valley Road for the Patterson Drive Neighborhood connecting to Faith Lane or a nearby location.
- Center turn lane on Pleasant Valley Road at Canyon Valley Road to allow a two-stage left turn out movement.

The mitigation scenario is evacuated only under the reduced roadway capacity scenario to evacuate the maximum effect of the proposed strategies and infrastructure projects.

KEY OBSERVATIONS:

- After 60 minutes from the start of the evacuation order, the mitigation strategies and infrastructure projects evacuated 6 percent more evacuation traffic as compared to the non-mitigated scenario, with both analyses using the reduced roadway capacity model.
- The total evacuation zone clearance time did not change as the departure time distribution still occurs over a two-hour period with the final 5 percent of the demand departing in the last 15-minute interval.
- The recommended mitigation strategies and infrastructure projects have a substantial reduction in evacuation travel times in the greater Placerville study area.
- Average travel times are reduced by 12 minutes and maximum travel times are reduced by 26 minutes as shown in **Figure 26**.

- The evacuation zone clearance time was not substantially different under the mitigation scenario as the evacuation congestion that occurred in the baseline evacuation scenarios occurred downstream of the evacuation zones.
- Construction of the Diamond Springs Parkway provides an important separation of evacuation flows from the Martinez Creek fire so westbound traffic on Pleasant Valley Road approaching SR 49 can turn right to ultimately get to Missouri Flat Road to avoid the congested segment between SR 49 and Missouri Flat.
- The westbound US 50 hard shoulder emergency-use only lane provides a critical third lane of capacity to evacuate the Martinez Creek Fire evacuation population. Even with this added third lane, parallel facilities, such as Mother Lode Drive are heavily used during the evacuation.
- Additional access connections for the Neighborhoods off of Patterson Drive and Fowler Lane can reduce the total evacuation times for those neighborhoods.

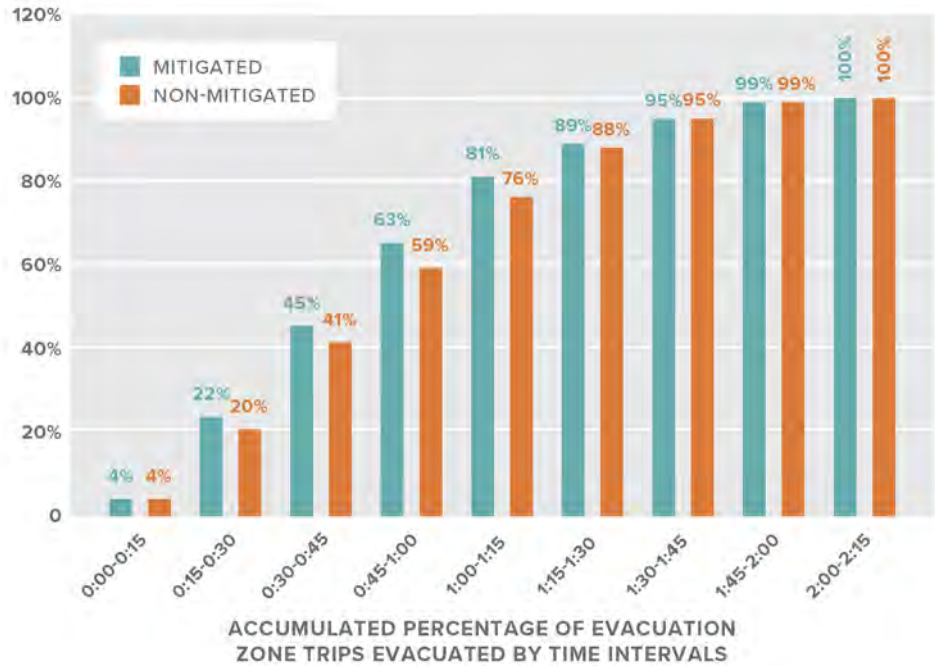


FIGURE 25. MITIGATED ACCUMULATED PERCENTAGE OF MARTINEZ CREEK EVACUATION ZONE TRIPS EVACUATED BY TIME INTERVALS

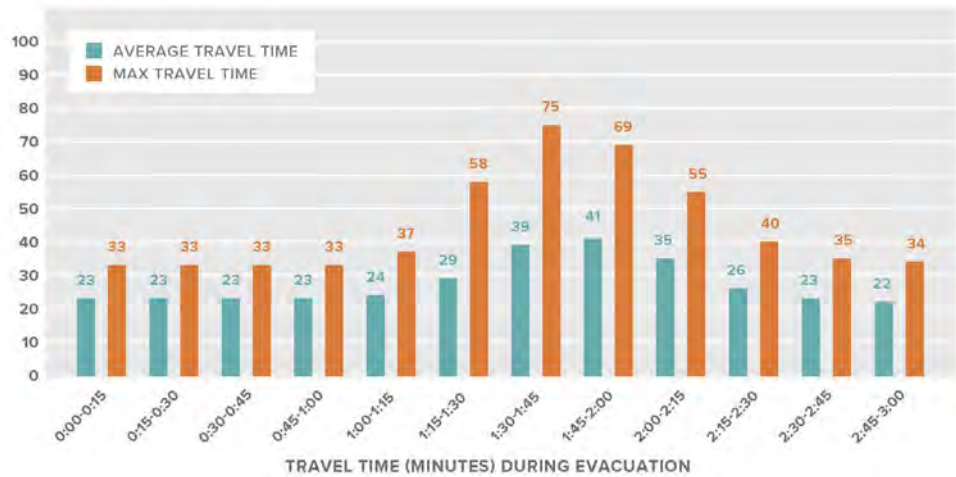


FIGURE 26. MITIGATED STUDY AREA EVACUATION TRAVEL TIME ESTIMATES FOR MARTINEZ CREEK FIRE SCENARIO (REDUCED ROADWAY CAPACITY)

4.4. Wildfire Evacuation Assessment #4: Bucks Bar

The Bucks Bar fire scenario represents a wildfire originating near the Bucks Bar Road crossing of the Cosumnes River burning northeast toward Pleasant Valley. This fire evacuation zone is comparatively smaller than the other fire scenarios with the evacuation population being primarily rural households. The evacuation zone is Bucks Bar Road to the southwest, Pleasant Valley Road to the north and E16 to the east. Closures include Bucks Bar Road from Pleasant Valley Road to E16 (northbound evacuation traffic only) and E16 from Pleasant Valley Road to Bucks Bar Road (northbound evacuation traffic only). US 50 is assumed to be open to through traffic and 25 percent of households in the warning zone are anticipated to voluntarily evacuate at the same time as the evacuation zones using the same evacuation destinations.

4.4.1. EVACUATION TIME ESTIMATES

Figure 27 shows the accumulated percentage of trips that have cleared the evacuation zone by time intervals from the start of the evacuation order. The results are shown for both the full roadway capacity and reduced roadway capacity scenarios. Under the reduced roadway capacity scenario there is some additional congestion that leads to slightly longer evacuation times.

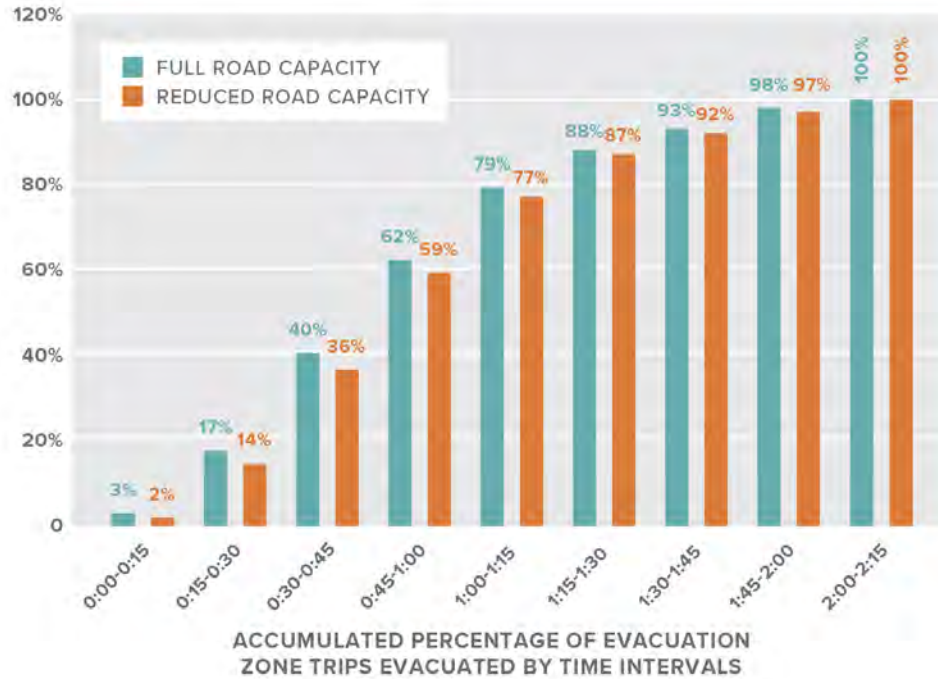


FIGURE 27. ACCUMULATED PERCENTAGE OF BUCKS BAR EVACUATION ZONE TRIPS EVACUATED BY TIME INTERVALS

KEY OBSERVATIONS:

- All evacuation trips have cleared the evacuation zone by 135 minutes after the start of the evacuation order.
- After 60 minutes, approximately 60 percent of trips have cleared the evacuation zone.
- After 90 minutes, approximately 88 percent of trips have cleared the evacuation zone.
- After 120 minutes, approximately 98 percent of trips have cleared the evacuation zone.
- Under the reduced roadway capacity scenario, approximately 4 percent less traffic has cleared the evacuation zone during the peak of the evacuation, however all trips clear by 135 minutes regardless of the roadway capacity as the final 5 percent of traffic leaves in the last 15-minute interval of the departure time distribution just before 2 hours after the evacuation order is in effect.

4.4.2. STUDY AREA EVACUATION TRAVEL TIME ESTIMATES

Study area evacuation travel times provide an estimate of how long it takes an evacuation trip to clear the Greater Placerville Study Area. After an evacuation trip clears the evacuation zone, there can be considerable downstream congestion that can substantially impact the route choice and the travel time along that route for that trip to clear the study area. Downstream evacuation effects can also result in congestion that impacts emergency response or potentially spillback near or into the evacuation zone and impact the evacuation zone clearance times.

Figure 28 shows the study area evacuation travel time for the full roadway capacity scenario and **Figure 29** shows the travel time results for the reduced roadway capacity scenario.

KEY OBSERVATIONS:

- Average travel times from the evacuation zone to the destinations along the study area boundary range from 28 to 30 minutes under full capacity conditions, with maximum travel time of 47 minutes.
- Under the reduced roadway capacity scenario the average travel times increase by approximately 3 minutes and maximum travel times increase by approximately 4 minutes.
- Note that these average and maximum travel time values by interval are from the evacuation zone to all destination zones across all possible routes between the zones.
- Overall there is little difference between the full and reduced roadway capacity scenarios as there are minimal traffic bottlenecks with the Bucks Bar scenario that result in substantial congestion, as compared to the three other scenarios. This is a result of lower overall evacuation trips due to the rural residential land use of the evacuation zone.

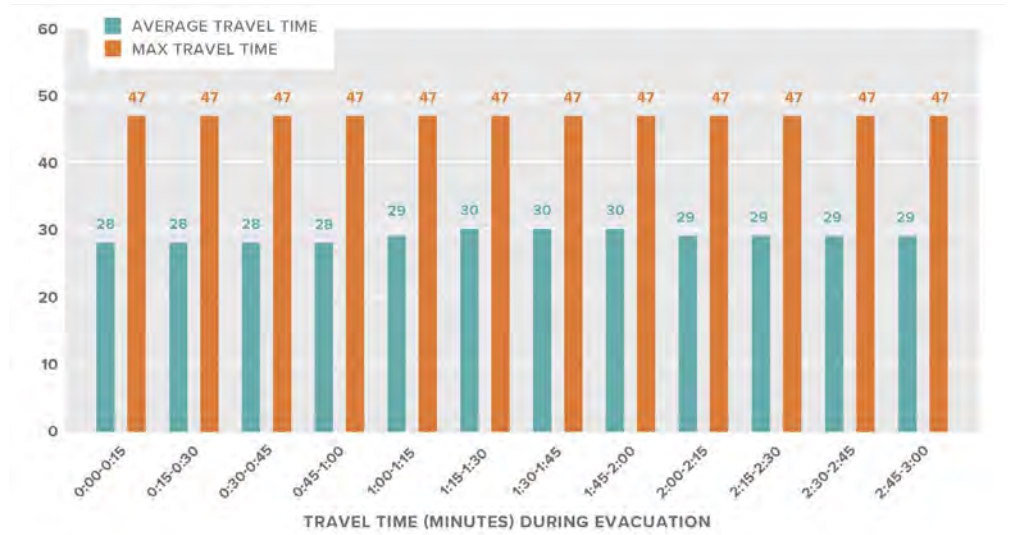


FIGURE 28. STUDY AREA EVACUATION TRAVEL TIME ESTIMATE FOR BUCKS BAR FIRE SCENARIO (FULL ROADWAY CAPACITY)

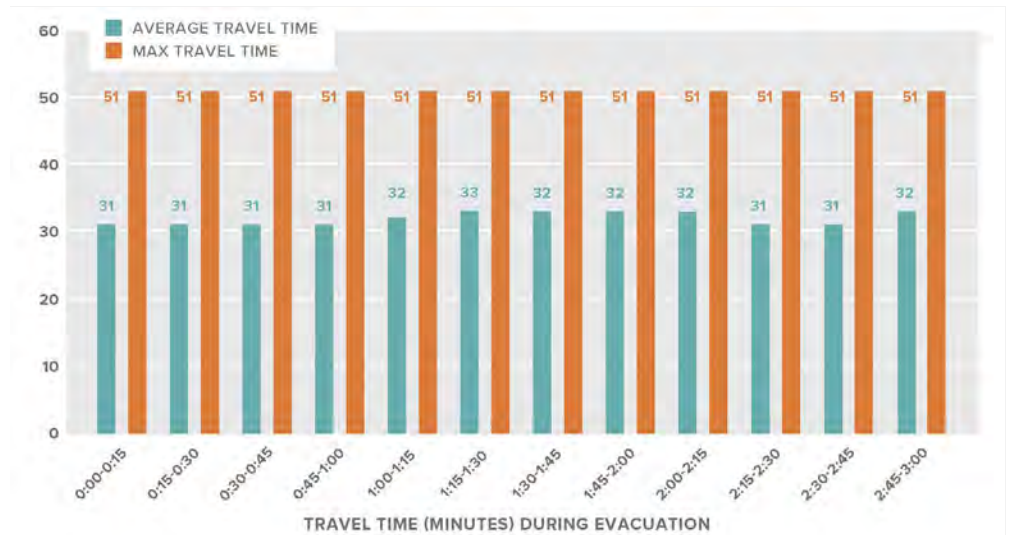


FIGURE 29. STUDY AREA EVACUATION TRAVEL TIME ESTIMATE FOR BUCKS BAR FIRE SCENARIO (REDUCED ROADWAY CAPACITY)

4.4.3. KEY EVACUATION ROUTES

For the Bucks Bar Fire scenario there are many key transportation facilities as outlined in Figure 30. 90 percent of the evacuating trips head west primarily toward US 50 with some traffic heading north on SR 49. The primary evacuation routes west from the Bucks Bar fire scenario are Bucks Bar Road, Pleasant Valley Road, Newtown Road, Cedar Ravine Road, SR 49, Missouri Flat Road, and El Dorado Road. 10 percent of trips head east on US 50 from E16.

4.4.4. EVACUATION TRAFFIC BOTTLENECK IDENTIFICATION

There are minimal traffic bottlenecks with the Bucks Bar scenario that result in substantial congestion, as compared to the three other scenarios. This is a result of lower overall evacuation trips due to the rural residential land use of the evacuation zone. Despite the lower congestion levels, there are a few locations that do experience brief traffic backups or slowdowns. Those locations have the potential for more significant congestion should the urgency of a fire scenario decrease the departure time distribution from 2 hours to 1 hour. Recommendations for operational strategies and infrastructure projects are listed under **Section 5**.

- **Downtown Placerville:** With increased evacuation traffic on US 50 westbound, queuing at each of the 3 traffic signals in downtown Placerville does increase. The Bucks Bar fire scenario assumes a portion of the evacuation will head north on SR 49. This traffic tends to use Cedar Ravine Road and crosses downtown

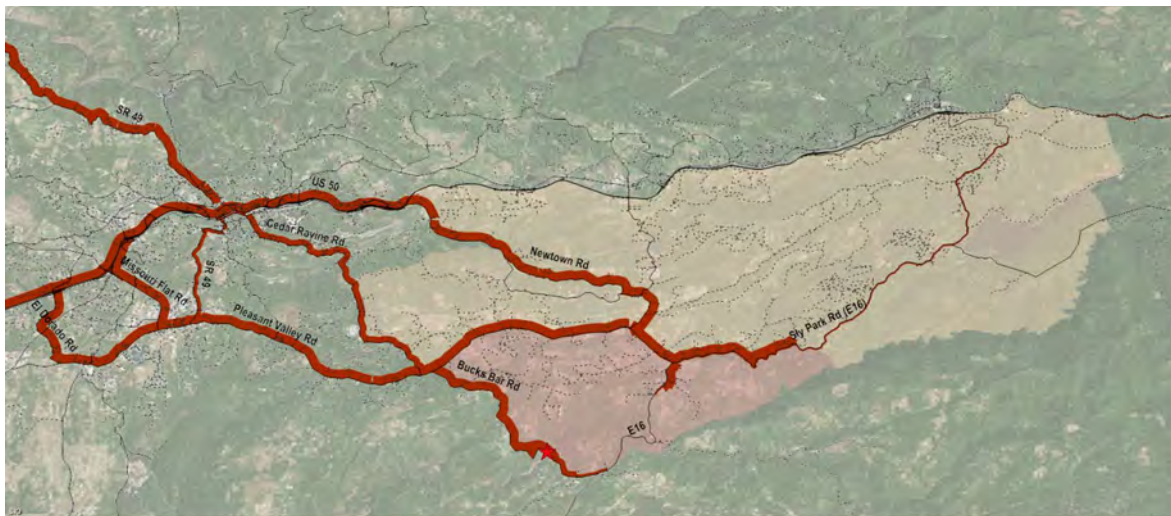


FIGURE 30. KEY EVACUATION ROUTES FOR BUCKS BAR FIRE SCENARIO

Placerville to SR 49. With some north-south traffic demand crossing US 50, full implementation of Trip to Green may not be the most efficient strategy. An initial strategy would be to run a signal timing plan with increased westbound green time to reduce queuing on US 50. Should the demand on US 50 be greater than assumed under this scenario, then a Trip to Green implementation would mitigate the westbound queuing, and evacuation trips destined for SR 49 would need to find a route to US 50 further east, such as Newtown Road.

- **Pleasant Valley Road (SR 49 North to Missouri Flat Road):** This stretch of Pleasant Valley Road through Diamond Springs experiences heavy congestion at the traffic signals to Sr 49 North and Missouri Flat Road. Traffic typically clears the traffic signals in 1 or 2 cycles. Evacuation-specific signal timing plans with increased westbound

green time would help minimize delays for evacuating trips. Should the evacuation demand depart in a shorter time period or the evacuation zone expand, then manual flagging of traffic at these locations may be necessary.

- **Pleasant Valley Road and Bucks Bar Road:** Moderate congestion builds on the northbound and westbound approaches from the all-way stop control at this intersection. Manual flagging of traffic should be considered if the departure time estimates are shorter than assumed under this analysis.
- **Pleasant Valley Road and Sly Park Road (E16):** Moderate congestion builds from the northbound stop controlled approach at this intersection. Manual flagging of traffic should be considered if the departure time estimates are shorter than assumed under this analysis.

Recommendations

5.0

Infrastructure, Operational Strategies, and Considerations

THIS SECTION DOCUMENTS RECOMMENDATIONS FOR OPERATIONAL STRATEGIES AND INFRASTRUCTURE IMPROVEMENTS TO BETTER FACILITATE EVACUATION EVENTS IN THE GREATER PLACERVILLE STUDY AREA. THE SECTION ALSO INCLUDES ADDITIONAL CONSIDERATIONS REGARDING HOW TECHNOLOGY AND COMMUNICATIONS CAN BE USED TO MAINTAIN AND IMPROVE EVACUATION ALERTS AND MONITOR CONDITIONS DURING AN EVACUATION.

5.1. Transportation Infrastructure and Operational Strategies

Each wildfire scenario poses unique challenges when it comes to evacuating many people over a short period of time. The surge in traffic demand during an evacuation stresses the capacity of the available transportation system. As outlined in **Section 4.0** of this report, each fire evacuation scenario results in multiple bottlenecks that impact the evacuation route choice and the travel time along those routes. This section documents recommendations for operational strategies and infrastructure improvements to better facilitate evacuation events in the Greater Placerville Study Area. The section also includes additional considerations regarding how technology and communications can be used to maintain and improve evacuation alerts and monitor conditions during an evacuation.

Operational strategies may include developing evacuation-specific signal timing plans or providing emergency resources to manually flag traffic through an intersection. Operational strategies may also include full or directional road closures to restrict access to hazardous areas, restrict non-emergency traffic from entry to evacuation routes, or provide downstream capacity by limiting conflicting flows of evacuation traffic. Operational strategies generally do not include physical improvements on the system. Infrastructure improvements serve the goal of reducing or eliminating bottlenecks along evacuation routes to reduce overall evacuation clearance times.

Recommended infrastructure improvements may require further planning and analysis prior to agency approval and implementation. For example, Caltrans supports the use of roundabouts to for efficient movement of traffic



along evacuation routes, but they require an Intersection Control Evaluation (ICE) be completed as part of the planning process. That level of analysis is outside the scope of this study.

It is important to consider state and local policies for Vehicle Miles Traveled (VMT) reduction and ensure that wildfire evacuation infrastructure projects do not counter those goals. Two such policies are the California Action Plan on Transportation Infrastructure (CAPTI) and the Caltrans System Investment Strategy (CSIS). Transportation is the largest contributor to California’s greenhouse gas emissions (GHG). The CAPTI outlines several recommended infrastructure improvements to minimize congestion-related GHG emissions without expanding roadway capacity and includes specific guidance for rural roadways and facilitating emergency evacuations. The framework specifically cites that historical investments in additional roadway capacity have actually promoted VMT growth and have, in fact, “induced travel,” which has failed to reduce congestion and the resulting GHG emissions over the long term. The purpose of the CSIS is to establish a framework with standard methodologies to guide transportation investments through a transparent scoring and prioritization process when nominating Non-SHOPP (State Highway Operation and Protection Program) projects for various discretionary fund programs. CAPTI specifically calls for CSIS to implement a data- and performance-driven nomination approach to quantitatively determine the best projects to

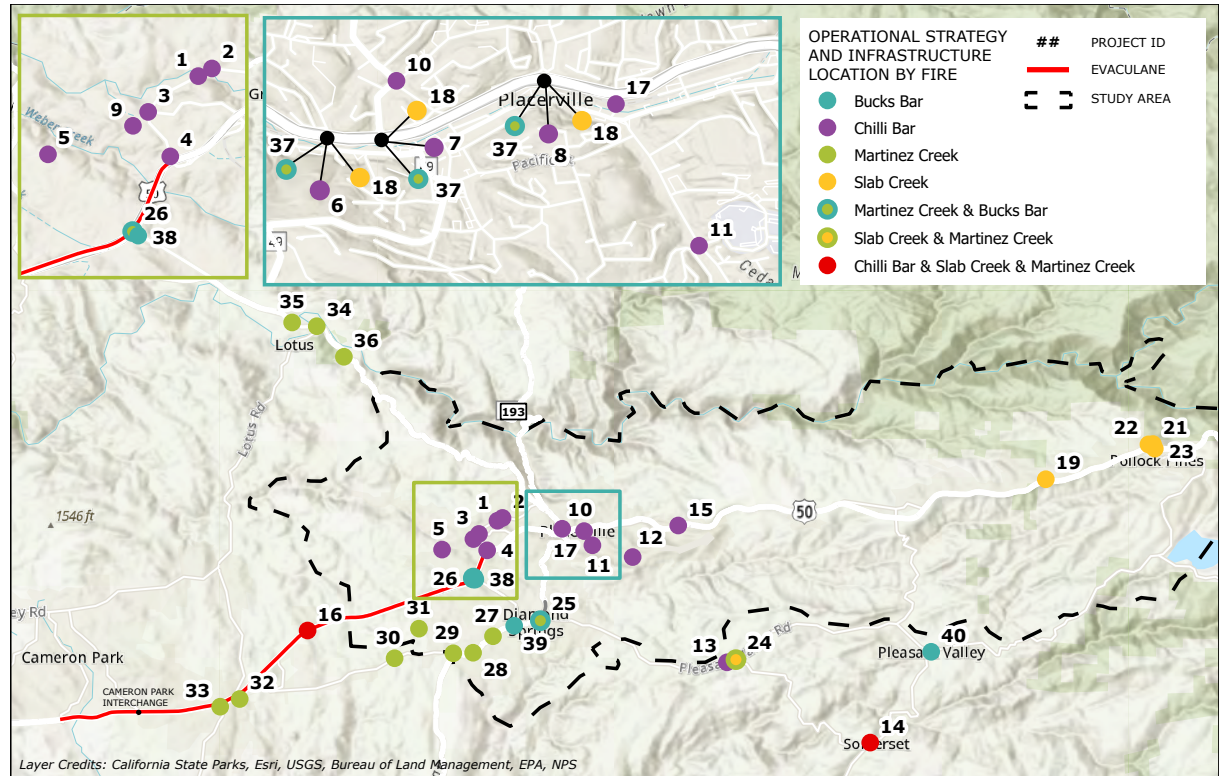


FIGURE 31. GREATER PLACERVILLE WILDFIRE EVACUATION OPERATIONAL STRATEGY AND INFRASTRUCTURE IMPROVEMENTS LOCATION MAP

nominate, fund, and sponsor. As such, the projects and infrastructure recommendations included in this study do not include simply expanding the roadway capacity to improve congestion, rather they are specific operational strategies to improve the flow of traffic and reduce congestion.

The following map highlights all locations with recommended operational strategies and/or infrastructure improvements to better facilitate wildfire evacuation for the assessed fire scenarios.

The locations on the map highlight which fire scenario evacuation the strategy or improvement benefits. Some of the locations benefit from multiple fire evacuation scenarios.

Each wildfire evacuation scenario includes a list of operational strategies and/or infrastructure improvements to mitigate the bottlenecks identified through the evacuation assessment.

The following table identifies each of these elements for each scenario:

- **Project ID:** Unique ID number for each strategy/improvement
- **Location:** Intersection or segment description
- **Mitigation Need:** Description of the condition being mitigated
- **Mitigation Strategy:** High-level descriptor for strategy options
- **Mitigation Description:** Detailed description of each strategy or infrastructure improvement
- **Priority:** Defines each project with a qualitative priority ranking of “Tier 1” or “Tier 2”. Tier 1 projects improve evacuation flows on critical routes in or near the evacuation zone, or

substantially mitigate significant evacuation bottlenecks that are a greater distance from the evacuation zone. Tier 2 projects provide a measurable improvement in evacuation flows, but mitigate low to moderate bottlenecks that may be further from the evacuation zone or are on minor evacuation routes. The priority ranking is provided independently for each roadway’s full capacity and reduced capacity scenarios. In some cases, a bottleneck may become more significant under the reduced capacity scenario and the mitigation project may change from Tier 1 to Tier 2.

- **Potential Traffic Control Resource Needs:** For project locations that include a “Flagger” (human-directed traffic control) as a mitigation strategy option, then that location has a

resource need for emergency personnel to direct traffic. Using the reduced capacity scenario, the total number of Tier 1 and Tier 2 resources are provided per wildfire evacuation scenario. This information can be used to estimate how many locations may require staff resources, or how investment in infrastructure projects might reduce the total resource needs for a wildfire evacuation scenario.

- **Planning-Level Cost Estimate:** Planning level cost estimates are provided for each infrastructure improvement project. Detailed project-level cost estimates and coordination with the roadway authority are recommended prior to seeking funding for specific projects.



TABLE 3. GREATER PLACERVILLE WILDFIRE OPERATIONAL STRATEGIES AND INFRASTRUCTURE IMPROVEMENTS

PROJECT ID	LOCATION	MITIGATION NEED	MITIGATION STRATEGY	MITIGATION DESCRIPTION	PRIORITY		POTENTIAL TRAFFIC CONTROL RESOURCE NEEDS (BASED ON REDUCED CAPACITY SCENARIO)		PLANNING-LEVEL COST ESTIMATE
					FULL CAPACITY SCENARIO	REDUCED CAPACITY SCENARIO	TIER 1	TIER 2	
WILDFIRE SCENARIO: CHILI BAR (1 of 3)									
1	Placerville Dr / Pierroz Rd	Southbound right turn from Pieroz Rd queues due to heavy evacuation westbound through evacuation traffic	A) Flagger B) Construct Roundabout	A) Flag traffic to alternate flow from southbound left and westbound through B) Install traffic signal with southbound right turn overlap phase	Tier 1	Tier 1	1		A) n/a B) \$1,200,000
2	Cold Springs Rd / Pierroz Rd	Westbound left from Cold Springs Rd to Pierroz Rd is the primary evacuation flow that queues due to stop sign. Southbound right turn control existing condition is not marked	A) Flagger B) Sign/stripe southbound right turn as yield or stop controlled C) Construct compact roundabout D) Construct traffic signal	A) Flag traffic to alternate primary westbound left flow with secondary southbound right B) Sign/stripe southbound right turn as yield or stop controlled to be clear this is not a free turn C) Construct compact roundabout to improve westbound evacuation flow and improve everyday safety D) Construct traffic signal with southbound right overlap phase to alternate with westbound left phase	Tier 2	Tier 1	1		A) n/a B) \$10,000 C) \$2,000,000 D) \$1,200,000
3	Placerville Dr / Green Valley Rd	Southbound evacuation flow queues back from traffic signal	A) Signal timing plan modification B) Signal control modification	A) Develop evacuation signal timing plan for increased southbound green time B) Modify signal to add southbound right turn overlap phase to increase flow rate	Tier 1	Tier 1	1		A) n/a B) \$50,000
4	Placerville Dr / US 50 Westbound	Southbound right turn evacuation flow impeded by yield control. Potential of westbound US 50 traffic to use Placerville Dr off-ramp and on-ramp to jump westbound US 50 traffic congestion.	A) Flagger B) Signal control modification	A) Flag traffic to alternate flow from southbound left and westbound through B) Modify traffic signal to add southbound right turn overlap phase with extended green evacuation signal timing plan	Tier 1	Tier 1	1		A) n/a B) \$50,000
5	El Dorado Rd / Green Valley Rd	All-way stop control impedes westbound left evacuation flow	A) Flagger B) Construct compact roundabout	A) Flag traffic to allow free flow westbound left B) Construct compact roundabout to improve westbound evacuation flow and improve everyday safety	Tier 2	Tier 1	1		A) n/a B) \$2,000,000
6	US 50 / Canal St	Southbound evacuation flow queues back from traffic signal	A) Flagger B) Signal control modification	A) Flag traffic to alternate flow from southbound right and westbound through B) Modify signal to add southbound right turn overlap phase to increase flow rate	Tier 1	Tier 1	1		A) n/a B) n/a

PROJECT ID	LOCATION	MITIGATION NEED	MITIGATION STRATEGY	MITIGATION DESCRIPTION	PRIORITY		POTENTIAL TRAFFIC CONTROL RESOURCE NEEDS (BASED ON REDUCED CAPACITY SCENARIO)		PLANNING-LEVEL COST ESTIMATE	
					FULL CAPACITY SCENARIO	REDUCED CAPACITY SCENARIO	TIER 1	TIER 2		
WILDFIRE SCENARIO: CHILI BAR (2 of 3)										
7	US 50 / Spring St	Southbound evacuation flow queues back from traffic signal	A) Flagger B) Signal control modification	A) Flag traffic to alternate flow from southbound right and westbound through B) Modify signal to add southbound right turn overlap phase to increase flow rate	Tier 1	Tier 1	1		A) n/a B) n/a	
8	US 50 / Bedford Ave	Southbound evacuation flow queues back from traffic signal	A) Flagger B) Signal control modification	A) Flag traffic to alternate flow from southbound right and westbound through B) Modify signal to add southbound right turn overlap phase to increase flow rate	Tier 1	Tier 1	1		A) n/a B) n/a	
9	Mallard Ln / Green Valley Road	All-way stop control impedes westbound through and southbound right evacuation flows	Flagger	Flag traffic to alternate evacuation flows between primary westbound through and secondary southbound right	Tier 2	Tier 2	1		n/a	
10	Coloma Rd (SR 49) / Spring Rd	Queue from US 50 traffic signal back through intersection. Heavy southbound right (Coloma Rd to Spring St) and westbound (Spring St to Spring St) evacuation flows	Flagger	Flag traffic to alternate evacuation flows between westbound through and southbound right. Southbound right turn only during evacuation.	Tier 1	Tier 1	1		n/a	
11	Cedar Ravine Rd / Darlington Ave	All-way stop control impedes south eastbound evacuation flow with queuing backing toward Main Street under reduced capacity scenario	Flagger	Flag south eastbound traffic on Cedar Ravine Rd through stop sign	n/a	Tier 2	1		n/a	
12	Cedar Ravine Rd / Country Club Rd	All-way stop control impedes southeast bound evacuation flow with significant queuing under reduced capacity scenario	Flagger	Flag south eastbound traffic on Cedar Ravine Rd through stop sign	n/a	Tier 2	1		n/a	
13	Cedar Ravine Rd / Pleasant Valley Rd	Southbound left evacuation flow is stop controlled resulting in queuing trying to enter eastbound evacuation flow on Pleasant Valley Rd	Flagger	Flag traffic to alternate evacuation flows between eastbound through and southbound right	n/a	Tier 2	1		n/a	
14	Bucks Bar Rd / Mt Aukum Rd (E16)	Evacuation flows from eastbound Bucks Bar Rd and southbound E16 have significant queuing from all-way stop controlled intersection	A) Flagger B) Construct acceleration lane for eastbound right turn	A) Flag traffic to alternate evacuation flows between eastbound right and southbound through B) Construct downstream acceleration lane for the eastbound right turn lane, allowing the eastbound right and southbound through to enter the intersection without conflict and then merge downstream of the intersection	Tier 2	Tier 2	1		A) n/a B) \$500,000	

PROJECT ID	LOCATION	MITIGATION NEED	MITIGATION STRATEGY	MITIGATION DESCRIPTION	PRIORITY		POTENTIAL TRAFFIC CONTROL RESOURCE NEEDS (BASED ON REDUCED CAPACITY SCENARIO)		PLANNING-LEVEL COST ESTIMATE
					FULL CAPACITY SCENARIO	REDUCED CAPACITY SCENARIO	TIER 1	TIER 2	
WILDFIRE SCENARIO: CHILI BAR (3 of 3)									
15	US50 EB / Jacquier Rd	Evacuation traffic from the eastern area of the evacuation zone heading toward E16 south exits eastbound US 50 at Jacquier Rd to go eastbound on Broadway to connect to Newtown Rd and ultimately to E16 south. The stopped controlled approach at the ramp terminal and for the left turn onto Broadway results in significant queuing back onto US 50.	A) Flagger B) Construct Roundabout	A) Flag eastbound off-ramp traffic through Jacquier Rd onto eastbound Broadway B) Construct 6-leg roundabout connecting Jacquier Rd with the eastbound ramps and Broadway	Tier 2	Tier 1	1		A) n/a B) \$8,000,000
16	US-50 WB	Westbound US 50 is the primary evacuation route for the Greater Placerville area. Westbound heavy congestion builds with significant evacuation flows from the signalized intersections downtown Placerville and the interchange ramps resulting in high volumes of through and merging traffic.	Construct hard-shoulder evacuation lane	Construct right hard-shoulder emergency-use evacuation lane westbound on US 50 from Missouri Flat Rd to quarter mile downstream of Cameron Park Dr interchange. Right shoulder lane added by narrowing left shoulder, narrowing travel lanes to 11' and relocating right rumble strip to center of right shoulder lane using FHWA freeway shoulder lane use principles. Use of shoulder lane may require emergency closure of northbound Cameron Park Dr to westbound US 50 loop ramp during event. A third lane through lane is assumed from Placerville Dr through Missouri Flat Rd interchange by using the existing auxiliary lane and flagging the westbound through lane from the off-ramp through the Missouri Flat traffic signal on to the on-ramp leading to the start of the hard shoulder lane. Cost estimate assumes no civil reconstruction. Further evaluation recommended.	Tier 1	Tier 1	1		\$1,250,000
17	Clay Street Bridge	Existing single lane bridge sufficient for serving southbound evacuation traffic, but would limit ability of northbound emergency response to use facility	Widen bridge to two lanes	Widen bridge to include two travel lanes and sidewalks	Tier 2	Tier 2	1		\$15,000,000
TOTAL POTENTIAL TRAFFIC CONTROL RESOURCE NEEDS							16	0	

PROJECT ID	LOCATION	MITIGATION NEED	MITIGATION STRATEGY	MITIGATION DESCRIPTION	PRIORITY		POTENTIAL TRAFFIC CONTROL RESOURCE NEEDS (BASED ON REDUCED CAPACITY SCENARIO)		PLANNING-LEVEL COST ESTIMATE	
					FULL CAPACITY SCENARIO	REDUCED CAPACITY SCENARIO	TIER 1	TIER 2		
WILDFIRE SCENARIO: SLAB CREEK (1 of 2)										
18	US 50 at downtown Placerville	Westbound congestion with primary evacuation flow passing through traffic signals at Canal St, Spring St and Bedford Rd	"Trip to Green" Project	The "Trip to Green" Project has been a successful pilot project on US 50 through downtown Placerville to restrict turning movements to right-in, right-out and keep east-west movements green full time. The Trip to Green project is planned to design and construct permanent infrastructure for future use during high demand event, including wildfire evacuation when evacuations occur east of downtown Placerville.	Tier 1	Tier 1	1		\$18,000,000	
16	US-50 WB	Westbound US 50 is the primary evacuation route for the Greater Placerville area. Westbound heavy congestion builds with significant evacuation flows from the signalized intersections downtown Placerville and the interchange ramps resulting in high volumes of through and merging traffic.	Construct hard-shoulder evacuation lane	Construct right hard-shoulder lane emergency-use evacuation lane westbound on US 50 from Missouri Flat Rd to quarter mile downstream of Cameron Park Dr interchange. Right shoulder lane added by narrowing left shoulder, narrowing travel lanes to 11' and relocating right rumble strip to center of right shoulder lane using FHWA freeway shoulder lane use principles. Use of shoulder lane may require emergency closure of northbound Cameron Park Dr to westbound US 50 loop ramp during event. A third lane through lane is assumed from Placerville Dr through Missouri Flat Rd interchange by using the existing auxiliary lane and flagging the westbound through lane from the off-ramp through the Missouri Flat traffic signal on to the on-ramp leading to the start of the hard shoulder lane. Cost estimate assumes no civil reconstruction. Further evaluation recommended.	Tier 1	Tier 1	2		\$1,250,000	
19	Pony Express Trail / Ridgeway	Westbound evacuation traffic on Pony Express Trail continuing past Ridgeway interchange can impede downstream side street evacuation routes.	Flagger/Route Closure	Manually close westbound Pony Express Trail at Ridgeway Drive and flag all traffic on to westbound US 50.	Tier 2	Tier 1	1		n/a	

PROJECT ID	LOCATION	MITIGATION NEED	MITIGATION STRATEGY	MITIGATION DESCRIPTION	PRIORITY		POTENTIAL TRAFFIC CONTROL RESOURCE NEEDS (BASED ON REDUCED CAPACITY SCENARIO)		PLANNING-LEVEL COST ESTIMATE
					FULL CAPACITY SCENARIO	REDUCED CAPACITY SCENARIO	TIER 1	TIER 2	
WILDFIRE SCENARIO: SLAB CREEK (2 of 2)									
21	Pony Express Trail / Sly Park Rd	The stop controlled eastbound right turn results in congestion along the evacuation route.	A) Flagger B) Construct Roundabout C) Construct Traffic Signal	A) Flag eastbound right turn traffic through stop sign B) Construct roundabout to increase eastbound right turn flow rate, while improving year-round safety and delay reduction C) Construct traffic signal to reduce intersection delays. Include eastbound right turn lane with right turn overlap phase. Evacuation signal timing plan can be considered	Tier 2	Tier 1	1		A) n/a B) \$4,000,000 C) \$1,500,000
22	Pony Express Trail / Forebay Rd	Southbound left evacuation traffic from Forebay Road has limited opportunity to turn onto Pony Express Trail due to a lack of gaps in traffic and/or standing eastbound queuing.	A) Flagger B) Construct Traffic Signal	A) Flag traffic to alternate evacuation flows between eastbound through and southbound left. B) Construct traffic signal to reduce intersection delays. Include southbound left turn lane. Evacuation signal timing plan can be considered. Note) A roundabout would provide benefit here over no solution, but heavy flows from Forebay Road during an evacuation would limit eastbound through flows on Pony Express Trail.	Tier 2	Tier 2		1	A) n/a B) \$2,000,000
23	Sly Park Rd / Ridgeway Park Rd / US-50 EB Interchange	Eastbound US 50 off-ramp queues back from stop controlled ramp terminal and conflicting southbound Sly Park Road traffic. Eastbound Ridgeway Drive is also stop controlled and has conflicting southbound traffic from the off-ramp and through traffic on Sly Park Road, resulting in queuing.	Flagger	Flag traffic to alternative southbound Sly Park Road with eastbound US 50 off-ramp and eastbound Ridgeway Drive. Multiple traffic control personnel may be needed		Tier 2		2	n/a
24	Pleasant Valley Rd / Bucks Bar Rd	Westbound evacuation traffic queues back from stop sign turning left onto Bucks Bar Road	A) Flagger B) Construct Roundabout	A) Flag westbound left traffic through the stop sign B) Construct a roundabout to reduce westbound left delay. Improves year-round safety (crash history at this location)		Tier 2		1	A) n/a B) \$2,500,000
14	Bucks Bar Rd / Mt Aukum Rd (E16)	Evacuation flows from eastbound Bucks Bar Rd and southbound E16 have significant queuing from all-way stop controlled intersection	A) Flagger B) Construct acceleration lane for eastbound right turn	A) Flag traffic to alternate evacuation flows between eastbound right and southbound through. B) Construct downstream acceleration lane for the eastbound right turn lane, allowing the eastbound right and southbound through to enter the intersection without conflict and then merge downstream of the intersection.	Tier 2	Tier 2		1	A) n/a B) \$500,000
TOTAL POTENTIAL TRAFFIC CONTROL RESOURCE NEEDS							5	5	

PROJECT ID	LOCATION	MITIGATION NEED	MITIGATION STRATEGY	MITIGATION DESCRIPTION	PRIORITY		POTENTIAL TRAFFIC CONTROL RESOURCE NEEDS (BASED ON REDUCED CAPACITY SCENARIO)		PLANNING-LEVEL COST ESTIMATE
					FULL CAPACITY SCENARIO	REDUCED CAPACITY SCENARIO	TIER 1	TIER 2	
WILDFIRE SCENARIO: MARTINEZ CREEK (1 of 3)									
25	Diamond Springs Parkway (Phase 1 B)	Westbound Pleasant Valley Road evacuation traffic headed for US 50 via Missouri Flat Road results in significant congestion at the Missouri Flat Road and SR 49 traffic signals. This congestion also impacts the evacuation flow rate of the Fowler Lane approach.	Construct New Parkway	The planned Diamond Spring Parkway separated the evacuation flows by allowing westbound Pleasant Valley Road to turn right onto SR 49 and access the Missouri Flat directly, thereby reducing congestion on Pleasant Valley Road west of SR 49 North.	Tier 1	Tier 1			Funded / Scheduled
26	Patterson Drive Neighborhood Second Access	The Patterson Drive Neighborhood has a single access that results in increased evacuation clearance time.	Construct 2nd Access	Construct a second access to Faith lane to improve evacuation flow rates for the Patterson Drive Neighborhood. Alternative or additional secondary access projects could include converting Tullis Mine Road from Crystal Drive to Pleasant Valley Road as a paved multi-use trail with width to support emergency use-only evacuation traffic. Another possible evacuation vehicle access (EVA) connection would be to the southwest to Union Mine Road.	Tier 2	Tier 1			\$1,500,000
27	Pleasant Valley Dr / Patterson Dr	Northwestbound evacuation traffic from Patterson Drive Neighborhood significantly queues back with only a single access point	A) Signal Timing Plan B) Flagging	A) Signal timing plan to increase Patterson Drive green time for evacuation events B) Flag Patterson Drive approach onto Pleasant Valley Road. May need to flag Gold Dust Dr onto Patterson Drive given single access and limited spacing to Pleasant Valley Road	Tier 1	Tier 1	2		n/a
28	Pleasant Valley Dr / Koki Ln	Westbound Pleasant Valley Road backs up from traffic signal	A) Signal Timing Plan B) Flagging	A) Signal timing plan to increase westbound green time B) Flag westbound Pleasant Valley Road through signal	Tier 2	Tier 2		1	n/a
29	Pleasant Valley Rd / SR-49 (south)	Westbound through and left Pleasant Valley Road backs up from stop controlled approach	A) Flagger B) Construct Roundabout	A) Flag westbound traffic through the stop sign B) Construct a roundabout to reduce westbound delay. Improves year-round safety	Tier 2	Tier 2		1	A) n/a B) \$6,000,000
30	Pleasant Valley Rd / Mother Lode Rd	Westbound left from Pleasant Valley Road onto Mother Lode Drive backs up from stop controlled approach	A) Flagger B) Construct Roundabout	A) Flag westbound left traffic through the stop sign B) Construct a roundabout to reduce westbound delay. Improves year-round safety	Tier 2	Tier 2		1	A) n/a B) \$6,000,000

PROJECT ID	LOCATION	MITIGATION NEED	MITIGATION STRATEGY	MITIGATION DESCRIPTION	PRIORITY		POTENTIAL TRAFFIC CONTROL RESOURCE NEEDS (BASED ON REDUCED CAPACITY SCENARIO)		PLANNING-LEVEL COST ESTIMATE	
					FULL CAPACITY SCENARIO	REDUCED CAPACITY SCENARIO	TIER 1	TIER 2		
WILDFIRE SCENARIO: MARTINEZ CREEK (2 of 3)										
31	El Dorado Rd / Mother Lode Dr	Westbound through on El Dorado Road across Mother Lode Drive backs up from stop controlled approach	A) Flagger B) Construct Compact Roundabout	A) Flag westbound left traffic through the stop sign B) Construct a compact roundabout to reduce delay that still accommodates WB-67 trucks. Improves year-round safety and traffic operations.	Tier 2	Tier 2		1	A) n/a B) \$2,500,000	
32	Mother Lode Dr / French Creek Rd	Westbound Mother Lode Drive backs up from traffic signal	A) Signal Timing Plan B) Flagger	A) Signal timing plan to increase westbound green time B) Flag westbound Mother Lode Drive through signal	Tier 2	Tier 2		1	n/a	
33	Mother Lode Dr / S Shingle Rd	Westbound right Mother Lode Drive backs up from traffic signal	A) Signal Timing Plan B) Flagger	A) Signal timing plan to increase westbound right green time B) Flag westbound right Mother Lode Drive through signal	Tier 2	Tier 2		1	n/a	
16	US-50 WB	Westbound US 50 is the primary evacuation route for the Greater Placerville area. Westbound heavy congestion builds with significant evacuation flows from the signalized intersections downtown Placerville and the interchange ramps resulting in high volumes of through and merging traffic.	Construct hard-shoulder evacuation lane	Construct right hard-shoulder lane emergency-use evacuation lane westbound on US 50 from Missouri Flat Rd to quarter mile downstream of Cameron Park Dr interchange. Right shoulder lane added by narrowing left shoulder, narrowing travel lanes to 11' and relocating right rumble strip to center of right shoulder lane using FHWA freeway shoulder lane use principles. Use of shoulder lane may require emergency closure of northbound Cameron Park Dr to westbound US 50 loop ramp during event. A third lane through lane is assumed from Placerville Dr through Missouri Flat Rd interchange by using the existing auxiliary lane and flagging the westbound through lane from the off-ramp through the Missouri Flat traffic signal on to the on-ramp leading to the start of the hard shoulder lane. Cost estimate assumes no civil reconstruction. Further evaluation recommended.	Tier 1	Tier 1		2	\$1,250,000	
34	SR-49 / Lotus Rd	Northbound through on SR 49 backs up from stop controlled approach	A) Flagger B) Construct Roundabout	A) Flag northbound traffic through the stop sign B) Construct a roundabout to reduce northbound delay. Improves year-round safety and delay reduction.	Tier 2	Tier 2		1	A) n/a B) \$6,000,000	

PROJECT ID	LOCATION	MITIGATION NEED	MITIGATION STRATEGY	MITIGATION DESCRIPTION	PRIORITY		POTENTIAL TRAFFIC CONTROL RESOURCE NEEDS (BASED ON REDUCED CAPACITY SCENARIO)		PLANNING-LEVEL COST ESTIMATE
					FULL CAPACITY SCENARIO	REDUCED CAPACITY SCENARIO	TIER 1	TIER 2	
WILDFIRE SCENARIO: MARTINEZ CREEK (3 of 3)									
35	SR-49 / Marshall Rd	Northbound through on SR 49 backs up from stop controlled approach	A) Flagger B) Construct Roundabout	A) Flag northbound traffic through the stop sign B) Construct a roundabout to reduce northbound delay. Improves year-round safety and delay reduction.	Tier 2	Tier 2		1	A) n/a B) \$6,000,000
24	Pleasant Valley Rd / Bucks Bar Rd	Westbound evacuation traffic queues back from stop sign turning left onto Bucks Bar Road	A) Flagger B) Construct Roundabout	A) Flag westbound left traffic through the stop sign B) Construct a roundabout to reduce westbound left delay. Improves year-round safety (crash history at this location)		Tier 2		1	A) n/a B) \$2,500,000
14	Bucks Bar Rd / Mt Aukum Rd (E16)	Evacuation flows from eastbound Bucks Bar Rd and southbound E16 have significant queuing from all-way stop controlled intersection	A) Flagger B) Construct acceleration lane for eastbound right turn	A) Flag traffic to alternate evacuation flows between eastbound right and southbound through. B) Construct downstream acceleration lane for the eastbound right turn lane, allowing the eastbound right and southbound through to enter the intersection without conflict and then merge downstream of the intersection.	Tier 2	Tier 2		1	A) n/a B) \$500,000
37	US 50 downtown Placerville	Westbound evacuation demand results in increased queuing on US 50.	Signal Timing Plan	Increased westbound green time with signal timing plan. Evacuation traffic from Cedar Ravine Road turns onto US 50 or crosses US 50 to SR 49 downtown Placerville reducing the application of Trip to Green.	Tier 2	Tier 1			n/a
TOTAL POTENTIAL TRAFFIC CONTROL RESOURCE NEEDS							4	10	

PROJECT ID	LOCATION	MITIGATION NEED	MITIGATION STRATEGY	MITIGATION DESCRIPTION	PRIORITY		POTENTIAL TRAFFIC CONTROL RESOURCE NEEDS (BASED ON REDUCED CAPACITY SCENARIO)		PLANNING-LEVEL COST ESTIMATE
					FULL CAPACITY SCENARIO	REDUCED CAPACITY SCENARIO	TIER 1	TIER 2	
WILDFIRE SCENARIO: BUCKS BAR									
37	US 50 downtown Placerville	Westbound evacuation demand results in increased queuing on US 50.	Signal Timing Plan	Increased westbound green time with signal timing plan. Evacuation traffic from Cedar Ravine Road turns onto US 50 or crosses US 50 to SR 49 downtown Placerville reducing the application of Trip to Green.	Tier 2	Tier 1			n/a
36	Pleasant Valley Rd / SR-49	Westbound evacuation demand results in increased queuing on Pleasant Valley Road	A) Signal Timing Plan B) Flagging	A) Evacuation signal timing plan westbound green time B) Flag westbound traffic through should demand be greater as a result of a shorter evacuation departure time distribution or larger evacuation zone.	Tier 2	Tier 2		1	n/a
39	Missouri Flat Rd / Pleasant Valley	Westbound evacuation demand results in increased queuing on Pleasant Valley Road	A) Signal Timing Plan B) Flagging	A) Evacuation signal timing plan westbound green time B) Flag westbound traffic through should demand be greater as a result of a shorter evacuation departure time distribution or larger evacuation zone.	Tier 2	Tier 2		1	n/a
40	Pleasant Valley Rd / E16 (Sly Park Rd)	Northbound evacuation demand on E16 queues from stop controlled approach at Pleasant Valley Road.	Flagging	Flag northbound right traffic through on E16 should demand be greater as a result of a shorter evacuation departure time distribution or larger evacuation zone.	Tier 2	Tier 2		1	n/a
TOTAL POTENTIAL TRAFFIC CONTROL RESOURCE NEEDS							0	3	

5.2. Technology

INTELLIGENT TRANSPORTATION SYSTEMS

Managing traffic on designated evacuation routes requires active monitoring of the routes to ensure maximum efficiency. Installing ITS equipment at critical traffic bottlenecks will allow real time traffic information to allocate resources effectively. A single pole and cabinet accommodating a camera, radar, anemometer, hygrometer and thermometer can provide the necessary situational information to assess traffic flow conditions. An added benefit of the weather sensors can assist in managing wildfires. The ITS sites can be hardwired for power if available at the specific location but should include solar panels and batteries in the event of power failure and/or public safety power shutoff. Communication should use fiber optic cables if available, but also cellular communication as a backup or primary if fiber optic communication is not available. High-speed fiber or cellular connections are recommended for optimal video feeds or pan-tilt-zoom (PTZ) operations. Planning-level cost estimates per outfitted pole installation are \$25,000 each.

TRAFFIC SIGNAL SYSTEMS

Many of the wildfire evacuation routes traverse through the many traffic signals within El Dorado County. The traffic signals may be programmed to accommodate typical peak period and off-peak period traffic demand. During an evacuation, there may be a single high volume evacuation flow or multiple flows converging at a traffic signal that may overwhelm the programmed signal timing.

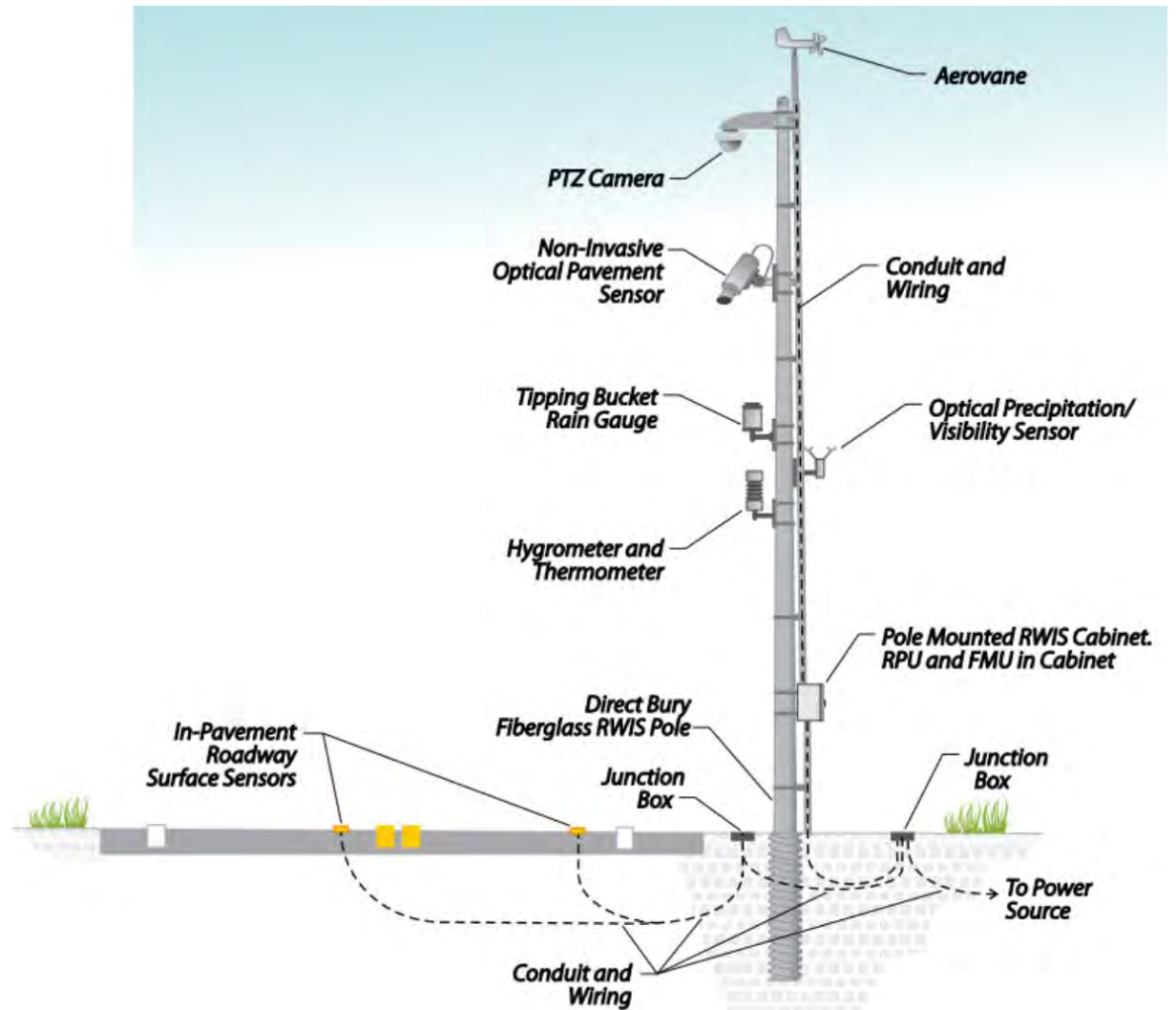


FIGURE 32. EXAMPLE ITS STATION WITH TRAFFIC AND WEATHER SENSORS



FIGURE 33. CALTRANS ITS STATION WITH TRAFFIC AND WEATHER SENSORS ON US 50 WEST OF ICE HOUSE ROAD

Depending on the anticipated evacuation flows at a traffic signal, evacuation specific signal timing plans may be used to control traffic without the need for emergency management resources to flag traffic through the intersection. Multiple evacuation signal timing plans can be developed to accommodate evacuations from different directions. Evacuation signal timing plans may use longer cycle lengths and green time intervals than typical plans. Evacuation signal timing plans may also need to change the signal phasing to provide all lanes green on an approach. For example, a signalized traffic approach serving a

neighborhood might typically have leading left turn signal phasing followed by the through movements. If this approach is part of an evacuation the intersection may need to have the left turn and adjacent through phase go green at the same time and for a longer duration to flush those evacuation movements.

An important aspect of evacuation-specific signal timing plans is the ability to remotely activate the signal timing plan. Having connected signal controllers to central traffic management software allows for rapid response during an incident. Many central software systems also allow for real-time monitoring of detection and signal phase operations. Without the central system connection, signal technicians would need to go to the field to change the signal timing plan in the controller directly in the cabinet. During an evacuation event staff may not be able to reach the signal controller cabinets due to evacuation congestion or they may be involved in the evacuation themselves. Central systems to provide remote access and monitoring of traffic signals have several required components. Communication to the traffic controller may be provided via fiber, copper, or cellular modem. The hard-line communications will have higher installation costs if not already present, whereas the modem approach will require on-going subscription fees. Traffic signal controller hardware and software updates may also be needed, along with license fees for the controller and central system software. A planning-level cost estimate for a central system connected traffic signal controller is \$25,000, not including hard-line communications construction.

Providing power to the traffic signals is important during an evacuation unless the traffic signal is intentionally turned off for manual traffic control. Power outages due to wind events common during extreme fire conditions or public safety power shutoffs may impact traffic signal operations during critical evacuation events. Many traffic signal controller systems include battery back-up systems. Depending on the system and conditions, the back-up power supply may last for 4 to 8 hours. This may or may not be enough back-up time considering the circumstances of the power outage and the need to operate the traffic signal. Microgrids are an option in some communities to provide localized energy grids during regional power outages. Where possible, traffic signals along critical evacuation routes that are part of the evacuation strategy should be connected to a microgrid. PG&E operates a microgrid for a portion of downtown Placerville.

5.3. Communications

Importance of communications. Reliable communication will play a vital role in the successful execution of an emergency evacuation. This includes the first responders ability to identify imminent fire risks as early as possible, communication between first responders, coordinators, and utility providers, and alert communications to the general public. It is imperative that local agencies take the initiative to safeguard the infrastructure and processes that will ensure reliable communication in the event of an emergency evacuation.

Wildfire detection system. Advanced wildfire detection in El Dorado County features a complex system of specialized firefighting teams that are supported by various technologies. Fire lookout towers remain an invaluable part of this system. The three Lookouts in the El Dorado National Forest are supported by aerial supervision by aircraft and Helitack teams (firefighters who arrive on the scene by helicopter) and seven specialized Fire Prevention Technicians¹. The El Dorado County Fire Protection District also utilizes a variety of technologies to identify wildfire threats in the region, including new thermal imaging devices that assist in early fire detection².

Wildfire detection technologies are rapidly evolving and many are currently available on the market. Emerging technologies include cameras

and remote sensing devices that use artificial intelligence (AI) and thermal imaging. Drones are already being utilized by firefighters to drop water on active fires, but new technologies are investigating the use of unmanned aerial vehicles (UAVs) in early wildfire detection as well³. Opportunities to invest in these new technologies should be considered by local agencies to improve early wildfire detection capabilities to support suppression efforts when necessary and to improve the lead time on wildfire alert communications.

Emergency responders and utility staff.

To carry out essential services such as evacuation coordination and infrastructure modification, emergency responders, coordinators, and utility staff will rely upon various communication networks.

Public safety and law enforcement organizations, as well as utility providers EID and PG&E, utilize private Land Mobile Radio (LMR) systems to communicate. Although occasionally shared among organizations, the LMR systems used by different entities are largely independent and rely upon separate fixed infrastructure that require power to function. Many towers have backup power options, and redundancies are often built into these networks, but the vulnerability of this system in the event of a power outage should be considered. Structure hardening and defensible space practices should be considered.



1 <https://www.fs.usda.gov/detail/eldorado/fire/?cid=fseprd596289>

2 <https://www.cbsnews.com/sacramento/news/el-dorado-county-fire-adds-new-gear-to-this-fire-season/>

3 <https://www.ucdavis.edu/climate/news/new-drone-research-advances-wildfire-monitoring>



Commercially based satellite communication networks can also provide communication channels for these organizations. Since these systems rely on satellite networks to transmit messages, they do not have the same vulnerabilities to power outages as tower-based systems.

General Public. Cellular messaging has become one of the primary channels for emergency communications with the public. These messages provide residents with critical updates regarding evacuation warnings or mandatory evacuation notices for their neighborhoods. It should be expected that a significant increase in cellular communications will occur as individuals coordinate with one another during an emergency event. This increased load on the

system, in combination with potential power outages or wildfire damage to communication infrastructure, should be anticipated and prepared for. It is recommended that local agencies and communication providers take immediate steps to harden critical communication infrastructure and provide defensible space to ensure their reliable performance.

Alert Communication. The speed and reliability at which informative emergency messages can be received by the public will have a significant impact on their ability to safely and swiftly respond to emergencies, and remove themselves from danger. Messages should be sent to and received by the public at the earliest possible opportunity. Messages to residents and businesses sent by telephone, cell phone, and text message are

bolstered by email and social media communications regarding time-sensitive general and emergency notifications, primarily through the El Dorado County Emergency Alerts system, powered by RAVE Mobile Safety. This system was previously known as “CodeRED.” Although the database of contact information has been migrated to the new messaging system, it is important that residents be made aware of these changes and given the opportunity to verify their information or sign up if not previously enrolled. Information about the El Dorado County Emergency Alerts system can be found online at <https://ready.edso.org/>.

Another means of alert communications in El Dorado County is the Neighborhood Radio Watch Program founded by the Community Emergency Radio Association (CERA). CERA helps to prepare individuals and local communities with emergency communications in the event of disasters such as catastrophic wildfires by providing programs and services that enable access to radio equipment, training, practice, and other programs that promote community connection, cooperation, and action. In addition, CERA sponsors many Neighborhood Radio Watch Groups in El Dorado County and surrounding communities. Neighborhood Radio Watch Groups are informal groups intended for use by the general public so neighborhood residents have a means of staying in touch through the use of radios and a radio communications system to educate and prepare residents of a community on security and safety events and to help themselves when traditional communication methods fail or are not available.

5.4. Funding Sources

Recommendations for enhanced infrastructure have been documented throughout this study. The table below summarizes the various funding sources available to EDCTC, which offer competitive grant opportunities and other revenue streams to government agencies. The best-matched funding opportunities associated with critical infrastructure recommendations are outlined in the table below.

TABLE 4. GREATER PLACERVILLE WILDFIRE EVACUATION PREPAREDNESS STUDY – POTENTIAL GRANT FUNDING SOURCES

PROGRAM	GRANTOR	ELIGIBLE PROJECT	FISCAL YEARS	MATCH
<p>ATTAIN: The Advanced Transportation Technologies and Innovative Mobility Deployment (ATTIMD) program, also known as the Advanced Transportation Technology and Innovation (ATTAIN) program, provides funding to deploy, install, and operate advanced transportation technologies to improve safety, mobility, efficiency, system performance, intermodal connectivity, and infrastructure return on investment.</p>	Federal	<p>Advanced transportation technologies to improve emergency evacuation and responses by federal, state, and local authorities. (NOTE: Potential ITS including cameras at key project intersections)</p>	<p>The ATTIMD program will provide \$60 million for each of fiscal years 2022 through 2026. Not less than 20 percent of the amounts made available to carry out this paragraph shall be reserved for projects serving rural areas.</p>	<p>The federal cost-share is 80 percent; the applicant must supply the remaining 20 percent.</p>
<p>PROTECT: Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation (PROTECT) Grant program provides funding to ensure surface transportation resilience to natural hazards including climate change, sea level rise, flooding, extreme weather events, and other natural disasters through support of planning activities, resilience improvements, community resilience and evacuation routes, and at-risk coastal infrastructure.</p>	Federal	<p>Eligible uses include highway, transit, and certain port projects that include resilience planning, strengthening and protecting evacuation routes, enabling communities to address vulnerabilities and increasing the resilience of surface transportation infrastructure from the impacts of sea level rise, flooding, wildfires, extreme weather events, and other natural disasters.</p>	<p>The PROTECT program provides \$1.4 billion in funding over 5 years. Individual award amounts vary. Only 40 percent of award funds can be used for construction of new capacity.</p>	<p>Federal cost share is 80% but federal cost-sharing will be higher if the eligible entity develops a resilience improvement plan (or is in a state or area served by MPO that does) and the state or MPO incorporates it into its long-range transportation plan.</p>
<p>RAISE: The Rebuilding American Infrastructure with Sustainability and Equity, or RAISE Discretionary Grant program, provides a unique opportunity for the DOT to invest in road, rail, transit and port projects that promise to achieve national objectives. Previously known as the Better Utilizing Investments to Leverage Development (BUILD) and Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grants, Congress has dedicated nearly \$14.3 billion for fifteen rounds of National Infrastructure Investments to fund projects that have a significant local or regional impact.</p>	Federal	<p>Support surface transportation projects of local or regional significance.</p>		

PROGRAM	GRANTOR	ELIGIBLE PROJECT	FISCAL YEARS	MATCH
<p>LOCAL TRANSPORTATION CLIMATE ADAPTATION PROGRAM (LTCAP): Was created by California Senate Bill 198 (Committee on Budget and Fiscal Review. Transportation., Chapter 71, Statutes of 2022) to make the State’s transportation infrastructure resilient to climate hazards. The primary objective of this program is to provide competitive grants to local agencies for the development and implementation of capital projects adapting local transportation infrastructure to climate changes.</p>	<p>State – California Transportation Commission</p>	<p>Projects that increase climate resiliency and protect at-risk transportation infrastructure using California’s climate projections, as specified in Planning and Investing for a Resilient California: A Guidebook for State Agencies;</p>	<p>The LTCAP Program received \$148 million of General Fund in Fiscal Year 2021-22. In addition to State funds, the LTCAP Program is supported by the federal Infrastructure Investment and Jobs Act of 2021 (IIJA) (Public Law 117-58) which created a new resilience formula program, the Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation (PROTECT). The PROTECT Program provides California with approximately \$252.5 million dollars over five years through 2026 with funds for resilience improvements that protect surface transportation assets. The PROTECT funds will be administered through the LTCAP Program.</p>	<p>The Local Transportation Climate Adaptation Program requires a 20% non-federal match.</p>
<p>SMART GRANT PROGRAM: Bipartisan Infrastructure Law (BIL) establishes the Strengthening Mobility and Revolutionizing Transportation (SMART) Grants Program to “conduct demonstration projects focused on advanced smart city or community technologies and systems in a variety of communities to improve transportation efficiency and safety.” The program is appropriated at \$100M annually for fiscal years 2022-2026.</p>	<p>Federal</p>	<p>Improve mobility and infrastructure resilience with tools that map and monitor environmental conditions, including roadway flooding, air quality, tree canopy, and sidewalk accessibility.</p>	<p>The Bipartisan Infrastructure Law (BIL) established the Strengthening Mobility and Revolutionizing Transportation (SMART) discretionary grant program with \$100 million appropriated annually for fiscal years (FY) 2022-2026.</p>	<p>Match is not required for Stage 1 planning projects. At this point no decision has been made on a match for Stage 2 implementation projects.</p>
<p>RURAL SURFACE TRANSPORTATION GRANT PROGRAM: The Rural Surface Transportation Grant Program supports projects that improve and expand the surface transportation infrastructure in rural areas to increase connectivity, improve the safety and reliability of the movement of people and freight, and generate regional economic growth and improve quality of life. Rural Surface Transportation grant program funding will be made available under the MPDG combined Notice of Funding Opportunity (NOFO).</p>	<p>Federal</p>	<p>A highway, bridge, or tunnel project eligible under Surface Transportation Block Grant.</p>	<p>Funded under the Bipartisan Infrastructure Law (BIL) as part of the MPDG Grant Program.</p>	<p>Rural grants may be used for up to 80 percent of future eligible project costs. Other Federal assistance may satisfy the non-Rural share requirement for a Rural grant up to 100 percent of project costs.</p>

PROGRAM	GRANTOR	ELIGIBLE PROJECT	FISCAL YEARS	MATCH
<p>STBG: The Surface Transportation Block Grant program (STBG) provides flexible funding that may be used by States and localities for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals.</p>	<p>Sacramento Area Council of Governments (SACOG)</p>	<p>Any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals.</p>	<p>SACOG utilizes a competitive biennial Regional Funding Round to award funds to projects within the six county SACOG region.</p>	<p>Requires 11.47% match.</p>
<p>CMAQ: The Congestion Mitigation and Air Quality Improvement Program (CMAQ) provides a flexible funding source to State and local governments for transportation projects and programs to help meet the requirements of the Federal Clean Air Act.</p>	<p>Sacramento Area Council of Governments (SACOG)</p>	<p>Each CMAQ project must meet three basic criteria: it must be a transportation project, it must generate an emissions reduction from motor vehicles, and it must be located in or benefit a nonattainment or maintenance area.</p>	<p>SACOG utilizes a competitive biennial Regional Funding Round to award funds to projects within the six county SACOG region.</p>	<p>Requires 11.47% match.</p>
<p>HSIP: The overall purpose of the Highway Safety Improvement Program (HSIP) is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads through the implementation of infrastructure-related highway safety improvements.</p>	<p>State - Caltrans</p>	<p>HSIP funds are eligible for work on any public road or publicly owned bicycle or pedestrian pathway or trail, or on tribal lands for general use of tribal members, that improves the safety for its users. There are twenty eight project categories identified as eligible as listed under 23 U.S.C. §148(a)(4)(B)</p>	<p>Currently there is no active HSIP call for projects. Caltrans HSIP Cycle 12 call for projects has not yet been released.</p>	<p>The maximum reimbursement ratio for an HSIP project may be 100%, 90% or 50% per the project's safety countermeasure(s) as defined in Section 4.2 of the Local Roadway Safety Manual (LRSM).</p>



6.0

Wildfire Preparedness

Additional Considerations and Future Efforts

THIS WILDFIRE EVACUATION ASSESSMENT FOCUSES ON THE MOTOR VEHICLE EVACUATION OF FOUR SPECIFIC WILDFIRE SCENARIOS IN THE GREATER PLACERVILLE STUDY AREA WITH THE OBJECTIVE OF QUANTIFYING EVACUATION TIME ESTIMATES, IDENTIFYING EVACUATION TRAFFIC BOTTLENECKS AND DEVELOPING OPERATIONAL STRATEGIES AND INFRASTRUCTURE PROJECTS THAT BETTER FACILITATE EVACUATION.

Vulnerable Population Evacuation

The evacuation demand for this assessment focuses on household, employee and visitor trips that are within an evacuation or warning zone at the time of an evacuation order. While the predominant mode of evacuation will be motor vehicles, there are many in the community that will need to be evacuated that do not have access to a motor vehicle. It is recommended that future community planning and preparedness efforts further develop strategies for evacuating vulnerable populations that need assistance during an evacuation. Example strategies may include:

- Coordination with local emergency service providers to assist vulnerable populations
- Identification of shelter-in-place facilities
- Identification of single access neighborhoods
- Neighborhood buddy program to connect individuals without vehicles to neighbors willing to assist
- Identification of facilities that will require shuttle or bus services, such as retirement communities, care facilities and schools
- Coordination with El Dorado Transit to provide transit services
- Coordination with local school bus service providers
- Coordination with Transportation Network Companies, such as Lyft and Uber
- El Dorado County is currently in the process of updating their General Plan, including the Safety Element and the Local Hazard Mitigation Plan. This effort includes many of the vulnerable population identification and resource needs, including the identification of shelter-in-place facility needs in El Dorado County.



WILDFIRE PREVENTION

Identifying wildfire hazards and developing and maintaining programs to reduce or prevent those hazards is critical to any community wildfire preparedness program. The El Dorado Resource Conservation District is starting the City of Placerville Community Wildfire Resiliency Strategy project in 2024 with the goal of addressing the risk of wildfire to the City of Placerville and surrounding communities.

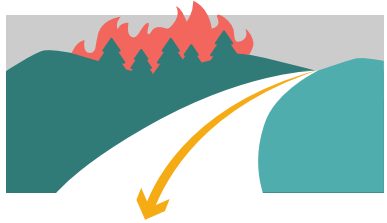
Many utilities are either at-risk for damage from wildfire and/or are a potential source of wildfire ignition. Examples of critical infrastructure include power, water, and communications utilities.

Providing all three of these services during a wildfire event may be critical for alert communications, facilitating evacuations and proving response. Coordination with local utility providers is important to identify at-risk facilities and encourage best practices to provide structure hardening and defensible space around critical facilities. Undergrounding key power and communication facilities is another strategy to both reduce potential ignition sources and maintain service during fire events.

Roadside activities can be another wildfire ignition source. Roadway authorities are encouraged to maintain fuel loads along the road right-of-way to

both reduce the potential for fire ignitions and to provide fire breaks in the event of a wildfire.

The general public can also play an important role in creating a fire adapted and resilient El Dorado County through collaboration with local organizations and practicing defensible space and fuels management on their own properties. The El Dorado County Office of Wildfire Preparedness and Resilience provides a countywide wildfire protection strategy with many community resources. The El Dorado County Fire Safe Council is another resource for the community providing information, resources and assistance programs that support wildfire preparedness and resilience.



Greater Placerville
**WILDFIRE
EVACUATION
PREPAREDNESS
STUDY**

*Envisioning a Fire
Adaptive Community*

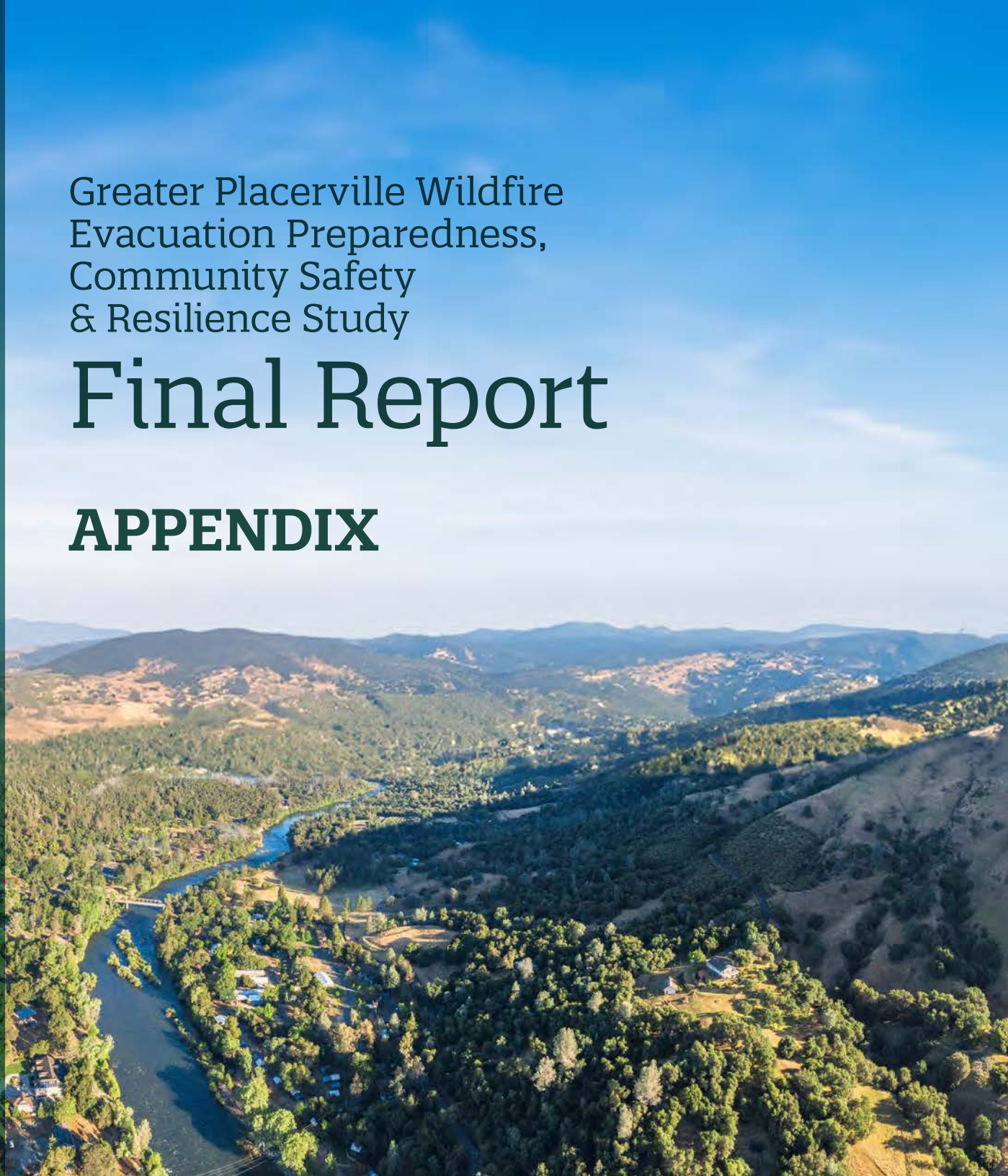
**EL DORADO COUNTY
TRANSPORTATION
COMMISSION**

JUNE 2024

Greater Placerville Wildfire
Evacuation Preparedness,
Community Safety
& Resilience Study

Final Report

APPENDIX



EL DORADO COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN – WILDFIRE EVACUATION STUDY

MAY 2024



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LIST OF ACRONYMS

CAL APG - California Adaptation Planning Guide
CAL FIRE - California Department of Forestry and Fire Protection
DTA - Dynamic Traffic Assignment
ETE - Evacuation Time Estimates
EPA – Environmental Protection Agency
EVA – Emergency Vehicle Access
GDP – Gross Domestic Product
HOA – Homeowners Association
MJHMP – Multi-Jurisdictional Hazard Mitigation Plan
OES - Office of Emergency Services

1. INTRODUCTION

1.1 OBJECTIVES OF THE STUDY

El Dorado County's greatest risk to its population, property, and critical infrastructure is wildfire, as identified in the most recent updates of the General Plan Safety Element and Multi-Jurisdictional Hazard Mitigation Plan (MJHMP).^{1,2} Through the stakeholder engagement process of each **respective plan, the County's residents have also agreed that wildfire continues to be the greatest risk and needs to be a primary focus for the County.** In support of these efforts, this study assesses the wildfire evacuation viability of five hazard areas within the County. This study identifies major evacuation routes within the El Dorado County project area to assess the road networks' performance under specific evacuation scenarios based on different criteria, including evacuation time estimates (ETE) and potential bottlenecks based on model simulations. Evacuation strategies and project recommendations are included in this assessment to identify potential future and ongoing efforts to prepare for wildfire emergencies. However, the study is not an evacuation route plan and does not identify specific routes to be used during an actual evacuation. The El Dorado County Sheriff's Office of Emergency Services (OES) will define specific evacuation routes at the time of an evacuation order during a real emergency event. This study should be used to inform El Dorado County and other regional agencies as they plan for the next steps to address wildfire hazards and improve evacuation preparedness.

1.2 LEGISLATIVE REQUIREMENTS

In accordance with California state legislature, which requires the inclusion and/or review of emergency evacuation routes and plans when adopting General Plans or other emergency planning documents such as the MJHMP, this study meets the following legislative requirements for the specific hazard areas:

- California Assembly Bills 747 and 1409 [Government Code section 65302.15 (a)] – This study identifies evacuation routes and their capacity, safety, and viability. In addition, it identifies evacuation locations under a range of emergency scenarios.

This is a requirement for all Safety Elements or updates to all Local Hazard Mitigation Plans completed after January 2022.

Emergency evacuations can occur for any number of reasons. Future emergency events that will require an evacuation are often unpredictable. For El Dorado County, the most likely hazard events that would require an evacuation are those caused by wildfires. Wildfire events were identified as

¹ El Dorado County 2022 General Plan Safety Element Update, accessed by DKS Associates in May 2024: <https://www.eldoradocounty.ca.gov/Land-Use/Long-Range-Planning/Active-Projects/2022-General-Plan-Safety-Element-Update#:~:text=What%20is%20a%20Safety%20Element,policies%20to%20protect%20the%20community.>

² El Dorado County Multi-Jurisdictional Hazard Mitigation Plan Update, accessed by DKS Associates in May 2024: <https://www.eldoradocounty.ca.gov/Public-Safety-Justice/Safety-Justice/sheriff/operations/oes> and the County's Safety Element can be found on the County's website at: <https://www.eldoradocounty.ca.gov/Land-Use/Long-Range-Planning/Active-Projects/2022-General-Plan-Safety-Element-Update>

the highest risk scenario in the MJHMP. Due to these reasons, this evacuation study includes a range of evacuation scenarios where multiple evacuation directions are possible to account for a range of wildfire threats.

Specific wildfire scenarios are not accounted for in this study. This study does not include compounding effects from hazards beyond wildfire. This study identifies specific evacuation destination directions away from the evacuation zone which were developed in coordination with OES. Directions do not identify specific destination locations, such as shelter locations, as those facilities are assigned at the time of an evacuation order during a real wildfire emergency event. Destinations evaluated in each community evacuation scenario, called out in the figures later in this document, are demonstrative of possible directions towards final destinations which vehicles could travel. These destinations do not represent physical places which individuals will be ordered to evacuate to. OES will assign evacuation shelters at the time of an evacuation order during a real emergency.

The CAL FIRE **Office of the State Fire Marshal’s Subdivision Review Program and the 2024 El Dorado County General Plan Safety Element** address California Senate Bill 99 requirements to identify residential developments in hazard areas that do not have at least two emergency evacuation routes. Four of the five analysis hazard areas in this study have been identified by the Subdivision Review Program as residential developments in hazard areas that do not have at least two emergency evacuation routes.

This study will be incorporated **into El Dorado County’s MJHMP update** and will identify specific hazard mitigation actions, including mitigation actions related to efficient wildfire evacuation. These actions are developed to reduce or eliminate hazard risk within the County during evacuation **events. The County’s Safety Element** will also incorporate by reference the County MJHMP update. Therefore, the Wildfire Evacuation Study ensures that the County meets the legislative requirements of AB 747 and 1409.

1.3 DISCLAIMER

This study has been conducted by DKS Associates and the El Dorado County Sheriff’s OES to support the El Dorado County Wildfire Evacuation Study. This study is intended to provide an **understanding of the County’s preparedness for wildfire evacuation of select hazard areas and** provide recommendations based on the described scenarios.

This study intends to evaluate multiple wildfire evacuation scenarios of high-risk communities to assess the transportation network for points of catastrophic failure and present an account of these conditions and recommendations in a wildfire evacuation study for select hazard areas of El Dorado County. The scope of this wildfire evacuation assessment is based on the behavior and movement of motor vehicles during evacuation events.

The contents of this study are founded on precise data and likely wildfire evacuation scenarios within El Dorado County. They are not intended as a forecast or comprehensive compilation of all conceivable wildfire situations in the area. This study does not ensure that wildfires or evacuation routes will unfold precisely as depicted in this study nor does it identify any evacuation routes to be

taken by the public. Evacuation orders and evacuation route designation are the purview and **responsibility of the El Dorado County Sheriff's Office of Emergency Services.**

1.4 STUDY AREA

The El Dorado County Sheriff's OES, in coordination with the El Dorado County Office of Wildfire Preparedness and Resilience, identified five hazard areas for wildfire evacuation assessment as part of this study as shown in Figure 1. These areas were chosen based on the Subdivision Review Program as previously mentioned to represent a variety of communities spread throughout the County based on density, vegetation, population, and topography.

Three of the wildfire hazard areas have been identified for a simulation-based model wildfire evacuation assessment given the total evacuation population and multiple evacuation routing possibilities under a potential range of wildfire scenarios. These areas include the following communities:

1. Lake Hills
2. Rancho del Sol
3. Logtown

An additional two wildfire hazard areas have been identified for a qualitative wildfire evacuation assessment due to containing a single evacuation egress route.

4. Outingdale Subdivision
5. Golden Bear Trail Subdivision

Figure 1 below displays each hazard area and its respective evacuation and warning zones. The **evacuation and warning zones were developed in coordination with the El Dorado County Sheriff's OES** to assess the evacuation viability under a range of possible wildfire scenarios, but not a specific wildfire scenario. Evacuation zones define the area of mandatory evacuation for all individuals through the issue of an evacuation order. Warning zones are areas near evacuation zones that are provided with an alert notification that a potential wildfire incident may require people to leave the area. It is issued as a precautionary measure to provide sufficient time for people to prepare themselves for a potential evacuation. Warning zones typically generate voluntary trips that add to the warning zone evacuation demand.

All scenarios were modeled to occur on a Saturday at 2:00 p.m. in October. This time was chosen due to the increased likeliness for individuals to be at home being a non-typical workday, while still having moderate background traffic conditions due to weekend activities, such as shopping. October was chosen since it is part of peak wildfire season for the region. The following subsections in the report detail the assessment of each study area.

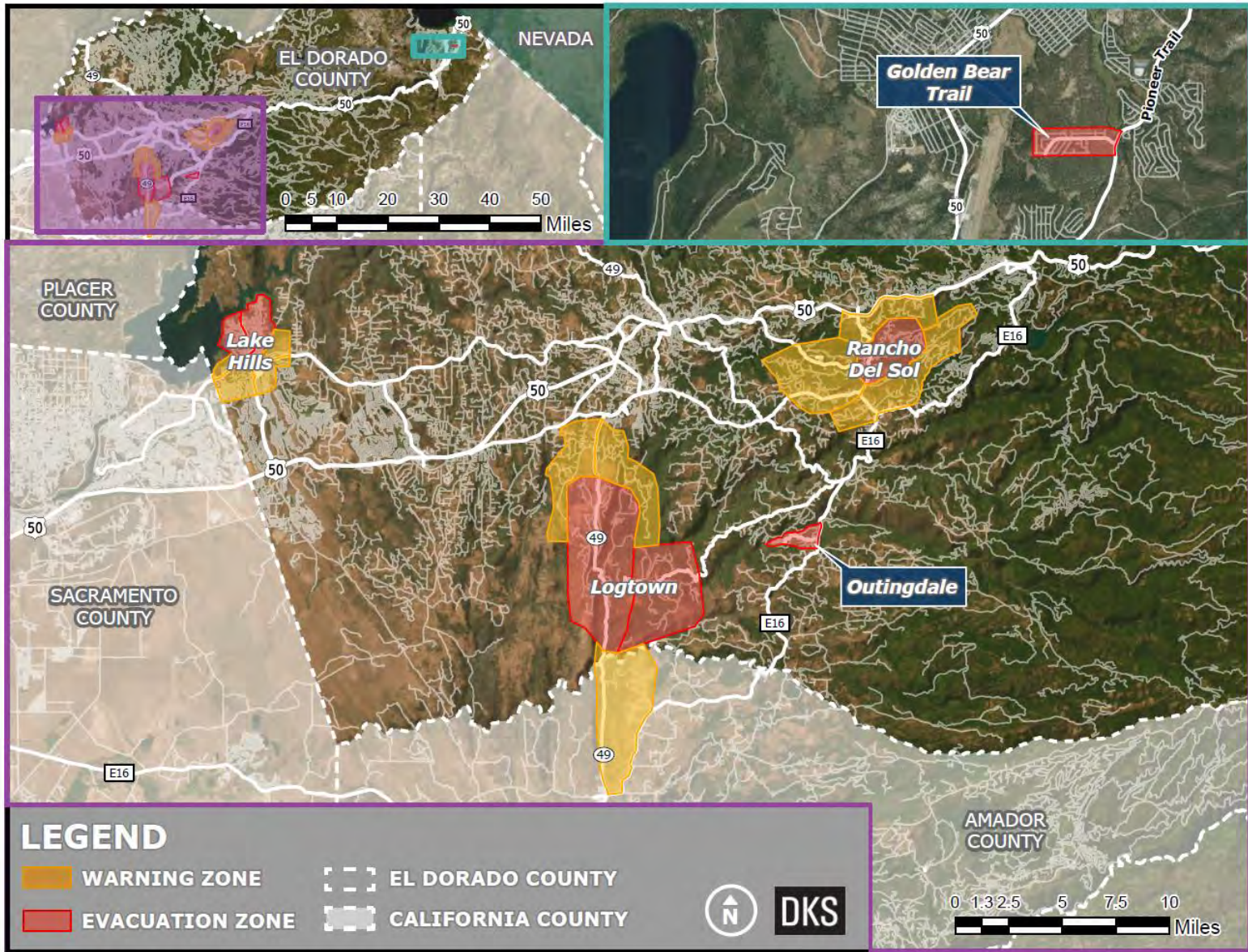


FIGURE 1: WILDFIRE EVACUATION STUDY AREA

2. METHODOLOGY

2.1 EVACUATION MODEL SOFTWARE

The Evacuation assessment uses a Dynamic Traffic Assignment (DTA) simulation model using PTV Visum software to capture all elements of a wildfire evacuation. The roadway network in the model includes all streets within the study area with key attributes, including the number of lanes, posted speed limits, intersection control (including stop signs, signal timing, and yield signs), and facility capacity. The evacuation and background trips are then assigned to the network in 10-minute intervals over the assignment period. The assignment period includes a one-hour warm-up period to preload background traffic, a 60-minute evacuation period following the evacuation order, and a one-hour cool-down period to capture the time to clear any remaining traffic. The exception to this methodology is the Logtown scenario which models a 40-minute evacuation period as opposed to a 60-minute period. OES, selected the 40-minute evacuation time period for the Logtown scenario as a conservative estimate based on the vegetation, topography and the range of potential wildfire scenarios. The evacuation destinations for each scenario are defined in their respective sections.

2.2 EVACUATION TRIP DEMAND

The evacuation demand is determined by residential household data in evacuation and warning zones. U.S. Census data on households without vehicles, those with one vehicle, and those with multiple vehicles is used to estimate demand.³ Households with no vehicle access generate zero evacuation trips as those households are anticipated to evacuate with neighbors or emergency personnel. Households with 1 vehicle generate one trip per household. The value of 1.75 vehicles evacuating per household was used for all other households. The value of 1.75 is consistent with the average number of vehicles used to evacuate during the Santa Rosa, California Tubbs and Nuns fires of 2017.⁴

2.3 EVACUATION TIME

The departure time distribution of evacuees is critical to the evacuation assessment as that determines the peaking characteristics and subsequent congestion levels during an evacuation event. This time includes the time it takes for evacuees to receive the order, gather belongings, and perform any other necessary duties before departing their household. The evacuation assessment of the three model areas includes a departure time scenario that coincides with moderate spreading wildfire scenarios. In the 60-minute scenario, all evacuation trips depart within

³ U.S. Census Bureau. "TENURE BY VEHICLES AVAILABLE." *American Community Survey, ACS 5-Year Estimates Detailed Tables, Table B25044*, 2020.

U.S. Census Bureau. "AGGREGATE NUMBER OF VEHICLES AVAILABLE BY TENURE." *American Community Survey, ACS 5-Year Estimates Detailed Tables, Table B25046*, 2020.

⁴ Fehr & Peers. "SCOTT RANCH DEIR: WILDFIRE EVACUATION TRANSPORTATION ASSESSMENT." https://storage.googleapis.com/proudcity/petalumaca/uploads/2020/12/Appendix_4.15_Wildfire1.pdf. page 100 of 105, 2020.

60 minutes of the evacuation order. In the 40-minute scenario, all evacuation trips depart within 40 minutes of the evacuation order.

The evacuation trip departure time distribution is assigned to the model in 10-minute intervals, with a percentage of the evacuation trips beginning to evacuate within each interval. The following departure time distributions were informed by the 2024 Greater Placerville Wildfire Evacuation Preparedness Study that developed distributions with input from the El Dorado County Fire, California Department of Forestry and Fire Protection (CAL FIRE), and El Dorado County Sheriff’s OES. The departure time distributions for these models were adapted to use ten-minute intervals, rather than 15-minute intervals to account for the shorter overall evacuation periods for these wildfire scenarios.

TABLE 1: PERCENT OF EVACUATION TRIPS BEGINNING AFTER THE EVACUATION ORDER

Elapsed Time (Min)	60-Minute Scenario	40-Minute Scenario
10	10%	15%
20	25%	40%
30	40%	75%
40	75%	100%
50	95%	
60	100%	

2.4 TRAFFIC CONTROL AND BACKGROUND TRAFFIC ASSUMPTIONS

Traffic control measures are assumed to be in place by emergency responders following an initial response lag time to assist in the evacuation process by restricting background traffic from entering the evacuation zone. Specific traffic control locations are described for each scenario in their respective sections. It is assumed that traffic control closures for background traffic are in place twenty minutes after the start of the Evacuation order unless stated otherwise. No additional traffic control measures are assumed in the evacuation model assumptions other than the ones stated below.

Replica data was used to estimate weekend afternoon background traffic that will be present at the time of the evacuation along key routes within the modeled scenarios. Replica uses mobile device data to provide complete trip tables for all modes of travel representing typical weekday and weekend days. Replica data can be aggregated by season for residents, workers, visitors, and commercial travel. It can also define trip characteristics and routing information for various specifications.

2.5 TRANSPORTATION NETWORK

The evacuation models include transportation networks inside the warning zones, evacuation zones, and critical junctions to evacuation destinations. The network includes all streets and junction controls, including stop signs, yield signs, traffic signals, and emergency traffic control elements.

During a wildfire evacuation, there are many factors that can influence the capacity of the system that may result in the evacuation traffic not flowing at the same rate as under ideal non-emergency conditions. These factors may include heavy smoke conditions that limit visibility, the presence of emergency response vehicles, and non-typical driver behaviors because of the emergency conditions. To capture these effects all the model scenarios were analyzed with reduced roadway capacity by approximately 40% to capture the worst case of traffic efficiency during a wildfire. This 40 percent reduction in capacity was selected based on the professional judgment of the consultant team. The capacity reduction contributes to congestion patterns that influence both the evacuation route assignment and the ETEs.

2.6 WILDFIRE EVACUATION ASSESSMENT

For each scenario, ETEs are presented by the accumulated percentage of evacuated trips by time intervals showing the progression of evacuation trips throughout the evacuation period. The ETEs are presented for the Evacuation Zones for each scenario. Note it is not possible to have 100% of the evacuation trips clear the evacuation zone by the end of the evacuation period as vehicles are modeled leaving their homes within the 50 to 60-minute interval after the start of the evacuation order or 30 to 40-minute interval after the evacuation order for the 40-minute scenario. Many of the trip lengths exceed 10 minutes to clear the zone, even in non-congested conditions which leads to this effect.

As evacuation route congestion can occur downstream of the evacuation zones, average and maximum travel times are also evaluated from the evacuation zones to the study area destination directions to estimate the time it takes to clear the evacuation vicinity. Summaries of the ETEs are detailed under the key observations sections of the three modeling scenarios.

2.7 VULNERABLE POPULATION ASSESSMENT

According to the California Adaptation Planning Guide (Cal APG), **"Equitable climate adaptation planning involves identifying persons who may be most vulnerable to climate change and ensuring that planning processes, distribution of resources, and efforts to address systemic wrongs are all conducted in an equitable manner."** The guide provides definitions for vulnerable populations who are most at risk due to climate change. The presence of vulnerable populations in the study areas **was identified based on the U.S. Census Bureau's American Community Survey 5-year summary estimates as reported by the U.S. Environmental Protection Agency (EPA) Environmental Justice Screening and Mapping tool.**⁵ The **U.S. Census Bureau's Access Broadband Dashboard** was also used to capture more characteristics at the tract level. Both interactive tools provide statistics on socioeconomic indicators, including employment, small business establishments, wages and

⁵ Environmental Justice Screening and Mapping Tool Descriptions - <https://www.epa.gov/ejscreen/ejscreen-map-descriptions#soci>

income, poverty, home values, population change and migration, educational attainment, and real gross domestic product (GDP).

Additional vulnerable populations (i.e., geographically isolated individuals, individuals without health insurance, Native Americans, individuals without access to a vehicle, households without broadband internet, and households without a computer) not included in the Cal APG were identified and analyzed in the vulnerability analysis, as they face disproportionate risk to wildfire and evacuation challenges.

While all people in a community will experience impacts from wildfire, some may be more affected than others. Many factors can influence sensitivity to wildfires including the following:

- Health
- Age
- Ability
- Societal disadvantages
- Access to health care and basic needs
- Economic opportunity
- Education

The *most* vulnerable populations are likely to be disproportionately impacted by wildfires, face challenges in the event of an evacuation, and may have fewer resources to prepare for, adapt to, and recover from wildfires. Following guidance from the Cal APG, vulnerable population groups were identified for each study area (Cal OES 2020). Each study area has several vulnerable populations that may disproportionately experience the impacts of climate change.

A social sensitivity index of 19 indicators, shown in Table 2 below, was created to understand the presence of vulnerable population groups in each study area. Each indicator represents a **characteristic that increases an individual's sensitivity to wildfire risk**. These characteristics relate to a person's physiological sensitivity to wildfire and/or the ability of an individual to prepare for, evacuate from, or recover from a wildfire. These 19 indicators are similar to those used in the County's Safety Element and portions of the County's 2024 MJHMP like the Climate Vulnerability Assessment.

TABLE 2: SOCIAL SENSITIVITY INDICATORS

Social Sensitivity Indicator	Indicator Description
Median Family Household Income	Median Family Household Income
Median Non-Family Household Income	Median Non-Family Household Income
People experiencing homelessness	Individuals who currently lack fixed, regular, and adequate housing
Undocumented individuals	Individuals residing in the United States without legal documentation
Unemployed	Individuals 16 and older who are out of work and able to work but are not
Seniors	Individuals 65 years or older
Young Children	Individuals 5 years and younger
People of Color	All individuals that do not identify as white
Renters	Housing units that are renter occupied
Outdoor Workers	Individuals who are employed, 16 and older, and work outdoors
Visitors	Individuals who are not residents and are visiting the study area for a limited time
Linguistically Isolated	Households with individuals who are non or limited English-speaking
American Native and Alaskan Native	Individuals that identify as American Native or Alaskan Native
Individuals with Disabilities	Individuals with access and functional needs (physical and mental)
Individuals with Asthma	Individuals diagnosed with asthma
Individuals with Coronary Artery Disease ^c	Individuals diagnosed with coronary artery disease
Individuals without access to a vehicle	Households without access to a vehicle
Individuals without health insurance	Individuals aged 18 to 64 years old currently uninsured
Households without a computer	Households without access to a computer.
Households without broadband internet	Households without access to broadband internet.

3. LAKE HILLS

Overview

The Lake Hills evacuation zone is located alongside the eastern side of Folsom Lake on a peninsula that stretches approximately 2,100 acres. Among the mix of topographic features, suburban neighborhoods are built within the valleys, mid-slopes, ridgelines, and bluffs. The vegetation primarily consists of urban types (i.e., grass and trees) with a perimeter of hardwood woodland.⁶ Additionally, the area attracts many visitors to the Folsom Lake Marina, shown in Figure 2 on the following page. Based on the most recent 2023 Fire Hazard Severity Zones Map issued by CAL FIRE for the State Responsibility Area, the evacuation zone west of Francisco Drive is a Moderate Fire Hazard Severity Zone while the area east of Lake Hills Drive is a Very High Fire Hazard Severity Zone.⁷

Community Characteristics

There are approximately 1,940 residential households within the Lake Hills community in the evacuation zone. The community has an estimated population of 5,430 persons. Of these households, there are about 30 with zero vehicle access, around 230 with one vehicle access, and around 1,680 with two or more vehicles accessible.⁸

⁶ State of California and the Department of Forestry and Fire Protection, California Vegetation - WHR13 Types

⁷ California Board of Forestry and Fire Protection, Fire Hazard Severity Zones in State Responsibility Area - effective April 1, 2024

⁸ U.S. Census Bureau. "SEX BY AGE." *American Community Survey, ACS 5-Year Estimates Detailed Tables, Table B01001, 2020.*

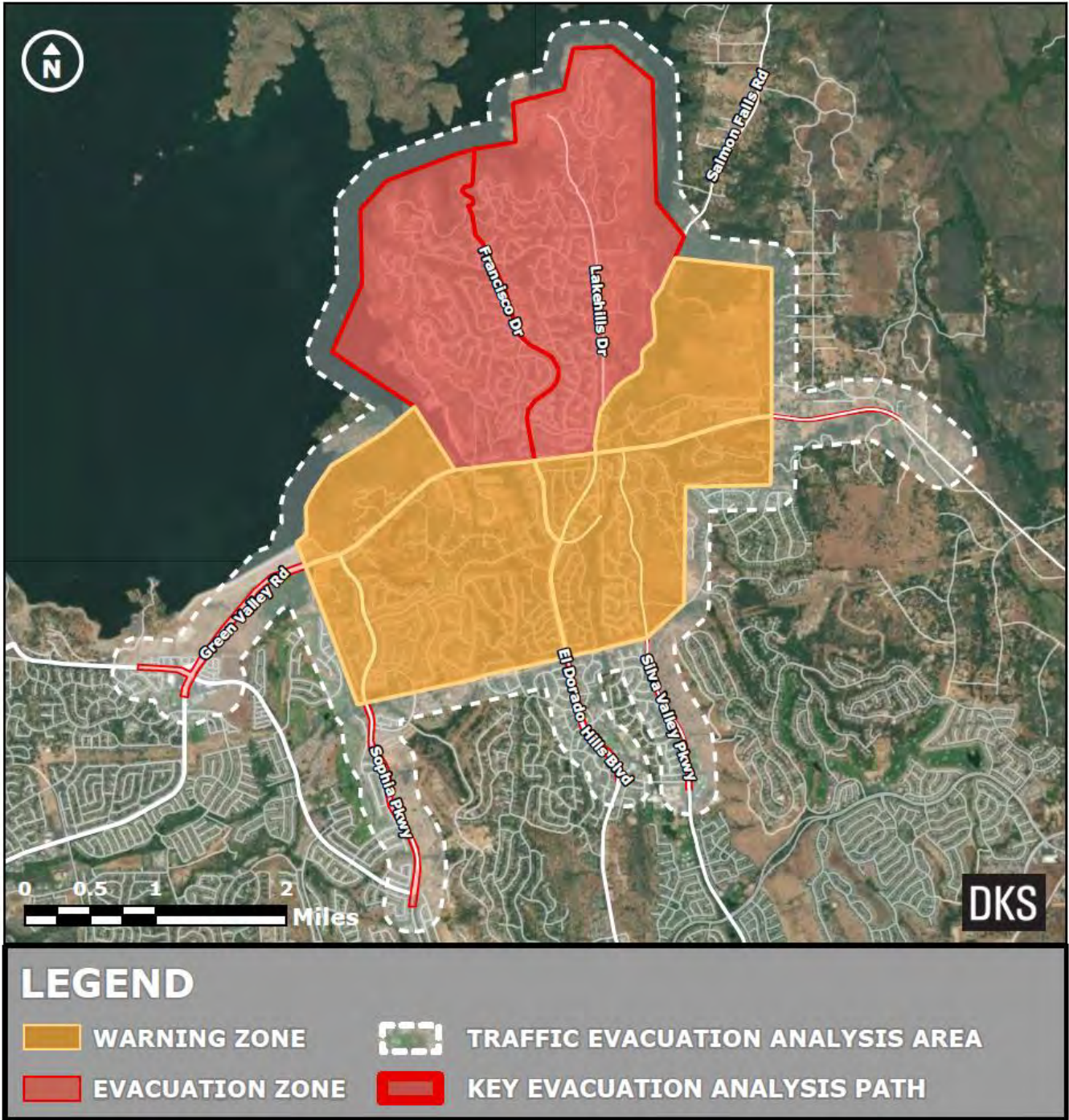


FIGURE 2: LAKE HILLS STUDY AREA

Vulnerable Population Assessment

Table 3 summarizes the proportion of vulnerable population social sensitivity indicators in Lakehills.

TABLE 3: SOCIAL SENSITIVITY INDICATORS IN LAKE HILLS EVACUATION AREA

Social Sensitivity Indicator	Percentage of Population or Households in the Lake Hills Evacuation Area*
Median Family Household Income	\$150,478
Median Non-Family Household Income	\$63,938
Low Income	12.0%
People experiencing homelessness	N/A
Undocumented individuals	N/A
Unemployed	4.0%
Seniors	23.0%
Young Children	5.0%
People of Color	17.0%
Renters	12.0%
Outdoor Workers	N/A
Visitors	Not Available
Linguistically Isolated	2.0%
American Native and Alaskan Native	0%
Individuals with Disabilities	10.0%
Individuals with Asthma	9.6%
Individuals with Coronary Artery Disease	4.9%
Individuals without access to a vehicle	2.0%
Individuals without health insurance	1.5%
Households without a computer	3.4%
Households without broadband internet	3.0%

Key Transportation Facilities

- *Francisco Drive*: North-south major collector through the Lake Hills area posted at 30 to 40 miles per hour (MPH). Francisco Drive provides one of two ingress/egress points to the Lake Hills community. It is mostly a two-lane roadway with left-turn lane pockets throughout the corridor. A center strip is consistent through the corridor, but the fog line strip starts south of Gordo Court where the pavement widens to include a center median. North of Gordo Court is the narrowest portion of the corridor with a 12-foot-wide travel lane in each direction. This corridor directly connects to El Dorado Hills Boulevard which leads to US-50 and Green Valley Road which provides connections east and west.
- *Lakehills Drive / Salmon Falls Road / El Dorado Hills Boulevard*: This route serves as one of two ingress/egress points to the Lake Hills community. Lakehills Drive is a north-south minor arterial that connects to Salmon Falls Drive before connecting directly to El Dorado Hills Boulevard south of Green Valley Road and provides direct access to US-50. The posted speed ranges from 25 to 40 MPH. The center line strip begins south of Guadalupe Drive while fog lines are marked south of Bonita Drive as areas become more populated.
- *Green Valley Road*: East-west minor arterial road with a posted speed of 50 MPH. It runs parallel to US-50 providing a connection between Folsom and Placerville. In the warning zone, travel lanes are 12 feet wide. The cross-section changes between Francisco Drive and El Dorado Hills Boulevard, where to the west there is a 5-lane cross-section and to the east a 3-lane cross-section. There are additional right turn lanes at the Francisco Drive and Silva Valley Parkway intersections. Green Valley Road narrows to 2-lanes east of Silva Valley Parkway.
- *Sophia Parkway*: North-south minor arterial road posted at 50 MPH with a center line strip and fog line strip. It serves as an alternate route that indirectly connects to US-50 via Empire Ranch Road and Saratoga Way.
- *Silva Valley Parkway*: North-south minor arterial road posted at 50 MPH that starts as a two-lane route within the warning zone and then becomes a four-lane road closer to US-50.

3.1 EVACUATION SCENARIOS

Two evacuation scenarios were developed to assess the Lake Hills roadway network performance:

- Scenario 1: Base Evacuation. Uses a trip distribution to all possible evacuation destinations along main corridors and maintains existing traffic patterns, see Figure 3 on the following page for the evacuation distribution.
- Scenario 2: Francisco Drive Dual Right & Restricted Turns. This scenario uses emergency traffic control to restrict turning movements and operate dual southbound right turn lanes from Francisco Drive to increase evacuation flows. During this scenario, emergency personnel would allow the existing southbound through lane on Francisco Drive to turn right and southbound through. This changes evacuation zone destination distributions to evacuations through Green Valley Road or El Dorado Hills Boulevard outside of the study area as shown in Figure 4 below. To increase the southbound right throughput, this scenario models a dual right turn allowing for vehicles in the center lane to make a southbound right onto Green Valley as well as go straight onto El Dorado Hills Boulevard.

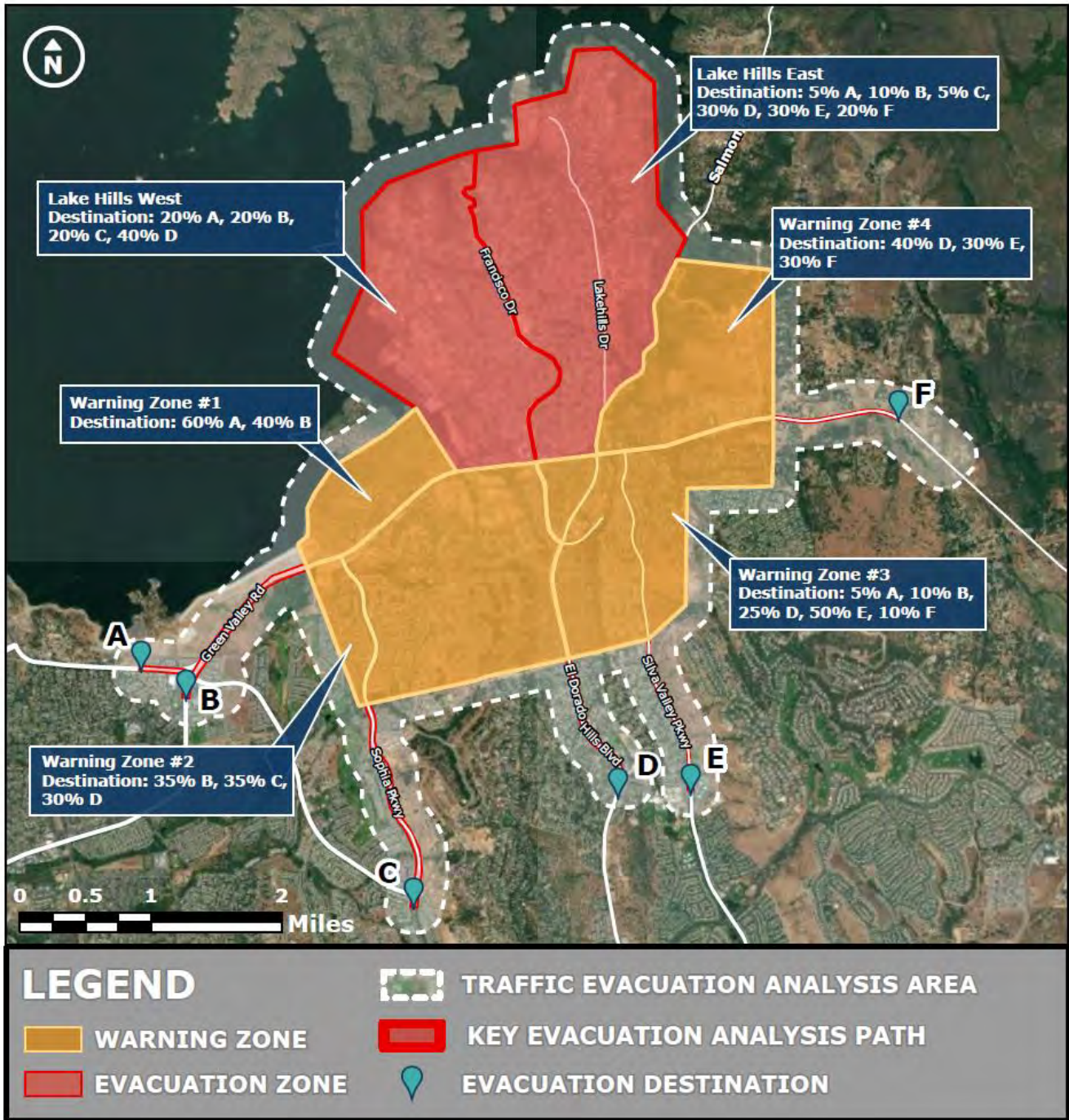


FIGURE 3: LAKE HILLS SCENARIO 1 EVACUATION DISTRIBUTION

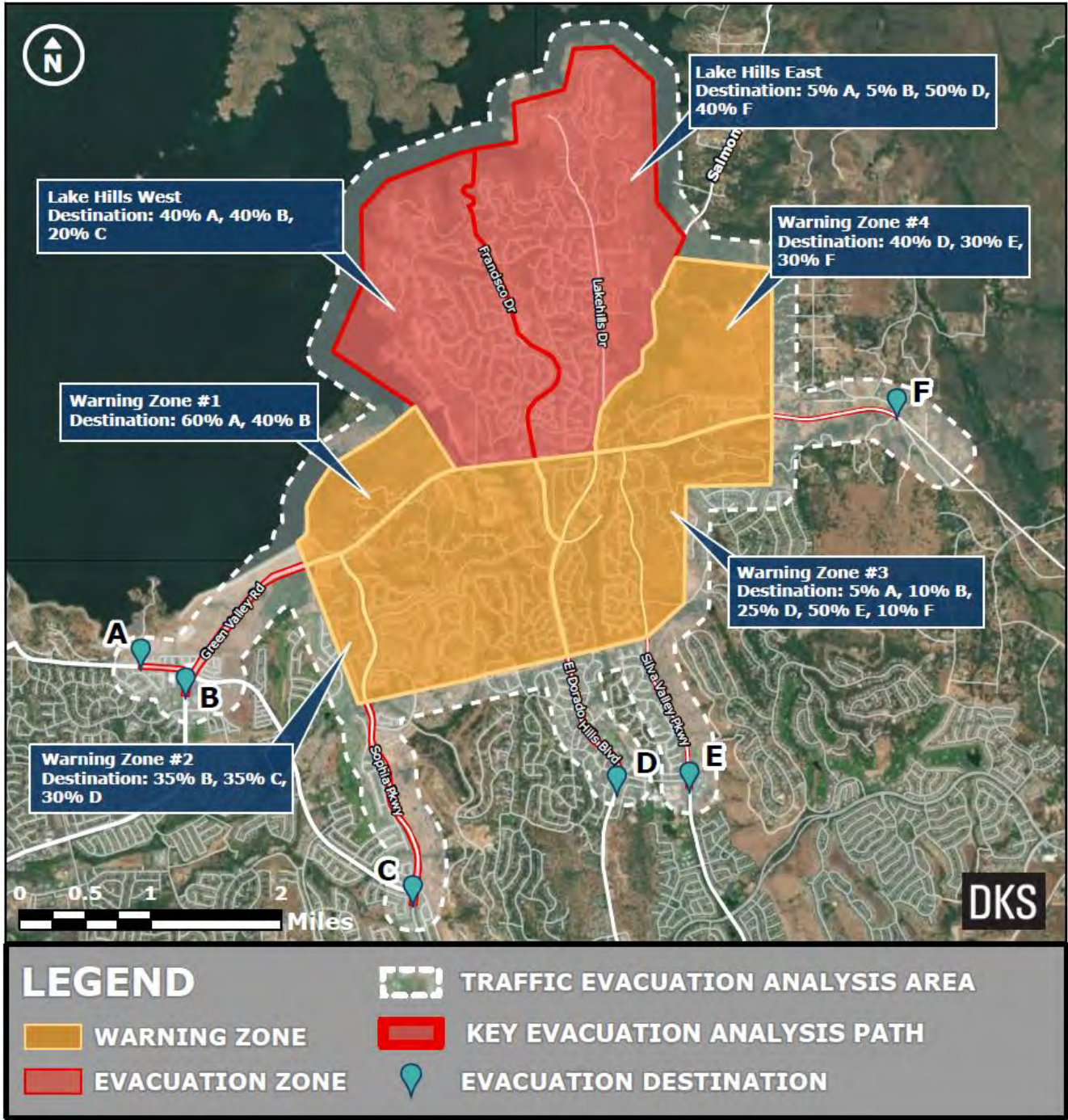


FIGURE 4: LAKE HILLS SCENARIO 2 EVACUATION DISTRIBUTION

3.2 EVACUATION ROUTES

All evacuation trips are assigned evacuation destination directions along key routes. Leaving the study area represents heading in the direction of an ultimate evacuation destination downstream. The following destinations have been identified for the Lake Hills evacuation model:

- A: E Natoma Street west of Green Valley Road
- B: Blue Ravine Road south of E Natoma Street
- C: Sophia Parkway south of E Natoma Street
- D: El Dorado Hills Blvd south of Harvard Way
- E: Silva Valley Parkway south of Harvard Way
- F: Green Valley Road east of Green Springs Rd

Each evacuation and warning zone has an assigned trip distribution percentage to one or more of the above destinations as shown in the previous two figures. Key roadway facilities used for evacuation are shown in Figure 5. Two main roadways allow for egress from the Lake Hills Peninsula: Francisco Drive and Salmon Falls Road / Lake Hills Drive.

While this evacuation assessment does not include fire modeling or specific wildfire scenarios, the peninsula geography of Lake Hills in combination with the northeast area being a Very High Fire Hazard Severity Zone, results in the most likely wildfire threat occurring northeast of the community along the Salmon Falls Road corridor. Given this hazard, it was assumed that Salmon Falls Road going northeast away from Lake Hills is closed as an evacuation route. This results in a realistic stress test analysis of the transportation network for a Lake Hills community evacuation.

During the evacuation after emergency traffic control is in place, there is not east-west traffic allowed on Green Valley Road between Francisco Drive and Salmon Falls Road / El Dorado Hills Road as allowing evacuating traffic from Francisco Drive eastbound would result in additional delay for southbound evacuating traffic from Salmon Falls Road. Conversely, southbound right turn movements from Salmon Falls Road would result in conflicting demand that would impede the evacuation flow at Francisco Drive.

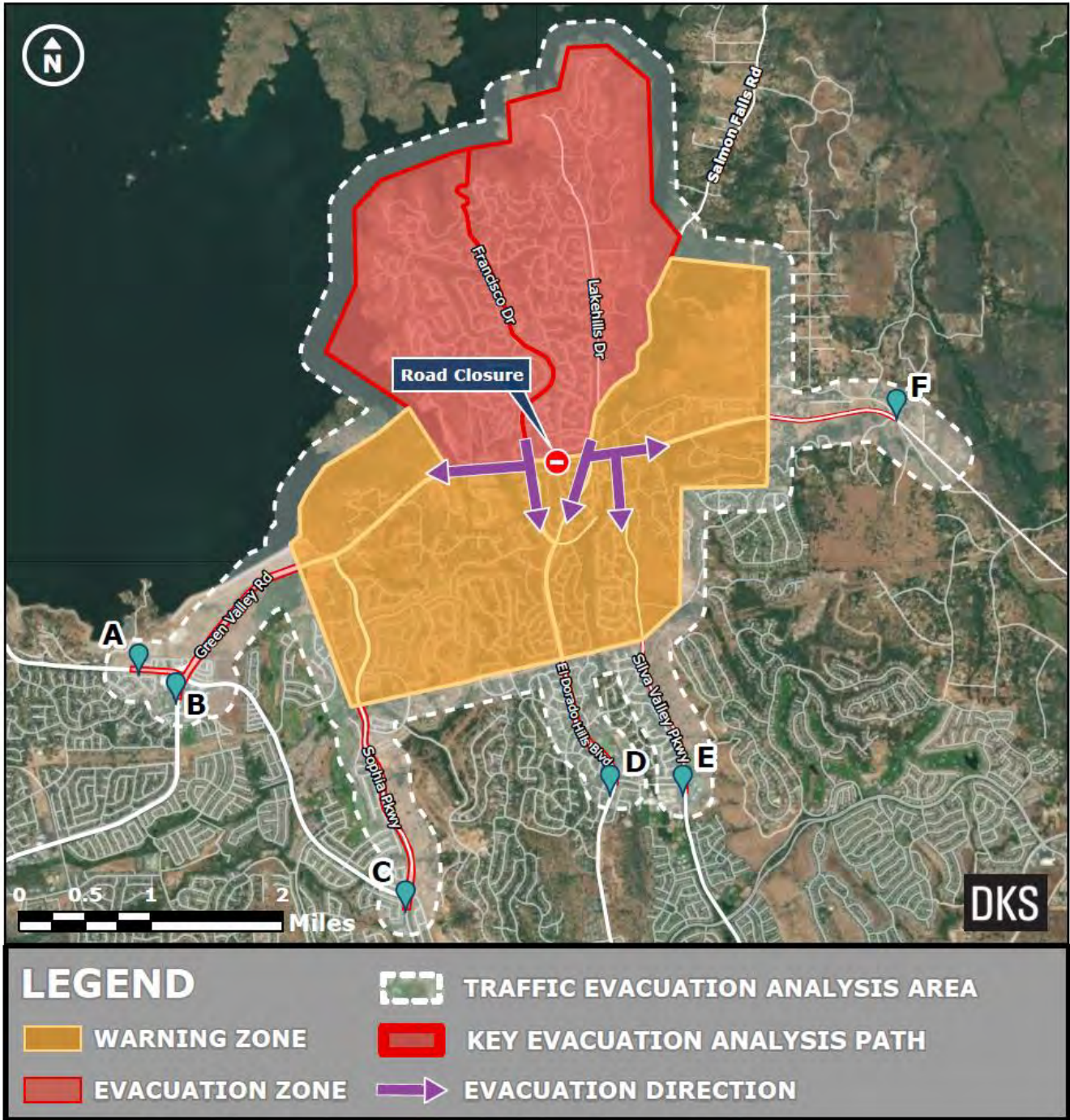


FIGURE 5: LAKE HILLS EVACUATION DIRECTIONS

3.3 MODEL ASSUMPTIONS

Emergency manual traffic control is assumed to be implemented within the Lake Hills area within 20 minutes of the evacuation order. Given the evacuation population and the limited routes serving the evacuation zone, emergency manual traffic control is an essential element for a successful evacuation of this area. Five traffic signals exist within the evacuation zone that are important for efficiency within the evacuation process, mapped in Figure 6 on the following page:

- Green Valley and Francisco Drive: Manually flagging for southbound evacuation traffic or an evacuation-specific signal timing plan with increased southbound green time that runs southbound right and through signal phases concurrently (split phase). Scenario 2 requires manual flagging to operate the southbound through lane as an optional dual right movement for increased flow.
- Green Valley and Salmon Falls Road/ El Dorado Hills Boulevard: Manually flagging for southbound evacuation traffic or an evacuation-specific signal timing plan with increased southbound green time that runs southbound right and through signal phases concurrently (split phase).
- Green Valley and Silva Valley Parkway: Manually flagging for southbound and eastbound evacuation traffic or an evacuation-specific signal timing plan with increased eastbound green time.
- Francisco Drive and Village Center Drive: Manually flagging for southbound and westbound evacuation traffic or an evacuation-specific signal timing plan with increased southbound green time that provide sufficient traffic flow that does not impede the flow to Green Valley Road.
- Francisco Drive and the Retail Center: Manually flagging for southbound evacuation traffic or an evacuation-specific signal timing plan with increased southbound green time.

In addition to these traffic control points it is assumed southbound left turns from Francisco Drive and southbound right turns from Salmon Falls Road are prohibited. The only traffic allowed access to the portion of Green Valley Road between Francisco Drive and Salmon Falls Road are vehicles leaving the two shopping complexes with direct access. Replica data was used to estimate weekend afternoon background traffic that will be present at the time of the evacuation scenario along Green Valley Road, Francisco Drive, El Dorado Hills Blvd, Silva Valley Parkway, and Sophia Parkway.

Outside of the manual traffic control areas to assist the flow of evacuation traffic, background traffic needs to be blocked along Green Valley Road to prevent non evacuation traffic from entering the evacuation zone and impeding the evacuation process. Within the same 20-minute period following the start of the evacuation order, eastbound Green Valley Road is closed at Sophia Parkway with all traffic diverted to southbound Sophia Parkway. Westbound Green Valley Road is assumed to be closed at Silva Valley Parkway with all westbound traffic diverted with southbound Silva Valley Parkway.

The model also incorporates nonresidential employee trips exiting the shopping center north of Green Valley Road. Nonresidential trips have a shorter departure time distribution than residential trips as there is less or no need for preparations prior to evacuation.

TABLE 4: PERCENT OF NON-RESIDENTIAL EVACUATION TRIPS BEGINNING AFTER THE EVACUATION ORDER

Elapsed Time (Min)	60-Minute Scenario
10	40%
20	80%
30	90%
40	100%
50	100%
60	100%

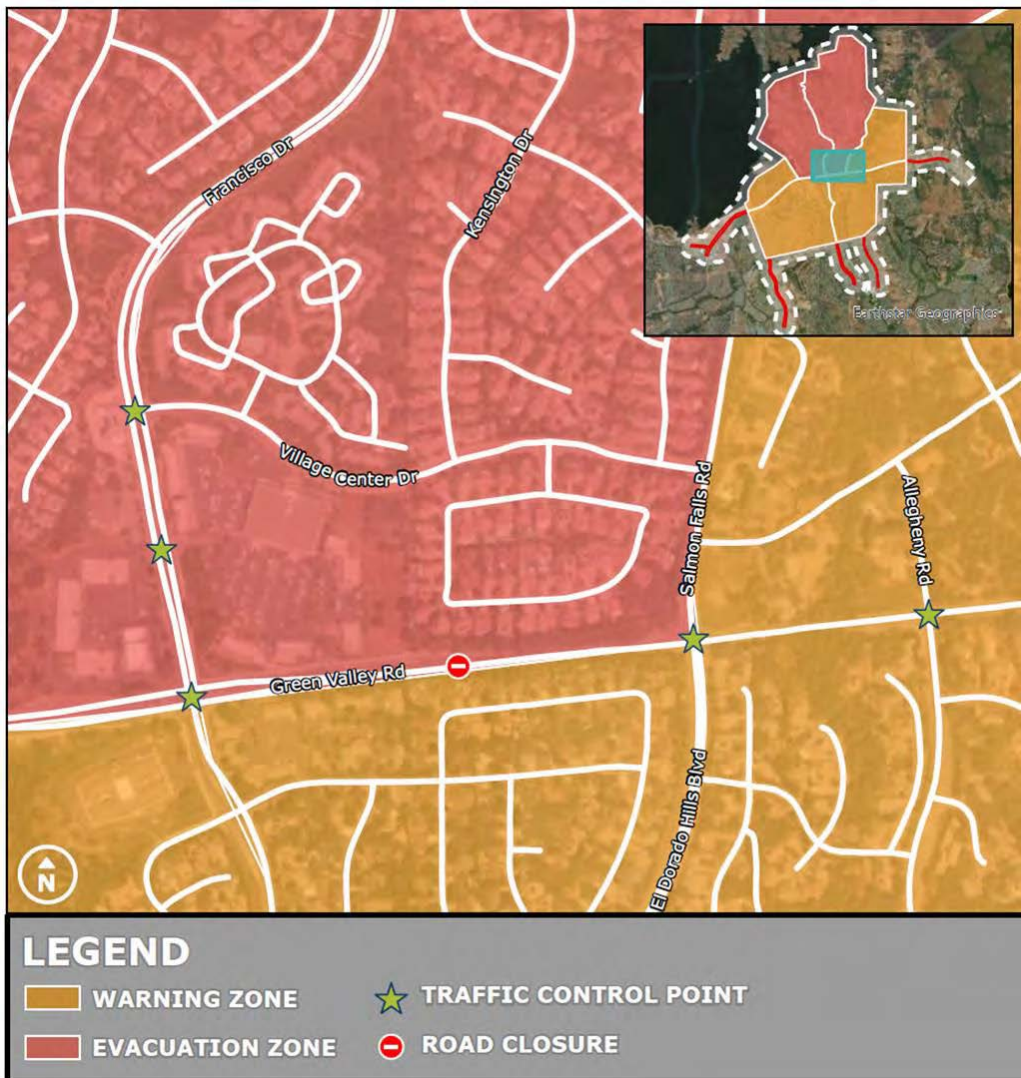


FIGURE 6: EMERGENCY TRAFFIC CONTROL LOCATIONS FOR EVACUATION TRAFFIC

3.4 EVACUATION TIME ESTIMATES

Under both scenarios, trips evacuating from the Lake Hills Peninsula are unable to evacuate fully within 70 minutes of the evacuation order. 60 minutes after the evacuation order is issued, 75% of vehicles can exit the evacuation zone in Scenario 1 (Figure 7) and 85% of vehicles can exit the evacuation zone in Scenario 2 (Figure 8). Scenario 2 conditions decrease evacuation times by one interval with 100% trips clearing the area 80 minutes after the order as opposed to 90 minutes after the order.

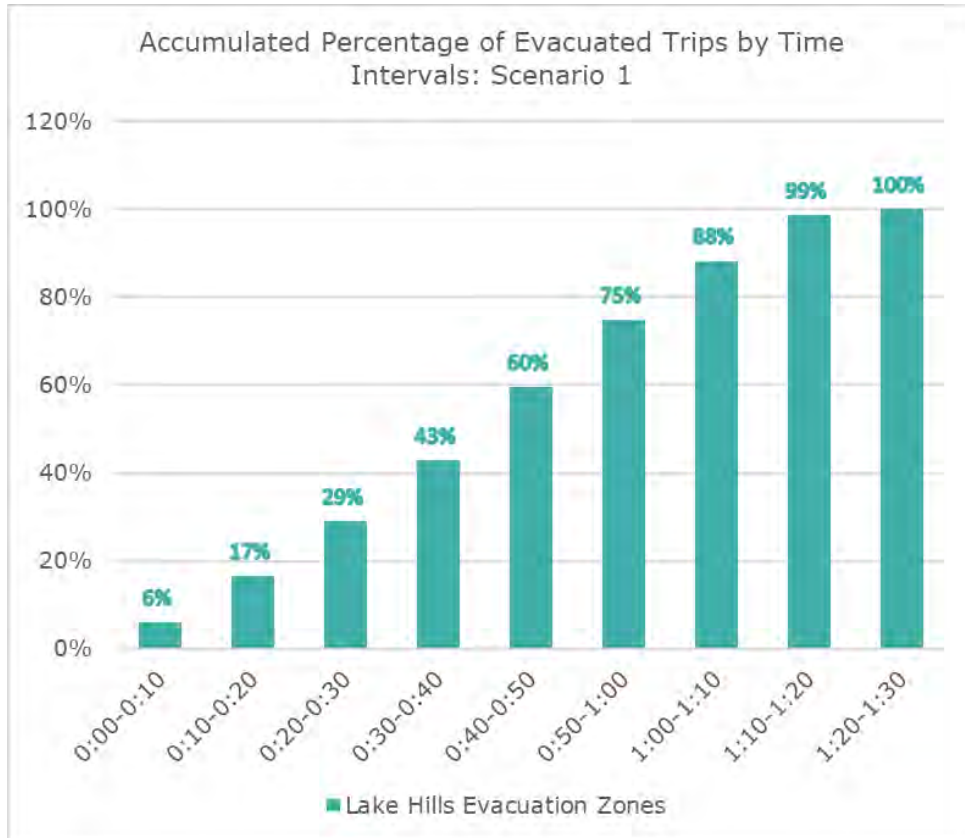


FIGURE 7: ACCUMULATED PERCENTAGE OF EVACUATED TRIPS BY INTERVAL SCENARIO 1

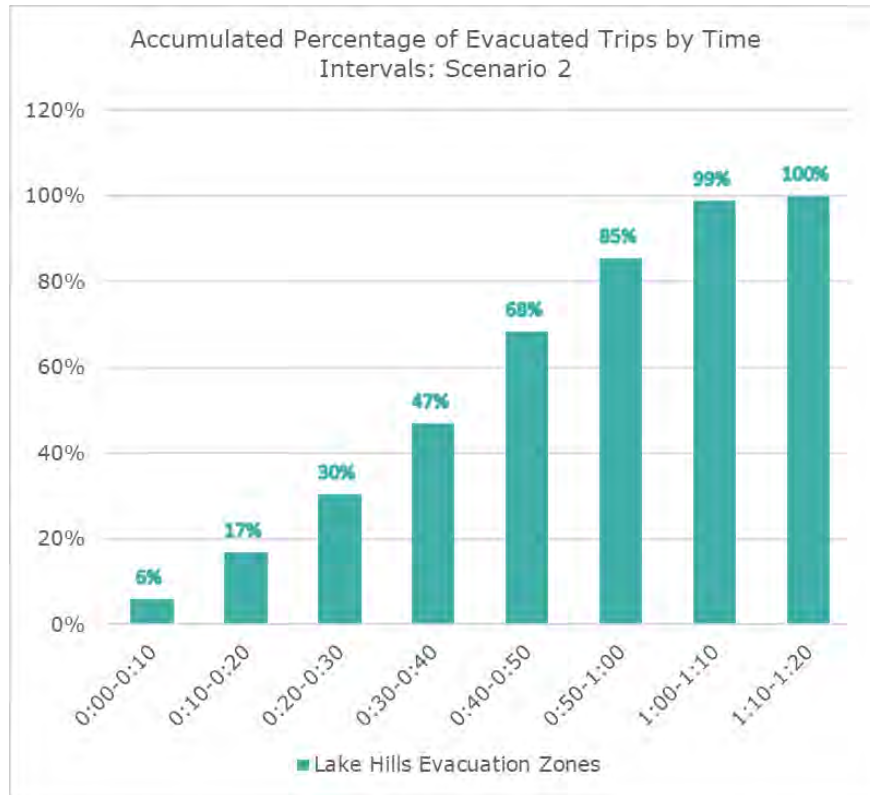


FIGURE 8: ACCUMULATED PERCENTAGE OF EVACUATED TRIPS BY INTERVAL SCENARIO 2

Figures 9 and 10 show average vehicle speeds along key evacuation routes over 10-minute periods throughout the evacuation. Slowdowns occur along the two main roads (Francisco Drive & Lake Hills Drive). Additionally, there are vehicle slowdowns along El Dorado Hills Boulevard and Silva Valley Parkway. In Scenario 1 congestion from Silva Valley Parkway queues up into the Silva Valley Parkway and Green Valley Road intersection slowing down vehicles' ability to evacuate through that intersection.

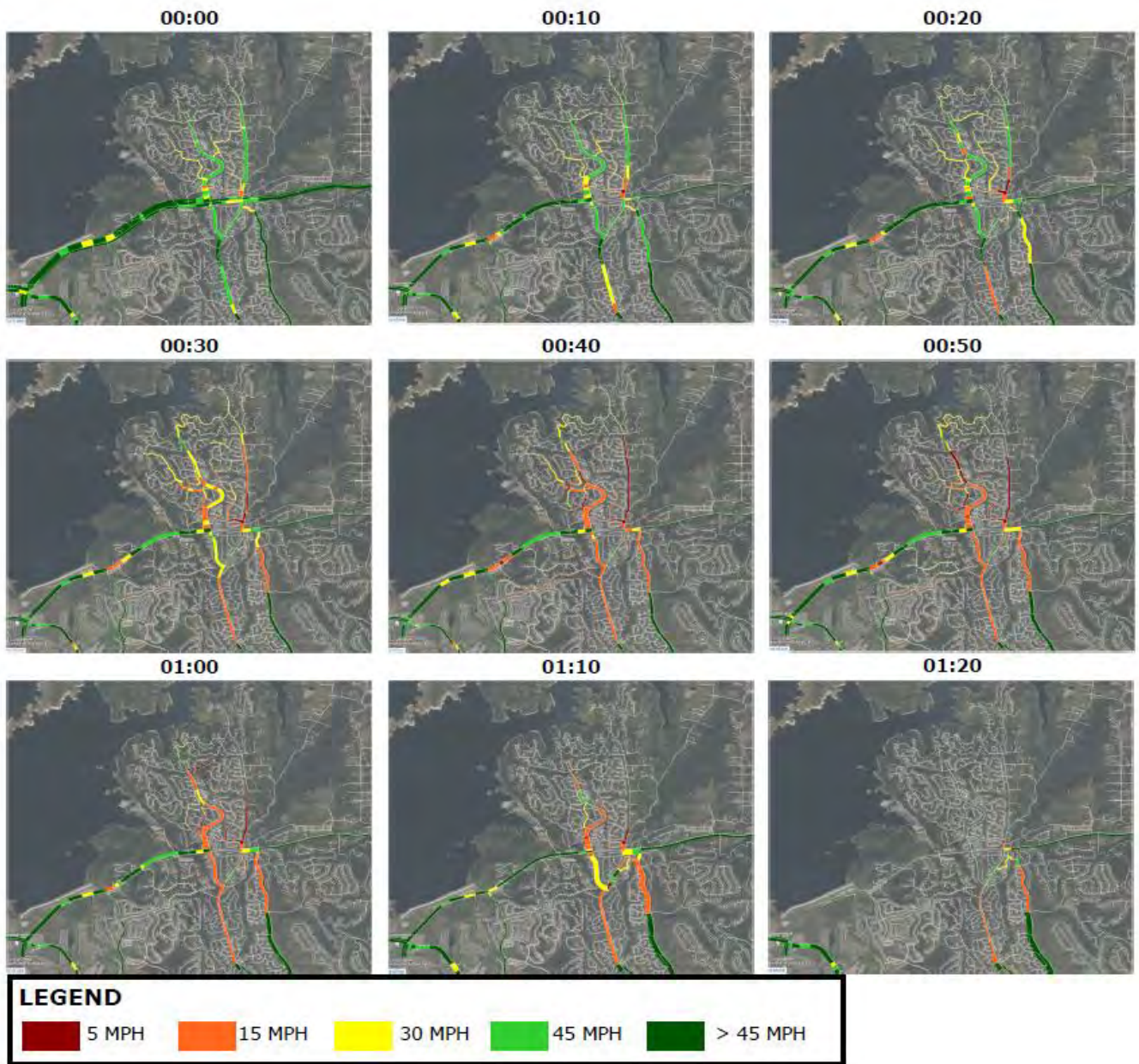


FIGURE 9: LAKE HILLS CHANGE IN VEHICLE SPEED THROUGHOUT EVACUATION PERIOD SCENARIO 1

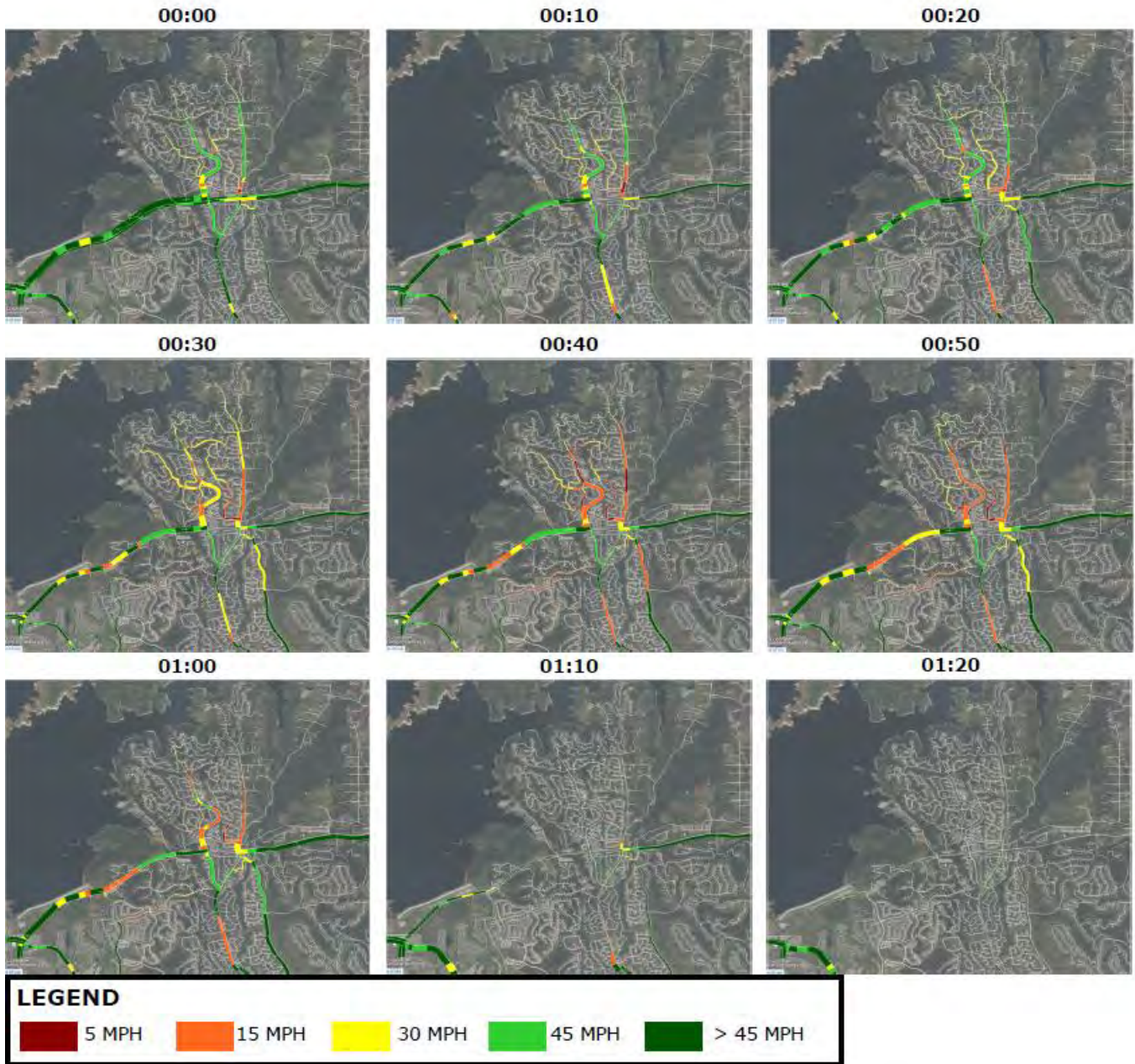


FIGURE 10: LAKE HILLS CHANGE IN VEHICLE SPEED THROUGHOUT EVACUATION PERIOD SCENARIO 2

3.5 TRAVEL TIME ESTIMATES

After evacuation traffic clears the evacuation zone, there are still downstream bottlenecks that occur. The travel time estimates represent the travel time of all trips considering all possible paths from their origin in the evacuation zone to the destination at the edge of the study area. Note, there are likely to be further congestion bottlenecks within the region during an evacuation along routes that reach US-50, however assessment of the full routes would require a regional study that is beyond the available scope of this project. In both scenarios, average and maximum travel times

peak 30 minutes after the evacuation order. For Scenario 1, the longest average travel time is 31.7 minutes (Figure 11) and for Scenario 2, the longest is 22.6 minutes (Figure 12). Both average and maximum travel times are shorter in Scenario 2 than in Scenario 1 as a result of the dual right turn lane emergency manual traffic control operations.

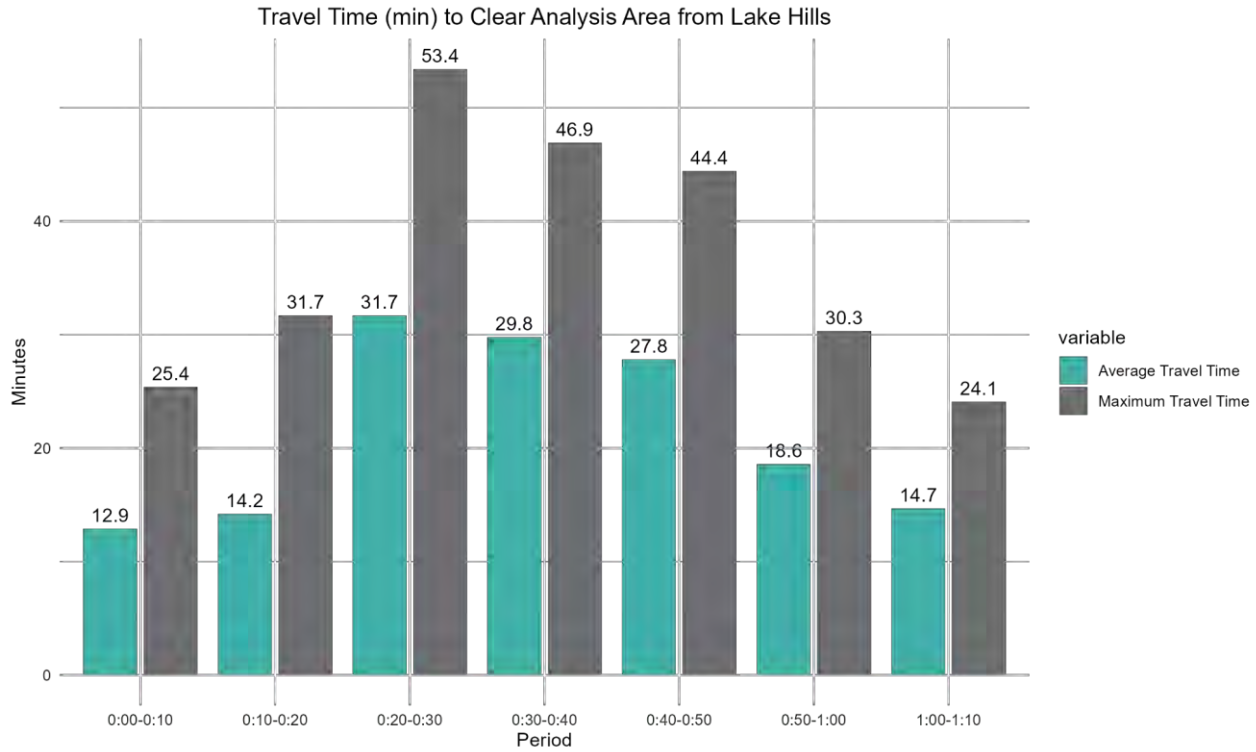


FIGURE 11: LAKE HILLS TRAVEL TIME ESTIMATES SCENARIO 1

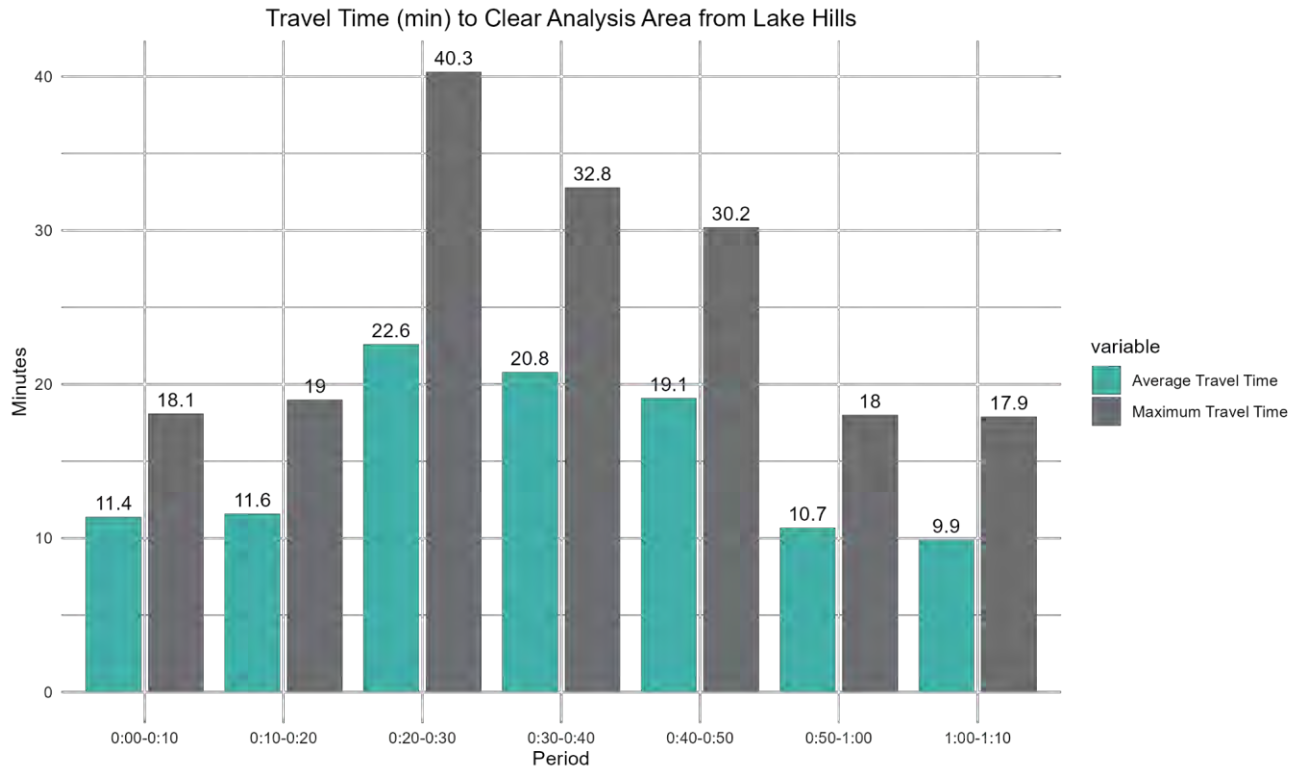


FIGURE 12: LAKE HILLS TRAVEL TIME ESTIMATES SCENARIO 2

3.6 KEY OBSERVATIONS

Among both scenarios, the peak evacuation trip demand occurs between 20 and 30 minutes after the start of the evacuation order. During the peak evacuation time interval in Scenario 1, it takes an average of 31.7 minutes and a maximum of 53.4 minutes to clear the analysis zone from the evacuation zone. Scenario 2 takes an average of 22.6 minutes and a maximum of 40.3 minutes to clear the analysis zone from the evacuation zone. The additional southbound right turn evacuation flow at Francisco Drive at Green Valley Road decreases the average evacuation travel time by over 9 minutes and decreases the maximum travel time by over 13 minutes.

- 60 minutes after the start of the Evacuation order, 75% of trips can clear the evacuation zone in Scenario 1.
- 60 minutes after the start of the Evacuation order, 85% of trips can clear the evacuation zone in Scenario 2.
- It takes 90 minutes to fully evacuate Lake Hills under Scenario 1 with 100% of trips leaving their origin within 60 minutes of the evacuation order.
- It takes 80 minutes to fully evacuate Lake Hills under Scenario 2 with 100% of trips leaving their origin within 60 minutes of the evacuation order.
- In Scenario 1 and 2, 50 minutes into the evacuation, the vehicle queue southbound on Lakehills Drive extends from the Salmon Falls Road intersection to Bonita Drive, nearly one mile north of the Salmon Falls Road intersection.

- In Scenario 1, 50 minutes into the evacuation order, the vehicle queue southbound on Francisco Drive reaches the Sheffield Drive intersection, approximately 1.4 miles north of Green Valley Road. The queue then lengthens approximately 0.4 miles onto Sheffield Drive. The queue clears around 70 minutes after the evacuation order at this location.
- In Scenario 2, the southbound queue along Francisco Drive also reaches the Sheffield Drive intersection and has some spill back on Sheffield Drive around 50 minutes after the evacuation order but clears out within the 10-minute period after.
- In Scenario 1 and 2, 45 minutes into the evacuation order, the vehicle queue westbound on Green Valley Road at the intersection of Sophia Parkway reaches approximately 0.3 miles.
- In Scenario 1, 45 minutes into the evacuation order, the queue along El Dorado Hills Boulevard from the signalized intersection with Governor Drive/ St Andrews Drive backs up approximately 0.2 miles onto Francisco Drive.
- In Scenario 2, 45 minutes into the evacuation order, the queue along El Dorado Hills Boulevard from the same signalized intersection backs up approximately 0.45 miles.
- In Scenario 1, 45 minutes into the evacuation order, the southbound queue along Silva Valley Parkway reaches the intersection with Green Valley due to the four way stop intersection with Appian Way/Charter Way.
- In Scenario 2, at the same point in time the southbound queue is approximately 0.3 miles.
- Queues within the Lake Hills Peninsula evacuation area remained similar in the two scenarios, but downstream queues were smaller allowing for better evacuation once cleared from the Peninsula.

3.7 RECOMMENDATIONS AND CONSIDERATIONS

- The five following traffic signals restrict the flow of traffic during an evacuation impacting evacuation clearance times:
 - Green Valley and Francisco Drive
 - Green Valley and Salmon Falls Road/ El Dorado Hills Boulevard
 - Green Valley and Silva Valley Parkway
 - Francisco Drive and Village Center Drive
 - Francisco Drive and the Retail Center
 - These five traffic signals will need manual traffic control at the start of the evacuation order to increase the evacuation flow rate. Installation of connected traffic signals to a central traffic signal system would allow the County to remotely change signal phasing and optimize cycle lengths and green times to increase traffic flow until emergency manual traffic control can be in place. Operations, such as the Scenario 2 dual right turn lane operation at Francisco Drive and Green Valley Road can only be achieved with emergency manual traffic control.
- Emergency manual traffic control can be put in place along Village Center Drive to balance and direct traffic flows between Salmon Falls Road and Francisco Drive, whichever route is less burdened or threatened.

- Green Valley Road needs to be closed to background through traffic at least 20 minutes after the start of the evacuation order. Eastbound traffic is assumed to be closed at Sophia Parkway and Westbound traffic is assumed to be closed at Silva Valley Parkway. If resources are available, an additional westbound closure at Silver Springs Parkway would reduce the amount of westbound left traffic that would need to be diverted to southbound Silva Valley Parkway.
- The intersection of El Dorado Hills Boulevard and Francisco Drive is an all-way stop controlled intersection that under Scenario 1 has higher southbound evacuation demand on Francisco Drive that queues back toward Green Valley Road, directly impacting the Lake Hills evacuation. Manual traffic control may be needed at this location should the queue on Francisco Drive or El Dorado Hills Boulevard queue toward Green Valley Road and directly impact egress from Lake Hills. A connected traffic signal or a roundabout with a right turn bypass lane and downstream merge could provide improved traffic flow during an evacuation and minimize the need for manual traffic control resources.
- The intersection of Silva Valley Parkway and Appian Way/Charter Way is an all-way stop controlled intersection that results in southbound queuing that nears Green Valley Road at the peak of the evacuation period. A connected traffic signal or a roundabout could provide improved traffic flow during an evacuation and minimize the need for manual traffic control resources.
- There is a long-range El Dorado County Capital Improvement Project to widen Green Valley Road from 2 lanes to 4 lanes from Francisco Drive to 200 feet east of Silva Valley Parkway. This project was not accounted for in this analysis; however, this project has the potential to improve evacuation flows from Salmon Falls Road with an additional lane of capacity through Silva Valley Parkway. While not in the project description, an auxiliary southbound through lane from Salmon Falls Road across Green Valley Road to El Dorado Hills Boulevard would further increase evacuation flow rates.
- This analysis is limited to the study area shown in Figure 2. Ultimate evacuation destinations are likely to be west and east on US 50 or west of Folsom on routes that cross the American River. Evacuation bottlenecks may be encountered along routes that access these destinations and may warrant further traffic control support from emergency traffic control or signal timing adjustments.

4. RANCHO DEL SOL

Overview

The Rancho del Sol full evacuation analysis area is located approximately eight miles east of Placerville and two miles south of Camino. The evacuation zone is approximately 2,600 acres with a predominantly rural residential community situated between North Fork Weber Creek and South Fork Weber Creek straddling Snows Ridge as shown in Figure 13. The topography consists of moderate to steep slopes along the canyons and ridge lines. The vegetation types in the area consist of a mix of coniferous and hardwood forests, and shrub lands.⁹ The entire evacuation analysis area is classified by CAL FIRE as a Very High Fire Hazard Severity Zone.¹⁰

⁹ State of California and the Department of Forestry and Fire Protection, California Vegetation - WHR13 Types

¹⁰ California Board of Forestry and Fire Protection, Fire Hazard Severity Zones in State Responsibility Area - April 1, 2024

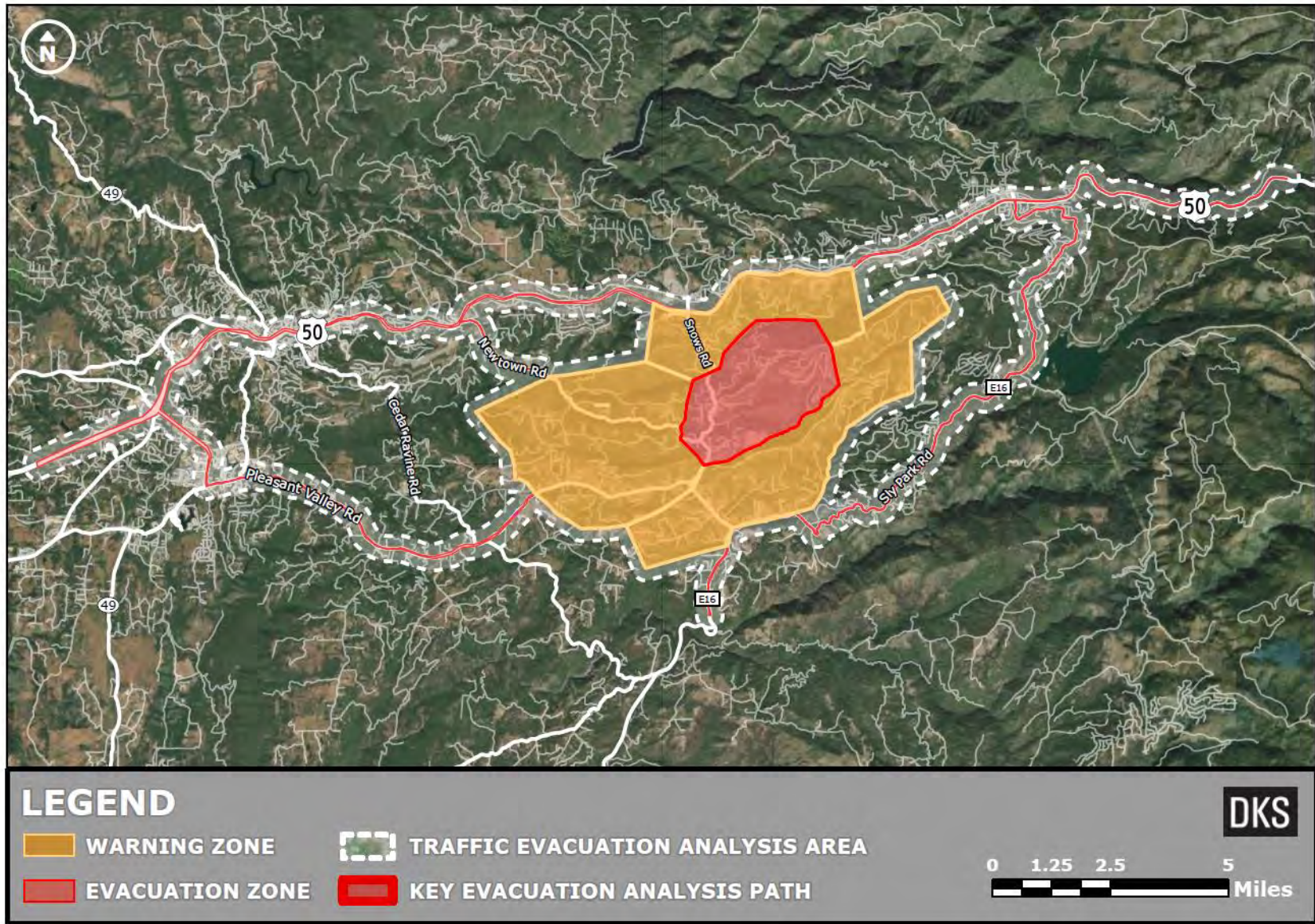


FIGURE 13: RANCHO DEL SOL STUDY AREA

Community Characteristics

The evacuation zone includes the private gated community of Rancho del Sol, properties west of Starkes Grade Road between Snows Road and Paso Robles Road, and properties along the access Snows Road between Newtown Road and North Fork Weber Creek, including the community along Glory Hole. There are approximately 160 residential households on 1000 acres within the Rancho del Sol community with an estimated population of 535 persons which consist of a higher proportion of seniors in comparison to the latest countywide data (37 percent versus 24 percent).¹¹Of these households, there are an estimated 5 with zero vehicle access, 25 with one vehicle access, and 130 with two or more vehicles accessible.

Vulnerable Population Assessment

TABLE 5: SOCIAL SENSITIVITY INDICATORS IN RANCHO DEL SOL EVACUATION AREA

Social Sensitivity Indicator	Percentage of Population or Households in the Rancho del Sol Evacuation Area
Median Family Household Income	\$90,357
Median Non-Family Household Income	\$84,911
Low Income	25.0%
People experiencing homelessness	N/A
Undocumented individuals	N/A
Unemployed	6.0%
Seniors	37.0%
Young Children	0%
People of Color	15.0%
Renters	8.9%
Outdoor Workers	N/A
Visitors	Not Available
Linguistically Isolated	0%
American Native and Alaskan Native	1.0%
Individuals with Disabilities	12.0%
Individuals with Asthma	9.9%
Individuals with Coronary Artery Disease	5.2%
Individuals without access to a vehicle	0%
Individuals without health insurance	3.0%
Households without a computer	3.0%

¹¹ U.S. Census Bureau. "ACS Demographic and Housing Estimates." American Community Survey, ACS 1-Year Estimates Data Profiles, Table DP05, 2022, <https://data.census.gov/table/ACSDP1Y2022.DP05?q=el+dorado+county+california&t=Populations+and+People>. Accessed by DKS Associates on May 2024.

Social Sensitivity Indicator	Percentage of Population or Households in the Rancho del Sol Evacuation Area
Households without broadband internet	8.0%

Key Transportation Facilities

- Snows Road*: Primary route for the evacuation zone connecting north to Carson Road in Camino and south to Newtown Road. The intersections of Snows Road at Carson Road and Newtown Road are two-way stop controlled with the Snows Road approaches being stop controlled. Snows Road has a posted speed limit at 35 MPH, however narrow lanes, steep grades and sharp corners (see Figure 14) result in a much lower operational speed than posted. The road is posted for vehicles over 35 feet in length as not advised. There is also a height restriction of **15'-3" under the US-50** overcrossing, shown in Figure 15. Snows Road has a center stripe, no fog line stripe, no shoulders, and has lane widths of 9-12 feet.



FIGURE 14: SNOWS ROAD WITH NARROW LANES, STEEP GRADE AND SWITCHBACK CURVE



FIGURE 15: SNOWS ROAD LENGTH AND HEIGHT RESTRICTIONS

- *Carson Road*: East-west arterial through Camino that runs parallel to US-50. In addition to serving Camino and providing a connection between US-50 and Snows Road, Carson Road also provides access to many of the Apple Hill area Destinations. Carson Road is posted at 35 MPH and is striped with a center and fog line.
- *Newtown Road*: Arterial providing direct access to US-50 to the west or indirectly connects to Placerville and Diamond Springs via Pleasant Valley Road. Pleasant Valley Road also connects east to E16 (Mt. Aukum Road/Sly Park Road) providing connections south and east of the study area. Newtown Road is unposted with many curves that have advisory speeds below 30 MPH and is striped with a center and fog line.
- *Starkes Grade Road*: Local Road that forms the southern boundary of the evacuation zone and connects Newtown Road one the west and Sly Park Road to the east. Starkes Grade Road has segments that are gravel and single lane wide with two-way traffic, see Figure 16.



FIGURE 16: STARKES GRADE ROAD SINGLE LANE SEGMENT WITH TWO-WAY TRAFFIC

- *Pleasant Valley Road*: Arterial that connects Newtown Road to E16 (Sly Park Road/Mt. Aukum Road) to the east and the towns of Diamond Springs and Placerville to the west. Pleasant Valley is near the study area and is posted at 50 MPH. The roadway has a center strip and fog line strip.
- *Puerto Del Sol Road*: Private gated road that serves as the primary road within the Rancho del Sol neighborhood. The road is paved and unstriped with a width of 22 to 24 feet.

4.1 EVACUATION SCENARIOS

The evacuation scenarios for the Rancho del Sol area were developed in coordination with El Dorado County OES. Two scenarios were developed to evaluate a 60-minute evacuation period to cover a range of wildfire scenarios, rather than to model an evacuation in response to a specific wildfire scenario. For the Ranch del Sol area, Snows Road provides the only evacuation route out of the evacuation analysis zone. Under ideal evacuation conditions Snows Road will be open in both directions to facilitate prompt evacuation should Rancho del Sol require an evacuation. Depending on a specific wildfire threat, Snows Road may need to be restricted for safety to provide access in a single direction. This analysis evaluates two evacuation scenarios under a directional closure of Snows Road to assess the viability of a Rancho del Sol evacuation.

- Scenario #1: North only evacuation - 60-minute evacuation period. All evacuation trips north of Treasure Rock Lane must evacuate north along Snows Road toward Carson Road. The assigned evacuation trip distribution percentages for this scenario are displayed in Figure 17.
- Scenario #2: South only evacuation - 60-minute evacuation period. All evacuation trips south of North Fork Weber Creek must evacuate south along Snows Road toward Newtown Road. The assigned evacuation trip distribution percentages for this scenario are displayed in Figure 18.

These scenarios cover a range of fast-moving wildfire scenarios that could result in a restricted evacuation direction. Wildfire evacuation scenarios that would allow for an evacuation in both directions simultaneously would likely result in faster evacuation time estimates than represented by these directional closure scenarios.

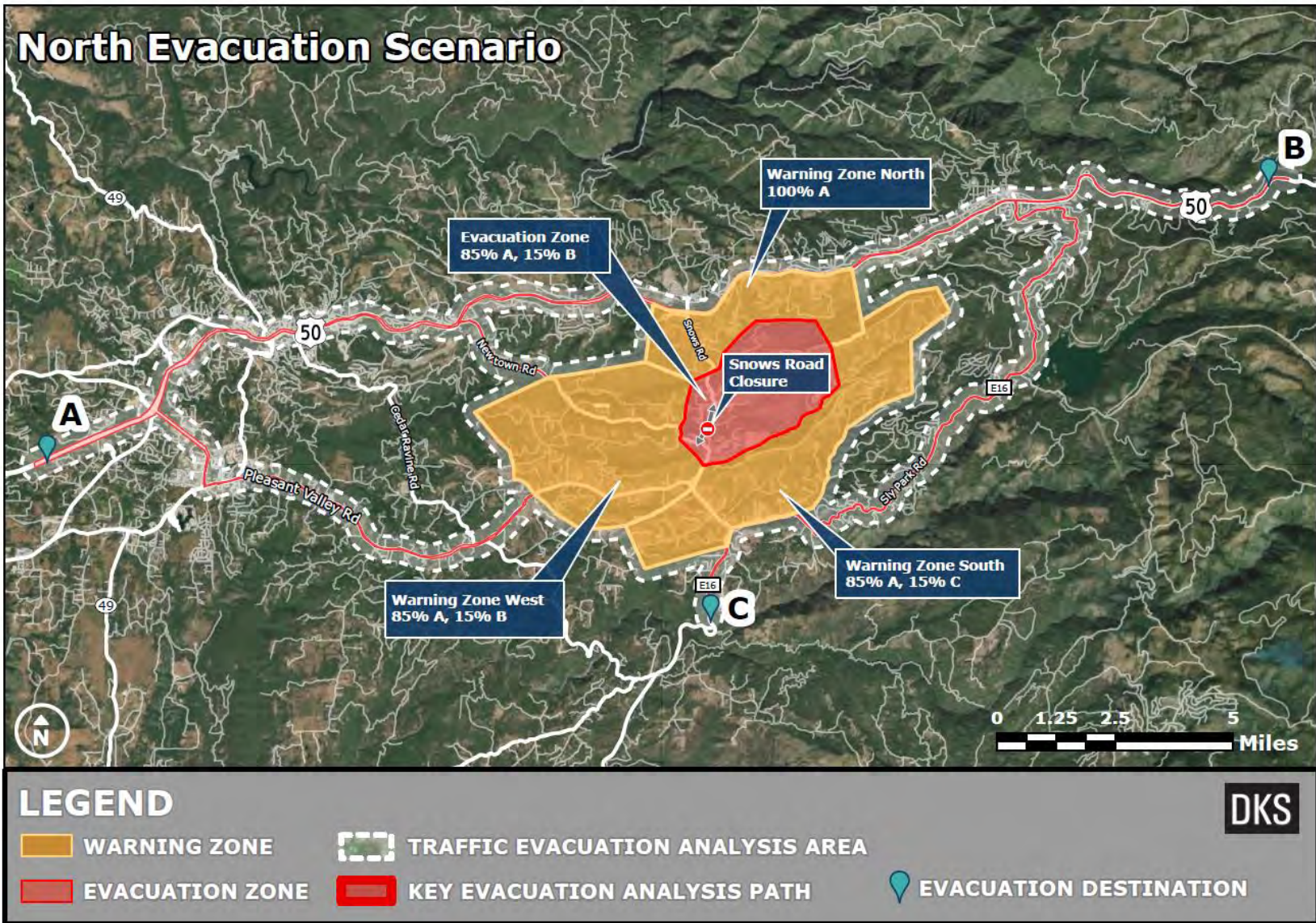


FIGURE 17: RANCHO DEL SOL SCENARIO 1 (NORTH) EVACUATION DISTRIBUTION

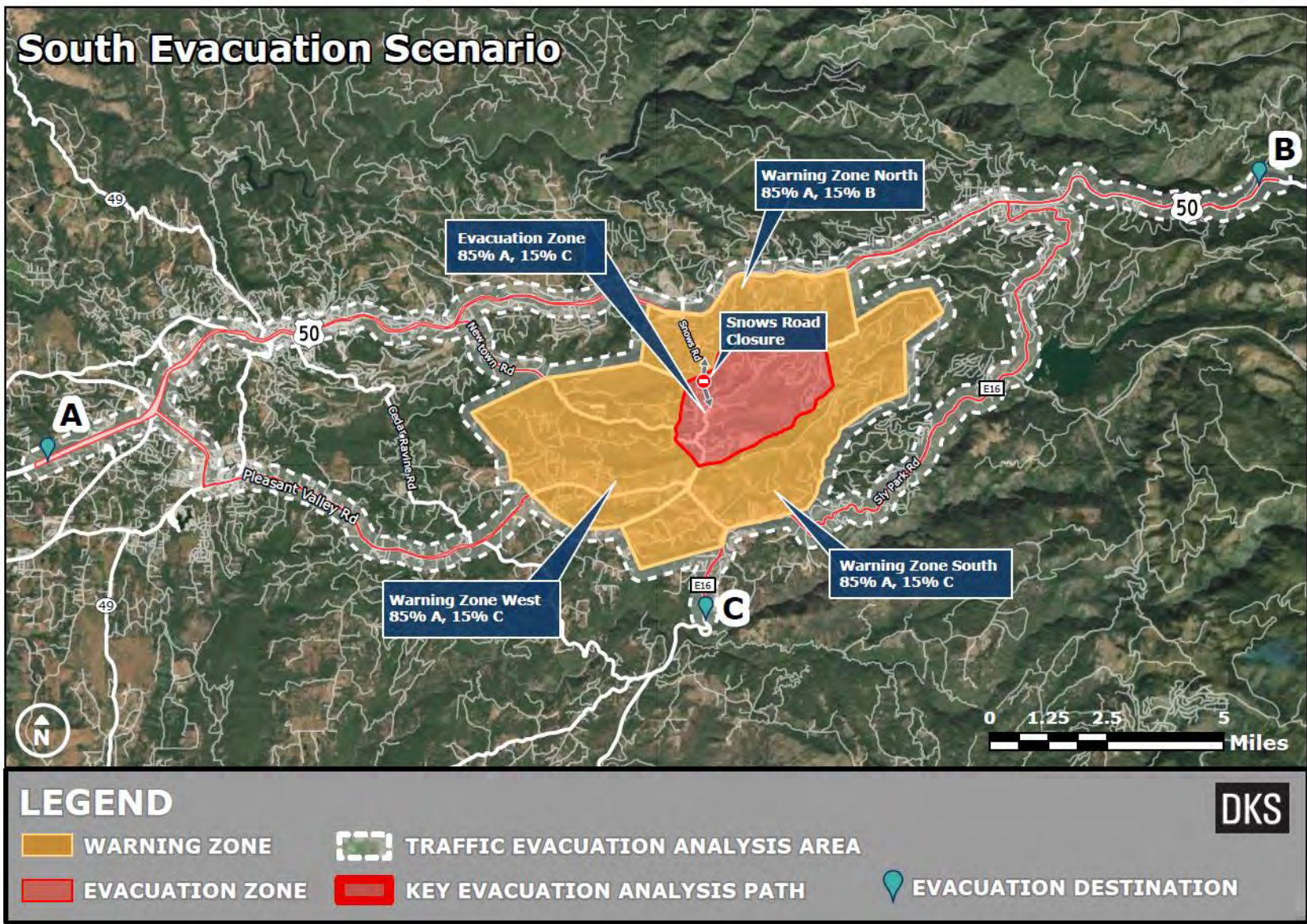


FIGURE 18: RANCHO DEL SOL SCENARIO 2 (SOUTH) EVACUATION DISTRIBUTION

4.2 EVACUATION ROUTES

As shown in Figure 19, evacuation destinations for the Rancho del Sol model include the following:

- A: US-50 west of South Shingle Road
- B: US-50 east of Peavine Ridge Road
- C: Mount Aukum Road/E-16 south of Silver Ridge Lane

The private gated community of Rancho del Sol has a single egress with an automatic gate on Puerto Del Sol Road at Snows Road and is the only egress considered for this evacuation assessment under the direction of OES. The Ranch del Sol Homeowners Association (HOA) provides an Emergency Exit Map for the community identifying an internal unpaved route connecting Espina Loma Drive to Oro Court and two external emergency exit routes, one connecting Loma Del Norte to Lynx Trail and Paso Robles connecting Escondito Circle to Starkes Grade Road.¹² These are unpaved routes of unknown maintained condition with manual padlocked gates. The HOA provides the gate code, but the maintenance status of the gates and locks are unknown. As of April 2024, there was significant vegetation growth south of the Fire Exit gate of Paso Robles as shown in Figure 21. Figure 20 shows the location of the gate in Figure 21 as well as the single egress into the community.

¹² Rancho del Sol Emergency Exit Map, updated May 2017:
https://www.rdsliving.com/_files/ugd/d10258_c908830001dc4fb99cc877320e8995db.pdf

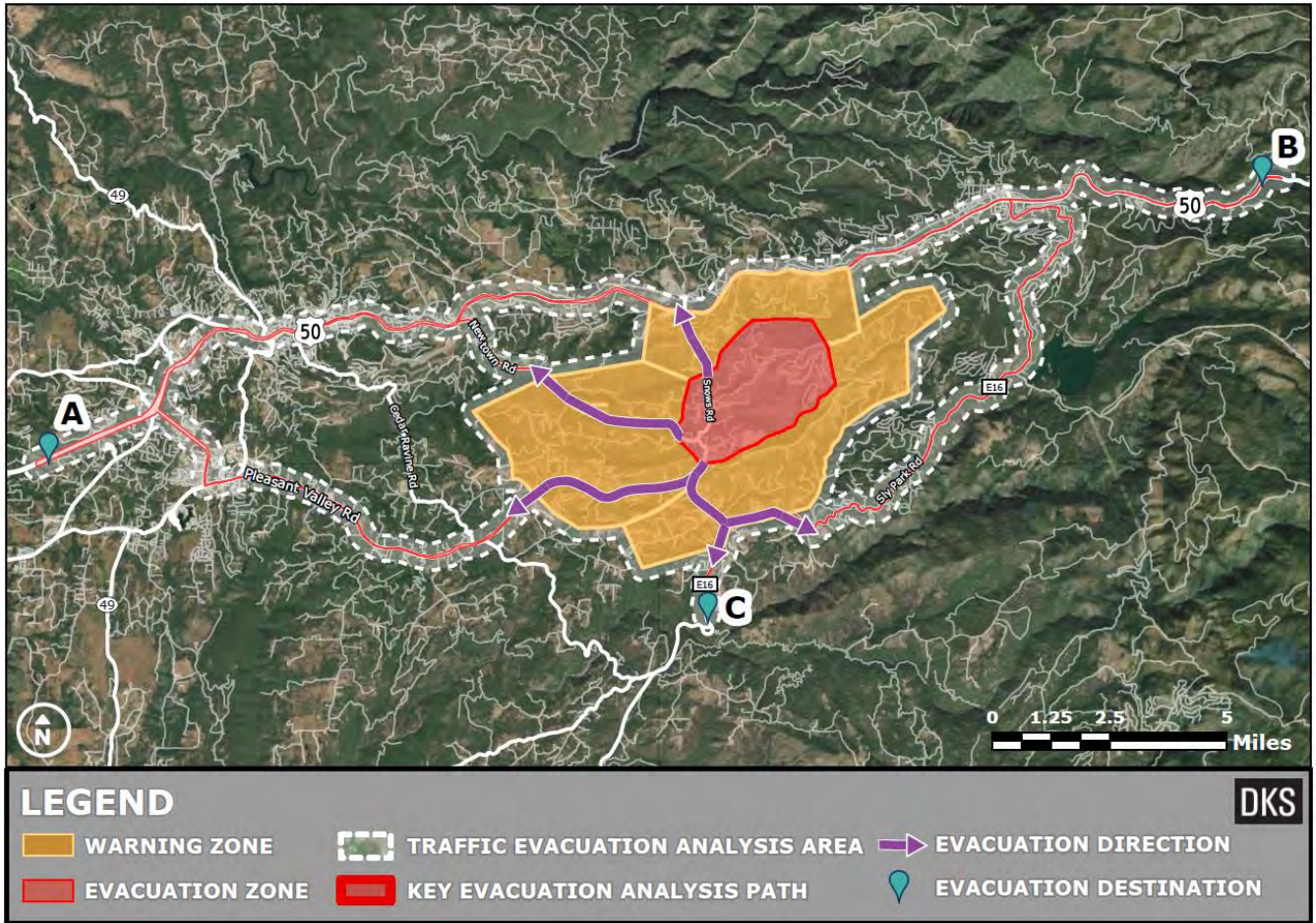


FIGURE 19: RANCHO DEL SOL EVACUATION ROUTES

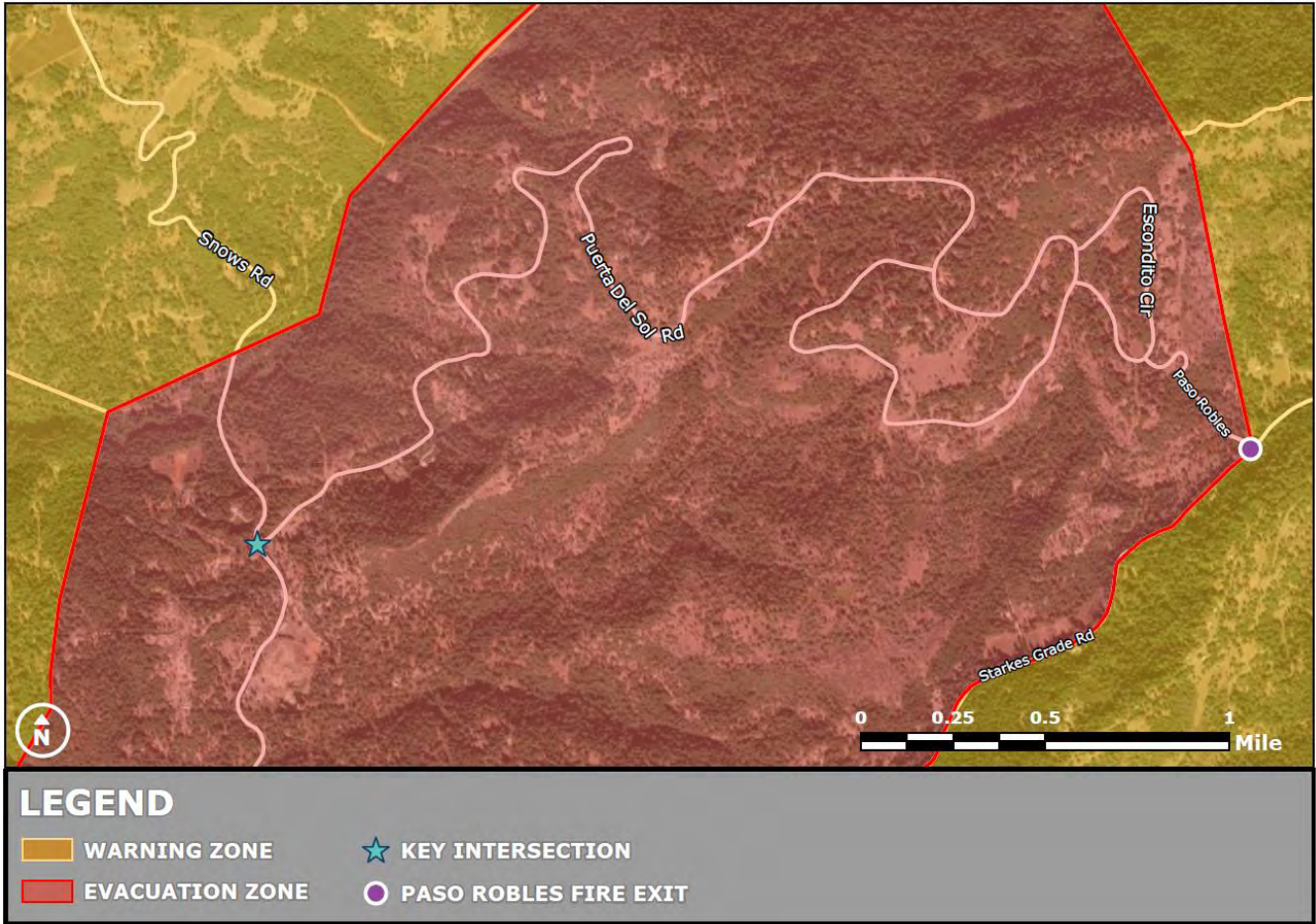


FIGURE 20: RANCHO DEL SOL ACCESS POINTS



FIGURE 21: RANCHO DEL SOL FIRE EXIT ROAD AT PASO ROBLES

4.3 MODEL ASSUMPTIONS

The background traffic control point is assumed to be on Snows Road south of Carson Road near the Camino School to restrict background traffic from entering the evacuation zone. No reduction factor is applied to the background traffic during the evacuation period.

In Scenario 1 (North Evacuation Only), Snows Road north of Newtown Road is closed to all traffic to restrict traffic from entering the evacuation zone from the south.

In Scenario 2 (South Evacuation Only), Snows Road south of Red Dog Drive near North Fork Weber Creek is closed to all traffic to restrict traffic from entering the evacuation zone from the north.

4.4 EVACUATION TIME ESTIMATES

Under Scenario 1 (north), trips departing the evacuation zone can fully evacuate within 70 minutes of the evacuation order but under Scenario 2 (South), an additional 10 minutes are needed to fully evacuate the remaining 1 percent of the Rancho del Sol evacuation area zone (Figure 22). The additional time needed to clear the remaining 1 percent of traffic is more a function of the length of the evacuation route to clear the evacuation zone (not the study area), and less so as a result of evacuation congestion.

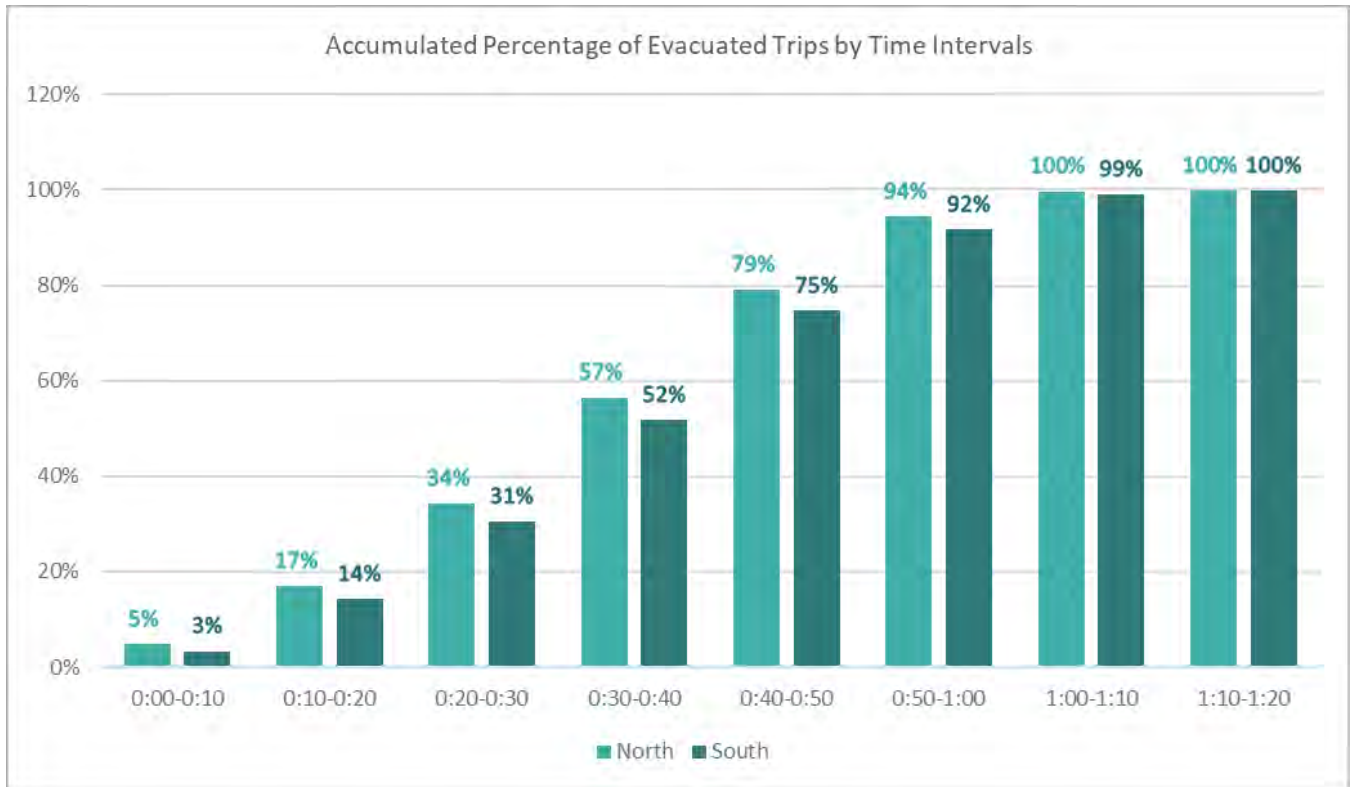
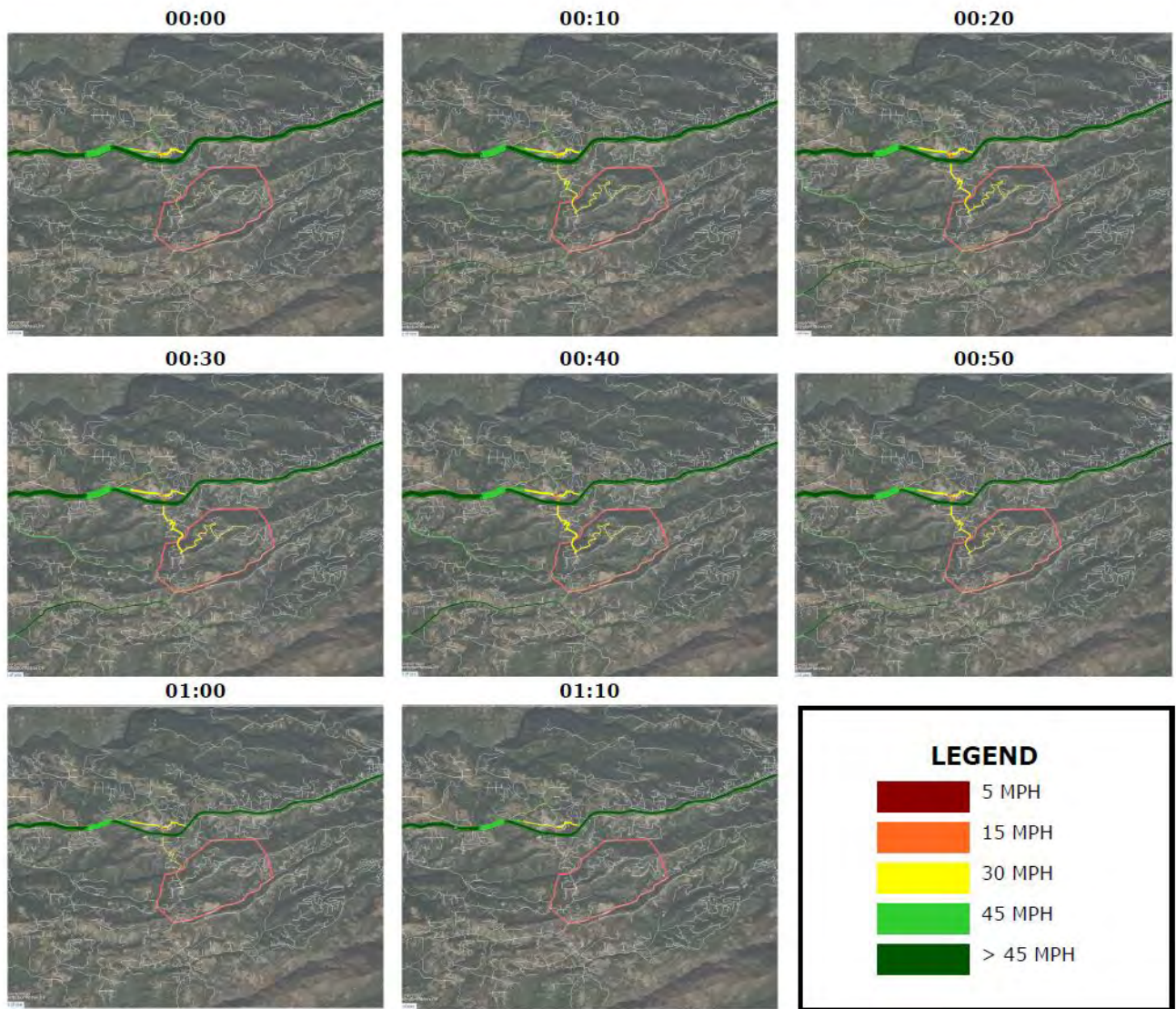


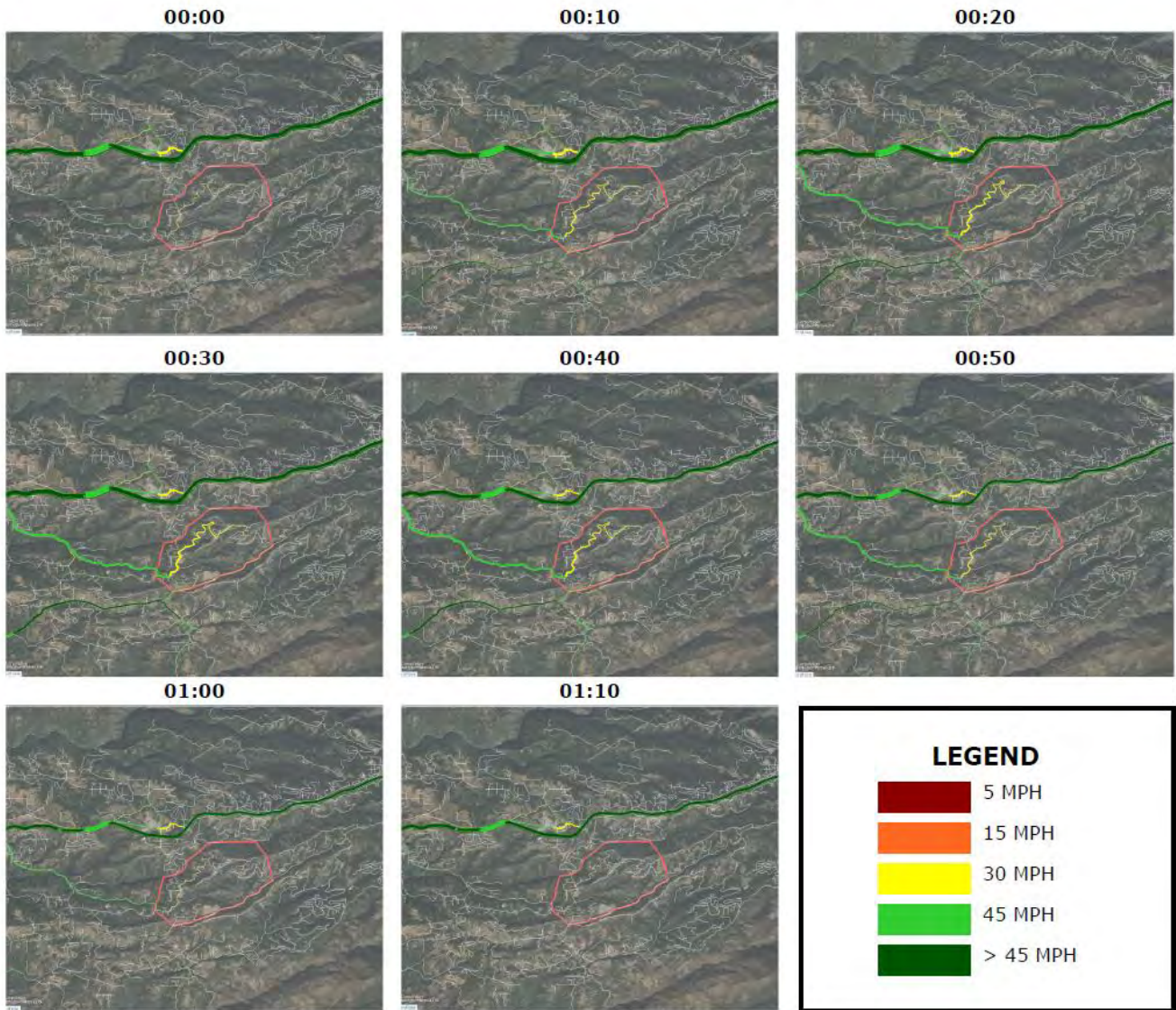
FIGURE 22: RANCHO DEL SOL ACCUMULATED PERCENTAGE OF EVACUATED TRIPS BY INTERVAL SCENARIOS 1 & 2

Figure 23 and Figure 24 show average vehicle speeds along key evacuation routes over 10-minute periods throughout the evacuation. With a northern only evacuation, there is some slowing of traffic occurring at The Rancho del Sol gate on Puerto Del Sol Road and on Snows Road at Carson Road from the stop sign, but there are no significant stop-and-go queuing effects due to the low evacuation demand relative to the roadway capacity. The south evacuation scenario has some slowing on Snows Road from the stop sign at Newtown Road, but there is minimal warning zone traffic on Newtown Road conflicting with the evacuation traffic turning off Snows Road.



Scenario #1: North Only Evacuation

FIGURE 23: RANCHO DEL SOL CHANGE IN VEHICLE SPEED THROUGHOUT EVACUATION PERIOD SCENARIO 1



Scenario #2: South Only Evacuation

FIGURE 24: RANCHO DEL SOL CHANGE IN VEHICLE SPEED THROUGHOUT EVACUATION PERIOD SCENARIO 1

4.5 TRAVEL TIME ESTIMATES

For both Rancho del Sol evacuation scenarios, there are no major traffic congestion events within the study that result in a peaking characteristic commonly observed during high-volume evacuation events. Under the north evacuation scenario, average evacuation times to clear the study area are approximately 28 minutes with maximum travel times for the longest routes being approximately 38 minutes. Under the south evacuation scenario, average evacuation times to clear the study area are approximately 21 minutes with maximum travel times for the longest routes being approximately 38 minutes.

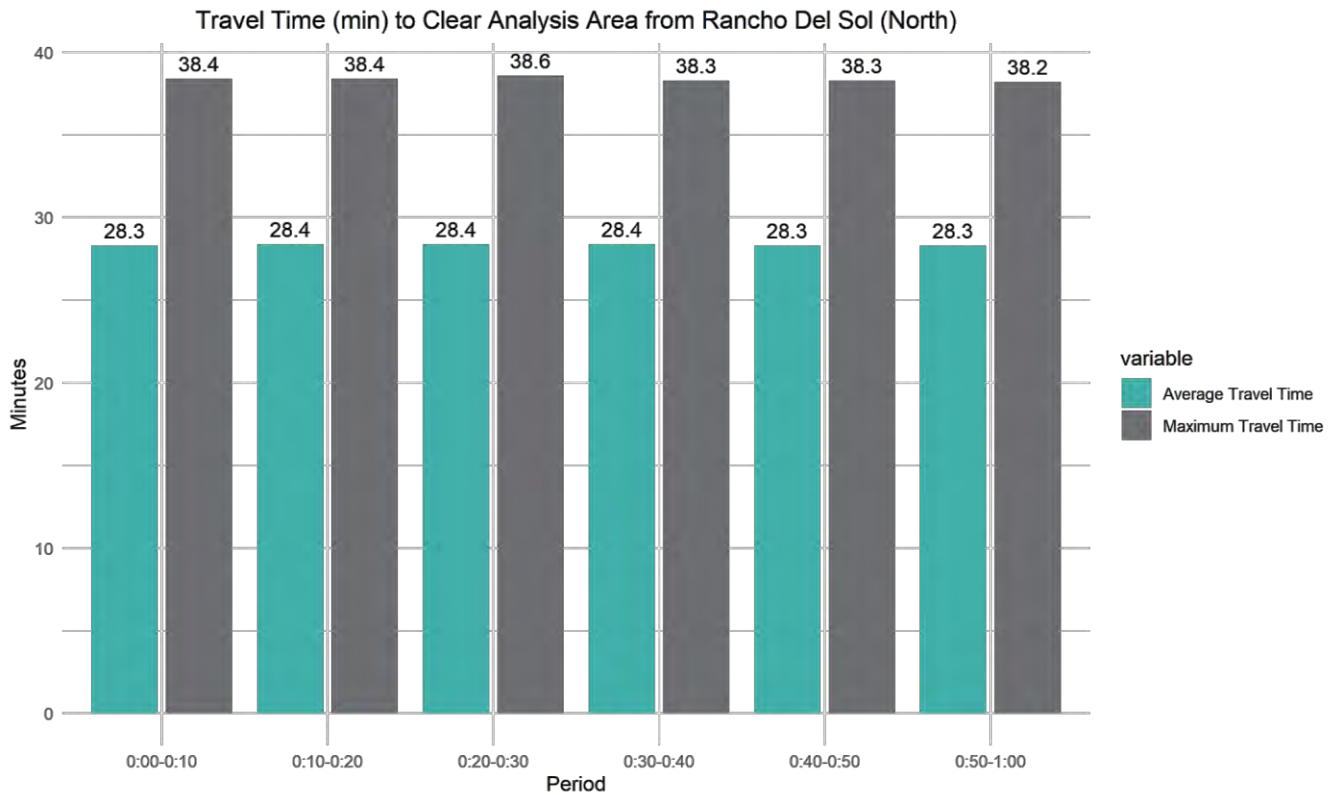


FIGURE 25: RANCHO DEL SOL TRAVEL TIME ESTIMATES SCENARIO 1

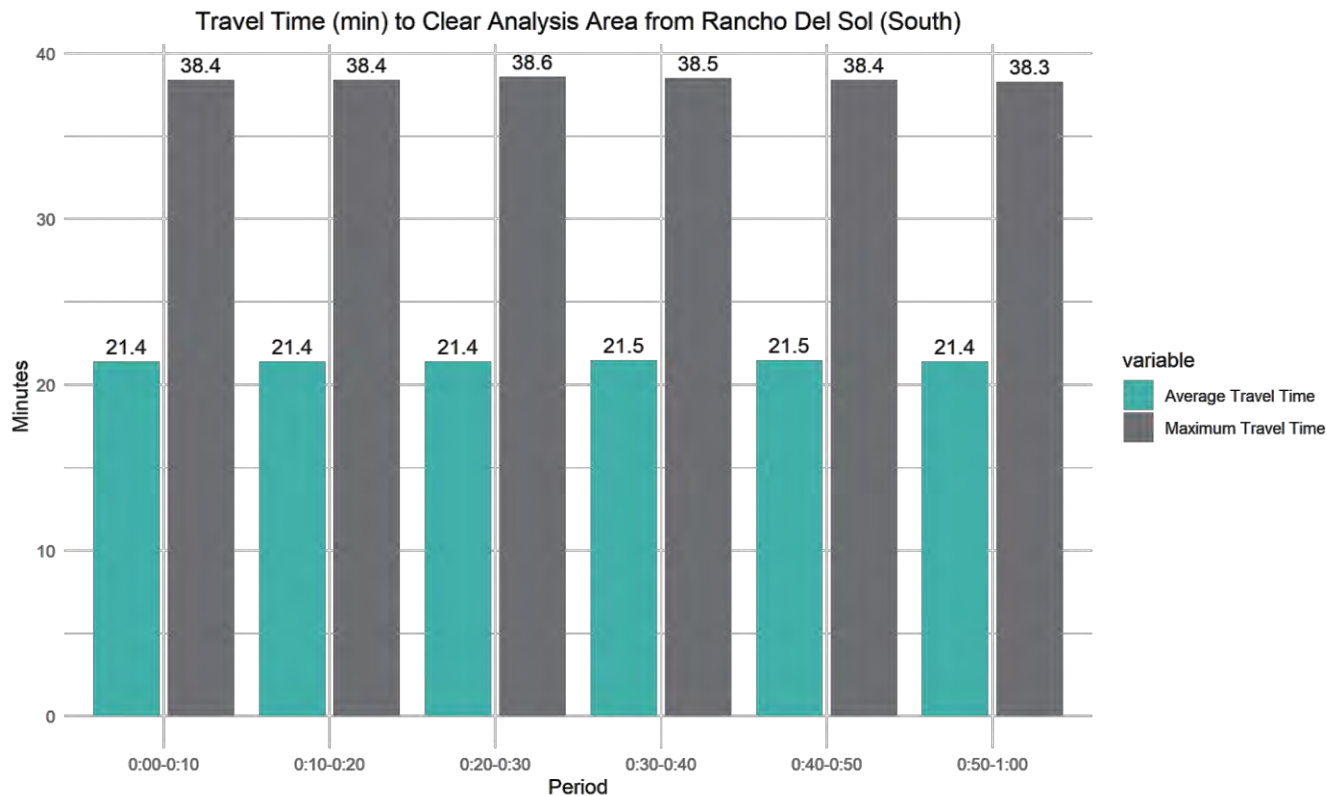


FIGURE 26: RANCHO DEL SOL TRAVEL TIME ESTIMATES SCENARIO 2

4.6 KEY OBSERVATIONS

There is minimal queuing or congestion observed for either scenario, primarily due to the low evacuation trip demand (255 total trips from the evacuation zone and 340 total trips from the warning zone) relative to the roadway capacity.

Under the north evacuation scenario, after all trips leaving in a 60-minute period, the evacuation zone is 100% clear of all trips within 70 minutes. Under the south evacuation scenario, after all trips leaving in a 60-minute period, the evacuation zone is 99% clear of all trips within 70 minutes and 100% clear of all trips in 80 minutes.

4.7 RECOMMENDATIONS AND CONSIDERATIONS

- Based on evacuation demand for the given Ranch del Sol evacuation zone and the background traffic conditions where Snows Road intersects Carson Road and Newtown Road, no mitigation or emergency traffic control measures are needed to facilitate evacuation flows.
- Should westbound traffic on Newtown Road at Snows Road be higher than estimated in this analysis, then there is potential for additional evacuation congestion on Snows Road at the stop sign. This could be mitigated by a single emergency manual traffic control point at Snows Road and Newtown Road that could prevent traffic from entering the evacuation area

on Snows Road and as needed stop traffic on Newtown Road to flag traffic out of Snows Road.

- For the north evacuation, the background traffic estimates were developed using weekend October data that would include demand from Apple Hill Season. Even with this additional traffic, there was sufficient capacity at the Snows Road / Carson Road intersection to prevent substantial queuing. Should traffic on Carson Road at Snows Road be higher than estimated in this analysis, then there is potential for additional evacuation congestion on Snows Road at the stop sign. This could be mitigated by a single emergency manual traffic control point at Snows Road and Carson Road that could prevent traffic from entering the evacuation area on Snows Road and as needed stop traffic on Carson Road to flag traffic out of Snows Road.
- This evacuation demand and period did not result in significant westbound queuing on US-50 through downtown Placerville that warranted changes to the signal timing. Should an evacuation in the Rancho del Sol area occur that is larger in size than assumed in this analysis, resulting in a substantially larger evacuation demand, then implementation of the Trip-to-Green Project on US-50 through Placerville may be warranted.
- Rancho del Sol area evacuation greater in size than assumed in this analysis may result in congestion bottlenecks along the identified evacuation routes.

5. LOGTOWN

Overview

The Logtown evacuation zone encompasses the Logtown Ridge and SR-49 corridor where the topography consists of moderate to steep slopes along the ridge lines and canyons. The evacuation zone is approximately 8,800 acres, as shown in Figure 27. The vegetation types in the area consist mostly of hardwood woodland mixed in with hardwood forests and herbaceous lands.¹³ The entire evacuation analysis area is classified by CAL FIRE as a Very High Fire Hazard Severity Zone.¹⁴

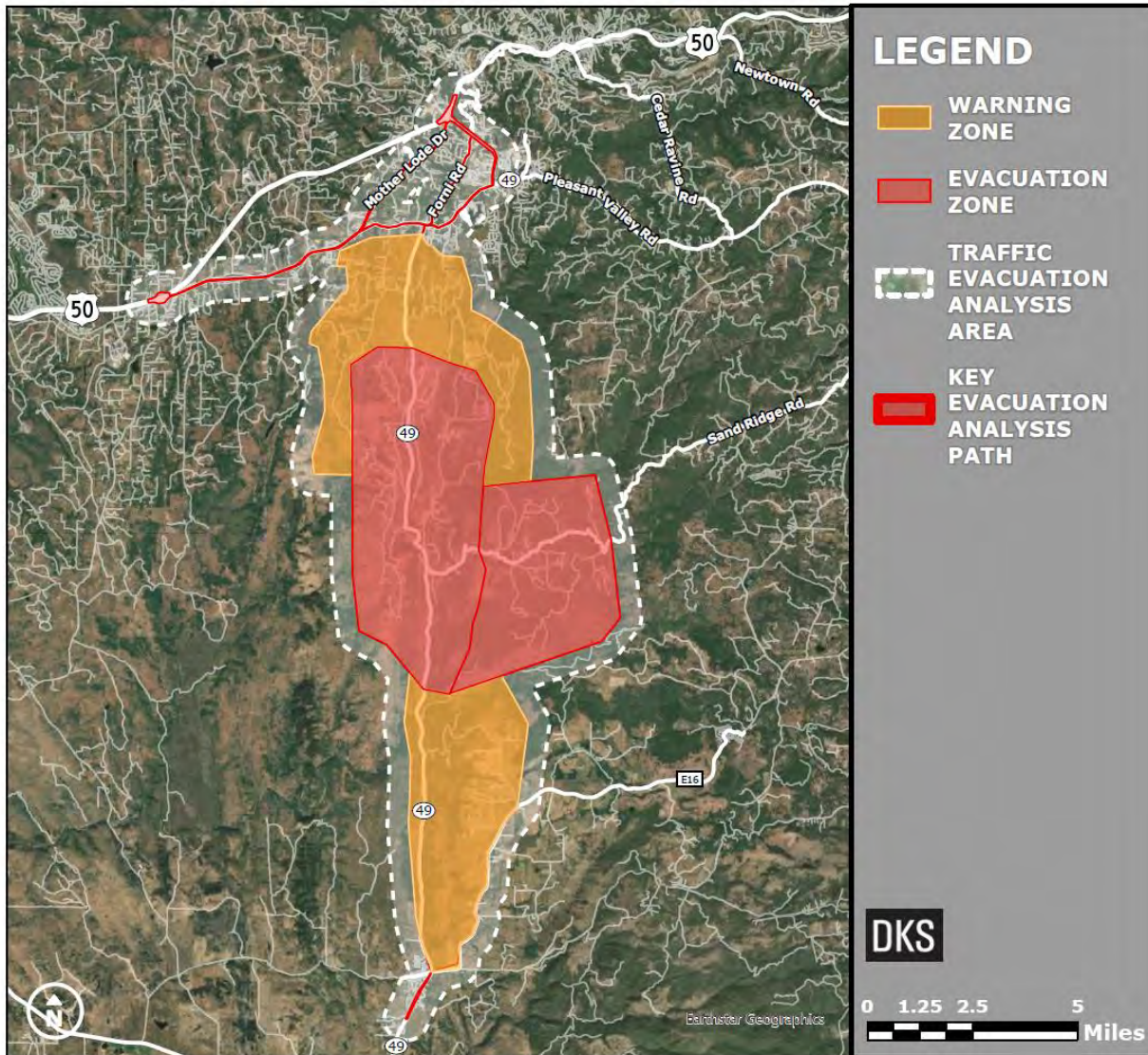


FIGURE 27: LOGTOWN STUDY AREA

¹³ State of California and the Department of Forestry and Fire Protection, California Vegetation - WHR13 Types

¹⁴ California Board of Forestry and Fire Protection, Fire Hazard Severity Zones in State Responsibility Area - effective April 1, 2024

Community Characteristics

The evacuation zone includes the rural communities near SR-49 between Dolomite Drive in the north and Morales Rancho Road in the south. This includes Crystal Boulevard on the west side and Monitor Road on the east side. There are an estimated 680 households in the evacuation zone with an estimated population of 1695 persons which consist of a higher proportion of seniors in comparison to the latest statewide data (25 percent versus 16 percent). Of these households, there are 20 with zero vehicle access, 130 with one vehicle access, and 535 with two or more vehicles accessible.

Vulnerable Population Assessment

TABLE 6: SOCIAL SENSITIVITY INDICATORS IN LOGTOWN EVACUATION AREA

Social Sensitivity Indicator	Percentage of Population or Households in the Logtown Evacuation Area
Median Family Household Income	\$114,885
Median Non-Family Household Income	\$39,445
Low Income	17.0%
People experiencing homelessness	N/A
Undocumented individuals	N/A
Unemployed	8.0%
Seniors	25.0%
Young Children	1.62%
People of Color	15.0%
Renters	10.1%
Outdoor Workers	N/A
Visitors	Not Available
Linguistically Isolated	1.0%
American Native and Alaskan Native	0.8%
Individuals with Disabilities	15.0%
Individuals with Asthma	10.0%
Individuals with Coronary Artery Disease	7.0%
Individuals without access to a vehicle	2.0%
Individuals without health insurance	1.8%
Households without a computer	3.0%
Households without broadband internet	7.0%

Key Transportation Facilities

- *SR-49 (Golden Chain Highway)*: North-south two-lane minor arterial which provides a connection between US-50, Pleasant Valley Road in the Diamond Springs and Placerville areas, and south to Plymouth at the intersection with E16. SR-49 is posted at 55 MPH through the study area and striped with center and fog lines.
- *Pleasant Valley Road*: East-west arterial that becomes part of US-49 for a segment in Diamond Springs and connects to US-50. Within the study area, the posted speed limit ranges from 25 to 40 MPH and striped with center and fog lines.
- *Mother Lode Drive*: Two-lane east-west route running parallel to US-50 through Kingsville, located south of US-50 from Shingle Road in the west to Missouri Flat Road in the east. It connects Pleasant Valley Road to US-50 in both directions. The road is classified as minor arterial west of Pleasant Valley Road and major collector northeast of Pleasant Valley Road. The posted speed limit ranges from 25 to 50 MPH and striped with center and fog lines.
- *Forni Road*: Two-lane local road east of SR-49 that connects Pleasant Valley Road to Missouri Flat Road and can then access US-50. Forni Road has a posted speed limit of 35 MPH and is striped with a center and fog line.
- *Crystal Boulevard*: Rural residential collector road posted at 35 MPH. The road is narrow with 10-to-11-foot travel lanes, with no shoulders. There is a center stripe, with segments that have fog lines. It intersects with Monitor Road in Logtown at SR-49.
- *Monitor Road*: Rural residential local road that is unposted. The road is narrow with 10-to-11-foot travel lanes, with no shoulders. There is a center stripe, with no fog lines. Intersections with Crystal Boulevard in Logtown at SR-49.

5.1 EVACUATION SCENARIOS

The evacuation assessment for the Logtown area has two scenarios with the same departure time:

- Scenario #1: North only evacuation - 40-minute evacuation period. All evacuation trips north of Sand Ridge Road must evacuate north along SR-49 toward Pleasant Valley Road.
- Scenario #2: South only evacuation - 40-minute evacuation period. All evacuation trips south of Quartz Drive and Dolomite Drive evacuate south along SR-49 toward Plymouth.

These scenarios cover a range of fast-moving wildfire scenarios that could result in a restricted evacuation direction. Wildfire evacuation scenarios that would allow for an evacuation in both directions simultaneously would likely result in faster evacuation time estimates than represented by these directional closure scenarios.

5.2 EVACUATION ROUTES

As shown in Figure 27, the following destinations have been identified for the Logtown evacuation model:

- A: US-50 westbound
- B: North Missouri Flat Commercial Zone (potential shelter) or beyond to Placerville
- C: SR-49 south of Main Street/E16

The assigned trip distribution percentage for each evacuation and warning zone to the above destinations in Scenario 1 and 2 is shown in Figure 29 and Figure 30, respectively. For north evacuation in Scenario 1, Pleasant Valley Road and Mother Lode Drive are two main roadways that allow for egress from the evacuation and warning zones. Forni Road also provides connection to the Missouri Flat Road interchange area accessing US-50 on the east and potential shelter areas. For south evacuation in Scenario 2, trips from evacuation and warning zones access the south destination using SR-49.

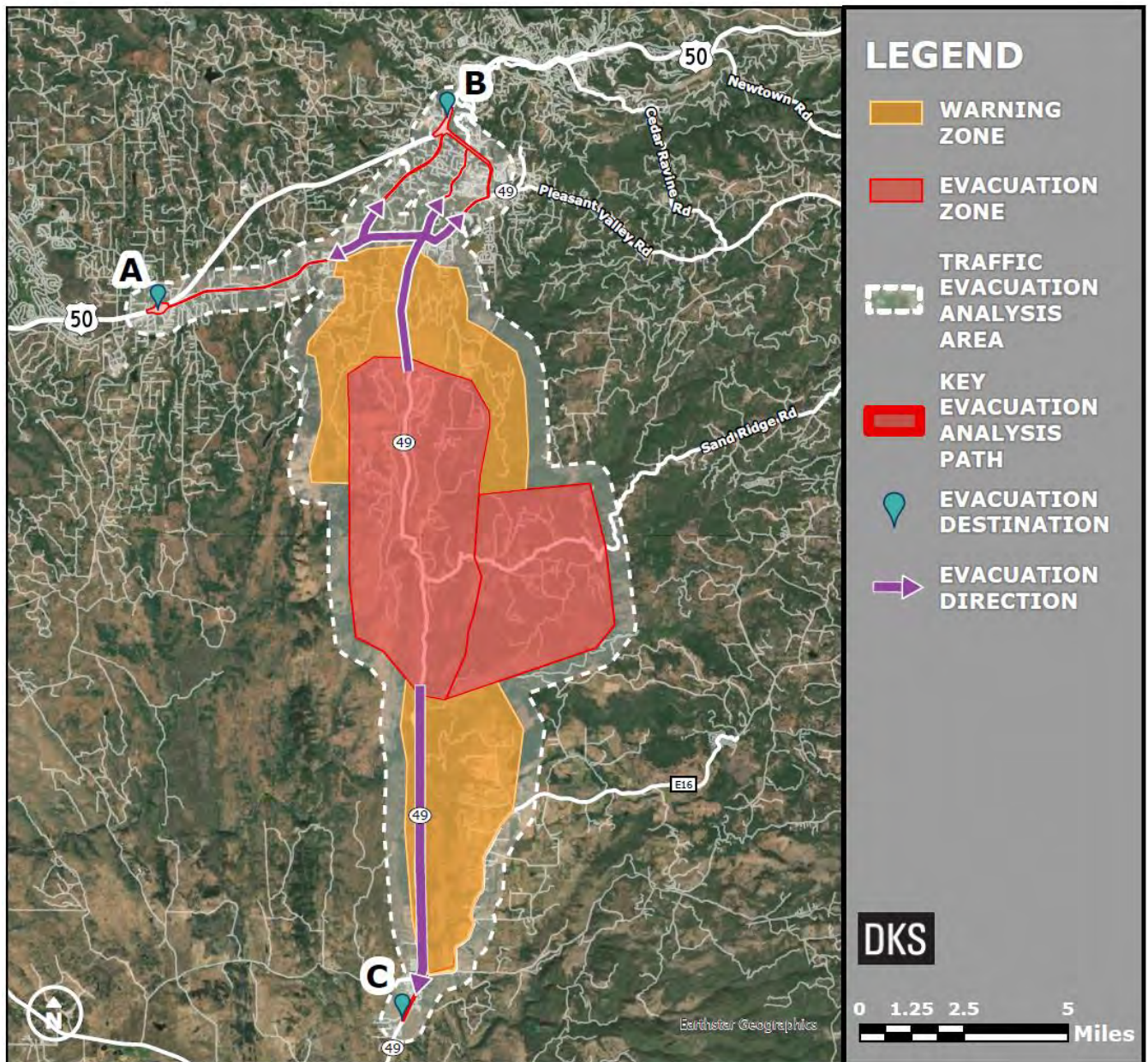


FIGURE 28: LOGTOWN EVACUATION DIRECTIONS

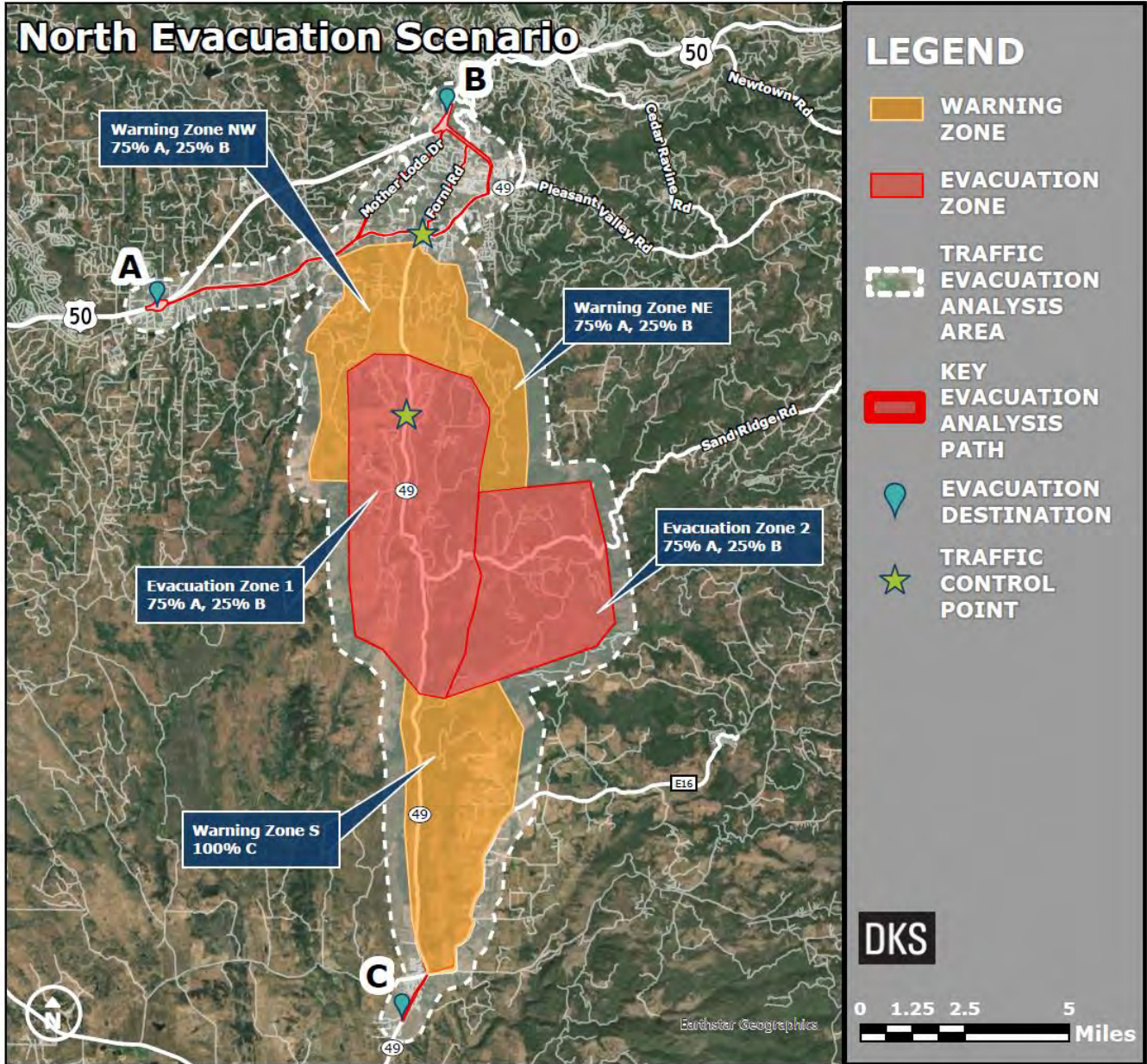


FIGURE 29: LOGTOWN NORTH EVACUATION DISTRIBUTION

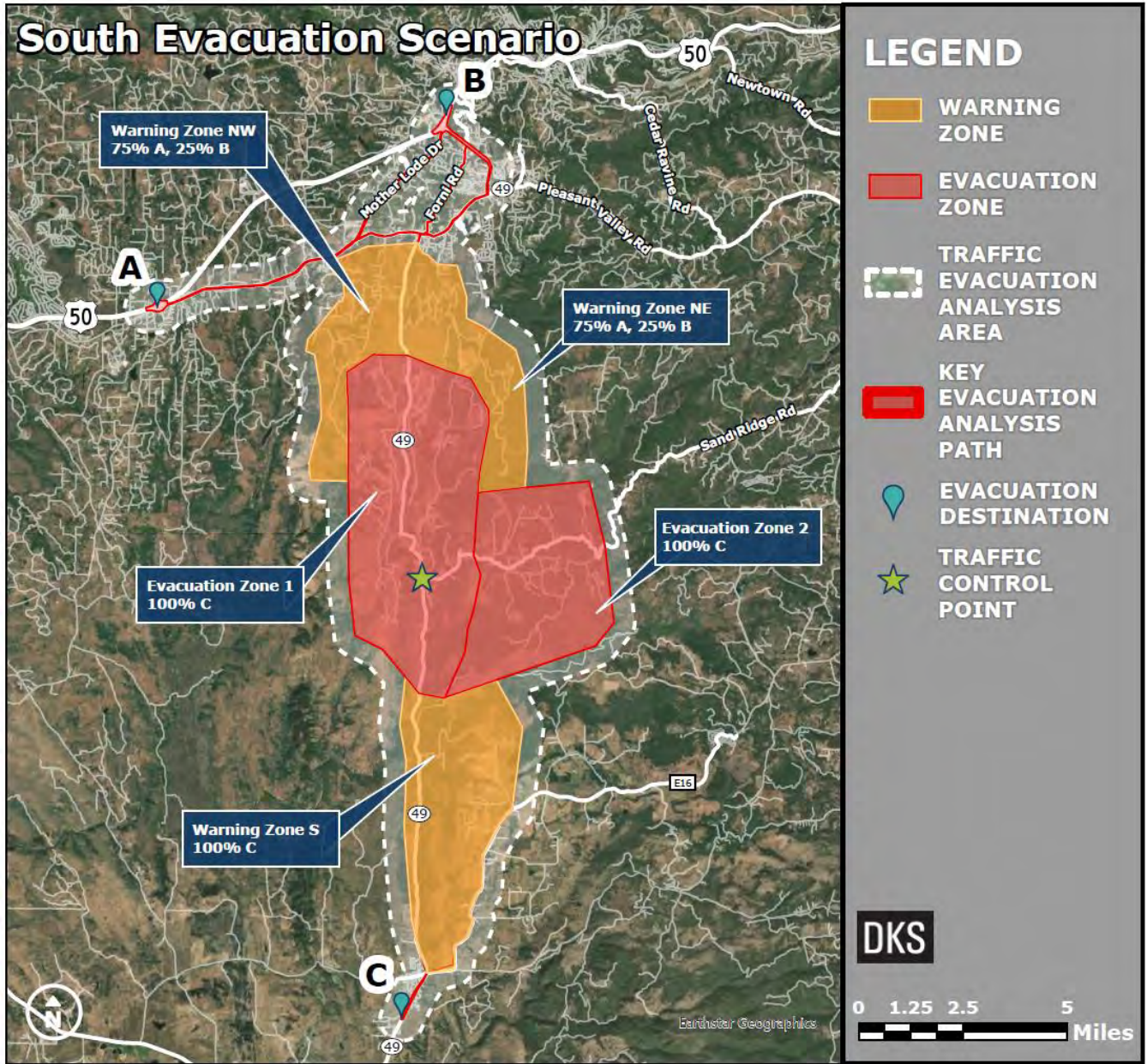


FIGURE 30: LOGTOWN SOUTH EVACUATION DISTRIBUTION

5.3 MODEL ASSUMPTIONS

Background traffic control points are assumed to be in place along SR-49 to restrict background traffic from entering the evacuation zone. For the north area, traffic is proportionally redirected to other north destinations based on the background traffic distribution. For the south area, traffic is redirected to other south destinations, including west to Main Street, east to Route E 16, and south to SR-49. A 50 percent reduction factor is applied to the background traffic 20 minutes after the evacuation start time as local users in the area begin to receive alerts and avoid the area for non-essential trips.

There are several bottleneck locations that require emergency manual traffic control to minimize significant congestion. The following locations under mitigation scenarios assume emergency traffic control is in place within 20 minutes of the start of the evacuation order:

North Scenario

- SR-49/Pleasant Valley Road: flag northbound traffic both directions onto Pleasant Valley Road
- SR-49/Crystal Boulevard/Monitor Road: Stop northbound traffic on SR 49 to allow for significant traffic flow from Crystal Boulevard and minor traffic from Monitor Road to go north on SR-49

South Scenario

- SR-49/Sand Ridge Road: Stop southbound traffic on SR-49 to allow evacuating traffic from Sand Ridge Road onto southbound SR-49.

5.4 EVACUATION TIME ESTIMATES

With no emergency traffic control in place as shown in Figure 31, under Scenario 1 (north), trips leaving their property in the evacuation zone within 40 minutes are able to fully evacuate within 90 minutes of the evacuation order, with 99% clearing within 80 minutes. Under Scenario 2 (South), 97% of the evacuation trips have cleared the evacuation zone within 70 minutes and 100% by 80 minutes. Due to the single lane of traffic on SR-49 evacuating the entire evacuation zone, it takes up to 50 minutes after the evacuation departure period before the last trip clears the evacuation zone.

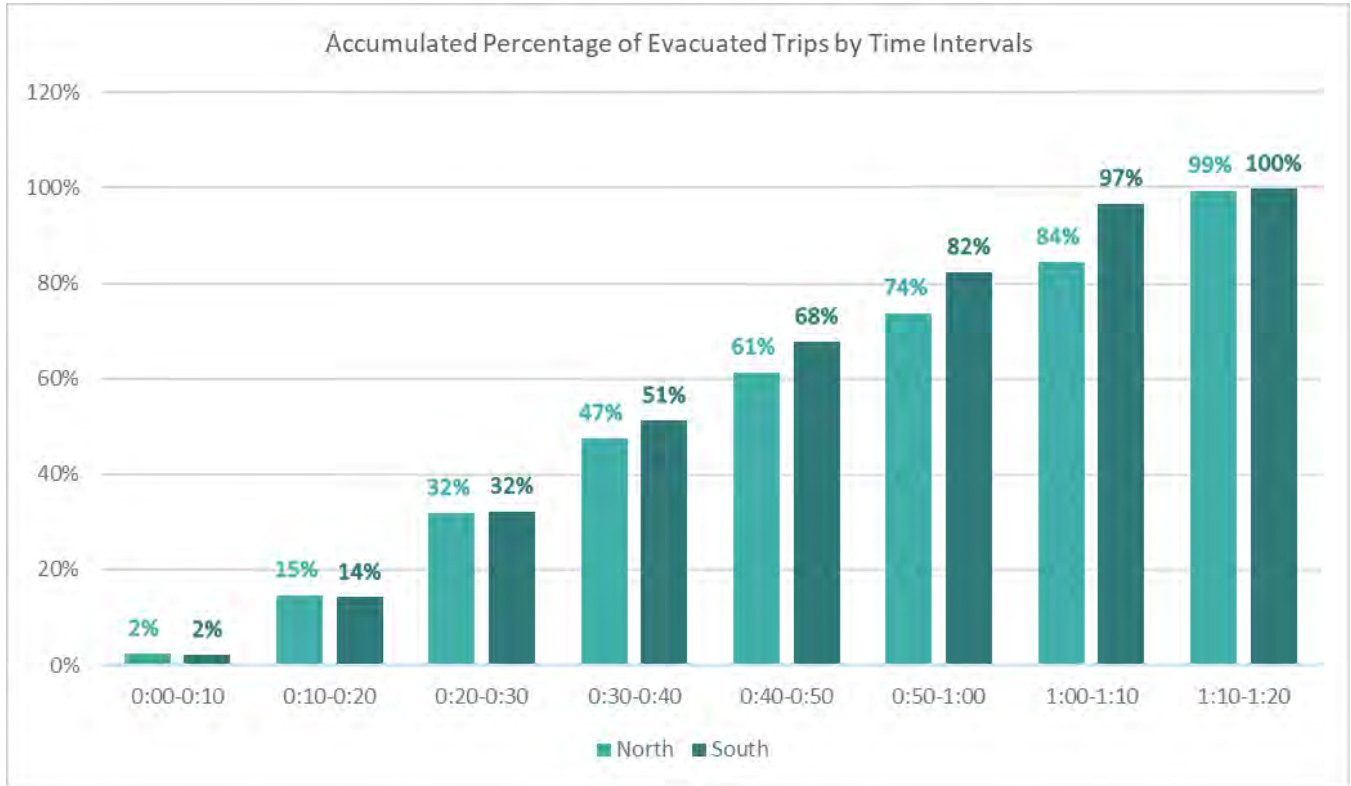


FIGURE 31: LOGTOWN ACCUMULATED PERCENTAGE OF EVACUATED TRIPS BY INTERVAL SCENARIOS 1 & 2

The Scenario 1 North Mitigation scenario adds emergency manual traffic control as described under the model assumptions section. The results show in Figure 32 that the addition of traffic control at Pleasant Valley Road and Crystal Boulevard on SR-49 reduces the time to 100% clear the evacuation zone from 90 minutes to 60 minutes, reducing the overall evacuation time estimate by 30 minutes.

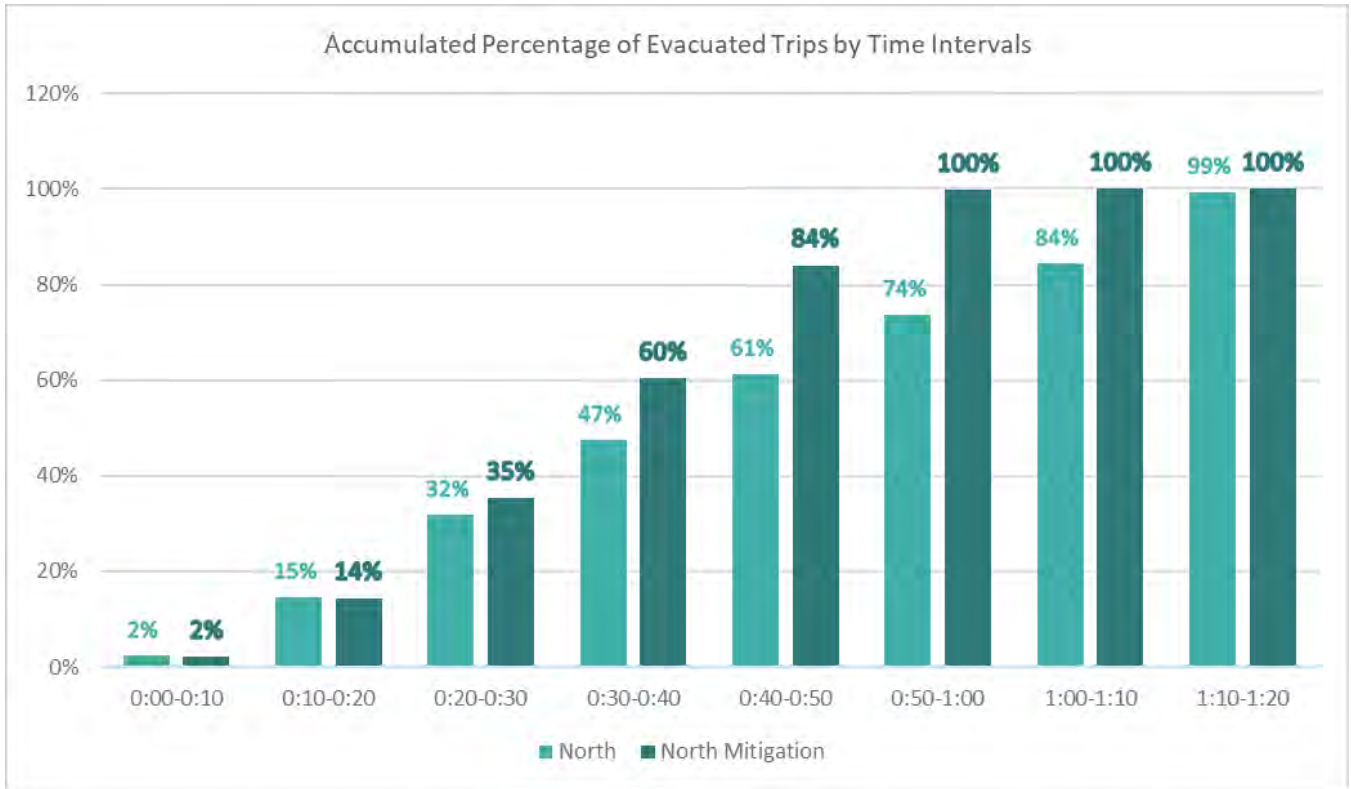


FIGURE 32: LOGTOWN ACCUMULATED PERCENTAGE OF EVACUATED TRIPS BY INTERVAL SCENARIOS 1 & MITIGATION

The Scenario 2 South Mitigation scenario adds emergency manual traffic control as described under the model assumptions section. The results show in Figure 33 that the addition of traffic control at Sand Ridge Road on SR-49 reduces the time to 100% clear the evacuation zone from 80 minutes to 70 minutes, reducing the overall evacuation time estimate by 10 minutes.

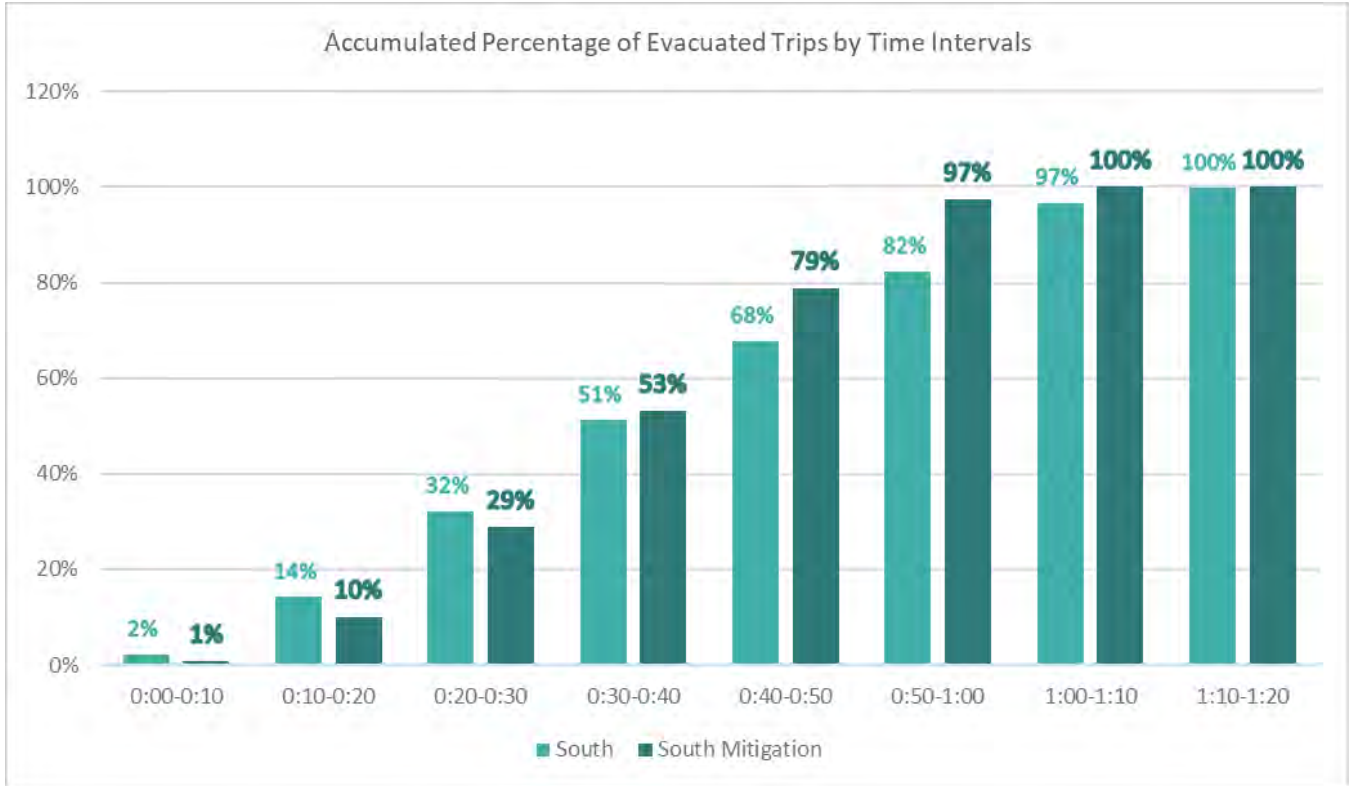


FIGURE 33: LOGTOWN ACCUMULATED PERCENTAGE OF EVACUATED TRIPS BY INTERVAL SCENARIOS 2 & MITIGATION

Figure 34 and Figure 35 show average vehicle speeds along key evacuation routes over 10-minute periods throughout the evacuation. Both figures depict the mitigated scenarios with the traffic control in place. The north scenario shows slow moving (rolling queues) on SR-49 back from Pleasant Valley Road, extending up Crystal Boulevard. The south scenario shows slow moving (rolling queues) on SR-49 back from Plymouth, extending up to Sand Ridge Road.

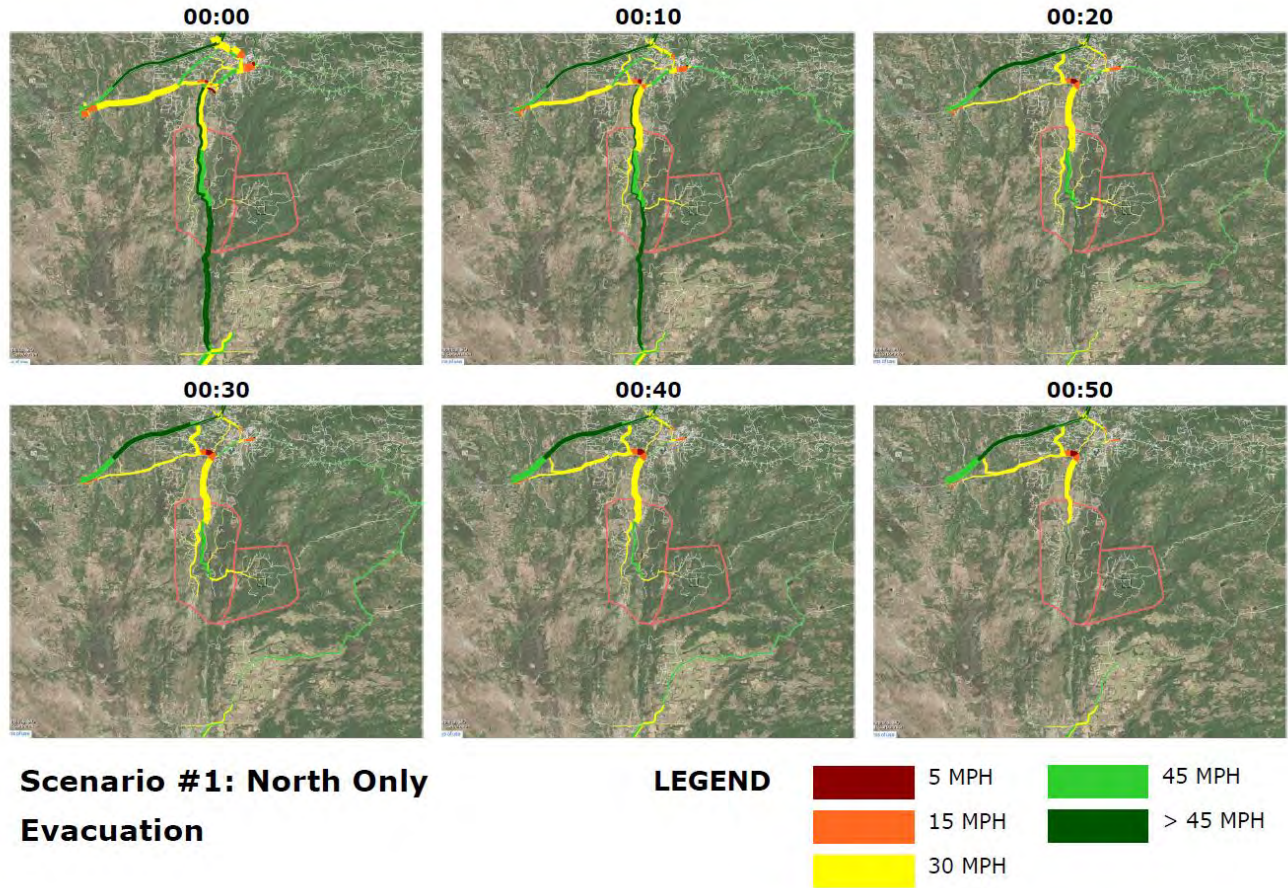


FIGURE 34: LOGTOWN CHANGE IN VEHICLE SPEED THROUGHOUT EVACUATION PERIOD SCENARIO 1 (MITIGATED)

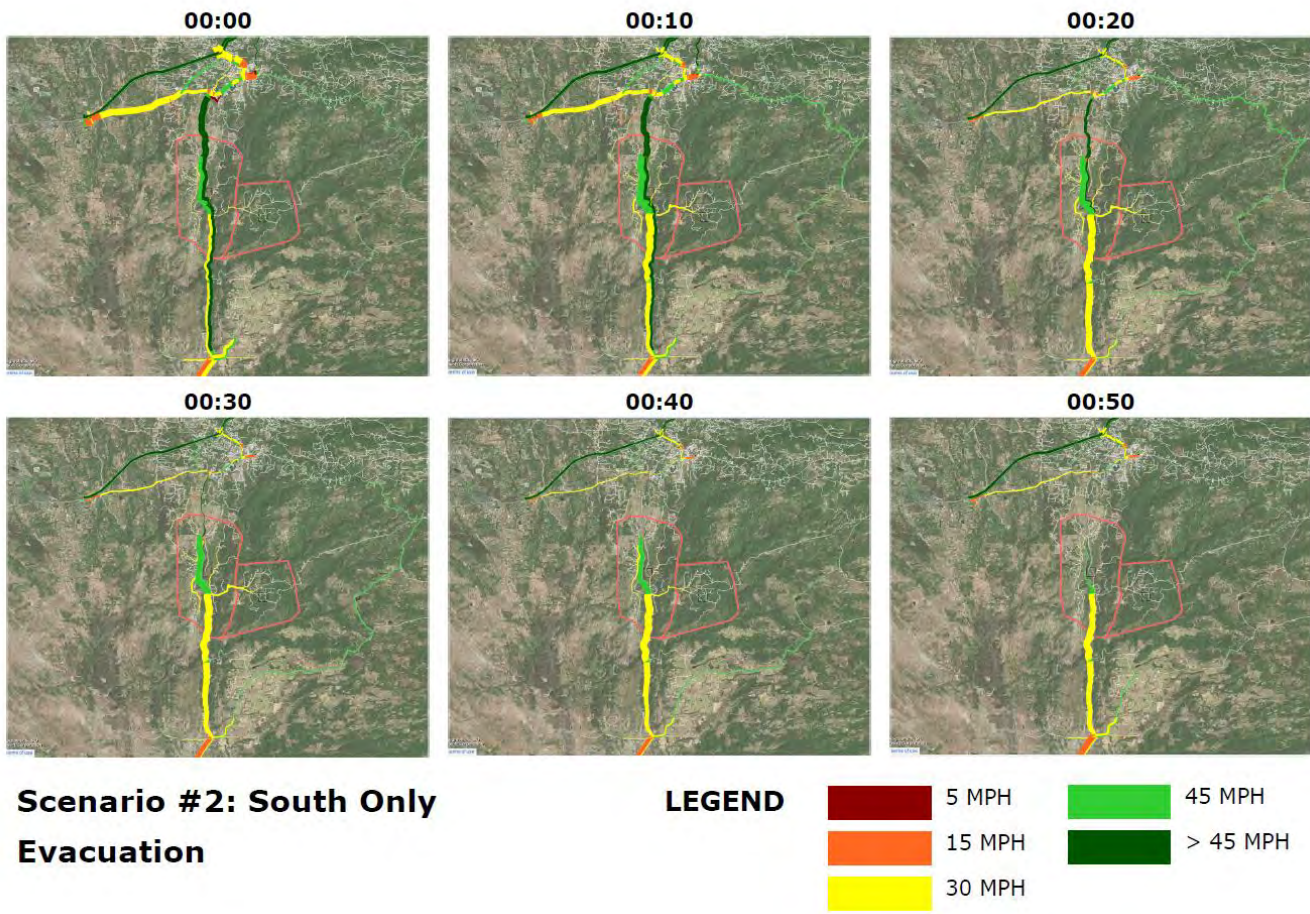


FIGURE 35: LOGTOWN CHANGE IN VEHICLE SPEED THROUGHOUT EVACUATION PERIOD SCENARIO 2 (MITIGATED)

5.5 TRAVEL TIME ESTIMATES

The peak travel times occur 30 minutes after the evacuation order. The travel times consider all paths from the origin within the evacuation zone to the end of the study area, capturing bottlenecks both within and downstream of the evacuation zones.

Under the north evacuation scenario (Figure 36), average evacuation times to clear the study area are approximately 58 minutes with maximum travel times for the longest routes being approximately 82 minutes. The traffic control mitigation (Figure 37) reduces these times to 49 and 71 minutes respectively.

Under the south evacuation scenario (Figure 38), average evacuation times to clear the study area are approximately 62 minutes with maximum travel times for the longest routes being approximately 96 minutes. The traffic control mitigation (Figure 39) reduces the maximum travel time by only 3 minutes, but more evenly distributes the evacuation of traffic from Sand Ridge Road, which without the traffic control queues up much sooner after the start of the evacuation order.

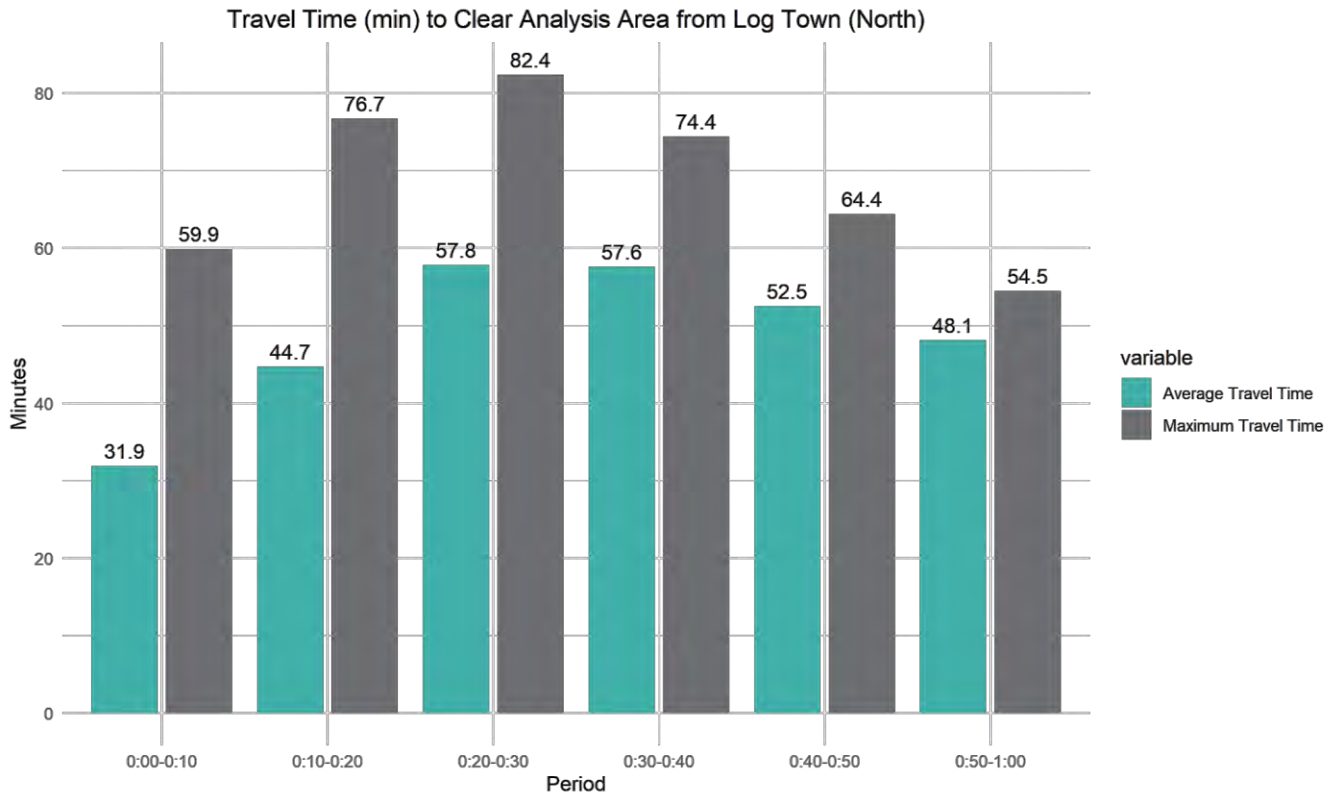


FIGURE 36: LOGTOWN TRAVEL TIME ESTIMATES SCENARIO 1

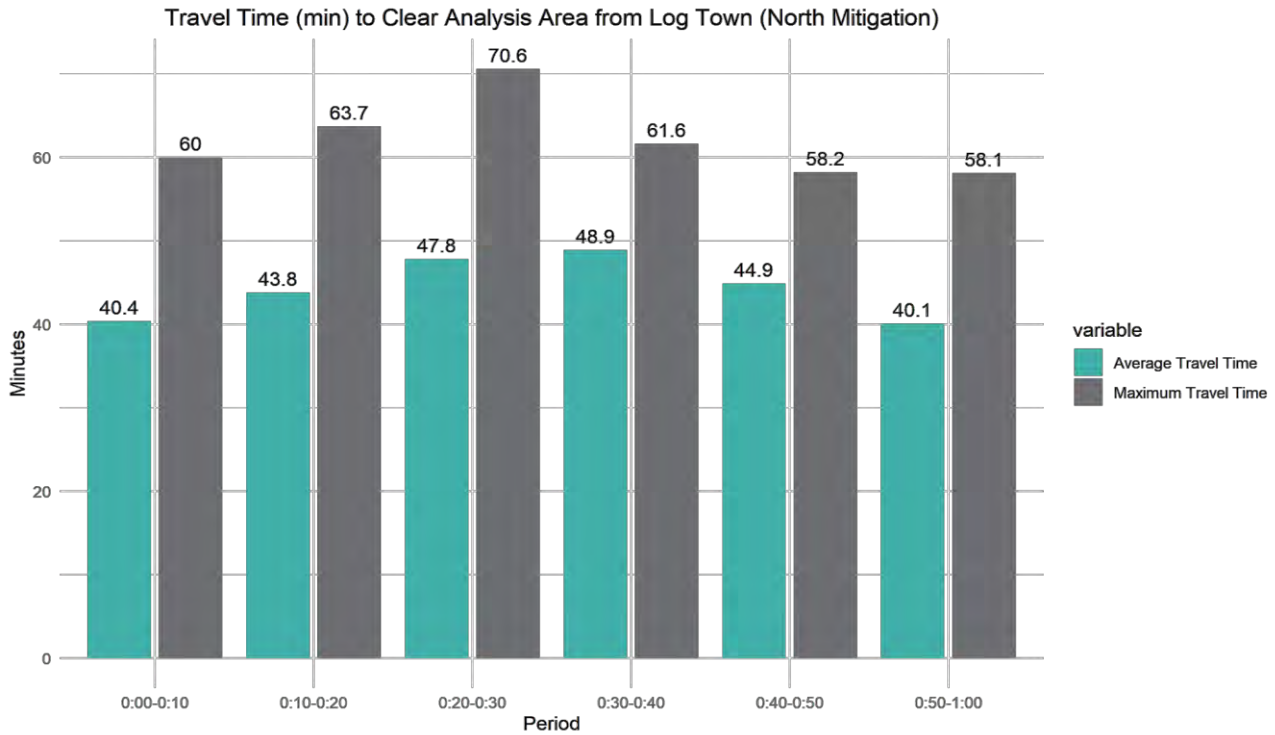


FIGURE 37: LOGTOWN TRAVEL TIME ESTIMATES SCENARIO 1 MITIGATION

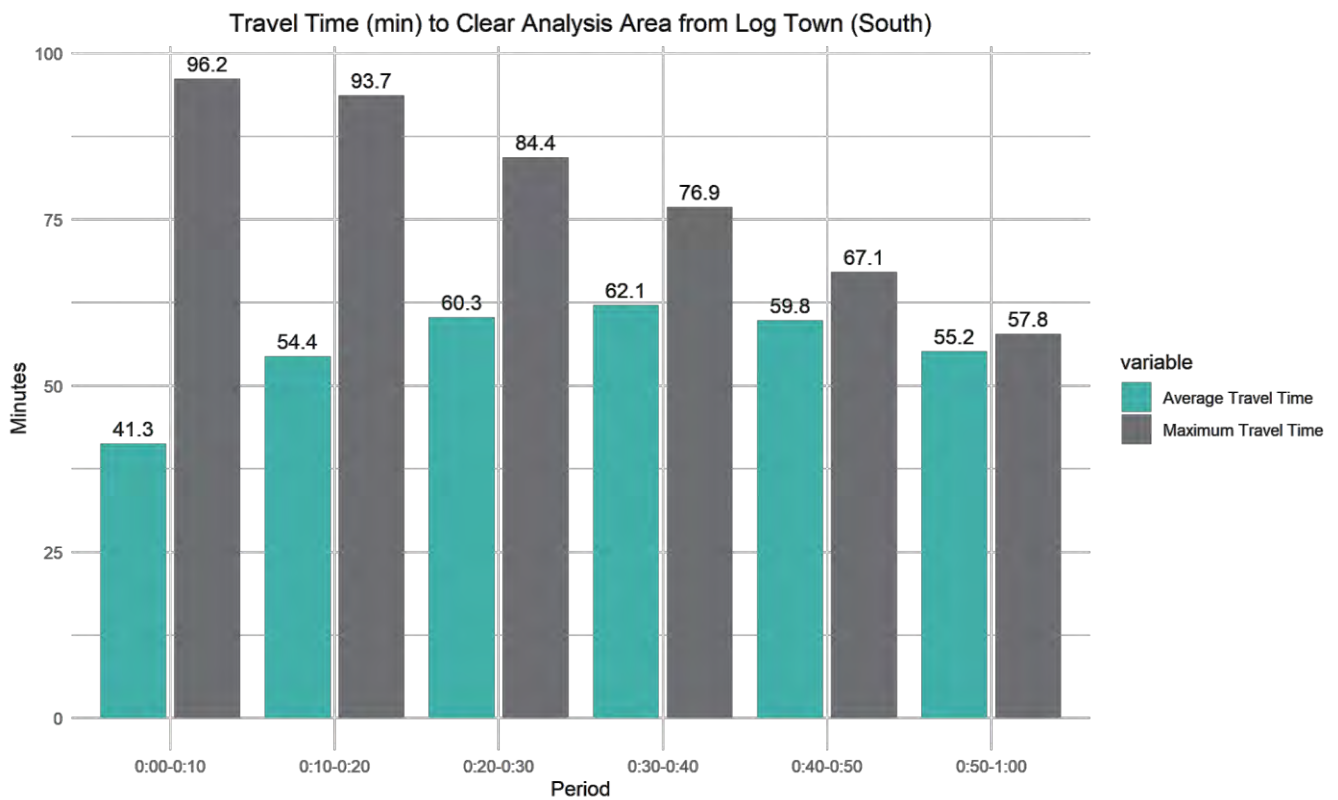


FIGURE 38: LOGTOWN TRAVEL TIME ESTIMATES SCENARIO 2

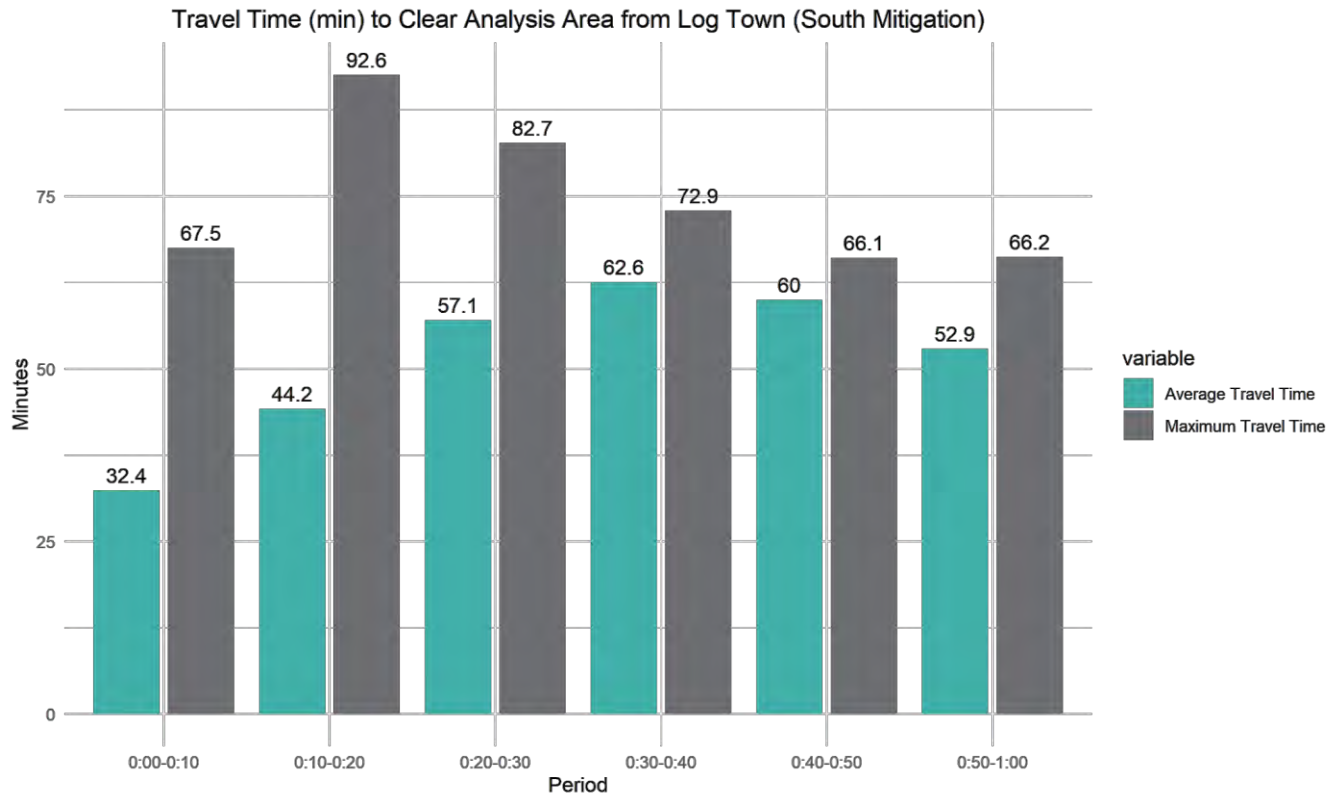


FIGURE 39: LOGTOWN TRAVEL TIME ESTIMATES SCENARIO 2 MITIGATION

5.6 KEY OBSERVATIONS

- Approximately 1,060 evacuation trips need to evacuate along a single lane of SR-49, either northbound or southbound depending on the scenario. With reduced roadway capacity under evacuation conditions, this area begins to exceed the available capacity of a single lane resulting in the impact evacuation time estimates presented here.
- Manual traffic control on SR-49 at key junctions substantially improves the evacuation time estimates, but it still takes an additional 20 to 30 minutes to clear the evacuation zone after the last trips leave their home. This extra time is partially due to the long travel distance within the evacuation zone and partially congestion at bottleneck locations.
- Sand Ridge Road results in significant congestion trying to evacuate south onto SR-49 with Logtown traffic also evacuating south on SR-49. This analysis represents a conservative scenario with all 209 trips from the Sand Ridge Road community evacuating toward SR-49. Recent paving on Sand Ridge Road provides an opportunity for residents to evacuate east toward Bucks Bar Road and reduce the impacts of evacuating toward SR-49.

5.7 RECOMMENDATIONS AND CONSIDERATIONS

- Emergency manual traffic control is essential to the success of a Logtown area evacuation and should be in place no more than 20 minutes after the start of the evacuation order to restrict background traffic from using SR-49 in the evacuation zone and to facilitate the efficient movement of evacuation traffic.
- Primary emergency manual traffic control locations for a northern evacuation on SR-49 are at Pleasant Valley Road and Crystal Boulevard
- Primary emergency manual traffic control locations for a southern evacuation on SR-49 are at Sand Ridge Road.
- The existing roundabout at SR-49/Main Street/E16 in Plymouth moves southbound traffic at a reasonable flow rate under light eastbound traffic from E16 and northbound left traffic from SR-49. If either of these movements increase traffic volumes, then this will reduce the flow rate of the primary southbound evacuation route along SR-49 and may warrant manual traffic control.
- The intersection of SR-49 and Pleasant Valley Road is a significant bottleneck for a northern evacuation scenario as a result of the stop-controlled approach. A roundabout or traffic signal at this location would provide some additional capacity during an event before emergency traffic services arrive, but even with those improvements manual traffic control would likely be necessary. Roadway widening for a northbound right turn lane of several hundred feet in length in combination with manual traffic control would provide additional capacity to reduce evacuation time estimates.
- A connected central signal system on Mother Lode Road, Pleasant Valley Road, and Missouri Flat Road may assist in evacuation flows downstream of the immediate evacuation area by providing more green time.
- If the wildfire scenario permits, evacuating Logtown in both directions along SR-49 will reduce evacuation times.

6. OUTINGDALE

Overview

The Outingdale community has been identified by the CAL FIRE Subdivision Review Program as a residential development in a hazard area that does not have at least two emergency evacuation routes.¹⁵ This community only has a single ingress/egress route within a mix of moderate, high, and very high Fire Hazard Severity Zones.¹⁶

The Outingdale community is located on the Middle Fork of the Cosumnes River, where the topography consists of moderate to steep slopes along the ridge lines and canyons and the vegetation consists mostly of hardwood forests with a mix of hardwood woodlands and herbaceous vegetation types.¹⁷ A qualitative wildfire evacuation assessment was conducted of the area that stretches approximately 620 acres, shown in Figure 40.

¹⁵ State of California and the Department of Forestry and Fire Protection, Subdivision Review Program - <https://bof.fire.ca.gov/projects-and-programs/subdivision-review-program/> accessed by DKS Associates in May 2024

¹⁶ California Board of Forestry and Fire Protection, Fire Hazard Severity Zones in State Responsibility Area - effective April 1, 2024

¹⁷ State of California and the Department of Forestry and Fire Protection, California Vegetation - WHR13 Types

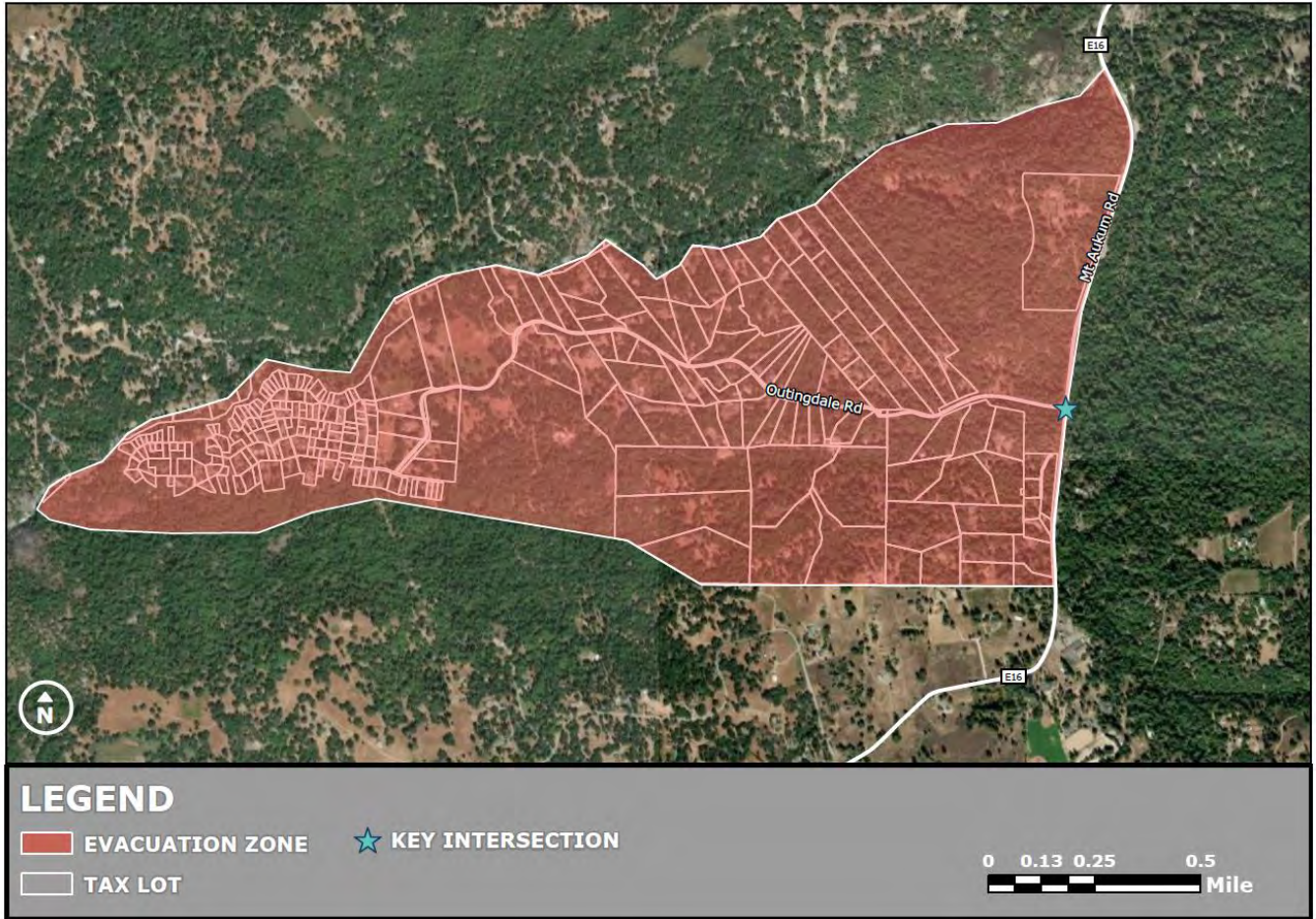


FIGURE 40: OUTINGDALE STUDY AREA

Community Characteristics

There are approximately 253 residential households within the Outingdale community. There is a private community west of Outingdale Road with increased density as compared to the larger parcel residential properties in the rest of Outingdale. An entry banner is posted entering the private neighborhood as shown in Figure 41 below. Of these households, there are 10 with zero vehicle access, 50 with one vehicle access, and 190 with two or more vehicles accessible.

Vulnerable Population Assessment

TABLE 7: SOCIAL SENSITIVITY INDICATORS IN OUTINGDALE EVACUATION AREA

Social Sensitivity Indicator	Percentage of Population or Households in the Outingdale Evacuation Area
Median Family Household Income	\$119,500
Median Non-Family Household Income	\$42,500
Low Income	40%
People experiencing homelessness	N/A
Undocumented individuals	N/A
Unemployed	9.0%
Seniors	23.0%
Young Children	0%
People of Color	17.0%
Renters	10.0%
Outdoor Workers	N/A
Visitors	Not Available
Linguistically Isolated	0%
American Native and Alaskan Native	0%
Individuals with Disabilities	6.0%
Individuals with Asthma	10.5%
Individuals with Coronary Artery Disease	7.5%
Individuals without access to a vehicle	0%
Individuals without health insurance	2.0%
Households without a computer	12.0%
Households without broadband internet	5.0%



FIGURE 41: OUTINGDALE COMMUNITY ENTRANCE PRIVATE PROPERTY SIGN

Key Transportation Facilities

- *Outingdale Road*: a two-lane local road, serves as the single egress route in the subdivision. The major road and entrance are paved terminating near the private community. The speed is unposted but limited due to narrow lanes and curvature. There is a striped center line with no fog line stripe.
- Private Community Roads: Within the Outingdale private community there is a network of gravel and partially paved roads with steep segments. Most roads are single lane wide serving two-way traffic.
- E16 (Mt. Aukum Road): County highway posted at 55 MPH with center stripe, fog lines and shoulders. Serves as the only connection for Outingdale Road. There are no turn lanes at the intersection.

6.1 EVACUATION ROUTES ASSESSMENT

Most of the subdivision is encompassed by dense, heavy vegetation. Some of this vegetation encroaches on the primary evacuation routes, including Outingdale Road, which makes it difficult for larger vehicles, such as a fire apparatus and a horse trailer to pass each other, Figure 42.



FIGURE 42: OUTINGDALE ROAD EXISTING CONDITIONS (APRIL 2024)

Within the private community of Outingdale, the network of steep, single-lane, two-way, unpaved streets all converge to a single access on Vacation Boulevard.

Figure 43 shows possible evacuation routes from the Outingdale community. After exiting, vehicles can either travel north on E16 north or south. E16 connects with Pleasant Valley Road, Cedar Ravine Road, and Newtown Road which all eventually connect with US 50. Alternatively, E16 connects with US 50 heading north near Pollock Pines. Heading southbound on E16 connects with SR49 in Plymouth.

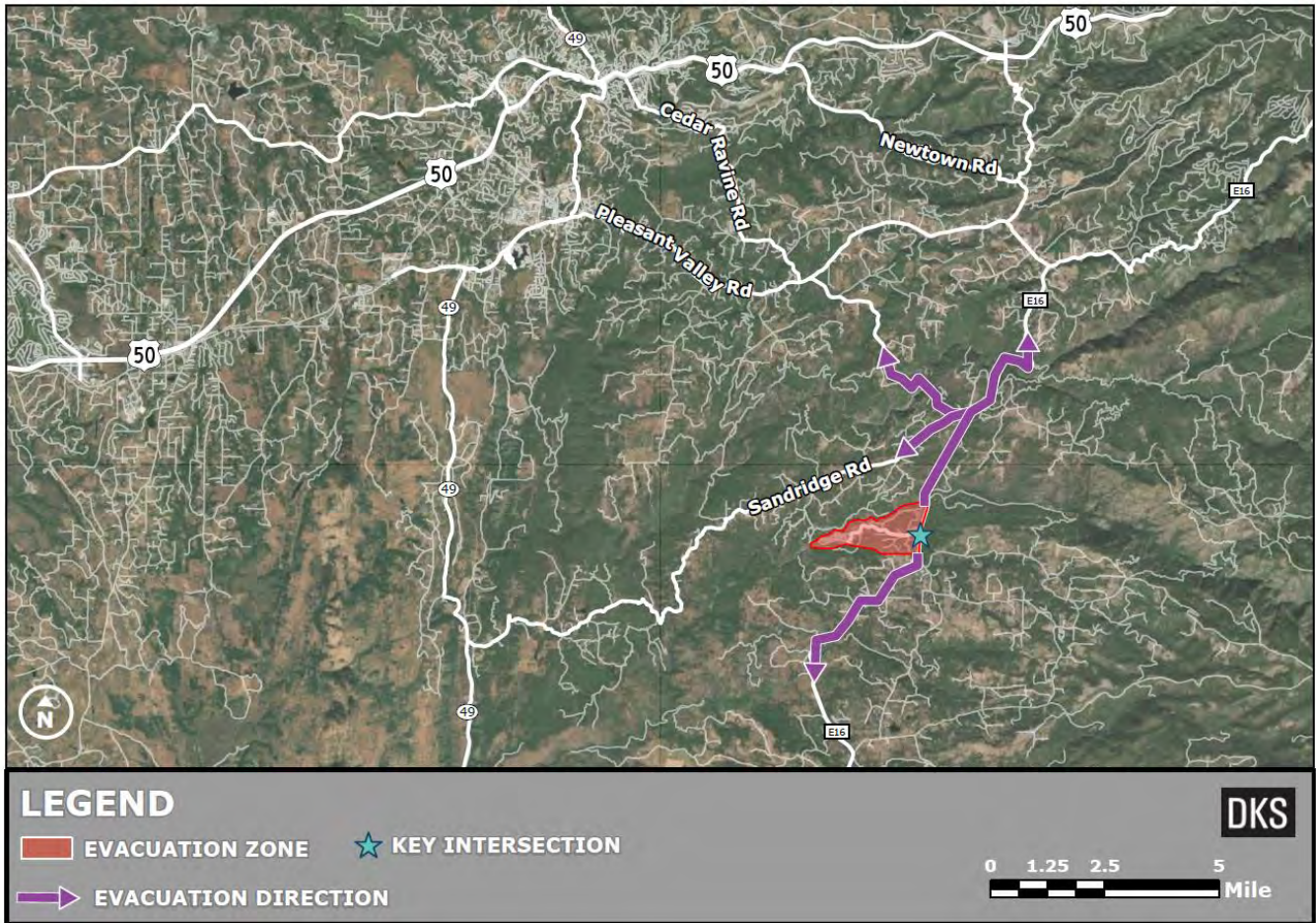


FIGURE 43. POSSIBLE EVACUATION DIRECTIONS FROM THE OUTINGDALE COMMUNITY

The CAL FIRE Subdivision Review Report recommends creating a secondary vehicle egress route given the existing single route and the total number of households to evacuate. The construction of an effective secondary egress is challenging given the many property and topographical constraints. Potential considerations and constraints for a secondary egress include:

- The Cosumnes River runs along the northwest edge of Outingdale. Morning Canyon Road is on the north side of the river canyon and a secondary egress connection from Outingdale would require significant property acquisition, road and bridge construction.
- Along the southern boundary steep slopes and private property prevent secondary road connections.
- Summerhill Road is a non-continuous (no existing through connection) local road on unknown property ownership that runs from the center of Outingdale along the Consumnes River to E16. The west segment is a partially paved road that serves residential parcels and connects to Outingdale Road. The east segment is a dirt road not passable to passenger vehicles that serves rural property with a connection to E16. The shoulder of E16 at Summerhill Road is signed and marked with No Parking, Fire Lane. Further assessment is recommended to determine the viability of Summerhill Road being improved and gaps constructed to provide secondary emergency egress or public access to E16.
- In the southeast corner of Outingdale, Little Spring Road and Desperado Road terminate

near the community boundary and have favorable grades to connect to E16 or Horseshoe Bend Road to the south, however, connections to these roads would require significant property acquisition and road construction. In addition, these streets connect to Outingdale Road within 1,800 feet of E16 with the majority of parcels still upstream past a single stretch of Outingdale Road.

Beyond a secondary egress for the full community, and internal secondary egress for the private Outingdale community could prove beneficial given the density of homes that access steep, single lane roads. A secondary connection between Stream Way and Outingdale Road where it turns south would greatly improve emergency access to the private community, however this connection would require significant property acquisition and/or easements and road construction.

6.2 RECOMMENDATIONS AND CONSIDERATIONS

- Trim back vegetation and thin fuels along Outingdale Road to improve large vehicle passing potential, improve sight distance, and reduce fire hazards.
- During a full evacuation of Outingdale, emergency manual traffic control may be necessary to stop traffic on E16 and flag traffic from Outingdale Road to minimize congestion within Outingdale.
- An alternative to help facilitate left turns out of Outingdale is to widen E16 with a center turn lane to allow residents the opportunity to make a two-stage left out movement to avoid needing to wait for a gap in E16 traffic in both directions. This concept needs further assessment as potential significant regrading may be required that could make this concept not feasible.
- The Outingdale Road approach to E16 is approximately 40 feet wide. Restriping this approach to include a left and right turn lane would reinforce vehicle lane positioning and provide left turn and right turn vehicle capacity that could assist during an evacuation.



FIGURE 44: OUTINGDALE ROAD ACCESS FACING EAST

- Recommendations from the CAL FIRE Subdivision Review reports include:

- Install reflective evacuation route street signs directing residents from their local roads to the nearest collector road(s) and/or arterial highway(s) based on the standards for emergency management signing in the California Manual on Uniform Traffic Control Devices.
- Conduct community-wide evacuation drills.
- Install reflective markers to indicate road edges or other areas of danger that might not be evident during periods of low visibility.
- Further study the feasibility of secondary egress route options outlined above.

7. GOLDEN BEAR TRAIL

Overview

Similar to Outingdale, the Golden Bear Trail community has been identified by the Subdivision Review Program as a residential development in a hazard area that does not have at least two emergency evacuation routes.¹⁸ This community also only has a single ingress/egress route.

Within a Very High Fire Hazard Severity Zone, the Golden Bear Trail evacuation zone is located between Lake Tahoe Airport and Pioneer Trail. The area is approximately 156 acres. The types of vegetation within and around the subdivision, including grass, trees, brush, and timber contribute to the fire hazard severity. The topography of the area is primarily flat lands with gradual slopes.

The Golden Bear Trail community is actively involved with wildfire preparedness. **The community's** HOA website provides a list of wildfire resources¹⁹ and in the past the community has held evacuation drills. A Lake Valley Fire Protection District Station is located at the entrance to the neighborhood on Golden Bear Trail, as shown in Figure 45. The station serves as a wildfire preparedness education reminder as demonstrated by the banner posing the question to residents "Is your home ignition resistant?"

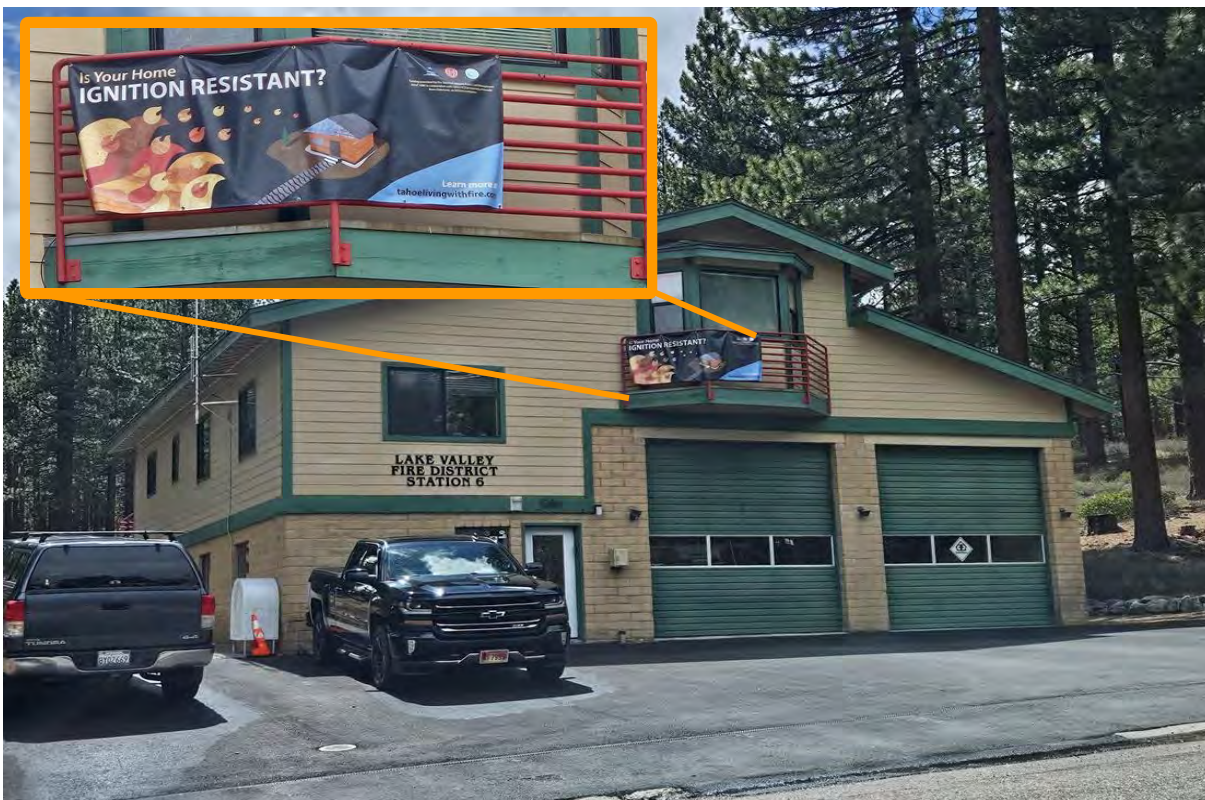


FIGURE 45: FIRE DISTRICT STATION IN GOLDEN BEAR

¹⁸ State of California and the Department of Forestry and Fire Protection, Subdivision Review Program - <https://bof.fire.ca.gov/projects-and-programs/subdivision-review-program/> accessed by DKS Associates in May 2024

¹⁹ Golden Bear Homeowners Association - <https://goldenbearha.org/>

Community Characteristics

There are approximately 314 single-family households within the Golden Bear Trail neighborhood with an estimated population of 1,020 persons in the full evacuation analysis area. Of these households, there are none with zero vehicle access, 80 with one vehicle access, and 240 with two or more vehicles accessible.

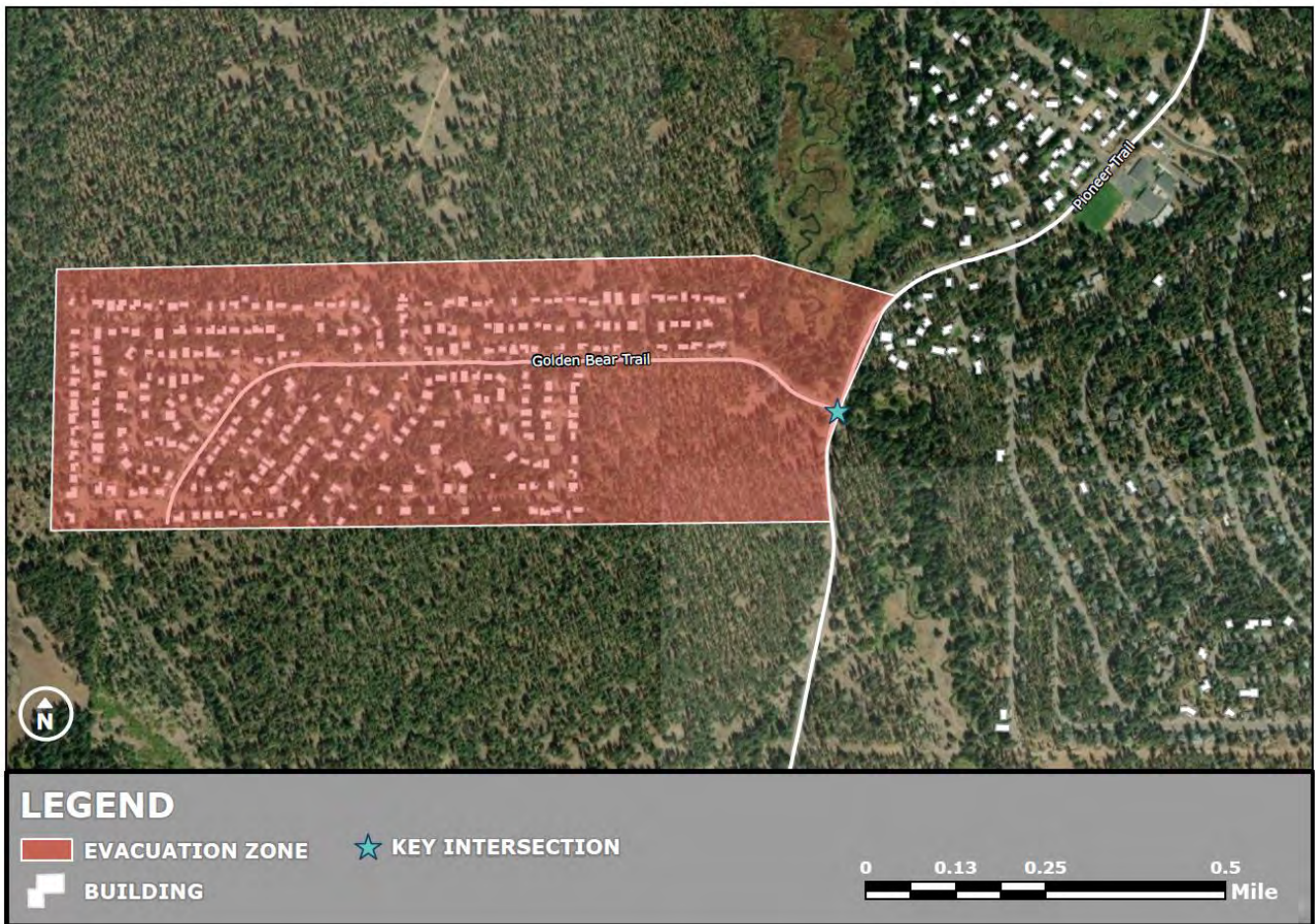


FIGURE 46: GOLDEN BEAR TRAIL STUDY AREA

Vulnerable Population Assessment

TABLE 8: SOCIAL SENSITIVITY INDICATORS IN GOLDEN BEAR TRAIL EVACUATION AREA

Social Sensitivity Indicator	Percentage of Population or Households in the Golden Bear Trail Evacuation Area
Median Family Household Income	\$107,300
Median Non-Family Household Income	\$74,300
Low Income	10.0%
People experiencing homelessness	N/A
Undocumented individuals	N/A
Unemployed	7.0%
Seniors	22.0%
Young Children	4.0%
People of Color	15.0%
Renters	23.0%
Outdoor Workers	N/A
Visitors	Not Available
Linguistically Isolated	0%
American Native and Alaskan Native	0%
Individuals with Disabilities	9.0%
Individuals with Asthma	9.4%
Individuals with Coronary Artery Disease	4.9%
Individuals without access to a vehicle	0%
Individuals without health insurance	2.0%
Households without a computer	0%
Households without broadband internet	5.0%

Key Transportation Facilities

- *Golden Bear Trail*: Two-lane local road posted at 35 MPH, serves as the single ingress/egress route in the subdivision. At its narrowest point along curves, the pavement width is between 34 and 42 feet. The centerline is striped, but no fog line or shoulder space is provided as shown in Figure 47.
- *Pioneer Trail*: Two-lane arterial posted at 40 MPH. Only connection for Golden Bear Trail that serves local area destinations and regional connections as a parallel route to US-50.



FIGURE 47: GOLDEN BEAR TRAIL EXISTING CONDITIONS (APRIL 2024)

7.1 EVACUATION ROUTES ASSESSMENT

Golden Bear Trail serves as the only evacuation egress road for the community and runs down the middle of the community. At the intersection with Pioneer Trail, the Golden Bear Trail is approximately 42 feet wide with a flared lane at the intersection. This flared lane can serve as a short de facto right turn lane if there are one or two left turning vehicles aligned with the centerline of the road, thereby reducing vehicular traffic for right turning traffic. There is no center turn lane on Pioneer Trail. Further into the Community, Golden Bear Trail is 34 feet wide, still allowing on-street parking on both sides of the street with room for vehicles to pass. All other neighborhood streets are 28 feet in width. When vehicles are parked on both sides of the street, especially larger vehicles and equipment, as shown in Figure 48, oncoming vehicles may not be able to pass each other. During an evacuation this constriction may impact emergency response vehicles when opposed by evacuating traffic.

There are two manual gates on the north side of the community connecting to recreation trails, but these trails are not passable by most vehicles as shown in Figure 49.



FIGURE 48: GOLD DUST TRAIL ON-STREET PARKING RESTRICTION



FIGURE 49: GOLDEN BEAR TRAIL EXIT ROAD AT JACARILLO TRAIL ROAD

Figure 50, shows possible evacuation routes from the Golden Bear Trail community. Heading northbound or southbound on Pioneer Trail Road both connect with US 50. An additional route to US 50 is to take Pioneer Trail Road to Al Tahoe Blvd which also connects to US 50.

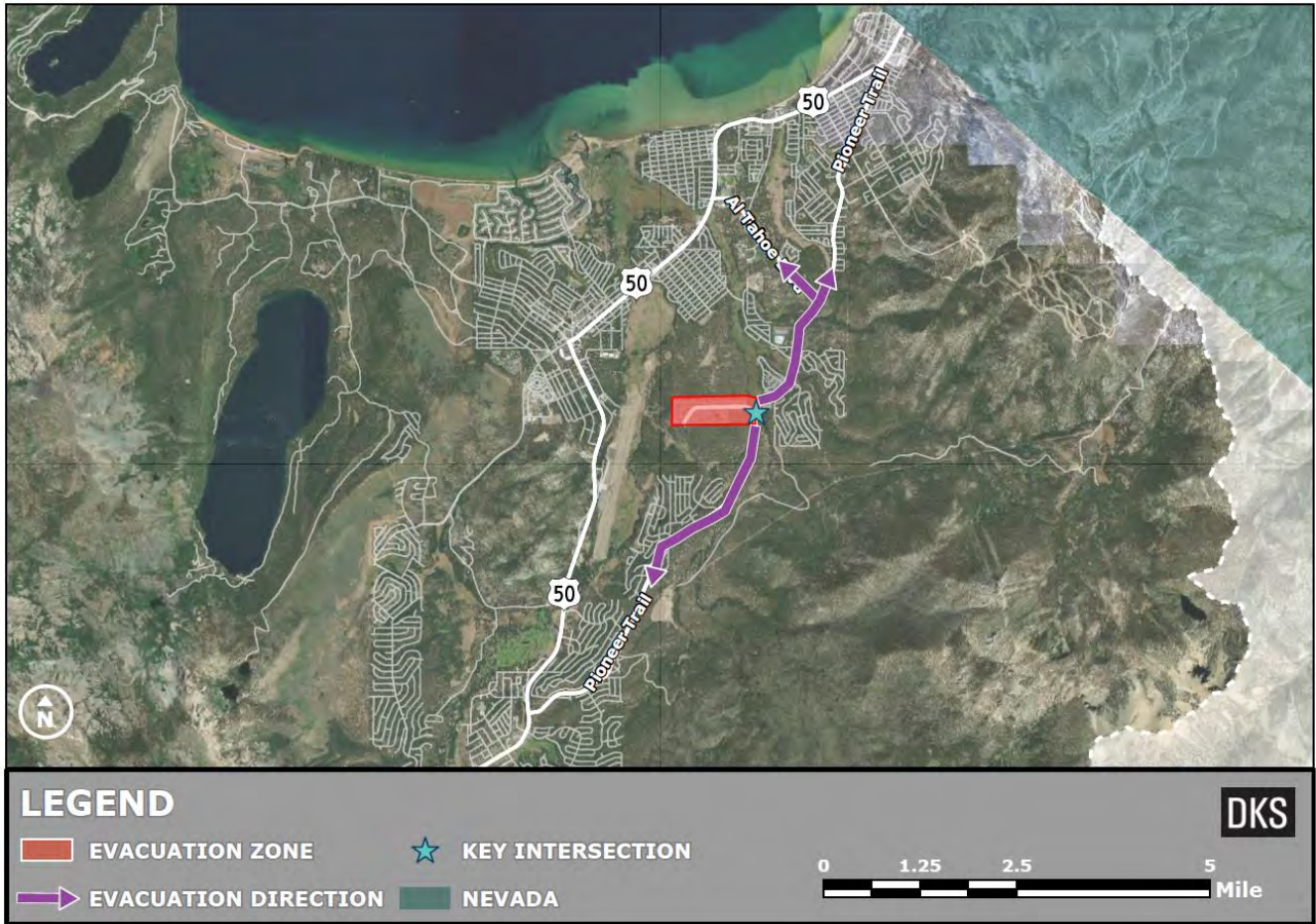


FIGURE 50: POSSIBLE EVACUATION ROUTES FROM GOLDEN BEAR TRAIL

The CAL FIRE Subdivision Review Report recommends the creation of a secondary egress. Given the narrow east/west oriented development, a second access to Pioneer Trail would not provide adequate access. Environmental and topographical constraints and the regional airport limit potential connections to the south and west. To the north, there is forested land with recreation trails that connect to the existing neighborhood centered on Sierra Boulevard. A potential concept is to provide the secondary emergency egress need identified by CAL FIRE is to construct a recreation trail to El Dorado County Emergency Vehicle Access (EVA) standards. This concept as shown in Figure 51 would provide a year-round all ages and abilities recreation trail, while providing emergency evacuation egress for the Golden Bear Trail community. Further assessment is recommended to determine political and environmental feasibility, as well as design standard requirements, such as surface materials and gate technologies.

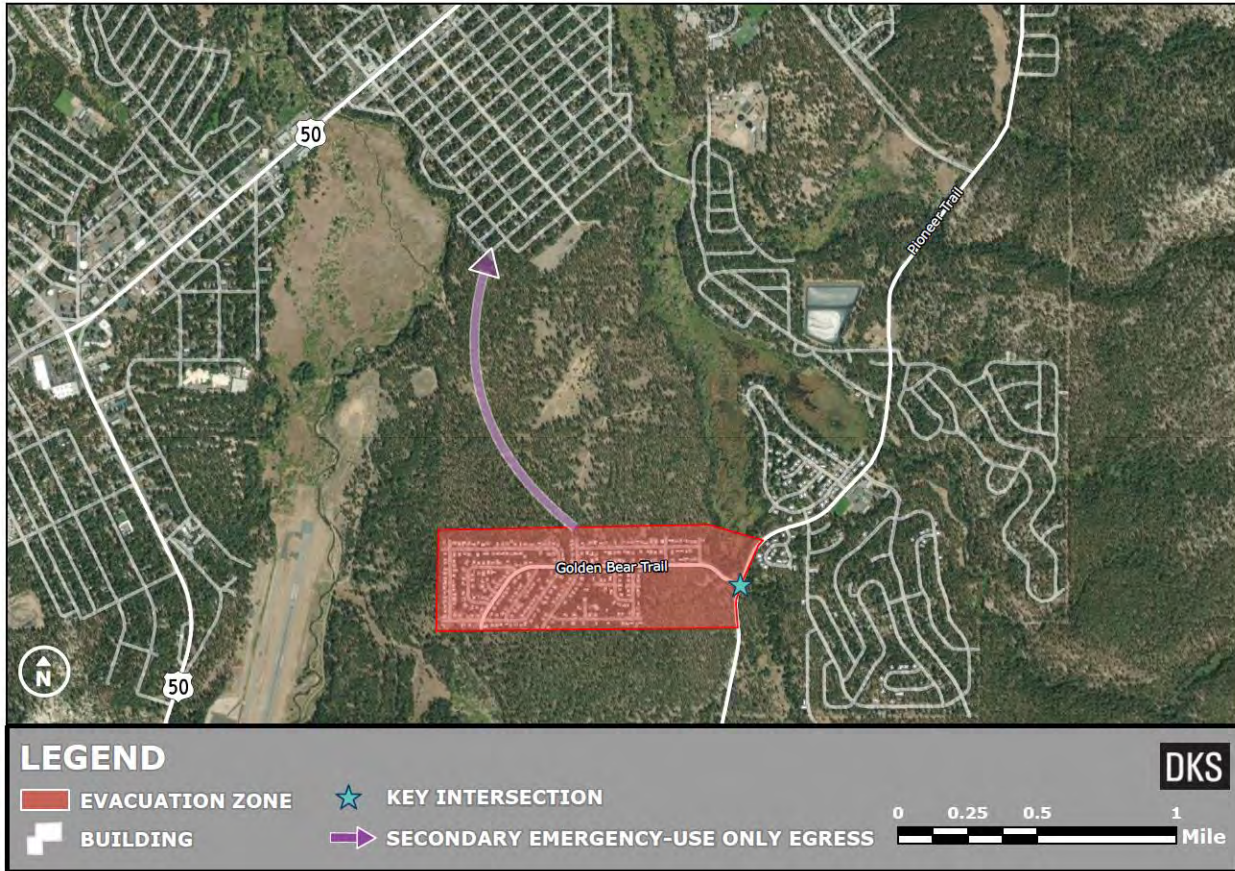


FIGURE 51: GOLDEN BEAR TRAIL SECONDARY ACCESS RECREATION TRAIL/EMERGENCY EGRESS CONCEPT

7.3 RECOMMENDATIONS AND CONSIDERATIONS

- During a wildfire evacuation implement emergency manual traffic control to flag traffic out of the neighborhood.
- Restripe Golden Bear Trail approaching Pioneer Trail to have a left and right turn pocket to avoid a left turning vehicle waiting for a gap from blocking a right turning vehicle.
- Assess the feasibility to widen Pioneer Trail to include a center turn lane to allow a two-stage left turn out to minimize left turn delay.
- Recommendations from the CAL FIRE Subdivision Review reports include:
 - Install reflective evacuation route street signs directing residents from their local roads to the nearest collector road(s) and/or arterial highway(s) based on the standards for emergency management signing in the California Manual on Uniform Traffic Control Devices.
 - Conduct community-wide evacuation drills.
 - Install reflective markers to indicate road edges or other areas of danger that might not be evident during periods of low visibility.
 - Implement on-street parking restrictions during Red-Flag days to avoid blocking access for two-way traffic.
- Further study feasibility of dual use recreation path/emergency use secondary egress.
- An evacuation plan of the Golden Bear Trail Neighborhood, especially when compounded

with a wider-area evacuation order, should consider potential traffic congestion bottlenecks that may impede the evacuation flow.

- South of Golden Bear Trail along Pioneer Trail is the intersection at US-50. This intersection is an existing traffic signal with a planned improvement for a roundabout with a southbound US-50 bypass through lane (similar to US-50 and SR 89 roundabout). This planned improvement will help minimize delay during an evacuation. Larger area evacuations may still need emergency traffic control to manage traffic even with the planned roundabout.
- North of Golden Bear Trail, there are existing traffic signals that may impede evacuation flows without manual traffic control and signal plan changes. Consider connecting the following signals on Pioneer Trail to a central traffic signal system to allow for remote signal timing changes: Black Bart Avenue, Al Tahoe Boulevard, Ski Run Boulevard, and US-50. Traffic cameras can also be added to the signals to monitor conditions remotely.



Placer County Transportation Planning Agency - Placer County Evacuation and Transportation Resiliency Study

Screen Shot of Placer County Evacuation & Transportation Resiliency Study Website and Outreach survey

The screenshot shows the website for the Placer County Transportation Planning Agency. At the top left is the agency's logo, which consists of a stylized 'P' followed by the text 'Placer County Transportation Planning Agency'. To the right of the logo are social media icons for YouTube, Instagram, and Facebook, and a 'Contact Us' link. Below these is a search bar with the text 'Search...' and a 'Go!' button. A blue navigation bar contains the following menu items: Home, About, Transit Planning, Streets & Highways, Bike & Pedestrian, Regional Planning, Governance, News & Calendar, Airport Land Use Commission, South Placer Regional Transportation Authority, and Western Placer Consolidated Transportation Services Agency. The main content area features a large banner with the text 'Wildfires, floods, winter storms. Are you ready to evacuate?' in white and green on a blue background. Below the text are three images: a road with a yellow diamond-shaped sign and a 'NEXT 1 MILES' sign, a flooded road with cars, and a snowy road with a 'Placer County Line' sign and a 'MAXIMUM SPEED 40 ROUTE' sign. At the bottom of the banner is the text 'We need your input!' in orange, a logo for the study, and the text 'PLACER COUNTY EVACUATION AND TRANSPORTATION RESILIENCY STUDY'. To the right of the banner is a 'STAFF CONTACT' box with the following information: David Melko, Principal Transportation Planner, (530) 823-4090, and dmelko@pctpa.net. Below the banner is a section titled 'We Need Your Input for the Evacuation and Transportation Resiliency Study!' with a paragraph of text explaining the study's purpose. Below this is a link to the survey: www.dks-engage.com/placerco-evacplan. Below the link are two bullet points: 'Adding your suggestions to the interactive map' and 'Sharing your feedback and experiences on the available survey'. At the bottom is a paragraph of text: 'Please feel free to contact David Melko at (530) 823-4090 or by email at dmelko@pctpa.net if you have any questions or comments regarding the ETRS project.'

Website Link: <https://www.pctpa.net/placer-county-evacuation-and-transportation-resiliency-study>

Placer County Transportation Planning Agency - Placer County Evacuation and Transportation Resiliency Study

Screen Shot of Placer County Evacuation & Transportation Resiliency Study Website and Outreach

Placer County Evacuation & Transportation Resiliency Study

PCTPA and Placer County Office of Emergency Services are leading a study to enhance transportation and community resilience.

The goal of the study is to improve emergency evacuation and resilience of Placer County's transportation network in the event of a fire, flood, or extreme weather. It will identify vulnerable communities, determine the risks from wildfires and other natural disasters, and recommend improvements and strategies to better protect residents during evacuation. **We want to hear your feedback!**

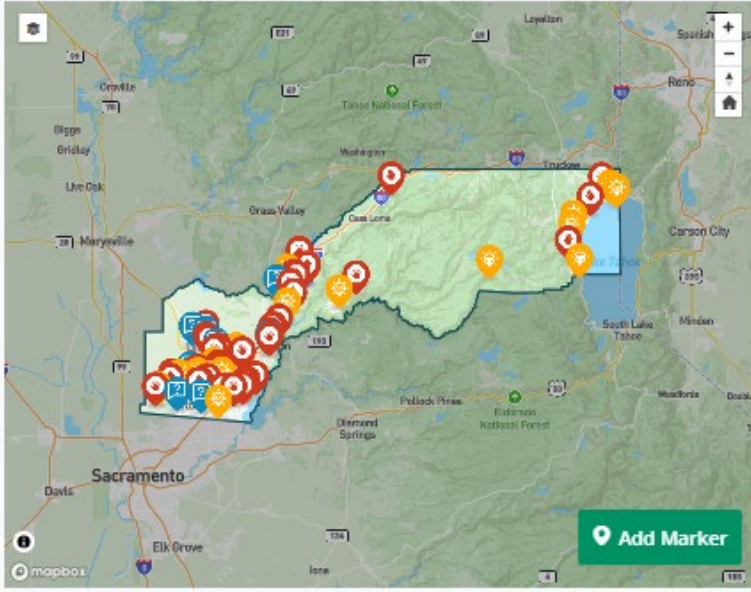
[Open](#)

Share your input to improve evacuation readiness and response!

Pin your comments and suggestions on the map below!

66 contributions so far

Enter an address.



[Add Marker](#)

[Open](#)

Sign Up to Receive More Information

Provide your email address to receive project updates: Required

[Submit](#)

Finished leaving your comments on the map?

[Take our Community Survey!](#)

Download the social media graphic:

English: [Version 1](#) | [Version 2](#)

Spanish: [Version 1](#) | [Version 2](#)

Instructions:

To navigate around the map:

1. Use the search bar to find a specific location
2. Use the +/- buttons in the top right corner of the map to **zoom in and out** (you can also scroll to zoom in/out)
3. Click and drag to move around the map

To leave your comments: Click the 'Add Marker' button in the lower right corner of the map and click the location where you want to leave your comment. Fill out the input form, select the relevant category, and hit the 'Submit' button.

[Add Marker](#)

Add Marker

Category Required

Select a category

Select a category

Area of Concern

General Comment

Ideas & Suggestions

To view the map legend or turn on/off map layers: Select the icon in the upper left corner of the map that looks like a stack of papers. Click the circle to the right of each layer to toggle that layer on/off.



To view additional map instructions: Select the question mark icon just above the map in the upper left corner. The display box will include more instruction information.



Frequently Asked Questions

[English](#)

[Spanish](#)

Website Link: <https://dks-engage.com/placerco-evacplan>

Emergency Response and Evacuation Plan

Tahoe Truckee Waldorf School



August 21, 2025

Prepared for: Tahoe Truckee Waldorf School

Address: 12640 Union Mills Road, Truckee, CA 96161

Town of Truckee Permit # 2021-00000095

Contact: Patrick Kamin



Phillips
Consulting
Services
Fire Safe Planning

Prepared by:

Ronald A. Phillips

530.217.7432

FORWARD

The Emergency Response and Evacuation Plan (EREP) has been prepared for the Tahoe Truckee Waldorf School¹ (School) located at 12640 Union Mills Road in Truckee, California. The focus of the EREP is on emergency preparedness for, and response to, wildfire and hazardous materials events, including mitigation measures and evacuation procedures for the school. Natural and man-made hazards such as severe weather, flooding/seiche, utility/critical infrastructure failure, dam failure, landslide/avalanche, earthquake, civil unrest, terrorism, public health emergencies and transportation emergencies, are not addressed because the School site is not in an area that is prone to such hazards, and/or standard engineering techniques and compliance with applicable regulations will fully address these concerns (see Chapter 3 for more information). The EREP is intended to serve as an Annex to the *Tahoe Truckee Waldorf Comprehensive School Safety Plan* (last updated in 2/6/20).

This EREP is consistent with Condition of Approval Numbers 35 and 65 of the School use permit that requires the school to demonstrate compliance with the following requirement related to evacuation planning: *[35] Prior to an increase in school capacity beyond 44 students, the applicant shall submit a Town-approved emergency response/evacuation plan outlining the procedure for offsite evacuation of the entire campus. This plan must identify the measures that will be implemented by the school to ensure orderly evacuation of the entire campus population during an evacuation warning or evacuation order (as determined by the California Department of Forestry and Fire Protection [CAL FIRE] and the California Governor's Office of Emergency Services [Cal-OES], and defined by the Cal-OES Evacuation Terminology Working Group), using no more than 50 vehicles. Measures could include but not necessarily be limited to use of on-site shuttles, contracting with a transportation company, and/or a establishing a designated classroom evacuation carpool system. The plan should also account for an evacuation order, which requires campus evacuation with vehicles located onsite.*

[65] Prior to building permit (grading) issuance or increase in student population beyond the currently permitted limit of 44 students, the applicant shall provide an emergency response and

¹ See Town of Truckee Permit # 2021-00000095

evacuation plan, prepared by an emergency professional; to be reviewed by the Town of Truckee, TFPD and CalFire. This plan shall address the requirements of Mitigation Measure IX-1.

This EREP also serves as the **Fire Protection Plan** for the School as required by Chapter 49 of California Code of Regulations Title 24, Part 9 (California Fire Code). The EREP addresses the following topics:

- Project Description (Chapter 1)
- Regulatory Setting (Chapter 2)
- Wildfire Risk Assessment (Chapter 3)
- Fire Protection Planning (Chapter 4)
- Emergency Preparedness and Evacuation Planning (Chapter 5)
- Fuel Reduction Management and Defensible Space Concepts (Chapter 6)
- Mitigation Measures and Design Considerations (Chapter 7)
- References and Contacts (Chapter 8)

The objectives of this EREP are as follows:

- a. Reduce the exposure of vulnerable buildings to high intensity flames.
- b. Reduce the quantity of embers accumulating at a building based on factors related to the building characteristics and adjacent fuel treatments.
- c. Reduce the likelihood of urban conflagration due to treatment of fuels in proximity to buildings.
- d. Enhance the level of preparedness by both staff and students for safe evacuation during a wildfire or all-hazards incident requiring an evacuation.

The EREP provides a framework for protection of staff and students from all-hazard events, the prevention of fire, and preparation for responding to an emergency evacuation of the School should the need arise. The EREP is intended to be utilized during the development, construction, and occupancy of the School. The EREP should be updated no less than once every 5 years, or as changes to state and local regulations occur, to ensure that the plan can be effectively utilized by all stakeholders. The EREP should also be evaluated annually and updated after the activation of the plan during an emergency event.

For the purpose of interpreting and applying the provisions found within each chapter the terms shall and should are found throughout. The use of the term “shall” refer to requirements of the

Plan as mandated through State statute or regulation. The use of the term “should” refer to recommendations cited in the document by the authors.

END OF FORWARD

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DEFINITIONS ASSOCIATED WITH THIS PLAN

Building: Any structure used or intended for supporting or sheltering any use or occupancy, except those classified as utility and miscellaneous Group U, as determined by the California Building Standard Codes.

California Building Code (CBC): Refers to the building construction standards described in California Code of Regulations Title 24, Part 2.

California Fire Code (CFC): Refers to the fire and life safety standards described in California Code of Regulations Title 24, Part 9.

Cascading Effects: Refers to dynamics present in disasters, in which the impact of a physical event or the development of an initial technological, or human failure, generates a sequence of events in human subsystems that result in physical, social, or economic disruption.

Compounding Disasters: A situation when two or more catastrophic events occur simultaneously. This may amplify loss and create complex response and recovery challenges.

Critical Facilities: Public and private facilities deemed by a community to be essential for the delivery of vital services, protection of special populations, and the provision of other services of importance for that community. Examples include hospitals, fire stations, police and emergency services facilities, utility facilities, and communications facilities.

Critical Fire Weather: A set of weather conditions (usually a combination of low relative humidity and wind) whose effects on fire behavior make control difficult and threaten life safety.

Defensible Space: Is the design and maintenance of natural and/or landscaped areas in an area where mitigation actions are undertaken to reduce building loss from a wildfire. It is also intended to provide access to firefighters for fire suppression actions and to provide a safe zone for them to work. Defensible space is based on four general concepts:

- a. Elimination of combustible vegetation and other materials within 5' of the building.
- b. Fuel removal or reduction within 100' of buildings in all directions.

- c. Thinning, pruning and removal of continuous and dense uninterrupted layers of vegetation
- d. Removal of ladder fuels within 6' from the ground to prevent fire spread through tree canopies.

Embers: Are hot flying particles that can travel ½ mile or more ahead of the fire front. Where embers land is mostly determined by the local wind patterns.

Emergency Vehicle Access (EVA): A road or other connection designed to connect directly to a through road and used to comply with 14CCR §1273.08 (Maximum Length of New Dead-End Roads). The road shall serve as a secondary means of emergency access and civilian evacuation for the School. EVA's are only used as a civilian egress route when all other options are not viable.

Evacuation: The organized, phased, and supervised withdrawal, dispersal, or removal of civilians from dangerous or potentially dangerous areas, and their reception and care to safe areas.

Evacuation Clearance Time: The estimated time to evacuate people from the time an evacuation order is given until the time when the last evacuee can either leave the evacuation zone or the remaining population must shelter-in-place. The calculation is based on various factors such as the type of hazard or threat, level of notice of the incident, population characteristics of the area at the time, and public behavior.

Evacuation Pick-up Points: refers to temporary locations used exclusively for evacuation embarkation and transportation coordination in a field setting. They may also be referred to as evacuation transportation sites or assembly points. (e.g., bus stops, parks, aircraft landing sites)

Evacuation Route Safety: The likelihood of evacuees or responders being harmed while using potential evacuation routes. Such routes may include (but are not limited to) roadways, pedestrian facilities, and public transportation services.

Evacuation Route Viability: The ability of transportation infrastructure and services to reasonably enable populations to leave an area at-risk and/or reach temporary areas of refuge under a range of emergency scenarios, given the respective time-constraints.

Evacuation Order: An immediate threat to life. This is a lawful order to leave now. The area is lawfully closed to public access.

Evacuation Centers: An interim space(s) that enable evacuees to access basic services and information. For instance, evacuation centers may provide food, water, first-aid, restroom facilities as well as charging stations. Staff at the center will prioritize evacuee needs by helping them transfer to shelters, connect with reunification services, and access additional resources such as vehicle rentals. Evacuation centers may include transfer points, information points, or reception centers. They may also be called a Temporary Evacuation Point.

Evacuation Warning: Potential threat to life and/or property. Those who require additional time to evacuate should leave as quickly as possible.

Ignition Resistant: As applied to building construction materials means a material that, in the form in which it is used, resists ignition or sustained flaming combustion sufficiently so as to reduce losses from a wildland-urban interface conflagration under worst-case weather and fuel conditions. Any material conforming to American Society for Testing (ASTM) Standard No. E2768, or as otherwise approved by the fire agency, shall be considered ignition resistant for the purpose of this Plan.

Noncombustible: As applied to building construction material means a material that, in the form in which it is used, is one of the following:

- a. Material of which no part will ignite and burn when subjected to fire. Any material conforming to ASTM Standard No. E136 shall be considered noncombustible for the purpose of this Plan. Or
- b. Material having a structural base of noncombustible material as defined in Item A above, with a surface material not over 1/8 inch thick, which has a flame spread index rating of 50 or less. Flame spread index as used in this Plan refers to a flame spread index obtained according to tests conducted as specified by ASTM E84 or Underwriters Laboratory (UL) Standard No. 723.

Road: A public or private vehicular pathway to more than four (4) residential units, or to any industrial or commercial occupancy as defined in 14CCR §1270.01.

School Emergency Response Team (SERT): is a group of staff members that manage emergency events on behalf of the school to ensure that both students and staff are adequately protected during the incident. The composition of the School Emergency Response Team will vary according to the circumstances of the emergency event.

Secondary Egress: An adequate secondary egress route that is a road, navigable by a passenger vehicle weighing 6,000 pounds or less, of equal construction standard to the primary road. The secondary road does not have to be rated to carry the same quantity of traffic (e.g., a two-lane paved road and a one-lane paved road is acceptable).

Shelter in Place (SIP): The use of a structure to temporarily separate individuals from a hazard or threat. Sheltering in place is the primary protective action in many cases. Often it is safer for individuals to shelter in-place than to try to evacuate. Sheltering in place is appropriate when conditions necessitate that individuals seek protection in their home, place of employment, or other location when disaster strikes.

Temporary Refuge Area (TRA): Locations that are used by individuals when a hazard is imminent or occurs with no warning, and are meant to provide temporary and limited protection as an incident occurs.

Wildfire: Any uncontrolled fire spreading through vegetative fuels that threatens to destroy life, property or resources as defined in Public Resources Code Sections 4103 and 4104.

Wildland: An area in which development is essentially nonexistent, except for roads, railroads, power lines, and similar facilities.

Wildland Urban Interface² (WUI): A geographical area identified by the state as a “Fire Hazard Severity Zone” in accordance with Public Resources Code Sections 4201 through 4204 and Government Code Sections 51175 through 51189, or other areas designated by the enforcing agency to be at a significant risk from wildfires.

END OF DEFINITIONS

² See 2025 California Wildland Urban Interface Code, Title 24, Part 7, Chapter 2; Definitions.

CHAPTER 1: SCHOOL DESCRIPTION

The Tahoe Truckee Waldorf School is located at 12640 Union Mills Road in the Town of Truckee, California. The Nevada County Assessor Parcel Number for the site is 048-210-012. The property owner is the non-profit organization Friends of Tahoe Truckee Waldorf (FOTTW). The latitude and longitude for the site is 39.365937, -120.130283. The School is located within the Lake Tahoe region. The Project is located approximately 1,200 feet north of U.S. Interstate 80 (I-80), and is approximately three miles east California State Highway 89 (North) and Highway 267 (South). The parcel is approximately 40.1 acres in size. The Town of Truckee 2025 General Plan zoning designation for the site as Rural Residential with one dwelling unit per ten acres (RR 0.10)³.

The School will expand in two phases:

- **Phase 1** expands the use of the existing 4,560 square foot (SF²) classroom building⁴ from 44 students to 95 students⁵;
- **Phase 2** expands the use of the site by adding up to four⁶ new classroom buildings. The number of students attending the school would grow from 95 to 220 students⁷.

The four new classroom buildings in Phase 2 will be modular buildings placed on permanent foundations. Buildings A, B, and D are each approximately 1,960 FT², and Building C is approximately 960 FT². All new classroom buildings will be required to comply with the requirements of the Town of Truckee (Town), the California Building Standards Code (CBC), and Truckee Fire Protection District (TFPD), at the time of building permit issuance.

The existing ingress/egress road serving the School will be increased in width from 12-feet to a 24-foot road, with a two-foot-wide shoulder on either side, to accommodate the use of the road by emergency vehicles and by civilian vehicles during an emergency evacuation. Primary road access to the School is by the approximately one-mile-long Union Mills Road. This private road is maintained through a Road Maintenance Association Agreement by the local land owners.

³ See *Golden Valley Tahoe School Project Initial Study / Mitigated Negative Declaration*. November, 2022.

⁴ The existing classroom building was constructed in 2003.

⁵ Total population of staff and students present at the site will be approximately 95 students and 16 staff members.

⁶ The new classroom buildings are designated on the site plan as Buildings B, C, D and E.

⁷ Total population will be approximately 220 students and 20 staff members.

See Figure 1 for a general vicinity map and Figure 2 for the School site plan.



Figure 1: General Vicinity Map

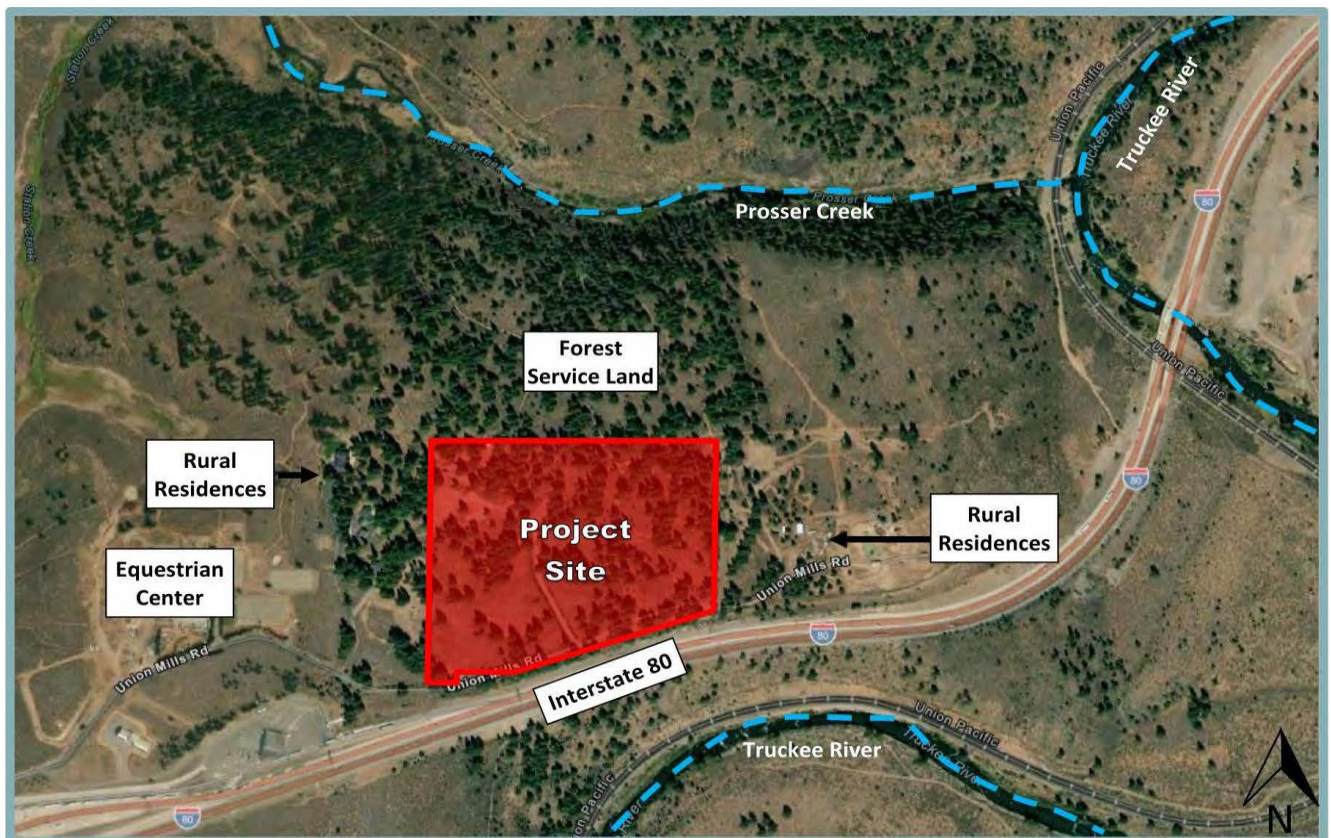


Figure 2: Project Site Plan (Courtesy of Raney Planning and Management Inc, Nov. 2022)

1.2 Surrounding Uses

The general area surrounding the School is rural in nature. Lands to the north of the School are located within the Tahoe National Forest. Prosser Creek Reservoir is located approximately 1.4 miles northwest of the School. Prosser Creek is fed by the reservoir, and is located approximately 1,500 feet north of the School.

One rural residential home and associated agricultural structures are located east of the School. Three residential homes are located west of the School. All properties adjacent to the School are accessed from Union Mills Road. The *Piping Rock Equestrian Center*⁸, located at 12318 Union Mills Road, is located approximately 1,500 feet west of the School.

U.S. Interstate 80 (I-80) is located approximately 1,200 feet south of the School. I-80 is a 4-6 lane transcontinental freeway that connects California with Nevada. There are three State of California government facilities located near the School along I-80. A California Highway Patrol (CHP) Commercial Vehicle Enforcement Facility is located approximately 1,750 feet southwest of the site at 12800 I-80. A California Department of Transportation (CAL TRANS) sand storage facility is located approximately 2,100 feet southwest of the site. A California Department of Food & Agriculture (CDFA) Inspection Facility is located approximately 3,100 feet west of the School.

1.3 Utilities and Infrastructure

Electrical power service to the School is provided by two (2) 120/240-amp transformers that receive their power supply source from the Truckee Donner Public Utility District (TDPUD). Heating and cooking appliances are supplied by two 500-gallon Liquefied Petroleum Gas (LPG) tanks that are located adjacent to the existing classroom building.

Potable water for domestic drinking and fire protection purposes is supplied by an on-site water system owned and operated by FOTTW. The School is served by a 90,000-gallon aboveground steel storage tank that is maintained to provide a reliable water supply for fire protection purposes. One existing dry barrel fire hydrant is located approximately 50-feet south of the existing classroom

⁸ The equestrian center offers a variety of public training and education services. They also provide equine housing services for up to 80 horses.

building. The water system for fire protection is supported by a 40 horse power (H.P.), 750 gallon-per-minute (GPM) electric fire pump⁹ that is located in a pump house next to the water tank.

The School parcel is bisected by a 60kV single-circuit high-voltage overhead transmission powerline owned and operated by the Nevada Energy Company (NV Energy). The powerline is located within a 20-foot right-of-way easement. A seasonal dirt road is located within the easement to provide access to the powerline. See Figure 5 for the location of the powerline on the site.

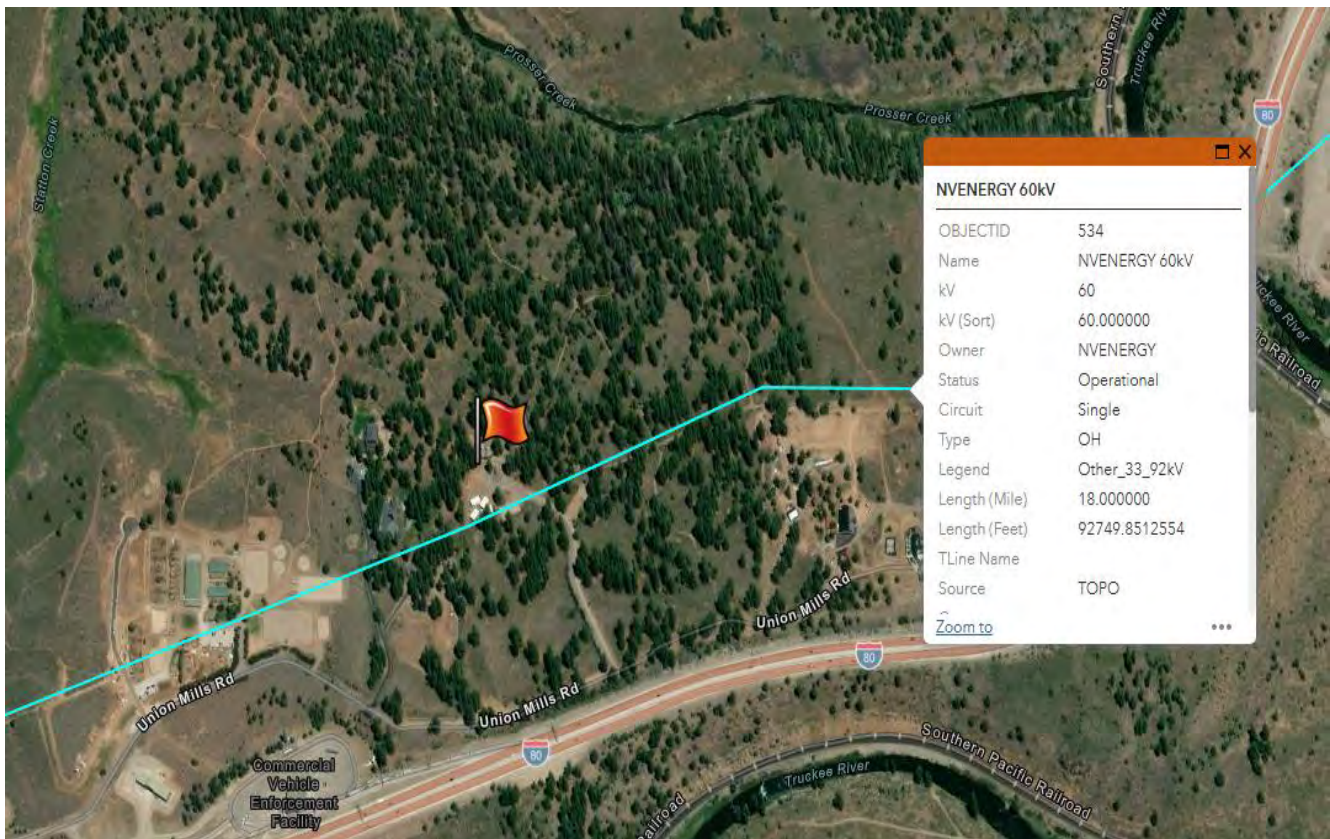


Figure 5: Location of NV Energy 60kV Power Line

The FOTW parcel is not classified as forest lands as defined in the California Public Resource Code¹⁰ (PRC). There are approximately 160 plus mature trees that have been identified on the parcel. The California Department of Forestry and Fire Protection (CAL FIRE) identifies the parcel as being classified as timberlands¹¹.

END OF CHAPTER

¹⁰ See PRC Section 12220[g] for additional details.

¹¹ See PRC Section 4526 for additional details.

Chapter 2: REGULATORY SETTING

2.1 Chapter Overview

Development of the approved School will be subject to Federal and State statutes and regulations, Town of Truckee ordinances and regulations, and Truckee Fire District codes. The key provisions that would address hazards and emergencies within the EREP are summarized below, and, in some cases, reproduced in the appendices.

The Town of Truckee, through its General Plan¹², has identified natural hazards that include severe weather, seismic and geological events, landslides, flooding, and wildfires, as the highest vulnerability to Town residents. A review of the information¹³ provided in the Town of Truckee General Plan shows the School site being vulnerable to the threat of a wildfire. A secondary vulnerability identified by the Town of Truckee is the potential for a hazardous materials incident to occur on I-80 or within one of the State operated facilities within 2,600 feet of the School. The focus of the EREP will be to address efforts to reduce the impact of both threats on the School.

2.2 Town of Truckee General Plan

The 2040 Town of Truckee General Plan contains two sections that provide public safety policy guidance related to the School. Chapter 2 (Land Use Element) and Chapter 8 (Safety and Noise Element). The following polices and actions identified by the Town of Truckee General Plan are applicable to the School:

Policy LU-1.2 Wildfire Risk Management. Minimize wildfire risks through effective land use planning and land management techniques (e.g., defensible space, fire breaks).

Policy LU-5.6 Future Emergency Service Needs. Coordinate with emergency service providers to ensure that emergency service needs can be adequately met to meet Schooled population growth, including fire protection provided by the Truckee Fire Protection District.

¹² See *Town of Truckee 2040 General Plan*, May 2023, [2040 General Plan | Truckee, CA](#) accessed December 14, 2024.

¹³ *ibid*

Policy SN-2.1 Defensible Space Implementation. Assist the Truckee Fire Protection District with the implementation of defensible space requirements, including supporting inspections and enforcement to achieve defensible space and promote vegetation management to reduce fuel loads and ignition sources near existing development.

Policy SN-2.2 Fire Safe Regulations for New Development. Require new development in State Responsibility Areas (SRA) and/or Local Responsibility Areas (LRA) fire hazard severity zones to comply with Fire Safe Regulations (14CCR§1270.00-1276.00); demonstrate adequate ingress and egress for circulation and evacuation; ensure adequate signing and building numbering, building siting, setbacks, and fuel modification including vegetation clearance maintenance on public and private roads; identify the location of anticipated water supply; and demonstrate adequate water flow for fire suppression needs. Adequate compliance with these requirements shall be determined by either the Truckee Fire Protection District or the County Fire Marshal (i.e., CA FIRE), as appropriate.

Policy SN-2.4 Water Supply for Fire Safety. Coordinate with the Truckee Donner Public Utility District to ensure and maintain the long-term sustainability of water supplies to meet current and anticipated future firefighting needs.

Policy SN-2.5 Fire-Resistant Landscaping. Require new development to include fire-resistant species in landscaping.

Policy SN-2.9 Reduction in Ignition Sources. Assist with efforts by the Truckee Fire Protection District to reduce ignition sources and ignition potential (e.g., campfires, barbecues, chainsaws, smoking, electrical and power equipment).

Action SN-2. I Fire Protection Plans. Require the preparation of a School-specific fire protection plan that addresses risk analysis, fire response capabilities, fire safety requirements (i.e., defensible space, infrastructure, and building ignition resistance), mitigation measures and design considerations for non-conforming fuel modification, wildfire education maintenance and limitations.

2.3 Fire Safe Regulations

California Public Resource Code (PRC) Section 4290. The State Board of Forestry has the authority to adopt regulations for minimum fire safety standards applicable to SRA lands under the authority of the department, and to VHFHSZs. The Fire Safe regulations are codified in CCR, Title 14 (Natural Resources), Division 1.5 (Department of Forestry), Chapter 7 (Fire Protection) under Subchapter 2 (SRA Fire Safe Regulations), §§ 1270-1276. These regulations generally address the following:

- Standards for signs identifying streets, roads, and buildings.
- Minimum private water supply reserves for emergency fire use.
- Fuel modification standards for fuel breaks and greenbelts.
- Road and driveway standards for emergency fire equipment access and public evacuation.

They do not supersede local regulations that equal or exceed minimum regulations adopted by the State (PRC § 4290(c)).

California Building Standards Code

The State of California has adopted a minimum model code for use within all 58 counties of the State. These provisions can be found within California Code of Regulations Title 24 – Parts 1 through 12. The code is updated on a triennial basis with the last update occurring on January 1, 2023.

The California Building Standards Code is a compilation of three types of building standards from three different origins:

- Building standards that have been adopted by state agencies without change from building standards contained in national model codes;
- Building standards that have been adopted and adapted from national model codes to address California’s ever-changing conditions; and
- Building standards, authorized by the California legislature, that constitute amendments not covered by national model codes, that have been created and adopted to address particular California concerns.

All occupancies in California are subject to national model codes adopted into Title 24, and occupancies are further subject to amendments adopted by state agencies and ordinances implemented by local jurisdictions' governing bodies.

2.4 Defensible Space Regulations

California PRC Section 4291 / Government Code (GC) Section 51182. These State statute and regulatory provisions define and describe mandatory fire protection measures and responsibilities for maintaining defensible space that apply to all property within the SRA in California. Per GC § 51182, defensible space regulations also apply to all property in the VHFHSZ within the Local Responsibility Area (LRA).

The defensible space requirements include, but are not limited to, the following:

- 100 feet minimum of vegetation management (“defensible space”) around homes
- Removal of dead/dying vegetation
- Vegetation removal around chimneys/stovepipes

Depending on the area, defensible space requirements may include certain exemptions and exceptions from code. Moreover, jurisdictions may require extension of the minimum distance beyond property lines or as needed for insurance. The State Board provides direction for complying with the defensible space regulations in CCR Title 14, §§ 1299.01- 1299.05 which incorporates by reference additional information outlined in the State Board’s General Guidelines for Creating Defensible Space. Due to the recent passage of AB 3074 (2020), defensible space compliance will soon require more intense fuel reduction activities and the creation of an ember-resistant zone within 5 feet of a structure. The State Board will provide additional guidance and must amend the regulations to reflect these changes on or before January 1, 2023.

2.5 Other Plans and Regulations

Truckee Fire Protection District Ordinance 01-2022 (Fire Code)

The Truckee Fire Protection District (TFPD) has adopted the 2022 California Fire Code (CFC) with several local amendments which are more restrictive than those described in the CFC. TFPD updates its local fire code ordinance in conjunction with the triennial update to the California Building Standards Code. Specific local amendments contained within the ordinance that may impact the School include the following:

- Fire lane marking requirements described in Section 503.3.1
- Security gate design criteria as described in Section 503.6
- Address identification criteria as described in Section 505.1
- LP-Gas storage tank limits as described in Section 6104.2
- Residential fire sprinkler system installation requirements found in Chapter 80.
- Fire-Flow requirements for buildings as described in Appendix B

See Appendix F for a copy of the local fire safety standards that are more restrictive than the State of California.

Truckee Fire Protection District Ordinance 02-2012 (Defensible Space)

TFPD has adopted local regulations related to Defensible Space on all parcels located throughout the district. Specific provisions contained within the ordinance that may impact the School include the following:

- Findings and purpose for the need to have more restrictive requirements;
- Defensible space requirements;
- Abatement and enforcement provisions;
- Appeals by property owners;
- Miscellaneous provisions.

California Environmental Quality Act California Code of Regulations Title 14, Division 6, Chapter 3 defines the administrative regulations governing the implementation of the California

Environmental Quality Act¹⁴, otherwise known as CEQA. This regulation applies to all public agencies in the State, including local governments such as the Town of Truckee. The CEQA guidelines are intended to assist local agencies in determining whether an activity subject to further environmental review, what steps are involved in the environmental review process, and the required content of the environmental documents prepared for the project.

In November, 2022, the Town of Truckee Planning Division prepared an Initial Study/Mitigated Negative Declaration report for the Golden Valley Tahoe School Project¹⁵. Section IX.f (Hazards and Hazardous Materials) evaluated the potential for the Project to impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. The Town's evaluation of this potential impact stated the following:

*“The Town of Truckee does not have an adopted emergency response plan or emergency evacuation plan, with which the proposed project could interfere. Nevertheless, this section will more broadly consider emergency response and evacuation and the project’s potential effects thereupon. During construction of the proposed project, all construction equipment would be staged on-site so as to prevent obstruction of local and regional travel routes in the Town that could be used as evacuation routes during emergency events. With respect to project operations, the proposed project would not alter the existing circulation system in the surrounding area. The proposed project’s roadway improvements would facilitate access for emergency vehicles by way of the widened access road. However, in the event of an evacuation, the proposed project, at full capacity, would result in the need to evacuate an additional 196 students, which could interfere with evacuation of nearby residents or emergency vehicles responding to the area. As a result, the project could have a **potentially significant** impact with respect to impairing the implementation of or physically interfering with an adopted emergency response plan or emergency evacuation plan.”*

This EREP is intended to describe how the Project will meet this mitigation measure.

¹⁴ See CEQA: The California Environmental Quality Act; [CEQA: The California Environmental Quality Act - Office of Land Use and Climate Innovation](#)

¹⁵ The Project was previously known by this name.

Nevada County Hazard Mitigation Plan

In 2024 the County of Nevada County developed a comprehensive Hazard Mitigation Plan (HMP) to reduce risks associated with disasters that occur within the County. The HMP includes a countywide assessment of hazards, risks, and capabilities. The HMP was developed by the County and seven participating local jurisdictions, including the Town of Truckee.

Town of Truckee Ordinance 2025-04

In May, 2025, the Town of Truckee adopted Ordinance 2025-04, adopted the State of California Fire Hazard Severity Zone Map, and also amended Chapter 15.03 of the Truckee Municipal Code regarding Fire Hazard Severity Zone classifications.

END OF CHAPTER

CHAPTER 3: WILDFIRE RISK ANALYSIS

3.1 Fire Hazard Versus Fire Risk

The threat of wildfire exposure to people, critical infrastructure, structures, and communities is based upon a comprehensive vulnerability assessment of an area. Wildfire risk is based on several factors: likelihood, intensity, exposure, and susceptibility. Understanding which factors affect the community can help to prioritize risk reduction strategies.

This vulnerability assessment is usually completed through the evaluation of both *fire hazard* and *fire risk* factors. The term “hazard” describes the density of live or dead vegetation that may be ignited by the various fire risks or causes that can increase a fires intensity or rate of spread such as topography or weather conditions. The term “risk¹⁶” describes the probability of adverse wildfire exposure to people, to structures, critical assets/infrastructure and other values at risk located in the WUI Zone.

A comprehensive fire risk analysis is an important component of this EREP for the School. The risk assessment described in the following sections of this Chapter evaluate the factors described in Table 1 when assessing the wildfire exposure potential for the School:

Table 1: Hazard and Risk Assessment Factors

Hazard Assessment Factors	Risk Assessment Factors
<ul style="list-style-type: none"> • Vegetation (fuel) types present • Topography of the area • Weather conditions present during both seasonal and critical fire weather periods • Other criteria as determined by either CAL FIRE or the local fire agency 	<ul style="list-style-type: none"> • Local Fire Protection Capabilities • Water Supply Sources for Fire Protection • Hazardous Fuels and Structure Ignitability • Emergency Vehicle Access • Population in Area / Evacuation Routes • Critical Assets / Infrastructure at Risk

¹⁶ National Fire Protection Association Standard No 1144 (2018); Chapter 3, Section 3.3.19

3.2 Wildland Urban Interface Fire Risk Evaluation for the School

The overall risk rating can be described as Low, Moderate, High, and Very-High. When analyzing individual fire risk factor ratings within the School area the following terms are used:

- **LOW RISK** – Fire risk factors present typically do not support rapid fire spread.
- **MODERATE RISK** – Fire risk factors present may support moderate fire spread, but burning ember distribution is limited to less than ½ mile.
- **HIGH RISK** – Fire risk factors present may support rapid fire spread and ember distribution beyond ½ mile.
- **VERY-HIGH RISK** – Fire risk factors present may support extreme fire spread and intensity.

The following fire risk evaluation is the opinion of the EREP author, and is based upon field observations and research related to the School and surrounding community. This evaluation is based on information described in Table C101 (*Community WUI Fire Hazard Evaluation Framework*) of California Code of Regulations Title 24, Part 7 (2025 California Wildland-Urban Interface Code).

It is important to remember that the risk factor ratings described do not infer that a community is at greater or less risk due to its overall rating. Fires can, and do, cause significant damage to property even when they occur in areas that may receive an overall low or moderate rating. Failure to maintain adequate defensible space, critical fire weather conditions, and/or lack of available fire suppression resources due to other emergency incidents, may cause a fire to increase its intensity and fire spread beyond the capabilities of firefighters on scene.

Table 2 provides the analysis of the wildfire risk evaluation factors that are specific for the School site. See Sections 3.3 to 3.12 for the specific analysis for each category described within the above rating sheet.

See Section 3.13 regarding an analysis of other potential all-hazard risk factors that may impact the School site, and may potentially require additional mitigation efforts. The additional analysis performed evaluates flooding, hazardous material transportation accidents, and seismic and geological risks.

Table 2: Wildfire Risk Evaluation for the School

No.	Risk Factor	Low	Moderate	High	Very-High	Rating
3.3	Fire Hazard Severity Zone				X ¹⁷	Very High
3.4	Fire History		X			Mod
3.5	Local Fire Protection Capabilities		X			Mod
3.6	Water Supply for Fire Suppression			X		High
3.7	Emergency Vehicle Access			X		High
3.8	Hazardous Fuels			X		High
3.9	Structure Ignition Potential			X ¹⁸		High
3.10	Evacuation Routes		X			Mod
3.11	Public Emergency Notification		X			Mod
3.12	Critical Assets / Infrastructure at Risk			X ¹⁹		High
	Total	1	3	5	1	

Overall Wildfire Risk Rating: Moderate - High Risk

NOTE: One Very High-Risk factor (Fire Hazard Severity Zone) is currently found in the School area.

¹⁷ For purposes of building construction requirements all areas of the Town are classified as being in a VHFHSZ. See Town of Truckee Municipal Code Section 15.03.040 and TFPD Ordinance 1-96 for additional details.

¹⁸ The structure ignitability potential is "Moderate" for the existing classroom building in Phase 1.

¹⁹ The two assets identified are the education facility use of the Project, and the NV Energy 60kV power transmission lines that crosses the property just south of the campus.

3.3 Fire Hazard Severity Zone

The term Fire Hazard refers to the dangerous accumulation of flammable fuels in open space areas and other wildland urban interface areas (WUI). It is typically described at the landscape (area) level, usually referring to the density of live or dead vegetation that may be ignited by the various fire risks or causes that can increase a fire's intensity or rate of spread. Fire hazard is based on the vegetation types likely to be present over the next 50 years that contribute to fire severity and ember production, the topography of the area, and the average fire weather conditions present in the area.

Fire Hazard ratings are provided by CAL FIRE as part of their *Fire Hazard Zone Severity Mapping* program. One of the major hazards in the Truckee region is the threat of a disastrous wildfire endangering both people and property. The School is also located within a designated²⁰ Wildland Urban Interface (WUI) community identified by the Federal Government as being at risk from a large wildfire due to fire behavior potential and values at risk.

The area is vulnerable to the threat of wildfire throughout the year subject to a variety of conditions including, but not limited to:

- Daily weather conditions such as air temperature, humidity, wind speed and direction.
- Climatic conditions such as drought, extended seasonal periods of hot, dry weather typically found in the summer and fall months, or seasonal rains typically found in the winter and spring months.
- Fuel moisture and growth cycle periods, especially in fine fuels such as the herbs and shrubs that are prevalent in the area.
- Human caused ignition factors such as arson, escaped debris burns and unsafe equipment operation.

The School area is located within a Local Responsibility Area (LRA) for wildfire management. Wildfire suppression and prevention efforts are provided by the Truckee Fire Protection District

²⁰ Federal Register *Urban Wildland Interface Communities within the Vicinity of Federal Lands that are at High Risk from Wildfires*; (January, 2001); [Federal Register :: Urban Wildland Interface Communities Within the Vicinity of Federal Lands That Are at High Risk From Wildfire](#)

(TFPD). The Town of Truckee has classified all lands within the boundaries of the School as being within a Wildland Urban Interface (WUI) area²¹ for the purpose of determining the construction and maintenance requirements of the California Building Standards Code (CCR Title 24, Parts 1-12. CAL FIRE has mapped the School property as being within a LRA **High Fire Hazard Severity Zone (HFHSZ)**.

Lands within 1,000 feet of the School are located in either a LRA Very-High Fire Hazard Severity Zone or Federal Responsibility Area (FRA) undesignated zone. The predominant wildfire risk to the School site is located approximately one-half (1/2) mile north in the Prosser Creek and Boca Hill area. The fire hazard classification for the School area is illustrated in Figure 6.

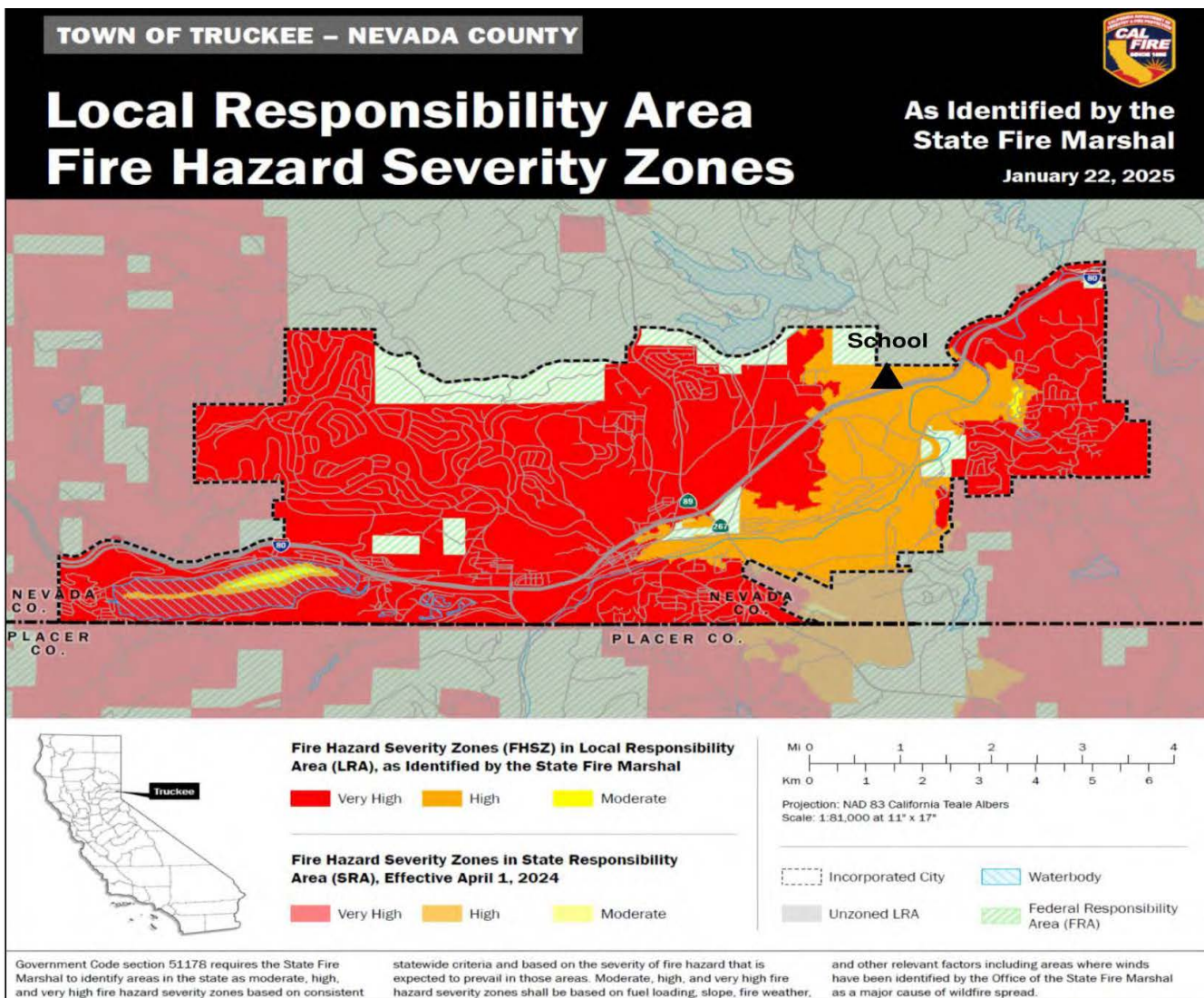


Figure 6: Fire Hazard Severity Zone Map for the School

²¹ See Town of Truckee Ordinance 2025-04 for additional details.

The Truckee Fire Protection District has created a Community Wildfire Protection Plan (CWPP) for the Town and surrounding areas. The CWPP has completed a wildfire risk assessment for the community which includes the evaluation of fuels, weather, and topography for the area. This risk analysis shows that the School is located within a WUI Intermix area. See Figure 7 for additional information.

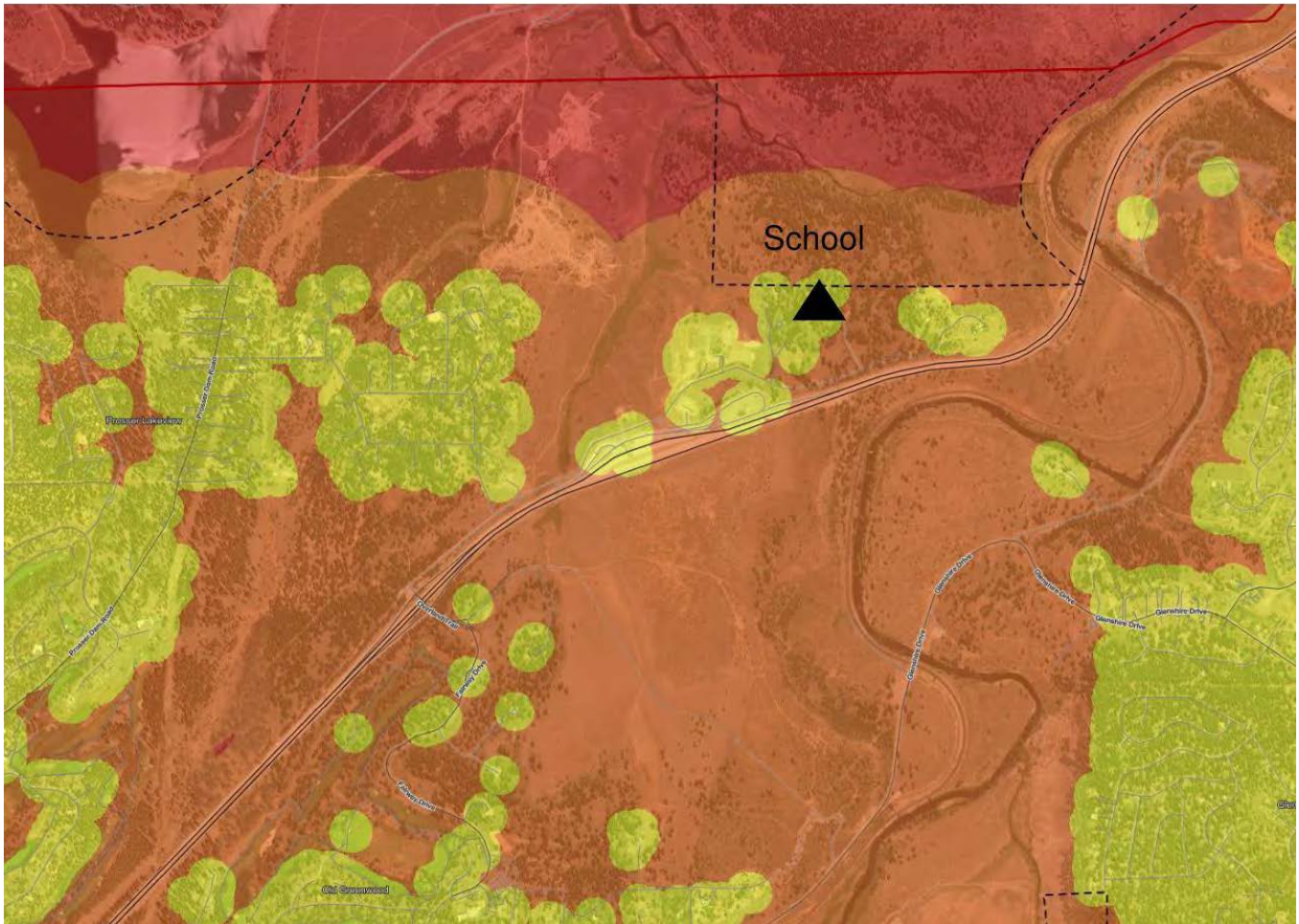


Figure 7: Truckee Fire Community Wildfire Protection Plan

Local Fire Weather Conditions

Predominant weather patterns in the Truckee area are characterized by hot dry summers and mild to cold winters. The annual precipitation in the Truckee area is generally snow with accumulations of 10 to 20 feet. Predominate winds are southwest but commonly becomes north to northeast following weather systems. Annually fire weather conditions become critical in late July through October. Red Flag warnings are common throughout the summer and largely attributed to lightning, low relative humidity, or strong north winds. An average summer day is 85-95 degrees, winds

southwest 0-7 with relative humidities in the range of 20-25 percent. Under these common conditions the ignition potential and likelihood of a fire growing into a significant event is high.

Local Topographic Conditions

The topography in the general area of the School is classified as being a “Sierra Mixed Conifer” terrain type which transitions from the Central Valley area of California to the Sierra Nevada Mountain range. Elevations within the School area generally range from 5,780 feet to 5,820 feet. The School is currently graded and slopes are generally flat. Most of the land within the School has west facing aspects. See Figure 8 for the existing topographic condition of the School area.

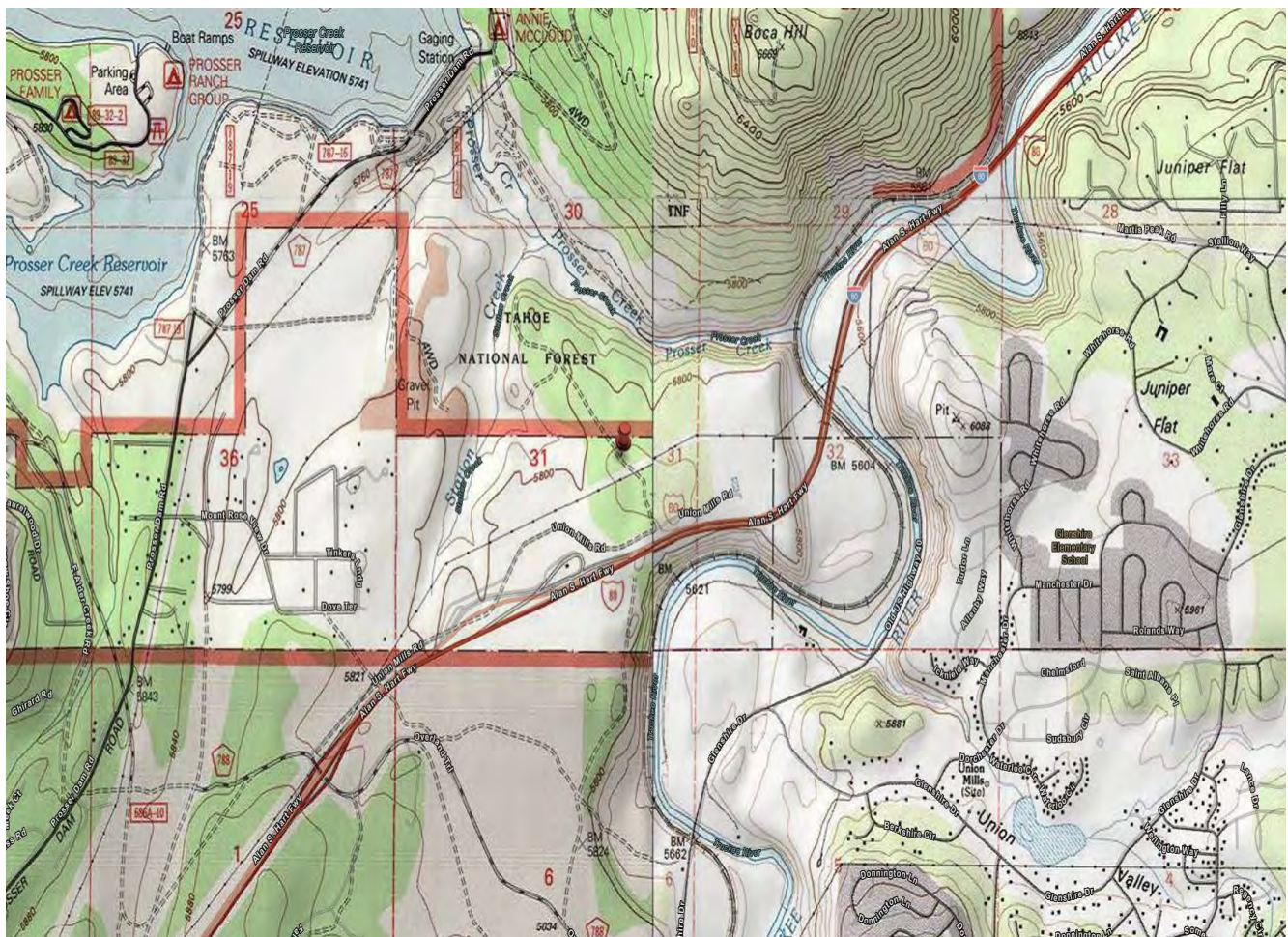


Figure 8: FOTTW Topographic Map

The risk assessment factor assigned to the Fire Hazard vulnerability of the School is rated as **High**. This rating is due to the natural vegetation (fuel) types found in the general area, local topography, and critical fire weather conditions frequently observed. It also includes the potential for a nearby wildfire to easily distribute embers and fire brands in the School area.

3.4 Fire History

Fire history data provides important spatial data regarding fire spread, fire frequency, ignition sources, and vegetation types across a given landscape. Fire history reviewed for this analysis uses the annual historical fire perimeter data from across public and private lands in the Fire and Resource Assessment Program (FRAP) database from CAL FIRE. Fire history data has been recorded by the State of California since 1900.

According to available data from the CAL FIRE FRAP database²², eight (8) large wildfires have burned within a 1-mile radius of the School. None of these wildfires have directly impacted the School site. Three of these fires, 1,305-acre fire in 1977, a 386-acre fire in 1978, and a 12-acre fire in 2003, burned to within ½ mile of the School site in the last 30 years. Wildfire history for the general area surrounding the School is illustrated in Figure 9.

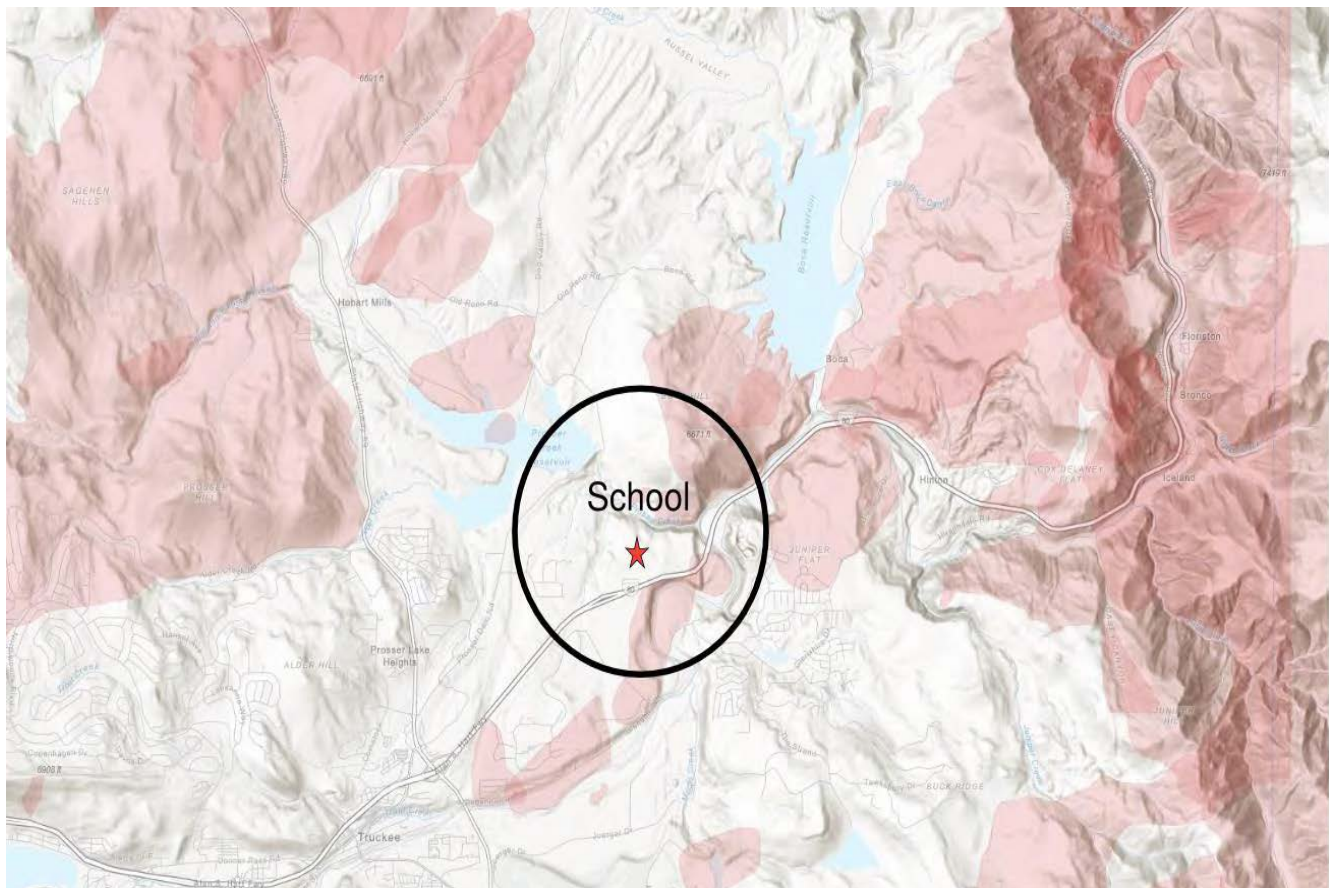


Figure 9: Fire History for the School Site

²² See CAL FIRE FRAP Program Website: [Fire Perimeters | CAL FIRE](#)

While reviewing fire cause data reported by CAL FIRE for Nevada County over the period between 2012-2022, the following ten leading causes of local wildland fires were identified:

- | | |
|--------------------------|----------------------------------|
| 1) Debris Burning | 6) Power Equipment |
| 2) Undetermined | 7) Arson |
| 3) Equipment | 8) Natural - Lightning |
| 4) Other | 9) Recreation / Campfires |
| 5) Vehicle | 10) Smoking |

It is important to note that the frequency of fire causes does not necessarily correlate with [a] the numbers of acres destroyed, [b] the number of persons injured or killed by a wildfire, or [c] the number of structures damaged or destroyed by a wildfire. As an example, the Caldor wildfire, one of the largest fires during this reporting period in the region for acreage lost, structures damaged and/or destroyed, and injuries and / or deaths, was determined to be caused by target shooting activity which falls into the "other²³" category. Factors such as severe weather conditions present when the wildfire ignites, structure density in proximity to the wildfire, response and availability of firefighting resources, and the level of preparedness by the property owner prior to the fire igniting are also critical factors in the outcome of the wildfire. Nine of the ten fire ignition cause categories are considered to be human related²⁴.

The risk assessment factor assigned for the Fire History vulnerability of the School is rated as **High**. The local fire history for the area around the School shows an increased probability of a wildfire impacting the School area. Fire frequency in the general area of the School shows that large wildfires occur in the Truckee area on average of once every 25 years.

This makes it highly probable that a wildfire will impact the School area in the lifespan of the classroom buildings located within it. As most wildfires are human caused it is likely that the frequency of fires in the area will increase.

²³ "Other" common causes that fall into this category include wildfire that are caused by a structure fire, spontaneous combustion, fireplace ashes deposited in the wildland, barbecuing, cooking fires, and fireworks.

²⁴ Excludes Natural-Lightning caused fires.

3.5 Local Fire Protection Capabilities

Local government fire protection and rescue services for the School are provided by the Truckee Fire Protection District (TFPD). Wildfire protection for the adjacent undeveloped LRA lands near the School are the responsibility of the local agency. Emergency medical services, including ground ambulance transport, are provided to the School by TFPD.

There are two (2) nearby fire stations in the vicinity of the School:

- Truckee Fire Protection District (TFPD) Station No. 96 located at 10277 Truckee Airport Road. Station 96 is approximately 5.6 miles west of the School site. This station houses Engine 96, an advanced life support Type I fire engine staffed each day with four (4) firefighters
- Truckee Fire Protection District (TFPD) Station No. 92 is located at 11473 Donner Pass Road. Station 92 is approximately 6.2 miles west of the School site. This station houses Engine 92, an advanced life support Type 1 fire engine staffed each day with four (4) firefighters. Station 92 also houses the district ladder truck for use on large-scale structure fires.

The next three (3) closest fire stations are CAL FIRE Station 50 located at 10277 Truckee Airport Road, TFPD Station 95 located at 10900 Manchester Drive, and TFPD Station 97 located at 53823 Sherritt Lane. All three fire stations are approximately 10 to 15 minutes from the School when traveling in typical road conditions for responding fire apparatus.

The School is located within an Insurance Service Office (ISO) Class 4/4X rating area. Emergency response travel times for the first arriving unit to the School are, on-average, less than 10 minutes²⁵. These response times are consistent with TFPD guidelines which calls for an average response time to emergency calls of ten minutes or less in the Town.

The risk assessment factor assigned to the local fire protection capability serving the School is described as **Moderate**. The School is served by a local fire department that meets the emergency

²⁵ Response times are based on an average 90 second turnout time by firefighters from their station plus travel time using the closest roads available to the project. The response time standard is based on the closest station (Station 95) only, and not the average response times of all resources responding to an incident.

response travel time requirements of the Town. An effective initial alarm response force²⁶ can be achieved with the deployment of fire engines from TFPD and CAL FIRE, and the surrounding fire agencies to contain a Low-Hazard²⁷ structure fire to the building of origin.

3.6 Water Supply Source for Fire Protection

The design, installation, and maintenance of the water supply system for fire protection shall be in accordance with CCR Title 14 §§ 1275-1275.04 (Emergency Water Standards) and CCR Title 24 – Part 9 (California Fire Code), Section 507 (Fire Protection Water Supplies). The School operates a private water supply system for both fire protection and drinking water purposes. The existing classroom building in Phase 1 was constructed in 1995.

An existing 90,000-gallon steel-core water storage tank is located on the property, and is dedicated for fire protection purposes. The tank is supplied by an on-site well. In addition, a 40 Horsepower, 60 Hz electric motor, stationary fire pump capable of providing 750 gallons per minute of water serves both the existing classroom building automatic fire sprinkler system and a fire hydrant. There is one (1) existing Clow dry barrel fire hydrant located approximately 60-feet south of the existing classroom building near the fire apparatus access road.

The emergency water supply requirement for both phases of the Project are identified in Table 3.

Table 3: Fire Flow Requirements

Phase	Fire-Flow Calculation Area (square feet)	Automatic Fire Sprinkler System	Minimum Fire-Flow (gallons per minute)	Flow Duration (hours)
1	4,560 S.F.	Yes	750	2
2	1,802 S.F. ²⁸	No	1,500	2

²⁶ Defined as the minimum number of firefighters and equipment that must reach a specific emergency incident within a maximum prescribed travel [driving] time.

²⁷ Defined as one-two-or three-family dwellings and scattered small business and industrial occupancies.

²⁸ The total fire area calculated is based on Buildings C-D combined. This is based on a minimum 15-foot separation between the two buildings which increases the potential for building-to-building ignition.

The risk assessment factor assigned to the water supply source for fire protection serving the School is described as **High**. The required fire flow for Phase 1 of the School has been met using the existing fire protection system. The required fire flow for Phase 2 will require modifications to the existing fire protection system that serves the site. All modifications to the fire protection system design as part of Phase 2 will need to be approved by TFPD prior to the issuance of an occupancy permit.

3.7 Emergency Vehicle Access

The Project is located in the Prosser area of Truckee, and is approximately 1.4 miles southeast of Prosser Creek Reservoir. Access to the Project is provided by Union Mills Road. This road *meets California Code of Regulations Title 14, Section 1273.08 requirements for emergency vehicle access*. Union Mills Road is a private road owned and maintained by the property owners served by the road. The road is located within a reciprocal access easement and is maintained in accordance to the provisions outlined within a Road Maintenance Agreement (RMA) between the property owners.

The Project is just north of U.S. Interstate 80, a major transportation route through the Truckee area, thereby providing adequate Emergency Vehicle / Evacuation Access Road²⁹ (EVA) routes for automatic and mutual aid fire equipment to quickly arrive in the area. Union Mills Road connects to Overland Trail at one location west of the School to provide access to the site.

The School is served by a private road designed in accordance with both state and local fire safe regulations. The private road on the campus is approximately 20-feet in width. The private road on the campus is approximately 1,087-foot-long and is a dead-end road. The private road serving the campus will have fire lane parking restrictions on both side of the road which will be enforced by the School.

The risk assessment factor assigned to the local fire apparatus access serving the Project is described as **High**. The Project is located within a rural community area which may lead to road congestion delaying emergency equipment access during peak traffic times. In addition, all roads

²⁹ The term *Emergency Vehicle Access* is defined as a road or connection designed to connect directly to a through road and used to comply with 14CCR§1273.08. The road shall serve as a secondary means of emergency vehicle access and civilian evacuation for the Project.

in the area are two-lane roads that can potentially be impacted by concurrent events leading to the evacuation routes becoming compromised during a wildfire.

3.8 Hazardous Fuels

The term Hazardous Fuels³⁰ is used to describe the following types of flammable vegetation found in the community:

- Excess woody materials on the ground or in the forest understory or canopy that can increase the severity of a wildfire;
- Any kind of living or dead vegetation that is flammable;
- “Weeds” and dead or dying trees that endanger public safety by creating a fire hazard.

Hazardous Fuels serve as one of the primary pathways for wildfires to spread into the Wildland Urban Interface (WUI) community. This is accomplished by one or more of the following means:

- Direct flame contact, when buildings ignite through direct contact with flames from an approaching wildfire;
- Radiation, the intense heat emitted by flames that increases the temperature of combustible materials on or within a building; and
- Firebrand ignition, when flammable vegetation or structural materials break off and travel ahead of an advancing wildfire, as seen with embers.

The School site is located within areas classified as “Mixed Conifer” habitat. The predominant natural vegetation types found within 1-mile of the School include Tall Grasses (GR2), Chapparal (SH4) and Very High Load Dry Climate Timber with Understory Fuels (TU5). Live and dead fuel loading in the area is generally Moderate.

Hazardous Fuels for the general area surrounding the School are illustrated in Figure 10³¹.

³⁰ *Treating Hazardous Fuels at a Scale that Makes a Difference*; U.S. Forest Service Fact Sheet FS-1189e, April 2022

³¹ Pyrocast GIS Fuel Map (Accessed April 10, 2025); [Wildfire Forecasts \(pyrocast.org\)](https://www.pyrocast.org)



Figure 10: Vegetation Types Found in Area

The Prosser Creek and Boca Hill areas are north and east of the School, and are covered with continuous unmanaged vegetation that have sufficient fuel to sustain the spread of a surface fire to within 1,000 feet of the School. The School is located on a west facing slope in a mixture of vegetation types that will permit firebrand ignition to easily reach the School during a wildfire from both the south and east. The area within the School will be predominantly hardscape (roads, walkways, etc.), school buildings, and other improvements, which will not slow down or stop fire spread.

The risk assessment factor assigned to the Hazardous Fuels located on the School is described as **High**. The School is located south and west of the Boca Hill area. This area is currently classified as a wildland area. No natural physical barriers, such waterways, greenbelts, and rock outcroppings, exist in the area to slow down or prevent fire progression.

The use and maintenance of the “Fire Smart Vegetation” concepts described in Chapter 6, especially within 30-feet of buildings and structures, will be critical in reducing the risk of vegetation ignition that can lead to building-to-building fire spread.

3.9 Structure Ignition Potential

Building features, such as the materials used to protect roof assemblies and exterior walls, can determine a building’s susceptibility to ignition. Fire intensity within 100-feet of a building and embers landing on or within 5-feet of a building, represent the greatest exposure from a wildfire. Together their capacity to ignite buildings is a major factor in building-to-building ignition and urban conflagration potential. Once an ignition occurs the survival of a building is dependent on the fire protection resources (e.g. built-in fire protection systems, firefighting personnel, water supply capability, etc.) that can be committed to extinguish the fire before it spreads to adjacent buildings.

The risk assessment factor assigned to the Structural Ignition Potential for the School is described as **High**. The potential for building-to-building fire spread is greatest within those areas of the School where buildings are located within 30-feet of each other. Continuous combustible materials, including wood fencing and ornamental landscaping, can easily serve as a means for fire spread to occur that will threaten both the inhabitants and buildings.

3.10 Evacuation Routes

The California Office of Emergency Services (CALOES) defines the term “Evacuation” to mean “the organized, phased, and supervised withdrawal, dispersal, or removal of civilians from dangerous or potentially dangerous areas and their reception and care in safe areas.” The decision to initiate a local evacuation during a wildfire emergency rests with the public safety agencies (law enforcement and fire) based on a comprehensive threat assessment made in the field. The implementation and enforcement of evacuation orders rests with law enforcement.

Evacuation types typically focus on one or more of the following methods:

- Evacuation Warnings Issued by Public Safety Officials
- Evacuation Orders Issued by Public Safety Officials
- Temporary Refuge Area / Shelter in Place decisions made by staff/visitors

The principal goal of a wildfire evacuation is to protect the public from the threat of a wildfire without injury or death.³² To achieve this goal the objectives of a manageable and successful evacuation by the public include the following:

- Immediate identification of a wildfire threat and constant awareness of the fire behavior that may impact your location;
- Receiving emergency alerts and communications from public safety officials and responding to their directions in an appropriate fashion;
- Recognizing the need to depart from the area in a judicious and prepared departure;
- Safely and competently evacuating to an area outside a hazardous area;

The School campus and surrounding area is currently served by one single lane exit for civilian evacuation during a wildfire event. That exit is Union Mills Road. This road connects to Overland Trail and U.S. Interstate 80 approximately 1.59 miles west of the School.

There are approximately 5 residential parcels, 3 commercial parcels (including the School), and several unimproved parcels would utilize Union Mills Road during an evacuation. The evacuation analysis for the Project assumes the following persons who require evacuation using Union Mills Road:

- 2.52 occupants per residence. Total population estimate is 8 occupants.
- The School site population in Phase 1 is estimated at 111 occupants³³.
- The School population in Phase 2 is estimated at 240 occupants³⁴.
- The Piping Rock Equestrian Center population³⁵ is estimated at 25 occupants during normal school hours. The analysis of this facility includes the use of truck-trailer units to remove equestrian livestock and individually operated vehicles.

The total population served by Union Mills Road with Phase 1 of the School project is 128 occupants per lane, and with Phase 2 the total population is 303 occupants per lane.

³² See *Literature Review of the State-of-the-Science in Wildfire Evacuation* (2022); Marin Wildfire Prevention Authority.

³³ Assumes 95 students and 16 full and part-time staff being present.

³⁴ Assumes 220 students and 20 full and part-time staff being present.

³⁵ In reviewing available information regarding this facility, the majority of its public events occur during after-school hours or during periods of time when the school is not in session.

Previous studies of wildfire evacuations in California³⁶ have shown that between 1.2 and 1.9 vehicles per residential household, and 1.0 vehicles per employee and visitors to commercial facilities, are used by the community population to evacuate during wildfires. For analysis purposes it is assumed that 1.5 vehicles are used to evacuate each residential housing unit, and 1.0 vehicles per employee and visitors to commercial uses served by Union Mills Road.

For Phase 1 of the Project the evacuation assumptions include 5.0 seats per POV can be used during an evacuation. The vehicle methodology in the evacuation planning calculation shows that 50 occupants (10 staff and 40 students) can be evacuated from the site using POV transportation. The evacuation plan relies on a higher number, or higher capacity, of HOV vehicles to transport students and staff. Based on the number of students/staff that can be transported via POV (50) the remaining number of students/staff who may require transportation during an evacuation via HOV is approximately 61 persons.

The School is currently working to meet the Town's guidance by evaluating the various HOV options that are currently available prior to the beginning of the upcoming school year. The options can include, but are not limited to: acquiring multiple passenger vans (15+ passenger), small sized buses (20-30 passenger), or a single large sized (60+ passenger) bus for use during an evacuation. Please note the number of POVs may be adjusted based on number of HOVs utilized, and the School will maintain the resources needed to evacuate the campus population approved by the Conditional Use Permit. See Table 4 for an example of the POV/HOV's required for an evacuation during Phase 1:

Table 4: Sample Calculation for Vehicles Required in Phase 1

Vehicle Type	Number of Vehicles	Total Number of Available Seats
POV	10	50
HOV	1	61
Total	11	111

³⁶ Wong, Stephen D., Jacquelyn C. Broader, and Susan A. Shaheen. 2020a. *Review of California Wildfire Evacuations from 2017 to 2019*, (March, 2020). <https://doi.org/10.7922/G29G5K2R>.

The total vehicle count required to complete evacuations in Phase 2 is modified to include up to 16 HOV/POV's being used to complete the student evacuation. The remaining students and staff would be evacuating using staff personnel vehicles at the School. The total number of vehicles using Union Mills Road during a Phase 2 evacuation by the School is estimated at 16 vehicles. See Table 5 for an example of the POV/HOV's required for an evacuation during Phase 2:

Table 5: Sample Calculation for Vehicles Required in Phase 2

Vehicle Type	Number of Vehicles	Total Number of Available Seats
POV	13	65
HOV	3	183
Total	16	248

During an unplanned evacuation of the area during a wildfire event it is not unusual for people leaving to encounter obstacles (e.g. fallen trees, down utility lines and poles across roadways, and vehicle accidents) that can result in evacuation routes being partially or fully blocked. The two-way intersection of Union Mills Road and Overland Trail can potentially become a bottleneck³⁷ during an evacuation of the entire area leading to delays in leaving the area. Early traffic control by law enforcement at this location will be critical in ensuring an orderly evacuation process.

To overcome this bottleneck concern the School has established a secondary evacuation route for use of the access point from Union Mills Road onto Interstate 80 via the road connection at 12750 U.S. Interstate 80. This secondary evacuation route has been established by written agreement with the California Department of Food and Agriculture (CDFA). See Attachment C for additional information. A coordinated on-going set of evacuation drills and exercises for the entire area should be considered as soon as practical with local law enforcement and fire officials.

The risk assessment rating assigned to the Evacuation Routes category for the School is described as **Moderate**. An important decision-making process by the occupants of the School once a

³⁷ A bottleneck is a geographical location where the flow of evacuees is slowed, significantly restricted, or stopped.

wildfire in the local area is discovered is to leave as early as possible. See Chapter 5 for additional steps that School staff and parents can take to prepare for an evacuation.

3.11 Public Emergency Notification

Providing current and reliable information to large numbers of people during a wildfire is an important part of reducing negative outcomes and ensuring public safety. Community notification is an important aspect of evacuation planning. Evacuations are often initiated by emergency officials who issue notifications and instructions to the affected populations using various tools such as opt-in mass alert systems, Reverse-911, the Integrated Public Alert & Warning System (IPAWS), social media, and the internet. Sirens and door-to-door notifications may also be utilized. If time allows, evacuations may be conducted in phases, starting by notifying and evacuating areas of the community that may be affected first.

In the Town of Truckee all public safety agencies have partnered to implement the *Code Red* alert notification system.³⁸ The alert system is managed by the County of Nevada Truckee Police Department (TPD), and the Town of Truckee and allows for public safety agencies to quickly send an emergency alert to citizens in all geographic areas of the County. This system enables these users to provide residents with critical information quickly in a variety of situations, such as severe weather, unexpected road closures, missing persons, and evacuations of buildings or neighborhoods. *Code Red* provides community members with emergency notifications through telephone call, text message, and email notifications.

The County of Nevada and the Town of Truckee has been authorized by FEMA to use the Integrated Public Alert & Warning System (IPAWS). This is FEMA's national system for local alerts that provides authenticated emergency and life-saving information to the public through mobile phones using Wireless Emergency Alerts, to radio and television via the Emergency Alert System, and on the National Oceanic and Atmospheric Administration's Weather Radio.

The risk assessment factor assigned to the Notification category for the School is described as **Moderate**. The Town of Truckee has access to both Opt-in / Opt-out emergency alert systems for

³⁸ County of Nevada Code Red, Citizen Notification System;

use in notifying people about a wildfire impacting their community. However unplanned factors such as communication infrastructure outages and failures can disrupt the ability of these systems to send mass alert and warning messaging. To ensure timely evacuation notifications to the public it is the practice of TPD to send law enforcement officers door-to-door to provide in person evacuation noticing to residents and visitors when an evacuation order is implemented thereby further reducing the risk of individuals not receiving word of a wildfire or all-hazard incident.

3.12 Critical Assets / Infrastructure at Risk

The identification and analysis of Critical Assets and Infrastructure at Risk is an important part of a comprehensive fire risk analysis. This analysis also looks at potential risks associated with public service sites designated in California as being “Essential” that must conform to current seismic design criteria.

The risk assessment factor assigned to the Critical Assets / Infrastructure at Risk category for the School is described as **High**. The School has one proposed use, the NV Energy 60 kV powerline that bisects the FOTTW property, that is identified as a *Critical Assets* that could be at risk during a wildfire. One *Essential Service* building, the school campus and related student population, that is proposed as part of this project. No *Infrastructure at Risk* uses have been identified within the School area that could be adversely impacted by a wildfire.

3.13 Other Risk Factors³⁹

To fully assess the risk of an exposure to other all-hazard incidents beyond wildfires an analysis of the most likely types of events to impact the site was completed. Based on this additional analysis the following risk factors described in Subsections 3.13.1 through 3.13.3 was completed.

³⁹ Nevada County Local Hazard Mitigation Plan Update, August 2017

3.13.1 Hazardous Material Transport Risk

Hazardous materials include any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. Hazardous materials are transported through Truckee on three major transportation routes: Interstate 80, the Union Pacific Railroad (UPRR) line, and the Kinder Morgan petroleum pipeline. Since 1973, there have been 186 hazardous material spills in Truckee, but there have been no federal or state disaster declarations for hazardous materials in the town.

The closest potential hazardous material transportation accident location near the School is U.S. Interstate 80, and the State of California Commercial Vehicle Enforcement Facility located at 12800 U.S. Interstate 80. Both risk locations are between 1,200-1,500 feet south and southwest of the School. In the event that a Shelter-in-Place order is issued for a hazardous material incident that impacts the area the School shall implement the provisions outlined in the All-Hazards Evacuation Plan for the campus. See Appendix A for additional details.

3.13.2 Seismic and Geologic Risks

According to information provided in the Local Hazard Mitigation Plan for the County⁴⁰, Nevada County lies between two seismically active regions in the western United States. Tectonic stresses associated with the North American-Pacific Plate boundary can generate damaging earthquakes along faults 30 to 100 miles to the west of the County. Extreme eastern Nevada County, including the Truckee area, is pierced with active faults that are responsible for and form the boundary between each basin or valley and the neighboring mountain range.

Quaternary and historic faults can be found in the eastern portion of the County near Truckee. Of particular note is the Dog Valley or Truckee fault which runs through Truckee from Prosser Reservoir past Boca Reservoir to Stampede Reservoir in Sierra County. A search of records available through the U.S. Geological Survey shows that the Truckee area is in the highest intensity zone for earthquakes that are capable of creating a Magnitude 7 or higher earthquake.

No recent large-scale earthquakes⁴¹ have been recorded in the Truckee area as of the date of this plan. All buildings within the School will be constructed in compliance with building code standards that address seismic activity. For the most part, these standards will ensure that risks associated with seismic activity are minimized.

3.13.3 Flooding

According to the Federal Emergency Management Agency (FEMA) Map Number 06057C0532E, the entire school parcel is within the Zone X FEMA flood hazard area, which is defined as “areas that are determined to be outside the 500-year floodplain.” This designation indicates that the watershed area is dominated by terrain that is either not prone to flooding or is considered to be of lesser concern by FEMA and has not been studied in detail. There are no 100-year flood hazard areas designated by FEMA within the School parcel. Therefore, no other flood-related measures are required of the School.

END OF CHAPTER

⁴⁰ Nevada County Local Hazard Mitigation Plan Update, August 2017

⁴¹ In 1966 a 5.4 magnitude earthquake caused minor damage in the area. See [Effects of the Truckee, California, earthquake of September 12, 1966](#)

CHAPTER 4: FIRE PROTECTION PLANNING

4.1 Chapter Overview

The purpose of this Chapter is to describe the recommended fire prevention and emergency planning best practices for the School. This Chapter is consistent with nationally recognized and accepted practices for the preservation of life and property from the hazards of fire and other dangerous conditions associated with a wildfire and/or urban conflagration. This Chapter is based on a School-specific wildfire hazard and risk assessment as described in Chapter 3 and includes analysis on the following subjects:

- Road and Building Address Signage Requirements
- Emergency Vehicle Access Requirements
- Emergency Water Supply Requirements
- Building and Parcel Siting and Setback Requirements
- Applicable Building Codes and Standards for Wildfire Safety
- Fire Protection System Requirements

4.2 Road, Building, and Site Identification Signage Requirements

Private streets and buildings within the School shall be provided with an approved identification meeting the requirements of this section.

One private road serves the School and is designed to meet the requirements of California Fire Code Section 503 (Fire Apparatus Access Roads). The road was recently increased to 20-feet in width. The road is fully paved. The road terminates in a cul-de-sac bulb near the existing classroom building. The total length of the road that is approximately 1,087-feet in length.

4.2.1 Road Sign Requirements

Newly constructed or approved roads shall be identified by a name or number through a consistent system that provides for sequenced or patterned numbering and/or non-duplicative naming as approved by the Town of Truckee. Road signs shall be visible and legible from both directions of vehicle travel for a distance of at least one hundred (100) feet.

4.2.2 Building Address Requirements

All existing and new classroom buildings shall have an address sign placed on them identifying them (e.g., 1, 2, 3, 4, 5 or A, B, C, etc..). Utility and miscellaneous buildings are not required to have a separate address. The address installation, location and visibility on the building shall meet the requirements found in CCR Title 24, Part 9 (Fire Code), Section 505. The following provisions shall be met for the placement of address numbers on a building:

- a. All classroom buildings shall have a permanently posted address which shall be plainly legible and visible from the road fronting the property.
- b. Address numbers shall be reflective and contrasting in color to the sign background, and with a number height of not less than 4-inches and with a stroke width of 1/2-inch.
- c. Address numbers shall not be spelled out.
- d. Address numbers shall be posted between 4-feet and 7-feet above grade.

In all cases, the address shall be posted by the builder at the beginning of construction and shall be maintained thereafter by the School.

4.3 Fire Apparatus Access Road Requirements

Fire apparatus access is an important element of the EREP for the School area. Fire apparatus access is necessary to provide fire protection services to their jurisdiction as well as respond to a variety of other emergencies such as medical emergencies, motor vehicle accidents, hazardous material spills, electrical hazards, floods, and construction accidents. Fire apparatus access can be described as the means (e.g., roads, bike paths, trails, etc.) by which firefighters can enter an area to quickly mitigate a wildfire incident before it spreads to adjacent properties and critical assets / infrastructure at risk.

All private roads within the School shall comply with the requirements of the Town of Truckee, TFPD and CAL FIRE. All roadway widths are measured from curb face to curb face. All road widths are a minimum of 20-feet in width at the School. Security gates are not currently proposed across the fire apparatus road serving the School.

4.4 Emergency Water Supply Requirements

The School is required to comply with the emergency water standards for fire protection described in both CCR Title 14 §§ 1275.00 – 1275.04 and California Fire Code Section (CFC) 507. Emergency water for fire protection shall be available, accessible, and maintained in quantities and locations specified in both regulations in order to attack a fire or defend a property from a fire.

Section 1275.02 (Water Supply) of California Code of Regulations Title 14 (Fire Safe Regulations), and Section 507 (Fire Protection Water Supplies) of California Code of Regulations Title 24 – Part 9 (California Fire Code), both require an approved water supply that is capable of supplying the required fire flow for fire protection for all new building's hereafter constructed. The School operates an existing private water system at the campus to meet this requirement.

The existing private water system operated by the School is adequate to meet the required fire flow requirements for Phase 1 of the project.

Phase 2 will require additional analysis and potential upgrades to the water supply system providing fire protection water to meet the fire flow requirements for the project. The required fire flow demand for Phase 2 is 1,500 gpm with 20 psi residual pressure remaining in the system. The current water storage tank serving the campus is not adequate to meet this demand requirement for a 2-hour period of time as required by the California Fire Code.

4.5 Building and Parcel Siting and Setback Requirements

All parcels within the School shall comply with the minimum 30-foot setback for all buildings from all property lines and/or the center of a road, as required by CCR Title 14 - § 1276.01 (a). The purpose of this setback requirement is to reduce the intensity of a wildfire through structure-to-structure ignition sources. A reduction of this minimum setback is permitted by this regulation in some cases⁴².

The minimum setbacks from property lines are described in Table 6.

⁴² CCR Title 14 - § 1276.01(b) does allow for a reduction in the minimum setback based upon findings that support the practical reason for the reduction and alternative methods are implemented to reduce building-to-building ignition.

Table 6: Building Number, Square Footages and Minimum Fire Setback Distances

Building #	Square Footage⁴³	Front Yard⁴⁴	Rear Yard	Side Yard
Existing	4,560 SF	30 Feet	30 Feet	30 Feet
A	1,190 SF	30 Feet	30 Feet	30 Feet
B	1,190 SF	30 Feet	30 Feet	30 Feet
C	612 SF	30 Feet	30 Feet	15 Feet
D	1,190 SF	30 Feet	30 Feet	15 Feet

The following specific alternative material and construction methods, exceeding the minimum criteria described in CBC Chapter 7A, shall be implemented when a school building is placed within 30-feet of another structure to meet the “Practical Effect” principles described in CCR Title 14 - §1276.01:

- a. A five (5) -foot defensible space ember-resistant zone (Zone 0) shall be maintained around all sides of buildings (including fencing within 5-feet). Consider utilizing concrete paths, paving stones, gravel, and decomposed granite within 5-feet of buildings; and
- b. Accessory structures located within 50-feet of classroom buildings shall comply with California Code of Regulations Title 24, Part 2, Chapter 7A, Section 710A; and
- c. Eaves shall be enclosed on the underside with non-combustible material, ignition-resistant material, or minimum two (2) inch lumber; and
- d. Exterior windows, skylights, and glazed doors on the reduced fire setback zone side(s) of the structure shall comply with California Code of Regulations Title 24, Part 2, Chapter 7A, Section 707A; and
- e. Exterior walls shall be constructed with ignition-resistant building materials such as stucco, fiber-cement wall siding, fire retardant treated wood, or other approved materials, and comply with California Code of Regulations Title 24, Part 2, Chapter 7A, Section 706A; and

⁴³ Excludes porch areas outside the perimeter of the building.

⁴⁴ As measured to the centerline of the adjoining road as permitted in CCR Title 14, § 1276.01

- f. Use WUI ember and flame-resistant vents, conforming with the requirements described in ASTM E2886, to protect exterior wall openings when the wall is located within 30-feet of another building. Dryer vents shall be metal and equipped with a louver or flap; and
- g. Fencing materials located within 5 to 10-feet of a building shall be constructed of ignition-resistant materials. Areas located between 0-feet and 5-feet from all buildings shall remain non-combustible.

In addition to the specific alternative material and construction methods described in this section see Subsections 4.6.1 to 4.6.14 of this EREP for additional building construction measures required for all new classroom buildings on the campus.

4.6 Applicable Building Codes and Standards for Wildfire Safety

California Code of Regulations (CCR) Title 24, also known as the California Building Standards Code, is a collection of three types of building standards:

- Those standards adopted by state agencies without modification from those found in the national model codes; and
- Standards that have been modified from the national model codes that address those unique issues facing California; and
- California statutory based standards that create amendments that are not addressed by the national model codes.

All new buildings and occupancies in the State are subject to the standards found in the California Building Standards Codes. The codes are updated every three years. The last update to the Building Standards Codes occurred on January 1, 2022. The relevant wildfire exposure standards that the School is subject to can be found in Part 2 (California Building Code), and Part 9 (California Fire Code). Buildings constructed within the School shall comply with the following specific provisions.

4.6.1 Roof Assembly Requirements

The primary concern with roof coverings on buildings is the large surface area for potentially catching embers and burning debris, or the roof slope which can expose the roof to radiant heat exposure and direct flame impingement.

To reduce this risk the following measures shall be implemented on all new buildings:

- a. CBC Section 705A.1 requires roof assemblies on new buildings within a Very-High Fire Hazard Severity Zone to meet or exceed a Class A fire-resistant rating as described in ASTM E108 or UL 790 or other approved non-combustible roof covering.
- b. For roof assemblies where the profile allows a space between the roof covering and roof deck, the space at the eave ends shall be fire stopped to preclude entry of flames or embers or have one layer of cap sheet complying with ASTM D3909 installed over the combustible roof deck.
- c. Where provided, valley flashings shall be not less than 0.019-inch (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide underlayment consisting of one layer of 72-pound mineral-surfaced, nonperforated cap sheet complying with ASTM D3909 running the full length of the valley.

4.6.2 Chimney and Roof Vents

The intrusion of embers through roof vents and chimneys is a major source of vulnerability that can lead to structure ignition during wildfires. Both inlet and outlet vents are sources of weakness that can lead to ignition of interior building contents and other building components. To reduce this risk the following measures shall be implemented on all buildings:

- a. Ember resistant vents shall be protected with metal wire mesh with openings no larger than 1/8 inch. **Do Not** use fiberglass or plastic mesh because they can melt and burn.
- b. Use corrosion-resistant, metal vent and flashing materials.
- c. Roof ridge and off-ridge (field) vents shall be protected with noncombustible corrosion-resistant mesh screen size not to exceed 1/8 inch.
- d. Chimneys serving fireplaces, barbecues, incinerators, or decorative heating appliances in which solid or liquid fuel is used, shall be provided with a spark arrestor. Spark arrestors shall be constructed of woven or welded wire screening of 12 USA standard gage wire

(0.1046 inch) having openings not exceeding ½ inch. Provide spark arrestor caps on all chimneys.

- e. Place all vent openings at least 10-feet from other buildings or property lines to avoid ignition from embers and hot gases from an adjacent building that has ignited.
- f. Limit the maximum net free area of vent openings to 144 square inches.
- g. Fire-resistant sealants should be provided in lieu of non-fire rated caulking.
- h. Metal flashing should be installed at vent, chimney, and skylight roof joints to limit ember penetration or direct flame penetration into the roof substrate.
- i. Noncombustible materials (e.g., mineral wool) should be provided to fill expansion joints.

4.6.3 Skylights

Skylights can comply with several different provision in order to resist the effects of fire. **Plastic skylights shall be forbidden.** Options include:

- a. Be constructed of multi-pane glazing with a tempered pane.
- b. Be constructed of glass block units.
- c. Be comprised of fire rated glazing per ASTM Standard No. E119.
- d. Have a fire-resistance rating of not less than 20 minutes when tested in accordance with National Fire Protection Association Standard No. 257.
- e. Operable skylights shall be protected by a non-combustible mesh screen where the dimensions of the opening shall not exceed 1/8-inch.

4.6.4 Protection of Gutters

Combustible debris such as leaves and pine needles can accumulate in gutters, especially from nearby or overhanging trees. If ignited the combustible debris burning in the gutter will expose the edge of the roof covering, typically the fascia and/or roof sheathing, to fire spread. To reduce this risk the following measures shall be implemented on all new buildings:

- a. Gutters and downspouts shall be constructed of noncombustible materials.
- b. Gutters shall be covered with a noncombustible material to prevent the accumulation of debris within the gutter.

4.6.5 Solar Panels

Solar panels have associated risks that contribute to building ignition. Combustible portions of a solar panel can provide fuel that can support a fire. To reduce this risk the following measures shall be implemented:

- a. Class A rated panels shall be used on new and existing buildings.
- b. Inverter and energy storage components should be installed within buildings to minimize ignition hazards. These elements shall not be installed within 5-feet of exterior walls.

4.6.6 Protection of Eaves

Eaves are located at the down-slope edge of a sloped roof and serve as a transition between the roof and wall. To reduce this risk the following measures shall be implemented on all new buildings:

- a. Eaves and soffits shall be enclosed on the underside with non-combustible material, ignition-resistant material, or minimum two (2) inch lumber.
- b. The exterior covering of such assembly shall be constructed with noncombustible materials.
- c. Fascia is required and shall be constructed with materials approved for not less than 1-hour fire-resistance-rated construction. Such fascia shall be protected on the backside by noncombustible materials.

4.6.7 Exterior Walls

Exterior wall surfaces can provide a means for fire intrusion due to the combustibility of the exterior cladding. Exterior walls often have a sublayer that is of combustible materials. An often-overlooked area of ember intrusion is the foundation overlap where a gap between the foundation and the siding can provide nesting or retention of embers against a combustible surface, including stucco or masonry cladding. A 6-in. vertical noncombustible zone at this location has the highest importance because even if noncombustible siding is used, combustible sheathing is still commonly used behind the cladding. To reduce this risk the following measures shall be implemented on all new buildings:

- a. All buildings must have at minimum, 6-inches of vertical noncombustible material at the base of where a vertical surface meets a horizontal surface (i.e., base of wall at the ground and the intersection of a wall and deck).
- b. Gable end, crawl space and other vents that mount on a vertical wall or in the under-eave area shall be tested in accordance with ASTM E2886 and approved to prevent flame or ember penetration into the structure.

4.6.8 Exterior Windows

Windows are a vulnerable area of walls due to the potential for glass breakage from direct flame contact or radiant heat, particularly if the glass in the windows is annealed glass. Recent studies show that tempered glass is more than four times more resistant to radiant heat exposure than annealed glass. Windows with tempered glass will have an etched label on the glass. To reduce this risk the following measures shall be implemented on all new buildings:

- a. Exterior windows and window walls shall be constructed with multipaned glass with at least two tempered panes or constructed of glass block units.
- b. Utilize ignition resistant or noncombustible framing materials.

- c. Have a fire-resistance rating of not less than 20 minutes when tested in accordance with NFPA 257, or have a fire-resistance rated glazing tested in accordance with SFM Standard 12-7A-2.

4.6.9 Exterior Doors

Exterior doors can be compromised during a wildfire due to an extended radiant heat exposure from surrounding combustibles. Weather stripping and glass panels can fail over time allowing flames and embers to penetrate around the door into the structure.

To reduce this risk the following measures shall be implemented on all new buildings:

- a. Exterior doors shall be constructed of materials allowed in CBC Section 708.3.
- b. Provide where possible ignition resistant or noncombustible framing materials.
- c. Consider using tempered glass for sliding glass doors or glass panel inserts, which is stronger than annealed glass and will provide additional protection during a wildfire.

4.6.11 Fire Protection System Requirements

All buildings within the School greater than 3,600 S.F. in area are required to comply with the applicable fire protection system requirements described in Section 903.2.11.7 of TFPD Ordinance 01-2022. The installation of these systems within classroom buildings shall also conform with the design and installation standards of the Town of Truckee and TFPD.

4.6.12 Fences

Fences can be very hazardous during a wildfire by allowing fire spread to occur through pathways that lead to the building. In addition, the bottom of fences collect debris that, when combined with combustible fencing, can become a fuel source to carry fire directly to the building. To reduce this risk the following measures shall be implemented for all new buildings:

- a. All fences located within 5-feet of buildings shall be constructed with noncombustible materials.
- b. Side yard and rear yard fencing located 5-feet to 10-feet from buildings shall be constructed of ignition-resistant materials.
- c. Keep combustible mulch materials, trash cans and other combustibles away from fences.

4.6.13 Accessory Buildings and Miscellaneous Structures

Accessory buildings and miscellaneous structures can pose a significant risk of fire spread to other buildings on the property during a wildfire. These buildings and structures can serve as pathways for wildfires to spread throughout the lot threaten the classroom buildings. To reduce this risk the following measures shall be implemented for all new accessory buildings:

- a. Accessory buildings that are within 30 feet of a classroom building and that have a footprint greater than or equal to 15 square feet shall comply with both items listed below.
 - i. No more than 3 total of these buildings are allowed within 30-feet of the classroom building.
 - ii. Each classroom building must have its own 5-feet of defensible space that does not overlap the 5-foot, Zone 0, required for the building, decks, or other structures within 30- feet of other buildings.
- b. Accessory buildings within 50-feet of a classroom building shall be constructed with either non-combustible or ignition resistant materials in accordance with CBC Section 710A.3.2.
- c. Do not place accessory buildings within 5-feet of the classroom buildings.

4.7 Fire Safety During Construction Activities

Construction activities shall comply with California Fire Code (CCR T24 - Part 9), Chapter 33 (Fire Safety During Construction and Demolition) as required by TFPD and CAL FIRE. The relevant provisions found in this Chapter of the fire code include:

- a. Section 3303 - Development of a Site Safety Plan
- b. Section 3304 - Temporary Heating Equipment
- c. Section 3305 - Precautions Against Fire
- d. Section 3306 - Flammable and Combustible Liquids
- e. Section 3307 - Flammable Gases
- f. Section 3308 - Explosive Materials
- g. Section 3309 - Portable Generators
- h. Section 3310 - Fire Reporting
- i. Section 3311 - Required Access for Emergency Vehicles
- j. Section 3313 - Water Supply for Fire Protection
- k. Section 3316 - Portable Fire Extinguishers
- l. Section 3317 - Motorized Construction Equipment

END OF CHAPTER

CHAPTER 5: EMERGENCY PREPAREDNESS AND EVACUATION PLANNING

5.1 Chapter Overview

The purpose of this chapter is to describe the community evacuation planning analysis for the School and surrounding neighborhoods in the event of an evacuation warning or order being issued by local officials of a local wildfire or similar event. See Chapter 8 - Appendix A, B, and C for additional details on the specific evacuation plan details for the School in both Phases 1 and 2.

This Chapter is based on a School-specific hazard and risk assessment as described in Chapter 3, and includes analysis on the following subjects:

- Community Evacuation Types and Decision Making
- School Pre-Evacuation Planning
- Emergency Evacuation Education Materials
- Emergency Notification

5.2 Community Evacuation Types and Decision Making

The California Office of Emergency Services (CALOES) defines the term evacuation to mean “the organized, phased, and supervised withdrawal, dispersal, or removal of civilians from dangerous or potentially dangerous areas and their reception and care in safe areas.” The decision to initiate a local evacuation during a wildfire emergency rests with the public safety agencies (law enforcement and fire) based on a comprehensive threat assessment made in the field. The implementation and enforcement of evacuation orders rests with law enforcement.

Evacuation types typically focus on one or more of the following methods:

- Evacuation Warnings Issued by Public Safety Officials
- Evacuation Orders Issued by Public Safety Officials
- Shelter in Place decisions made by residents/visitors

The principal goal of a wildfire evacuation is to protect the public from the threat of a wildfire without injury or death.⁴⁵ To achieve this goal the objectives of a manageable and successful evacuation by the public include the following:

- Immediate identification of a wildfire threat and constant awareness of the fire behavior that may impact your location;
- Receiving emergency alerts and communications from public safety officials and responding to their directions in an appropriate fashion;
- Recognizing the need to depart from the area in a judicious and prepared departure;
- Safely and competently evacuating to an area outside a hazardous area;

Emergency evacuations during a wildfire can be generally described as being either immediate or planned need events. Immediate need evacuations are ordered when a developing wildfire incident poses an increased threat to human life occurs in close proximity, generally 60 minutes or less, in nearby communities and buildings. Planned need evacuations are often coordinated hours or days before the evacuation is ordered allowing law enforcement officers, firefighters, and others to work together to ensure an organized movement of civilians out of harm's way.

Evacuations during a wildfire can lead to panic and poor decision making by civilians, especially when evacuees are confronted with smoke, embers, and spot fire conditions from an approaching wildfire. Evacuees, including visitors temporarily staying in the community, can lack knowledge of the available evacuation routes, and can encounter obstacles (e.g. down power lines, poles, trees, vehicle accidents and disabled vehicles), which can result in blocked roads and evacuation routes. This chaotic situation is exacerbated when public safety agencies are concurrently attempting to access the community using the same routes.

Some populations and communities are more susceptible to the impacts of wildfire threats due to access and functional needs of the residents and visitors (e.g., elderly, disabled, low income, low English proficiency). Early awareness and actions are necessary to safely evacuate an area. It is imperative that pre-evacuation planning efforts occur frequently between the community and local public safety agencies.

⁴⁵ See *Literature Review of the State-of-the-Science in Wildfire Evacuation* (2022); Marin Wildfire Prevention Authority.

5.3 School Pre-Evacuation Planning

The Town of Truckee has a - emergency evacuation plan⁴⁶ with which the School shall interact with when an evacuation order or warning issued that impacts the campus. The reader of this plan can review this information at the following link: <https://townoftruckee.gov/DocumentCenter/View/2770/Town-of-Truckee-Evacuation-Annex---2025-PDF?bidId=>. However, multiple evacuation options are available from the School site and, in the event of emergency, the evacuation route will be determined by the Public Safety Officials at the emergency scene based on numerous considerations, including the location of the fire.

See Figure 11 for additional details regarding the primary evacuation routes available to the School.

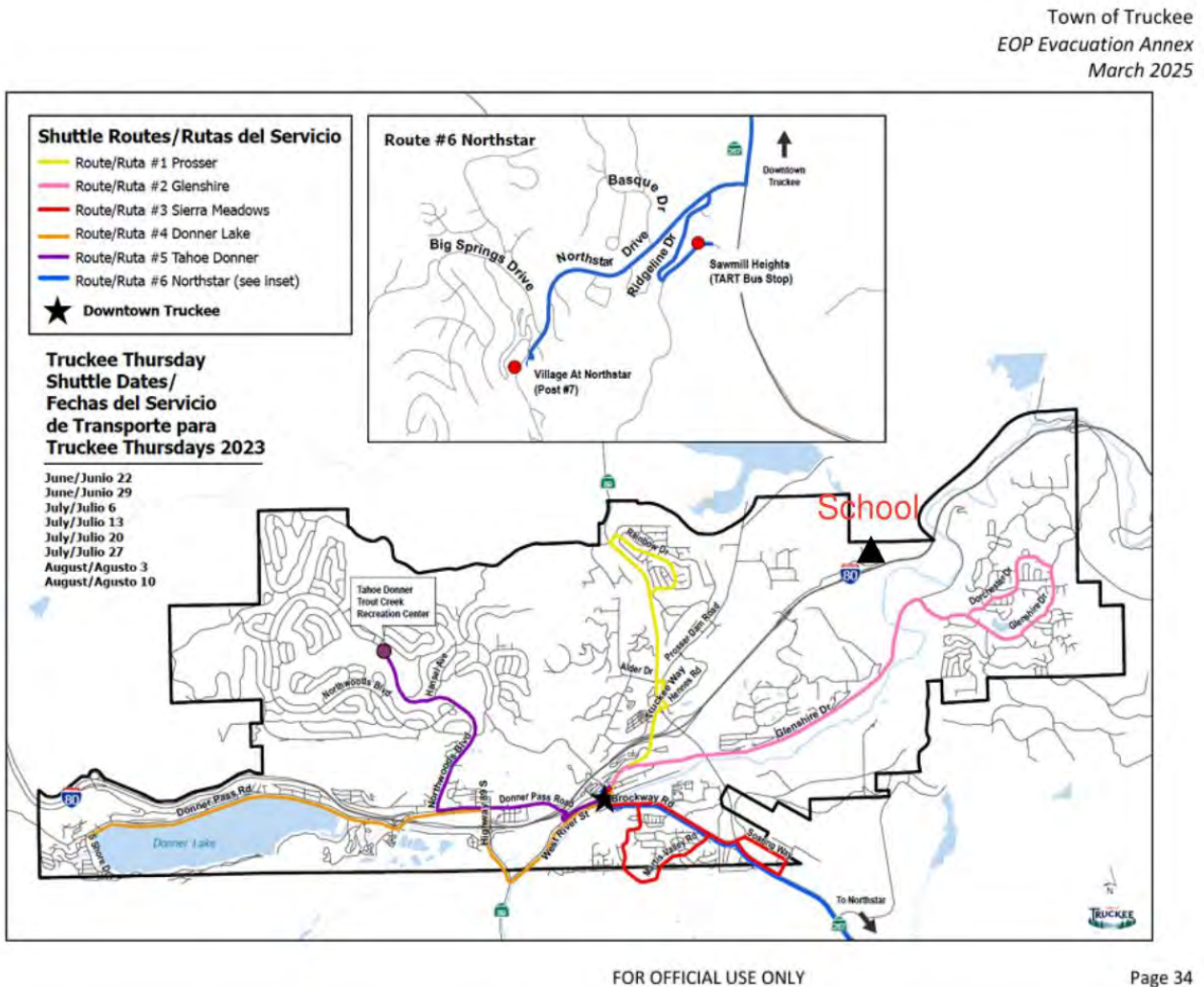


Figure 11: Town of Truckee Primary Evacuation Routes

⁴⁶ See Town of Truckee Emergency Operations Plan – Evacuation Annex, (2024)

The proximity of the School next to a known community transportation routes (U.S. Interstate 80) will permit the School population, and the surrounding community population, to evacuate the area while maintaining emergency vehicle access into the area during an emergency event⁴⁷. In addition, the staff, student, and visitor population (111-240 occupants +/-) will not adversely impact the existing evacuation routes used during an emergency by the Truckee community due to the wildfire hazard mitigation work within the School boundaries, available road network, and emergency alert system capabilities accessible to the School staff and parents. See Figure 12 for additional details regarding the evacuation route options available to the School.

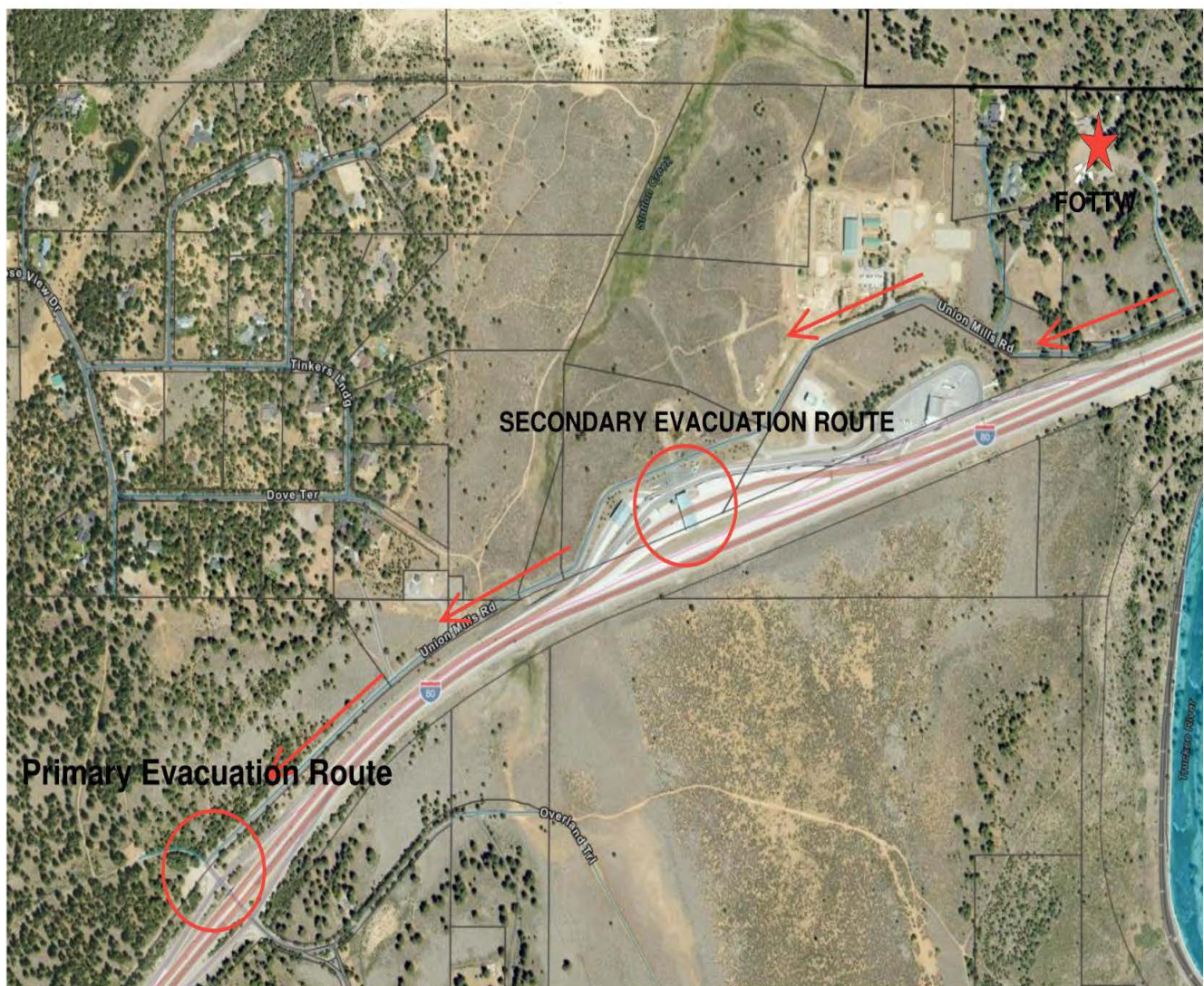


Figure 12: Evacuation Route

⁴⁷ Emergency vehicle access and civilian evacuation onto U.S. Interstate 80 during a wildfire or other emergency incident can occur from two locations. The primary access point is located at Overland Trail. A secondary access point onto the freeway has been established through written agreement at the CDFA site located along Union Mills Road.

As noted in Section 3.10 (Evacuation Route Risk Assessment) the School today has access to a single evacuation route (Union Mills Road to Overland Trail) out of the community. The most likely mode of transport by the residents of the School are private vehicle ownership and School owned transportation services that will permit the majority of residents, employees, and students to move out of danger once they are directed to evacuate by Public Safety Officials. A key intersection that needs to be monitored by Public Safety Officials to avoid potential delays in traffic movement is at Union Mills Road and Overland Trail. The decision by civilians to evacuate early during a wildfire incident in the area will be critical to avoid potential a bottleneck at this intersection.

A secondary evacuation route from Union Mills Road onto U.S. Interstate 80 is available for use by local residents, local businesses and School staff, parents, and visitors during an evacuation. This secondary evacuation route leads from Union Mills Road through the CDFA site and onto the west bound lanes of U.S. Interstate 80. See Appendix C for additional details on the terms of use with this agreement.

Future School staff, parents and visitors should remain vigilant to the threat of a wildfire in the area at all times. Staff, parents, and visitors should utilize the resources described in Sections 5.4 and 5.5, and be prepared to evacuate staff and students when ordered to evacuate by a law enforcement or fire official. See Appendix A for additional details regarding the School All-Hazard Evacuation Plan for the campus during an emergency. In addition, see Appendix B for additional details regarding the School response to unplanned power disruptions that impact the campus.

5.4 Emergency Evacuation Education Measures

CAL FIRE has an effective community education program to assist staff, parents, and visitors to prepare for a wildfire⁴⁸. The program is titled *Ready-Set-Go* and is designed to assist persons in preparing for and leaving a residence threatened by a local wildfire. This information should be made available to new and existing residents and building owners through information packets and community websites whenever practical. See Chapter 8 – Appendix G for additional information about this program.

⁴⁸ CAL FIRE, *Ready Set Go*; <http://www.readyforwildfire.org/>.

5.5 Emergency Notification Alert Systems

Community notification is an important aspect of evacuation planning. Evacuations are often initiated by emergency officials who issue notifications and instructions to the affected populations using various tools such as opt-in mass alert systems, reverse-911, the Integrated Public Alert & Warning System (IPAWS), social media, and the internet. Sirens and door-to-door notifications may also be utilized. If time allows, evacuations may be conducted in phases, starting by notifying and evacuating areas of the community that may be affected first.

In the Town of Truckee all public safety agencies have partnered to implement the *Code Red* alert notification system. The alert system is managed by the Town and allows for public safety agencies to quickly send an emergency alert to citizens in all geographic areas of the County. This system enables TPD to provide residents with critical information quickly in a variety of situations, such as severe weather, unexpected road closures, missing persons, and evacuations of buildings or neighborhoods. Truckee *Code Red* provides community members with emergency notifications through telephone call, text message, and email notifications. See Chapter 8 - Appendix H for additional information on *Code Red* and how to sign-up to receive alerts from TPD.

The Town of Truckee has been authorized by FEMA to use the Integrated Public Alert & Warning System (IPAWS). This is FEMA's national system for local alerts that provides authenticated emergency and life-saving information to the public through mobile phones using Wireless Emergency Alerts, to radio and television via the Emergency Alert System, and on the National Oceanic and Atmospheric Administration's Weather Radio.

END OF CHAPTER

CHAPTER 6: FUEL MANAGEMENT AND PRIORITIZED HAZARDOUS FUEL REDUCTION TREATMENTS

6.1 Chapter Overview

The purpose of this chapter is to describe the recommended long-term comprehensive fuel management and prioritized hazardous fuel reduction treatments in WUI areas to reduce flame intensity as it gets closer to a building through three stages of fire spread:

- Converting tall continuous flames into sparse fires with shorter flames within 30–100 ft of buildings.
- Converting short and sparse flames into low-intensity creeping fire within 5–30 ft of the building.
- Stopping the creeping fire from reaching the building by using noncombustible materials within 0–5 ft of the building.

This Chapter is based on California Government Code Section 51182 and California Fire Code Section 4903 and includes analysis on the following subjects:

- Defensible Space Requirements
- Fire-Smart landscape Requirements Near Buildings
- Fuel Break Requirements
- Defensible Space Zone and Fuel Break Criteria
- Fuel Reduction on Vacant Parcels / During Construction
- Reoccurring Fuel Reduction Maintenance Frequency

6.2 Defensible Space Requirements

The term “Defensible Space” refers to reducing the wildfire vulnerability in WUI Zones by actions that will decrease the potential of heat, flames and embers spreading to buildings. Defensible space work around buildings should be performed within 3 zone areas based on the fire risk reduction efforts necessary to protect the occupants and property. The 3 defensible space zones around buildings are described as:

Zone 0 – Ember Resistant Zone

Zone 0 extends 5-feet from buildings, buildings, decks, etc.

Zone 0 requirements are mandatory by TFPD within the School as part of the fire-safe setback conditions between buildings. This zone includes the area under and around all attached decks, and requires the most stringent wildfire fuel reduction. The ember-resistant zone is designed to keep fire or embers from igniting materials that can spread the fire to the building. The following provides guidance for this zone, which may change based on future regulations developed by TFPD. See Figure 8 below to match the item number with the corresponding zone.

1. Use hardscape like gravel, pavers, concrete, and non-combustible mulch materials. No combustible bark or mulch.
2. No vegetation (trees, shrubs, bushes, plants, grass, weeds, etc.) shall exist within or overhang the building.
3. The roof, gutters and downspouts shall be kept clear of combustible debris such as leaves and pine needles.
4. Overhanging limbs or branches from nearby trees and bushes shall be trimmed back outside Zone 0.
5. Relocate firewood and lumber to a minimum of 30-feet from buildings.
6. Avoid placing combustible fencing, gates, trellis, and arbors attached to the building and use non-combustible alternatives
7. Place garbage and recycling containers outside this zone
8. Place boats, RVs, vehicles, and other combustible items outside this zone

Zone 1 – Lean, Clean and Green Zone

Zone 1 extends 30-feet from buildings, decks, etc. or to the property line, whichever is closer.

9. Remove all dead plants, grass, and weeds (vegetation).
10. Remove dead or dry leaves and pine needles from yard, roof, and rain gutters.

11. Remove branches that hang over roof and keep dead branches 10-feet away from your chimney.
12. Trim trees regularly to keep branches a minimum of 10- feet from other trees.
13. Relocate wood piles to Zone 2.
14. Remove or prune flammable plants and shrubs near windows.
15. Remove vegetation and items that could catch fire from around and under decks, balconies, and stairs.
16. Create a separation between trees, shrubs and items that could catch fire, such as patio furniture, wood piles, swing sets, etc.

Zone 2 – Reduced Fuel Zone

Zone 2 extends from 30-feet to 100-feet out from buildings, buildings, decks, etc. or to the property line, whichever is closer.

17. Cut or mow annual grass down to a maximum height of 4 inches.
18. All exposed wood piles must have a minimum of 10 feet clearance around them, down to bare mineral soil, in all directions.
19. Create horizontal space between shrubs and trees. (See diagram)
20. Create vertical space between grass, shrubs, and trees. (See diagram)
21. Remove fallen leaves, needles, twigs, bark, cones, and small branches. However, they may be permitted to a depth of 3 inches.

All Zones

22. Mow before 10:00 am, but never when its windy or excessively dry.
23. Protect water quality, do not clear vegetation near waterways to bare soil. Vegetation removal can cause soil erosion – especially on steep slopes.

24. Logs or stumps embedded in the soil must be removed in Zone 0. In Zones 1 and 2 they need to be removed or isolated from other vegetation.

Figure 13 provides additional information on defensible zone spaces around buildings.

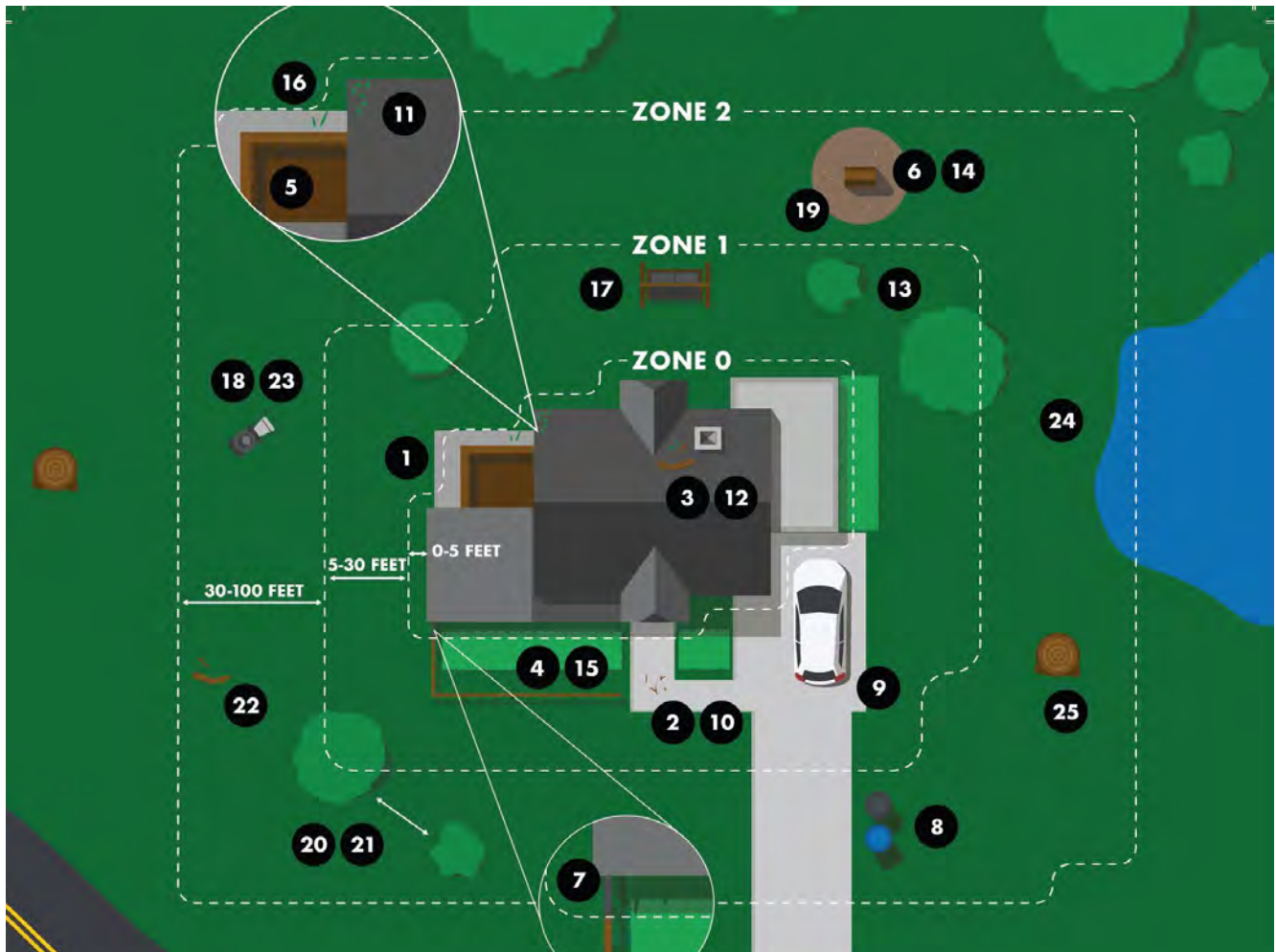


Figure 13: CAL FIRE Defensible Space Zones

6.3 Fire Smart Vegetation Requirements Near Buildings

The School shall utilize “Fire-Smart Vegetation” within Defensible Space Zones 1 (5-30 feet) and 2 (30-100 feet), and avoid the use of certain highly flammable trees and vegetation within 30-feet of classroom buildings as identified in Chapter 8 - Appendix F of this EREP.

Exception: New trees such as conifers, palms, pepper trees and Eucalyptus species, shall be permitted provided the tree is planted and maintained in accordance with one of the following:

- a. The tree is planted so that the tree's drip line at maturity is a minimum of 30-feet from a structure.
- b. The tree is planted so that the tree's drip line at maturity is a minimum of 10-feet from any combustible structure, and is well pruned and maintained so as not to form a means of rapidly transmitting fire from other nearby vegetation to the structure or from the structure to nearby vegetation, or to interrupt the advance of embers towards a structure.

For landscape materials to be considered fire-smart vegetation, it must meet at least one of the following:

- a. Be identified as fire-smart vegetation in an approved book, journal or listing from an approved organization.
- b. Be identified as fire-smart vegetation by a licensed landscape architect with supporting justification.
- c. Plants considered fire-smart vegetation and approved by TFPD.

6.3.1 Shrubs Near Buildings

All new plantings of shrubs within Zone 1 of a structure shall comply with the following:

- a. Shrubs shall not exceed 6-feet in height.
- b. Groupings of shrubs are limited to a maximum aggregate diameter of 10-feet.
- c. Shrub groupings shall be separated from other groupings a minimum of 15-feet
- d. Shrub groupings shall be separated from structures a minimum of 30-feet.
- e. Where shrubs are located below or within a tree's drip line, the lowest tree branch shall be a minimum of three times the height of the understory shrubs or 10-feet whichever is greater.

6.3.2 Trees Near Buildings

Trees shall be managed as follows within the 30-foot zone of a structure:

- a. New trees shall be planted and maintained so that the tree's drip line at maturity is a minimum of 10-feet from any combustible structure.
- b. The horizontal distance between crowns of new trees and crowns of adjacent trees shall

not be less than 10-feet.

- c. Existing trees shall be trimmed to provide a minimum separation of 10-feet away from chimney and stovepipe outlets per California Code of Regulations, Title 14, Section 1299.03.

No combustible landscaping or mulch materials, unless specially approved by TFPD, shall be located within the Zone 0 (Ember-Resistant Zone) around buildings. Acceptable forms of ground cover within this zone includes concrete walkways, paving stones, gravel, and decomposed graphite.

The installation and use of shredded rubber, pine needles, shredded cedar and similar mulch materials shall be prohibited within Defensible Space Zone 0 (**Ember Resistant Zone**) and 1 (**Lean, Clean and Green Zone**) around buildings.

6.4 Roadside Shaded Fuel Break

The goal of the FOTTW Shaded Fuel Break is to create a shaded fuel break with as little material on the ground as possible along Union Mill Road and the private road leading to the school campus to provide a safe evacuation route for the students, staff, and the adjacent properties. All limbs and wood greater than 4 inches diameter shall be removed, masticated, or chipped and broadcast into the adjacent roadside easement area. Wood chips shall not exceed an average depth of 3 inches and should be broadcast evenly across the landscape at work locations, avoid leaving excessive chipped material at the base of residual trees and shrubs.

The Shaded Fuel Break shall be established within a road maintenance easement and accepted by TFPD prior to the issuance of the Phase 1 occupancy permit issued by the Town of Truckee for the School. Maintenance of the Shaded Fuel Break shall be the responsibility of FOTTW prior to the transfer of the obligation to the road maintenance association. The Shaded Fuel Break shall be completed along Union Mills Road to the CDFR secondary access road connection as part of Phase 1. The Shaded Fuel Break shall be extended from that location along Union Mills Road to Overland Trail as part of the Phase 2 improvements of the campus.

All work shall be completed prior to May 1st each year unless otherwise ordered to complete this work earlier by TFPD due to drought or other fire conditions being present.

See the specific Shaded Fuel Break criteria for the School described within Figure 14 and in Section 6.5 for additional details.



Figure 14: FOTTW Shaded Fuel Break Location

6.5 Specific Shaded Fuel Break Criteria for the School

- a. Either through use of equipment or hand crews, all vegetation within 10' of pavement or the drivable road surface (when dirt) will be removed when feasible, except for trees equal or greater than 24" DBH and select trees that landowners wish to retain.
- b. Dead and diseased standing trees, all downed trees and tree branches less than 8-inches in diameter located on the ground, tree slash materials, and combustible debris within 10-feet of roads, and 100-feet of structures, shall be removed as required by TFPD or CAL FIRE.

- c. Tree limbs on mature live trees shall be limbed up to a height of 6-feet above the ground, except when more than 1/3 of the live crown is required to be removed. Tree branches are to be limbed to at least 10-feet when possible. The minimum height may be lowered when trees are young or small; or if it is unsafe to reach a 10-foot height due to terrain, equipment, or skill level.
- d. Live understory fuels over 1-foot in height within 10-feet of the road edge, or within 100-feet of structures, are to be removed in order to develop vertical separation and low horizontal continuity of fuels. Individual plants or pairs of plants may be retained provided there is a horizontal separation between plants of 3 to 5 times the height of the residual plants and the residual plants are not within the drip lines of an overstory tree.
- e. Fuel reduction shall include the removal of all dead vegetation 4-inches or less in diameter. Trunks shall be cut flush with the ground. The removal of additional trees shall be done in consultation with CAL FIRE, TFPD and County staff.
- f. It is desirable to remove as much brush and large vegetation as possible within the Shaded Fuel Break areas. However, if individual plants or pairs of plants are desired to be left, leave plants with the following characteristics: young plants less than 5 feet tall and individual or pairs of plants that are no more than 5-feet in width.
- g. The cutting of vegetation materials shall be done with a CAL FIRE approved spark arrester and maintained in effective working order as required by PRC 4442(a)(b)(c).
- h. The removal of annual grasses and other fine fuels shall be completed through the use of plastic string weed trimmers or other TFPD or CAL FIRE approved equipment.
- i. Chipping of material is permitted. Chipped material shall be removed from the site unless otherwise approved by the land owner representative and TFPD.
- j. Prescribed burning and / or herbicide use is prohibited within the Shaded Fuel Break areas unless such use is approved via permit by CAL FIRE, TFPD and the Town of Truckee.

- k. Approved fire suppression equipment is required on-site at all times during the fuel-reduction activities.
- l. All fuel reduction work shall be performed using every reasonable measure to minimize erosion, ground disturbing activities and soil damage. Where the ground is exposed by fuel reduction efforts, the area shall be revegetated (i.e., seeded) and/or erosion control measures shall be installed prior to October 15.
- m. Pruning of live trees shall be performed in accordance with the Best Management Practices set forth by the International Society of Arboriculture (ISA) and conform to ANSI A300 Standards for Tree Care.

6.6 Annual Fuel Reduction Maintenance Frequency

The effectiveness of the long-term comprehensive effort requires certain elements to be maintained on an annual or otherwise noted frequency. The coordination of fuel reduction work between the School, TFPD and CAL FIRE staff, and the adjacent land owner(s) to complete these Schools in a timely fashion is imperative for the success in minimizing the wildfire risk in the School area. All maintenance shall be performed prior to May 1st each year unless otherwise ordered to complete this work earlier by TFPD due to drought or other fire conditions being present.

Table 7 provides additional details regarding the recommended maintenance frequency for various activities described in the EREP.

Table 7: Shaded Fuel Break Maintenance Frequency

Action Item	Party Responsible	Frequency
Complete annual inspection of the shaded fuel breaks using the criteria found in Section 6.5.	School/TFPD	Annual
Remove/trim annual grasses to less than 2-inches in height within 30-feet of buildings and 4-inches height within 100-feet of adjacent property lines.	School	Annual

Action Item	Party Responsible	Frequency
Remove debris piles, dead trees (snags) or dying trees, down trees, and limbs. ⁴⁹	School	Annual
Removal of understory fuels that contribute to fire spread.	School	Annual
Removal or treatment of invasive exotic plant species that may invade the area cleared in the shaded fuel break areas.	School	Annual
Remove biomass materials from the site and dispose of in accordance with best practices.	School	Annual
Remove ladder fuels (tree limbs) to 6-foot DBH and increase tree canopy spacing.	School	10 Year + As Needed

End of Chapter

⁴⁹ This plan recognizes that dead and dying trees may provide a beneficial use for the habitat. The removal of this vegetation should be completed after an inspection by representatives from CAL FIRE, ECF, and the Land Owner has been completed and a scope of work agreed on by both parties.

CHAPTER 7: KEY FINDINGS, APPLICABLE CODES, AND DESIGN FEATURES

7.1 Key Findings for the School

- a. Fire and rescue services for the School site are the responsibility of the Truckee Fire Protection District (TFPD) in accordance with California Government Code § 66474.02(a)(2)(A).
- b. Wildfire protection for the adjacent undeveloped LRA lands near the School are the responsibility of the local agency.
- c. The FOTTW School (School) is located within a CAL FIRE LRA designated High Fire Hazard Severity Zone. The School is therefore subject to the regulations found in California Public Resource Code Section's 4290 and 4291. See Chapter 8 - Appendix B for additional information.
- d. The School has an overall Fire Risk Rating of High based upon the ten rating criteria outlined in Chapter 3.
- e. The School has two proposed uses that are identified as a Critical Asset or Essential Service Location that could be at risk during a wildfire.

7.2 Fire Protection Statutes and Regulations Applicable to the School

- a. The School shall comply with all applicable provisions as described in California Code of Regulations Title 14 (Fire Safe Regulations) and 24 (Building Standards Code).
- b. All roads and driveways within the School are constructed, and will be maintained in accordance with the approved conditions of approval requirements as previously approved by TFPD and CAL FIRE. See Chapter 8 – Appendix D and G for additional details.
- c. Approved vehicle access for firefighting shall be provided to all construction sites as required by CFC Section 3311. Vehicle access shall be provided by either temporary or permanent roads, capable of supporting vehicle loading under all weather conditions.

Vehicle access shall be maintained until permanent fire apparatus access roads are available.

- d. The school shall meet the requirements of both CCR Title 14 Section 1274 and California Fire Code Section 503 as determined by TFPD. See Subsection 4.2.1 and Section 4.3 for additional details.
- e. All buildings, with the exception of utility and accessory structures, shall be provided with approved address identification prior to occupancy as described in Subsection 4.2.2 for additional details.
- f. Prior to occupancy of buildings as part of Phase 2 of the project FOTTW shall demonstrate to the satisfaction of both the Town of Truckee and TFPD that the emergency water supply system serving the campus is adequate to meet the required fire flow for the site as required by the California Fire Code. See Section 4.4 for additional details.
- g. All buildings over 3,600 square feet in size shall be provided with an approved automatic fire sprinkler system designed in accordance with the CFC and TFPD requirements. Upon occupancy these systems shall be operable and maintained by FOTTW at all times.
- h. The School shall provide a fire-retardant Class A roof assembly on all buildings as required by the California Building Code.
- i. All buildings shall be constructed and maintained in accordance with the current design standards found in *California Building Code (CBC) Chapter 7A (Materials and Construction Methods for Exterior Wildfire Exposure)*. Buildings and structures within the School shall meet the provisions found in Subsections 4.6.1 through 4.6.14 of this EREP.
- j. No speed bumps, speed humps, speed control dips, etc. shall be permitted on fire access roadways. All other traffic calming devices shall be prohibited unless approved by TFPD.

7.3 WUI Fire Protection Plan Implementation Strategies

- a. The School shall meet the Fuel Management Plan requirements described in Chapter 6 of this document.
- b. The roadside Shaded Fuel Break shall be established and maintained as described in Section 6.4 and 6.5. Maintenance mechanisms shall be established to ensure the fire behavior objectives and thresholds are maintained over time. The maintenance mechanisms shall be binding upon the property for which the fuel break is established, shall ensure adequate maintenance levels, and may include written legal agreements, permanent fees, taxes, or assessments as required by CCR Title 14, Section 1273.03 (e), (g), and (h).

7.4 Emergency Preparedness and Evacuation Preparedness Strategies

- a. Town of Truckee TPD education materials on the *Code Red* program should be made available to all new parents of the students for use in receiving timely notification information regarding the need to evacuate.
- b. The School shall prepare and practice campus evacuation on no less than an annual basis as outlined in the All-Hazards Campus Evacuation Plan. See Appendix A and B for additional details.

END OF CHAPTER

Chapter 8: PLAN APPENDIXES

Appendix A: All-HAZARDS CAMPUS EVACUATION PLAN

TAHOE TRUCKEE WALDORF SCHOOL

STANDARD OPERATING PROCEDURE

All-HAZARDS CAMPUS EVACUATION PLAN

Site Safety Team Approval:

Name	Title	Signature	Date

8/18/2025

PURPOSE:

The Tahoe Truckee Waldorf School is dedicated to safeguarding the well-being of our students, staff, and school buildings in the face of the significant wildfire or other risk in our community. Our comprehensive All-Hazard Evacuation Plan focuses on proactive measures, including annual site assessments, and recommendations for defensible space maintenance, debris removal, tree management, and building hardening. We closely monitor wildfires and other emergency events both within and outside school boundaries, communicate with local emergency services, and follow protocols for sheltering in place or evacuating students and staff when necessary. Our goal is to ensure a secure learning environment and effectively respond to potential wildfire or other threats.

DEFINITIONS:

All-Hazards: Is a strategic approach that places reliance on preparing for a broad range of emergencies and disasters, regardless of their cause or nature. Examples include, but are not limited to, wildfires, floods, earthquakes, hazardous material spills, civil disturbance, and electrical power disruptions.

Critical Fire Weather: A set of weather conditions (usually a combination of low relative humidity and wind) whose effects on fire behavior make control difficult and threaten life safety.

Evacuation Pick-up Points (EPP): refers to temporary locations used exclusively for evacuation embarkation and transportation coordination in a field setting. They may also be referred to as evacuation transportation sites or assembly points. (e.g., bus stops, parks, aircraft landing sites).

Evacuation Route Viability: The ability of transportation infrastructure and services to reasonably enable populations to leave an area at-risk and/or reach temporary areas of refuge under a range of emergency scenarios, given the respective time-constraints.

Evacuation Order: An immediate threat to life. This is a lawful order to leave now. The area is lawfully closed to public access.

Evacuation Warning: Potential threat to life and/or property. Those who require additional time to evacuate should leave as quickly as possible.

Incident Commander (IC): is the person responsible for managing all aspects of an emergency response at the school. The Incident Commander sets priorities and the overall incident action plan. The Incident Commander for the school shall coordinate with, and provide support to, the other Incident Commanders (e.g. Sheriff, Fire, EMS Director), assist emergency personnel to maintain established perimeters, monitor, and support student staging areas, parent/guardian housing and communication, district/media communication and other functions required to support students and staff. The incident commander may, at their own discretion, assign individuals, who may be from the same agency or from assisting agencies, to subordinate or specific positions for the duration of the emergency.

Red Flag Event: Refers to critical weather (e.g. relative humidity $\leq 15\%$, sustained surface winds ≥ 25 mph or greater, widely scattered dry thunderstorms, etc.), and fire danger conditions that could lead to extensive wildfire occurrences and/or control problems on existing wildfires. Red Flag events are typically declared by the National Weather Service.

School Emergency Response Team (SERT): is a group of staff members that manage emergency events on behalf of the school to ensure that both students and staff are adequately protected during the incident. The composition of the School Emergency Response Team will vary according to the circumstances of the emergency event.

Shelter in Place (SIP): The use of a structure to temporarily separate individuals from a hazard or threat. Sheltering in place is the primary protective action in many cases. Often it is safer for individuals to shelter in-place than to try to evacuate. Sheltering in place is appropriate when conditions necessitate that individuals seek protection in their home, place of employment, or other location when disaster strikes.

Temporary Refuge Area (TRA): Locations that are used by individuals when a hazard is imminent or occurs with no warning, and are meant to provide temporary and limited protection as an incident occurs.

PROCEDURE:

1. The following **preparedness actions** will take place during the school year, as necessary, by the School Emergency Response Team (SERT) to prepare for a potential evacuation of the staff and students as a result of a wildfire or other local emergency:
 - a. The school recognizes the high risk of wildfire and similar events within the Truckee community and the importance of being adequately prepared to protect our students, staff, and our campus.
 - School staff will meet annually, or more frequently as necessary, with representatives from both the Town of Truckee Police Department (TPD) and the Truckee Fire Protection District (TFPD) to perform site assessments of our facilities to ensure that wildfire and other natural or man-made risks are identified and addressed.
 - At the start of each school year talk to the families of students about the emergency evacuation plan for their students should an evacuation warning or order be issued when students are present.
 - b. As wildfire conditions can change dramatically in a very brief period of time it is imperative that school staff maintain situational awareness at all times throughout the year. School staff will continually monitor the progress of wildfires burning in the greater Truckee area.
 - Monitor the proximity, direction, and containment of a nearby wildfire.
 - Monitor the air quality and follow local air quality recommendations
 - Keep up-to-date on the current status of local wildfires and any potential risks to the school.
 - Monitor the status of evacuations in the community through the use of the Town of Truckee *Wildfire Alerts, Evacuations, and Emergencies in Your Area* via the link [Genasys Protect](#). The school campus is located in **Zone TRK-E299** (Prosser Pits OHV and Pannonia Ranches).

- c. If a nearby wildfire or other emergency event potentially impacting the school occurs during non-school hours the principal, or other authorized person, may elect to close the school until further notice depending on information communicated to the public by TPD and TFPD.
 - d. In the event of a “Red-Flag” or Critical Fire Weather event the campus may be evacuated of all students and staff as determined necessary by the principal, or other authorized person. School instruction shall be either moved to a virtual learning format or cancelled at the direction of the principal or other authorized person.
 - e. Each campus building shall be equipped with the following emergency supplies in the event that an evacuation, shelter-in-place, or temporary refuge area directive is issued by SERT:
 - Flashlight & Radio
 - Portable Fire Extinguisher
 - First Aid Kit
 - Important documents such as class attendance roster, and phone tree contact list
2. The following **Evacuation Procedures** will be implemented, as necessary, by SERT to prepare for an evacuation order or warning that impacts the campus area as a result of a wildfire or other emergency event:
- a. Phase 1 Evacuation Process – This phase of the school has a daily population count of approximately 111 occupants. When either an evacuation warning or order is issued for the area around the school campus the SERT shall perform the following tasks:
 - Assess life safety issues that may potentially impact the school and resolve them where possible.
 - Provide immediate emergency medical care when appropriate.

- Alert both school staff and the parents of students of the situation using the *Parent Square Internal Messaging System*.
 - SERT will notify both staff and parents when a decision has been finalized to evacuate the school. See also Item 2.c for additional details. The following items will be addressed in this communication:
 - The type of evacuation message received (warning vs. order).
 - The designed EPP where family reunification will occur.
 - The designated Staging Area Manager contact information (name, phone number, etc.) that they can contact at the EPP.
 - SERT shall coordinate the evacuation process by collecting the population count from each classroom. This information shall be forwarded to the Evacuation Coordinator in SERT for determining which classrooms will be evacuated on a priority need basis.
 - Staff members and others assisting in the transportation to the EPP will contact the SERT representative at the front door of the Main School Building to receive instructions from a SERT member on who they are assigned to transport to the EPP. **Parents shall not enter the building except when authorized by a SERT member.**
 - Staff members and others assisting in the evacuation will be assigned specific students from the class roster to transport to the EPP. Each transportation vehicle will be provided with a written list of students from the Evacuation Coordinator that they are transporting which will be handed to the Staging Area Manager upon arrival to the EPP.
 - Students will not be released to their parents from the EPP until authorized to do so by the Staging Area Manager.
 - Upon the completion of parent-student reunification SERT shall notify TPD and TFPD that the evacuation has been completed.
- b. Phase 2 Evacuation Process** - This phase of the school has a daily population count of approximately 240 occupants. When either an evacuation warning or order is issued for the area around the school campus SERT shall perform the following tasks:

- Assess life safety issues that may potentially impact the school and resolve them where possible.
 - Provide immediate emergency medical care when appropriate.
 - Alert both school staff and the parents of students of the situation using the *Parent Square Internal Messaging System*.
 - Notify the responsible staff members who are responsible for transporting students via a maximum of 50 HOV/POV to arrange for immediate pick-up of students for transportation to the EPP.
 - SERT shall coordinate the evacuation process by collecting the population count from each classroom. This information shall be forwarded to the Evacuation Coordinator in SERT for determining which classrooms will be evacuated on a priority need basis.
 - Students will not be released to their parents from the EPP until authorized to do so by the Staging Area Manager.
 - Upon the completion of parent-student reunification SERT shall notify TPD and TFPD that the evacuation has been completed.
- c.** If an evacuation occurs students and staff will be relocated to one of the following Evacuation Pick-up Points (EPP), depending on the direction that the wildfire or emergency event is approaching from, for reunification with their families:
- EPP01 – Riverview Sports Park, 12200 Joerger DR, Truckee
 - EPP02 – Truckee Community Recreation Center, 8924 Donner Pass RD, Truckee
 - EPP03 – Cabela’s Store, 8650 Boomtown Garson RD, Verdi, NV

The option to evacuate the campus will be coordinated with TPD and TFPD staff to ensure safety and alleviate roadway traffic and congestion. SERT will make the determination as to which of the EPP locations will be selected, and will communicate this information to all staff members and parents. EPP sites may assign incremental pick-up times by alphabet or other method.

3. The following **Shelter in Place (SIP) Procedures** will take place during the school year, as necessary, by SERT in the event that a campus evacuation cannot occur as a result of a wildfire or other emergency event. These procedures are to be used when there is a possibility of danger (e.g. approaching wildfire, nearby hazardous material release, lightning storms, lock down, etc....) to students and staff were they to remain outside or in a non-secure location:
 - a. The SERT will be activated under determining the need to initiate a SIP.
 - b. SERT shall notify TPD and TFPD on the decision to shelter in place. SERT shall provide these agencies with the total school population that is sheltering.
 - c. SERT shall initiate the SIP order through the use of the campus PA system or other approved communications methods.
 - d. If classes are outside, they shall return immediately to their classes or other secure location. STUDENTS AND STAFF ARE NOT PERMITTED TO LEAVE THEIR SIP LOCATION WITHOUT AUTHORIZATION FROM SERT.
 - e. Assess life safety issues that may potentially impact the school and resolve them where possible.
 - f. Provide immediate emergency medical care when appropriate.
 - g. Alert both school staff and the parents of students of the situation using the *Parent Square Internal Messaging System*.
 - h. Staff shall follow the emergency actions initiated by both the incident commander and SERT.
 - i. Once safe to do so, and under the direction of the incident commander, SERT shall initiate the evacuation of the school by the procedures described in Item 2.

4. In the event that the primary evacuation route is blocked or obstructed the secondary evacuation route through the California Department of Food and Agriculture facility located on Interstate 80 shall be utilized for evacuating the school.

See Figures 1 and 2 for additional information.

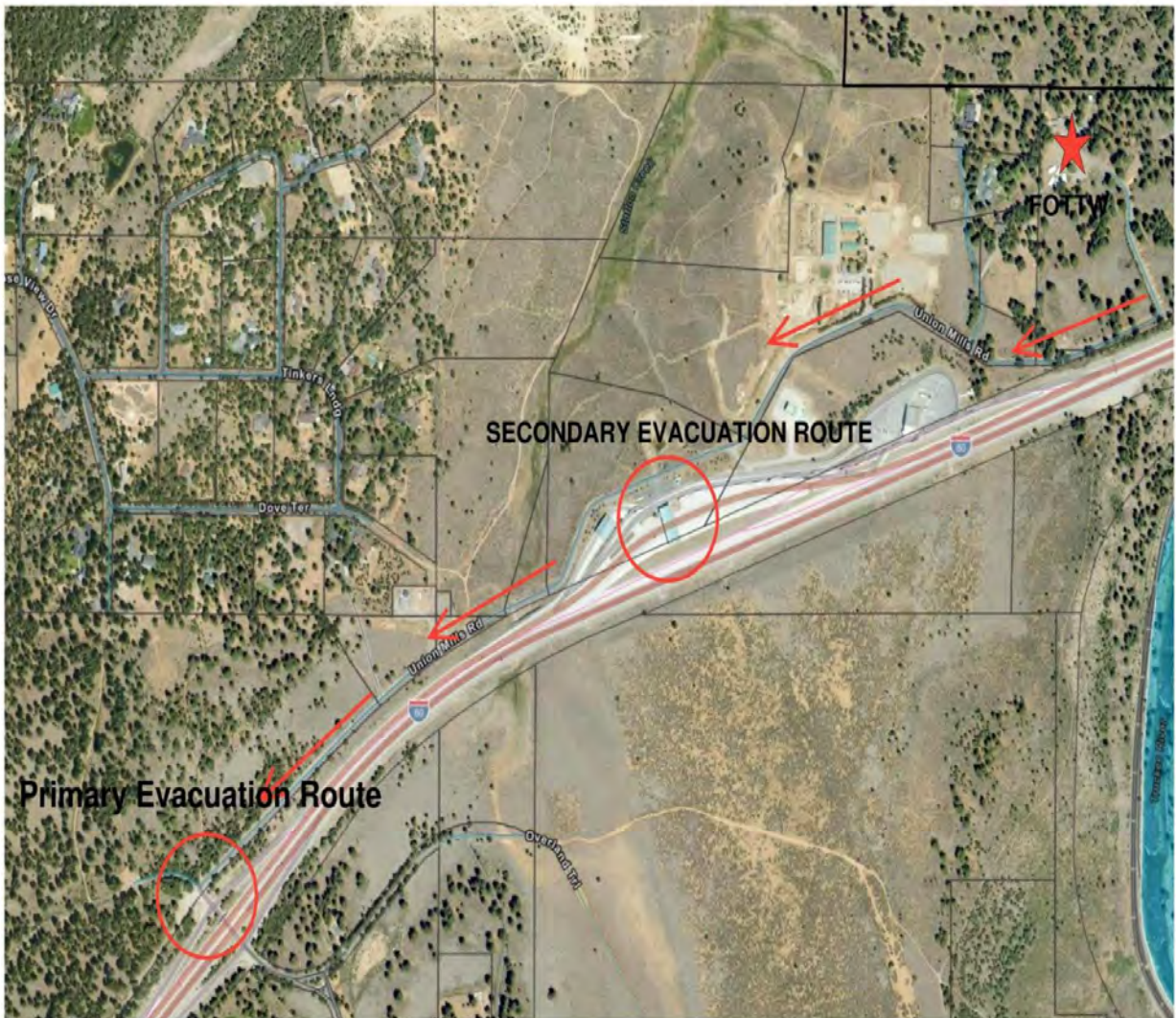


Figure 1: Area Evacuation Routes



Figure 2: Right of Way (ROW) for Emergency Vehicle Access / Civilian Evacuation Route

5. During all school evacuation events SERT will be activated. The team will be responsible to complete the following actions:
 - Use authorized communication devices to report potential emergencies to the SERT.
 - Assign a staff member to monitor the entrance of each building and only allow students and staff to enter. Close all external doors and post signs indicating all persons are to enter the building through a designated entrance.

- Communicate with staff, parents, and guardians that power to the campus will be impacted, and that school activities will be moved to a virtual learning format or that school has been cancelled for the remainder of the day.
 - Establish a safe departure action plan that ensures that all students are picked up by the authorized parent or guardian and transported home.
 - Ensure that all students are reunited with their parent or guardian at an approved location on the campus grounds.
6. All evacuation routes (on and off-campus) shall be clearly marked and navigable by students who use a wheelchair, walker, cane or have limited mobility/visual impairments.

TRAINING:

1. All school staff are to be trained on both this procedure and the evacuation maps provided on no less than an annual basis.
2. At the beginning of each school year facility, part-time staff and others as determined by SERT shall be provided instruction on the evacuation plan and their role in assisting in campus evacuations. Staff members, part-time staff and others who operate School related HOV's shall be properly licensed and trained to operate the vehicle as required by the California Vehicle Code.
3. At the beginning of each school year, and more frequently as determined by SERT, staff and students shall participate in a campus wide evacuation exercise to ensure that everyone is familiar with the plan. The annual exercise shall practice the actions required at the campus location only, and shall not require students to be transported off-site to a EPP location.

End of Standard Operating Procedure

Appendix B: UNPLANNED AND PSOM ELECTRICAL POWER DISRUPTIONS DURING SCHOOL
HOURS

**TAHOE TRUCKEE WALDORF
SCHOOL**

STANDARD OPERATING PROCEDURE

**UNPLANNED AND PSOM ELECTRICAL POWER
DISRUPTIONS DURING SCHOOL HOURS**

Approved By: _____

Title

6/2/2025

PURPOSE:

To establish guidelines for determining school operations during either unplanned electrical power disruptions or Public Safety Outage Management events that occur when the Tahoe Truckee Waldorf School is in session. The following school functions are covered by this Standard Operating Procedure (SOP):

- Teaching, school administration, food preparation, out of hours clubs, sports activities, and school organized day trips.

This SOP covers the whole school site, including all classrooms and internal space, all outdoor areas within the boundaries of the school premises, and off-site trips when students are leaving or returning to the school site during school hours.

DEFINITIONS:

Fire Protection System – a system that is intended to detect, control, and suppress fires, ensuring the safety of people and property. These systems include fire sprinkler, fire pumps, fire alarms, and pre-engineered extinguishing equipment.

Level 1 Outage – an unplanned electrical power disruption that impacts school campus operations for periods not exceeding 1 hour in duration.

Level 2 Outage – an unplanned electrical power disruption that impacts school campus operations for periods of between 1 and 4 hours in duration.

Level 3 Outage – an unplanned electrical power disruption that impacts school campus operations for more than 4 hours in duration

Public Safety Outage Management (PSOM) – a program implemented by NV Energy in very-high fire-hazard areas during Red Flag and similar events. Electrical power is shut off to prevent energized electrical power sources from causing wildfires to ignite.

Red Flag Event – refers to critical weather (e.g. relative humidity $\leq 15\%$, sustained surface winds ≥ 25 mph or greater, widely scattered dry thunderstorms, etc.), and fire danger conditions that could lead to extensive wildfire occurrences and/or control problems on existing wildfires. Red Flag events are typically declared by the National Weather Service.

School Incident Management Team – is a group of staff members that manage emergency events on behalf of the school to ensure that both students and staff are adequately protected during the incident. The composition of the School Incident Management Team will vary according to the circumstances of the emergency event.

PROCEDURE:

1. Unless otherwise specified by the school principal or other authorized individual, the campus shall remain open during Level 1 and 2 power outages and, if safe to do so, classes shall operate as normal. It is the expectation that all staff should remain on-site until otherwise directed.
2. All persons shall avoid unnecessary movement inside buildings on the campus to avoid injury resulting from slips, trips, and falls. During normal school hours there is typically sufficient natural light to safely remain in place for a period of time. School staff should ensure that all students are accounted for and evacuated from dark spaces (e.g. washrooms and areas with no natural lighting).
3. The use of open flame candles and similar devices for supplementary lighting is strictly prohibited.
4. Each classroom building on the campus should store the following supplies in case of a Level 1 or 2 power outage: two flashlights and extra batteries. These items should be inspected during a monthly safety audit to ensure that they remain functional.
5. In the event of a Level 3 power outage or PSOM event the campus shall be evacuated of all students and staff. School instruction shall be either moved to a virtual learning format or cancelled at the direction of the principal or other authorized person.
6. During a Level 3 power outage, Red-Flag event, or PSOM event, the School Incident Management Team will be activated. The team will be responsible to complete the following actions:
 - Use authorized communication devices to report potential emergencies to the School Incident Management Team.
 - Assign a staff member to monitor the entrance of each building and only allow students and staff to enter. Close all external doors and post signs indicating all persons are to enter the building through a designated entrance.
 - Communicate with staff, parents, and guardians that power to the campus will be impacted for an extended period of time, and that school activities will be moved to a virtual learning format or that school has been cancelled for the remainder of the day.

- Establish a safe departure plan that ensures that all students are picked up by the authorized parent or guardian and transported home.
 - Ensure that all students are reunited with their parent or guardian at an approved location on the campus grounds.
7. During a Level 3 power outage or PSOM event the manual bypass valve serving the fire protection systems shall be operated to allow for the flow of water to both building automatic fire sprinkler systems and the site fire hydrant.

TRAINING:

All school staff are to be trained on both this procedure and the building specific plan on no less than an annual basis.

End of Standard Operating Procedure

Appendix C: MOU By and Between the California Department of Food and Agriculture and FOTTW
Regarding Emergency Evacuation Route Access

**Memorandum of Understanding (MOU) by and
between the California Department of Food and Agriculture (CDFA) and
Friends of Truckee Tahoe Waldorf (FOTTW)**

Emergency Evacuation Route

Purpose:

1. It is critical to have effective traffic safety measures to ensure the safety of both parties, specifically during an emergency evacuation. Access shall be granted via west bound Interstate 80, through CDFA property by way of the CDFA Truckee Border Protection driveway located through the center of a parking lot.
2. This agreement is only applicable to the FOTTW located at 12640 Union Mills Road, Truckee, CA 96161 and the CDFA located at 12750 Interstate 80, Truckee, CA 96161.

CDFA Responsibilities:

1. Grant FOTTW access to the parking lot driveway during emergency evacuations.
2. Ensure the emergency evacuation route is clear and free of vehicles blocking the entrance or exit of the parking lot driveway.
3. Notify FOTTW of any construction or repairs impacting the parking lot or Truckee Border Protection Station (BPS) that would prevent access to the driveway during an emergency evacuation.

FOTTW Responsibilities:

1. Provide CDFA a detailed map and written plans of the emergency evacuation route and any procedures set in place.
2. Provide traffic safety cones, traffic safety signage, and any other safety equipment necessary to safely direct traffic through CDFA property via the driveway parking lot and onto westbound Interstate 80.
3. Ensure staff take appropriate public safety measures as directed by emergency personnel.
4. Address any violations identified by CDFA.
5. Enforce the safe and respectful travel of vehicles using the emergency evacuation route during an evacuation.
6. Provide and install legal size signs at the entrance and exit of the CDFA parking lot driveway. Signs shall read (EMERGENCY EVACUATION VEHICLE ROUTE, NO PARKING OR BLOCKING DRIVEWAY) or as directed by the California Highway Patrol and the California Department of Forestry and Fire Protection.
7. Ensure FOTTW staff, parents, and outside visitors to the FOTTW do not use the CDFA driveway, except as required during emergency evacuations.
8. Assume liability of any injuries to any FOTTW parties involved using the driveway during emergency evacuations. This shall include staff during set up and teardown of the emergency evacuation route (traffic safety cones, traffic safety signage needed to direct traffic, and any other safety equipment used).
9. Assume liability of any damage to vehicles of FOTTW parties involved when using the driveway during an emergency evacuation.

10. Assume liability of any damage to the CDFA property when using the driveway during an emergency evacuation.

MOU Review

This MOU serves as an agreement between CDFA and FOTTW, to allow the use of the CDFA property at the Truckee BPS during emergency evacuations. The MOU may be renewed at the end of the term, with or without changes. Parties to this MOU may terminate the agreement 60 calendar days after issuing written notice to the other party.

During the duration of this MOU, both parties shall communicate in good faith regarding any reasons for the issuance of the termination notice, in an attempt to keep the MOU in effect, provided that either party retains the right to terminate without cause at the conclusion of the period.

Term

This MOU shall be effective once signed by both parties and shall remain in force for a period of five (5) years, unless terminated earlier by mutual agreement of both parties. Upon expiration of the agreed upon term, the parties may choose to renew or extend the MOU by mutual consent.

Parties to the Agreement:

California Department of Food and Agriculture

Jody Lusby Digitally signed by Jody Lusby
Date: 2025.01.06 16:21:15
-08'00'

Jody Lusby
Director
Administrative Services Division
1220 N Street
Sacramento, CA 95814
(916) 654-1020
CDFA.ASD.Admin.Services@cdfa.ca.gov

Date

Friends of Tahoe Truckee Waldorf



Ms. Liz Sheppard
Board President
12640 Union Mills Rd.
Truckee, CA 96161
(404) 202-6829
liz@friendsoftahoetruckeewaldorf.org

01/02/2025

Date



June 26, 2024

Adriaan Gilis
 Agriculture Program Supervisor II
 CDFA-Pest Exclusion Branch
 Border Station Program

Mr. Gilis,

My name is Liz Sheppard and I am the Board President of Friends of Tahoe Truckee Waldorf (FOTTW). Our organization is a non-profit that currently operates a Waldorf Educational program at 12640 Union Mills Road, Truckee, CA 96161. We have an open Conditional Use Permit (CUP) with the town of Truckee and one of the conditions of this CUP is the development of evacuation plans in cases of emergency. One of our parent volunteers, Jonathan Jung, has been in contact with you and your colleagues with regards to our inquiry for use of your access point to I-80 thru your facility at 12750 I-80, Truckee, CA 96161 in a specific emergency evacuation scenario. Below are details that are relevant to this inquiry:

- The request is being made so that FOTTW complies with the requirements found in California Code of Regulations Title 14, Section 1273.08 (a) regarding dead-end roads. Current state fire safe regulations require a secondary emergency vehicle access point and civilian evacuation route whenever a dead-end road exceeds 2,640 feet. The property currently exceeds this maximum limit and the expansion of the campus requires the project to meet this regulation.
- FOTTW would like to propose a memorandum of understanding (MOU) be established between them and CDFA for the purpose of allowing an emergency vehicle access point from westbound I-80 onto Union Mill Road, and a civilian evacuation route from Union Mill Road onto I-80 to allow for the school and adjacent properties to evacuate west towards the Town of Truckee.
- It is undetermined at this point if either the Town of Truckee or the Truckee Fire Protection District want to be named parties in the MOU, however the MOU can be revised to include one or both upon their request.
- The use of this access connection would only be allowed during large-scale emergencies in the area such as a wildfire, hazardous materials spill, or similar natural or man-made disaster when Union Mill Road is either blocked by the hazard or closed by public safety officials.
- The minimum right-of-way (ROW) required to comply with this regulation is a road with no less than a 20-foot unobstructed width and 14-foot vertical clearance. The road surface needs to support the imposed weight of fire apparatus weighing at least 75,000 pounds.
- The MOU would be effective for no less than 5 years and then be renewed on an annual basis in perpetuity upon the agreement of both parties.

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- Termination of the MOU by either party will become effective 6 months upon written notice by either party being received on the other.

See Figure 1 for an area map showing the general location of the CDFA facility and its proximity to the school campus.



Figure 1: Area Map Showing the Location of the School Campus and CDFA Facility

See Figure 2 for a map that shows the approximate ROW from Union Mill Road to I-80 through the CDFA facility.

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Figure 2: Proposed Right of Way (ROW) for Emergency Vehicle Access / Civilian Evacuation Route

Please do not hesitate to reach out to me or our parent volunteer, Jonathan Jung, with any follow-up questions regarding this proposed language for the MOU.

Thank you for your help,

Liz Sheppard
FOTTW Board President
(404) 202-6829
liz@friendsoftahoetruckeewaldorf.org

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State Minimum Fire Safe Regulations

Board of Forestry and Fire Protection



FOR INFORMATIONAL USE ONLY

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govt.westlaw.com/calregs

As of April 1, 2023

California Code of Regulations
Title 14 Natural Resources
Division 1.5 Department of Forestry
Chapter 7 - Fire Protection
Subchapter 2 State Minimum Fire Safe Regulations
Articles 1-5

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Article 1 Administration**§ 1270.00. Title**

Subchapter 2 shall be known as the "State Minimum Fire Safe Regulations," and shall constitute the minimum Wildfire protection standards of the California Board of Forestry and Fire Protection.

§ 1270.01. Definitions

The following definitions are applicable to Subchapter 2.

- (a) Agriculture: Land used for agricultural purposes as defined in a Local Jurisdiction's zoning ordinances.
- (b) Board: California Board of Forestry and Fire Protection.
- (c) Building: Any Structure used or intended for supporting or sheltering any use or Occupancy, except those classified as Utility and Miscellaneous Group U.
- (d) CAL FIRE: California Department of Forestry and Fire Protection.
- (e) Dead-end Road: A Road that has only one point of vehicular ingress/egress, including cul-de-sacs and Roads that loop back on themselves
- (f) Defensible Space: The area within the perimeter of a parcel, Development, neighborhood or community where basic wildland fire protection practices and measures are implemented, providing the key point of defense from an approaching Wildfire or defense against encroaching Wildfires or escaping Structure fires. The perimeter as used in this regulation is the area encompassing the parcel or parcels proposed for construction and/or Development, excluding the physical Structure itself. The area is characterized by the establishment and maintenance of emergency vehicle access, emergency water reserves, Road names and Building identification, and fuel modification measures.
- (g) Development: As defined in section 66418.1 of the California Government Code.
- (h) Director: Director of the Department of Forestry and Fire Protection or their designee.
- (i) Driveway: A vehicular pathway that serves no more than four (4) Residential Units and any number of non-commercial or non-industrial Utility or Miscellaneous Group U Buildings on each parcel. A Driveway shall not serve commercial or industrial uses at any size or scale.
- (j) Exception: An alternative to the specified standard requested by the applicant that may be necessary due to health, safety, environmental conditions, physical site limitations or other limiting conditions, such as recorded historical sites, that provides mitigation of the problem.
- (k) Fire Apparatus: A vehicle designed to be used under emergency conditions to transport personnel and equipment or to support emergency response, including but not limited to the suppression of fires.
- (l) Fire Authority: A fire department, agency, division, district, or other governmental body responsible for regulating and/or enforcing minimum fire safety standards in the Local Jurisdiction.
- (m) Fire Hydrant: A valved connection on a water supply or storage system for the purpose of providing water for fire protection and suppression operations.
- (n) Fuel Break: A strategically located area where the volume and arrangement of vegetation has been managed to limit fire intensity, fire severity, rate of spread, crown fire potential, and/or ember production.
- (o) Greenbelts: open space, parks, wildlands, other areas, or a combination thereof, as designated by Local Jurisdictions, which are in, surround, or are adjacent to a city or urbanized area, that may function as Fuel Breaks and where Building construction is restricted or prohibited.
- (p) Greenways: Linear open spaces or corridors that link parks and neighborhoods within a community through natural or manmade trails and paths.

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- (q) Hammerhead/T: A "T" shaped, three-point Turnaround space for Fire Apparatus on a Road or Driveway, being no narrower than the Road or Driveway that serves it.
- (r) Hazardous Land Use: A land use that presents a significantly elevated potential for the ignition, prolonged duration, or increased intensity of a Wildfire due to the presence of flammable materials, liquids, or gasses, or other features that initiate or sustain combustion. Such uses are determined by the Local Jurisdiction and may include, but are not limited to, power-generation and distribution facilities; wood processing or storage sites; flammable gas or liquids processing or storage sites; or shooting ranges.
- (s) Local Jurisdiction: Any county, city/county agency or department, or any locally authorized district that approves or has the authority to regulate Development.
- (t) Municipal-Type Water System: A system having water pipes servicing Fire Hydrants and designed to furnish, over and above domestic consumption, a minimum of 250 gpm (950 L/min) at 20 psi (138 kPa) residual pressure for a two (2) hour duration.
- (u) Occupancy: The purpose for which a Building, or part thereof, is used or intended to be used.
- (v) One-way Road: A Road that provides a minimum of one Traffic Lane width designed for traffic flow in one direction only.
- (w) Residential Unit: Any Building or portion thereof which contains living facilities including provisions for sleeping, eating, cooking and/or sanitation, for one or more persons. Manufactured homes, mobile homes, and factory-built housing are considered Residential Units.
- (x) Ridgeline: The line of intersection of two opposing slope aspects running parallel to the long axis of the highest elevation of land; or an area of higher ground separating two adjacent streams or watersheds.
- (y) Road: A public or private vehicular pathway to more than four (4) Residential Units, or to any industrial or commercial Occupancy.
- (z) Road or Driveway Structures: Bridges, culverts, and other appurtenant Structures which supplement the Traffic Lane or Shoulders.
- (aa) Same Practical Effect: As used in this subchapter, means an Exception or alternative with the capability of applying accepted wildland fire suppression strategies and tactics, and provisions for fire fighter safety, including:
- (1) access for emergency wildland fire equipment,
 - (2) safe civilian evacuation,
 - (3) signing that avoids delays in emergency equipment response,
 - (4) available and accessible water to effectively attack Wildfire or defend a Structure from Wildfire, and
 - (5) fuel modification sufficient for civilian and fire fighter safety.
- (bb) Shoulder: A vehicular pathway adjacent to the Traffic Lane.
- (cc) State Responsibility Area (SRA): As defined in Public Resources Code sections 4126-4127; and the California Code of Regulations, title 14, division 1.5, chapter 7, article 1, sections 1220-1220.5.
- §(ee) Structure: That which is built or constructed or any piece of work artificially built up or composed of parts joined together in some definite manner.
- (ff) Traffic Lane: The portion of a Road or Driveway that provides a single line of vehicle travel.
- (gg) Turnaround: An area which allows for a safe opposite change of direction for Fire Apparatus at the end of a Road or Driveway.
- (hh) Turnout: A widening in a Road or Driveway to allow vehicles to pass.

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- (ii) Undeveloped Ridgeline: A Ridgeline with no Buildings.
- (jj) Utility and Miscellaneous Group U: A Structure of an accessory character or a miscellaneous Structure not classified in any specific Occupancy permitted, constructed, equipped, and maintained to conform to the requirements of Title 24, California Building Standards Code.
- (kk) Vertical Clearance: The minimum specified height of a bridge, overhead projection, or vegetation clearance above the Road or Driveway.
- (ll) Vertical Curve: A curve at a high or low point of a Road that provides a gradual transition between two Road grades or slopes.
- (mm) Very High Fire Hazard Severity Zone (VHFHSZ): As defined in Government Code section 51177(i).
- (nn) Wildfire: Has the same meaning as “forest fire” in Public Resources Code Section 4103.

§ 1270.02. Purpose

- (a) Subchapter 2 has been prepared and adopted for the purpose of establishing state minimum Wildfire protection standards in conjunction with Building, construction, and Development in the State Responsibility Area (SRA) and, after July 1, 2021, the Very High Fire Hazard Severity Zones, as defined in Government Code § 51177(i) (VHFHSZ).
- (b) The future design and construction of Structures, subdivisions and Developments in the SRA and, after July 1, 2021, the VHFHSZ shall provide for basic emergency access and perimeter Wildfire protection measures as specified in the following articles.
- (c) These standards shall provide for emergency access; signing and Building numbering; private water supply reserves for emergency fire use; vegetation modification, Fuel Breaks, Greenbelts, and measures to preserve Undeveloped Ridgelines. Subchapter 2 specifies the minimums for such measures.

§ 1270.03. Scope

- (a) Subchapter 2 shall apply to:
 - (1) the perimeters and access to all residential, commercial, and industrial Building construction within the SRA approved after January 1, 1991, and those approved after July 1, 2021 within the VHFHSZ, except as set forth below in subsection (b).
 - (2) the siting of newly installed commercial modulars, manufactured homes, mobilehomes, and factory-built housing, as defined in Health and Safety Code sections 18001.8, 18007, 18008, and 19971;
 - (3) all tentative and parcel maps or other Developments approved after January 1, 1991; and
 - (4) applications for Building permits on a parcel approved in a pre-1991 parcel or tentative map to the extent that conditions relating to the perimeters and access to the Buildings were not imposed as part of the approval of the parcel or tentative map.
- (b) Subchapter 2 does not apply where an application for a Building permit is filed after January 1, 1991 for Building construction on a parcel that was formed from a parcel map or tentative map (if the final map for the tentative map is approved within the time prescribed by the local ordinance) approved prior to January 1, 1991, to the extent that conditions relating to the perimeters and access to the Buildings were imposed by the parcel map or final tentative map approved prior to January 1, 1991.
- (c) Affected activities include, but are not limited to:
 - (1) permitting or approval of new parcels, excluding lot line adjustments as specified in Government Code (GC) section 66412(d);
 - (2) application for a Building permit for new construction not relating to an existing Structure;

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- (3) application for a use permit;
 - (4) Road construction including construction of a Road that does not currently exist, or extension of an existing Road.
- (d) The standards in Subchapter 2 applicable to Roads shall not apply to Roads used solely for Agriculture; mining; or the management of timberland or harvesting of forest products.

§ 1270.04. Provisions for Application of these Regulations

This Subchapter shall be applied as follows:

- (a) the Local Jurisdictions shall provide the Director of the California Department of Forestry and Fire Protection (CAL FIRE) or their designee with notice of applications for Building permits, tentative parcel maps, tentative maps, and installation or use permits for construction or Development within the SRA, or if after July, 1 2021, the VHFHSZ.
- (b) the Director or their designee may review and make fire protection recommendations on applicable construction or development permits or maps provided by the Local Jurisdiction.
- (c) the Local Jurisdiction shall ensure that the applicable sections of this Subchapter become a condition of approval of any applicable construction or Development permit or map.

§ 1270.05. Local Regulations

- (a) Subchapter 2 shall serve as the minimum Wildfire protection standards applied in SRA and VHFHSZ. However, Subchapter 2 does not supersede local regulations which equal or exceed the standards of this Subchapter.
- (b) A local regulation equals or exceeds a minimum standard of this Subchapter only if, at a minimum, the local regulation also fully complies with the corresponding minimum standard in this Subchapter.
- (c) A Local Jurisdiction shall not apply exemptions to Subchapter 2 that are not enumerated in Subchapter 2. Exceptions requested and approved in conformance with § 1270.07 (Exceptions to Standards) may be granted on a case-by-case basis.
- (d) Notwithstanding a local regulation that equals or exceeds the State Minimum Fire Safe Regulations, Building construction shall comply with the State Minimum Fire Safe Regulations.

§ 1270.06. Inspections

Inspections shall conform to the following requirements:

- (a) Inspections in the SRA shall be made by:
 - (1) the Director, or
 - (2) Local Jurisdictions that have assumed state fire protection responsibility on SRA lands, or
 - (3) Local Jurisdictions where the inspection duties have been formally delegated by the Director to the Local Jurisdictions, pursuant to subsection (b).
- (b) The Director may delegate inspection authority to a Local Jurisdiction subject to all of the following criteria:
 - (1) The Local Jurisdiction represents that they have appropriate resources to perform the delegated inspection authority.
 - (2) The Local Jurisdiction acknowledges that CAL FIRE's authority under subsection (d) shall not be waived or restricted.
 - (3) The Local Jurisdiction consents to the delegation of inspection authority.
 - (4) The Director may revoke the delegation at any time.
 - (5) The delegation of inspection authority, and any subsequent revocation of the delegation, shall be documented in writing, and retained on file at the CAL FIRE Unit headquarters that administers SRA fire protection in the area.
- (c) Inspections in the VHFHSZ shall be made by the Local Jurisdiction.

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(d) Nothing in this section abrogates CAL FIRE's authority to inspect and enforce state forest and fire laws in the SRA even when the inspection duties have been delegated pursuant to this section.

(e) Reports of violations within the SRA shall be provided to the CAL FIRE Unit headquarters that administers SRA fire protection in the Local Jurisdiction.

(f) When inspections are conducted, they shall occur prior to: the issuance of the use permit or certificate of Occupancy; the recordation of the parcel map or final map; the filing of a notice of completion; or the final inspection of any project or Building permit.

§ 1270.07. Exceptions to Standards

(a) Upon request by the applicant, an Exception to standards within this Subchapter may be allowed by the Inspection entity in accordance with 14 CCR § 1270.06 (Inspections) where the Exceptions provide the Same Practical Effect as these regulations towards providing Defensible Space. Exceptions granted by the Local Jurisdiction listed in 14 CCR § 1270.06, shall be made on a case-by-case basis only. Exceptions granted by the Local Jurisdiction listed in 14 CCR § 1270.06 shall be forwarded to the appropriate CAL FIRE unit headquarters that administers SRA fire protection in that Local Jurisdiction, or the county in which the Local Jurisdiction is located and shall be retained on file at the Unit Office.

(b) Requests for an Exception shall be made in writing to the Local Jurisdiction listed in 14 CCR § 1270.06 by the applicant or the applicant's authorized representative.

At a minimum, the request shall state the specific section(s) for which an Exception is requested; material facts supporting the contention of the applicant; the details of the Exception proposed; and a map showing the proposed location and siting of the Exception. Local Jurisdictions listed in § 1270.06 (Inspections) may establish additional procedures or requirements for Exception requests.

(c) Where an Exception is not granted by the inspection entity, the applicant may appeal such denial to the Local Jurisdiction. The Local Jurisdiction may establish or utilize an appeal process consistent with existing local building or planning department appeal processes.

(d) Before the Local Jurisdiction makes a determination on an appeal, the inspector shall be consulted and shall provide to that Local Jurisdiction documentation outlining the effects of the requested Exception on Wildfire protection.

(e) If an appeal is granted, the Local Jurisdiction shall make findings that the decision meets the intent of providing Defensible Space consistent with these regulations. Such findings shall include a statement of reasons for the decision. A written copy of these findings shall be provided to the CAL FIRE Unit headquarters that administers SRA fire protection in that Local Jurisdiction.

§ 1270.08. Distance Measurements

All specified or referenced distances are measured along the ground, unless otherwise stated.

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Article 2 Ingress and Egress**§ 1273.00. Intent**

Roads, and Driveways, whether public or private, unless exempted under 14 CCR § 1270.03(d), shall provide for safe access for emergency Wildfire equipment and civilian evacuation concurrently, and shall provide unobstructed traffic circulation during a Wildfire emergency consistent with 14 CCR §§ 1273.00 through 1273.09.

§ 1273.01. Width.

(a) All roads shall be constructed to provide a minimum of two ten (10) foot traffic lanes, not including shoulder and striping. These traffic lanes shall provide for two-way traffic flow to support emergency vehicle and civilian egress, unless other standards are provided in this article or additional requirements are mandated by Local Jurisdictions or local subdivision requirements. Vertical clearances shall conform to the requirements in California Vehicle Code section 35250.

(b) All One-way Roads shall be constructed to provide a minimum of one twelve (12) foot traffic lane, not including Shoulders. The Local Jurisdiction may approve One-way Roads.

(1) All one-way roads shall, at both ends, connect to a road with two traffic lanes providing for travel in different directions, and shall provide access to an area currently zoned for no more than ten (10) Residential Units.

(2) In no case shall a One-way Road exceed 2,640 feet in length. A turnout shall be placed and constructed at approximately the midpoint of each One-way Road.

(c) All driveways shall be constructed to provide a minimum of one (1) ten (10) foot traffic lane, fourteen (14) feet unobstructed horizontal clearance, and unobstructed vertical clearance of thirteen feet, six inches (13' 6").

§ 1273.02. Road Surface

(a) Roads shall be designed and maintained to support the imposed load of Fire Apparatus weighing at least 75,000 pounds, and provide an aggregate base.

(b) Road and Driveway Structures shall be designed and maintained to support at least 40,000 pounds.

(c) Project proponent shall provide engineering specifications to support design, if requested by the Local Jurisdiction.

§ 1273.03. Grades

(a) At no point shall the grade for all Roads and Driveways exceed 16 percent.

(b) The grade may exceed 16%, not to exceed 20%, with approval from the Local Jurisdiction and with mitigations to provide for Same Practical Effect.

§ 1273.04. Radius

(a) No Road or Road Structure shall have a horizontal inside radius of curvature of less than fifty (50) feet. An additional surface width of four (4) feet shall be added to curves of 50-100 feet radius; two (2) feet to those from 100-200 feet.

(b) The length of vertical curves in Roadways, exclusive of gutters, ditches, and drainage structures designed to hold or divert water, shall be not less than one hundred (100) feet.

§ 1273.05. Turnarounds

(a) Turnarounds are required on Driveways and Dead-end Roads.

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(b) The minimum turning radius for a turnaround shall be forty (40) feet, not including parking, in accordance with the figures in 14 CCR §§ 1273.05(e) and 1273.05(f). If a hammerhead/T is used instead, the top of the "T" shall be a minimum of sixty (60) feet in length.

(c) Driveways exceeding 150 feet in length, but less than 800 feet in length, shall provide a turnout near the midpoint of the Driveway. Where the driveway exceeds 800 feet, turnouts shall be provided no more than 400 feet apart.

(d) A turnaround shall be provided on Driveways over 300 feet in length and shall be within fifty (50) feet of the building.

(d) Each Dead-end Road shall have a turnaround constructed at its terminus. Where parcels are zoned five (5) acres or larger, turnarounds shall be provided at a maximum of 1,320 foot intervals.

(e) Figure A. Turnarounds on roads with two ten-foot traffic lanes.

Figure A/Image 1 on the left is a visual representation of paragraph (b).

(f) Figure B. Turnarounds on driveways with one ten-foot traffic lane.

Figure B/Image 2 on the right is a visual representation of paragraph (b).

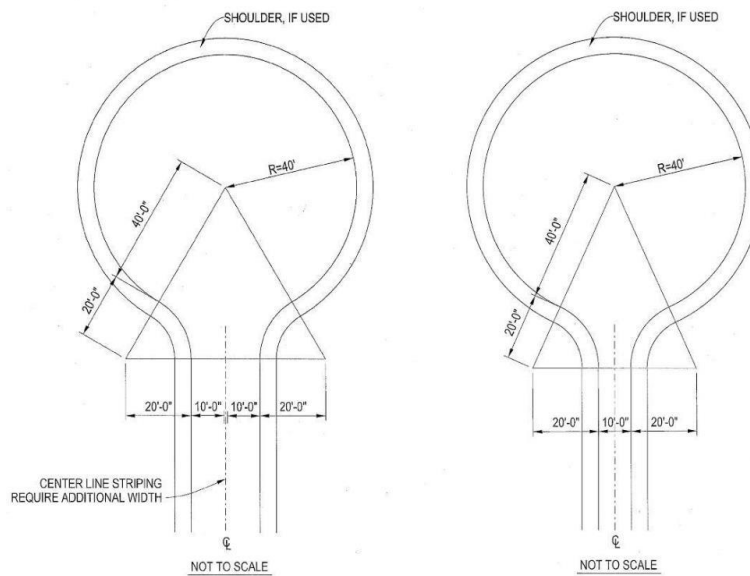


FIGURE FOR 14 CCR § 1273.05. TURNAROUND EXAMPLES

§ 1273.06. Turnouts

Turnouts shall be a minimum of twelve (12) feet wide and thirty (30) feet long with a minimum twenty-five (25) foot taper on each end.

§ 1273.07. Road and Driveway Structures

(a) Appropriate signing, including but not limited to weight or vertical clearance limitations, One-way Road or single traffic lane conditions, shall reflect the capability of each bridge.

(b) Where a bridge or an elevated surface is part of a Fire Apparatus access road, the bridge shall be constructed and maintained in accordance with the American Association of State and

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Highway Transportation Officials Standard Specifications for Highway Bridges, 17th Edition, published 2002 (known as AASHTO HB-17), hereby incorporated by reference. Bridges and elevated surfaces shall be designed for a live load sufficient to carry the imposed loads of fire apparatus. Vehicle load limits shall be posted at both entrances to bridges when required by the local authority having jurisdiction.

(c) Where elevated surfaces designed for emergency vehicle use are adjacent to surfaces which are not designed for such use, barriers, or signs, or both, as approved by the local authority having jurisdiction, shall be installed and maintained.

(d) A bridge with only one traffic lane may be authorized by the Local Jurisdiction; however, it shall provide for unobstructed visibility from one end to the other and turnouts at both ends.

§ 1273.08. Dead-end Roads

(a) The maximum length of a Dead-end Road, including all Dead-end Roads accessed from that Dead-end Road, shall not exceed the following cumulative lengths, regardless of the number of parcels served:

- parcels zoned for less than one acre - 800 feet
- parcels zoned for 1 acre to 4.99 acres - 1,320 feet
- parcels zoned for 5 acres to 19.99 acres - 2,640 feet
- parcels zoned for 20 acres or larger - 5,280 feet

All lengths shall be measured from the edge of the Road surface at the intersection that begins the Road to the end of the Road surface at its farthest point. Where a dead-end road crosses areas of differing zoned parcel sizes requiring different length limits, the shortest allowable length shall apply.

(b) See 14 CCR § 1273.05 for dead-end road turnaround requirements.

§ 1273.09. Gate Entrances

(a) Gate entrances shall be at least two (2) feet wider than the width of the traffic lane(s) serving that gate and a minimum width of fourteen (14) feet unobstructed horizontal clearance and unobstructed vertical clearance of thirteen feet, six inches (13' 6").

(b) All gates providing access from a Road to a Driveway shall be located at least thirty (30) feet from the roadway and shall open to allow a vehicle to stop without obstructing traffic on that Road.

(c) Where a One-way Road with a single traffic lane provides access to a gated entrance, a forty (40) foot turning radius shall be used.

(d) Security gates shall not be installed without approval. Where security gates are installed, they shall have an approved means of emergency operation. Approval shall be by the local authority having jurisdiction. The security gates and the emergency operation shall be maintained operational at all times.

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Article 3 Signing and Building Numbering**§ 1274.00. Intent**

To facilitate locating a fire and to avoid delays in response, all newly constructed or approved Roads and Buildings shall be designated by names or numbers posted on signs clearly visible and legible from the Road. This section shall not restrict the size of letters or numbers appearing on road signs for other purposes.

§ 1274.01. Road Signs.

(a) Newly constructed or approved Roads must be identified by a name or number through a consistent system that provides for sequenced or patterned numbering and/or non-duplicative naming within each Local Jurisdiction. This section does not require any entity to rename or renumber existing roads, nor shall a Road providing access only to a single commercial or industrial Occupancy require naming or numbering.

(b) The size of letters, numbers, and symbols for Road signs shall be a minimum four (4) inch letter height, half inch (.5) inch stroke, reflectorized, contrasting with the background color of the sign.

§ 1274.02. Road Sign Installation, Location, and Visibility.

(a) Road signs shall be visible and legible from both directions of vehicle travel for a distance of at least one hundred (100) feet.

(b) Signs required by this article identifying intersecting Roads shall be placed at the intersection of those Roads.

(c) A sign identifying traffic access or flow limitations, including but not limited to weight or vertical clearance limitations, dead-end roads, one-way roads, or single lane conditions, shall be placed:

(1) at the intersection preceding the traffic access limitation, and

(2) no more than one hundred (100) feet before such traffic access limitation.

(d) Road signs required by this article shall be posted at the beginning of construction and shall be maintained thereafter.

§ 1274.03. Addresses for Buildings.

(a) All Buildings shall be issued an address by the Local Jurisdiction which conforms to that jurisdiction's overall address system. Utility and miscellaneous Group U Buildings are not required to have a separate address; however, each Residential Unit within a Building shall be separately identified.

(b) The size of letters, numbers, and symbols for addresses shall conform to the standards in the California Fire Code, California Code of Regulations title 24, part 9.

(c) Addresses for residential Buildings shall be reflectorized.

§ 1274.04. Address Installation, Location, and Visibility.

(a) All buildings shall have a permanently posted address which shall be plainly legible and visible from the Road fronting the property.

(b) Where access is by means of a private Road and the address identification cannot be viewed from the public way, an unobstructed sign or other means shall be used so that the address is visible from the public way.

(c) Address signs along one-way Roads shall be visible from both directions.

(d) Where multiple addresses are required at a single driveway, they shall be mounted on a single sign or post.

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(e) Where a Road provides access solely to a single commercial or industrial business, the address sign shall be placed at the nearest Road intersection providing access to that site, or otherwise posted to provide for unobstructed visibility from that intersection.

(f) In all cases, the address shall be posted at the beginning of construction and shall be maintained thereafter.

Article 4 Emergency Water Standards

§ 1275.00. Intent

Emergency water for Wildfire protection shall be available, accessible, and maintained in quantities and locations specified in the statute and these regulations in order to attack a Wildfire or defend property from a Wildfire.

§ 1275.01. Application

The provisions of this article shall apply in the tentative and parcel map process when new parcels are approved by the Local Jurisdiction.

§ 1275.02. Water Supply.

(a) When a water supply for structure defense is required to be installed, such protection shall be installed and made serviceable prior to and during the time of construction except when alternative methods of protection are provided and approved by the Local Jurisdiction.

(b) Water systems equaling or exceeding the California Fire Code, California Code of Regulations title 24, part 9, or, where a municipal-type water supply is unavailable, National Fire Protection Association (NFPA) 1142, "Standard on Water Supplies for Suburban and Rural Fire Fighting," 2017 Edition, hereby incorporated by reference, shall be accepted as meeting the requirements of this article.

(c) Such emergency water may be provided in a fire agency mobile water tender, or naturally occurring or man made containment structure, as long as the specified quantity is immediately available.

(d) Nothing in this article prohibits the combined storage of emergency Wildfire and structural firefighting water supplies unless so prohibited by local ordinance or specified by the local fire agency.

(e) Where freeze or crash protection is required by Local Jurisdictions, such protection measures shall be provided.

§ 1275.03. Hydrants and Fire Valves.

(a) The hydrant or fire valve shall be eighteen (18) inches above the finished surface. Its location in relation to the road or driveway and to the building(s) or structure(s) it serves shall comply with California Fire Code, California Code of Regulations title 24, part 9, Chapter 5, and Appendix C.

(b) The hydrant head shall be a two and half (2 1/2) inch National Hose male thread with cap for pressure and gravity flow systems and four and a half (4 1/2) inch for draft systems.

(c) Hydrants shall be wet or dry barrel and have suitable freeze or crash protection as required by the local jurisdiction.

§ 1275.04. Signing of Water Sources.

(a) Each hydrant, fire valve, or access to water shall be identified as follows:

(1) if located along a driveway, a reflectorized blue marker, with a minimum dimension of three (3) inches shall be located on the driveway address sign and mounted on a fire retardant post, or

(2) if located along a road,

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- (i) a reflectorized blue marker, with a minimum dimension of three (3) inches, shall be mounted on a fire retardant post. The sign post shall be within three (3) feet of said hydrant or fire valve, with the sign no less than three (3) feet nor greater than five (5) feet above ground, in a horizontal position and visible from the driveway, or
- (ii) as specified in the State Fire Marshal's Guidelines for Fire Hydrant Markings Along State Highways and Freeways, May 1988.

§ 1275.04. Signing of Water Sources.

- (a) Each Fire Hydrant or access to water shall be identified as follows:
 - (1) if located along a Driveway, a reflectorized blue marker, with a minimum dimension of three (3) inches shall be located on the Driveway address sign and mounted on a fire retardant post, or
 - (2) if located along a Road,
 - (i) a reflectorized blue marker, with a minimum dimension of three (3) inches, shall be mounted on a fire retardant post. The sign post shall be within three (3) feet of said Fire Hydrant with the sign no less than three (3) feet nor greater than five (5) feet above ground, in a horizontal position and visible from the Driveway, or
 - (ii) as specified in the State Fire Marshal's Guidelines for Fire Hydrant Markings Along State Highways and Freeways, May 1988.

Article 5 Building Siting, Setbacks, and Fuel Modification

§ 1276.00 Intent

To reduce the intensity of a Wildfire, reducing the volume and density of flammable vegetation around Development through strategic fuel modification, parcel siting and Building setbacks, and the protection of Undeveloped Ridgelines shall provide for increased safety for emergency fire equipment, including evacuating civilians, and a point of attack or defense from a Wildfire.

§ 1276.01. Building and Parcel Siting and Setbacks

- (a) All parcels shall provide a minimum thirty (30) foot setback for all Buildings from all property lines and/or the center of a Road, except as provided for in subsection (b).
- (b) A reduction in the minimum setback shall be based upon practical reasons, which may include but are not limited to, parcel dimensions or size, topographic limitations, Development density requirements or other Development patterns that promote low-carbon emission outcomes; sensitive habitat; or other site constraints, and shall provide for an alternative method to reduce Structure-to-Structure ignition by incorporating features such as, but not limited to:
 - (1) non-combustible block walls or fences; or
 - (2) non-combustible material extending five (5) feet horizontally from the furthest extent of the Building; or
 - (3) hardscape landscaping; or
 - (4) a reduction of exposed windows on the side of the Structure with a less than thirty (30) foot setback; or
 - (5) the most protective requirements in the California Building Code, California Code of Regulations Title 24, Part 2, Chapter 7A, as required by the Local Jurisdiction.

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§ 1276.02. Ridgelines

- (a) The Local Jurisdiction shall identify Strategic Ridgelines, if any, to reduce fire risk and improve fire protection through an assessment of the following factors:
- (1) Topography;
 - (2) Vegetation;
 - (3) Proximity to any existing or proposed residential, commercial, or industrial land uses;
 - (4) Construction where mass grading may significantly alter the topography resulting in the elimination of Ridgeline fire risks;
 - (5) Ability to support effective fire suppression; and
 - (6) Other factors, if any, deemed relevant by the Local Jurisdiction.
- (b) Preservation of Undeveloped Ridgelines identified as strategically important shall be required pursuant to this section.
- (c) New Buildings on Undeveloped Ridgelines identified as strategically important are prohibited, as described in subsections (c)(1), (c)(2), and (c)(3).
- (1) New Residential Units are prohibited within or at the top of drainages or other topographic features common to Ridgelines that act as chimneys to funnel convective heat from Wildfires.
 - (2) Nothing in this subsection shall be construed to alter the extent to which utility infrastructure, including but not limited to wireless telecommunications facilities, as defined in Government Code section 65850.6, subdivision (d)(2), or Storage Group S or Utility and Miscellaneous Group U Structures, may be constructed on Undeveloped Ridgelines.
 - (3) Local Jurisdictions may approve Buildings on Strategic Ridgelines where Development activities such as mass grading will significantly alter the topography that results in the elimination of Ridgeline fire risks.
- (d) The Local Jurisdiction may implement further specific requirements to preserve Undeveloped Ridgelines.

§ 1276.03. Fuel Breaks

- (a) When Building construction meets the following criteria, the Local Jurisdiction shall determine the need and location for Fuel Breaks in consultation with the Fire Authority:
- (1) the permitting or approval of three (3) or more new parcels, excluding lot line adjustments as specified in Government Code (GC) section 66412(d); or
 - (2) an application for a change of zoning increasing zoning intensity or density; or
 - (3) an application for a change in use permit increasing use intensity or density.
- (b) Fuel Breaks required by the Local Jurisdiction, in consultation with the Fire Authority, shall be located, designed, and maintained in a condition that reduces the potential of damaging radiant and convective heat or ember exposure to Access routes, Buildings, or infrastructure within the Development.
- (c) Fuel Breaks shall have, at a minimum, one point of entry for fire fighters and any Fire Apparatus. The specific number of entry points and entry requirements shall be determined by the Local Jurisdiction, in consultation with the Fire Authority.
- (d) Fuel Breaks may be required at locations such as, but not limited to:
- (1) Directly adjacent to defensible space as defined by 14 CCR § 1299.02 to reduce radiant and convective heat exposure, ember impacts, or support fire suppression tactics;
 - (2) Directly adjacent to Roads to manage radiant and convective heat exposure or ember impacts, increase evacuation safety, or support fire suppression tactics;
 - (3) Directly adjacent to a Hazardous Land Use to limit the spread of fire from such uses, reduce radiant and convective heat exposure, or support fire suppression tactics;

Appendix E: TFPD Ordinance 01-2022 (Fire Code)



**Truckee Fire Protection District of Nevada County
ORDINANCE
of the Board of Directors**

Ordinance No. 01-2022

AN ORDINANCE OF THE TRUCKEE FIRE PROTECTION DISTRICT OF NEVADA COUNTY ADOPTING THE 2022 EDITION OF THE CALIFORNIA FIRE CODE AND PORTIONS OF THE 2021 INTERNATIONAL FIRE CODE, REGULATING AND GOVERNING THE SAFEGUARDING OF LIFE AND PROPERTY FROM FIRE AND EXPLOSION HAZARDS ARISING FROM THE STORAGE, HANDLING AND USE OF HAZARDOUS SUBSTANCES, MATERIALS AND DEVICES, AND FROM CONDITIONS HAZARDOUS TO LIFE OR PROPERTY IN THE OCCUPANCY OF BUILDINGS AND PREMISES IN THE TRUCKEE FIRE PROTECTION DISTRICT OF NEVADA COUNTY; PROVIDING FOR THE ISSUANCE OF PERMITS AND COLLECTION OF FEES THEREFOR.

WHEREAS, the Truckee Fire Protection District of Nevada County (District) operates under the Fire Protection District Law of 1987; and

WHEREAS, pursuant to Health and Safety Code Section 13869, the District may adopt by reference the 2022 California Fire Code, which establishes minimum building standards related to fire and hazardous conditions; and

WHEREAS, pursuant to Health and Safety Code Sections 13869.7, 17958.5, and 17958.7, the District may adopt standards more stringent than state standards when such modifications are reasonably necessary because of local climatic, geological or topographical conditions; and

WHEREAS, the Board of Directors has adopted those express findings on the necessity of the modifications and has directed that those findings be submitted to the Counties of Nevada and Placer with a copy of this Ordinance for ratification.

NOW THEREFORE, The Board of Directors of the Truckee Fire Protection District of Nevada County does ordain as follows:

SECTION 1 California Fire Code – Adopted.

That a certain document, three copies of which are on file in the Office of the Clerk of the Truckee Fire Protection District of Nevada County, being marked and designed as the California Code of Regulations, Title 24, Part 9, 2022 Edition of the California Fire Code published by the International Code Council and the California Building Standards Commission with errata, together with those portions of the 2021 Edition of the International Fire Code including Appendices B, C, D and H published by the International Code Council not included in the California Building Standards Code, as modified and amended by this chapter, are adopted by this reference into this Chapter, and are hereby collectively declared to be the Truckee Fire Protection District of Nevada County Fire Code for the purpose of regulating the safeguarding of life, property, and public welfare to a reasonable degree from the hazards of fire, hazardous materials release and explosion arising from the storage, use and handling of dangerous and hazardous materials, substances, and devices, conditions hazardous to life or property in the occupancy and use of buildings and premises, the operation, installation, construction, location,

safeguarding and maintenance of attendant equipment, providing for the issuance of permits and collection of fees therefore, and providing penalties for violation of such code.

SECTION 2 Truckee Fire Protection District of Nevada County Fire Code – Amended.

The following sections are amended or added to the Truckee Fire Protection District Fire Code.

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Section 101.1 amended – Title.

Section 101.1 of Chapter 1 is amended to read as follows:

101.1 Title. These regulations shall be known as the Truckee Fire Protection District of Nevada County Fire Code, hereinafter referred to as “this code.”

Section 105.5.19 deleted – Floor Finishing.

Section 105.5.19 of Chapter 1 is deleted.

Section 105.5.20 deleted – Fruit and Crop Ripening.

Section 105.5.20 of Chapter 1 is deleted.

Section 105.5.21 deleted – Fumigation and Insecticidal Fogging.

Section 105.5.21 of Chapter 1 is deleted.

Section 105.5.29 amended – LP-gas.

Exception to Item 1 of Section 105.5.29 of Chapter 1 is amended to read as follows:

Exception: A permit is not required for individual containers with a 125-gallon (473 L) water capacity or less or multiple container systems having an aggregate quantity not exceeding 500 gallons (1893 L), serving occupancies in Group R-3.

Section 105.5.41 deleted – Private Fire Hydrants.

Section 105.5.41 of Chapter 1 is deleted.

Section 107.2 amended – Schedule of Fees.

Section 107.2 of Chapter 1 is amended to read as follows:

107.2 Schedule of fees. Fees for District services shall be paid by the applicant or owner. Fees for permits, administrative services, cost recovery and capital improvement impacts shall be in accordance with the fee schedule established by the District.

Section 107.7 added – Cost Recovery Fees.

Section 107.7 is added to Chapter 1 to read as follows:

107.7 Cost recovery fees. Fees may be charged to any person, firm, corporation, business or public agency to cover the cost of any service which the District provides or the cost of enforcing any regulation for which the fee is charged. The fees shall not exceed the costs reasonably borne by the District in providing the service or enforcing the regulation for which the fee is charged.”

Section 109.3.1 added – Submission of Records.

Section 109.3.1 is added to Chapter 1 to read as follows:

109.3.1 Submission of records. Contractors, engineers, test companies and licensed or certified testers who perform inspection, testing or maintenance services on fire protection and life safety systems and equipment are required to electronically submit all compliant and non-compliant reports to the Truckee Fire Protection District via a method approved by the Fire Code Official.

Section 111.1 amended – Board of Appeals Established.

Section 111.1 of Chapter 1 is amended to read as follows:

111.1 Board of Appeals established. In order to hear and decide appeals of orders, decisions or determinations made by the Fire Code Official relative to the application and interpretation of this code, there shall be and is hereby created a board of appeals, comprised of the Board of Directors of the District. The board of appeals shall adopt rules of procedure for conducting its business and shall render all decisions and findings in writing to the appellant with a duplicate copy to the Fire Code Official.

Section 111.3 deleted – Qualifications.

Section 111.3 of Chapter 1 is deleted.

Section 112.3 amended – Notice of Violation.

Section 112.3 of Chapter 1 is amended to read as follows:

112.3 Notice of violation. Where the Fire Code Official finds a building, premises, vehicle, storage facility or outdoor area that is in violation of this code, the Fire Code Official is authorized to prepare a written notice of violation describing the conditions deemed unsafe and, where compliance is not immediate, specifying a time for reinspection.

The Fire Chief, Fire Code Official or their duly authorized representative may issue citations for violations of this code pursuant to Health and Safety Code section 13871 and Penal Code section 853.6.

Section 112.4 amended – Violation Penalties.

Section 112.4 of Chapter 1 is amended to read as follows:

112.4 Violation penalties. Persons who shall violate a provision of this code or shall fail to comply with any of the requirements thereof or who shall erect, install, alter, repair or do work in violation of the approved construction documents or directive of the Fire Code Official, or of a permit or certificate used under provisions of this code, shall be guilty of a misdemeanor, punishable by a fine of not more than \$1,000.00 or by imprisonment not exceeding 90 days, or both such fine and imprisonment. Each day that a violation continues after due notice has been served shall be deemed a separate offense. (Health and Safety Code, §§13145, 17995.)

Section 202 amended – General Definitions.

Section 202 of Chapter 2 is amended by adding or revising certain definitions to read as follows:

CAMPFIRE. An outdoor fire which is used for cooking, personal warmth, lighting, or aesthetic purposes. This includes fires using jellied, liquid, solid or gaseous fuels and may be contained within outdoor fireplaces and enclosed stoves with flues or chimneys, stoves, portable barbecue pits, braziers, or space heating devices which are used outside of any structure, mobile home or any living accommodation mounted on a vehicle.

DISTRICT. The Truckee Fire Protection District of Nevada County and all areas within the exterior boundaries thereof as now or hereafter established.

FIRE CHIEF. The chief officer of the fire department serving the Truckee Fire Protection District of Nevada County, or a duly authorized representative.

FIRE CODE OFFICIAL. The Fire Chief or other designated authority charged with the administration and enforcement of the code, or a duly authorized representative.

JURISDICTION. The Truckee Fire Protection District of Nevada County and all areas within the physical boundaries thereof as now or hereafter established.

Section 307.1.1 amended – Prohibited Open Burning.

Section 307.1.1 of Chapter 3 is amended to read as follows:

307.1.1 Prohibited Open Burning. Open burning, campfires, bonfires, portable outdoor fireplaces and recreational fires, shall be prohibited when atmospheric conditions or local circumstances make such fires hazardous including when, in the judgment of the Fire Chief or his designee, the menace of destruction by fire to life, improved property, or natural resources is, or is forecast to become, extreme due to critical fire weather, fire suppression forces being heavily committed to control fires already burning, acute dryness of the vegetation, or other factors that may cause the rapid spread of fire such as high winds, low fuel moistures, fire weather or Red Flag Warnings, severe threat of wildland fire, or issuance of Fire Restrictions on lands adjacent to the District by the United States Forest Service or CalFire.

Exceptions:

1. Prescribed burning for the purpose of reducing the impact of wildland fire when authorized by the Fire Code Official.
2. Gaseous-fueled outdoor fire pits and barbeques, and pellet grills/smokers unless a Red Flag Warning has been issued.
3. Charcoal barbeques for a commercial restaurant, catering operation or special event, where additional mitigations have been approved by the Fire Code Official.

Section 307.4.4 added – Campfires.

Section 307.4.4 is added to Chapter 3 to read as follows:

307.4.4 Campfires. Campfires shall comply with Sections 307.4.4.1 and 307.4.4.2.

307.4.4.1 Prohibited. It is unlawful for any person to light, maintain, or use a Campfire upon or near any brush-covered land, grass-covered land, or forest-covered land during the time when burning permits are suspended by the Fire Chief, the Director of the Department of Forestry, the

CalFIRE Unit Chief or the authority having jurisdiction.

307.4.4.2 Campfire restrictions. When Campfires are allowed, it shall be unlawful for any person to light, maintain, or use a Campfire upon any brush-covered land, grass-covered land, or forest covered land unless the following minimum requirements are complied with.

1. The area within 5 feet of the periphery of the Campfire is cleared of all combustible material and vegetation.
2. One serviceable shovel with a handle of at least 12 inches is ready for use at the immediate area of the Campfire.
3. Campfires shall be limited to dimensions of 12 inches by 12 inches, unless in an approved manufactured cooking device or fire ring.
4. Written permission of the landowner must be obtained prior to the ignition of the Campfire and shall be on site.

Section 308.1.4 amended – Open-flame Cooking Devices.

Section 308.1.4 of Chapter 3 is amended to read as follows:

308.1.4 Open-flame cooking devices. Charcoal burners and other open-flame cooking devices shall not be operated on combustible balconies or within 10 feet (3048 mm) of combustible construction.

Exceptions:

1. One- and two-family dwellings.
2. Where buildings, balconies and decks are protected by an automatic sprinkler system.
3. LP-gas cooking devices having LP-gas container with a water capacity not greater than 2½ pounds [nominal 1 pound (0.454 kg) LP-gas capacity].
4. Devices used in compliance with the manufacturer's instructions.

Section 308.1.9 added – Outdoor Open Flame Appliances.

Section 308.1.9 is added to Chapter 3 to read as follows:

308.1.9 Outdoor Open Flame Appliances. Outdoor open flame appliances, including permanently installed outdoor fireplaces, fire pits, BBQ's, pizza ovens and any other open flame outdoor device that is connected to a residential or commercial gas line service shall be installed in accordance with the following:

1. All parts/assemblies to be tested and certified by UL, CSA, or ANSI.
2. A gas shut-off valve located shall be installed at the stub out and provided with ready access.
3. A second gas shut-off valve shall be located within 3 feet (9115 mm) to 5 feet (1524 mm) of device where the primary shut-off valve is further than 6 feet (1829 mm) from the appliance.
4. The appliance shall include a timer device which allows a maximum operating time of three hours. The timer shall require a manual reset.
5. A separation distance of 10 feet (3048 mm) feet vertically and horizontally shall be provided to all combustible materials, not including the support structure. The separation distance shall be measured from the open flame.

Exception: Where approved by the Fire Code Official, the separation distance can be reduced provided the manufacturer's installation guidelines specify a lesser distance to combustible materials.
6. The surface supporting the appliance shall be of an ignition-resistant or fire-resistant material for a distance of 2 feet (610 mm) in all directions from the appliance.
7. The appliance shall produce a maximum flame height of 2 feet (610 mm).

Sections 311.5 through 311.5.5 deleted – Placards.

Sections 311.5 through 311.5.5 of Chapter 3 are deleted.

Section 503.2.1 amended – Dimensions.

Section 503.2.1 of Chapter 5 is amended to read as follows:

503.2.1 Dimensions. Fire apparatus access roads shall have an unobstructed width of not less than 20 feet (6096 mm), exclusive of shoulders, except for approved security gates in accordance with Section 503.6, and an unobstructed vertical clearance of not less than 15 feet (4572 mm). Driveways shall have an unobstructed width of not less than 12 feet (3658 mm).

Section 503.2.5 amended – Dead Ends.

Section 503.2.5 of Chapter 5 is amended to read as follows:

503.2.5 Dead ends. Dead-end fire apparatus access roads and driveways in excess of 150 feet (45 720 mm) in length shall be provided with an approved area for turning around fire apparatus.

Section 505.1 amended – Address Identification.

Section 505.1 of Chapter 5 is amended to read as follows:

505.1 Address identification. New and existing buildings shall be provided with address identification as specified below. Address identification characters shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. Each character shall be not less than 4 inches (102 mm) high with a minimum stroke width of ½ inch (12.7 mm). Where required by the Fire Code Official, address identification shall be provided in additional approved locations to facilitate emergency response. Where access is by means of a private road and the building cannot be viewed from the public way, a monument, pole or other sign or means shall be used to identify the structure. Address identification shall be maintained.

1. The address identification shall be legible and placed in a position that is visible from the street or road fronting the property.
2. The address shall be placed at each driveway entrance and visible from both directions of travel along the road.
3. The address shall be posted at the beginning of construction and shall be maintained thereafter.
4. Address signs along one-way roads shall be visible from both the intended direction of travel and the opposite direction.
5. Where multiple addresses are required at a single driveway, they shall be mounted on a single post.
6. Where a roadway provides access solely to a single commercial or industrial business, the address sign shall be placed at the nearest road intersection providing access to that site.

Section 506.1.1 amended – Locks.

Section 506.1.1 of Chapter 5 is amended to read as follows:

506.1.1 Locks. An approved lock shall be installed on gates or similar barriers, and gated residential driveways where required by the Fire Code Official.

Section 509.2.1 added – Electrical Shunt Trip/Switch.

Section 509.2.1 is added to Chapter 5 to read as follows:

509.2.1 Electrical Shunt Trip/Switch. New structures and remodeled structures shall be provided with a remote main power electrical shunt switch in an approved location where any of the following conditions occur:

1. The main power disconnect switch is located on the interior of a building,
2. The main power disconnect switch is inaccessible to fire department personnel due to location or to climatic conditions, or
3. The facility is equipped with multiple electrical sources, such as fuel cells, ESS, generators or solar photovoltaic systems.

Exception: Facilities where the Fire Code Official determines the electrical shunt trip/switch is

not required.

The remote main power electrical shunt trip/switch shall be hard wired to all power sources. The electrical shunt trip/switch shall be installed on the exterior of the building in an location approved by the Fire Code Official and protected from the elements. The electrical shunt trip/switch shall have an approved, permanent, weatherproof sign which states "MAIN POWER SHUNT TRIP/SWITCH".

Section 605.9 amended – Gas Meters.

Section 605.9 of Chapter 6 is amended to read as follows:

605.9 Gas Meters. New and existing above-ground gas meters, regulators and piping subject to damage shall be protected by a barrier complying with Section 312 or otherwise protected in an approved manner.

605.9.1 Gas Meters. For new installations, the gas meter assembly shall be located at the gable end of the building or under an engineered deck, as close as practical to the building wall.

605.9.2 Protective cover. For new and existing gas meters, an approved protective cover, designed to support the design snow load as determined by the building department shall be installed over the meter assembly, securely supported by the ground or diagonally to the building wall. The protective cover shall be approved by the gas supplier and designed to allow ready access to the gas meter. When supported by the ground, the footing for the supports shall be founded a minimum of 6 inches (152 mm) below finished grade. The protective cover shall not have doors.

605.9.3 Protection from horizontal impact. New and existing gas meters shall be protected from horizontal slide or shift of snow and ice where located underground piping extends above ground on a sloping grade. The barrier or method of protection shall be approved by the Fire Code Official.

Section 606.3.3.2 amended – Cleaning.

Section 606.3.3.2 of Chapter 6 is amended to read as follows:

606.3.3.2 Cleaning. If during the inspection it is found that hoods, grease-removal devices, fans, ducts or other appurtenances have an accumulation of grease, such components shall be cleaned in accordance with ANSI/KECA C10. Cleaning frequency shall not exceed 12 months, except for commercial cooking operations located in a building with Group R-1 and R-2 occupancies above shall be cleaned at intervals not exceeding 6 months.

Section 903.2.8.1 amended – Group R-3.

Section 903.2.8.1 of Chapter 9 is amended to read as follows:

903.2.8.1 Group R-3. An automatic sprinkler system installed in accordance with Section 903.3.1.3 shall be permitted in Group R-3 occupancies. An automatic sprinkler system shall be installed in new manufactured homes, as defined in Health and Safety Code Sections 18007 and 18009, and multiple family manufactured homes with two dwelling units, as defined in Health and Safety Code Section 18008.7, in accordance with Title 25 of the California Code of Regulations.

Section 903.2.11 amended – Specific Buildings Areas and Hazards.

Section 903.2.11 of Chapter 9 is amended to read as follows:

903.2.11 Specific buildings areas and hazards. An automatic sprinkler system shall be installed for building design or hazards in the locations set forth in Sections 903.2.11.1 through 903.2.11.7.

Section 903.2.11.7 added – Buildings Exceeding 3,600 Square Feet.

Section 903.2.11.7 is added to Chapter 9 to read as follows:

903.2.11.7 Buildings exceeding 3,600 square feet. Regardless of occupancy or use, an automatic sprinkler system shall be installed in all buildings exceeding 3,600 (334 m²) square feet. Fire walls, with or without, protected openings shall be disregarded when calculating the square footage.

Exception: Low life hazard structures, such as stand-alone public restrooms and ski lift operator

structures, with an area less than 500 square feet where approved by the Fire Code Official.

Section 903.4 amended – Sprinkler System Supervision.

Section 903.4 of Chapter 9 is amended to read as follows:

903.4 Sprinkler system supervision. Valves controlling the water supply for automatic sprinkler systems, pumps, tanks, water levels and temperatures, critical air pressures and waterflow switches on all sprinkler systems shall be electrically supervised by a listed fire alarm control unit.

Exceptions:

1. Automatic sprinkler systems protecting one- and two-family dwellings and townhouses with less than 100 sprinklers.
2. Limited area sprinkler systems in accordance with Section 903.3.8.
3. Automatic sprinkler systems installed in accordance with NFPA 13R where a common supply main is used to supply both domestic water and the automatic sprinkler system, and a separate shutoff valve for the automatic sprinkler system is not provided.
4. Jockey pump control valves that are sealed or locked in the open position.
5. Control valves to commercial kitchen hoods, paint spray booths or dip tanks that are sealed or locked in the open position.
6. Valves controlling the fuel supply to fire pump engines that are sealed or locked in the open position.
7. Trim valves to pressure switches in dry, preaction and deluge sprinkler systems that are sealed or locked in the open position.
8. Underground key or hub gate valves in roadway boxes.

Section 903.4.1 amended – Monitoring

Section 903.4.1 of Chapter 9 is amended to read as follows:

903.4.1 Monitoring. Alarm, supervisory and trouble signals shall be distinctly different and shall be automatically transmitted to an approved supervising station or, where approved by the Fire Code Official, shall sound an audible signal at a constantly attended location.

Exceptions:

1. Backflow prevention device test valves located in limited area sprinkler system supply piping shall be locked in the open position. In occupancies required to be equipped with a fire alarm system, the backflow preventer valves shall be electrically supervised by a tamper switch installed in accordance with NFPA 72 and separately annunciated.
2. Central station monitoring is not required in one- and two-family dwellings and townhouses with less than 100 sprinklers.

Section 903.4.2 amended – Alarms.

Section 903.4.2 of Chapter 9 is amended to read as follows:

903.4.2 Alarms. One exterior approved audible device, located on the exterior of the building in a location approved by the Fire Code Official, shall be connected to each automatic sprinkler system. The exterior audible device shall produce a minimum of 110 dBA at the street. Such sprinkler waterflow alarm devices shall be activated by water flow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Where a fire alarm system is installed, actuation of the automatic sprinkler system shall actuate the building fire alarm system. Visible alarm notification appliances shall not be required except when required by Section 907.

Section 903.4.4 added – Alarms in Residential Occupancies.

Section 903.4.4 is added to Chapter 9 to read as follows:

903.4.4 Alarms in Residential Occupancies. Every sleeping room in one- and two-family dwellings and Group R occupancies shall be provided with an audible notification appliance which is activated

upon waterflow from the automatic sprinkler system. The audible notification appliance must provide at least 75db at the pillow. This can be accomplished by way of interconnected smoke detection systems or horns.

Section 903.6 amended – Where Required in Existing Buildings and Structures.

Section 903.6 of Chapter 9 is amended to read as follows:

903.6 Where required in existing buildings and structures. An automatic sprinkler system shall be provided in existing buildings and structures in any of the following situations:

1. Where required in Chapter 11.
2. Where an existing building or structure undergoes a change of occupancy and the occupancy classification changes, and the total floor area exceeds 3,600 square feet (334 m²).
3. For other than one- and two-family dwellings and Group R occupancies, additions to existing buildings or structures where the floor area is increased by greater than 50 percent and the total floor area exceeds 3,600 square feet (334 m²).
4. Additions to existing one- and two-family dwellings and Group R occupancies where the floor area is increased by greater than 50 percent and the additional floor area exceeds 2,000 square feet (186 m²).
5. For other than one- and two-family dwellings and Group R occupancies, alterations to existing buildings or structures involving removal, demolition or repair of more than 50 percent of the exterior load-bearing walls or 50 percent of the interior floor square footage, and the floor area is increased by greater than 30 percent or 1,000 square feet (93 m²), whichever is less, and the total floor area exceeds 3,600 square feet (334 m²).
6. Alterations to existing one- and two-family dwellings and Group R occupancies involving removal, demolition or repair of more than 50 percent of the exterior load-bearing walls or 50 percent of the interior floor square footage.

Exceptions:

1. Alterations or additions made solely for the purpose of complying with the Americans with Disabilities Act.
2. Whenever there are practical difficulties involved, the Fire Code Official shall have the authority to grant modifications in individual cases provided the modifications do not lessen the health, life and fire safety requirements as permitted in Section 104.8 of the Fire Code.
3. Additions or repairs for the purpose of seismic retrofit.

Section 904.13.6 added – Supervision.

Section 904.13.6 is added to Chapter 9 to read as follows:

904.13.6 Supervision. The fire-extinguishing system shall be supervised by the fire alarm system in accordance with Section 904.3.5.

Where an existing fire-extinguishing system is replaced, the fire-extinguishing system shall be supervised by an existing fire alarm system, if provided. Where the facility is not equipped with a fire alarm system, a fire alarm system shall be installed if required in Section 907.2 for new construction.

Section 907.2.1 amended – Group A.

Section 907.2.1 of Chapter 9 is amended to read as follows:

907.2.1 Group A. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group A occupancies. Portions of Group E occupancies occupied for assembly purposes shall be provided with a fire alarm system as required for the Group E occupancy.

Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

Section 907.2.2 amended – Group B.

Section 907.2.2 of Chapter 9 is amended to read as follows:

907.2.2 Group B. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group B occupancies.

Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

Section 907.2.3 amended – Group E.

Section 907.2.3 of Chapter 9 is amended to read as follows:

907.2.3 Group E. An automatic fire alarm system that activates the occupant notification signal utilizing an emergency voice/alarm communication system meeting the requirements of Section 907.5.2.2 shall be installed in Group E occupancies with an occupant load of 50 or more persons or containing more than one classroom or one or more rooms used for Group E or I-4 child care purposes in accordance with this section. Where automatic sprinkler systems or smoke detectors are installed, such system or detectors shall be connected to the building fire alarm system. One additional manual fire alarm box shall be located at the administration office or location approved by the AHJ.

Exceptions:

1. For public school state funded construction projects see Section 907.2.29.
2. For public schools see Section 907.2.3.7.
3. For private schools see Section 907.2.3.8.

Section 907.2.4 amended – Group F.

Section 907.2.4 of Chapter 9 is amended to read as follows:

907.2.4 Group F. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group F occupancies.

Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

Section 907.2.5 amended – Group H.

Section 907.2.5 of Chapter 9 is amended to read as follows:

907.2.5 Group H. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group H occupancies. An automatic smoke detection system shall be installed for highly toxic gases, organic peroxides and oxidizers in accordance with Chapters 60, 62 and 63, respectively.

Section 907.2.7 amended – Group M.

Section 907.2.7 of Chapter 9 is amended to read as follows:

907.2.7 Group M. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group M occupancies.

Exceptions:

1. A manual fire alarm system is not required in covered or open mall buildings complying with Section 402 of the California Building Code.

2. Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

Section 907.2.8.1 amended – Manual Fire Alarm System.

Exception 1 to Section 907.2.8.1 of Chapter 9 is deleted.

Section 907.2.9 amended – Group R-2.

Section 907.2.9 of Chapter 9 is amended to read as follows:

907.2.9 Group R-2. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group R-2 occupancies.

Exceptions:

1. Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.
2. The manual fire alarm system is not required in buildings that do not have interior corridors serving dwelling units and are protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, provided that dwelling units either have a means of egress door opening directly to an exterior exit access that leads directly to the exits or are served by open-ended corridors designed in accordance with Section 1027.6, Exception 3.

Section 907.2.10 amended – Group S.

Section 907.2.10 of Chapter 9 is amended to read as follows:

907.2.10 Group S. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group S occupancies.

Exceptions:

1. Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.
2. Buildings with a floor area less than 500 square feet (47 m²) may be exempt, as determined by the Fire Chief, based on building construction material and features, location, occupancy type, and distance to exposures.

Section 907.6.6 amended – Monitoring.

Section 907.6.6 of Chapter 9 is amended to read as follows:

907.6.6 Monitoring. Fire alarm systems required by this chapter or by the California Building Code shall be monitored by an approved supervising station in accordance with NFPA 72 and this section.

Exception: Monitoring by a supervising station is not required for:

1. Single- and multiple-station smoke alarms required by Section 907.2.11.
2. Smoke detectors in Group I-3 occupancies shall be monitored in accordance with Section 907.2.6.3.
3. Agricultural buildings not under Special Use Permit and/or not used for commercial purposes (e.g. retail sales, food service, and/or special events).

Section 907.9 amended – Where Required in Existing Buildings and Structures.

Section 907.9 of Chapter 9 is amended to read as follows:

907.9 Where required in existing buildings and structures. An approved fire alarm system shall be provided in existing buildings and structures where required in Chapter 11.

An approved fire alarm system as required in Section 907.2 shall be installed in existing buildings not provided with a fire alarm system where an addition increases the floor area by more than 30 percent or 1,000 square feet (93 m²), whichever is less.

Exceptions:

1. Buildings equipped with an automatic sprinkler system.
2. One- and two-family dwellings.
3. Agricultural building not under Special Use permit for commercial purposes.
4. Buildings with a floor area less than 500 square feet (47 m²) when approved by the Fire Code Official based on building construction materials and features, location, occupancy type and distance to exposures.

Section 1103.7.5 deleted – Group R-1.

Section 1103.7.5 is deleted.

Section 1203.1.3 amended – Installation.

Section 1203.1.3 of Chapter 12 is amended to read as follows:

1203.1.3 Installation. Emergency power systems and standby power systems shall be installed in accordance with the California Building Code, NFPA 70, NFPA 110 and NFPA 111. Where emergency or standby power is provided at a structure, an electrical shunt trip/switch shall be provided in accordance with Section 509.2.1.

Section 1203.7 added – Protection from Horizontal Impact.

Section 1203.7 is added to Chapter 12 to read as follows:

1203.7 Protection from horizontal impact. Fuel piping to generators shall be protected from damage where underground fuel piping extends above ground and is located in an area subject to the horizontal movement of snow. The barrier or method of protection shall be approved by the Fire Code Official.

Section 1205.4.3 amended – Rapid Shutdown Switch.

Section 1205.4.3 of Chapter 12 is amended to read as follows:

1205.4.3 Rapid shutdown switch. Where a facility is provided with more than one electrical power supply, the rapid shutdown switch shall be interconnected to the electrical shunt trip/switch in accordance with Section 509.2.1. The rapid shutdown switch and the electrical shunt trip/switch shall have a label located not greater than 3 feet (914 mm) from the switch that states the following:

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

Chapter 25 deleted – Fruit and Crop Ripening.

Chapter 25 is deleted.

Chapter 26 deleted – Fumigation and Insecticidal Fogging.

Chapter 26 is deleted.

Section 3311.3 added – Premises Identification.

Section 3311.3 is added to Chapter 33 to read as follows:

3311.3 Premises Identification. Prior to and during construction, approved street signs and address signs shall be provided at each fire and emergency vehicle access road and entry into the project.

Section 3313.2 amended – Combustible Building Materials.

Section 3313.2 of Chapter 33 is amended to read as follows:

3313.2 Combustible building materials. When combustible building materials of the building under construction are delivered to a site, the minimum required fire flow shall be provided. The fire hydrant

used to provide this fire-flow supply shall be within 500 feet (152 m) of the combustible building materials, as measured along an approved fire apparatus access lane. Where the site configuration is such that one fire hydrant cannot be located within 500 feet (152 m) of all combustible building materials, additional fire hydrants shall be required to provide coverage in accordance with this section.

Section 3313 amended – Vertical Construction of Types III, IV and V construction.

Sections 3313.3 through 3313.3.3 are deleted.

Section 4905.4 added – Roof Covering.

Section 4905.4 is added to Chapter 49 to read as follows:

4905.4 Roof covering. All new construction, including additions, requires a Class A roof covering or assembly. All re-roofing requires Class A roof covering or assembly as a minimum. Re-roofing in excess of 50 percent of an existing structure within any one-year period will necessitate that the entire roof be a Class A roof covering or assembly as a minimum. Class B or C fire retardant treated and/or non-treated wood shake or shingles are prohibited as a component in a Class A roof covering assembly.

Section 5704.2.9.6.1 amended – Locations Where Above-Ground Tanks are Prohibited.

Section 5704.2.9.6.1 of Chapter 57 is amended to read as follows:

5704.2.9.6.1 Locations Where Above-Ground Tanks are Prohibited. Storage of Class I and Class II flammable liquids in above-ground tanks outside of buildings is prohibited except where approved by the Fire Code Official.

Exception: Protected above-ground storage tanks installed in accordance with Chapters 23 and 57.

Section 5706.2.4.4 amended – Locations Where Above-Ground Tanks are Prohibited.

Section 5706.2.4.4 of Chapter 57 is amended to read as follows:

5706.2.4.4 Locations Where Above-Ground Tanks are Prohibited. Storage of Class I and Class II flammable liquids in above-ground tanks is prohibited except where approved by the Fire Code Official.

Exception: Protected above-ground storage tanks installed in accordance with Chapters 23 and 57.

Section 5806.2 amended – Limitations.

Section 5806.2 of Chapter 58 is amended to read as follows:

5806.2 Limitations. Storage of flammable cryogenic fluids in stationary containers outside of buildings is prohibited except where approved by the Fire Code Official.

Section 6101.3 amended – Construction Documents.

Section 6101.3 of Chapter 61 is amended to read as follows:

6101.3 Construction documents. Where a single LP-gas container is more than 1,200 gallons (4542 L) in water capacity or the aggregate water capacity of LP-gas containers is more than 2,400 gallons (9084 L), the installer shall submit construction documents for such installation.

Section 6101.3.1 added – Reference Standard.

Section 6101.3.1 is added to Chapter 61 to read as follows:

6101.3.1 Reference standard. The installation and inspection of liquified petroleum gas containers shall comply with codes, standards and regulations. The Placer County Building and Development Code Article 15.12 is acceptable as an installation standard.

Section 6104.2 amended – Maximum Capacity within Established Limits.

Section 6104.2 of Chapter 61 is amended to read as follows:

6104.2 Maximum capacity within established limits. The storage of liquefied petroleum gas in excess of an aggregate of 2,000-gallon water capacity must meet the approval of the Fire Code Official and obtain a Special/Conditional Use Permit issued by the County.

Section D104.2 amended – Buildings Exceeding 62,000 Square Feet in Area.

Section D104.2 of Appendix D is amended to read as follows:

D104.2 Buildings exceeding 62,000 square feet in area. Buildings or facilities having a gross building area of more than 62,000 square feet (5760 m²) shall be provided with two separate and approved fire apparatus access roads.

Section D104.3 amended – Remoteness.

Section D104.3 of Appendix D is amended to read as follows:

D104.3 Remoteness. Where two access roads are required, they shall be placed a distance apart equal to not less than one half of the length of the maximum overall diagonal dimension of the property or area to be served, measured in a straight line between accesses.

Exception: Remoteness of access roads is not required where fire apparatus roads cannot be installed because of location on property, topography, waterways, nonnegotiable grades or similar condition and an approved alternative means of fire protection is provided.

Section D105.1 amended – Where Required.

Section D105.1 of Appendix D is amended to read as follows:

D105.1 Where Required. Where the vertical distance between the grade plane and the highest roof surface exceeds 30 feet (9144 mm), approved aerial fire apparatus access roads shall be provided. For purposes of this section, the highest roof surface shall be determined by measurement to the eave of a pitched roof, the intersection of the roof to the exterior wall, or the top of parapet walls, whichever is greater.

Section D106.1 amended – Projects Having More than 100 Dwelling Units.

Section D106.1 of Appendix D is amended to read as follows:

D106.1 Projects Having More than 100 Dwelling Units. Multiple-family residential projects having more than 100 dwelling units shall be equipped throughout with two separate and approved fire apparatus access roads.

Section D107.1 amended – One- or Two-family Dwelling Residential Developments.

Section D107.1 of Appendix D is amended to read as follows:

D107.1 One- or two-family dwelling residential developments. Developments of one- or two-family dwellings where the number of dwelling units exceeds 30 shall be provided with two separate and approved fire apparatus access roads.

SECTION 3 Repeal of Previous Ordinances. All prior Ordinances of the Truckee Fire Protection District of Nevada County adopting and/or amending any prior International Fire Code or California Fire Code are hereby repealed upon the effective date of this Ordinance except that any enforcement or abatement action under any such prior Ordinance shall remain and be pursued until resolution.

SECTION 4 Severability. That if any section, subsection, sentence, clause or phrase of this Ordinance is, for any reason held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this Ordinance. The Board of Directors of the Truckee Fire Protection District of Nevada County hereby declares that it would have passed this Ordinance, and each section, subsection, clause or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses and phrases be declared unconstitutional.

SECTION 5 Effect on Litigation. That nothing in this Ordinance or in the 2022 Edition of the California Fire Code or the 2021 Edition of the International Fire Code hereby adopted shall be construed to affect any suit or proceeding pending in any court, or any rights acquired, or liability incurred, or any other cause or causes of action acquired or existing, under any act or Ordinance hereby repealed as cited in Section 8 of this Ordinance; nor shall any just or legal right or remedy of any character be lost, impaired or affected by this Ordinance.

SECTION 6 Publication. That the Administrative Officer of the Truckee Fire Protection District of Nevada County is hereby ordered and directed to cause this Ordinance to be published and posted in compliance with California Law.


SECTION 7 Effective Date. That this Ordinance and the rules, regulations, provisions, requirements, orders and matters established and adopted hereby shall take effect and be in full-force and effect from and after January 1, 2023.

Passed and Adopted at a duly held meeting of the Board of Directors of the Truckee Fire Protection District of Nevada County on October 18, 2022 by the following vote:

Yes:



Victor R. Hernandez



Gerald W. Herrick



Paul D. Wilford

Noes:

Absent:

Gary R. Botto

Erin E. Prado

Abstain:

Attested by:



Joyce L. Engler, Administrative Officer / Clerk of the Board

Dated: October 18, 2022

Appendix F: Characteristics of Fire Smart Vegetation

All plants will burn under the right conditions, regardless of how they are classified (e.g. “Fire Smart,” “fire resistive,” “fire safe,” or “Firewise,”). However, plants burn at different intensities and rates of consumption. Fire Smart plants burn at a relatively low intensity, slow rates of spread and with short flame lengths. The following are characteristics⁵⁰ of Fire Smart vegetation:

- Growth with little or no accumulation of dead vegetation (either on the ground or standing upright).
- Non-resinous plants (willow, poplar, or tulip trees).
- Low volume of total vegetation (for example, a grass area as opposed to a forest or shrub-covered land).
- Plants with high live fuel moisture (plants that contain a large amount of water in comparison to their dry weight).
- Drought-tolerant plants (deeply rooted plants with thick, heavy leaves).
- Stands without ladder fuels (plants without small, fine branches and limbs between the ground and the canopy of overtopping shrubs and trees).
- Plants requiring little maintenance (slow-growing plants that, when maintained, require little care).
- Plants with woody stems and branches that require prolonged heating to ignite.

⁵⁰ See *Home Landscaping for Fire*, University of California Division of Agriculture and Natural Resources; [Fire Resistant Plants - UCANR Fire Network](#)

Highly Flammable Trees & Vegetation

It is advised that these trees and vegetation be removed from the defensible space area around structures.

Trees:

Acacia
 Arborvitae California Bay
 Arizona Cypress
 Bald Cypress
 Blue Gum
 Cedar
 Cryptomeria
 Cypress
 Eucalyptus
 Pine
 Hemlock
 Italian Cypress
 Juniper
 Larch
 Leyland Cypress
 Manna Gum
 Palm (when left untrimmed)
 Palm Pine
 Pepper Tree
 Fir
 Red Cedar
 Spruce
 Sugar Gum
 Tamarisk
 Wax Myrtle Cabbage Palm
 Yew

Grasses, Shrubs, Ground Cover

Algerian Ivy
 American Holly
 Bamboo
 Black Sage
 Boxwood
 Brooms
 California buckwheat
 California sagebrush
 Chamise or greasewood
 Deer Grasses
 Dry annual Grasses
 Fountain Grasses
 Gallberry Holly
 Hopseed Bush
 Juniper
 Laurel sumac
 Coyote Brush
 Manzanita
 Melaleuca
 Pampas Grass
 Pine straw
 Podocarpus
 Red Shanks
 Rosemary
 Salal
 Saw Palmetto
 Scotch broom
 Scrub oak
 Spanish broom
 Sugar bush
 Toyon
 Wax Myrtle
 Yaupon Holly



*These plants are among those known for the amount of dead fuel that accumulates in them, and high oil, high resin, or low moisture content of their leaves and branches

**All plants are flammable if not pruned periodically and the risk attached to any one plant can be greatly diminished with maintenance.

Appendix G: Ready – Set – Go Wildfire Evacuation Program

The geography, weather patterns and number of Wildland Urban Interface communities in California make it a state particularly threatened by devastating wildfire. To help educate property owners and residents in areas most at risk, CAL FIRE has developed a communications program called “Ready, Set, Go!” that breaks down the actions needed to be ready for wildfire.

Ready, Set, Go! Program



Get prepared for wildfire before it strikes by following Ready, Set, Go!

- Be Ready: Create and maintain defensible space and harden your building against flying embers.
- Get Set: Prepare your family and building ahead of time for the possibility of having to evacuate.
- Be Ready to GO!: Take the evacuation steps necessary to give your family and building the best chance of surviving a wildfire.

Go to this link for additional information on the Ready - Set - Go program: [What is the Ready, Set, Go! Program? \(wildlandfirersg.org\)](http://wildlandfirersg.org).

READY TRUCKEE

Emergency Alerts & Evacuation Guide



Register for Emergency Alerts



Opt-in to receive emergency alerts from the Town of Truckee Police Department. www.townoftruckee.gov/alerts

Gather Essential Supplies



Know where to quickly grab important documents, irreplaceable memorabilia, food, water, prescriptions, and money to help you leave quickly.

Know Your Evacuation Zone



Save time by knowing your zone before disaster strikes. protect.genasys.com

Identify Evacuation Routes and Locations



Identify where you plan to go and multiple routes to get there.

Understand Evacuation Terminology



Warning means be ready to leave on a moment's notice, or leave now if you need extra time. Order means leave immediately.

Make a Communication Plan



Make a plan on how you can reach family when separated during an evacuation.





Emergency Alerts & Evacuation Guide

Do YOU have a plan? Are YOU ready?

From wildfires, to haz-mat incidents, to flooding, disaster related devastation and loss of life recently witnessed is a stark illustration of why we as a community need to plan and be prepared for disasters we face in Truckee.

Here's where YOU come in

When evacuation warnings or orders are issued, we want you to get the alert. Truckee Police Department and the Truckee Fire Protection District use the CodeRED Emergency Alert System as our primary method of communication during emergencies. CodeRED is an opt-in notification system, and these alerts may be received as text, email, landline, cell phone, and TTY. Residents and visitors are encouraged to subscribe to CodeRED to stay informed in the event of an emergency. Register for CodeRED emergency alerts:

- Online at www.townoftruckee.gov/alerts
- Text "ReadyNevadaCounty" to 99411
- Call 211 or 1-833-DIAL211
- Placer County residents can register by going to TahoeAlerts.com

Do you have a "go" bag, enough gas in your car, or do you know where you're headed? Preparedness can save you precious minutes of time and can be the difference between life and death. In emergency management, "milling" is the time spent pondering if you should go, what things to bring, and how to pack it all into your car. Listen to our alerts in advance, have a plan, know where to go, and GO when we say GO!

- Emergency evacuation plans are geared toward the entire community. They are not individual plans for households in every scenario. Having a personal preparedness plan is critical for you to be able to react appropriately when told to GO!

When that alert is received, what should YOU do?

If an evacuation warning, order, or shelter in place is issued, follow the directions from public safety officials.

- Evacuation Warning: An event with a potential threat to life and/or property. Those who require additional time to evacuate, and those with pets and livestock should leave when an evacuation warning is issued.
- Evacuation Order: An event with an immediate threat to life. This is a lawful order. The area is lawfully closed to public access. All people and pets should leave immediately, without delay.

Know Your Evacuation Zone

Truckee and Nevada County use Zone Names in emergency alerts, media releases, and social media to help notify residents which areas are under an evacuation. Be prepared for emergencies and look up your address to get your evacuation zone information – BEFORE an emergency strikes! Our evacuation management program, "Genasys Protect" has a mobile APP in addition to the existing web-based platform giving the ability to sign up for zone notifications. You can find the Genasys Protect mobile App in the App Store and on Google Play.

Know Your Zone in 3 Easy Steps:

1. Visit protect.genasys.com – type your address in the search bar or use your current address.
2. Write your zone down and place it somewhere easily accessible by everyone in your house.
3. Click on Subscribe to Alerts to stay updated in case of an emergency.

Know where to get more information

In addition to using CodeRED the event of a local emergency the Town of Truckee will provide information to the community a number of ways.

- Follow Truckee Police Department and Truckee Fire Protection District Social Media site.
- Tune to the local radio stations 1670 AM, 101.5 FM - KTKE, or 780 AM - KOH for late breaking news.
- Call 211 or 1-833-DIAL211 (TTY: 1-844-521-6697)



Appendix I: FIREWISE USA®



The National Fire Protection Association (NFPA) Firewise USA® recognition program provides a collaborative framework to help neighbors in a geographic area get organized, find direction, and take action to increase the ignition resistance of their buildings and community and to reduce wildfire risks at the local level. Any community that meets a set of voluntary criteria on an annual basis and retains an “In Good Standing Status” may identify itself as being a Firewise® Site.

The Firewise USA® program is administered by NFPA® and is co-sponsored by the USDA Forest Service and the National Association of State Foresters. While the NFPA® administers this program, individuals and communities participate on a voluntary basis. The NFPA® disclaims liability for any personal injury, property, or other damages of any nature whatsoever, whether special, indirect, consequential, or compensatory, directly, or indirectly resulting from participation in the Firewise USA® program. The NFPA® also makes no guaranty or warranty as to the accuracy or completeness of program guidance.

Go to this link for additional information on the FIREWISE USA program: [NFPA - Firewise USA®](#).

Appendix J: About the Author

This Fire Safe Plan was prepared in 2023 by Phillips Consulting Services of Georgetown, CA. The author, Ronald A. Phillips, has over 40 years of experience in both fire safety and emergency preparedness. Mr. Phillips served in a variety of positions within the California Fire Service including the position of Fire Chief for the City of Folsom between 2010 - 2016. He has a Bachelor of Science degree in Fire Administration along with several state and national program certificates in specialties such as the emergency management, fire prevention, arson & fire investigation, and the incident command system.

Phillips Consulting Services aids both public and private partners in the following areas of expertise:

- Δ POST Incident Analysis & After-Action Reviews
- Δ Buildingland Security Exercises / Improvement Plans
- Δ Emergency Management Planning & Documents
- Δ Community Fire & Rescue Master Planning
- Δ Special Event Planning
- Δ Firewise™ Community Assessments & Plans
- Δ WUI Site Assessments
- Δ Pre-Incident Planning for First Responders
- Δ Fire Code Inspections
- Δ Emergency Evacuation Planning & Training

WUI FIRE PROTECTION PLAN



Generations at Green Valley WUI Fire Protection Plan
EDC Project # GPA 22-0001, Z22-0001,
TM22-0001, DA24-001
June 6, 2024

Prepared By:

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PREPARED FOR THE COUNTY OF EL DORADO

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PLAN APPROVAL SHEET

The Generations at Green Valley WUI Fire Protection Plan (Fire Safe Plan or FSP) has been designed to evaluate the level of potential fire hazard affecting or resulting from the proposed project, and the methods and measures proposed to minimize that hazard. The approximately 280-acre project is located in the unincorporated portion of El Dorado County in the community of El Dorado Hills. The Project proposes to construct up to 379 residential lots (214 age restricted), an approximately 5-acre clubhouse site, nine open space lots, multiple private roads, and 4-acre park site.

The plan has been developed to conform with California Code of Regulations Title 14 §§ 1270-1276 (Fire Safe Regulations), California Code of Regulations Title 24, Part 9 - § 4903 (Plans) and El Dorado County Fire Protection Standard W-002 (Wildland Urban Interface Fire Protection Plans).

The Generations at Green Valley WUI Fire Safe Plan replaces the following previously prepared fire safe plan for this Project:

- Dixon Ranch WUI Fire Safe Plan, prepared by William F. Draper, RPF, dated July 22, 2013.

The Generations at Green Valley WUI Fire Protection Plan (Fire Safe Plan) has been reviewed and approved by the following fire agencies located in El Dorado County:

DATE PUBLISHED: June 6, 2024

PREPARED BY:

APPROVED BY:

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Jeff Hoag, Battalion Chief
CAL FIRE - AEU

FORWARD

The following **Generations at Green Valley WUI Fire Protection Plan (FSP)** has been prepared for the Generations at Green Valley Project (Project) in El Dorado Hills, California. The FSP for the Project meets the requirements described in Chapter 49 of the California Fire Code and various other State and County statutes and regulations. The FSP addresses the following topics:

- Introduction (Chapter 1)
- Existing Conditions (Chapter 2)
- Regulatory Requirements (Chapter 3)
- Fire Protection Planning (Chapter 4)
- Emergency Preparedness and Evacuation Planning (Chapter 5)
- Fuel Reduction Management and Defensible Space Concepts (Chapter 6)
- Emergency Preparedness and Evacuation Plan Mitigation Strategies (Chapter 7)
- Plan Appendixes (Chapter 8)

The goals of this FSP are as follows:

- » Reduce the exposure of vulnerable buildings to high intensity flames.
- » Reduce the quantity of embers accumulating at a building based on factors related to the building characteristics and adjacent fuel treatments.
- » Reduce the likelihood of urban conflagration due to treatment of fuels in proximity to buildings.
- » Enhance the level of preparedness by both residents and visitors for a safe evacuation during a wildfire or similar hazardous situation.

The FSP specifically applies to the Generations at Green Valley Project. The FSP provides a framework for protection of residents and visitors from natural hazards, the prevention of fire, and preparation for responding to an emergency evacuation of the Project should the need arise. The FSP is intended to be utilized during the development, construction, and occupancy phases of the Project.

For the purpose of interpreting and applying the provisions found within each chapter the terms shall and should are found throughout. The use of the term “shall” refer to requirements of the Plan as mandated through State statute or regulation. The use of the term “should” refer to recommendations cited in the document by the authors.

END OF FORWARD

CHAPTER 1: INTRODUCTION

1.1 Chapter Overview

The purpose of this plan is to generate and memorialize the fire safety requirements of the Fire Authority Having Jurisdiction (FAHJ), namely the California Department of Forestry and Fire Protection (CAL FIRE) and the El Dorado Hills Fire Department (EDHFD), during all phases of the development process. Recommendations for effectively mitigating identified impacts are based on site-specific characteristics and incorporate input from the project applicant and CAL FIRE / EDHFD. This FSP incorporates applicable fire safety regulations and requirements and documents a selection of these regulations that are most pertinent to the Project's unique residential development and location.

This FSP has been prepared for the proposed Project in unincorporated El Dorado County, California. The purpose of the FSP is to assess the potential impacts resulting from wildland fire hazards and identify the measures necessary to adequately mitigate those impacts. As part of the assessment, this plan has considered the fire risk presented by the site including: property location and topography, geology (soils and slopes), combustible vegetation (fuel types), climatic conditions, fire history and the proposed land use and configuration.

This FSP addresses water supply, access, structural ignitability and ignition resistive building features, fire protection systems and equipment, impacts to existing emergency services, defensible space, and vegetation management. This plan identifies fuel modification/management zones and recommends the types and methods of treatment that will protect this project and its essential infrastructure. In addition, this FSP recommends enhanced fire protection measures that the Generations at Green Valley Homeowner's Association (HOA), and individual property owners will take to reduce the probability of structural ignition during the occupancy phase of the Project.

The FSP should be updated no less than once every 5 years or as changes to state and local regulations occur to ensure that the plan can be effectively utilized by all stakeholders.

1.2 Terms and Definitions Related to this Plan

Term	Definition
Defensible Space	<p>Is the design and maintenance of natural and/or landscaped areas in an area where mitigation actions are undertaken to reduce building loss from a wildfire. It is also intended to provide access to firefighters for fire suppression actions and to provide a safe zone for them to work. Defensible space is based on four general concepts:</p> <ol style="list-style-type: none"> 1. Elimination of combustible vegetation and other materials within 5' of the building. 2. Fuel removal or reduction within 100' of buildings in all directions 3. Thinning, pruning and removal of continuous and dense uninterrupted layers of vegetation 4. Removal of ladder fuels within 6' from the ground to prevent fire spread through tree canopies.
Emergency Access / Egress (EAE)	<p>Refers to a road or other connection designed to connect directly to a through road and used to comply with 14CCR §1273.08 (Maximum Length of New Dead-End Roads) and EDHCWD Fire Code Section D107.2. The road shall serve as a secondary means of emergency access and civilian evacuation for the Project.</p>
Emergency Vehicle Access (EVA)	<p>Refers to a road or other connection designed to connect directly to a through road to provide additional access points to the Project for emergency vehicles.</p>

Term	Definition
Evacuation Order	Refers to a situation involving an Immediate threat to life. This is a lawful order to leave now. The area is lawfully closed to public access.
Evacuation Warning	Refers to a potential threat to life and/or property. Those who require additional time to evacuate, and those with pets and livestock should leave immediately.
Fuel Reduction	Refers to the decrease of wildfire fuels such as trees, shrubbery, grasses, and other natural materials to reduce risks to human life and damage to personal property. Fuel reduction can result in less extreme fire behavior and intensity through decreased fire spread rates and reduced flame lengths.
Wildfire	Any uncontrolled fire spreading through vegetative fuels that threatens to destroy life, property or resources as defined in Public Resources Code Sections 4103 and 4104.
Wildland Urban Interface (WUI)	A geographical area identified by the state as a “Fire Hazard Severity Zone” in accordance with Public Resources Code Sections 4201through 4204 and Government Code Sections 51175 through 51189, or other areas designated by the enforcing agency to be at a significant risk from wildfires.

1.3 Project Summary

Location: Unincorporated area of El Dorado County in the El Dorado Hills Community Region. The Project is located south of Green Valley Road, northeast of the West Green Springs Road neighborhood, west of the Green Springs Ranch, and north of Highland View. The Project site is located on five current parcels, El Dorado County Assessor Parcel Numbers (APN) 126-020-001, 126-020-002, 126-020-003, 126-020-004 and 126-150-023. The Map Coordinate for the Project is 38.704040N, 121.045090W. The Project applicant is Green Valley Road Benefits, LLC. See Figure 1 for the proposed Area Map for the Project.

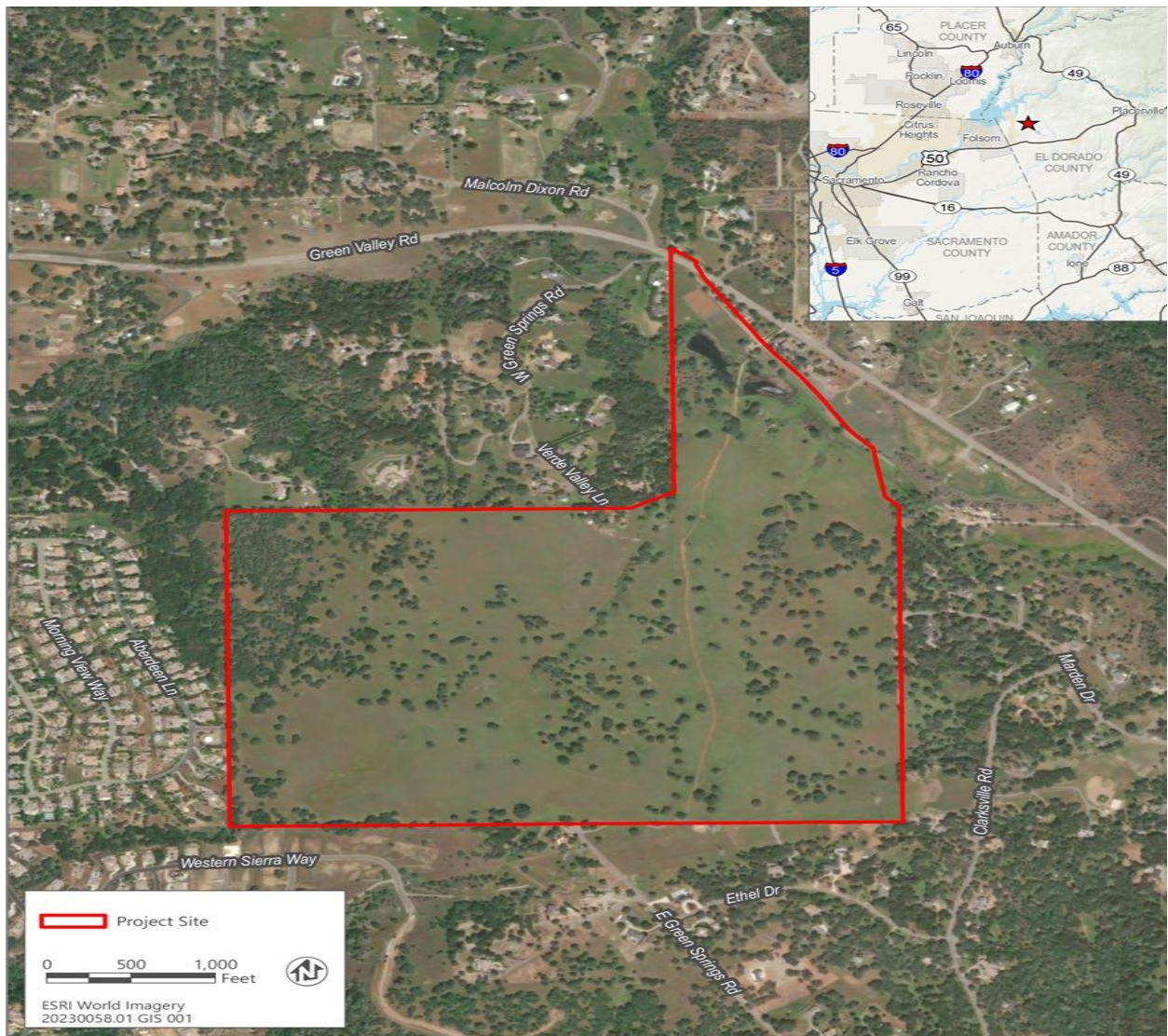


Figure 1: Generations at Green Valley Area Map¹ (Figure courtesy of Ascent)

¹ Figure courtesy of Ascent Environmental Inc.

Project Description: The Project proposes a Tentative Subdivision Map (TM22-0001) to construct up to 379 new residential lots (214 age restricted), an approximately 5-acre clubhouse site, nine open space lots, multiple private roads, and a 4-acre park site. The Project will be approximately 280 acres in total area. The new resident population² for the Project is approximately 854 persons at build-out, assuming single-family residential dwelling units. All new residential parcels will have a land use designation of either High Density Residential (HDR) or Low Density Residential (LDR).

See Figure 2 for the proposed land use designation for the Project



² Based on 1.8 residents per dwelling unit within the Age-Restricted portions, and 2.84 residents per dwelling unit for the remaining areas of the Project.

³ Figure produced by CTA Engineering and Surveying (2022)

The Project can be accessed from two road connections, A-Drive and C-Drive, off of Green Valley Road. An Emergency Access/Egress (EAE) connection is proposed to connect to Lima Way in the Highland View neighborhood. Two new Emergency Vehicle Access (EVA) roads are also proposed to connect to existing roads in the Green Springs Ranch⁴ neighborhood. All roads within the Project are proposed to be access controlled private roads owned and maintained by a Home Owners Association (HOA).

Electrical power supply is provided to the Project by Pacific Gas & Electric (PGE). Unless the Project is developed using only electric, each parcel will have natural gas supplied by PG&E for heat and other fuel needs. Municipal water supply for fire protection and domestic water consumption will be provided by the El Dorado Irrigation District (EID).

END OF CHAPTER

⁴ The East Green Springs Ranch EVA would only connect to the Green Springs Ranch community if the Green Springs Ranch Association chooses to complete this extension in the future and at their discretion.

CHAPTER 2: EXISTING CONDITIONS

2.1 Chapter Overview

The Project is located in the unincorporated community region of El Dorado Hills, California. El Dorado Hills is located in the western region of El Dorado County. According to 2021 population statistics⁵ for the area approximately 633 existing residents live in the general area of the Project. The Project is located within El Dorado County Supervisory District 1.

The Project is approximately 280 ± acres in size. The Project is currently zoned by the County of El Dorado for low density residential (LDR) use. The Project lands are currently unimproved.

See Figure 3 for a photo of the Project site from the Green Valley Road area.



Figure 3: Existing Condition of the Project Area

⁵ See Census Block Data for Areas 060170307093007, 060170307091008, 060170307093009, 060170307093010060170307093011, 060170307093013, 060170307093018, 060170307093011; 2020.

The Project is bordered by the following adjoining properties:

- **South Side** - The Highland View neighborhood is located south of the Project.
- **North Side** - The Hickok Ranch, Arroya Vista and Deer Valley neighborhoods are located north of the Project.
- **East Side** - The Green Springs Ranch neighborhood is located east of the Project.
- **West Side** - The West Green Springs neighborhood is located northwest of the Project.

2.2 Vegetation

The Project site is currently unimproved and contains natural vegetation cover. The Project site is located within areas classified as “Grassland” or “Oak Woodland” habitat. See Table 1⁶ for the common types of vegetation found on the parcel.

Table 1: Summary of Vegetation Found on the Property

Scientific Name	Common Name
<i>Quercus douglasii</i>	Blue Oak
<i>Quercus Lobata</i>	Valley Oak
<i>Quercus wislizenii</i>	Interior Live Oak
<i>Bromus diandrus, hordeasceus</i>	Bromes
<i>Centaurea solstitialis</i>	Yellow Star Thistle
<i>Hordeum marinum</i>	Mediterranean Barley
Geranium dissectum	Split-Leaf Geranium
<i>Rubus armeniacus</i>	American Blackberry
<i>Avena Fatua and Avena barbata</i>	Oats, Grass Family
<i>Eucalyptus globulas</i>	Blue Gum Eucalyptus
<i>Cynosurus echniatus</i>	Dogtail Grass
<i>Ceanothus integerrimus var.</i>	Deer Brush
<i>Ceanothus cuneatus var. cuneatus</i>	Buck Brush
<i>Pinus sabiniana</i>	Grey Pine

⁶ For further details see Biological Resources Assessment for the Project prepared by Madrone Ecological Consulting; (April, 2024).

2.3 Climate

Fire weather in El Dorado County is typically dominated by three general weather phenomena; the Delta push influence, north wind events, and east foehn winds caused by high pressure development in the Great Basin⁷. All three weather conditions cause potential increases in fire intensity and size. The Delta influence is the most common and occurs frequently throughout the summer.

Characteristically, high pressure systems will dominate Northern California in the summer months bringing extremely hot and dry conditions over much of the region. As these systems develop, they tend to originate near the Delta and Sacramento areas bringing the marine influence to the area. This is generally considered a beneficial condition for fire behavior; slightly cooler afternoon temperatures and increases in relative humidity. However, the downside is the strong winds that typically accompany these patterns which can override any benefit that may come from cool, moist marine air.

This type of wind generally subsides after sundown causing fire behavior to drop off dramatically. The other critical wind patterns that are difficult to predict for El Dorado County are the northerly and easterly winds. They are relatively rare, and often are forecasted only the day before. Northerly or easterly winds are typically warmer and drier than most other wind patterns due to air compression. These conditions provide the perfect environment for increased fire intensity and large fire growth.

Fire growth is typically wind driven, however as these winds subside, fire immediately returns to fuel/topography driven in opposing directions to the wind driven direction. This type of wind event is commonly referred to as a Santa Ana wind in Southern California, and a Foehn wind in the Sierra/Cascade Region.

Predominant local weather patterns in the Project area⁸ are characterized by warm, dry summers and cool, wet winters. Dry conditions traditionally begin around the beginning of May and last into late October. An average summer day is 95° - 105° Fahrenheit, winds from the southwest at 0-10 miles per hour, and relative humidity levels in the 15-25 percent range. Summer lightning

⁷ See Strategic Fire Plan for Amador El Dorado Unit; 2023; [2023 Strategic Fire Plan Amador El Dorado Unit \(ca.gov\)](#); P.5.

⁸ Ben Bolt Remote Automated Weather Station Site; National Weather Service, [Ben Bolt California \(dri.edu\)](#).

storms are infrequent in the area. On average, the strongest wind speeds in the El Dorado Hills area occur in March through May, but winds can frequently exceed 20 mph throughout the local fire season period.

2.4 Topography

The topography in the general area of the Project is classified as being a “foothill” terrain type which transitions from the Central Valley area of California to the Sierra Nevada Mountain range. The existing condition shown on the Tentative Parcel Map indicates that the average slope for the site is approximately 8 - 20% with a maximum slope of approximately 60% in certain open space areas. Elevations within the property range from a low of 900 feet along the northern boundary to a high of 1200 feet found near the southerly boundary. Most of the parcels within the Project have north or east facing aspects.

See Figure 4 for the existing topographic condition of the Project area.

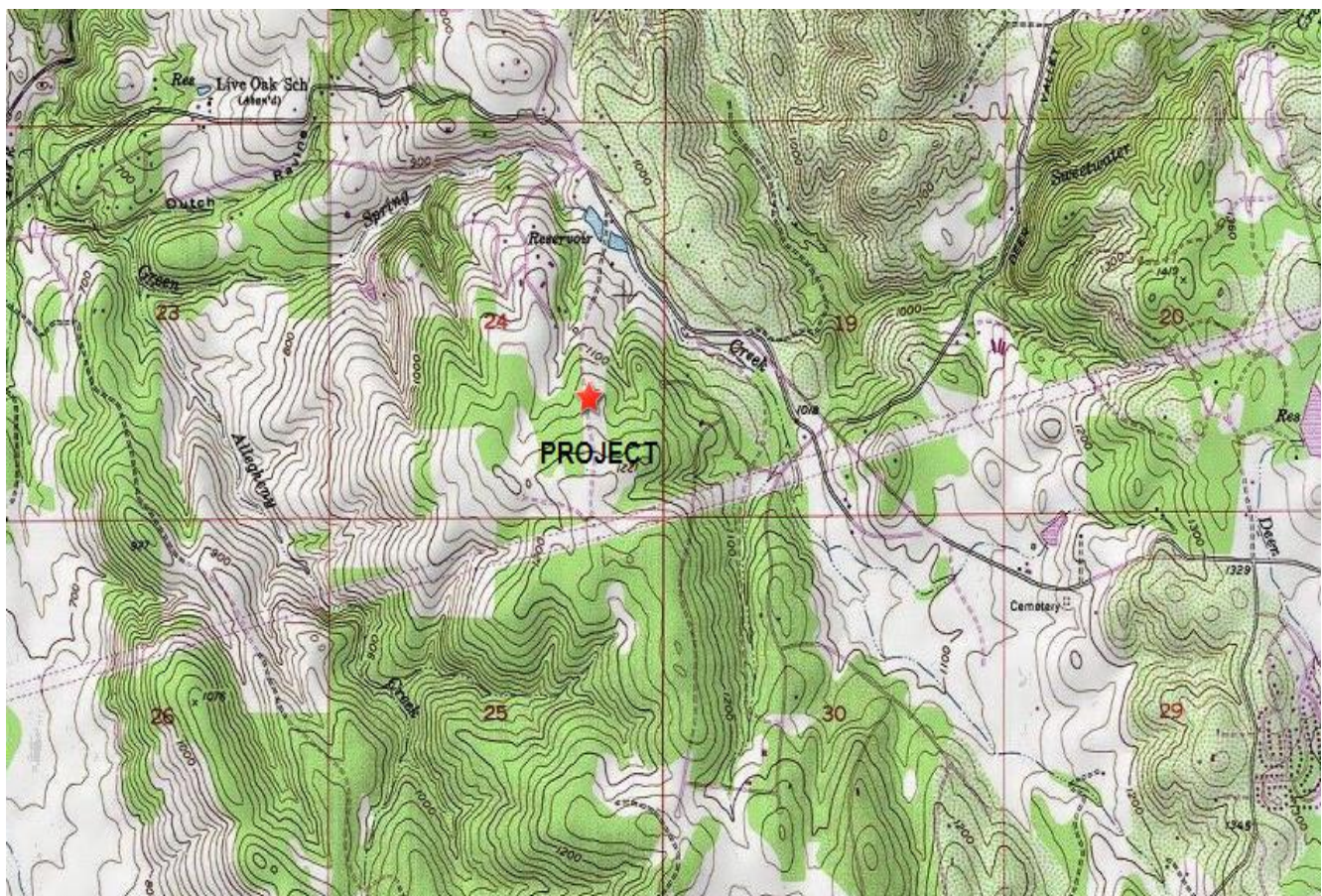


Figure 4: Generations at Green Valley Project Topographic Map

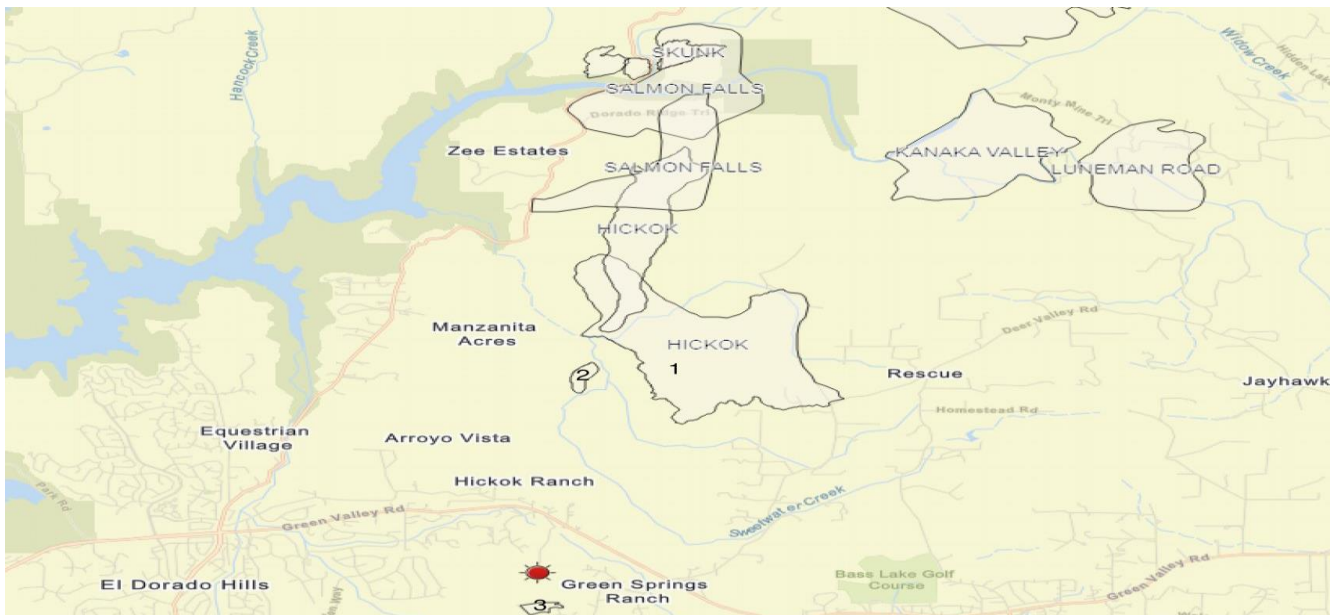
2.5 Existing and Planned Land Use Pattern

The current land use of the Project is unimproved. An existing Sacramento Municipal Utility District (SMUD) 230 kV transmission powerline, and a Pacific Gas & Electric 230kV transmission powerline, cross the Project near the southern boundary within an established easement. The Project proposes a Tentative Subdivision Map (TM22-0001) to construct up to 379 new residential lots (214 age restricted), an approximately 5-acre clubhouse site, nine open space lots, multiple private roads, and a 4-acre park site. The Project will be approximately 280 acres in total area.

2.6 Fire History

According to CAL FIRE statistics the majority of wildland fires that have occurred in the western El Dorado County area was ignited from one of the following sources: debris burning (34%), Undetermined (14%), Equipment (13%), Vehicle (9%) and Other (9%) causes.⁹ Debris and Open Burning was the Number 1 cause of vegetation fires in the El Dorado Hills and surrounding communities in the area in 2022.

Figure 5 describes the significant wildland fire history in the vicinity of the Project area.



LEGEND

1. Hickok Fire, August 30, 2002, Size - 776 acres, Cause - Arson
2. Hickok Fire, June 26, 1997, Size - 294 acres, Cause - Miscellaneous
3. Ethel Fire, July 6, 2001, Size - 10 acres, Cause - Equipment Use

Figure 5: Large Wildfire History in the Project Area (1910-2022)

⁹ *Strategic Fire Plan Amador o El Dorado o Sacramento o Alpine Unit*, (2023); P.57.

Several large wildfires (>300 acres) have been reported within 5 miles of the Project area between 1910 - 2022. The Project site has not been directly impacted within this reporting period. Lack of historical fire does not, by default, translate to low fire hazard. The absence of fire activity in the interface community contributed to significant fuels build up. The fuels built up together with the severe lack of precipitation and strong winds can all contribute to severe fire behavior that can cause the loss of life and structure destruction.

2.7 Fire Hazard Severity Zone Designation

The term Fire Hazard refers to the dangerous accumulation of flammable fuels in open space areas and other wildland urban interface areas (WUI). It is typically described at the landscape (area) level, usually referring to the density of live or dead vegetation that may be ignited by the various fire risks or causes that can increase a fire's intensity or rate of spread. Fire hazard is based on the vegetation types likely to be present over the next 50 years that contribute to fire severity and ember production, the topography of the area and the average fire weather conditions present in the area.

Fire Hazard ratings are provided by CAL FIRE as part of their *Fire Hazard Zone Severity Mapping* program. One of the major hazards in the western El Dorado County region is the threat of a disastrous wildfire endangering both people and property. The Project is also located within a designated¹⁰ Wildland Urban Interface (WUI) community identified by the Federal Government as being at risk from a large wildfire due to fire behavior potential and values at risk.

The area is vulnerable to the threat of wildfire throughout the year subject to a variety of conditions including, but not limited to:

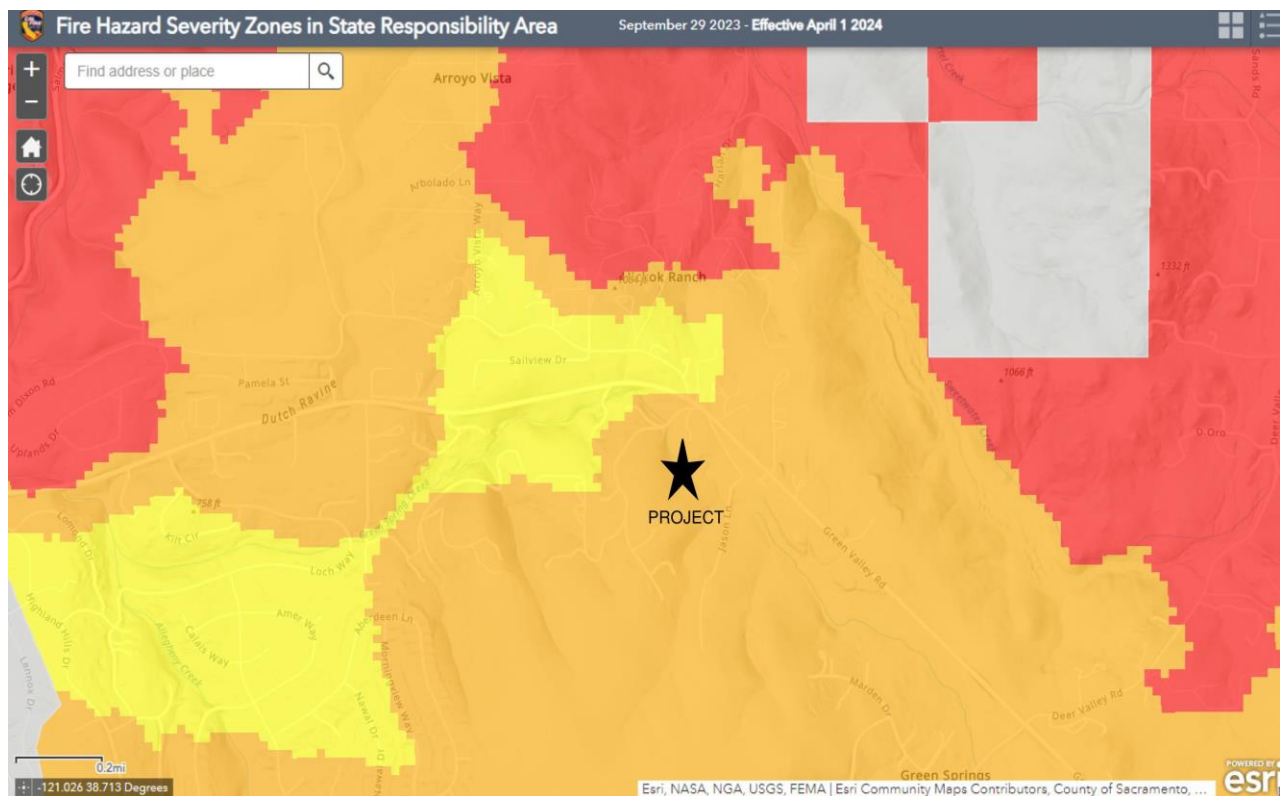
- Daily weather conditions such as air temperature, humidity, wind speed and direction.
- Climatic conditions such as drought, extended seasonal periods of hot, dry weather typically found in the summer and fall months, or seasonal rains typically found in the winter and spring months.
- Fuel moisture and growth cycle periods, especially in fine fuels such as the herbs and shrubs that are prevalent in the area.

¹⁰ Federal Register *Urban Wildland Interface Communities within the Vicinity of Federal Lands that are at High Risk from Wildfires*; (January, 2001); [Federal Register :: Urban Wildland Interface Communities Within the Vicinity of Federal Lands That Are at High Risk From Wildfire](#)

- Human caused ignition factors such as arson, escaped debris burns and unsafe equipment operation.

The Project area is located within a State Responsibility Area (SRA) for fire management. The current CAL FIRE Hazard Severity Zone¹¹ Map for El Dorado County identifies the Project as being inside a **High Fire Hazard Severity Zone**. Lands approximately ½ mile northwest of Project are identified as being within a Moderate Fire Hazard Severity Zone. Land approximately ½ mile north of the Project, in the Hickok and Deer Valley communities, are identified as being in a Very-High Fire Hazard Severity Zone. The unimproved lands north and east of the site, extending into the Pine Hill Preserve area and Salmon Falls area, and the open space areas within the Project, pose the most likely worst-case wildfire risk to the future community.

See Figure 6 for the Fire Hazard Map information for the Project and surrounding community.



LEGEND

- Yellow** State Responsibility Area (SRA) Moderate Fire Hazard Severity Zone
- Orange** State Responsibility Area (SRA) High Fire Hazard Severity Zone
- Red** State Responsibility Area (SRA) Very-High Fire Hazard Severity Zone

Figure 6: Fire Hazard Severity Zone Map for the Generations at Green Valley (2024)

¹¹ CAL FIRE; Fire Hazard Severity Zone Map for El Dorado County (April, 2024); [Fire Hazard Severity Zones in State Responsibility Area - El Dorado County \(azureedge.net\)](https://www.azureedge.net/).

2.8 Fire and Emergency Response

Fire, rescue, and pre-hospital emergency medical services for the El Dorado Hills community is provided by the El Dorado Hills Fire Department (EDHFD)¹². EDHFD is a career staffed fire department which operates five staffed fire stations and serves an area of approximately 78 square miles. EDHFD utilizes no less than twenty-one firefighters and paramedics to staff these fire stations on a 24-hours-per-day, seven-days-per-week operational schedule.

The closest staffed EDHFD fire station to the Project is Station 84 on Francisco Drive. This station is approximately 2.62 miles west of the Project. Station 84 is staffed with a crew of 3 firefighters on a year-round basis.

CAL FIRE operates one fire station in the El Dorado Hills region to meet its wildfire suppression and prevention mission. This fire station is located at CAL FIRE Station 70 in the Pilot Hill area and is approximately 13.5 miles from the Project. CAL FIRE staffs two state funded fire engines with a crew of 3-4 firefighters on a seasonal basis from this location.

The closest paramedic ambulance to the Project is located at El Dorado Hills Station 85, and has an average emergency response time of less than eight minutes to the Project.

The Project is located within an Insurance Service Office (ISO) Class 3 rating area. EDHFD emergency response travel times for the first arriving unit to the Project are, on-average, less than 8 minutes¹³. These response times are consistent with El Dorado County General Plan Policy 5.1.2.2¹⁴ which calls for an average response time to emergency calls of less than eight minutes in community region areas.

See Table 3 for additional information on local fire station locations and distance to the Project.

¹² See El Dorado Hills Website; [HOME - El Dorado Hills Fire Department \(edhfire.com\)](https://www.edhfire.com); accessed February 29, 2024.

¹³ Response times are based on an average 90 second turnout time by firefighters from their station plus travel time using the closest roads available to the project. The response time standard the county uses to evaluate the adequacy of the project meeting General Plan Policy 6.2.3.1 are based on the closest station (Station 84) only, and not the average response times of all resources responding to an incident.

¹⁴ See *El Dorado County General Plan, 2004*; Public Services and Utilities Element Section, P.91.

Table 3: Fire Station Data for Project			
Fire Station Identification	Address	Travel Distance to Project	Staffed Year Round
EDHFD Station 84	4680 Golden Foothills Pkwy. El Dorado Hills	2.62 Miles	Yes
EDHFD Station 85	1050 Wilson Boulevard El Dorado Hills	5.37 Miles	Yes
EDHFD Station 86	3670 Bass Lake Road El Dorado Hills	5.38 Miles	Yes
CAL FIRE Station 70	4731 Pedro Hill Road Pilot Hill	13.50 Miles	No ¹⁵
CAM Station 88	2961 Alhambra Drive Cameron Park	3.68 Miles	Yes

During a major emergency incident such as a building fire, wildland fire, hazardous materials spill, or similar event it is likely that EDHFD and CAL FIRE will dispatch multiple fire station crews to assist in controlling the incident. It is probable that five or more fire suppression units would be dispatched from multiple fire stations located in the western El Dorado County region.

Figure 7 shows the regional locations of the five closest fire stations to both the Project and El Dorado Hills community.



Figure 7: Staffed Fire Stations Near Project

¹⁵ CAL FIRE Station 70 is a seasonal wildland fire station operated by CAL FIRE typically between April-October.

A joint EDHFD, CAL FIRE, and local fire agency emergency response to the Project will occur along the Green Valley Road corridor. Three fire stations (84, 85, and 70) are located west or north of the Project; while two fire stations (88, 86) are located east or south of the Project. The closest paramedic ambulance to the Project is located at El Dorado Hills Station 85, and has an average emergency response time of less than eight minutes to the Project.

2.9 Emergency Ingress and Egress

The existing travel route to the Project site is currently by Green Valley Road which is a collector road that serves the El Dorado Hills, Cameron Park, Rescue and Shingle Springs on the northern end of those communities. Green Valley Road is a two-lane road in the vicinity of the Project site. It connects to Sacramento County on the west side of the Project, and to North Shingle Springs Road on the east side of the Project.

See Figure 8 for a map for the Project and surrounding areas.

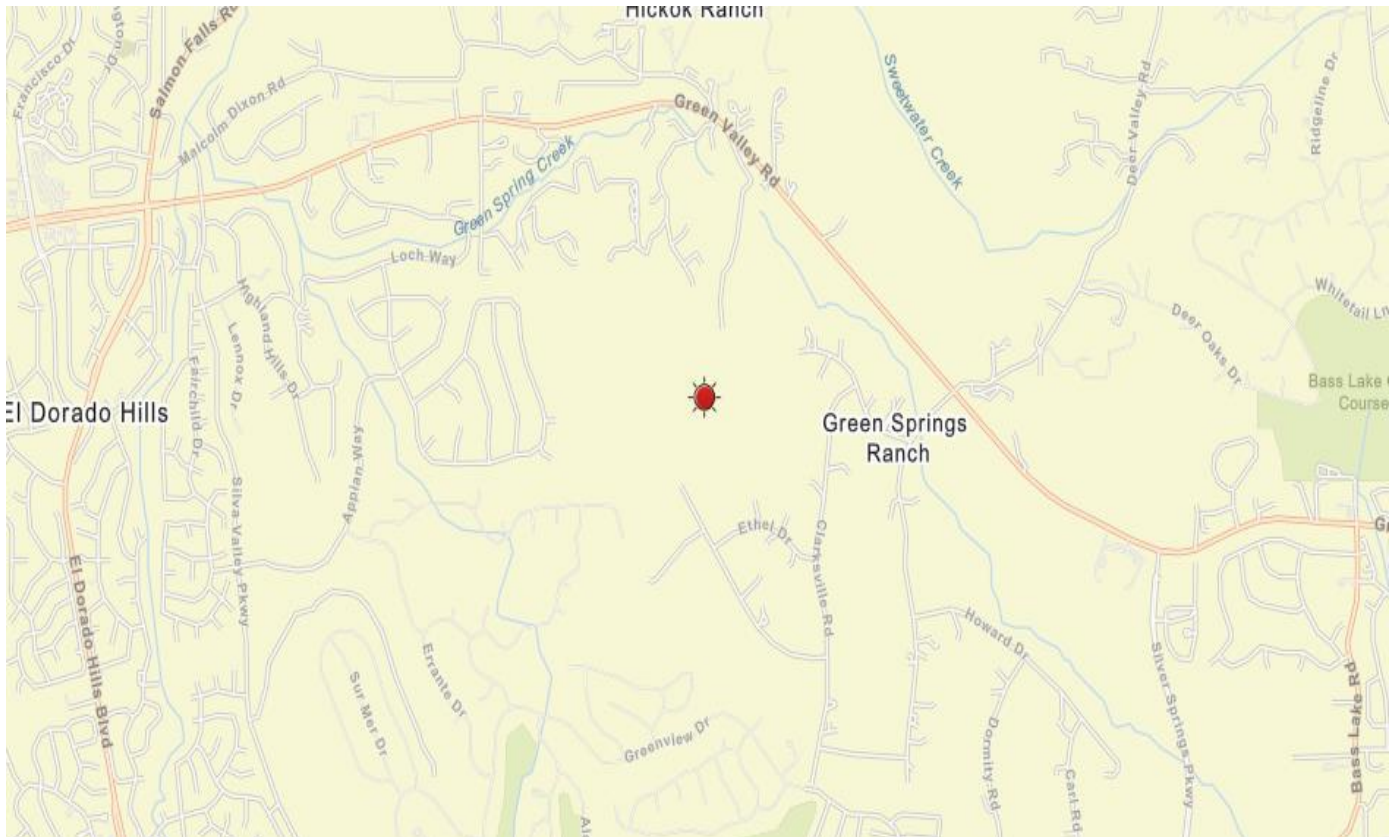


Figure 8: Generations at Green Valley Area Map

Chapter 3: REGULATORY SETTING

3.1 Chapter Overview

Development of the proposed Project will be subject to federal and state laws, County ordinances and regulations. The key provisions that would address hazards and emergencies within the FSP are summarized below, and, in some cases, reproduced in the appendices.

The County of El Dorado, through its General Plan¹⁶, has identified natural hazards that include severe weather, seismic and geological events, landslides, flooding, and wildfires, as the highest vulnerability to County residents. A review of the information¹⁷ provided in the General Plan shows the Project as being at greatest risk to the threat of a wildfire. The focus of the FSP will be to address efforts to reduce the wildfire threat within the Project and surrounding areas.

3.2 El Dorado County General Plan

The El Dorado County General Plan¹⁸ contains two sections that provide public safety policy guidance related to the Project. Chapter 5 (Public Services and Utilities Element) and Chapter 6 (Health and Safety Element). Chapter 5 was last amended in December, 2015. Chapter 6 was last updated by the County in August, 2019.

The following Public Services and Utilities Element polices of the County are applicable to the proposed Project:

Policy 5.1.2.2. Provision of public services to new discretionary development shall not result in a reduction of service below minimum established standards to current users, pursuant to Table 5-1.

Policy 5.1.2.3. New development shall be required to pay its proportionate share of the costs of infrastructure improvements required to serve the project to the extent permitted by State law. Lack of available public or private services or adequate infrastructure to serve the project

¹⁶ See *El Dorado County General Plan Public - Health, Safety and Noise Element*, (2019)

¹⁷ *ibid*

¹⁸ See El Dorado County General Plan (2004); [Adopted General Plan \(edcgov.us\)](https://www.edcgov.us); accessed August 31, 2023.

which cannot be satisfactorily mitigated shall be grounds for denial of any project or cause for the reduction of size, density, and/or intensity otherwise indicated on the General Plan land use map to the extent allowed by State law.

Policy 5.1.2.4. Service standards for public services and emergency services in Rural Centers and Rural Regions are different than in Community Regions based on lower intensity and density of land use.

Policy 5.2.1.2. An adequate quantity and quality of water for all uses, including fire protection, shall be provided for with discretionary development.

Policy 5.7.2.1. Prior to approval of new development, the responsible fire protection district shall be requested to review all applications to determine the ability of the district to provide protection services. The ability to provide fire protection to existing development shall not be reduced below acceptable levels as a consequence of new development.

Policy 5.7.4.1. Prior to approval of new development, the applicant shall be required to demonstrate that adequate medical emergency services are available and that adequate emergency vehicle access will be provided concurrent with development.

Policy 5.7.4.2. Prior to approval of new development, the Emergency Medical Services Agency shall be requested to review all applications to determine the ability of the department to provide protection services. The ability to provide protection to existing development shall not be reduced below acceptable levels as a consequence of new development. Recommendations such as the need for additional equipment, facilities, and adequate access may be incorporated as conditions of approval.

In addition, the Health and Safety Element of the General Plan includes the following policies regarding fire protection within El Dorado County:

Policy 6.2.1.1. Implement Fire Safe ordinance to attain and maintain defensible space through conditioning of tentative maps and in new development at the final map and/or building permit stage.

Policy 6.2.1.2. Coordinate with the local Fire Safe Councils, California Department of Forestry and Fire Protection, and federal and state agencies having land use jurisdiction in El Dorado County in the development of a Countywide fuels management strategy.

Policy 6.2.2.1. Fire Hazard Severity Zone Maps shall be consulted in the review of all projects so that standards and mitigation measure's appropriate to each hazard classification can be applied. Land use densities and intensities shall be determined by mitigation measures in areas designated as high or very high fire hazard.

Policy 6.2.2.2. The County shall preclude development in areas of high and very high wildland fire hazard or in areas identified as wildland-urban interface (WUI) communities within the vicinity of Federal lands that are a high risk for wildfire, as listed in the Federal Register Executive Order 13728 of May 18, 2016, unless such development can be adequately protected from wildland fire hazard, as demonstrated in a WUI Fire Safe Plan prepared by a qualified professional as approved by the El Dorado County Fire Prevention Officers Association. The WUI Fire Safe Plan shall be approved by the local Fire Protection District having jurisdiction and/or California Department of Forestry and Fire Protection. (Resolution 124- 2019, August 6, 2019)

Policy 6.2.3.1. As a requirement for approving new development, the County must find, based on information provided by the applicant and the responsible fire protection district that, concurrent with development, adequate emergency water flow, fire access, and firefighting personnel and equipment will be available in accordance with applicable State and local fire district standards. Public Health, Safety, and Noise Element El Dorado County General Plan Page 114 (Amended August 2019) July 2004

Policy 6.2.3.2. As a requirement of new development, the applicant must demonstrate that adequate access exists, or can be provided to ensure that emergency vehicles can access the site and private vehicles can evacuate the area.

Policy 6.2.3.4. All new development and public works projects shall be consistent with applicable State Wildland Fire Standards and other relevant State and federal fire requirements.

Policy 6.2.4.1. Discretionary development within high and very high fire hazard areas shall be conditioned to designate fuel break zones that comply with fire safe requirements to benefit the new and, where possible, existing development.

3.3 Tentative Map and Parcel Map Requirements in the SRA

California Government Code § 66474.02 requires that a legislative body of a County make specific findings before approving a tentative map, or a parcel map for which a tentative map was not required, for an area located in the State Responsibility Area (SRA) or Local Responsibility Area (LRA) VHFHSZ. The findings must show that that the subdivision is consistent with regulations adopted by the State Board pursuant to Sections 4290 and 4291 of the Public Resources Code (PRC) or consistent with local ordinances certified by the State Board as meeting or exceeding the State regulations.

The County must also submit a copy of the findings to the State Board. Certain tentative maps or parcel maps for purposes of open space and conservation are exempt, as specified in the statute. The findings described above must be made in order to approve a tentative or parcel map. Even if the lead agency adopts a statement of overriding considerations for a proposed project, or if the lead agency determines a project to be exempt to CEQA, the substantive requirements in the Government Code regarding fire protection must be satisfied. Information on how to submit these subdivision maps to the State Board can be found in the California Code of Regulations (CCR), Title 14, §§ 1266.00, 1266.01, and 1266.02.

3.4 Fire Safe Regulations

California Public Resource Code (PRC) Section 4290. The State Board of Forestry has the authority to adopt regulations for minimum fire safety standards applicable to SRA lands under the authority of the department, and to VHFHSZs. The Fire Safe regulations are codified in CCR, Title 14 (Natural Resources), Division 1.5 (Department of Forestry), Chapter 7 (Fire Protection) under Subchapter 2 (SRA Fire Safe Regulations), §§ 1270-1276. These regulations generally address the following:

- Standards for signs identifying streets, roads, and buildings.

- Minimum private water supply reserves for emergency fire use.
- Fuel modification standards for fuel breaks and greenbelts.
- Road and driveway standards for emergency fire equipment access and public evacuation.

They do not supersede local regulations that equal or exceed minimum regulations adopted by the State (PRC § 4290(c)).

California Building Standards Code

The State of California has adopted a minimum model code for use within all 58 counties of the State. These provisions can be found within California Code of Regulations Title 24 - Parts 1 through 12. The code is updated on a triennial basis with the last update occurring on January 1, 2023.

The California Building Standards Code is a compilation of three types of building standards from three different origins:

- Building standards that have been adopted by state agencies without change from building standards contained in national model codes;
- Building standards that have been adopted and adapted from national model codes to address California's ever-changing conditions; and
- Building standards, authorized by the California legislature, that constitute amendments not covered by national model codes, that have been created and adopted to address particular California concerns.

All occupancies in California are subject to national model codes adopted into Title 24, and occupancies are further subject to amendments adopted by state agencies and ordinances implemented by local jurisdictions' governing bodies.

3.5 Defensible Space Regulations

California PRC Section 4291 / Government Code (GC) Section 51182. These State statute and regulatory provisions define and describe mandatory fire protection measures and responsibilities for maintaining defensible space that apply to all property within the SRA in

California. Per GC § 51182, defensible space regulations also apply to all property in the VHFHSZ within the Local Responsibility Area (LRA).

The defensible space requirements include, but are not limited to, the following:

- 100 feet minimum of vegetation management (“defensible space”) around homes
- Removal of dead/dying vegetation
- Vegetation removal around chimneys/stovepipes

Depending on the area, defensible space requirements may include certain exemptions and exceptions from code. Moreover, jurisdictions may require extension of the minimum distance beyond property lines or as needed for insurance. The State Board provides direction for complying with the defensible space regulations in CCR Title 14, §§ 1299.01- 1299.05 which incorporates by reference additional information outlined in the State Board’s General Guidelines for Creating Defensible Space. Due to the recent passage of AB 3074 (2020), defensible space compliance will soon require more intense fuel reduction activities and the creation of an ember-resistant zone within 5 feet of a structure. The State Board will provide additional guidance and must amend the regulations to reflect these changes on or before January 1, 2023.

El Dorado County Code Chapter 8.09

The County of El Dorado has more restrictive requirements, in some cases, than State statutes and regulations pertaining to Defensible Space around homes and buildings. El Dorado County Codes and Ordinances Chapter 8.09 pertains to all requirements and administrative actions associated with Vegetation Management and Defensible Space. The purpose of this chapter is to provide for the removal of hazardous vegetation and combustible materials situated in the unincorporated areas of the County so as to reduce the potential for fire and to promote the safety and welfare of the community. The chapter applies to all improved parcels and designated unimproved parcels within the County, and establishes annual on-going maintenance of those parcels to prevent vegetation from growing back and posing a fire hazard to the community.

3.6 Other Plans and Regulations

El Dorado County Local Hazard Mitigation Plan.

The County of El Dorado last updated its Local Hazard Mitigation Plan (LHMP) in April, 2019¹⁹. The purpose of the LHMP is to guide hazard mitigation planning to better protect the people and property of the County from the effect of hazard events. Based on a comprehensive risk assessment the LHMP identified that it is vulnerable to several hazards. The threat of wildfire was among those hazards identified as posing the highest risk to the communities and population within the County.

The wildfire risk assessment provisions within the LHMP are described within Section 3.2.15. Wildfires are identified within the LHMP²⁰ as highly likely to occur within all areas of the County. Prolong dry seasons, warmer temperatures created by climate change, drought and tree mortality are all significant factors in the increased risk of wildfire occurring in the County.

California Governor's Office of Planning and Research - Fire Hazard Planning Technical Advisory

This planning guide is one in a series of technical advisories provided by the Governor's Office of Planning and Research (OPR) as a service to professional planners, land use officials, and California Environmental Quality Act (CEQA) practitioners. OPR issues technical guidance on issues that broadly affect land use planning, including the application of CEQA. The advisory was published in August, 2022.

The goal of this technical advisory is to provide a robust planning framework for addressing fire hazards, reducing risk, and increasing resilience across California's diverse communities and landscapes. To accomplish this goal, it is essential that local agencies (i.e., cities and counties) develop and incorporate effective policies and implementation programs in their general plans and integrate their general plans with other relevant hazard and risk reduction policies, plans, and programs. This advisory provides guidance on those policies and programs, and is also

¹⁹ See El Dorado County Local Hazard Mitigation Plan; [EIDoradoCounty_LHMP.pdf \(edcgov.us\)](#); accessed August 31, 2023.

²⁰ *ibid*

intended to assist city and County planners in discussions with professionals from fire hazard prevention and mitigation, disaster preparedness, and emergency response and recovery agencies as they work together to develop effective fire hazard policies for the general plan.

EI Dorado Hills County Water District Ordinance 2022-01 (Fire Code)

The EI Dorado County Water District (EDHCWD) has adopted the 2022 California Fire Code (CFC) with several local amendments which are more restrictive than those described in the CFC. EDHCWD updates its local fire code ordinance in conjunction with the triennial update to the California Building Standards Code. Specific local amendments contained within the ordinance that may impact the Project include the following:

- Fire apparatus access road design criteria as described in Section 503.2.1
- Dead end roads and driveways as described in Section 503.2.5
- Fire lane marking requirements described in Section 503.3.1
- Security gate design criteria as described in Section 503.6
- Address identification criteria as described in Section 505.1
- LP-Gas storage tank limits as described in Section 6104.2
- Residential fire sprinkler system installation requirements found in Chapter 80.
- Fire-Flow requirements for buildings as described in Appendix B
- Fire Apparatus access road design criteria described in Appendix D.

EI Dorado Hills County Water District Ordinance 2023-01 (Unimproved Parcel Maintenance)

EDHCWD has adopted local regulations related to Hazardous Vegetation Management on Unimproved Parcels located throughout the district. Specific provisions contained within the ordinance that may impact the Project include the following:

- Hazardous vegetation maintenance on unimproved parcels that are one (1.0) acre in size or smaller
- Hazardous vegetation maintenance on unimproved parcels over one-acre (1.01) in size or larger

- Unimproved parcels known to contain, or that the property owner believes, may contain habitat for rare, threatened, or endangered plant or animal species
- Duty of property owner to abate fire hazards on their property
- Acceptable methods of clearance of hazardous vegetation and combustible materials
- Reoccurring fire hazards
- Penalties for violating the ordinance

In addition, the El Dorado County Fire Chiefs Association has created several Fire Protection Standards, as permitted by the California Fire Code, to clarify certain provisions of the Code and their application locally. See Chapter 8 - Appendix F of this FSP for a list of these local standards.

END OF CHAPTER

CHAPTER 4: FIRE PROTECTION PLANNING

4.1 Chapter Overview

The purpose of this Chapter is to describe the recommended fire prevention and emergency planning best practices for the Generations at Green Valley Project. This Chapter is consistent with nationally recognized and accepted practices for safeguarding life and property from the hazards of fire and other dangerous conditions associated with a wildfire and/or urban conflagration. This Chapter is based on a Project-specific wildfire hazard and risk assessment as described in California Fire Code Section 4903 and includes analysis on the following subjects:

- Emergency Vehicle Access Requirements
- Road and Address Signage Requirements
- Emergency Water Supply Requirements
- Applicable Building Codes and Standards for Wildfire Safety
- Fire Protection System Requirements

4.2 Wildfire Hazard and Risk Assessment Factors

The threat of wildfire exposure to people, critical infrastructure, buildings, and communities is based upon a comprehensive vulnerability assessment of an area. This vulnerability assessment is usually completed through the evaluation of both *fire hazard* and *fire risk* factors. The term “hazard” describes the density of live or dead vegetation that may be ignited by the various fire risks or causes that can increase a fire’s intensity or rate of spread such as topography or weather conditions. The term “risk” describes the potential damage a fire can do to buildings, critical assets/infrastructure, and other values at risk in individual open space areas and other wildland urban interface areas.

Landowners, managers, and fire officials need to consider the potential fire hazard and risk factors that may make their community vulnerable to a wildfire when making land management and development decisions in fire-prone areas²¹. This assessment also aids fire agencies in the preparation of pre-incident plans and resource deployment actions such as fire equipment

²¹ Wildfire Hazard and Risk Assessment, United Nations Office for Disaster Risk Reduction, 2017

staffing levels and resource placement during critical fire periods. This assessment should consider the factors described in Table 4 when assessing the wildfire exposure potential for an area:

Table 4: Hazard and Risk Assessment Factors

Hazard Assessment Factors

- Landscape level vegetation (fuel) types
- Landscape level topography
- Weather conditions present during seasonal and critical fire weather periods
- Prior fire history in the area
- Ember / firebrand spread potential
- Other criteria as determined by CAL FIRE

Risk Assessment Factors

- Subdivision design points
- Site vegetation (fuel) types
- Site topography
- Defensible Space measures
- Building construction materials used
- Roofing materials used
- Local fire protection capabilities
- Fire protection water sources
- Utilities
- Critical assets / infrastructure at risk

4.3 Wildfire Vulnerability Assessment for the Project

The fire risk factor scoring for the Project is described in Table 3. The overall risk rating can be described as Low (0-39), Moderate (40-59), High (60-74) and Very-High (75+). When analyzing individual fire risk factor ratings within the Project area the following terms are used:

- **LOW RISK** - Fire risk factors present typically do not support rapid fire spread.
- **MODERATE RISK** - Fire risk factors present may support moderate fire spread, but burning ember distribution is limited to less than ½ mile.
- **HIGH RISK** - Fire risk factors present may support rapid fire spread and ember distribution beyond ½ mile.
- **VERY-HIGH RISK** - Fire risk factors present may support extreme fire spread and intensity.

NOTE: No Very High-Risk factors are currently identified within the Project area.

See Table 5 and the subsequent description below for additional analysis on the fire risk rating for the Project.

Table 5: Fire Risk Rating²² for the Generations at Green Valley Project

No.	Risk Factor	Low	Moderate	High	Very-High	Total
		0-3	4-6	7-8	9-10	
1	Subdivision Design Points	3				3
2	Vegetation Fuel Type		6			6
3	Defensible Space		6			6
4	Site Topography		6			6
5	Building Construction Materials		6			6
6	Roofing Materials	3				3
7	Fire Protection - Water Source	3				3
8	Fire Protection - Fire Department Capability	3				3
9	Utilities	3				3
10	Critical Assets / Infrastructure at Risk	0				0
	Total	15	24	0	0	39

Overall Wildfire Risk Rating: **Low** (39)

The fire risk factors associated with the *Subdivision Design Points* are considered “**Low**” based on the current site plan design. The Project is accessed via two access controlled road connections (A-Drive, C-Drive) to Green Valley Road on the north side of the Project. Green Valley Road is a public road maintained by the County of El Dorado. The Project is accessed by an Emergency Access/Egress (EAE) connection to Lima Way on the south side of the Project. This EAE will be designed and operated as a second access road connection for both emergency responders, and civilians during an evacuation, in accordance with EDHCWD Fire Code Section D107.2. Two additional EVAs for emergency vehicle use only are provided within the Project. All roads within the Project will be designed in accordance with EDHFD and CAL FIRE emergency vehicle access requirements.

²² Based on the 2023 ICC Wildland Urban Interface Code. Additional risk factors such as defensible space, fire department capacity and critical assets/infrastructure at risk are also evaluated as part of this risk assessment based on local fire agency requirements. The rating scale has been simplified to describe a range of between 0-10 for ease in describing the overall risk score.

The fire risk factors associated with the *Vegetation Fuel Types* are considered “**Moderate**” based on the current site plan design. The primary vegetation types found in the Project area today pose the threat of rapid fire spread during long dry periods of the year. The Project will contain approximately 57.6 acres of open space lands. The wildfire mitigation measures described in Chapter 6 will reduce the fire risk to nearby buildings when implemented by the HOA.

The fire risk factors associated with *Defensible Space* are considered “**Moderate**” for the Project. Preparedness actions such as ensuring that adequate defensible space meeting the requirements found in State and Local regulations, along with on-going wildfire fuel reduction practices established with this FSP on undeveloped sections of the Project, will limit the risk of a wildfire damaging buildings within this Project and surrounding communities.

The fire risk factors associated with *Site Topography* are considered “**Moderate**” for the Project. All parcels established within this Project have average slopes of less than 20%. Open space lots adjacent to the residential lots may have slopes up to 60%. The Project is located on north and east aspects. These factors, along with the vegetation fuel described previously, will lead to rapid fire spread conditions during heightened fire danger periods.

The fire risk factors associated with *Building Construction Materials* are considered “**Moderate**” for the Project. The risk of building-to-building ignition during a wildfire is present due to the close proximity of the buildings (<30 feet) proposed within the Project. All new buildings constructed within the Project will utilize materials and construction methods (e.g. Class A roof cover, vent screening, ignition-resistant construction, etc.) for exterior wildfire exposure as described in California Building Code Chapter 7A and this FSP.

The fire risk factors associated with *Roofing Materials* are considered “**Low**” for the Project. All new buildings built within the Project will be provided with a Class A Roof as required by El Dorado County Code Section 110.16.110. The design of each roof assembly shall comply with California Building Code Section 705A and this FSP.

The fire risk factors associated with *Fire Protection - Water Source* are considered “**Low**” for the Project. The Project will be provided with a municipal water supply system meeting the fire protection requirements for all buildings within the Project.

The fire risk factors associated with *Fire Protection - Fire Department Capability* are considered “**Low**” for the Project. The Project site is currently served by EDHFD and CAL FIRE. Emergency response times to the Project site are consistent with the average response time standards for community region areas established by the County of El Dorado.

The fire risk factors associated with *Utilities* are considered “**Low**” for the Project. All electrical power distribution lines serving the Project will be buried underground reducing the wildfire risk in the subdivision. Unless the Project is developed using only electric, each parcel will have natural gas supplied by PG&E for heat and other fuel needs.

The fire risk factor associated with *Critical Assets / Infrastructure at Risk* sites in the Project should be considered “**Low**” for the Project. The Project as proposed contains one value and assets identified within Chapter 8 - Appendix A.

It is important to remember that the risk factor ratings described do not imply that a community is at greater or lower risk due to its overall rating. Fires can, and do, cause significant damage to property and buildings even when they occur in areas that may receive an overall low or moderate rating. Failure to maintain adequate defensible space, critical fire weather conditions and/or lack of available fire suppression resources due to other emergency incidents may cause a fire to increase its intensity and fire spread beyond the capabilities of firefighters on scene.

4.4 Emergency Vehicle Access Requirements

Emergency vehicle access is an important element of the FSP for the Project area. Emergency vehicle access can be described as the means (e.g., roads, bike paths, trails, etc.) by which firefighters can enter an area to quickly mitigate a wildfire incident before it spreads to adjacent properties and critical assets / infrastructure at risk. Joint efforts to develop and maintain ingress/egress for local evacuation and fire suppression response are required to ensure that both public and firefighter safety is provided.

See Figure 9 for additional information on the gated access, EVA and EAE locations within the Project, and Section 5.2 for a further description on the multiple evacuation route options.

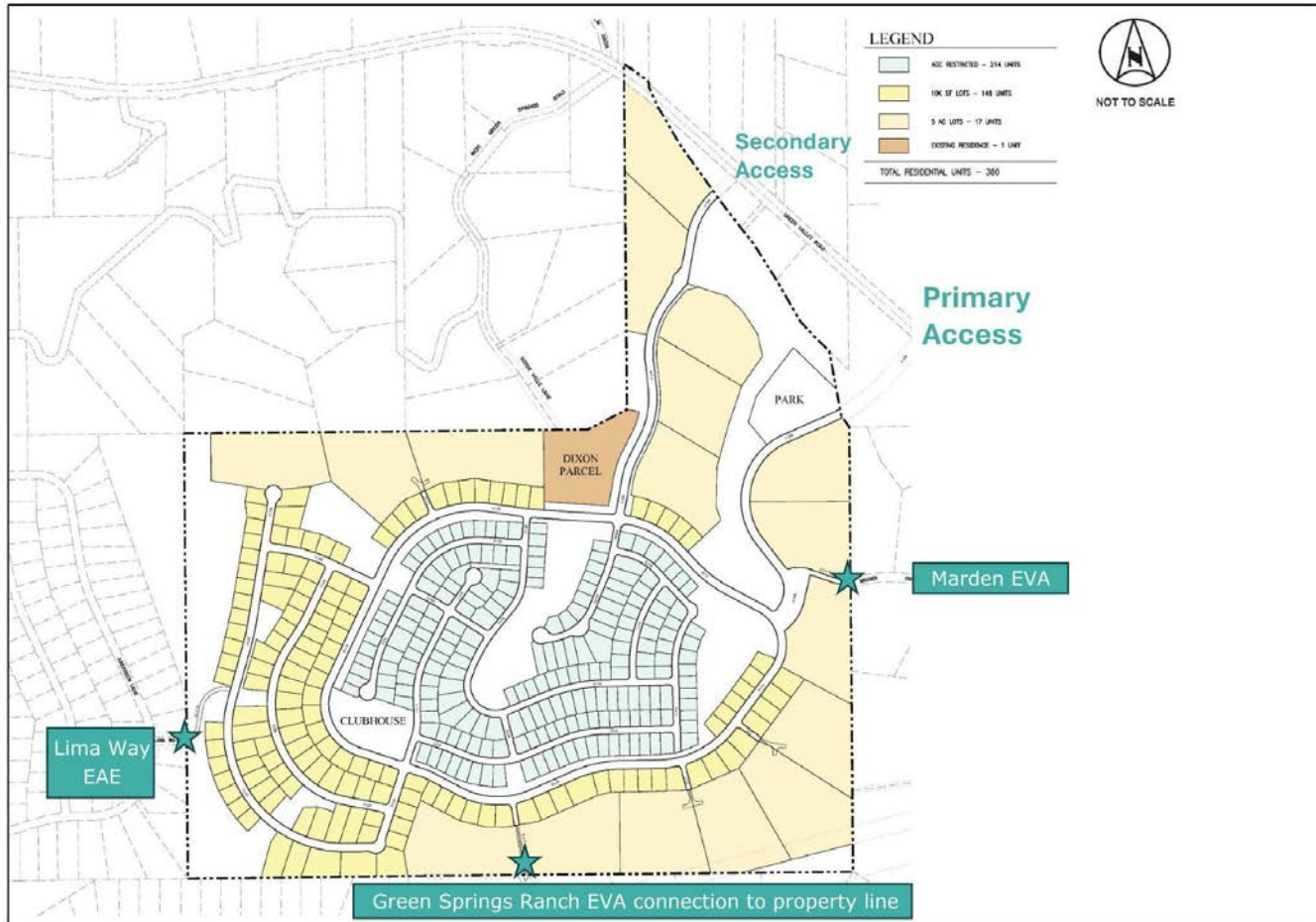


Figure 9: Generations at Green Valley Project Entrances (Figure Courtesy of DKS Associates)

The main entry/exit point and emergency response routes to the Project will be A-Drive, identified in Figure 9 as being the east entrance off of Green Valley Road. This intersection will be controlled via a new traffic signal that will be installed with the Project. Emergency vehicle access is also available from Green Valley Road via C-Drive, identified as the west entrance off of Green Valley Road. Civilian vehicle turning movements from this connection are limited to right-in/right-out only²³.

The EAE connection to Lima Way will be designed and operated as a second emergency vehicle access road connection and will allow for civilians use during an evacuation in accordance with EDHCWD Fire Code Section D107.2 (Access Remoteness). This EAE will connect the Project to the Highland View community. An automatic gated entry is proposed for this location. The gated entry shall comply with the applicable automatic gate design criteria

²³ The final design of this traffic calming measure shall allow for emergency vehicle movement from all directions as required by EDHFD.

described in El Dorado County Code Section 130.30.090 (D) and EDHFD Standard No. B-002 (Automatic Gates on Fire Apparatus Roads).

The Marden Road, and East Green Springs Road connections are EVA use only road connections located on the east side of the Project. Both EVAs connect to the Green Springs Ranch community. The East Green Springs EVA would only connect to the Green Springs Ranch community if the Green Springs Ranch Association chooses to complete the extension in the future and at their discretion.

All roads serving the project shall meet the emergency vehicle access requirements described in Chapter 8 - Appendix D, F, and G along with the provisions described in California Code of Regulations Title 24 - Part 9 (California Fire Code).

No speed bumps, speed humps, speed control dips, etc. shall be permitted on emergency vehicle access roadways. All other traffic calming devices shall be prohibited unless approved by EDHFD as required by CFC 503.4.1.

Each lot will be accessed by a private driveway connection. Driveways shall be constructed to meet the following minimum standards:

- Driveways serving as the primary means for emergency vehicle access shall be provided to within 150-feet of all portions of the building.
- Driveways shall provide not less than 12-feet of unobstructed road width, not including shoulders, throughout the entire length of the road. An unobstructed horizontal clearance from vegetation of not less than 10-feet along both sides of the driveway, and a vertical unobstructed clearance of 15-feet, shall be provided along the length of the driveway.
- Driveways exceeding 150-feet in length, but less than 800-feet, shall provide a turnout near the midpoint of the driveway. Where the driveway exceeds 800-feet turnouts shall be provided no more than 400-feet apart.
- Turnouts shall be a minimum 12-feet in width and 30-feet in length with minimum 25-foot tapered ends.

- Driveways shall be designed and maintained to support the imposed live load of not less than 40,000 pounds gross vehicle weight for emergency vehicle access. A report, prepared by a geotechnical or civil engineer, verifying the ability of the road to bear the required minimum weight shall be submitted with any plan indicating the construction of fire apparatus access roads. Verification of constructed roadway shall be provided by a geotechnical or civil engineer prior to the final inspection of the project.
- Turns in fire apparatus access roads shall have a minimum 40-foot inner and 56-foot outer turning radius.
- Approach and departure angles in fire apparatus access roads shall not exceed 5% over a distance of 5-feet.
- A turnaround shall be provided on driveways over 150-feet in length and shall be within 50-feet of the building.

See Chapter 8 - Appendix D for further analysis on how the project complies with the fire safe provisions required by California Code of Regulations (CCR) Title 14 - Sections 1270-1275.

4.5 Road and Address Signage Requirements

Newly constructed or approved roads shall be identified by a name or number through a consistent system that provides for sequenced or patterned numbering and/or non-duplicative naming as approved by the County of El Dorado. Road signs shall be visible and legible from both directions of vehicle travel for a distance of at least one hundred (100) feet. Road signs shall meet the following criteria:

- Road signs shall be placed at the intersection of roads.
- Road sign assemblies shall be constructed of non-combustible materials.
- The road sign background shall be of a reflective material and of a contrasting color to the address numbers or letters.
- Road numbers or letters shall be of a reflective material, of a contrasting color to the sign background, and with a height of not less than 4-inches and with a width of ½-inch stroke.
- Spacing between road numbers or letters shall be between ½-inch and 1-inch.

- Road signs shall be installed a minimum of 7-feet above the traveled way.

A sign identifying traffic access or flow limitations, including but not limited to, weight or vertical clearance limitations, dead-end roads, one-way roads, or single lane conditions shall be placed:

- At the intersection preceding the traffic access limitation, and
- No more than one hundred (100) feet before such traffic access limitation.

All buildings within the Project shall be issued an address by the County of El Dorado which conforms with the overall address system. Utility and miscellaneous buildings are not required to have a separate address. The address installation, location and visibility on the building shall meet the requirements found in CCR Title 24, Part 9 (Fire Code), Section 505 and EDHFD Standard No. B-001 (Addressing of Buildings). Building address signs shall meet the following additional criteria as required by EDHFD:

- Address numbers on each residential building shall be either internally or externally illuminated.

When the building address is located more than 150-feet from the road serving the Project the address sign shall be placed at the driveway entrance onto the parcel. The address sign shall meet the following additional criteria:

- Signs shall be mounted between 4-feet and 7-feet above grade.
- Posted no further than 5-feet from either the driveway or roadway travelled way, and on the same side of the road as the serviced driveway.
- Oriented perpendicular to the direction of travel on the roadway and legible from both directions of travel on the driveway.
- Address numbers shall be reflective and contrasting in color to the sign background, and with a number height of not less than 4-inches and with a stroke width of 1/2-inch.

4.6 Fire Protection Water Supply Requirements

Section 1275.02 (Water Supply) of California Code of Regulations Title 14 (Fire Safe Regulations), and Section 507 (Fire Protection Water Supplies) of California Code of Regulations

Title 24 - Part 9 (California Fire Code), both require an approved water supply that is capable of supplying the required fire flow for fire protection for all new buildings hereafter constructed. As the number of buildings and their square footages is not known at this date the following general information on required fire flows is the only data currently available for analysis. The required fire flows for determining the water supply needs for the project are described in Table 6.

Table 6: Fire-Flow Requirements²⁴ for the Project

Fire-Flow Calculation Area (square feet)	Automatic Sprinkler System Type	Minimum Fire-Flow (gallons per minute) ²⁵	Flow Duration (hours)
0-3,600	CFC 903.3.1.3 ²⁶	1,000	1
3,601 and greater	CFC 903.3.1.3	½ Value in CFC Table B105.1 (2)	2

The Project is located in an area of El Dorado Hills that has adequate water supply capabilities for fire protection available to it. The municipal water service provider for the El Dorado Hills area is the El Dorado Irrigation District (EID). The Project will be served by a large municipal water tank storage system operated by EID that is just south of the Project site in Highland View.

The Project will install a municipal water supply system using fire hydrants supplied by EID for fire protection purposes. This water supply system will be capable of meeting and/or exceeding the Project minimum fire-flow requirements of no less than 1,000 GPM @ 20 pounds per square inch gauge (PSIG) for a 1-hour duration as identified in the California Fire Code (CFC). Fire hydrants meeting EID, EDHFD and CAL FIRE requirements will be spaced on average every 500-feet along both public and private roads serving the Project in accordance with the CFC

4.7 Building Siting and Setbacks

All parcels within the Project must provide a minimum 30-foot setback for all buildings from all property lines and/or the center of a road, as required by CCR Title 14 - § 1276.01 (a). The purpose of this setback requirement is to reduce the intensity of a wildfire through structure-

²⁴ "Fire Flow" is the flow rate of a water supply, measured at 20 pounds per square inch (psi) residual pressure, that is available for firefighting.

²⁵ CFC Appendix Section B103.2 authorizes the fire code official to increase the fire-flow requirements when conditions indicate an unusual susceptibility to group fires or conflagrations.

²⁶ See NFPA Standard 13D (*Standard for the Installation of Sprinkler Systems in One and Two-Family Dwellings and Manufactured Homes*) as amended by the State of California in Title 24 - Part 9, Chapter 80.

to-structure ignition sources. A reduction of this minimum setback is permitted by this regulation in some cases²⁷.

The following specific alternative material and construction methods, exceeding the minimum criteria described in CBC Chapter 7A, shall be implemented within the Project to meet the “Practical Effect” principles described in CCR Title 14 - §1276.01 when buildings are located within 30-feet of property lines to reduce the potential for building-to-building fire spread may include, but are not limited to²⁸, the following provisions:

- Block any spaces between roof decking and the Class A roof covering to prevent embers from catching and igniting the building; and
- Eaves shall be enclosed on the underside with non-combustible material, ignition-resistant material, or minimum two (2) inch lumber; and
- Exterior walls shall be constructed with non-combustible building materials such as stucco, fiber cement, stone, or brick, and comply with California Code of Regulations Title 24, Part 2, Chapter 7A, Section 707A; and
- Use WUI ember and flame-resistant vents, conforming with the requirements described in ASTM E2886, to protect exterior wall openings when the wall is located within 30-feet of another building or faces the Wildland Fuel Reduction Zone areas. Dryer vents shall be metal and equipped with a louver or flap; and
- Exterior windows, skylights, glazed doors, and glazed openings within exterior doors shall be multi-paned with at least two (2) tempered panes, minimum twenty (20) minute fire rated, or fire-resistant glass block units. Shutters installed over windows shall be non-combustible; and
- Areas under first floor bay windows shall be enclosed with non-combustible walls; and

²⁷ CCR Title 14 - § 1276.01(b) does allow for a reduction in the minimum setback based upon findings that support the practical reason for the reduction and alternative methods are implemented to reduce building-to-building ignition.

²⁸ The Project will comply with all applicable state and local code and regulatory requirements to achieve “Practical Effect” at the time of issuance of the building permit.

- Exterior doors of buildings shall be non-combustible, or have a non-combustible exterior storm door, and comply with California Code of Regulations Title 24, Part 2, Chapter 7A, Section 708A ; and
- A minimum non-combustible area of 6 vertical inches, measured from the ground up (at grade) and from any attached horizontal surface like a deck, shall be provided on the exterior of all buildings. Non-combustible materials can include brick, stone, fiber-cement siding, or concrete; and
- Fencing materials located within 5-feet of a building shall be constructed of non-combustible materials. Areas located between 0-feet and 5-feet from all buildings shall remain non-combustible. Back-to-back, combustible fencing shall be separated by a minimum of five (5) feet; and
- Landscape materials and other vegetation located within 0'-100' of dwellings shall comply with the fire-resistant standards of EDHFD and CAL FIRE; and
- Accessory and miscellaneous structures, as defined in the California Building Code, located within the reduced fire setback zone shall comply with this plan and California Code of Regulations Title 24, Part 2, Chapter 7A, Section 710A; and
- Decks, including posts, joists, railing, stairs, and walking surfaces, shall be non-combustible and comply with California Code of Regulations Title 24, Part 2, Chapter 7A, Section 709A; and
- Projections shall be non-combustible, ignition resistant, or one (1) hour fire-rated in accordance with IWUIC, Section 503.2, and/or NFPA 1144, Section 5.2; and
- Gutters and downspouts shall be of non-combustible material. Gutters shall be provided with a non-combustible leaf guard.

See EDHFD Standard No. 7 (Residential Setback for Structure Defensible Space) for additional information.

Fencing materials adjacent to non-irrigated open space areas shall be constructed of non-combustible materials.

CCR Title 14 - §1276.02 requires local jurisdictions to identify “Strategic Ridgelines”, for all land use projects to reduce the fire risk and improve fire protection in the community. All new parcels being created by this Project are not located in a potential ridgeline area. EDHFD has confirmed that no strategic ridgelines are proposed at this time within the Project boundaries.²⁹

4.8 Applicable Building Codes and Standards for Wildfire Safety

New buildings constructed within the Project will comply with the current requirements of the California Building Code (CBC). All residential dwellings in the Project shall be provided with an approved automatic fire sprinkler system, as required by State law and County of El Dorado Planning & Building Department requirements. Accessory buildings, detached garages, outdoor living space buildings, and other miscellaneous buildings located on the property shall be constructed in accordance with the current CBC requirements to reduce the risk of a fire spreading to the primary buildings on-site. See Chapter 8 - Appendix E for additional details regarding local building department requirements. For general building construction standards for new residential dwellings refer to the current California Building Standards Code located at: [Codes \(ca.gov\)](https://codes.ca.gov).

Single-family dwellings, storage buildings and accessory buildings constructed within the Project shall be constructed and maintained in accordance with the current design standards found in *California Building Code (CBC) Chapter 7A (Materials and Construction Methods for Exterior Wildfire Exposure)*. Examples of where construction methods and other development activities shall meet the ignition resistant requirements found in this Chapter include, but are not limited to, the following:

- Class A roof assembly with a Class A roof covering, fire resistant valley flashing, and an approved means to prevent the accumulation of leaves and debris in roof gutters.
- Ventilation openings into enclosed attics, enclosed eave soffit spaces, enclosed rafter spaces and underfloor ventilation openings.

²⁹ Phone communication with EDHFD Fire Prevention Specialist Marshall Cox, September 27, 2023.

- Exterior wall materials, decks, porches, balconies, stairs, and other projections.
- Roof eaves and exterior porch ceilings.
- Exterior windows, doors, glazing and skylights.
- Accessory buildings and miscellaneous buildings located within 50' of another building.

Construction activities shall comply with California Fire Code (CCR T24 - Part 9), Chapter 33 (Fire Safety During Construction and Demolition) as required by EDHFD and CAL FIRE. The relevant provisions found in this Chapter of the fire code include:

- Section 3303 - Development of a Site Safety Plan
- Section 3304 - Temporary Heating Equipment
- Section 3305 - Precautions Against Fire
- Section 3306 - Flammable and Combustible Liquids
- Section 3307 - Flammable Gases
- Section 3308 - Explosive Materials
- Section 3309 - Portable Generators
- Section 3310 - Fire Reporting
- Section 3311 - Required Access for Emergency Vehicles
- Section 3313 - Water Supply for Fire Protection
- Section 3316 - Portable Fire Extinguishers
- Section 3317 - Motorized Construction Equipment

4.9 Fire Protection System Requirements

All buildings within the Project are required to comply with the applicable fire protection system requirements described in CFC Chapter 9. An approved automatic fire sprinkler system is required by these regulations within all new single-family buildings within the Project. The design of these fire sprinkler systems shall conform with CFC 903.3.1.2 (NFPA 13D Sprinkler Systems). The installation of these systems within buildings shall conform with the design and installation standards of EDHFD.

Smoke and Carbon Monoxide alarm devices shall be provided in all occupied living areas of each building as described in CFC Sections 907.2.11 and 915.

END OF CHAPTER

CHAPTER 5: EMERGENCY PREPAREDNESS AND PRE-EVACUATION PLANNING

5.1 Chapter Overview

The purpose of this chapter is to describe the community evacuation planning analysis for the Project and surrounding neighborhoods in the event of an evacuation warning or order being issued by local officials of a local wildfire or similar event. See Chapter 8 - Appendix C for additional details.

This Chapter is based on a Project-specific hazard and risk assessment as described in Chapter 4, and includes analysis on the following subjects:

- Community Evacuation Types and Decision Making
- Community Evacuation Routes
- Pre-Identified Community Wildfire Safety Zones
- Emergency Evacuation Shelters
- Emergency Evacuation Education Materials
- Emergency Notification

5.2 Community Evacuation Types and Decision Making

The California Office of Emergency Services (CALOES) defines the term evacuation to mean “the organized, phased, and supervised withdrawal, dispersal, or removal of civilians from dangerous or potentially dangerous areas and their reception and care in safe areas.” The decision to initiate a local evacuation during a wildfire emergency rests with the public safety agencies (law enforcement and fire) based on a comprehensive threat assessment made in the field. The implementation and enforcement of evacuation orders rests with law enforcement.

Evacuation types typically focus on one or more of the following methods:

- Evacuation Warnings Issued by Public Safety Officials
- Evacuation Orders Issued by Public Safety Officials

- Pre-Identified Wildfire Safety Zones when evacuating the community is not practical
- Temporary Refuge Area / Shelter in Place decisions made by residents/visitors

The principal goal of a wildfire evacuation is to protect the public from the threat of a wildfire without injury or death.³⁰ To achieve this goal the objectives of a manageable and successful evacuation by the public include the following:

- Immediate identification of a wildfire threat and constant awareness of the fire behavior that may impact your location;
- Receiving emergency alerts and communications from public safety officials and responding to their directions in an appropriate fashion;
- Recognizing the need to depart from the area in a judicious and prepared departure;
- Safely and competently evacuating to an area outside a hazardous area;

5.3 Generations at Green Valley Pre-Evacuation Planning

The County of El Dorado does not currently make its community evacuation plans for the El Dorado Hills area available to the public for review. However, multiple evacuation options are available from the project site and, in the event of emergency, the evacuation route will be determined by the Public Safety Officials at the emergency scene based on numerous considerations, including the location of the fire. As part of the environmental review, the County of El Dorado County Sheriff's Department, Office of Emergency Services (County OES) will also review the Project, and the Fire Safe Plan, and evaluate any potential impacts to the existing emergency evacuation routes.

The Project has completed a *Wildfire Evacuation Study* that has been prepared by DKS Associates on April 8, 2024. See Appendix L for additional details regarding that analysis. Government Code Section 65302.15 requires cities and counties to identify evacuation routes and locations “*under a range of emergency scenarios.*” The capacity, safety, and viability of evacuation routes associated with the project must be analyzed against the range of emergency scenarios to ensure that it does not impair the implementation of an adopted emergency response plan or evacuation plan.

³⁰ See *Literature Review of the State-of-the-Science in Wildfire Evacuation* (2022); Marin Wildfire Prevention Authority.

The Project site is not subject to substantial hazards other than wildfire. Compliance with federal, state, county and local regulations will ensure that risks associated with seismic events, flooding, geological conditions, and hazardous materials are minimized. The evacuation study analysis that has been performed for the Project does not evaluate compounding disasters (e.g. simultaneous wildfire and hazardous materials incidents) or cascading effects (e.g. phone communication disruption during a wildfire).

The FSP information below does not ensure that wildfires or evacuation routes will unfold precisely as depicted nor does it identify the evacuation routes to be taken by the public during an evacuation order. Evacuation orders and evacuation route designation are the purview and responsibility of the El Dorado County Sheriff's Department. A wildfire scenario that results in changes to the factors described below may result in different outcomes.

The wildfire scenario and associated planning and modeling created for the Project are designed to require significant activation of evacuation routes, resources, and locations. The analysis makes no assumptions regarding the use of temporary areas of refuge or shelter-in-place strategies to protect residents and visitors within the project. The wildfire scenario parameters are based on three conditions associated with the project that can be pre-planned for during the evacuation planning efforts: [1] fire hazard severity zone; [2] prior large fire history in the area; and [3] hazardous vegetation types present in the area within and surrounding the project.

To stress the evacuation analysis the following worst case wildfire scenario factors are proposed as part of the FSP:

- The wildfire originates north of the project area in the general vicinity of Hickok Road.
- The ignition occurs on a Saturday in October between 2:00 pm and 4:00 pm.
- The weather conditions present at the time include Dry Bulb Temperatures between 70-90° F; Relative Humidity between 10-14%; Midflame Wind Speeds of 30 M.P.H. from the North; Live Fuel Moisture of 50%.
- The predominant fuel type found in the area is Fuel Model 4 (Chaparral).
- Average topographical slopes in the area are between 0 (Flat) to 20 (Mild) percent.

Using the Behave Plus³¹ 6.0 computer program, and the factors described above, the scenario anticipates rapid fire spread south towards Green Valley Road and the project between 30-60 minutes after ignition. Maximum rate of fire spread south towards the project will be between 0 and 386 chains³² per hour (Ch/h).

See Figure 10 for the proposed wildfire scenario for the evacuation analysis.

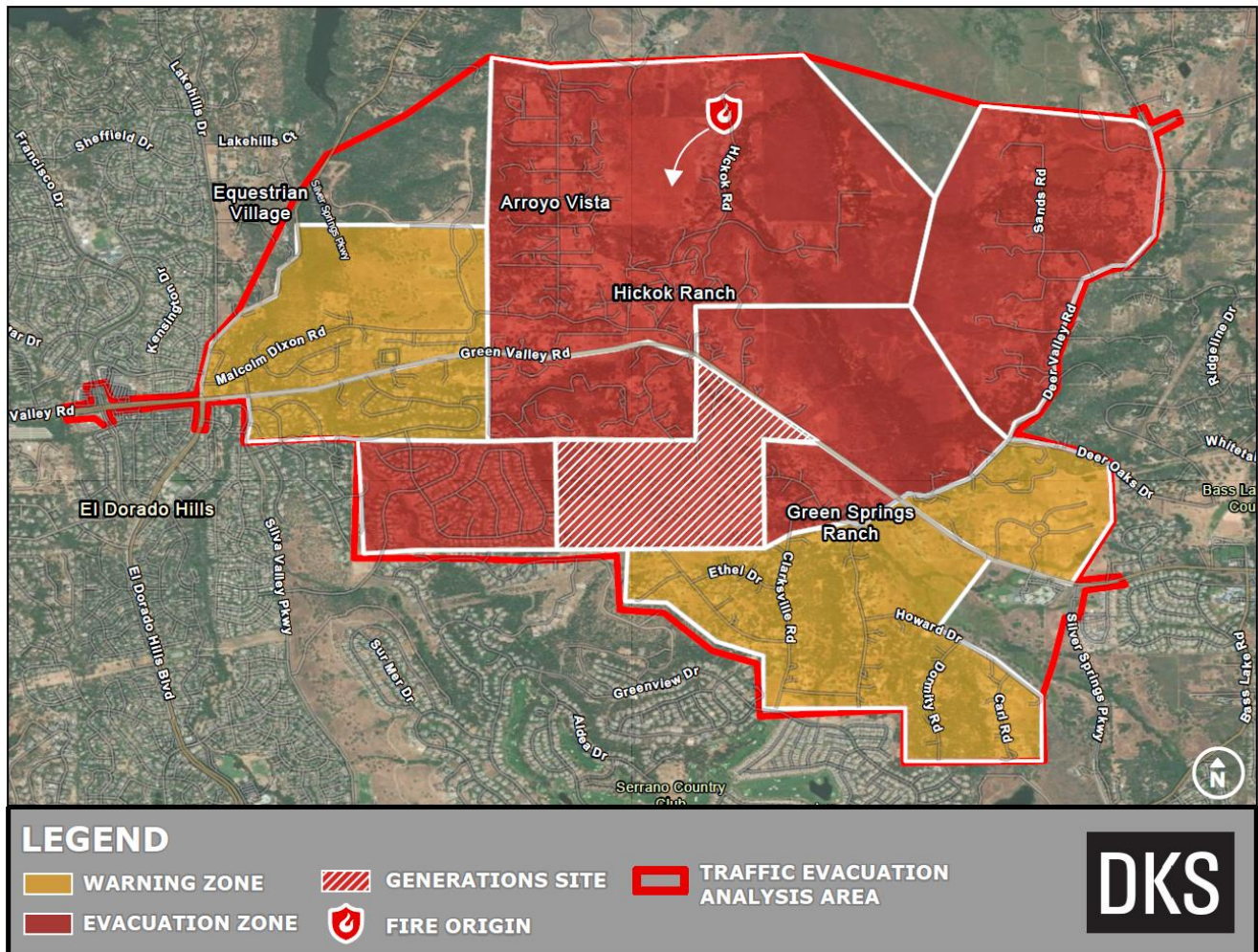


Figure 10: Proposed Wildfire Evacuation Scenario (Courtesy of DKS Associates)

The fire behavior modeling performed for this scenario assumes in the first hour that [1] no active fire suppression efforts³³ occur and [2] no large barriers (e.g., roads, greenbelts, water features) slow the spread of the wildfire south and east. Weather conditions present do not moderate

³¹ Behave Plus is a Windows-based fire modeling system for estimating fire behavior and fire characteristics.

³² The rate of spread is measured in chains. One chain equals 66 feet in length.

³³ It is anticipated that the immediate priorities for first responders would be to focus on civilian evacuations and structure defense efforts.

during the projected time period. The total acreage destroyed by the wildfire during the first 60 minutes using the modeling is estimated to be up to 2,500 acres. This wildfire scenario envisions dangerous rates of fire spread as the fire approaches the project area. In addition, significant ember cast conditions may lead to numerous small fires burning in and around homes and private property simultaneously in the fire area.

See Figure 11 for an area map with the available evacuation routes for the Project.

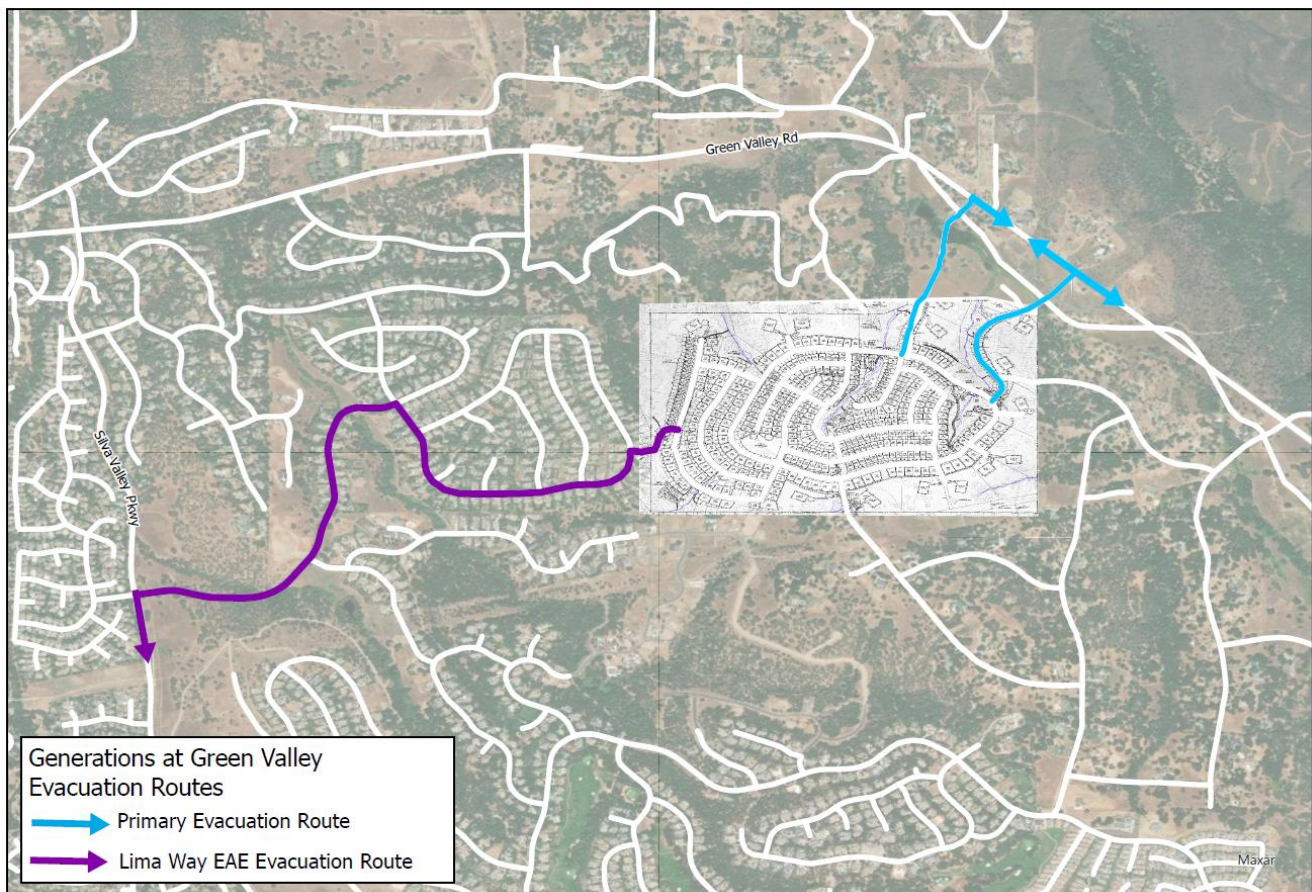


Figure 11: Area Map for Project Showing Evacuation Routes (Courtesy of DKS Associates)

The location of the Project next to a known community transportation route (Green Valley Road) will permit the Project population and the existing community population to efficiently evacuate the area while maintaining emergency vehicle access. In addition, the resident and visitor population (854 persons +/-) will not adversely impact the existing evacuation routes used during an emergency by the El Dorado Hills community due to the wildfire hazard mitigation work within the Project boundaries, available road network, and emergency alert system capabilities accessible to the Project residents.

All of the access points and adjoining public and private roads within the Project can be utilized for emergency vehicle access and civilian evacuation during an emergency as determined by the Public Safety Officials at the scene. All areas within the Project have access to two or more evacuation routes as required by the EDHCWD Fire Code. The most likely mode of transport by the residents of the Project are private vehicle ownership and private transportation services that will permit the majority of residents to move out of danger once they are directed to evacuate by Public Safety Officials.

The project will increase the number of residents to the area, but will provide emergency vehicle access and multiple exits from the project to access multiple evacuation routes. Aside from capacity increasing improvements to maintain level of service standards consistent with the County's General Plan, the Project will not adversely impact any of the existing community evacuation routes, or create a situation that establishes limited evacuation route access.

Future residents and visitors should remain vigilant to the threat of a wildfire in the area at all times. Residents should utilize the resources described in Sections 5.4 and 5.5, and be prepared to evacuate their families and animals when ordered to evacuate by a law enforcement or fire official. To increase preparedness for a potential wildfire evacuation the HOA should consider limiting on-street parking during red-flag fire weather conditions in residential areas with limited roadway capacity, and leaving all gated entrances in the open position to improve evacuation capacity.

5.4 Emergency Evacuation Education Measures

CAL FIRE has an effective community education program to assist residents and visitors prepare for a wildfire³⁴. The program is titled *Ready-Set-Go* and is designed to assist persons in preparing for and leaving a residence threatened by a local wildfire. This information should be made available to new and existing residents and homeowners through information packets and community websites whenever practical. See Chapter 8 - Appendix J for additional information about this program.

³⁴ CAL FIRE, *Ready Set Go*; <http://www.readyforwildfire.org/>.

5.5 Emergency Notification

Community notification is an important aspect of evacuation planning. Evacuations are often initiated by emergency officials who issue notifications and instructions to the affected populations using various tools such as opt-in mass alert systems, reverse-911, the Integrated Public Alert & Warning System (IPAWS), social media, and the internet. Sirens and door-to-door notifications may also be utilized. If time allows, evacuations may be conducted in phases, starting by notifying and evacuating areas of the community that may be affected first.

In El Dorado County all public safety agencies have partnered to implement the *RAVE* alert notification system.³⁵ The alert system is managed by the El Dorado County Sheriff's Office and allows for public safety agencies to quickly send an emergency alert to citizens in all geographic areas of the County. This system enables the El Dorado County Sheriff's Office of Emergency Services (County OES) to provide residents with critical information quickly in a variety of situations, such as severe weather, unexpected road closures, missing persons, and evacuations of buildings or neighborhoods. El Dorado RAVE provides community members with emergency notifications through telephone call, text message, and email notifications.

El Dorado County has been authorized by FEMA to use the Integrated Public Alert & Warning System (IPAWS). This is FEMA's national system for local alerts that provides authenticated emergency and life-saving information to the public through mobile phones using Wireless Emergency Alerts, to radio and television via the Emergency Alert System, and on the National Oceanic and Atmospheric Administration's Weather Radio.

END OF CHAPTER

³⁵ El Dorado County RAVE, Citizen Notification System; [El Dorado County Emergency Alerts \(edso.org\)](http://edso.org)

CHAPTER 6: FUEL REDUCTION MANAGEMENT AND DEFENSIBLE SPACE CONCEPTS

6.1 Chapter Overview

The purpose of this chapter is to describe the recommended long-term comprehensive fuel reduction management and defensible space best practices for the Project. The best practices include [1] adequate defensible space within 100' of all buildings; and [2] the establishment of a Wildfire Fuel Reduction Zone (WFRZ) for all lands located within the Open Space. This Chapter is based on California Government Code Section 51182 and California Fire Code Section 4903 and includes analysis on the following subjects:

- Defensible Space Requirements
- Wildfire Fuel Reduction Zone Requirements
- Defensible Space Zone and Wildfire Fuel Reduction Zone Criteria
- Fuel Reduction on Vacant Parcels / During Construction
- Reoccurring Fuel Reduction Maintenance Frequency

6.2 Defensible Space Requirements

The term “Defensible Space” refers to reducing the wildfire vulnerability in WUI Zones by actions that will decrease the potential of heat, flames and embers spreading to buildings. Defensible space work around buildings should be performed within 3 zone areas based on the fire risk reduction efforts necessary to protect the occupants and property. The 3 defensible space zones around buildings are described as:

Zone 0 - Ember Resistant Zone

Zone 0 extends 5-feet from buildings, buildings, decks, etc.

The ember-resistant zone is currently not required by law, but scientific data has proven it to be the most important of all the defensible space zones. This zone includes the area under and around all attached decks, and requires the most stringent wildfire fuel

reduction. The ember-resistant zone is designed to keep fire or embers from igniting materials that can spread the fire to the home. The following provides guidance for this zone, which may change based on the regulation developed by the California Board of Forestry and Fire Protection. See Figure 12 below to match the item number with the corresponding zone.

1. Use hardscape like gravel, pavers, concrete, and non-combustible mulch materials. No combustible bark or mulch.
2. Remove all dead and dying weeds, grass, plants, shrubs, trees, branches, and vegetative debris (leaves, needles, cones, bark, etc.); Check roofs, gutters, decks, porches, stairways, etc.
3. Remove all branches within 10-feet of any chimney or stovepipe outlet
4. Limit plants in this area to low growing, nonwoody, properly watered, and maintained plants.
5. Limit combustible items (outdoor furniture, planters, etc.) on top of decks
6. Relocate firewood and lumber to Zone 2
7. Replace combustible fencing, gates, and arbors attached to the home with non-combustible alternatives
8. Consider relocating garbage and recycling containers outside this zone
9. Consider relocating boats, RVs, vehicles, and other combustible items outside this zone

Zone 1 - Lean, Clean and Green Zone

Zone 1 extends 30-feet from buildings, decks, etc. or to the property line, whichever is closer.

10. Remove all dead plants, grass, and weeds (vegetation).
11. Remove dead or dry leaves and pine needles from yard, roof, and rain gutters.
12. Remove branches that hang over roof and keep dead branches 10-feet away from your chimney.
13. Trim trees regularly to keep branches a minimum of 10- feet from other trees.
14. Relocate wood piles to Zone 2.
15. Remove or prune flammable plants and shrubs near windows.

16. Remove vegetation and items that could catch fire from around and under decks, balconies, and stairs.
17. Create a separation between trees, shrubs and items that could catch fire, such as patio furniture, wood piles, swing sets, etc.

Zone 2 - Reduce Fuel Zone

Zone 2 extends from 30-feet to 100-feet out from buildings, buildings, decks, etc. or to the property line, whichever is closer.

18. Cut or mow annual grass down to a maximum height of 4 inches.
19. All exposed wood piles must have a minimum of 10 feet clearance around them, down to bare mineral soil, in all directions.
20. Create horizontal space between shrubs and trees. (See diagram)
21. Create vertical space between grass, shrubs, and trees. (See diagram)
22. Remove fallen leaves, needles, twigs, bark, cones, and small branches. However, they may be permitted to a depth of 3 inches.

All Zones

23. Mow before 10:00 am, but never when its windy or excessively dry.
24. Protect water quality, do not clear vegetation near waterways to bare soil. Vegetation removal can cause soil erosion - especially on steep slopes.
25. Logs or stumps embedded in the soil must be removed in Zone 0. In Zones 1 and 2 they need to be removed or isolated from other vegetation.

Many of these efforts shall be performed by the land owner except in cases where the setback distance of the building extends onto another property and/or undeveloped land. In those cases, a coordinated effort will be required between the individual property owners and the Home Owners Association (HOA) established for the Project. See CCR Section 5.7 regarding HOA maintenance obligations.

Figure 12 provides additional information on defensible zone spaces around buildings.

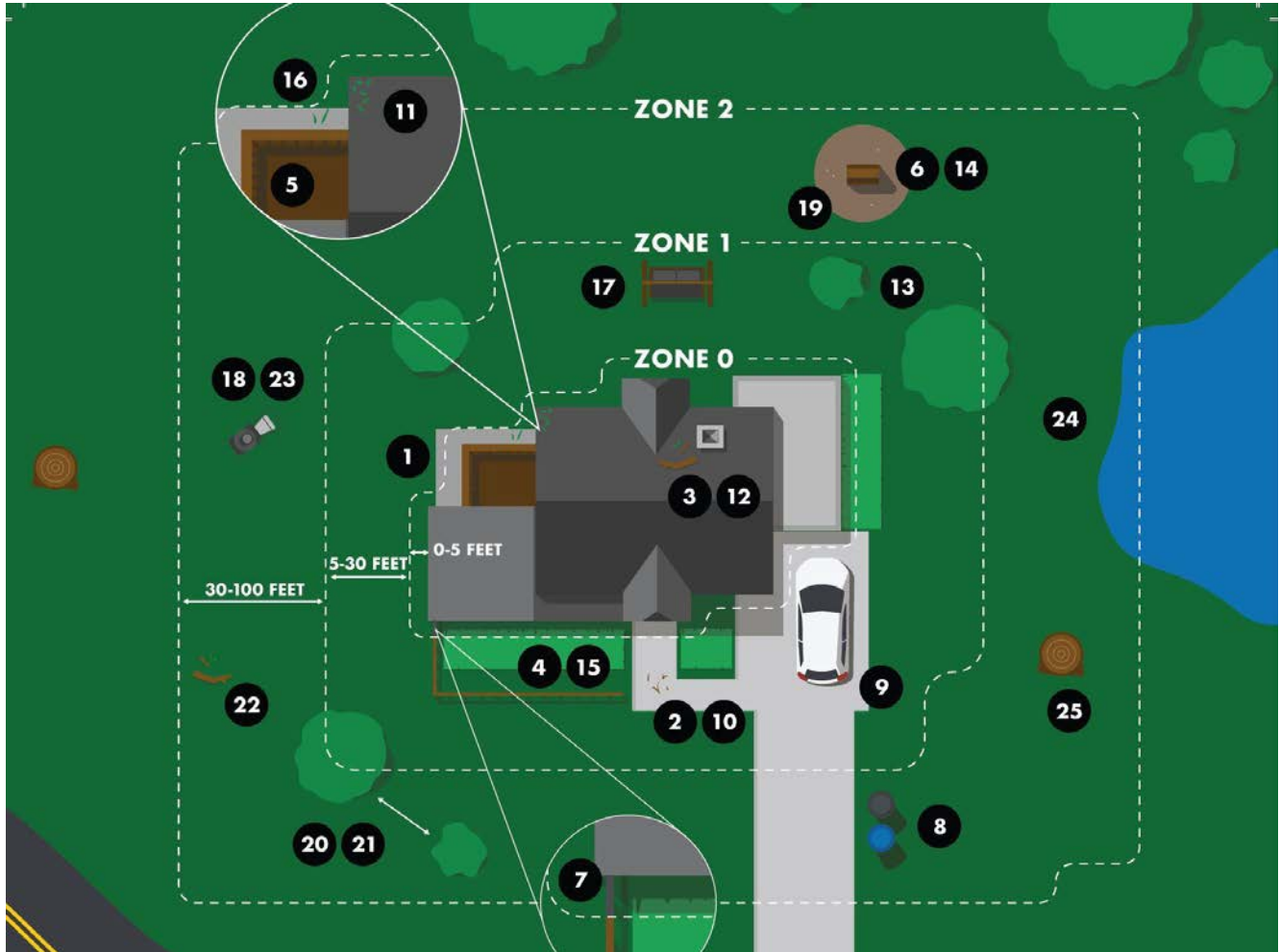


Figure 12: CAL FIRE Defensible Space Zones

6.3 Wildfire Fuel Reduction Zone Requirements

A Wildfire Fuel Reduction Zone (WFRZ) shall be implemented and maintained in the non-irrigated Open Space Buffer in accordance with CAL FIRE, EDHFD and El Dorado County requirements. The WFRZ shall extend from the property line of the adjacent residential lot out 100-feet, or to the boundary with a protected habitat or waterway, whichever is less, to ensure that adequate defensible space is provided for the building.

The WFRZ shall be established and accepted by EDHFD prior to the issuance of the first building construction permit issued by the County of El Dorado for the Project. Maintenance of the WFRZ shall be the responsibility of the landowner prior to the transfer of the obligation to the HOA, and shall be completed prior to May 1st each year unless otherwise ordered to complete this work earlier by EDHFD due to drought or other fire conditions being present. See the specific Wildfire

Fuel Reduction Zone criteria for the Project described within Figure 13 and in Section 6.4 for additional details.

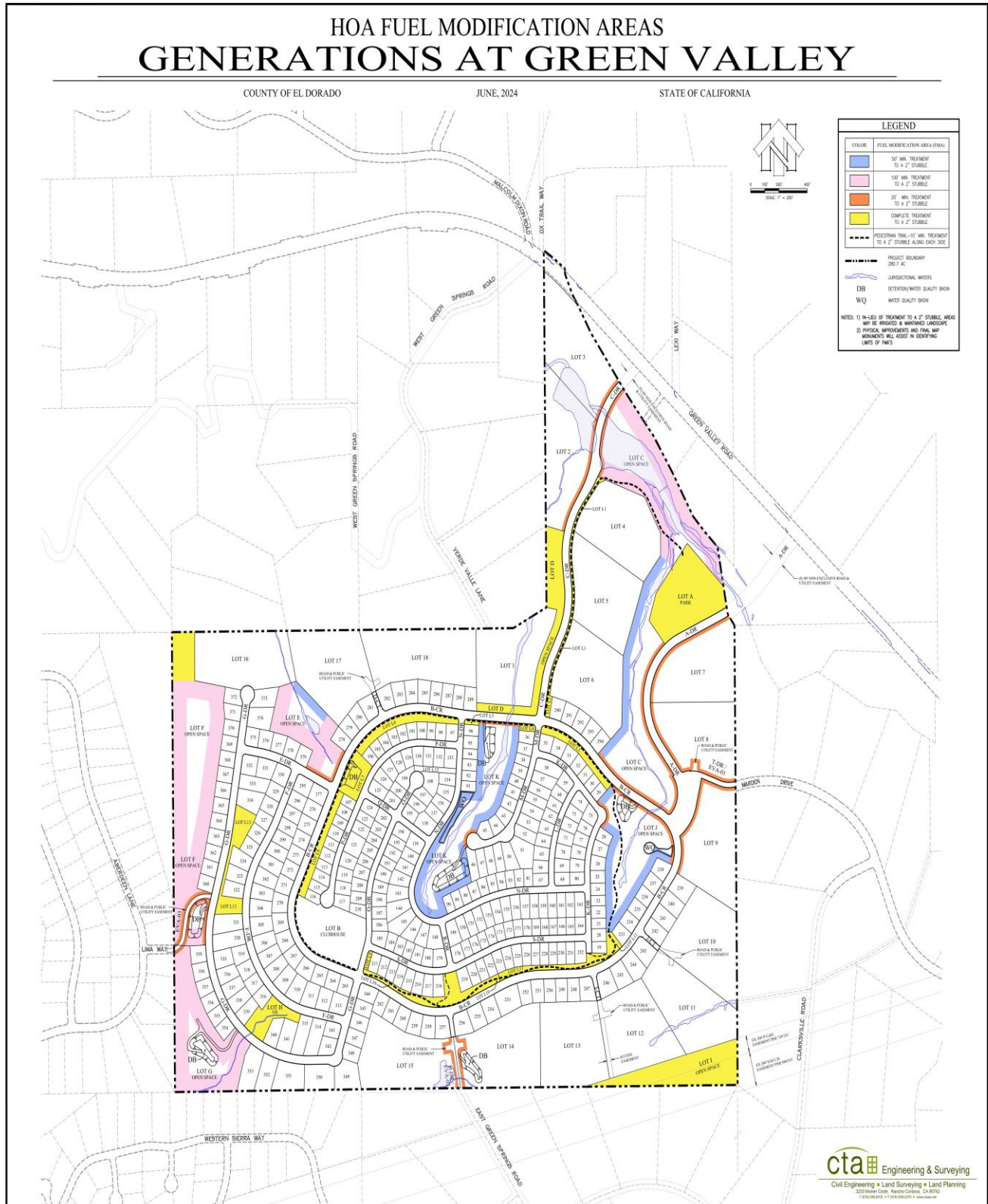


Figure 13 - Generations at Green Valley Fire Safe Exhibit

6.4 Specific Wildfire Fuel Reduction Zone (WFRZ) Criteria for the Project

- A. Annual grasses shall be maintained below 2-inches in height within 30-feet of buildings and 4-inches in height in all other areas just after the grasses cure in early spring. Additional fuel treatment work may be necessary throughout the year within 100-feet of all property lines, where practical, to maintain defensible space requirements.
- B. Removal of dead and diseased trees, debris, and the removal of tree limbs on live trees up to a height of 6-feet above the ground. Tree branches are to be limbed to at least 6-feet when possible. The minimum height may be lowered when trees are young or small; or if it is unsafe to reach a 6-foot height due to terrain, equipment, or skill level.
- C. Understory fuels over 1-foot in height are to be removed in order to develop vertical separation and low horizontal continuity of fuels. Individual plants or pairs of plants may be retained provided there is a horizontal separation between plants of 3 to 5 times the height of the residual plants and the residual plants are not within the drip lines of an overstory tree.
- D. Fuel reduction shall include the removal of all dead vegetation 4-inches or less in diameter. Trunks shall be cut flush with the ground. The removal of additional trees shall be done in consultation with CAL FIRE, EDHFD and County staff.
- E. Threatened and/or endangered species may be present within the WFRZ areas. The recommendations of the Project biologist shall be implemented with respect to avoiding loss or harm to the affected species, or restoration and/or compensation measures to be undertaken if the species' habitat cannot be avoided. For example, if nesting raptors are present, the nesting tree shall not be removed and no tree removal or mechanical activity shall occur within a buffer zone established around the nest until the young have fledged. The Federal and/or State agency with jurisdiction over the affected protected species shall also be consulted.
- F. It is desirable to remove as much brush and large vegetation as possible within the WFRZ areas. However, if individual plants or pairs of plants are desired to be left, leave plants with the following characteristics: young plants less than 5 feet tall and individual or pairs of plants that are no more than 5-feet in width.

- G. All dead trees within 100-feet of all property lines, where practical shall be removed.
- H. The removal of all dead limbs and trees laying on the ground within 85-feet of all property lines shall be completed annually.
- I. All trails and Class 1 Bike Paths located in open space areas shall have no less than a 10-foot wide WFRZ established along either side of the trail/path.
- J. The cutting of vegetation materials shall be done with CAL FIRE approved spark arrestors.
- K. The removal of annual grasses and other fine fuels shall be completed through the use of plastic string weed trimmers or other CAL FIRE approved equipment.
- L. Chipping of material is permitted. Chipped material shall be removed from the site unless otherwise approved by the land owner representative and EDHFD.
- M. Prescribed burning and / or herbicide use is not allowed within the DSZ and WFRZ areas unless such use is approved via permit by CAL FIRE, EDHFD and the County of El Dorado.
- N. Approved fire suppression equipment is required on-site at all times during the fuel-reduction activities.
- O. All fuel reduction work shall be performed using every reasonable measure to minimize erosion, ground disturbing activities and soil damage. Where the ground is exposed by fuel reduction efforts, the area shall be revegetated (i.e., seeded) and/or erosion control measures shall be installed prior to October 15.
- P. Pruning of live trees shall be performed in accordance with the Best Management Practices set forth by the International Society of Arboriculture (ISA) and conform to ANSI A300 Standards for Tree Care.

6.5 Fuel Reduction on Vacant Parcels / During Construction

Unimproved parcels adjacent to buildings, either when vacant or under construction, can pose a significant fire risk to adjacent occupied buildings. To reduce the risk of wildfires spreading to nearby buildings, EDHFD requires all unimproved properties to comply with Ordinance 2023-01.

See Chapter 8 - Appendix H for specific requirements based on parcel size. Construction activities shall conform to the current Fire Code provision required by EDHFD and CAL FIRE.

6.6 Annual Fuel Reduction Maintenance Frequency

The effectiveness of the long-term comprehensive effort requires certain elements to be maintained on an annual or otherwise noted frequency. The coordination of fuel reduction work between the applicant, EDHFD and CAL FIRE staff, and the adjacent land owner(s) to complete these projects in a timely fashion is imperative for the success in minimizing the wildfire risk in the Project area. All maintenance shall be performed prior to May 1st each year unless otherwise ordered to complete this work earlier by EDHFD due to drought or other fire conditions being present.

Table 7 provides additional details regarding the recommended maintenance frequency for various activities described in the Plan.

Table 7: Maintenance Frequency for the DSZ and WFRZ

Action Item	Party Responsible	Frequency
Complete annual inspection of the WFRZ using the criteria found in Section 6.	Land Owner/EDHFD	Annual
Remove/trim annual grasses to less than 2-inches in height within 30-feet of buildings and 4-inches height within 100-feet of adjacent property lines.	Land Owner	Annual
Remove debris piles, dead trees (snags) or dying trees, down trees, and limbs. ³⁶	Land Owner	Annual
Removal of understory fuels that contribute to fire spread.	Land Owner	Annual
Removal or treatment of invasive exotic plant species that may invade the area cleared in the DSZ and WFRZ areas.	Land Owner	Annual
Remove biomass materials from the site and dispose of in accordance with best practices.	Land Owner	Annual
Remove ladder fuels (tree limbs) to 6-foot DBH and increase tree canopy spacing.	Land Owner	10 Year + As Needed

End of Chapter

³⁶ This plan recognizes that dead and dying trees may provide a beneficial use for the habitat. The removal of this vegetation should be completed after an inspection by representatives from CAL FIRE, EDHFD and the Land Owner has been completed and a scope of work agreed on by both parties.

CHAPTER 7: SUMMARY OF KEY FINDINGS AND PROJECT RECOMMENDATIONS

7.1 Key Findings for the Project

- A. The Project design is consistent with the El Dorado County General Plan fire safety policies and regulations described in Chapter 3.
- B. Fire and rescue services for the Project site are the responsibility of the El Dorado Hills Fire Department (EDHFD) in accordance with California Government Code § 66474.02(a)(2)(A). The Project meets or exceeds the minimum levels of service for fire district response in Community Regions in accordance with Policy 5.1.2.2 of the El Dorado County General Plan.
- C. Wildfire protection for the adjacent undeveloped SRA lands near the Project are the responsibility of CAL FIRE.
- D. The Generations at Green Valley Project (Project) is located within a CAL FIRE SRA designated **High** Fire Hazard Severity Zone. The Project is therefore subject to the regulations found in California Public Resource Code Section's 4290 and 4291. See Chapter 8 - Appendix B for additional information.
- E. The Project is consistent with California Public Resource Code Section 4290.5 and Government Code Section 65302. All areas within the Project boundary will have access to a secondary means of egress route for residents and visitors.
- F. The Project has an overall Fire Risk Rating of **Low** based upon the ten rating criteria outlined in Chapter 4.
- G. The Project has one proposed use, electrical transmission lines, that is identified as a Critical Assets or Essential Service Location that could be at risk during a wildfire.

- H. No strategic ridgelines to reduce fire risk and improve fire protection, as described by California Code of Regulations Title 14 - §1276.02, have been identified by the El Dorado Hills Fire Department within the Project or adjoining areas.
- I. The location of the Project next to a known community transportation route (Green Valley Road) will permit the Project population and the existing community population to efficiently evacuate the area while maintaining emergency vehicle access.
- J. The Project will not expose people or structures to a significant risk of loss, injury or death involving a wildfire, and will not interfere with the existing evacuation routes used during an emergency by the El Dorado Hills community. This is due to the wildfire hazard mitigation measures described in Section 7.3, evacuation mitigation measures recommended in Section 7.4 and Appendix L, available off-site road network, and emergency alert system capabilities accessible to the Project residents.

7.2 Fire Protection Statutes and Regulations Applicable to the Project

- A. The Project shall comply with all applicable provisions as described in California Code of Regulations Title 14 (Fire Safe Regulations) and 24 (Building Standards Code).
- B. All roads and driveways within the Project shall be constructed, and maintained in accordance with EDHFD and CAL FIRE requirements. See Chapter 8 - Appendix D and G for additional details.
- C. All buildings, with the exception of utility and accessory structures, shall be provided with approved address identification prior to occupancy.
- D. The Project shall meet the minimum fire-flow requirements as described in Section 4.6, and as required both in California Fire Code (CFC) Section 507, and EDHCWD Ordinance 2022-01 (Fire Code). See Chapter 8 - Appendix G for additional details.
- E. All residential dwellings in the Project will be provided with an approved automatic fire sprinkler system designed in accordance with the CFC. Upon occupancy these systems shall be operable and maintained by the individual land owners at all times.

- F. All buildings constructed shall have a minimum 30-foot setback from property lines, or the “practical effect” provision approved by EDHFD, to reduce the threat of a wildfire impinging directly on the building. Setback areas may contain driveways, parking areas and/or other non-combustible surfaces. The minimum setback areas may be reduced based upon findings that support the practical reason for the reduction and alternative methods are implemented to reduce building-to-building ignition. When a practical reason for the reduction is necessary the Project shall implement the provisions contained within Subsections 7.3 (D) of this chapter.
- G. All buildings shall be provided with a Class A roof covering as required by the El Dorado County Building Code.
- H. All buildings shall be constructed and maintained in accordance with the current design standards found in *California Building Code (CBC) Chapter 7A (Materials and Construction Methods for Exterior Wildfire Exposure)*.
- I. No speed bumps, speed humps, speed control dips, etc. shall be permitted on fire access roadways. All other traffic calming devices shall be prohibited unless approved by EDHFD.
- J. Gated entrances to private roads and driveways shall meet the current design requirements to allow emergency vehicle access described in Chapter 8 - Appendix F.

7.3 Fire Protection Plan Strategies

- A. Street signs and individual building address signage shall conform with the provision described in Section 4.5. Address numbers on each residential building shall be either internally or externally illuminated.
- B. Fencing materials adjacent to non-irrigated open space areas shall be constructed of non-combustible materials.
- C. Combustible sheds and other outbuildings shall be kept at least 30 feet from residential dwellings and other buildings on each parcel.

D. The following specific alternative material and construction methods, exceeding the minimum criteria described in CBC Chapter 7A, shall be implemented within the Project to meet the “Practical Effect” principles described in CCR Title 14 - §1276.01 when buildings are located within 30-feet of property lines to reduce the potential for building-to-building fire spread may include, but are not limited to³⁷, the following provisions:

- Block any spaces between roof decking and the Class A roof covering to prevent embers from catching and igniting the building; and
- Eaves shall be enclosed on the underside with non-combustible material, ignition-resistant material, or minimum two (2) inch lumber; and
- Exterior walls shall be constructed with non-combustible building materials such as stucco, fiber cement, stone, or brick, and comply with California Code of Regulations Title 24, Part 2, Chapter 7A, Section 707A; and
- Use WUI ember and flame-resistant vents, conforming with the requirements described in ASTM E2886, to protect exterior wall openings when the wall is located within 30-feet of another building or faces the Wildland Fuel Reduction Zone areas. Dryer vents shall be metal and equipped with a louver or flap; and
- Exterior windows, skylights, glazed doors, and glazed openings within exterior doors shall be multi-paned with at least two (2) tempered panes, minimum twenty (20) minute fire rated, or fire-resistant glass block units. Shutters installed over windows shall be non-combustible; and
- Areas under first floor bay windows shall be enclosed with non-combustible walls; and
- Exterior doors of buildings shall be non-combustible, or have a non-combustible exterior storm door, and comply with California Code of Regulations Title 24, Part 2, Chapter 7A, Section 708A; and

³⁷ The Project will comply with all applicable state and local code and regulatory requirements to achieve “Practical Effect” at the time of issuance of the building permit.

- A minimum non-combustible area of 6 vertical inches, measured from the ground up (at grade) and from any attached horizontal surface like a deck, shall be provided on the exterior of all buildings. Non-combustible materials can include brick, stone, fiber-cement siding, or concrete; and
- Fencing materials located within 5-feet of a building shall be constructed of non-combustible materials. Areas located between 0-feet and 5-feet from all buildings shall remain non-combustible. Back-to-back, combustible fencing shall be separated by a minimum of five (5) feet; and
- Landscape materials and other vegetation located within 0'-100' of dwellings shall comply with the fire-resistant standards of EDHFD and CAL FIRE; and
- Accessory and miscellaneous structures, as defined in the California Building Code, located within the reduced fire setback zone shall comply with this plan and California Code of Regulations Title 24, Part 2, Chapter 7A, Section 710A; and
- Decks, including posts, joists, railing, stairs, and walking surfaces, shall be non-combustible and comply with California Code of Regulations Title 24, Part 2, Chapter 7A, Section 709A; and
- Projections shall be non-combustible, ignition resistant, or one (1) hour fire-rated in accordance with IWUIC, Section 503.2, and/or NFPA 1144, Section 5.2; and
- Gutters and downspouts shall be of non-combustible material. Gutters shall be provided with a non-combustible leaf guard.

See EDHFD Standard No. 7 (Residential Setback for Structure Defensible Space) for additional information.

- E. Wildfire fuel reduction management and defensible space practices for the Project shall follow the requirements identified in Chapter 6.

- F. A Restrictive Covenant shall be filed with the final subdivision map which stipulates that a Fire Safe Plan has been prepared and wildfire mitigation measures shall be implemented.
- G. "No Smoking" signs shall be posted at all trail entrances.
- H. At all trail intersections with the roads that have vehicle access there shall be a knock down bollard or gate with a Knox® padlock, or other approved lock, to allow for the passage of emergency equipment onto the trail.
- I. A 5-foot defensible space ember-resistant zone (Zone 0) shall be maintained around all buildings (including fencing within 5 feet).
- J. A Homeowners Association (HOA), or other acceptable entity, shall be responsible for maintaining all private emergency vehicle access roads and wildfire fuel reduction zone provisions described in Chapter 6. Reliable on-going sources of funding shall be established and acceptable to EDHFD prior to the recording of the final map for the project. Specifically, and also without limiting the foregoing, the owners shall be responsible for the operation and maintenance of, and for potential liability arising from, the following measures:
- Provisions for the necessary repair and maintenance of the roadway surface (as determined by the HOA and/or EDHFD); and
 - Removal of vegetation overgrowing the roadway and infringing on the roadway clear vertical height of fifteen feet (15') or width of twenty feet (20'); and
 - Provisions for the maintenance, repair, and/or replacement of NO PARKING-FIRE LANE signage or striping; and
 - Provisions for the necessary repair and maintenance of vehicle and pedestrian access gates and opening systems.

7.4 Emergency Preparedness and Evacuation Preparedness Strategies

- A. The strategies recommended in the *Generations at Green Valley Wildfire Evacuation Study* (Appendix L) should be considered by all stakeholders.
- B. The HOA should consider restricting on-street parking and opening all EVA gates within the Project boundaries during National Weather Service “Red-Flag” fire weather conditions in order to advance traffic flow conditions during an evacuation.
- C. CAL FIRE *Ready-Set-Go* education materials should be made available to all new residents of the Project for their use in preparing for an evacuation. EDHFD and CAL FIRE should be encouraged to visit the neighborhood annually to discuss this material and answer questions by the homeowners. See Chapter 8 - Appendix J for additional details.
- D. Upon 8 or more dwellings being occupied within the Project the land owners should work together to obtain designation by the National Fire Protection Association (NFPA) as a FIREWISE USA® community. This designation will assist land owners in receiving insurance discounts for their fire insurance premiums. See Chapter 8 - Appendix K for additional details.
- E. El Dorado County OES education materials on the *RAVE* program should be made available to all new residents of the Project for use in receiving timely notification information regarding the need to evacuate.

END OF CHAPTER

Chapter 8: PLAN APPENDIXES

Appendix A: Critical Assets / Populations at Risk Checklist

Facility Type	Essential Service	Population at Risk	Infrabuilding at Risk	Facility Count
Fire Station	X			0
Police Station	X			0
Emergency Evacuation Shelter*	X			0
Government Facilities	X			0
General Acute Care Hospital	X			0
Medical Health Facility		X		0
Adult Residential Care Facility		X		0
Child Care Facility		X		0
Adult Care Facility		X		0
Public Elementary School		X		0
Private Elementary School		X		0
Public Middle School		X		0
Private Middle School		X		0
Public High School		X		0
Private High School		X		0
College / University		X		0
Vulnerable Population Centers**		X		0
Water Treatment Plant			X	0
Water Storage Facility			X	0
Water Conveyance System			X	0
Electrical Transmission Lines			X	1
Electrical Substation			X	0
Sewer Lift Station			X	0
Telecommunications Facilities			X	0
Corporation Yard	X			0
* Includes General Population, Access/Functional Needs Shelters, and Animal Shelters				
** Includes Disadvantaged, Disabled and Low-Income Census Areas				

Appendix B: PRC 4290 and 4291 Checklist

Project Name:				
	CCR Title 14	Conforms	Does Not Conform	N/A
<i>Safe Access and Egress</i>				
Road Width	§1273.01	X		
Roadway Surface	§1273.02	X		
Road Grades	§1273.03	X		
Road Radius	§1273.04	X		
Road Turnarounds	§1273.05	X		
Road Turnouts	§1273.06	X		
Road and Driveway Buildings	§1273.07	X		
Dead-end Roads	§1273.08	X		
Gate Entrances	§1273.09	X		
<i>Signing and Building Numbering</i>				
Road Name Signs	§1274.01	X		
Road Sign Installation	§1274.02	X		
Addresses for Buildings	§1274.03	X		
Address Installation, Location	§1274.04	X		
<i>Fire Water Standards</i>				
Application	§1275.01	X		
Approved Fire Water Supply	§1275.02	X		
Hydrants	§1275.03	X		
Signing of Water Sources	§1275.04	X		
<i>Building Siting and Fuel Mod.</i>				
Building and Parcel Siting/Setbacks	§1276.01	X		
Ridgelines	§1276.02			X
Fuel Breaks	§1276.03			X
Greenbelts, Open Spaces	§1276.04	X		
Disposal of Flammable Vegetation	§1276.05			X

NOTES:

1. No roadway buildings (e.g., bridges, culverts, etc.) and dead-end roads are proposed within the project.
2. The review of road designs will occur during the civil improvement and building permit application process.
3. The review of proposed street signage and building numbering will occur during later phases of the project.

Appendix C: Emergency Evacuation Planning Checklist

No.	Risk Factor	Yes	No	Unknown
1	Existing Evacuation Plan is Current?			X
2	General Population Shelters Identified?			X
3	Special Care Shelters Identified?			X
4	Animal Care Shelters Identified?			X
5	Temporary Safe Refuge Areas Identified?			X
6	Emergency Evacuation Routes Identified?	X		
7	Mass Notification System Identified/Used?	X		
8	Ready-Set-Go or Similar Program Used?			X
9	Evacuation Plans Available to the Public?			X
10	Are First Responders Briefed on the Plan?			X
	Total			

Notes:

1. El Dorado County OES has not publicly created an emergency evacuation plan for use by the public and first responders as of the date of this plan.
- 2-4. El Dorado County OES has not publicly designated emergency evacuation shelters throughout the County prior to large-scale emergencies.
- 5-6. The primary emergency evacuation routes in the El Dorado Hills area have not been formally designated by El Dorado County OES as of the date of this plan. The primary transportation routes out of the area include Green Valley Road north of the Project and the East Green Springs EVA through Green Springs Ranch.
7. El Dorado County OES uses *RAVE* as its emergency notification system. The system relies on notifications through existing telephone lines and through “opt-in” sign-ups for cell phones and other devices. See Chapter 8 - Appendix K for additional information on this notification system.
- 8-10. EDHFD and the adjacent fire agencies utilize tactical pre-fire plans that brief first responders on various pre-fire information.

Appendix D: California Code of Regulations Title 14 §1270-1276

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State Minimum Fire Safe Regulations

Board of Forestry and Fire Protection



FOR INFORMATIONAL USE ONLY

View the official California Code of Regulations online at
govt.westlaw.com/calregs

As of April 1, 2023

California Code of Regulations
Title 14 Natural Resources
Division 1.5 Department of Forestry
Chapter 7 - Fire Protection
Subchapter 2 State Minimum Fire Safe Regulations
Articles 1-5

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Article 1 Administration**§ 1270.00. Title**

Subchapter 2 shall be known as the "State Minimum Fire Safe Regulations," and shall constitute the minimum Wildfire protection standards of the California Board of Forestry and Fire Protection.

§ 1270.01. Definitions

The following definitions are applicable to Subchapter 2.

- (a) Agriculture: Land used for agricultural purposes as defined in a Local Jurisdiction's zoning ordinances.
- (b) Board: California Board of Forestry and Fire Protection.
- (c) Building: Any Structure used or intended for supporting or sheltering any use or Occupancy, except those classified as Utility and Miscellaneous Group U.
- (d) CAL FIRE: California Department of Forestry and Fire Protection.
- (e) Dead-end Road: A Road that has only one point of vehicular ingress/egress, including cul-de-sacs and Roads that loop back on themselves
- (f) Defensible Space: The area within the perimeter of a parcel, Development, neighborhood or community where basic wildland fire protection practices and measures are implemented, providing the key point of defense from an approaching Wildfire or defense against encroaching Wildfires or escaping Structure fires. The perimeter as used in this regulation is the area encompassing the parcel or parcels proposed for construction and/or Development, excluding the physical Structure itself. The area is characterized by the establishment and maintenance of emergency vehicle access, emergency water reserves, Road names and Building identification, and fuel modification measures.
- (g) Development: As defined in section 66418.1 of the California Government Code.
- (h) Director: Director of the Department of Forestry and Fire Protection or their designee.
- (i) Driveway: A vehicular pathway that serves no more than four (4) Residential Units and any number of non-commercial or non-industrial Utility or Miscellaneous Group U Buildings on each parcel. A Driveway shall not serve commercial or industrial uses at any size or scale.
- (j) Exception: An alternative to the specified standard requested by the applicant that may be necessary due to health, safety, environmental conditions, physical site limitations or other limiting conditions, such as recorded historical sites, that provides mitigation of the problem.
- (k) Fire Apparatus: A vehicle designed to be used under emergency conditions to transport personnel and equipment or to support emergency response, including but not limited to the suppression of fires.
- (l) Fire Authority: A fire department, agency, division, district, or other governmental body responsible for regulating and/or enforcing minimum fire safety standards in the Local Jurisdiction.
- (m) Fire Hydrant: A valved connection on a water supply or storage system for the purpose of providing water for fire protection and suppression operations.
- (n) Fuel Break: A strategically located area where the volume and arrangement of vegetation has been managed to limit fire intensity, fire severity, rate of spread, crown fire potential, and/or ember production.
- (o) Greenbelts: open space, parks, wildlands, other areas, or a combination thereof, as designated by Local Jurisdictions, which are in, surround, or are adjacent to a city or urbanized area, that may function as Fuel Breaks and where Building construction is restricted or prohibited.
- (p) Greenways: Linear open spaces or corridors that link parks and neighborhoods within a community through natural or manmade trails and paths.

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- (q) Hammerhead/T: A "T" shaped, three-point Turnaround space for Fire Apparatus on a Road or Driveway, being no narrower than the Road or Driveway that serves it.
- (r) Hazardous Land Use: A land use that presents a significantly elevated potential for the ignition, prolonged duration, or increased intensity of a Wildfire due to the presence of flammable materials, liquids, or gasses, or other features that initiate or sustain combustion. Such uses are determined by the Local Jurisdiction and may include, but are not limited to, power-generation and distribution facilities; wood processing or storage sites; flammable gas or liquids processing or storage sites; or shooting ranges.
- (s) Local Jurisdiction: Any county, city/county agency or department, or any locally authorized district that approves or has the authority to regulate Development.
- (t) Municipal-Type Water System: A system having water pipes servicing Fire Hydrants and designed to furnish, over and above domestic consumption, a minimum of 250 gpm (950 L/min) at 20 psi (138 kPa) residual pressure for a two (2) hour duration.
- (u) Occupancy: The purpose for which a Building, or part thereof, is used or intended to be used.
- (v) One-way Road: A Road that provides a minimum of one Traffic Lane width designed for traffic flow in one direction only.
- (w) Residential Unit: Any Building or portion thereof which contains living facilities including provisions for sleeping, eating, cooking and/or sanitation, for one or more persons. Manufactured homes, mobile homes, and factory-built housing are considered Residential Units.
- (x) Ridgeline: The line of intersection of two opposing slope aspects running parallel to the long axis of the highest elevation of land; or an area of higher ground separating two adjacent streams or watersheds.
- (y) Road: A public or private vehicular pathway to more than four (4) Residential Units, or to any industrial or commercial Occupancy.
- (z) Road or Driveway Structures: Bridges, culverts, and other appurtenant Structures which supplement the Traffic Lane or Shoulders.
- (aa) Same Practical Effect: As used in this subchapter, means an Exception or alternative with the capability of applying accepted wildland fire suppression strategies and tactics, and provisions for fire fighter safety, including:
- (1) access for emergency wildland fire equipment,
 - (2) safe civilian evacuation,
 - (3) signing that avoids delays in emergency equipment response,
 - (4) available and accessible water to effectively attack Wildfire or defend a Structure from Wildfire, and
 - (5) fuel modification sufficient for civilian and fire fighter safety.
- (bb) Shoulder: A vehicular pathway adjacent to the Traffic Lane.
- (cc) State Responsibility Area (SRA): As defined in Public Resources Code sections 4126-4127; and the California Code of Regulations, title 14, division 1.5, chapter 7, article 1, sections 1220-1220.5.
- §(ee) Structure: That which is built or constructed or any piece of work artificially built up or composed of parts joined together in some definite manner.
- (ff) Traffic Lane: The portion of a Road or Driveway that provides a single line of vehicle travel.
- (gg) Turnaround: An area which allows for a safe opposite change of direction for Fire Apparatus at the end of a Road or Driveway.
- (hh) Turnout: A widening in a Road or Driveway to allow vehicles to pass.

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- (ii) Undeveloped Ridgeline: A Ridgeline with no Buildings.
- (jj) Utility and Miscellaneous Group U: A Structure of an accessory character or a miscellaneous Structure not classified in any specific Occupancy permitted, constructed, equipped, and maintained to conform to the requirements of Title 24, California Building Standards Code.
- (kk) Vertical Clearance: The minimum specified height of a bridge, overhead projection, or vegetation clearance above the Road or Driveway.
- (ll) Vertical Curve: A curve at a high or low point of a Road that provides a gradual transition between two Road grades or slopes.
- (mm) Very High Fire Hazard Severity Zone (VHFHSZ): As defined in Government Code section 51177(i).
- (nn) Wildfire: Has the same meaning as “forest fire” in Public Resources Code Section 4103.

§ 1270.02. Purpose

- (a) Subchapter 2 has been prepared and adopted for the purpose of establishing state minimum Wildfire protection standards in conjunction with Building, construction, and Development in the State Responsibility Area (SRA) and, after July 1, 2021, the Very High Fire Hazard Severity Zones, as defined in Government Code § 51177(i) (VHFHSZ).
- (b) The future design and construction of Structures, subdivisions and Developments in the SRA and, after July 1, 2021, the VHFHSZ shall provide for basic emergency access and perimeter Wildfire protection measures as specified in the following articles.
- (c) These standards shall provide for emergency access; signing and Building numbering; private water supply reserves for emergency fire use; vegetation modification, Fuel Breaks, Greenbelts, and measures to preserve Undeveloped Ridgelines. Subchapter 2 specifies the minimums for such measures.

§ 1270.03. Scope

- (a) Subchapter 2 shall apply to:
 - (1) the perimeters and access to all residential, commercial, and industrial Building construction within the SRA approved after January 1, 1991, and those approved after July 1, 2021 within the VHFHSZ, except as set forth below in subsection (b).
 - (2) the siting of newly installed commercial modulars, manufactured homes, mobilehomes, and factory-built housing, as defined in Health and Safety Code sections 18001.8, 18007, 18008, and 19971;
 - (3) all tentative and parcel maps or other Developments approved after January 1, 1991; and
 - (4) applications for Building permits on a parcel approved in a pre-1991 parcel or tentative map to the extent that conditions relating to the perimeters and access to the Buildings were not imposed as part of the approval of the parcel or tentative map.
- (b) Subchapter 2 does not apply where an application for a Building permit is filed after January 1, 1991 for Building construction on a parcel that was formed from a parcel map or tentative map (if the final map for the tentative map is approved within the time prescribed by the local ordinance) approved prior to January 1, 1991, to the extent that conditions relating to the perimeters and access to the Buildings were imposed by the parcel map or final tentative map approved prior to January 1, 1991.
- (c) Affected activities include, but are not limited to:
 - (1) permitting or approval of new parcels, excluding lot line adjustments as specified in Government Code (GC) section 66412(d);
 - (2) application for a Building permit for new construction not relating to an existing Structure;

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- (3) application for a use permit;
 - (4) Road construction including construction of a Road that does not currently exist, or extension of an existing Road.
- (d) The standards in Subchapter 2 applicable to Roads shall not apply to Roads used solely for Agriculture; mining; or the management of timberland or harvesting of forest products.

§ 1270.04. Provisions for Application of these Regulations

This Subchapter shall be applied as follows:

- (a) the Local Jurisdictions shall provide the Director of the California Department of Forestry and Fire Protection (CAL FIRE) or their designee with notice of applications for Building permits, tentative parcel maps, tentative maps, and installation or use permits for construction or Development within the SRA, or if after July, 1 2021, the VHFHSZ.
- (b) the Director or their designee may review and make fire protection recommendations on applicable construction or development permits or maps provided by the Local Jurisdiction.
- (c) the Local Jurisdiction shall ensure that the applicable sections of this Subchapter become a condition of approval of any applicable construction or Development permit or map.

§ 1270.05. Local Regulations

- (a) Subchapter 2 shall serve as the minimum Wildfire protection standards applied in SRA and VHFHSZ. However, Subchapter 2 does not supersede local regulations which equal or exceed the standards of this Subchapter.
- (b) A local regulation equals or exceeds a minimum standard of this Subchapter only if, at a minimum, the local regulation also fully complies with the corresponding minimum standard in this Subchapter.
- (c) A Local Jurisdiction shall not apply exemptions to Subchapter 2 that are not enumerated in Subchapter 2. Exceptions requested and approved in conformance with § 1270.07 (Exceptions to Standards) may be granted on a case-by-case basis.
- (d) Notwithstanding a local regulation that equals or exceeds the State Minimum Fire Safe Regulations, Building construction shall comply with the State Minimum Fire Safe Regulations.

§ 1270.06. Inspections

Inspections shall conform to the following requirements:

- (a) Inspections in the SRA shall be made by:
 - (1) the Director, or
 - (2) Local Jurisdictions that have assumed state fire protection responsibility on SRA lands, or
 - (3) Local Jurisdictions where the inspection duties have been formally delegated by the Director to the Local Jurisdictions, pursuant to subsection (b).
- (b) The Director may delegate inspection authority to a Local Jurisdiction subject to all of the following criteria:
 - (1) The Local Jurisdiction represents that they have appropriate resources to perform the delegated inspection authority.
 - (2) The Local Jurisdiction acknowledges that CAL FIRE's authority under subsection (d) shall not be waived or restricted.
 - (3) The Local Jurisdiction consents to the delegation of inspection authority.
 - (4) The Director may revoke the delegation at any time.
 - (5) The delegation of inspection authority, and any subsequent revocation of the delegation, shall be documented in writing, and retained on file at the CAL FIRE Unit headquarters that administers SRA fire protection in the area.
- (c) Inspections in the VHFHSZ shall be made by the Local Jurisdiction.

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(d) Nothing in this section abrogates CAL FIRE's authority to inspect and enforce state forest and fire laws in the SRA even when the inspection duties have been delegated pursuant to this section.

(e) Reports of violations within the SRA shall be provided to the CAL FIRE Unit headquarters that administers SRA fire protection in the Local Jurisdiction.

(f) When inspections are conducted, they shall occur prior to: the issuance of the use permit or certificate of Occupancy; the recordation of the parcel map or final map; the filing of a notice of completion; or the final inspection of any project or Building permit.

§ 1270.07. Exceptions to Standards

(a) Upon request by the applicant, an Exception to standards within this Subchapter may be allowed by the Inspection entity in accordance with 14 CCR § 1270.06 (Inspections) where the Exceptions provide the Same Practical Effect as these regulations towards providing Defensible Space. Exceptions granted by the Local Jurisdiction listed in 14 CCR § 1270.06, shall be made on a case-by-case basis only. Exceptions granted by the Local Jurisdiction listed in 14 CCR § 1270.06 shall be forwarded to the appropriate CAL FIRE unit headquarters that administers SRA fire protection in that Local Jurisdiction, or the county in which the Local Jurisdiction is located and shall be retained on file at the Unit Office.

(b) Requests for an Exception shall be made in writing to the Local Jurisdiction listed in 14 CCR § 1270.06 by the applicant or the applicant's authorized representative.

At a minimum, the request shall state the specific section(s) for which an Exception is requested; material facts supporting the contention of the applicant; the details of the Exception proposed; and a map showing the proposed location and siting of the Exception. Local Jurisdictions listed in § 1270.06 (Inspections) may establish additional procedures or requirements for Exception requests.

(c) Where an Exception is not granted by the inspection entity, the applicant may appeal such denial to the Local Jurisdiction. The Local Jurisdiction may establish or utilize an appeal process consistent with existing local building or planning department appeal processes.

(d) Before the Local Jurisdiction makes a determination on an appeal, the inspector shall be consulted and shall provide to that Local Jurisdiction documentation outlining the effects of the requested Exception on Wildfire protection.

(e) If an appeal is granted, the Local Jurisdiction shall make findings that the decision meets the intent of providing Defensible Space consistent with these regulations. Such findings shall include a statement of reasons for the decision. A written copy of these findings shall be provided to the CAL FIRE Unit headquarters that administers SRA fire protection in that Local Jurisdiction.

§ 1270.08. Distance Measurements

All specified or referenced distances are measured along the ground, unless otherwise stated.

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Article 2 Ingress and Egress**§ 1273.00. Intent**

Roads, and Driveways, whether public or private, unless exempted under 14 CCR § 1270.03(d), shall provide for safe access for emergency Wildfire equipment and civilian evacuation concurrently, and shall provide unobstructed traffic circulation during a Wildfire emergency consistent with 14 CCR §§ 1273.00 through 1273.09.

§ 1273.01. Width.

(a) All roads shall be constructed to provide a minimum of two ten (10) foot traffic lanes, not including shoulder and striping. These traffic lanes shall provide for two-way traffic flow to support emergency vehicle and civilian egress, unless other standards are provided in this article or additional requirements are mandated by Local Jurisdictions or local subdivision requirements. Vertical clearances shall conform to the requirements in California Vehicle Code section 35250.

(b) All One-way Roads shall be constructed to provide a minimum of one twelve (12) foot traffic lane, not including Shoulders. The Local Jurisdiction may approve One-way Roads.

(1) All one-way roads shall, at both ends, connect to a road with two traffic lanes providing for travel in different directions, and shall provide access to an area currently zoned for no more than ten (10) Residential Units.

(2) In no case shall a One-way Road exceed 2,640 feet in length. A turnout shall be placed and constructed at approximately the midpoint of each One-way Road.

(c) All driveways shall be constructed to provide a minimum of one (1) ten (10) foot traffic lane, fourteen (14) feet unobstructed horizontal clearance, and unobstructed vertical clearance of thirteen feet, six inches (13' 6").

§ 1273.02. Road Surface

(a) Roads shall be designed and maintained to support the imposed load of Fire Apparatus weighing at least 75,000 pounds, and provide an aggregate base.

(b) Road and Driveway Structures shall be designed and maintained to support at least 40,000 pounds.

(c) Project proponent shall provide engineering specifications to support design, if requested by the Local Jurisdiction.

§ 1273.03. Grades

(a) At no point shall the grade for all Roads and Driveways exceed 16 percent.

(b) The grade may exceed 16%, not to exceed 20%, with approval from the Local Jurisdiction and with mitigations to provide for Same Practical Effect.

§ 1273.04. Radius

(a) No Road or Road Structure shall have a horizontal inside radius of curvature of less than fifty (50) feet. An additional surface width of four (4) feet shall be added to curves of 50-100 feet radius; two (2) feet to those from 100-200 feet.

(b) The length of vertical curves in Roadways, exclusive of gutters, ditches, and drainage structures designed to hold or divert water, shall be not less than one hundred (100) feet.

§ 1273.05. Turnarounds

(a) Turnarounds are required on Driveways and Dead-end Roads.

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(b) The minimum turning radius for a turnaround shall be forty (40) feet, not including parking, in accordance with the figures in 14 CCR §§ 1273.05(e) and 1273.05(f). If a hammerhead/T is used instead, the top of the "T" shall be a minimum of sixty (60) feet in length.

(c) Driveways exceeding 150 feet in length, but less than 800 feet in length, shall provide a turnout near the midpoint of the Driveway. Where the driveway exceeds 800 feet, turnouts shall be provided no more than 400 feet apart.

(d) A turnaround shall be provided on Driveways over 300 feet in length and shall be within fifty (50) feet of the building.

(d) Each Dead-end Road shall have a turnaround constructed at its terminus. Where parcels are zoned five (5) acres or larger, turnarounds shall be provided at a maximum of 1,320 foot intervals.

(e) Figure A. Turnarounds on roads with two ten-foot traffic lanes.

Figure A/Image 1 on the left is a visual representation of paragraph (b).

(f) Figure B. Turnarounds on driveways with one ten-foot traffic lane.

Figure B/Image 2 on the right is a visual representation of paragraph (b).

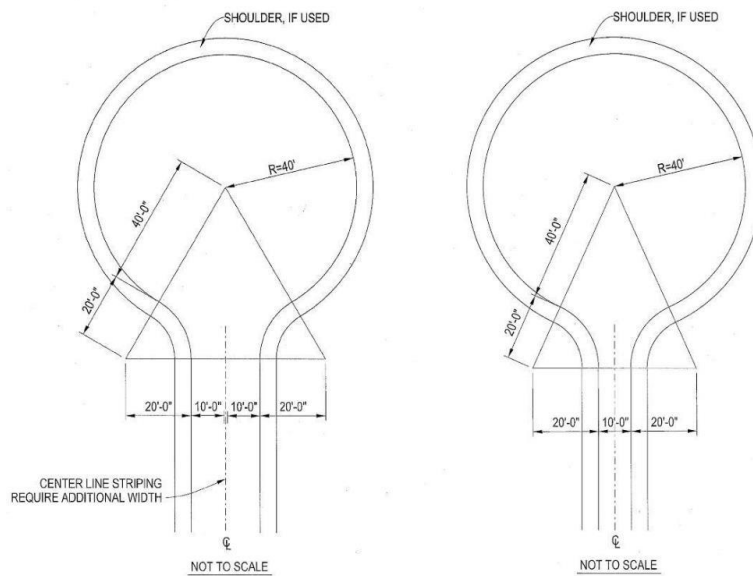


FIGURE FOR 14 CCR § 1273.05. TURNAROUND EXAMPLES

§ 1273.06. Turnouts

Turnouts shall be a minimum of twelve (12) feet wide and thirty (30) feet long with a minimum twenty-five (25) foot taper on each end.

§ 1273.07. Road and Driveway Structures

(a) Appropriate signing, including but not limited to weight or vertical clearance limitations, One-way Road or single traffic lane conditions, shall reflect the capability of each bridge.

(b) Where a bridge or an elevated surface is part of a Fire Apparatus access road, the bridge shall be constructed and maintained in accordance with the American Association of State and

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Highway Transportation Officials Standard Specifications for Highway Bridges, 17th Edition, published 2002 (known as AASHTO HB-17), hereby incorporated by reference. Bridges and elevated surfaces shall be designed for a live load sufficient to carry the imposed loads of fire apparatus. Vehicle load limits shall be posted at both entrances to bridges when required by the local authority having jurisdiction.

(c) Where elevated surfaces designed for emergency vehicle use are adjacent to surfaces which are not designed for such use, barriers, or signs, or both, as approved by the local authority having jurisdiction, shall be installed and maintained.

(d) A bridge with only one traffic lane may be authorized by the Local Jurisdiction; however, it shall provide for unobstructed visibility from one end to the other and turnouts at both ends.

§ 1273.08. Dead-end Roads

(a) The maximum length of a Dead-end Road, including all Dead-end Roads accessed from that Dead-end Road, shall not exceed the following cumulative lengths, regardless of the number of parcels served:

- parcels zoned for less than one acre - 800 feet
- parcels zoned for 1 acre to 4.99 acres - 1,320 feet
- parcels zoned for 5 acres to 19.99 acres - 2,640 feet
- parcels zoned for 20 acres or larger - 5,280 feet

All lengths shall be measured from the edge of the Road surface at the intersection that begins the Road to the end of the Road surface at its farthest point. Where a dead-end road crosses areas of differing zoned parcel sizes requiring different length limits, the shortest allowable length shall apply.

(b) See 14 CCR § 1273.05 for dead-end road turnaround requirements.

§ 1273.09. Gate Entrances

(a) Gate entrances shall be at least two (2) feet wider than the width of the traffic lane(s) serving that gate and a minimum width of fourteen (14) feet unobstructed horizontal clearance and unobstructed vertical clearance of thirteen feet, six inches (13' 6").

(b) All gates providing access from a Road to a Driveway shall be located at least thirty (30) feet from the roadway and shall open to allow a vehicle to stop without obstructing traffic on that Road.

(c) Where a One-way Road with a single traffic lane provides access to a gated entrance, a forty (40) foot turning radius shall be used.

(d) Security gates shall not be installed without approval. Where security gates are installed, they shall have an approved means of emergency operation. Approval shall be by the local authority having jurisdiction. The security gates and the emergency operation shall be maintained operational at all times.

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Article 3 Signing and Building Numbering**§ 1274.00. Intent**

To facilitate locating a fire and to avoid delays in response, all newly constructed or approved Roads and Buildings shall be designated by names or numbers posted on signs clearly visible and legible from the Road. This section shall not restrict the size of letters or numbers appearing on road signs for other purposes.

§ 1274.01. Road Signs.

(a) Newly constructed or approved Roads must be identified by a name or number through a consistent system that provides for sequenced or patterned numbering and/or non-duplicative naming within each Local Jurisdiction. This section does not require any entity to rename or renumber existing roads, nor shall a Road providing access only to a single commercial or industrial Occupancy require naming or numbering.

(b) The size of letters, numbers, and symbols for Road signs shall be a minimum four (4) inch letter height, half inch (.5) inch stroke, reflectorized, contrasting with the background color of the sign.

§ 1274.02. Road Sign Installation, Location, and Visibility.

(a) Road signs shall be visible and legible from both directions of vehicle travel for a distance of at least one hundred (100) feet.

(b) Signs required by this article identifying intersecting Roads shall be placed at the intersection of those Roads.

(c) A sign identifying traffic access or flow limitations, including but not limited to weight or vertical clearance limitations, dead-end roads, one-way roads, or single lane conditions, shall be placed:

(1) at the intersection preceding the traffic access limitation, and

(2) no more than one hundred (100) feet before such traffic access limitation.

(d) Road signs required by this article shall be posted at the beginning of construction and shall be maintained thereafter.

§ 1274.03. Addresses for Buildings.

(a) All Buildings shall be issued an address by the Local Jurisdiction which conforms to that jurisdiction's overall address system. Utility and miscellaneous Group U Buildings are not required to have a separate address; however, each Residential Unit within a Building shall be separately identified.

(b) The size of letters, numbers, and symbols for addresses shall conform to the standards in the California Fire Code, California Code of Regulations title 24, part 9.

(c) Addresses for residential Buildings shall be reflectorized.

§ 1274.04. Address Installation, Location, and Visibility.

(a) All buildings shall have a permanently posted address which shall be plainly legible and visible from the Road fronting the property.

(b) Where access is by means of a private Road and the address identification cannot be viewed from the public way, an unobstructed sign or other means shall be used so that the address is visible from the public way.

(c) Address signs along one-way Roads shall be visible from both directions.

(d) Where multiple addresses are required at a single driveway, they shall be mounted on a single sign or post.

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(e) Where a Road provides access solely to a single commercial or industrial business, the address sign shall be placed at the nearest Road intersection providing access to that site, or otherwise posted to provide for unobstructed visibility from that intersection.

(f) In all cases, the address shall be posted at the beginning of construction and shall be maintained thereafter.

Article 4 Emergency Water Standards**§ 1275.00. Intent**

Emergency water for Wildfire protection shall be available, accessible, and maintained in quantities and locations specified in the statute and these regulations in order to attack a Wildfire or defend property from a Wildfire.

§ 1275.01. Application

The provisions of this article shall apply in the tentative and parcel map process when new parcels are approved by the Local Jurisdiction.

§ 1275.02. Water Supply.

(a) When a water supply for structure defense is required to be installed, such protection shall be installed and made serviceable prior to and during the time of construction except when alternative methods of protection are provided and approved by the Local Jurisdiction.

(b) Water systems equaling or exceeding the California Fire Code, California Code of Regulations title 24, part 9, or, where a municipal-type water supply is unavailable, National Fire Protection Association (NFPA) 1142, "Standard on Water Supplies for Suburban and Rural Fire Fighting," 2017 Edition, hereby incorporated by reference, shall be accepted as meeting the requirements of this article.

(c) Such emergency water may be provided in a fire agency mobile water tender, or naturally occurring or man made containment structure, as long as the specified quantity is immediately available.

(d) Nothing in this article prohibits the combined storage of emergency Wildfire and structural firefighting water supplies unless so prohibited by local ordinance or specified by the local fire agency.

(e) Where freeze or crash protection is required by Local Jurisdictions, such protection measures shall be provided.

§ 1275.03. Hydrants and Fire Valves.

(a) The hydrant or fire valve shall be eighteen (18) inches above the finished surface. Its location in relation to the road or driveway and to the building(s) or structure(s) it serves shall comply with California Fire Code, California Code of Regulations title 24, part 9, Chapter 5, and Appendix C.

(b) The hydrant head shall be a two and half (2 1/2) inch National Hose male thread with cap for pressure and gravity flow systems and four and a half (4 1/2) inch for draft systems.

(c) Hydrants shall be wet or dry barrel and have suitable freeze or crash protection as required by the local jurisdiction.

§ 1275.04. Signing of Water Sources.

(a) Each hydrant, fire valve, or access to water shall be identified as follows:

(1) if located along a driveway, a reflectorized blue marker, with a minimum dimension of three (3) inches shall be located on the driveway address sign and mounted on a fire retardant post, or

(2) if located along a road,

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- (i) a reflectorized blue marker, with a minimum dimension of three (3) inches, shall be mounted on a fire retardant post. The sign post shall be within three (3) feet of said hydrant or fire valve, with the sign no less than three (3) feet nor greater than five (5) feet above ground, in a horizontal position and visible from the driveway, or
- (ii) as specified in the State Fire Marshal's Guidelines for Fire Hydrant Markings Along State Highways and Freeways, May 1988.

§ 1275.04. Signing of Water Sources.

- (a) Each Fire Hydrant or access to water shall be identified as follows:
 - (1) if located along a Driveway, a reflectorized blue marker, with a minimum dimension of three (3) inches shall be located on the Driveway address sign and mounted on a fire retardant post, or
 - (2) if located along a Road,
 - (i) a reflectorized blue marker, with a minimum dimension of three (3) inches, shall be mounted on a fire retardant post. The sign post shall be within three (3) feet of said Fire Hydrant with the sign no less than three (3) feet nor greater than five (5) feet above ground, in a horizontal position and visible from the Driveway, or
 - (ii) as specified in the State Fire Marshal's Guidelines for Fire Hydrant Markings Along State Highways and Freeways, May 1988.

Article 5 Building Siting, Setbacks, and Fuel Modification**§ 1276.00 Intent**

To reduce the intensity of a Wildfire, reducing the volume and density of flammable vegetation around Development through strategic fuel modification, parcel siting and Building setbacks, and the protection of Undeveloped Ridgelines shall provide for increased safety for emergency fire equipment, including evacuating civilians, and a point of attack or defense from a Wildfire.

§ 1276.01. Building and Parcel Siting and Setbacks

- (a) All parcels shall provide a minimum thirty (30) foot setback for all Buildings from all property lines and/or the center of a Road, except as provided for in subsection (b).
- (b) A reduction in the minimum setback shall be based upon practical reasons, which may include but are not limited to, parcel dimensions or size, topographic limitations, Development density requirements or other Development patterns that promote low-carbon emission outcomes; sensitive habitat; or other site constraints, and shall provide for an alternative method to reduce Structure-to-Structure ignition by incorporating features such as, but not limited to:
 - (1) non-combustible block walls or fences; or
 - (2) non-combustible material extending five (5) feet horizontally from the furthest extent of the Building; or
 - (3) hardscape landscaping; or
 - (4) a reduction of exposed windows on the side of the Structure with a less than thirty (30) foot setback; or
 - (5) the most protective requirements in the California Building Code, California Code of Regulations Title 24, Part 2, Chapter 7A, as required by the Local Jurisdiction.

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§ 1276.02. Ridgelines

- (a) The Local Jurisdiction shall identify Strategic Ridgelines, if any, to reduce fire risk and improve fire protection through an assessment of the following factors:
- (1) Topography;
 - (2) Vegetation;
 - (3) Proximity to any existing or proposed residential, commercial, or industrial land uses;
 - (4) Construction where mass grading may significantly alter the topography resulting in the elimination of Ridgeline fire risks;
 - (5) Ability to support effective fire suppression; and
 - (6) Other factors, if any, deemed relevant by the Local Jurisdiction.
- (b) Preservation of Undeveloped Ridgelines identified as strategically important shall be required pursuant to this section.
- (c) New Buildings on Undeveloped Ridgelines identified as strategically important are prohibited, as described in subsections (c)(1), (c)(2), and (c)(3).
- (1) New Residential Units are prohibited within or at the top of drainages or other topographic features common to Ridgelines that act as chimneys to funnel convective heat from Wildfires.
 - (2) Nothing in this subsection shall be construed to alter the extent to which utility infrastructure, including but not limited to wireless telecommunications facilities, as defined in Government Code section 65850.6, subdivision (d)(2), or Storage Group S or Utility and Miscellaneous Group U Structures, may be constructed on Undeveloped Ridgelines.
 - (3) Local Jurisdictions may approve Buildings on Strategic Ridgelines where Development activities such as mass grading will significantly alter the topography that results in the elimination of Ridgeline fire risks.
- (d) The Local Jurisdiction may implement further specific requirements to preserve Undeveloped Ridgelines.

§ 1276.03. Fuel Breaks

- (a) When Building construction meets the following criteria, the Local Jurisdiction shall determine the need and location for Fuel Breaks in consultation with the Fire Authority:
- (1) the permitting or approval of three (3) or more new parcels, excluding lot line adjustments as specified in Government Code (GC) section 66412(d); or
 - (2) an application for a change of zoning increasing zoning intensity or density; or
 - (3) an application for a change in use permit increasing use intensity or density.
- (b) Fuel Breaks required by the Local Jurisdiction, in consultation with the Fire Authority, shall be located, designed, and maintained in a condition that reduces the potential of damaging radiant and convective heat or ember exposure to Access routes, Buildings, or infrastructure within the Development.
- (c) Fuel Breaks shall have, at a minimum, one point of entry for fire fighters and any Fire Apparatus. The specific number of entry points and entry requirements shall be determined by the Local Jurisdiction, in consultation with the Fire Authority.
- (d) Fuel Breaks may be required at locations such as, but not limited to:
- (1) Directly adjacent to defensible space as defined by 14 CCR § 1299.02 to reduce radiant and convective heat exposure, ember impacts, or support fire suppression tactics;
 - (2) Directly adjacent to Roads to manage radiant and convective heat exposure or ember impacts, increase evacuation safety, or support fire suppression tactics;
 - (3) Directly adjacent to a Hazardous Land Use to limit the spread of fire from such uses, reduce radiant and convective heat exposure, or support fire suppression tactics;

Appendix E: El Dorado Co. Code Section 110.16 Uniform Building Code

Specific Provisions Applicable to the Project that are found in the El Dorado County Code.

Fire Protection System Shop Drawings

Sec. 110.16.030. - International Building Code, Appendix Chapter 1 Section

106.1.1.1—Fire protection system shop drawings.



Appendix Chapter 1 Section 106.1.1.1 of the International Building Code shall have added:

Plans for buildings more than two stories in height of other than Group R, Division 3 and Group U Occupancies shall indicate how required structural and fire-resistive integrity will be maintained where a penetration will be made for electrical, mechanical, plumbing, and communication conduits, pipes, and similar systems.

The installer shall submit plans showing the proposed installation, indicating the location of the equipment and such accessories as may be required to ensure the proper and safe performance of its function.

(Code 1997, § 15.16.030; Ord. No. 4948, 10-19-2010)

Class A Roof Cover Requirements

Sec. 110.16.110. - International Building Code As Amended, Chapter 15,

Section 1505, Fire classification.



Section 1505 of the International Building Code is amended to read:

1505.1.2 Roof coverings within the unincorporated area of El Dorado County:

The entire roof covering of every existing structure where more than 50 percent of the total roof area is replaced within any one-year period, the entire roof covering of every new structure and any roof covering applied in the alteration, repair or replacement of the roof of every existing structure shall be a fire-retardant roof covering that is at least Class A for all residential occupancies and Class B for all commercial, industrial and public assembly buildings.

Where, in any specific case, different sections of applicable codes specify different materials, methods of construction, or other requirements, the most restrictive provisions shall govern.

(Code 1997, § 15.16.110; Ord. No. 4948, 10-19-2010)

Appendix F: El Dorado County Fire Chiefs Association Standards

The El Dorado County Fire Chiefs Association has developed a series of fire protection standards that are designed to assist landowners, developers and builders understand and interpret the fire protection design criteria locally. All of the current fire protection standards can be accessed at the following location:

[Fire Prevention Officers - El Dorado County Fire Chiefs Association \(edchiefs.org\)](http://edchiefs.org).

The following fire protection standards may apply to this tentative parcel map project:

Standard B-001; Addressing of Buildings

Standard B-002; Automatic & Manual Gates on Fire Access Roadways and Driveways

Standard B-003; Emergency Apparatus Access Ways

Standard D-003; Water Supplies for Suburban and Rural Firefighting

Standard G-001; Fire Department Access & Clearances During Construction

Standard H-005; Solar Photovoltaic Standard

Standard R-001; Construction of Residential Buildings (EDHFD Specific)

Standard 7; Residential Setback for Structure Defensible Space (EDHFD Specific)

Appendix G: EDHCWD Ordinance 2022-01 (Fire Code)

**EL DORADO HILLS COUNTY WATER DISTRICT
EL DORADO HILLS FIRE DEPARTMENT
ORDINANCE NO. 2022-01**

BE IT ORDAINED BY THE BOARD OF DIRECTORS OF THE EL DORADO
HILLS COUNTY WATER DISTRICT AS FOLLOWS:

An ordinance of the El Dorado Hills County Water District (EDHCWD) adopting the 2022 Edition of the *California Fire Code*, incorporating the 2021 Edition of the *International Fire Code*, regulating and governing the safeguarding of life and property from fire and explosion hazards arising from the storage, handling and use of hazardous substances, materials and devices, and from conditions hazardous to life or property in the occupancy of buildings and premises in the EDHCWD; providing for the issuance of permits and collection of fees therefor; Repealing Ordinance No. 2019-01 of the EDHCWD and all other ordinances and parts of the ordinances in conflict therewith.

Be it ORDAINED by the Board of Directors of the EDHCWD, also known as the El Dorado Hills Fire Department:

Section 1: **FINDINGS OF FACTS**

Section 2: **ADOPTION OF CODE WITH EXCLUSIONS**

Section 3: **LOCAL AMENDMENTS**

Section 4: **CONFLICT**

Section 5: **SEVERABILITY**

Section 6: **EFFECTIVE DATE AND PUBLICATION**

SECTION 1: FINDINGS OF FACTS

The EDHCWD makes certain changes (listed below) to the *California Fire Code*, 2022 Edition, pursuant to *Health & Safety Code Sections 13869.7, 17958.5, 17958.7 and 18941.5* during this code adoption process. Such changes are necessary because of local climatic, geological and/or topographical conditions. The EDHCWD has adopted, pursuant to *Section 18941.5* of the *California Health & Safety Code*, the findings of facts relative to these conditions by Resolution #2019-10 of the EDHCWD dated September 19, 2019.

SECTION 2: ADOPTION OF CODE WITH EXCLUSIONS

The EDHCWD adopts the 2022 *California Fire Code, Title 24, Part 9, in its entirety*, including Appendices, incorporating those sections of the *International Fire Code, 2021 edition* not adopted by the state, with the exclusions listed below:

Exclusions: 103, 309, 311.5, 311.6, 318, 403.3, 403.5, 403.8, 403.10, 403.11, 404, 406, 903.3.1.2, 904.1.1, 1103.1, 1103.3-1103.4, 1103.6, 1105, Chapter 26, D104.2 (Exception only), D106.1 (Exception only), D107.1 (Exceptions only), Appendix A, Appendix G, Appendix J, Appendix K, Appendix L, Appendix M, Appendix N, Appendix O.

Appendices not adopted can be used for reference in enforcing other sections of the 2022 *California Fire Code*.

SECTION 3: AMENDMENTS TO THE 2022 CALIFORNIA FIRE CODE

The following Sections are hereby amended or added:

Chapter 1

SECTION 101.1 "TITLE" SHALL BE AMENDED AS FOLLOWS:

Section 101.1 TITLE. These regulations shall be known as the Fire Code of EDHCWD, hereinafter referred to as "this code".

SECTION 105.5 "REQUIRED OPERATIONAL PERMITS" IS AMENDED AS FOLLOWS:

Section 105.5 Required operational permits. The fire code official is authorized to issue operational permits for the operations set forth in Sections 105.5.2 through 105.5.25.

SECTION 105.5.55 "AUTOMOBILE WRECKING YARDS" IS ADDED AS FOLLOWS:

Section 105.5.55 Automobile wrecking yards. *An operational permit is required for the operation of automobile wrecking yards.*

SECTION 105.6 "REQUIRED CONSTRUCTION PERMITS" IS AMENDED AS FOLLOWS:

Section 105.6 required construction permits. The fire code official is authorized to issue construction permits for work as set forth in sections 105.6.1 through 105.6.246.

SECTION 105.6.25 "AUTOMOBILE WRECKING YARDS" IS ADDED AS FOLLOWS:

Section 105.6.25 Automobile wrecking yards. *Construction permits are required for the installation of or modification to automobile wrecking yards.*

SECTION 105.6.26 "TRAFFIC CALMING DEVICES" IS ADDED AS FOLLOWS:

105.6.26 Traffic calming devices. *Construction permits are required for the installation or modification of traffic calming devices.*

SECTION 107.5 "PERMIT, PLAN REVIEW AND INSPECTION FEES" SHALL BE ADDED AS FOLLOWS:

Section 107.5 Permit. *A schedule of fees adopted by the district board of directors for plan review, inspections and the issuance of permits by the district may be found in the most current district fee schedule (Health & Safety Code 17951).*

SECTION 107.5.1 "COST RECOVERY FEES" SHALL BE ADDED AS FOLLOWS:

Section 107.5.1 Cost Recovery Fees. *Fire service fees may be charged to any person, firm, corporation or business that through negligence, violation of the law, or as a result of carelessness, is responsible for the cause of the district to respond to the scene of an incident. A district board may charge a fee to cover the cost of any service which the district provides or the cost of enforcing any regulation for which the fee is charged (Health & Safety Code 13916). The fee shall not exceed the actual cost of suppressing the fire and/or responding to the scene of an incident.*

SECTION 107.7 "ADMINISTRATIVE COSTS" SHALL BE ADDED AS FOLLOWS:

Section 107.7 Administrative Costs. *When a test or inspection is scheduled, and the contractor fails to perform to the satisfaction of the authority having jurisdiction (AHJ), the AHJ may bill the contractor for actual time spent traveling to and from the test/inspection location and the time spent at the test/inspection site as well as administrative costs.*

SECTION 111.5 "APPEAL PROCEDURES AND TIMELINES" SHALL BE ADDED AS FOLLOWS:

Section 111.5 Appeal Procedures and Timelines. *Any person or entity who believes they may be adversely affected by an order, decision, or determination made by the fire code official through a written notice may appeal this matter within 15 calendar days of the postmark on the notice. All such appeals shall be filed in writing with the Secretary of the Governing Board for the district. A timely appeal shall stay further action by the fire code official until the matter is determined by the Appeal Board as outlined in Section 109.2, unless the issue poses an imminent fire or life safety hazard to members of the public. The fire code official shall notify the appellant by certified mail of the date and time of such hearing. The hearing shall be scheduled to take place no sooner than 20 calendar days from the date shown on the certified mail. The appellant shall have the right to appear in person or by agent at the hearing and present oral, written and/or photographic evidence to the Appeal Board.*

SECTION 112.4 "VIOLATION PENALTIES" SHALL BE AMENDED AS FOLLOWS:

Section 112.4 Violation Penalties. *Persons who shall violate a provision of this code or shall fail to comply with any of the requirements thereof or who shall erect, install, alter, repair or do work in violation of the approved construction documents or directive of the fire code official,*

or of a permit or certificate used under provisions of this code, shall be guilty of a *misdemeanor or infraction, at the discretion of the prosecuting attorney or agency, punishable by a fine not more than \$100.00 for a first violation; A fine not exceeding \$500.00 for a second violation of the same provision within one year; A fine not exceeding \$1000.00 for each additional violation of the same provision within one year, or by imprisonment not exceeding 180 days, or both such fine and imprisonment. Each day that a violation continues after due notice has been served shall be deemed a separate offense. (Health & Safety Code Sections 13145 and 17995).*

SECTION 112.4.2 "CITATIONS" SHALL BE ADDED AS FOLLOWS:

Section 112.4.2 Citations. *The Fire Chief, or his/her duly authorized representative, may issue citations for infractions or misdemeanor violations of this code pursuant to Section 13871 of the Health & Safety Code of the State of California and Chapter 5c (commencing with Section 853.6) of Title 3 of Part 2 of the Penal Code of the State of California.*

SECTION 113.4 "FAILURE TO COMPLY" SHALL BE AMENDED AS FOLLOWS:

Section 113.4 Failure to Comply. *Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be punishable by a fine or imprisonment or both as described in Section 112.4 (Health & Safety Code Sections 13145 and 17995).*

Chapter 2

SECTION 202 "CAMPFIRE" SHALL BE ADDED AS FOLLOWS:

CAMPFIRE. *A fire which is used for cooking, personal warmth, lighting, or aesthetic purposes.*

SECTION 202 "DISTRICT" SHALL BE ADDED AS FOLLOWS:

DISTRICT. *The district and all other areas within the exterior boundaries thereof now or hereafter established.*

SECTION 202 "DRIVEWAY" SHALL BE ADDED AS FOLLOWS:

DRIVEWAY. *A vehicular access that serves up to two (2) parcels with no more than two (2) residential units and any number of non-commercial or industrial buildings on each parcel.*

SECTION 202 "EXECUTIVE BODY" SHALL BE ADDED AS FOLLOWS:

EXECUTIVE BODY. *The Board of Directors of the District.*

SECTION 202 "FIRE CHIEF" SHALL BE ADDED AS FOLLOWS:

FIRE CHIEF. *The Chief Executive Fire Officer of the Fire department/district serving the jurisdiction or a duly authorized representative.*

SECTION 202 "FIRE HAZARD" SHALL BE ADDED AS FOLLOWS:

FIRE HAZARD. Any condition, arrangement, or act which will increase, or may cause an increase of, the hazard or menace of fire to a greater than customarily recognized as normal by persons in the public service of preventing, suppressing or extinguishing fire; or which may obstruct, delay, or hinder, or may become the cause of obstruction, delay or hinderance to the prevention, suppression, or extinguishment of fire.

SECTION 202 "OPEN BURNING" SHALL BE AMENDED AS FOLLOWS:

OPEN BURNING. The burning of materials wherein products of combustion are emitted directly into the ambient air without passing through a stack or chimney from an enclosed chamber. Open burning does not include road flares, smudge-pots and similar devices associated with safety or occupational uses typically considered open flames. For the purpose of this definition, a chamber shall be regarded as enclosed when, during the time combustion occurs, only apertures, ducts, stacks, flues or chimneys necessary to provide combustion air and permit the escape of exhaust gas are open.

Open burning shall also include campfires, bonfires, portable outdoor fireplaces, ceremonial fires, and recreational fire as defined in the Fire Code.

Exception:

1. *UL or ASMI listed LPG or natural gas outdoor flame devices, such as gas BBQ's or gas fire pits that comply with the Fire Code.*
2. *For one- or two-family dwellings, fixed or portable outdoor flame devices that meet the following:*
 - a. *Devices shall comply with the Fire Code.*
 - b. *Devices shall be used per manufacturer's specifications.*
 - c. *Minimum 10-foot clearance from device to all flammable material and vegetation.*
 - d. *No burning shall be conducted during high or extreme fire weather conditions (e.g., National Weather Service Red Flag Warnings).*
3. *Campfires on private lands. Where required by the fire code official, a permit shall be issued by the fire code official.*
4. *Ceremonial and/or religious burning with the following safety measures:*
 - a. *Maximum 4-foot x 4-foot burn area.*
 - b. *Minimum 10-foot clearance from edge of burn area to all flammable material and vegetation.*
 - c. *An approved water supply is located within 500-feet of the burn area.*
 - d. *The burn area is located no less than 30-feet from adjoining property lines.*
 - e. *An adult is present with a shovel until the fire is extinguished.*
 - f. *No burning shall be conducted during high or extreme fire weather conditions (e.g., National Weather Service Red Flag Warnings).*

SECTION 202 "TRAINED CROWD MANAGER" SHALL BE ADDED AS FOLLOWS:

TRAINED CROWD MANAGER. *Standby personnel, usually a security guard or usher personnel, who are trained in the proper procedure to exit people from a tent or other place of public assemblage in an orderly and calm fashion in the event of an emergency*

Chapter 3

SECTION 302.1 "DEFINITIONS" SHALL BE AMENDED AS FOLLOWS:

3D PRINTER.

ADDITIVE MANUFACTURING.

BONFIRE.

CAMPFIRE.

HI-BOY.

HIGH-VOLTAGE TRANSMISSION LINE.

OPEN BURNING.

PORTABLE OUTDOOR FIREPLACE.

POWERED INDUSTRIAL TRUCK.

RECREATIONAL FIRE.

SKY LANTERN.

SECTION 307.4.4 "OPEN BURNING RESTRICTIONS" SHALL BE ADDED AS FOLLOWS:

Section 307.4.4 Open Burning Restrictions. *Open burning on all lands within the jurisdiction of the El Dorado Hills Fire Department (EDHFD), including the Local Response Area (LRA), is prohibited when the California Department of Forestry and Fire Protection (Cal Fire) issues a burn suspension in the State Responsibility Area (SRA). This prohibition shall be made effective 24-hours following its commencement in the SRA.*

Open burning is also prohibited on all lands within the jurisdiction of EDHFD at any time the fire code official determines that atmospheric conditions or other local circumstances make such fires hazardous, including factors such as high winds, low fuel moisture, fire weather, the issuance of red flag warnings, severe threat of wildland fire, or present risk of destruction by wildfire to life, wildlife, property, or natural resources.

Chapter 4

SECTION 401.2.1 "PRE-FIRE PLANS" IS ADDED AS FOLLOWS:

Section 401.2.1 Pre-fire plans. *Where required by the fire code official, a pre-fire plan shall be provided and approved by the fire code official for all new commercial structures.*

Chapter 5

SECTION 503.2.1 "DIMENSIONS" SHALL BE AMENDED AS FOLLOWS:

Section 503.2.1 Dimensions. *Fire apparatus access roads shall have an unobstructed width of not less than 20 feet (6096 mm), exclusive of shoulders, as measured from face of curb to face of curb, except for approved security gates in accordance with Section 503.6, and an*

unobstructed vertical clearance of not less than 15 feet. Driveways shall have an unobstructed width of not less than 12 feet wide.

SECTION 503.2.5 "DEAD ENDS" SHALL BE AMENDED AS FOLLOWS:

Section 503.2.5 Dead Ends. Dead-end fire apparatus access roads and driveways in excess of 150 feet (45,720 mm) in length shall be provided with an approved area for turning around fire apparatus.

SECTION 503.2.6 "BRIDGES AND ELEVATED SURFACES" SHALL BE AMENDED AS FOLLOWS:

Section 503.2.6 Bridges and Elevated Surfaces. Where a bridge or an elevated surface is part of a fire apparatus access road, the bridge shall be constructed and maintained in accordance with AASHTO HB-17, the current El Dorado County Transportation Division Bridge Standard or Appendix D of the current California Fire Code, whichever is more restrictive. Bridges and elevated surfaces shall be designed for a live load sufficient to carry the imposed loads of fire apparatus. Vehicle load limits shall be posted at both entrances to bridges when required by the fire code official. Where elevated surfaces designed for emergency vehicle use are adjacent to surfaces that are not designed for such use, approved barriers, approved signs or both shall be installed and maintained where required by the fire code official.

SECTION 503.3.1 "NO PARKING IN FIRE LANES" SHALL BE ADDED AS FOLLOWS:

Section 503.3.1 No Parking in Fire Lanes. No person shall stop, park, or leave standing any vehicle, whether attended or unattended, except when necessary to avoid conflict with other traffic or in compliance with the directions of the Fire Chief, or his/her duly authorized representative, Peace Officer or official traffic control device along the edge of any highway, at any curb, or in any location in a publicly or privately owned or operated off-street parking facility, designated as a fire lane by the district with jurisdiction over the area in which the place is located. The designation shall be indicated (1) by a sign posted immediately adjacent to, and visible from, the designated place clearly stating in letters not less than one inch in height that the place is a fire lane, (2) by outlining or painting the place in red and, in contrasting color, marking the place with the words "FIRE LANE", which are clearly visible from a vehicle, or (3) by a red curb or red paint on the edge of the roadway upon which is clearly marked the words "FIRE LANE".

SECTION 503.3.2 "NO PARKING IN FRONT OF HYDRANTS" SHALL BE ADDED AS FOLLOWS:

Section 503.3.2 No Parking in Front of Hydrants. No person shall stop, park, or leave standing any vehicle within 15 feet of a fire hydrant except as follows: (a) If the vehicle is attended by a licensed driver who is seated in the front seat and who can immediately move such vehicle in case of necessity, (b) If the vehicle is owned or operated by a fire department and is clearly marked as a fire department vehicle.

SECTION 503.3.3 "FIRE LANES BASED ON ROAD WIDTH" SHALL BE ADDED AS FOLLOWS:

Section 503.3.3 Fire Lanes Based on Road Width. *Fire lanes shall be based on road width as required in Appendix D as amended by the District.*

SECTION 503.6 "SECURITY GATES" IS AMENDED AS FOLLOWS:

Section 503.6 Security Gates. *The installation of security gates across a fire apparatus access road shall be approved by the fire code official and shall comply with the District gate standard. Where security gates are installed, they shall have an approved means of emergency operation. The security gates and the emergency operation shall be maintained operational at all times. Electric gate operators, where provided, shall be listed in accordance with UL 325. Gates intended for automatic operation shall be designed, constructed, and installed to comply with the requirements of ASTM F2200.*

SECTION 505.1 "ADDRESS IDENTIFICATION" SHALL BE AMENDED AS FOLLOWS:

Section 505.1 Address Identification. *Addresses for new and existing buildings shall comply with the District address standard as approved by the fire code official. The address identification shall be legible and placed in a position that is visible from the street or road fronting the property. Address identification characters shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. Each character shall be not less than 4 inches (102 mm) high with a minimum stroke width of 1/2 inch (12.7 mm). Where required by the fire code official, address identification shall be provided in additional approved locations to facilitate emergency response. access is by means of a private road and the building cannot be viewed from the public way, a monument, pole or other sign or means shall be used to identify the structure. Address identification shall be maintained.*

SECTION 507.5.1 "WHERE REQUIRED" SHALL BE AMENDED AS FOLLOWS:

Section 507.5.1 Where Required. *Where a portion of the facility or building hereafter constructed or moved into or within the jurisdiction is more than 150 feet from a hydrant on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains capable of supplying the required fire flow shall be provided where required by the fire code official.*

Exceptions:

1. For Group R-3 and Group U occupancies, the distance requirement shall be 600 feet (183 m).

SECTION 509.3 "FIRE CONTROL ROOM" SHALL BE ADDED AS FOLLOWS:

Section 509.3 Fire Control Room. *Fire sprinkler risers, fire alarm control panels, solar photovoltaic power system rapid shutoff switches, and other fire detection, suppression or similar control elements shall be located inside a single fire control room for the building. The fire control room shall have minimum dimensions of five feet by seven feet in size with a total usable area of not less than 35 square feet. The room shall be located within the building on an outside wall at a location approved by the Fire Code Official and shall be accessible from the exterior. An exterior access door with a clear width of not less than 32 inches and height of not less than 80 inches shall be provided for access into the room. A durable sign shall be affixed to the exterior of the door with the words "FIRE CONTROL ROOM" in letters not less*

than 4 inches in height. A key box complying with Section 506 shall be installed on the exterior side of the fire control room door opening.

The room must be capable of maintaining a minimum temperature of 40 degrees Fahrenheit. A clearance of 12 inches shall be provided from the fire sprinkler risers to any adjacent walls. This room can be shared with other building utilities or fire protection equipment that is not incompatible. An approved cabinet or container shall be provided to store record plans of the fire sprinkler system and other fire protection equipment. This room shall not be used for any other storage.

Exception: One- and two-family dwellings, manufactured homes or similar uses defined as either a Group R-3, R3.1, or R-4 occupancy.

SECTION 510.4.2.3 "STANDBY POWER" SHALL BE AMENDED AS FOLLOWS:

Section 510.4.2.3 Standby power. In-building, two-way emergency responder communication radio coverage systems shall be provided with dedicated standby batteries or provided with 2-hour standby batteries and connected to the facility generator power system in accordance with Section 1203. The standby power supply shall be capable of operating the in-building, two-way emergency responder communication coverage system at 100-percent system capacity for a duration of not less than 72 hours.

Chapter 9

SECTION 903.2 "WHERE REQUIRED" SHALL BE AMENDED AS FOLLOWS:

Section 903.2 Where Required. Approved automatic sprinkler systems in new buildings and structures when constructed or relocated within the jurisdiction shall be provided in the locations described in Sections 903.2.1 through 903.2.12 and Sections 903.2.14 through 903.2.23.

Exception: Agricultural buildings not under a special use permit used for commercial purposes.

SECTION 903.2.1.1 "GROUP A-1" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.1.1 Group A. An automatic sprinkler system shall be provided throughout stories containing Group A-1 occupancies and throughout all stories from the Group A-1 occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists:

1. The fire area exceeds 3,600 square feet.
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.
4. The fire area contains a multi-theater complex

SECTION 903.2.1.2 "GROUP A-2" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.1.2 Group A-2. An automatic sprinkler system shall be provided throughout stories containing Group A-2 occupancies and throughout all stories from the Group A-2

occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists:

1. The fire area exceeds 3,600 square feet;
2. The fire area has an occupant load of 100 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.
4. The structure exceeds 3,600 square feet, contains more than one fire area containing a Group A-2 occupancy, and is separated into two or more buildings by fire walls of less than 4-hour fire-resistance rating without openings.

SECTION 903.2.1.3 "GROUP A-3" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.1.3 Group A-3. An automatic sprinkler system shall be provided throughout stories containing Group A-3 occupancies and throughout all stories from the Group A-3 occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists:

1. The fire area exceeds 3,600 square feet.
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.
4. The structure exceeds 3,600 square feet, contains more than one fire area containing exhibition and display rooms, and is separated into two or more buildings by fire walls of less than 4-hour fire-resistance rating without openings.

SECTION 903.2.1.4 "GROUP A-4" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.1.4 Group A-4. An automatic sprinkler system shall be provided throughout stories containing Group A-4 occupancies and throughout all stories from the Group A-4 occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists:

1. The fire area exceeds 3,600 square feet.
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.

SECTION 903.2.3 "GROUP E" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.3 Group E. An automatic sprinkler system shall be provided for Group E occupancies as follows:

1. Throughout all Group E fire areas greater than 3,600 square feet in area.
2. The Group E fire area is located on a floor other than a level of exit discharge serving such occupancies.

Exception: In buildings where every classroom has not fewer than one exterior exit door at ground level, an automatic sprinkler system is not required in any area below the lowest level of exit discharge serving that area.

3. The Group E fire area has an occupant load of 300 or more.
4. In rooms or areas with special hazards such as laboratories, vocational shops and other such areas where hazardous materials in quantities not exceeding the maximum allowable quantity are used or stored.
5. Throughout any Group E structure greater than 3,600 square feet in area, which contains more than one fire area, and which is separated into two or more buildings by fire walls of less than 4-hour fire resistance rating without openings.
6. For public school state funded construction projects see Section 903.2.19.
7. For public school campuses, Kindergarten through 12th grade, see Section 903.2.20

SECTION 903.2.4 "GROUP F-1" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.4 Group F-1. An automatic sprinkler system shall be provided throughout all buildings containing a Group F-1 occupancy where one of the following conditions exists:

1. A Group F-1 fire area exceeds 3,600 square feet.
2. A Group F-1 fire area is located more than three stories above grade plane.
3. The combined area of all Group F-1 fire areas on all floors, including any mezzanines, exceeds 3,600 square feet.

SECTION 903.2.7 "GROUP M" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.7 Group M. An automatic sprinkler system shall be provided throughout buildings containing a Group M occupancy where one of the following conditions exists:

1. A Group M fire area exceeds 3,600 square feet.
2. A Group M fire area is located more than three stories above grade plane.
3. The combined area of all Group M fire areas on all floors, including any mezzanines, exceeds 3,600 square feet.
5. The structure exceeds 3,600 square feet, contains more than one fire area containing a Group M occupancy, and is separated into two or more buildings by fire walls of less than 4-hour fire resistance rating without openings.

SECTION 903.2.7.2 "GROUP M UPHOLSTERED FURNITURE OR MATTRESSES" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.7.2 Group M Upholstered Furniture or Mattresses. An automatic sprinkler system shall be provided throughout a Group M fire area where the area used for the display and sale of upholstered furniture or mattresses exceeds 3,600 square feet.

SECTION 903.2.8.5 "MANUFACTURED HOMES" SHALL BE ADDED AS FOLLOWS:

Section 903.2.8.5 Manufactured Homes. *An automatic fire sprinkler system shall be required in all new manufactured homes and multi-family manufactured homes intended for use as a one-and two-family dwelling. The design and installation of such systems shall be in accordance with California Code of Regulations, Title 25, §4300.*

Exceptions:

1. *Manufactured homes located within an existing mobile home park complying with California Health and Safety Code, Division 13, Part 2.1 or 2.3.*
2. *Manufactured homes that do not exceed 1,200 square feet in size and serve as an accessory dwelling unit, as defined in Government Code Section 658502; when the existing primary residence on the property is not required to comply with California Residential Code Section R313.2.*
3. *Manufactured homes that do not exceed 320 square feet in size.*

SECTION 903.2.9 "GROUP S-1" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.9 Group S-1. An automatic sprinkler system shall be provided throughout all buildings containing a Group S-1 occupancy where one of the following conditions exists:

1. A Group S-1 fire area exceeds 3,600 square feet.
2. A Group S-1 fire area is located more than three stories above grade plane.
3. The combined area of all Group S-1 fire areas on all floors, including any mezzanines, exceeds 3,600 square feet.
4. A Group S-1 fire area used for the storage of commercial motor vehicles where the fire area exceeds 3,600 square feet.

SECTION 903.2.10 "GROUP S-2" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.10 Group S-2. An automatic sprinkler system shall be provided throughout buildings classified as parking garages where any of the following conditions exist:

1. Where the fire area of the enclosed parking garage, in accordance with Section 406.6 of the California Building Code, exceeds 3,600 square feet.
2. Where the enclosed parking garage, in accordance with Section 406.6 of the California Building Code, is located beneath other groups.

Exception: Enclosed parking garages located beneath Group R-3 occupancies.

3. Where the fire area of the open parking garage, in accordance with Section 406.5 of the California Building Code, exceeds 3,600 square feet.

SECTION 903.2.10.1 "COMMERCIAL PARKING GARAGES" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.10.1 Commercial Parking Garages. An automatic sprinkler system shall be provided throughout buildings used for storage of commercial motor vehicles where the fire area exceeds 3,600 square feet.

SECTION 903.2.22 "GROUP B" SHALL BE ADDED AS FOLLOWS:

Section 903.2.22 Group B. *An automatic sprinkler system shall be provided throughout all buildings containing Group B occupancies where the fire area exceeds 3,600 square feet.*

SECTION 903.2.23 "GROUP F-2" SHALL BE ADDED AS FOLLOWS:

Section 903.2.23 Group F-2. *An automatic sprinkler system shall be provided throughout all buildings containing Group F-2 occupancies where the fire area exceeds 3,600 square feet.*

SECTION 903.6 "WHERE REQUIRED IN EXISTING BUILDINGS AND STRUCTURES" IS AMENDED AS FOLLOWS:

Section 903.6 Where Required In Existing Buildings and Structures. An automatic sprinkler system shall be provided in existing buildings and structures where required in Chapter 11 *and as follows:*

1. When there is a change in occupancy classification that results in an increased life safety or fire risk, as determined by the fire code official, and the structure exceeds 3,600 square feet, an automatic fire sprinkler system shall be installed throughout the building.
2. *In existing buildings 3,600 square feet or greater, other than one and two-family dwelling units, and agricultural buildings not under special use permit for commercial purposes, where the floor area of the building or structure is increased, such building or structure shall be made to conform to Section 903.2.*

Exception: *When the building increase is less than 500 square feet.*

3. *In existing buildings 3,600 square feet or less, other than one-and two-family dwelling units, and agricultural buildings not under special use permit for commercial purposes, where the floor area of the building or structure is increased to a total square footage over 3,600 square feet, such building or structure shall be made to conform to Section 903.2.*

Exception: *When the building increase is less than 500 square feet.*

SECTION 907.2. "WHERE REQUIRED – NEW BUILDINGS AND STRUCTURES" SHALL BE AMENDED AS FOLLOWS:

Section 907.2. Where Required – New Buildings and Structures. An approved fire alarm system installed in accordance with the provisions of this code and NFPA 72 shall be provided in new buildings and structures in accordance with Sections 907.2.1 through 907.2.2930 and provide occupant notification in accordance with Section 907.5, unless other requirements are provided by another section of this code.

Not fewer than one manual fire alarm box shall be provided in an approved location to initiate a fire alarm signal for fire alarm systems employing automatic fire detectors or waterflow detection devices. Where other sections of this code allow elimination of fire alarm boxes due to sprinklers or automatic fire alarm systems, a single fire alarm box shall be installed at a location approved by the enforcing agency.

Exceptions:

1. The manual fire alarm box is not required for fire alarm control units systems dedicated to elevator recall control, supervisory service and fire sprinkler monitoring.
2. The manual fire alarm box is not required for Group R-2 occupancies unless required by the fire code official to provide a means for fire watch personnel to initiate an alarm during a sprinkler system, impairment event. Where provided, the manual fire alarm box shall not be located in an area that is open to the public.
3. The manual fire alarm box is not required to be installed when approved by the fire code official.
4. *A fire alarm system is not required in one and two-family dwellings, agricultural buildings, and other occupancies classified as Group U not under special use permit and/or not used for commercial purposes (e.g. retail sales, food service, and/or special events).*
5. *Buildings with a floor area less than 500 square feet may be exempt, as determined by the fire code official based on building construction material and features, location, occupancy type, and distance to exposures.*

SECTION 907.2.1.4 "GROUP A UNDER 3,600 SQUARE FEET" SHALL BE ADDED AS FOLLOWS:

Section 907.2.1.4 Group A Under 3,600 Square Feet. *An approved fire alarm system shall be installed in all group A buildings with a floor area less than 3,600 square feet.*

SECTION 907.2.2.3 "GROUP B UNDER 3,600 SQUARE FEET" SHALL BE ADDED AS FOLLOWS:

Section 907.2.2.3 Group B Under 3,600 Square Feet. *An approved fire alarm system shall be installed in all group B buildings with a floor area less than 3,600 square feet.*

SECTION 907.2.3.11 "GROUP E UNDER 3,600 SQUARE FEET" SHALL BE ADDED AS FOLLOWS:

Section 907.2.3.11 Group E Under 3,600 Square Feet. *An approved fire alarm system shall be installed in all group E buildings with a floor area less than 3,600 square feet.*

SECTION 907.2.4.1 "GROUP F UNDER 3,600 SQUARE FEET" SHALL BE ADDED AS FOLLOWS:

Section 907.2.4.1 Group F Under 3,600 Square Feet. *An approved fire alarm system shall be installed in all group F buildings with a floor area less than 3,600 square feet.*

SECTION 907.2.5.2 "GROUP H UNDER 3,600 SQUARE FEET" SHALL BE ADDED AS FOLLOWS:

Section 907.2.5.2 Group H Under 3,600 Square Feet. *An approved fire alarm system shall be installed in all group H buildings with a floor area less than 3,600 square feet.*

SECTION 907.2.6.6 "GROUP I UNDER 3,600 SQUARE FEET" SHALL BE ADDED AS FOLLOWS:

Section 907.2.6.6 Group I Under 3,600 Square Feet. *An approved fire alarm system shall be installed in all group I buildings with a floor area less than 3,600 square feet.*

SECTION 907.2.7.2 "GROUP M UNDER 3,600 SQUARE FEET" SHALL BE ADDED AS FOLLOWS:

Section 907.2.7.2 Group M Under 3,600 Square Feet. *An approved fire alarm system shall be installed in all group M buildings with a floor area less than 3,600 square feet.*

SECTION 907.2.8.4 "GROUP R-1 UNDER 3,600 SQUARE FEET" SHALL BE ADDED AS FOLLOWS:

Section 907.2.8.4 Group R-1 Under 3,600 Square Feet. *An approved fire alarm system shall be installed in all group R-1 buildings with a floor area less than 3,600 square feet.*

SECTION 907.2.9.4 "GROUP R-2, R-2.1, R-2.2 UNDER 3,600 SQUARE FEET" SHALL BE ADDED AS FOLLOWS:

Section 907.2.9.4 Group R-2, R-2.1, R-2.2 Under 3,600 Square Feet. *An approved fire alarm system shall be installed in all group R-2, R-2.1, R-2.2 buildings with a floor area less than 3,600 square feet.*

SECTION 907.2.10.1 "GROUP S UNDER 3,600 SQUARE FEET" SHALL BE ADDED AS FOLLOWS:

Section 907.2.10.1 Group S Under 3,600 Square Feet. *An approved fire alarm system shall be installed in all group S buildings with a floor area less than 3,600 square feet.*

907.2.30 "TYPE I HOOD INSTALLATIONS" SHALL BE ADDED AS FOLLOWS:

907.2.30 "Type I Hood Installations. *The requirement of installation, or replacement, of a Type I Hood System shall require a fire alarm/sprinkler monitoring system to be installed, or for the hood system to be connected to an existing fire alarm/sprinkler monitoring system for that building.*

907.6.5 "MONITORING" SHALL BE AMENDED AS FOLLOWS:

907.6.5 Monitoring. *Fire alarm systems required by this chapter or by the California Building Code shall be monitored by an approved, UL certified, Type A Full Service central, proprietary or remote station service, which gives audible and visual signals at a constantly attended location. All sprinklered buildings shall be monitored.*

Exceptions:

1. *One- and two-family dwellings (R-3 Occupancies and other occupancies classified as "U").*

2. *Agricultural buildings not under special use permit and/or not used for commercial purposes (e.g., retail sales, food service, and/or special events).*

SECTION 907.6.2.1 "SECONDARY POWER SUPPLY" SHALL BE ADDED AS FOLLOWS:

SECTION 907.6.2.1 SECONDARY POWER SUPPLY. *Where required by the fire code official, in accordance with NFPA 72, the secondary power supply providing a minimum 24-hour power capacity under quiescent load (system operating in a non-alarm condition) shall be amended to a minimum 72-hour power capacity.*

Exception: *The existence of an emergency back-up power supply that meets or exceeds the requirements of California Fire Code Chapter 12.*

SECTION 907.9 "WHERE REQUIRED IN EXISTING BUILDINGS" SHALL BE AMENDED AS FOLLOWS:

SECTION 907.9 Where Required. *An approved fire alarm system shall be provided in existing buildings and structures where required in Chapter 11 and in existing buildings with a floor area less than 3,600 square feet without an approved automatic sprinkler system, other than one- or two-family dwelling units, agricultural building not under special use permit for commercial purposes where a fire alarm detection system does not exist and the floor area of the building or structure is increased*

Exception: *When the building increase is less than 500 square feet.*

Chapter 12

SECTION 1203.1.3 "INSTALLATION" SHALL BE AMENDED AS FOLLOWS:

Section 1203.1.3 Installation. *Emergency power systems and standby power systems shall be installed in accordance with the California Building Code, the California Electrical Code, NFPA 110 and NFPA 111. All buildings, other than one- and two-family dwelling units, and agricultural buildings not used for commercial purposes, with standby power, shall have a shunt trip device that disconnects all power sources to the building, approved by the fire code official. Existing installations shall be maintained in accordance with the original approval.*

Chapter 33

SECTION 3311.3 "PREMISE IDENTIFICATION" SHALL BE ADDED AS FOLLOWS:

Section 3311.3 Premise Identification. *Prior to and during construction, an approved address sign shall be provided at each fire and emergency vehicle access road entry into the project.*

SECTION 3313.1 "WHEN REQUIRED" SHALL BE AMENDED AS FOLLOWS:

Section 3313.1 When Required. *An approved water supply for fire protection, either temporary or permanent, shall be installed and maintained in continuous operation as soon as combustible building materials arrive on site, the commencement of vertical combustible*

construction and on installation of a standpipe system in buildings under construction, in accordance with Sections 3313.2 through 3313.5.

Exception: The fire code official is authorized to reduce the fire-flow requirements for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire-flow requirements is impractical.

Chapter 50

SECTION 5001.7 "LIABILITY FOR DAMAGES" SHALL BE ADDED AS FOLLOWS:

Section 5001.7 Liability for Damages. *Any damages or cost resulting from the negligence, violation of the law, careless handling, spill or discharge of any hazardous materials shall constitute debt against any such person, firm or corporation causing such spill or discharge. This debt is collectible by the Fire Chief, or his/her duly authorized representative, in the same manner as in the case of an obligation under contract, expressed or implied.*

Chapter 56

SECTION 5601.2 "PERMIT REQUIRED" SHALL BE AMENDED AS FOLLOWS:

Section 5601.2 Permit Required. Permits shall be required as set forth in Section 105.5 and regulated in accordance with this section. *Where fireworks permits are required, they shall be issued by the Fire Chief, or his/her duly authorized representative, and the El Dorado County Board of Supervisors.*

Chapter 57

SECTION 5704.2.9.6.1 "LOCATIONS WHERE ABOVE-GROUND TANKS ARE PROHIBITED" SHALL BE AMENDED AS FOLLOWS:

SECTION 5704.2.9.6.1 Locations Where Above-Ground Tanks are Prohibited. Storage of Class I and Class II flammable liquids in above-ground tanks outside of buildings is prohibited within the limits established by law as the limits of districts in which such storage is prohibited. *Storage of Class I and Class II flammable liquids in above-ground tanks outside of buildings is prohibited unless approved by the fire code official.*

SECTION 5706.2.4.4 "LOCATIONS WHERE ABOVE-GROUND TANKS ARE PROHIBITED" SHALL BE AMENDED AS FOLLOWS:

SECTION 5706.2.4.4 Locations Where Above-Ground Tanks are Prohibited. The storage of Class I and Class II liquids in above-ground tanks is prohibited within the limits established by law as the limits of districts in which such storage is prohibited. *Storage of Class I and Class II liquids in above-ground tanks is prohibited unless approved by the fire code official.*

Chapter 58

SECTION 5806.2 "LIMITATIONS" SHALL BE AMENDED AS FOLLOWS:

SECTION 5806.2 Limitations. Storage of flammable cryogenic fluids in stationary containers outside of buildings is prohibited within the limits established by law as the limits of districts in which such storage is prohibited. *Storage of flammable cryogenic fluids in stationary containers outside of buildings is prohibited unless approved by the fire code official.*

Chapter 61

SECTION 6104.2 "MAXIMUM CAPACITY WITHIN ESTABLISHED LIMITS" SHALL BE AMENDED AS FOLLOWS:

SECTION 6104.2 Maximum Capacity within Established Limits. Within the limits established by law restricting the storage of liquefied petroleum gas for the protection of heavily populated or congested areas, the aggregate capacity of any one installation shall not exceed a water capacity of 2,000 gallons. *The storage of liquefied petroleum gas in excess of an aggregate of 2,000-gallon water capacity when located at least one-half (1/2) mile from property zoned or designated for residential use and at least one-half (1/2) mile from existing residential development with a density greater than one (1) dwelling unit per acre and at least one-half (1/2) mile from any hotel or motel is allowed when approved by the fire code official, and a special/conditional use permit is issued by the County of El Dorado.*

Dispensing within established limits. Within the limits established by law restricting the dispensing of liquefied petroleum gas for the protection of heavily populated or congested areas, the aggregate capacity of any one installation shall not exceed a water capacity of 2,000 gallons. The dispensing of liquefied petroleum gas in excess of an aggregate of 2,000-gallon water capacity when located at least one-half (1/2) mile from property zoned or designated for residential use and at least one-half (1/2) mile from any hotel or motel is allowed when approved by the fire code official and a special/conditional use permit is issued by the County of El Dorado.

Chapter 80

SECTION 80, NFPA 1-22, CHAPTER 22 "AUTOMOTIVE WRECKING YARDS" IS ADOPTED, AMENDED SECTIONS AS FOLLOWS:

Revise Section 22.3 as follows:

22.3 Fire department access roads shall be in accordance with the California Fire Code, Section 503 and Appendix D.

Add new Section 22.10 as follows:

22.10 Stored vehicles, boats, recreational vehicles, parts, and equipment shall not be stored within 30 feet of adjacent property lines.

SECTION 80, NFPA, 13D-22 – “STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS IN ONE-AND TWO FAMILY DWELLINGS AND MANUFACTURED HOMES” IS AMENDED AS FOLLOWS: 903.3.1.3, 903.3.5.1.1

NFPA 13D, Amended Sections as follows:

Add new Section 4.6 as follows:

4.6 Residential fire sprinkler systems installed in all new one-and two-family dwellings shall utilize a “Passive Purge” system design unless otherwise approved by the fire code official.

***Exception:** Manufactured home installed, tested and approved by the California Department of Housing and Community Development.*

Revise Section 5.1.1.2 as follows:

5.1.1.2 A supply of at least one of each type and temperature sprinkler used within the premises shall be maintained on the property at an approved location. Spare sprinklers shall be kept in a mounted and accessible cabinet.

Revise Section 7.6 as follows:

7.6 A local audio/visual device activated upon water flow shall be provided on all fire sprinkler systems in homes at an approved location on the exterior of the dwelling.

Revise Section 11.2.1.1 as follows:

11.2.1.1 Where a fire department pumper connection is not provided, the system shall be hydrostatically tested at a minimum pressure of 150 pounds per square inch gauge for no less than a 30-minute duration without evidence of leakage. Such test shall be witnessed by the fire code official.

Appendix B – Fire Flow Requirements for Buildings

TABLE B105.1(1) “REQUIRED FIRE FLOW FOR ONE- AND TWO-FAMILY DWELLINGS, GROUP R-3, AND R-4 BUILDINGS AND TOWNHOUSES” SHALL BE AMENDED AS FOLLOWS:

TABLE B105.1(1) REQUIRED FIRE FLOW FOR ONE- AND TWO-FAMILY DWELLINGS, GROUP R-3, AND R-4 BUILDINGS AND TOWNHOUSES

FIRE-FLOW CALCULATION AREA (square feet)	AUTOMATIC SPRINKLER SYSTEM (Design Standard)	MINIMUM FIRE-FLOW (gallons per minute)	FLOW DURATION (hours)
0 – 3,600	No automatic sprinkler system	1,000	1

3,601 and greater	No automatic sprinkler system	Value in Table B105.1(2)	Duration in Table B105.1(2) at the required fire-flow rate
MAJOR SUBDIVISIONS (5 PARCELS OR GREATER)			
0 – 3,600	Section 903.3.1.3 of the CA Fire Code or Section 313.3 of the CA Residential Code	1,000	1
3,601 and greater	Section 903.3.1.3 of the CA Fire Code or Section 313.3 of the CA Residential Code	1/2 value of Table B105.1(2) (min. 1000 GPM)	2
OTHER RESIDENTIAL DEVELOPMENT			
0 – 3,600	Section 903.3.1.3 of the CA Fire Code or Section 313.3 of the CA Residential Code	500	1
3,601 and greater	Section 903.3.1.3 of the CA Fire Code or Section 313.3 of the CA Residential Code	1/2 value of Table B105.1(2) (min. 750 GPM)	1

TABLE B105.2 "REQUIRED FIRE FLOW FOR BUILDINGS OTHER THAN ONE- AND TWO-FAMILY DWELLINGS, GROUP R-3, AND R-4 BUILDINGS AND TOWNHOUSES" SHALL BE AMENDED AS FOLLOWS:

TABLE B105.2 REQUIRED FIRE FLOW FOR BUILDINGS OTHER THAN ONE- AND TWO-FAMILY DWELLINGS, GROUP R-3, AND R-4 BUILDINGS AND TOWNHOUSES

AUTOMATIC SPRINKLER SYSTEM (Design Standard)	MINIMUM FIRE-FLOW (gallons per minute)	FLOW DURATION (hours)
No automatic sprinkler system	Value in Table B105.1(2)	Duration in Table B105.1(2)
Section 903.3.1.1 of the CA Fire Code	25% of the value in Table B105.1(2) ^b	Duration in Table B105.1(2) at the reduced flow rate

b. The reduced fire flow shall not be less than 1,500 gpm