

Greater Placerville
**WILDFIRE
EVACUATION
PREPAREDNESS
STUDY**

*Envisioning a Fire
Adaptive Community*

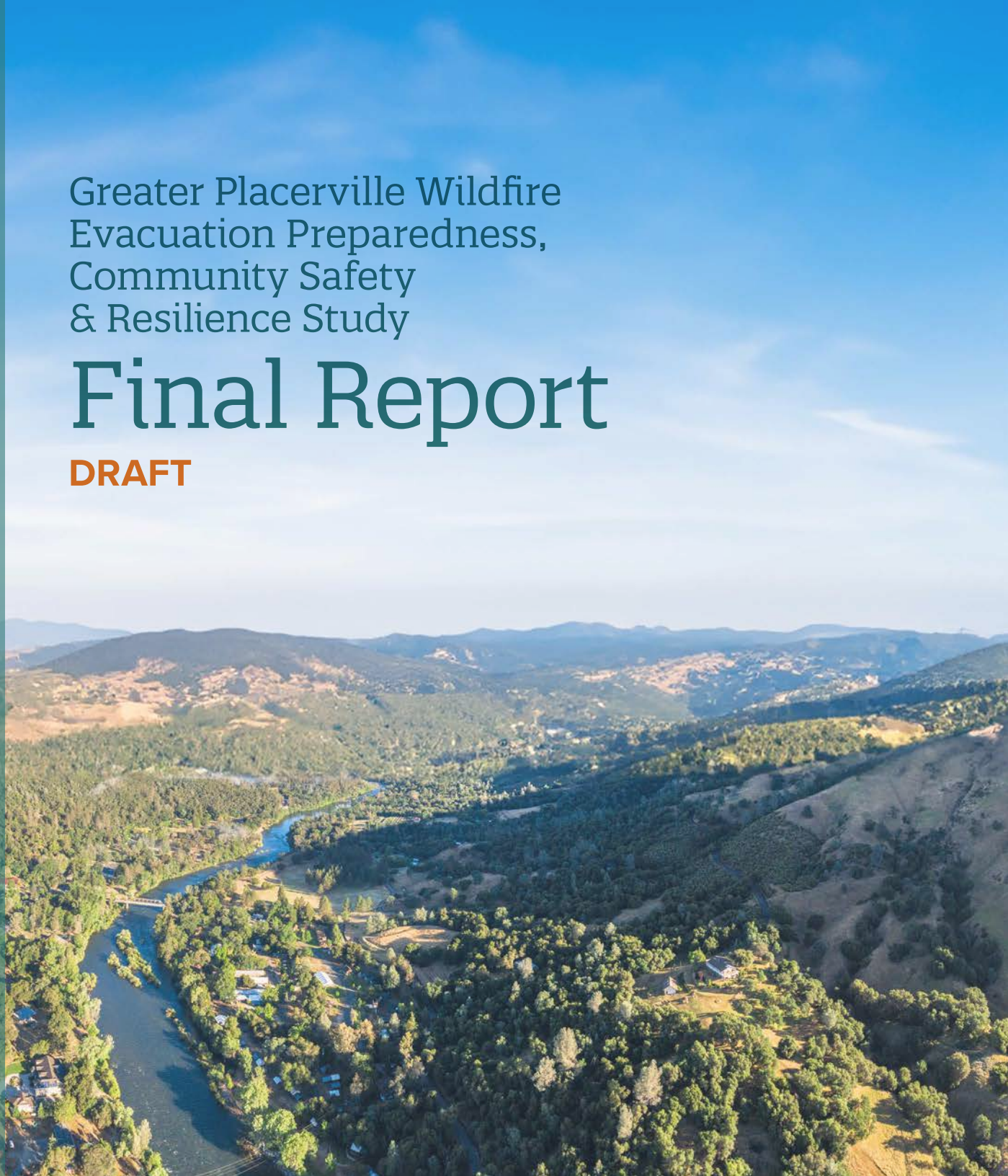
EL DORADO COUNTY
TRANSPORTATION COMMISSION

MAY 2024

Greater Placerville Wildfire
Evacuation Preparedness,
Community Safety
& Resilience Study

Final Report

DRAFT



Acknowledgments



PREPARED FOR
EL DORADO COUNTY
TRANSPORTATION COMMISSION



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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 study 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.

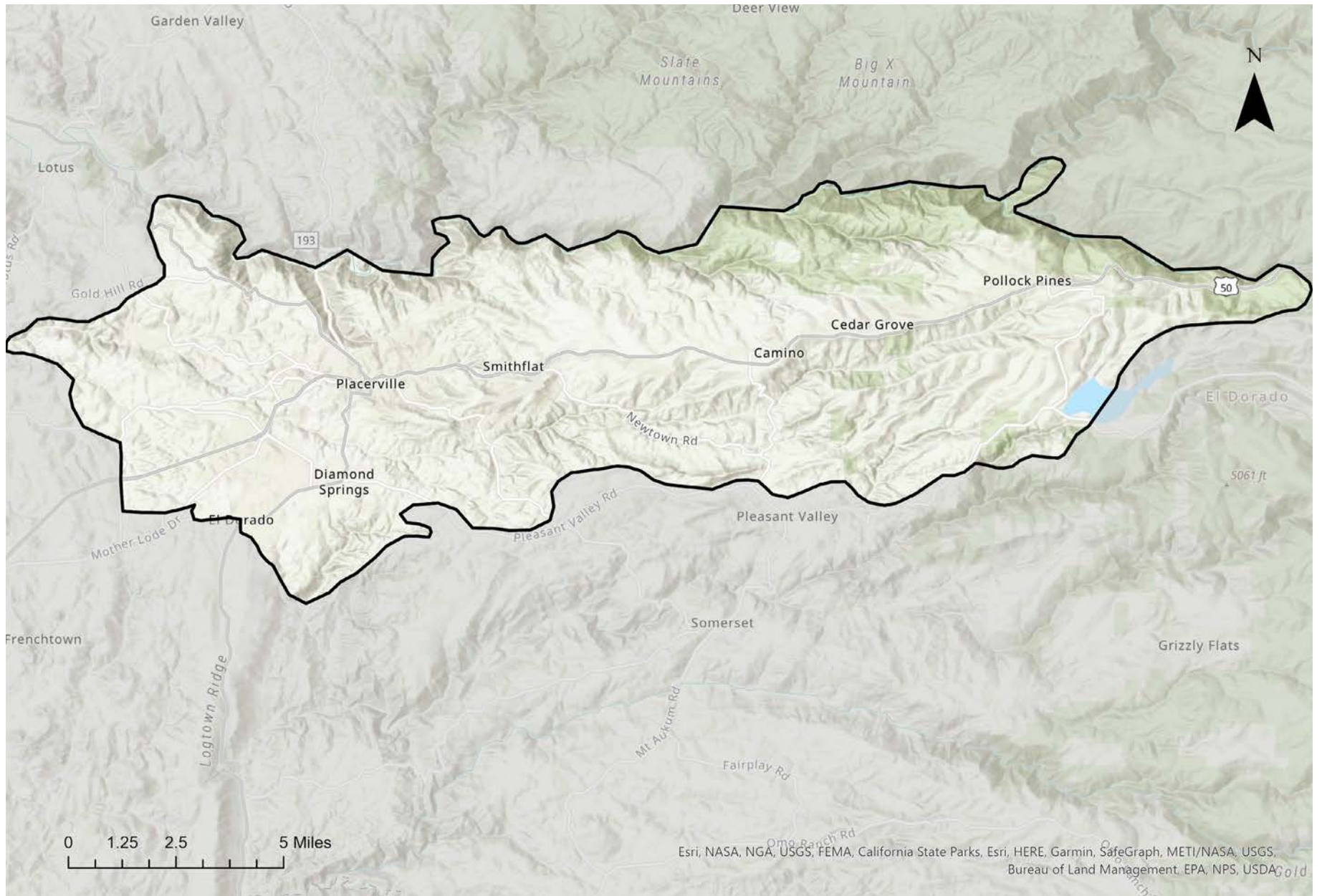


FIGURE 1. STUDY AREA

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



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.

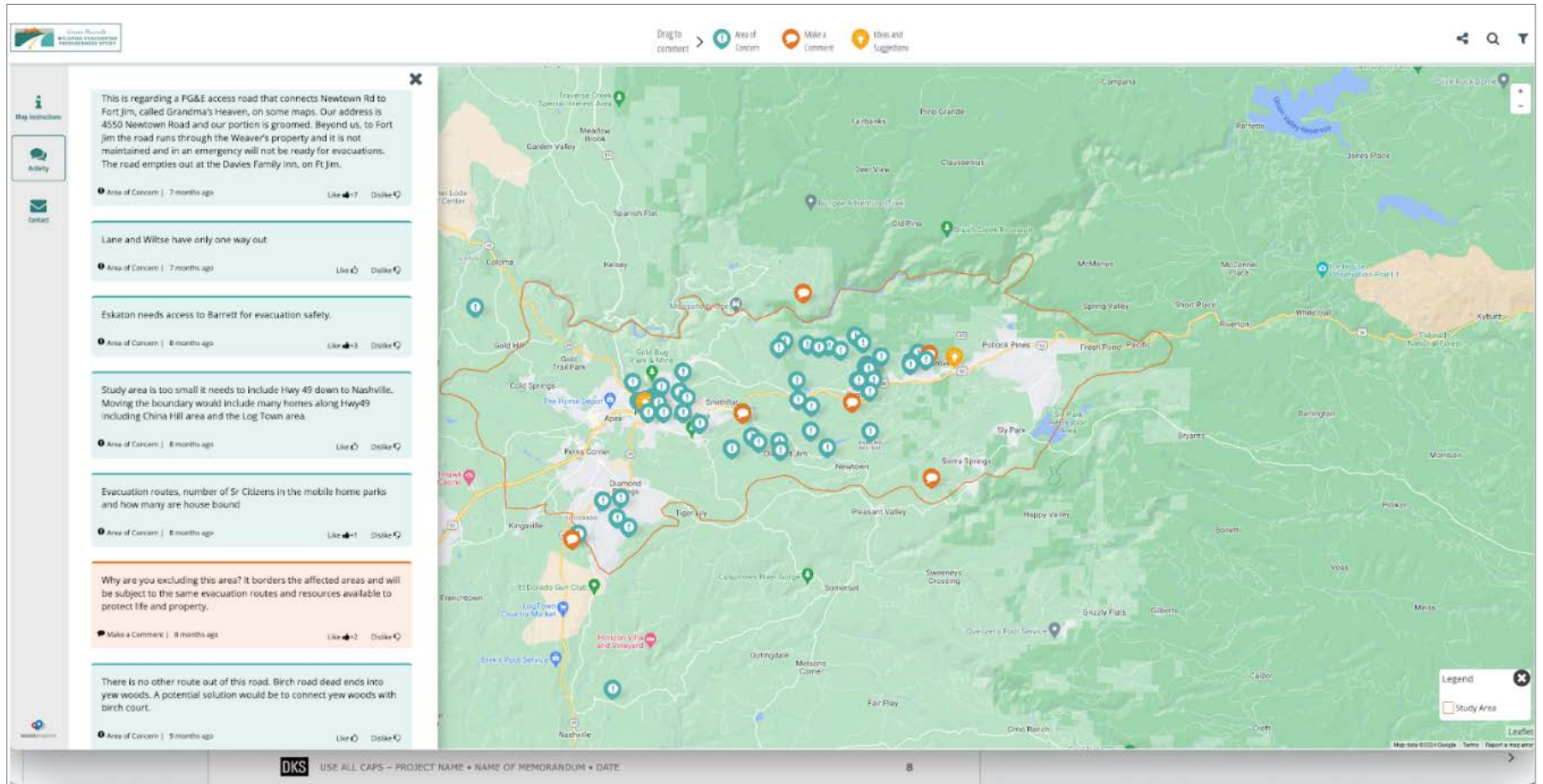


FIGURE 2. SOCIAL PINPOINT MAP

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.

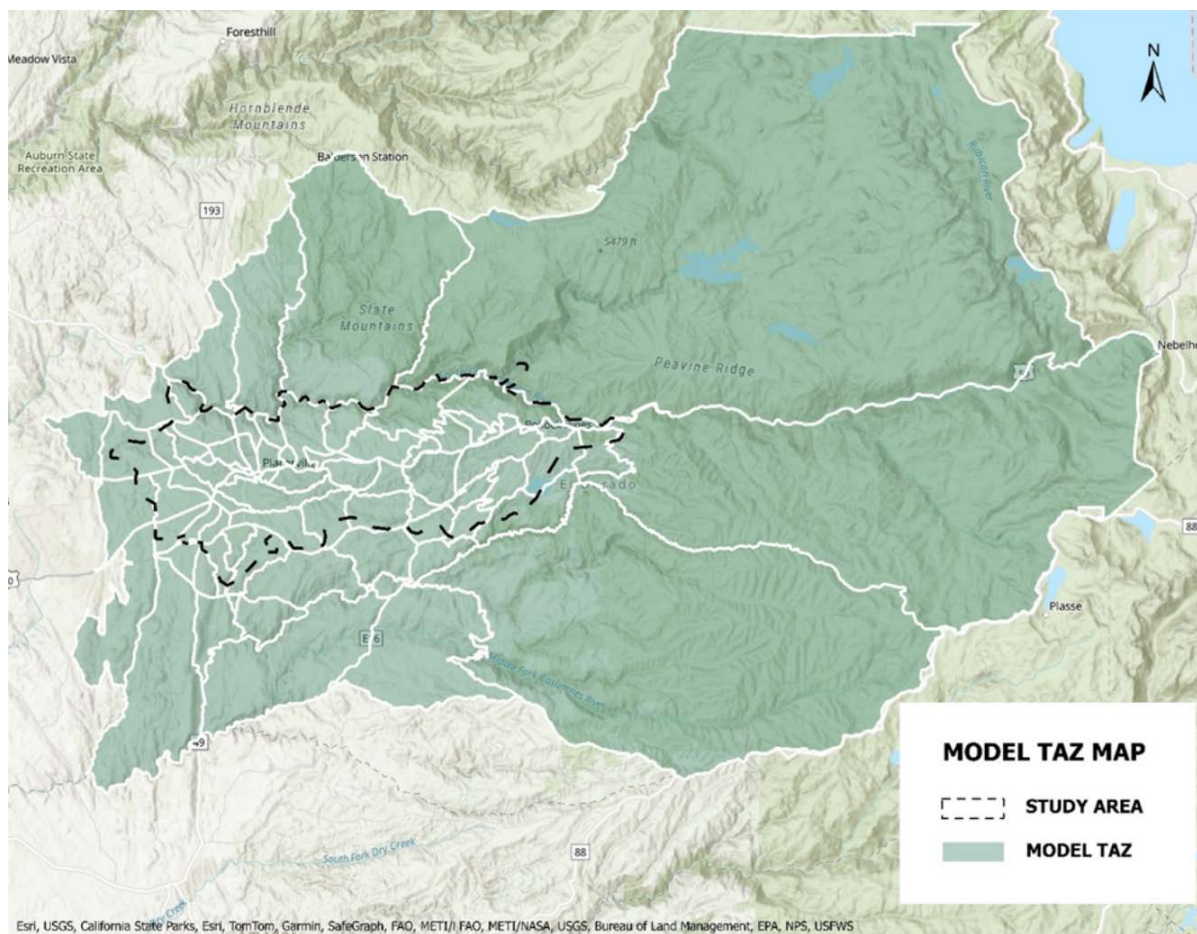


FIGURE 3. MODEL TAZ MAP

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 Placerville closed to all non-emergency vehicles.

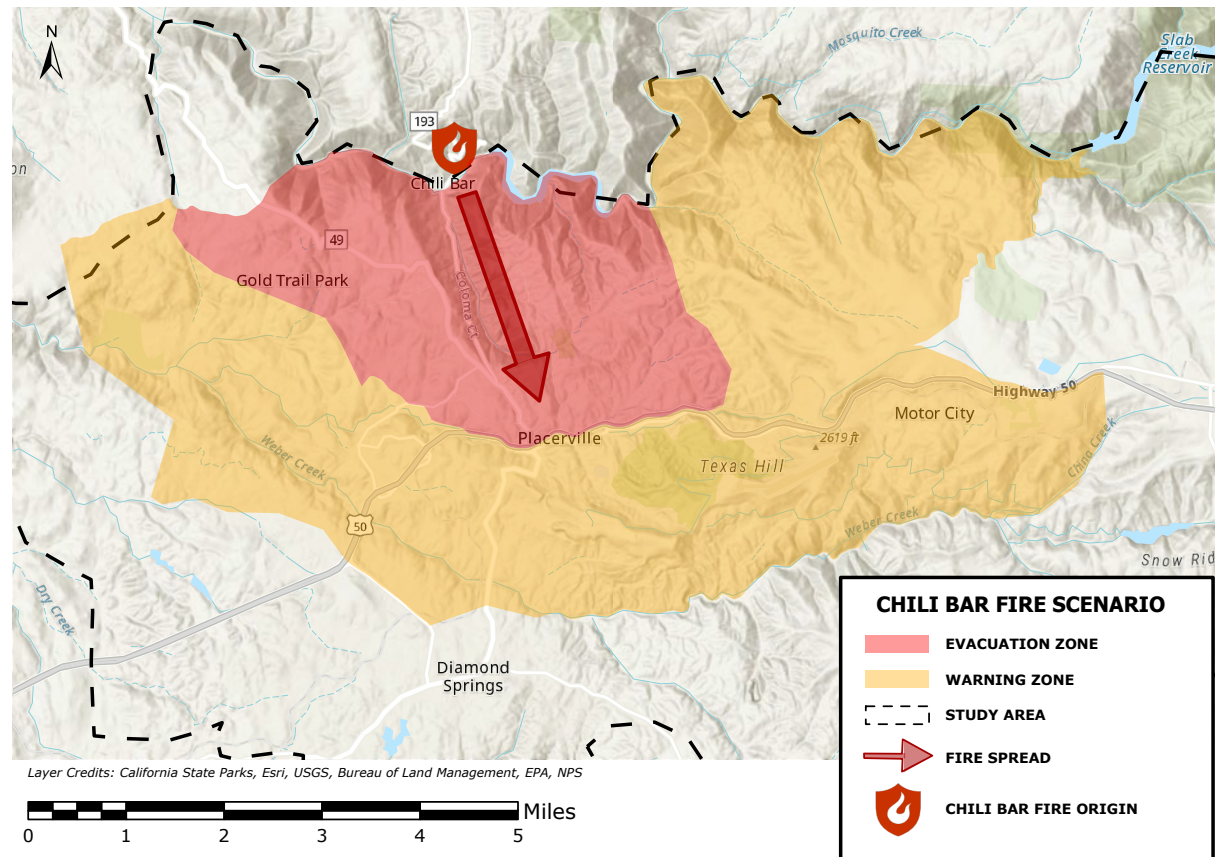


FIGURE 4. CHILI BAR FIRE SCENARIO – FIRE ORIGIN, EVACUATION & WARNING ZONES

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.

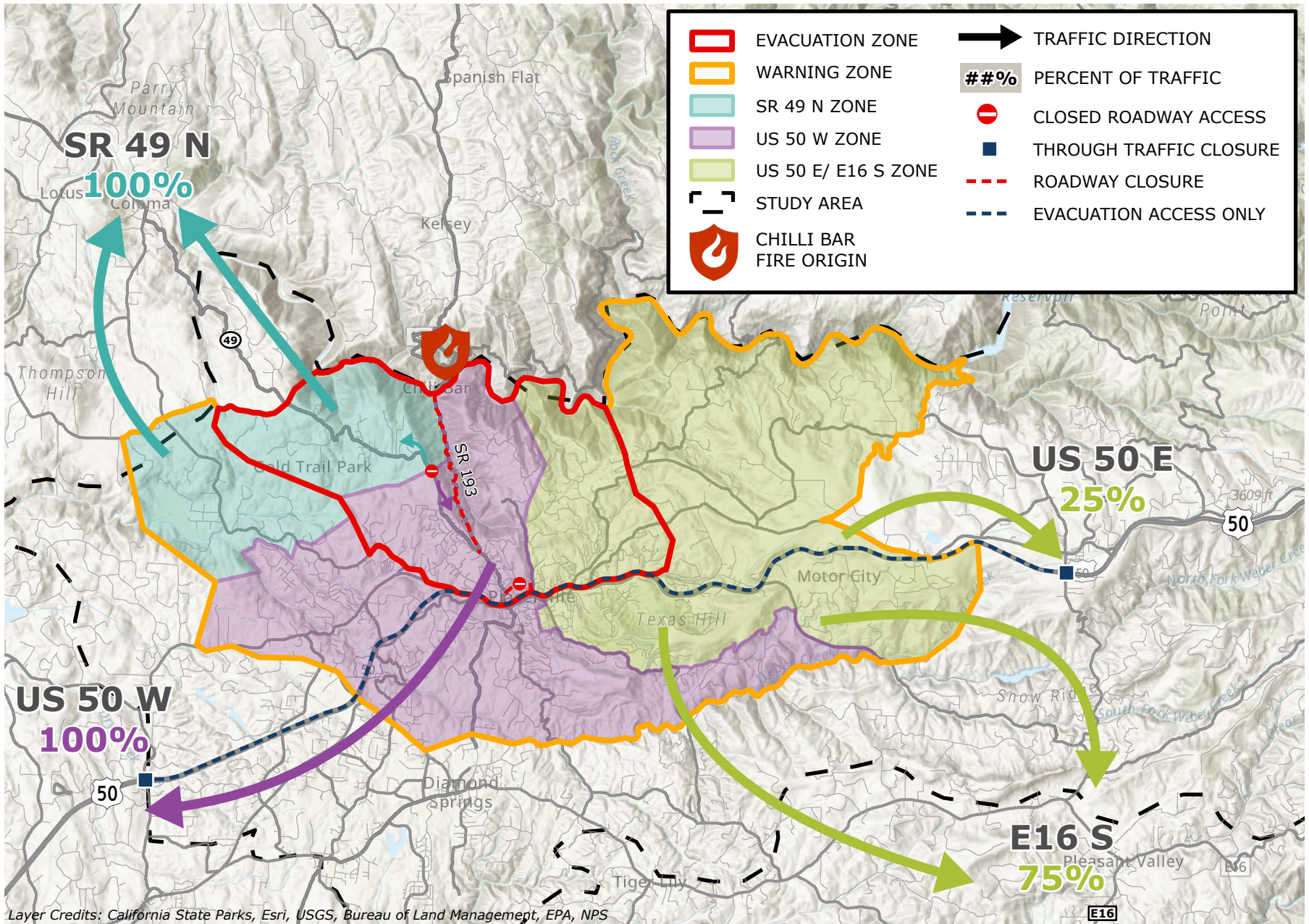


FIGURE 5. CHILI BAR FIRE SCENARIO – EVACUATION DESTINATIONS AND CLOSURES

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.

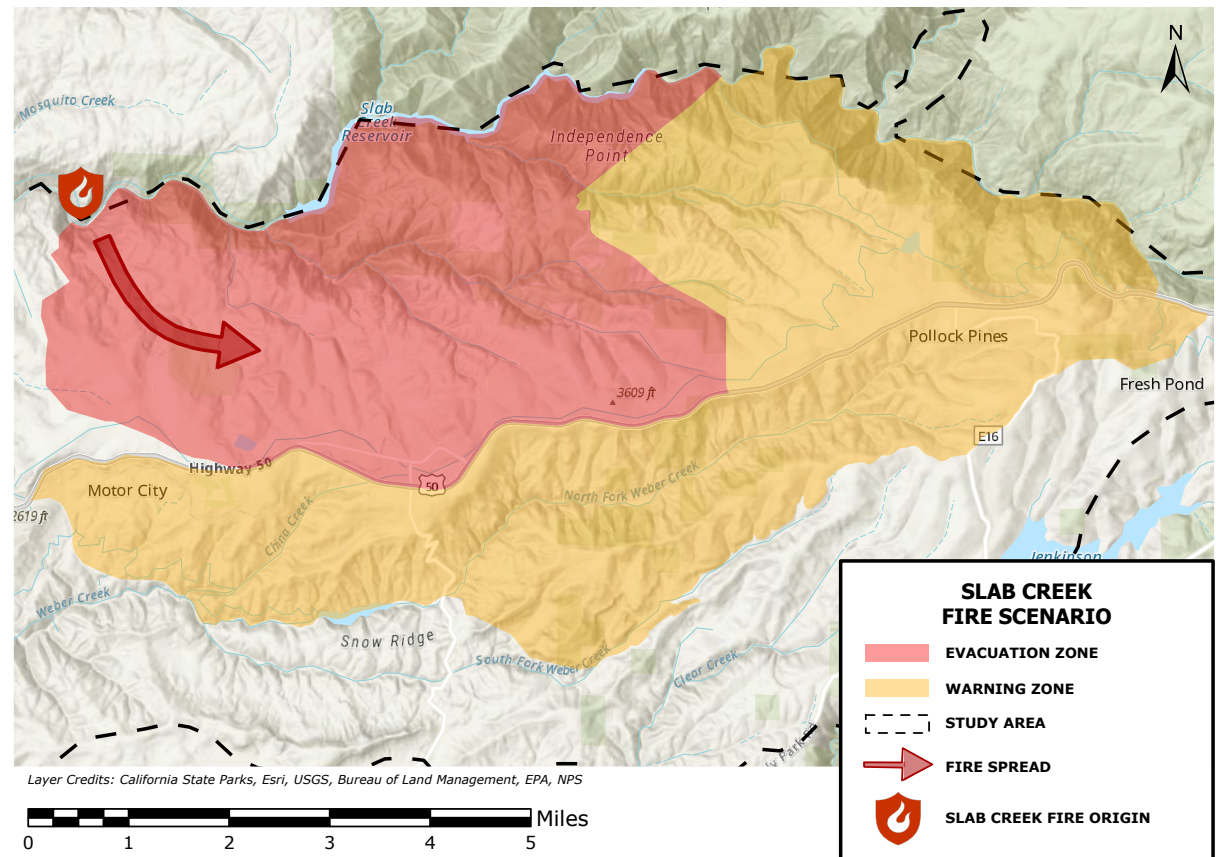


FIGURE 6. SLAB CREEK FIRE SCENARIO – FIRE ORIGIN, EVACUATION & WARNING ZONES

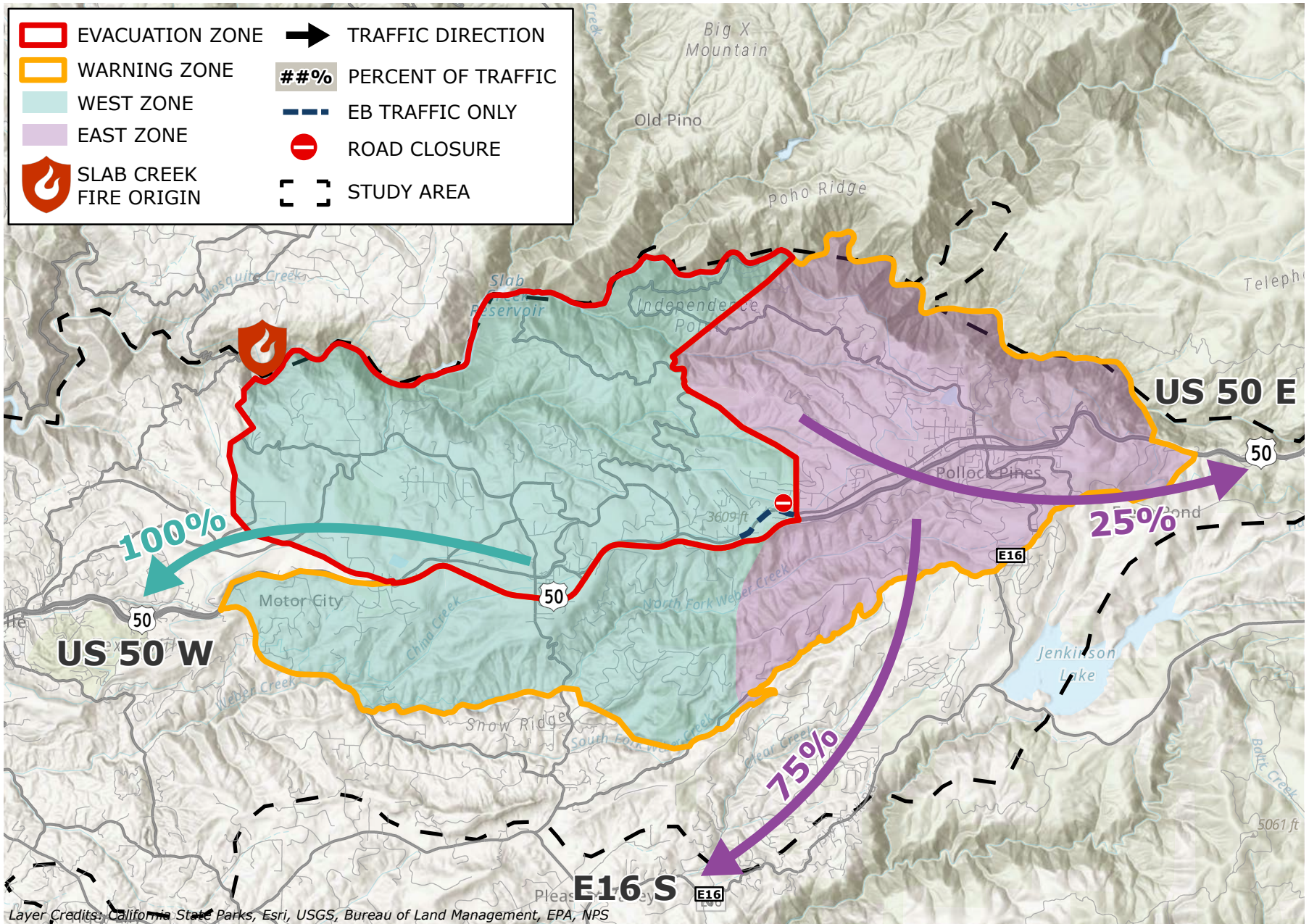


FIGURE 7. SLAB CREEK FIRE SCENARIO – EVACUATION DESTINATIONS

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 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.

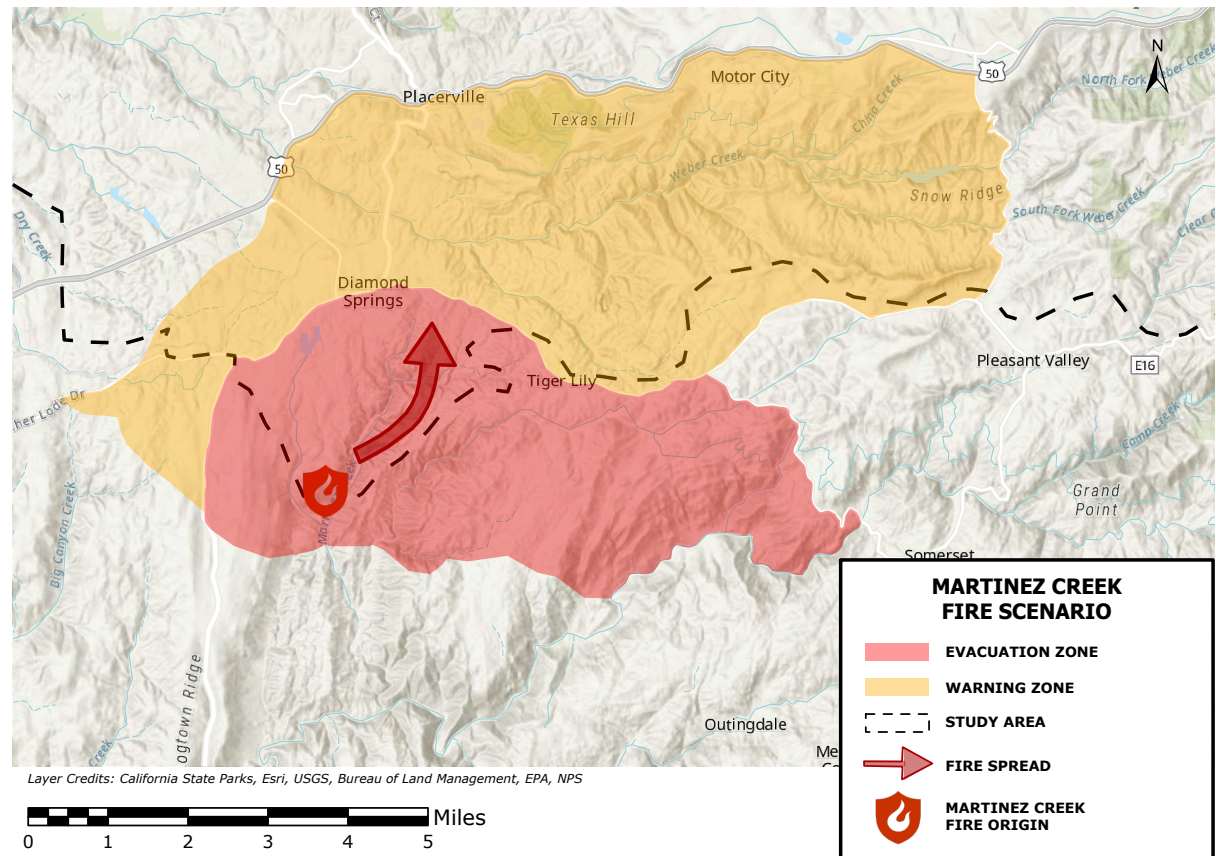


FIGURE 8. MARTINEZ CREEK FIRE SCENARIO – FIRE ORIGIN, EVACUATION & WARNING ZONES

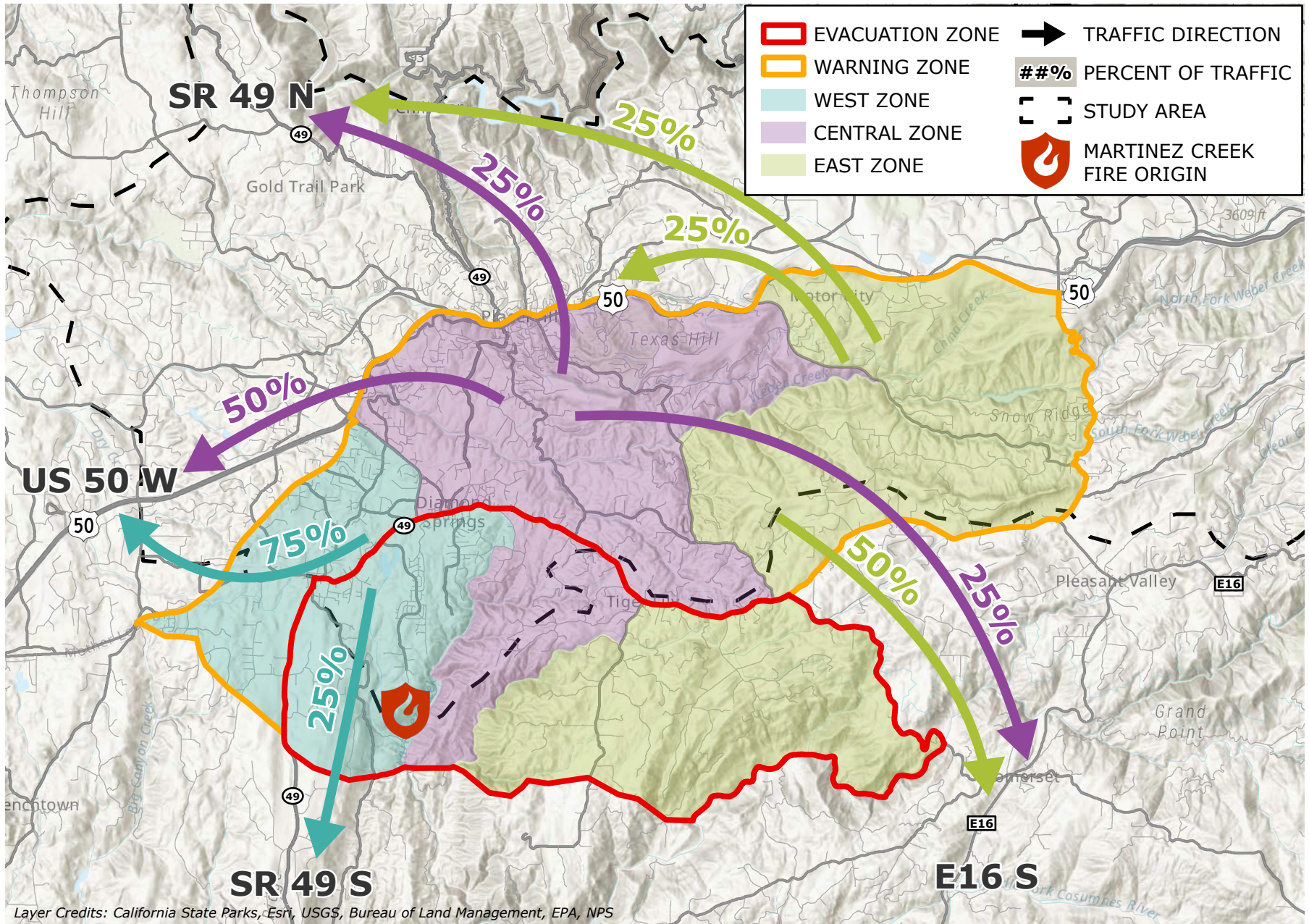


FIGURE 9. MARTINEZ CREEK FIRE SCENARIO – EVACUATION DESTINATIONS

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.

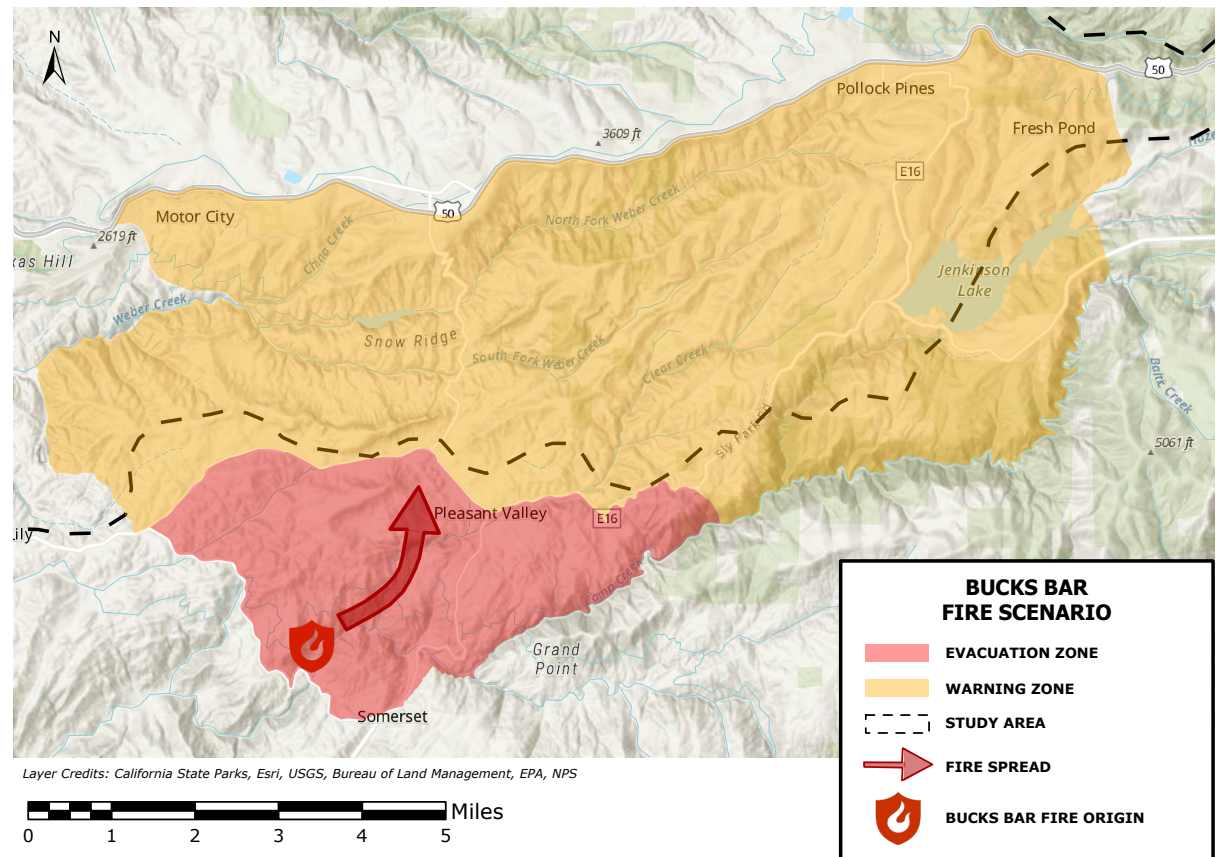


FIGURE 10. BUCKS BAR FIRE SCENARIO – FIRE ORIGIN, EVACUATION & WARNING ZONES

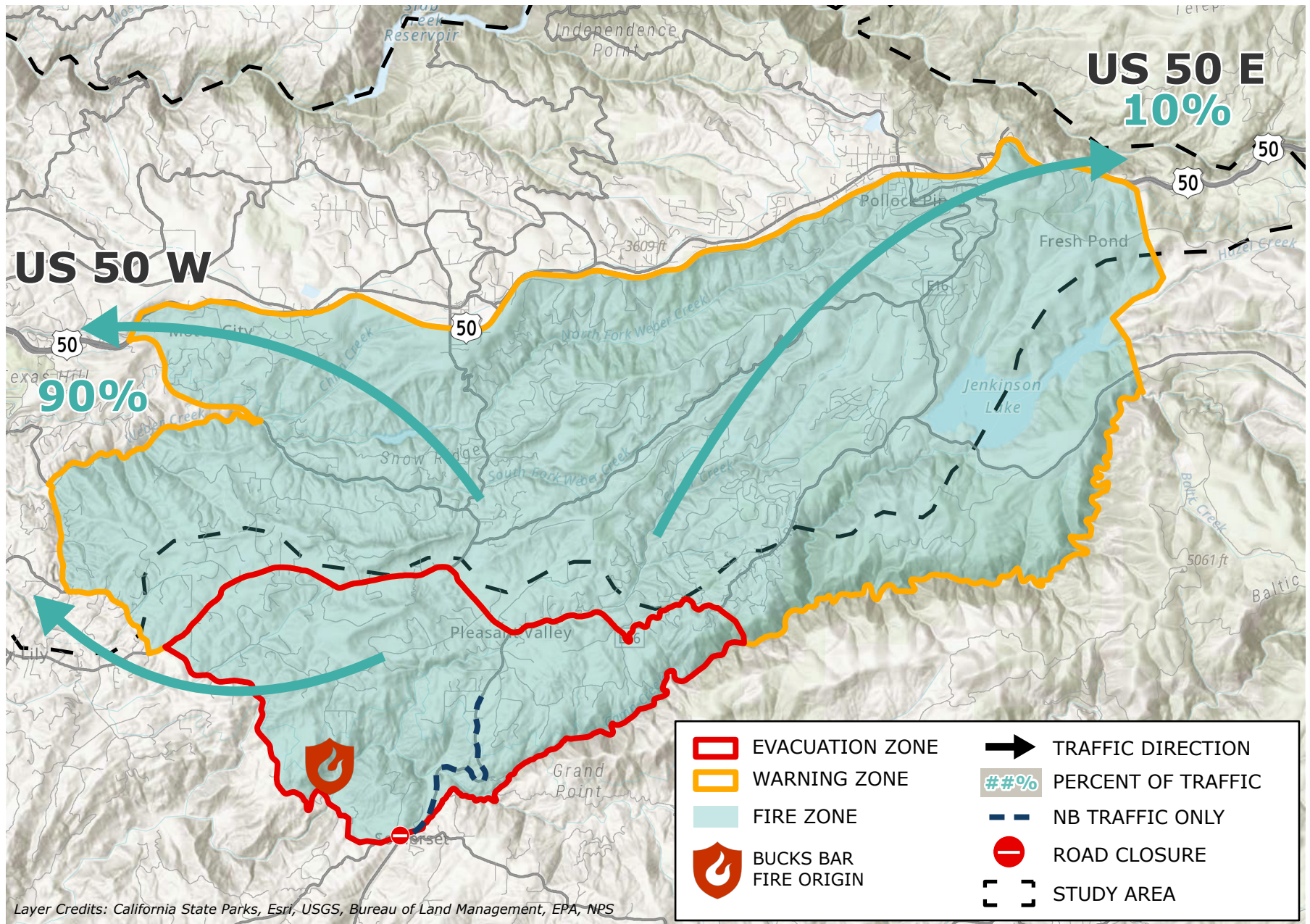


FIGURE 11. BUCKS BAR FIRE SCENARIO – EVACUATION DESTINATIONS AND CLOSURES

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.

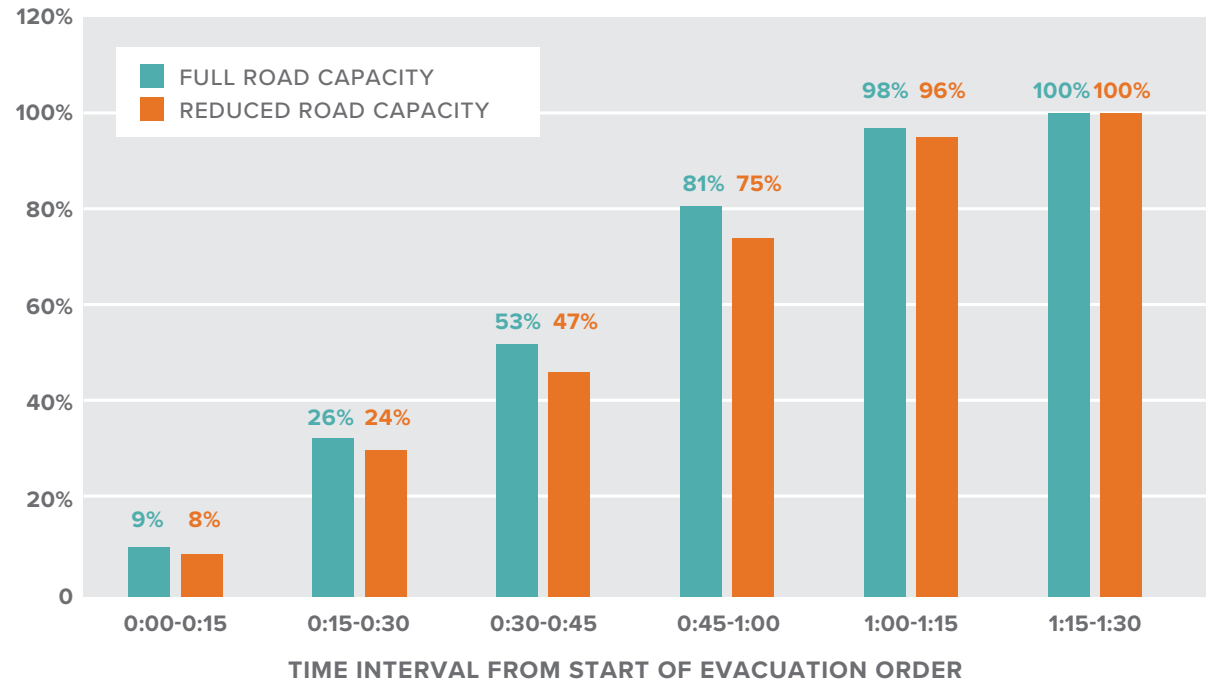


FIGURE 12. ACCUMULATED PERCENTAGE OF CHILI BAR FIRE EVACUATION ZONE TRIPS EVACUATED BY TIME INTERVAL

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.

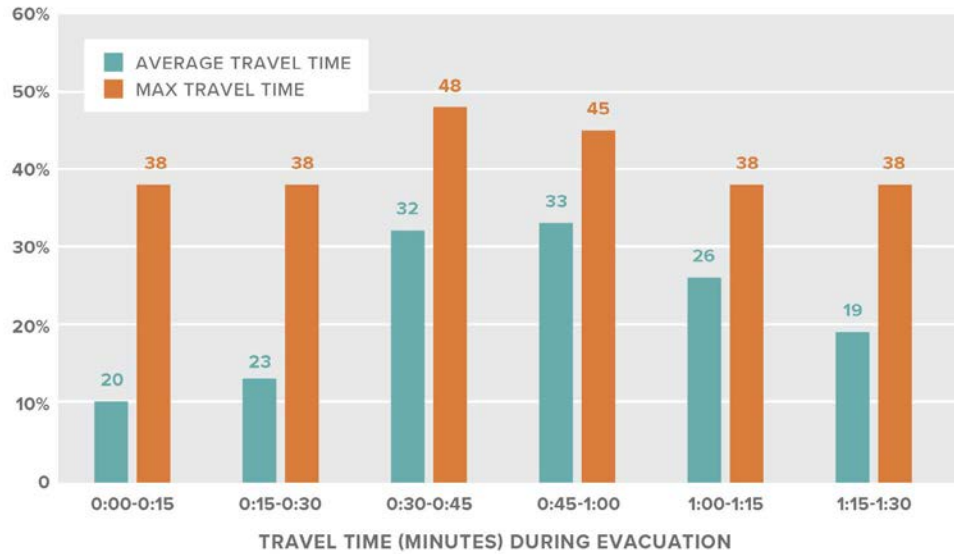


FIGURE 13. STUDY AREA EVACUATION TRAVEL TIME ESTIMATES FOR CHILI BAR FIRE SCENARIO (FULL ROADWAY CAPACITY)

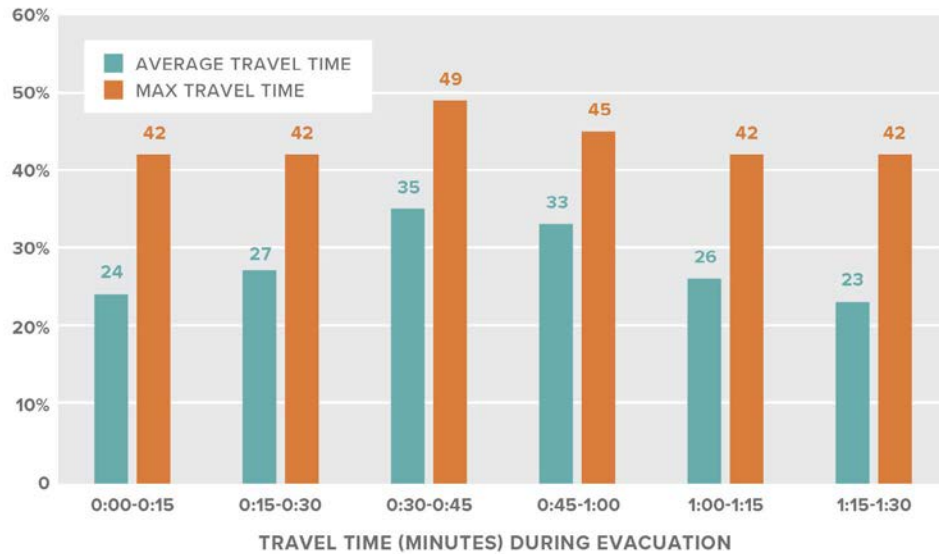


FIGURE 14. STUDY AREA EVACUATION TRAVEL TIME ESTIMATES FOR CHILI BAR FIRE SCENARIO (REDUCED ROADWAY CAPACITY)

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.

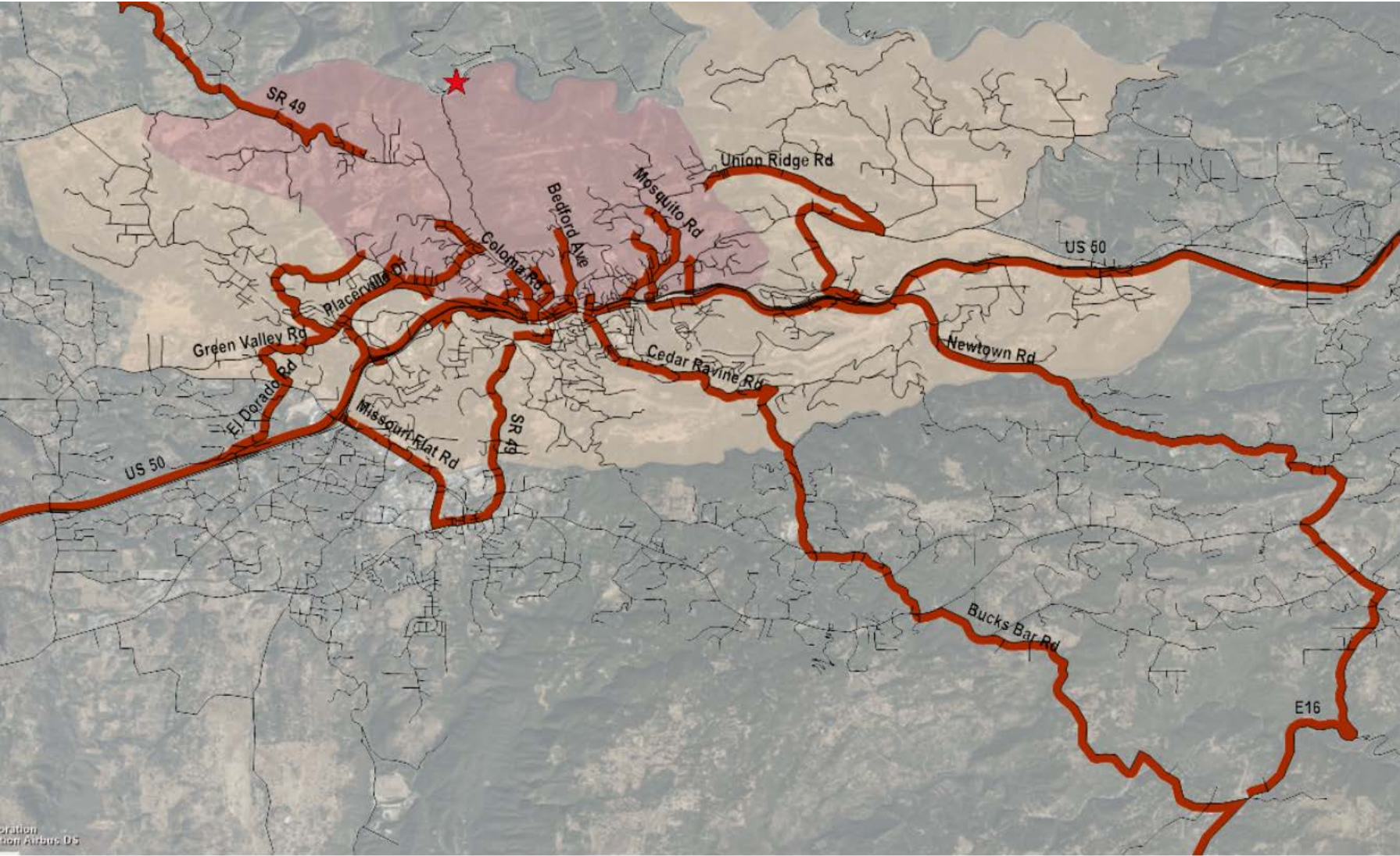


FIGURE 15. KEY MODEL EVACUATION ROUTES FOR CHILI BAR FIRE SCENARIO

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

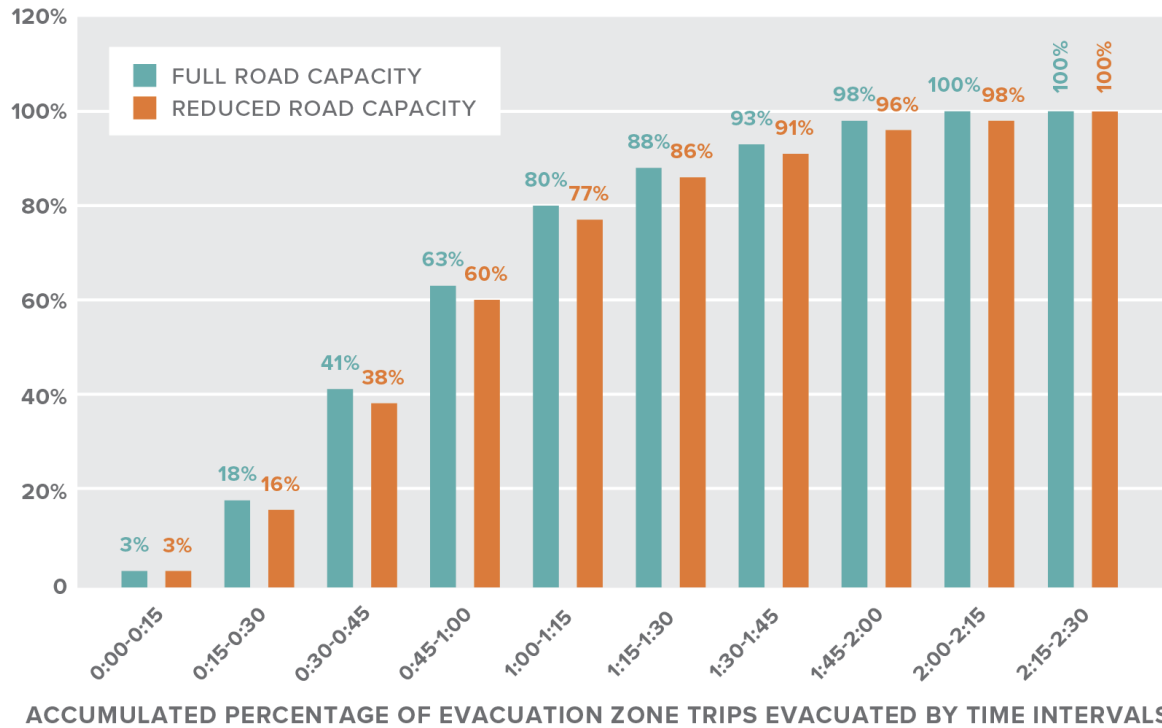


FIGURE 16. ACCUMULATED PERCENTAGE OF SLAB CREEK EVACUATION ZONE TRIPS EVACUATED BY TIME INTERVALS

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.

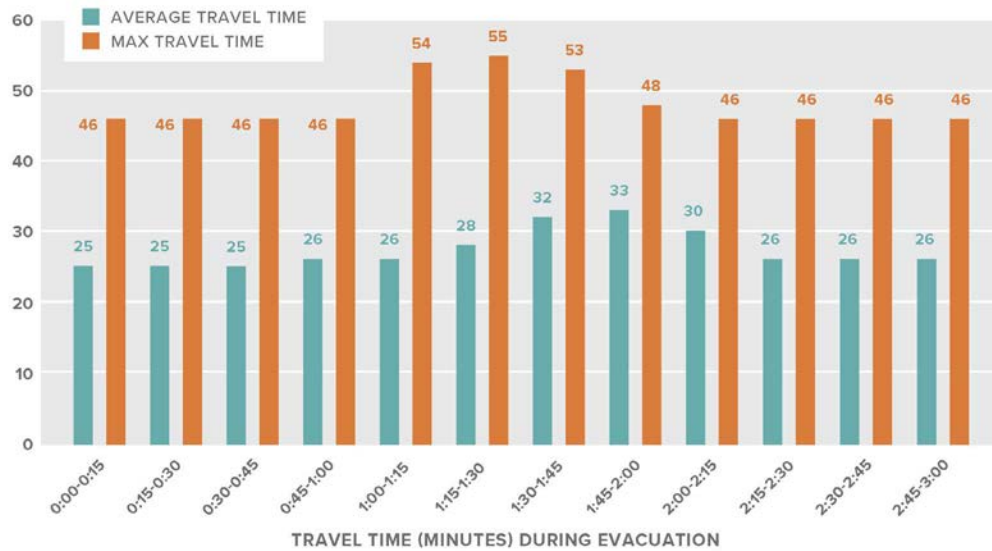


FIGURE 17. STUDY AREA EVACUATION TRAVEL TIME ESTIMATES FOR SLAB CREEK FIRE SCENARIO (FULL ROADWAY CAPACITY)

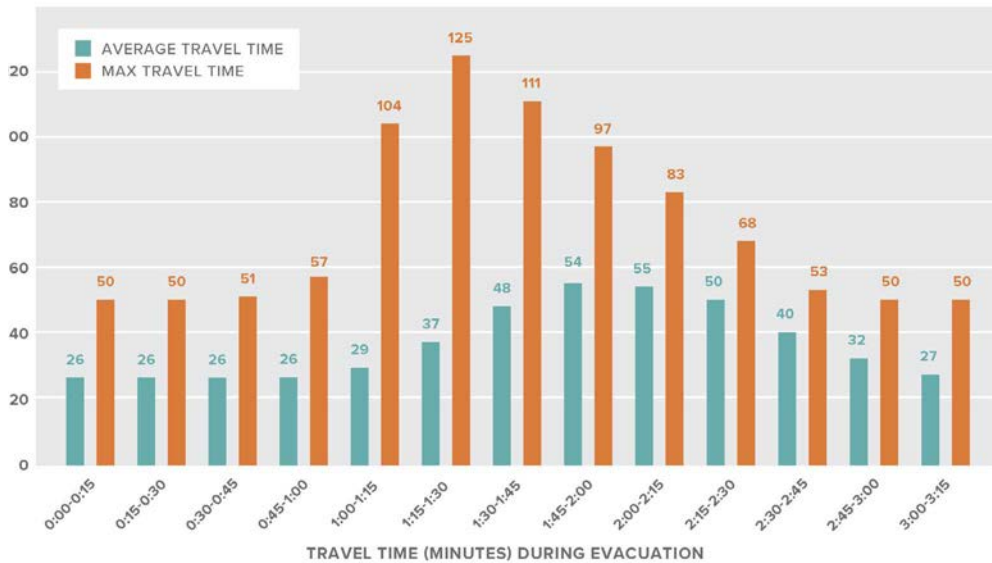


FIGURE 18. STUDY AREA EVACUATION TRAVEL TIME ESTIMATES FOR SLAB CREEK FIRE SCENARIO (REDUCED ROADWAY CAPACITY)

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.

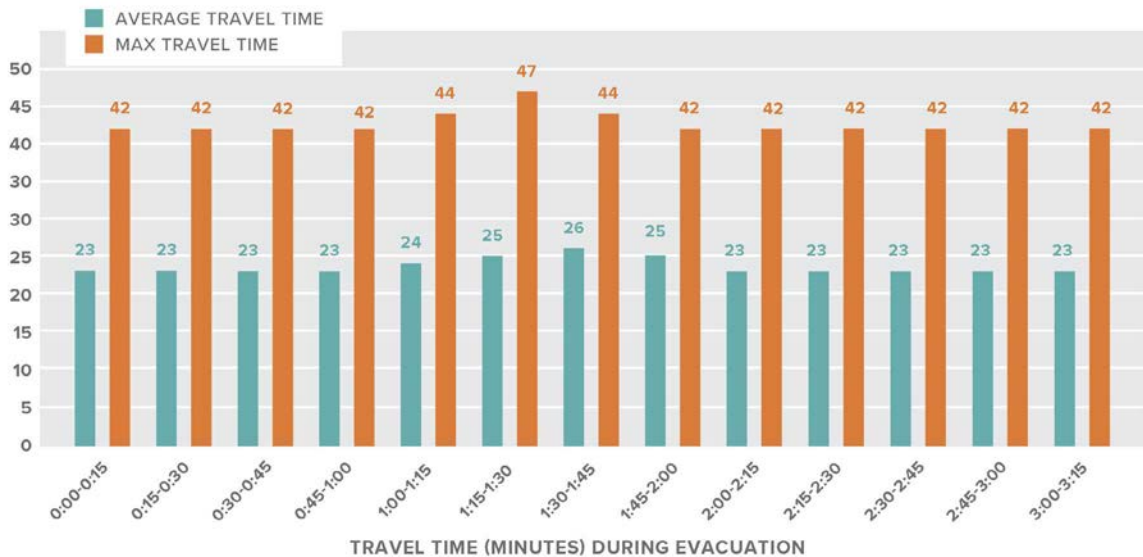


FIGURE 20. MITIGATED STUDY AREA EVACUATION TRAVEL TIME ESTIMATES FOR SLAB CREEK FIRE SCENARIO (REDUCED ROADWAY CAPACITY)

- 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.

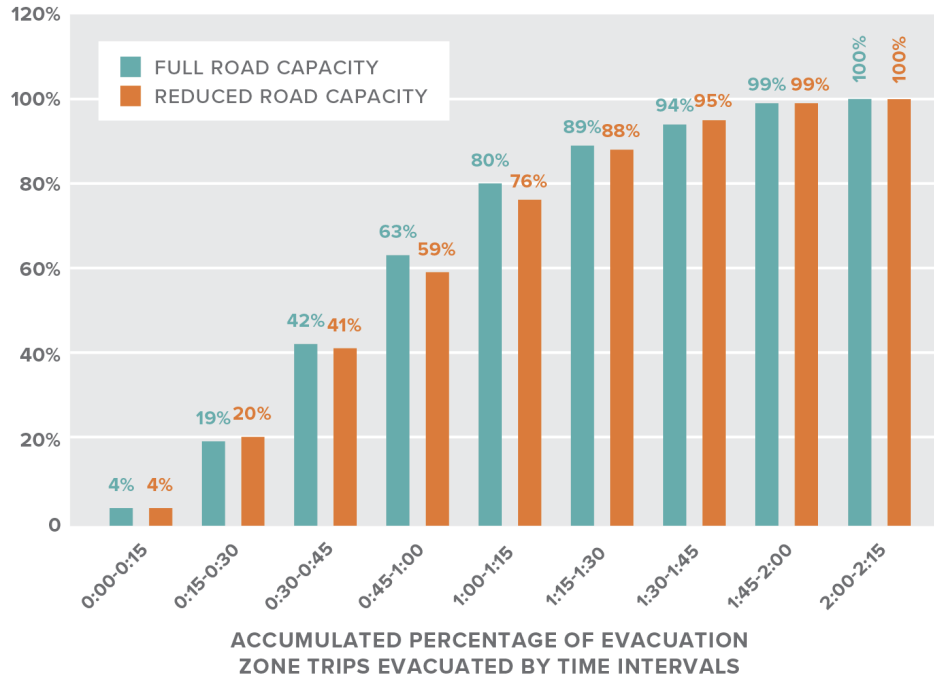


FIGURE 21. ACCUMULATED PERCENTAGE OF MARTINEZ CREEK EVACUATION ZONE TRIPS EVACUATED

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.

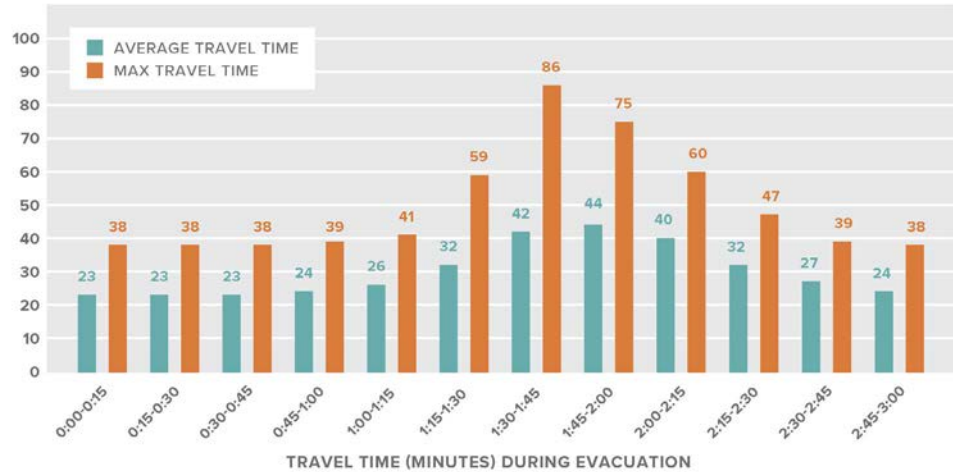


FIGURE 22. STUDY AREA EVACUATION TRAVEL TIME ESTIMATE FOR MARTINEZ CREEK FIRE SCENARIO (FULL ROADWAY CAPACITY)

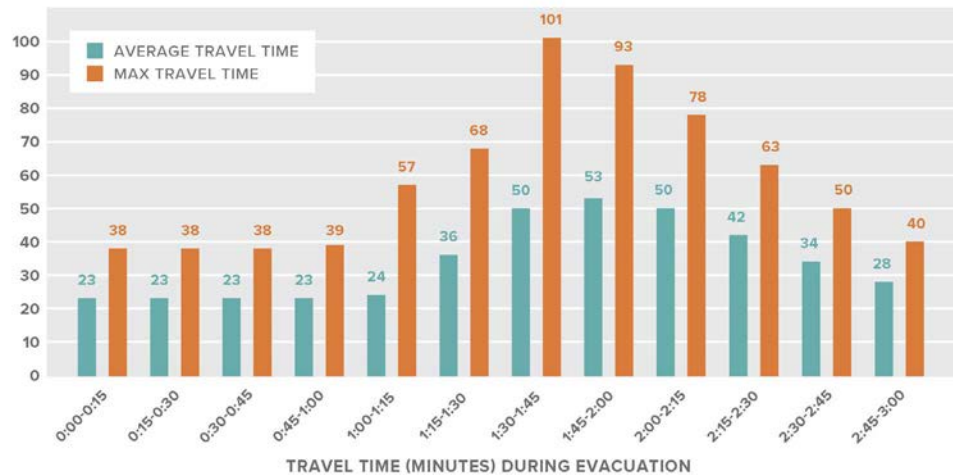


FIGURE 23. STUDY AREA EVACUATION TRAVEL TIME ESTIMATE MARTINEZ CREEK FIRE SCENARIO (REDUCED ROADWAY CAPACITY)

- 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.

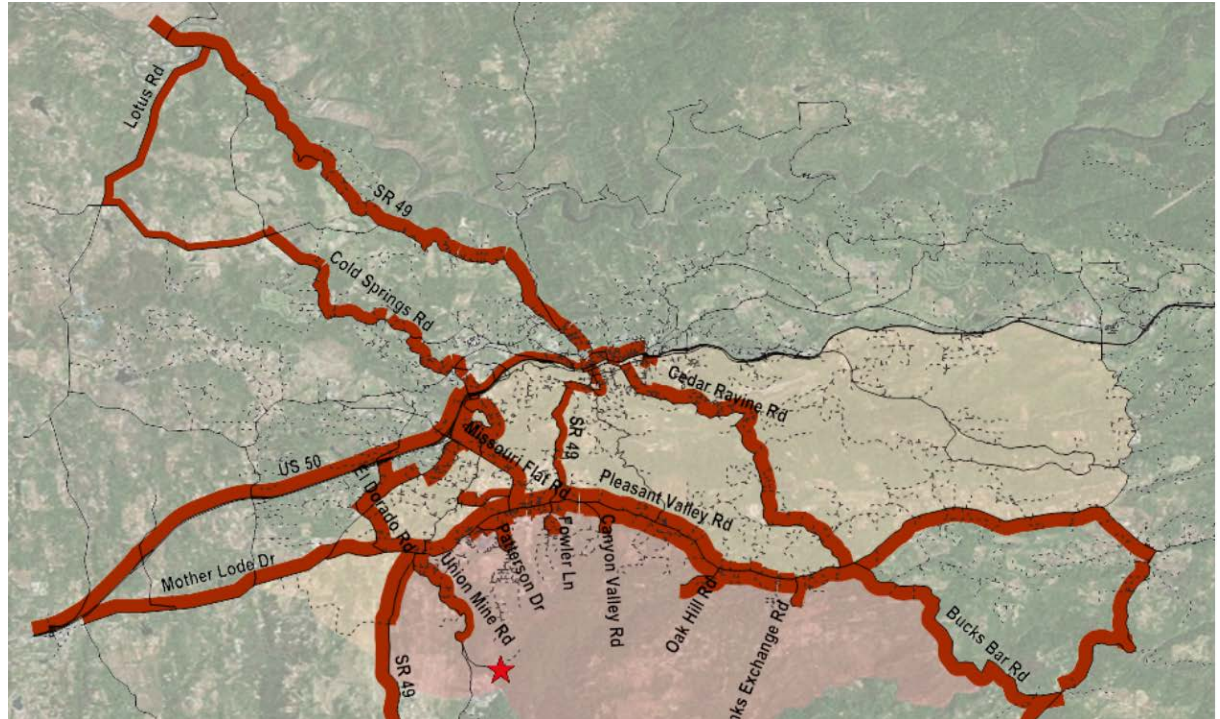


FIGURE 24. KEY EVACUATION ROUTES FOR MARTINEZ CREEK FIRE SCENARIO

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.

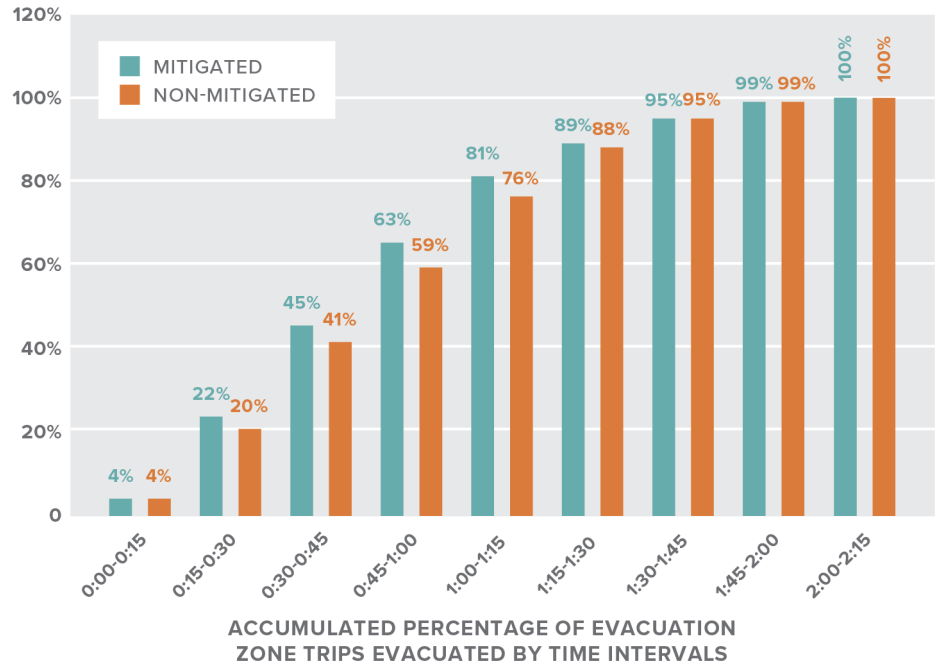


FIGURE 25. MITIGATED ACCUMULATED PERCENTAGE OF MARTINEZ CREEK EVACUATION ZONE TRIPS EVACUATED BY TIME INTERVALS

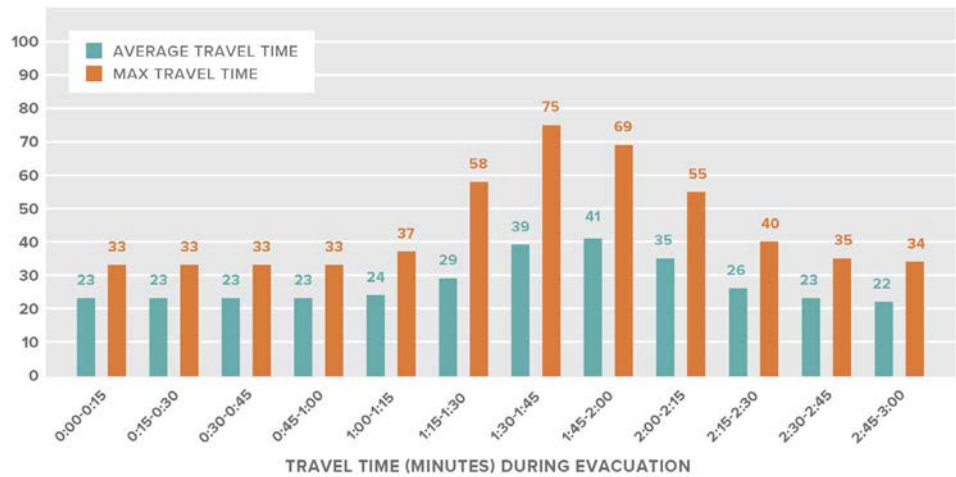


FIGURE 26. MITIGATED STUDY AREA EVACUATION TRAVEL TIME ESTIMATES FOR MARTINEZ CREEK FIRE SCENARIO (REDUCED ROADWAY CAPACITY)

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.

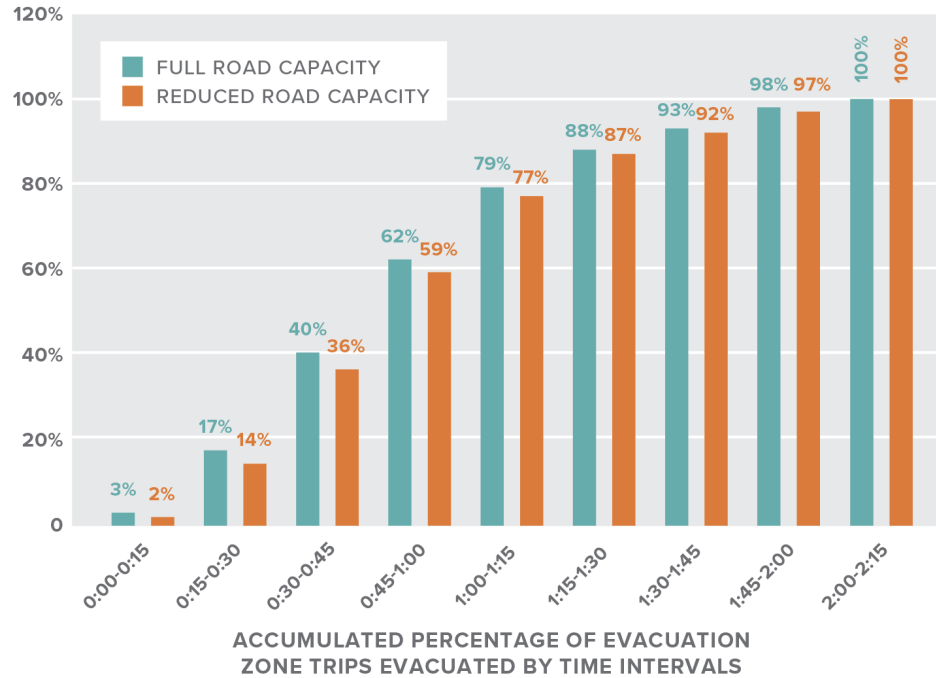


FIGURE 27. ACCUMULATED PERCENTAGE OF BUCKS BAR EVACUATION ZONE TRIPS EVACUATED BY

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.

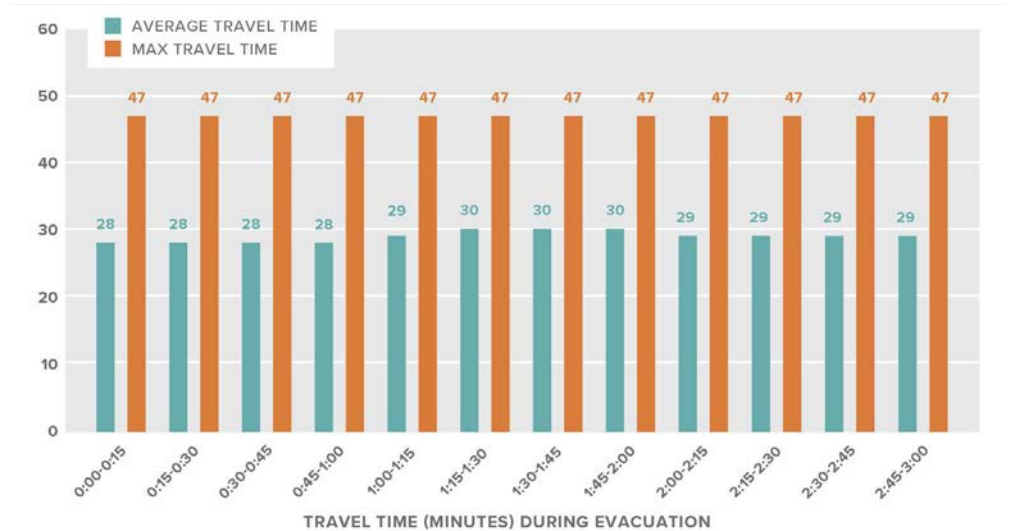


FIGURE 28. STUDY AREA EVACUATION TRAVEL TIME ESTIMATE FOR BUCKS BAR FIRE SCENARIO (FULL ROADWAY CAPACITY)

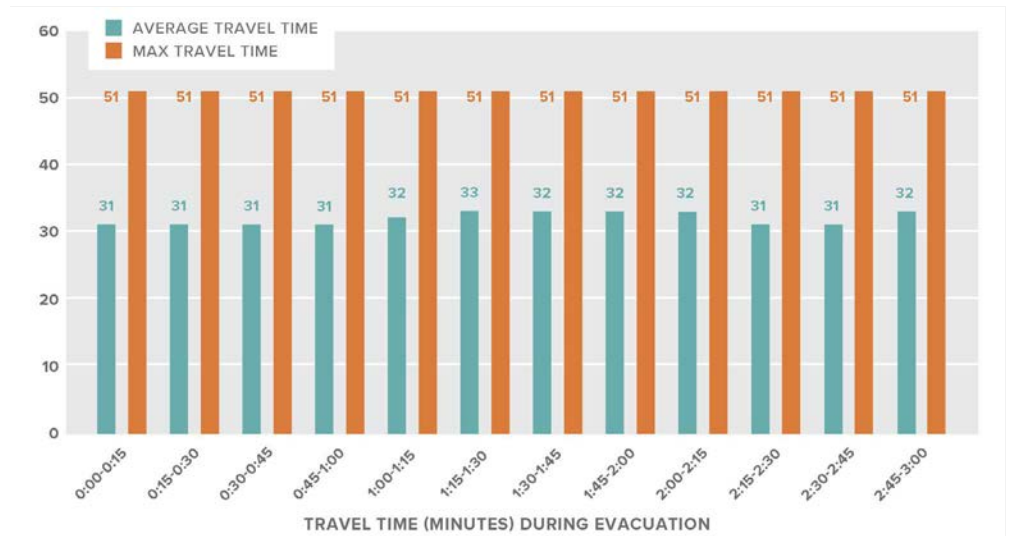


FIGURE 29. STUDY AREA EVACUATION TRAVEL TIME ESTIMATE FOR BUCKS BAR FIRE SCENARIO (REDUCED ROADWAY CAPACITY)

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

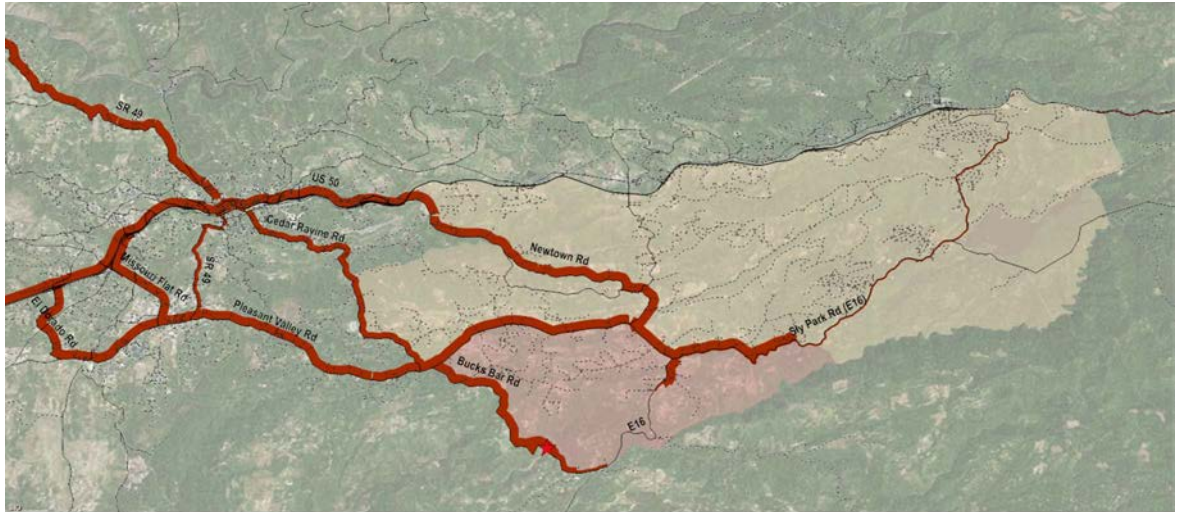


FIGURE 30. KEY EVACUATION ROUTES FOR BUCKS BAR FIRE SCENARIO

use Cedar Ravine Road and crosses downtown 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

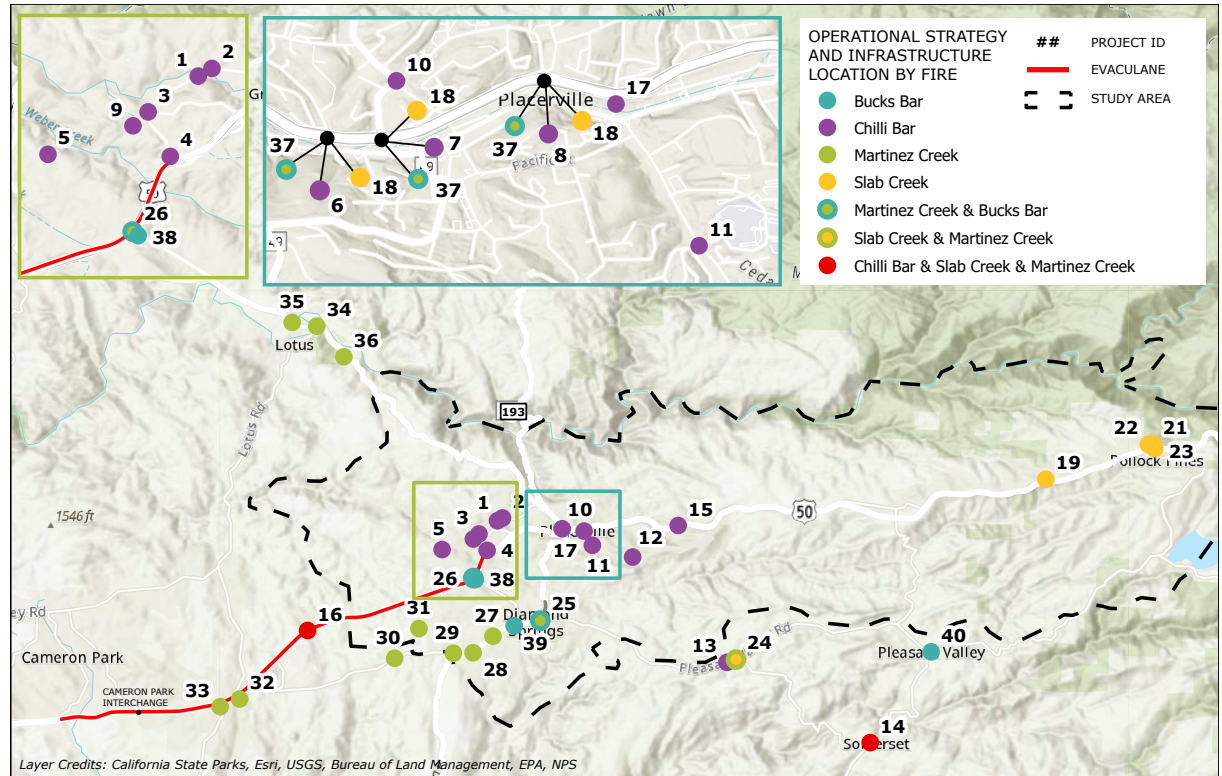


FIGURE 31. GREATER PLACERVILLE WILDFIRE EVACUATION OPERATIONAL STRATEGY AND INFRASTRUCTURE IMPROVEMENTS LOCATION MAP

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.

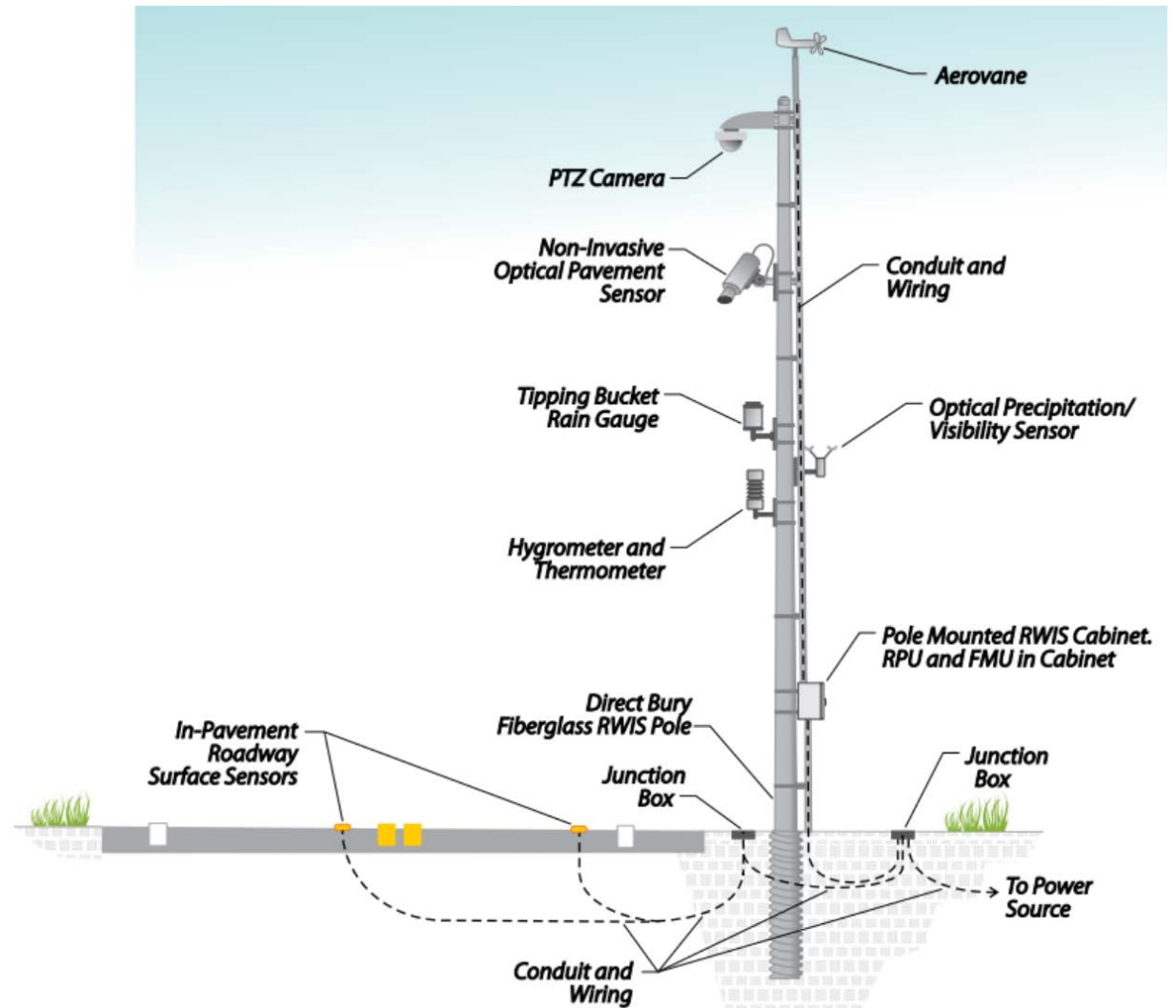


FIGURE 32. EXAMPLE ITS STATION WITH TRAFFIC AND WEATHER SENSORS



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	Advanced transportation technologies to improve emergency evacuation and responses by federal, state, and local authorities. (NOTE: Potential ITS including cameras at key project intersections)	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.	The federal cost-share is 80 percent; the applicant must supply the remaining 20 percent.
<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	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.	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.	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>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	Support surface transportation projects of local or regional significance.		

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.

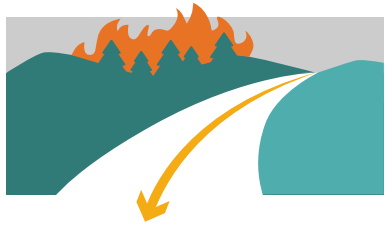
Many utilities are either at-risk for damage from wildfire and/or are a potential source of wildfire ignition. Examples of critical infrastructure include power, water, and communications utilities.

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

MAY 2024

Greater Placerville Wildfire
Evacuation Preparedness,
Community Safety
& Resilience Study

Final Report

DRAFT

APPENDIX

OUTREACH & ENGAGEMENT SUMMARY APPENDIX

GREATER PLACERVILLE WILDFIRE EVACUATION
PREPAREDNESS, COMMUNITY SAFETY, AND RESILIENCY
STUDY

APRIL 2024

PREPARED BY DKS ASSOCIATES FOR:

THE EL DORADO COUNTY TRANSPORTATION COMMISSION



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Executive Summary

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 Services
- 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

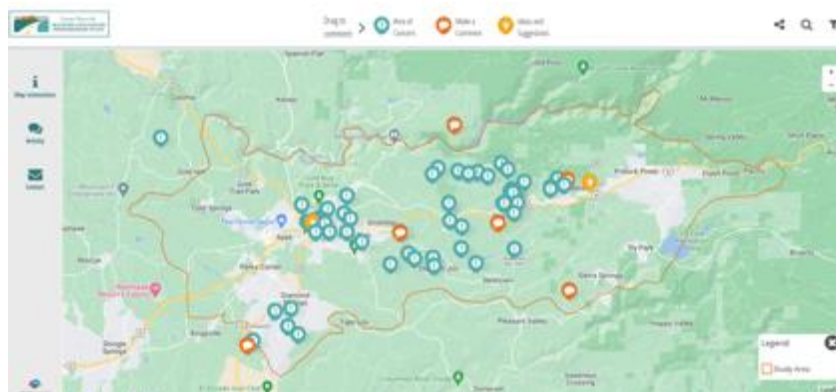
Four rounds of presentations were also made to local Fire Safe Councils and business interests to address specific concerns for their local communities. These included:

- 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 0 comments were received online in addition to those shared at the numerous meetings and workshops.

Social Pinpoint Map Outreach

To ensure comments were received throughout the project area, the project team created a Social Pinpoint map, an interactive mapping tool. This interactive mapping tool allowed participants to provide location-specific comments and include images for the project team to reference. Additionally, users were able to like or dislike the comments received. The interactive mapping tool was available for comment between March of 2023 through January 2024. The Social Pinpoint Map received a total of 67 comments.



All comments received are provided below with indication of agreements with the statements or not. Please note comments are exactly how they were entered by respondents and were not edited in any way.

Comment Type	Social Pinpoint Comment	Up Votes	Down Votes
Area of Concern	Westbound congestion impedes primary evacuation route on US 50.	0	0
Area of Concern	Signalized intersection adds to congestion concerns during an evacuation.	0	0
Area of Concern	Signalized intersection adds to congestion concerns during an evacuation.	0	0
Area of Concern	Substandard bridge to use during emergency response to the neighborhoods just north of US 50.	1	0
Area of Concern	South county evacuations are challenging with the narrow and winding route on Cedar Ravine.	0	0
Area of Concern	Congestion on US 50 leads to congestion on local roads, further hindering emergency response time.	1	0
Area of Concern	During peak congestion, Station 25 is unable to access eastbound destinations.	0	0
Area of Concern	If there's a fire in the north canyon, 49 and/or 193 will be severely impacted.	0	0
Area of Concern	This road doesn't really provide the through access towards south county that this map leads the viewer to believe.	1	0
Area of Concern	Mosquito is the only access in and out of Swansborough.	0	0
Area of Concern	There is no secondary way out of Camino Heights if there is a fire at the top by the freeway.	2	0
Area of Concern	There is a pocket community of 42 homes called Thompson Hill Road Association. Three main private single carriage roads: Los Robles, Boot Hill and Tai Pan. Primarily an older population some with limited mobility. Boot Hill and Tai Pan have only one way out in case of a fire on the hill that will be impossible to evacuate if the road is blocked by fire, fire vehicles, fallen trees, etc. High risk for shelter in place. County needs to implement an egress out of Tai Pan and Boot Hill.	0	0
Area of Concern	631 acre parcel of BLM land that is not being managed at all. Some of the property is a ridge top and could easily be cleared and maintained as a huge fire break in the area. Instead it is unmanaged by BLM and is a fire contributor in the area.	5	0
Area of Concern	Overgrown bushes and trees behind lake oaks mph. Site of union fire several years ago.	2	0
Area of Concern	I realized that this is outside the study area, but we have significant road issues along Sand Ridge Road that will make evacuation a potential disaster. The point marked has been the site of several recent cases of trucks getting stuck and will be VERY difficult to navigate successfully in an emergency. The road makes a very tight S curve between 2 trees with sharp drop on one side.	1	0

Comment Type	Social Pinpoint Comment	Up Votes	Down Votes
Area of Concern	What are the plans for protecting the densely packed historic Main Street area? There is no buffer between buildings. The hill behind the shops on the south side (Reservoir Street) is heavily tree'd with dry vegetation.	1	0
Area of Concern	I am concerned regarding the area where the proposed Dorado Oaks subdivision will be. There are not enough roads in the Deer park Subdivision or Fowler road to evacuate should there be a fire. Also the corporation that owns that land has made no fire mitigation clearing efforts. The grass is waist deep and the brush and down trees is a fire disaster waiting to happen.	2	0
Area of Concern	This intersection will cause backup on Pony express if an evacuation is needed east of the area. If a fire strikes traffic control should be implemented to allow smooth flow onto WB hwy. 50. This back up is demonstrated every winter when hwy. 50 closes or during apple hill season.	1	0
Area of Concern	This intersection will cause backup on snows road if evacuation is required from the south. Traffic control should be established if an event happens. This backup is demonstrated every school day especially at release time.	1	0
Area of Concern	Cedar grove is a big loop with no secondary exit routes. Any fire that starts near the bottom of the subdivision will quickly run through the community cutting off escape routes. Roadside trimming and secondary escape routes could be accomplished.	0	0
Area of Concern	This intersection could cause backup as areas north meet with areas east.	0	0
Area of Concern	Traffic will back up on mace road if an event happens as this is a main route that serves a large population that also meets a main route (pony express) that serves a even larger population.	1	0
Area of Concern	There is no other route out of this road. Birch road dead ends into yew woods. A potential solution would be to connect yew woods with birch court.	0	0
Area of Concern	Evacuation routes, number of Sr Citizens in the mobile home parks and how many are house bound	1	0
Area of Concern	Study area is too small it needs to include Hwy 49 down to Nashville. Moving the boundary would include many homes along Hwy49 including China Hill area and the Log Town area.	0	0
Area of Concern	Eskaton needs access to Barrett for evacuation safety.	3	0
Area of Concern	Lane and Wiltse have only one way out	0	0

Comment Type	Social Pinpoint Comment	Up Votes	Down Votes
Area of Concern	This is regarding a PG&E access road that connects Newtown Rd to Fort Jim, called Grandma’s Heaven, on some maps. Our address is 4550 Newtown Road, and our portion is groomed. Beyond us, to Fort Jim the road runs through the Weaver’s property and it is not maintained and, in an emergency, will not be ready for evacuations. The road empties out at the Davies Family Inn, on Ft Jim.	7	0
Area of Concern	Jim Valley Rd. is heavily overgrown and needs a road clearance fuel reduction project.	11	0
Area of Concern	Miller Way is incorrect on this map. It does connect to Clay Street AND it also connects on the left to a private road where there is a residence at the end of the road. We do have a large turnaround in our driveway and good defensible space.	0	0
Area of Concern	The neighborhoods of Camino Heights and Camino Hills has only one way out in an emergency. This one way out has been further complicated by the divider on the freeway. While the divider allows for safer travel, it does create a problem in a disaster. I would love to see a contingency plan for evacuation of those neighborhood up to and including a second egress.	3	0
Area of Concern	Our subdivision, Audubon Hills, has many undeveloped property lots with dead and fallen trees and overgrown brush that needs to be cleared out. How do we get vacant property owners to clear their properties for the rest of the occupied owners' safety????	1	0
Area of Concern	What are evacuation plans should a wildfire start during October weekends during apple hill. I live just above High Hill ranch and cannot get out of my road on most Saturdays and Sundays in October.	5	0
Area of Concern	DOT sprayed all vegetation on the side of road, and we have dead trees, bushes, etc. This is a fire danger and if evacuation is needed, flames will go across the road and cause damage to cars, and the fire will jump the road. The road needs to be cleaned as this is a danger to the community and is our way out.	3	0

Comment Type	Social Pinpoint Comment	Up Votes	Down Votes
Area of Concern	Snows road from Newtown to Carson=MAJOR concern. It is narrow, winding, riddled with potholes, has only two lanes, steep cliffs that need to be shored up plus safety rails added & is only way out for many. Big-rigs often stuck/block egress-should be prohibited. Many seniors live in Rancho del Sol POA community. Emergency exit roads lead back to Snows or other narrow mountain roads. Without advance notice to evacuate during Caldor or if big-rig blocking, Snows would have been disastrous. Please go	4	0
Area of Concern	The potholes in this location are so bad that drives go into the other lane to avoid them, and it is on a blind corner. Very unsafe! Thank you	1	0
Area of Concern	There is a HUGE ditch on the edge of the pavement that people drive into at night and when it snows it is invisible and cars get completely stuck. It is right at the edge of the restaurant entrance, so it is a very busy area,	1	0
Area of Concern	N. Canyon Rd. is one of the worst and Apple Hill. Its neglect from DOT is concerning. It's an imperative road of Apple Hill and in the middle of a fire zone by which we need roads in good condition.	1	0
Area of Concern	North Canyon is a critical and potentially only escape route for many, many families in the event of a fire. There are lots of areas with dense brush that would cause rapid fire to spread if not mitigated.	3	0
Area of Concern	Gate at a road connecting to Chrome Ridge rd. off Pleasant Valley Rd that would provide secondary evacuation route from Ft Jim and Jim Valley rd. off Newtown to pleasant valley rd. and vice versa in a single access area	14	0
Area of Concern	Unmaintained portion of Jim Valley road connecting to Fairover dr in Texas Hill estates off Jim Valley and Fort Jim Rd that would provide secondary evacuation route from Ft Jim and Jim Valley rd off Newtown to Fairover rd and Texas Hill Estates and vise versa in a single access area. Texas Hill estates is a one way in and out community	11	0
Area of Concern	Locked gate connecting to Fairover dr and Texas Hill Rd in Texas Hill estates directly to Newtown Rd that would provide secondary evacuation route off Newtown to Fairover rd and Texas Hill Estates and vise versa in a single access area. Texas Hill estates is a one way in and out community	3	0

Comment Type	Social Pinpoint Comment	Up Votes	Down Votes
Area of Concern	most of Jim Valley Rd is unmaintained with heavy tree shady hanging over the road. At times it becomes impassable during winter storm/rains. It is one lane with few turnouts. Basic maintenance to the road- proper grading and/or chip seal with widening for turnouts can improve access/egress for all (including Texas Hill Estate residents as a secondary fire exit) and lessen fire spread.	7	0
Area of Concern	Holm Rd. off P.V. Rd. is one way in, one way out unless gate between W. & E. Ridgewood Dr. is open and available to residents from Chrome Ridge, Ridgewood, lower Holm Rd. and below.	1	0
Area of Concern	Residents of 4220 Barbara's Court frequently place vehicles and other large items the 25' community emergency access granted to this neighborhood on July 6, 2023 by the residents of 4201 Barbara's Court on their land. Concerned neighbors are currently coordinating with Cal Fire and civil enforcement avenues to ensure full, unobstructed access.	2	0
Area of Concern	DOT sprayed vegetation throughout Cable Road that is currently creating high-fire risk fuel build-ups along this low-access roadway. Request DOT clean-up of this vegetation debris prior to the 2023 winter snow season and the 2024 fire season.	3	0
Area of Concern	As already mentioned, DOT sprayed existing vegetation on both sides of road, let it die, but never returned to remove all dead bushes and other once green vegetation. This is found throughout the greater Camino area and should have been addressed months ago, but was not. DOT was very irresponsible, not only creating an eye sore, but also a very volatile fire issue. Response to this problem is or should have been mandated way before this ongoing study began.	0	0
Area of Concern	The intersection of Pacific St with Cedar Ravine has no traffic controls. The traffic backs up on Pacific St during school dismissal times and shift change times for Marshall Hospital. In any emergency situation, this becomes a problem moving people out.	0	0
Area of Concern	Paydirt Drive is a one way in one way out. Although the map shows a connection at the end to Texas Hill Rd, it is only a walking trail and as exists vehicles could not get through.	0	0

Comment Type	Social Pinpoint Comment	Up Votes	Down Votes
Area of Concern	During apple season, traffic backs up for ages in both directions down Carson Rd, even under the highway and through the new traffic circle. This is not only annoying, but potentially dangerous, especially since apple season often coincides with fire season. If residents needed to evacuate, we might not be able to because the road is clogged with tourists and there are no traffic controls. Additionally, ambulance and fire truck access would be impaired during any kind of emergency.	0	0
Area of Concern	Excessive fuels from old tree farm along with dense blackberries along evacuation route for residences of Apple Tree Lane.	0	0
Area of Concern	Excessive fuels all along Cable Road evacuation route on both the east and west sides of the road. Not only is this a risk for evacuee's it poses a major threat to Cal Fire's command center on the ridge above.	0	0
Area of Concern	Excessive fuels along Audubon Drive evacuation route.	3	0
Area of Concern	No secondary emergency egress route from the entire subdivision of Audubon Hills. One mile or more dead end road with heavy fuels on main evacuation route. Many home and vacate lot property owners have excessive fuel loads on site. There exists a home owners association that could deal with these issues and become a model for other subdivisions in EDC.	3	0
Area of Concern	Excessive fuels in canyon leading up from the American River drainages to residences in Camino; out on Apple Vista Lane, Apple Tree Lane, Hartwick Dr., Larsen Dr., Cable and Copperton Roads. These areas have not burned in over 70 years or more. While SMUD and PG&E cleared their respective ROW's there remains an excessive amount of fuel below the residences. Additionally this area if engulfed would spread up canyon and across Cable threatening Cal Fires Command Center on Mt. Danaher.	2	0
Area of Concern	Heavy dense fuels on each side of Highway 50 evacuation route.	0	0
Area of Concern	Absentee owners have heavy fuel loads on their properties.	1	0
Ideas and Suggestions	Work with DOT and Cal-Trans to install fiber to connect all three lights in Placerville to allow them to work together to reduce congestion. This would also allow the lights to be turned to green if evacuation was needed from the east.	2	0

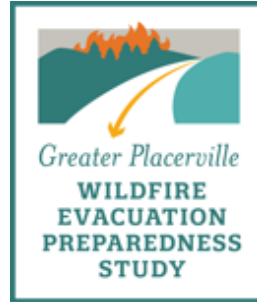
Comment Type	Social Pinpoint Comment	Up Votes	Down Votes
Ideas and Suggestions	utilize traffic control here during an evacuation to usher WB residents onto hwy. 50 to relieve downhill stress on pony express.	0	0
Make a Comment	Cedar Grove is essentially a loop with Alder Dr and Wandering Way providing the only escape routes. At one point (Near Monte Vista Wy) Alder Drive and Wandering Way are only 1,000 feet apart. Any fire in that area would essentially trap every resident north of that roadway	1	0
Make a Comment	Adding 500+ homes in the El Dorado/Diamond Springs area is setting us up for disaster! We do not have efficient roads now!	3	0
Make a Comment	The study area is too small of an area. As we witnessed during the Caldor Fire many communities not in the fire path were impacted by traffic, temp lodging, emergency personal etc. Study needs to account for the influx of displaced residences on major as well as alternate travel arteries etc. throughout our County. Today we still see the impacts of the Caldor Fire with logging trucks using our narrow 2 lane roads.	1	0
Make a Comment	Cable Rd being a major route through Camino is overgrown with vertical clearances as low 12ft. Vehicles constantly hit these obstacles. DOT could care less about the conditions much less do something about it. Our safety is at stake.	0	0
Make a Comment	Why are you excluding this area? It borders the affected areas and will be subject to the same evacuation routes and resources available to protect life and property.	2	0
Make a Comment	Evacuation for the end of Texas Hill estates out to Newtown would take less than a minute without this gate on Big Barn Rd off Newtown. It is approximately a quarter mile. The gate should remain open or be removed.	3	0
Make a Comment	On July 6, 2023, a 25' emergency access easement was granted to the residents on Barbara's Court by the owners of 4201 Barbara's Court (EDC Recorder: DOC# 2023-0018611). The easement includes part of a 1933 logging road that is now a secondary emergency outlet for this one-way community. An easement on the same land to give access to Cal Fire's Amador/EDC HQ is in progress; Cal Fire is also surveying adjacent parcels for additional easements that will enlarge the access area for emergency use.	1	0



Collateral Outreach Materials

PROJECT LOGO

A project logo was developed by DKS to help the community easily identify the project during the outreach efforts.

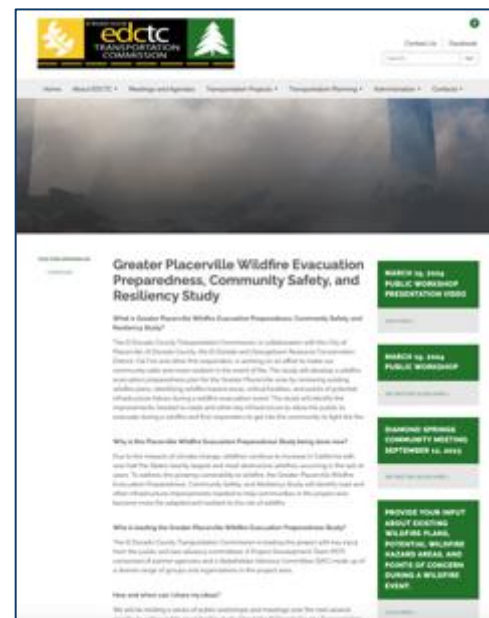


This logo was used throughout all outreach efforts including all collateral outreach materials, the project website landing page, and outreach emails.

PROJECT WEBSITE LANDING PAGE

A project specific website landing page was developed and maintained by EDCTC staff to consolidate all project related information, materials, and event information in one place for outreach efforts and for the public to utilize. The website landing page (<https://www.edctc.org/greater-placerville-wildfire-evacuation-preparedness-community-safety-and-resiliency-study>) included the following information:

- Project overview.
- Ways to get involved.
- Social Pinpoint.
- Frequently asked questions.
- Contact information for comments, questions, and to sign-up for project updates.
- Meeting Documents associated with the project.



The project website link was promoted in all outreach efforts.

BILINGUAL INFORMATIONAL CARDS

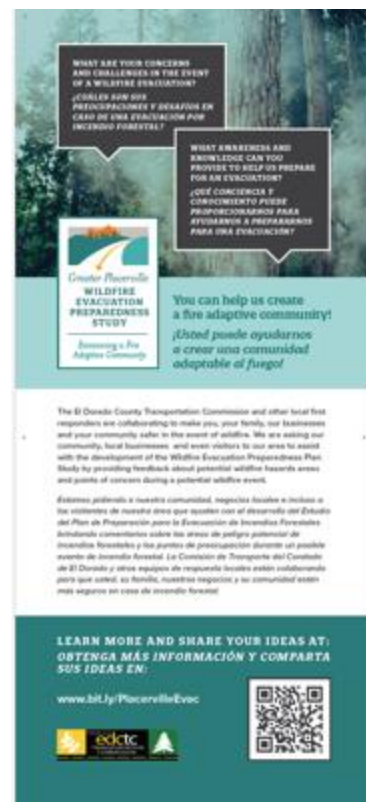
Bilingual informational cards were developed to inform and encourage community members to visit the project website for more information. The bilingual informational cards included the project logo, links to the survey and project website, as well as QR codes for these sites.



These informational cards were distributed during the pop-up events, workshops and community meetings.

BILINGUAL PULL-UP BANNER

A bilingual pull-up banner was developed to inform and encourage community members visit the project website for more information. The bilingual pull-up banner included the project logo, and a link and QR code for the project website. The pull-up banner was displayed at the pop-up events and community workshops.



BILINGUAL FAQ

A bilingual Frequently Asked Questions (FAQ) document was created to further inform the community on the project.

FLYERS

To inform the community of the workshops and events, bilingual flyers were created and distributed to project partners and the public.



Community Outreach Efforts

SOCIAL MEDIA

A series of social media posts promoting workshops, availability of website mapping tool and the draft plan were created for EDCTC's social media accounts in English and Spanish.

Posts were created May 17, 2023, September 2, 2023, October 26, 2023 and March 19, 2024 and deployed via Facebook, Twitter and NextDoor.



COMMUNITY MEETINGS AND WORKSHOPS

Community meetings held in connection with local Fire Safe Councils provided the project team the opportunity to connect directly with local community members in their own neighborhoods to discuss local concerns and opportunities. These were held in two phases; first to identify key issues and challenges and second to share proposed solutions and strategies developed as part of the plan.



- Community Workshop #1 - May 17, 2023 (8 Attendees)
- Apple Hill Growers Virtual Community Meeting – September 11, 2023 (6 Attendees)

- Diamond Springs Fire Safe Council Community Meeting – September 12, 2023 (12 Attendees)
- Camino Fire Safe Council Community Meeting – October 26, 2023 (21 Attendees)
- Camino Faire Safe Council Community Meeting – February 20, 2024 (7 Attendees)
- Oak Hill Fire Safe Council Community Meeting – February 21, 2024 (40 Attendees)
- Community Workshop #2 Virtual – March 19, 2024 (12 Attendees)



COMMUNITY POP UP EVENTS

DKS and EDCTC staff attended four pop-up events to bring information about the study directly to the community:

- El Dorado County Fair, June 16, 2023
- Placerville Farmers Market, June 17, 2023
- Placerville Wildfire Safety Day Events, March 18 and 23, 2024

MAILER

A postcard will be sent to all homes and businesses in the project area in May of 2024 to advise them of the availability of the Final Study on the project website.