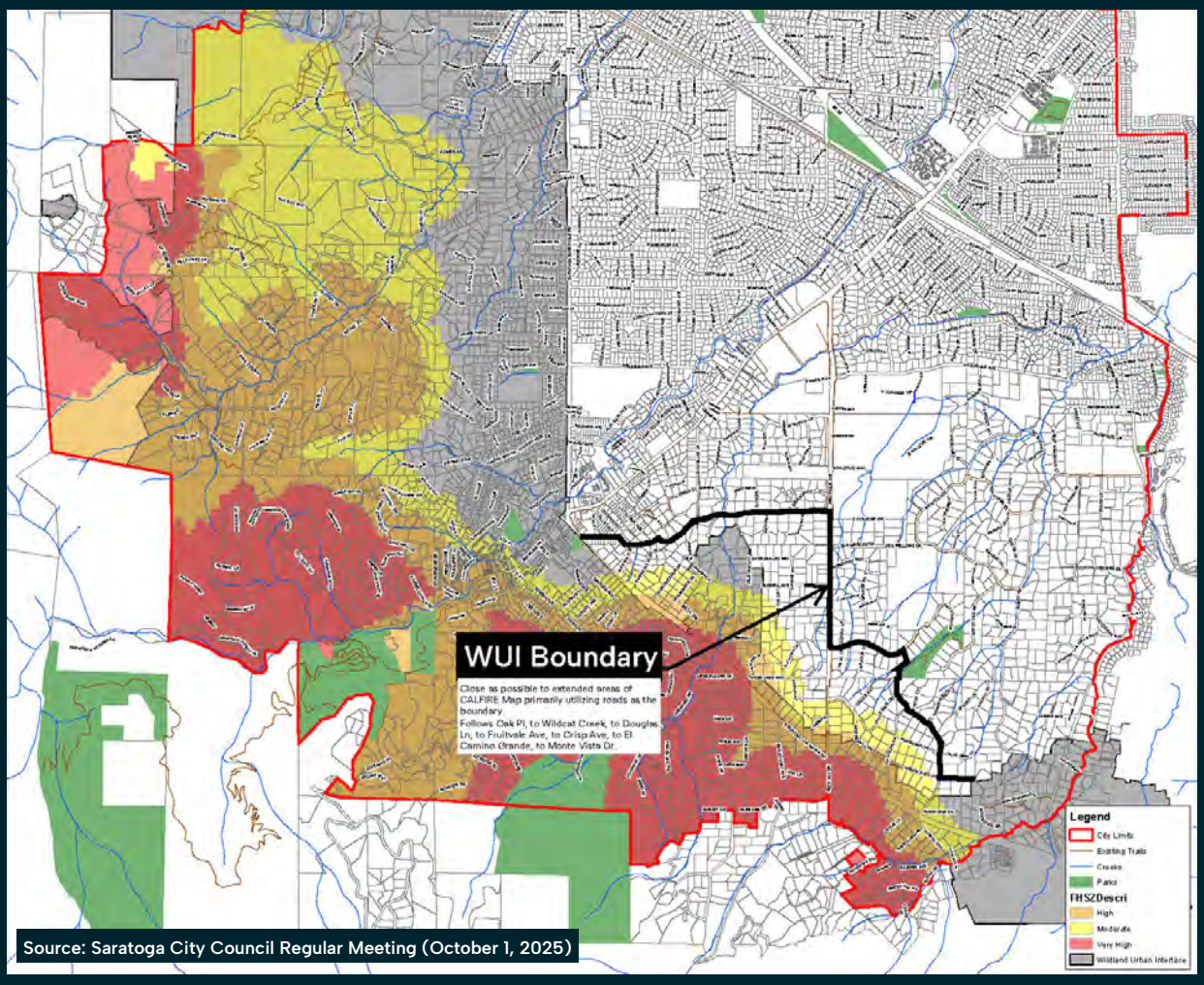
Fehr & Peers

Wildfire Evacuation Time Estimates:

Existing and Future Development Projections

Submitted to:
City of Saratoga

Submitted on:
May 2026



Source: Saratoga City Council Regular Meeting (October 1, 2025)

Fehr & Peers

Wildfire Evacuation Time Estimates: Existing and Future Development Projections

Prepared for:
City of Saratoga

Submitted:
May 2026

Table of Contents

1. Introduction 1

1.1 Study Purpose 2

1.2 Study Context 2

1.3 Wildfire Hazard 2

1.4 Project Description 3

1.4.1 Defining the Development Projections 4

2. Background 11

3. Approach and Methods 12

3.1 Identify the Wildfire Evacuation Scenario 12

3.2 Define the Evacuation Area 15

3.3 Define Evacuation Routes 17

3.4 Estimate Vehicle Trips 19

3.4.1 Existing Traffic Demand 19

3.4.2 Evacuation Demand Assumptions 20

3.4.3 Forecast Demand Estimates under Development Projections 23

3.5 ETE Metric and Methods 26

3.5.1 ETE Metric 26

3.5.2 Phases of Evacuation Process 26

3.5.3 ETE Methods 28

3.5.4 Vehicle Trip Evacuation Departure Time 28

3.5.5 Roadway Capacity 31

3.5.6 Speed Humps 32

4. ETE Assessment 33

4.1 Evaluating ETE 33

4.1.1 ETE for Development Projection A (Existing Conditions) 33

4.1.2 Development Projection B (Adding Pending Subdivisions within Evacuation Area) 34

4.1.3 Development Projection C (Adding Citywide and Adjacent Development) 35

5. Estimate of Average Evacuation Time for Residents 37

5.1 Development Projection A (Existing Conditions) 37

5.2 Development Projection B (Pending Subdivisions within the Evacuation Area) 38

5.3 Development Projection C (Citywide and Adjacent Development) 39

6. Strategies for Reducing Evacuation Time.....40
6.1 Existing Emergency Planning In Saratoga 40
6.2 Initial Workshop to Assess Strategies 43
6.3 Strategies to Reduce Evacuation Time..... 45
6.3.1 Feasible Strategies to Reduce Evacuation Time..... 45
6.3.2 Supply-Side Strategies..... 47
6.3.3 Demand-Side Strategies..... 47
6.3.4 Information-Side Strategies..... 47
6.3.5 Corridor Recommendations 48
6.3.6 Additional Considerations 49
Corridor 1: Saratoga-Sunnyvale Road E-2
Corridor 2: Saratoga Avenue..... E-6
Corridors 3 and 4: Pierce Road and Big Basin Way/Pierce Road E-10
All Corridors: Demand-Side Strategy E-16
Financial Feasibility E-18

Appendices

Appendix A. Evacuation Time Estimates Model Calibration and Validation
Appendix B. Socioeconomic Data
Appendix C. Model Inputs for Evacuation Time Estimates
Appendix D. Trip Distribution
Appendix E. Corridor-Specific Recommendations

List of Figures

Figure 1. Pending Subdivision in and Near the City of Saratoga 6
Figure 2. Housing Element Opportunity Sites 10
Figure 3. Flow Chart of the Approach for Evacuation Time Estimates 12
Figure 4. Evacuation Time Estimates Analysis Model Street Network 16
Figure 5. Evacuation Routes 18
Figure 6. Parts of the Evacuation Time Estimates 27
Figure 7. Percent of Population Beginning Evacuation Trip after Evacuation Order 30
Figure 8. Average Evacuation Time for a Resident by Departure Time for Development Projection A 37
Figure 9. Average Evacuation Time for Residents by Departure Time for Development Projection B 38
Figure 10. Average Evacuation Time for a Resident by Departure Time for Development Projection C 39
Figure 11. SB 99 Single Access Roads and Constrained Access Parcels 42
Figure 12. Corridors Evaluated During Feasible Strategies Workshop 44
Figure A-1. Model Validation Based on Hourly Traffic Count Data A-2
Figure A-2. Model Validation Based on Select Traffic Count Data Sites A-3
Figure B-1. Census Block Group and Census Tract Locations B-3
Figure B-2. Genasys Protect Zone Locations B-4
Figure B-3. TAZ Locations B-4
Figure E-1. Illustration of Contraflow Lane on Saratoga-Sunnyvale Road E-5

List of Tables

Table 1. Development Projection B 4
Table 2. Development Projections for Scenario C 7
Table 3. Applying the Wildfire Evacuation Scenario to the Development Projections 14
Table 4. Sources and Assumptions related to Vehicle Demand 21
Table 5. Development Projection A Estimated Population and Evacuation Demand (Existing Conditions) 23
Table 6. Development Projection B Estimated Population and Evacuation Demand (Existing Conditions with Pending Subdivisions within Evacuation Area) 24
Table 7. Development Projection C Estimated Population and Evacuation Demand (Existing Conditions with Citywide and Adjacent Development) 25
Table 8. Percent of Population Beginning Evacuation Trip after Evacuation Order 29
Table 9. Roadway Capacity per Hour per Lane 31
Table 10. Development Projection A Evacuation Time Estimates under Existing Conditions 33
Table 11. Development Projection A Subgroup Evacuation Time Estimates under Existing Conditions 34
Table 12. Development Projection B Evacuation Time Estimates 34
Table 13. Development B Subgroup Evacuation Time Estimates 35
Table 14. Development Projection C Evacuation Time Estimates 35
Table 15. Development Projection C Subgroup Evacuation Time Estimates 36
Table 16. Feasible Strategies to Reduce Evacuation Time 46
Table A-1. Collection Locations for Existing Traffic Demand A-2
Table B-1. Summary of Socioeconomic Data B-2
Table B-2. Equestrian Trailer Trip Demand Data B-5
Table C-1. Development Projection A: Land Use C-2
Table C-2. Household Vehicle Ownership Distribution – All Projections C-2
Table C-3. Development Projection A: Vehicle Trips by Vehicle Ownership Distribution C-3
Table C-4. Development Projection A: Evacuation Vehicle Demand C-4
Table C-5. Development Projection B: Land Use C-5
Table C-6. Development Projection B: Vehicle Trips by Vehicle Ownership Distribution C-5
Table C-7. Development Projection B: Evacuation Vehicle Demand C-6
Table C-8. Development Projection C: Land Use C-7
Table C-9. Development Projection C: Vehicle Trips by Vehicle Ownership Distribution C-7
Table C-10. Development Projection C: Evacuation Vehicle Demand C-8
Table D-1. Population & Evacuation Trip Distribution by Zone D-2
Table E-1. Saratoga Avenue Corridor Recommendations (Corridor 1) E-3
Table E-2. Saratoga Avenue Corridor Recommendations (Corridor 2) E-8

Table E-3. Pierce Road (Southern Half) and Big Basin Way Corridor Recommendations (Corridor 3) E-12
Table E-4. Pierce Road (Northern Half) Corridor Recommendations (Corridor 4) E-14
Table E-5. All Corridors – Demand-Side Recommendations E-17

1. Introduction

This report evaluates a hypothetical wildfire evacuation under different development projections in the City of Saratoga consistent with California Environmental Quality Act (CEQA) requirements. This report builds on the *Saratoga Evacuation Route Capacity Assessment* (Fehr & Peers, June 2025), which evaluated the capacity of City roadways during an evacuation. Specifically, this report builds on the previous study by assessing how proposed new development could affect evacuation time estimates (ETEs).[1] This analysis also identifies strategies to help reduce those effects.

To understand the potential impact of proposed and pending new development, this report studies the following three representative development projections:

- In "Development Projection A," the report provides evacuation time estimates from the evacuation area under Existing Conditions in the City. Projection A shows the current baseline situation in the City without any proposed or pending residential development.
- Next, in "Development Projection B," the report shows the influence on evacuation times of adding 725 pending subdivision units in the evacuation area. These units were proposed pursuant to state laws that limit the City's ability to require compliance with the General Plan and zoning for qualifying projects and so were not contemplated in the City's General Plan or the associated Environmental Impact Report (EIR). Development applications for these pending subdivisions are currently under review.
- Finally, in "Development Projection C," the report builds on Projection B and shows the evacuation times effect of adding an additional 1,498 residential units and 81 hotel rooms comprised of pending subdivisions outside the evacuation area, housing opportunity sites throughout the City, and nearby pending development in Santa Clara County. These units were similarly not contemplated in the City's General Plan or the associated EIR. The added Projection C units outside the evacuation area are modeled as contributing to background traffic on the roads rather than to the evacuating population.

For all three development projections, this report models and compares estimated evacuation times during a wildfire evacuation for the entire population of the evacuation area as well as for individuals within the evacuation area.

First, this study provides evacuation time estimates for each of these development projections during a wildfire evacuation. ETE estimates the time it would likely take for 90% and 100% of area residents to evacuate following receipt of an evacuation order. An ETE is useful for understanding how long it takes everyone in the evacuation area to evacuate. Given the number of variables that could affect an actual evacuation, an ETE is not a precise prediction of evacuation times under an actual evacuation scenario; rather, it provides an estimate of the likely order of magnitude of evacuation times.

Next, this study also estimates the average time it would take an individual to leave the evacuation area after receiving an evacuation order, measuring the time between receipt of the evacuation order and the individual leaving their home. This metric is useful for providing an estimate of how long it might take any one person to evacuate, as opposed to the entire population in the evacuation area.

[1] An evacuation time estimate is the time it would likely take for 90% and 100% of area residents to evacuate following receipt of an evacuation order.

1.1 Study Purpose

The following summarizes the purpose of this evacuation study:

- conduct traffic simulation of wildfire evacuation under alternative development projections;
- identify evacuation time estimates and bottlenecks on major evacuation routes based on simulation results;
- identify and inform development of evacuation strategies to improve road network evacuation time estimates during evacuations; and
- identify strategies to improve evacuation times.

1.2 Study Context

This study evaluates evacuation time estimates under certain development projections and should not be considered an evacuation plan. Emergency evacuations can be triggered by several events, and natural and man-made disasters can be as unpredictable as individual behavior related to evacuation events. As such, this assessment is intended to provide the City of Saratoga with a broad understanding of the transportation system during evacuations under certain development projections; it does not provide system adequacy guarantees, nor does it guarantee the findings are applicable to all situations. This assessment will help the City analyze impacts associated with development not contemplated in the City's General Plan.

Fehr & Peers has utilized existing methods in transportation planning that, based on our knowledge and experience, offer the most appropriate understanding of evacuation time estimates for evacuation events. Nevertheless, such methods reflect the current state of the practice in a field that is continually evolving. This analysis is informational only and is not intended as advice or judgment during an emergency situation. The analysis is not intended to take the place of an emergency plan for immediate guidance during an actual emergency event.

The City of Saratoga requested this study to aid in the environmental impact analysis of proposed developments under certain development projections. This assessment should help the City better prepare for those events, and Fehr & Peers has made every effort to ensure the accuracy, completeness, and usefulness of the information in this report. However, Fehr & Peers does not accept any liability for errors, omissions, or inaccuracies in the content nor for any actions taken based on this information.

1.3 Wildfire Hazard

The most common natural hazard in California is wildfire. These fires can burn large areas of land in a short amount of time. They often begin as smaller fires caused by weather related events such as lightning strikes and arcing or downed power lines during high winds or a seismic event. They are also caused by intentional, careless, or accidental human behavior such as unattended campfires, discarded smoking materials, vehicle fires, and even arson. During critical fire weather conditions (low humidity, high heat, and sustained winds) small fires may rapidly expand in size. The recent trend toward prolonged periods of drought increases the likelihood of wildfire.

Typically, wildfires pose minimal threat to people and buildings in urban areas. However, in suburban and rural areas the likelihood that wildfires will cause injuries, death, and/or property damage increases with human encroachment into natural areas. As such, there is a need to

effectively evacuate people from the hazard area to get them out of harm's way before and during a wildfire event.

The City of Saratoga's geographical location and proximity to the Santa Cruz Mountains creates a wildland-urban interface (WUI). The Federal Emergency Management Agency (FEMA) defines the wildland-urban interface as a transition zone between human development and unoccupied land with naturally occurring vegetation. "It is the line, area or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels."[2] Saratoga recently adopted an updated WUI map that defines the WUI boundary in the City. The WUI boundary encompasses CAL-Fire's Fire Hazard Severity Zones and extends slightly beyond those zones to enhance the City's resiliency to the fire hazards from nearby wildlands. The City Council adopted the updated WUI boundary during its October 1, 2025 public meeting.

Having a wildland-urban interface increases a community's risk of and susceptibility to wildfires. The presence of wildland-urban interface, coupled with the steepness and direction of topography, vegetation, and the potential for "Diablo" winds, increases the opportunity for wildfires to ignite, grow, and spread in the City. Historical fires near the City of Saratoga in the past six years include the 2020 CZU Lightning Complex fire to the southwest (San Mateo-Santa Cruz unit fire that covered 86,500 acres).

1.4 Project Description

This report studies how over 2,223 new residential units and 81 hotel rooms contemplated in and adjacent to Saratoga would affect community evacuation times during wildfire emergencies.

As described in greater detail below, the analysis in this report differentiates between residential units added within the evacuation area from those added outside the evacuation area. The evacuation area is defined as the set of geographic zones from which all people (residents, employees, equestrian population, and event attendees) are required to evacuate during a wildfire emergency scenario. For purposes of this analysis, the evacuation area consists of the Genasys Protect Zones[3] that overlap the City of Saratoga's WUI, as shown in the updated WUI map approved by the Saratoga City Council on October 1, 2025 (SAR-001, SAR-008 to 010, SAR-014 to 016, SAR-018 to SAR-019), and nearby Genasys Protect Zones in Santa Clara County (SAR-20, SCC-011, SCC-020, SCC-021, SCC-029, SCC-030).

In Development Projection C, the report also studies units added outside the evacuation area. In this development projection, such units contribute to background traffic during the evacuation but are not modeled as adding to the evacuating population.

[2] FEMA. (2021). US Fire Administration. *What is the WUI?*

[3] Genasys Protect is an evacuation management tool that helps communities and first responders plan, communicate, and conduct evacuations. It provides communications, situational awareness, and cross-agency coordination capabilities for emergency management. The platform delivers integrated hardware and software for proactive preparedness and multi-channel communication. Refer to Appendix B for the zone boundaries.

1.4.1 Defining the Development Projections

Development Projection A reflects the current evacuating population within the evacuation area.

In Development Projection B, the report models the influence of adding 725 pending subdivision units to the evacuating population within the evacuation area.

In Development Projection C, the report adds on to Development Projection B by modeling the impact of adding 139 units in the City's Housing Opportunity sites within the evacuation area, 256 units and 81 hotel rooms in the county within the evacuation area, 36 pending subdivision units in the City outside the evacuation area, and 1,067 units in the City's Housing Opportunity sites outside the evacuation area.

Table 1 shows the pending 725 subdivision[4] units inside the evacuation area.

Table 1. Development Projection B

Project	Number of Units	Land Use Size	Site Number
Pending Subdivisions in the City of Saratoga inside the Evacuation Area			
18580 Allendale Avenue	5 units	5-unit development consisting of 3 market-rate single-family homes and 2 detached accessory dwelling units	#1 in **Figure 1**
Chadwick Heights	96 units	96-unit development	#3 in **Figure 1**
Chester/Allendale (Vineyard One)	64 units	64-unit development consisting of 52 single-family detached units, and 12 accessory dwelling units.	#4 in **Figure 1**
19521 Douglas Lane (Application 1)	8 units	8-unit development	#5 in **Figure 1**
19521 Douglas Lane (Application 2)	48 units	20-unit single bedroom and 24 two-bedroom multi-family apartment development	#6 in **Figure 1** (at #5)
Marshall Lane	132 units	132-unit three-story townhome development	#7 in **Figure 1**
Mt. Eden	23 units	23-unit development consisting of 19 single-family homes and 2 two-unit duplexes	#8 in **Figure 1**
22200 Mt. Eden Road	7 units	7-unit development consisting of five single-family homes and 1 two-unit duet home	#9 in **Figure 1**

[4] The pending subdivisions in the City of Saratoga are "Builder's Remedy" units. From the City's website, the "Builder's Remedy" under the Housing Accountability Act (HAA) is applicable to jurisdictions in the State of California that did not have a compliant housing element adopted at the time the development application was submitted. *See* https://www.saratoga.ca.us/603/Builders-Remedy-Projects. In such cases, cities may not disapprove qualifying housing developments on the grounds of its inconsistency with standards contained in the City's General Plan or zoning code. See Government Code § 65589.5(d)(5). However, the HAA does not waive, or require the City to waive, any Saratoga standards. Those standards remain applicable to projects in other ways; for example, through the potential imposition of conditions of approval. See Government Code § 65589.5(f)(1). Under Assembly Bill 1893, however, projects that meet specific requirements are deemed consistent, compliant and in conformity with the General Plan, zoning, and other planning documents 'for all purposes.'

Project	Number of Units	Land Use Size	Site Number
14486 Oak Place	4 units	4-unit development consisting of 3 single family homes with 1 attached accessory dwelling units	#10 in **Figure 1**
12048 Parker Ranch Road	17 units	17-unit development consisting of 14 single-family and 3 accessory dwelling units	#12 in **Figure 1**
Pierce Road (Masson Estates)[1]	25 units	25-unit single-family development	#13 in **Figure 1**
12991 Pierce Road	28 units	28-unit development consisting of 22 single-family residences and 6 attached accessory dwelling units	#14 in **Figure 1**
14076 Quito Road	69 units	69-unit condominium/townhome development consisting of 55 attached three-story residential units and 14 units with accessory dwelling units	#15 in **Figure 1**
19765 Saratoga Los Gatos Road	9 units	9-unit development consisting of 7 single-family homes and 2 townhome units	#18 in **Figure 1**
13605 Surrey Lane (Application 1)	8 units	8-unit development consisting of 4 single-family homes and 4 attached accessory dwelling units	#19 in **Figure 1**
13605 Surrey Lane (Application 2)	44 units	44-unit development	#20 in **Figure 1** (at #19)
19761 Three Oaks Way	8 units	8-unit development with 6 single-family homes and 2 accessory dwelling units	#21 in **Figure 1**
Vickery Avenue	12 units	12-unit development	#22 in **Figure 1**
14575 Oak Street	2 units	Two apartment units from a remodeled single-family residence	#23 in **Figure 1**
Chester/Allendale	64 units	52 single family homes and 12 accessory dwelling units	#24 in **Figure 1**
14500 Fruitvale Avenue	52 units	52-unit development	#25 in **Figure 1**
Total	**725 units**		

Note:

1. Site #69 had an SB 330 application at the time the housing element was prepared. For this analysis, we reference the Pierce Road (Masson Estates) project description (#13) in **Figure 1**.

Source: Fehr & Peers, 2026.

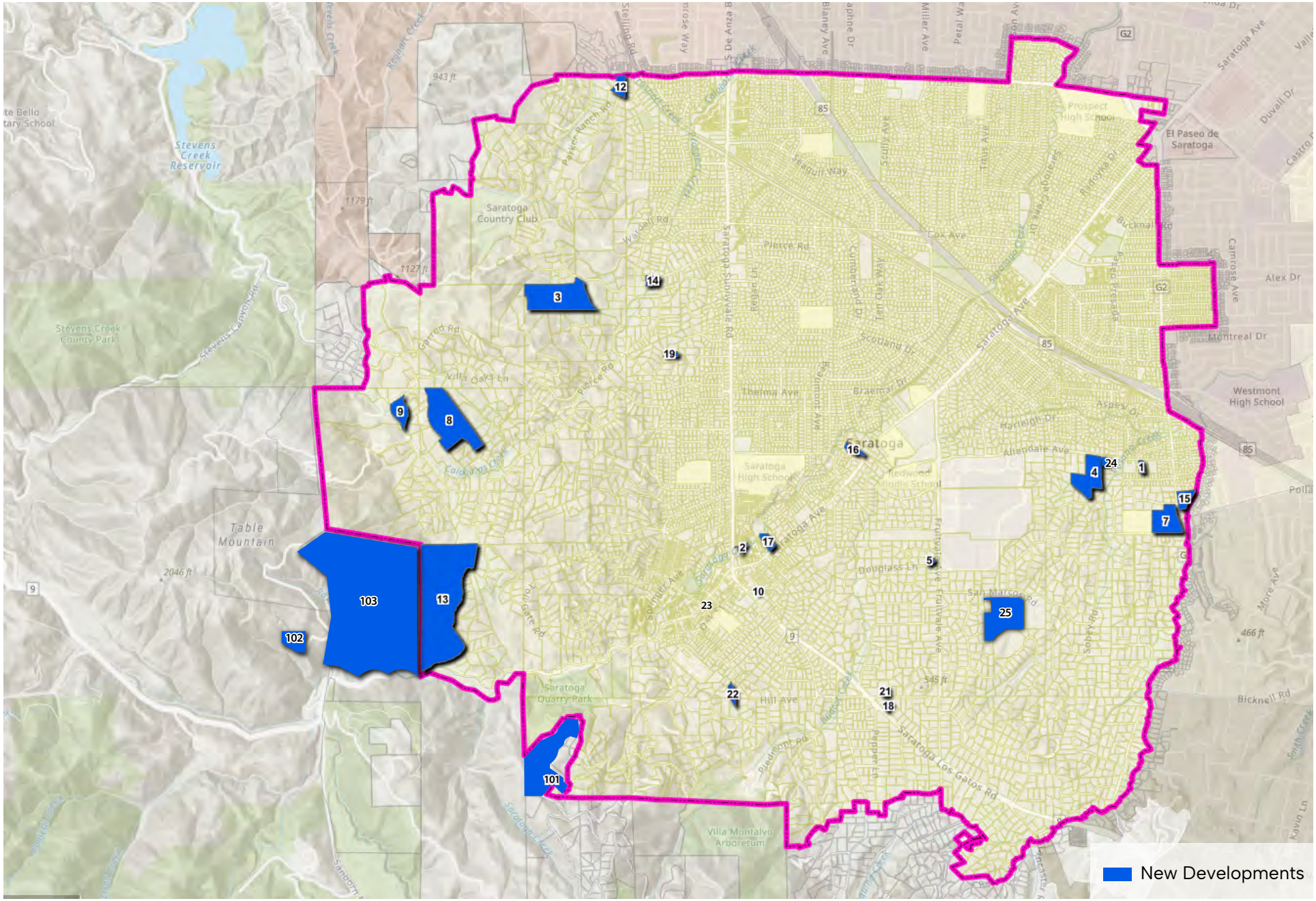


FIGURE 1

Source: https://experience.arcgis.com/experience/c2b6c4a90ce445a3837107c325835d7b
Accessed October 8, 2025
Fehr & Peers added #24 and #25, February 27, 2026

Pending Subdivisions in and Near the City of Saratoga

In addition to the units added under Development Projection B, Development Projection C studies the additional impact of adding the following residential units, shown in **Table 2**:

- Evacuating population within the evacuation area:
  - Housing opportunity sites in the evacuation area from the *City of Saratoga General Plan 2040: 2023-2031 Housing Element Update* (June 2024)[5] (139 Units)
  - Pending subdivisions in Santa Clara County[6] near the study area (256 units and 81 hotel rooms)
- Non-evacuating population outside the evacuation area (contributes to background traffic):
  - Pending subdivisions in the City of Saratoga outside the evacuation area (36 units)
  - Housing opportunity sites outside the evacuation area (1,067 units)

Table 2 summarizes the additional units added in Development Projection C.

Table 2. Development Projections for Scenario C

Project	Number of Units	Land Use Size	Site Number
Housing Opportunity Sites in the City of Saratoga inside the Evacuation Area			
Vacant land	39 units	39 dwelling units	#26 and 30 to #68 in Figure 6-2 in the Housing Element[1] in **Figure 2**
Non-Vacant Land: Fellowship Plaza housing site	80 units	Total capacity of 80 senior housing units	#70 in Figure 6-2 in the Housing Element in **Figure 2**
Non-Vacant Land: Wardell housing site	20 units	Total capacity of 20 single-family units	#94 in Figure 6-2 in the Housing Element in **Figure 2**
Total	**139 units**		

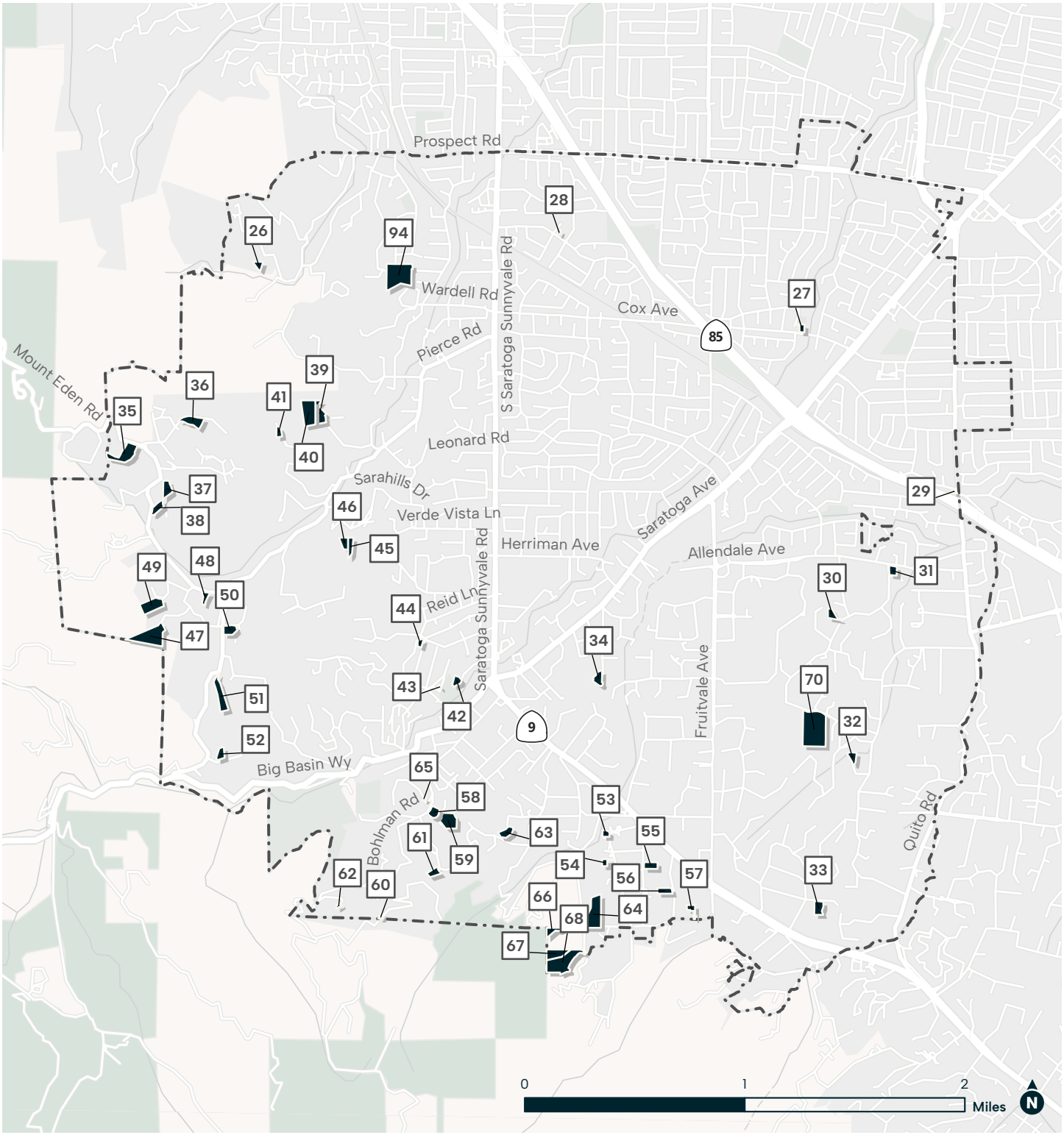
[5] Figure 6-2 Housing Sites Inventory, Table 6-7 Vacant Land Inventory, and Table 6-9 Non-Vacant/Under Utilized Land Inventory describe opportunity housing sites from the Housing Element. "The City of Saratoga's non-vacant/underutilized land resources total 62.5 acres of land and are anticipated to accommodate a total of 1,198 residential units of the City's RHNA."

[6] County of Santa Clara. Current projects in Saratoga. https://plandev.santaclaracounty.gov/services/planning-services/projects/current-planning-projects/current-projects-saratoga. Accessed October 10, 2025.

Project	Number of Units	Land Use Size	Site Number
Pending Subdivisions in Santa Clara County inside the Evacuation Area			
PLN25-085 – SB 330 application for a Tentative Map Subdivision and Grading Approval	18 units	18 single-family units	#101 in **Figure 1**
PLN23-225 – New House and Club House on Pierce Road	1 unit	2-story single-family residence and 2-story club house	#102 in **Figure 1**
PLN24-146 – 237 Residential Units on Pierce Road (Mountain Winery Expansion)	237 units and 81 hotel rooms	237-unit residential development (69 detached single-family residences, 39 triplex units, 129 multi-family units) and an 81-unit hotel	#103 in **Figure 1**
Total	**256 units 81 hotel rooms**		
Pending Subdivisions in the City of Saratoga outside the Evacuation Area			
20440 Arbeleche Lane	11 units	11-unit development consisting of 8 three-story town homes and 3 attached accessory dwelling units	#2 in **Figure 1**
13845 Saratoga Avenue	7 units	7-unit development consisting of 5 single-family homes and 2 accessory dwelling units	#16 in **Figure 1**
14285 and 14301 Saratoga Avenue	18 units	18-unit development consisting of 14 new single-family homes, 1 single-family home, and a 3-unit apartment building.	#17 in **Figure 1**
Total	**36 units**		
Housing Opportunity Sites in the City of Saratoga outside the Evacuation Area			
Vacant land	3 units	3 dwelling units	#27 to #29 in Figure 6-2 in the Housing Element[1] in **Figure 2**
Non-Vacant Land: Gateway north housing site	44 units	Total capacity of 44 multi-family units	#71 and #72 in Figure 6-2 in the Housing Element in **Figure 2**
Non-Vacant Land: Gateway south housing site	197 units	Total capacity of 197 multi-family units	#73 to #77 in Figure 6-2 in the Housing Element in **Figure 2**

Project	Number of Units	Land Use Size	Site Number
Non-Vacant Land: Saratoga Avenue housing site	344 units	Total capacity of 344 multi-family units	#78 to #82 in Figure 6-2 in the Housing Element in **Figure 2**
Non-Vacant Land: Village East housing site	69 units	Total capacity of 69 multi-family units	#83 to #88 in Figure 6-2 in the Housing Element in **Figure 2**
Non-Vacant Land: Prospect Lawrence housing site	410 units	Total capacity of 410 mixed use very high-density units	#89 to #93 in Figure 6-2 in the Housing Element in **Figure 2**
Total	**1,067 units**		

Source: Fehr & Peers, 2026.



Source: Saratoga General Plan 2040, Figure 6-2 Housing Sites Inventory

Saratoga City Limits Housing Opportunity Sites

FIGURE 2

Housing Element Opportunity Sites

Fehr & Peers

2. Background

This analysis is intended to support CEQA environmental assessments of proposed developments in Saratoga. To that end, the assessment evaluates evacuation impacts associated with proposed developments. CEQA requires agencies to evaluate wildfire evacuation impacts for projects located in fire-prone areas. A CEQA analysis must assess "any significant environmental effects the project might cause or risk exacerbating by bringing development and people into the area affected," including by locating development in wildfire-prone areas. CEQA Guidelines § 15126.2. Appendix G of the CEQA Guidelines, reinforces this requirement by including the following wildfire questions in the Environmental Checklist Form:

> ***WILDFIRE**. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:*
>
> *a) Substantially impair an adopted emergency response plan or emergency evacuation plan?*
> *b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?*
> *c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?*
> *d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?*

According to the State of California Office of the Attorney General, *Best Practices for Analyzing and Mitigating Wildfire Impacts of Development Projects Under the California Environmental Quality Act* (October 2022) ("Attorney General's Guidance"), CEQA evacuation modeling and analysis should evaluate the following (refer to page 10 of the Attorney General's Guidance):

- *Evaluation of the capacity of roadways to accommodate project and community evacuation and simultaneous emergency access.*
- *Assessment of the timing for evacuation.*
- *Identification of alternative plans for evacuation depending upon the location and dynamics of the emergency.*
- *Evaluation of the project's impacts on existing evacuation plans.*
- *Consideration of the adequacy of emergency access, including the project's proximity to existing fire services and the capacity of existing services.*
- *Traffic modeling to quantify travel times under various likely scenarios.*

The Attorney General's Guidance also encourages public agencies to assess and mitigate a project's evacuation impacts based on the potential need for large-scale evacuations, rather than relying primarily on shelter-in-place strategies (page 11 of the Attorney General's Guidance). The analysis that follows is shaped by this guidance and recent case law.

3. Approach and Methods

This analysis focused on transportation evacuation time estimates during a wildfire evacuation event. The following flow chart illustrates the steps in the process (refer to **Figure 3**).

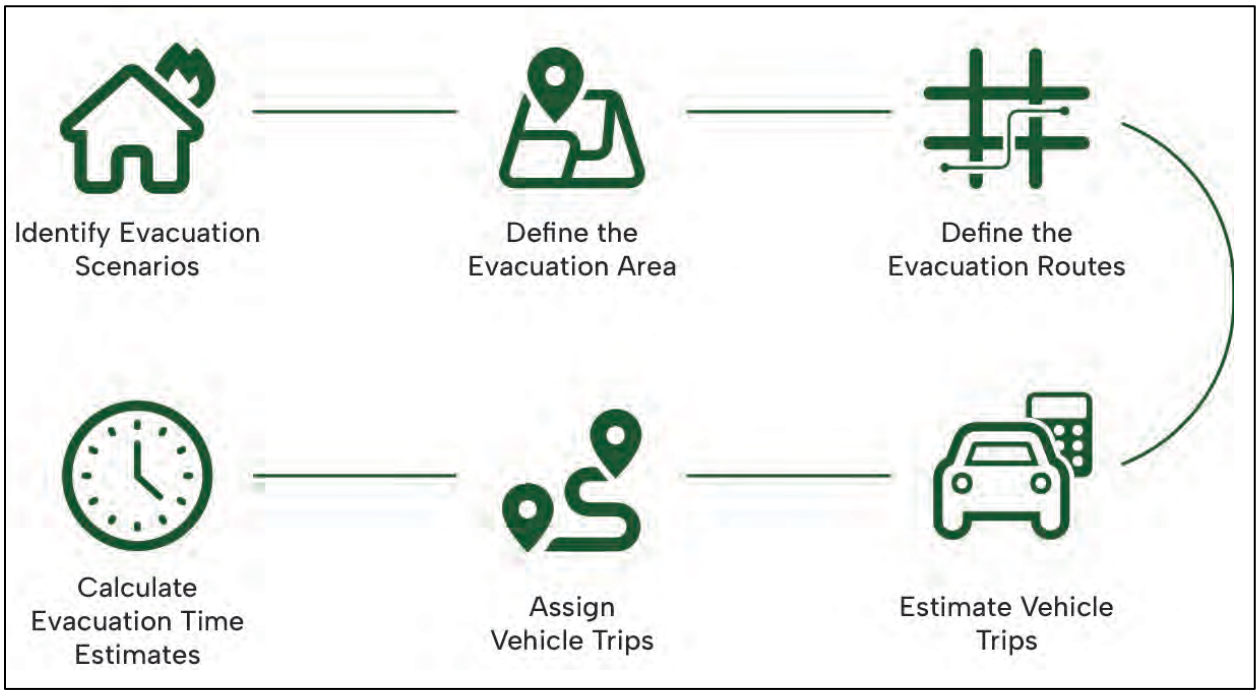


Figure 3. Flow Chart of the Approach for Evacuation Time Estimates

3.1 Identify the Wildfire Evacuation Scenario

Potential emergency events that could trigger an evacuation include natural hazards such as fires, flooding, and earthquakes, as well as person-made events like chemical accidents, toxic gas releases, and fire from industrial accidents. This report focuses on an evacuation scenario resulting from wildfire.

Fehr & Peers, staff from the City of Saratoga, and representatives of the Santa Clara County Fire Department met on Thursday September 25, 2025 to identify three development projections to be used for evaluating wildfire evacuation times in the City of Saratoga. The discussion considered wildfire vulnerability, as well as access limitations that may occur due to compounding hazards such as road closures along an evacuation route.

Based on historical fire events, this analysis assesses evacuation under a no-notice scenario in which a fast-moving wildfire forces evacuation with no advance warning. A no-notice scenario generally represents the greatest potential threat to life and safety during an evacuation.

The wildfire scenario was developed by City staff in consultation with Santa Clara County fire, sheriff, and emergency management officials.

Under the wildfire scenario, an evacuation order is assumed to be issued at 9 PM, requiring full evacuation of the evacuation area. 9 PM was chosen as the evacuation start time because most people are assumed to be at home at that time, resulting in near-peak population needing to evacuate. Consistent with guidance from the State Office of the Attorney General, this scenario assumes no evacuation population will "shelter-in-place." This scenario evaluates evacuation to the safe zone using the shortest path.

Table 3 applies the wildfire evacuation scenario to each of the three development projections. For each development projection, all parameters other than the number and location of evacuees are held constant. Thus, all three development projections assume a wildfire-triggered evacuation within the evacuation area at 9 PM on a Mountain Winery concert evening. All roadways are assumed to be accessible to evacuees, which include residents, employees, equestrian population, 2,500 attendees[7] and 82 employees from a Mountain Winery concert,[8] and 148 visitors plus 22 employees from House Family Vineyards.[9]

For all three development projections, the evacuation network is assumed to remain fully open, with no road closures due to downed trees, firefighting equipment, or other causes. In this sense, the analysis presents a best-case scenario. The evacuation times would increase in the event of road closures, but there is no reasonable way to predict the location or extent of such closures.

The only difference among the development projections is the number and location of households to be evacuated. The development projections are summarized below.

- **Development Projection A – Existing Conditions:** Under this development projection, the evacuees are the current residents of existing development within the evacuation area, plus employees, the equestrian population, and Mountain Winery event attendees.
- **Development Projection B – Adding Pending Subdivisions within Evacuation Area:** This development projection adds to the evacuees from **Development Projection A** additional evacuation demand from the pending subdivisions in the evacuation area (725 units identified in **Table 1**).
- **Development Projection C – Adding Citywide and Adjacent Development:** This development projection adds to the evacuees from **Development Projection B** additional evacuation demand from the housing opportunity sites in the City of Saratoga inside the evacuation area (139 units), and pending subdivisions in Santa Clara County near the City (256 units and 81 hotel rooms), plus the additional background demand associated with pending subdivisions in the City of Saratoga outside the evacuation area (36 units), and housing opportunity sites in the City of Saratoga outside the evacuation area (1,067 units). (**Table 2** identifies the 1,498 units and 81 hotel rooms.)

[7] https://www.mountainwinery.com/#:~:text=The%20nature%20of%20this%20intimate%202%2C500%20seat,experience%20for%20star%20performers%20and%20guests%20alike. Accessed October 13, 2025.

[8] The Mountain Winery | LinkedIn. Accessed October 13, 2025.

[9] Vehicle Miles Traveled (VMT) Evaluation for the House Family Vineyards Project in Saratoga, California, August 2024; Fehr & Peers.

Table 3. Applying the Wildfire Evacuation Scenario to the Development Projections

Parameter	Development Projection A (Existing Conditions)	Development Projection B (Development Projection A + Pending Subdivisions within Evacuation Area)	Development Projection C (Development Projection B + Citywide and Adjacent Development)
Hazard Type	Wildfire	Wildfire	Wildfire
Fire Origin	Hillside	Hillside	Hillside
Fire Spreading Direction	Northeast	Northeast	Northeast
Evacuation Order Time	9 PM	9 PM	9 PM
Evacuation Area[1]	Genasys Protect Zones[2] within the evacuation area	Genasys Protect Zones[2] within the evacuation area	Genasys Protect Zones[2] within the evacuation area
Road Closure(s)	All roadways open	All roadways open	All roadways open
Evacuees	Residents of existing development in the evacuation area, employees, equestrian population, and Mountain Winery event attendees	Residents of existing development and pending subdivisions in the evacuation area, employees, equestrian population, and Mountain Winery event attendees	Residents of existing development and pending subdivisions and housing opportunity sites in the evacuation area, employees, equestrian population, and Mountain Winery event attendees
Non-Evacuating Population (modeled as background traffic on roads at start of evacuation)	City and County residents outside evacuation area	City and County residents outside evacuation area	City and County residents outside evacuation area, residents of pending subdivisions and housing opportunity sites outside the evacuation area

Notes:

1. The evacuation area consists of the Genasys Protect Zones that overlap the City of Saratoga's WUI, as shown in the updated WUI map approved by the Saratoga City Council on October 1, 2025 (SAR-001, SAR-008 to 010, SAR-014 to 016, SAR-018 to SAR-019), and nearby Genasys Protect Zones in Santa Clara County (SAR-20, SCC-011, SCC-020, SCC-021, SCC-029, SCC-030).

3.2 Define the Evacuation Area

The study area includes the incorporated boundaries of Saratoga as well as adjacent access corridors that would play a role in evacuation and circulation. The study area includes the following three subareas that comprise the evacuation model boundaries:

- **Evacuation Area:** consists of the Genasys Protect Zones (**Appendix B**) that overlap the City of Saratoga's WUI, as shown in the updated WUI map approved by the Saratoga City Council on October 1, 2025 (SAR-001, SAR-008 to 010, SAR-014 to 016, SAR-018 to SAR-019), and nearby Genasys Protect Zones in Santa Clara County (SAR-20, SCC-011, SCC-020, SCC-021, SCC-029, SCC-030). **Figure 4** illustrates the evacuation area boundaries, which are designed to capture all at-risk populations and properties that may need to be evacuated in the modeled wildfire scenario.
- **Safe Area:** The SR 85 and SR 17 corridors in Saratoga serve as the safety boundary (refer to **Figure 4**). The evacuating population is considered to no longer be at immediate risk once they have crossed the boundary into the safe area.
- **Model Area:** includes the evacuation area and the safe area and additionally extends slightly beyond the safe area to capture key access points and roadway connections that affect evacuation demand flows.

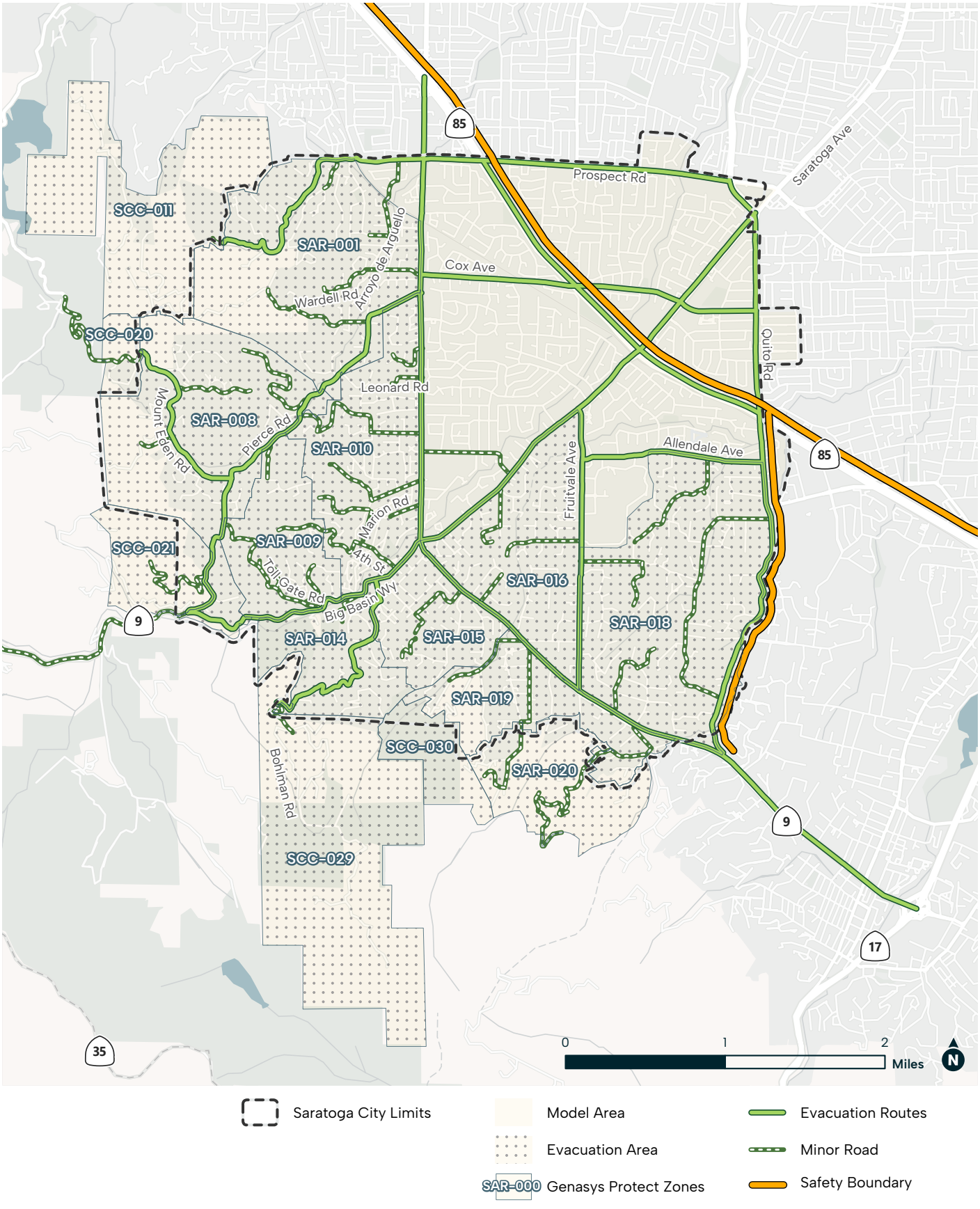


FIGURE 4

Evacuation Time Estimates Analysis Model Street Network

3.3 Define Evacuation Routes

The evacuation routes for the City of Saratoga and surrounding unincorporated areas are used to move evacuees to the safe area. Evacuation routes are the designated roadways and corridors that residents, employees, and other evacuees are expected to use to travel from the evacuation area to the safe area (SR 85 or SR 17) during a wildfire emergency. These routes are selected to provide the most direct paths out of the evacuation area, minimizing exposure to risk. This analysis assumes evacuees will use routes that provide the most direct path to evacuate from their point of origin to the safe area.

- The routes include both major and local roads within the City of Saratoga and adjacent unincorporated areas.
- The routes are used in the dynamic traffic assignment model to estimate evacuation times and identify potential bottlenecks.

Figure 5 shows City evacuation routes.

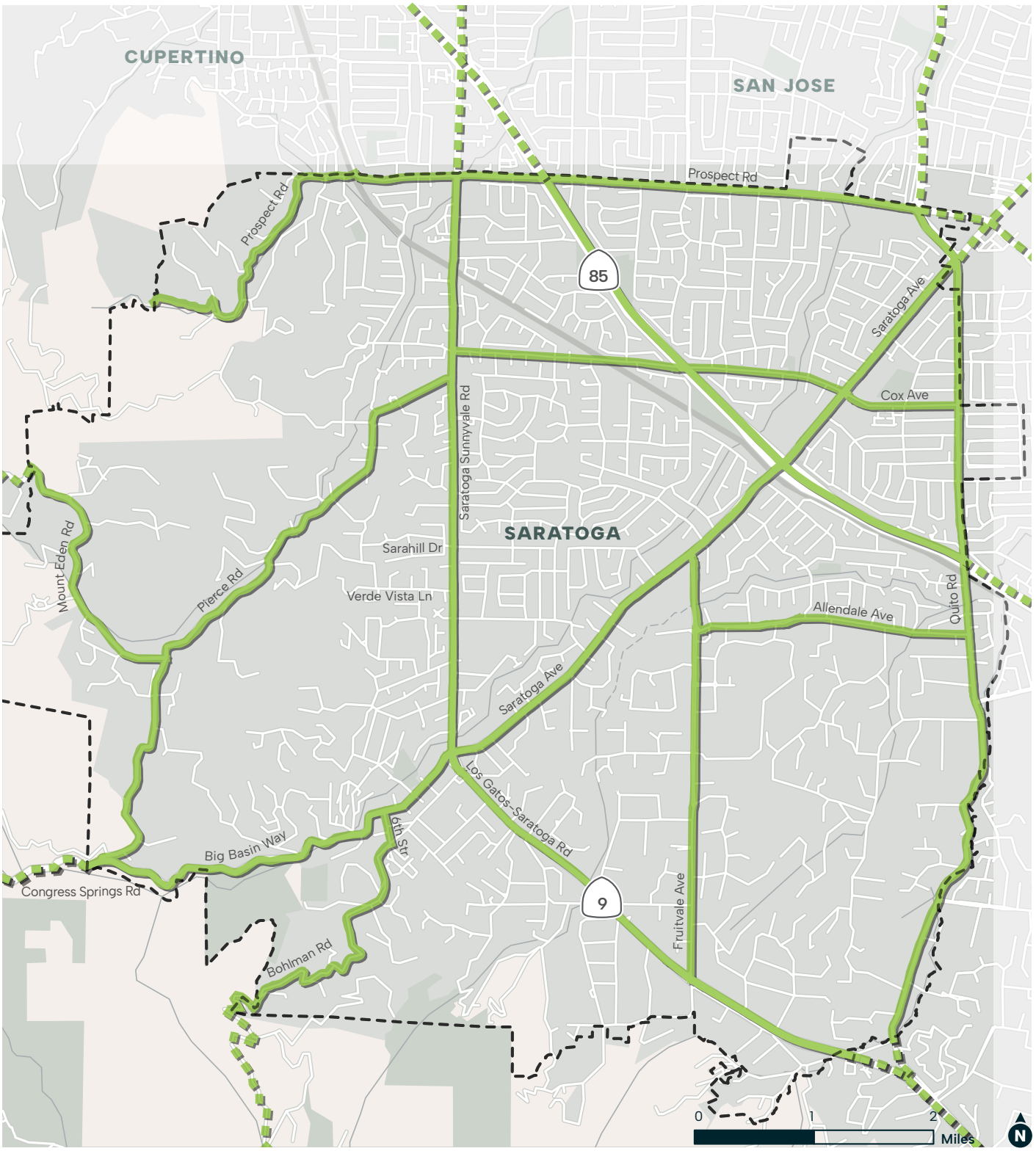


FIGURE 5

Evacuation Routes

\SJ25-2405_Saratoga_Evacuation_Impact_Assessment\Graphics\ADOBE\3_Impact_Assessment\Fig5_Evacuation_Routes.ai

Fehr & Peers

3.4 Estimate Vehicle Trips

Estimating vehicle trips is a critical step in evaluating evacuation time estimates because it establishes the demand placed on the roadway network during a wildfire evacuation. This section describes how existing traffic conditions and additional evacuation-related trips are quantified. The resulting vehicle demand estimates serve as key inputs to the evacuation modeling and ETE analysis.

The approach separates traffic demand into two components. First, existing background traffic is represented using observed roadway counts collected during late evening conditions that are consistent with the assumed evacuation start time. This background traffic is independent of an evacuation order and represents roadway conditions at the time an evacuation order is issued. Second, evacuation-related traffic demand is layered onto this baseline to reflect trips generated by residents, employees, equestrian trailers, and special event attendees who will respond to an evacuation order. This structure allows the analysis to distinguish between routine traffic already using the network and new trips triggered by the evacuation.

Existing traffic at the start of the evacuation order is assumed to remain on the roadway network and then diminish as access restrictions and behavioral changes occur.

The evacuation-related traffic demand estimates assume all populations within the evacuation area require evacuation, including visitors attending major events such as a concert at the Mountain Winery.

The analysis assumes that only the populations within the evacuation zones receiving an evacuation order will evacuate, and all other surrounding populations will remain in place. These evacuation zones are larger than the anticipated hazard area directly affected by a wildfire. In practice, some nearby populations may also begin evacuating once residents in nearby evacuation zones receive evacuation orders (a phenomenon known as "shadow evacuation"). However, because human behavior is unpredictable and there are too many unknown variables, this analysis makes a reasonable assumption for analysis purposes that only the populations within the evacuation zones will evacuate.

These assumptions are intended to provide decision-makers with a clear understanding of how the roadway system performs under stressed conditions.

Together, the methods described in this section provide a transparent and data-driven framework for estimating evacuation vehicle trips. The results form the foundation for subsequent modeling, calibration, and evaluation of evacuation times and network performance under the defined wildfire evacuation scenario.

3.4.1 Existing Traffic Demand

A travel model was developed to determine how vehicle trips affect the roadway network within the study area during evacuation. Existing traffic demand was measured from an analysis period between 8 PM to 3 AM using roadway volume counts from 2024 and 2025 collected on a non-concert evening. By comparing these real-world counts to roadway volume outputs from the model, we were able to ensure that travel model performance was reasonably accurate under existing conditions prior to our evaluation of various evacuation scenarios.

The travel model resulted in an existing demand matrix, which was calibrated to match observed volumes throughout the evacuation time period as well as the total volume at each location. The

analysis assessed 11 locations and hourly traffic count volumes from the model were within +/- 10% of observed volumes for each hour within the analysis period. Additionally, total volumes across the entire analysis period were within +/- 7% for each of the 11 locations. **Appendix A** provides detailed information regarding travel model calibration including data sources, count locations, and travel model volume comparisons.

3.4.2 Evacuation Demand Assumptions

The number of evacuation vehicle trips assigned to the roadway network is a combination of trips generated by residential households, employees, equestrian trailers, and approximately 2,500 Mountain Winery event attendees, reflecting the assumption that a concert is occurring at the time of evacuation. These trips include those generated by uses within the evacuation area in the City as well as surrounding unincorporated areas, including Mountain Winery on a concert evening.

The analysis uses land use inputs such as total number of households, total population, and total employment derived from the 2015 Base Year version of the Santa Clara Valley Transportation Authority (VTA)-City/County Association of Governments of San Mateo County (C/CAG) Bi-County travel model (VTA Travel Model).[10] Within the City of Saratoga, land use (population, household, and employment) information was updated based on 2025 Genasys Protect zone data, while zones outside the City retain land use data from the Year 2015 VTA travel model (zones that have little land use change in the past decade). The Genasys Protect zone data provides a basis for establishing an updated 2025 subarea model in Visum[11] that was subsequently calibrated and validated using 2025 observed traffic counts for the locations shown in **Appendix A**. The 2015 VTA roadway network was used without modifications. Outputs from the model run served as inputs to the evacuation time estimate assessment.

3.4.2.1 Residential Demand

Trips generated by residential households within the City of Saratoga are based on several data sources. This data includes population, the number of households, persons per household, and vehicles per household. Baseline data was established from the US Census Bureau and the California Department of Finance, then cross-referenced with data in the Genasys Protect platform's designated evacuation zones to validate the number of vehicle trips generated by residential households. The household data is used to estimate evacuation vehicle trips based on the number of households, persons per household, auto-ownership information, population, and other factors that could affect the number of vehicles per household used during an evacuation event.

[10] The Santa Clara Valley Transportation Authority (VTA)-City/County Association of Governments of San Mateo County (C/CAG) Bi-County travel model (VTA Travel Model) is a calibrated four-step forecasting tool that integrates socioeconomic forecasts, land-use patterns, and multimodal transportation network data to estimate trip generation, distribution, mode choice, and assignment. The model is used to evaluate existing and future travel conditions, assess project alternatives, and support environmental analysis, including VMT-based assessments.

[11] PTV Visum is a transportation planning and travel-demand modeling software used to build and analyze multimodal transportation networks, forecast traffic and transit conditions, and evaluate future transportation scenarios.

3.4.2.2 Employee Demand

Within the evacuation area, we assume that approximately half of all employees (primarily retail and restaurant staff) would require evacuation at 9 PM. Many employees have already gone home at 9 PM; the remaining employees are for hospitality related services like restaurants, bars, and hotel services. All employees at Mountain Winery (82 employees) and House Family Vineyards (22 employees) are assumed to evacuate.

3.4.2.3 Event Attendee Demand

An event at Mountain Winery could attract up to 2,500 attendees with an estimated 1,140 vehicles, and House Family Vineyards would attract up to 148 guests with an estimated 68 vehicles. The analysis assumes that visitors attending an event will carpool in order to evacuate efficiently. The analysis also assumes that no car-share services are attempting to reach the event venue, thereby creating contraflow during an evacuation.

3.4.2.4 Equestrian Demand

There are 190 horses in the City, and only 22 equestrian trailers (20 2-horse trailers, 1 4-horse trailer, and 1 3-horse trailer). The traffic analysis assumed that each equestrian trailer is the equivalent of three regular vehicles (given their size) (refer to **Table 4**).

Each one-way trip by the 22 equestrian trailers can evacuate 46 horses. As a result, the trailers are insufficient to evacuate all horses in a single trip. In other words, the analysis assumes there will be no return-trips by equestrian trailers to evacuate horses, which would generate contraflow during an evacuation. Additional trips or shelter-in-place strategies would be needed to ensure all horses can be safely evacuated.

Table 4 describes data sources and equations used to estimate vehicle evacuation demand for residents, employees, equestrian vehicles, Mountain Winery, and House Family Vineyards event attendees.

Table 4. Sources and Assumptions related to Vehicle Demand

Evacuation Demand Variable (Step Number)	Data Source[1]	Equation/Assumption
1. Residential Population	Genasys Protect	Data source provided value.
2. Household Size	Census Tract	Total population/Total household
3. Number of Households	Steps 1 & 2	Population/Household size
4. Household Vehicle Ownership Distribution	Census Tract	Number of Households with 0, 1, 2, or 3+ vehicles/Total Number of Households
5. Household Vehicle Ownership	Steps 3 & 4	Household vehicle ownership distribution * Number of Households

Evacuation Demand Variable (Step Number)	Data Source[1]	Equation/Assumption
6. Employment	Santa Clara Countywide VMT Estimation Tool for employees within the evacuation area; The Mountain Winery LinkedIn website for Mountain Winery employees; House Family Vineyards VMT study (House Family Vineyards Conditions of Approval (Resolution 25-026) Ex. A)	Data source provided value. Assumed 50% employees in the evacuation area, 100% employees in Mountain Winery and 100% employees in House Family Vineyards during evacuation
7. Equestrian Trailers	City staff	Data source provided value. Assumed only one one-way trip by all equestrian trailers; no contraflow return trips.
8. Mountain Winery Event Attendees	Mountain Winery website	Data source provided value.
9. Estimated Vehicle Evacuation Demand	Steps 1 -8	Residents: 1 trip * zero-vehicle household + 1 trip * one-vehicle household + 2 trips * two-vehicle household + 2.5 trips[2] * three-or-more vehicle household
		Employees: 0.99[3] * employment
		Equestrian trailers: 3 * equestrian trailers (each trailer = 3 passenger vehicles)
		Mountain Winery Event Attendees: Event attendees/2.2[4] House Family Vineyard guests: guests/2.2[4] (assumed attendees carpool and no ride share vehicles)

Notes:
1. Socioeconomic data is presented in **Appendix B**.
2. The proportion of household members age 16 and older (i.e., those eligible to drive) was calculated and found to average roughly 84% in the evacuation area. Given an average household size of 2.8 persons, a factor of approximately 2.5 (which is 84%*2.8) is applied to estimate the number of households likely to have three or more vehicles.
3. Most employees drive themselves to/from work.
4. Assume 2.2 visitors per vehicle based on *Sonoma Valley Wildfire Evacuation Time Estimate Study* (January 2025) conducted by KLD Associates, Inc.

Source: 2023 American Community Survey (ACS) 5-year Estimates; Genasys Protect; Santa Clara Countywide VMT Estimation Tool; Fehr & Peers, 2025. *Saratoga Evacuation Capacity Assessment*, June 2025; *Sonoma Valley Wildfire Evacuation Time Estimate Study*, January 2025. The Mountain Winery | LinkedIn. Accessed October 13, 2025; https://www.mountainwinery.com/#:~:text=The%20nature%20of%20this%20intimate%202%2C500%20seat,experience%20for%20star%20performers%20and%20guests%20alike. Accessed October 13, 2025.

3.4.3 Forecast Demand Estimates under Development Projections

Table 5 to **Table 7** show total population forecast and estimated evacuation demand for **Development Projections A** to **C**, respectively.

Please note that the population and employee estimates are based on the Genasys Protect zones within the evacuation area. In the June 2025 Evacuation Capacity Analysis, only the portion of Genasys Protect zones SAR-016 and SAR-018 (**Figure 4**) that overlap with the WUI were assumed to evacuate; however, for this study we assume that 100 percent of the population in these Genasys Project zones will evacuate—not just those in the WUI.

Appendix C summarizes the land use by zone, household distribution, vehicle trips by vehicle ownership distribution, and evacuation vehicle demand for each development projection.

Table 5 shows that under Development Projection A, which represents the baseline existing evacuation conditions in the City without any proposed residential development, there is a population of 16,161 individuals, representing 11,576 vehicles, that will need to evacuate.

Table 5. Development Projection A Estimated Population and Evacuation Demand (Existing Conditions)

Type of Evacuees	Estimated Population	Estimated Vehicle Evacuation Demand
Residents	13,137	9,956
Employees	354[1]	351
Equestrian Trailers	22[4]	66
Evacuation Vehicle Trips for Mountain Winery Event Attendees	2,500	1,136
Evacuation Vehicle Trips for House Family Vineyard Guests	148	67
Total	**16,161**	**11,576**

Notes:
1. There are 250 of 887 employees within the evacuation area at 9 PM associated with hotels, retail stores, and restaurants, 81 employees from Mountain Winery, and 22 employees are from House Family Vineyards.

Source: *Saratoga Evacuation Capacity Assessment*, June 2025; Fehr & Peers, 2025. The Mountain Winery | LinkedIn. Accessed October 13, 2025.

Table 6 shows that under Development Projection B, which represents the addition of 725 pending subdivisions within the evacuation area, there would be an additional 2,015 individuals, or an additional 1,510 vehicles, that will need to evacuate. Population and vehicle trips both increase by 13% over the current baseline.

Table 6. Development Projection B Estimated Population and Evacuation Demand (Existing Conditions with Pending Subdivisions within Evacuation Area)

Type of Evacuees	Estimated Population	Estimated Vehicle Evacuation Demand
Residents	15,152	11,466
Employees	354[1]	351
Equestrian Trailers	22	66
Evacuation Vehicle Trips for Mountain Winery Event Attendees	2,500	1,136
Evacuation Vehicle Trips for House Family Vineyard Guests	148	67
Total	**18,176**	**13,086**
Change from Development Projection A	**2,015**	**1,510**
Percent Change from Development Projection A[2]	**13%**	**13%**

Notes:
1. There are 250 of 887 employees within the evacuation area at 9 PM associated with hotels, retail stores, and restaurants, 81 employees from Mountain Winery, and 22 employees are from House Family Vineyards.
2. Percent change calculation for population estimate omits equestrian trailers.

Source: *Saratoga Evacuation Capacity Assessment*, June 2025; Fehr & Peers, 2025. The Mountain Winery | LinkedIn. Accessed October 13, 2025.

Table 7 shows that under Development Projection C, which represents the addition of pending subdivisions in the City outside the evacuation area, plus Housing Opportunity Sites throughout the City and additional proposed development in nearby Santa Clara County, there would be an additional 3,224 individuals, or an additional 2,446 vehicles, that will need to evacuate, beyond the existing baseline. The increase in the number of individuals represents a 19% increase over the current baseline, while the increase in the number of vehicles represents a 20% increase over the current baseline.

Table 7. Development Projection C Estimated Population and Evacuation Demand (Existing Conditions with Citywide and Adjacent Development)

Type of Evacuees	Estimated Population	Estimated Vehicle Evacuation Demand
Residents	16,248	12,289
Employees	386[1]	383
Equestrian Trailers	22	66
Evacuation Vehicle Trips for Mountain Winery Event Attendees and Hotel Guests	2,581	1,217
Evacuation Vehicle Trips for House Family Vineyard Guests	148	67
Total	**19,385**	**14,022**
Change from Development Projection A	**3,224**	**2,446**
Percent Change from Development Projection A[2]	**20%**	**21%**

Notes:
1. There are 250 of 887 employees within the evacuation area at 9 PM associated with hotels, retail stores, and restaurants, 113 employees from Mountain Winery, and 22 employees are from House Family Vineyards.
2. Percent change calculation for population estimate omits equestrian trailers.

Source: *Saratoga Evacuation Capacity Assessment*, June 2025; Fehr & Peers, 2025. The Mountain Winery | LinkedIn. Accessed October 13, 2025.

3.5 ETE Metric and Methods

This section describes the methods used to calculate evacuation time estimates (ETEs) for each of the development projections studied in this report. The evacuation time estimate metric is defined as the estimated time necessary to evacuate 90% and 100% of all evacuees, measured from the time an evacuation order is first issued until the last evacuee exits the evacuation area.

To calculate ETEs for each development projection, the estimated evacuation vehicle trips described in section 3.4 are first distributed across geographically defined evacuation zones and then assigned to the roadway network to evaluate how long it would take for all evacuees to exit the evacuation area under congested evacuation conditions.

Total household, employee, attendee, and equestrian trailer evacuation trips are disaggregated into geographically designated evacuation zones defined in the Genasys Protect platform. Trips originating in each zone are routed to the nearest designated evacuation route. Once vehicles reach a major evacuation route, they are assigned to the most efficient path toward an evacuation gateway.

State Route (SR) 85 and SR 17 are designated as the evacuation gateways for this analysis. These facilities represent the boundary beyond which evacuees are considered to have exited the wildfire evacuation area and are no longer at immediate risk. Accordingly, evacuation is considered complete once all evacuating vehicles have reached either SR 85 or SR 17.

3.5.1 ETE Metric

The evacuation time estimates reflect the time needed for both 90% and 100% of all evacuees to clear the evacuation area and routes.

The evacuation times include time spent traveling on major evacuation routes such as Pierce Road, Big Basin Way, Saratoga–Sunnyvale Road, and Saratoga Avenue, Saratoga–Los Gatos Road (SR 9), as well as the time vehicles wait in queues on local connecting streets to access the evacuation routes. The ETE analysis network (**Figure 4**) illustrates how the Genasys Protect zones are connected to adjacent roadway links through designated connectors, which serve as the basis for calculating evacuation time estimates in the model.

Table D–1 in **Appendix D** presents the trip distribution linked with each Genasys Protect zone, which is applied to these connectors within the model to generate the ETE results. The evacuation time estimates for Mountain Winery begins at the intersection of Pierce Road and Vintage Lane.

The evacuation time estimates are based on existing lane configurations throughout the study area and do not account for any lane reductions due to lane closures or capacity additions through operations improvements such as contraflow lanes. The evacuation assessment is based on no major traffic incidents that would impede study area egress.

3.5.2 Phases of Evacuation Process

The ETE includes the combined duration of all phases of the evacuation process following the receipt of an evacuation order. The phases of an evacuation process are described below and shown in **Figure 6** (refer to the orange arrows).

- **Hazard Detection**: Time when hazard is first identified.
- **Hazard Notification to the Public**: Time when an official releases an evacuation order to the public.
- **Evacuation Order Received**: Time when people receive the evacuation order.
- **Preparation (Time included in an ETE)**: Time it takes to prepare to depart after receiving an evacuation order.
- **Travel Time (Time included in an ETE)**: The total elapsed time until all vehicles exit the evacuation area including time driving (moving) and delay due to congestion. Due to the number of variables and constraints in the model, the calculated travel time will not account for unexpected complications or incidents on the roadways during an evacuation (such as vehicle breakdowns, collisions, traffic signal failures due to power outages, or "shadow evacuees").

  Note: The phases and definitions described above are representative of the general evacuation process for this analysis. Actual events may vary. The ETE metric is intended to provide a practical framework for estimating evacuation times and understanding the relative impact of different assumptions under typical conditions modeled in this study.

The ETE begins after an evacuation order is received by the public (i.e., the ETEs will not account for time it takes for a hazard detection and or the hazard notification to the public). ETEs calculated for this assessment represent the evacuation preparation and travel time estimates (last evacuee leaves the evacuation area) as marked in **Figure 6** by the gold arrow at the bottom of the figure. The ETEs discussed in this report represent the total time required for all evacuees in the evacuation area to reach SR 85 or SR 17, which represent a safe zone where evacuees would be considered safe from the wildfire dangers and clear of the congested evacuation route.

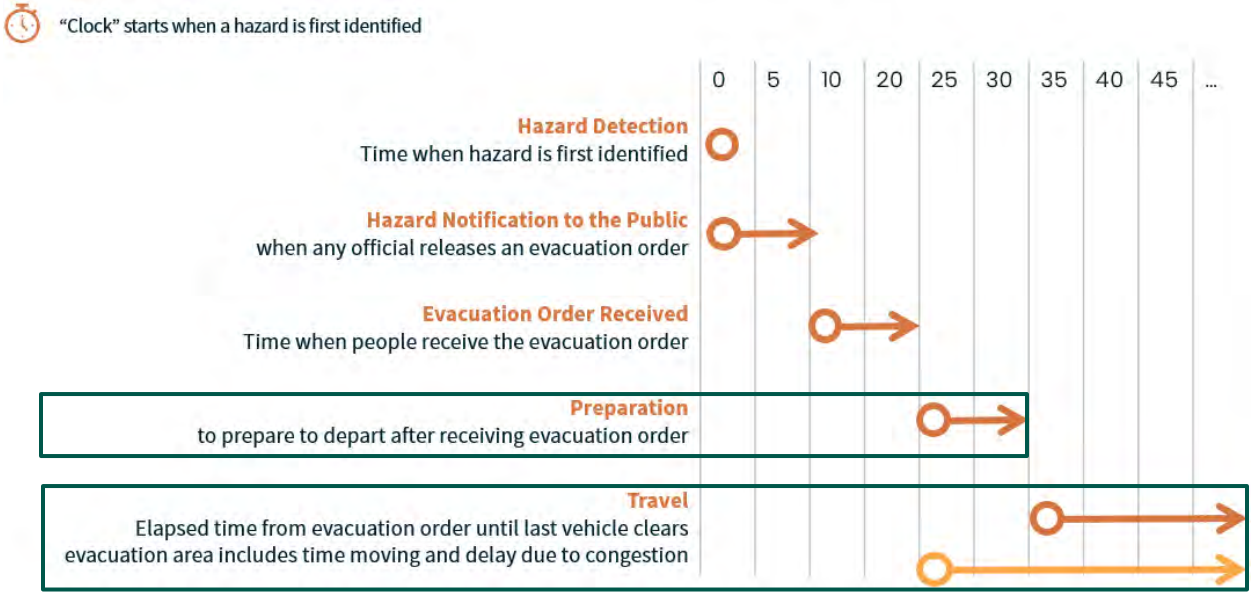


Figure 6. Parts of the Evacuation Time Estimates

3.5.3 ETE Methods

To estimate ETEs for each of the development projections, this analysis uses an integrated EvacInsight[12] approach that combines local land use and population data with a validated travel demand model. This approach provides a realistic and data-driven estimate of evacuation times, helping the City assess evacuation times.

The evacuation modeling is conducted using Planung Transport Verkehr (PTV) Visum software, which integrates dynamic traffic assignment (DTA). DTA allows modeling congestion and travel patterns in 15-minute intervals to dynamically adjust travel routes as roads reach capacity and congestion conditions change. The evacuation model tracks when all evacuees have exited the area.

The total household, employee, and equestrian trailer evacuation trips are disaggregated into 14 geographically defined evacuation zones established in the Genasys Protect platform. Trips from each zone are routed to the nearest evacuation route and assigned to the most efficient path toward the safe area, which is established at SR 85 and SR 17. These roadways serve as the safety boundary which evacuees are considered to have exited to a safe area and are therefore no longer at immediate risk.

3.5.4 Vehicle Trip Evacuation Departure Time

The time it takes for people to begin evacuating depends on the type of emergency and how much notice they receive. If families are together and have advance warning, they can leave quickly. If notice is short or families are separated, more time is needed to gather belongings and prepare.

In this study, all evacuation scenarios start at 9 PM, when most residents are expected to be home. In addition, the study assumes "no-notice" scenarios, in which fast-moving wildfires force evacuation with no advance warning. This "compressed" scenario maximizes evacuation demand on the roadway network and represents a conservative estimate. The analysis does not assume that any contra-flow trips would enter the evacuation zones (i.e., travel toward wildfire areas) during the evacuation period, as they would be negligible.

Table 8 shows how different groups (employees, residents, equestrian population, and event attendees) are anticipated to begin their evacuation trips in 15-minute intervals after the evacuation order is received. The table builds on research conducted for the *City of Ashland Evacuation Time Estimate Study* (April 2021) prepared by KLD Engineering, D.P.C., which identified evacuation curves for employees and residents based on surveys (**Figure 6**). According to the Ashland study, and as reflected in **Table 8** and **Figure 7**, employees tend to evacuate fastest. For events such as a Mountain Winery concert, however, it is assumed that employees remain on-site to assist and will not begin evacuating until most attendees have evacuated. (If Mountain Winery employees were to begin evacuating sooner, it would change the resulting ETE estimates.) More than 90 percent of residents start their evacuation within two hours of the evacuation order. Event attendees take longer due to parking and access constraints. These patterns help model how quickly different groups are expected to evacuate and how demand builds on evacuation routes.

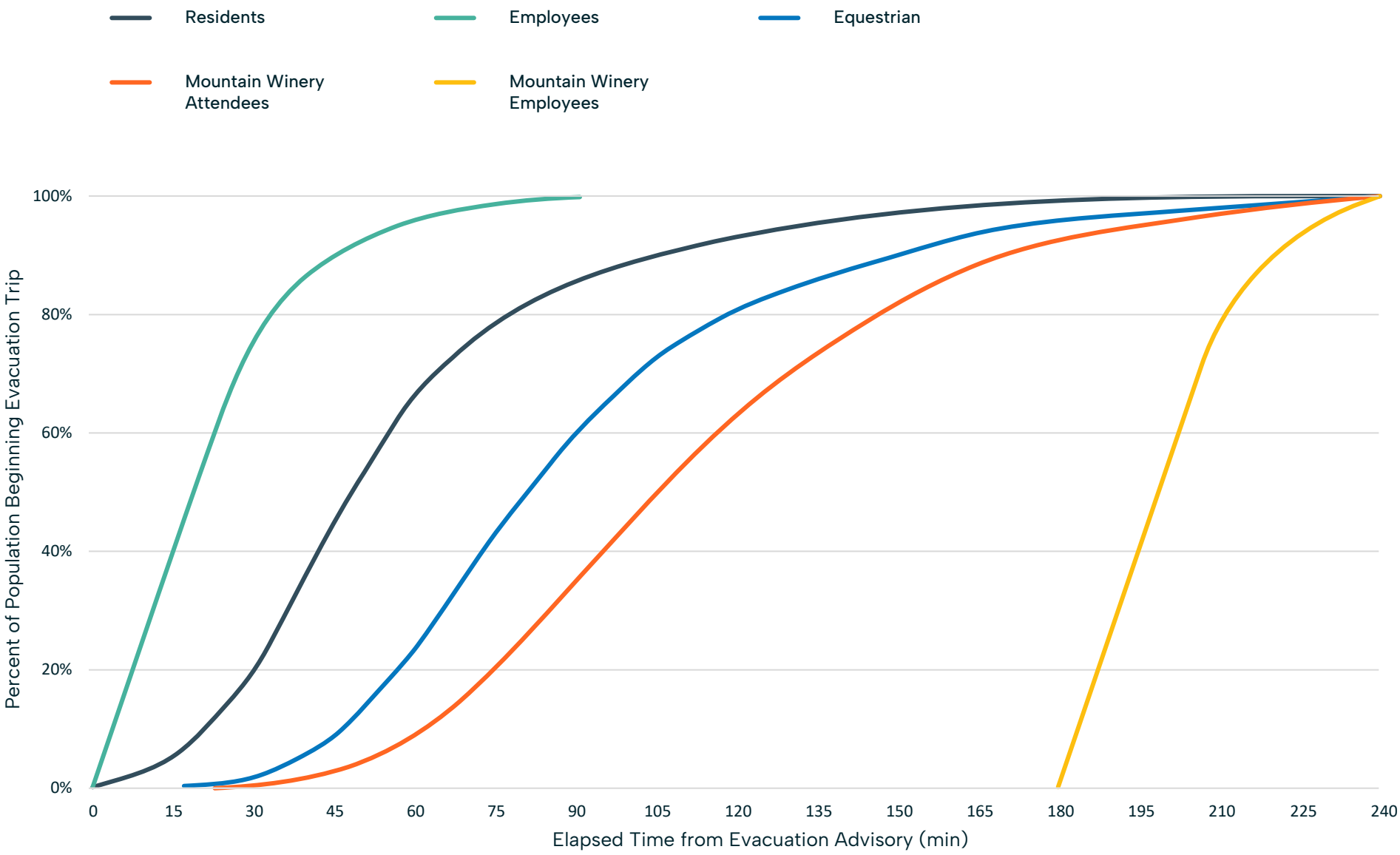
[12] EvacInsight is a tool developed by Fehr & Peers to evaluate the capacity, safety, and viability of evacuation routes under a range of emergency scenarios. This tool is used for scalable evacuation route analysis or route resiliency analysis.

Table 8. Percent of Population Beginning Evacuation Trip after Evacuation Order

Time Interval	Residents	Employees	Equestrian Population	Mountain Winery Event Attendees	Mountain Winery Event Employees
	Observed[1]	Observed[1]	Used	Used[2]	Used
9:00–9:14 PM	4%	40%	0%	0%	0%
9:15–9:29 PM	19%	79%	1%	0%	0%
9:30–9:44 PM	45%	93%	8%	2%	0%
9:45–9:59 PM	67%	96%	23%	7%	0%
10:00–10:14 PM	79%	100%	43%	20%	0%
10:15–10:29 PM	86%		60%	35%	0%
10:30–10:44 PM	88%		73%	50%	0%
10:45–10:59 PM	91%		81%	64%	0%
11:00–11:14 PM	95%		86%	74%	0%
11:15–11:29 PM	98%		90%	82%	0%
11:30–11:44 PM	98%		94%	90%	0%
11:45–11:59 PM	99%		96%	93%	0%
12:00–12:14 AM	99%		97%	95%	40%
12:15–12:29 AM	100%		98%	97%	80%
12:30–12:44 AM			99%	99%	95%
12:45–12:59 AM			100%	100%	100%

Note:
1. Observed evacuation demand loading pattern is based on the *City of Ashland Evacuation Time Estimate Study*.
2. Mountain Winery evacuation demand loading pattern based on September 25, 2025 project team discussion, reflecting the team's understanding of typical evacuee behavior during evacuation.

Source: *City of Ashland Evacuation Time Estimate Study*, April 2021; Fehr & Peers, 2026.



Source: City of Ashland Evacuation Time Estimate Study

FIGURE 7

Percent of Population Beginning Evacuation Trip after Evacuation Order

3.5.5 Roadway Capacity

This analysis uses roadway capacities based on the number of travel lanes per road, with adjustments for hilly terrain and anticipated low visibility from smoke during wildfire evacuations in the evacuation area. Baseline capacities for all evacuation roadways will be reduced by 12 percent to account for these hazards, based on recommended capacity reductions due to low visibility (due to weather) provided by the Federal Highway Administration (FHWA) Road Weather Management Program.[13] Additionally, to account for rolling terrain in the evacuation area, an additional 10 percent reduction to the planning capacity will be applied. For example, a freeway lane's capacity drops from 2,020 vehicles per hour per lane under normal conditions to 1,780 vehicles per hour per lane under low visibility conditions (a reduction of about 12 percent). (Refer to **Table 9**.)

These adjustments ensure the model reflects reasonably foreseeable real-world constraints, but these modifications do not account for roadway-specific constraints that could emerge during a wildfire evacuation, which would have different effects depending on where they occur. There is no way to reasonably predict and model such constraints.

The analysis assumed there would be no contraflow,[14] as lanes moving in the opposite direction would be reserved for emergency responders.

Table 9 summarizes the peak one-hour roadway capacity for each roadway type.

Table 9. Roadway Capacity per Hour per Lane

Roadway Type	Base Roadway Capacity[1]	Roadway Capacity with Low Visibility	Roadway Capacity with Hilly and Low Visibility
Freeway	2,020	1,780	N/A[2]
Divided Arterial	940	830	N/A[2]
Undivided Arterial	890	780	700
Collector	650	570	510
Local	440	390	350

Notes:
1. Roadway capacity from *Highway Capacity Manual* (2000).
2. Not applicable to the study evacuation routes, so not used in the ETE study.

Source: *Highway Capacity Manual* (2000); Fehr & Peers, 2025.

[13] How weather events impact roadways? https://ops.fhwa.dot.gov/weather/q1_roadimpact.htm#:~:text=Speed%20variance%20can%20fall%20by,12.%20percent%20in%20low%20visibility. Accessed April 2025.

[14] Contraflow in evacuation planning refers to a traffic management strategy in which the normal direction of travel on one or more lanes of a roadway is reversed so that all lanes carry traffic away from the hazard area.

3.5.6 Speed Humps

Speed humps are incorporated in the analysis as localized speed reduction features, not as capacity constraints. Under normal (non-evacuation) conditions, each speed hump is designed to manage vehicle speeds by requiring drivers to slow to 15 mph,[15] in accordance with County of Santa Clara's Standards and Specifications. This speed management function helps maintain safety and traffic calming for typical daily traffic.

In the evacuation analysis, the effect of speed humps is modeled by adjusting vehicle speeds to 15 mph along roadway segments with humps, resulting in a brief delay at each hump before vehicles resume higher speeds between them. It is anticipated that the evacuation conditions will lower speeds to or below the design speed of the speed humps.

[15] *County of Santa Clara – Planning and Development*. https://www.sccfd.org/wp-content/uploads/documents/fire_prevention/standards/UnIncorporated%20Standards%20&%20Specification%2007012025/A-2%20Speed%20Humps%20and%20Speed%20Tables%20(03.13.2025).pdf

4. ETE Assessment

This chapter evaluates evacuation time estimates during a wildfire evacuation event for the evacuation area and routes identified in **Chapter 3**.

4.1 Evaluating ETE

Evacuation time estimates are provided for each development projection to reflect the time it takes for 90% of the population to evacuate, as well as the time it takes for 100% of the population to evacuate.

The "clock" for evacuation time estimates starts when an evacuation order is received. The "clock" stops once congestion has dissipated from the evacuation routes and all demand from the evacuation area has exited into the safe area. The evacuation time estimate ranges thus reflect when 90% and 100% of all evacuees in each population group clear the evacuation area and routes. The evacuation times include time spent traveling on major evacuation routes such as Pierce Road, Big Basin Way, Saratoga-Sunnyvale Road, Saratoga Avenue, Saratoga-Los Gatos Road, Fruitvale Avenue, and Quito Road as well as the time vehicles wait in queues on local connecting streets to access evacuation routes.

The evacuation time estimates are based on existing lane configurations in place throughout the evacuation area and no change to provide contraflow lane operations. The evacuation assessment assumes no major traffic incidents that would impede study area egress. Such incidents would increase the amount of time required for egress.

4.1.1 ETE for Development Projection A (Existing Conditions)

Evacuation populations were divided into five unique subgroups based on the model's evacuation zones land use characteristics. Distinguishing between these demand segments in the model allows for a more detailed level of analysis. This approach provides discrete ETE estimates for each defined population. This level of granularity provides greater insight into individual travel experiences under each scenario.

Development Projection A models ETEs under existing land use and population characteristics with no additional household growth or development. **Table 10** presents the 90% and 100% ETE for Development Projection A. As **Table 10** shows, under existing conditions in the City of Saratoga, it will take an estimated 2 hours and 45 minutes to evacuate 90% of the population in the evacuation area, and 5 hours to evacuate 100% of that population.

Table 10. Development Projection A Evacuation Time Estimates under Existing Conditions

Population Group	90% Evacuated Within	100% Evacuated Within
Evacuating Population	2 hours, 45 mins (11:45 PM)	5 hours (2:00 AM)

Notes:
The above travel times are the estimated duration of time starting with a 9 PM evacuation notice, after which 90 and 100 percent of the population groups are evacuated. Evacuation time estimates are reported in 15-minute increments.
Source: Fehr & Peers, 2026.

Table 11 shows the ETEs for each evacuating subgroup. **Table 11** shows that the estimated evacuation times for the population subgroups will vary within that range. Attendees of the Mountain Winery event experience the longest evacuation times due to the location of the venue in the roadway network, physical constraints of roadways exiting the area, and the 1,136 evacuation trips originating from Mountain Winery in Scenario A.

Table 11. Development Projection A Subgroup Evacuation Time Estimates under Existing Conditions

Population Group	90% Evacuated Within	100% Evacuated Within
Residents	2 hours, 15 mins (11:15 PM)	3 hours, 45 mins (12:45 AM)
Employees	1 hour, 30 mins (10:30 PM)	2 hours, 30 mins (11:30 PM)
Equestrian Trailers	3 hours (12:00 AM)	4 hours (1:00 AM)
Mountain Winery	4 hours (1:00 AM)	5 hours (2:00 AM)

Notes:
The above travel times are the estimated duration of time starting with a 9 PM evacuation notice, after which 90 and 100 percent of the population groups are evacuated. Evacuation time estimates are reported in 15-minute increments.
Source: Fehr & Peers, 2026.

These results indicate that evacuation under existing conditions already requires multiple hours to fully clear the evacuation area under a no-notice wildfire scenario, reflecting constrained access, limited route redundancy, and time-compressed demand.

4.1.2 Development Projection B (Adding Pending Subdivisions within Evacuation Area)

As described above, Development Projection B adds pending subdivisions contained within the evacuation area to the existing evacuation demand studied in Development Projection A. While this does not cause additional overall delays for the entire evacuating population, specific subgroups experience increased delays. **Table 12** shows the total duration times needed to evacuate 90% and 100% of the evacuation area under Development Projection B.

Table 12. Development Projection B Evacuation Time Estimates

Population Group	90% Evacuated Within	100% Evacuated Within
Evacuating Population	2 hours, 45 mins (11:45 PM)	5 hours (2:00 AM)

Notes:
The above travel times are the estimated duration of time starting with a 9 PM evacuation notice, after which 90 and 100 percent of the population groups are evacuated. Evacuation time estimates are reported in 15-minute increments.
Source: Fehr & Peers, 2026.

Table 13 shows the range of evacuation time duration for each evacuating subgroup.

Table 13. Development B Subgroup Evacuation Time Estimates

Population Group	90% Evacuated Within	100% Evacuated Within
Residents	2 hours, 30 mins (11:30 PM)	4 hours, 15 mins (1:15 AM)
Employees	1 hour, 30 mins (10:30 PM)	2 hours, 45 mins (11:45 PM)
Equestrian Trailers	3 hours (12:00 AM)	4 hours (1:00 AM)
Mountain Winery	4 hours (1:00 AM)	5 hours (2:00 AM)

Notes:
The above travel times are the estimated duration of time starting with a 9 PM evacuation notice, after which 90 and 100 percent of the population groups are evacuated. Evacuation time estimates are reported in 15-minute increments.
Source: Fehr & Peers, 2026.

Development Projection B increases vehicle evacuation demand by 1,510 vehicles (13 percent increase from Development Projection A). Compared to Development Projection A, this added demand results in less than a 15 minute change in the overall evacuation duration for the full population. However, evacuation times for residents increase by up to 30 minutes, reflecting localized effects within the evacuation area.

While the change in total evacuation time is limited, the additional evacuation traffic of Development Projection B results in a measurable worsening of evacuation performance for the residents in an already constrained system, where total evacuation time substantially exceeds one hour.

4.1.3 Development Projection C (Adding Citywide and Adjacent Development)

Development Projection C adds to Development Projection B pending subdivisions outside the evacuation area, housing opportunity sites within the City, and nearby pending development in Santa Clara County. This growth affects the background traffic on the roads and increases evacuation demand. **Table 14** shows the total duration times needed to evacuate the entire evacuation population.

Table 14. Development Projection C Evacuation Time Estimates

Population Group	90% Evacuated Within	100% Evacuated Within
Evacuating Population	3 hours, 15 mins (12:15 AM)	6 hours, 15 mins (3:15 AM)

Notes:
The above travel times are the estimated duration of time starting with a 9 PM evacuation notice, after which 90 and 100 percent of the population groups are evacuated. Evacuation time estimates are reported in 15-minute increments.
Source: Fehr & Peers, 2026.

Table 15 shows the range of evacuation time duration for each evacuating subgroup.

Table 15. Development Projection C Subgroup Evacuation Time Estimates

Population Group	90% Evacuated Within	100% Evacuated Within
Residents	2 hours, 30 mins (11:30 PM)	5 hours, 45 mins (2:45 AM)
Employees	1 hour, 45 mins (10:45 PM)	2 hours, 45 mins (11:45 PM)
Equestrian Trailers	3 hours, 15 mins (12:15 AM)	4 hours (1:00 AM)
Mountain Winery	5 hours (2:00 AM)	6 hours, 15 mins (3:15 AM)

Notes:
The above travel times are the estimated duration of time starting with a 9 PM evacuation notice, after which 90 and 100 percent of the population groups are evacuated. Evacuation time estimates are reported in 15-minute increments.
Source: Fehr & Peers, 2026.

Development Projection C increases vehicle evacuation demand by 2,446 vehicles (21 percent increase from Development Projection A). Compared to Development Projection A, this added demand increases the overall evacuation duration by approximately 30 minutes for 90% evacuation and 1 hour 15 minutes for full evacuation.

In addition to these system-wide increases, evacuation times for specific subgroups increase by up to approximately 2 hours, reflecting both added evacuation demand within the evacuation area and increased background traffic on the roadway network.

These results indicate a substantial worsening of evacuation performance relative to existing conditions, particularly given that evacuation times already exceed multiple hours under baseline conditions.

5. Estimate of Average Evacuation Time for Residents

This chapter provides estimates of the average resident evacuation by departure for each of the three development projections analyzed. While the evacuation start time for each population subgroup is a clearly defined parameter in the model, the amount of time needed to evacuate shifts based on when individuals begin their evacuation trip and can change within the 15-minute increment summarized.

The average evacuation times shown in the histograms are average times of residents from all zones. Residents living closer to SR 85 or SR 17 would experience shorter evacuation times while residents living farther from SR 85 and SR 17 would experience longer evacuation times.

5.1 Development Projection A (Existing Conditions)

Development Projection A represents the current baseline conditions within the evacuation area in the City without any additional new development.

Figure 8 shows the estimated average time of a residential evacuation trip by departure time in the evacuation area under Development Projection A.

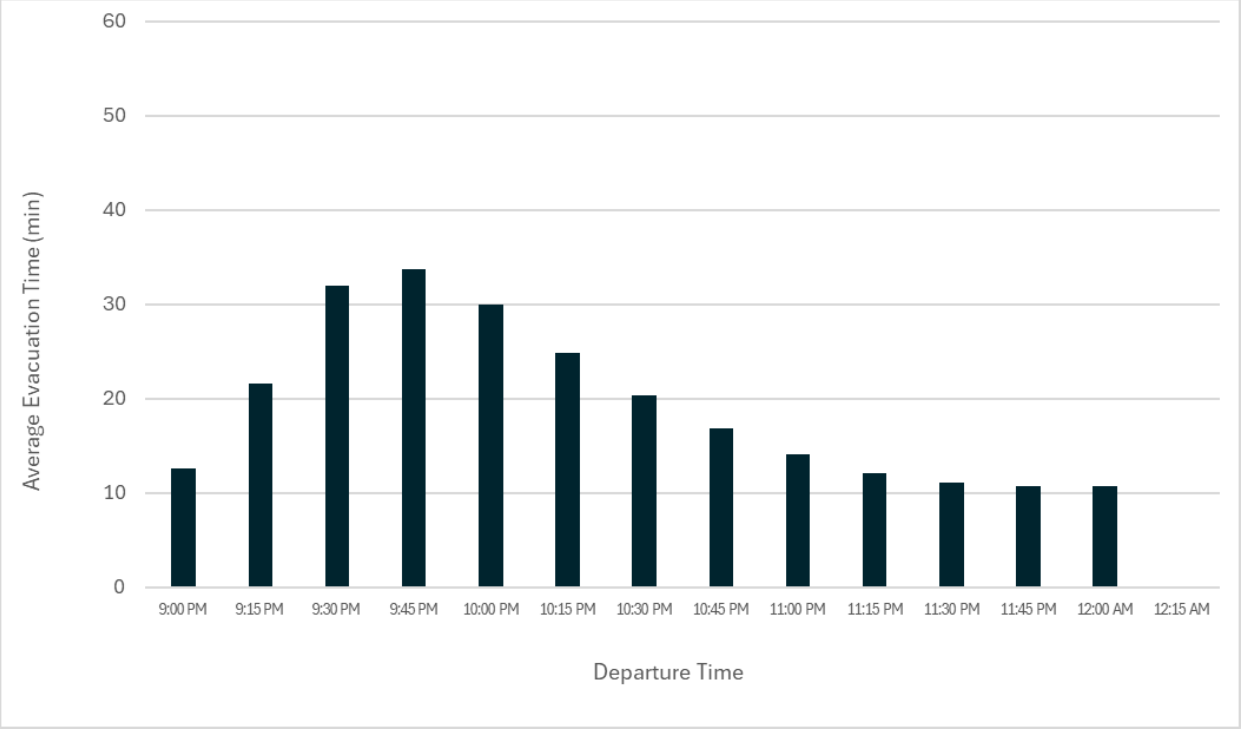


Figure 8. Average Evacuation Time for a Resident by Departure Time for Development Projection A

On average, the amount of time it takes individual residents to evacuate in Development Projection A ranges roughly between 10–30 minutes. Evacuating between 9:30 PM and 10:00 PM results in a

longer overall evacuation time; however, the total average evacuation time of individual residents remains under 40 minutes across all time intervals during the evacuation process. Note that these estimates are averages; residents living further from the safety boundary would experience longer evacuation times than those who live closer.

5.2 Development Projection B (Pending Subdivisions within the Evacuation Area)

Development Projection B adds to Development Projection A the pending subdivisions in the evacuation area.

Figure 9 illustrates the average length of a residential evacuation trip by departure time in the evacuation area under Development Projection B.

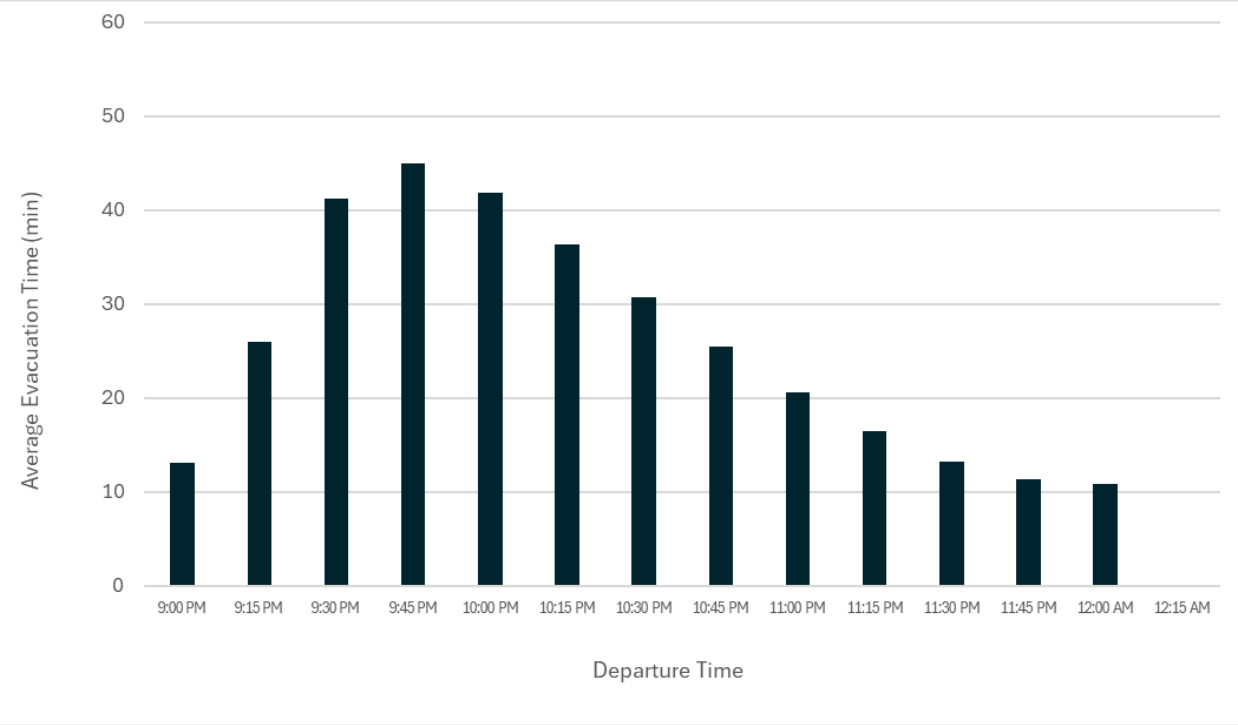


Figure 9. Average Evacuation Time for Residents by Departure Time for Development Projection B

On average, the amount of time it takes residents to evacuate in Development Projection B ranges roughly between 10–45 minutes. The time intervals that experience the longest evacuation time are between 9:30 PM and 10:30 PM; however, the total average evacuation time of individual residential evacuation trips remains under 45 minutes across all time intervals during the evacuation process.

5.3 Development Projection C (Citywide and Adjacent Development)

Development Projection C adds to Development Projection B pending subdivisions in the City outside the evacuation area, housing opportunity sites throughout the City, and pending subdivisions nearby in the county.

Figure 10 illustrates the average length of a residential evacuation trip by departure time in the evacuation area under Development Projection C, based on the time interval in which a trip begins.

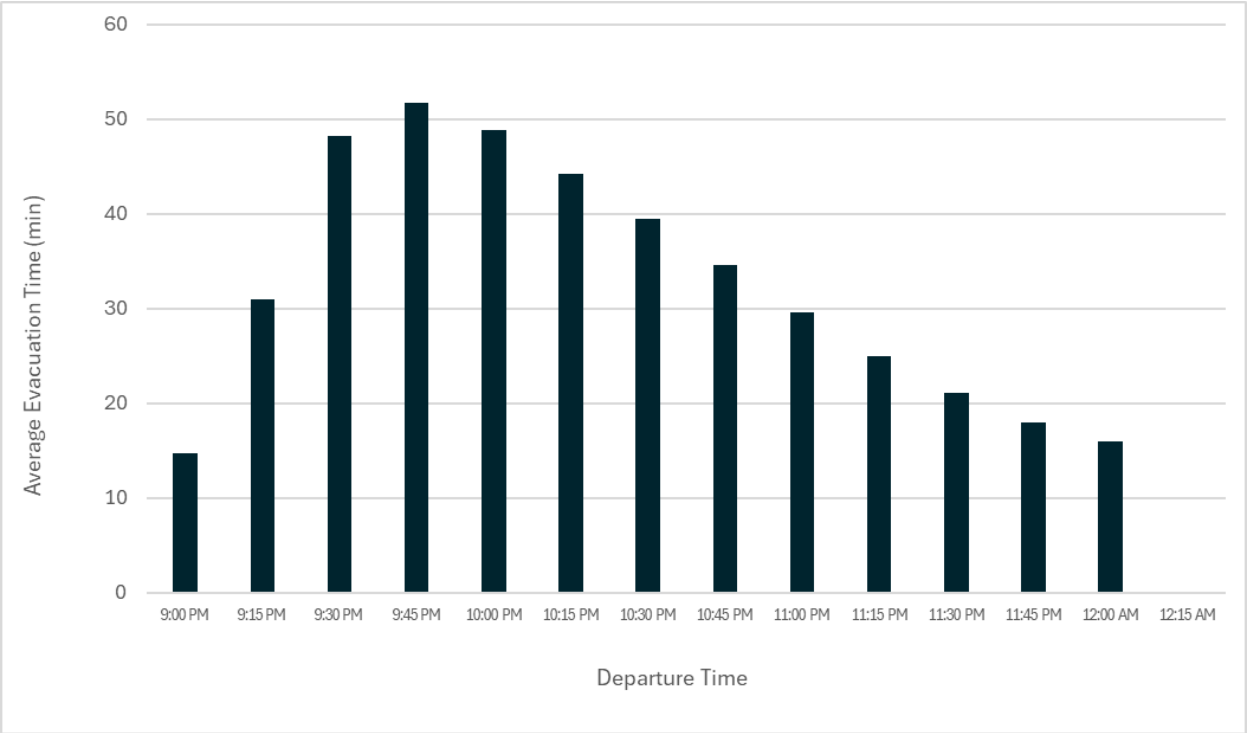


Figure 10. Average Evacuation Time for a Resident by Departure Time for Development Projection C

On average, the amount of time it takes residents to evacuate in Development Projection C ranges roughly between 20 to just over 50 minutes. The time intervals that experience average evacuation times greater than 30 minutes occur between 9:30 PM and 11 PM; however, the total average evacuation time of individual residential evacuation trips remains under the one-hour mark across all time intervals during the evacuation process.

6. Strategies for Reducing Evacuation Time

This report demonstrates that the City faces an existing wildfire evacuation challenge under Development Projection A, which is only exacerbated under the proposed developments studied in Development Projections B and C. As a result, this chapter identifies feasible strategies to reduce evacuation effects associated with new development.

This chapter documents the process used to develop and screen feasible potential strategies to reduce evacuation time. As part of this effort, City staff, emergency response partners, and the project team participated in a workshop on November 19, 2025 to review preliminary evacuation findings and discuss the practicality of potential response strategies. The workshop focused on operational readiness, physical and staffing constraints, interagency coordination, and potential funding pathways, rather than on quantifying evacuation benefits or making CEQA determinations.

6.1 Existing Emergency Planning In Saratoga

The City of Saratoga maintains and publishes several emergency planning documents on its website.[16]

- The **Emergency Operations Plan (EOP) (2019)** provides guidance on the City's response to the most likely and demanding emergency conditions. It outlines the incident management structure, legal compliance, whole community engagement, continuity of government, and other critical components. This EOP describes the City's incident management organization and critical components of the incident management structure. The incident management structure is designed to be scaled up and its components activated as needed to reflect an incident's escalation from a routine incident to an emergency. The EOP provides a flexible platform for responses to hazards and emergencies, including wildland fires.
- The **Safety Element (2024)**, a chapter in the General Plan, describes local hazards and mitigation measures. The *Safety Element* describes the City's efforts to prepare for and respond to emergencies. The *Safety Element* also describes the role of the EOP as guiding the City's response activities to an emergency, explaining that in the event of an emergency, "[t]o guide response activities, the City will rely on the EOP." Refer to *Safety Element* on page 29. The *Safety Element* also references the City's analysis of the "routes used for evacuation purposes" during a hazard event. *Id.* on 30.

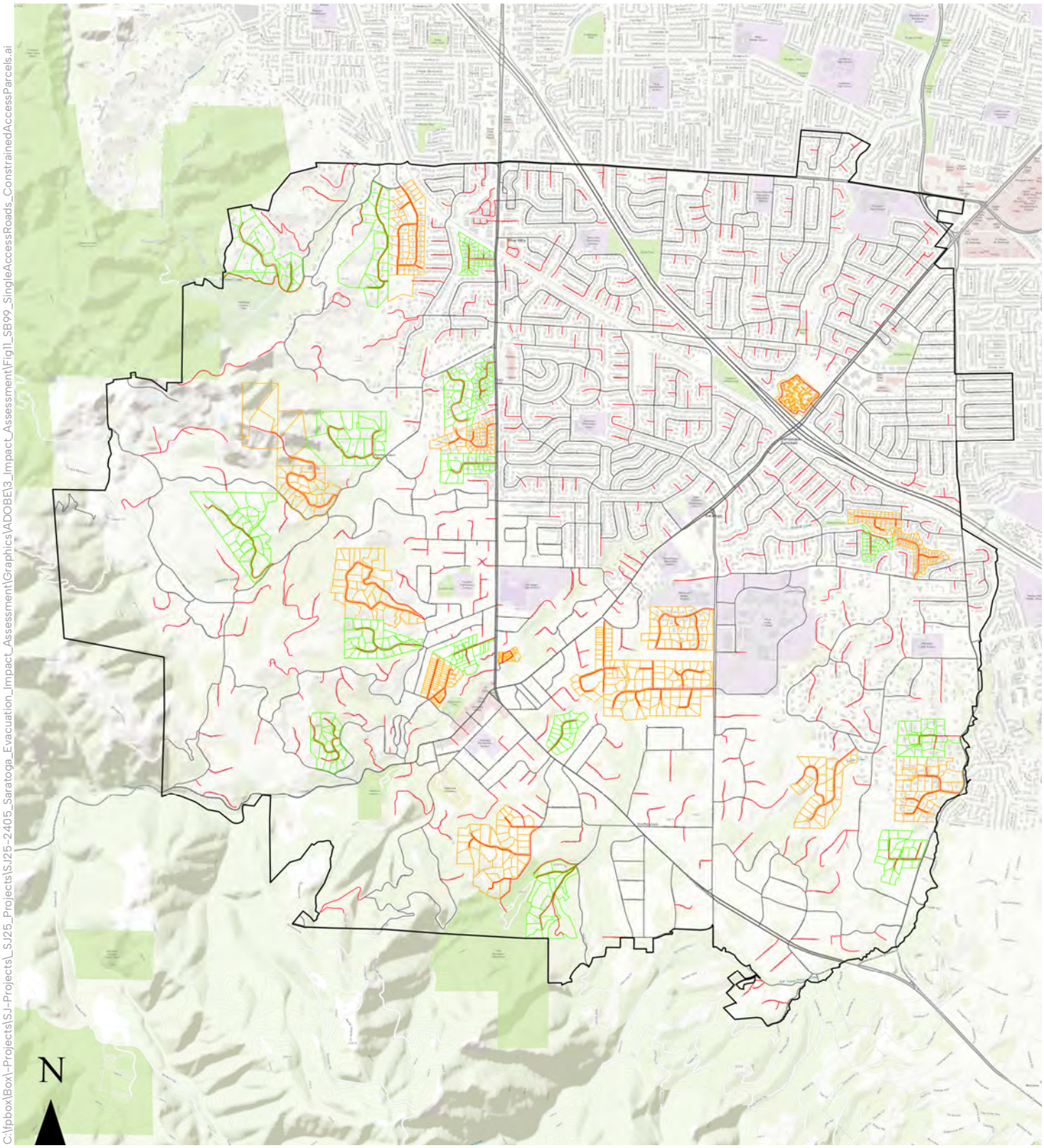
[16] https://www.saratoga.ca.us/224/Emergency-Preparedness, Accessed April 24, 2025.

- The *Safety Element* also identifies evacuation constraints associated with residential developments, specifically focused on residential developments in hazard areas without at least two emergency evacuation routes as required by Senate Bill 99.[17] **Figure 11** shows the constrained access parcels and parcels of concern.[18,19]
- The **Local Hazard Mitigation Plan (LHMP) (2024)** assesses potential hazard risks as well as mitigation measures to prevent loss of life, injury, and property damage. It identifies earthquake, heavy rain, and wildfire as hazards with a "highly likely" probability (refer to Table 15). In the LHMP, Table 17 lists the status of the actions that comprised the City's hazard mitigation action plan in 2017. Refer to LHMP page 36. ("Table 196 lists the actions that make up the City of Saratoga hazard mitigation action plan.")
- The **Community Wildfire Protection Plan (CWPP)** (2016) describes projects from the Santa Clara County CWPP (2016). This document will be updated after the Santa Clara County Community Wildfire Protection Plan.

[17] A SB 99 assessment identifies the constrained parcel groups that are within one or more hazard areas and are served by one access point to the street network.

[18] As defined in the General Plan Safety Element (2024), *Single Ingress/Egress Roadways – these roadways (identified in red) include cul-de-sacs, roadways with a single connection to the roadway network, and roadways that may have secondary connections that are not publicly accessible due to a gate or other constraint.*

[19] As defined in the General Plan Safety Element (2024), *Constrained Access Parcels/Parcels of Concern – parcels located along single ingress/egress roadways may be constrained during an evacuation. The standard used for determining constrained access parcels relies on Public Resources Code Section 4290.5, which is used by CAL FIRE to identify subdivisions of 30 parcels or more that take access from a single ingress/egress condition. However, given the nature of the residential composition and geography in Saratoga, additional locations with at least 20 parcels were also identified (parcels of concern). For Saratoga, constrained parcel locations have been identified in orange, and parcels of concern have been identified in green.*



Source: Saratoga General Plan 2024

FIGURE 11

SB 99 Single Access Roads and Constrained Access Parcels

Fehr & Peers

6.2 Initial Workshop to Assess Strategies

City and consultant staff met on November 19, 2025 to review the preliminary concepts and discuss feasibility considerations for corridor-specific evacuation improvements that could reduce evacuation times. The workshop aimed to

- revisit key findings from the 2025 evacuation capacity assessment;
- identify feasible strategies to reduce evacuation times that balance emergency performance with community livability; and
- gather input from City staff, first responders, and stakeholders on operational, policy, and funding considerations.

Attendees included representatives from the City Manager's Office, Public Works, and Planning Departments, along with Fehr & Peers project staff. The workshop was structured around priority evacuation corridors, allowing a localized and context-driven discussion.

The four corridors evaluated were (Refer to **Figure 12**) as follows:

- Corridor 1: Saratoga-Sunnyvale Road (Big Basin Way to SR 85)
- Corridor 2: Saratoga Avenue (Sunnyvale–Saratoga Road to SR 85)
- Corridor 3: Pierce Road and Big Basin Way (Mount Eden Road to Saratoga–Sunnyvale Road)
- Corridor 4: Pierce Road (Mount Eden Road to Saratoga–Sunnyvale Road – northern segment)

Key Topics and Findings

- **Operational Readiness**: Participants emphasized the need for realistic, staff-manageable solutions such as signal override plans, managed traffic control, and public notification systems rather than complex or labor-intensive contraflow operations.
- **Infrastructure Feasibility**: High-cost measures such as dual-purpose shoulder widening and equestrian route expansion were recognized as long-term or infeasible within current constraints.
- **Policy Coordination**: The City expressed interest in developing a standard activation protocol for "High Hazard Days," focusing on voluntary parking clearance, communication, and interdepartmental coordination.
- **Technology and Resilience**: The group supported signal hardening (battery backups) and the use of real-time communication tools for incident response and public awareness.
- **Funding Considerations**: Near-term implementation could leverage state and federal resilience programs such as California Governor's Office of Emergency Services Hazard Mitigation Grant Program (Cal OES HMGP), Cal Fire Mitigation Grants, and Caltrans Sustainable Transportation Planning grants for planning and operational improvements.

The group also discussed whether shelter-in-place guidance may be appropriate for portions of Monte Vista and noted that the Climate Resilience District framework could support long-term planning. Questions were raised regarding the Pierce Road Class I facility between Teerlink Court and Highway 9, including whether it could be widened to support emergency vehicle access and how it would transition onto State Route 9 during an evacuation.

The City expressed interest in identifying viable funding sources for strategies to reduce evacuation time. Recent Cal Cities materials identified funding streams consistent with those discussed during the workshop, with additional potential sources including development impact fees and federal Senate and House district appropriations.

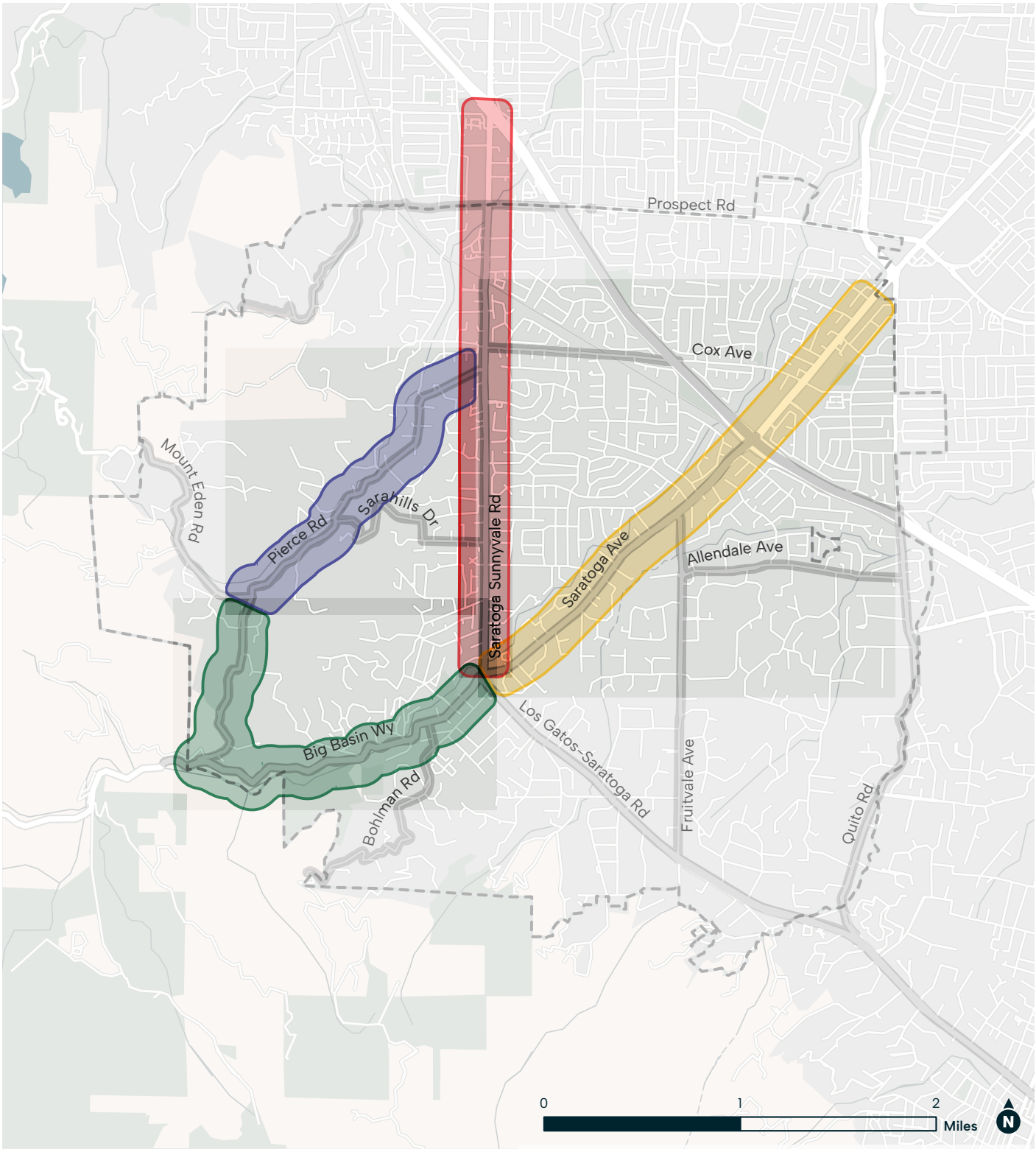


FIGURE 12

Corridors Evaluated During Feasible Strategies Workshop

Fehr & Peers

6.3 Strategies to Reduce Evacuation Time

Because wildfire evacuation performance depends on both physical roadway conditions and operational response, strategies to reduce evacuation time are organized into supply-side, demand-side, and information-side strategies, consistent with best practice and state guidance. These categories reflect the range of actions available to improve evacuation performance by increasing effective roadway capacity, reducing peak evacuation demand, and improving coordination and decision-making during emergency events.

Feasible strategies to reduce evacuation time were identified through a feasible strategy toolbox and refined through the Feasible Strategies Workshop and corridor-specific analysis. The workshop evaluated potential strategies based on operational practicality, physical constraints, staffing requirements, and consistency with the City of Saratoga's *Safety Element* policies. The resulting framework emphasizes operational measures, targeted improvements, and policy-based actions that can be implemented incrementally and scaled to incident severity.

Collectively, these strategies are intended to improve evacuation performance relative to baseline conditions, while recognizing the inherent constraints of Saratoga's hillside roadway network. Detailed descriptions of feasible strategies to reduce evacuation time, corridor-specific applications, and additional considerations are provided in the next section.

6.3.1 Feasible Strategies to Reduce Evacuation Time

This section describes feasible strategies to reduce evacuation time identified through the feasible strategy toolbox and refined through the Feasible Strategies Workshop and corridor-specific analysis described in this section.

The framework around strategies to reduce evacuation time focuses on implementable, scalable strategies that can be deployed incrementally to reduce evacuation impacts and improve evacuation performance. The framework does not rely on large-scale roadway expansion or assumptions of operational perfection during emergency events.

Because evacuation performance depends on both physical infrastructure and operational response, strategies to reduce evacuation time are organized into supply-side, demand-side, and information-side strategies, consistent with best practice and state guidance.

Table 16 summarizes commonly used transportation response strategies, organized into supply-side, demand-side, and information-side categories. These strategies were refined based on the *Saratoga Evacuation Route Capacity Assessment* (Fehr & Peers, June 2025) and the policies (Policy SAF-4.1 to SAF-4.23) in the *Safety Element* (2024).

Table 16. Feasible Strategies to Reduce Evacuation Time

Strategy Type	Strategy	Description/Example
Supply-Side	Contraflow lanes/reversible lanes	Use painted medians or dual-purpose shoulders to increase capacity on key evacuation routes during emergencies.
	Dual-purpose shoulder/bike lane widening	Widen shoulders for downhill evacuation and uphill bike lanes, especially on hilly routes (e.g., Mount Eden Road).
	Managed traffic control	Implement turn restrictions, traffic lights, and maximize outflows during evacuation.
	Faster clearing of fire-induced road closures	Rapid removal of obstacles to restore evacuation routes.
	Street parking management	Restrict parking on high hazard days to improve flow on evacuation routes.
	Wider equestrian routes	Expand roadways for equestrian evacuation (e.g., Villa Oaks Lane, Quarry Road, Pierce Road).
	Intelligent Transportation Systems (ITS)/Transportation Systems Management and Operations (TSMO) elements	Traffic Signal Queue Flush, Battery Backup at Signals, and Remote/Emergency Operations Center (EOC) Signal Control
Demand-Side	Carpooling and public transit promotion	Encourage fewer vehicles per household and use of transit during evacuation.
	One car per household pledge	Households commit to evacuating with a single vehicle when possible.
	Early off-site placement of second vehicles	Move extra vehicles off-site in advance when warnings are issued.
	Shelter location planning	Identify and implement shelter facilities inside and outside the evacuation area for residents and equestrian populations.
Information-Side	Community evacuation education	Enhance programs to improve preparedness and route familiarity for residents, employees, and equestrians.
	Wildfire early detection systems	Deploy cameras, drones, and sensors for rapid hazard identification, especially for constrained parcels.
	Real-time traffic management and dynamic route guidance	Use ITS tools to guide evacuees away from congestion and distribute traffic across multiple routes.
	Phased evacuation process	Evacuate different groups/areas at staggered times to reduce congestion.
	Vehicle monitoring and variable message signs	Monitor evacuation progress and provide real-time updates and route changes to motorists.

Source: Fehr & Peers, 2026.

6.3.2 Supply-Side Strategies

Supply-side strategies consist of operational and targeted capital measures that increase effective evacuation capacity by improving how existing roadway infrastructure functions during emergency conditions. These strategies are particularly important along key evacuation routes with limited redundancy.

Potential supply-side measures include the use of directional or contraflow operations and dual-purpose shoulder or protected bicycle lane widening that can be repurposed during evacuation events. These approaches focus on maximizing the performance of existing pavement rather than permanent roadway widening. Opportunities for such treatments are primarily located west of Saratoga-Sunnyvale Road and both north and south of State Route 9. In these areas, future roadway designs could incorporate painted medians, reversible lane concepts, or dual-purpose shoulders to support temporary capacity expansion during evacuations.

Additional supply-side strategies include the following:

- Providing wider roadways for equestrian evacuation routes, including Mount Eden Road, Villa Oaks Lane, Quarry Road, and Pierce Road, with uphill bicycle lanes and dual-purpose downhill shoulders on hilly corridors.
- Implementing managed traffic control during evacuations, such as turn restrictions, access management, and route or ramp closures, to maximize outbound flow.
- Facilitating rapid clearing of fire-induced roadway obstructions to restore evacuation routes.
- Planning for temporary on-street parking restrictions on high-hazard days to preserve effective roadway width.

6.3.3 Demand-Side Strategies

Demand-side strategies emphasize policy- and program-based actions that reduce peak evacuation vehicle demand and distribute departures over time. These strategies are broadly feasible, scalable, and complementary to corridor-specific operational improvements.

The City of Saratoga can support demand reduction during wildfire evacuations through the following measures:

- Encouraging carpooling and shared evacuation travel, and where feasible, use of public transit.
- Promoting a voluntary one-vehicle-per-household evacuation pledge. For households that require multiple vehicles, an alternative strategy includes early off-site placement of secondary vehicles when advance wildfire warnings or other evacuation triggers are present.
- Identifying and planning shelter locations within City limits but outside the WUI, reducing long-distance evacuation demand on primary corridors.
- Identifying and planning shelter facilities for equestrian populations within the City and outside the evacuation area to reduce equestrian trailer trips on constrained routes.

6.3.4 Information-Side Strategies

Information-side strategies focus on low-cost, high-impact communication and technology measures that improve evacuation coordination, route utilization, and decision-making under dynamic wildfire conditions.

The City of Saratoga can further support evacuation effectiveness through the following:

- Enhancing community evacuation education and preparedness programs to improve resident, employee, and equestrian familiarity with evacuation routes and procedures.
- Exploring and deploying wildfire early-detection systems, such as video surveillance cameras or drones, particularly in areas with constrained access.
- Using real-time traffic management tools to provide dynamic route guidance, monitor congestion, and encourage use of secondary or tertiary routes.
- Implementing phased evacuation protocols, where different areas or populations evacuate at staggered times based on proximity to hazard, access constraints, or priority.
- Planning and installing vehicle monitoring devices and variable message signs to track evacuation progress and communicate real-time route changes to motorists.

6.3.5 Corridor Recommendations

For the four corridors identified during the Strategies Workshop, implementable improvements for the following locations were identified and documented in **Appendix E**.

- Corridor 1: Saratoga-Sunnyvale Road (Big Basin Way to SR 85) (**Table E-1**)
- Corridor 2: Saratoga Avenue (Sunnyvale–Saratoga Road to SR 85) (**Table E-2**)
- Corridor 3: Pierce Road and Big Basin Way-southern segment (Mount Eden Road to Saratoga–Sunnyvale Road) (**Table E-3**)
- Corridor 4: Pierce Road-northern segment (Mount Eden Road to Saratoga–Sunnyvale Road – northern segment) (**Table E-4**)

Across all four corridors, recommended measures focus on maximizing the performance of existing infrastructure through directional and contraflow evacuation operations, targeted shoulder and bicycle lane widening, managed access control, and temporary parking restrictions. Together, these strategies increase effective outbound capacity while preserving access for emergency responders.

These physical and operational improvements are supported by signal override and queue-flush plans, battery backup systems, vegetation management, and routine maintenance, improving evacuation reliability during wildfire events. Complementary information- and demand-side strategies including real-time messaging, community education, phased evacuation protocols, and voluntary vehicle-reduction measures are intended to encourage earlier and more orderly evacuations.

Taken together, the corridor-specific improvements form a layered, flexible framework that can be implemented incrementally and scaled to incident severity, significantly improving evacuation effectiveness without reliance on large-scale roadway expansion.

6.3.6 Additional Considerations

This evacuation assessment assumes that residents and employees within the evacuation area evacuate using vehicles. A critical consideration for emergency response agencies is assisting individuals who do not have access to a vehicle or cannot drive, to ensure complete evacuation.

Additional strategies to support these populations may include the following:

- Establishing neighborhood "buddy" programs to link residents needing assistance with those able to help.
- Coordinating with VTA or other transit providers to provide evacuation assistance.
- Partnering with transportation network companies (TNCs) such as Uber or Lyft.
- Enhancing coordination with emergency services personnel to support accessibility needs.

For Mountain Winery event attendees without access to a vehicle, potential strategies include the following:

- Designated pick-up zones for TNCs or buses to facilitate orderly evacuation.
- Providing dedicated shuttle or charter bus service during events.

These strategies are designed to help the City of Saratoga and project teams reduce evacuation times and improve safety for all community members, including vulnerable populations. By implementing a combination of supply-side, demand-side, and information-side measures, evacuation performance can be improved and comply with state and local requirements.

Appendix A. Evacuation Time Estimates Model Calibration and Validation

Table A-1. Collection Locations for Existing Traffic Demand

ID	Roadway	Location	Data Source
1	Prospect Road	Miller Avenue to Lawrence Expressway	Tube count
2	Saratoga Avenue	Westerly Shadow Oaks Way to Fruitvale Avenue	Tube count
3	Big Basin Way	5th Street to 6th Street	Tube count
4	Quito Road	Yorkton Way to Baylor Avenue	Tube count
5	Quito Road	Yorkton Way to Allendale Avenue	Tube count
6	Quito Road	Bicknell Road to Pollard Road	Tube count
7	Fruitvale Avenue	Burgundy Way to Allendale Avenue	Tube count
8	Prospect Road	Stelling Road to Saratoga-Sunnyvale Road	Tube count
9	Saratoga Road	Fruitvale Avenue to Dagmar Drive	Tube count
10	SR 85	De Anza Boulevard	PeMS[1]
11	SR 85	Saratoga Avenue	PeMS[1]

Note: PeMS = Caltrans Performance Measurement System
Source: Fehr & Peers, 2026.

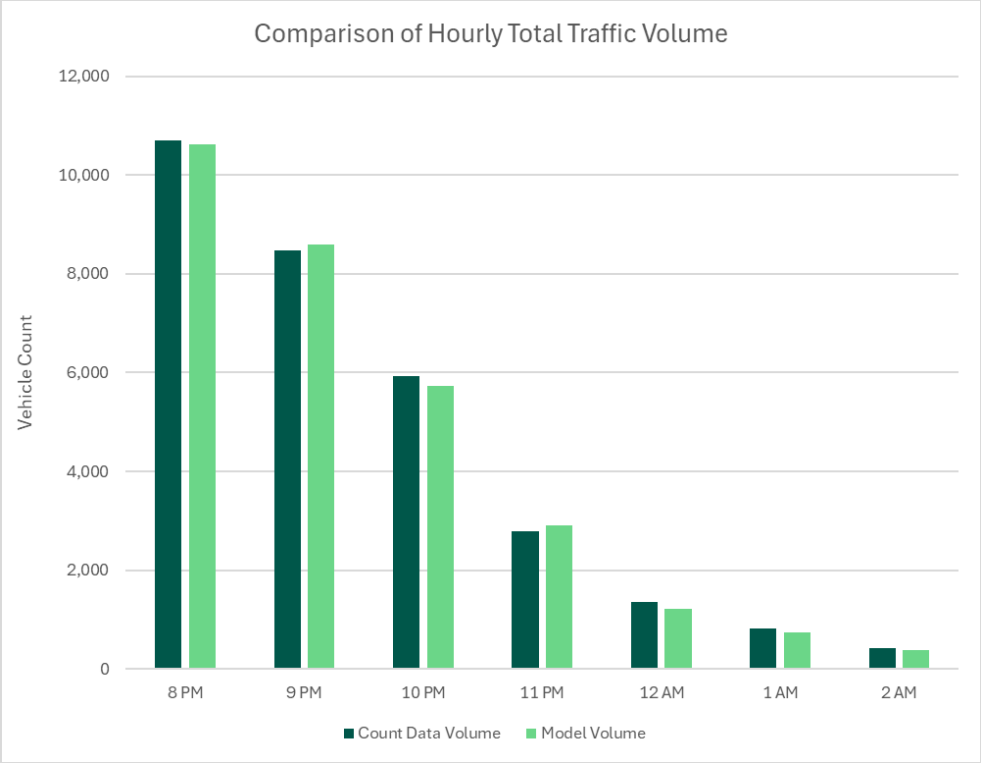


Figure A-1. Model Validation Based on Hourly Traffic Count Data

Notes:
1. Vehicle counts are based on total volumes at each location between 8 PM and 3 AM.
2. All locations are within +/-20% of observed count volumes.
3. Most locations are within +/-100 trips.
4. Model is within +/-1% of observed count volumes across all locations and hours.

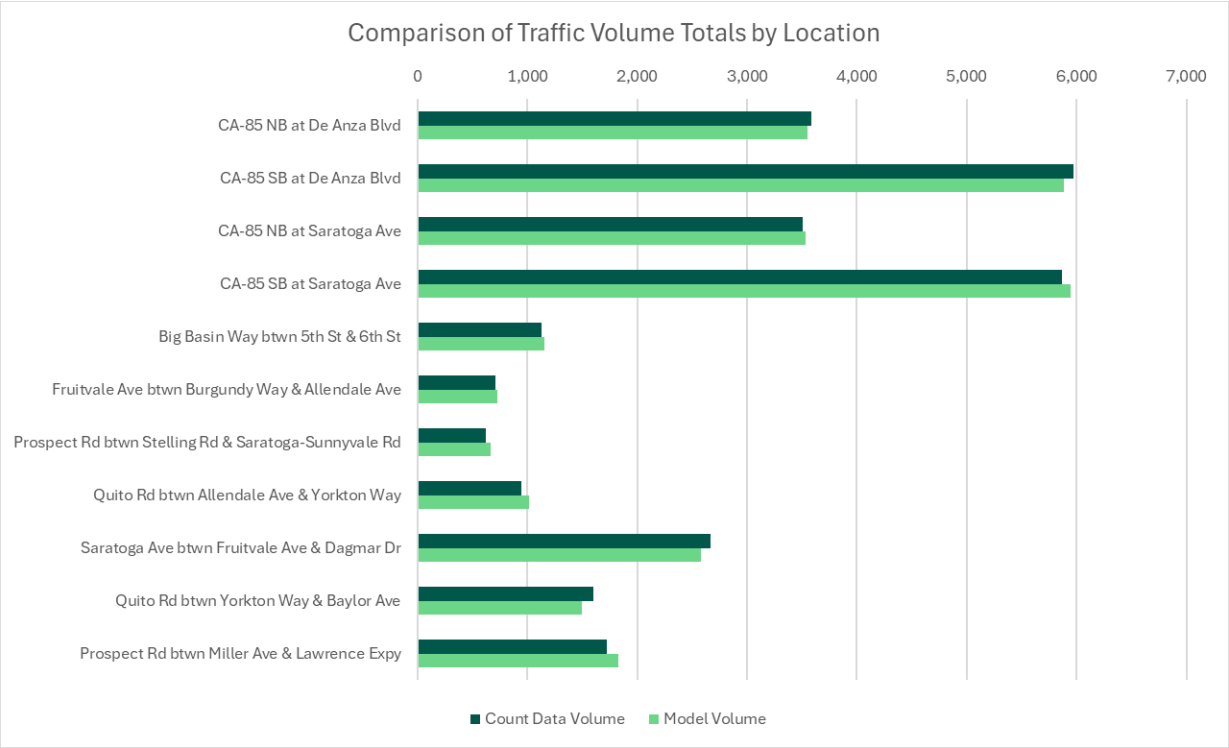


Figure A–2. Model Validation Based on Select Traffic Count Data Sites

Notes:
1. Vehicle counts are based on total volumes at each location between 8 PM and 3 AM.
2. All locations are within +/–20% of observed count volumes.
3. Most locations are within +/–100 trips.
4. Model is within +/–1% of observed count volumes across all locations and hours.

Appendix B. Socioeconomic Data

Table B-1. Summary of Socioeconomic Data

Geographic Area	Households[1]	Population[2]	Employment[3]	Household Vehicle Ownership[1]			
				0	1	2	3+
Census[1]							
Census Tract 5076	2,165	6,134	535	36	214	930	869
Census Tract 5073.02	1,013	2,552	1,487	0	164	405	336
Census Block Group 3; Census Tract 5073.01	287	792	N/A	N/A	N/A	N/A	N/A
Census Block Group 4; Census Tract 5073.01	277	783	N/A	N/A	N/A	N/A	N/A
Census Block Group 5; Census Tract 5073.01	594	1,597	N/A	N/A	N/A	N/A	N/A
Census Block Group 6; Census Tract 5073.01	681	1,297	N/A	N/A	N/A	N/A	N/A
Genasys Protect[2]							
SAR-001	N/A	1,796	N/A	N/A	N/A	N/A	N/A
SAR-008	N/A	769	N/A	N/A	N/A	N/A	N/A
SAR-009	N/A	558	N/A	N/A	N/A	N/A	N/A
SAR-010	N/A	2,812	N/A	N/A	N/A	N/A	N/A
SAR-014	N/A	247	N/A	N/A	N/A	N/A	N/A
SAR-015	N/A	1,196	N/A	N/A	N/A	N/A	N/A
SAR-016	N/A	1,702	N/A	N/A	N/A	N/A	N/A
SAR-018	N/A	2,755	N/A	N/A	N/A	N/A	N/A
SAR-019	N/A	675	N/A	N/A	N/A	N/A	N/A
SAR-020	N/A	414	N/A	N/A	N/A	N/A	N/A
SCC-011[3]	6	N/A	N/A	N/A	N/A	N/A	N/A
SCC-020[3]	25	N/A	N/A	N/A	N/A	N/A	N/A
SCC-021	N/A	0	N/A	N/A	N/A	N/A	N/A
SCC-029[3]	70	N/A	N/A	N/A	N/A	N/A	N/A
SCC-030	N/A	1	N/A	N/A	N/A	N/A	N/A

Geographic Area	Households[1]	Population[2]	Employment[3]	Household Vehicle Ownership[1]			
				0	1	2	3+
Santa Clara Countywide VMT Estimation Tool[4]							
TAZ 1333	1,246	3,342	139	N/A	N/A	N/A	N/A
TAZ 1334	661	1,880	55	N/A	N/A	N/A	N/A
TAZ 1350	546	1,466	245	N/A	N/A	N/A	N/A
TAZ 1351	664	1,789	385	N/A	N/A	N/A	N/A
TAZ 1353	1,406	3,997	63	N/A	N/A	N/A	N/A

Notes:
1. Census block group and census tract locations are illustrated in **Figure B-1**.
2. Genasys Protect zone locations are illustrated in **Figure B-2**.
3. The number of households for SCC-011, SCC-020, and SCC-029 was manually counted to estimate population.
4. TAZ locations are illustrated in **Figure B-3**.

Source: 2023 ACS 5-year Estimates; Genasys Protect; Santa Clara Countywide VMT Estimation Tool. Fehr & Peers, 2026.

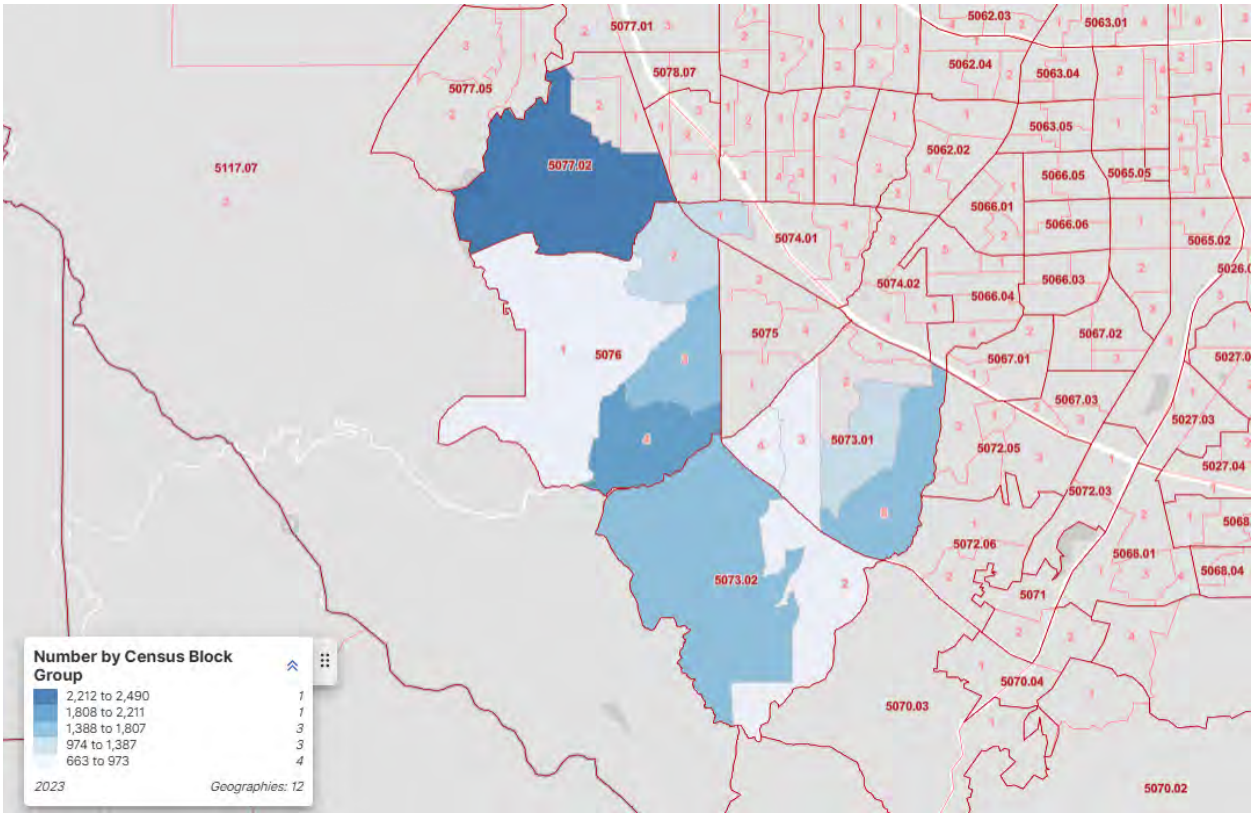


Figure B-1. Census Block Group and Census Tract Locations

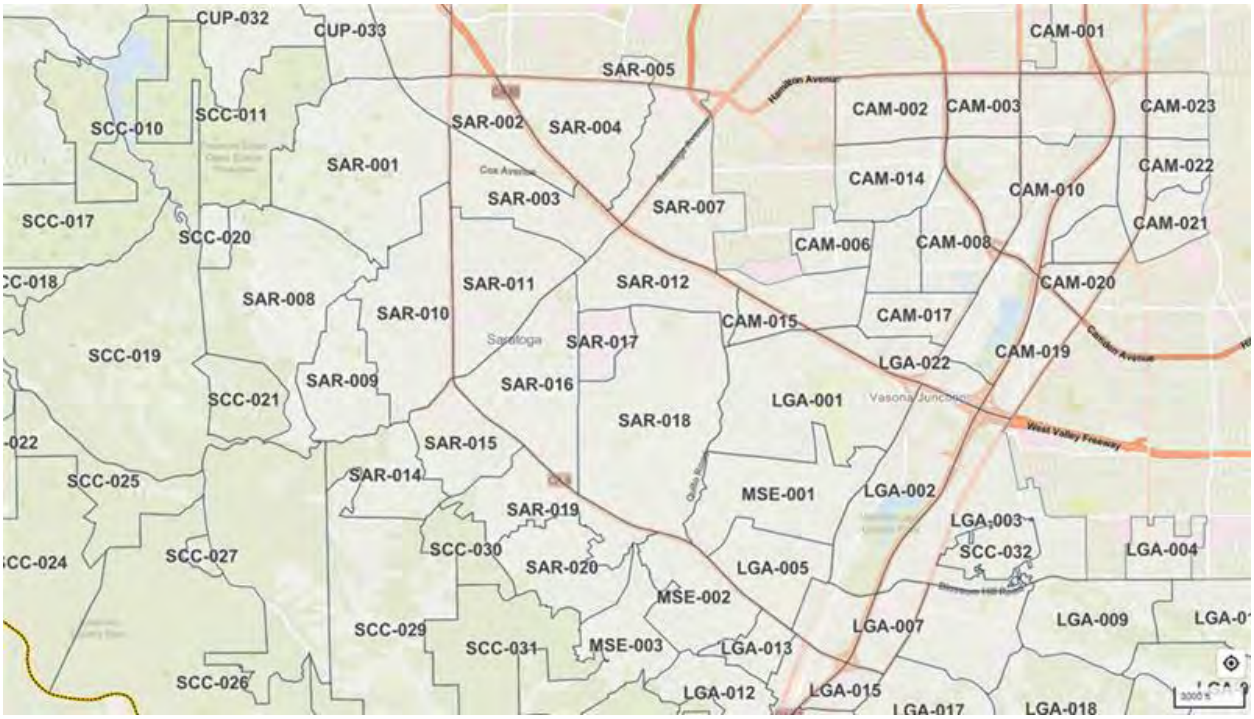


Figure B-2. Genasys Protect Zone Locations

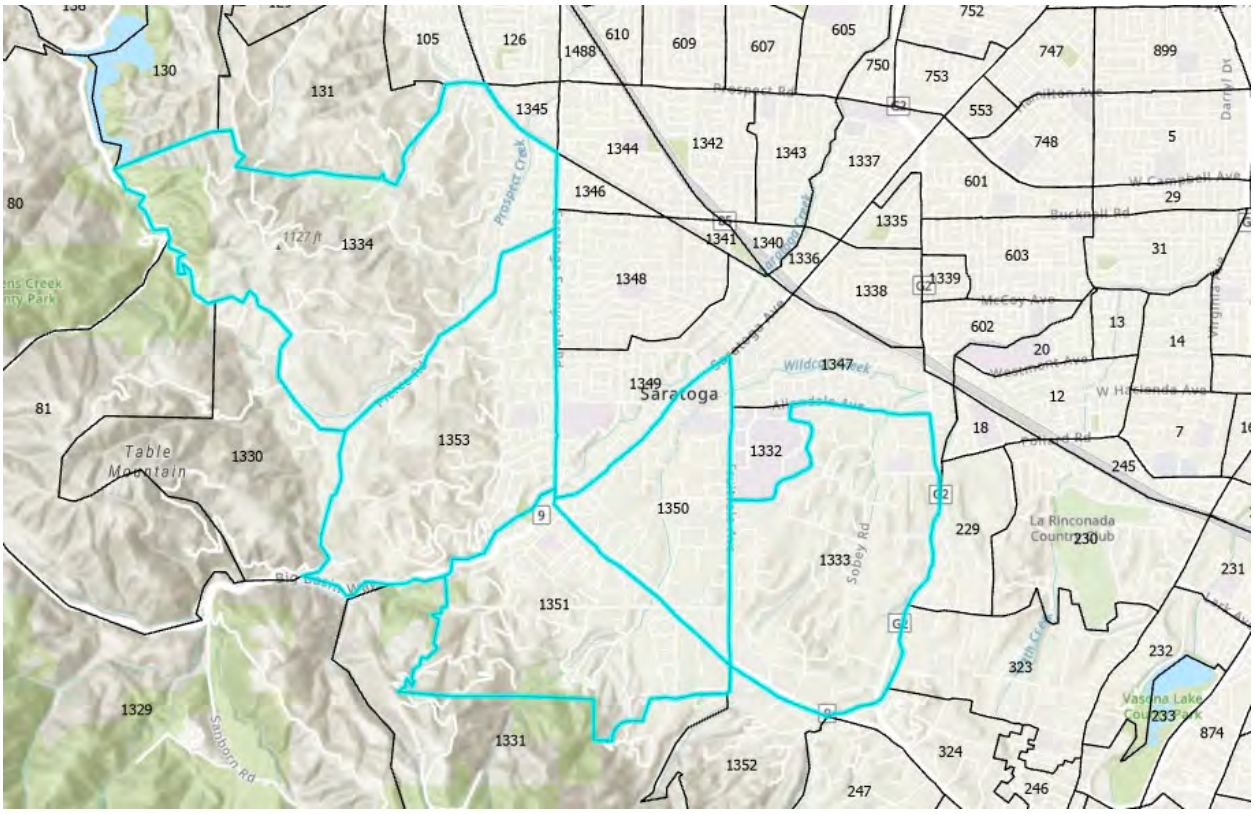


Figure B-3. TAZ Locations

Table B-2. Equestrian Trailer Trip Demand Data

Facility	Horses	Trailers	Equivalent Standard Vehicle Trips[1]
Garrod's	175	20 2-horse trailers	60
Tiger Teerlink's	5	1 4-horse trailer[2]	3
Via Regina	10[3]	1 3-horse trailer	3
Total	**190**	**22**	**66**

Notes:
1. Assume that one trailer is equivalent to three standard vehicles.
2. The owner does not have a trailer but a nearby neighbor has a four-horse trailer.
3. Via Regina has eight horses and two goats.

Source: City of Saratoga; Fehr & Peers, 2025.

Appendix C. Model Inputs for Evacuation Time Estimates

Table C-1. Development Projection A: Land Use

Genasys Zone	A: Residents	Household Size	A: Households	A: Employees	A: Equestrian Trailers	A: Mountain Winery Event Attendees	A: Mountain Winery Employees	A: House Family Vineyard Guests	A: House Family Vineyard Employees
SAR-001	1,796	2.8	641	0	0	0	0	0	0
SAR-008	769	2.8	275	27	22	0	0	148	22
SAR-009	558	2.8	199	5	0	0	0	0	0
SAR-010	2,812	2.8	1,004	25	0	0	0	0	0
SAR-014	247	2.5	99	0	0	0	0	0	0
SAR-015	1,196	2.5	478	193	0	0	0	0	0
SAR-016	1,702	2.8	608	0	0	0	0	0	0
SAR-018	2,755	2.8	984	0	0	0	0	0	0
SAR-019	675	2.5	270	0	0	0	0	0	0
SAR-020	414	2.8	148	0	0	0	0	0	0
SCC-011	16	2.8	6	0	0	0	0	0	0
SCC-020	5	2.8	2	0	0	0	0	0	0
SCC-021	0	2.8	0	0	0	2,500	82	0	0
SCC-029	191	2.5	76	0	0	0	0	0	0
SCC-030	1	2.5	1	0	0	0	0	0	0
Total	*13,137*	-	*4,791*	*250*	*22*	*2,500*	*82*	*148*	*22*

Table C-2. Household Vehicle Ownership Distribution – All Projections

Genasys Zone	0	1	2	2+	*Total*
SAR-001	2%	10%	45%	43%	*100%*
SAR-008	2%	10%	45%	43%	*100%*
SAR-009	2%	10%	45%	43%	*100%*
SAR-010	2%	10%	45%	43%	*100%*
SAR-014	0%	18%	45%	37%	*100%*
SAR-015	0%	18%	45%	37%	*100%*
SAR-016	2%	10%	45%	43%	*100%*
SAR-018	2%	10%	45%	43%	*100%*
SAR-019	0%	18%	45%	37%	*100%*
SAR-020	2%	10%	45%	43%	*100%*
SCC-011	2%	10%	45%	43%	*100%*
SCC-020	2%	10%	45%	43%	*100%*
SCC-021	2%	10%	45%	43%	*100%*
SCC-029	0%	18%	45%	37%	*100%*
SCC-030	0%	18%	45%	37%	*100%*

Table C-3. Development Projection A: Vehicle Trips by Vehicle Ownership Distribution

Genasys Zone	0	1	2	2+	*Subtotal*
SAR-001	13	64	577	689	*1,343*
SAR-008	6	28	248	296	*578*
SAR-009	4	20	179	214	*417*
SAR-010	20	100	904	1,079	*2,103*
SAR-014	0	18	89	92	*199*
SAR-015	0	86	430	442	*958*
SAR-016	12	61	547	654	*1,274*
SAR-018	20	98	886	1,058	*2,062*
SAR-019	0	49	243	250	*542*
SAR-020	3	15	133	159	*310*
SCC-011	0	1	5	6	*12*
SCC-020	0	0	2	2	*4*
SCC-021	0	0	0	0	*0*
SCC-029	0	14	68	70	*152*
SCC-030	0	0	1	1	*2*
Total	*78*	*554*	*4,312*	*5,012*	*9,956*

Note: Evacuation trip rates per household were based on the number of vehicles per household, estimated from census data. Households that own more vehicles generate more trips. The evacuation rates range from 1 to 2.5 trips per household.

Table C-4. Development Projection A: Evacuation Vehicle Demand

Genasys Zone	A: Residents	A: Employees	A: Equestrian	A: Mountain Winery Attendees	A: Mountain Winery Employees	A: House Family Vineyard Guests	A: House Family Vineyard Employees
SAR-001	1,343	0	0	0	0	0	0
SAR-008	578	27	66	0	0	67	22
SAR-009	417	5	0	0	0	0	0
SAR-010	2,103	25	0	0	0	0	0
SAR-014	199	0	0	0	0	0	0
SAR-015	958	191	0	0	0	0	0
SAR-016	1,274	0	0	0	0	0	0
SAR-018	2,062	0	0	0	0	0	0
SAR-019	542	0	0	0	0	0	0
SAR-020	310	0	0	0	0	0	0
SCC-011	12	0	0	0	0	0	0
SCC-020	4	0	0	0	0	0	0
SCC-021	0	0	0	1,136	81	0	0
SCC-029	152	0	0	0	0	0	0
SCC-030	2	0	0	0	0	0	0
Total	*9,956*	*248*	*66*	*1,136*	*81*	*67*	*22*

Table C-5. Development Projection B: Land Use

Genasys Zone	B: Residents	Household Size	B: Households	B: Employees	B: Equestrian Trailers	B: Mountain Winery Event Attendees	B: Mountain Winery Employees	B: House Family Vineyard Guests	B: House Family Vineyard Employees
SAR-001	2,191	2.8	782	0	0	0	0	0	0
SAR-008	833	2.8	298	27	22	0	0	148	22
SAR-009	558	2.8	199	5	0	0	0	0	0
SAR-010	2,958	2.8	1,056	25	0	0	0	0	0
SAR-014	247	2.5	99	0	0	0	0	0	0
SAR-015	1,231	2.5	492	193	0	0	0	0	0
SAR-016	1,906	2.8	681	0	0	0	0	0	0
SAR-018	3,836	2.8	1,370	0	0	0	0	0	0
SAR-019	675	2.5	270	0	0	0	0	0	0
SAR-020	414	2.8	148	0	0	0	0	0	0
SCC-011	16	2.8	6	0	0	0	0	0	0
SCC-020	25	2.8	9	0	0	0	0	0	0
SCC-021	70	2.8	25	0	0	2,500	82	0	0
SCC-029	191	2.5	76	0	0	0	0	0	0
SCC-030	1	2.5	1	0	0	0	0	0	0
Total	*15,152*	-	*5,512*	*250*	*22*	*2,500*	*82*	*148*	*22*

Table C-6. Development Projection B: Vehicle Trips by Vehicle Ownership Distribution

Genasys Zone	0	1	2	2+	*Subtotal*
SAR-001	16	78	704	841	*1,639*
SAR-008	6	30	268	320	*624*
SAR-009	4	20	179	214	*417*
SAR-010	21	106	950	1,135	*2,212*
SAR-014	0	18	89	92	*199*
SAR-015	0	89	443	455	*987*
SAR-016	14	68	613	732	*1,427*
SAR-018	27	137	1,233	1,473	*2,870*
SAR-019	0	49	243	250	*542*
SAR-020	3	15	133	159	*310*
SCC-011	0	1	5	6	*12*
SCC-020	0	1	8	10	*19*
SCC-021	1	3	23	27	*54*
SCC-029	0	14	68	70	*152*
SCC-030	0	0	1	1	*2*
Total	*92*	*629*	*4,960*	*5,785*	*11,466*

Note: Evacuation trip rates per household were based on the number of vehicles per household, estimated from census data. Households that own more vehicles generate more trips. The evacuation rates range from 1 to 2.5 trips per household.

Table C-7. Development Projection B: Evacuation Vehicle Demand

Genasys Zone	B: Residents	B: Employees	B: Equestrian	B: Mountain Winery Event Attendees	B: Mountain Winery Employees	B: House Family Vineyard Guests	B: House Family Vineyard Employees
SAR-001	1,639	0	0	0	0	0	0
SAR-008	624	27	66	0	0	67	22
SAR-009	417	5	0	0	0	0	0
SAR-010	2,212	25	0	0	0	0	0
SAR-014	199	0	0	0	0	0	0
SAR-015	987	191	0	0	0	0	0
SAR-016	1,427	0	0	0	0	0	0
SAR-018	2,870	0	0	0	0	0	0
SAR-019	542	0	0	0	0	0	0
SAR-020	310	0	0	0	0	0	0
SCC-011	12	0	0	0	0	0	0
SCC-020	19	0	0	0	0	0	0
SCC-021	54	0	0	1,136	81	0	0
SCC-029	152	0	0	0	0	0	0
SCC-030	2	0	0	0	0	0	0
Total	*11,466*	*248*	*66*	*1,136*	*81*	*67*	*22*

Table C-8. Development Projection C: Land Use

Genasys Zone	C: Residents	Household Size	C: Households	C: Employees	C: Equestrian Trailers	C: Mountain Winery Event Attendees	C: Mountain Winery Employees	C: House Family Vineyard Guests	C: House Family Vineyard Employees
SAR-001	2,255	2.8	805	0	0	0	0	0	0
SAR-008	858	2.8	307	27	22	0	0	148	22
SAR-009	564	2.8	201	5	0	0	0	0	0
SAR-010	2,972	2.8	1,061	25	0	0	0	0	0
SAR-014	262	2.5	105	0	0	0	0	0	0
SAR-015	1,234	2.5	493	193	0	0	0	0	0
SAR-016	1,906	2.8	681	0	0	0	0	0	0
SAR-018	4,071	2.8	1,454	0	0	0	0	0	0
SAR-019	698	2.5	279	0	0	0	0	0	0
SAR-020	414	2.8	148	0	0	0	0	0	0
SCC-011	16	2.8	6	0	0	0	0	0	0
SCC-020	25	2.8	9	0	0	0	0	0	0
SCC-021	736	2.8	263	0	0	2,581	114	0	0
SCC-029	236	2.5	94	0	0	0	0	0	0
SCC-030	1	2.5	1	0	0	0	0	0	0
Total	*16,248*	-	*5,907*	*250*	*22*	*2,581*	*114*	*148*	*22*

Table C-9. Development Projection C: Vehicle Trips by Vehicle Ownership Distribution

Genasys Zone	0	1	2	2+	*Subtotal*
SAR-001	16	81	725	865	*1,687*
SAR-008	6	31	276	330	*643*
SAR-009	4	20	181	216	*421*
SAR-010	21	106	955	1,141	*2,223*
SAR-014	0	19	95	97	*211*
SAR-015	0	89	444	456	*989*
SAR-016	14	68	613	732	*1,427*
SAR-018	29	145	1,309	1,563	*3,046*
SAR-019	0	50	251	258	*559*
SAR-020	3	15	133	159	*310*
SCC-011	0	1	5	6	*12*
SCC-020	0	1	8	10	*19*
SCC-021	5	26	237	283	*551*
SCC-029	0	17	85	87	*189*
SCC-030	0	0	1	1	*2*
Total	*98*	*669*	*5,318*	*6,204*	*12,289*

Note: Evacuation trip rates per household were based on the number of vehicles per household, estimated from census data. Households that own more vehicles generate more trips. The evacuation rates range from 1 to 2.5 trips per household.

Table C-10. Development Projection C: Evacuation Vehicle Demand

Genasys Zone	C: Residents	C: Employees	C: Equestrian	C: Mountain Winery Event Attendees	C: Mountain Winery Employees	C: House Family Vineyard Guests	C: House Family Vineyard Employees
SAR-001	1,687	0	0	0	0	0	0
SAR-008	643	27	66	0	0	67	22
SAR-009	421	5	0	0	0	0	0
SAR-010	2,223	25	0	0	0	0	0
SAR-014	211	0	0	0	0	0	0
SAR-015	989	191	0	0	0	0	0
SAR-016	1,427	0	0	0	0	0	0
SAR-018	3,046	0	0	0	0	0	0
SAR-019	559	0	0	0	0	0	0
SAR-020	310	0	0	0	0	0	0
SCC-011	12	0	0	0	0	0	0
SCC-020	19	0	0	0	0	0	0
SCC-021	551	0	0	1,217	113	0	0
SCC-029	189	0	0	0	0	0	0
SCC-030	2	0	0	0	0	0	0
Total	*12,289*	*248*	*66*	*1,217*	*113*	*67*	*22*

Appendix D. Trip Distribution

Table D-1. Population & Evacuation Trip Distribution by Zone

Genasys Zone	Population	Population Distribution	Connected Roadways	Evacuation Trip Distribution
SAR-001	269	3%	Prospect Road	20%
	403	4%	Wardell Road	30%
	201	2%	Pierce Road	15%
	470	5%	Arroyo del Arguello	35%
SAR-008	490	5%	Mt Eden Road	85%
	86	1%	Pierce Road	15%
SAR-009	104	1%	Saratoga Avenue-Big Basin Way	25%
	104	1%	Pierce Road	25%
	104	1%	4th Street	25%
	104	1%	Toll Gate Road	25%
SAR-010	442	4%	Pierce Road	21%
	210	2%	Paramount Drive	10%
	210	2%	Leonard Road	10%
	442	4%	Sarahills Drive-Verde Vista Lane	21%
	210	2%	Reid Lane	10%
	210	2%	Marion Road	10%
	379	4%	Saratoga Avenue-Big Basin Way	18%
SAR-014	198	2%	Saratoga Avenue-Big Basin Way	100%
SAR-015	201	2%	Saratoga Avenue-Big Basin Way	21%
	757	8%	Highway 9	79%
SAR-016	255	3%	Saratoga Avenue	20%
	382	4%	Highway 9	30%
	637	6%	Fruitvale Avenue Northbound	50%
SAR-018	474	5%	Fruitvale Avenue Northbound	23%
	474	5%	Allendale Avenue	23%
	557	6%	Quito Road Northbound	27%
	557	6%	Highway 9	27%
SAR-019	541	5%	Highway 9	100%
SAR-020	310	3%	Highway 9	100%
SCC-011	13	0%	Prospect Road	100%
SCC-020	4	0%	Mount Eden Road	100%
SCC-021	0	0%	Mountain Winery	100%
SCC-029	152	2%	Bohlman Road	100%
SCC-030	2	0%	Highway 9	100%

Appendix E.
Corridor-Specific Recommendations

Corridor 1: Saratoga–Sunnyvale Road

Corridor Role and Evacuation Function

Saratoga–Sunnyvale Road between Big Basin Way and SR 85 is an approximately three–mile, four–lane divided arterial that serves as the primary evacuation spine for lower hillside neighborhoods within the City of Saratoga. During wildfire or other emergency events, this corridor aggregates the majority of outbound evacuation demand originating from hillside communities accessed via Pierce Road, Mount Eden Road, Bohlman Road, and adjacent local collectors. Because of this convergence, Saratoga–Sunnyvale Road is expected to carry a substantial share of total evacuation volumes and functions as the key connection between local evacuation routes and regional gateways, including SR 85.

Under emergency conditions, the corridor's operational role shifts from a balanced, bidirectional arterial to a predominantly unidirectional facility focused on efficiently moving large volumes of traffic away from the hazard area. The ability of this corridor to maintain continuous, predictable flow is therefore critical to overall evacuation time estimates.

Key Constraints and Operational Considerations

Despite its relatively wide cross–section, Saratoga–Sunnyvale Road presents several operational challenges during evacuation events. Multiple side–street connections and signalized intersections introduce friction points where conflicting movements can reduce effective capacity if not actively managed. In addition, unmanaged access from local streets can disrupt lane discipline and slow evacuation flow during high–stress conditions.

At the same time, the corridor must preserve reliable ingress for fire, emergency medical services, and law enforcement to support simultaneous evacuation and response activities. Any evacuation strategy for this corridor must therefore balance outbound evacuation efficiency with the need for controlled, predictable access for emergency responders.

Feasible Strategies Approach

Given the corridor's width, continuity, and regional function, feasible strategies for Saratoga–Sunnyvale Road emphasize temporary, operational measures that repurpose existing pavement rather than permanent roadway widening. Directional evacuation operations, including partial contraflow, represent a primary opportunity to increase effective evacuation capacity using existing travel lanes and medians.

Under this approach, one or two southbound lanes (starting at Pierce Road and extending up to Prospect Road or Rainbow Drive in Cupertino) could be temporarily converted to northbound evacuation use during emergency events, creating a predominantly unidirectional facility oriented toward SR 85 and other regional exits. Managed access control at side streets and signalized intersections would be used to maintain lane discipline, minimize conflicts, and support sustained evacuation flow. At least one continuous southbound lane would be reserved for emergency response access to ensure inbound mobility for fire and medical services.

Signal override and queue–flush plans at key intersections—such as Pierce Road, Wardell Road, Prospect Road, and Rainbow Drive—would further support evacuation operations by prioritizing outbound movements and preventing queue spillback that could undermine corridor evacuation time

estimates. These measures rely primarily on advance planning, interagency coordination, and operational readiness rather than major capital construction.

Summary of Corridor-Specific Recommendations

Potential recommendations for Saratoga-Sunnyvale Road are summarized in **Table E-1**. The recommendations are organized by strategy type and linked to the broader strategy toolbox described in **Table 16**. Strategies are identified to distinguish between temporary operational actions and longer-term capital improvements, and to highlight that many feasible strategies can be implemented without new construction.

Table E-1. Saratoga Avenue Corridor Recommendations (Corridor 1)

Strategy Type	Corridor Recommendation	Corresponding Strategy (Table 16)	How the Recommendation Satisfies the Strategy	Temporary/ Operational/ Capital Based Strategy	Cost Tier
Supply-Side	Apply directional evacuation operations with at least one of the southbound lanes converted to contraflow lane between Pierce Road and Prospect Road or Rainbow Drive (refer to E-1 for an example)	Contraflow lanes/reversible lanes	Converts an existing four-lane divided arterial into a directional evacuation facility, effectively increasing evacuation capacity using existing pavement and medians.	Temporary/ Operational/ Capital-based[1]	Medium
	Temporarily route evacuating traffic northbound by closing side-street southbound access at key cross streets between Saratoga Avenue and Prospect Road	Managed traffic control	Provides sustained northbound capacity enhancement along a primary evacuation spine serving multiple hillside neighborhoods.	Temporary/ Operational	Low
	Close northbound side-street access to maintain lane discipline and promote orderly egress.	Managed traffic control	Implements turn restrictions and access control to maximize evacuation outflow and reduce conflict points during emergency operations.	Temporary/ Operational	Low

Strategy Type	Corridor Recommendation	Corresponding Strategy (Table 16)	How the Recommendation Satisfies the Strategy	Temporary/ Operational/ Capital Based Strategy	Cost Tier
	Maintain one continuous southbound lane for fire and EMS access	Managed traffic control	Balances evacuation efficiency with emergency response needs by reserving dedicated access for first responders.	Temporary/ Operational	Low
	Integrate directional operations with signal override and queue flush plans at Pierce Road, Wardell Road, Prospect Road, and Rainbow Drive.	ITS/TSMO elements (Signal Queue Flush, Remote/EOC Signal Control)	Coordinates intersection control with evacuation priorities to minimize delay and prevent queue spillback.	Operational/ Capital-Based	Medium
Information-Side	Route evacuees toward freeways and designated gateways using unidirectional operations	Real-time traffic management and dynamic route guidance	Establishes clear, predictable evacuation routing that can be reinforced with signage, messaging, and ITS tools	Temporary/ Operational	Low
	Coordinate evacuation operations with public notification systems	Vehicle monitoring and variable message signs	Supports consistent, real-time communication of evacuation routes, lane configurations, and operational changes	Temporary/ Operational	Low-Medium

Note:
1. The extent of the contraflow lane will determine if an operational or capital improvement is needed. The speed of implementing a contraflow lane under evacuation will also influence the improvement.
Source: Fehr & Peers, 2026.

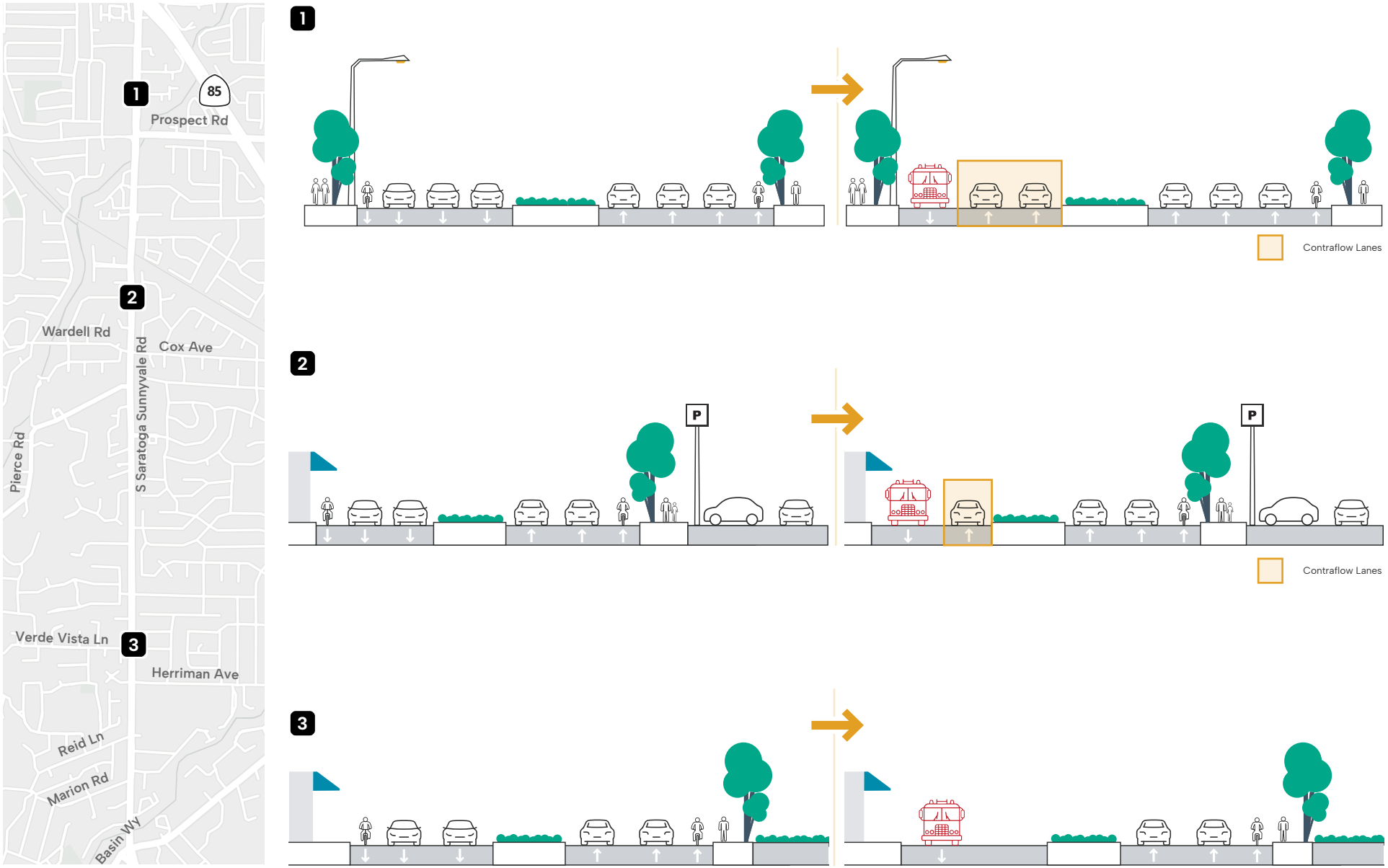


FIGURE E-1

Illustration of Contraflow Lane on Saratoga–Sunnyvale Road

Implementation and Feasibility Considerations

Most of the strategies identified for this corridor are operational in nature and can be implemented on a temporary or event-based basis. As a result, they are generally feasible within short to medium timeframes and do not require extensive capital investment. Key feasibility considerations include advance development of traffic control plans, staff training, coordination with neighboring jurisdictions (particularly at intersections controlled by other agencies) and clear public communication protocols.

The extent and duration of any contraflow operation would influence whether additional capital improvements, such as pavement markings or signage, are required. However, even in cases where limited capital investment is needed, these improvements would be targeted and scalable, supporting both emergency evacuation objectives and broader transportation system resilience.

Corridor 2: Saratoga Avenue

Corridor Role and Evacuation Function

Saratoga Avenue between Saratoga-Sunnyvale Road and SR 85 is an approximately two-mile corridor that transitions from a two-lane undivided roadway to a four-lane divided arterial. The corridor serves as a primary evacuation route for upper hillside neighborhoods and functions as a key collector of evacuation demand originating from Pierce Road, Big Basin Way, Bohlman Road, and the Saratoga Village area.

During wildfire or other emergency events, Saratoga Avenue plays a critical intermediary role in the evacuation network. It concentrates outbound traffic from constrained hillside roadways and conveys that demand toward regional evacuation gateways, including SR 85. Because of its position within the network and its connectivity to multiple high-risk hillside areas, the corridor is expected to experience high, time-compressed evacuation volumes that must be managed efficiently to avoid spillback into upstream neighborhoods.

Key Constraints and Operational Considerations

Evacuation time estimates along Saratoga Avenue is influenced by a combination of geometric transitions, access density, and signalized intersections. The shift from a two-lane facility to a wider arterial creates potential bottlenecks if traffic operations are not actively managed during evacuation conditions. Closely spaced driveways and cross streets introduce additional conflict points that can reduce effective capacity when evacuation demand is highest.

As with other primary evacuation corridors, Saratoga Avenue must also maintain reliable ingress for emergency responders. Fire, law enforcement, and emergency medical services require predictable access into hillside areas even as outbound evacuation flows intensify. Strategies must therefore balance increased outbound capacity with controlled, continuous access for emergency response.

Feasible Strategies Approach

Feasible strategies for Saratoga Avenue emphasize temporary and operational measures that increase effective evacuation capacity using existing roadway width, supplemented by targeted capital improvements where necessary. Directional evacuation operations, including partial

contraflow, represent a primary opportunity to enhance evacuation time estimates along this corridor during emergency events.

Under a directional operation scenario, up to three of the available travel lanes could be temporarily assigned to the outbound evacuation direction, substantially increasing capacity toward SR 85 while retaining a dedicated lane for emergency access. Managed access control at side streets and driveways would be used to preserve lane discipline, minimize conflicts, and support sustained evacuation flow.

Additional strategies focus on improving operational reliability and resilience during evacuation events. These include targeted use of dual-purpose shoulders to provide space for disabled vehicles or enforcement presence, temporary parking restrictions to reduce roadside friction, and coordinated signal override and queue-flush plans at key intersections such as Fruitvale Avenue. Signal hardening measures, including battery backups, support continued traffic control operation during power outages commonly associated with wildfire events.

Public notification and real-time communication tools play a complementary role by informing evacuees of lane configurations, route guidance, and destination options, helping to distribute demand and reduce confusion during high-stress conditions.

Summary of Corridor-Specific Recommendations

Potential recommendations for Saratoga Avenue are summarized in **Table E-2**. The recommendations are organized by strategy type and linked to the strategy toolbox described in **Table 16**. Strategies are identified to distinguish between temporary operational actions and longer-term capital improvements, and to highlight opportunities for phased implementation.

Table E-2. Saratoga Avenue Corridor Recommendations (Corridor 2)

Strategy Type	Corridor Recommendation	Corresponding Strategy (Table 16)	How the Recommendation Satisfies the Strategy	Temporary/ Operational/ Capital Based Strategy	Cost Tier
Supply-Side	Construct a two-way-left-turn lane between Saratoga-Sunnyvale Road and Crestbrook Road that can be used as a contraflow lane.	Contraflow lanes/reversible lanes	Expands usable roadway width during emergencies to accommodate overflow demand, disabled vehicles, or enforcement presence. May require modification of bicycle lanes.	Capital-Based	Medium-High
	Temporarily route evacuating traffic eastbound by closing westbound entries at key cross streets between Saratoga-Sunnyvale Road and SR 85	Contraflow lanes/reversible lanes	Provides sustained eastbound capacity enhancement along a primary evacuation spine serving multiple hillside neighborhoods.	Temporary/ Operational	Medium
	Close eastbound side-street access to maintain lane discipline and promote orderly egress.	Managed traffic control	Implements turn restrictions and access control to maximize evacuation outflow and reduce conflict points during emergency operations.	Temporary/ Operational	Low
	Maintain one continuous lane for fire and EMS access	Managed traffic control	Balances evacuation efficiency with emergency response needs by reserving dedicated access for first responders.	Temporary/ Operational	Low

Strategy Type	Corridor Recommendation	Corresponding Strategy (Table 16)	How the Recommendation Satisfies the Strategy	Temporary/ Operational/ Capital Based Strategy	Cost Tier
	Widen or reinforce shoulders near Crestbrook Dr and other constrained locations.	Dual-purpose shoulder/bike lane widening	Expands usable roadway width during emergencies to accommodate overflow demand, disabled vehicles, or enforcement presence.	Capital-Based	Medium
	Restrict on-street parking during high fire-risk days and evacuation events	Street parking management	Reduces roadside friction and improves effective capacity on narrow two-lane facilities during evacuation	Temporary/ Operational	Low
	Integrate directional operations with signal override and queue flush plans at Fruitvale Avenue	ITS/TSMO elements (Signal Queue Flush, Remote/EOC Signal Control)	Coordinates intersection control with evacuation priorities to minimize delay and prevent queue spillback.	Operational/ Capital-Based	Medium
Information-Side	Route evacuees toward freeways and designated gateways using unidirectional operations	Real-time traffic management and dynamic route guidance	Establishes clear, predictable evacuation routing that can be reinforced with signage, messaging, and ITS tools	Temporary/ Operational	Low
	Coordinate evacuation operations with public notification systems	Vehicle monitoring and variable message signs	Supports consistent, real-time communication of evacuation routes, lane configurations, and operational changes	Temporary/ Operational	Low-Medium

Source: Fehr & Peers, 2026.

Implementation and Feasibility Considerations

Many of the strategies identified for Saratoga Avenue are operational or temporary in nature and can be implemented without major construction. Directional evacuation operations and managed access controls and parking management rely primarily on advance planning, interagency coordination, staff training, and public communication rather than permanent roadway reconfiguration. As a result, these measures are generally feasible within short to medium implementation timeframes.

Targeted capital improvements—such as shoulder reinforcement or construction of a two-way left-turn lane that could function as a contraflow facility—would be limited in extent and focused on addressing specific constraints rather than expanding capacity corridor-wide. These improvements could be phased over time and coordinated with routine maintenance or safety projects to improve cost-effectiveness. This capital improvement may require modification of existing buffered bicycle lanes and should consider the trade-offs of day-to-day safety and evacuation needs.

Key feasibility considerations include defining clear activation and termination points for contraflow operations, coordinating responsibilities among police, public works, and emergency management staff, and aligning signal override protocols with the City's Emergency Operations Center. With these elements in place, Saratoga Avenue can function as a reliable, high-capacity evacuation route while maintaining safe and predictable operations under both emergency and non-emergency conditions.

Corridors 3 and 4: Pierce Road and Big Basin Way/Pierce Road

Corridor Role and Evacuation Function

Pierce Road and Big Basin Way (Corridor 3), together with Pierce Road as a standalone feeder corridor (Corridor 4), primarily serve as local evacuation collectors and feeders for hillside residential areas and winery destinations characterized by steep terrain, narrow cross-sections, and limited route redundancy. These corridors convey evacuation demand from dispersed hillside development toward downstream evacuation routes, including Saratoga-Sunnyvale Road, Saratoga Avenue, and Saratoga-Los Gatos Road (SR 9).

Unlike the primary evacuation spines, these corridors are not intended to carry large, sustained evacuation volumes over long distances. Instead, their evacuation function is to reliably move traffic out of constrained hillside areas and prevent localized blockages that could trap residents or delay emergency response. Because demand is highly directional and time-compressed, even minor disruptions can significantly degrade evacuation times.

Key Constraints and Operational Considerations

Both corridors are constrained by two-lane configurations, steep grades, limited shoulders, and minimal opportunities for vehicle recovery or passing. In several locations, roadside vegetation, narrow shoulders, and aging pavement conditions further reduce effective roadway width. These physical constraints limit the feasibility of traditional capacity-expansion strategies and increase the system's vulnerability to disabled vehicles, debris, or minor incidents during evacuation events.

Maintaining ingress for emergency responders is a critical consideration. Fire, law enforcement, and medical personnel must be able to access hillside neighborhoods even as outbound evacuation traffic increases. Operational strategies must therefore prioritize reliability and blockage prevention rather than throughput maximization.

Feasible Strategies Approach

Given the physical and environmental constraints of these corridors, feasible strategies focus on targeted, context-sensitive improvements rather than broad geometric expansion. The primary objective is to preserve effective roadway width, reduce the likelihood of blockages, and improve operational reliability during evacuation events.

Targeted shoulder widening is identified as a potential strategy at select locations where terrain, drainage, and right-of-way conditions allow modest expansion without extensive grading or environmental disturbance. These improvements are intended to provide space for disabled vehicles, emergency pullouts, or traffic management rather than to increase general-purpose capacity.

Operational measures play an equally important role. Vegetation clearance and routine shoulder maintenance help preserve usable pavement width and sight distance, reducing the risk that minor obstructions escalate into full roadway closures. Temporary on-street parking restrictions during high fire-risk days or evacuation events further reduce roadside friction and improve effective capacity on these narrow facilities.

Information-based strategies are particularly critical for these corridors. Public notification, early warning systems, and phased or early departure guidance can encourage residents and winery operations to evacuate earlier, reducing peak demand that would otherwise overwhelm limited roadway capacity. Signal hardening measures, including battery backups at key intersections, support orderly traffic flow and reduce driver confusion during power outages common in wildfire events.

Summary of Corridor-Specific Recommendations

Potential recommendations for Pierce Road and Big Basin Way (Corridor 3) and Pierce Road (Corridor 4) are summarized in **Table E-3** and **Table E-4**, respectively. The recommendations are organized by strategy type and linked to the strategy toolbox described in **Table 16**. Measure types distinguish between temporary operational actions and targeted capital improvements, highlighting that most feasible strategies do not require major construction.

Table E-3. Pierce Road (Southern Half) and Big Basin Way Corridor Recommendations (Corridor 3)

Strategy Type	Corridor Recommendation	Corresponding Strategy (Table 16)	How the Recommendation Satisfies the Strategy	Temporary/ Operational/ Capital Based Strategy	Cost Tier
Supply-Side	Implement targeted shoulder widening at select locations along Pierce Road and Big Basin Way where terrain and right-of-way allow	Dual-purpose shoulder/bike lane widening	Provides limited additional space for vehicle pull-outs, disabled vehicles, and emergency response without requiring full roadway widening.	Capital-Based	Medium
	Conduct vegetation clearance and routine shoulder maintenance along the corridor	Faster clearing of fire-induced road closures	Preserves effective roadway width and sight distance, reducing the likelihood that vegetation or debris constrains evacuation flow.	Operational	Low
	Restrict on-street parking during high fire-risk days and evacuation events	Street parking management	Reduces roadside friction and improves effective capacity on narrow two-lane facilities during evacuation.	Temporary/ Operational	Low
	Maintain clear ingress for emergency responders through traffic control and managed access	Managed traffic control	Balances outbound evacuation movements with inbound fire and EMS access in a constrained corridor.	Temporary/ Operational	Low
	Harden traffic control devices with battery backups at key intersections along Big Basin Way	ITS/TSMO elements (Battery Backup at Signals)	Ensures traffic signals remain operational during power outages to support safe and orderly evacuation.	Capital-Based	Medium
Information-Side	Deploy public notification and early-warning systems targeted to hillside residents and winery operations	Community evacuation education	Encourages earlier departures and improves route familiarity, reducing peak evacuation surges.	Operational	Low

Strategy Type	Corridor Recommendation	Corresponding Strategy (Table 16)	How the Recommendation Satisfies the Strategy	Temporary/ Operational/ Capital Based Strategy	Cost Tier
	Integrate evacuation messaging with real-time alerts and notifications	Vehicle monitoring and variable message signs	Provides consistent, timely information on evacuation timing, routes, and restrictions.	Temporary/ Operational	Low
	Coordinate evacuation communications with phased or early departure guidance	Phased evacuation process	Reduces congestion by distributing evacuation demand over time on capacity-constrained roadways.	Operational	Low

Source: Fehr & Peers, 2026.

Table E-4. Pierce Road (Northern Half) Corridor Recommendations (Corridor 4)

Strategy Type	Corridor Recommendation	Corresponding Strategy (Table 16)	How the Recommendation Satisfies the Strategy	Temporary/ Operational/ Capital Based Strategy	Cost Tier
Supply-Side	Implement targeted shoulder widening at select locations along Pierce Road where terrain and right-of-way allow	Dual-purpose shoulder/bike lane widening	Provides limited additional space for vehicle pull-outs, disabled vehicles, and emergency response without requiring full roadway widening	Capital-Based	Medium
	Construct bicycle lanes along Pierce Road between Saratoga-Sunnyvale Road and Comer Drive	Dual-purpose shoulder/bike lane widening	Provides potential for an additional evacuation lane or queuing storage.	Capital-Based	Medium
	Conduct vegetation clearance and routine shoulder maintenance along the corridor	Faster clearing of fire-induced road closures	Preserves effective roadway width and sight distance, reducing the likelihood that vegetation or debris constrains evacuation flow	Operational	Low
	Restrict on-street parking during high fire-risk days and evacuation events	Street parking management	Reduces roadside friction and improves effective capacity on narrow two-lane facilities during evacuation	Temporary/ Operational	Low
	Maintain clear ingress for emergency responders through traffic control and managed access	Managed traffic control	Balances outbound evacuation movements with inbound fire and EMS access in a constrained corridor	Temporary/ Operational	Low
	Harden traffic control devices with battery backups at key intersections along Big Basin Way	ITS/TSMO elements (Battery Backup at Signals)	Ensures traffic signals remain operational during power outages to support safe and orderly evacuation	Capital-Based	Medium

Strategy Type	Corridor Recommendation	Corresponding Strategy (Table 16)	How the Recommendation Satisfies the Strategy	Temporary/ Operational/ Capital Based Strategy	Cost Tier
Information -Side	Deploy public notification and early-warning systems targeted to hillside residents and winery operations	Community evacuation education	Encourages earlier departures and improves route familiarity, reducing peak evacuation surges	Operational	Low
	Integrate evacuation messaging with real-time alerts and notifications	Vehicle monitoring and variable message signs	Provides consistent, timely information on evacuation timing, routes, and restrictions	Temporary/ Operational	Low
	Coordinate evacuation communications with phased or early departure guidance	Phased evacuation process	Reduces congestion by distributing evacuation demand over time on capacity-constrained roadways	Operational	Low

Source: Fehr & Peers, 2026.

Implementation and Feasibility Considerations

The strategies identified for these corridors are intentionally modest and scalable, reflecting the physical constraints of hillside roadways. Most recommendations consist of operational, maintenance, or information-based actions that can be implemented relatively quickly and at low to moderate cost. These measures rely on clear activation criteria, interdepartmental coordination, and consistent enforcement rather than permanent roadway reconfiguration.

Targeted capital improvements, such as limited shoulder widening or signal hardening, would be implemented selectively where conditions allow and where benefits justify the investment. These improvements can be phased over time and coordinated with routine maintenance or safety projects to improve feasibility and cost-effectiveness.

Overall, this approach recognizes that evacuation time estimates along constrained hillside corridors is driven less by added capacity and more by early evacuation, obstruction prevention, and operational reliability. By combining targeted physical improvements with proactive operations and communication, these corridors can support safe and effective evacuation while maintaining access for emergency responders and preserving the environmental and community context of the hillside areas.

All Corridors: Demand-Side Strategy

Demand-side strategies reduce evacuation delays by lowering peak vehicle demand and distributing departures over time, rather than increasing physical roadway capacity. Across all evacuation corridors in Saratoga, these strategies are especially important given constrained hillside geometry, limited redundancy, and the highly time-compressed nature of no-notice wildfire evacuations.

Demand-side measures complement corridor-specific supply-side and information-side strategies by reducing congestion at its source. Many of these strategies rely on policy direction, preparedness programs, and operational protocols, making them broadly applicable, relatively low-cost, and feasible to implement across the entire evacuation network. While demand-side strategies alone cannot eliminate evacuation delays under extreme conditions, they can materially improve evacuation time estimates by reducing vehicle volumes and smoothing peak demand on primary evacuation routes.

Summary of All-Corridor Demand Side Recommendations

Table 16 summarizes feasible demand-side strategies applicable to all evacuation corridors. The table follows the same structure as corridor-specific recommendation tables (**Table E-1** to **Table E-4**) and links each recommendation to the strategies toolbox presented in **Table 16**.

Table E-5. All Corridors – Demand-Side Recommendations

Strategy Type	Corridor Recommendation	Corresponding Strategies (Table 16)	How the Recommendation Satisfies the Strategy	Temporary/ Operational/ Capital Based Strategy
Demand-Side	Encourage carpooling and shared evacuation travel where feasible	Carpooling and public transit promotion	Reduces the number of vehicles entering the evacuation network, lowering congestion on constrained corridors	Operational/Policy
	Implement a voluntary one-vehicle-per-household evacuation pledge	One car per household pledge	Lowers peak evacuation vehicle demand by encouraging households to consolidate trips	Operational/Policy
	Promote early off-site placement of secondary vehicles during advance wildfire warnings or high-hazard days	Early off-site placement of second vehicles	Reduces evacuation-time vehicle demand without affecting daily travel behavior	Operational/Policy
	Encourage early evacuation departures when credible wildfire threats exist	Phased evacuation process	Shifts demand earlier, reducing peak congestion during time-compressed evacuation windows	Operational
	Develop phased evacuation protocols based on location or access constraints	Phased evacuation process	Distributes evacuation demand over time and prioritizes the most constrained areas	Operational
	Identify local shelter locations outside the WUI but within City limits	Shelter location planning	Reduces long-distance evacuation demand on primary corridors and regional gateways	Policy/Planning
	Plan and implement shelter locations for equestrian populations	Shelter location planning	Reduces equestrian trailer trips and long-distance evacuation demand on constrained routes	Policy/Planning

Strategy Type	Corridor Recommendation	Corresponding Strategies (Table 16)	How the Recommendation Satisfies the Strategy	Temporary/ Operational/ Capital Based Strategy
	Coordinate early event suspension and staged departure plans for large venues	Carpooling and public transit promotion	Reduces surge demand from special events during evacuation periods	Operational/Policy

Source: Fehr & Peers, 2026.

Implementation and Feasibility Considerations

Demand-side strategies are generally highly feasible because they rely primarily on education, policy direction, coordination, and operational readiness rather than capital construction. Many measures can be implemented in the near term through updates to emergency preparedness programs, public outreach materials, and interdepartmental protocols. These strategies are scalable and can be strengthened over time as community familiarity with evacuation procedures improves.

Demand-side strategies play a critical role in demonstrating that evacuation performance can be managed through feasible, system-wide measures that reduce evacuation demand rather than relying solely on physical roadway expansion. When combined with supply-side and information-side strategies, demand-side measures contribute to reducing wildfire evacuation delay.

Financial Feasibility

Overall, the strategies identified for this corridor represent a financially feasible and scalable approach to improving evacuation time estimates, particularly when evaluated in the context of constrained hillside roadways where traditional capacity expansion is impractical. The recommended strategies rely primarily on operational, policy-based, and targeted capital investments, allowing jurisdictions to phase implementation over time and align expenditures with available funding and staffing resources.

A significant portion of the recommendations consist of operational and temporary measures with relatively low to moderate cost and short implementation timelines. Strategies such as managed traffic control and signal override programming, street parking management on high-hazard days, and public education and communication programs can generally be implemented within one year or less. These measures require limited capital investment and instead rely on staff time, interagency coordination, training, and modest equipment or programming costs. As such, they are well-suited for near-term implementation and provide meaningful evacuation benefits without the need for major construction funding.

Contraflow lane operations, while involving higher relative effort than basic operational measures, remain financially feasible because they require minimal permanent capital investment. Costs are primarily associated with planning, signage, training, and interagency coordination rather than roadway reconstruction. The ability to implement contraflow operations over a one- to two-year timeframe allows agencies to integrate these measures into existing emergency preparedness and capital planning cycles, further supporting feasibility.

The most capital-intensive measures (dual-purpose shoulder or bikeway widening and signal hardening with battery backups) are limited in scope and strategically targeted. Shoulder widening is anticipated only at select locations where terrain, drainage, and right-of-way constraints can be addressed without extensive grading or environmental disturbance. This targeted approach helps control costs and avoids the financial and environmental burdens associated with full corridor widening. Similarly, signal hardening investments are discrete improvements that provide long-term operational resilience benefits beyond evacuation scenarios, increasing their cost-effectiveness over time.

Importantly, the recommendations emphasize phasing and prioritization, allowing the City to implement lower-cost, high-benefit measures first while planning and funding more capital-intensive improvements over a longer horizon. Many of the operational and information-based measures can also be integrated with existing emergency management, transportation operations, and public outreach programs, further reducing incremental costs.

In summary, the identified strategies are financially feasible because they

- rely heavily on low- to moderate-cost operational and policy actions;
- limit capital investments to targeted, high-value improvements;
- allow for phased implementation aligned with planning and budget cycles; and
- provide multi-purpose benefits that extend beyond evacuation scenarios.

Taken together, this balanced approach supports a feasible evacuation strategy toolbox without requiring prohibitively expensive or impractical infrastructure expansion.