Santa Cruz County

Rural Highways Safety Plan

Caltrans

SCCRTC
Santa Cruz County Regional Transportation Commission

Fehr & Peers

MARCH 2026

Table of Contents

Executive Summary viii
Study Area and Local Context ES1
Safe System Approach and Vision Zero ES3
Safety Landscape and Systemic Risk Analysis ES4
Community Engagement ES5
Safety Strategies and Emphasis Area Safety Concepts ES6
Equity Considerations ES8
Implementation, Funding, and Project Readiness ES9

1 Introduction 1
1.1 Safe System Approach 2
1.1.1 How the Safe System Approach Shapes the RHSP 3
1.2 Project Location 5
1.2.1 Place Types 5
1.3 Supporting Efforts 9
1.3.1 Foundational State and Regional Policy 9
1.3.2 Regional and Local Planning Documents 9
1.3.3 Treatment Selection and Design Guidance 11

2 Vision and Goals 13

3 Safety Landscape 17
3.1 Potential Risk Factors 18
3.2 Crash History 21
3.2.1 Crash Trends 22
3.2.2 Demographic Information 25
3.2.3 Study Highways 26
3.3 Safety Profiles 30

4 Engaging the Community 33
4.1 Engagement Milestones and Activities 34
4.1.1 Milestone 1: Existing Conditions and Safety Concerns (Fall 2024) 34
4.1.2 Milestone 2: Safety Profiles, Countermeasures, and Priority Locations (Spring Summer 2025) 35
4.1.3 Milestone 3: Draft RHSP (January - February 2026) 36
4.1.4 Engagement Findings by Highway 36
4.1.5 Key Takeaways 37

5 Safety Strategies 39
5.1 Countermeasure Toolbox 39
5.1.1 Key Countermeasures 41
5.2 Safe System Strategies 41
5.2.1 Demand Management 43
5.2.2 Speed Management 44
5.2.3 Conflict Management 45

6 Emphasis Areas and Safety Enhancement Concepts 47
6.1 Method and Approach 48
6.1.1 Project Selection Process 48
6.1.2 Emphasis Areas 50

7 Equity 73
7.1 Transportation Equity Action Plan (2025) 75
7.2 Comparative Equity Mapping Tools 76

8 Funding, Implementation, and Evaluation Strategies 77
8.1 Road Map to Vision Zero 79
8.1.1 Building a Culture of Safety 81
8.1.2 Shared Responsibility 81
8.1.3 Project Priorities 82
8.1.4 Implementation Phasing and Sequencing 84
8.2 Funding Opportunities 85
8.2.1 Federal Funding Opportunities 86
8.2.2 State Funding Opportunities 87
8.2.3 Local Funding Opportunities in Santa Cruz County 88
8.2.4 Leveraging and Combining Funding Sources 89
8.3 Evaluation Strategies 90

9 Conclusion 93

Appendices

Appendix A. Relevant Plans and Policies

Appendix B. RHSP Vision and Goals

Appendix C. Existing Conditions Memo

Appendix D. Crash Profiles

Appendix E. Milestone 1 Engagement Summary

Appendix F. Milestone 2 Engagement Summary

Appendix G. RHSP Countermeasure Toolbox

Appendix H. RHSP Project List

Appendix I. Safety Enhancement Concepts

Appendix J. Equity Memo

Appendix K. SS4A Checklist

List of Figures

Figure ES-1: Study Highways and Place Types ES2

Figure ES-2: Emphasis Areas ES7

Figure 1: Safe System Wheel (Source: US DOT) 2

Figure 2: Swiss Cheese Redundancy Model Graphic (Source: FHWA) 2

Figure 3: The Exponential Role of Speed in Kinetic Energy (and Associated Injury Risk) 3

Figure 4: Safe Systems Pyramid 4

Figure 5: Study Highways 6

Figure 6: Caltrans Place Types for Contextual Design Guidance (Caltrans, DIB 94) 7

Figure 7: Study Highwas and Place Types 10

Figure 8: Potential Risk Network 20

Figure 9: Study Highway Crashes; 2014–2023 22

Figure 10: Modal Breakdown of Crashes; 2014-2023 22

Figure 11: Crashes by Crash Type; 2014-2023 23

Figure 12: Crashes by Primary Crash Factor (PCF); 2014-2023 24

Figure 13: Crash Victims by Race; 2014–2023 25

Figure 14: Crash Victims by Age; 2014–2023 25

Figure 15: Crash Parties by Gender; 2014-2023 26

Figure 16: Crashes by Study Highway; 2014–2023 26

Figure 17: Crashes by Severity 27

Figure 18: Modal Breakdown of Crashes by Highway 2014–2023 28

Figure 19: Modal Breakdown of KSI Crashes by Highway 2014–2023 28

Figure 20: Crashes by Mode 29

Figure 21: Countermeasure Toolbox Example 40

Figure 22: Safe Systems Pyramid 42

Figure 23: Emphasis Areas 49

Figure 24: Highway 1: Scott Creek 53

Figure 25: Highway 1: Davenport 55

Figure 26: Highway 1: Dimeo Lane/Transfer Station 57

Figure 27: Highway 9: Waterman Gap Hairpin Curve 59

Figure 28: Highway 9: Boulder Creek 61

Figure 29: Highway 9: Ben Lomond (1 of 2) 63

Figure 30: Highway 9: Ben Lomond (2 of 2) 65

Figure 31: Highway 129: Blackburn Street/Bridge Street 67

Figure 32: Highway 129: Murphy Road 69

Figure 33: Highway 152: Lakeview Middle School/St. Francis High/Fairgrounds Access 71

Figure 34: Santa Cruz County Census Tracts by Percentage of People of Color (2020 Census) 74

Figure 35: Santa Cruz County Transportation Equity Priority Communities (SCCRTC, 2025) 75

Figure 36: Screenshot of Santa Cruz County using the Safe Streets for All Underserved Communities Tool 76

Figure 37: Project Life Cycle 78

Figure 38: Example Safety Funding Sources 85

List of Tables

Table 1: Emphasis Area Locations 52

Acknowledgements

The Santa Cruz County Rural Highways Safety Plan (RHSP) was prepared for the Santa Cruz County Regional Transportation Commission (RTC) and the California Department of Transportation (Caltrans) District 5 and funded through a Caltrans Strategic Partnerships Grant. The RHSP was developed through collaboration with partner agencies, local jurisdictions, and community stakeholders to improve safety on rural highways throughout Santa Cruz County.

PROJECT PARTNERS AND PARTICIPATING ORGANIZATIONS

Santa Cruz County Regional Transportation Commission (RTC)
Caltrans District 5
County of Santa Cruz
Santa Cruz Metropolitan Transit District (SC METRO)
City of Watsonville
City of Santa Cruz
California State Parks

Davenport North Coast Association
Ben Lomond Village Alliance
Boulder Creek Business Association

Lakeview Middle School
St. Francis High School
Santa Cruz County Fair

CONSULTANT TEAM

Fehr & Peers
Leshner Planning
Mark Thomas

COMMUNITY PARTICIPATION

Numerous community members, residents, and local stakeholders provided valuable input throughout the development of the RHSP. Their participation and local knowledge were essential in shaping a plan that reflects community priorities and supports safer travel for all roadway users

CALTRANS DISCLAIMER

Caltrans supports the Santa Cruz County Regional Transportation Commission's (SCCRTC) efforts to create this Rural Highway Safety Plan (RHSP; Safety Plan) to assist in evaluation and prioritization of safety improvements for roadways within Santa Cruz County. This Safety Plan is a state-funded local plan focused on specific areas within Santa Cruz County. The priorities and projects within this safety plan may not reflect the Highway Safety Improvement Program at Caltrans. As such, some statements, the risk-ranking system, scope of concepts proposed, and other material may differ from those used by Caltrans. Additionally, implementation of concepts from this Plan can be evaluated for feasibility and alignment within Caltrans standards, policy, and procedure as they arise. Caltrans District Traffic Safety and executive management will need to concur with any proposed improvement on a State Highway.

Glossary

AB Assembly Bill

ADA Americans with Disabilities Act

CIP Capital Improvement Program

Caltrans California Department of Transportation

CHP California Highway Patrol

CRF Crash Reduction Factor

DIB Design Information Bulletin

DP Director's Policy

DUI Driving Under the Influence

FHWA Federal Highway Administration

HIN High-Injury Network

HSIP Highway Safety Improvement Program

ITE Institute of Transportation Engineers

KSI Killed or Severely Injured

LRSM Local Roadway Safety Manual

MPH Miles per Hour

NRSS National Roadway Safety Strategy

PCF Primary Crash Factor

PDO Property Damage Only

SB Senate Bill

SCCRTC Santa Cruz County Regional Transportation Commission

SC METRO Santa Cruz Metropolitan Transit District

SR State Route

SRTS Safe Routes to School

SS4A Safe Streets and Roads for All

TIMS Transportation Injury Mapping System

US DOT United States Department of Transportation

VMT Vehicle Miles Traveled

Executive Summary

The **Santa Cruz County Rural Highways Safety Plan (RHSP)** provides a comprehensive, data-driven framework with a goal to reduce and ultimately eliminate crashes where involved parties are killed or severely injured (KSIs) on rural state highways in unincorporated Santa Cruz County. The RHSP focuses on six undivided state highways that serve a wide range of functions, from rural main streets and community connectors to more mountainous or agricultural corridors. These highways play a critical role in daily travel, goods movement, and access to schools, jobs, recreation, and essential services. They also experience a high share of crashes resulting in KSI outcomes and have potential risk factors associated with severe and fatal injuries: exposure (number of people traveling), severity (speed and mass), and likelihood (road and intersection configuration).

The RHSP is grounded in the Safe System Approach and aligned with Vision Zero, which aims to eliminate all KSIs. Rather than reacting to crash history or changing individual behavior, the RHSP emphasizes proactively addressing the roadway conditions, operating conditions, and systemic factors that influence crash risk and severity. The RHSP is intended to guide coordinated safety investments, project development, and funding decisions by the Santa Cruz County Regional Transportation Commission (RTC), Caltrans, and local partners over time.

In addition to serving as a long-range safety roadmap, the RHSP, alongside Santa Cruz County's Safety Action Plan, is intended to help the county meet key state and federal safety planning requirements and positions the RTC and its partners to pursue implementation funding. This includes addressing components identified for federal Safe Streets and Roads for All (SS4A) grant eligibility in previous cycles.

Study Area and Local Context

The RHSP focuses on six conventional, undivided state highways located in unincorporated Santa Cruz County: Highway 1 north of the City of Santa Cruz, Highway 9, Highway 35, Highway 236, and portions of Highways 129 and 152 outside the City of Watsonville as shown in **Figure ES-1**. These corridors are owned and operated by Caltrans and traverse a range of contexts, including town centers, transition areas, agricultural lands, coastal segments, and mountainous terrain.

While these highways are often designed for high-speed travel, many segments function as community streets filled with people walking, biking, and accessing transit, and connect local destinations and services. In rural and mountainous areas, roadway geometry, limited sight distance (visibility), lighting conditions, and high observed vehicle speeds further contribute to potential crash risk. The RHSP recognizes that safety challenges on these highways are shaped by a mix of functions and contexts and that a one-size-fits-all approach is not effective.

To better reflect local conditions, the RHSP applies Caltrans "place types" to categorize roadway segments as Rural Main Streets, Transitional Areas, and Undeveloped Areas, with further distinction between mountainous and non-mountainous segments. These place types are based on Caltrans Design Information Bulletin 94 ("DIB 94") - *Complete Streets: Contextual Design Guidance*[9], and provide a consistent framework for setting appropriate speed expectations, identifying safety challenges, and selecting context-appropriate strategies. Place types are described further in **Section 1.2.1**.

9 Design Information Bulletins (DIBs) are guidance documents issued by Caltrans to clarify and supplement statewide design standards. As transportation planning and design practices evolve, DIBs allow Caltrans to put new policies or legislative requirements into practice until such time as they are formally incorporated into the Highway Design Manual (HDM) and other standards. DIB 94 is used by planners and engineers to apply Caltrans complete streets policies to specific roadway contexts.

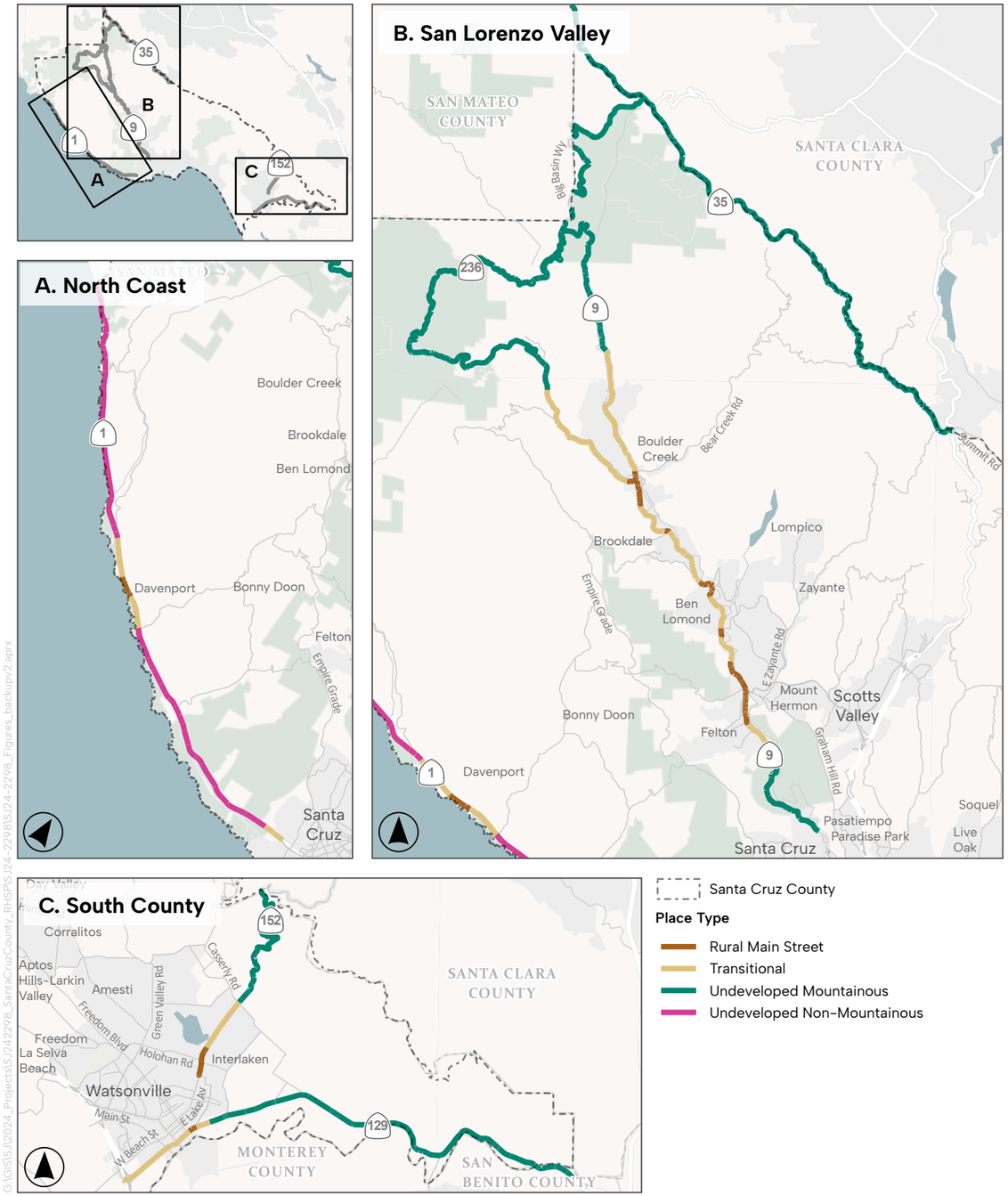


FIGURE ES-1

Study Highways and Place Types

Safe System Approach and Vision Zero

The RHSP is organized around the Safe System Approach[10], which has been adopted at the federal and state levels as the guiding framework for roadway safety. This approach is based on the understanding that people make mistakes and are physically vulnerable in crashes, and that the transportation system should be designed to reduce both the likelihood of crashes and the severity of outcomes when crashes occur.

Rather than focusing primarily on individual behavior, education, or enforcement, the Safe System Approach emphasizes managing kinetic energy, the force released in a crash that increases with vehicle speed and mass. Undesirable outcomes such as severe injuries and fatalities are generally caused by greater force in a crash. By lowering speeds, reducing exposure to risk, separating users in space and time, and building redundancy into the system, the Safe System Approach seeks to limit the amount of energy transferred in a crash and in turn reduce the risk of severe injury or fatality. The RHSP applies this framework through the "new Es" of energy, exposure, and equity, shifting attention from isolated crash events and individual fault toward the underlying roadway conditions and systemic factors that shape safety outcomes. The Safe System Approach is described in further detail in **Section 1.1**.

Consistent with this approach, the RHSP establishes a Vision Zero goal of eliminating crashes that result in people being killed or severely injured (KSI) on the study highways by 2050. The RHSP vision and goals are described in detail in **Chapter 2** and **Appendix B**.

10 The Safe System Approach was adopted by the United States Department of Transportation (US DOT) in 2022. It is a new safety paradigm aimed at eliminating severe injuries and fatalities on U.S. roadways. This paradigm aligns with Vision Zero, a global road safety movement that establishes the goal that no loss of life on the transportation system is acceptable and reframes traffic-related fatalities and serious injuries as preventable rather than inevitable. The Safe System Approach provides the framework for achieving this goal, outlining how transportation systems can be designed to anticipate human error and minimize the severity of crashes when they occur.

> **"RTC and Caltrans are committed to eliminating traffic fatalities and severe injuries on undivided State Highways in unincorporated Santa Cruz County by 2050 through the implementation of holistic Safe System Approach strategies.**

Safety Landscape and Systemic Risk Analysis

To understand safety challenges along the study highways, the RHSP combines a review of ten years (2014-2023) of crash data with a proactive, systemic analysis of roadway conditions. Additional crash data analysis is included in **Section 3.2**. While crash history provides important insight into past outcomes, it does not fully capture where KSI crashes are likely to occur in the future. The RHSP therefore evaluates potential risk using the kinetic energy factors: exposure, likelihood, and severity.

- **Exposure** reflects where, how, and how far people are traveling or likely to travel, particularly in areas with pedestrian activity, transit access, or limited alternatives to driving.
- **Likelihood** reflects roadway design and operating conditions that increase the chance of conflicts, such as narrow lanes, limited shoulders, frequent driveways, curves, and visibility constraints.
- **Severity** reflects factors such as vehicle speed, vehicle size, and the presence of people walking or biking, which influence how harmful a crash may be if it occurs.

Mapping these risk factors across the study highways reveals locations where multiple potential risk factors overlap, including rural main streets, transition zones near town centers, and mountainous segments with limited sight distance. These findings, described in more detail in **Section 3.1**, help identify corridors and segments where safety investments may have the greatest impact In preventing injuries.

Safety Profiles

Building on the systemic risk analysis and crash history, the RHSP identifies a set of safety profiles that represent common patterns in KSI crashes and potential risk factors. This approach looks at groups of crashes that share similar characteristics, such as roadway context, vehicle speeds, time of day, or user type, rather than focusing solely on individual high-crash locations. This process and the crash profiles are described further in **Section 3.3** and **Appendix D**.

These safety profiles provide a practical link between analysis and action. They help identify which types of safety strategies can match different settings and support a systemic approach to project development rather than isolated, location-by-location responses.

SAFETY PROFILES

Excessive speed: observed speed is 10 miles per hour over target speed

Pedestrian crashes: crashes involving pedestrians

Turns on Transitional streets: mid-block vehicle-only crashes involving turns on Transitional streets

Weekend driving on Undeveloped Non-Mountainous roads: vehicle crashes on weekends on Undeveloped Non-Mountainous roads

DUIs on Undeveloped Mountainous roads: DUI related crashes on Undeveloped Mountainous roads

Bicyclists on narrow roads: bike crashes on narrow roadway segments (<36 feet roadway)

Lane departures: head-on or hit object vehicle crashes

Pedestrians at night: pedestrian crashes when lighting conditions were noted as not daylight

Community Engagement

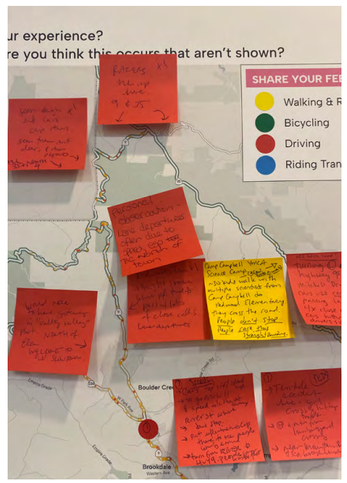
Community engagement was a central component of the RHSP and was conducted in three milestones aligned with key phases of technical analysis. The purpose of engagement was to understand how people experience safety along rural highways, identify location-specific concerns, and ensure that technical findings reflected local knowledge. Additional information about RHSP community engagement is included in Chapter 4 and Appendices E and F.

Milestone 1 engagement (Fall 2024) focused on existing conditions and perceived safety concerns. Activities included an online survey with an interactive mapping tool, a virtual community workshop, stakeholder meetings, and presentations to advisory committees. This phase helped identify recurring observed issues such as speeding, crossing challenges, visibility, and informal parking near destinations.

Milestone 2 engagement (Spring/Summer 2025) focused on reviewing crash profiles, potential countermeasures, and priority locations. Activities included additional surveys, in-person workshops in North and South County, targeted stakeholder meetings, and coordination with schools and community organizations. Feedback generally confirmed that the crash profiles aligned with lived experience and helped refine countermeasure preferences, project priorities, and feasibility considerations. As part of Milestone 2, the project team also conducted supplemental targeted outreach; stakeholders reviewed and refined the safety enhancement concepts. Their input helped to confirm feasibility, align with concurrent planning efforts, and provide additional design considerations.

Milestone 3 engagement (Winter/Spring 2026) included public review of the draft RHSP and consideration by the RTC Board. The draft Plan was made available for public comments from January 30 through February 17, 2026, and was shared through the RTC email distribution list and posted on the RTC website. During this period, the RTC received helpful comments from stakeholders and members of the public, which were reviewed and incorporated as appropriate. The RHSP was presented to the RTC Board for consideration and adoption on March 5, 2026, providing an additional opportunity for public comment and Board input prior to final approval.

Community input across all three milestones complemented technical analysis by highlighting near-misses, daily travel challenges, and context-specific concerns that are not always captured in crash data.



Safety Strategies and Emphasis Area Safety Concepts

The RHSP translates analysis and engagement findings into a set of implementable safety strategies. These include a countermeasure toolbox (**Section 5.1** and **Appendix G**) aligned with proven safety treatments, as well as broader Safe System strategies organized around demand management, speed management, and conflict management (**Section 5.2**).

The RHSP identified a list of specific projects with the greatest need for safety improvements informed by analysis and stakeholder and public input. Projects were identified based on multiple factors, including crash history, presence of systemic risk factors, alignment with crash profiles, community input, equity considerations, and overlapping opportunities for implementation. The resulting project list (**Appendix H**) reflects a mix of near-term, quick-build opportunities and longer-term capital improvements across different corridors and place types.

From the project list, the project team selected a sample of locations for further project development as shown in **Figure ES-2**. The selection and prioritization process is described in **Chapter 6**. These emphasis areas are designed to capture recurring patterns in roadway conditions and crash patterns that contribute to killed and severely injured (KSI) crashes and illustrate high impact interventions for consideration at both the identified locations as well as at other locations with similar place types, operating conditions, and crash characteristics.

For emphasis areas, the project team developed safety enhancement concepts that illustrate how safety strategies can be applied in representative locations. These concepts are intended to support future project development, coordination, and funding applications, and can also inform future designs for other areas with comparable existing conditions and crash patterns.

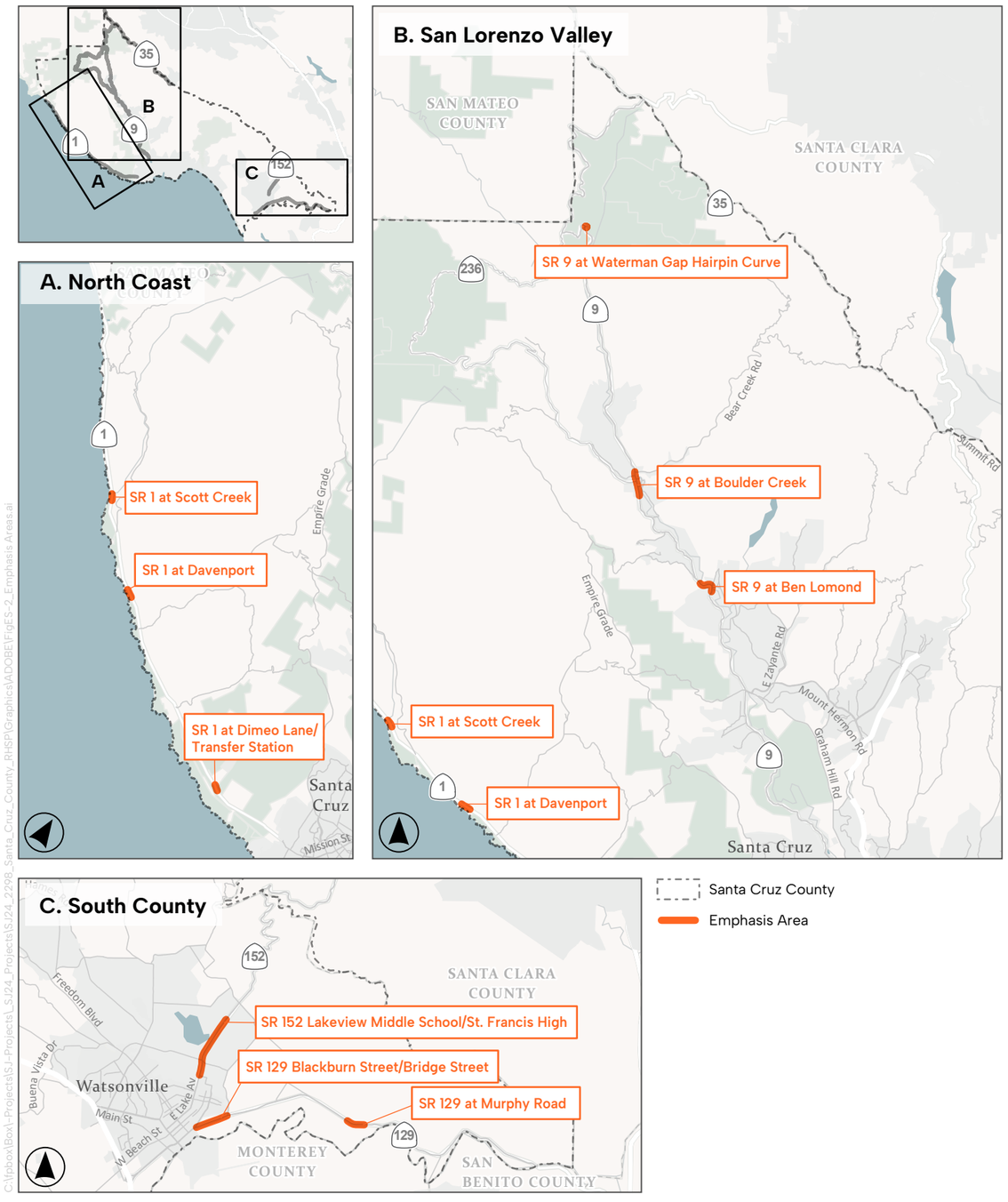


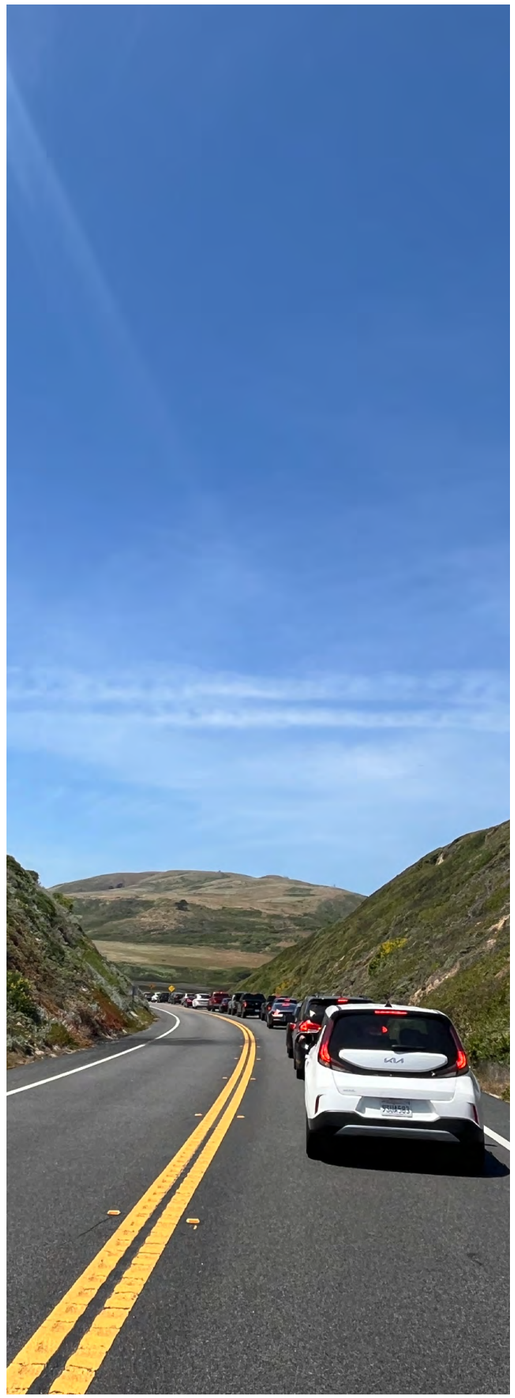
FIGURE ES-2

Emphasis Areas

Equity Considerations

Equity is integrated throughout the RHSP. The RHSP includes analysis of income, race, and ethnicity data, along with a review of state and federal equity mapping tools and the County's adopted 2025 Transportation Equity Action Plan (Equity Plan). The Equity Plan establishes a regional definition of Transportation Equity Priority Communities based on adopted thresholds related to income, poverty, race and ethnicity, limited English proficiency, disability, age, and renter status. Within the RHSP study area, Transportation Equity Priority Communities overlap with segments of Highway 9 near Brookdale and portions of Highway 129 and 152 in and around Watsonville. Federal and state mapping tools, including the Safe Streets and Roads for All Underserved Communities Mapping Tool, similarly identify areas near Watsonville as underserved.

The RHSP uses these findings to inform prioritization and emphasizes directing safety investments to locations where they can improve outcomes for vulnerable communities. Additional equity findings and analysis are described in **Chapter 7** and **Appendix J**.



Implementation, Funding, and Project Readiness

The RHSP establishes a clear implementation framework that emphasizes coordination, prioritization, and ongoing evaluation. While Caltrans retains authority over state highways, the RTC plays a critical role in regional coordination, funding strategy, and advancing safety projects in partnership with Caltrans, the County, and local agencies. Advancing the goals of the RHSP and ultimately achieving zero traffic deaths and severe injuries is a shared responsibility.

Adoption of the RHSP positions Santa Cruz County to pursue state and federal safety funding. The RHSP meets key requirements for SS4A eligibility and supports applications for other programs such as HSIP, ATP, STIP, and rural transportation grants. By clearly identifying priority projects, systemic strategies, and an implementation roadmap, the RHSP strengthens the region's ability to compete for funding and to integrate safety improvements into both near-term and long-range investments. Additional information about implementation is included in **Chapter 8**.

RTC Roles	Local Agency Partner Roles	Caltrans Roles
Accessing funding opportunities to design and construct projects Establishing innovative regional policies that prioritize safety Facilitating collaboration between Caltrans and local communities Providing technical support on safety analysis and implementation Monitoring implementation efficacy	Leveraging the tools provided by RTC to prioritize and implement safety solutions Supporting implementation and development by participating in the planning and design process	Designing and constructing projects Collaborating with project partners on identification of suitable design standards across different contexts Integrating safety enhancements into highway maintenance programs and development review Monitoring implementation efficacy

1

Introduction

The Rural Highways Safety Plan (RHSP) seeks to substantially enhance safety for all modes of transportation on the six undivided rural highways in Santa Cruz County by identifying high-risk areas, analyzing crash patterns, and recommending targeted safety countermeasures. The RHSP will serve as a structured roadmap for Santa Cruz County, Caltrans, and other local stakeholders to enhance roadway safety for all users, including drivers, pedestrians, bicyclists, and transit riders. The analysis aims to pinpoint systemic potential risks that affect entire corridors and location-specific hazards, providing a data-driven foundation to guide the Santa Cruz County Regional Transportation Commission (RTC) and Caltrans in prioritizing and investing in safety improvements.

This plan was developed through a partnership between RTC and Caltrans, alongside the Santa Cruz County Safety Action Plan. Together, these documents are intended to reflect a comprehensive safety action planning effort that establishes eligibility to obtain state and federal grant funds for transportation safety enhancements in unincorporated Santa Cruz County.

SAFETY IS A SHARED RESPONSIBILITY

The RHSP was developed in collaboration with the following agencies and organizations:

- Caltrans District 5
- The Santa Cruz County Community Traffic Safety Coalition
- Santa Cruz Metro
- Local school districts
- UC Santa Cruz
- Emergency responders
- Neighborhood groups
- Community representatives

These partnerships ensure that the RHSP reflects local priorities and integrates a wide range of perspectives.

1.1 Safe System Approach

In recent years, transportation leaders at the federal, state, and regional levels have embraced a new safety paradigm aimed at eliminating killed and severe injury (KSI) outcome crashes on U.S. roadways. This paradigm aligns with Vision Zero, a global road safety movement that establishes the goal that no loss of life on the transportation system is acceptable and reframes KSIs as preventable rather than inevitable. The Safe System Approach provides the framework for achieving this goal, outlining how transportation systems can be designed to anticipate human error and minimize the severity of crashes when they occur.

The United States Department of Transportation (US DOT) formally adopted the Safe System Approach in its National Roadway Safety Strategy (NRSS) in January 2022, representing the first national commitment to a long-term goal of zero roadway deaths. These core principles and elements are illustrated in **Figure 1**. At the state level, Caltrans has committed to Vision Zero and the Safe System Approach through multiple policies, including Director's Policy 36 (Roadway Safety), Director's Policy 37 (Complete Streets), and related design guidance that prioritizes speed management, protection of vulnerable road users like people walking and biking, and system-wide safety over vehicle throughput.

Figure 1: Safe System Wheel (Source: US DOT)

The Safe System Approach represents a fundamental evolution in how roadway safety is understood and addressed. It acknowledges that mistakes on the transportation system will inevitably happen, while also asserting that KSIs are avoidable. Rather than relying primarily on education or enforcement to change individual behavior, the Safe System Approach calls for transportation systems to be intentionally designed so that the consequences of errors are minimized. This includes building multiple, overlapping layers of protection, such as managing vehicle speeds, separating users in time and space, improving roadway design, incorporating advanced vehicle safety technologies, and strengthening post-crash care so that when crashes occur, they are far less severe (**Figure 2**).

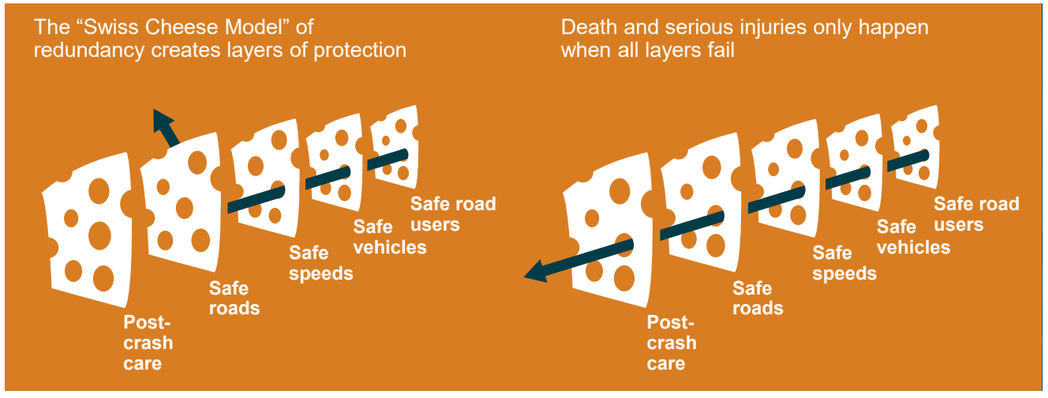


Figure 2: Swiss Cheese Redundancy Model Graphic (Source: FHWA)

1.1.1 How the Safe System Approach Shapes the RHSP

The RHSP has been developed to align with the shift toward the Safe System Approach. This shift influences how safety risks are defined, how strategies are prioritized, and how decisions are made through the Plan. The following foundational perspectives describe how the RHSP applies Safe System principles to the unique context of Santa Cruz County's rural highways.

Reframing Safety Through The New Es of Energy, Exposure, and Equity

Traditionally, roadway safety plans have been organized around the "Four Es" of safety: education, enforcement, engineering, and emergency services. This Plan shifts the focus away from addressing these elements in isolation and instead emphasizes the cross-cutting concepts of energy, exposure, and equity – the "new Es" – that more directly influence the likelihood and severity of KSI crashes.

Under this framing, safety risk is understood primarily in terms of kinetic energy, which is influenced by speed, mass (weight), and the frequency and duration of exposure to high-risk conditions. Figure 3 illustrates the role of speed in kinetic energy and associated injury risk. By examining how vehicle speed, vehicle size, traffic volumes, and roadway context interact across the system, the RHSP takes a proactive, system-level approach to identifying where and why severe crashes are most likely to occur. A focus on equity ensures that populations and places experiencing disproportionately high safety risks are recognized and addressed.

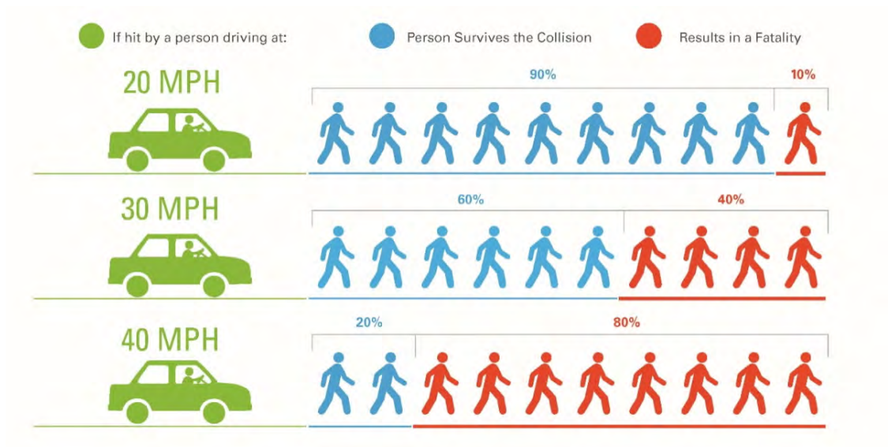


Figure 3: The Exponential Role of Speed in Kinetic Energy (and Associated Injury Risk)
(Source: AAA Foundation for Traffic Safety, San Francisco MTA Vision Zero Action Plan, February 2015)

Prioritizing Actions That Address Root Causes of Risk

The RHSP prioritizes safety strategies based on their ability to reduce risk broadly and sustainably. Rather than focusing first on individual behavior, this approach emphasizes addressing the underlying conditions that create risk in the transportation system.

As illustrated in the Safe Systems Pyramid (**Figure 4**), the most impactful safety outcomes are achieved by:

- First, acknowledging and addressing socioeconomic and land use factors that shape travel patterns and exposure, such as long travel distances between housing, jobs, and services; limited access to transit or alternative modes like walking and biking; and development patterns that place homes, schools, or workplaces along high-speed rural highways.
- Second, understanding and enhancing built environment factors that influence how the roadway functions, including roadway design and operating speeds (e.g., lane widths, the presence or absence of shoulders), access patterns (e.g., driveway or access frequency, intersection spacing), and lighting conditions.
- Third, applying both passive and active safety tools within the roadway system. Passive (or latent) measures, such as rumble strips, guardrails, median treatments, and signal timing changes, operate automatically and do not require user action. Active safety measures, such as warning signs, flashing beacons, or in-vehicle alerts, depend on users noticing and responding appropriately.

This priority order reflects the relative reach and effectiveness of different interventions, emphasizing upstream strategies that shape context and exposure before relying on measures that depend on individual awareness or behavior.

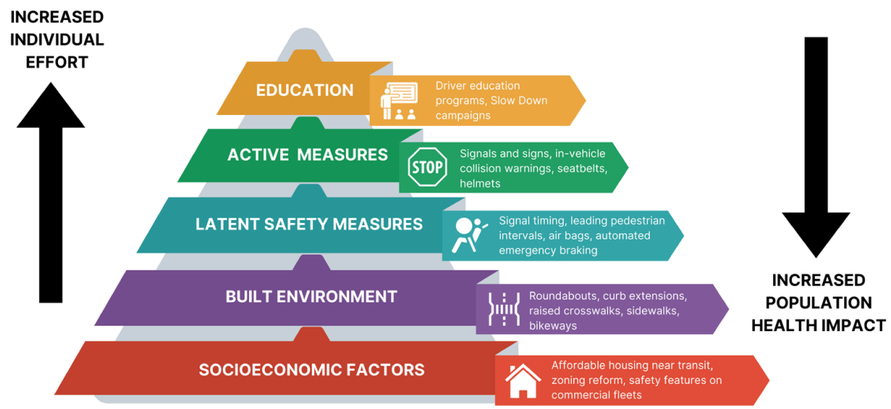


Figure 4: Safe Systems Pyramid
(Source: Adapted from Ederer, et. al. "The Safe Systems Pyramid: A New Framework for Traffic Safety." Science Direct, Elsevier, September 2023, https://www.sciencedirect.com/science/article/pii/S2590198223001525; and Watkins, K & Lieberman, M. "The Safe System Pyramid." National Center for Sustainable Transportation, March 2025, https://escholarship.org/uc/item/7h64w30k.)

Making Safety the Default

The RHSP, in accordance with the Safe System Approach, aspires to make safety the default choice—the easy choice for people as they move about and the easy choice for roadway planning, design, and operations decisions. Applying Safe System Principles in this way helps ensure that safety is embedded through decision-making processes rather than only after crashes occur.

To support this goal, the RHSP identifies opportunities to improve alignment across programs, practices, and policies among implementing agencies, consistent with the Safe System Approach. This includes clarifying priorities, supporting consistent application of design guidance, and reducing barriers to implementing safety-focused solutions across jurisdictions.

1.2 Project Location

This project is located in Santa Cruz County and specifically focuses on six conventional state-owned highways: Highway 1 north of the City of Santa Cruz city limits, Highway 9, Highway 35, Highway 236, and Highways 129 and 152 outside the City of Watsonville city limits, as shown in **Figure 5**. These six conventional highways are owned by Caltrans and collectively function as main streets, intercommunity connectors, and rural highways as they traverse a range of communities and contexts within the county.

1.2.1 Place Types

Caltrans identifies place types in **Design Information Bulletin 94 ("DIB 94") - Complete Streets: Contextual Design Guidance**[9] as a way to describe a roadway's context, including surrounding land use, development patterns, and the types of people and activities present.3F Place types help agencies understand how a roadway functions within its surroundings and to provide a consistent framework for setting appropriate design, speed, and safety expectations across different locations. DIB 94 provides design guidance that emphasizes which travel modes, such as walking, bicycling, driving, or transit, should be prioritized based on surrounding context. DIB 94 defines three rural area place types (**Figure 6**). For the RHSP, one Caltrans-defined rural place type is further refined to reflect the distinct terrain and operating conditions found in Santa Cruz County. Specifically, the RHSP distinguishes between the Undeveloped Non-Mountainous Areas and Undeveloped Mountainous Areas, recognizing the differences in grade, curvature, and sight distance influencing appropriate speeds and safety treatments.

The RHSP place types include Rural Main Streets, Transitional Areas, Undeveloped Non-Mountainous Areas, and Undeveloped Mountainous Areas as described herein and shown in **Figure 7**.

3 Design Information Bulletins (DIBs) are guidance documents issued by Caltrans to clarify and supplement statewide design standards. As transportation planning and design practices evolve, DIBs allow Caltrans to implement new policies or legislative requirements into practice until such time they are formally incorporated into the Highway Design Manual (HDM) and other standards. DIB 94 is used by planners and engineers to apply Caltrans complete streets policies to specific roadway contexts.

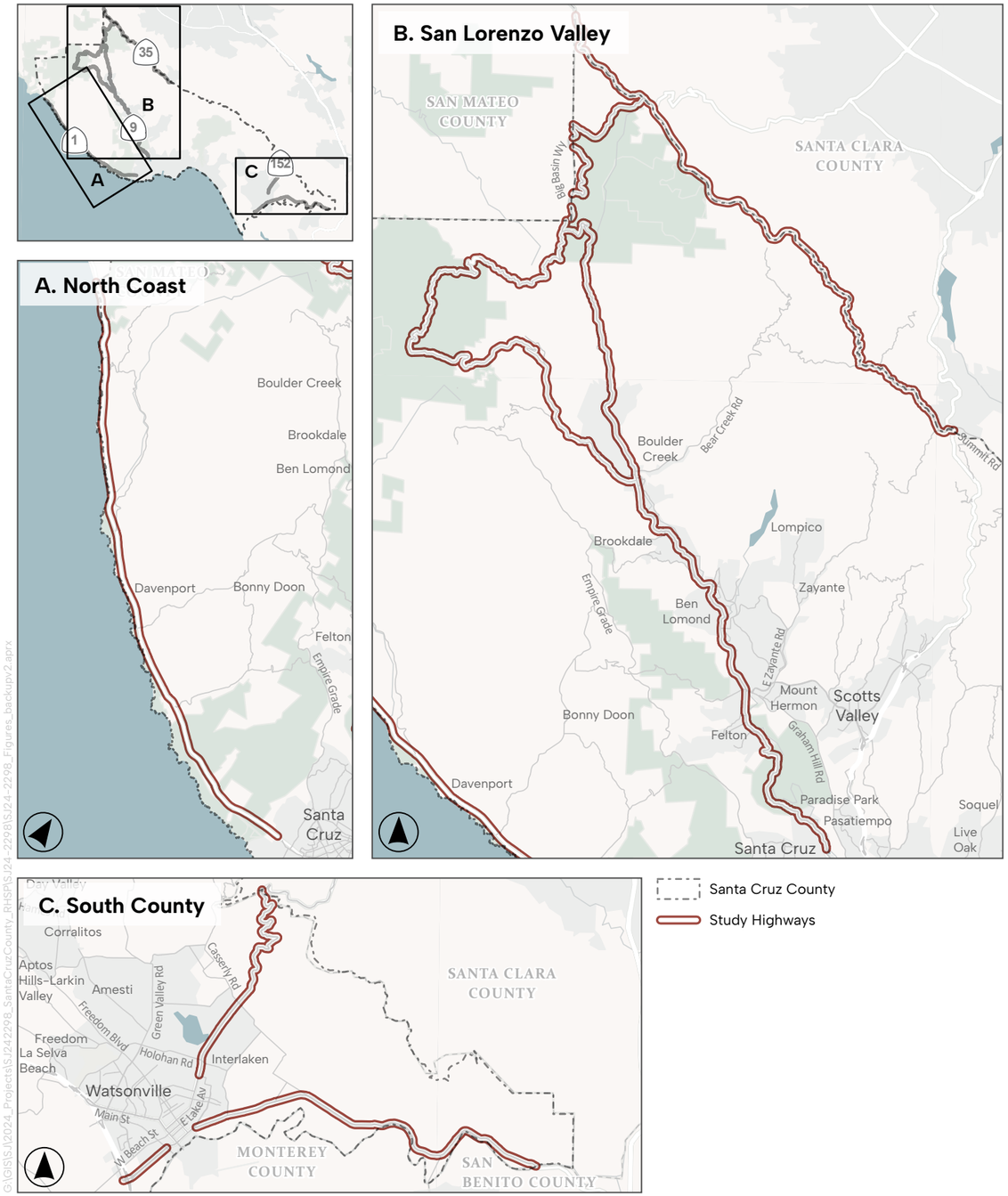


FIGURE 5
Study Highways

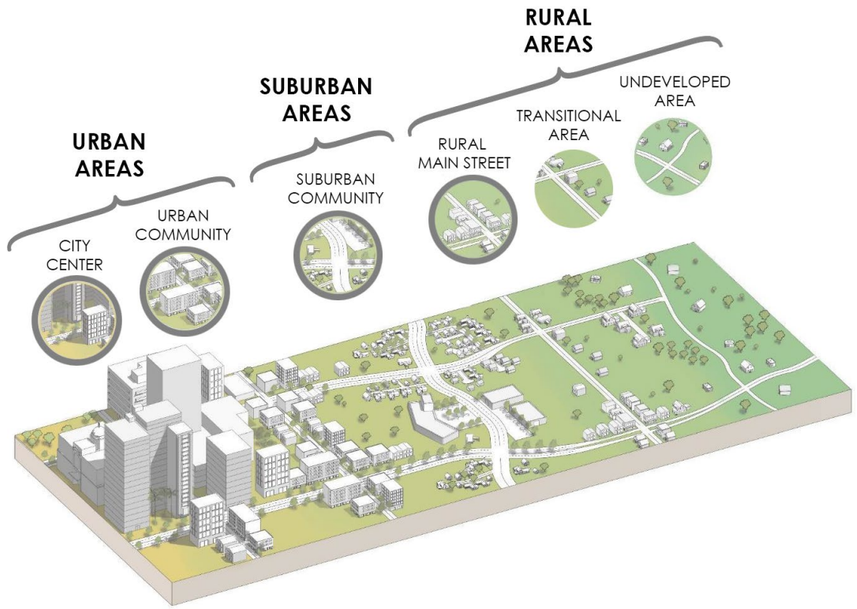


Figure 6: Caltrans Place Types for Contextual Design Guidance (Caltrans, DIB 94)

A critical element of assigning place types is determining if the place type will be the current condition or the potential condition with supportive changes in the build environment. For the purpose of the RHSP, place types have been defined based on the community's desired condition, which in some cases may differ from the status quo. This typically occurs in locations where, with additional pedestrian and bicycle facilities, traffic calming, and/or on-street parking, a Main Street environment with a "park once" strategy (that encourages drivers to park in one central location and complete the rest of their trip on foot) could be achieved. For example, along Highway 1 and Highway 9, many of the roadway features and infrastructure near town centers and retail hubs are currently indistinguishable from rural highway segments but could serve as "park once" environments with clusters of pedestrian activity. There is also a community desire to expand transitional areas in some locations.

Rural Main Streets

- State highway functioning as a main street through a town center
- Higher levels of development and activity
- Low operating speed expected
- Prioritize people walking and biking, e.g., crossing the street, accessing transit
- Projects may be more complex and costly due to competing demands for space

Transitional Areas

- State highways connecting Rural Main Streets and Undeveloped Areas
- Mix of pass-through traffic and residents accessing local destinations
- Speed management is critical to set expectations in advance
- Increased potential for conflicts near activity clusters

Undeveloped Areas

- State highways primarily supporting longer-distance travel
- Historically focused on vehicle and freight movement
- Often the only connection between destinations for all users, including people walking/biking
- Limited active transportation or transit infrastructure

In Santa Cruz County, Undeveloped Areas can be further subdivided into two categories:

NON-MOUNTAINOUS HIGHWAYS

- Generally flat terrain
- Minimal changes in grade
- Straighter roadway segments

MOUNTAINOUS HIGHWAYS

- Steeper grades or more winding roadway geometry
- Curves, limited sight distance, and terrain constraints
- Dense vegetation, embankments, or natural features influence design

1.3 Supporting Efforts

The RHSP builds on a substantial body of prior transportation planning, policy, and design guidance at the state, regional, and local levels. These efforts establish safety, multimodal access, and the Safe System Approach as shared priorities and provide important background on existing conditions, collision patterns, and potential countermeasures and recommended treatments along the RHSP study highways. The RHSP draws from this foundation to identify remaining gaps, ensure consistency with adopted policies, and develop safety improvements across rural state highways in Santa Cruz County.

1.3.1 Foundational State and Regional Policy

These state and regional policy documents establish the broader policy framework that informs the RHSP, including commitments to Vision Zero, the Safe System Approach, Complete Streets, and multimodal safety on the state highway system:

- California Transportation Plan 2050 (2021)
- Climate Action Plan for Transportation Infrastructure (2021)
- California Strategic Highway Safety Plan (2020–2024)
- Strategic Highway Safety Plan Implementation Plan (2024)
- Highway Safety Improvement Program Implementation Plan (2023)
- State Highway System Management Plan (2023)
- California Freight Mobility Plan (2023)
- Caltrans Director's Policy 35: Transportation Asset Management
- Caltrans Director's Policy 37: Complete Streets
- Caltrans District 5 Active Transportation Plan (2021)
- Caltrans District 5 Climate Change Vulnerability Assessment (2019) and Adaptation Priorities Report (2021)
- Caltrans Reconnecting Communities Handbook (2023)

1.3.2 Regional and Local Planning Documents

Regional and local planning efforts provide corridor-specific analysis, collision data, and community-informed recommendations that directly inform the RHSP. These documents are particularly important for understanding safety needs on Highways 1, 9, and 129, as well as areas with high concentrations of vulnerable road users, such as people walking, biking, and accessing transit.

- **County of Santa Cruz Active Transportation Plan** (2022) – Identifies priority walking and biking needs in unincorporated areas and highlights RHSP corridors as key locations for pedestrian safety improvements.
- **County of Santa Cruz / City of Scotts Valley Complete Streets to Schools Plan** (2020)* – Recommends infrastructure and programmatic improvements near schools, with goals of increasing active transportation and eliminating severe and fatal youth collisions.
- **Highway 9 San Lorenzo Valley Complete Streets Corridor Plan** (2019)* – Identifies 28 priority safety concepts for Highway 9 communities, including crosswalks, bicycle facilities, lighting, and speed management strategies. The previous complete streets evaluations of Highway 9 underpin many of the safety enhancements reflected in the RHSP, and safety improvements identified as part of the Highway 9 San Lorenzo Valley Complete Streets Corridor Plan are recommended to be included in the development of future projects unless otherwise indicated.
- **Caltrans Project Study Report – Project Development Support for SR 9** (2022)* – Advances prior Highway 9 safety concepts toward implementation through refined alternatives and design concepts.

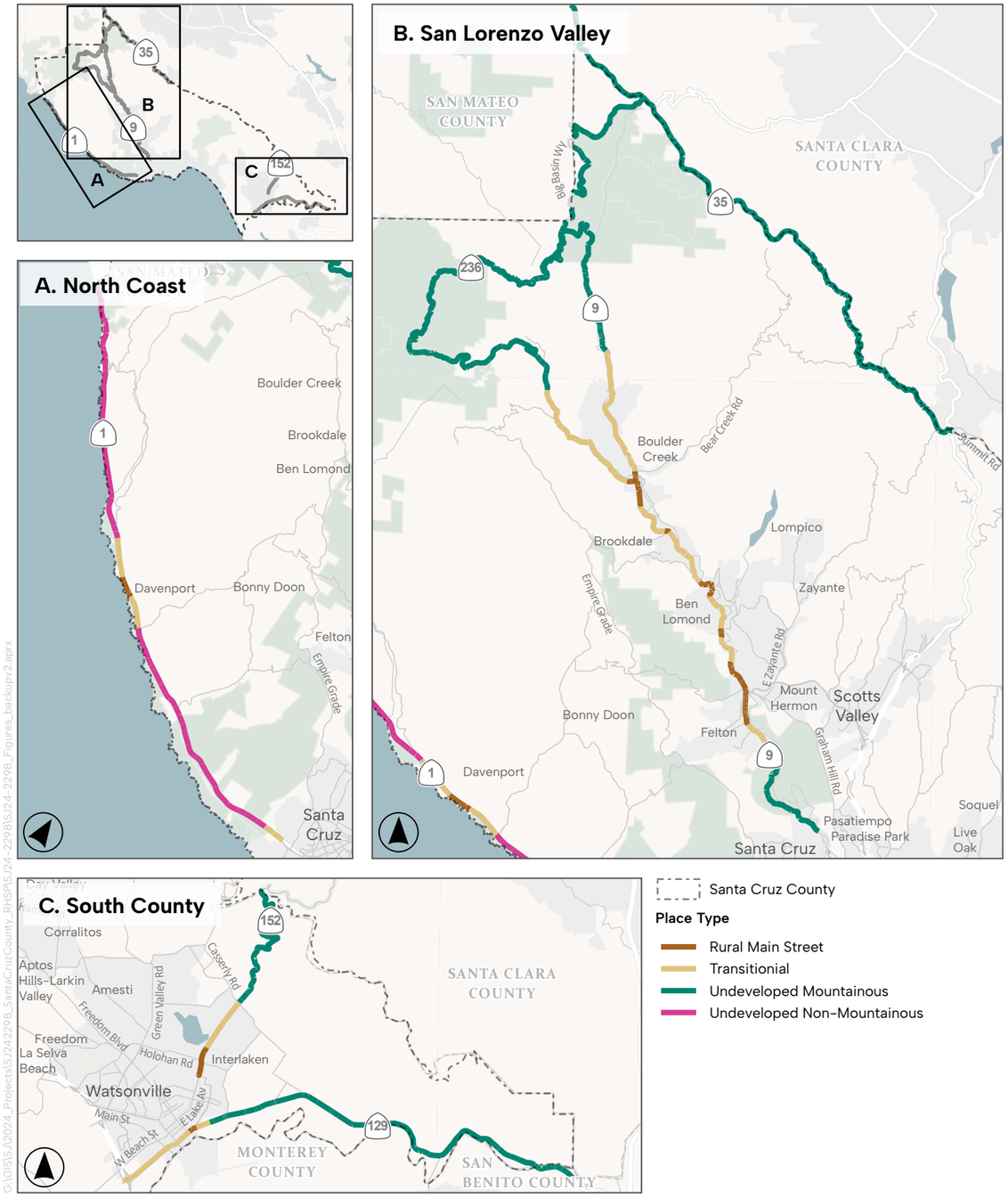


FIGURE 7

Study Highways and Place Types

- **San Lorenzo Valley Schools Complex Circulation and Access Study** (2023)* – Identifies targeted safety improvements near multiple schools along Highway 9, including bicycle facilities, multi-use paths, and enhanced crossings.
- **Climate Adaptation Vulnerability Assessment and Transportation Priorities Report** (2025) – Evaluates climate-related risks affecting transportation facilities and recommends mitigation strategies relevant to RHSP corridors.
- **Caltrans Transportation Concept Reports (TCRs)** – Establish long-term corridor concepts and operational priorities for each RHSP highway.

These documents represent a significant foundation of prior analysis and community engagement, particularly for Highway 9 and school-related safety. A substantial amount of transportation safety planning has already been completed for Highway 9 and school zones across Santa Cruz County through the four plans marked with an asterisk (*), which include recommendations and conceptual designs for a range of safety treatments. The RHSP considers the recommendations in these previous plans as a starting point and serves as an update of the *2019 Highway 9 Complete Streets Plan*, while expanding the focus to all rural state highways in unincorporated Santa Cruz County.

1.3.3 Treatment Selection and Design Guidance

The RHSP is also informed by Caltrans design guidance that supports the selection and implementation of context-appropriate safety treatments on the state highway system:

- **Caltrans Traffic Calming Guide** – Provides a toolbox of traffic calming and speed management measures applicable to state highways.
- **Design Information Bulletin (DIB) 82-06: Pedestrian Accessibility Guidelines** – Guides the application of ADA and accessibility standards in highway projects.
- **Design Information Bulletin (DIB) 89-02: Class IV Bikeway Guidance** – Provides design guidance for separated bikeways, where appropriate.
- **Design Information Bulletin (DIB) 94: Complete Streets Contextual Design Guidance** – Establishes the place type framework used throughout the RHSP to guide context-sensitive design decisions, as discussed in the previous section.

This Caltrans guidance supports the development of targeted, implementable safety improvements by outlining practical treatments appropriate for different roadway contexts. **Appendix A** provides detailed summaries for all documents reviewed as part of the literature review.

2

Vision and Goals

Developed in a collaboration between RTC and Caltrans, the RHSP vision statement indicates the overarching intent for the RHSP and establishes a Vision Zero goal for the project's study area. This vision reflects a shared commitment between RTC and Caltrans to improve safety on rural state highways through a coordinated, long-term approach. The vision statement was jointly developed, reviewed, and vetted by both agencies to ensure alignment with statewide safety priorities, regional goals, and local context.

> RTC and Caltrans are committed **to eliminating traffic fatalities and severe injuries** on undivided State Highways in unincorporated Santa Cruz County **by 2050** through the implementation of holistic Safe System Approach strategies.

This commitment recognizes that achieving meaningful safety outcomes requires moving beyond a reactive, collision-driven approach and toward a proactive framework that anticipates risk, addresses systemic safety issues, and prioritizes implementing proven countermeasures before serious crashes occur.

The RHSP vision provides the framework for an achievable performance-based plan that can guide coordinated investment and decision-making across agencies over time. The RHSP goals support the RHSP vision by prioritizing the reduction and eventual elimination of crashes that result in KSI crashes as well as focusing on a collaborative approach to issue identification and strategy deployment between RTC, Caltrans, and local partners. The objectives associated with each goal detail actionable and measurable strategies to achieve the associated goals and support a consistent, data-driven approach to improving safety on local state highways. The RHSP goals are listed herein, and the objectives for each goal are expanded upon in Appendix A. The RHSP vision and goals establish a clear framework for prioritizing and programming safety improvements, guiding how projects are identified, evaluated, and advanced over time to focus resources on strategies and locations with the greatest potential to reduce fatal and severe injury crashes.

Goal 1 Commit to Vision Zero. The RHSP will lay out a clear and actionable roadmap aligned with the Vision Zero goal.

- Make safety the default design choice (specifically risk factor reduction through speed management and separating users in space and time) rather than the exception.
- Clarify the context of the road segment (movement or place-focused)
- Maximize accessibility and connectivity
- Advance regional sustainability goals

Goal 2 Advance Partnerships and Collaboration. Addressing safety on study highways is a shared responsibility that requires strong partnerships to effectively implement the RHSP.

- Collaborate with stakeholders
- Proactively engage with Caltrans
- Focus on upstream, population-scale considerations for safety

Goal 3 Prioritize Equity and Community Engagement. Elevating equity and meaningful community engagement is a priority in all stages of Vision Zero and Safe System work. Nationwide studies have concluded that low-income communities and communities of color often carry a disproportionate burden of traffic-related injuries and fatalities, lack the infrastructure to facilitate safe access and mobility, and are more likely to be stopped by law enforcement[9]. RTC is currently preparing a Transportation Equity Action Plan that will identify Equity Priority Communities across Santa Cruz County[10].

- Cross-analyze traffic-related injuries and fatalities with demographic factors
- Coordinate with RTC's Transportation Equity Action Plan
- Accept that humans make mistakes and focus on the environment and context that travel occurs within
- Supplement data with community input
- Offer different options for inclusive engagement
- Invite participation from and collaborate with community-based
- Reduce barriers to participation

Goal 4 Ensure Future Funding Success. A key goal of the RHSP is for the plan to meet state and federal Local Roadway Safety Plan (LRSP) and Safe Streets for All Action Plan (SS4A Action Plan) requirements.

- Develop RHSP to meet SS4A funding requirements
- Ensure consistency with other related regional and local plans
- Prioritize investments where kinetic energy risk is highest and in historically underserved communities
- Infuse safety into all projects on the corridors, including maintenance efforts

9 See https://smartgrowthamerica.org/dangerous-by-design/ and https://visionzeronetwork.org/wp-content/uploads/2023/09/Prioritizing_Health_Equit_in_Vision_Zero_Planning.pdf for further information.

10 See https://www.sccrtc.org/funding-planning/equity/ for further information.


HERE
TO
11572

3

Safety Landscape

The safety landscape along the six study highways is shaped by a combination of systemic roadway conditions and historic crash patterns that influence where and how severe crashes occur. Applying a Safe System lens, the analysis examines both ten years of crash history and the corridor characteristics that affect crash exposure, crash likelihood, and crash severity. This proactive approach highlights locations where multiple potential risk factors converge, particularly for vulnerable road users, such as people walking, biking, or accessing transit, and provides a data-driven foundation for prioritizing safety improvements.

3.1 Potential Risk Factors

A core principle of the Safe System Approach is that people can be vulnerable to serious injury when crashes occur. Vehicles carry large amounts of kinetic energy, and when that energy is transferred in a crash, the human body has limited tolerance. The Safe System Approach responds to this reality by identifying where kinetic energy risk is the highest in the transportation system and applying multiple, complementary (or redundant) strategies to reduce the chance that a severe injury occurs. Kinetic energy risk is assessed using three core components: exposure, likelihood, and severity.

EXPOSURE

Addresses where people are traveling or likely to travel. Exposure increases in locations with higher numbers of people and vehicles, and in areas that attract people walking and biking.

Examples of exposure-related conditions include:

- Limited options for people walking, biking, or taking transit
- Rural Main Streets, schools, parks, or other areas with high numbers of people walking or biking
- Limited affordable housing near employment locations, resulting in longer trips

LIKELIHOOD

Focuses on how roadway design and operating conditions influence the chance that conflicts occur between road users or between vehicles and roadside features. Many of the study highways are undivided two-lane roadways, which can increase the potential for conflicts. Other design features can further elevate potential risk as described below.

Examples of likelihood-related conditions include:

- Mountainous roads with limited visibility
- Lack of pedestrian and bicycle facilities especially near intersections
- Multiple vehicle lanes or narrow shoulders
- Lack of physical separation between users
- Two-way left-turn lanes
- Fixed objects close to the roadway
- Limited or no traffic control at intersections, such as stop signs or signals

SEVERITY

Considers how serious the outcome may be if a crash occurs. Severity is influenced by vehicle speed, vehicle size and weight, and the angle at which vehicles or people collide. Higher speeds and larger vehicles result in greater kinetic energy, which increases the risk of severe or fatal injuries.

Examples of severity-related conditions include:

- High vehicle speeds or large differences between typical driving speeds and intended safe speed limits
- High truck volumes or agricultural vehicles
- Sharp curves and steep hills that limit sight distance and reduce reaction time
- People walking, biking, or otherwise unprotected by a vehicle

The RHSP takes a proactive approach that identifies where road design, operating conditions, and local context may be associated with injury risk factors, moving beyond reliance on crash data alone and aligning with Safe System principles.

Source: Fehr & Peers, 2026.

Figure 8 maps where potential risk factors are present along the study highways. Areas where multiple potential risk factors overlap may have a higher likelihood of severe in crashes, particularly for people walking and biking and are designated as a higher score. This mapping approach focuses on the transportation system itself, rather than relying only on past crash locations, and helps identify where potential safety risks are most concentrated.

Based on this analysis, the RHSP focuses on the following highway segments, where multiple risk factors are present, often across all three risk categories:

Highway 1 from Davenport (Marine View Avenue) to Santa Cruz City boundary

- Risk factors include near schools, high vehicle volumes, many intersections close together, more than two lanes, narrow lanes, two way turn lanes, and Rural Main Street segments

Highway 1 from Coast Road to Wilder Ranch

- Risk factors include near parks, high vehicle volumes, many intersections close together, more than two lanes, striped medians (as opposed to physical medians), and high vehicle speeds

Highway 9 in Boulder Creek (Bear Creek Road to River Street)

- Risk factors include high vehicle volumes, many intersections close together, lack of street lighting, more than two lanes, narrow lanes, and Rural Main Street segments

Highway 9 in Ben Lomond (Hillside Avenue to Glen Arbor Road)

- Risk factors near parks, high vehicle volumes, many intersections close together, lack of lighting, more than two lanes, narrow lanes, striped medians (as opposed to physical medians), and Rural Main Street segments

Highway 9 in Felton (Graham Hill Road to Lakeview Drive)

- Risk factors include near schools and parks, many intersections close together, lack of street lighting, more than two lanes, narrow lanes, striped medians (as opposed to physical medians), and Rural Main Street segments

Highway 129 Lakeview Road to Silliman Road

- Risk factors include high vehicle volumes, many intersections close together, lack of street lighting, more than two lanes, and narrow lanes

Highway 129 Murphy Road to county line near Old Chittenden Road

- Risk factors include high vehicle volumes, many intersections close together, lack of street lighting, segments with more than two lanes, narrow lanes, and striped medians (as opposed to physical medians)

Highway 152 near Interlaken between Carlton/Casserly Road to Watsonville City boundary near Bridge Street

- Risk factors include near schools, high vehicle volumes, many intersections close together, more than two lanes, striped medians (as opposed to physical medians), high observed vehicle speeds

Many of these locations function as Rural Main Streets, particularly along Highway 1 and Highway 9, but the roadway width and layout do not always match the surrounding activity. These segments often have narrow lanes, limited right-of-way, closely spaced driveways or intersections, and limited space for sidewalks, bicycle facilities, or buffers. They also tend to carry higher volumes of people walking, biking, and driving, include frequent intersections, have limited stop signs or signals, and experience higher vehicle travel speeds.

Other areas with overlapping potential risk factors include Mountainous Rural Areas which experience recreational pedestrian, bicycle, and vehicle traffic. These segments can have limited sight distance due to curves and hills, minimal lighting, and/or narrow or missing shoulders. In many of these areas, drivers often travel faster than the speed limit or what is considered an appropriate speed for the surrounding conditions, increasing the risk of severe crashes.

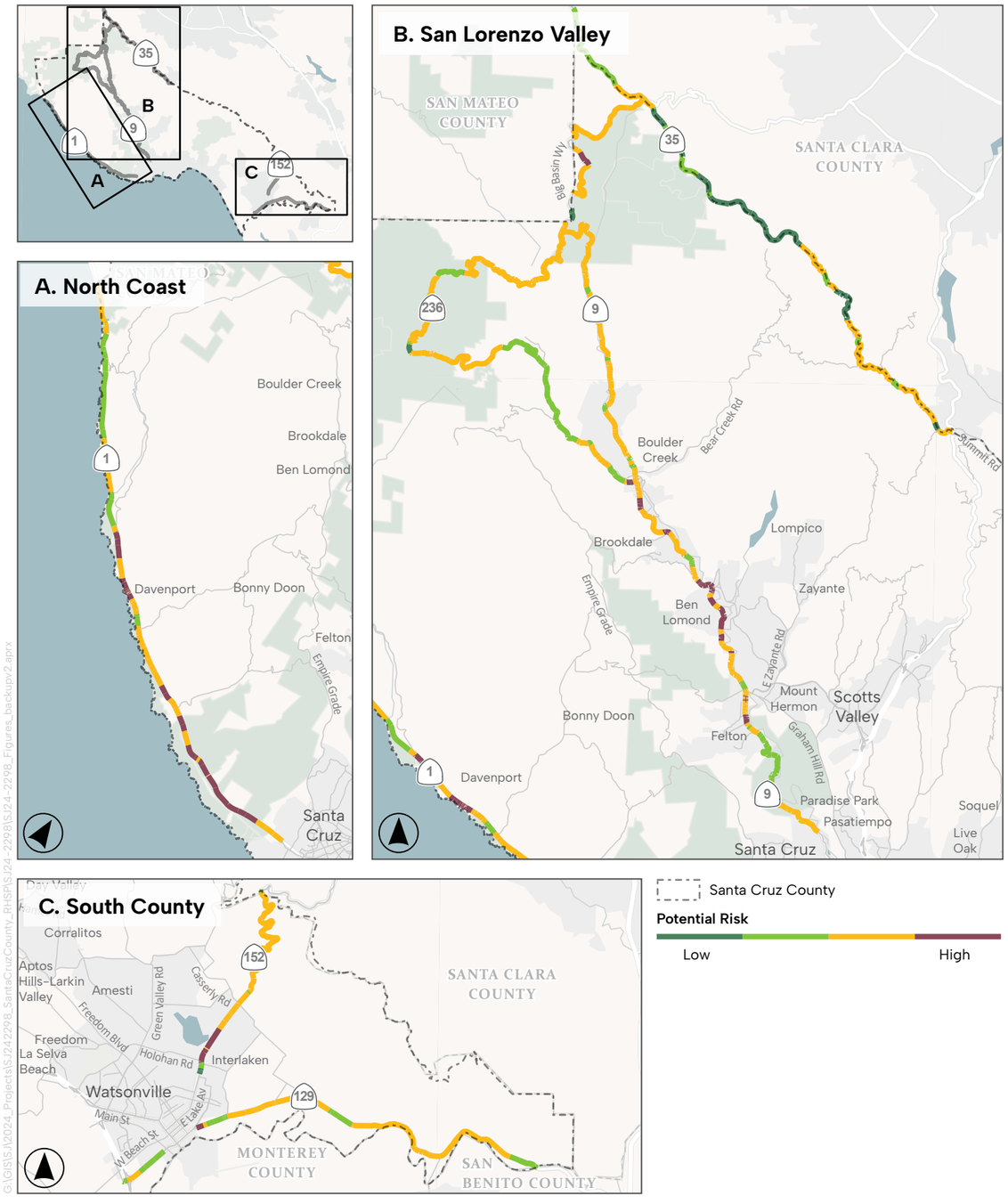


FIGURE 8

Potential Risk Network

3.2 Crash History

In addition to the proactive risk factors assessment, the project team reviewed a comprehensive crash history of the six study highways to identify notable trends and patterns in crashes where involved partiesare killed or severely injured (KSI). The analysis was based on crash data for the past ten years of available data (2014 to 2023) from UC Berkeley Safe Transportation Research and Education Center's (SafeTREC) Transportation Injury Mapping System (TIMS). From 2014 to 2023, there were 1,301 reported crashes on the six study highways—265 of those resulted in a user killed or severely injured (KSI). The following is a summary of key findings from the crash analysis; a detailed crash analysis is included in **Appendix B**.

CRASH DATA

TIMS provides geocoded access to crash data in California, drawing from the Statewide Integrated Traffic Records System (SWITRS), which includes records of injury and fatal crashes. SWITRS data is compiled and managed by the California Highway Patrol (CHP) and contains information about crashes reported to the CHP by both local and state authorities. The California Local Roadway Safety Manual advises using TIMS data for traffic crash analysis, and the Safe System Approach emphasizes a focus on preventing and analyzing crashes resulting in fatalities or severe injuries (often referred to as KSI crashes).

It is important to recognize that crash databases may contain reporting biases or incomplete data, such as the following:

- Crashes involving pedestrians, cyclists, or motorcyclists may be underreported compared to those involving vehicle occupants.
- Crashes on rural highways or in mountainous areas may be underreported.
- Property damage-only incidents are less likely to be reported than more severe crashes.
- Younger individuals may be less inclined to report crashes.
- Crashes involving alcohol may also be underreported.
- Factors such as race, income, immigration status, and English proficiency could influence reporting, though research on these biases remains limited.
- Roadway context or upstream Safe System risk factors are not addressed, with primary crash factors (PCFs) limited to a behavioral "cause" as a result.

3.2.1 Crash Trends

Over the ten-year period, approximately one in five injury crashes on the study highways resulted in a KSI. The highest ratio of KSI crashes occurred in 2022, totaling 26% of crashes (more than one in four) as shown in **Figure 9**.

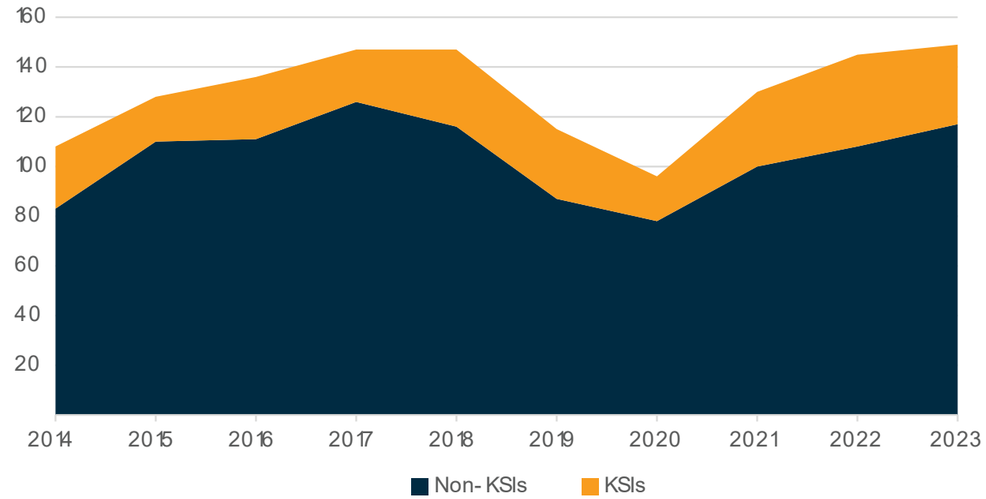


Figure 9: Study Highway Crashes; 2014–2023

While pedestrians and bicyclists made up 8% of all crashes, they were overrepresented in KSI crashes. Pedestrians and bicyclists comprised over twice the share of KSI crashes (20% or 52 crashes) as shown in Figure 10. This highlights the vulnerability of pedestrians and bicyclists given the comparatively smaller proportion of road users they represent on the study highways.

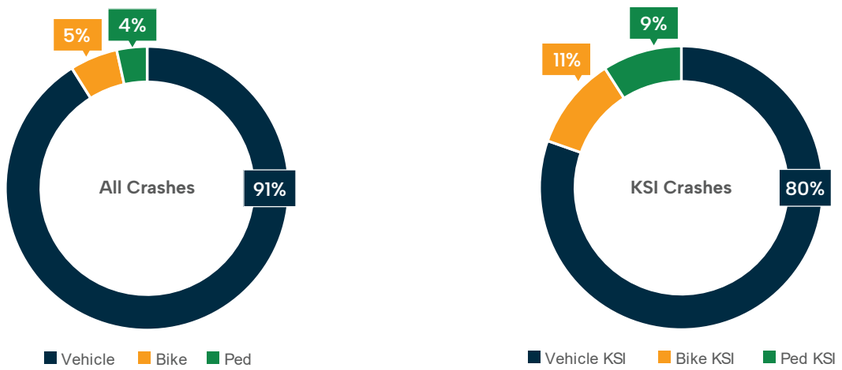


Figure 10: Modal Breakdown of Crashes; 2014-2023

Crash Types describe how a crash is reported by law enforcement based upon the parties involved and generally describe the way contact was made between the involved parties. **Figure 11** shows that crash types involving more forceful impact (and higher kinetic energy transfer) due to the typical speed and angle at which they occur, such as hit object, broadside ("T-bone"), and head-on crashes are associated with a greater share of KSI crashes[9].

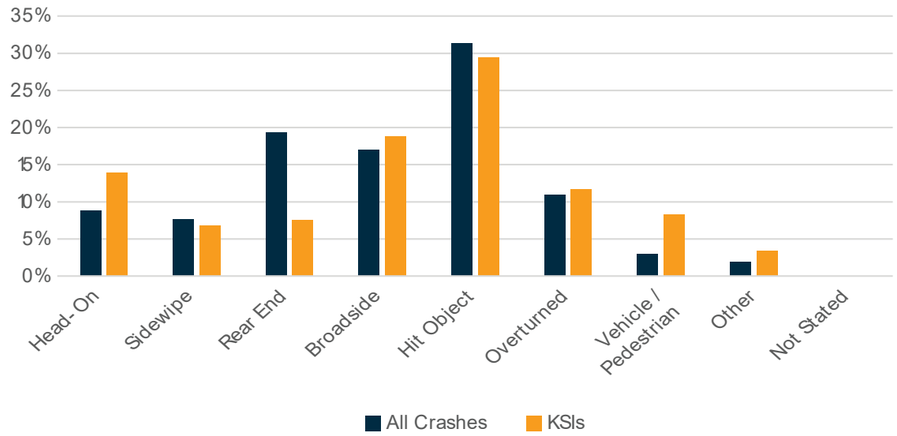


Figure 11: Crashes by Crash Type; 2014-2023

9 **Hit object** crashes involve one user hitting a non-moving object
Broadside crashes are when one road user hits another road user at a perpendicular or "T" angle
Head-on crashes involve two road users moving in opposite directions and colliding face to face

Primary Collision Factors (PCFs) are identified by the responding officer based on their assessment of what contributed to the crash at the time of the crash. PCFs typically exclude contextual details about the location's roadway design, which may have played a primary or secondary role in the incident. On the study highways, the most frequently reported PCFs for all crashes and KSI crashes, as illustrated in **Figure 12**, were unsafe speed, improper turning[10], and driving or bicycling under the influence of alcohol or drugs.

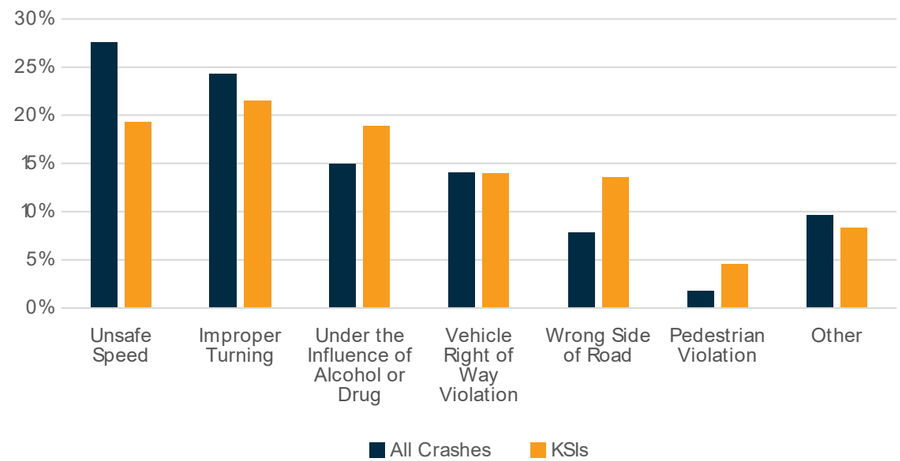


Figure 12: Crashes by Primary Crash Factor (PCF); 2014-2023[11]

10 **Improper turning** identifies a crash where a contributing cause is vehicle turns at intersections, turns onto/off of a road, and/or improper signaling during lane changes. It also covers drivers making an illegal U-turn, turning from a lane that does not allow turns, or making a turn that is signed as prohibited.

11 The **Pedestrian Violation** category shown here combines two PCF categories: Pedestrian Violation and Pedestrian Right of Way Violation. The former indicates that the pedestrian violated a rule of the road, such as crossing outside of a crosswalk, where the latter indicates the driver of a vehicle violated the pedestrian's right of way. The Pedestrian Violation category may be overrepresented due to a lack of clear information related to collision circumstances, and the increased likelihood that the pedestrian party may be unable to provide their side of the incident at the time of the collision. For this reason, we have elected to not show the distinction in these tallies and instead show all pedestrian-related collisions in one single category.

3.2.2 Demographic Information

The project team compared the share of study highway crashes by reported race to countywide census data to identify if the share of crashes by race is reflective of the population. As illustrated in **Figure 13**, the race of crash victims on study highways was comparable to the race of the general population in the county.

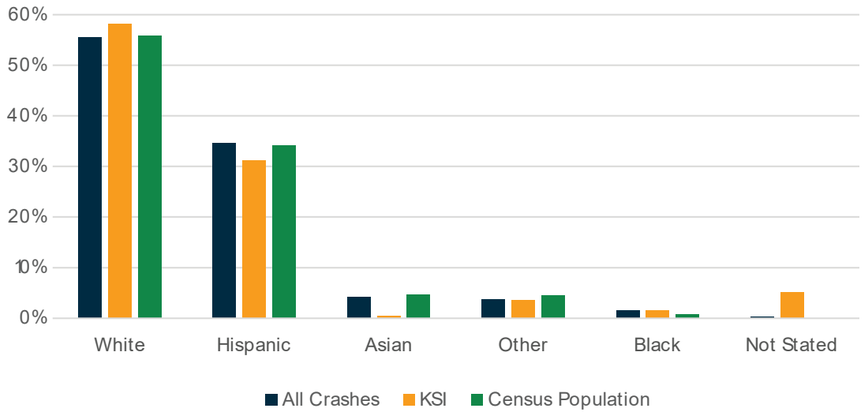


Figure 13: Crash Victims by Race; 2014–2023

Figure 14 illustrates the distribution of crashes and KSI incidents by reported age group relative to the county census population. This analysis focuses on vulnerable populations including youth (under 15 years old) and older adults (ages 65 and older). There were fewer crashes involving people under 15 years old compared to the total population. In general, crash victims between ages 15 and 64 who were not categorized as youths or older adults were slightly overrepresented in both total crashes and KSIs relative to the census population, as this group tends to represent a larger share of drivers. For individuals aged 65 and older, the share of KSI crashes is slightly higher than the share of total crashes, suggesting that older adults may be more vulnerable to undesired outcomes when involved in crashes.

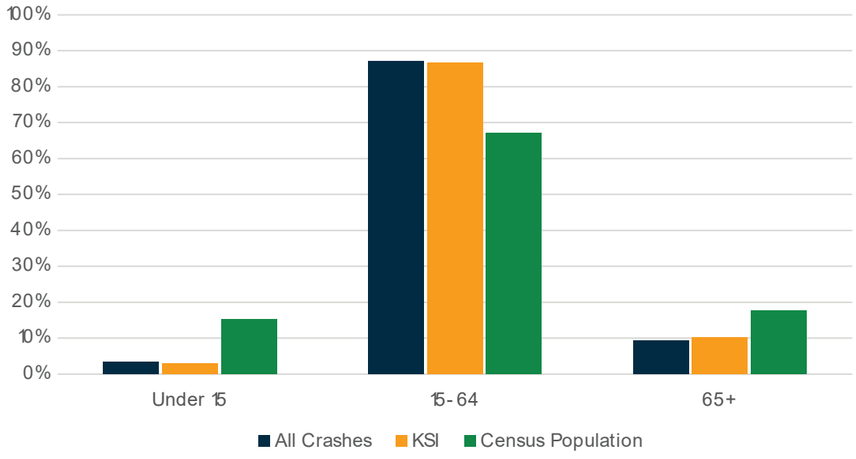


Figure 14: Crash Victims by Age; 2014–2023

Although the population by gender in Santa Cruz County is generally evenly split between males and females, male road users are involved in almost two thirds (64%) of all crashes as shown in **Figure 15**. This is consistent with nationwide trends across different regions and road contexts indicating that this finding is in part related to user behavior rather than physical conditions. The Safe System Approach that recognizes that humans make mistakes and recommends the transportation system incorporates redundancies including physical improvements to reinforce safe user behaviors.

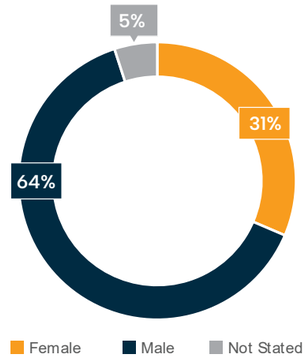


Figure 15: Crash Parties by Gender; 2014-2023

3.2.3 Study Highways

As shown in **Figure 16** and mapped in **Figure 17**, the total number of crashes by study highway varies. Highway 9 had the highest number of total crashes (579) across the ten-year period, representing 41% of all crashes on the study highways. About a quarter (24%, 331 crashes) occurred on Highway 129. Highway 1 and Highway 152 represent 15% (209 crashes) and 14% (39 crashes) of all study highways crashes, respectively. There were fewer than 100 crashes total on Highway 35 and Highway 236 (1% or 20 crashes and 5% or 75 crashes, respectively). Generally, KSIs made up about 20% of all crashes on each highway. Highway 35 had a higher ratio of 30% KSIs to total crashes and Highway 129 had the lowest ratio of 16% KSIs to total crashes.

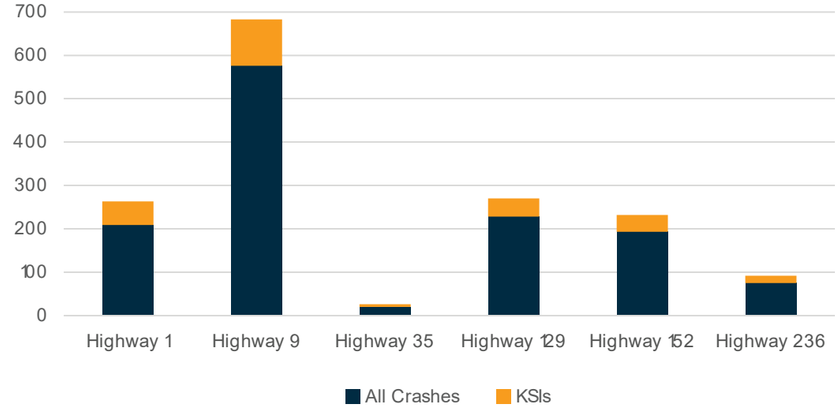


Figure 16: Crashes by Study Highway; 2014–2023

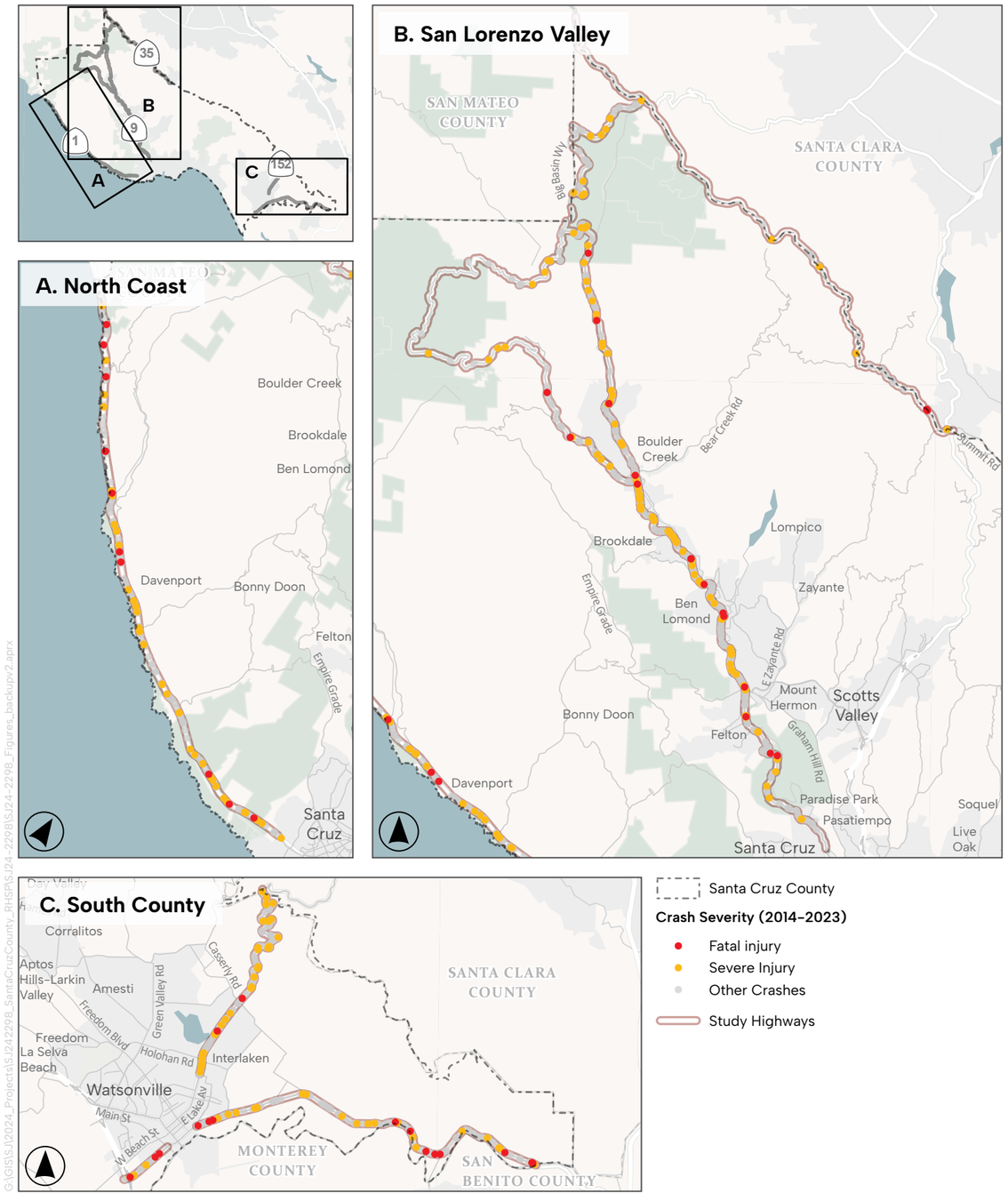


FIGURE 17

Crashes by Severity

As illustrated in **Figure 18** and **Figure 19** and mapped in **Figure 20**, bicycle and pedestrian crashes make-up a small number of total crashes on each study highway (totaling about 12% on average) but the share of bicycle and pedestrian related KSIs on each study highway is almost double (totaling about 28% on average).

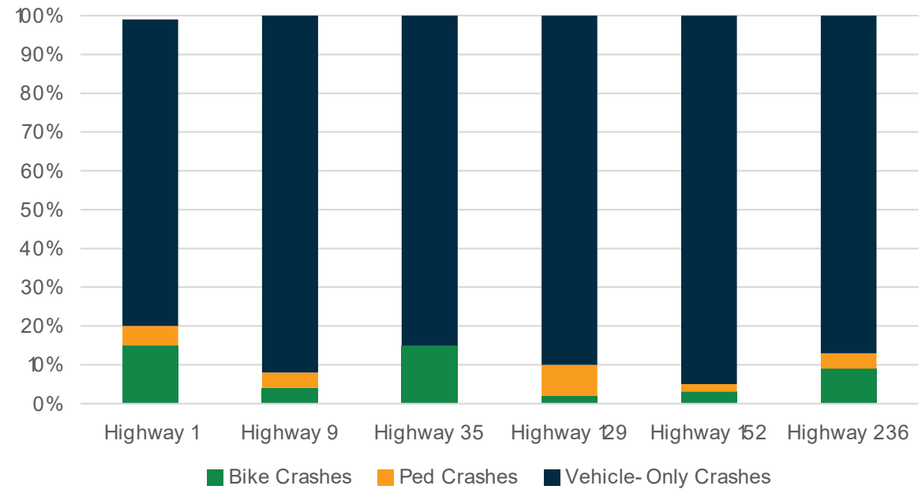


Figure 18: Modal Breakdown of Crashes by Highway 2014–2023

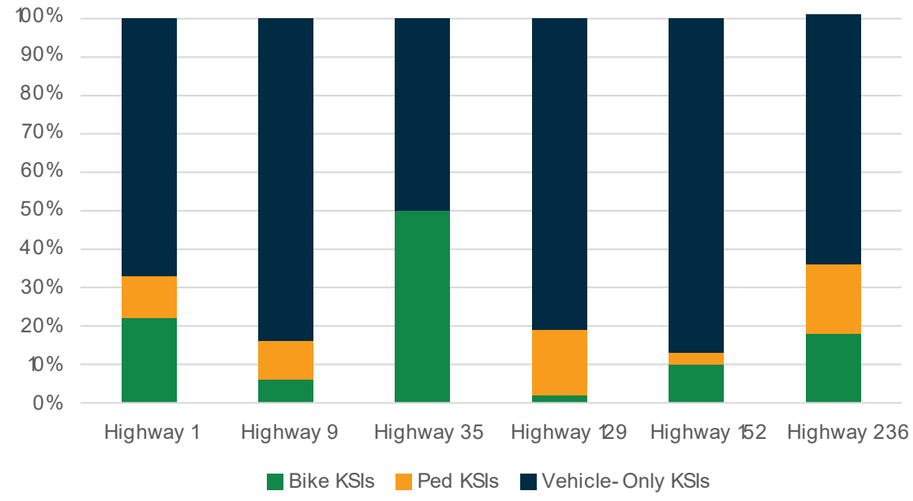


Figure 19: Modal Breakdown of KSI Crashes by Highway 2014–2023

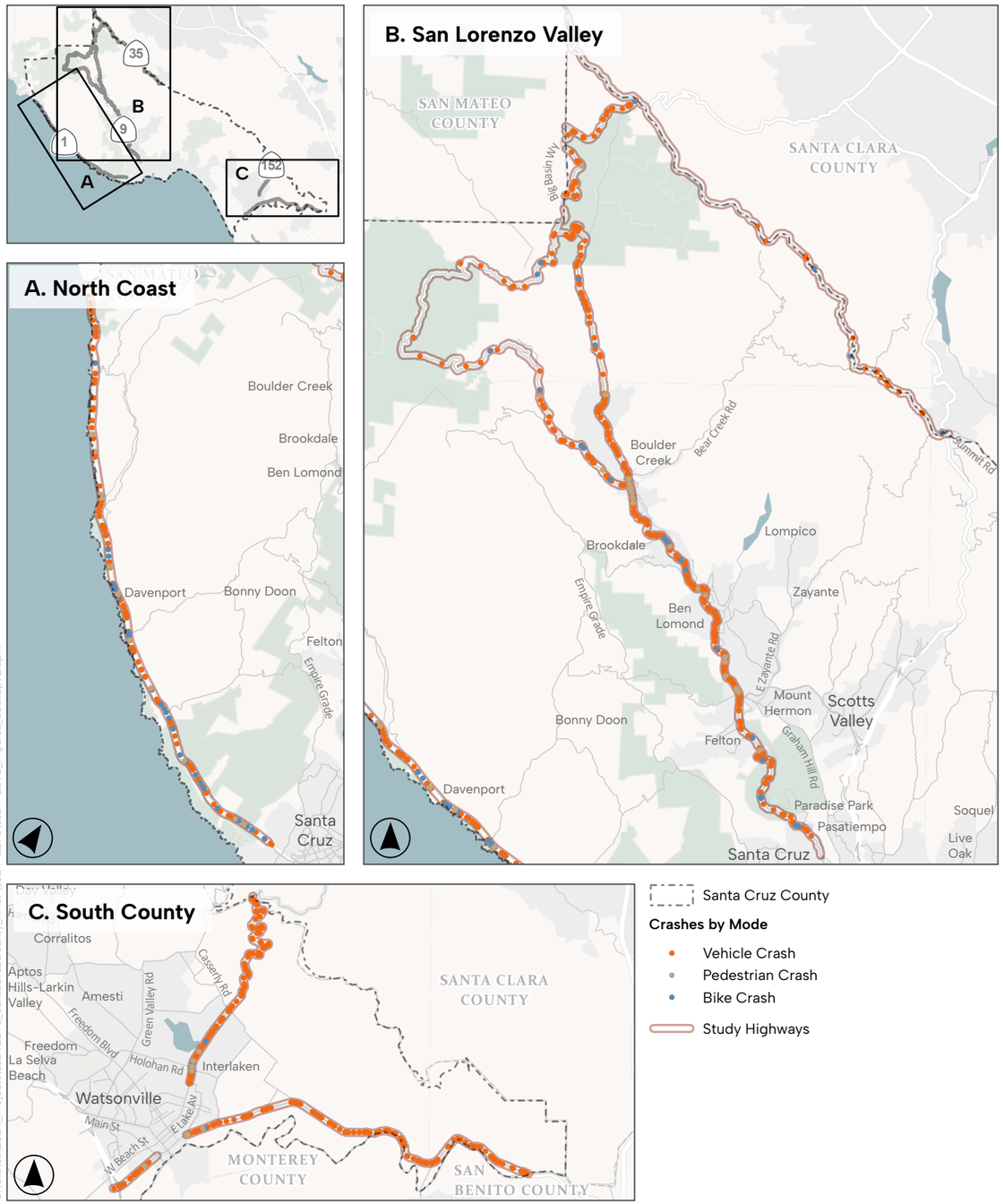


FIGURE 20

Crashes by Mode

3.3 Safety Profiles

Safety profiles identify common patterns in KSI crashes that occur across multiple locations with similar roadway and land use conditions. Instead of focusing only on individual high-crash locations, this approach looks at groups of crashes that share similar characteristics, helping identify safety concerns that are likely to repeat in similar settings across the study highways.

Building on the proactive safety risk assessment, crash history analysis, and input from local stakeholders, several safety profiles were developed that reflect key safety challenges across the study highways. This includes reviewing crashes in relation to roadway features and operating conditions, such as vehicle speeds, roadway width, presence of curves or hills, lighting conditions, nearby land uses, and pedestrian or bicycle activity. These safety profiles were shared with the community during outreach activities to help refine the analysis and identify priority locations for improvement.

The safety profiles are aligned with Federal Highway Administration (FHWA) guidance and represent recurring crash patterns that account for a meaningful share of KSI crashes along the study highways. Each profile highlights a specific combination of roadway context, user behavior, or operating conditions that contribute to higher-severity crashes. Other key considerations that tend to affect or contribute to crashes represented by each profile are noted. Each profile typically represents 5% or more of KSI crashes on the study corridors.

Excessive speed: observed speed is 10 miles per hour over target speed. The target speed refers to the speed considered appropriate for the roadway's context, surrounding land uses, and safety objectives, and is not necessarily the same as the posted speed limit.

- Mode: all modes
- Represents 40% of all KSIs
  - 72% of KSIs on Main Streets
  - 42% of KSIs on Transitional Streets
  - 28% of KSIs on Undeveloped Non-Mountainous Streets
  - 32% of KSIs on Undeveloped Mountainous Streets
- Key considerations include:
  - High speeds and presence of vulnerable users (youth, older adults, pedestrians, and bicyclists)

Pedestrian crashes: crashes involving pedestrians

- Mode: pedestrians
- Represents 9% of all KSIs
  - 31% of KSIs on Main Streets
  - 9% of KSIs on Transitional Streets
  - 9% of KSIs on Undeveloped Non-Mountainous Streets
  - 1% of KSIs on Undeveloped Mountainous Streets
- Key considerations include:
  - Sight distance (visibility, high speeds, presence of vulnerable users (youth, older adults, pedestrians, and bicyclists), and pedestrian facilities (sidewalks, crosswalks etc.)

Turns on Transitional streets: mid-block vehicle-only crashes involving drivers turning onto or from Transitional streets at driveways, parking areas, or other access points away from intersections with other streets

- Mode: vehicles
- Represents 4% of all KSIs
- Key considerations include:
  - Driveway spacing/locations, sight distance (visibility), crossing high-traffic areas, and observed speed exceeds target speed

Weekend driving on Undeveloped Non-Mountainous roads: vehicle crashes on weekends on Undeveloped Non-Mountainous roads

- Mode: vehicles
- Represents 5% of all KSIs
- Key considerations include:
  - Sight distance (visibility), parking challenges at key destinations, presence of vulnerable users (youth, older adults, pedestrians, and bicyclists), drivers and visitors less familiar with roadways, and observed speed exceeds target speed

DUIs on Undeveloped Mountainous roads: DUI related crashes on Undeveloped Mountainous roads

- Mode: vehicles
- Represents 8% of all KSIs
- Key considerations include:
  - Lack of existing alternative travel options to driving when planning to consume alcohol, observed speed exceeds target speed

Bicyclists on narrow roads: bike crashes on narrow roadway segments (<36 feet roadway)

- Mode: bicyclists
- Represents 6% of all KSIs
- Key considerations include:
  - High levels of bicycle activity, lack of space for bicycle facilities, sight distance often reduced by horizontal or vertical constraints (curved roads, hills, and trees or other objects that obscure visibility, observed speed exceeds target speed

Lane departures: head-on or hit object vehicle crashes

- Mode: vehicles
- Represents 42% of all KSIs
  - 18% of KSIs on Main Streets
  - 45% of KSIs on Transitional Streets
  - 28% of KSIs on Undeveloped Non-Mountainous Streets
  - 55% of KSIs on Undeveloped Mountainous Streets
- Key considerations include:
  - Lane width, shoulder width, median type, horizontal and vertical curvature (curved roads, hills, and tight turns), presence of guardrail or other protective devices, sight distance (visibility), observed speed exceeds target speed

Pedestrians at night: pedestrian crashes when lighting conditions were noted as not daylight

- Mode: pedestrians
- Represents 5% of all KSIs
- Key considerations include:
  - Lighting, presence of pedestrian facilities (sidewalks, crosswalks, etc.), high pedestrian traffic

Appendix C provides full details on the contextual factors identified for each safety profile as well as example locations.

4

Engaging the Community

Community engagement was a central component of the RHSP. The purpose of engagement was to understand how people experience safety along rural state highways in Santa Cruz County, identify location-specific concerns, and ensure that technical analysis was informed by local knowledge. Community input complemented crash data by capturing near misses, perceived risks, and day-to-day travel challenges that may not result in reported collisions.

Engagement was structured in phases to support plan development at key milestones. Milestone 1 focused on existing conditions and lived experiences, while Milestone 2 focused on providing opportunities to review and refine analysis findings and preliminary recommendations. Milestone 3 focused on reviewing and verifying the Draft RHSP. Input gathered through these efforts informed the development of safety profiles, helped identify corridor-specific safety needs, and supported identification and prioritization of emphasis areas described in **Section 6**.

Engagement activities were conducted in coordination with local agencies, community organizations, and advisory committees, with an emphasis on reaching people who live, work, travel, or recreate along the study highways. Materials and activities were designed to be accessible and to encourage participation across geographic areas and travel modes.

4.1 Engagement Milestones and Activities

Community engagement for the RHSP was organized into three milestones aligned with key phases of technical analysis and plan development. This structure ensured that early community input informed the direction of analysis, while later engagement provided opportunities to review findings and provide input on proposed recommendations.

4.1.1 Milestone 1: Existing Conditions and Safety Concerns (Fall 2024)

Milestone 1 engagement focused on understanding existing safety conditions and community experiences along the study highways.

4.1.1.1 Goals

- Introduce the Rural Highways Safety Plan, including Vision, Goals, and Safety Landscape Analysis
- Understand how people experience safety and travel conditions along the study highways
- Identify perceived safety issues, near misses, and locations of concern
- Gather local context to support the existing conditions assessment and early analysis

4.1.1.2 Key Activities

- Online survey and interactive mapping tool to collect location-specific input with bilingual options provided in Spanish
- Virtual community workshop with small-group discussions organized by geographic area
- Two stakeholder meetings with over 30 participants
- Presentations and discussions with RTC advisory committees, Santa Cruz County Community Traffic Safety Coalition, and Watsonville Vision Zero Task Force
- Targeted promotion through RTC channels, partner organizations, and local newspapers to support broad participation

Through these activities, Milestone 1 input helped establish a shared understanding of safety challenges across corridors and highlighted recurring themes related to speeding, pedestrian crossings, informal parking, and visibility. Community feedback identified locations that may warrant further review and supported the development of initial safety profiles and areas of focus for subsequent analysis.

A detailed summary of Milestone 1 engagement activities and findings is provided in **Appendix D**.

4.1.2 Milestone 2: Safety Profiles, Countermeasures, and Priority Locations (Spring Summer 2025)

Milestone 2 engagement built on the findings from Milestone 1 and focused on reviewing, validating, and refining safety analyses, including safety profiles, potential safety countermeasures, and locations with multiple potential risk factors.

4.1.2.1 Goals

- Validate safety profiles based on community and stakeholder experience
- Gather feedback on potential safety countermeasures and improvement strategies
- Inform and refine project locations and emphasis areas

4.1.2.2 Key Activities

- Online survey and interactive mapping tool focused on safety profiles, countermeasures, and priority locations (over 200 responses)
- Two in-person community workshops in North County and South County with over 50 participants and bilingual English/ Spanish translation provided at the South County workshop
- Presentations and discussions with RTC advisory committees, Watsonville Vision Zero Task Force, and Santa Cruz County Community Traffic Safety Coalition
- Three stakeholder meetings covering the North Coast, San Lorenzo Valley, and South County with over 30 participants
- Supplemental, targeted outreach conducted by RTC staff, including meetings with school administrators from St. Francis High School and Lakeview Middle School, Santa Cruz County Fairgrounds management, Watsonville city staff, Watsonville Vision Zero Task Force, and community or business associations in Boulder Creek, Ben Lomond, and Davenport

Through these activities, Milestone 2 input indicated that the safety profiles generally aligned with community members' experiences along the study highways and provided additional location-specific context to the technical analysis. Community and stakeholder feedback helped refine countermeasure options by identifying preferences, feasibility considerations, and context-sensitive concerns, particularly near schools, downtown areas, and major activity centers. This input supported the selection emphasis areas determined as part of the RHSP.

The supplemental targeted outreach helped to review and refine initial safety enhancement concepts for the safety emphasis areas. Their input helped to confirm feasibility, align with concurrent planning efforts, and provide additional design considerations.

A detailed summary of Milestone 2 engagement activities and findings is provided in **Appendix E**.

4.1.3 Milestone 3: Draft RHSP (January - February 2026)

Milestone 3 focused on reviewing and confirming the Draft RHSP. The draft was open for public comment on the RTC project website from late January through mid-February. Key stakeholders also reviewed and commented on the Draft RHSP. Comments and input were considered by the project team for incorporation into the Final RHSP.

4.1.4 Engagement Findings by Highway

Community input from Milestone 1 and Milestone 2 engagement highlighted corridor-specific safety concerns and recurring themes across the study highways. The findings below summarize the most common issues raised by participants and provide context for the emphasis areas and strategies discussed later in this report.

4.1.4.1 Highway 1

Key themes raised through engagement included:

- High visitor volumes near beaches, parks, and trailheads, particularly during peak periods
- Informal and roadside parking which contributes to unpredictable vehicle movements and people crossing the highway at unmarked locations
- Speed differentials between through traffic and vehicles slowing or turning into destination access points
- Limited opportunities for safe pedestrian crossings near key destinations
- Limited visibility due to hilly terrain or from side streets
- Emergency response challenges, including limited cell service and wayfinding

Overall, input emphasized the need to better address safety near high-use destinations while maintaining access for residents, visitors, and recreational users.

4.1.4.2 Highway 9

Engagement findings for Highway 9 emphasized its role as a community corridor through San Lorenzo Valley towns. Key themes included:

- Strong desire for the corridor to function as a rural main street through town centers
- Concerns about speeding throughout the corridor but especially near town centers
- Pedestrian crossing challenges near schools, downtown areas, and bus stops
- Narrow roadways with limited or poorly maintained shoulders and lack of bicycle facilities
- Narrow roadways and roadside vegetation affecting visibility
- Limited lighting contributing to nighttime safety concerns
- Concerns about recreational driving and street racing north of Boulder Creek
- Lack of facilities to access transit stops

Participants emphasized the importance of speed management, pedestrian visibility, and consistent treatments through town centers, as well as coordination with previously adopted plans such as the SLV Complete Streets Corridor Plan and the SLV Schools Access Study.

4.1.4.3 Highway 35

Community input along Highway 35 focused strongly on issues related to recreational driving and speeding, including:

- Concerns about racing culture and recreational driving, particularly on curving segments
- Desire for more visible and targeted enforcement to address speeding behaviors
- Seasonal debris and roadside hazards noted as concerns
- Pedestrian exposure near parking areas and trail access points without sidewalks

Feedback indicated that safety concerns along Highway 35 are closely tied to recreational use patterns and enforcement presence.

4.1.4.4 Highway 129

Engagement findings for Highway 129 highlighted speed, freight activity, and agricultural context:

- High vehicle speeds, truck traffic, and limited bicycle/pedestrian facilities contribute to uncomfortable conditions for people walking and biking
- Positive feedback on the recently constructed roundabout, with an interest in additional roundabouts or similar treatments at other high-conflict locations
- Challenges making left turns onto and off the highway
- Debris and shoulder conditions affecting both vehicle operations and bicyclist comfort

Overall input emphasized the need to address speed management and multimodal safety while recognizing the corridor's agricultural and freight functions.

4.1.4.5 Highway 152

Key issues raised along Highway 152 included:

- Congestion and queuing near schools, the Fairgrounds, and during special events
- Unpredictable driving behavior associated with event traffic and peak periods
- Limited sidewalks, crossings, and safe walking routes for students, event attendees, and nearby residents
- Truck activity, curves, and visibility constraints along certain segments, including Hecker Pass
- Concerns related to corridor reliability, flooding, and emergency access

Participants emphasized the importance of context-sensitive safety approaches near schools and activity centers, along with coordination between state and local agencies when planning and implementing improvements involving adjacent local streets, schools, or the Fairgrounds.

4.1.4.6 Highway 236

Engagement related to Highway 236 identified a smaller number of concerns including:

- Pedestrian activity near campgrounds and recreational areas, often without formal crossings or pedestrian facilities
- Concerns related to speeding on narrow, winding segments
- Limited sight distance and narrow, winding roadways contribute to reduced visibility and reaction time

4.1.5 Key Takeaways

Engagement findings highlight that safety challenges along rural state highways are not uniform across corridors and tend to be concentrated at specific locations and influenced by local context. Community input helped clarify where safety concerns are most concentrated and informed the identification of emphasis areas. Subsequent chapters draw on these findings, together with crash data and technical analysis, to develop targeted safety strategies.

5

Safety Strategies

Safety strategies translate crash analysis and engagement findings into implementation tools to reduce fatal and severe injury (KSI) crashes on the study highways. This chapter presents a countermeasure toolbox of specific engineering treatments along with Safe System–aligned strategies that help to categorize and prioritize the toolbox countermeasures to better inform implementation. These strategies provide a framework for addressing underlying risk factors and guiding subsequent project development.

5.1 Countermeasure Toolbox

For each safety profile, this toolbox includes a series of countermeasures from **FHWA's Proven Safety Countermeasures** list. Countermeasures in the toolbox are included in the Caltrans Highway Design Manual and are applicable for consideration on Caltrans facilities. However, contextual factors help inform where specific countermeasures may be most appropriate across the study highways. Key safety countermeasures are applicable to different roadway contexts, defined by factors such as surrounding land use or activity, place types (e.g., Rural Main Street, Undeveloped), operating speed and traffic volumes, and the presence of people walking, biking, or accessing transit.

Key safety countermeasures include an associated Crash Reduction Factor (CRF), where applicable, from the **California Local Roadway Safety Manual** (LRSM). A CRF is an estimate of the expected reduction in crashes associated with a specific treatment, based on observed outcomes from similar applications.

The LRSM is Caltrans-supported guidance that establishes a framework of the steps and analysis tools needed to identify locations with roadway safety issues and the appropriate countermeasures. The LRSM compiles best practices to support data-informed safety decision-making, and CRFs from the LRSM are typically used to evaluate anticipated benefits of Highway Safety Improvement Program (HSIP) projects applications. In this study, CRFs are used as a screening and comparison tool to help prioritize countermeasures; they do not represent guaranteed outcomes. Identifying these factors supports development for grant applications that require this information.

This toolbox will be used to identify improvements that can be implemented systemically for each profile and includes both interim, quick-build treatments as well as more permanent capital improvements. Quick-build treatments are temporary or interim measures that can be installed more quickly and at lower cost to address safety challenges, test design concepts, or respond to urgent safety concerns. Caltrans has increasingly supported the use of pilot and interim safety treatments on the state highway system under defined conditions, with coordination and approval at the district level. Typical examples include enhancements to pavement markings, roadway signs, and application of treatments such as flexible delineators or other approved channelizers which can be deployed more expediently than civil or roadway modifications such as changes to pavement, curbs, or medians. Any proposed quick-build treatments on state facilities would be subject to Caltrans review, coordination, and applicable standards, and may be used to inform longer-term permanent improvements.

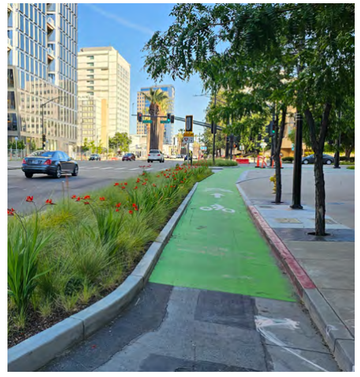
Figure 21 shows an example of how countermeasures are presented in the countermeasure toolbox. Appendix F includes the full countermeasure toolbox, including detailed descriptions, applicable safety profiles, roadway contexts, and associated CRFs.

BIKEWAYS

Bicycle Ramp

A ramp that connects bicyclists from the road to the sidewalk or a shared use path.

Cost $



Safe System Hierarchy

Tier 1	Tier 2	Tier 3	Tier 4
Remove Severe Conflicts			

Figure 21: Countermeasure Toolbox Example

5.1.1 Key Countermeasures

Countermeasures included in the toolbox include enhancements for pedestrian crossings such as rapid rectangular flashing beacons (RRFBs) as well as improved lighting and gateway or traffic calming treatments (e.g., medians barriers and centerline hardening) to reduce speeds through town centers and near key destinations. Overall, community feedback showed strong support for these improvements.

Roundabouts were generally viewed positively, especially in locations where they have already been implemented and perceived to improve safety and speed management. However, participants noted that roundabouts may be challenging at certain locations. Rumble strips received more mixed feedback, with concerns raised about potential effects on bicyclists, motorcyclists, noise for nearby residences, and parking access in commercial areas.

In general, countermeasures for safety projects are identified based on efficacy and feasibility. However, it is important to understand community preferences for different countermeasures to inform decision-making in cases where multiple candidate countermeasures may be appropriate.

5.2 Safe System Strategies

In addition to physical safety countermeasures described above, achieving the Plan's vision of eliminating KSI crashes requires strategies that reduce crash risk at a system-wide scale. The RHSP applies the Safe System approach to identify opportunities to embed safety principles into day-to-day practices, investment decisions, and long-term planning, consistent with Caltrans' commitment to Safe System principles.

The Safe System approach draws from public health practices and recognizes that people make mistakes and are physically vulnerable in crashes. Rather than relying primarily on individual behavior change, it focuses on designing transportation systems that anticipate human error and reduce the likelihood that mistakes result in severe injury or death. The Safe Systems Pyramid is a visual framework that illustrates how strategies with the broadest reach and the least reliance on individual action tend to have the greatest safety impact.

In the RHSP, the Safe Systems Pyramid (**Figure 22**) is used to reinforce a shift toward addressing crash injury risk. Strategies at the base of the pyramid focus on reducing exposure to crash risk and shaping travel conditions, while strategies higher on the pyramid rely more heavily on individual behavior. Approaches at the base levels tend to have the greatest impact because they reach more people and do not depend on individual choices or compliance.

RTC and Caltrans have the greatest direct influence over the built environment, including roadway design, operations, speed management, and conflict management. The RHSP also includes demand management strategies that reduce exposure to crash injury risk by lowering vehicle volumes and shifting travel to non-vehicle modes. These approaches emphasize the lower levels of the pyramid, where safety benefits are more consistent, equitable, and have the greatest impact, rather than strategies that rely primarily on education or enforcement alone.

The Safe System Strategies described in this chapter are organized into three categories aligned with this framework: Demand Management, Speed Management, and Conflict Management. These strategies complement the physical countermeasures described earlier and demonstrate how safety can be advanced through coordinated policies, programs, and investment priorities across corridors and agencies.

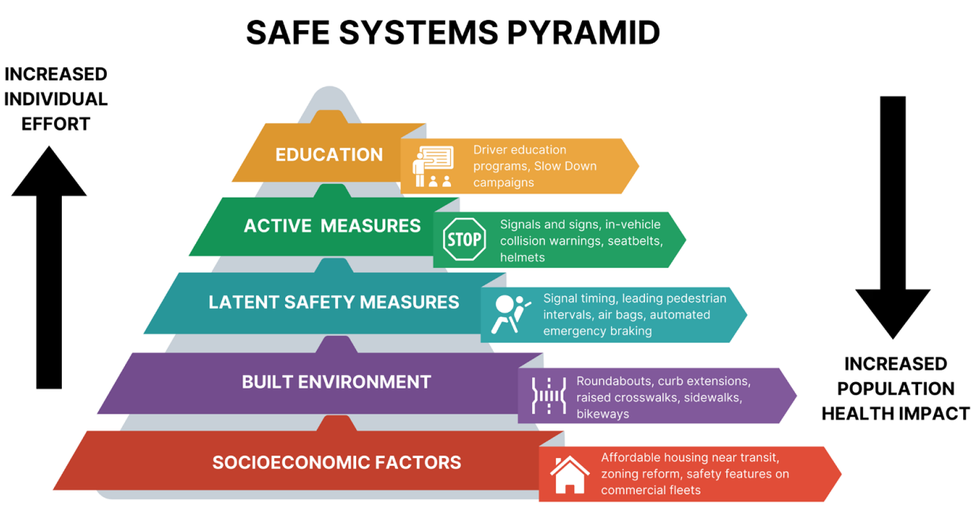


Figure 22: Safe Systems Pyramid
(Source: Adapted from Ederer, et. al. "The Safe Systems Pyramid: A New Framework for Traffic Safety." Science Direct, Elsevier, September 2023, https://www.sciencedirect.com/science/article/pii/S2590198223001525; and Watkins, K & Lieberman, M. "The Safe System Pyramid." National Center for Sustainable Transportation, March 2025, https://escholarship.org/uc/item/7h64w30k.)

5.2.1 Demand Management

Demand management is a Safe System strategy that reduces exposure to crash risk by lowering the number of vehicle trips and total vehicle miles traveled (i.e., 50 people traveling in 2 buses on a roadway have a lower risk of experiencing a crash than 50 people driving 50 single-occupancy vehicles on the same roadway). By shifting trips away from single-occupant vehicles and toward transit, walking, biking, and shared travel options, demand management addresses safety at the base of the Safe Systems Pyramid. These strategies reduce the number of people and vehicles exposed to high-speed or high-conflict roadways, which in turn lowers the overall likelihood of crashes occurring.

GOAL: Reduce overall exposure to crash risk by decreasing single-occupant vehicle trips and shifting travel to walking, biking, transit, and other shared travel options.

Actions:

- Collaborate with Santa Cruz County to implement land use policies that support mixed-use development and affordable housing near employment centers, reducing the need for long personal vehicle commutes.
- Expand and improve active transportation infrastructure such as sidewalks, bike lanes, and multi-use paths to encourage walking and biking, especially in underserved communities.
- Work with the Santa Cruz Metropolitan Transit District (SC METRO) to enhance transit service frequency, reliability, and accessibility to provide viable alternatives to driving.
- Promote travel demand management programs (e.g., Go Santa Cruz County, Cruz511), including employer-based incentives, school travel plans, flexible schedules, and remote work options, to reduce peak-hour congestion and vehicle volumes.

Equity Consideration: Prioritize investments in communities with limited transportation options and high rates of traffic-related injurie to ensure that all residents have safe, affordable, and convenient mobility choices and practical alternatives to driving alone.

5.2.2 Speed Management

Speed management is a Safe System strategy focused on reducing the likelihood and severity of crashes by aligning vehicle speeds with the surrounding context. While speed limits are one tool, the Safe System approach emphasizes target speeds, or the desired operating speeds that reflect land use, roadway function, and the presence of pedestrians and bicyclists. Roadway design and corridor treatments are then used to support these target speeds and make appropriate speeds intuitive and self-enforcing.

Target speeds are particularly important in rural areas where state highways function as town centers. For example, on Rural Main Streets, target speeds are typically lower than on corridors intended to primarily serve throughput and are often in the range of approximately 25 to 30 miles per hour, consistent with Caltrans' evolving approach to context-based design. The RHSP supports aligning design, operations, and posted speeds over time to better reflect these target conditions.

Speed management strategies are most effective when applied systemically at the corridor level rather than on a project-by-project basis. Treatments such as center medians and pedestrian refuge islands play a critical role by visually narrowing the roadway, reducing crossing distances, organizing traffic movements, and reinforcing lower operating speeds while also reducing conflict severity.

GOAL: Lower the likelihood and severity of crashes by reducing operating speeds to levels appropriate for the context and presence of vulnerable road users like people walking, biking, and accessing transit.

Actions:

- Establish context-sensitive target speeds based on place type, roadway function, and presence of pedestrians and bicyclists, and work toward aligning design and operations to support those needs.
- Use roadway design and corridor treatments to encourage drivers to travel at appropriate speeds rather than relying solely on enforcement of a set speed limit.
- Apply speed management strategies by place type, including:
- Main Streets: Gateway medians and speed feedback signs, pedestrian refuge islands, sidewalks, crossing treatments (e.g., high visibility crosswalks, rectangular rapid flashing beacons), and curb extensions especially in areas with high pedestrian activity
- Transitional Streets: Medians, driveway consolidation, turn lanes, sidewalks and crosswalks, roundabouts, and targeted signage
- Undeveloped Areas: Rumble strips (on centerlines where there is head-on lane departure risk, on roadway edges where there is fixed-object collision risk, and potentially both in some locations), advanced warning signage, speed feedback signs, and narrowed lanes, especially in areas with winding roads, limited visibility, or other potential risk factors.
- Address speeds systemically by evaluating corridors as a whole and implementing corridor-wide strategies, such as a series of roundabouts to set consistent speed expectations across a corridor and at similar place types (e.g., 25 mph through Rural Main Streets).

Equity Consideration: Focus speed management investments near schools, senior housing, communities with limited sidewalks, bike infrastructure, or transit access, and along high-speed corridors where severe crashes disproportionately impact vulnerable populations such as in and around Watsonville along Highways 129 and 152.

5.2.3 Conflict Management

Conflict management is a Safe System strategy that reduces the likelihood of severe crashes by minimizing points of conflict and lowering the energy involved when conflicts do occur. These strategies are typically applied at specific locations where different modes or travel directions intersect, such as intersections, crossings, and driveway clusters. The focus is on improving visibility, simplifying movements, and separating users in space and time, particularly in areas where there are people walking, biking, and accessing transit.

GOAL: Minimize the likelihood of crashes by reducing points of conflict and improving separation between different modes and directions of travel.

Actions:

- Separate users in space and time where feasible through dedicated facilities and appropriate intersection control. Prioritize improvements that help protect people walking and biking.
- Add curb extensions, high-visibility crosswalks, pedestrian refuge islands, sidewalks, and bicycle facilities where appropriate to reduce crossing distances and improve comfort and safety. Prioritize improvements at locations with high pedestrian activity or near places where many people walk like schools, transit stops, and community destinations.
- Install appropriate crossing controls at intersections and crosswalks, which are high-conflict locations, such as Rectangular Rapid Flashing Beacons (RRFBs), Pedestrian Hybrid Beacons (PHB), Leading Pedestrian Intervals where signals exist, and automatic pedestrian recall, which provides pedestrians with a walk signal every signal cycle without requiring push-button activation.
- Add bike boxes or two-stage turn boxes where bike facilities are present.
- Install physical barriers, medians, or off-street trails to separate modes, especially on high-speed or high-volume corridors, and use striping or centerline treatments to prevent vehicles from crossing lanes.
- Prioritize intersection designs that reduce the number of conflict points and limit interactions with high potential transfer of kinetic energy, including:
- Implement roundabouts or protected intersection treatments (i.e., physical design elements to separate people walking and biking from vehicle movements at intersections) that reduce severe crash types like head-on, broadside ("T-bone"), or bicycle and pedestrian crashes.
- Decrease turn radii where appropriate to slow turning vehicles and install curb extensions to shorten pedestrian crossing distances.
- Close or redesign slip lanes (a.k.a. channelized turn lanes), which allow high-speed turning movements and create challenging crossing conditions for people walking.
- Address site-specific hazards such as limited sight distance, frequent driveways, or complex turning movements.

Equity Consideration: Prioritize conflict management improvements at locations identified through crash data and community input as having higher impacts on underserved groups, ensuring that safety investments benefit those most at risk.

6

Emphasis Areas and Safety Enhancement Concepts

Based on the safety needs identified through analysis and stakeholder and public input, the RHSP identified project locations with the greatest need for safety improvements. From the full project list, the project team selected a sample of locations for further project development, as shown in **Figure 23**. These emphasis areas are designed to capture recurring patterns that may contribute to killed or severely injured (KSI) crashes and illustrate high-impact improvements that can be implemented at both the identified emphasis area locations and at comparable locations along the study highways.

6.1 Method and Approach

6.1.1 Project Selection Process

Informed by the safety needs identified along the study highways, the RHSP includes a comprehensive list of projects aimed at addressing critical safety challenges. Projects were selected based on their potential to reduce kinetic energy transfer and KSI crashes consistent with the Safe System Approach and alignment with community priorities, as follows:

- **High concentrations of KSI crashes**: locations where many KSI crashes occurred, as described in **Section 3.2.1**.
- **High potential risk score**: locations where many potential risk factors are present, as described in **Section 3.1**.
- **Strong community support**: locations with substantial community input, as described in **Chapter 4**.
- **Matched identified safety profile**: locations that match the characteristics of an identified safety profile, as described in **Section 3.3**.
- **Aligned with existing plan or project**: locations near ongoing or previously planned projects, such as San Lorenzo Valley Plans described in **Section 1.3**.
- **In an equity areas**: locations within identified equity areas, as described in **Chapter 7**.

Emphasis area project locations are shown in Figure 23, and the full list of projectsand descriptions is included in **Appendix G**. These projects represent a balanced mix of near-term and long-term strategies, geographic locations, and place types. **Appendix G** describes specific enhancements for each location, including quick-build improvements to address immediate safety concerns and larger-scale infrastructure investments.

The emphasis areas and priority project locations identified in this chapter do not represent a comprehensive list of all locations along the six rural highways that may warrant safety enhancements. While the RHSP documents locations identified through data analysis and community input during the study period, project advancement is not limited to these locations and will depend on updated crash data, funding availability, community input, and agency priorities. Following the adoption of the RHSP, any location along the study highways may be considered for future safety improvements consistent with program requirements and agency direction. Enhancements identified as part of previous efforts evaluating these corridors, including the Highway 9 San Lorenzo Valley Complete Streets Corridor Plan, are recommended to be included in the development of future projects.

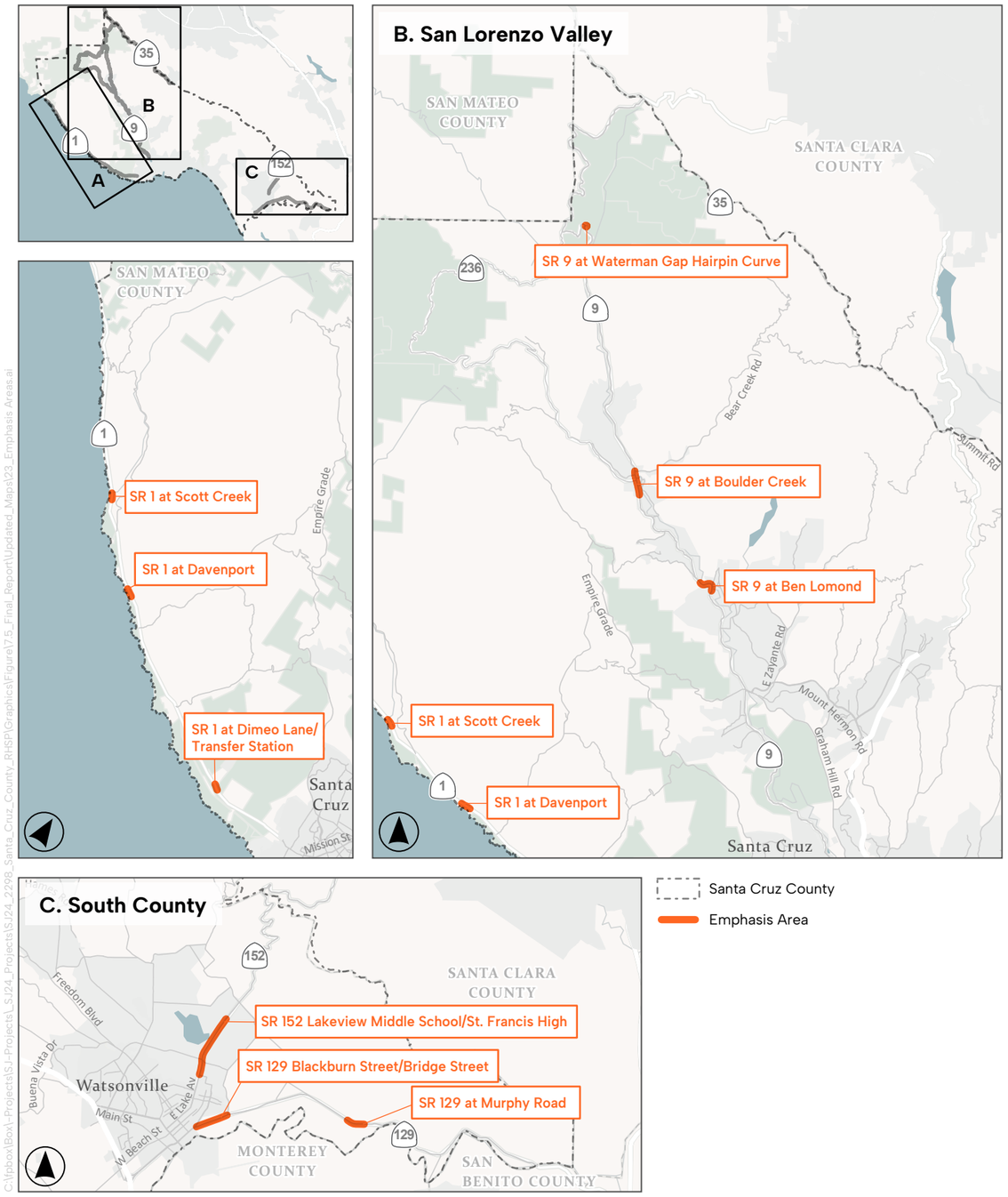


FIGURE 23
Emphasis Areas

6.1.2 Emphasis Areas

Informed by the safety needs discussed in Chapter 3, the RHSP identified select emphasis areas for further project development. Emphasis areas are focused on critical safety challenges on the study highways and the recommended enhancements, as shown in the concepts, are intended to serve as reference for other comparable locations. These sample locations, shown in Table 1 and mapped in **Figure 23**, were selected based on the following:

Representative safety concerns or typical characteristics that apply to other locations

- Addresses all safety profiles and place types
- Geographically distributed locations to reflect representative locations on all study highways

Locations that would most benefit from enhancements based on analysis and feedback

- Areas where more potential risks factors are present and/or crashes have occurred
- Areas where community feedback highlighted key concerns
- Areas where there is an equity need

Opportunities for funding

- Aligned with crash data that underpins criteria for certain safety funding programs
- Presents a compelling case for funding

The project team developed safety enhancement concepts for each emphasis area to help with future planning coordination and accessing future implementation funding for environmental, final design, and construction phases. The safety enhancement concepts, also included in Appendix H, are intended to illustrate the types of improvements that may be concerned at these locations but are conceptual and would require further design development, engineering calculations, and coordination before construction.

Table 1: Emphasis Area Locations

HIGHWAY #	LOCATION	CONCEPT FIGURE #	DESCRIPTION	PLACE TYPE	TOTAL CRASHES	KSI CRASHES	PED CRASHES[1]	BIKE CRASHES[1]
Highway 1	Scott Creek	1	500 feet in each direction from Scott Creek	Undeveloped Non-Mountainous	7	2	0	3
Highway 1	Davenport	2	Marine View Avenue to San Vicente Creek	Main Street	8	2	1	1
Highway 1	Dimeo Lane/Transfer Station	3	500 feet in each direction from Dimeo Lane	Undeveloped- Non-Mountainous	6	1	0	0
Highway 9	Waterman Gap Hairpin Curve	4	Hairpin north of Saratoga Toll Road	Undeveloped Mountainous	4	1	0	0
Highway 9	Boulder Creek	5	Bear Creek Road to North of Mountain Road	Main Street	47	10	16	44
Highway 9	Ben Lomond	6-1, 6-2	South of Marshall Creek Court to Hillside Avenue	Main Street	30	3	0	10
Highway 129	Blackburn St/Bridge St	7	East of Bridge Street to West of Lakeview Road	Transitional	28	4	7	21
Highway 129	Murphy Road	8	200 feet in each direction from Murphy Road	Undeveloped Mountainous	7	1	0	0
Highway 152	Lakeview Middle School/St. Francis High	9	Levee Path to the Fair Grounds Entrance	Main Street/ Transitional	69	14	54	36

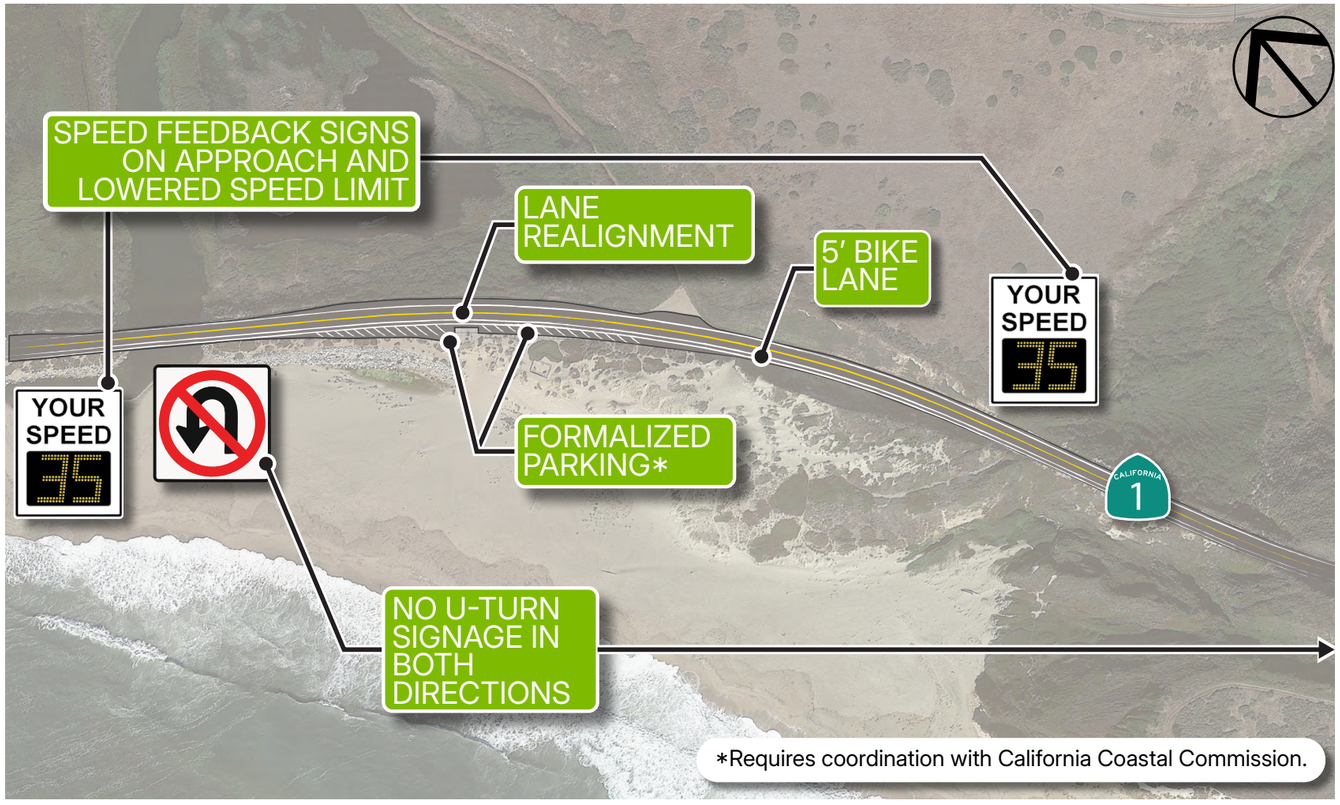
Notes:
1. Accounts for both KSI and non-KSI crashes.

Source: Fehr & Peers, 2026.

FIGURE 24

Highway 1: Scott Creek | Managing turning and parking at visitor destinations

Highway 1 at Scott Creek is designated as an Undeveloped Non-Mountainous place type and serves as a key access point to coastal parking areas. Like many other locations on Highway 1 in within the study limits, the parking areas are informal and can make it challenging to maneuver. The corridor experiences many crashes related to weekend driving that are associated with high volumes of recreational users driving, biking, and walking.



PLANNING-LEVEL COST ESTIMATE (2026 DOLLARS)

$ Scott Creek **$345,000**

KEY ENHANCEMENTS

- Potentially formalize parking on the west side of Highway 1 with striping and an access lane
- Install speed feedback signs
- Realign vehicle through lanes to the east
- Remove informal parking on the east side to reduce pedestrians crossing the highway

PLACE TYPE

Rural Non-Mountainous

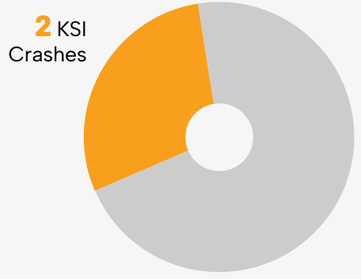
SEGMENT LENGTH

1,000 Feet

PROFILES ADDRESSED

Weekend Driving on Undeveloped Non Mountainous Roads

CRASH OUTCOMES



CRASH BY MODE

Pedestrian Crashes **0**

Bicycle Crashes **3**

FIGURE 25

Highway 1: Davenport | Incorporating pedestrian/bicycle facilities and crossing improvements along Main Streets

Highway 1 in Davenport is characterized as a Main Street place type with high pedestrian and vehicle volumes. Highway 1 in Davenport is characterized as a Main Street place type with high pedestrian and vehicle volumes. This section serves as a main access point to Davenport shops and restaurants, elementary school, and beaches with frequent crossings across Highway 1. The corridor experiences many excessive speeding and lane departure crashes.

PLANNING-LEVEL COST ESTIMATE (2026 DOLLARS)

Davenport	**$3,567,000**

KEY ENHANCEMENTS

- Provide gateway improvements and traffic calming measures
- Install rolled curbs with sidewalks to delineate pedestrian space
- Improve pedestrian crossing at Highway 1 and Ocean Street to increase visibility
- Enhance transit stops to support existing and future transit service
- Create connections for pedestrians and bicyclists through Davenport

PLACE TYPE

Main Street

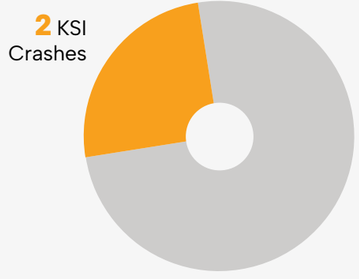
SEGMENT LENGTH

1,500 Feet

PROFILES ADDRESSED

Excessive Speed, Lane Departure

CRASH OUTCOMES



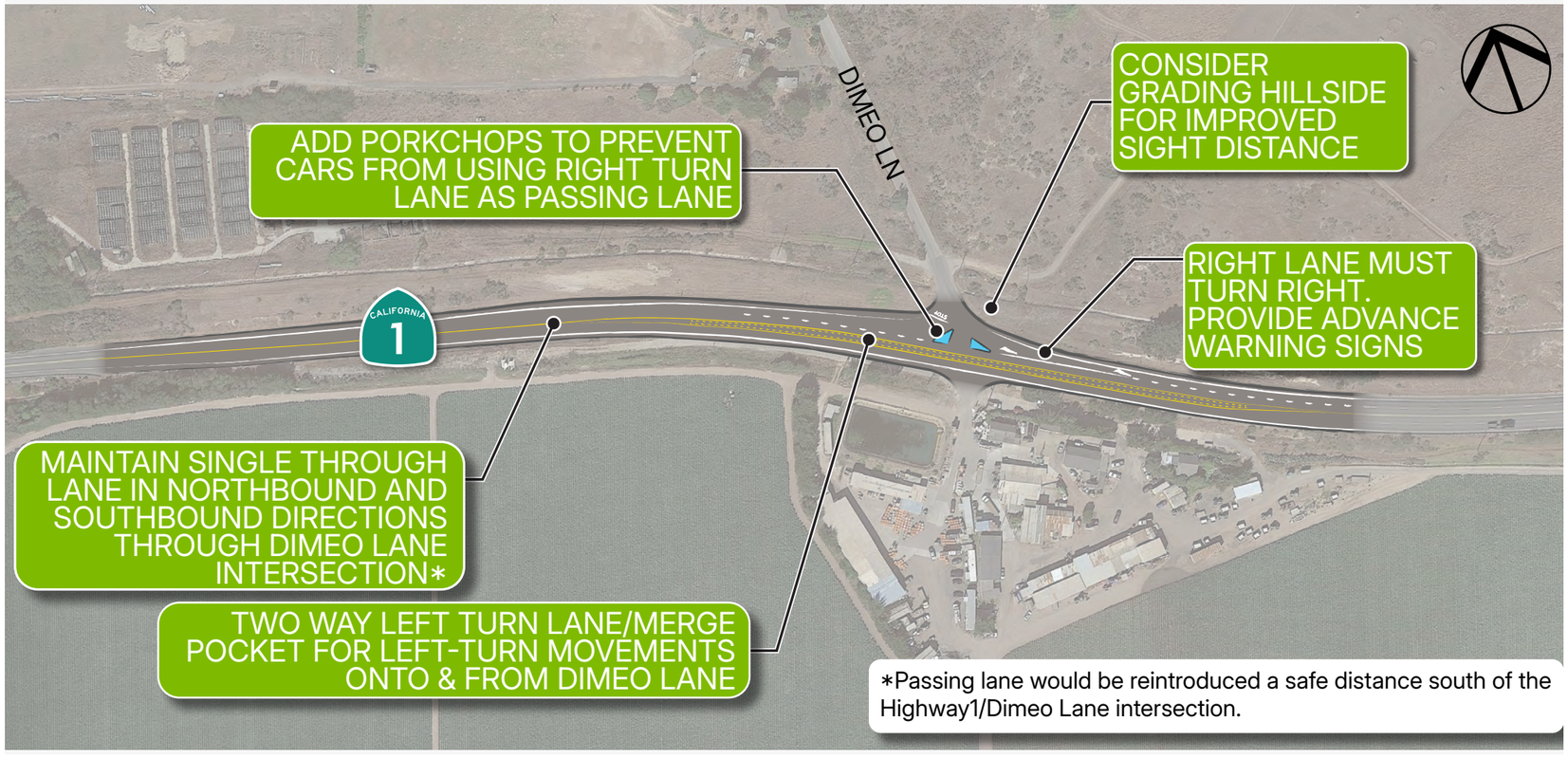
CRASH BY MODE

Pedestrian Crashes	**1**
Bicycle Crashes	**1**

FIGURE 26

Highway 1: Dimeo Lane/Transfer Station | Managing turns at locations with high truck and heavy vehicle volumes

Highway 1 at Dimeo Lane is designated as an Undeveloped Non-Mountainous place type and is primarily affected by excessive vehicle speeds and heavy vehicles traveling to/from the City of Santa Cruz Resource Recovery Facility. The intersection geometry of this location is representative of other areas on Highway 1 with visibility challenges and high vehicle and truck volumes. Intersection improvements should be designed to accommodate all turning movements for vehicle types including semi-trucks.



PLANNING-LEVEL COST ESTIMATE (2026 DOLLARS)

$ Dimeo Lane & Transfer Station **$1,066,000**

KEY ENHANCEMENTS

- Restripe turn lanes and passing lanes to discourage passing at the intersection and address sight distance concerns
- Add pork chop islands to help facilitate turn movements and improve visibility
- Narrow vehicle lanes
- Maintain shoulders for bike access

PLACE TYPE

Undeveloped Non-Mountainous

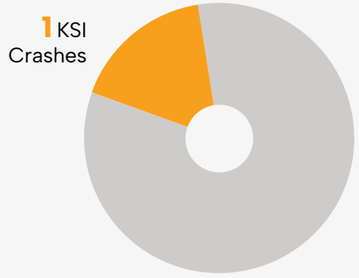
SEGMENT LENGTH

1,000 Feet

PROFILES ADDRESSED

Excessive Speed

CRASH OUTCOMES



CRASH BY MODE

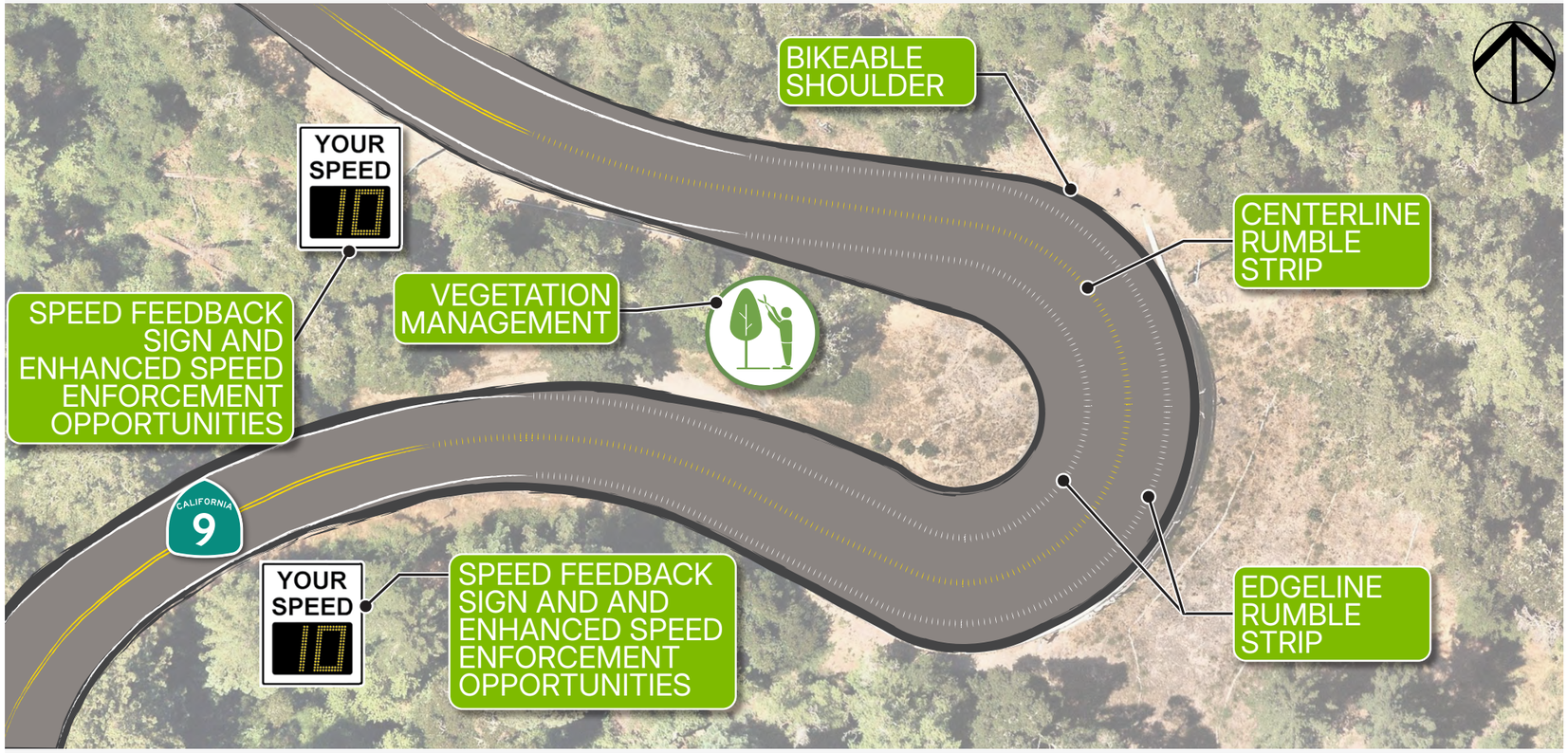
Pedestrian Crashes **0**

Bicycle Crashes **0**

FIGURE 27

Highway 9: Waterman Gap Hairpin Curve | Reducing vehicle speeds on narrow, curved, and mountainous locations

This segment of Highway 9, located at a hairpin turn south of the intersection with SR 236 and north of Saratoga Toll Road, is classified as Undeveloped Mountainous. The road is narrow with horizontal and vertical curves that present challenges related to sight distance, especially navigating tight or compounding curves. Anecdotal reports of speeding and racing on this portion of Highway 9 were shared in the community feedback. Although observed speed data shows average speeds of approximately 30 MPH, the corridor has a history of lane departure and DUI-related crashes.



PLANNING-LEVEL COST ESTIMATE (2026 DOLLARS)

$ Waterman Gap Hiairpin Curve **$211,000**

KEY ENHANCEMENTS

- Install centerline rumble strips
- Manage vegetation to maintain visibility
- Install speed feedback signs to encourage slower travel speeds
- Enhance speed enforcement opportunities

PLACE TYPE

Undeveloped Mountainous

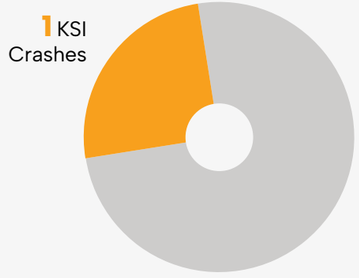
SEGMENT LENGTH

500 Feet

PROFILES ADDRESSED

Lane Departures, DUIs on Undeveloped Mountainous Roads

CRASH OUTCOMES



CRASH BY MODE

Pedestrian Crashes **0**

Bicycle Crashes **0**

FIGURE 28

Highway 9: Boulder Creek | Accommodating all road users within town centers

Highway 9 through Boulder Creek, from Bear Creek Road to Mountain Street, is characterized as a Main Street place type with a mix of narrow roads approaching downtown Boulder Creek and a more generous right-of-way with on-street parking within downtown. The area generally has limited sight distances and high levels of pedestrian activity. The corridor experiences many crashes falling into the excessive speeding and pedestrian crashes at night crash profiles.

KEY ENHANCEMENTS

- Provide gateway treatments such as medians, landscaping, and signage
- Install speed feedback signs to encourage slower travel speeds
- Enhance intersection and pedestrian crossings with Rectangular Rapid Flashing Beacons (RRFBs) and high-visibility crosswalks
- Improve transit stops by adding waiting areas and signage/ furniture
- Build sidewalk connections to close gaps
- Include dedicated bike facilities or bikeable shoulders according to context where feasible

PLACE TYPE

Main Street

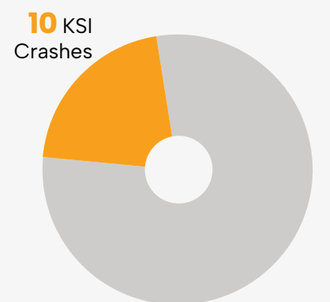
SEGMENT LENGTH

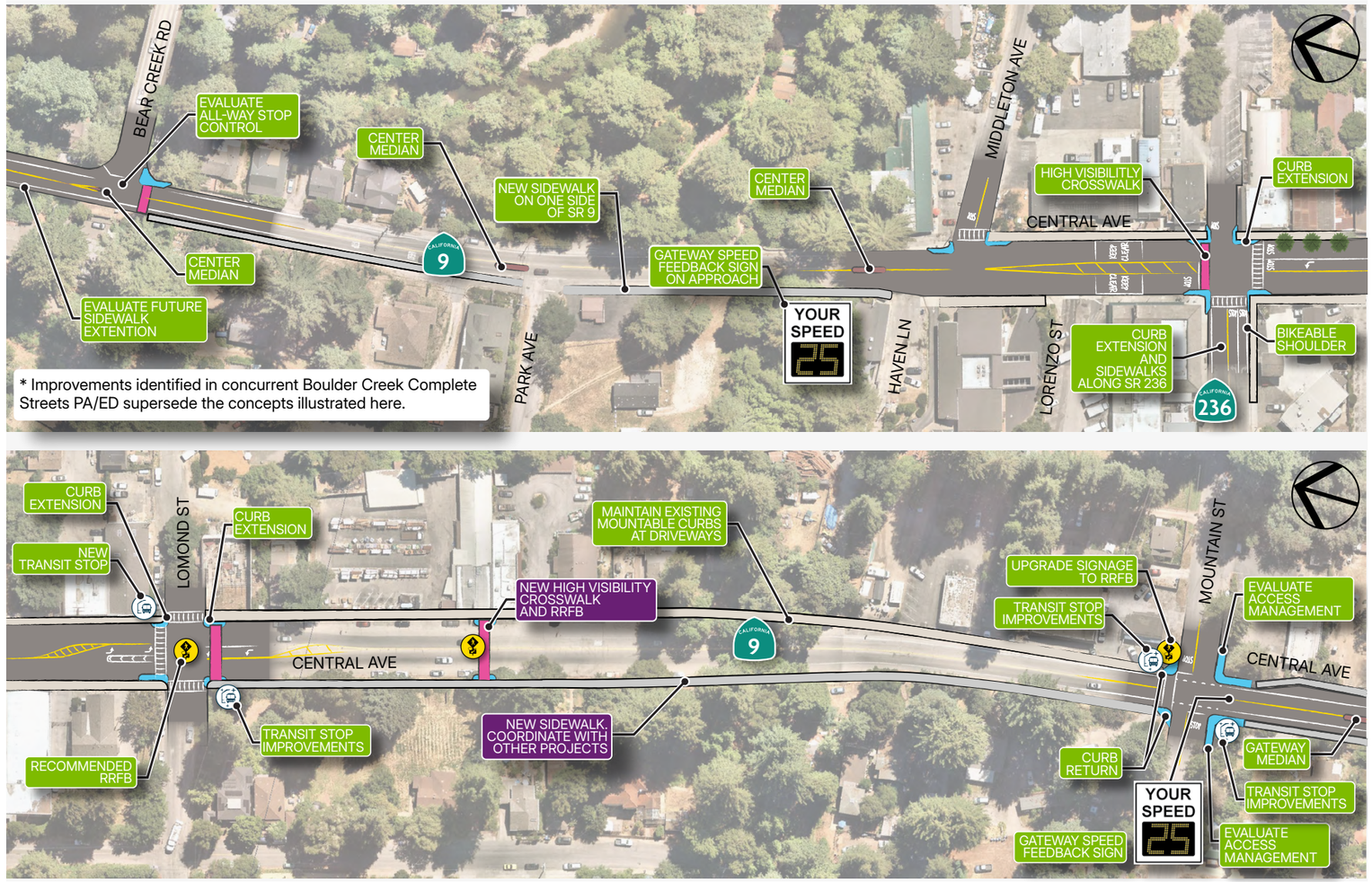
2,500 Feet

PROFILES ADDRESSED

Excessive Speed, Pedestrian Crashes, Pedestrians at Night

CRASH OUTCOMES





PLANNING-LEVEL COST ESTIMATE (2026 DOLLARS)

Boulder Creek **$4,978,000**

CRASH BY MODE

Pedestrian Crashes **16**

Bicycle Crashes **44**

FIGURE 29

Highway 9: Ben Lomond (1 of 2) | Managing vehicle and pedestrian access through town centers

The Highway 9 segment through downtown Ben Lomond is a Main Street corridor with narrow curves, limited sight distance, and high pedestrian volumes. The area is affected by excessive speeds and frequent lane departure crashes. Enhancements will build on previous planning and design work done in the area including the San Lorenzo Valley (SLV) Complete Streets Plan and the Complete Streets Safety Assessment in Ben Lomond.

KEY ENHANCEMENTS

- Support existing crossing demand by right-sizing intersections and adding high visibility crosswalks, RRFBs, and curb extensions
- Provide gateway treatments including median islands, landscaping, and signage
- Improve transit stops by adding waiting areas and signage / furniture
- Narrow vehicle lanes
- Build sidewalk connections to close gaps

PLACE TYPE

Main Street

SEGMENT ENGTH

2,500 Feet

PROFILES ADDRESSED

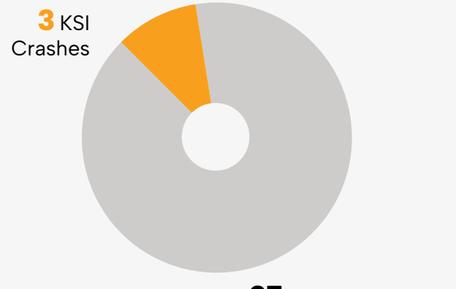
Excessive Speed, Lane Departure

PLANNING-LEVEL COST ESTIMATE

(2026 DOLLARS)

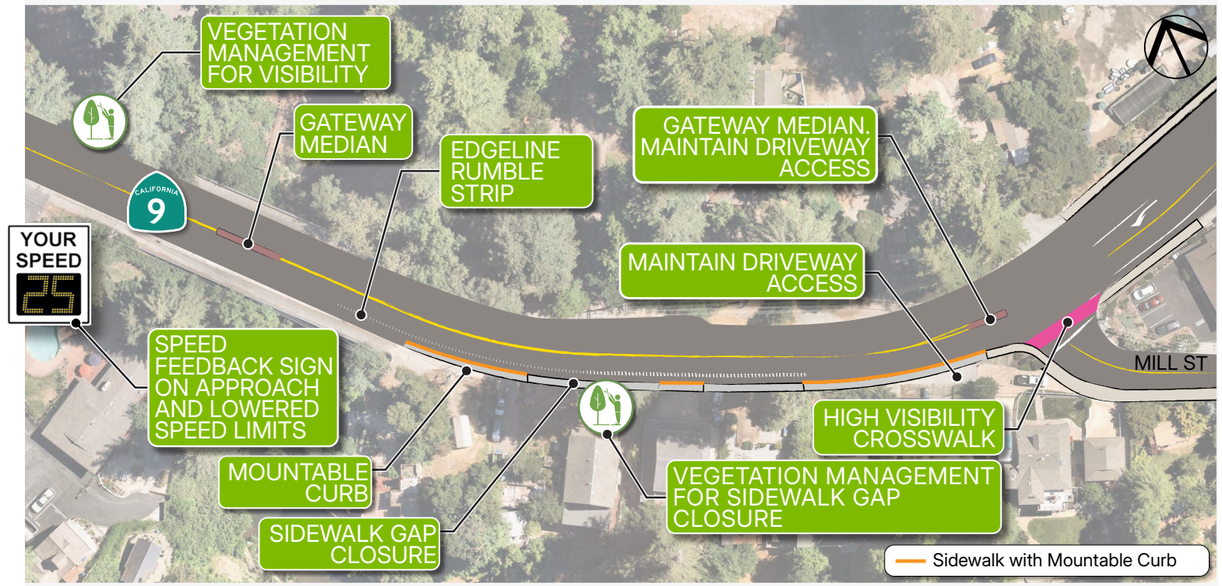
Ben Lomond	**$4,309,000**

CRASH OUTCOMES



CRASH BY MODE

Pedestrian Crashes	**0**
Bicycle Crashes	**10**



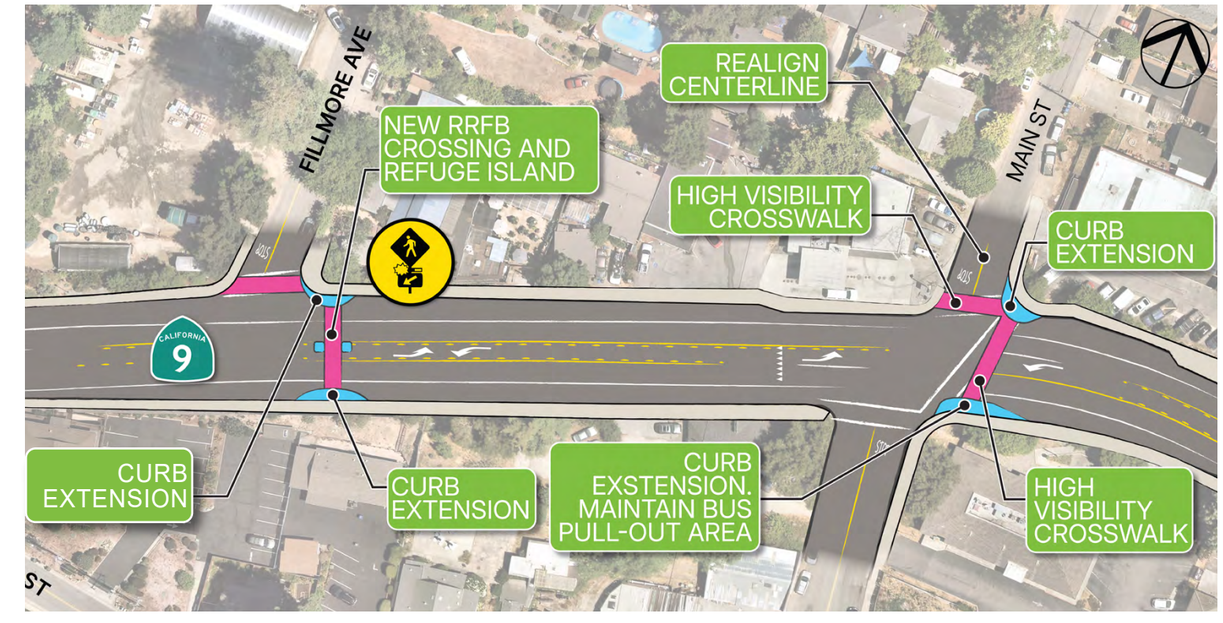


FIGURE 30

Highway 9: Ben Lomond (2 of 2) | Managing vehicle and pedestrian access through town centers

The Highway 9 segment through downtown Ben Lomond is a Main Street corridor with narrow curves, limited sight distance, and high pedestrian volumes. The area is affected by excessive speeds and frequent lane departure crashes. Enhancements will build on previous planning and design work done in the area including the San Lorenzo Valley (SLV) Complete Streets Plan and the Complete Streets Safety Assessment in Ben Lomond.

KEY ENHANCEMENTS

- Support existing crossing demand by right-sizing intersections and adding high visibility crosswalks, RRFBs, and curb extensions
- Provide gateway treatments including median islands, landscaping, and signage
- Improve transit stops by adding waiting areas and signage / furniture
- Narrow vehicle lanes
- Build sidewalk connections to close gaps

PLACE TYPE

Main Street

SEGMENT ENGTH

2,500 Feet

PROFILES ADDRESSED

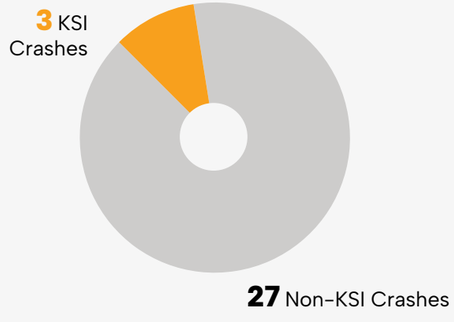
Excessive Speed, Lane Departure

PLANNING-LEVEL COST ESTIMATE

(2026 DOLLARS)

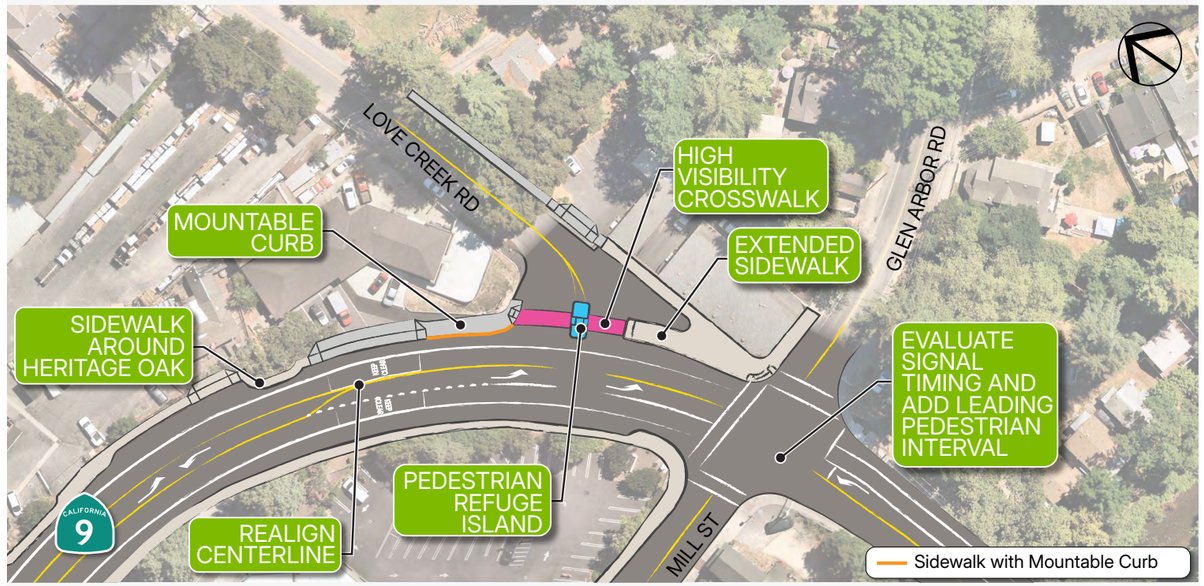
Ben Lomond	**$4,309,000**

CRASH OUTCOMES



CRASH BY MODE

Pedestrian Crashes	**0**
Bicycle Crashes	**10**



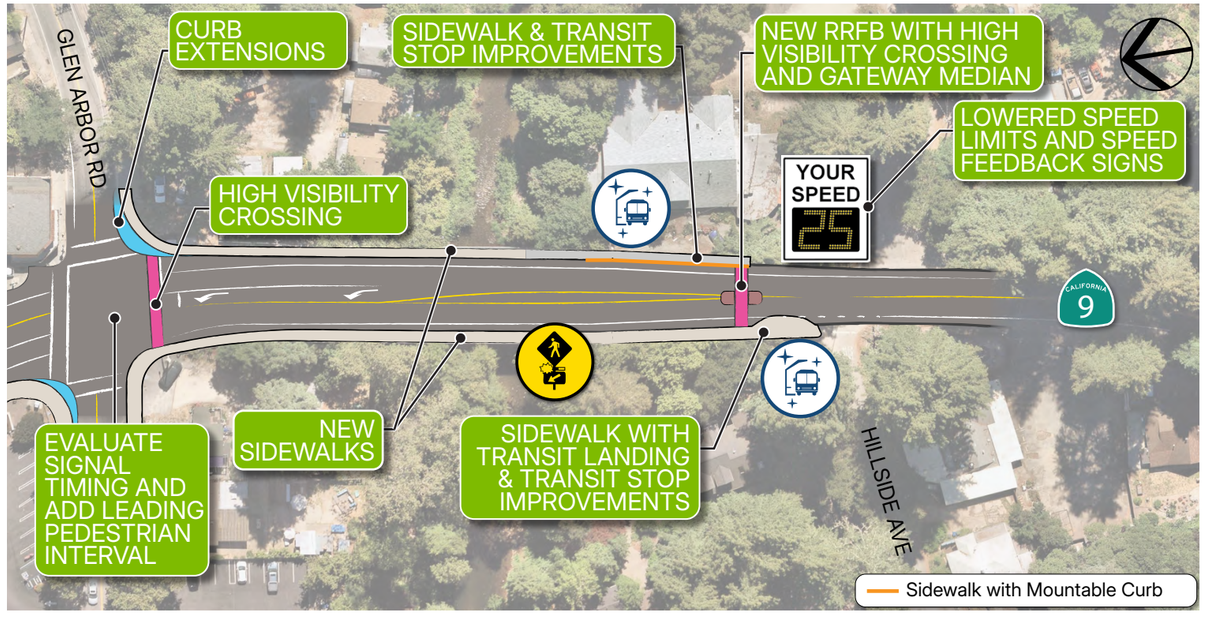
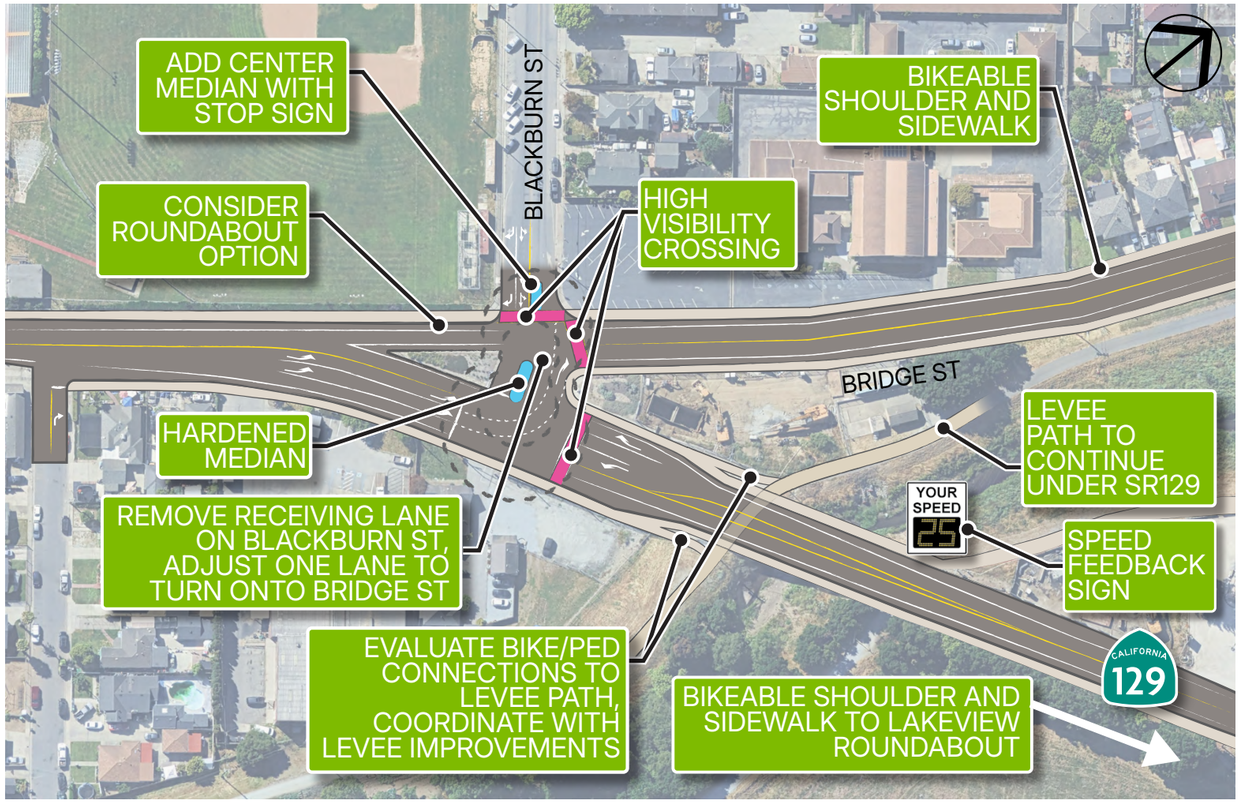


FIGURE 31

Highway 129: Blackburn Street/Bridge Street | Reducing conflicts at complex intersections in Transitional areas

Highway 129 near the eastern edge of the City of Watsonville is a Transitional place type and designated truck route with a diverse vehicle mix. While the project location is within the City of Watsonville, intersection treatments here can help to systemically manage speeds throughout the corridor, particularly in the segment just east of the City limits between this intersection and the Highway 129/Lakeview Road intersection. This segment provides access to agriculture lands and sees higher than typical heavy vehicle volumes, including trucks and farm equipment. Pedestrians and bicyclists on the corridor are typically a mix of people traveling to employment sites or participating in recreational activities. There is a history of excessive speeding and pedestrian-involved crashes.



PLANNING-LEVEL COST ESTIMATE (2026 DOLLARS)

$ Blackburn & Bridge **$24,084,000**

KEY ENHANCEMENTS

- Provide bikeable shoulders
- Build sidewalk connections to close gaps
- Install center medians
- Add high-visibility crosswalks to help improve pedestrian visibility
- Consider a roundabout to address speeds and conflict severity; potentially build additional roundabouts at other locations along Highway 129 with the goal of systemically managing speeds

PLACE TYPE

Transitional

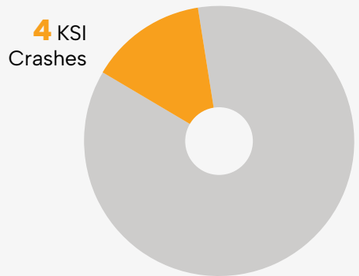
SEGMENT LENGTH

5,000 Feet

PROFILES ADDRESSED

Excessive Speed, Lane Departures

CRASH OUTCOMES



CRASH BY MODE

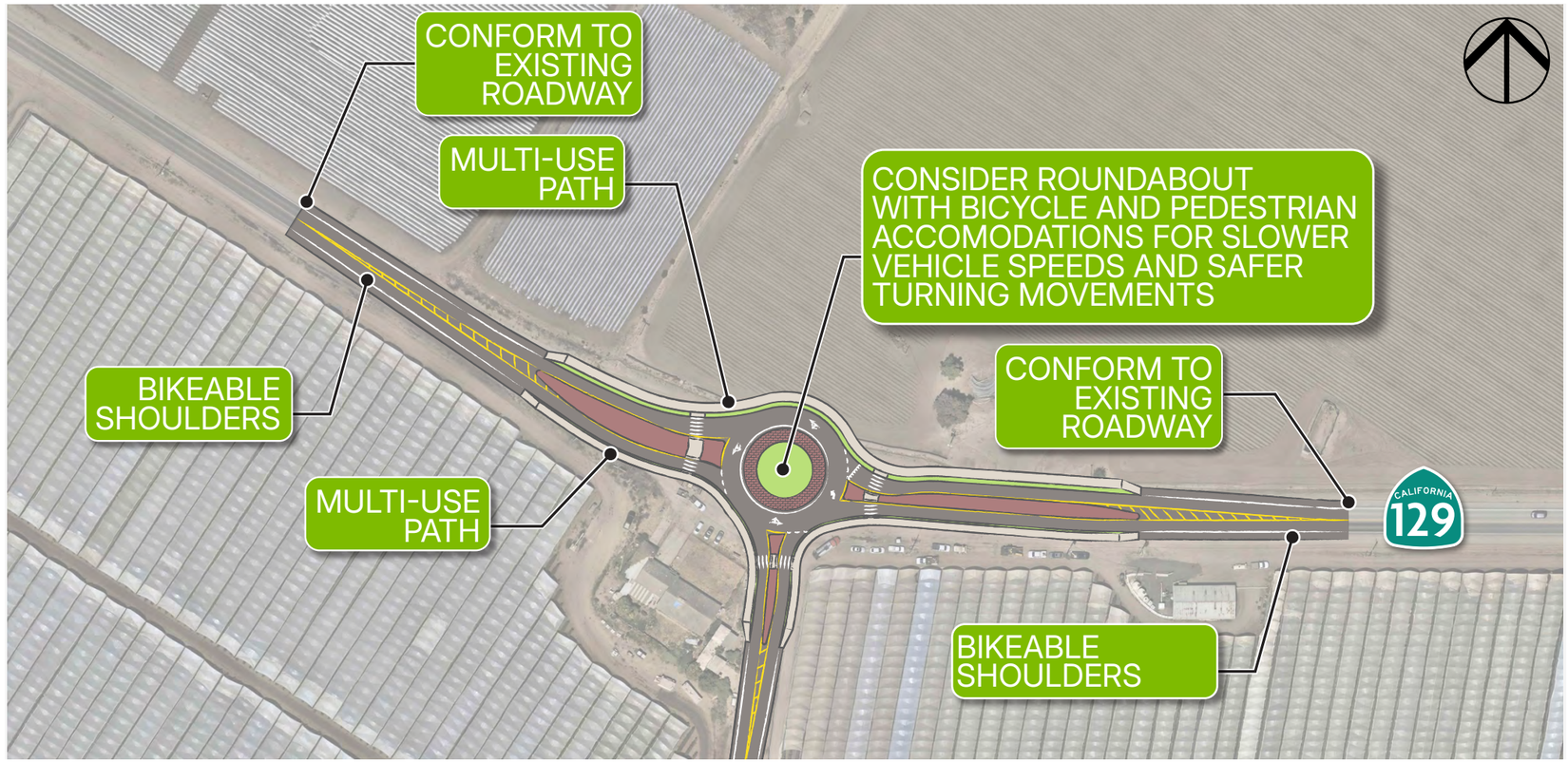
Pedestrian Crashes **7**

Bicycle Crashes **21**

FIGURE 32

Highway 129: Murphy Road | Reducing speeds on roads near agricultural uses

Near Murphy Road, Highway 129 is characterized as an Undeveloped Mountainous place type with agricultural rural characteristics. At the intersection, historical realignments of Highway 129 have created excess pavement that is no longer required as part of the traveled way but is not suitably delineated or separate to discourage use. Feedback indicated that the large paved areas near the intersection can lead to higher travel speeds, especially for turns. The corridor is affected by excessive speeds and lane departure crashes.



PLANNING-LEVEL COST ESTIMATE (2026 DOLLARS)

Murphy Rd	**$7,298,000**

KEY ENHANCEMENTS

- Delineate or remove pavement outside the desired traveled way
- Install bike lane marking
- Consider a roundabout to address speeds and conflict severity; potentially build additional roundabouts at other locations along Highway 129 with the goal of systemically managing speeds

PLACE TYPE

Undeveloped Mountainous

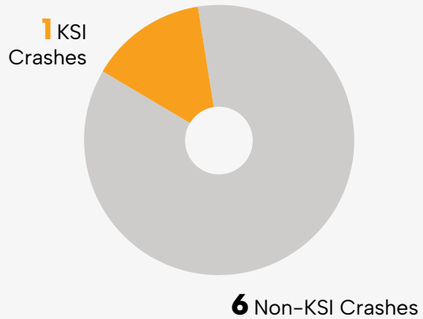
SEGMENT LENGTH

1,500 Feet

PROFILES ADDRESSED

Excessive Speed, Lane Departure

CRASH OUTCOMES



CRASH BY MODE

Pedestrian Crashes	**0**
Bicycle Crashes	**0**

FIGURE 33

Highway 152: Lakeview Middle School/St. Francis High/Fairgrounds Access | Designing for safe pedestrian and bicycle access near schools or other key destinations

Highway 152 northeast of Watsonville includes two key segments with distinct safety concerns. The Holohan Road segment, from the edge of the City to St. Francis High School, is a Main Street corridor that experiences unpredictable driveway movements and lane departure crashes. This segment includes both a middle school and high school that generate high vehicle and pedestrian volumes. There are many pedestrians crossing midblock to access the school and the church.

The Fairgrounds segment is a Transitional corridor with concerns related to long queues and high vehicle volumes during Fairgrounds events. Enhancements and improvements are focused on ingress and egress for all modes, including enhanced active transportation access that may reduce demand for vehicular travel during events.

KEY ENHANCEMENTS

- Build a Class I multi-use path parallel to Highway 152 along the segment
- Add traffic control such as a Pedestrian Hybrid Beacon (PHB) or traffic signal with high visibility crosswalks at the driveway to St. Francis High School
- Enhance School Zone signage to notify drivers of multiple school locations and pedestrian activity
- Complete sidewalk gap closures, including Class I trail connections
- Consolidate driveways where feasible

PLACE TYPE

Main Street, Transitional

SEGMENT LENGTH

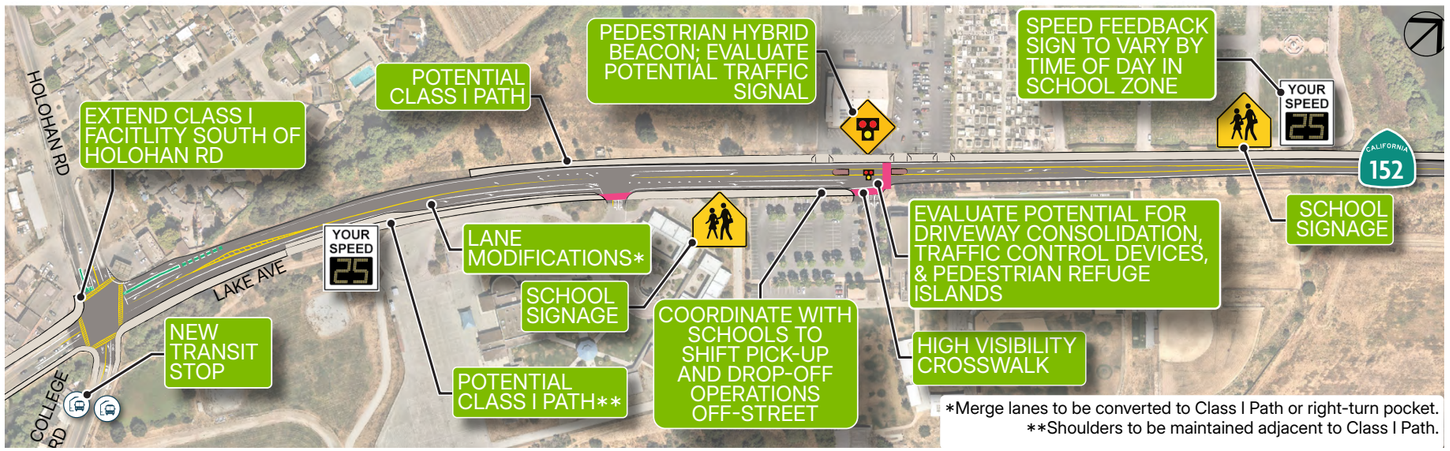
6,600 Feet

PROFILES ADDRESSED

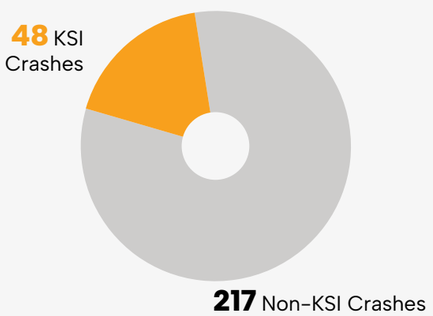
Excessive Speed, Lane Departures, Bicyclists on Narrow Roads, Turns on Transitional Roads

PLANNING-LEVEL COST ESTIMATE (2026 DOLLARS)

$ Lakeview Middle School/St. Francis High **$14,703,000**

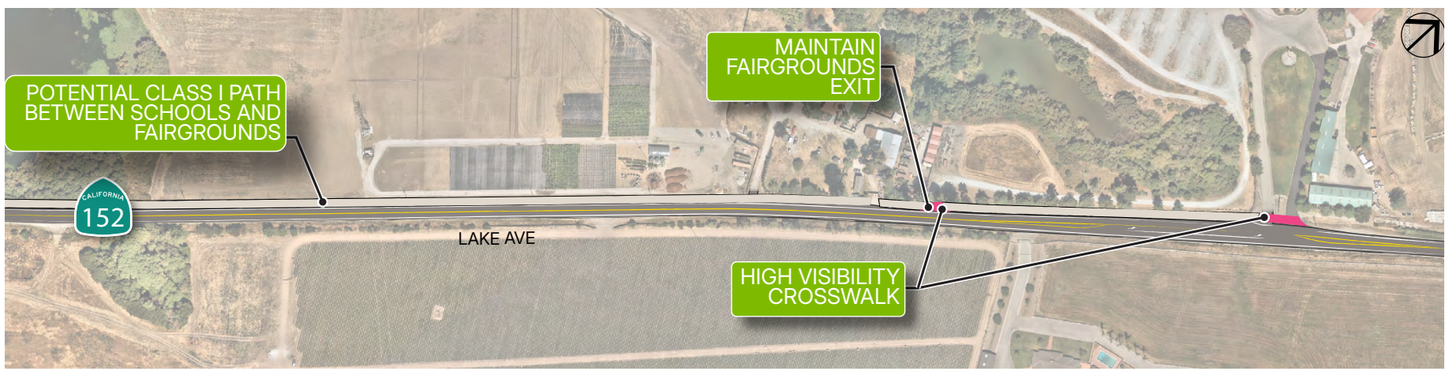


CRASH OUTCOMES



CRASH BY MODE

Pedestrian Crashes	78
Bicycle Crashes	115



7

Equity

An equity analysis was conducted to inform development of the RHSP and complement ongoing efforts by RTC and Caltrans to understand and identify underserved communities within Santa Cruz County. The analysis draws on household income, race, and ethnicity data, along with established state and federal equity mapping tools, to identify geographic areas where residents may face higher barriers to transportation safety and access and where focused consideration in safety planning and investment may be warranted.

Santa Cruz County's mean ($150,630) and median ($112,240) household incomes based on 2023 American Community Survey (ACS) 5-year estimates are higherthan statewide figures; however, these values should be interpreted in the context of the county's high cost of living.Housing and transportation costs in Santa Cruz County significantly reduce purchasing power and contribute to affordability challenges not captured by income alone. According to recent data, Santa Cruz County has been ranked the least affordable rental market in the U.S. for multiple years, with fair market rents among the highest nationwide[9]. The difference between the mean and median incomes indicates that high-earning households raise the countywide average, while a substantial share of households earn closer to the median or below. The median represents the midpoint of all households and is less influenced by very high incomes, providing a clearer picture of typical household conditions.

Of the county's 69 census tracts, 23 (33%) have median household incomes below California's median of $95,520, and one tract (1%) falls below 200% of the Federal Poverty Line for a family of three (about $53,300). These lower-income tracts are primarily concentrated around the City of Watsonville, Downtown Santa Cruz, and Brookdale, indicating areas where households may face greater economic constraints relative to the rest of the county. It should be noted that census tracts represent averages across relatively small geographic areas, but they can still include households with very different income levels. As a result, localized need may not be fully reflected in tract-level summary statistics.

Based on 2020 Decennial Census data, Santa Cruz County is less racially diverse than California as a whole, with a higher proportion of non-Hispanic White residents (54%) and a lower representation of people of color overall (46%), including Asian, Black, and Hispanic/ Latino populations. Census tracts with the highest percentages of people of color are generally located near the City of Watsonville, Downtown Santa Cruz, and the University of California, Santa Cruz, as shown in **Figure 34**. While census tracts provide a consistent unit of analysis, they may not capture variation within neighborhoods, suggesting that additional outreach or more fine-grained analysis could be useful in future phases.

9 Lookout Santa Cruz, "Santa Cruz County named the nation's least affordable rental market for third straight year — and the gap has widened," Lookout Santa Cruz, August 2024, https://lookout.co/santa-cruz-county-named-the-nations-least-affordable-rental-market-for-third-straight-year-and-the-gap-has-widened/story

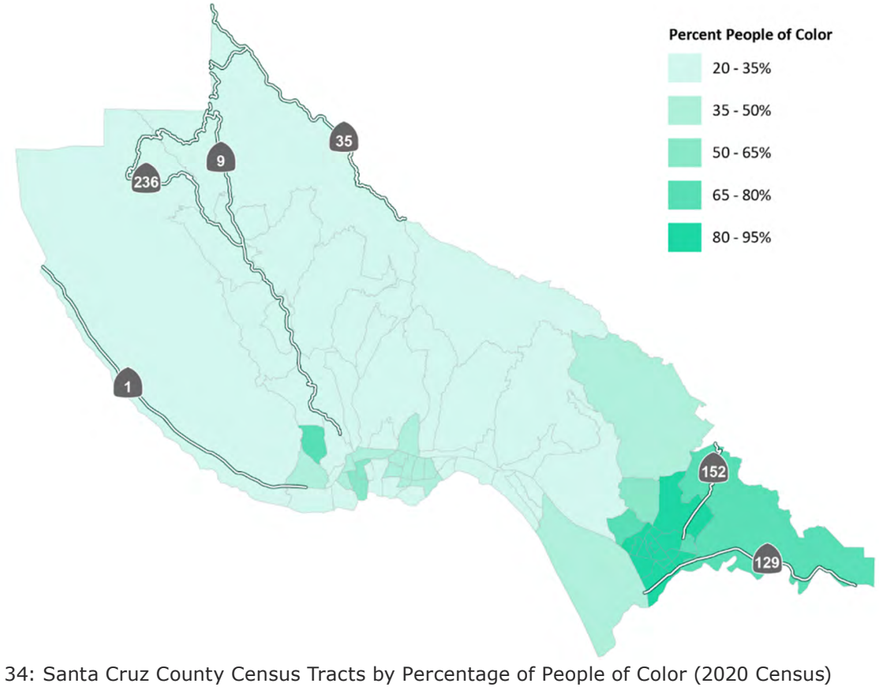


Figure 34: Santa Cruz County Census Tracts by Percentage of People of Color (2020 Census)

7.1 Transportation Equity Action Plan (2025)

In 2025, the Santa Cruz County Regional Transportation Commission adopted the Transportation Equity Action Plan (Equity Plan), which establishes a regional definition of Transportation Equity Priority Communities. The Equity Plan identifies census tracts that meet one or more adopted equity thresholds related to income, poverty, race and ethnicity, limited English proficiency, disability status, age, renter status, and other indicators using American Community Survey and U.S. Census data. Areas meeting multiple thresholds are shown as darker concentrations on the adopted map shown in **Figure 35**.

Under the Equity Plan framework, areas with the highest concentrations of residents meeting one or more thresholds include downtown Watsonville and surrounding neighborhoods, the Beach Flats and downtown areas of Santa Cruz, Live Oak, and the University of California Santa Cruz.

Within the RHSP study area, Transportation Equity Priority Communities overlap with segments of Highway 9 in and around Brookdale and with portions of Highways 129 and 152 in and around Watsonville. These corridors serve communities identified through the Equity Plan as meeting one or more equity thresholds and warrant focused attention in safety planning and investment decisions.

The Equity Plan establishes an adopted regional definition of Transportation Equity Priority Communities and informs local project prioritization. Although federal programs such as Safe Streets and Roads for All use their own eligibility criteria, the Equity Plan provides a clear and consistent local framework for identifying priority communities within Santa Cruz County.

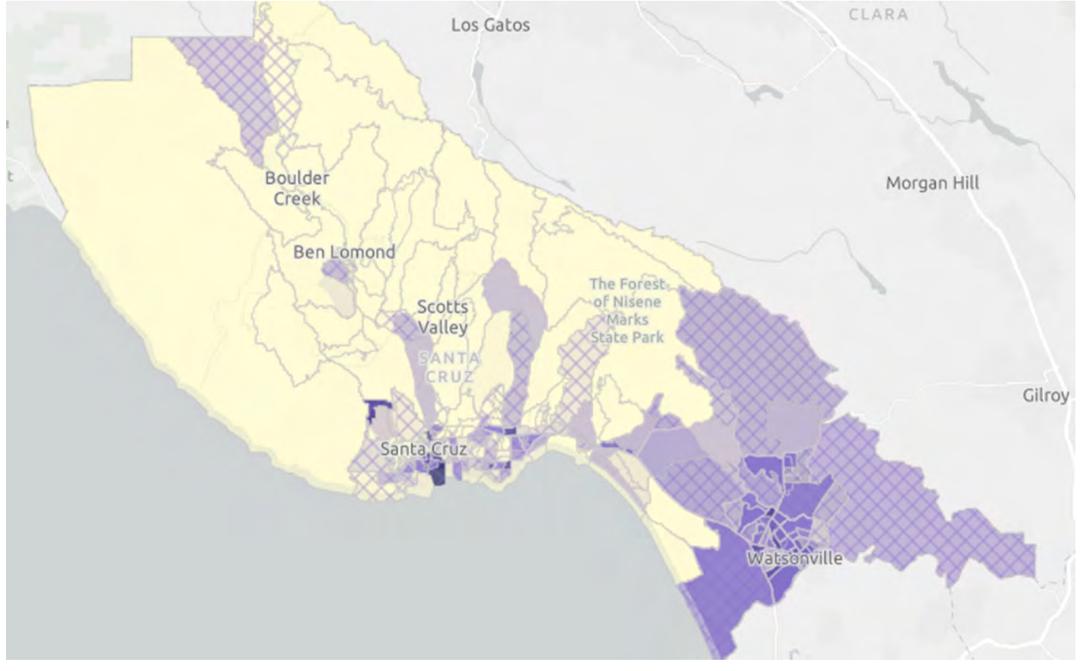


Figure 35: Santa Cruz County Transportation Equity Priority Communities (SCCRTC, 2025)

7.2 Comparative Equity Mapping Tools

Three commonly used equity mapping and planning tools were reviewed to understand how underserved communities are identified using different policy and programmatic lenses.

- The Safe Streets and Roads for All (SS4A) Underserved Communities Mapping Tool is designed to support transportation safety planning and investment by identifying areas that meet federal definitions of persistent poverty and other indicators tied to program eligibility.
- The Climate Investments Priority Populations Mapping Tool 4.0 identifies disadvantaged and low-income communities statewide using criteria established in state legislation to guide allocation of climate investment funds.
- The California Healthy Places Index (HPI), developed by the Public Health Alliance of Southern California, evaluates community health using 23 indicators related to education, housing, transportation, employment, and environmental factors.

In Santa Cruz County, the SS4A tool identifies several census tracts near the cities of Santa Cruz and Watsonville as underserved communities (see **Figure 36**). Across all three tools, Downtown Santa Cruz and the greater Watsonville area consistently emerge as having higher concentrations of underserved communities, based on overlapping indicators related to income, community conditions, and access to opportunity. Within the RHSP study area, these patterns align with corridors that serve dense residential areas, agricultural employment areas, and communities with higher reliance on walking, biking, and transit, including areas with concentrations of farmworker housing in and around Watsonville.

Appendix I includes additional information about this equity analysis, including additional maps.

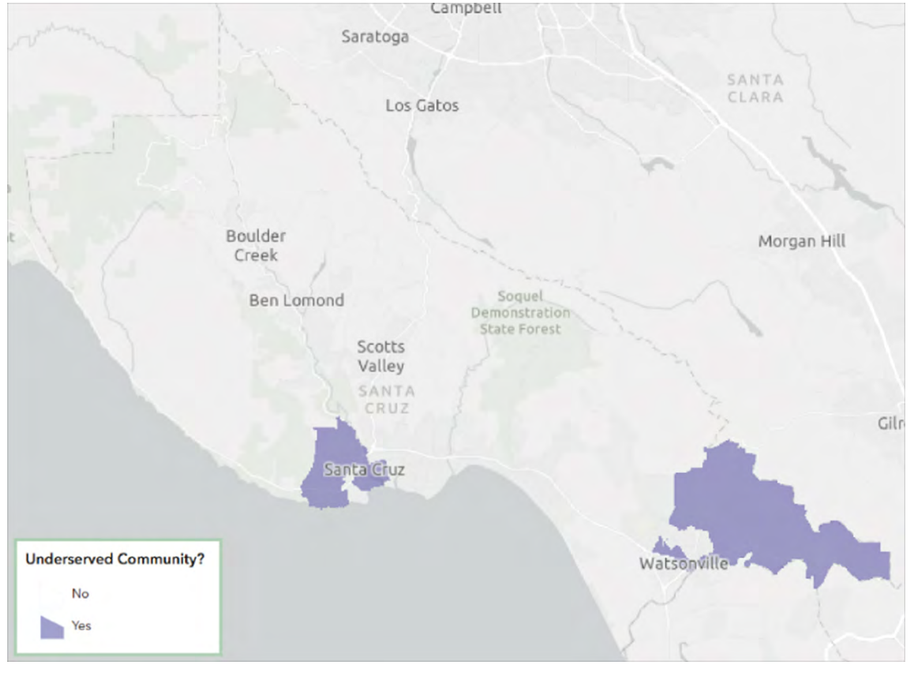


Figure 36: Screenshot of Santa Cruz County using the Safe Streets for All Underserved Communities Tool

8

Funding, Implementation, and Evaluation Strategies

Figure 37: Project Life Cycle

RTC and Caltrans will look for opportunities to institutionalize safety across planning, design, funding, and project delivery to advance the shared goal of eliminating crashes that result in people being killed or severely injured (KSIs). The following framework identifies actions, roles, and processes needed to support this goal.

Figure 37 depicts a conceptual project and program life cycle commonly used for transportation planning and implementation. While this framework reflects general practice, RHSP projects are located on Caltrans right-of-way and will typically be subject to Caltrans project development and approval processes.

RTC can maintain and regularly update an ongoing list of safety projects and candidate improvements, including projects located on Measure D-funded corridors like Highway 9 where RTC has a more direct implementation role, as well as projects on other state highways that would require Caltrans sponsorship or partnership. Coordination with Caltrans, the County, and local jurisdictions will be critical for identifying opportunities to integrate safety enhancements into existing capital, maintenance, and resurfacing projects. Key implementation steps, including coordination, funding, implementation, and ongoing monitoring are described in this section.

8.1 Road Map to Vision Zero

COORDINATE

- Establish a committee or Vision Zero task force with key officials and stakeholders, including RTC, Caltrans, local schools, local municipalities, emergency responders, and community groups, to ensure seamless collaboration and accountability.
- This type of governance structure aligns with requirements and best practices for current federal safety funding programs, including the Safe Streets and Roads for All (SS4A) program, while also supporting broader regional coordination.
- The committee should meet at regular intervals (bi-annually or quarterly) to proactively manage successful implementation and tracking.

PLAN

- Integrate Safe System Approach principles and Vision Zero goals into all planning documents and processes moving forward.
- Address systemic safety profiles identified in the RHSP (Section 3.3), which reflect common potential risk factors and recurring crash patterns across similar roadway contexts, and translate these findings into context-appropriate design strategies.

LEADERSHIP COMMITMENT: Make safety a top priority for regional transportation decisions.

STAFF RESOURCE ALLOCATION: Develop a task force for sharing transportation safety knowledge, identifying opportunities to develop win-win solutions across regional planning and development efforts, coordinating implementation with local, regional, and state partners.

PROJECT FUNDING AND IMPLEMENTATION: Align grant programs with regional safety goals.

DATA COLLECTION AND ANALYSIS: Address data availability issues and known gaps in regional safety data, share safety analysis best practices to build cohesion in the regional approach, and provide local governments with safety information to inform decision making.

SAFETY EDUCATION AND ENCOURAGEMENT: Expand existing public engagement and education initiatives related to transportation safety. These activities should be designed to "meet people where they are" both in-person and online.

THE SAFE SYSTEM APPROACH IN ACTION: Integrate the Safe System Approach into all RTC's planning initiatives, develop evaluation metrics to track trends in safety outcomes, and provide assistance to local governments to support implementation of proven safety solutions.

SAFETY AT THE POLICY LEVEL: Support local, regional, and state partners in incorporating safety principles in regional planning documents and guidelines.

FUND

- Identify and pursue diverse funding sources: proactive (systemic safety efforts), responsive (crash hot spots), opportunistic (existing funding mechanisms), and discretionary (flexible needs). Key funding programs and eligibility considerations are described in Section 8.2.
- RTC can support the County, Caltrans, and local agencies by identifying opportunities to incorporate safety improvements into other funded efforts, such as Capital Improvement Programs (CIPs), pavement and maintenance projects, such as Caltrans State Highway Operations and Protection Program (SHOPP) improvements, or larger corridor investments. This approach aligns with Complete Streets policies, Caltrans Director's Policy guidance, and Design Information Bulletins (DIB) including but not limited to Director Policy 35 and 37 as well as DIBs 89 and 94 that call for the integration of safety and multimodal elements into all transportation projects, where feasible.
- Prioritize investments in high-risk and underserved communities.

EDUCATE

- RTC and Caltrans can provide capacity-building and training opportunities for staff, elected officials, and media on best practices and the Safe System Approach.
- Raise awareness through targeted educational programs and resources for diverse regional stakeholders. Efforts could include targeted education geared toward drivers and the most vulnerable road users, technical support, data, and training for stronger integration of safety principles in all RTC-led efforts, and community outreach to build momentum around Vision Zero implementation.

IMPLEMENT

- Prioritize planning and implementation at high-risk locations for immediate impact, while planning for long-term infrastructure upgrades.
- Support stakeholders in institutionalizing safety in all maintenance and capital projects, ensuring every effort considers vulnerable road users.
- Monitor project progress and adjust implementation sequencing based on emerging needs and feedback.

RTC Roles	Local Agency Partner Roles	Caltrans Roles
• Accessing funding opportunities to design and construct projects • Establishing innovative regional policies that prioritize safety • Facilitating collaboration between Caltrans and local communities • Providing technical support on safety analysis and implementation • Monitoring implementation efficacy	• Leveraging the tools provided by RTC to prioritize and implement safety solutions • Supporting implementation and development by participating in the planning and design process	• Designing and constructing projects • Collaborating with project partners on identification of suitable design standards across different contexts • Integrating safety enhancements into highway maintenance programs and development review • Monitoring implementation efficacy

EVALUATE

- Develop and track evaluation metrics aligned with RHSP goals.
- Conduct regular audits of safety data, project outcomes, and community feedback to inform future actions.
- Share evaluation results with stakeholders and the public to maintain transparency and foster continuous improvement.

ADVOCATE

- Champion a culture of safety at all levels—leadership, staff, and community—making safety the default choice in transportation decisions.
- Advocate for policy changes that support the Safe System Approach, such as speed management, equitable enforcement, and integrated land use planning.
- Engage with local, regional, and state partners to promote best practices and secure ongoing support for safety initiatives.

8.1.1 Building a Culture of Safety

The RHSP builds on existing safety practices in Santa Cruz County to ensure consistency with the Safe System Approach. The RHSP establishes a shared framework for RTC, Caltrans, and regional partners to guide transportation planning, funding and implementation decisions so that safety is addressed systematically and proactively. This includes rethinking how the RTC, Caltrans, and agency partners prioritize projects and allocate funding to address safety concerns across the transportation system. When safety is successfully embedded into agency culture, every transportation project advances the Safe System Approach.

8.1.2 Shared Responsibility

The study highways are all state routes which are under the jurisdiction of Caltrans; ultimately, the design and construction of projects is subject to approval by Caltrans. As the regional transportation planning agency, RTC does not own or operate the study highways. RTC can focus on advancing Vision Zero goals by coordinating and supporting project development at the regional level, potentially including leadership on grant-funded infrastructure projects in unincorporated areas.

To advance these goals at the local/project level, RTC needs the support and partnership of decision-makers and leaders across local, state, federal, and tribal levels, including sectors such as public safety, education, transit, community advocacy, and healthcare. We must work together to move toward a future with zero traffic deaths and severe injuries on our roads.

What Can You Do to Support the RHSP and Advance Vision Zero?

Safety is also a shared goal of the community. Community members can advance Vision Zero by:

- Advocating and expressing support for projects in your community to your elected officials and Caltrans. This can help to get projects moving forward and access local match money to fund design and construction.
- Identifying safety concerns in your community using the **Caltrans Customer Service Request Form**. This data helps to justify and prioritize projects and allocate funding.

8.1.3 Project Priorities

When developing plans and designing projects, RTC, Caltrans, and local agency partners should prioritize improvements that most effectively reduce kinetic energy exposure, likelihood, and severity risk by focusing on three core strategies in the following order:

1. **Demand management**
2. **Speed management**
3. **Conflict management**

These priorities should be applied through an equity lens to ensure that investments address the needs of historically underserved communities and maximize safety for all roadway users.

8.1.3.1 Demand Management

As a first step, RTC, Caltrans, and local agency partners should prioritize planning efforts that reduce exposure to kinetic energy. Transportation demand management strategies (as described in **Section 5.2.1**) which influence when, how, and whether people travel by vehicle, can play an important role in reducing this exposure. Examples include land use strategies that bring housing, jobs, and services closer together; investments in active transportation and transit that provide viable alternatives to driving; and transportation demand management programs such as employer-based commute programs, parking management, and Safe Routes to School programs.

What Can RTC and Their Partners Do?

RTC can help by incorporating the Safe System Approach into the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) to promote a better balance between jobs and housing. RTC can also provide guidance to agency partners on integrating the Safe System Approach into their general plans, as required by law (SB 932). In addition, RTC can support the development of non-driving infrastructure by coordinating with SC METRO and advancing projects that expand trail networks and improve pedestrian and bicycle facilities.

8.1.3.2 Speed Management

Projects should include strategies to reduce speeds through systemic design, with the goal of achieving average vehicle speeds that align with target speeds for each place type. Target speeds represent safe operating speeds, rather than posted speed limits, and are established to reduce the risk of severe injury by accounting for the survivability limits associated with roadway function, adjacent land uses, and the likelihood of conflicts with people walking and biking.

Design strategies include vertical deflection, which uses changes in roadway elevation to influence driver behavior (e.g., speed humps, raised intersections, raised crosswalks), and horizontal deflection, which introduces changes in alignment or roadway geometry to reduce speeds (e.g., curb extensions, center medians, chicanes, roadway narrowing). Specific design strategies applicable to the study corridors can be coordinated between RTC, Caltrans, and other local agencies based on context and need. Operational tools such as signal timing and enforcement (including automated speed safety cameras, if permitted in the future) can also be effective.

What Can RTC and Their Partners Do?

RTC can help by establishing clear guidance for the county and partner agencies on how to adopt Caltrans Design Information Bulletin 94 (DIB 94). This guidance can include developing technical resources such as a systemic speed management plan and basis-of-design recommendations tailored to different place types. Additionally, RTC can support agencies by facilitating coordination with Caltrans to implement DIB 94 on Caltrans-owned roads, ensuring consistency and alignment across jurisdictions.

8.1.3.3 Conflict Management

Projects should focus on reducing the number of conflict points and interactions between high mass and high speed vehicles and vulnerable road users like people walking and biking. This includes separating users in space or time to match the context, simplifying complex intersections, improving visibility and predictability, managing access, and providing dedicated, protected facilities for people walking and biking. Treatments such as such as raised or painted center medians and pedestrian refuge islands help to reduce conflicts by limiting turning movements and reducing exposure across multilane roadways. These strategies directly address the systemic crash patterns identified in **Chapter 3**, where recurring conflicts between high mass and high speed vehicles and people walking or biking contribute to a high share of severe and fatal crashes along study highways.

What Can RTC and Their Partners Do?

RTC can help by developing resources for partner agencies, including Transportation Impact Analysis (TIA) guidelines and development review guidance that incorporate Safe System best practices. RTC can also support Safe Routes to School (SRTS) programs by helping to advance SRTS-related projects, seeking funding, and providing programming resources to school districts. In addition, RTC can create guidance for County and partner agencies on truck routing to reduce exposure near schools and other locations with high pedestrian activity. Finally, RTC can assist by identifying and accessing funding opportunities to construct projects that reduce conflicts and improve safety for all road users.

8.1.3.4 Green Infrastructure and Community Enhancements

After prioritizing enhancements focused on improving safety outcomes, projects can consider elements such as green infrastructure, trees and shade, street furniture (e.g., benches and landscaping), and public art. These features are often most appropriate on highway segments that serve as destinations and key activity centers, such as Rural Main Streets. In addition to community and environmental benefits, these elements can reinforce speed management by signaling to drivers that they are entering a place with higher levels of activity, encouraging slower and more attentive driving behavior through visual and spatial cues. Guidance on green infrastructure is included in Caltrans DIB 94.

What Can RTC and Their Partners Do?

RTC can support efforts by encouraging the incorporation of urban design elements into project designs and developing basis-of-design guidance that supports green infrastructure and community enhancement principles. RTC can also leverage community input gathered through the RHSP process and other regional and local projects to identify and prioritize community building elements that reflect local needs and preferences. By aligning design standards with community priorities, RTC can foster vibrant, sustainable, and people-centered spaces throughout the region.

8.1.4 Implementation Phasing and Sequencing

8.1.4.1 Quick-Build Opportunities

When implementing projects, RTC and Caltrans should look for opportunities to address key safety needs as quickly as possible with lower construction costs. Quick-build improvements are typically interim or temporary treatments that can be implemented more quickly than capital projects and may be used to address urgent safety concerns or test design concepts. This can be achieved through lower-cost measures such as pavement markings and signage, temporary medians, flexible delineators, plastic bollards, or other approved channelization elements. Caltrans maintains Authorized Materials Lists (AMLs) that identify products authorized for use on Caltrans construction projects, including devices that can be used to support quick-build enhancements.

Quick-build improvements can include enhancing visibility and navigation, clarifying and separating movements to reduce conflicts, introducing vertical and horizontal elements to encourage slower vehicle speeds, and adding community identity features to that signal entry into Rural Main Street areas.

8.1.4.2 Opportunistic Implementation

Project implementation should be opportunistic and can be paired with street maintenance projects, resurfacing efforts, or ongoing development activity. Caltrans SHOPP projects, including programs such as pavement maintenance, can provide opportunities to implement safety enhancements.

For example, a SHOPP project focused on pavement rehabilitation in Caltrans District 4 was recently expanded and obtained additional funding and maintenance support from local agencies to include safety enhancements such as lane width reductions, Class IV bikeways with delineators from the Caltrans Authorized Materials List (AML), bike boxes and two-stage turn queue boxes, and other bicycle and pedestrian enhancements. This opportunistic application resulted in faster implementation alongside reduced design and construction costs for safety enhancements when compared to separate, standalone projects.

When funding for systemic spot improvements becomes available, pedestrian safety enhancements such as high-visibility crosswalks, sidewalks, upgraded crossing controls including rectangular rapid flashing beacons (RRFB) or pedestrian hybrid beacons (PHB) where appropriate, and curb ramp upgrades to meet accessibility standards should be prioritized. While more costly, trails and off-street paths should continue to be evaluated and implemented where appropriate to provide the highest level of separation for people walking and biking.

8.1.4.3 Systemic Improvements

As a regional agency that operates across Santa Cruz County, RTC is well positioned to provide regional context and coordination for local and corridor-level projects. As part of project development and review, RTC should consider regional connectivity by identifying opportunities to close gaps in the pedestrian and bicycle network and support the creation of continuous, safe routes for active transportation modes. RTC can also promote consistent design standards and practices across projects and jurisdictions by providing guidance, technical resources, and coordination. While RTC does not enforce design standards, particularly on state highways, this role can help improve predictability, usability, and safety for all users. Caltrans retains authority over design and implementation decisions on state highways. RTC can also help local agencies align their projects with regional goals for accessibility, equity, and sustainability by encouraging consistency with adopted plans, policies, and funding priorities.

RTC should prioritize opportunities to advance corridor-wide improvements, particularly speed management strategies, rather than isolated segment-level change where feasible. Corridor-wide approaches reinforce consistent driving behavior, reduce speed variability, and create a more predictable environment for all roadway users. This systemic approach is especially important for addressing safety outcomes equitably, as it helps ensure benefits are distributed across entire corridors, including in underserved communities. By coordinating these efforts regionally and in partnership with Caltrans and local agencies, RTC can help ensure that speed management measures are applied consistently and effectively, advancing the principles of the Safe System Approach.

8.2 Funding Opportunities

Four primary funding sources are available to implement safety in all projects: proactive, responsive, opportunistic, and discretionary funding sources.

- **Proactive funding sources** focus on preventing fatal and severe crashes through systemic safety efforts that address common potential risk factors across corridors or networks rather than individual crash locations. These can include corridor-wide speed management, access management, enhanced crossings, and other treatments applied consistently across similar roadway contexts.
- **Responsive funding sources** address locations with documented crash histories or higher-potential risk conditions, including locations identified in Chapter 3 based on historic crash patterns and other indicators of potential risk.
- **Opportunistic funding sources** leverage existing funding mechanisms and work programs, such as maintenance, resurfacing, or capital projects, that present opportunities to incorporate safety elements as part of a larger investment.
- **Discretionary funding sources** are flexible and responsive, allowing RTC to address emerging community needs, pilot new approaches, or advance smaller-scale safety improvements that may not align with traditional funding cycles. Some funding sources may require sponsorship or partnership with Caltrans or local agencies, particularly for projects located on state highways.

Figure 38 illustrates how RTC may strategically apply these funding source types over time, as an example. Shifting toward greater use of proactive and opportunistic funding sources will allow safety improvements to be implemented earlier and more efficiently, reducing reliance on crash history alone and helping prevent fatal or severe crashes before they occur.

Figure 38: Example Safety Funding Sources

8.2.1 Federal Funding Opportunities

8.2.1.1 Safe Streets and Roads for All (SS4A)

The Safe Streets and Roads for All (SS4A) Grant Program was established by the Bipartisan Infrastructure Law in 2022 and is administered by the U.S. Department of Transportation. The program is grounded in the National Roadway Safety Strategy and supports the goal of eliminating KSI crashes. Over its five-year authorization, SS4A will provide $5 billion nationwide for safety planning and implementation.

SS4A funding is available for both planning and implementation activities. Planning grants support the development of Comprehensive Safety Action Plans (CSAPs), while implementation grants fund capital safety projects. Eligibility for implementation funding requires an agency to have an adopted CSAP or an equivalent plan that meets USDOT's nine required elements, including a formal safety commitment, data-driven analysis, equity considerations, public engagement, project identification, and performance monitoring. Adoption of this Rural Highways Safety Plan and the County's Safety Action Plan position the RTC to pursue SS4A implementation funding for projects aligned with its recommendations. The SS4A checklist is included in **Appendix J** and lists the requirements for SS4A funding.

Relevant project types or characteristics: High KSI density locations and notable safety need. This funding source is well suited to areas with high concentrations of KSI outcomes, including all emphasis areas identified in this plan.

8.2.1.2 Rural Surface Transportation Grant (RSTG) Program

The **Rural Surface Transportation Grant (RSTG) Program** is a federally competitive grant program designed to improve transportation infrastructure in rural areas. The program supports a range of eligible projects, including roadway safety improvements, multimodal facilities, and projects that improve access, reliability, and safety in rural communities. RSTG funding may be particularly relevant for bundled rural highway safety projects that address documented crash risks, serve underserved or disadvantaged areas, or improve safety along critical rural corridors. The program's focus on rural needs makes it a potential funding source for implementation of safety strategies identified in this plan.

Relevant project types or characteristics: Undeveloped roads and opportunities to scale or implement corridor-wide improvements such as consecutive roundabouts. Projects that address multiple RSTG goals are good candidates, including emphasis areas such as Highway 129: Murphy Road and Highway 152: Lakeview Middle School/St. Francis High/Fairgrounds Access.

8.2.1.3 Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT)

The **Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation** (PROTECT) Program is a federal funding program established by the Bipartisan Infrastructure Law to improve the resilience of surface transportation infrastructure to climate change and natural hazards. PROTECT funds may be used for planning, resilience improvements, and capital projects that reduce vulnerability to extreme weather, sea level rise, flooding, wildfire, and other climate-related risks. In rural contexts, PROTECT funding may support safety improvements on highways that also serve as critical evacuation routes or lifeline corridors,

where projects enhance both safety and climate resilience. Safety projects that address roadway reliability, emergency access, and long-term asset protection may be particularly competitive under this program.

Relevant project types or characteristics: Environmental and resilience benefits, within coastal areas, and green infrastructure elements. Projects supporting these goals may be candidates, including emphasis areas such as Highway 1: Scott Creek and Highway 1: Davenport.

8.2.2 State Funding Opportunities

A range of California state funding programs may support implementation of safety strategies identified in this plan, particularly those focused on rural highways, active transportation, and equity priority communities.

8.2.2.1 Highway Safety Improvement Program (HSIP)

The **Highway Safety Improvement Program** is a federally funded, state-administered program focused specifically on reducing fatal and severe injury crashes on public roads. In California, HSIP funds are programmed by Caltrans and the California Transportation Commission (CTC) and are commonly used for data-driven safety improvements at high-risk locations or along corridors with demonstrated safety needs. Rural highway safety projects, including intersection improvements, roadway departures countermeasures, and systemic safety treatments, are often strong candidates for HSIP funding.

Relevant project types or characteristics: Improvements listed in the Local Roadway Safety Manual (LRSM) with high Crash Reduction Factor (CRFs) and favorable benefits/cost ratio (see Appendix G). This may include emphasis areas such as Highway 152: Lakeview Middle School/St. Francis High/ Fairgrounds Access, Highway 9: Boulder Creek, Highway 9: Ben Lomond, and Highway 1: Dimeo Lane. HSIP Set-aside programs may also be applicable for certain types of improvements such as those identified in the Highway 9: Waterman Gap Hairpin Curve emphasis area.

8.2.2.2 Active Transportation Program (ATP)

The **Active Transportation Program** provides funding for bicycle and pedestrian infrastructure and safety improvements, as well as education and encouragement activities. ATP places a strong emphasis on safety, equity, and access for disadvantaged communities. Safety improvements along rural highways that improve pedestrian or bicycle crossings, access to transit, or connections between communities may be competitive, particularly where projects address documented safety risks or close network gaps.

Relevant project types or characteristics: Bicycle and pedestrian improvements that help to promote walking and biking and enhance safety, strong benefits to equity priority areas, and robust engagement. This may include emphasis areas such as Highway 152: Lakeview Middle School/St. Francis High/ Fairgrounds Access and Highway 1: Davenport.

8.2.2.3 State Transportation Improvement Program (STIP)

The **State Transportation Improvement Program** funds capital transportation projects over a five-year period and includes both a regional and interregional component. STIP funds can support roadway, operational, and safety improvements on state highways and local roads. Projects identified in adopted regional or countywide plans, including safety plans, are well positioned for consideration during future STIP programming cycles.

Relevant project types or characteristics: Consistent with Regional Transportation Plan, reduces Vehicle Miles Traveled (VMT), and project readiness including defined scope, right-of-way, demonstrated local funding match, and environmental clearance. All emphasis areas represent candidate projects for this funding source.

8.2.2.4 SB 1 Local Partnership Program (LPP)

The **Local Partnership Program** provides funding to transportation agencies that have enacted local transportation taxes or fees. LPP funds are intended to augment local revenues and support projects that align with statewide transportation goals, including safety, congestion relief, and multimodal access. LPP funds may be used to advance safety improvements identified in this plan when paired with eligible local funding sources.

Relevant project type or characteristics: Eligible for local transportation fee programs, including Measure D, demonstrated local funding match, and complete street elements. All emphasis areas represent candidate projects for this funding source.

8.2.2.5 Planning, Climate, and Equity-Focused Programs

Additional state programs may support planning or early implementation activities, including the Caltrans Sustainable Transportation Planning Grant Program, Climate Adaptation Planning Grants, and the Reconnecting Communities: Highways to Boulevards Program. These programs may be particularly relevant for projects that address safety alongside climate resilience, community connectivity, or historic transportation barriers.

Relevant project types or characteristics: Environmental and resilience benefits, within coastal areas, green infrastructure elements, and support for equity focus areas. Projects supporting these goals may be candidates, including emphasis areas such as Highway 1: Scott Creek, Highway 1: Davenport, Highway 129: Blackburn Street/Bridge Street, and Highway 152: Lakeview Middle School/St. Francis High/Fairgrounds Access.

8.2.3 Local Funding Opportunities in Santa Cruz County

As the county's designated transportation planning agency and regional transportation funding authority, the RTC plays a central role in programming state and federal transportation funds and advancing regionally significant transportation priorities. Through mechanisms such as the Consolidated Grants Program and the Regional Transportation Improvement Program (RTIP), the RTC allocates limited transportation funds to locally sponsored projects, including roadway, bicycle, pedestrian, transit, and safety improvements. This role primarily involves coordinating funding strategies, aligning projects with adopted plans, and supporting local and state agency partners in advancing eligible projects. This role enables the RTC to integrate rural highway safety projects into both near-term funding cycles and longer-term capital planning efforts, consistent with adopted plans and regional objectives.

8.2.3.1 Measure D Local Transportation Funding

Measure D is Santa Cruz County's voter-approved half-cent sales tax for transportation, providing a stable, long-term source of local funding for defined transportation improvements over a 30-year period. The measure is projected to generate approximately $17 million annually and supports a broad range of eligible investments, including roadway and intersection improvements, bicycle and pedestrian infrastructure, Safe Routes to School projects, transit services, and the Coastal Rail Trail.

Measure D revenues represent a potential local funding source for safety improvements on specific state highway segments where eligibility applies, most notably along Highway 9 and limited portions of Highways 236 and 35 within one-quarter mile of Highway 9 within the **SLV Complete Streets Program**. Within this area, Measure D funds may be used to advance safety improvements identified in this plan, either as stand-alone projects or as components of larger capital, maintenance, or multimodal efforts, and may serve as a local match for state and federal grants where eligible. Outside of these limited geographic contexts, Measure D funding is not available for improvements on the rural state highway network.

Relevant project type or characteristics: Within Measure D eligibility areas, and strong community support. Emphasis areas that are eligible for Measure D funds include Highway 9: Waterman Gap Hairpin Curve, Highway 9: Boulder Creek, and Highway 9: Ben Lomond. Enhancements associated with Highway 1: Davenport may also be eligible in support of Coastal Rail Trail improvements.

8.2.4 Leveraging and Combining Funding Sources

Implementation of the RHSP will depend on the strategic coordination of federal, state, and local funding sources. Discretionary programs such as SS4A can be paired with state safety and active transportation funds and, where eligible, local Measure D revenues to deliver comprehensive and cost-effective safety improvements. Using a balanced mix of proactive, responsive, opportunistic, and discretionary funding approaches will allow the RTC and its partners to remain flexible, respond to evolving safety needs, and make steady progress toward reducing fatal and severe injury crashes on Santa Cruz County's rural highway network. In this context, local funding sources such as Measure D play a targeted role, while broader implementation across the study highways will rely primarily on state and federal programs in partnership with Caltrans and local agencies.

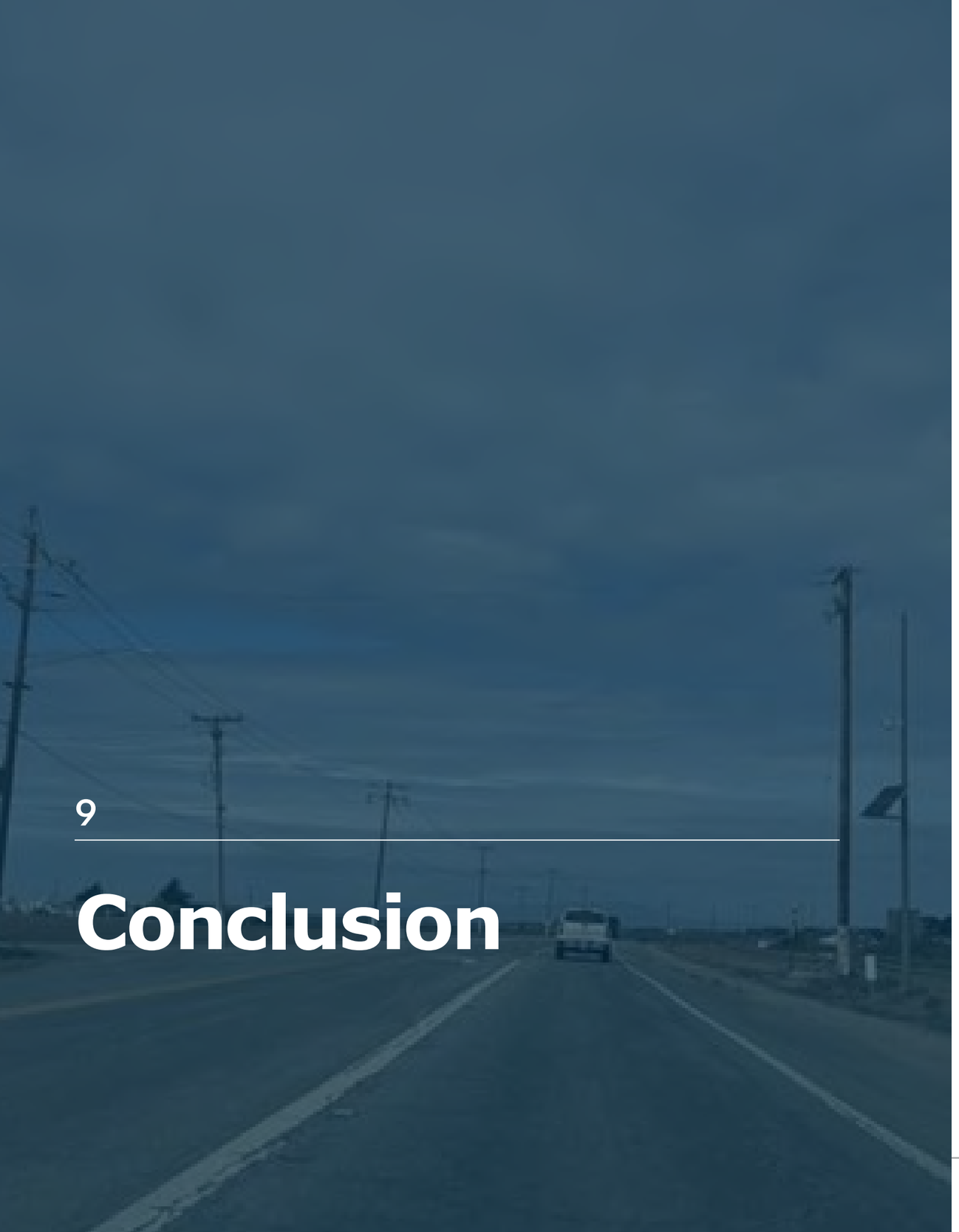
8.3 Evaluation Strategies

By tracking advancement toward the goal of zero and determining the effectiveness of implemented strategies, we can adjust strategies as needed to maintain progress. RTC is committed to regular reporting on progress and has established a process for evaluation and monitoring. The Vision Zero Task Force will be responsible for monitoring and tracking progress and will work with RTC to gather information related to the measures of effectiveness and to collaboratively develop strategies to meet targets.

Topic	Measure of Effectiveness	Target	Reporting Frequency
Goal 1: Commit to Vision Zero			
Vision Zero	Report KSI crashes by mode on study highways	Zero KSIs by 2050	5 years
Safe Speeds	Compare observed vehicle speeds to target speeds on study highways	Observed speeds are consistent with target vehicle speeds	5 years
Goal 2: Advance Partnerships and Collaboration			
Emphasis Area Safety Enhancement Implementation	Track implementation of emphasis area safety enhancement implementation and report project progress	Implement quick-build improvements in short-term and construct permanent improvements as illustrated in concept plans in the medium- or long-term	2 years
Safety Culture	Report percentage of projects incorporating Safe System principles	All transportation projects incorporate Safe System principles	2 years
Vision Zero Task Force	Establish Vision Zero taskforce and track meeting frequency and attendance	Includes a diverse group of stakeholders and meets regularly to track RHSP progress	At least once a quarter
Goal 3: Prioritize Equity and Community Engagement			
KSIs in Equity Areas	Report KSI crashes in equity areas on study highways	Zero KSIs by 2050	5 years
Alignment with future RTC Equity Plans	Regularly evaluate RHSP project list and priorities to ensure alignment with latest equity assessments and planning	Projects reflect latest RTC equity priorities	2 years
Goal 4: Future Funding Success			
SS4A Eligibility	Coordinate with the county SS4A Plan. Adopt SS4A compliant RHSP.	Santa Cruz County is eligible for SS4A Demonstration and Implementation funding.	Within first 1 year
Measure D Funding	Review project list to identify opportunities to use Measure D funding.	RTC helps to get projects funded.	2 years
RTC Funding Support	Track potential funding sources. Record number of projects where RTC worked with county and Caltrans to support agencies in seeking funding including applying for funding as joint partnerships or offering resources and letters of support	Priority projects are funded	Every year
RTC Funding Support	Track potential funding sources. Record number of projects where RTC worked with county and Caltrans to support agencies in seeking funding including applying for funding as joint partnerships or offering resources and letters of support	Priority projects are funded	Every year

Source: Fehr & Peers, 2026.


NO
PARKING
LOADING
ZONE
STOP



9

Conclusion

The RHSP provides a clear and actionable path toward eliminating crashes that result in people being killed or severely injured (KSIs) on the six undivided rural state highways in unincorporated Santa Cruz County. Grounded in the Safe System Approach and informed by data, technical analysis, and extensive community engagement, the RHSP shifts the focus from reacting to crashes after they occur to proactively reducing the conditions that make severe crashes more likely and more harmful.

Across the six study highways, the Plan identifies recurring potential risk factors and crash patterns that affect people driving, walking, biking, and accessing transit. These risks are shaped by roadway context, speed, access patterns, and the presence of people walking and biking, particularly near town centers, schools, transit stops, and key destinations. By combining systemic risk analysis with community input, the RHSP highlights where safety challenges are most concentrated and where investments can have the greatest impact.

The RHSP also establishes a practical framework for moving from planning to action. The countermeasure toolbox, Safe System strategies, and emphasis area safety enhancement concepts are designed to support near-term improvements as well as longer-term capital investments. Recommendations emphasize making safety the default in planning, design, operations, and funding decisions. This approach recognizes that people make mistakes and that the transportation system should be designed to reduce the likelihood that those mistakes result in severe injury or death.

Implementation will require sustained coordination among the RTC, Caltrans, the County, local jurisdictions, and community partners. While Caltrans retains authority over state highways, the RTC plays a critical role in regional coordination, funding strategy, and advancing projects that align with adopted regional safety priorities. The RHSP is intentionally structured to support this collaboration and to guide how projects are identified, prioritized, and advanced over time.

Importantly, adoption of the RHSP positions the RTC and its partners to pursue state and federal safety funding, including Safe Streets and Roads for All (SS4A) implementation grants. By meeting key planning requirements and clearly articulating emphasis areas and strategies, the RHSP strengthens the county's readiness to compete for funding and to deliver safety improvements more efficiently.

Achieving Vision Zero on Santa Cruz County's rural highways will not happen all at once. It will require consistent leadership, continued community engagement, and a commitment to embedding safety into everyday decisions. The RHSP provides the roadmap. With sustained effort and partnership, the strategies outlined in this Plan can translate into safer, more predictable travel and a future where KSI crashes on rural highways are no longer accepted as inevitable.

SCCRTC
Santa Cruz County Regional Transportation Commission