Memorandum

Date: September 2024

To: Brianna Goodman, RTC

From: Alexandra Lee-Gardner, Meghan Mitman, Steve Davis, Fehr & Peers; Eleanor Leshner, Leshner Planning

Subject: Proposed Vision, Goals, and Objectives Framework for Rural Highways Safety Plan

SJ24-2298

This memorandum describes the vision and objectives of the Rural Highways Safety Plan (RHSP). The vision and objectives establish a defined Vision Zero goal and will be used as a framework to guide the development of the RHSP, including project prioritization and alternatives analysis. The proposed vision, goals, and objectives build on the State and Federal policy context and best practices detailed in **Appendix A**.

This memorandum is organized into two sections:

- **Proposed Plan Vision** describes the overarching vision of the RHSP.
- **Plan Goals and Objectives** provide the framework for an actionable RHSP.

Proposed Plan Vision

The proposed Plan vision indicates the overarching intent for the RHSP and establishes a Vision Zero goal for the project's study area. The proposed vision is as follows:

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

Goals and Objectives

The RHSP vision provides the framework for an achievable performance-based plan. The RHSP goals support the RHSP vision by prioritizing reducing crashes that result in traffic fatalities and serious injuries as well as focusing on a collaborative approach to issue identification and strategy deployment. The objectives associated with each goal detail actionable and measurable strategies to achieve the associated goals. The RHSP goals and objectives are listed below and included in **Appendix B**. This framework will be referenced in future stages of the Plan development to guide the preferred alternative selection process.

Goal 1: Commit to Vision Zero

The RHSP will lay out a clear and actionable roadmap aligned with the Vision Zero goal. This includes five objectives that are key to reducing killed and severely injured (KSI) crashes along the study corridors.

- **Make safety the default design choice (specifically risk factor reduction through speed management and separating users in space and time) rather than the exception**. In addition to speed management strategies, risk reduction should focus on reducing exposure through land use and travel demand management strategies. Risk factors can be assessed using the Federal Highway Administration's (FHWA) Safe System Project-Based Alignment Framework tool that uses surrogate data to measure kinetic energy. This can also be evaluated against Caltrans' Design Information Bulletin (DIB) 94 treatment selection guidance to ensure alignment with best practices and the most recent Caltrans guidance. National Cooperative Highway Research Program (NCHRP) 1036 also provides a framework for tradeoff decision-making in support of multi-modal safety.
- **Clarify the context of the road segment (movement or place-focused)** by establishing a street typology to match safety improvements (especially target speed) with the appropriate context and road use. The place types defined in DIB 94 can be used as a basis for this typology and should have an appropriate modal hierarchy and target speed. This objective's success can be measured based on alignment with the established place type standards as adapted from DIB 94. Additionally, observed speeds should align with target speed speeds for each place type.
- **Maximize accessibility and connectivity** by ensuring streets are comfortable for all users and abilities and provide sufficient connections to the wider multi-modal transportation network throughout the region. This can be measured quantitively through

level of traffic stress[1] and qualitatively with measures such as proximity to other facilities or major destinations/land uses and the number of crossing connections to other facilities.

- **Advance regional sustainability goals** by effectively decreasing the share of vehicles and shifting travelers to other modes. This can improve safety by reducing the exposure rate. Level of traffic stress, as well as transit frequency and reliability, can be used as a proxy for mode shift potential, as the quality of multimodal infrastructure is directly related to induced user demand and potential mode shift. Other sustainability goals can be achieved as co-benefits to safety projects, such as building green infrastructure. This objective can be measured qualitatively through the quantity and quality of green infrastructure.

Goal 2: Advance Partnerships and Collaboration

Addressing safety on the study corridors is a shared responsibility that requires strong partnerships to effectively implement the RHSP. The following three objectives detail how to continue to build these relationships.

- **Collaborate with stakeholders** to solicit input throughout the process of developing the RHSP. Stakeholders can share additional perspectives and insights into the process and can help to establish a culture of safety throughout RTC departments and among County stakeholders. Surrogate safety data should include near misses and other qualitative community input not included in crash data.
- **Proactively engage with Caltrans** to develop a plan that is feasible and lays a clear roadmap to navigate Caltrans' processes. The RHSP will need to be developed closely with Caltrans as they own the right of way on these corridors. Improvements should meet DIB 94 requirements to ensure alignment with Caltrans' latest best practices.
- **Focus on upstream, population-scale considerations for safety,** including who is traveling; what mode they are using; where are they traveling; why are they traveling; and which policies, design decisions, and other upstream considerations influenced their socio-economic and built environment experience. Strategies should prioritize population-scale approaches, de-emphasizing the role and need for education and enforcement interventions.

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

[1] Level of traffic stress refers to the level of comfort a bicyclists may experience on a given roadway based on factors like connectivity, the existence/quality of bicycle networks, and roadway context. This methodology was first developed by the Mineta Transportation Institute (https://transweb.sjsu.edu/research/Low-Stress-Bicycling-and-Network-Connectivity)

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.[2] RTC is currently preparing a *Transportation Equity Action Plan* that will identify Equity Priority Communities across Santa Cruz County.[3] The following objectives outline how to prioritize equity and meaningful community engagement for the RHSP, which will not only inform the alternatives selection but also be infused throughout all stages of the Plan development.

- **Cross-analyze traffic-related injuries and fatalities with demographic factors,** including Equity Priority Communities, and acknowledge the disproportionate burden of crashes in underserved communities.
- **Coordinate with RTC's *Transportation Equity Action Plan*** to define equity in a consistent way and develop methods for incorporating equity in decision-making processes that work across projects.
- **Accept that humans make mistakes and focus on the environment and context that travel occurs within.** This should include de-emphasizing law enforcement in favor of focusing on the "New Es" of Energy, Exposure, and Equity. Shift enforcement away from traffic stops and bike citations to more equitable options like speed safety cameras and post-crash care. While strategic enforcement can be an important tool, the Safe System approach recognizes that built environment interventions and sociodemographic factors are most impactful.
- **Supplement data with community input** so that the Plan can better reflect and meet community needs. Ground truth recorded crash data with community-sourced crash, near miss, and general safety observations during Phase 1 of outreach. During Phase 2 of outreach, update draft recommendations, emphasis areas, and project priorities based on community feedback.
- **Offer different options for inclusive engagement** so that stakeholder and resident feedback and insights are incorporated into the development of the RHSP. Offer both virtual and in-person options at different times of day and locations to maximize opportunities for engagement. This should include online surveys or questionnaires that can be completed asynchronously to allow flexibility. Where possible, outreach should strive to "meet people where they are" through pop-up events, temporary demonstration projects, or information booths at local events and community hubs.
- **Invite participation from and collaborate with community-based organizations** to help distribute information and solicit feedback from community leaders.
- **Reduce barriers to participation** Such as by compensating people for more involved participation or offering childcare or meals at traditional public meetings.

---

[2] 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.

[3] See https://www.sccrtc.org/funding-planning/equity/ for further information.

Goal 4: Ensure Future Funding Success

A key goal of the RHSP is for the plan to meet State and Federal requirements of a Local Roadway Safety Plan (LRSP) and Safe Streets for All Action Plan (SS4A Action Plan). The following objectives seek to prepare RTC and partner agencies to apply for funding (e.g., SS4A, HSIP) and successfully implement priority safety projects identified as part of the RHSP.

- **Develop RSHP to meet SS4A funding requirements** to allow identified projects to compete for the federal funding programs. To be competitive for SS4A Implementation grant eligibility, the RHSP should meet all nine action plan components included in **Appendix A**.
- **Ensure consistency with other related regional and local plans** (e.g., Santa Cruz County LRSP, Caltrans Highway Safety Improvement Plan, County of Santa Cruz Active Transportation Plan). Demonstrate how the RHSP goals align with other regional and local plans. Align with guidance and recommendations in State and County plans as well as Federal guidance to maximize access to State and Federal roadway safety funds.
- **Prioritize investments where kinetic energy risk is highest and in historically underserved communities.** Kinetic energy transfer is directly related to the severity of a crash. Kinetic energy transfer can be addressed by reducing exposure (travel volume), likelihood (conflict points), and severity (speed and mass) of crashes. This aligns with other state mode shift and greenhouse gas (GHG) emissions goals established in RTC's *2045 Regional Transportation Plan* ("2045 RTP") and Caltrans' *California Transportation Plan 2050* ("CTP 2050"). Furthermore, prioritizing historically underserved communities addresses transportation inequities. These areas can be defined through coordination with RTC's *Transportation Equity Action Plan* or by using U.S. Census household income and race data.
- **Infuse safety into all projects on the corridors, including maintenance efforts**. Look for opportunities to address safety through existing maintenance efforts, such as repaving efforts or as part of site plan reviews. Identify areas to institutionalize safety throughout department practices, including eliminating policies such as traffic Level of Service (LOS) that worsen crash risk. Where possible, provide Safe System Approach training for staff and elected officials as well as the media.

Appendix A: Background and Policy Context

The RHSP prioritizes regional safety targets and will likely have co-benefits that work towards other related regional climate, economic, and equity goals. The relevant policy documents that helped shape the goals and objectives of the RHSP are summarized below.

In recent years, leaders at the Federal, State, and regional levels have taken bold and consistent steps to acknowledge the persistent and unacceptable level of severe injuries and fatalities on our roadways, commit to eliminating these occurrences, and follow international best practices and public health fundamentals to form a new safety paradigm in the US. This has specifically involved embracing the Vision Zero goal of safe mobility for all and adopting the Safe System Approach as the way to get there.

The Safe System Approach is a significant evolution in how roadway safety is conceptualized. The Safe System Approach acknowledges that mistakes on our roadways are inevitable while also asserting that severe injuries and fatalities are avoidable. This is a shift in thinking on how to improve roadway safety; instead of a primary focus on shifting behavior through education campaigns or enforcement, it encourages that roads, vehicles, and policies be intentionally designed to prioritize safety. It involves building layers of redundancy that function as safety nets for users – even if someone makes a mistake on the roadway, the system as a whole minimizes the risk of serious injury through such measures as decreased speeds, advanced vehicle safety technologies, separation among roadway users in time and space, and better post-crash care in the case of injuries. Some crashes will still happen, but under the Safe System Approach, they won't be nearly as harmful.

The Safe System Approach, as adopted by the US DOT, includes the key elements and core principles shown in **Figure 1**.

Figure 1: FHWA Safe System Wheel

The RHSP will be developed to align with the pivot to the Safe System Approach. Acknowledging this fundamental pivot leads to these foundational perspectives in the Plan:

- **The "New Es" – Energy, Exposure, Equity:** Conventionally, a safety plan has been organized by the Es of safety: education, enforcement, engineering, and emergency services. This Plan shifts away from the silos of those Es and focuses instead on cross-cutting "new Es": energy, exposure, and equity. This Plan focuses on addressing kinetic energy risk through an assessment of speed, mass, and exposure that is inherently proactive and systemic.

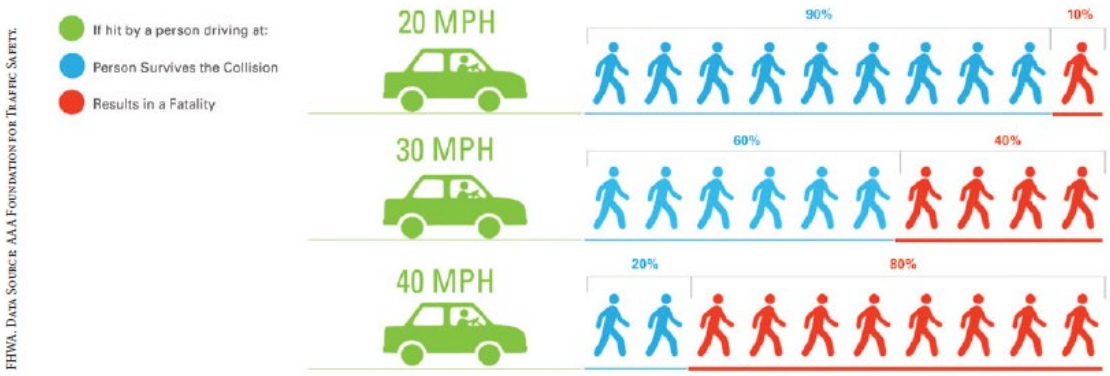

Figure 2: The Exponential Role of Speed in Kinetic Energy (and Associated Injury Risk)

- **Safety as a Public Health Issue:** According to Public Health best practice, the most impactful way to address kinetic energy risk (the pathogen in the public health safety crisis) is by acknowledging and systematically addressing socioeconomic and land use factors that create the systemic risk, followed by understanding and enhancing built environment factors, and then considering passive and active safety tools, as shown in the *Safe Systems Pyramid* (see **Figure 3**). This Plan presents a holistic assessment of the needs and opportunities for enhancing safety consistent with this public health framing and priority order.

Figure 3: Safe Systems Pyramid

- **Safety as the Default:** This Plan aspires to make safety the default choice: the easy choice for people as they move about and the easy choice for roadway design decisions. This Plan identifies the opportunities to streamline decision-making to prioritize safety and improve internal alignment in programs, practices, and policies consistent with the Safe System Approach.

Federal Policy Considerations

The United States Department of Transportation (US DOT) incorporated the Safe System Approach as part of its most recent *National Roadway Safety Strategy* (NRSS), adopted in January 2022. This NRSS is the first national commitment to a long-term goal of zero fatalities on America's roadways, and names the Safe System Approach as the way to accomplish that goal. Federal transportation officials have since unveiled a number of policies and programs geared towards the application and implementation of the Safe System Approach at the state and local levels.

SS4A[4]

The *Safe Streets and Roads for All* (SS4A) grant program was established by the *Bipartisan Infrastructure Law* in 2022. It is centered around the Department of Transportation's *National Roadway Safety Strategy* and its goal of zero deaths and serious injuries on America's roadways. Over its five-year duration, the program will provide $5 billion in grant funding to develop and implement safety plans and projects.

The SS4A grant program provides funding for local agencies to create Comprehensive Safety Action Plans (CSAPs). It also provides funding to implement safety projects, but only to those agencies that have an adopted CSAP or an equivalent. To qualify as a CSAP (and allow an agency to be eligible for implementation planning grant funding), a plan must meet nine criteria set forth by the Department of Transportation. They include:

1. An official commitment and goal to eliminate roadway fatalities and serious injuries;
2. The creation of a standing task force or working group that will lead and monitor the implementation of the plan;
3. Data-driven safety analysis;
4. Public engagement and inter-governmental collaboration;
5. Consideration of equity in the planning process;
6. Assessment of current policies and guidelines to identify changes that will better prioritize safety;
7. Identification of a comprehensive set of projects and strategies that address safety issues;
8. Posting of the plan online along with description of how future progress will be measured; and,
9. That the plan would be updated every five years.

This Plan will be designed to meet all of these criteria.

[4] https://www.transportation.gov/grants/SS4A

FHWA Safe System Roadway Design Hierarchy[5]

The Safe System Roadway Design Hierarchy, created by the Federal Highway Administration (FHWA) in 2024, provides guidance on contextualizing and assessing infrastructure-based countermeasures and strategies based on their alignment with the principles of the Safe System Approach.

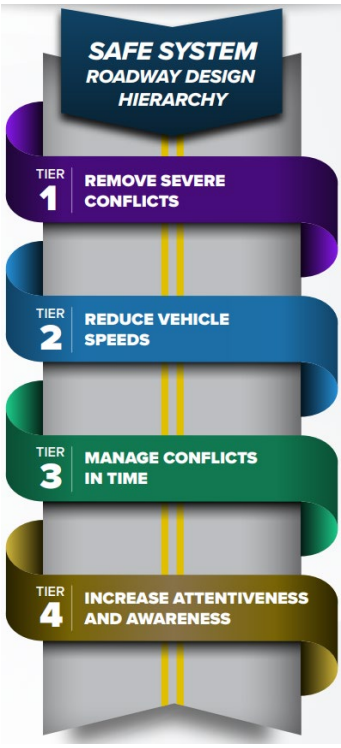

Figure 4: Safe System Roadway Design Hierarchy

The Hierarchy classifies countermeasures into four tiers, from most to least aligned with Safe System principles. These tiers are:

1. **Removing severe conflicts**, which can eliminate high-risk conditions involving users with different speeds or moving in different directions while sharing space. This tier can include countermeasures that remove potential points of conflict (for example, removing conflicting turning movements) and those that separate vulnerable users from vehicles in space (for example, protecting people biking through a separated bike lane).
2. **Reducing vehicle speeds**, which reduces the kinetic energy present within systems and thereby reduces the severity of crashes that do occur. As driver behavior, especially when it comes to speed, is highly influenced by roadway features, countermeasures that reduce prevailing speeds can include lane narrowing and features that channelize vehicle traffic such as median islands.

[5] https://highways.dot.gov/sites/fhwa.dot.gov/files/2024-01/Safe_System_Roadway_Design_Hierarchy.pdf

3. **Managing conflicts in time**, which covers instances (such as intersections) where space needs to be shared between different users but where they can be separated in time. An example is the Leading Pedestrian Interval, which allows people walking to have a "head start" interval at a signalized intersection before conflicting vehicle traffic enters the crosswalk.
4. **Increasing attentiveness and awareness**, which involves alerting users to conflicts and potential risks, can involve such countermeasures as intersection daylighting and warning signage.

Crucially, the Hierarchy prioritizes improvements and countermeasures that make physical changes to the system for the whole population, which are more effective than measures that rely on roadway users and individual decisions. This is consistent with the Safe System Approach's central premise that humans make mistakes and that the roadway system should be designed to accommodate them through redundant and proactive interventions.

In addition to presenting this tiered hierarchy as a framework for understanding countermeasures as they relate to the principles of the Safe System Approach, the guidance also presents examples of both common and novel countermeasures that fall under each tier.

FHWA Safe System Approach for Speed Management[6]

Speeding continues to be one of the leading causes of crashes across the country, especially those causing fatalities and severe injuries, and the relationship between higher speeds and increased crash severity is well-documented. The FHWA's 2023 report on the *Safe System Approach for Speed Management* provides targeted recommendations around speed management. The report notes the need for agencies to place safety and the prevention of injury crashes (as opposed to throughput or travel times) as the highest priority when it comes to speed setting on roadways, and highlights the need to change the physical design and context of the roadway beyond merely changing regulatory speed limits to achieve target speeds.

The report outlines a five-stage framework for speed management that is consistent with the Safe System Approach. The process begins with establishing a vision and building consensus within the community to manage speeds; the creation of a strategic safety plan, such as a Vision Zero plan or LRSP, can serve this purpose. Second, speed data should be collected and analyzed, which can help both guide the rest of the process and provide the backing to build public support. Third, locations for speed management should be prioritized proactively, taking into account both crash and speeding history as well as contextual factors (such as the presence of vulnerable users or traffic generators like schools and commercial areas). Countermeasures can then be selected for prioritized locations. Finally, ongoing monitoring and evaluation should be conducted to

[6] https://highways.dot.gov/sites/fhwa.dot.gov/files/Safe_System_Approach_for_Speed_Management.pdf

ensure efficacy and allow for flexibility and adjustment. The report also provides real-world case studies of how these principles were applied in practice.

Other National Guidance

In addition to policy and guidance from Federal agencies, other national-level documents provide additional guidance towards applying and implementing the Safe System Approach for local agencies.

The Safe Systems Pyramid[7]

The Safe Systems Pyramid is a new framework for traffic safety proposed in a 2023 paper by David Ederer of the Center for Disease Control (CDC), along with his co-authors Rachael Thompson Panik, Nisha Botchwey, and Kari Watkins, which adapts the Health Impact Pyramid framework into the Safe Systems Pyramid for roadway safety practitioners. Building on established public health practice, the Safe Systems Pyramid illustrates how interventions that have the largest reach and require the least personal effort will be the most impactful. In addition to identifying kinetic energy transfer as the cause of injury, the Safe Systems Pyramid also relates energy to exposure. It explains how the many possible safety interventions differ in their effectiveness at reducing risk in the transportation system by prioritizing interventions that reduce exposure to kinetic energy transfer at the system level. Those that require more individual effort, such as driver education programs, have the least impact on improving system-wide safety. Meanwhile, those that change the quality of people's lives and the built environment in which they travel more broadly, such as affordable housing near transit, zoning reform, traffic calming, and limiting crossing distances at intersections, have the largest impacts on safety.

Figure 5: Safe Systems Pyramid

[7] https://www.sciencedirect.com/science/article/pii/S2590198223001525

Education is at the top of the Safe System Pyramid, which generally corresponds to Tier 4 of the Safe System Hierarchy and encompasses driver education programs and campaigns – for example, asking drivers to slow down and obey the speed limit. As the authors of the paper note, "the need to urge behavioral change is symptomatic of failure to establish contexts in which healthy choices are default actions," and education programs are thus considered to be most reliant on individual behavior and least effective in producing improvements.

Below education on the Pyramid are active and latent safety measures, which generally correspond to Tier 3 of the Hierarchy. Active safety measures encompass such countermeasures as warning signals and signs, as well as in-vehicle devices such as seatbelts and crash warnings. These safety measures are effective when used, but rely on individual opt-in (for example, for a driver to react to signage or to a crash warning) to function. Latent safety measures encompass countermeasures such as signal timing modifications such as leading pedestrian intervals (LPIs) that create redundancy, as well as vehicle features such as lane departure prevention and automated emergency braking. Latent measures are considered more effective than active measures, as they require less individual opt-in, but their efficacy is still limited by the fact that they are applied individually. For example, while automated braking is superior to a warning signal that warns the driver to manually brake, only those who choose and have the means to drive a vehicle with the feature will have access to this technology.

Further down on the pyramid is the built environment level, which corresponds to Tiers 1 and 2 of the Hierarchy, and refers to physical alterations to the roadway that promote slower speeds, physically separate vulnerable users, and reduce the number of high-risk conflicts. Such interventions can also improve the experience of walking and biking and reduce the number of vehicle trips by encouraging mode shift. Unlike the higher levels of the pyramid, changes to the environment create contexts that encourage safer user behaviors (for example, narrower lanes that induce lower speeds), and are thus less dependent on active user participation and are more effective.

Finally, the socioeconomic factors level lies at the base of the pyramid. Typically, roadway safety interventions do not go beyond the roadway infrastructure, but today's safety outcomes are inexorably linked to socioeconomic factors of the places that our roadways serve. Across the country, communities of color and low-income communities are disproportionately exposed to the most dangerous roadways that feature high speeds, high traffic volumes, and outdated design and safety features. Moreover, many communities across the country are also trapped by a lack of viable alternative transportation options as a result of car dependency, a crisis that is likely going to persist as the national phenomenon of the suburbanization of poverty continues. These are overarching socioeconomic factors that dictate urban form and the built environment, which in turn dictate safety outcomes. This category of interventions is often considered outside the traditional purview of transportation professionals, as they must come in the form of policy around land use, zoning, and economics that go beyond (but work in tandem with) transportation

policy. However, they also must be considered when attempting to address roadway safety, as these socioeconomic factors form the root causes of roadway safety issues.

The pyramid should be seen as a structure for prioritizing the roadway design and operations tools that will have the most impact on safety while also collaborating outside the safety silo with other agency and community stakeholders to engage in upstream and more wide-ranging root cause topics.

Safe System Alignment Framework

In 2024, FHWA released two Excel-based tools that evaluate how well policies and projects align with the Safe System Approach. The Safe System Project-Based[8] Alignment Framework was developed to assess roadway locations and potential improvements through a Safe System Approach lens. The Excel-based tool looks at elements such as crash exposure, crash likelihood, and crash severity as described below:

- Exposure: The volume of or length (distance) that various users are using a facility and could be involved in a potential crash
- Likelihood: Elements or risks that impact the probability of a crash taking place by influencing the opportunity for conflict and user error rates
- Severity: Factors that impact the probability of a serious or fatal injury in the event of a crash

The framework references the FHWA Roadway Design Hierarchy and measures the impact of kinetic energy on vulnerable road users. It can be used to compare alternative designs or as a prioritization tool to understand relative kinetic energy risk along different road segments.

The Safe System Policy-Based[9] Alignment Framework focuses on the six principles of the Safe System Approach with added considerations for equity:

- Death and Serious Injury is Unacceptable
- Humans Make Mistakes
- Humans are Vulnerable
- Responsibility is Shared
- Safety is Proactive
- Redundancy is Crucial

[8] https://highways.dot.gov/safety/zero-deaths/safe-system-project-based-alignment-framework
[9] https://highways.dot.gov/safety/zero-deaths/safe-system-policy-based-alignment-framework

The framework can be used to benchmark and track progress towards aligning policies with the Safe System Approach and identify gaps in existing policy and program efforts. The tool can also help generate strategies to improve Safe System Alignment in agency practices and raise awareness of the Safe System Approach.

NCHRP 1036: Roadway Cross-Section Reallocation Guide[10]

The National Cooperative Highway Research Program (NCHRP)'s Report 1036, the *Roadway Cross-Section Reallocation Guide*, was developed in 2023 as a tool for practitioners to use in the development of roadway cross-sections that better assess the tradeoffs that are involved in the allocation of the limited width of a roadway. The guide begins with the premise that roadway space is scarce and trade-offs are inevitable, and it provides guidance for planning roadway cross-sections that center community priorities for that limited space. The guidelines also infuse Safe System considerations by establishing minimum floors for safety standards, such as the provisions of pedestrian and bike facilities and minimum widths for sidewalks and bike lanes. Finally, the guide discusses approaches for community engagement and operational analysis to facilitate the decision-making process consistent with the goals and minimum standards outlined in the guide. The guide also includes a companion Excel spreadsheet that can be used for new roadway and retrofit planning.

Caltrans Policy Considerations

Like Federal authorities, the California Department of Transportation (Caltrans) has also adopted the Safe System Approach and committed to Vision Zero. Similarly, recently legislation at the State level has supported prioritization and cross-department collaboration consistent with the Safe Systems Pyramid strategies and hierarchy. Several Caltrans Plans, Design Information Bulletins (DIBs), and Directors' Policies (DPs) have been essential policy building blocks to support the ongoing Safe System Pivot in California.

California Transportation Plan 2050 (2021)[11]

The *California Transportation Plan 2050* ("CTP 2050") is a statewide plan that provides a long-range vision of the transportation system throughout the state. The plan aims to develop a safe, resilient, and universally accessible transportation system through the following goals, as shown in **Figure 6**.

[10] https://nap.nationalacademies.org/catalog/26788/roadway-cross-section-reallocation-a-guide
[11] https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/ctp-2050-v3-a11y.pdf

Figure 6: CTP 2050 Goals

DIB 94 (2024)[12]

Design Information Bulletin 94 ("DIB 94") establishes best practices and design guidance for complete street facilities on Caltrans facilities. The document focuses on contextual design and includes a series of standards and design recommendations for different place types based on local context. The place types are illustrated in **Figure 7**. The study corridors are primarily located in rural areas.

[12] https://dot.ca.gov/-/media/dot-media/programs/design/documents/dib-94-010224-a11y.pdf

Figure 3-A - Place Types for Contextual Design Guidance

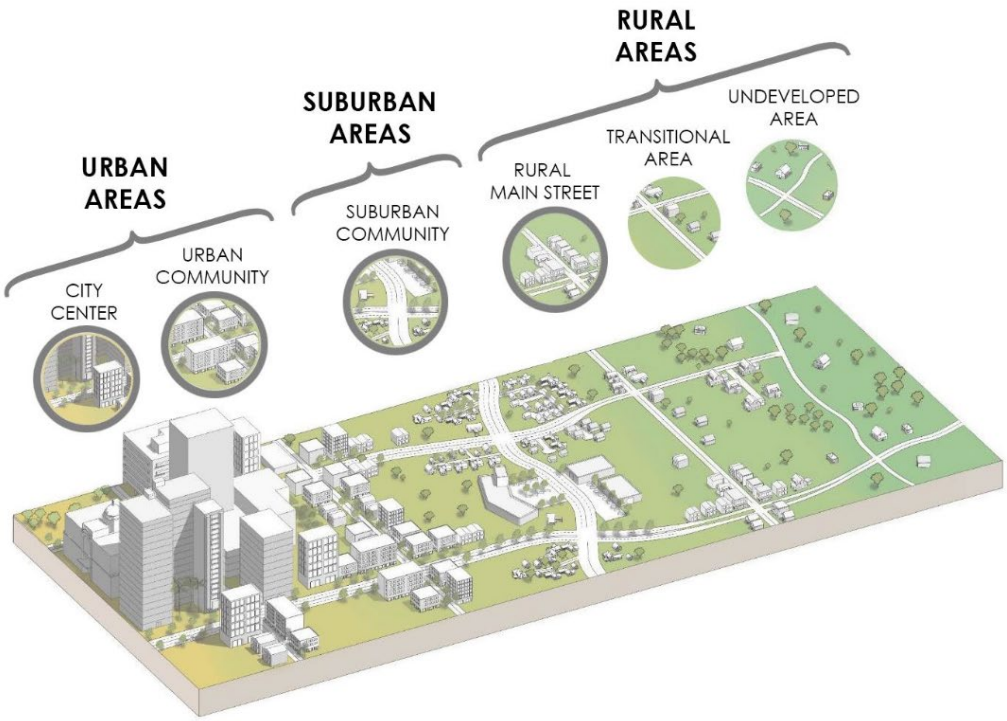

Figure 7: DIB 94 Place Types

Large segments of the study corridors are in transitional areas and undeveloped areas. These streets prioritize trucks and vehicles and provide spaces for bicyclists. Following DIB 94, roads in these areas should consider including the following features:

- Providing separation for pedestrians and bicyclists users. Class I off-street bike paths and multi-use trails can be an efficient option to provide comfortable access for these users where moderate to high vehicle operating speeds are anticipated.
- Providing a roadway design that supports the reduction of operating speeds and incorporates traffic calming features as vehicles approach the Rural Main Street place type.
- Providing bicycle and pedestrian crossings and connections, including at interchanges and in the vicinity of schools and bus stops.
- Supporting transit, car-share, and ride-share through park-and-ride facilities and bus stop amenities.
- Providing connected access, either on the State Highway or on a parallel route, for pedestrians and bicyclists.

The study corridors also include several main street areas. For segments on rural main streets, pedestrians should be prioritized with traffic calming via roadway design to achieve a contextually

appropriate operating speed. In rural areas where separate spaces for pedestrians and bicyclists are not provided, operating speeds should remain low (between 25 and 35 mph).

DIB 94 includes recommended design guidance for lane widths, shoulders, bikeway facility type, sidewalks, crosswalks, and other street features by each place type.

DP 36[13]

In Caltrans *Director's Policy 36* (DP 36), made effective in February of 2022, the agency committed to eliminating fatal and serious injury crashes by the year 2050 and committed to achieving this goal through the application of the Safe System Approach.

DP 37[14]

DP 37, issued in December 2021, establishes the creation of complete streets that support people walking, biking, taking transit, and accessing passenger rail. It recognizes these priorities as a means of advancing state goals related to climate and the environment, public health, and equity, and repairing harm to underserved communities. It also recognizes complete streets as valuable community spaces that can boost economic vitality and resiliency. To these ends, it directs that "all transportation projects funded or overseen by Caltrans will provide comfortable, convenient, and connected complete streets facilities for people walking, biking, and taking transit or passenger rail unless an exception is documented and approved."

Regional policies

2045 Regional Transportation Plan (2022)[15]

RTC developed the *2045 Regional Transportation Plan* ("2045 RTP") as a comprehensive planning document that provides guidance on transportation policy and projects through 2045 as follows:

- Goal 1: Establish livable communities that improve people's access to jobs, schools, recreation, healthy lifestyles and other regular needs in ways that improve health, reduce pollution and retain money in the local economy.
- Goal 2: Reduce transportation related fatalities and injuries for all transportation modes.
- Goal 3: Deliver access and safety improvements cost effectively, within available revenues, equitably and responsive to the needs of all users of the transportation system and beneficially for the natural environment.
- (2045 RTP, 2022)

[13] https://dot.ca.gov/-/media/dot-media/programs/safety-programs/documents/policy/dp_36-a11y.pdf
[14] https://dot.ca.gov/-/media/dot-media/programs/esta/documents/complete-streets/dp-37-complete-streets-a11y.pdf
[15] https://sccrtc.org/wp-content/uploads/2022/06/Final%202045%20RTP.pdf

Appendix B: Goals, Objectives, and Measures of Effectiveness

The proposed goals and objectives will be used to guide the development of the RHSP. Goals 1 and 2 are intended to be used as a framework to evaluate alternatives by using associated measures of effectiveness, as shown in **Table B-1**. On the other hand, goals 3 and 4 are intended to be infused through all stages of the Plan and have less quantifiable measures of effectiveness.

Table B-1: Alternatives Evaluation Approach

Objective	Candidate Measures of Effectiveness/Outcomes	Key Data Source/Evaluation Framework
Goal 1: Commit to Vision Zero		
Make safety the default design choice (specifically risk factor reduction through speed management and separating users in space and time)	• Difference between operating speed and target speed • Number of conflict points • Travel volumes • Number of conflict points • Operating speeds • Percentage of heavy vehicles, large passenger vehicles, and electric vehicles	DIB 94, Safe System Project-Based Alignment Framework, and NCHRP 1036
Clarify the context of the road segment (movement or place-focused)	• Defined place types and associated target speed	DIB 94

Objective	Candidate Measures of Effectiveness/Outcomes	Key Data Source/Evaluation Framework
Maximize accessibility and connectivity	• Level of traffic stress • Walking, bicycling, and transit travel time to key destinations • Frequency of crossing opportunities • Connections to other low stress facilities	-
Advance regional sustainability goals	• Quantity and quality of green infrastructure • Level of traffic stress • Frequency and reliability of transit	Regional sustainability goals in CTP 2050 and 2045 RTP
Goal 2: Advance Partnerships and Collaboration		
Collaborate with stakeholders	• Near miss data • Quantity of stories, input from community and key stakeholders	-
Proactively engage with Caltrans	• Alignment with Caltrans policies and procedures • Proactive outreach connections with Caltrans	DIB 94
Focus on upstream, population-scale considerations for safety	• Potential mode shift • Alignment with place type context	Safe System Pyramid
Goal 3: Prioritize Equity and Community Engagement		

Objective	Candidate Measures of Effectiveness/Outcomes	Key Data Source/Evaluation Framework
Cross-analyze traffic-related injuries and fatalities with demographic factors	• Crash analysis presented alongside Equity Priority Communities or socio-demographic data	-
Coordinate with RTC's *Transportation Equity Action Plan* project team	• Meeting(s) with Transportation Equity Workgroup • Consistent definition of equity and processes to incorporate equity in decision-making	-
Accept that humans make mistakes and focus on the environment and context that travel occurs within	• Participation of law enforcement in stakeholder meetings or interviews	Safe Systems Pyramid
Supplement data with community input	• Community safety observations from webmap, meetings, and workshops	-
Offer different options for inclusive engagement	• Flexible options for community engagement during Phases 1 and 2 of outreach	-
Invite participation from and collaborate with community-based organizations	• Partner with community groups that represent diverse interests to participate in stakeholder and public meetings, and distribute project information	-

Objective	Candidate Measures of Effectiveness/Outcomes	Key Data Source/Evaluation Framework
Reduce barriers to participation	• Incentives for more involved participation	-
Goal 4: Ensure Future Funding Success		
Develop RSHP to meet Safe Streets for All Action Plan (SS4A Action Plan) requirements	• Plan meets all nine SS4A elements	SS4A grant requirements
Ensure consistency between other related regional and local plans	• Complete literature review of other related plans to understand identified areas of concern and past recommendations	Regional and local plans
Prioritize investments where kinetic energy risk is highest and in historically underserved communities	• RHSP includes a prioritization framework that emphasizes areas with high kinetic energy risk and in locations with historically underserved communities	Safe System Roadway Design Hierarchy
Infuse safety into all projects on the corridors, including maintenance efforts	• Institutionalize safety throughout department practices, such as repaving efforts, site plan reviews, and eliminating LOS policies • Provide Safe System Approach training for staff and elected officials as well as the media	