



Solano County

Local Road Safety Plan (LRSP) Amendment

Amended August 2026

EXECUTIVE SUMMARY

The Solano County Local Road Safety Plan (LRSP), adopted in 2024, established a comprehensive, data-driven framework for improving traffic safety throughout the unincorporated county. The LRSP identified the County's highest-risk roadway locations, analyzed fatal and serious injury (F+SI) collision trends, and recommended a combination of systemic and location-specific countermeasures intended to reduce fatalities and serious injuries on the County's transportation network. The plan serves as the County's guiding document for prioritizing roadway safety investments and supporting applications for federal and state safety funding programs.

Since adoption of the LRSP, Solano County has continued to monitor roadway safety performance through routine evaluation of statewide collision databases and the County's roadway inventory. As additional collision data became available, the County recognized the opportunity to update portions of the LRSP to better reflect current safety trends and further refine project priorities for future Highway Safety Improvement Program (HSIP) funding cycles. This amendment supplements the adopted LRSP by incorporating the most recent five-year collision dataset (2019–2023) and updating the roadway segment analysis used to identify high-risk corridors within the unincorporated county.

The purpose of this amendment is to evaluate changes in fatal and serious injury collision patterns occurring along roadway segments, identify roadway corridors exhibiting elevated crash risk, and recommend systemic countermeasures that can be implemented across multiple locations with similar roadway characteristics. The amendment does not replace the adopted LRSP or modify its vision, goals, or emphasis areas. Rather, it builds upon the existing plan by refining the County's understanding of current roadway safety conditions and supporting implementation of the LRSP's long-term safety strategy.

Consistent with the methodology established in the adopted LRSP, this amendment utilizes collision data obtained from the California Statewide Integrated Traffic Records System (SWITRS) and the Transportation Injury Mapping System (TIMS). Fatal and serious injury collisions occurring on County-maintained roadways between January 1, 2019, and December 31, 2023, were analyzed using the Equivalent Property Damage Only (EPDO) methodology to identify roadway segments with the greatest concentration of severe collisions. The analysis focuses on roadway segments rather than intersections to support development of a countywide systemic safety improvement project addressing common roadway risk factors.

The updated collision analysis indicates that the primary safety trends identified in the adopted LRSP remain largely unchanged. Roadway departure crashes continue to represent a disproportionate share of fatal and serious injury collisions throughout the County's rural roadway network. Collisions involving fixed objects, nighttime driving conditions, and improper turning maneuvers remain among the most prevalent contributing factors associated with severe crashes. Many of the highest-ranked roadway segments exhibit similar operational and geometric characteristics, including narrow shoulders, limited roadway delineation, horizontal curvature, minimal fixed lighting, and roadside hazards located in close proximity to the traveled way. These recurring characteristics demonstrate that many severe crashes are attributable to systemic roadway conditions rather than isolated deficiencies at individual locations.

The updated analysis also reinforces the County's commitment to implementing a systemic approach to roadway safety. Rather than pursuing improvements solely at locations with a history of severe collisions, the systemic approach identifies roadway features that are common among high-risk corridors and proactively implements countermeasures before additional severe crashes occur. This strategy is consistent with guidance from the Federal Highway Administration (FHWA) and the California Department of Transportation (Caltrans), both of which encourage agencies to address widespread roadway risk factors through cost-effective, data-driven improvements.

Based on the updated collision analysis and roadway segment evaluation, this amendment recommends implementation of a countywide systemic safety project utilizing Low-Cost Roadway Safety Manual (LRSM) countermeasures. The recommended improvements consist of upgrading sign retroreflectivity (Countermeasure R22) and upgrading striping and pavement markings (Countermeasure R28), two proven safety countermeasures intended to improve roadway visibility, enhance driver guidance, and reduce roadway departure crashes, particularly during nighttime and low-visibility conditions. These countermeasures were selected because they directly address the predominant collision patterns identified in the updated analysis while providing broad applicability across the County's rural roadway network. Their relatively low implementation cost, ease of deployment, and demonstrated safety effectiveness make them well suited for a countywide systemic project.

Implementation of these improvements is expected to enhance roadway delineation, improve driver expectancy, and increase the visibility of critical regulatory and warning signs throughout the County's transportation network. Because the recommended countermeasures can be applied across numerous roadway corridors sharing similar characteristics, the project provides an opportunity to achieve meaningful safety benefits at multiple locations while maximizing the effectiveness of limited transportation funding.

This amendment strengthens the technical foundation of the County's Local Road Safety Plan by incorporating current collision data, refining roadway segment priorities, and identifying a focused systemic safety improvement strategy. The updated analysis will support future applications for Highway Safety Improvement Program funding while providing a framework for continued investment in projects that reduce fatal and serious injury collisions throughout unincorporated Solano County. As additional collision data become available and systemic safety improvements are implemented, the County will continue to monitor roadway performance and periodically update the LRSP to ensure that future safety investments remain data-driven, effective, and aligned with evolving federal and state safety initiatives.

1. INTRODUCTION AND PURPOSE

1.1 Background

Solano County is committed to improving the safety of its transportation network through proactive planning, data-driven decision making, and strategic investment in roadway infrastructure. The County owns and maintains approximately 670 centerline miles of roadway serving rural communities, agricultural areas, recreational destinations, and developing urban fringe areas throughout the unincorporated county. These roadways provide critical connections between incorporated cities, regional transportation facilities, employment centers, agricultural operations, and emergency services. Maintaining a safe and reliable transportation system is essential to supporting the County's residents, businesses, and visitors.

Traffic safety remains one of the County's highest transportation priorities. Although significant progress has been made in reducing traffic fatalities and serious injuries nationwide, rural roadways continue to experience a disproportionate number of severe crashes due to higher operating speeds, limited roadway lighting, narrow shoulders, roadside hazards, and longer emergency response times. Many of these characteristics are present on portions of the County's roadway network and contribute to elevated crash severity when collisions occur.

To better understand these risks and prioritize safety investments, Solano County adopted the **Local Road Safety Plan (LRSP)** in 2024. The LRSP established a comprehensive framework for identifying traffic safety issues, analyzing collision trends, and developing engineering, education, enforcement, and emergency response strategies to reduce fatal and serious injury (F+SI) collisions throughout the unincorporated county. The plan incorporated extensive collision analysis, roadway evaluations, stakeholder coordination, and public outreach to identify safety emphasis areas and recommend projects eligible for future state and federal transportation funding.

The LRSP also serves as the County's primary transportation safety planning document for pursuing funding through programs such as the Highway Safety Improvement Program (HSIP). By documenting collision trends, identifying high-risk locations, and recommending proven safety countermeasures, the LRSP provides the technical foundation necessary to compete for limited transportation safety funding while ensuring that investments are directed toward projects capable of producing the greatest reduction in fatal and serious injury crashes.

Since adoption of the LRSP, Solano County has continued monitoring roadway safety performance using newly available collision data, updated roadway inventories, and ongoing evaluation of roadway conditions. As additional collision information became available, the County identified the opportunity to refine portions of the adopted plan to better reflect current safety conditions and strengthen the technical basis for future systemic safety projects.

1.2 Purpose of the Amendment

The purpose of this amendment is to update the roadway segment analysis contained within the adopted 2024 Local Road Safety Plan using the most recent available five-year collision dataset covering the period from **January 1, 2019, through December 31, 2023**. The updated analysis provides a current assessment of fatal and serious injury collision trends occurring on County-maintained roadway segments and identifies corridors exhibiting the highest concentrations of severe crashes.

Unlike the original LRSP, which evaluated both roadway segments and intersections as part of a comprehensive countywide safety assessment, this amendment focuses specifically on roadway segments to support development of a countywide systemic safety improvement project. The amendment evaluates whether collision trends identified in the adopted LRSP remain consistent, updates the County's high-injury roadway segment rankings using current collision data, and identifies roadway characteristics that continue to contribute to severe crashes.

The amendment also provides the technical justification for implementing systemic roadway safety improvements using low-cost countermeasures capable of addressing common risk factors across multiple roadway corridors. This approach recognizes that many severe crashes share similar contributing roadway characteristics and that addressing these characteristics proactively can reduce future crashes before they occur.

The updated analysis is intended to support future Highway Safety Improvement Program (HSIP) applications and other competitive transportation safety funding opportunities by providing current collision data, updated corridor prioritization, and documented engineering rationale for the County's recommended systemic safety improvements.

1.3 Relationship to the Adopted Local Road Safety Plan

This document is an amendment to the Solano County Local Road Safety Plan adopted in 2024. It is intended to supplement, rather than replace the adopted LRSP.

The vision, goals, emphasis areas, and implementation strategies established in the adopted LRSP remain unchanged. The amendment does not modify the County's overall transportation safety objectives or alter previously adopted policies. Instead, it updates one component of the original plan by incorporating newer collision data, refining roadway segment prioritization, and identifying systemic countermeasures that address the predominant fatal and serious injury collision patterns observed on the County's roadway network.

Comparison of the updated analysis with the adopted LRSP indicates that the primary collision trends remain largely consistent. Roadway departure crashes, collisions involving fixed roadside objects, nighttime crashes, and collisions occurring on rural roadway segments continue to account for a disproportionate share of fatal and serious injury collisions within the unincorporated county. While

the ranking of individual roadway corridors has changed based on updated collision data, the overall safety emphasis areas identified in the original LRSP remain valid and continue to support implementation of systemic roadway safety improvements.

This amendment therefore strengthens the adopted LRSP by providing a more current assessment of roadway safety conditions while maintaining consistency with the County's long-term transportation safety strategy.

1.4 Amendment Objectives

The objectives of this amendment are to:

- Update the County's roadway segment collision analysis using the most recent available five-year collision dataset (2019–2023).
- Evaluate current fatal and serious injury collision trends occurring on County-maintained roadway segments.
- Identify roadway corridors exhibiting elevated crash risk using the Equivalent Property Damage Only (EPDO) methodology.
- Compare updated collision trends with those identified in the adopted 2024 Local Road Safety Plan.
- Identify recurring roadway characteristics contributing to severe crashes throughout the County's rural transportation network.
- Evaluate low-cost systemic safety countermeasures capable of addressing common roadway risk factors across multiple corridors.
- Provide technical justification for implementing a countywide systemic roadway safety improvement project.
- Strengthen the County's competitiveness for future Highway Safety Improvement Program (HSIP) funding and other transportation safety grant opportunities.
- Establish a framework for continued monitoring of roadway safety performance and future updates to the Local Road Safety Plan.

2. DATA COLLECTION AND METHODOLOGY

2.1 Overview

The Local Road Safety Plan (LRSP) is founded on a data-driven approach that identifies roadway safety issues through objective analysis of collision trends and roadway characteristics. Consistent with the methodology established in the adopted 2024 LRSP, this amendment utilizes the most recent available collision data to evaluate fatal and serious injury (F+SI) crashes occurring on County-maintained roadways and to identify roadway segments that present the greatest opportunity for systemic safety improvements.

The primary objective of the analysis is not merely to identify locations where collisions have occurred, but rather to understand the underlying roadway characteristics associated with severe crashes. By identifying recurring patterns across multiple roadway corridors, the County can implement systemic countermeasures that address common risk factors before additional severe crashes occur. This proactive approach aligns with guidance from the Federal Highway Administration (FHWA), which encourages agencies to move beyond reactive "hot spot" improvements toward broader implementation of proven safety treatments across transportation networks with similar risk characteristics.

This amendment focuses specifically on roadway segment analysis. Although intersection safety remains an important component of the County's overall LRSP, roadway departure crashes occurring between intersections continue to account for the majority of fatal and serious injury collisions within the unincorporated county. Concentrating the analysis on roadway segments allows the County to identify common safety deficiencies and develop a countywide systemic safety project that addresses widespread roadway conditions rather than isolated crash locations.

2.2 Study Area

The study area includes all roadways owned and maintained by Solano County within the unincorporated county. State highways maintained by the California Department of Transportation (Caltrans), including Interstate 80, Interstate 680, Interstate 505, State Route 12, State Route 113, State Route 37, and other state facilities, were excluded from this analysis because they are maintained under separate jurisdiction and evaluated through independent safety programs.

The County roadway network consists primarily of rural two-lane collectors and minor arterials connecting agricultural communities, residential areas, recreational destinations, regional highways, and incorporated cities. Many of these facilities traverse rolling terrain, open agricultural land, and environmentally constrained corridors where roadway widening and geometric improvements may be limited by existing right-of-way, topography, environmental resources, or available funding.

Roadway characteristics vary considerably throughout the County; however, many rural corridors share common features including:

- Two-lane undivided roadways;
- Narrow or unpaved shoulders;
- Limited roadway lighting;
- Horizontal and vertical curves;
- Roadside drainage facilities;
- Fixed roadside objects such as trees, utility poles, signs, and culverts;
- Higher operating speeds; and
- Seasonal agricultural traffic.

These roadway characteristics influence both the likelihood and severity of roadway departure crashes and provide the basis for evaluating systemic safety improvements.

2.3 Collision Data Sources

Collision data used in this amendment were obtained from the California Statewide Integrated Traffic Records System (SWITRS) and the Transportation Injury Mapping System (TIMS), which compile collision records reported by law enforcement agencies throughout California.

SWITRS serves as the official statewide repository for reported traffic collision data and includes detailed information regarding collision severity, collision type, contributing factors, environmental conditions, involved roadway users, and geographic location. TIMS supplements SWITRS by providing geographic visualization and analytical tools that facilitate network-level safety evaluations and identification of collision patterns.

A five-year study period was selected, encompassing collisions occurring between **January 1, 2019, and December 31, 2023**. Use of a five-year dataset is consistent with accepted traffic safety practice and Highway Safety Improvement Program (HSIP) guidance because it provides a sufficient sample size to identify recurring collision trends while minimizing the influence of year-to-year fluctuations caused by isolated incidents or temporary traffic conditions.

Only collisions occurring on County-maintained roadways were included in the analysis. Collisions occurring on state highways or facilities maintained by other jurisdictions were excluded to ensure the analysis reflects roadway conditions under the County's ownership and maintenance responsibilities.

For purposes of this amendment, particular emphasis was placed on Fatal and Serious Injury (F+SI) collisions. These collisions represent the highest societal and economic costs, are the primary focus of statewide safety initiatives, and are most directly aligned with the objectives of the Highway Safety Improvement Program.

2.4 Collision Screening and Quality Control

Following data acquisition, collision records were reviewed to ensure consistency with the study objectives. Duplicate records, incomplete reports, and collisions occurring outside the County-maintained roadway system were excluded from the dataset.

Collision locations were spatially referenced using Geographic Information System (GIS) software and compared with the County roadway inventory to verify roadway ownership and assign collisions to the appropriate roadway segment. This process allowed collision records to be evaluated spatially and facilitated identification of recurring crash patterns throughout the County's transportation network.

Additional quality assurance measures included review of roadway ownership, collision coordinates, roadway names, and collision attributes to ensure accurate assignment of collisions prior to performing statistical analyses.

2.5 Equivalent Property Damage Only (EPDO) Methodology

Consistent with the adopted Local Road Safety Plan and the Highway Safety Improvement Program, roadway segments were prioritized using the **Equivalent Property Damage Only (EPDO)** methodology.

Unlike analyses that rely solely on collision frequency, EPDO assigns greater weight to collisions resulting in fatalities or serious injuries, recognizing that severe collisions impose substantially greater societal costs than minor crashes. This methodology enables roadway segments experiencing relatively few but high-severity collisions to receive appropriate priority during project development.

For this amendment, EPDO values were assigned using the same weighting methodology employed in the adopted LRSP and consistent with HSIP evaluation procedures.

Collision Severity	EPDO Weight
Fatal Injury	165
Serious Injury	165
Visible Injury	11
Complaint of Pain	6
Property Damage Only	1

The cumulative EPDO score for each roadway segment represents the relative severity of collisions occurring along that segment. Higher EPDO scores indicate roadway segments where severe crashes have occurred more frequently and where safety improvements may produce the greatest benefit.

Because the objective of this amendment is to identify locations with elevated fatal and serious injury risk, EPDO provides a more meaningful prioritization than simple collision counts alone.

2.6 Roadway Segment Analysis

Unlike the adopted LRSP, which evaluated both intersections and roadway segments, this amendment focuses exclusively on roadway segments to support development of a countywide systemic safety improvement project.

Roadway segment analysis emphasizes crashes occurring between intersections, where roadway geometry, roadside conditions, pavement markings, signing, and driver guidance are the primary contributing infrastructure elements.

Each collision was assigned to its corresponding roadway segment using GIS-based linear referencing techniques. Segment-level collision totals, fatal and serious injury frequencies, and cumulative EPDO values were calculated for the County roadway network.

The roadway segment analysis also considered recurring roadway characteristics associated with severe collisions, including:

- roadway departure tendencies;
- roadside fixed-object exposure;
- nighttime operating conditions;
- roadway delineation;
- horizontal curvature;
- shoulder characteristics;
- driver expectancy; and
- roadway environment.

Rather than evaluating each roadway independently, the analysis sought to identify characteristics common among multiple high-risk corridors. This network-level evaluation supports implementation of systemic improvements capable of reducing crashes across numerous locations with similar roadway conditions.

2.7 Corridor Prioritization

Following calculation of EPDO scores, roadway segments were ranked according to cumulative crash severity.

Segments exhibiting the highest EPDO values were identified as candidate corridors for further engineering evaluation. While collision history served as the primary screening criterion, engineering judgment was also applied during development of the recommended project to ensure selected corridors represented locations where systemic improvements would provide meaningful safety benefits.

The prioritization process considered:

- cumulative EPDO score;
- frequency of fatal and serious injury collisions;
- recurring collision patterns;
- roadway characteristics;
- consistency of risk factors across multiple corridors;
- feasibility of implementing systemic improvements; and
- applicability of proposed countermeasures.

Rather than selecting isolated roadway segments solely because they experienced a high number of crashes, the County sought to identify corridors exhibiting common characteristics that could be addressed through standardized improvements across the roadway network.

This approach maximizes the effectiveness of limited transportation funding while supporting implementation of proven safety countermeasures capable of reducing severe crashes on a countywide basis.

2.8 Systemic Safety Approach

The analysis presented in this amendment follows the principles of the FHWA Systemic Safety Approach, which emphasizes proactive implementation of low-cost safety improvements at locations sharing similar risk characteristics rather than waiting for severe crashes to accumulate at individual sites.

The County's updated collision analysis demonstrates that many fatal and serious injury crashes occur under similar roadway conditions throughout the rural transportation network. Common contributing factors include roadway departures, collisions with fixed objects, nighttime driving conditions, limited roadway delineation, and inadequate driver guidance. Because these characteristics occur across numerous roadway corridors, implementation of systemic countermeasures offers the opportunity to reduce crash risk on a broader scale than traditional site-specific improvements.

This methodology supports the County's recommendation to implement a countywide systemic safety project utilizing upgraded pavement markings and enhanced sign retroreflectivity. These improvements directly address the predominant collision patterns identified in the updated analysis while providing consistent driver guidance across the County's rural roadway network. By applying proven countermeasures to corridors with shared risk characteristics, the County can improve safety proactively, maximize the effectiveness of available funding, and advance the long-term goals established in the adopted Local Road Safety Plan.

3. UPDATED COLLISION ANALYSIS (2019–2023)

3.1 Overview

The purpose of the updated collision analysis is to evaluate recent fatal and serious injury (F+SI) collision trends occurring on County-maintained roadways and determine whether the safety emphasis areas identified in the adopted 2024 Local Road Safety Plan remain representative of current roadway conditions. The analysis also identifies emerging trends that may influence future project prioritization and implementation of systemic safety improvements.

Consistent with the adopted LRSP, the analysis focuses primarily on collisions resulting in fatalities or serious injuries, as these crashes represent the greatest human and economic costs and are the primary focus of the Highway Safety Improvement Program (HSIP). While all reported injury collisions provide valuable insight into roadway performance, F+SI collisions receive particular emphasis because reducing these crashes is the central objective of the County's roadway safety program.

Collision records occurring between January 1, 2019, and December 31, 2023, were evaluated to identify recurring patterns related to collision type, contributing factors, roadway environment, lighting conditions, and geographic distribution. The results were then compared with the findings of the adopted LRSP to determine whether previously identified emphasis areas remain appropriate.

Overall, the updated analysis indicates that the County's roadway safety priorities have remained remarkably consistent. The majority of fatal and serious injury collisions continue to occur on rural roadway segments, frequently involving roadway departures, fixed-object impacts, nighttime conditions, and driver errors associated with excessive speed or impaired driving. These findings reinforce the need for systemic safety improvements capable of addressing common roadway characteristics throughout the County's transportation network rather than focusing solely on isolated high-crash locations.

3.2 Overall Collision Trends

Analysis of the updated collision dataset demonstrates that fatal and serious injury collisions continue to occur predominantly on rural roadway segments rather than at intersections. This finding is consistent with the adopted LRSP and reflects the characteristics of Solano County's roadway network, where long rural corridors, higher operating speeds, and limited roadside recovery areas contribute to increased crash severity.

Unlike urban environments, where congestion often results in lower-speed intersection crashes, rural collisions frequently involve vehicles leaving the traveled way at higher speeds or striking fixed roadside objects. These crash mechanisms significantly increase the likelihood of fatalities and serious injuries, even when overall collision frequency may be relatively low.

The updated analysis further indicates that severe collisions remain geographically dispersed throughout the County rather than concentrated at a small number of locations. Although several roadway corridors exhibit elevated EPDO scores, many fatal and serious injury crashes occur on roadways sharing similar geometric and operational characteristics. This distribution supports implementation of systemic improvements that address common roadway deficiencies across multiple corridors.

The persistence of these trends demonstrates that the collision patterns identified in the adopted LRSP remain valid and that continued emphasis on rural roadway safety is appropriate.

3.3 Roadway Departure and Fixed-Object Collisions

Roadway departure collisions continue to represent the predominant fatal and serious injury crash type within the unincorporated County. These collisions typically occur when a vehicle unintentionally leaves the traveled way before overturning or striking a fixed roadside object such as a tree, utility pole, culvert headwall, embankment, sign support, or drainage structure.

Consistent with the findings of the adopted LRSP, collisions involving fixed objects account for a substantial proportion of severe crashes. While the specific locations of these collisions vary throughout the County, they occur under remarkably similar roadway conditions. Common characteristics include narrow shoulders, limited recovery areas, horizontal curvature, minimal pavement edge delineation, and roadside hazards located within the clear recovery zone.

These findings suggest that the roadway environment plays an important role in collision severity. Once a vehicle departs the roadway, the presence of rigid roadside objects significantly increases the likelihood that the collision will result in serious injury or fatality. Consequently, measures that assist drivers in maintaining lane position before a roadway departure occurs represent one of the most effective opportunities for reducing severe crashes.

Improved pavement markings, enhanced delineation, and upgraded retroreflective signing provide drivers with better visual guidance, particularly during nighttime and reduced-visibility conditions, thereby reducing the likelihood of unintentional lane departures.

3.4 Nighttime Collision Trends

Nighttime driving conditions continue to be disproportionately represented among fatal and serious injury collisions occurring on County-maintained roadways. Although traffic volumes are generally lower during nighttime hours, the severity of crashes occurring after dark remains significantly greater than during daytime conditions.

Many County roadways traverse rural areas where roadway lighting is limited or nonexistent. Under these conditions, drivers rely heavily on pavement markings, edge lines, centerlines, retroreflective traffic signs, and roadway delineation to maintain lane position and anticipate upcoming curves or intersections. Deteriorated pavement markings or reduced sign retroreflectivity can diminish driver expectancy and increase the likelihood of roadway departures.

The updated collision analysis indicates that a significant percentage of severe nighttime collisions occur on roadway segments lacking continuous roadway illumination. These findings are consistent with national research identifying reduced visibility as a contributing factor in rural roadway crashes and further support implementation of low-cost improvements that enhance nighttime driver guidance.

Improving pavement marking visibility and replacing aging traffic signs with modern high-performance retroreflective sheeting represent cost-effective strategies for reducing nighttime crash risk across the County's rural transportation network.

3.5 Contributing Factors

Review of the updated collision records indicates that driver behavior continues to play a significant role in severe crashes. The most frequently reported contributing factors remain driving under the influence (DUI), improper turning movements, and unsafe speed.

While behavioral factors cannot be eliminated solely through engineering improvements, roadway design can reduce the likelihood that driver errors result in severe outcomes. This principle, commonly referred to as a "forgiving roadway," recognizes that transportation systems should be designed to accommodate occasional driver mistakes while minimizing the resulting consequences.

Enhanced pavement markings and improved signing provide earlier recognition of roadway alignment, improve lane guidance, reinforce regulatory information, and increase driver awareness of approaching curves or roadway features. These improvements are particularly beneficial in rural environments where drivers may encounter unexpected changes in alignment or roadside conditions.

Engineering countermeasures should therefore be viewed as complementary to education and enforcement efforts, collectively contributing to reductions in severe collisions.

3.6 Geographic Distribution of Severe Crashes

Although several roadway corridors exhibit elevated EPDO scores, fatal and serious injury collisions occur throughout the County roadway network rather than being confined to a small number of isolated locations.

The updated analysis indicates that many of the highest-ranked roadway segments share common characteristics regardless of geographic location. These characteristics include:

- Rural two-lane roadway configuration;
- Higher operating speeds;
- Horizontal curves;
- Narrow shoulders;
- Limited roadway lighting;
- Fixed roadside hazards; and
- Aging pavement markings or traffic signs.

This geographic distribution demonstrates that severe crashes are associated with recurring roadway characteristics rather than isolated infrastructure deficiencies. As a result, implementing improvements at only a handful of locations would address only a small portion of the County's overall safety risk.

A systemic approach targeting these common roadway characteristics offers the opportunity to improve safety across numerous corridors simultaneously while making efficient use of limited transportation funding.

3.7 Comparison with the Adopted 2024 LRSP

Comparison of the updated collision analysis with the findings of the adopted 2024 Local Road Safety Plan indicates that the County's primary safety emphasis areas have remained consistent despite incorporation of newer collision data.

Roadway departure crashes continue to account for a disproportionate share of fatal and serious injury collisions. Fixed-object impacts remain the most common severe collision type, while nighttime driving conditions continue to be overrepresented among severe crashes. Similarly, driver impairment, excessive speed, and improper turning remain the predominant behavioral contributing factors.

Although the relative ranking of individual roadway segments has changed due to updated collision history, the underlying collision mechanisms remain largely unchanged. This consistency provides confidence that the recommendations contained within the adopted LRSP remain appropriate and that continued implementation of systemic roadway safety improvements represents the most effective strategy for reducing severe crashes.

Rather than fundamentally changing the County's safety priorities, the updated analysis refines project prioritization using the most current available data and provides additional technical justification for implementing countywide systemic improvements.

3.8 Engineering Interpretation

The updated collision analysis demonstrates that Solano County's fatal and serious injury crashes are not isolated events but are manifestations of recurring roadway conditions found throughout the rural transportation network. Although individual collisions involve different drivers, vehicles, and environmental conditions, many occur under similar roadway circumstances that can be addressed through engineering improvements.

The recurring presence of roadway departures, fixed-object impacts, and nighttime crashes suggests that improving roadway visibility, delineation, and driver guidance represents one of the greatest opportunities for reducing severe collisions on County-maintained roadways. These findings support the implementation of low-cost systemic countermeasures that enhance roadway recognition and assist drivers in maintaining lane position before roadway departures occur.

Accordingly, the updated collision analysis provides the technical basis for evaluating systemic countermeasures presented in the following chapters. By addressing common roadway characteristics rather than isolated crash locations, the County can proactively reduce future fatal and serious injury collisions while maximizing the effectiveness of available transportation safety funding.

4. HIGH-INJURY ROADWAY SEGMENT EVALUATION

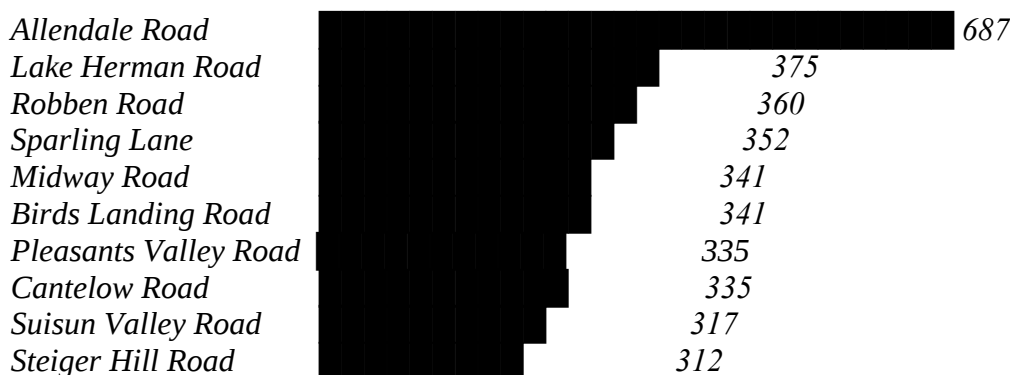
4.1 Overview

Following completion of the collision analysis, roadway segments were evaluated to identify locations exhibiting the greatest concentration of fatal and serious injury (F+SI) collisions. The objective of this evaluation was to prioritize roadway corridors for potential safety improvements using a consistent, data-driven methodology while identifying common roadway characteristics that contribute to severe crashes.

Unlike traditional site-specific safety studies that focus on a single intersection or isolated roadway location, this evaluation considers the County's roadway network as an integrated system. The intent is to identify recurring safety risks across multiple corridors and develop improvement strategies that can be applied systemically to reduce fatal and serious injury collisions throughout the unincorporated county.

Roadway segments were prioritized using the Equivalent Property Damage Only (EPDO) methodology described in Chapter 2. Each roadway segment received a cumulative EPDO score based on the severity and frequency of reported collisions occurring during the 2019–2023 study period. Segments with higher EPDO scores indicate locations where severe collisions have occurred more frequently and where engineering improvements may provide the greatest potential safety benefit.

Top 10 EPDO Scores



4.2 High-Injury Roadway Network

The updated analysis identified a network of roadway segments exhibiting elevated fatal and serious injury collision risk. Although the ranking of individual corridors changed slightly from the adopted 2024 Local Road Safety Plan due to the incorporation of newer collision data, the overall distribution of high-risk corridors remained consistent.

The highest-ranked roadway segments are generally located on rural collector and minor arterial roadways that serve regional travel, agricultural operations, recreational destinations, and intercommunity traffic. These corridors typically experience moderate traffic volumes combined with relatively high operating speeds and limited roadway features that assist driver recognition during nighttime or reduced-visibility conditions.

Unlike urban roadway systems where severe crashes often concentrate at signalized intersections, the County's severe collisions occur over long roadway corridors. This pattern reflects the rural nature of the transportation network and supports implementation of corridor-wide improvements rather than isolated spot treatments.

The updated analysis demonstrates that no single roadway segment accounts for a disproportionate share of severe crashes. Instead, severe collisions are distributed across numerous corridors exhibiting similar roadway characteristics. This finding further supports the implementation of systemic improvements designed to reduce risk throughout the roadway network rather than addressing only individual high-crash location.

All EPDO Scores

Road Name	From	To	Length Miles	EPDO Score
Allendale Road	Timm Road	Meridian Rd North	2.856	687
Lake Herman Road	0.38 Miles East of Columbus Parkway	0.65 Miles West of Reservoir Road	2.765	375
Robben Road	Brown Road	Tremont Road	13.044	360
Sparling Lane	0.17 MI East of Pedrick Road	0.65 MI East of Kidwell Road	2.221	354
Peabody Road	0.32 MI North of Chuck Hammond Dr	0.10 MI South of Prison	0.461	341
Shiloh Road	1.25 MI North of Collinsville Road	SR-12	4.968	336
Hawkins Road	0.505 MI East of Leisure Town Road	SR-113	5.505	223
Timm Road	Cantelow Road	Allendale Road	2.701	214
Grizzly Island Road	1.48 MI South of SR-12	0.09 MI North of Beldens Boat Launch	3.902	209
Winters Road	Allendale Road	Putah Creek Road	4.67	200
Silveyville Road	Meridian Road	Pitt School Road	4.254	199
Clayton Road	Gordon Valley Road	County line	2.348	183
Foothill Drive	Pleasants Valley Road	0.28 MI East of Pleasants Valley Road	0.285	182
Fox Road	Hawkins Road	Weber Road	3.005	176
Gordon Valley Road	Clayton Road	County line	2.043	172

Emigh Road	Azevedo Road	Montezuma Hills Road	2.027	167
Batavia Road	Weber Road	1.50 MI North of Midway Road	2.502	165
Lewis Road	Hay Road	Midway Road	7.087	50
Bulkley Road	Trefoil Road	Tremont Road	6.967	45
Hartley Road	Midway Road	Allendale Road	2.538	40
Hay Road	Meridian Road	SR-113	4.985	37
Weber Road	600 FT East of Byrnes Road	Pitt School Road	3.383	26

4.3 Common Roadway Characteristics

Although the County's highest-ranked roadway segments are geographically dispersed, field observations and collision analysis indicate that many share similar operational and geometric characteristics.

Common characteristics observed among high-ranking roadway segments include:

- Rural two-lane roadway configuration;
- Posted speed limits generally ranging from 45 to 55 miles per hour;
- Narrow or limited paved shoulders;
- Minimal roadway lighting;
- Horizontal curves and rolling terrain;
- Drainage ditches adjacent to the roadway;
- Trees, utility poles, culverts, and other fixed roadside objects located near the travel lanes;
- Aging pavement markings and roadway delineation; and
- Retroreflective traffic signs approaching the end of their service life.

Individually, none of these characteristics necessarily creates an unsafe roadway. However, when combined with nighttime driving, adverse weather, driver distraction, or excessive speed, they substantially increase the likelihood that a minor driver error may result in a roadway departure or fixed-object collision with severe consequences.

The consistency of these roadway characteristics across multiple corridors suggests that the County's severe collisions are influenced by systemic roadway conditions rather than isolated design deficiencies.

4.4 Collision Patterns Along High-Risk Corridors

Review of collision reports indicates that many severe crashes occurring on the identified roadway segments follow similar collision sequences.

A typical severe collision begins when a vehicle departs the travel lane due to excessive speed, driver inattention, impaired driving, or misjudgment of roadway alignment. Once outside the travel lane, the limited recovery area available on many rural roadways provides little opportunity for the driver to regain control before encountering a roadside hazard.

Common collision outcomes include:

- Impact with trees or utility poles;
- Collision with drainage structures or culvert headwalls;
- Vehicle overturning after leaving the roadway;
- Embankment impacts; and
- Secondary collisions following roadway departure.

These collision mechanisms are consistent with statewide and national trends observed on rural roadways, where roadway departures account for a disproportionate share of traffic fatalities despite representing a smaller percentage of total crashes.

The recurrence of these collision patterns across multiple roadway segments indicates that improving lane guidance, pavement delineation, and roadside driver information has the potential to reduce crash occurrence before roadway departures take place.

4.5 Corridor Risk Factors

Several recurring roadway characteristics contribute to elevated crash risk throughout the County roadway network.

Higher Operating Speeds

Many County roadways serve regional travel between communities and agricultural areas. These facilities often have posted speed limits of 45 to 55 mph, resulting in greater stopping distances and increased collision severity when crashes occur.

Limited Nighttime Visibility

Most rural County roadways do not include continuous street lighting. Drivers rely almost exclusively on pavement markings, edge lines, centerlines, and retroreflective traffic signs to identify roadway alignment and upcoming roadway features during nighttime travel.

Roadside Hazards

Numerous roadway corridors contain fixed objects located relatively close to the edge of pavement, including trees, utility poles, drainage structures, fencing, and sign supports. Once a vehicle departs the roadway, these objects significantly increase crash severity.

Roadway Geometry

Horizontal curves, crest vertical curves, and rolling terrain reduce available sight distance and increase driver workload, particularly for unfamiliar motorists. Enhanced roadway delineation is especially beneficial along these roadway sections.

Driver Expectancy

Consistency in roadway markings and signing allows drivers to better anticipate roadway conditions. Where pavement markings have deteriorated or sign visibility has diminished, drivers may have less time to recognize curves, intersections, or changes in roadway alignment.

Collectively, these characteristics explain why many high-ranking roadway segments experience similar collision patterns despite being located in different areas of the County.

4.6 Network-Level Assessment

One of the most important findings of the updated roadway segment evaluation is that severe collisions are **network-wide rather than site-specific**.

Historically, transportation agencies often prioritized projects solely at locations with the highest crash frequencies. While this reactive approach remains appropriate for certain locations, it may overlook roadway segments that possess similar risk characteristics but have not yet experienced multiple severe collisions.

The County's updated analysis demonstrates that numerous roadway corridors share common risk factors associated with roadway departure crashes, nighttime driving, and fixed-object impacts. Implementing improvements only at the highest-ranked roadway segments would leave many similar corridors untreated despite exhibiting comparable safety risks.

Accordingly, the County determined that a systemic approach provides the greatest opportunity to reduce severe crashes across the broader transportation network. By addressing recurring roadway characteristics instead of isolated crash locations, the County can improve safety proactively while maximizing the benefits of available transportation funding.

4.7 Implications for Project Development

The roadway segment evaluation directly informed development of the recommended systemic safety project presented in the following chapter.

Rather than identifying a single corridor for reconstruction, the evaluation demonstrates that multiple roadway segments would benefit from improvements that enhance roadway visibility and driver guidance. Because many of the identified corridors exhibit similar operational characteristics, standardized low-cost countermeasures can be implemented consistently across the network.

This approach provides several advantages:

- Addresses risk factors present on multiple roadway corridors.
- Improves consistency in roadway appearance and driver expectancy.
- Maximizes the geographic extent of safety improvements.
- Provides greater overall safety benefit per dollar invested.
- Aligns with FHWA's Systemic Safety Approach and Caltrans' Highway Safety Improvement Program objectives.
- Facilitates phased implementation as funding becomes available.

The findings of this chapter establish the engineering basis for evaluating and selecting the systemic countermeasures described in Chapter 5.

5. SYSTEMIC COUNTERMEASURE EVALUATION

5.1 Overview

The updated collision analysis identified recurring crash patterns and roadway characteristics that are present throughout the County's rural transportation network. Rather than being concentrated at a small number of isolated locations, fatal and serious injury collisions occur across numerous roadway segments sharing similar operational, geometric, and environmental characteristics. These findings indicate that a systemic approach to roadway safety is the most appropriate strategy for reducing future crashes.

This chapter evaluates potential engineering countermeasures capable of addressing the predominant collision patterns identified in the updated analysis and documents the rationale for the County's recommended systemic safety improvements. Countermeasure selection was guided by FHWA's *Systemic Safety Project Selection Tool*, Caltrans Highway Safety Improvement Program (HSIP) guidance, and the Low-Cost Roadway Safety Manual (LRSM), with consideration given to safety effectiveness, applicability to County roadways, implementation feasibility, long-term maintenance requirements, and cost-effectiveness.

The objective was to identify improvements that can be implemented consistently across multiple roadway corridors to reduce roadway departure crashes, improve nighttime visibility, and enhance driver expectancy while maximizing the benefit of available transportation funding.

5.2 Systemic Safety Approach

Historically, transportation agencies have relied on a reactive approach to roadway safety, implementing improvements only after a location has experienced a history of severe collisions. While this approach remains appropriate for certain high-crash locations, it may overlook roadway segments that possess similar risk characteristics but have not yet accumulated sufficient collision history to warrant project development.

The Federal Highway Administration encourages agencies to adopt a **Systemic Safety Approach**, which identifies roadway characteristics associated with severe crashes and proactively applies proven safety countermeasures to locations exhibiting those characteristics. Rather than waiting for additional collisions to occur, systemic improvements seek to reduce crash risk before future severe crashes develop.

The updated roadway segment analysis demonstrates that many of Solano County's rural roadways share common characteristics associated with roadway departure crashes, including limited shoulder width, horizontal curvature, minimal roadway lighting, roadside fixed objects, and aging pavement

markings or traffic signs. Because these characteristics occur throughout the roadway network, implementation of standardized safety improvements provides the opportunity to reduce crash risk at multiple locations simultaneously.

A systemic approach also allows the County to improve safety on roadway segments with moderate collision histories that may not otherwise qualify for individual spot improvement projects but nevertheless possess elevated risk factors. This strategy expands the geographic reach of safety investments and provides greater overall benefit than implementing isolated improvements at only the highest-ranked locations.

5.3 Countermeasure Identification

Following completion of the roadway segment evaluation, the County considered a range of engineering countermeasures commonly used to reduce roadway departure and nighttime collisions on rural two-lane highways.

Potential improvements included:

- Enhanced pavement markings;
- Upgraded retroreflective traffic signs;
- Curve warning signs and advisory speed plaques;
- Chevron alignment signs;
- Upgrade Existing Centerline and Edgeline;
- Shoulder rumble strips;
- High-friction surface treatments;
- Shoulder widening;
- Guardrail installation;
- Clear zone improvements;
- Roadside hazard removal; and
- Delineator installation.

Each countermeasure offers potential safety benefits under specific roadway conditions. However, implementation feasibility varies considerably depending on roadway geometry, environmental constraints, available right-of-way, utility conflicts, maintenance requirements, project cost, and funding availability.

Because the objective of this amendment is to develop a countywide systemic safety project, emphasis was placed on countermeasures that can be implemented consistently across multiple roadway corridors while providing measurable reductions in roadway departure and nighttime crashes.

5.4 Evaluation Criteria

Each candidate countermeasure was evaluated using the following criteria:

Safety Effectiveness

The anticipated ability of the countermeasure to reduce fatal and serious injury collisions, particularly roadway departure, fixed-object, and nighttime crashes.

Applicability

Whether the countermeasure can be implemented on a broad range of County-maintained roadways regardless of roadway geometry or surrounding land use.

Implementation Feasibility

Consideration of environmental constraints, permitting requirements, utility conflicts, construction complexity, and anticipated project delivery schedule.

Cost Effectiveness

Relative construction cost compared to anticipated safety benefits and the ability to maximize the number of treated roadway miles.

Maintenance Considerations

Long-term maintenance requirements, expected service life, and compatibility with existing County maintenance operations.

Consistency

Ability to provide a uniform appearance and operating environment throughout the County roadway system, improving driver expectancy.

Collectively, these evaluation criteria support development of projects that provide meaningful long-term safety benefits while making efficient use of limited transportation funding.

5.5 Selection of Recommended Countermeasures

Based on the updated collision analysis and engineering evaluation, the County identified two Low-Cost Roadway Safety Manual (LRSM) countermeasures as the most appropriate treatments for implementation through a countywide systemic safety project:

- **R28 – Upgrade Existing Center and Edgelines (Primary)**
- **R22 – Upgrade Sign Retroreflectivity**

These countermeasures directly address the predominant collision patterns identified throughout the roadway segment analysis while satisfying the evaluation criteria described above.

Unlike roadway reconstruction projects requiring significant right-of-way acquisition or environmental permitting, both countermeasures can be implemented rapidly across numerous roadway corridors with minimal disruption to the traveling public. Their relatively low implementation cost allows the County to improve safety over a substantially larger portion of the roadway network than would be possible through more capital-intensive improvements.

Furthermore, both countermeasures are recognized by FHWA and Caltrans as proven safety treatments with demonstrated effectiveness in reducing roadway departure and nighttime crashes on rural roadways.

Countermeasure	Safety Effectiveness	Cost	Network Applicability	HSIP Eligibility	Selected
Upgrade Existing Center and Edgelines (R28)	High	Low	Excellent	Yes	✓
Upgrade Sign Retroreflectivity (R22)	High	Low	Excellent	Yes	✓
Shoulder Widening (R15)	High	Very High	Limited	Yes	No
High-Friction Surface Treatment (R21)	High	High	Limited	Yes	No
Guardrail Installation (R04)	Moderate	High	Site Specific	Yes	No
Shoulder Rumble Strips (R31)	Moderate	Moderate	Limited	Yes	No
Centerline Rumble Strips (R30)	Moderate	Moderate	Limited	Yes	No
Delineators	Moderate	Low	Moderate	Yes	Consider Future

5.6 R28 – Upgrade Existing Center and Edgelines

The updated collision analysis identified roadway departure crashes as the County's predominant fatal and serious injury collision type. Many of these crashes occur during nighttime conditions or along roadway segments with horizontal curvature where pavement markings provide the primary source of driver guidance.

Upgrading to high-visibility pavement markings improve lane definition, increase edge recognition, and assist drivers in maintaining their position within the travel lane. Enhanced centerlines and edge lines also improve the driver's ability to detect changes in roadway alignment, particularly under low-light conditions or during inclement weather.

Improved pavement markings contribute to roadway safety by:

- Increasing lane visibility.
- Improving roadway delineation.
- Enhancing driver expectancy.
- Providing earlier recognition of curves.
- Reducing unintentional lane departures.
- Improving performance during nighttime and wet-weather conditions.

Because pavement markings are present on virtually every County-maintained roadway, upgrading their visibility provides safety benefits across the entire transportation network while maintaining consistency between corridors.

5.7 R22 – Upgrade Sign Retroreflectivity

Traffic signs communicate regulatory, warning, and guidance information essential for safe roadway operation. As retroreflective materials age, nighttime sign visibility gradually decreases, reducing the distance at which drivers can recognize roadway conditions and respond appropriately.

The updated collision analysis demonstrated that nighttime crashes remain overrepresented among fatal and serious injury collisions. Many severe crashes occur on rural roadways lacking continuous street lighting, making retroreflective traffic signs a critical component of nighttime driver guidance.

Upgrading sign retroreflectivity improves the visibility of:

- Curve warning signs;
- Advisory speed plaques;
- Stop signs;
- Intersection warning signs;
- Chevron alignment signs;
- Object markers; and
- Other regulatory and warning devices.

Improved sign visibility increases driver reaction time, reinforces roadway alignment, and provides earlier recognition of upcoming roadway features, thereby reducing the likelihood of roadway departures and other severe crashes.

5.8 Expected Safety Benefits

The recommended countermeasures complement one another by improving both continuous roadway guidance and point-specific driver information.

Enhanced pavement markings assist drivers in maintaining lane position throughout the roadway corridor, while upgraded retroreflective signs provide advance warning of changes in roadway alignment, intersections, regulatory controls, and roadside hazards.

Together, these improvements are expected to:

- Reduce roadway departure crashes.
- Improve nighttime driver performance.
- Increase driver expectancy.
- Improve roadway recognition.
- Reduce collisions with fixed roadside objects.
- Improve consistency throughout the County roadway network.
- Increase the overall safety of rural roadway corridors.

Because these treatments can be implemented systematically across numerous roadway segments, their cumulative safety benefits are expected to exceed those achieved through isolated improvements at individual crash locations.

5.9 Consistency with National and State Guidance

The County's recommended countermeasures are consistent with the principles established in the Federal Highway Administration's *Systemic Safety Approach*, the Highway Safety Manual, and the California Highway Safety Improvement Program. These guidance documents encourage agencies to implement proven, low-cost countermeasures at locations exhibiting common roadway risk factors before severe crashes accumulate.

The updated collision analysis confirms that roadway departure crashes, nighttime driving conditions, and fixed-object impacts continue to represent the predominant fatal and serious injury collision types on County-maintained roadways. The recommended improvements directly address these collision mechanisms through enhanced roadway visibility and improved driver guidance.

Selection of R22 and R28 therefore represents a data-driven engineering decision supported by current collision trends, recognized safety practices, and statewide funding priorities.

5.10 Summary

Evaluation of potential roadway safety countermeasures indicates that upgraded striping and pavement markings (R28) as a primary improvement along with upgraded sign retroreflectivity (R22) provide the greatest opportunity to reduce fatal and serious injury collisions across Solano County's rural roadway network. These treatments directly address the recurring collision patterns identified throughout the updated analysis while offering broad applicability, cost-effective implementation, and consistency with federal and state roadway safety guidance.

The recommended improvements provide the technical basis for the countywide systemic safety project described in the following chapter.

6. RECOMMENDED SYSTEMIC SAFETY PROJECT AND CONCLUSIONS

6.1 Recommended Systemic Safety Project

The updated roadway segment evaluation demonstrates that fatal and serious injury collisions within unincorporated Solano County are primarily associated with recurring roadway characteristics rather than isolated infrastructure deficiencies. Roadway departure crashes, nighttime collisions, and collisions involving fixed roadside objects continue to represent the predominant severe crash types throughout the County's rural transportation network. These collision patterns occur across multiple roadway corridors that share similar geometric, operational, and environmental characteristics, supporting implementation of a countywide systemic safety improvement project.

Based on the updated collision analysis and engineering evaluation presented in this amendment, Solano County recommends implementation of a systemic roadway safety project utilizing the following Low-Cost Roadway Safety Manual (LRSM) countermeasures:

- **R28 – Upgrade Existing Center and Edgelines**
- **R22 – Upgrade Sign Retroreflectivity**

These countermeasures directly address the predominant collision mechanisms identified throughout the roadway segment analysis. Enhanced pavement markings improve continuous lane guidance by increasing the visibility of centerlines and edgelines, particularly during nighttime and adverse weather conditions. Upgraded retroreflective traffic signs improve driver recognition of roadway alignment, regulatory requirements, and upcoming roadway features, allowing drivers additional time to perceive and respond to changing roadway conditions.

Unlike location-specific projects that address only individual crash sites, these improvements can be implemented consistently across numerous roadway corridors exhibiting similar risk characteristics. This systemic approach increases the overall geographic extent of safety improvements while maximizing the effectiveness of available transportation funding.

6.2 Project Implementation Strategy

The County intends to implement the recommended systemic improvements using a phased approach based on available funding and project delivery schedules. Initial implementation will focus on roadway segments identified through the updated EPDO analysis as exhibiting the greatest concentration of fatal and serious injury collisions. Additional roadway segments may be incorporated into future project phases as funding opportunities become available and as ongoing collision monitoring identifies additional candidate corridors.

Prior to construction, County engineering staff will perform field reviews to verify existing roadway conditions, evaluate pavement marking condition, assess sign retroreflectivity, and identify any additional maintenance needs that may be incorporated into the project. Field verification will ensure that proposed improvements are appropriately tailored to existing roadway conditions while maintaining consistency with the recommendations contained in this amendment.

Because the recommended improvements are low-cost, require minimal right-of-way acquisition, and generally do not involve substantial modifications to roadway geometry, implementation can occur with limited impacts to the traveling public. The improvements may also be coordinated with scheduled pavement maintenance and roadway preservation projects to reduce construction costs, minimize traffic disruptions, and extend the service life of the installed improvements.

6.3 Anticipated Safety Benefits

Implementation of upgraded centerlines and edgelines together with enhanced retroreflective signing is expected to improve driver guidance throughout the County's rural roadway network and reduce the likelihood of roadway departure crashes. These improvements increase roadway conspicuity, improve lane recognition, and provide motorists with clearer visual cues regarding roadway alignment, intersections, and regulatory controls.

The recommended project is anticipated to provide several long-term benefits, including:

- Improved visibility of roadway centerlines and pavement edges during nighttime and reduced-visibility conditions;
- Enhanced visibility of regulatory, warning, and guide signs through upgraded retroreflective sheeting;
- Increased driver expectancy and improved recognition of roadway alignment;
- Reduction in roadway departure and fixed-object collisions;
- Improved consistency of traffic control devices throughout the County roadway network;
- Cost-effective deployment of proven safety countermeasures across multiple roadway corridors; and
- Support for the County's long-term goal of reducing fatal and serious injury collisions.

Because these improvements address roadway characteristics common to many rural corridors, their cumulative safety benefits are expected to extend beyond the highest-ranked roadway segments and improve safety throughout the broader transportation network.

6.4 Consistency with the Local Road Safety Plan

This amendment is intended to supplement the adopted 2024 Solano County Local Road Safety Plan by incorporating updated collision data and refining roadway segment priorities. The amendment does not modify the vision, goals, or emphasis areas established in the adopted LRSP. Instead, it confirms that the primary safety concerns identified in the original plan remain valid and provides additional technical support for implementation of systemic safety improvements.

The updated analysis reinforces the County's commitment to a proactive, data-driven approach to roadway safety. By incorporating the most recent available collision information, the County can ensure that future investments continue to address the roadway characteristics most closely associated with severe crashes while remaining consistent with current federal and state transportation safety guidance.

This amendment also strengthens the technical basis for future grant applications by documenting the methodology used to identify high-risk roadway segments, evaluate engineering countermeasures, and prioritize implementation of cost-effective systemic improvements.

6.5 Monitoring and Future Updates

Roadway safety is an ongoing process requiring continuous evaluation as traffic patterns, roadway conditions, and land uses evolve. Following implementation of the recommended systemic improvements, Solano County will continue to monitor collision trends using the California Statewide Integrated Traffic Records System (SWITRS), the Transportation Injury Mapping System (TIMS), and other available roadway safety data sources.

The County will periodically evaluate the effectiveness of implemented improvements by reviewing changes in fatal and serious injury collision frequency, roadway departure crash trends, and overall network performance. Lessons learned from completed projects will be incorporated into future roadway safety initiatives and used to refine project selection for subsequent Highway Safety Improvement Program (HSIP) funding cycles.

The County also recognizes that roadway safety is most effective when engineering improvements are coordinated with education, enforcement, emergency response, and routine roadway maintenance. Continued collaboration with Caltrans, the California Highway Patrol, local law enforcement agencies, emergency responders, neighboring jurisdictions, and regional transportation partners will remain an important component of the County's long-term safety strategy.

As additional collision data become available, Solano County will continue updating its Local Road Safety Plan to ensure that future transportation investments remain data-driven,

performance-based, and focused on achieving measurable reductions in fatal and serious injury collisions.

6.6 Conclusion

This amendment reaffirms Solano County's commitment to improving transportation safety through proactive planning, sound engineering practices, and strategic investment in proven safety countermeasures. Analysis of the 2019–2023 collision data confirms that roadway departure crashes, nighttime collisions, and fixed-object impacts continue to represent the most significant fatal and serious injury crash patterns on County-maintained roadways.

The updated roadway segment evaluation demonstrates that these collisions are associated with recurring roadway characteristics present throughout the rural transportation network, supporting implementation of a systemic safety approach rather than isolated site-specific improvements. Based on this evaluation, the County has identified **R28 – Upgrade Existing Center and Edgelines** and **R22 – Upgrade Sign Retroreflectivity** as the most effective and practical countermeasures for improving roadway guidance, enhancing nighttime visibility, and reducing the risk of severe crashes across multiple roadway corridors.

By implementing these improvements, Solano County will advance the goals established in the adopted Local Road Safety Plan, improve the safety and reliability of its transportation network, and strengthen its ability to compete for future Highway Safety Improvement Program funding. This amendment provides the technical foundation for those efforts and demonstrates the County's continued commitment to reducing fatalities and serious injuries through data-driven, cost-effective, and systemwide roadway safety improvements.