

Prepared for:



El Dorado County Local Road Safety Plan (LRSP)

Prepared by:

Kimley»»Horn

Expect More. Experience Better.



DRAFT REPORT

FOR

EL DORADO COUNTY LOCAL ROAD SAFETY PLAN (LRSP)

Prepared for:



County of El Dorado
Department of Transportation
2441 Headington Road
Placerville, CA 95667

Prepared by:



555 Capitol Mall, Suite 300
Sacramento, California 95814
(916) 858-5800

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

© August 2022



ACKNOWLEDGEMENTS

The County of El Dorado’s employees and partners were instrumental in the development, review, and refinement of this Local Road Safety Plan. El Dorado County’s Community Development Department and Kimley-Horn would like to express their appreciation to the supporting staff and partners for their participation and contributions.

El Dorado County

- Dave Spiegelberg (Department of Transportation)
- Darryl Brown (Department of Transportation)
- Zach Oates (Department of Transportation)
- Jennifer Rimoldi (Department of Transportation)
- Dan Kikkert (Department of Transportation)
- David Markowski (Department of Transportation)
- Donaldo Palaroan (Department of Transportation)
- Matthew Mauk (El Dorado County Transit Authority)
- Jerry Barton (El Dorado Transportation Commission)
- Ken Pimlott (Office of Wildfire Preparedness and Resilience)

Consultant Team

- Robert Paderna (Project Manager)
- Amy Butler
- Darryl DePencier
- Molly O’Brien
- Zachary Ramalingam
- Matthew Weir

California Highway Patrol

Andrew Brown

El Dorado County Office of Education

Phil Jones

STATUTORY NOTICE

23 U.S.C. § 409: US Code - Section 409: Discovery and admission as evidence of certain reports and surveys

Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway- highway crossings, pursuant to sections 130, 144, and 148 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.



El Dorado County Local Road Safety Plan (LRSP)

TABLE OF CONTENTS

1. INTRODUCTION	1
1.1. Document Organization	2
2. VISION, GOAL, AND OBJECTIVES	4
3. PROCESS	6
3.1. Guiding Manuals.....	7
<i>3.1.1. Local Roadway Safety: A Manual for California’s Local Road Owners.....</i>	<i>7</i>
<i>3.1.2. Highway Safety Manual.....</i>	<i>8</i>
3.2. Analysis Techniques.....	8
<i>3.2.1. Crash and Network Screening Analysis.....</i>	<i>8</i>
<i>3.2.2. Critical Crash Rate (CCR) Analysis.....</i>	<i>9</i>
<i>3.2.3. Probability of Specific Crash Types Exceeding Threshold Proportion.....</i>	<i>10</i>
<i>3.2.4. Equivalent Property Damage Only (EPDO)</i>	<i>10</i>
.....	15
4. STAKEHOLDER ENGAGEMENT.....	16
4.1. Stakeholder Meeting.....	16
5. REVIEW OF COUNTY PLANNING DOCUMENTS	18
6. DATA SOURCES	20
6.1. Roadway Network.....	20
6.2. Intersections	20
6.3. Crashes	20
7. SAFETY TRENDS	22
7.1. K+SI Crashes Compared to Statewide K+SI Crashes.....	22
7.2. Severity Level	23
7.3. Highest Occurring Crash Types.....	28
7.4. Lane Departure.....	29
7.5. Impaired Driving Crashes	29
7.6. Bicycle and Pedestrian Crashes.....	31
<i>7.6.1. Bicycle Crashes</i>	<i>31</i>
<i>7.6.2. Pedestrian Crashes</i>	<i>31</i>
7.7. Motorcycle Crashes.....	33
8. PRIORITY LOCATIONS	35
9. RECOMMENDATIONS.....	38
9.1. Engineering Countermeasures	38
<i>9.1.1. Crash Modification Factors (CMFs)</i>	<i>38</i>
<i>9.1.2. Engineering Countermeasures Toolbox.....</i>	<i>39</i>
9.2. Non-Infrastructure Countermeasures	43
10. EVALUATION AND IMPLEMENTATION.....	45
10.1. Evaluation.....	45
10.2. Implementation	45
<i>10.2.1. Near- and Mid-Term Focus Areas.....</i>	<i>45</i>
10.3. Updates to the LRSP	45



<i>10.3.1. HSIP Analyzer</i>	46
<i>10.3.2. HSIP Eligibility</i>	47
10.4. Funding.....	47
<i>10.4.1. Highway Safety Improvement Program (HSIP)</i>	47
<i>10.4.2. Caltrans Active Transportation Program (ATP)</i>	48
<i>10.4.3. State Transportation Improvement Program (STIP)</i>	48
<i>10.4.4. California Senate Bill 1 (SB 1)</i>	48
<i>10.4.5. California Office of Traffic Safety (OTS) Grants</i>	49
<i>10.4.6. SACOG Regional Funding Programs</i>	49
11. NEXT STEPS	51

LIST OF APPENDICES

Appendix A	Literature Review
Appendix B	Intersection Network Screening Results
Appendix C	Segment Network Screening Results



LIST OF FIGURES

Figure 1 – Countywide Roadway Segment EPDO Map	13
Figure 2 – Countywide Intersection EPDO Map	14
Figure 3 – Crashes by Severity (Fatal and Severe).....	24
Figure 4 – Crashes by Severity (Other Injury, Complaint of Pain, and PDO)	25
Figure 5 – Severe Injury Crash Map	26
Figure 6 – Fatal Crash Map	27
Figure 7 – Crashes by Type (Hit Object, Rear End, and Broadsides)	28
Figure 8 – Crashes by Type (Sideswipe, Head On, and Overturned)	28
Figure 9 –Impaired Driving Crashes	29
Figure 10 – Impaired Driving Crash Map	30
Figure 11 – Bicycle and Pedestrian Crashes	31
Figure 12 – Non-Motorized Crashes	32
Figure 13 – Motorcycle Crashes	34
.....	37
Figure 14 – CMF Calculation	38
Figure 15 – CMF Method Sample Calculation	38
Figure 16 – CRF Calculation.....	39

LIST OF TABLES

Table 1 – El Dorado County K+SI Crashes Compared to Statewide K+SI Crashes.....	23
Table 2 – Crashes by Severity.....	24
Table 3 – El Dorado County Short-List of Priority Locations.....	35
Table 4 – El Dorado Countermeasures Toolbox.....	40
Table 5 – Non-Infrastructure Countermeasures Toolbox.....	43



LIST OF ACRONYMS

A	Severe Injury Crash
AASHTO	American Association of State Highway and Transportation Officials
ARIDE	Advance Roadside Impaired Enforcement
ATP	Active Transportation Program
B	Non-incapacitating Injury Crash
BCR	Benefit/Cost Ratio
C	Possible Injury Crash
Caltrans	California Department of Transportation
CCR	Critical Crash Rate
CMF	Crash Modification Factor
CRF	Crash Reduction Factor
CTC	California Transportation Commission
DEV	Daily Entering Volume
DRE	Drug Recognition Expert
EPDO	Equivalent Property Damage Only
FAST	Fixing America’s Surface Transportation Act
FHWA	Federal Highway Administration
GIS	Geographic Information System
HFST	High Friction Surface Treatment
HSIP	Highway Safety Improvement Program
HSM	Highway Safety Manual
IIP	Interregional Improvement Program
ITIP	Interregional Transportation Improvement Program
K	Fatal Crash
K+SI	Fatal and Severe Injury Crashes
LPI	Leading Pedestrian Interval
LRSM	Local Roadway Safety: A Manual for California’s Local Road Owners (Version 1.6, April 2022)
LRSP	Local Road Safety Plan
NHTSA	National Highway Traffic Safety Administration
O	No Injury Crash (Property Damage Only)
OTS	Office of Traffic Safety



El Dorado County Local Road Safety Plan (LRSP)

PDO	Property Damage Only
RRFB	Rectangular Rapid Flashing Beacon
R/W	Right-of-Way
SACOG	Sacramento Area Council of Governments
SB1	California Senate Bill 1
SHSP	Strategic Highway Safety Plan
STIP	State Transportation Improvement Program
SWITRS	Statewide Integrated Traffic Records System
VMT	Vehicle Miles Traveled



INTRODUCTION

SECTION 1

SECTION 2

SECTION 3

SECTION 4

SECTION 5

SECTION 6

SECTION 7

SECTION 8

SECTION 9

SECTION 10





1. INTRODUCTION

El Dorado County is located in east-central California, between Sacramento County and the California-Nevada state line. El Dorado County has a population of approximately 190,000 and covers 1,786 square miles. The County's transportation network includes 1,080 centerline miles of County-maintained roads and 57 traffic signals located on key arterial and collector roadways.

This Local Roadway Safety Plan (LRSP) identifies emphasis areas to inform and guide further safety evaluation of the County's transportation network. The emphasis areas include type of crash, certain locations, and notable relationships between current efforts and crash history. The LRSP analyzes crash data on an aggregate basis, as well as at specific locations to identify Countywide safety trends, high-crash locations, high-risk locations, and locations with unusual crash patterns or high-crash severities. The analysis of crash history throughout the County's transportation network allows for opportunities to:

- Identify safety factors in the transportation network that may be challenging for various roadway users
- Improve safety at specific high-crash and high-risk locations
- Develop safety measures aligning with the California Strategic Highway Safety Plan (SHSP) **Five Es of safety: Engineering, Enforcement, Education, Emergency Services, and Emerging Technologies**, to encourage safer driver behavior and reduce fatalities and severe injuries

The process and analysis performed in development of the County's LRSP, including establishing the initial vision and goals for the LRSP, performing crash history analysis, identification of emphasis areas and recommended engineering and non-engineering safety countermeasures, are summarized in this LRSP. The information compiled provide a foundation for decision making and prioritization for safety countermeasures and projects that enhance safety for all modes of travel within the County.

The County has taken steps to enhance multi-modal safety throughout the County and through this LRSP is continuing to make safety a priority in its planning processes. The County builds upon the safety practices that have led to prioritizing traffic safety across its road network in this LRSP by identifying areas of emphasis and systemic recommendations that can be implemented to further enhance safety. This LRSP analyzes the most recent range of crash data that was available at the start of the project (January 1, 2017 – December 31, 2021) and roadway improvements to assess historic trends, crash patterns, and areas of increasing concern.

The intent of the LRSP is to:

- Create a greater awareness of road safety and risks
- Reduce the number of fatal and severe-injury crashes
- Develop lasting partnerships through collaboration among professionals in various disciplines
- Support for grant/funding applications
- Assist in prioritizing investments in traffic safety



1.1. Document Organization

The LRSP is organized into the following sections:

Section 1	Provides an introduction to the LRSP.
Section 2	Presents the vision, goal, and objectives for the LRSP.
Section 3	Summarizes the LRSP development process including guidance documents and analysis techniques.
Section 4	Presents the project stakeholders and stakeholder engagement.
Section 5	Summarizes the review of County planning documents.
Section 6	Contains the LRSP data sources.
Section 7	Provides a summary of safety trends.
Section 8	Includes recommended engineering and non-infrastructure countermeasures.
Section 9	Summarizes the evaluation and implementation of the safety countermeasures.
Section 10	Identifies next steps.
Appendices	



VISIONS, GOAL, AND OBJECTIVES



SECTION 1

SECTION 2

SECTION 3

SECTION 4

SECTION 5

SECTION 6

SECTION 7

SECTION 8

SECTION 9

SECTION 10



2. VISION, GOAL, AND OBJECTIVES

This LRSP evaluates the transportation network as well as non-infrastructure programs and policies within the County. Mitigation measures are evaluated using criteria to analyze the safety of road users (drivers and passengers, bicyclists, and pedestrians), the interaction of travel modes, and the potential benefits of safety countermeasures. This effort is intended to use historical data to identify trends and develop a toolbox of countermeasures applicable to conditions in the County that can be used for proactive identification and implementation of opportunities, without relying solely on a reaction and response to crashes as they occur.



The Federal Highway Administration (FHWA) maintains a list of Proven Safety Countermeasures. The list currently contains twenty (20) Proven Safety Countermeasures, one of which is the development of a LRSP. Implementation of LRSPs has improved safety in local jurisdictions across the country by providing a guide for local jurisdictions to systemically address the conditions that are known to contribute to fatal and severe-injury crashes. LRSPs provide a locally developed and customized “roadmap” to directly address the jurisdictions’ most common safety challenges.

Following discussions with County staff and a review of existing plans and policies for the area, the following Vision, Goal, and Objectives were established for this LRSP:

	<p>Vision:</p> <p>Support the California vision of moving towards significantly reducing fatalities and severe injuries for all road users</p>
	<p>Goal:</p> <p>Identify transportation safety initiatives (projects and programs) and partnerships under the 5 Es of traffic safety including Engineering, Enforcement, Education, Emergency Response, and Emerging Technologies, to continue reducing fatalities and severe injuries in El Dorado County.</p>
	<p>Objectives:</p> <ul style="list-style-type: none"> ▪ Identify major contributing factors to crashes and define priority locations for roadway safety improvements including pedestrian, bicycle, and vehicular modes of travel ▪ Identify cost-effective countermeasures and safety investments that can be applied systemically (i.e., edgeline and centerline rumble strips, retroreflective backplates, etc.) ▪ Promote safe, equitable, and multimodal mobility opportunities ▪ Create an LRSP document to capitalize on established safety initiatives and identify other strategies to prioritize safety investments ▪ Document El Dorado County’s procedures for on-going crash data monitoring



PROCESS



SECTION 1

SECTION 2

SECTION 3

SECTION 4

SECTION 5

SECTION 6

SECTION 7

SECTION 8

SECTION 9

SECTION 10



3. PROCESS

Using a network screening process, locations within the County that would most likely benefit from safety enhancements were identified. Using historic crash data, crash risk factors for the entire County were explored. These outcomes would help inform the identification and prioritization of engineering and non-infrastructure safety measures that are most likely to improve roadway safety in El Dorado County. The following sections describe the data analysis process.

Guidance on the LRSP process is provided at both the national (FHWA) and California Department of Transportation (Caltrans) level. Both agencies have developed a general framework of data and recommendations to be included in a LRSP.

The FHWA encourages:

- *The establishment of a working group (Stakeholders) to participate in developing an LRSP*
- *Review crash, traffic, and roadway data to identify areas of concern*
- *Establish goals, priorities, and countermeasures to recommend improvements at spot locations, systemically, and comprehensively*

Caltrans' guidance follows a similar outline with the following steps:

- *Establish leadership*
- *Analyze the safety data*
- *Determine emphasis areas*
- *Identify strategies*
- *Prioritize and incorporate strategies*
- *Evaluate and update the LRSP*

This LRSP documents the results of data and information obtained, including the vision, goal, and objectives for the LRSP; existing safety efforts; collision analysis; emphasis areas; and project sheets for priority locations. Furthermore, the development of the LRSP recommendations considers the “Five Es” of traffic safety defined by the California SHSP: Engineering, Enforcement, Education, Emergency Response, and Emerging Technologies throughout its process.



3.1. Guiding Manuals

The following section describes the analysis process undertaken to evaluate safety within the County at a systemic level. Using a network screening process, locations within the County that will most likely benefit from safety enhancements were identified. Using historic crash data, crash risk factors for the entire network are derived. The outcomes inform the identification and prioritization of engineering and non-infrastructure safety countermeasures that address certain roadway characteristics and related behaviors that contribute to motor vehicle crashes as well as crashes involving active transportation users.

This process uses the latest National and State best practices for statistical roadway analysis described in the following sections.

3.1.1. *Local Roadway Safety: A Manual for California's Local Road Owners*

The *Local Roadway Safety: A Manual for California's Local Road Owners* (Version 1.6, April 2022) (LRSM) purpose is to encourage local agencies to pursue a proactive approach to identifying and analyzing safety issues, while preparing to compete for project funding opportunities. A proactive approach is defined as analyzing the safety of the entire roadway network through either a one-time, network wide analysis, or by routine analyses of the roadway network.

According to the LRSM, “The California Department of Transportation (Caltrans) – Division of Local Assistance is responsible for administering California’s federal safety funding intended for local safety improvements.”

To provide the most benefit and to be competitive for grant funding, the analysis leading to countermeasure selection should focus on both intersections and roadway segments and be considerate of roadway characteristics and traffic volumes. The result should be a list of locations that are most likely to benefit from cost-effective countermeasures, preferably prioritized by benefit/cost ratio (BCR). The LRSM suggests using a mixture of quantitative and qualitative measures to identify and rank locations that considers both crash frequency and crash rates. These findings should then be screened for patterns such as crash types and severity to aid in the determination of issues causing higher numbers of crashes and the potential countermeasures that could be most effective. Qualitative analysis should include field visits and a review of existing roadway characteristics and traffic control devices. The specific roadway context can then be used to assess what conditions may increase safety risk at the site and systematic level.

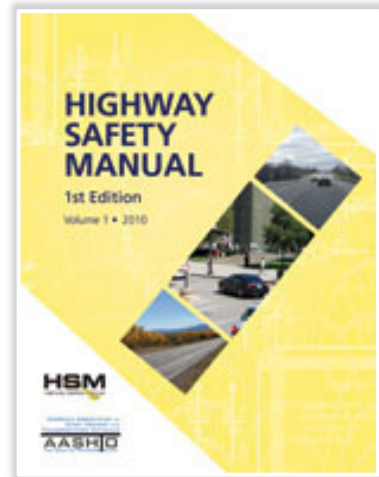
Countermeasure selection should be supported using Crash Modification Factors (CMFs). These factors are the peer reviewed product of before and after research that quantifies the expected rate of crash reduction that can be expected from implementation of a given countermeasure. If more than one countermeasure is under consideration, the LRSM provides guidance on how to apply CMFs appropriately.



3.1.2. Highway Safety Manual

The American Association of State Highway and Transportation Officials (AASHTO) *Highway Safety Manual (HSM)*, published in 2010, presents a variety of methods for quantitatively estimating crash frequency or severity at a variety of locations. This four-part manual is divided into Parts: A) Introduction, Human Factors, and Fundamentals, B) Roadway Safety Management Process, C) Predictive Method, D) Crash Modification Factors.

Chapter 4 of Part B of the HSM discusses the Network Screening process. The Network Screening Process is a tool for an agency to analyze their entire network and identify/rank locations that, based on the implementation of a countermeasure, are most likely to least likely realize a reduction in the frequency of crashes.



The HSM identifies five steps in this process:

1. **Establish Focus:** Identify the purpose or intended outcome of the network screening analysis. This decision will influence data needs, the selection of performance measures and the screening method that can be applied.
2. **Identify Network and Establish Reference Populations:** Specify the types of sites or facilities being screened (i.e., segments, intersections, geometrics) and identify groupings of similar sites or facilities.
3. **Select Performance Measures:** There are a variety of performance measures available to evaluate the potential to reduce crash frequency at a site. In this step, the performance measure is selected as a function of the screening focus and the data and analytical tools available.
4. **Select Screening Method:** There are three principal screening methods described in this chapter (i.e., ranking, sliding window, peak searching). Each method has advantages and disadvantages; the most appropriate method for a given situation should be selected.
5. **Screen and Evaluate Results:** The final step in the process is to conduct the screening and analysis and evaluate the results.

The HSM provides several statistical methods for screening roadway networks to identify high risk locations based on overall crash histories. In addition to identifying the total number of crashes, this LRSP uses a method referred to as Critical Crash Rate (CCR) to analyze the data.

3.2. Analysis Techniques

3.2.1. Crash and Network Screening Analysis

Intersections and roadways were analyzed using four crash metrics:

- Number of Crashes
- CCR (HSM Ch. 4)
- Probability of Specific Crash Types Exceeding Threshold Proportion (HSM Ch. 4)
- Equivalent Property Damage Only (HSM Ch. 4)



El Dorado County Local Road Safety Plan (LRSP)

The initial steps of the crash analysis established sub-populations of roadway segments and intersections that have similar characteristics. For this LRSP, intersections were grouped by their control type (Signalized or Unsignalized) and segments by their roadway category (Arterial, Collector, Minor Collector, and Local). Individual crash rates were calculated for each sub-population. The population level crash rates were then used to assess whether a specific location has more or fewer crashes than expected. These sub-populations were also used to determine typical crash patterns to help identify locations where unusual numbers of specific crash types are occurring.

The network screening process ranks intersections and roadway segments by the number of crashes that occurred at each one over the analysis period, and then identifies areas that had more of a given type of crash than would be expected for that type of location. These crash type factors were:

- **Crash severity** - fatal, severe injury, other visible injury, complaint of pain, and property damage only (PDO)
- **Crash type** - broadside, rear-end, sideswipe, head-on, hit object, overturned, bicycle, pedestrian, and other
- **Environmental factors** – lighting and wet roads
- **Driver behavior** - impaired, aggressive, and distracted driving

From the results of the network screening analyses, a short-list of locations was chosen based on crash activity, CCR, crash severity, crash patterns, location type, and area within the County to provide the greatest variety of locations covering the widest range of safety opportunities for toolbox development. The intent is to populate the safety toolbox with mitigation measures that will be applicable to most of the crash activity in the County.

3.2.2. Critical Crash Rate (CCR) Analysis

Reviewing the number of crashes at a location is a good way to understand the cost to society incurred at the local level, but does not provide a complete indication of the level of risk for those who use that intersection or roadway segment on a daily basis. The HSM describes the CCR method, which provides a statistical review of locations to determine where risk is higher than that experienced by other similar locations. It is also the first step in analyzing for patterns that may suggest systemic issues that can be addressed at that location, and proactively at others to prevent new safety challenges from emerging.

The CCR analysis compares the observed crash rate to the expected crash rate at a particular location based on facility type and traffic volume using a locally calculated average crash rate for the specific type of intersection or roadway segment being analyzed. Based on traffic volumes and a weighted Countywide crash rate for each facility type, a critical crash rate threshold is established at the 95-percent confidence level to determine locations with higher crash rates that are unlikely to be random. The threshold is calculated for each location individually based on its traffic volume and the crash profile of similar facilities. A CCR value of greater than zero reflects a location that has a higher crash rate than facilities with similar volumes, while a negative CCR value signifies a below-average crash rate. It should be noted that the CCR does not reflect the severity of the crashes occurring at the location, but rather the number of crashes for the given volume.

Critical Crash Rate Formula

$$R_{c,i} = R_a + \left[P \times \sqrt{\frac{R_a}{MEV_i}} \right] + \left[\frac{1}{(2 \times (MEV_i))} \right]$$

Where,

- R_{c,i} = Critical crash rate for intersection i
- R_a = Weighted average crash rate for reference population
- P = P-value for corresponding confidence level
- MEV_i = Million entering vehicles for intersection i

Source: Highway Safety Manual

Data Needs

CCR is calculated using:

- *Daily Entering Volume (DEV) for intersections, or Vehicle Miles Traveled (VMT) for roadway segments*
- *Intersection control types to separate them into like populations*
- *Roadway functional classification to separate them into like populations*
- *Crash records in Geographic Information Systems (GIS) or tabular form including coordinates or linear measures*

Strengths

- *Reduces low volume exaggeration*
- *Considers variance*
- *Establishes comparison threshold*

Weaknesses

- *Does not account for regression to the mean bias*

3.2.3. Probability of Specific Crash Types Exceeding Threshold Proportion

When analyzing crash data systematically, it is important to identify areas where certain types of crashes are occurring with greater frequency. The HSM describes a method of identifying locations where probability of a specific crash type exceeds the threshold population. This method prioritizes locations based on the probability that the true proportion (long-term predicted proportion) of a type of crash or injury level will exceed the threshold proportion. The threshold proportion is based on the proportion of a specific crash type/severity to all crashes within the dataset (HSM, Chapter 4). This analysis identifies locations where certain crash types are over-represented to be isolated for further analysis.

3.2.4. Equivalent Property Damage Only (EPDO)

The EPDO method is described in the HSM. This method assigns weighting factors to crashes based on injury level (fatal, non-fatal injury, no injury) to develop a property damage only score.



El Dorado County Local Road Safety Plan (LRSP)

In this analysis, the injury crash costs were calculated for each location (based on the latest Caltrans injury costs). This value is then divided by the injury cost for a property damage only crash. The resulting number is the equivalent number of property damage only crashes at each site. This value allows all locations to be compared based on injury crash costs (HSM, Chapter 4).

EPDO Formula:

$$EPDO = \frac{(N_F + N_S) * 2,843,000 + (N_O * 159,900) + (N_C * 90,900) + (N_{PDO} * 14,900)}{14,900}$$

Where,

EPDO = Equivalent Property Damage Only (in units of crashes)

N_F = Number of fatal crashes

N_S = Number of severe injury crashes

N_O = Number of other visible injury crashes

N_C = Number of complaint of pain crashes

N_{PDO} = Number of PDO crashes

The cost to society for each crash type along non-signalized intersections is as follows:

- *Fatal*: \$2,843,000
- *Severe*: \$2,843,000
- *Other Visible Injury*: \$159,900
- *Complaint of Pain*: \$90,900
- *PDO*: \$14,900

Source: Highway Safety Manual

To give an example from **Appendix B**, the intersection of Old Depot Rd and Missouri Flat Rd experienced 6 crashes from 2017-2021. The crashes are broken down by severity as follows: 1 fatal crash, 0 crashes resulting in severe injuries, 2 crashes resulting in other visible injuries, 1 crash resulting in complaint of pain, and 2 PDO crashes.

$$EPDO = \frac{(1 + 0) * 2,843,000 + (2 * 159,900) + (1 * 90,900) + (2 * 14,900)}{14,900} = 220$$

The 6 crashes of ranging severity that took place at the intersection of Old Depot Rd and Missouri flat Rd comprise the monetary equivalent of 220 PDO crashes. This intersection has a CCR Differential value of -0.02. Together the EPDO and CCR Differential values show that the intersection has historically had a relative crash rate that is slightly lower than average for similar facilities, but that that the crashes that have occurred there have generally resulted in significant injuries.



El Dorado County Local Road Safety Plan (LRSP)

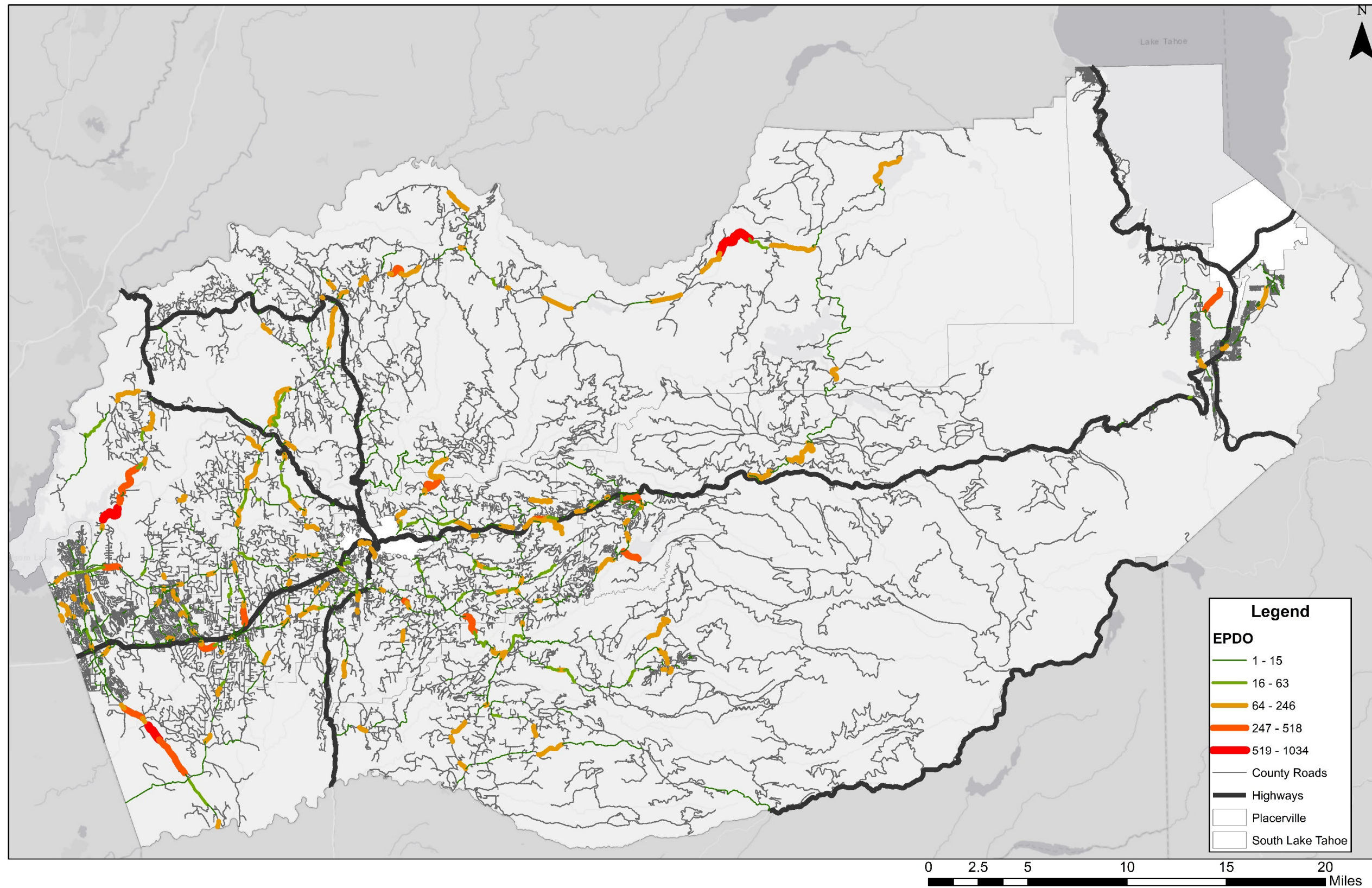
Locations with fatal and severe injury crashes will have a higher EPDO value compared to locations with less severe injury crashes. A number of locations with high EPDO values have been identified for further study and will be discussed in Section 7. **Figure 1** presents the EPDO value of roadway segments in the County, and **Figure 2** presents the EPDO values of intersections. Listed below are the roadway segment and intersection with the highest EPDO:

- The roadway segment with the highest EPDO value was Salmon Falls Road between Falcons Crest Lane and Hidden Bridge Road, with an EPDO value of 1,032 (1 Fatal Crash, 5 Severe Injury crashes). For the purpose of this study, this roadway segment was combined with the six others along Salmon Falls Road.
- The intersection with the highest EPDO value was Missouri Flat Road and Golden Center Drive, with an EPDO value of 529 (1 Fatal, 3 Severe crashes)



El Dorado County Local Road Safety Plan (LRSP)

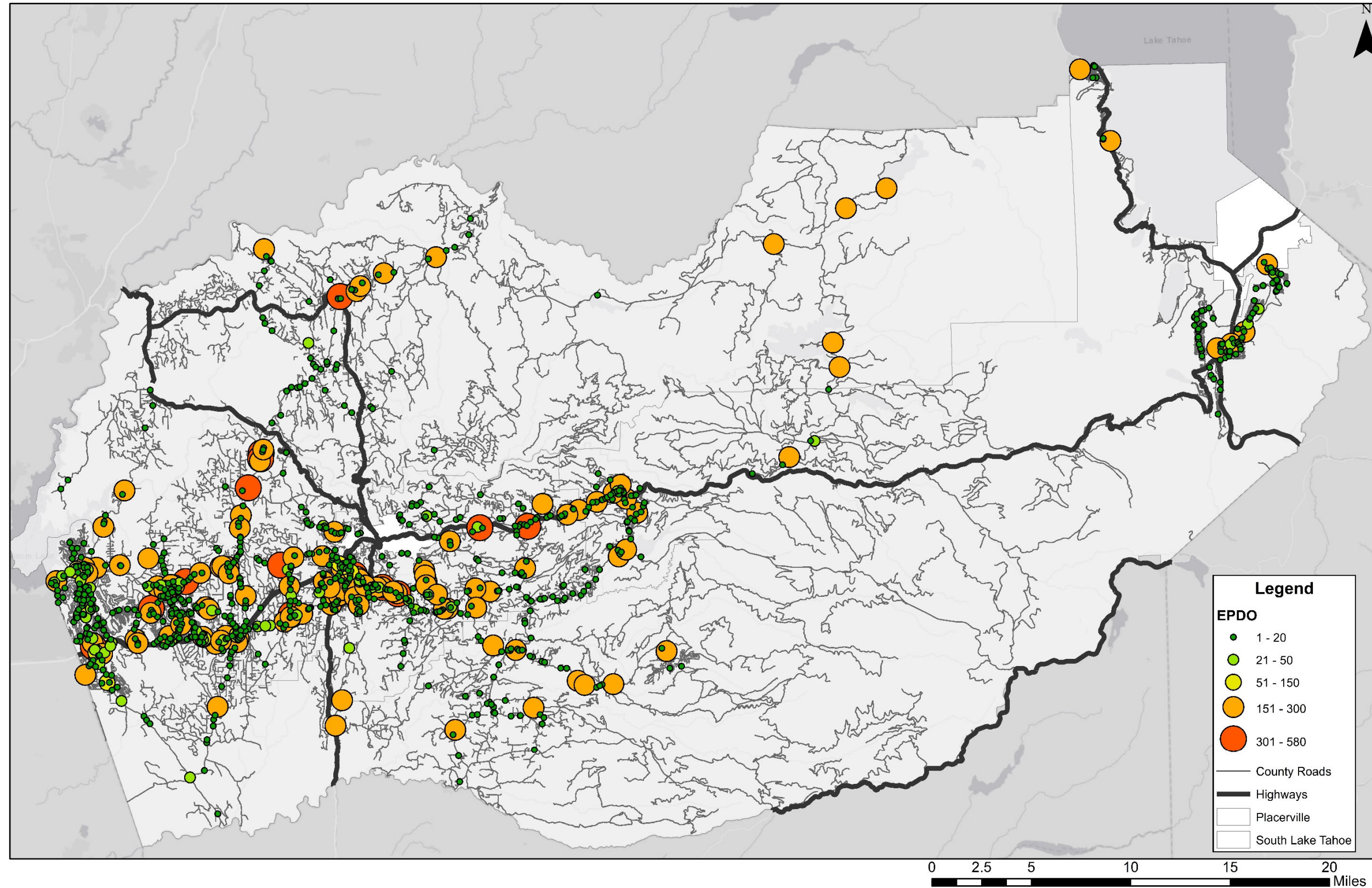
Figure 1 – Countywide Roadway Segment EPDO Map





El Dorado County Local Road Safety Plan (LRSP)

Figure 2 – Countywide Intersection EPDO Map





STAKEHOLDER ENGAGEMENT



SECTION 1

SECTION 2

SECTION 3

SECTION 4

SECTION 5

SECTION 6

SECTION 7

SECTION 8

SECTION 9

SECTION 10



4. STAKEHOLDER ENGAGEMENT

As part of the LRSP, local stakeholders were included in the process to ensure local perspective was kept at the forefront of this planning effort. A stakeholder group comprised of County staff and external stakeholders was formed. This group consisted of members of County staff representing engineering, education and transit, as well as representatives from California Highway Patrol.



The stakeholders were called together to offer insight on the safety concerns present in the County’s transportation network. Additionally, subsequent to the network screening and safety analysis, the stakeholder group will meet in the field to observe and discuss safety concerns at “priority” locations, and to develop potential safety countermeasures. The summary of the stakeholder meetings is provided below.

4.1. Stakeholder Meeting

A project stakeholder workshop was conducted virtually on July 7th, 2022. At the meeting, the LRSP stakeholder group was introduced to the project and provided an overview of the data used, data analysis approach, preliminary results and priority/emphasis areas. In addition to the LRSP overview, stakeholders were asked to provide local insight and knowledge for several “priority” locations that were identified after the initial network screening and crash analysis process.



REVIEW OF COUNTY PLANNING DOCUMENTS



SECTION 1

SECTION 2

SECTION 3

SECTION 4

SECTION 5

SECTION 6

SECTION 7

SECTION 8

SECTION 9

SECTION 10

5. REVIEW OF COUNTY PLANNING DOCUMENTS



Existing plans, policies, and projects that were recently completed, planned, or are on-going within the County were compiled at the start of the LRSP process to gain perspective on the existing efforts for transportation-related improvements within the County. High-level key points regarding transportation improvements and safety-related topics were identified to inform decision making in this LRSP.

The following planning documents were reviewed to obtain planned and programmed projects:

- General Plan Transportation and Circulation Element, 2004
- Active Transportation Plan, 2020
- Smart Region El Dorado County Technology Implementation Plan, 2019
- Meyers Corridor Operational Improvement Project, 2016
- El Dorado Trail Extension Project, 2021
- U.S. Highway 50 Camino Safety Project, 2019
- El Dorado County ADA Transition Plan, 2017
- Lake Tahoe Unified School District Safe Routes To School Master Plan, 2015
- Meyers Area Plan, 2022
- Linking Tahoe: Active Transportation Plan Appendix A-H, 2016
- Linking Tahoe: Active Transportation Plan Amendment 1, 2018

A matrix identifying plans and improvements is included in **Appendix A**. The intent of this matrix is to provide an idea of the types of strategies in place or encouraged by the County and to reveal projects that may impact the safety analysis process.



DATA SOURCES



SECTION 1

SECTION 2

SECTION 3

SECTION 4

SECTION 5

SECTION 6

SECTION 7

SECTION 8

SECTION 9

SECTION 10

6. DATA SOURCES

The following data was obtained from the County for use in crash data analysis.

6.1. Roadway Network

The collision analysis, which is described in detail in **Section 3**, used California Department of Transportation's (Caltrans') roadway classification system. The roadway network classification was assigned to each corridor roadway segment as either a major arterial, minor arterial, collector, or local road to develop crash rates specific to the functional design and capacity. Comparative statistics were stratified by roadway classification (i.e., only major arterials are compared to major arterials).

6.2. Intersections

The crash analysis also required each intersection within the County to be classified by control type. Intersections throughout the County were classified as either signalized or unsignalized. The safety analysis also only compared intersection safety performance with similar control types (i.e., signalized intersections are only compared to signalized intersections) within the County.

6.3. Crashes

Crash data for the five-year period from January 1, 2017 through December 31, 2021 was used for the crash analysis. Using data for the past five-year period is sufficient to identify potential trends in crashes by location and type, while not being outdated as to have data that would include long-term technology and cultural changes. The crash data comes from the County's database, which contains crash records from the SWITRS database. This database contains law enforcement records and provide GPS coordinate data that can be used to geocode crashes into a Geographic Information System (GIS) format.

In total, there were 4,412 crash records in the County's database from January 1, 2017 to December 31, 2021. These crash records contained GPS data and were used in the statistical analysis.



SAFETY TRENDS



- SECTION 1
- SECTION 2
- SECTION 3
- SECTION 4
- SECTION 5
- SECTION 6
- SECTION 7**
- SECTION 8
- SECTION 9
- SECTION 10



7. SAFETY TRENDS

The following sections contain the results of the analysis process which included evaluation of fatal and severe injury (K+SI) crashes to statewide K+SI crashes, among other evaluations including crash by severity level, cause, pedestrian, and bicycle crashes. Summary tables presenting the crash data analysis and network screening results for all intersections and roadway segments are provided in **Appendix B** and **Appendix C**, respectively.



7.1. K+SI Crashes Compared to Statewide K+SI Crashes

The California Strategic Highway Safety Plan (SHSP) focuses on 16 challenge areas identified by the SHSP Executive Leadership and Steering Committees after an in-depth analysis of California K+SI (fatal and severe injury) crash data as well as an extensive statewide outreach process that involved hundreds of diverse traffic stakeholders around the state. **Table 1** contains a comparison of El Dorado County's K+SI crashes to the statewide K+SI crashes and reflects SWITRS data.

The crash data can be attributed to fourteen of the sixteen challenge areas. Challenge areas where the county's percentages were higher than the statewide percentages are noted bold. El Dorado County is notably higher than the statewide percentages in lane departure, impaired driving, and motorcycle involved crashes.



El Dorado County Local Road Safety Plan (LRSP)

Table 1 – El Dorado County K+SI Crashes Compared to Statewide K+SI Crashes

California SHSP Challenge Areas	El Dorado County Comparison to Statewide Percentages	El Dorado County	Statewide Percentages
Lane Departure	Higher	79.5%	43.3%
Impaired Driving	Higher	33.7%	25.3%
Motorcyclists	Higher	28.7%	21.0%
Aging Drivers	Higher	15.9%	12.4%
Occupant Protection	Higher	15.1%	14.2%
Aggressive Driving	Lower	32.9%	33.1%
Young Drivers	Lower	12.8%	13.1%
Distracted Driving	Lower	4.7%	5.0%
Work Zones	Lower	0.4%	1.4%
Commercial Vehicles	Lower	2.6%	6.4%
Bicyclists	Lower	3.8%	8.3%
Intersections	Lower	10.0%	23.6%
Pedestrians	Lower	3.9%	19.2%
Driver Licensing**	Lower	0.0%	24.7%

Source: Statewide Integrated Traffic Record (SWITRS, 2009 – 2018).

1. Percentages will not add up to 100%, as a fatality or severe injury could have involved multiple Challenge Areas (i.e., a young driver that was impaired and unrestrained)
2. California SHSP does not have reported crash data for the following two challenge areas: Emergency Response and Emerging Technology

7.2. Severity Level

Knowing the impacts of the crash (the injuries or type of damage which occurred) is a key part of assessing the environment and safety factors around the site of the crash. The National Safety Council developed the “KABCO” injury scale, which is frequently used by law enforcement for classifying injuries. The KABCO scale is referenced below:

- K – Fatal
- A – Severe injury
- B – Other Visible Injury
- C – Complaint of Pain
- O – No injury (property damage only)

Table 2 presents crash severity by location type—signalized intersections, non-signalized intersections, and roadway segments. Forty-four percent of crashes in El Dorado County in the past five years have occurred along roadway segments, removed from intersections by more

than 250 feet. This is typical for more rural areas, as intersections exist at a lower density than in urban areas.

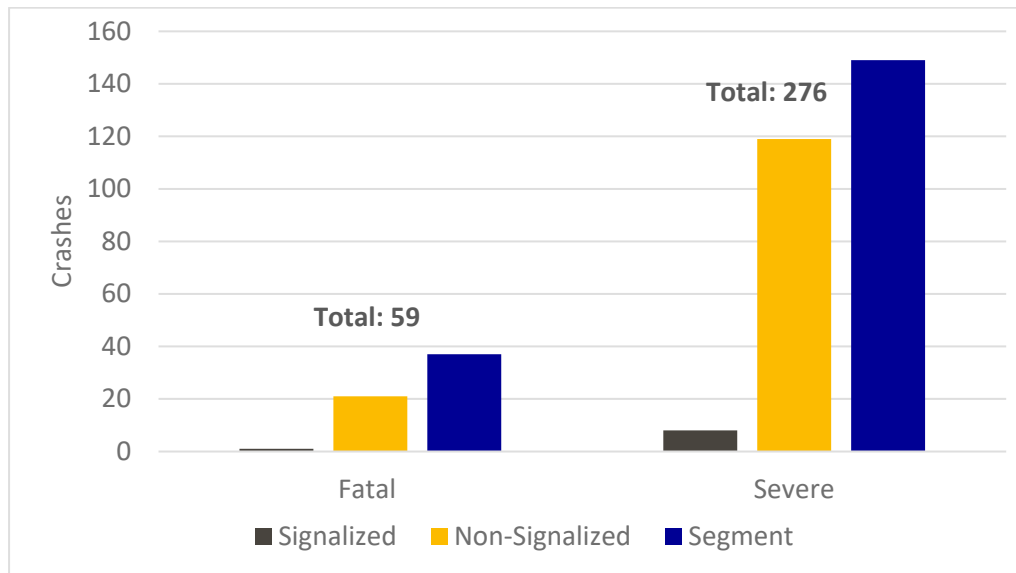
Table 2 – Crashes by Severity

Severity	Signalized Intersection		Non-signalized Intersection		Roadway Segments		Total	
	Crashes	%	Crashes	%	Crashes	%	Crashes	%
Fatal	1	2%	21	36%	37	63%	59	1%
Severe	8	3%	119	43%	149	54%	276	6%
Other Visible Injury	61	9%	287	41%	352	50%	700	16%
Complaint of Pain	132	20%	273	41%	268	40%	673	15%
No Injury (PDO)	375	14%	1204	45%	1125	42%	2704	61%
Total	577	13%	1904	43%	1931	44%	4412	100%

Source: El Dorado County’s Annual Accident Summary (2017 – 2021).

One percent of crashes recorded in the study period were fatal, and six percent resulted in severe injuries. Crashes resulting in property damage only accounted for sixty-one percent of all crashes. Crashes resulting in the various severity levels are presented in **Figure 3** and **Figure 4**.

Figure 3 – Crashes by Severity (Fatal and Severe)

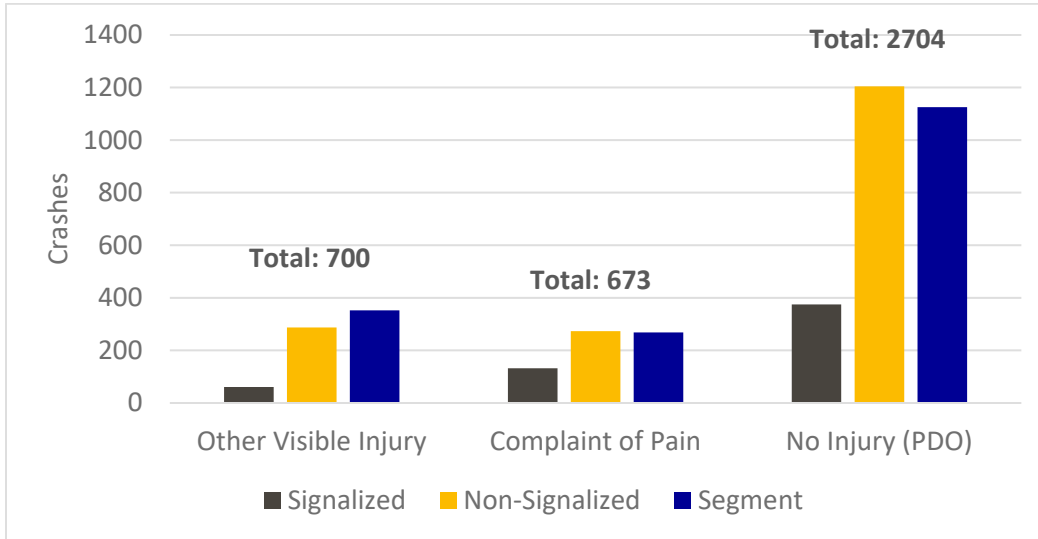


Source: El Dorado County’s Annual Accident Summary (2017 – 2021).



El Dorado County Local Road Safety Plan (LRSP)

Figure 4 – Crashes by Severity (Other Injury, Complaint of Pain, and PDO)



Source: El Dorado County’s Annual Accident Summary (2017 – 2021).

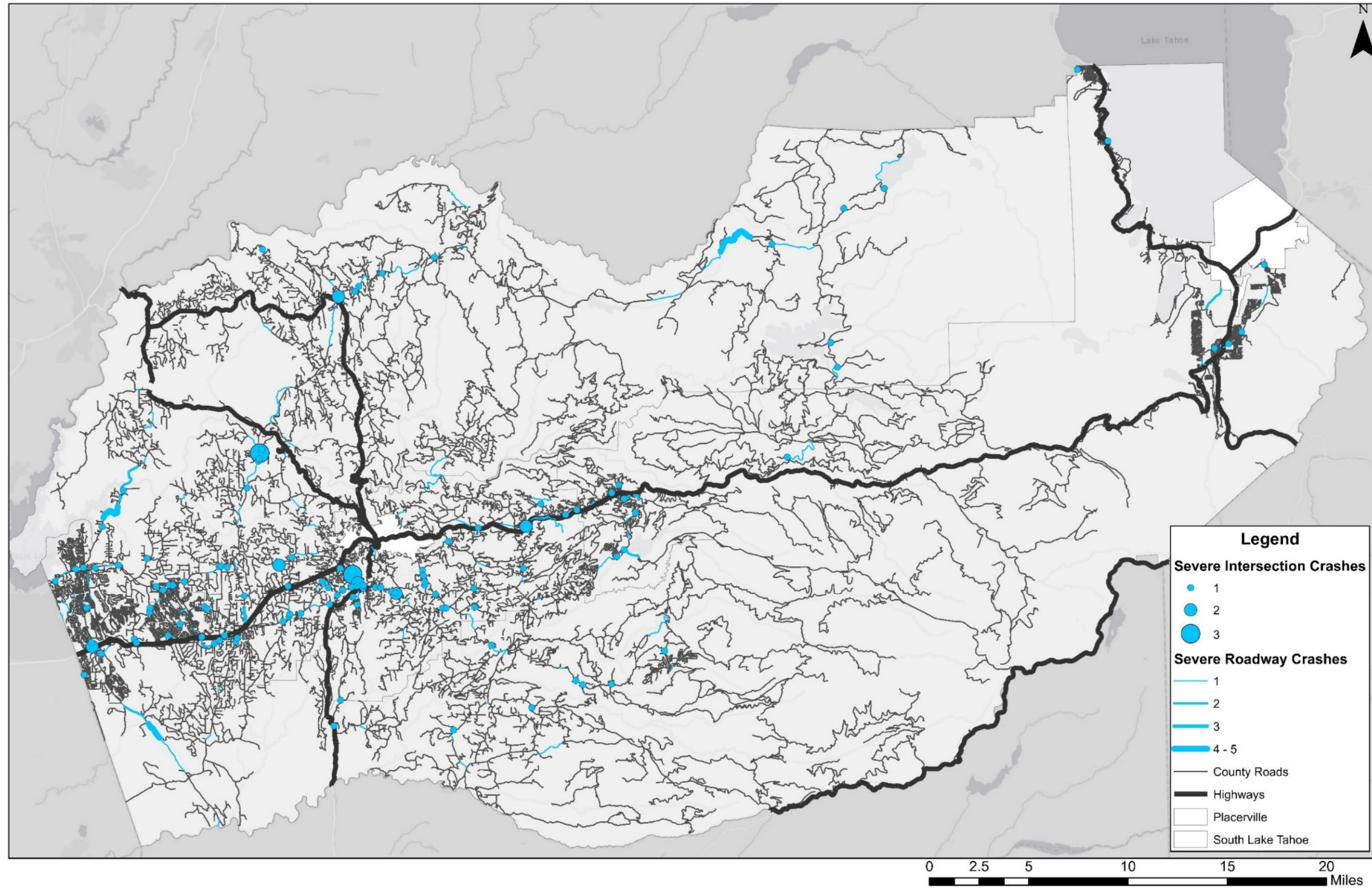
Figure 5 and **Figure 6** in the following pages illustrate the severe injury and fatal crashes throughout the County, broken down by intersection and roadway segment crashes.

- Roadway segment with the highest number of crashes:
 - Latrobe Road (Old Station Lane to Corinth Ranch Road) – 40 Crashes
- Intersections with the highest number of crashes:
 - Latrobe Road and White Rock Road – 27 Crashes
 - Green Valley Road and Francisco Drive – 25 Crashes
 - Latrobe Road and Town Center Boulevard – 24 Crashes



El Dorado County Local Road Safety Plan (LRSP)

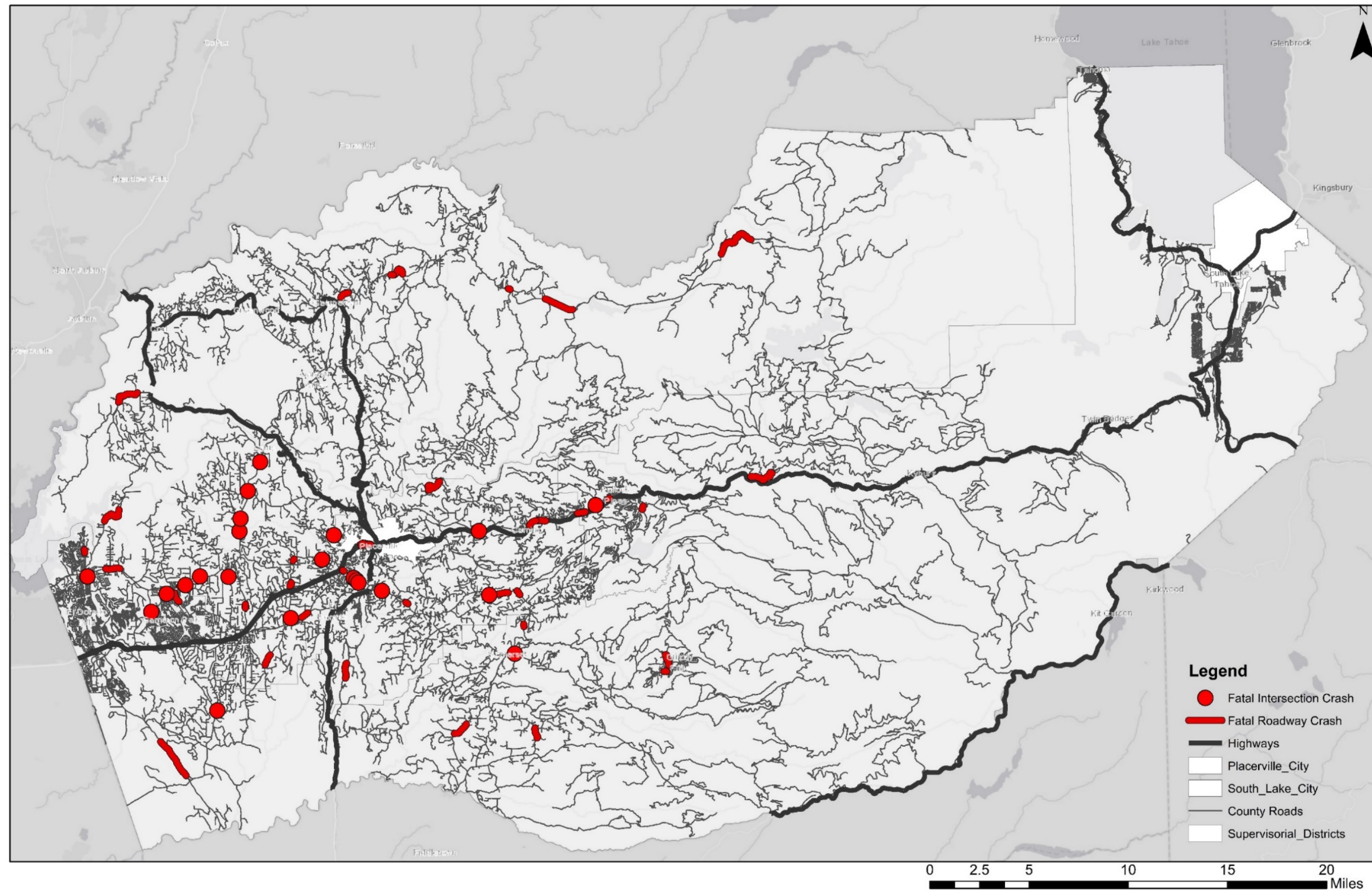
Figure 5 – Severe Injury Crash Map





El Dorado County Local Road Safety Plan (LRSP)

Figure 6 – Fatal Crash Map

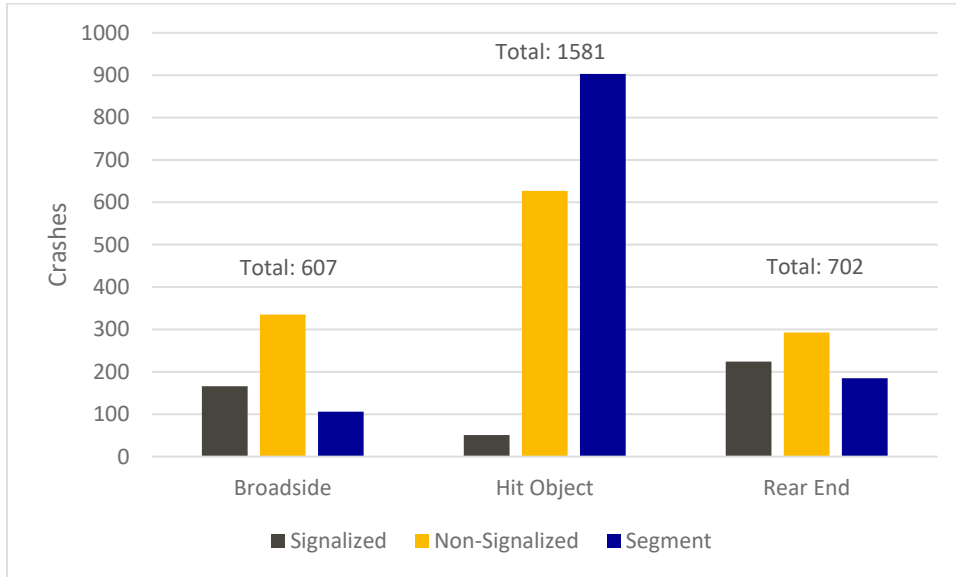




7.3. Highest Occurring Crash Types

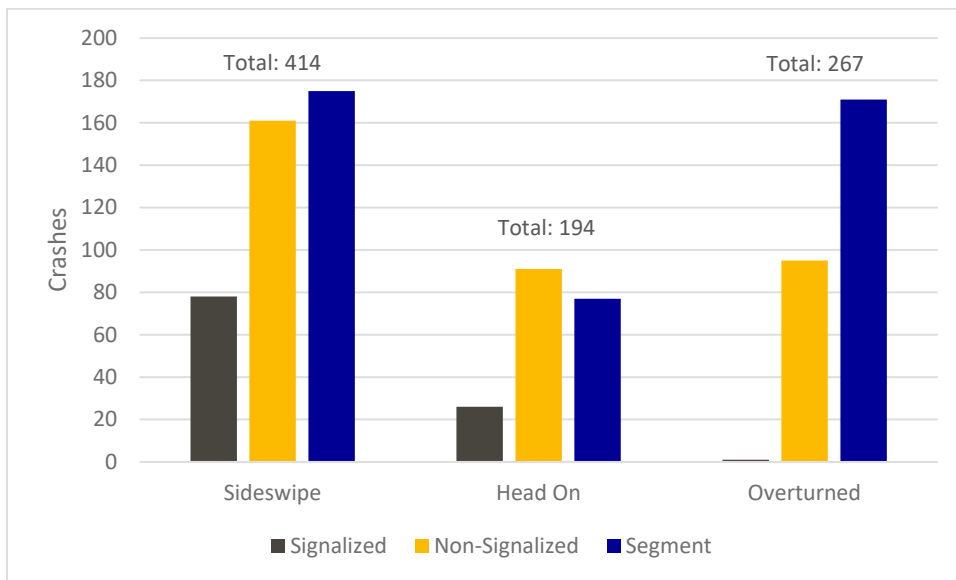
According to reported data, approximately 4,412 crashes occurred within El Dorado County during the five-year study period which had clear, discernable spatial data that did not occur on private property. As shown in **Figure 7** and **Figure 8**, the most common crash types were hit object crashes, followed rear end crashes and broadsides.

Figure 7 – Crashes by Type (Hit Object, Rear End, and Broadsides)



Source: El Dorado County’s Annual Accident Summary (2017 – 2021).

Figure 8 – Crashes by Type (Sideswipe, Head On, and Overturned)



Source: El Dorado County’s Annual Accident Summary (2017 – 2021).

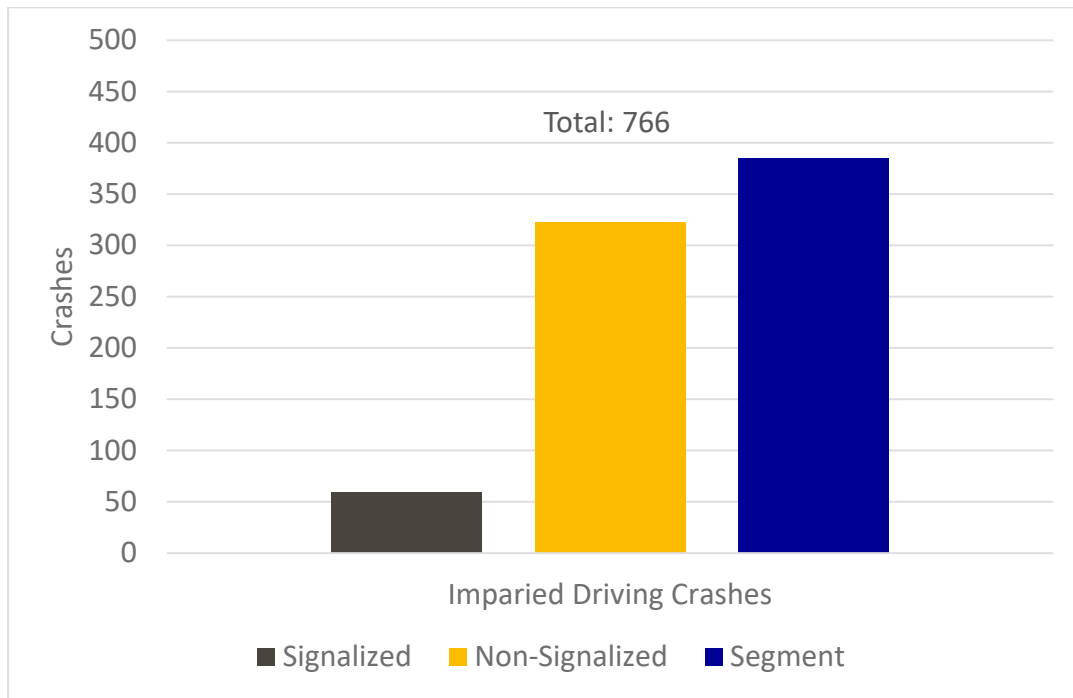
7.4. Lane Departure

Caltrans defines crashes involving lane departure as those with crash types listed as ‘Head-On’, ‘Hit Object’, or ‘Overturned’. This also includes instances where a vehicle runs off the road or crosses into the opposing lane prior to the crash. There were 2,039 lane departure crashes over the study period within the County. Lane departure crashes account for 60% of all fatal crashes and 45% of all severe injury crashes within the study period. Of the 2,039 lane departure crashes, 36 were fatal, 125 were reported with severe injuries, 406 with other visible injuries, 228 with complaints of pain, and 1,244 with PDO.

7.5. Impaired Driving Crashes

Crashes involving drugs or alcohol include all crashes where there was any evidence of drug or alcohol use by the driver. This is different from impaired driving statistics in that drivers do not need to exceed the legally defined threshold of intoxication to be counted. Caltrans considers any level of alcohol consumption to have the potential to impact driver responsiveness and decision making. There were 766 impaired driving crashes between 2017 and 2021. There were 28 fatal crashes and 81 crashes resulting in severe injuries. Impaired driving was a contributing factor in 32% of all fatal and severe injury crashes within the study period. **Figure 9** below shows the distribution of impaired driving crashes across intersections and roadway segments.

Figure 9 –Impaired Driving Crashes



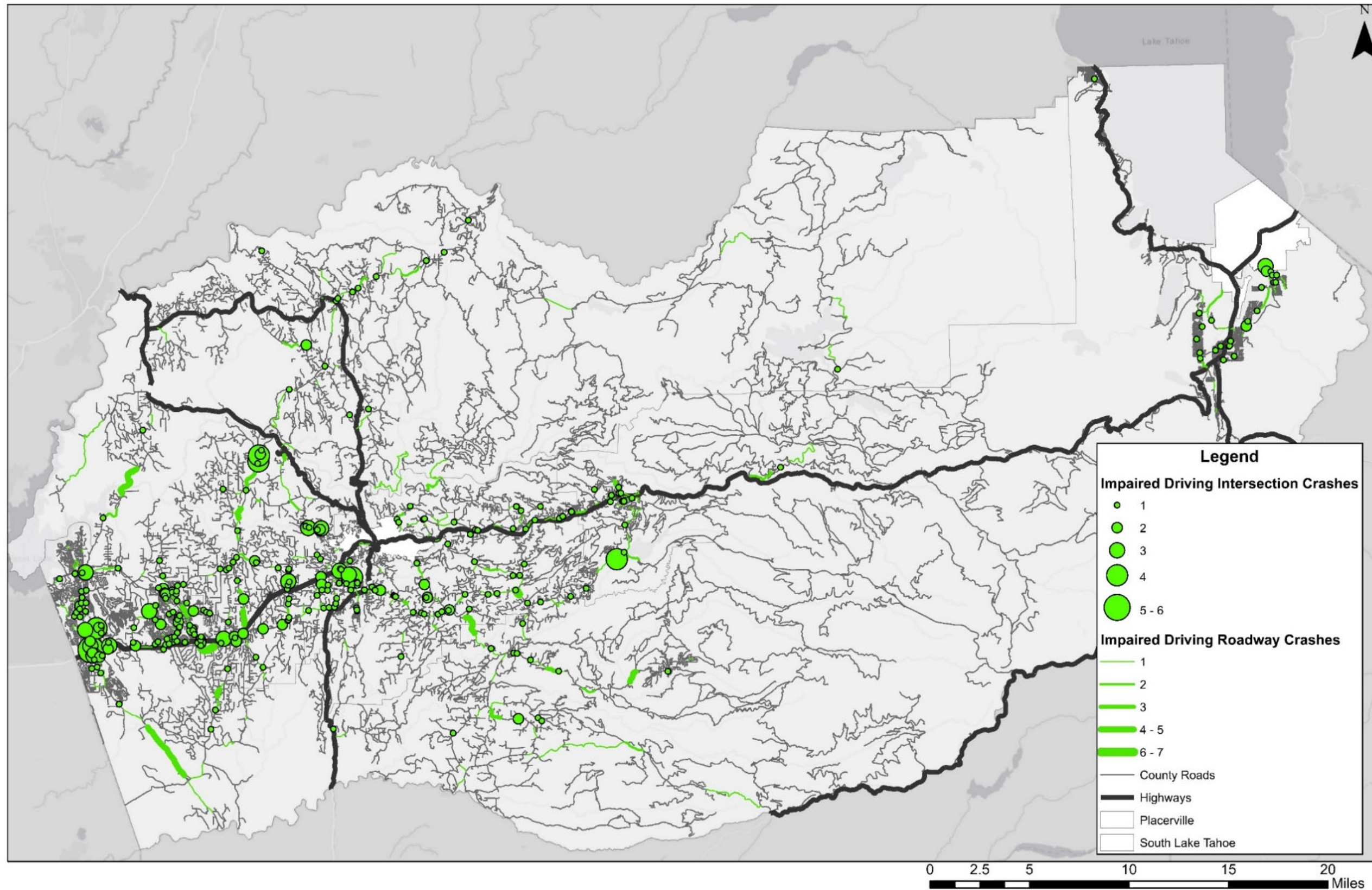
Source: El Dorado County’s Annual Accident Summary (2017 – 2021).

Figure 10 contains a map of impaired driving crashes throughout the County.



El Dorado County Local Road Safety Plan (LRSP)

Figure 10 – Impaired Driving Crash Map



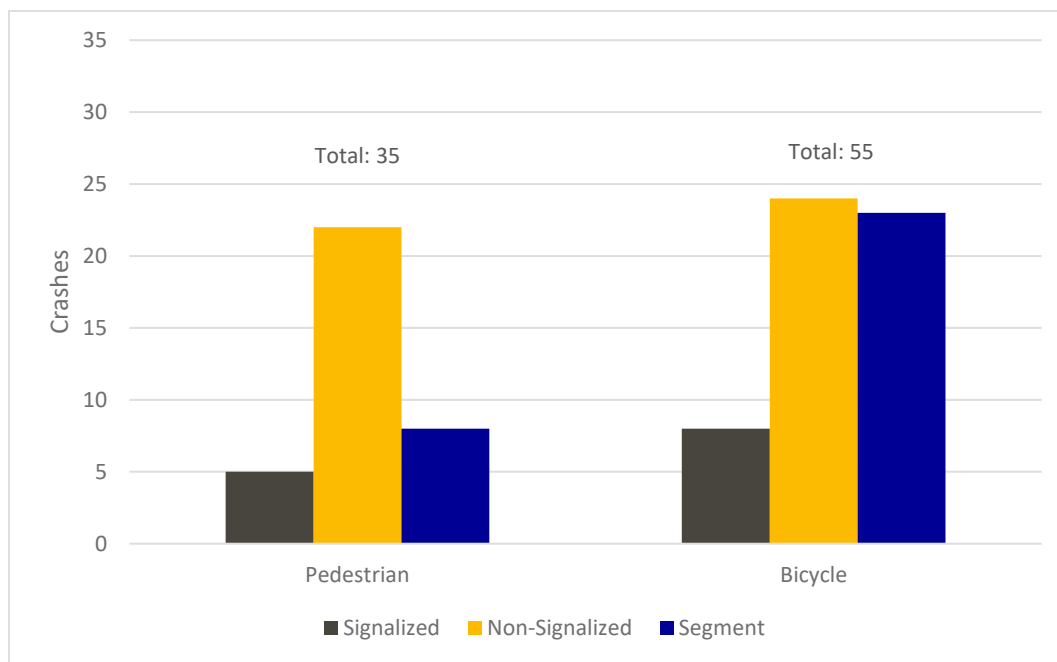


7.6. Bicycle and Pedestrian Crashes

Figure 11 presents the location of bicycle and pedestrian crashes. Bicycle crashes were more common along roadway segments and at non-signalized intersections. Pedestrian crashes were most common at non-signalized intersections. Bicycle crashes were split almost evenly between roadway segments and non-signalized intersections. **Figure 12** illustrates the locations of pedestrian and bicycle crashes within the County. Additional information on pedestrian and bicycle crashes is provided in the following sections.

Bicycle and pedestrian crashes accounted for approximately 11% of all fatal and severe injury crashes in the study period. Green Valley Road experienced the most bicycle crashes (10 crashes, 2 resulting in severe injuries). Missouri Flat Road experienced the most pedestrian crashes (6 crashes, 3 resulting in fatalities).

Figure 11 – Bicycle and Pedestrian Crashes



Source: El Dorado County’s Annual Accident Summary (2017 – 2021).

7.6.1. Bicycle Crashes

There were 55 bicycle-involved crashes that occurred across the County over the study period. Of the bicycle-involved injury crashes, none were fatal, 17 were reported with severe injuries, 18 with other visible injuries, 11 with complaints of pain, and 9 with no injuries (PDO).

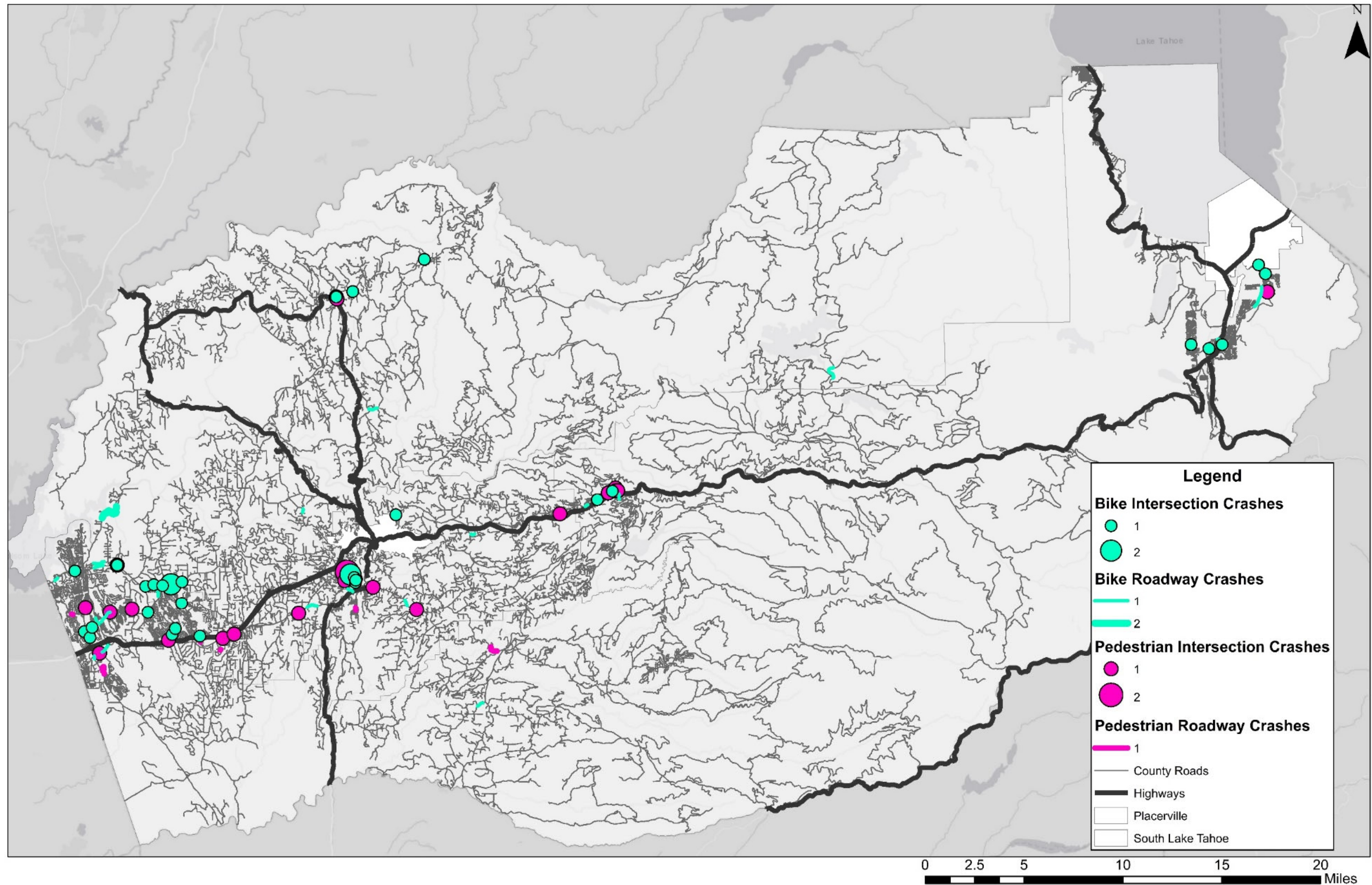
7.6.2. Pedestrian Crashes

Over the span from 2017 to 2021, a total of 35 pedestrian-involved crashes occurred across the County. Of the pedestrian-involved injury crashes, 3 were fatal, 13 were reported with severe injuries, 7 with other visible injuries, 6 with complaints of pain, and 6 with no injuries (PDO).



El Dorado County Local Road Safety Plan (LRSP)

Figure 12 – Non-Motorized Crashes





7.7. Motorcycle Crashes

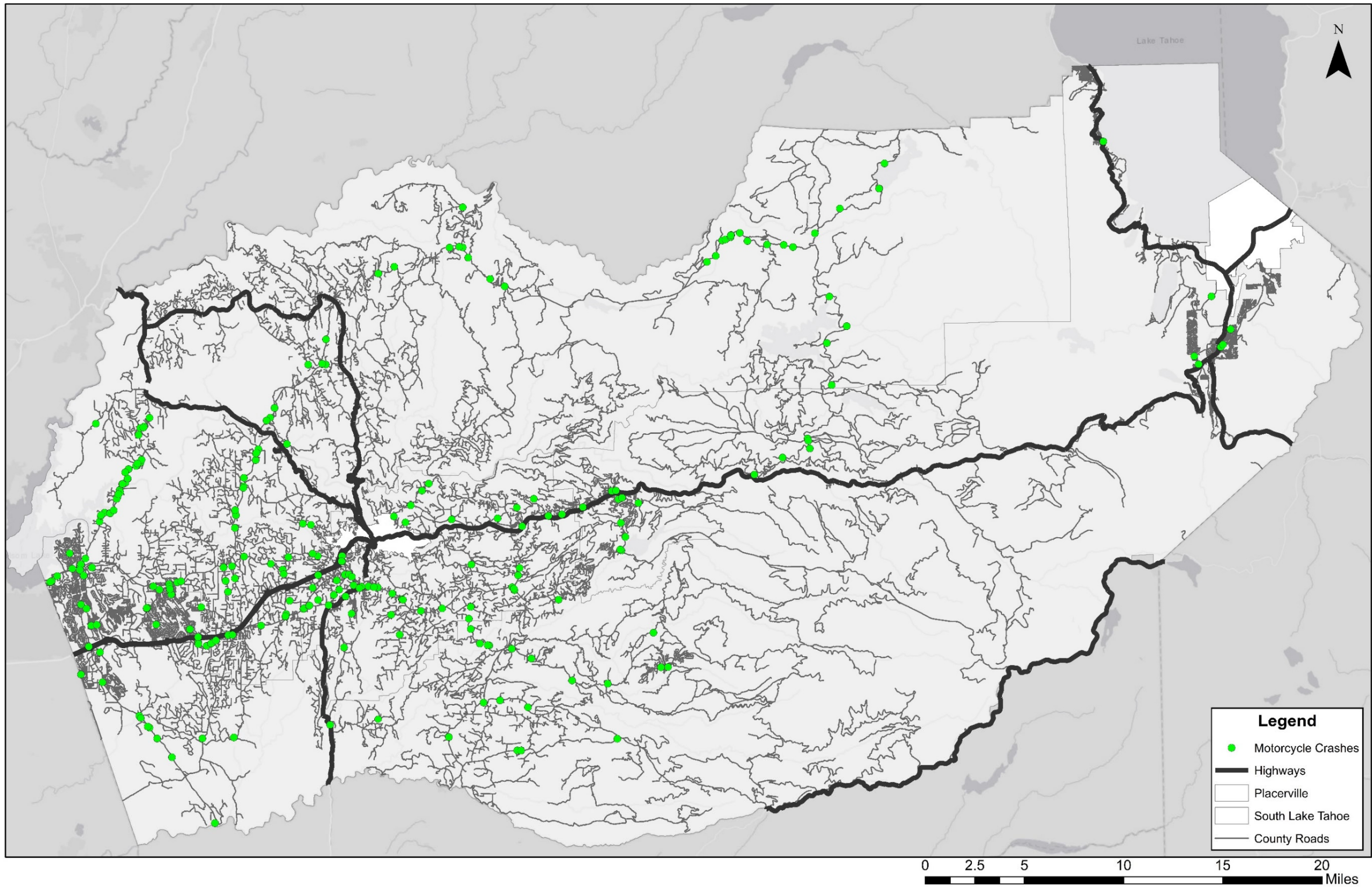
El Dorado County ranked higher than the statewide percentages in regards to fatal and severe injury crashes involving motorcycles. There were a total of 270 motorcycle-involved crashes, 13 of which were fatal and 94 of which resulted in severe injuries. While they only account for 6% of the total crashes within the study period, motorcycle-involved crashes accounted for 32% of all fatal and severe injury crashes. **Figure 13** presents the locations of the motorcycle crashes.

Salmon Falls Road experienced the most motorcycle crashes (36 crashes total, with 1 fatality and 11 severe injuries), followed by Wentworth Springs Road (22 crashes total, with 2 fatalities and 11 severe injuries).



El Dorado County Local Road Safety Plan (LRSP)

Figure 13 – Motorcycle Crashes





El Dorado County Local Road Safety Plan (LRSP)

7.8. Priority Locations

Based on the network screening analysis, the following priority locations have been identified for the County to consider for case studies. The short-list includes three signalized intersections, two non-signalized intersections, and seven segments as presented in **Table 3**.

The full list of intersection and segment network screening results is included in **Appendix B** and **Appendix C**, respectively. Based on input received from the County and project stakeholders, the locations for field review and case study was narrowed down to 12 priority locations. Site-specific safety countermeasures will be identified for these locations.

Table 3 – El Dorado County Short-List of Priority Locations

Location	Crashes	Local CCR Differential*	Equivalent Property Damage Only (EPDO)**	Notes
Signalized Intersections				
Missouri Flat Road and Forni Road	22	-0.03	102	Two pedestrian crashes and three head-ons
Missouri Flat Road and Golden Center Drive	16	-0.04	529	One fatal, three severe injury crashes, two head-ons. Location of future Diamond Springs Connector Project.
Pioneer Trail and US-50	7	0.03	26.93	Roundabout project planned.
Non-signalized Intersections				
Missouri Flat Road and Old Depot Road	6	-0.02	149	One Fatal, Pedestrian, 3 Dark
Lotus Road and Gold Hill/Luneman Road	7	0.21	259	One Fatal, One Severe Injury Crash. Located near a School
Roadway Segments (Principal Arterial)				
Lake Tahoe Blvd between Sawmill Road and Industrial Ave	7	0.36	359	Two severe, high EPDO
Roadway Segments (Minor Arterials)				
Salmon Falls Road between Salmon Valley Lane and Timeless Lane - (NOTE: 10 Segments along Salmon Falls Road Combined, 7 Miles total)	63	1.89	2213	1 Fatal, 11 Severe, 21 Motorcycle Crashes, 20 Hit Object, 15 Dark, 10 Overturned



El Dorado County Local Road Safety Plan (LRSP)

Location	Crashes	Local CCR Differential*	Equivalent Property Damage Only (EPDO)**	Notes
Roadway Segments (Minor Arterials)				
Green Valley Road between Rocky Springs Road and W Green Springs Road	7	-0.18	344	Fatal, Severe, 3 Hit Object. Potential Location for High Friction Surface Treatment
Roadway Segments (Major Collectors)				
Latrobe Road between Old Station Lane and Sun Ridge Meadow Lane - (NOTE: 6 Segments along Latrobe Rd Combined, 6 Miles total)	78	0.64	509	Fatal, 10 Severe, 6 Overturned, 47 Hit Object, 6 Head-on, 12 Overturned, 6 Motorcycle. Popular route from Folsom to Amador, ADT expected to increase
Bucks Bar Road between Palace Lane and <i>Private Driveways</i>	24	1.66	290	Severe Injury, 5 Overturned
Durock Road between Robin Lane and Shingle Lime Mine Road	20	0.96	411	2 Severe, Overturned
Roadway Segments (Minor Collectors)				
Wentworth Springs Road between Helix Flat Ave and Robs Cabin Trail - (NOTE: 5 Segments along Wentworth Springs Rd Combined, 9 Miles total)	16	0.76	1380	1 Fatal, 8 Severe, 14 motorcycle crashes

* Local Critical Crash Rate (LCCR) Differential – The difference between the critical crash rate of a location and the maximum crash rate expected to occur at that location within the municipality. Positive LCCRs indicate a higher crash rate than expected.

** Equivalent Property Damage Only Crashes – All severity levels are weighted and converted to PDO crashes for the benefit of having a single comparative value



RECOMMENDATIONS

SECTION 1

SECTION 2

SECTION 3

SECTION 4

SECTION 5

SECTION 6

SECTION 7

SECTION 8

SECTION 9

SECTION 10





8. RECOMMENDATIONS

The following sections provide more information on potential engineering and non-infrastructure safety countermeasures that are likely to address safety concerns within the County.

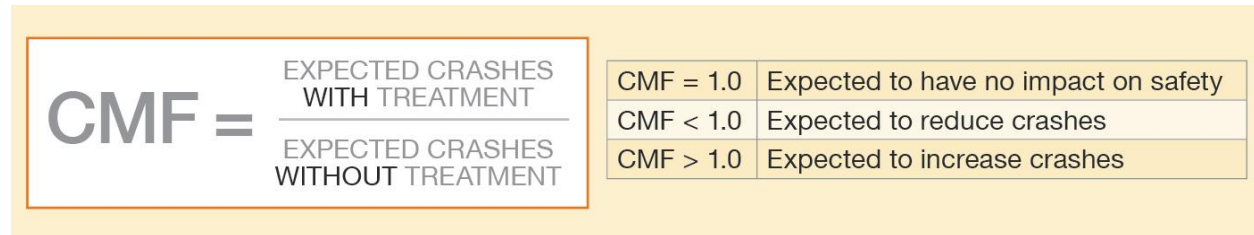
8.1. Engineering Countermeasures

While there are many safety countermeasures that could be used to systemically improve roadway safety, the following sections provide countermeasures for consideration by the County. The following sections contain a description of Crash Modification Factors (CMFs) and Crash Reduction Factors (CRFs) associated with the engineering countermeasures toolbox.

8.1.1. Crash Modification Factors (CMFs)

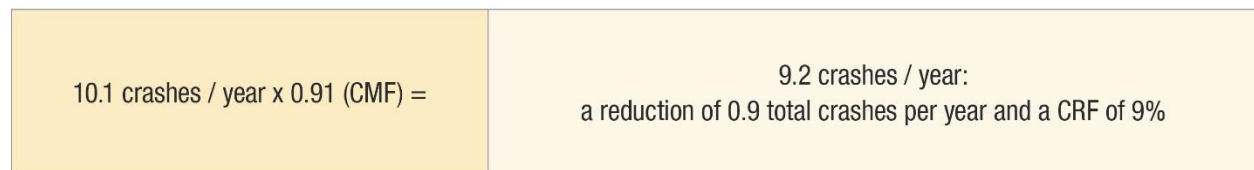
When identifying potential systemic safety improvements, it is important to look at CMFs for the proposed improvements. The CMF Method is found in Part D of the HSM. CMFs are defined as the ratio of effectiveness of one condition in comparison to another condition and represent the relative change in crash frequency due to a change in one specific condition. In other words, a CMF is a multiplicative factor used to compute the expected number of crashes after implementing a given countermeasure at a specific site. Countermeasures with CMFs less than one are expected to reduce crashes if applied, while those countermeasures with CMFs greater than one are expected to increase crashes. **Figure 14** illustrates the definition of CMFs.

Figure 14 – CMF Calculation



The CMF Method is used to calculate the expected number of crashes by taking the observed number of crashes and multiplying those crashes by the applicable CMF for the proposed countermeasure. It is recommended that CMFs be applied to a minimum of three years of crash data for urban and suburban sites and five years of crash data for a rural site. **Figure 15** is a sample calculation of the CMF method with one CMF being applied to a particular site for a single year.

Figure 15 – CMF Method Sample Calculation





A CRF is similar to a CMF but stated in different terms. A CRF is defined as a percentage of crash reduction that might be expected after the implementation of a given countermeasure at a specific site. **Figure 16** presents how a CRF is calculated in relationship to a CMF.

Figure 16 – CRF Calculation

$$\text{CRF} = (1 - \text{CMF}) \times 100$$

Caution should be used in the selection of appropriate CMFs. The following guidance should be considered when selecting CMFs for predictive crash analysis:

- *CMFs should be selected from the HSM Part D, the LRSM, or from the FHWA CMF Clearinghouse website (<http://www.cmfclearinghouse.org/>).*
- *Read the countermeasure abstract to determine if the CMF is applicable to the proposed improvement.*
- *Only CMFs with a four-star rating or higher should be considered for use in analysis.*
- *Be sure the selected CMF is applicable to the set of crash data being used for analysis. Some CMFs may only be applicable to a subset of the crash data.*
- *The application of multiple CMFs can overestimate the expected crash reduction. Unless each CMF addresses independent crash types, multiple CMFs should not be used. It is suggested that no more than three independent CMFs be applied to a particular site.*

The countermeasures proposed in this document were chosen because of their effectiveness in reducing crashes.

8.1.2. Engineering Countermeasures Toolbox

The systemic improvements identified as most likely effective for the County are listed in **Table 4**, and include low-cost and higher-cost items that can be implemented in phases where appropriate. The CMF indicates how effective the countermeasure is at reducing crashes. CMFs and CRFs have been provided for reference to aid the County in understanding potential reductions from crashes by different countermeasures.

Table 4 – El Dorado Countermeasures Toolbox

Countermeasure	Also Addresses		Crash Modification Factor (CMF)	Crash Reduction Factor (CRF)	CRF Applies to			Caltrans Funding	Cost to Implement
	Pedestrian	Bicycle			All	Nighttime	Pedestrian and Bicycle		
Signalized Intersections									
Install intersection lighting			0.6	40%		X		100%	\$\$
Retroreflective backplates			0.85	15%	X			100%	\$
Improve signal timing (coordination)			0.85	15%	X			50%	\$\$
Install Left Turn Lane, Add Left Turn Phase			0.45	55%	X			100%	\$\$\$
Protected left turn phase			0.7	30%	X			100%	\$\$
Convert signal from pedestal-mounted to mast arm			0.7	30%	X			100%	\$\$\$
Install raised pavement markers and striping			0.9	10%	X			100%	\$
Install flashing beacons as advanced warning			0.7	30%	X			100%	\$\$
Install High Friction Surface Treatment (HFST)			0.45	55%	X			100%	\$\$\$
Install raised median on approaches			0.75	25%	X			100%	\$\$
Install pedestrian median fencing on approaches	X		0.65	35%			X	90%	\$\$
Pedestrian countdown signal heads	X		0.75	25%			X	100%	\$
Pedestrian scramble	X		0.6	40%			X	100%	\$\$
Advanced stop bar before crosswalk and bicycle box	X	X	0.85	15%			X	100%	\$
Modify signal to provide a Leading Pedestrian Interval (LPI)	X		0.4	60%			X	100%	\$
Flashing yellow arrow			0.94	6%	X			N/A	\$
Signal ahead warning signs			0.85	15%	X			N/A	\$
Non-signalized Intersection									
Add intersection lighting			0.6	40%		X		100%	\$\$
Install all-way STOP control			0.5	50%	X			100%	\$
Convert intersection to roundabout			Varies	Varies	X			100%	\$\$\$
Convert intersection to mini-roundabout			70%	30%	X			90%	\$\$
Install/upgrade intersection warning/regulatory signs			0.85	15%	X			100%	\$
Upgrade pavement markings			0.75	25%	X			100%	\$
Install flashing beacons at stop-controlled intersections			0.85	15%	X			100%	\$\$
Install flashing beacons as advanced warning			0.7	30%	X			100%	\$\$
Clear sight triangles			0.8	20%	X			90%	\$ - \$\$\$
Install High Friction Surface Treatment (HFST)			0.55	55%	X			100%	\$\$\$



Countermeasure	Also Addresses		Crash Modification Factor (CMF)	Crash Reduction Factor (CRF)	CRF Applies to			Caltrans Funding	Cost to Implement
	Pedestrian	Bicycle			All	Nighttime	Pedestrian and Bicycle		
Install splitter-islands on minor road approaches			0.6	40%	X			100%	\$\$
Install raised median on approaches			0.75	25%	X			90%	\$\$
Directional median openings to restrict turning movements			0.5	50%	X			90%	\$\$
Reduced Left-Turn Conflict (R-CUT) intersections			0.5	50%	X			90%	\$\$\$
Install right-turn lane			0.8	20%	X			90%	\$\$
Install left-turn lane			0.65	35%	X			90%	\$\$
Pedestrian refuge island	X		0.55	45%			X	90%	\$\$
Install/upgrade pedestrian crossing (with enhanced safety features)	X		0.65	35%			X	100%	\$
Rectangular Rapid Flashing Beacon (RRFB)	X		0.65	35%			X	100%	\$\$
Pedestrian Signal	X		0.45	55%			X	100%	\$\$\$
Retroreflective strips on signposts			Not Available	Not Available	X				\$
Crosswalk lighting	X		0.6	40%			X	100%	\$\$
Colored bicycle lanes		X	0.61	39%			X		\$
Curb extensions	X		0.63	37%			X		\$\$\$
Roadway Segments									
Add segment lighting			0.65	35%		X		100%	\$\$
Remove or relocate fixed object outside of Clear Recovery Zone			0.65	35%	X			90%	\$\$\$
Install impact attenuators			0.75	25%	X			100%	\$\$
Install pedestrian median fencing	X	X	0.65	35%			X	90%	\$\$
Install bike lanes	X	X	0.65	35%			X	90%	\$\$
Install/upgrade pedestrian crossing (with enhanced safety features)	X	X	0.65	35%			X	90%	\$
Install raised pedestrian crossing	X	X	0.65	35%			X	90%	\$\$
Rectangular Rapid Flashing Beacon (RRFB)	X	X	0.65	35%			X	100%	\$\$
Speed feedback signs (mobile or fixed)			Not Available	Not Available	X			Opportunity for OTS funding	\$
Curve Shoulder Widening (Outside Only)			0.55	45%	X			90%	\$\$\$
Install chevron signs on horizontal curves			0.60	40%	X			100%	\$
Install curve advance warning signs			0.75	25%	X			100%	\$
Install curve advance warning signs (flashing beacon)			0.70	30%	X			100%	\$\$



El Dorado County Local Road Safety Plan (LRSP)

Countermeasure	Also Addresses		Crash Modification Factor (CMF)	Crash Reduction Factor (CRF)	CRF Applies to			Caltrans Funding	Cost to Implement
	Pedestrian	Bicycle			All	Nighttime	Pedestrian and Bicycle		
Install centerline rumble strips/stripes			0.80	20%	X			100%	\$\$
Install edgeline rumble strips/stripes			0.85	15%	X			100%	\$\$
Improve pavement friction (High Friction Surface Treatment)			0.45	55%	X			100%	\$\$\$
Install dynamic/variable speed warning signs			0.70	30%	X			100%	\$\$
Install/Upgrade signs with new fluorescent sheeting (regulatory or warning)			0.85	15%	X			100%	\$
Install delineators, reflectors and/or object markers			0.85	15%	X			100%	\$

\$\$\$ Requires design and construction of extensive infrastructure improvements

\$\$ Requires procurement and/or minor construction activities

\$ Requires limited staff resources and can be implemented in-house with current engineering and/or maintenance staff



8.2. Non-Infrastructure Countermeasures

The National Highway Traffic Safety Administration (NHTSA) *Countermeasures that Work, Ninth Edition*, is a reference to assist safety stakeholders in selecting effective, science-based non-infrastructure traffic safety countermeasures for major highway safety problem areas. While many of the countermeasures are more appropriate to apply at the state-level or require legislative modifications to implement, **Table 5** contains countermeasures that have demonstrated effectiveness and could be applied at the County level. Access to Drug Recognition Experts (DREs) and Advanced Roadside Impaired Driving Enforcement (ARIDE) training for law enforcement is not included in the document but is something that could also be considered for the County. These non-infrastructure countermeasures can be implemented through securing grant funding such as California Office of Traffic Safety (OTS) grants and other federal, state, and regional funding programs presented in **Section 9**.

Table 5 – Non-Infrastructure Countermeasures Toolbox

Countermeasure	Effectiveness	Cost to Implement	Use	Time to Implement
Aggressive Driving				
Automated enforcement systems	*****	\$\$\$ [†]	Medium	Medium
Impaired Driving				
Publicized Sobriety Checkpoints	*****	\$\$\$	Medium	Short
High-Visibility Saturation Patrols	****	\$\$	High	Short
Occupant Protection (Seat Belts, Helmets, Child Seats)				
Short-term high visibility enforcement	*****	\$\$\$	Medium	Medium
Integrated nighttime seat belt enforcement	****	\$\$\$	Unknown	Medium
Distracted Driving				
High visibility cellphone/text messaging enforcement	****	\$\$\$	Low	Medium

Effectiveness:

***** Demonstrated to be effective by several high-quality evaluations with consistent results

**** Demonstrated to be effective in certain situations

Cost to Implement:

\$\$\$ Requires extensive new facilities, staff, equipment, or publicity, or makes heavy demands on current resources

\$\$ Requires some additional staff time, equipment, facilities, and/or publicity

\$ Can be implemented with current staff, perhaps with training; limited costs for equipment, facilities, and publicity

[†] Can be covered by income from citations

Use:

High: More than two-thirds of States, or a substantial majority of communities

Medium: Between one-third and two-thirds of States or communities

Low: Less than one-third of States or communities

Unknown: Data not available

Time to Implement:

Long: More than 1 year

Medium: More than 3 months but less than 1 year

Short: 3 months or less



EVALUATION AND IMPLEMENTATION



- SECTION 1
- SECTION 2
- SECTION 3
- SECTION 4
- SECTION 5
- SECTION 6
- SECTION 7
- SECTION 8
- SECTION 9**
- SECTION 10



9. EVALUATION AND IMPLEMENTATION

9.1. Evaluation

The success of the LRSP will be evaluated using the preliminary process outlined below. This process will be useful to ensure proper implementation of goals and to determine when updates are needed.

- *Quarterly progress meetings are recommended to be conducted to track the implementation of the plan. In addition, the success of the plan will be evaluated on a reoccurring basis.*
- *An update to the plan should be considered after no more than five to seven years.*
- *Continued monitoring and recording of traffic incidents on local roadways by law enforcement.*
- *Maintain a list of focus areas where there are transportation safety concerns, based on historical crash data.*

9.2. Implementation

Implementation of the LRSP can be accomplished through several avenues including development of projects, the establishment of new policies and programs, and development/strengthening of relationships with stakeholders.

With regard to projects, the following identifies potential focus areas for the County in the near-to-mid-term.

9.2.1. Near- and Mid-Term Focus Areas

The opportunities identified in this LRSP provide more of the systemic countermeasures that can be applied within the County. Over the next three to five years, it is recommended that the County concentrate its efforts on the following emphasis areas:

- *Lane Departure*
- *Impaired Driving*
- *Motorcyclists*

Analysis conducted at the countywide level indicated that these factors were some of the most frequent influences contributing to K+SI crashes within the County. The countermeasure opportunities previously discussed in this LRSP for both systemic and project-specific improvements can be used as a basis for developing projects at locations where addressing these focus areas would be of the most benefit. Projects that address these focus areas can be developed with a high benefit-to-cost ratio (by applying countywide crash rates), allowing competitive projects to be developed even at sites with little to no direct crash history, but with conditions that might contribute to future crashes.

9.3. Updates to the LRSP

The following steps outline the process for updating the County’s LRSP every 5 to 7 years.

- 1) *Access necessary data*
 - *Roadway and intersection classification/configurations*
 - *Average Daily Traffic Volumes (Collected from counts where available)*



El Dorado County Local Road Safety Plan (LRSP)

- *Collision history*
- 2) *Network screening*
 - *Calculate the CCR for each roadway functional classification and intersection control type*
 - *Rank for each facility type*
 - i) *Roadway Segment*
 - (1) *Primary*
 - (2) *Secondary*
 - (3) *Local*
 - ii) *Intersection*
 - (1) *Signalized*
 - (2) *Unsignalized*
- 3) *Select locations*
 - *Identify the location with a higher CCR than what is typical of comparable facility types within County*
 - *Analyze the collision history and work with local officials to understand any significant exterior influences on the location*
- 4) *Countermeasures*
 - *Using the Engineering Countermeasures Toolbox (Table 4) and Non-Infrastructure Toolbox (Table 5), identify potential countermeasures that can be applied to the local to enhance safety features*
- 5) **Develop a Project Sheet** that can serve as a template for analyzing future locations
- 6) **Calculate the benefit and the cost** of each applicable countermeasure using Highway Safety Improvement Program (HSIP) tool and LRSM countermeasures. If those are not available, refer to other resources such as the CMF Clearinghouse and follow a similar calculation (using 20-year cost and benefit numbers). See more information in the section **HSIP Analyzer** below.

The LRSP has completed steps 1 through 6. In subsequent years, the County can begin at step 1 to continue the LRSP process. Additional items the County can do to keep the LRSP current are:

- 1) *When new or reconstruction projects arise, use the data processed to identify locations with similar characteristics and apply countermeasures which proved effective*
- 2) *Proactively update its roadway and traffic standards to address systemic safety issues identified in the LRSP*

9.3.1. HSIP Analyzer

As of 2021, the preferred way to calculate the BCR for the HSIP program uses Caltrans HSIP Analyzer tool in the form of an active PDF. The PDF tool contains 4 sections which are used to calculate the Benefit Cost Ratio for the Highway Safety Improvement Program.

This tool can be accessed on the Caltrans website:

<https://dot.ca.gov/programs/local-assistance/fed-and-state-programs/highway-safety-improvement-program/apply-now>



El Dorado County Local Road Safety Plan (LRSP)

Projects appropriate for other state grant programs can be analyzed using the Life-Cycle Benefit Cost Analysis Model (CalB/C) which has a much more comprehensive benefit assessment tool set.

9.3.2. HSIP Eligibility

Per Chapter 9 of the Highway Safety Improvement Program, funds are eligible for projects that improve the safety of its users on any public road or publicly owned bicycle or pedestrian pathway or trail, or on tribal lands for general use of tribal members.

HSIP looks for safety projects that can be designed and constructed expeditiously and do not require significant acquisition of rights-of-way. Proposed projects should not require extensive environmental review and mitigation. Additional information on the HSIP project selection criteria can be accessed online:

- Benefit Cost Ratio Applications
<https://dot.ca.gov/-/media/dot-media/programs/local-assistance/documents/hsip/2020/hsipalyzerinstructions2020bcr.pdf>
- Funding Set-asides (Non-Benefit Cost Ratio Applications)
<https://dot.ca.gov/-/media/dot-media/programs/local-assistance/documents/hsip/2020/hsipalyzerinstructions2020sa.pdf>

HSIP project eligibility is subject to the California SHSP. The SHSP identifies statewide challenge areas that correspond to safety concerns at the statewide level and potential countermeasure to address them and determine HSIP project eligibility. SHSP's are developed in compliance with FHWA requirements. A list of eligible project types can be seen in the current HSIP Analyzer. More information can be accessed online at the Caltrans HSIP grant website:

<https://dot.ca.gov/programs/local-assistance/fed-and-state-programs/highway-safety-improvement-program/apply-now>

9.4. Funding

Competitive funding resources are available to assist in the development and implementation of safety projects in El Dorado County. The County should continue to seek available funding and grant opportunities from local, state, and federal resources to accelerate their ability to implement safety improvements throughout El Dorado County. The following is a high-level introduction into some of the main funding programs and grants for which the County can apply.

9.4.1. Highway Safety Improvement Program (HSIP)

The Highway Safety Improvement Program (HSIP) is a Federal program housed under Fixing America's Surface Transportation (FAST) Act. This program apportions funding as a lump sum for each state, which is then divided among apportioned programs. These flexible funds can be used for projects to preserve or improve safety conditions and performance on any Federal-aid highway, bridge projects on any public road, facilities for non-motorized transportation, and other project types. Safety improvement projects eligible for this funding include:

- *New or upgraded traffic signals*
- *Upgraded guard rails*
- *Marked crosswalks*



El Dorado County Local Road Safety Plan (LRSP)

California's local HSIP focuses on infrastructure projects with national recognized crash reduction factors. Normally HSIP call-for-projects is made at an interval of one to two years. The applicant must be a city, a county, or a tribal government federally recognized within the State of California.

Additional information regarding this program at the Federal level is available at: <https://safety.fhwa.dot.gov/hsip/>. California specific HSIP information – including dates for upcoming call for projects – is available at: <http://www.dot.ca.gov/hq/LocalPrograms/hsip.html>.

9.4.2. Caltrans Active Transportation Program (ATP)

Caltrans Active Transportation Program (ATP) is a statewide funding program, created in 2013, consolidating several federal and state programs. The ATP funds projects that encourage increased mode share for walking and bicycling, improve mobility and safety for non-motorized users, enhance public health, and decrease greenhouse gas emissions. Projects eligible for this funding include:

- *Bicycle and pedestrian infrastructure projects*
- *Bicycle and pedestrian planning projects (e.g. safe routes to school)*
- *Non-infrastructure programs (education and enforcement)*

This program funding is provided annually. The ATP call for projects typically comes out in the spring. Information on this program and cycles can be found online:

<http://www.dot.ca.gov/hq/LocalPrograms/atp/>

9.4.3. State Transportation Improvement Program (STIP)

The State Transportation Improvement Program (STIP) provides state and federal gas tax money for improvements both on and off the state highway system. STIP programming occurs every two years. The programming cycle begins with the release of a proposed fund estimate, followed by California Transportation Commission (CTC) adoption of the fund estimate. The fund estimate serves to identify the amount of new funds available for the programming of transportation projects. Once the fund estimate is adopted, Caltrans and the regional planning agencies prepare transportation improvement plans for submittal. Caltrans prepares the Interregional Transportation Improvement Program (ITIP) using Interregional Improvement Program (IIP) funds, and regional agencies prepare Regional Transportation Improvement Programs (RTIPs) using Regional Improvement Program (RIP) funds. The STIP is then adopted by the CTC.

9.4.4. California Senate Bill 1 (SB 1)

SB 1 is a landmark transportation investment to rebuild California by fixing neighborhood streets, freeways and bridges in communities across California and targeting funds toward transit and congested trade and commute corridor improvements.

California's state-maintained transportation infrastructure will receive roughly half of SB 1 revenue: \$26 billion. The other half will go to local roads, transit agencies and an expansion of the state's growing network of pedestrian and cycle routes. Each year, this new funding will be used to tackle deferred maintenance needs both on the state highway system and the local road system, including:

- *Bike and Pedestrian Projects: \$100 million*



El Dorado County Local Road Safety Plan (LRSP)

- *This will go to cities, counties and regional transportation agencies to build or convert more bike paths, crosswalks and sidewalks. It is a significant increase in funding for these projects through the Active Transportation Program (ATP).*
- *Local Planning Grants: \$25 million*

9.4.5. California Office of Traffic Safety (OTS) Grants

This program has funding for projects related to traffic safety, including transportation safety education and encouragement activities. Grants applications must be supported by local crash data (such as the data analyzed in this LRSP) and must relate to the following priority program areas:

- *Alcohol Impaired Driving*
- *Distracted Driving*
- *Drug-Impaired Emergency Medical Services*
- *Motorcycle Safety*
- *Occupant Protection*
- *Pedestrian and Bicycle Safety*
- *Police Traffic Services*
- *Public Relations, Advertising, and Marketing Program*
- *Roadway Safety and Traffic Records*

9.4.6. SACOG Regional Funding Programs

The Sacramento Area Council of Governments (SACOG) provides funding allocation for various multi-modal transportation projects in the Sacramento region. Projects that are considered for this regional funding program must be eligible for CMAQ, RSTP, or STIP funds.

Performance outcomes which are considered for selection include those which:

- *Reduce regional VMT per capita*
- *Reduce regional congest VMT per capita*
- *Increase multi-modal or alternative travel choices*
- *Provide long term benefits, sustaining both rural and urban economies*
- *Improve movement of goods, in and through the region*
- *Improve safety and security*
- *Maintain and improve upon the existing transportation system*



NEXT STEPS



SECTION 1

SECTION 2

SECTION 3

SECTION 4

SECTION 5

SECTION 6

SECTION 7

SECTION 8

SECTION 9

SECTION 10



10. NEXT STEPS

The County of El Dorado has completed this LRSP to guide the process of future transportation safety improvements for years to come. The data-driven analysis process identified crash types, related primary crash factors, locations with frequent crashes and similar risk factors. Based on this process, emphasis areas were identified. These emphasis areas will guide traffic safety improvements, education programs, and capital improvements for the County. Using the analyzed data and outputs from this LRSP, the County will:

- *Apply for HSIP grant funding for safety improvements throughout the County that address the various emphasis areas identified, including intersections and lane departures*
- *Actively seek other funding opportunities to improve safety for all modal users*
- *Collaborate with established stakeholders and neighboring municipalities (i.e. Sacramento County, Placer County) as improvements are made to create a cohesive transportation network*
- *Iteratively evaluate existing and proposed transportation safety programs and capital improvements to design and operate a safer transportation network in El Dorado County*
- *Complete annual review of safety data*



LITERATURE REVIEW



Literature Review: Table of Documents

ID	Document Name	Year	Agency	Document Description	Transportation Improvements / Policies	Safety
1	El Dorado County General Plan Transportation and Circulation Element	2004 (Adjusted 2019)	Sutter County Board of Supervisors	Presents a vision for the City through 2030 and establishes priorities for allocation of resources	-Goal TC-1: plan for unified, coordinated, and cost efficient county roadway and highway system -Goal TC-3: Reduce demand on on road system and maximize efficiency of transportation facilities	
2	El Dorado County Active Transportation Plan	2020	El Dorado County Transportation Commission	Outlines plan and vision to increase quality of life of residents/visitors by improving walkability and biking convenience and comfort	Strategies (CH3 PG31): involve local agencies to increase awareness and benefits to health incorporate (CH3 PG36) planning and use Capital Improvement Program (CIP) for construction of bicycle and pedestrian improvements	-Strategies to implement ongoing improvements by analyzing collisions, enhancing visibility, adding barriers/markings as needed and collecting survey results on safety challenges in the County. -Promote idea of Safe Routes to School (SRTS) - will encourage more families and students to bike along designated Routes -Improve pedestrian safety with striping/signalization/refuge islands -Add color filled bike lanes to Improve visibility
3	Smart Region El Dorado County Technology Implementation Plan	2019	El Dorado County	Provides framework to improve transportation technology to create a more reliable transportation network	-Pg 5. Program goals and objectives -Pg 8. Potential solutions for addressing needs and gaps	
4	Meyers Corridor Operational Improvement Project	Proposed	El Dorado County	Outlines plans, designs, and construction for a complete street on a 1.3 mile stretch of the Meyers Corridor.	See the following webpage for project description: https://www.edcgov.us/Government/dot/TahoeEngineering/Pages/meyers_corridor_operational_improvement_project.aspx	
5	El Dorado Trail Extension Project	Proposed	DOT	Details the expansion of bike trail path and overcrossing project	See the following webpage for project description: https://www.edcgov.us/government/dot/pages/el_dorado_trail_extension_project.aspx See EDT POC Fact Sheet_El_Dorado_Trail	
6	U.S. Highway 50 Camino Safety Project	Proposed	Caltrans	Improvements to road increase safety on the U.S. Highway 50	-Installing median barrier, repaving roadway, constructing undercrossing, wildlife crossing under freeway	-Restricts left turn movements and provide access to crossing wildlife
7	El Dorado County ADA	2017	El Dorado County	Strategy to meet State and Federal in terms of accessibility / physical barriers	- Maintenance and repair projects, capital improvement projects and improvements for existing curb facilities	
8	Lake Tahoe Unified School District Safe Routes To School Master Plan	2015	Tahoe Metropolitan Planning Organization/ Tahoe Regional Planning Agency	Plan to improve health and safety of students by creating, educating, and encouraging safer and accessible active transportation	-Connection of trails and creation of Class 1 bike paths	-Recommendations for enhanced intersection crossing improvements such as pedestrian activated beacons, improved striping and signage
9	Meyers Area Plan	2022	El Dorado County/ Tahoe Regional Planning Agency	Transportation and circulation element supplementing the El Dorado County General Plan	- Pg 3-3: Transportation Goals and Policies - Pg 3-6: Transportation & Circulation Implementation Actions	-Support SRTS and ATP programs -Intersection improvements and centerline improvements to US 50 -relocation of agricultural inspection station and improve snow removal and storage operations
10	Linking Tahoe: Active Transportation Plan Appendix A-H	2016	Tahoe Metropolitan Planning Organization/ Tahoe Regional Planning Agency	Promotion of health, air quality, economy, and community character through an improved and expanded bicycle and pedestrian network	- Pg 3-2: Transportation Policies - All projects containing active transportation facilities require a Maintenance Responsibility Chart and Plan	- Recommended design elements for bicycle and pedestrian-oriented infrastructure
11	Linking Tahoe: Active Transportation Plan Amendment 1	2018	Tahoe Metropolitan Planning Organization/ Tahoe Regional Planning Agency	document "Linking Tahoe: Active Transportation Plan"	-updated inventory of facilities and recommendations based on updated information Amendments made to the	
12	KABCO Injury Classification Scale and Definitions	-	Federal Highway Administration	Injury codes for each state.		- Pg 2-3: California injury classification scale and definitions

EL DORADO COUNTY GENERAL PLAN
TRANSPORTATION AND CIRCULATION ELEMENT

TRANSIT CORRIDORS

As population and employment in El Dorado County increase, there will be greater need and opportunities for transit use. Opportunities can be maximized with planning aimed at concentrating higher intensity development and ensuring good transit accessibility in viable transit corridors. A “transit corridor” is an area along a major transportation facility (e.g., freeway, arterial, rail line) that can be planned for higher intensity land use. Transit corridors are designated based upon existing and future availability of “high-capacity” transit service and the availability of land that could be developed or redeveloped for higher-intensity residential and employment centers. The designation of transit corridors is intended to preserve rights-of-way in potential high-capacity transit corridors and provide adequate transit ridership in those corridors through land use and design standards that emphasize transit accessibility.

El Dorado County, the EDCTC, EDCTA, SACOG, Caltrans, City of Folsom, and the Regional Transit Authority in Sacramento County, are studying several transit corridor concepts in two categories: railroad corridors with potential for light rail or commuter rail transit and freeway corridors requiring adequate right-of-way for rail or other mass transit facilities. In addition to this effort, the County and EDCTA will continue to evaluate the need for expanded or improved bus service. Based on existing and planned development patterns, transit bus service is expected to continue to provide the highest service level, cost-efficiency, and route/area flexibility within the Greater Sacramento Metropolitan Area, including El Dorado County.

Transit corridors are likely to be designated only within the El Dorado Hills/Cameron Park and Tahoe Basin portions of the county since these areas have the best potential to allow the population and employment densities sufficient to support high-capacity transit services. The designation of transit corridors in El Dorado County depends upon the availability of existing or future rights-of-way for such services (e.g., light rail). It also depends on the availability of land that could be developed or redeveloped with higher-intensity residential uses and employment centers under the General Plan. With the concentration of higher-intensity development in certain corridors, high-capacity transit service may be feasible, whereas higher intensities in scattered locations are unlikely to support high-capacity transit services.

GOALS AND POLICIES

The following sections set out goals and policies for roads and highways, transit, transportation systems management, non-motorized transportation, rail transportation, and air transportation.

ROADS AND HIGHWAYS

The El Dorado County Circulation Map is a road and highway plan designed to provide for the safe and efficient movement of people and goods to and within the county and to ensure safe and continuous access to land. Using the state freeway and highways and the County’s

system of roads as its basic framework, the County Circulation Map provides a unified, functionally integrated, countywide system that is correlated with the Land Use Element.

GOAL TC-1: To plan for and provide a unified, coordinated, and cost-efficient countywide road and highway system that ensures the safe, orderly, and efficient movement of people and goods.

Policy TC-1a The County shall plan and construct County-maintained roads as set forth in Table TC-1. Road design standards for County-maintained roads shall be based on the American Association of State Highway and Transportation Officials (AASHTO) standards, and supplemented by California Department of Transportation (Caltrans) design standards and by County Department of Transportation standards. County standards include typical cross sections by road classification, consistent with right-of-way widths summarized in Table TC-1.

TABLE TC-1 GENERAL ROADWAY STANDARDS FOR NEW DEVELOPMENT BY ROAD CLASSIFICATION				
Road Classification	ACCESS CONTROL		CROSS SECTION	
	Public Roads Intersections (Or interchanges)	Abutting Property Driveways and Private Roads	ROW	Roadway Width
Six-Lane Divided Road	½ mile minimum spacing	Restricted	130'	108'
Four-Lane Divided Road	½ mile minimum spacing	Limited	100'	84'
Four-Lane Undivided Road				
Community Regions	½ mile minimum spacing	Limited	80'	64'
Rural Centers and Rural Regions	½ mile minimum spacing	Limited	80'	64'
Major Two-Lane Road				
Community Regions	¼ mile minimum spacing	Limited	60'	40'
Rural Centers and Rural Regions	¼ mile minimum spacing	Permitted	60'	40'
Local Road	¼ mile minimum spacing	Permitted	60'	Varies
Notes:				
<ol style="list-style-type: none"> 1. Access control and cross sections are desired standards. Details and waiver provisions shall be incorporated to the Design and Improvement Standards Manual (El Dorado County 1990). 2. Notwithstanding these highway specifications, additional right-of-way may be required for any classification when a road coincides with an adopted route for an additional public facility (e.g., transit facilities, bikeways, or riding and hiking trails), or a scenic highway. 3. The County may deviate from the adopted standards in circumstances where conditions warrant special treatment of the road. Typical circumstances where exceptions may be warranted include: <ol style="list-style-type: none"> a. Extraordinary construction costs due to terrain, roadside development, or unusual right-of-way needs; or b. Environmental constraints that may otherwise entirely preclude road improvement to the adopted standards, as long as environmental impacts are mitigated to the extent feasible. 4. Travel ways for all highways should be 12 feet wide. Turning lanes should be 12 feet wide, but may be reduced to 10 feet based on topographical or right-of-way constraints. All travel ways on roads should be paved. 				

Policy TC-1b In order to provide safe, efficient roads, all roads should incorporate the cross sectional road features set forth in Table TC-1.

Policies TC-1c through TC-1j intentionally blank

Policy TC-1k The County shall continue to work with the El Dorado County Transportation Commission, Sacramento Area Council of Governments, California Department of Transportation, Tahoe Regional Planning Agency, and other agencies to maintain a current Regional Transportation Plan, to identify funding priorities, and to develop expenditure plans for available regional transportation funds in accordance with regional, state, and federal transportation planning and programming procedures. Such regional programming may include improvements to state highways, city streets, and county road.

- Policy TC-1l The County shall actively seek all possible financial assistance, including grant funds available from regional, state, and federal agencies, for street and highway purposes when compatible with General Plan policies and long-term local funding capabilities.
- Policy TC-1m The County shall ensure that road funds allocated directly or otherwise available to the County shall be programmed and expended in ways that maximize the use of federal and other matching funds, including maintenance requirements.
- Policy TC-1n The County shall generally base expenditure of discretionary road funds for road uses on the following sequence of priorities:
- A. Maintenance, rehabilitation, reconstruction, and operation of the existing County-maintained road system;
 - B. Safety improvements where physical modifications or capital improvements would reduce the number and/or severity of crashes; and
 - C. Capital improvements to expand capacity or reduce congestion on roadways at or below County level of service standards, and to expand the roadway network, consistent with other policies of this General Plan.
- Policy TC-1o The County shall work with the cities of Placerville and South Lake Tahoe to establish a system of designated truck routes through urban areas.
- Policy TC-1p The County shall encourage street designs for interior streets within new subdivisions that minimize the intrusion of through traffic on pedestrians and residential uses while providing efficient connections between neighborhoods and communities.
- Policy TC-1q The County shall utilize road construction methods that seek to reduce air, water, and noise pollution associated with road and highway development.
- Policy TC-1r The County shall accept classified roads, as defined on Figure TC-1, into the County-maintained road system when constructed to County standards.
- Policy TC-1s Notwithstanding Policy TC-1r, the County shall only add new local roads into the existing County-maintained road system if maintenance for these local roads will be provided for through a County Service Area Zone of Benefit or other similar means acceptable to the Board of Supervisors.
- Policy TC-1t The County shall identify locations of needed future road rights-of-way, consistent with Figure TC-1, through analysis and adoption of road alignment plan lines where appropriate. Circumstances where road

alignment plan line analysis and adoption are acceptable shall include the following:

- A. Where major roads or corridors are expected to require additional through lanes within a 20-year planning horizon;
- B. Where the future alignment is expected to deviate from the existing alignment, or to be developed asymmetrically about the existing section or centerline;
- C. Where the adjacent properties are substantially undeveloped, so that property owners may benefit from prior knowledge of the location of rights-of-way of planned roads before constructing improvements or developing property in a way that may ultimately conflict with identified transportation needs; and
- D. Future facilities as identified in Figure TC-1.

Policy TC-1u *intentionally blank*

Policy TC-1v The County shall consider modification of the circulation diagram to include a frequent transit service operating on exclusive right-of-way to the El Dorado Hills Business Park from residential communities in El Dorado County and from the City of Folsom.

Policy TC-1w New streets and improvements to existing rural roads necessitated by new development shall be designed to minimize visual impacts, preserve rural character, and ensure neighborhood quality to the extent possible consistent with the needs of emergency access, on street parking, and vehicular and pedestrian safety.

Policy TC-1x To reduce heavy truck traffic in residential areas and near noise sensitive land uses associated with discretionary projects, the County will review truck routes to ensure traffic noise impacts are minimized.

Policy TC-1y *intentionally blank*

LEVELS OF SERVICE AND CONCURRENCY

In 1998, El Dorado County voters adopted an initiative measure known as Measure Y, the “Control Traffic Congestion Initiative.” The initiative added several policies to the former General Plan intended to require new development to fully pay its way to prevent traffic congestion from worsening in the County. The initiative provided that the new policies should remain in effect for ten years and that the voters should be given the opportunity to readopt those policies for an additional 10 years. The policies in this section reflect the voters’ intent in adopting Measure Y by (1) applying the Measure Y policies through 2008, (2) providing for the possible readoption of those policies in 2008, and (3) providing alternative policies that will take effect in 2009 if the Measure Y policies are not extended.

7. Second dwellings as defined under County Code Chapter 130.40.300 shall be subject to the multi-family fee.
8. *intentionally blank* (Resolution 159-2017, October 24, 2017)

TRANSIT

Transit systems—both bus and rail—provide alternatives to automobile use and are especially important for those who cannot or do not drive (i.e., the transit dependent). As El Dorado County grows, the potential for transit use and the need for transit will increase. The General Plan supports expansion of the existing transit system, especially in connection with new development.

GOAL TC-2: To promote a safe and efficient transit system that provides service to all residents, including senior citizens, youths, the disabled, and those without access to automobiles that also helps to reduce congestion, and improves the environment.

- Policy TC-2a The County shall work with transit providers to provide transit services within the county that are responsive to existing and future transit demand and that can demonstrate cost-effectiveness by meeting minimum fare box recovery levels required by state and federal funding programs.
- Policy TC-2b The County shall promote transit services where population and employment densities are sufficient to support those transit services, particularly within the western portion of the county and along existing transit corridors in the rural areas.
- Policy TC-2c The County shall cooperate with other agencies in the identification and development of transit corridors.
- Policy TC-2d The County shall encourage the development of facilities for convenient transfers between different transportation systems (e.g., rail-to-bus, bus-to-bus).
- Policy TC-2e The County shall work with the Tahoe Regional Planning Agency, Tahoe Transportation District, California Department of Transportation, and transit service providers to pursue the development of waterborne transportation for transit services in the Tahoe Basin.
- Policy TC-2f The County shall work with the El Dorado Transit Authority and support the provision of paratransit services and facilities for elderly and disabled residents, and those of limited means, which shall include bus shelters, bus stops, and ramps at stops.

TRANSPORTATION SYSTEMS MANAGEMENT

El Dorado County has a relatively complex highway and road transportation system, serving cars, heavy trucks, agricultural and commercial vehicles, buses, transit, bicycles, and pedestrian traffic. Coordinating these many forms of transportation is critical to achieving maximum road efficiency and minimizing costly road expansion or construction. Transportation Systems Management (TSM) is the use of techniques to manage traffic circulation to maximize existing facilities and provide for effective planning of new facilities.

Transportation Systems Management techniques are intended to provide economical, short-term improvements to increase efficiency and reduce congestion. Techniques include increasing the number of buses and routes, improving transit shelters, improving traffic signals, installing exclusive turn lanes, installing acceleration/deceleration lanes, resurfacing and widening of roads, and adding or improving bike lanes on new or existing roads. Transportation Systems Management measures can also conserve energy and decrease vehicular emissions leading to cleaner air. Transportation Systems Management is intended to emphasize improved transportation system efficiencies rather than road expansion or construction.

GOAL TC-3: To reduce travel demand on the County’s road system and maximize the operating efficiency of transportation facilities, thereby reducing the quantity of motor vehicle emissions and the amount of investment required in new or expanded facilities.

- Policy TC-3a The County shall support all standards and regulations adopted by the El Dorado County Air Quality Management District governing transportation control measures and applicable state and federal standards.
- Policy TC-3b The County shall consider Transportation Systems Management measures to increase the capacity of the existing road network prior to constructing new traffic lanes. Such measures may include traffic signal synchronization and additional turning lanes.
- Policy TC-3c The County shall encourage new development within Community Regions and Rural Centers to provide appropriate on-site facilities that encourage employees to use alternative transportation modes. The type of facilities may include bicycle parking, shower and locker facilities, and convenient access to transit, depending on the development size and location.
- Policy TC-3d Signalized intersections shall be synchronized where possible as a means to reduce congestion, conserve energy, and improve air quality.

NON-MOTORIZED TRANSPORTATION

The non-motorized transportation system includes bicycle facilities, sidewalks and pathways for pedestrians, and recreational trails for hiking and equestrian use. Policies regarding the latter are set forth in the Parks and Recreation Element.

GOAL TC-4: To provide a safe, continuous, and easily accessible non-motorized transportation system that facilitates the use of the viable alternative transportation modes.

- Policy TC-4a The County shall implement a system of recreational, commuter, and inter-community bicycle routes in accordance with the County’s *Bicycle Transportation Plan*. The plan should designate bikeways connecting residential areas to retail, entertainment, and employment centers and near major traffic generators such as recreational areas, parks of regional significance, schools, and other major public facilities, and along recreational routes.

- Policy TC-4b The County shall construct and maintain bikeways in a manner that minimizes conflicts between bicyclists and motorists.

- Policy TC-4c The County shall give priority to bikeways that will serve population centers and destinations of greatest demand and to bikeways that close gaps in the existing bikeway system.

- Policy TC-4d The County shall develop and maintain a program to construct bikeways, in conjunction with road projects, consistent with the County’s *Bicycle Transportation Plan*, taking into account available funding for construction and maintenance.

- Policy TC-4e The County shall require that rights-of-way or easements be provided for bikeways or trails designated in adopted master plans, as a condition of land development when necessary to mitigate project impacts.

- Policy TC-4f The County shall sign and stripe Class II bicycle routes, in accordance with the County’s *Bicycle Transportation Plan*, on roads shown on Figure TC-1, when road width, safety, and operational conditions permit safe bicycle operation.

- Policy TC-4g The County shall support development of facilities that help link bicycling with other modes of transportation.

- Policy TC-4h Where hiking and equestrian trails abut public roads, they should be separated from the travel lanes whenever possible by curbs and barriers (such as fences or rails), landscape buffering, and spatial distance.

Existing public corridors such as power transmission line easements, railroad rights-of-way, irrigation district easements, and roads should be put to multiple use for trails, where possible.

- Policy TC-4i Within Community Regions and Rural Centers, all development shall include pedestrian/bike paths connecting to adjacent development and to schools, parks, commercial areas and other facilities where feasible. In Rural Regions, pedestrian/bike paths shall be considered as appropriate.

GOAL TC-5: To provide safe, continuous, and accessible sidewalks and pedestrian facilities as a viable alternative transportation mode.

- Policy TC-5a Sidewalks and curbs shall be required throughout residential subdivisions, including land divisions created through the parcel map process, where any residential lot or parcel size is 10,000 square feet or less.

- Policy TC-5b In commercial and research and development subdivisions, curbs and sidewalks shall be required on all roads. Sidewalks in industrial subdivisions may be required as appropriate.

- Policy TC-5c Roads adjacent to schools or parks shall have curbs and sidewalks.

RAIL TRANSPORTATION

Rail transportation has played an important historical role in the development of the county, although currently there are no active rail transportation facilities. However, the former Southern Pacific right-of-way and track within the county, now known as the Sacramento-Placerville Transportation Corridor (SPTC), has requirements regarding preservation of the potential for reinstatement of rail transportation capabilities. The former Camino, Placerville, and Lake Tahoe Railroad right-of-way was purchased with state funding that precludes its use for rail unless that funding were returned.

GOAL TC-6: To plan for a safe and efficient rail system to meet the needs of all El Dorado County residents, industry, commerce, and agriculture.

- Policy TC-6a The County shall support improvements and uses on the former Southern Pacific right-of-way and track within the county, now known as the Sacramento-Placerville Transportation Corridor (SPTC) that maintain its viability as a potential freight and passenger hauling rail facility.

- Policy TC-6b The County shall support improvements to at-grade crossings on the former Southern Pacific right-of-way and track within the county, now known as the Sacramento-Placerville Transportation Corridor (SPTC), if that facility is reactivated as a freight or passenger hauling rail facility.

Policy TC-6c The County shall support multi-modal stations at appropriate locations to integrate rail transportation with other transportation modes.

AIR TRANSPORTATION

Air transportation plays a key role in the movement of goods and people not only to locations outside of the county but also between locations within the county. There are four public airports in the county: Placerville, Cameron Airpark, Georgetown, and South Lake Tahoe. The County’s role in air transportation is limited to land use regulation of the land surrounding the airports through the Zoning Ordinance and the actual operations of the two airports owned by the County: the Placerville Airport and the Georgetown Airport. State and federal agencies have primary jurisdiction over all airport facilities and operations in the county.

GOAL TC-7: To promote the maintenance and improvement of general and commercial aviation facilities.

Policy TC-7a The County shall continue to support federal and state regulations governing operations and land use restrictions related to airports in the county.

Policy TC-7b The County shall continue to seek input from the users of the Placerville Airport and the Georgetown Airport to promote the maintenance and improvement of these two general aviation facilities.

REGIONAL PLANNING

GOAL TC-8: To support the coordination of local, regional, State, and Federal transportation and circulation planning.

Policy TC-8a *intentionally blank*

Policy TC-8b The County shall review the EDCTC’s Regional Transportation Plan and SACOG’s Metropolitan Transportation Plan, including the Sustainable Communities Strategy each time it reviews and updates the General Plan and any master plan, strategy, and zoning, to ensure overall consistency among all of these plans and strategies to allow for CEQA streamlining and to ensure eligibility for State transportation and housing funding.

Policy TC-8c The County shall work with SACOG to ensure that cumulative impacts for any Regional Transportation Plan are analyzed pursuant to CEQA so that applicable projects may benefit from CEQA streamlining as provided by State law.

Policy TC-8d The County in working with the El Dorado County Transit Authority shall identify community level Transit Priority Areas (TPA) in areas planned for residential and mixed use projects that are consistent with land use designations, densities, building intensities, and all other applicable policies.

GOAL TC-9: To support the development of complete streets where new or substantially improved roadways shall safely accommodate all users, including bicyclist, pedestrians, transit riders, children, older people, and disabled people, as well as motorist.

Policy TC-9a Incorporate circulation concepts that accommodate all users in new developments as appropriate.

IMPLEMENTATION PROGRAM

MEASURE TC-A

Prepare and adopt a priority list of road and highway improvements for the Capital Improvement Program (CIP) based on a horizon of ten years. The Board of Supervisors shall update the CIP every year, or more frequently as recommended by the responsible departments. The CIP shall prioritize capital maintenance and rehabilitation, reconstruction, capacity, and operational and safety improvements. Non-capital maintenance activities need not be included in the CIP. The CIP shall be coordinated with the five-year major review of the General Plan and shall be included in the annual General Plan review. [Policies TC-1k, TC-1m, and TC-1n]

Responsibility:	Department of Transportation, Planning Department, and Board of Supervisors
Time Frame:	Within six months of General Plan amendment adoption; every one year thereafter.

MEASURE TC-B

Revise and adopt traffic impact fee program(s) for unincorporated areas of the county and adopt additional funding mechanisms necessary to ensure that improvements contained in the fee programs are fully funded and capable of being implemented concurrently with new development as defined by Policy TC-Xf. The traffic fees should be designed to achieve the adopted level of service standards and preserve the integrity of the circulation system. The fee program(s) shall be updated annually for changes in project costs, and at least every five years with revised growth forecasts, revised improvement project analysis and list, and

Smart Region El Dorado County Technology Implementation Plan

Transportation management is growing in terms of technology, software, and applications. The future of transportation includes connected vehicles, autonomous vehicles, decision-making based on performance metrics, and a committed focus on more effective operations and management of systems rather than just capital improvements. Often there is no way to build out of congestion, one to effectively improve mobility is to manage it more efficiently.

El Dorado County is one of eight agencies that is contributing to the Sacramento Area Council of Governments' (SACOG's) Smart Region Sacramento: Intelligent Transportation System (ITS) Architecture and Future Technology Project (referred to as Smart Region Sacramento). This Technology Implementation Plan provides the El Dorado County with the framework necessary to proactively and positively affect how residents and all travelers move within and access the County transportation network. This framework and its resulting tools, if prioritized and managed well by the County, will assist with every aspect of County public service: mobility, incident response, efficient maintenance, and cost savings across the County's bottom line. Because technology investments are low-cost compared to capacity-related projects and offer potentially significant benefits to the broad transportation system and its users, prioritizing technology investments supports the vision of an integrated and reliable transportation system.



Goals and Objectives

El Dorado County participated in the development of this Technology Implementation Plan that follows the [Smart Region mission statement](#) intended to clearly define the path toward technology investments and resources moving forward from 2019.

SMART REGION MISSION STATEMENT: To improve system performance, safety, sustainability, and reliability by ensuring efficient investments in regional smart transportation projects.

The [El Dorado County Smart Mobility Goals](#) include:

- ◆ Identify projects to improve County's communications network to connect field devices on primary corridors and more effectively manage the County's transportation system
- ◆ Provide additional tools for management of special and seasonal events Evaluate ways to improve efficiency of operations and maintenance of County's transportation system
- ◆ Develop projects that are appropriate for the type of community (urban versus rural)
- ◆ Evaluate ways to improve efficiency of operations and maintenance of County's transportation system
- ◆ Develop staffing plan to include recommendations on staffing levels and requisite skillsets for engineering and technical staff
- ◆ Identify implementable strategies to improve coordination and communication with neighboring agencies (Caltrans and neighboring Cities) to enhance regional traffic management)

The [Smart Region Objectives](#) include:

- ◆ Accommodate Different Communities Throughout the Region (Urban, Suburban, Rural, and Underserved)
- ◆ Adapt the Region to New Technology
- ◆ Achieve Consistency and Reliability for all Modes
- ◆ Increase Safety
- ◆ Improve Traveler Information Dissemination
- ◆ Improve Emergency/Disaster Preparedness



System Needs

The County is challenged with significant gaps that are inhibiting the system from addressing operational and management goals. System needs are identified by Infrastructure/Data (D), Operational (O), and Institutional (I) categories:

- ◆ D1: Baseline communications infrastructure
- ◆ D2: Robust coverage to acquire real-time conditions
- ◆ D3: Central system management of tools and data to support operations
- ◆ D4: Sharing of camera images to support pre-trip, en route, and incident management purposes
- ◆ D5: Timely emergency notifications (including weather)
- ◆ D6: Share data between agencies that share a corridor
- ◆ D7: Encourage travel mode shift
- ◆ D8: Real-time traveler information
- ◆ D9: Leverage and bolster private sector traveler information services
- ◆ O1: Access to central systems 24x7
- ◆ O2: Lack of environment for TOC operations
- ◆ O3: Improve traffic operations
- ◆ O4: Trained staff to support operations
- ◆ O5: Improve special event coordination
- ◆ I1: Funding strategy
- ◆ I2: Consistent CAD systems across public safety agencies





Determining the Path Forward

Traffic operations and management technology is constantly advancing and evolving, which makes it an important consideration during the formulation of implementation strategies. It is crucial that

the implementation process takes full advantage of the existing ITS technologies available while also formulating strategies that align with where technological advancements may be heading. The following are **current technology trends** that were evaluated for applicability in addressing needs and gaps:

- ◆ **Big data** – more data collected from roads, vehicles, and other sources
- ◆ **Transportation network carriers** – rideshare services
- ◆ **Connected vehicles** – field infrastructure and policies for data sharing
- ◆ **Autonomous vehicles** – vehicle fleets, availability, additional data
- ◆ **Smart wayfinding and citizen engagement platforms** – smart kiosks
- ◆ **Adaptive traffic signal control** – signals that can retime themselves
- ◆ **Traffic signal performance metrics** – software that finetunes how traffic signal timing serves the traveling public
- ◆ **Vehicle-to-everything communications** – data exchange
- ◆ **Internet of things** – connected devices that communicate in new ways
- ◆ **Electrification** – electric vehicles and charging stations
- ◆ **Multi-modal considerations** – on-board and fleet transit technologies

Determining the priority of which strategies are applicable to the County requires a careful evaluation of not only the existing conditions of the region but also the available technology trends that lend themselves toward potentially being solutions to the needs of the County.



Operations & Maintenance

The major elements of the future network include:

- ◆ 20 miles of fiber optic communications
- ◆ 59 traffic monitoring cameras
- ◆ 29 traffic information signs
- ◆ 24 upgraded traffic signal controllers
- ◆ 63 traffic detection devices

To effectively operate and maintain the various project elements and projects identified in this Implementation Plan, the County must be adequately staffed and prepared to sustain the system after it is deployed. Operations and maintenance procedures are essential to define the appropriate staffing levels, training, operational processes, and maintenance plans necessary to sustain an effective system. This Plan includes guidance for staffing resources necessary to support operations and maintenance activities recommended to maximize investment in assets.



Deployment Strategies

Strategies were developed and prioritized based on the County's conveyed needs and will aid in the phasing of future technology deployments and investments in the future of a Smart Region. Project corridors recommended to be outfitted with technology generally include enhanced communication infrastructure, deployment of vehicle video detection, installation of traffic monitoring cameras, installation of changeable message signs, installation of connected vehicle radio units, and traffic signal controller upgrades. Other strategies were developed to improve processes, outline standard operating procedures, or prepare for a future of connected and autonomous vehicles.

Exhibit ES-1 – Ultimate Communications Infrastructure

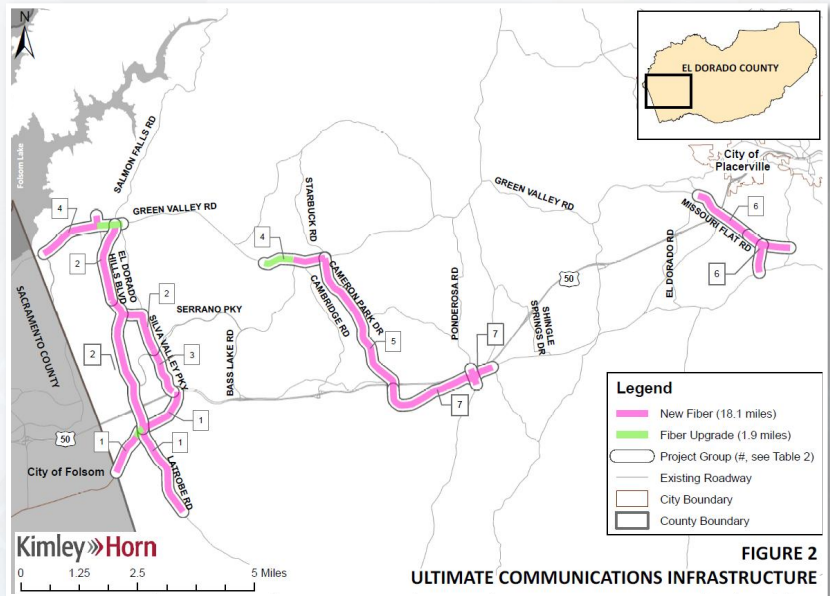
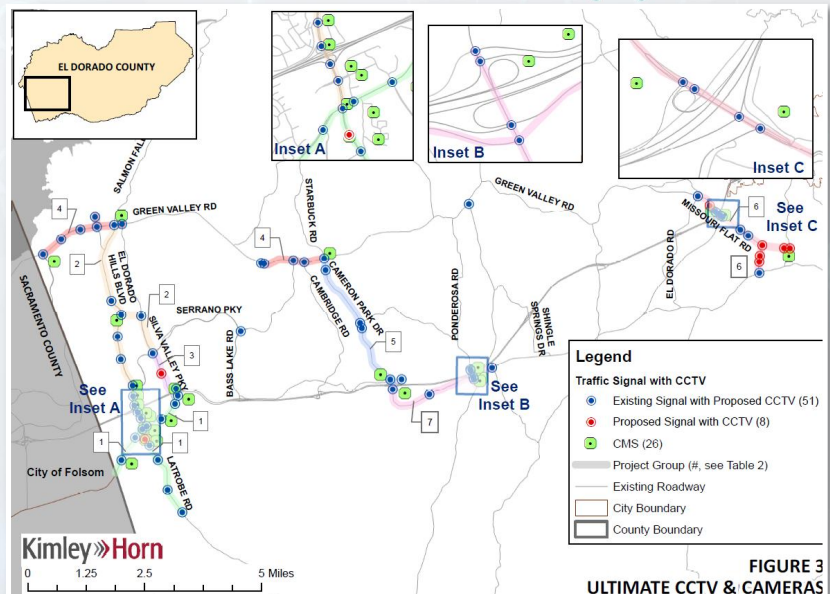


Exhibit ES-2 – Ultimate Cameras and Message Signs





identified as a potential project in which El Dorado County could implement CCTV cameras for traffic monitoring. The County currently maintains one to two portable Changeable Message Signs, but is looking to own more, including a few stationary signs at key locations. As the County only uses tube counts and has no permanent count locations, there is a desire to investigate the usage of detection at traffic signals for collecting counts. Bluetooth capabilities in El Dorado County exist on Highway 50 and the program is maintained by Caltrans.

NEEDS AND GAPS ASSESSMENT

El Dorado County’s Needs and Gaps Assessment process was conducted using a combination of methods. Existing documents and plans related to transportation and technology relevant to the County and the region were thoroughly reviewed. These needs and gaps form the foundation for identifying project solutions.

The needs and gaps were identified and categorized by the following distinctions:

- **Infrastructure/Data (D)** – field infrastructure, communications equipment, data, systems/software
- **Operations (O)** – operational enhancement projects and processes, staffing
- **Institutional (I)** – policies, agreements, funding/programming mechanisms, reporting/documenting, training

The following **Table 1** summarizes El Dorado County’s Needs and Gaps Assessment.

Table 1 – El Dorado County Needs and Gaps Summary

ID#	Need	Gap
		Infrastructure/Data
D1	Baseline communications infrastructure	Can’t communicate with all field devices. Closing the gaps in the County’s communications network will create redundancy in the County’s communications and replacing legacy copper communications with fiber will result in a more robust network.
D2	Robust coverage to acquire real-time conditions	Lack of device coverage and range of devices to collect different types of data. Lack of comprehensive detection and CCTV camera equipment at signalized intersections prevents the County from providing traffic-responsive signal timing and from adequately monitoring real-time conditions.
D3	Central system management of tools and data to support operations	Existing central system does not have communications to the field equipment.
D4	Sharing of camera images to support pre-trip, en route, and incident management purposes	County only has one CCTV camera deployed. Also, communications infrastructure not in place to share video with public or public safety agencies or partner agencies.
D5	Timely emergency notifications (including weather)	The delay in emergency notifications delays response capabilities and prevents accurate real-time data from being shared.
D6	Share data between agencies that share a corridor	Lack of real-time or planned knowledge of corridor restrictions operate efficiently across jurisdictions.



ID#	Need	Gap
D7	Encourage travel mode shift	Limited information is available or disseminated to support mode shift. Lack of TNC coordination locations for last-mile transit connections.
D8	Real-time traveler information	Limited real-time traveler information available to public and limited methods to disseminate information. Limited CMS equipment for communication of traveler information.
D9	Leverage and bolster private sector traveler information services	Inconsistency in data between agency services and third-party services. System data not available for use by other agencies. Lack of open data portal platform to allow for integration of third-party data.
Operations		
O1	Access to central systems 24x7	Existing central system does not have communications to the field equipment and does not have capability to monitor field elements.
O2	Lack of environment for TOC operations	There is no area set aside for a TOC.
O3	Improve traffic operations	Automate some functions to streamline operations. Current lack of adaptive traffic control or coordinated traffic signal timing along key corridors.
O4	Trained staff to support operations	Lack of sufficient number of staff members to provide adequate IT and project management staffing. Outdated or lack of skill set to support operational or maintenance needs.
O5	Improve special event coordination	Lack of tools to monitor traffic conditions during seasonal traffic (e.g., Apple farms area) and special events (e.g., Placerville Speedway).
Institutional		
I1	Funding strategy	Lack of reliable funding mechanism to support Smart City or Smart Region initiatives on a regional or agency-by-agency basis. Lack of regional technology procurement contract and regional technology and systems funding program.
I2	Consistent CAD systems across public safety agencies	Inability and incompatibility to share CAD data and coordinate responses across public safety agencies.

DETERMINING THE PATH FORWARD

There are many directions that SACOG and the region could move toward in implementing solutions to address the needs and gaps. While some gaps point to specific types of strategies that will directly and completely address that gap, other gaps are more difficult to solve and will require a combination of infrastructure, operations, and institutional processes to be implemented to completely address the gap.

Traffic operations and management technology is constantly advancing and evolving, which makes it an important consideration during the formulation of implementation strategies. It is crucial that the implementation process takes full advantage of the existing ITS technologies available while also formulating strategies that align with where technological advancements may be heading. The following are current technology trends that were evaluated for applicability in addressing needs and gaps as defined for the Smart Region Program:



- **Big Data** is becoming readily available as more data is acquired from connected field infrastructure on a near-real-time-basis as well as additional data-rich information from new sources such as probe vehicles, fleet vehicles, and connected vehicles becomes more mainstream. Big Data is about predictive analytics; or more simply, improving our ability to predict and anticipate outcomes. Historically, transportation data has been difficult and costly to obtain but as it becomes increasingly available through GPS, phone apps, and many other sources this is quickly changing. Big Data is already changing the way we plan, analyze, and operate our transportation, and big data will play a large role in affecting the evolution of STARNET.
- **Transportation Network Carriers (TNCs)** – TNCs pair passengers with drivers who provide on-demand service, most often via websites or mobile apps. Services such as Uber and Lyft are examples of the sharing economy. Increasingly, transit providers, including Sacramento Regional Transit (RT), are beginning to provide on-demand transportation services to augment their systems. These services have the potential to address the long-standing challenge of first-mile, last-mile service to expand the reach of existing bus and light rail service.
- **Connected Vehicle (CV)** readiness, both in terms of infrastructure and institutions, was identified as a need and yet full connected vehicle CV deployment is gradually becoming a reality in the industry. As a result, it is important that the partner agencies are equipped with the infrastructure and projects needed to adapt to those changes and needs. It is important to recognize the changing landscape of technology options with connected vehicles because the federal guidelines have not been finalized. Agency adoption of providing data to or collecting data from a connected vehicle will need to have benefits outlined and likely deployed on a scalable basis until more formal guidelines for adoption and expectations are defined.
- **Autonomous Vehicle (AV)** readiness, in terms of institutions and policies, was identified as a need as AVs are being tested on more and more roadways throughout the Country. Although functioning autonomously, there may be a variety of useful data that could be provided to the vehicle, collected by the vehicle, or shared between AVs that could require an agency role and responsibility.
- **Smart Wayfinding and Citizen Engagement Platforms** – Smart kiosks offer new, interactive ways for municipalities, business improvement districts, and marketing organizations to communicate with the public. Citizens and visitors use touchscreen displays to access a wide variety of information ranging from smart wayfinding and transit planning to locating nearby businesses and entertainment. Cities have the ability to broadcast important service announcements and relay emergency alerts enhancing public safety.
- **Adaptive Traffic Signal Control** enables traffic signals to proactively adjust signal timing parameters to accommodate unplanned variances in traffic demand. There are several adaptive systems in the market, each of which tends to accommodate specific corridor needs (e.g., maximize throughput, minimize side-street delay).
- **Automated Traffic Signal Performance Measures (ATSPM)** is a software module add-on to many traffic signal software applications that processes and analyzes traffic signal data to display and report performance metrics of an individual traffic signal, corridor, and/or across the traffic signal network. This feature enables agencies to proactively identify trouble areas, report on corridor performance, and facilitate efficient traffic management.

- **Vehicle-to-Everything (V2X) Communications** is becoming a highly-desirable system feature that establishes an exchange of data between vehicles and field infrastructure. One example includes Signal Phase and Timing data that enables subscribed vehicles to display when a downstream traffic signal will change. Another example is collecting vehicle location information for collision avoidance or for origin-destination analysis.
- **Internet of Things (IoT)** – Often referred to as “connected devices”, items are embedded with technology such that objects can exchange and collect data. From a streetlight bulb that notifies that it needs changing to roadway sensors that monitor traffic speeds, the opportunities to collect and use data to improve the maintenance and operations of the transportation system are rapidly expanding.
- **Electrification** – The transportation sector is responsible for approximately 36 percent of California’s Green House Gas (GHG) emissions (50 percent when you include refineries) and more than 80 percent of NOx and particulate emissions. In conjunction with the continued addition of renewable energy sources as the basis for electrification, the positive impact of air quality will be significant. As the location of charging stations continues to expand, electric vehicles will also become increasingly easy to own and operate.
- **Multi-Modal Considerations** – Municipalities and transit providers are also faced with the challenge of embracing technological advancements. These technologies are aimed at improving bicycle and pedestrian safety and mobility, as well as maximizing the efficiency and convenience of transit service. Technological advancements that provide more meaningful real-time and situational awareness information for multi-modal users include detection techniques, minimizing conflicts at traffic signals, fleet management, mobile traveler information, and Automatic Vehicle Location (AVL), among other methods. Multi-modal transportation users are diverse in their ability to provide information as well as receive it, and service providers are already applying technology in equipment as well as systems to provide a greater experience for the user.

El Dorado County is a participant in SACOG’s Civic Lab program, a regional effort launched by SACOG in August 2017. Civic Lab aims to improve effectiveness and efficiency of the region’s transportation systems by finding creative solutions to smart mobility issues. The County is involved in the apple farms area project which is proposing to reduce traffic volumes during peak tourist periods through wayfinding apps, increased signage, and transit improvements.

Determining the priority of which strategies are applicable to the SACOG region requires a careful evaluation of not only the existing conditions of the region (the infrastructure available, the data available, and the propensity for agencies to adopt certain technologies over others) but also the available technology trends that lend themselves toward potentially being solutions to the needs of the SACOG region.

IMPLEMENTATION PROJECT DEVELOPMENT

The previous information gathering efforts and the needs and gaps assessment influence the development of El Dorado County’s implementation projects. The needs and gaps illustrate the foundation for project opportunities to enhance the overall transportation system. The foundation of

knowledge and understanding of previously built projects ensures that the implementation projects are realistic and relevant to the County's conditions.

To support development and expansion of the transportation network, several deployment parameters were considered in conjunction with previously discovered information to formulate overarching implementation criteria. These include:

- **Key Emerging Technologies** – Provisions for CV/AV technology, multi-modal considerations (including transit), as well as other important initiatives in the region that are advancing innovative technology deployment.
- **Emergency/Disaster Preparedness** – Strategies facilitate the ability to improve the effectiveness of emergency and disaster response.
- **Data Availability** – The type and quality of available data, how data set can be improved and/or expanded, and how data can be effectively leveraged once it has been analyzed.
- **Project Dependencies** – Certain project elements must be constructed before other elements can be advanced.
- **Overlap with Other projects** – Other projects within the same project area offer efficiencies for construction.
- **Safety** – Strategy contributes to improved safety or reduction of collisions.
- **Context of Individual Agency** – Specifically customized for applicability to each agency.

Strategy Development

Overarching project strategies have been developed to identify a broad set of technology solutions that will address infrastructure/data, operations, and institutional stakeholder needs and system gaps. The strategy summary format is provided below and is detailed for each strategy in **Appendix B – Strategy Summary Sheets**:

- **ID #** – This is the identification number of the strategy.
- **Title** – This is the title of the strategy.
- **Description** – This is a succinct description of the strategy for context.
- **Relation to Needs** – This is a mapping of strategies to the original needs, recognizing that one strategy may serve multiple needs.
- **Scope/Limits** – This is a succinct summary of what is included in the strategy and/or locations (if applicable) of where the strategy would be deployed.
- **Considerations** – This is a bullet listing of other strategy ID #'s and Titles that are relevant for the County to reference during implementation or that could be packaged together to be implemented as part of a larger project in a particular timeframe.
- **Prerequisite Dependencies** – This is a bullet list summary of the high-level steps required to implement the strategy.

When all of these strategies are constructed, El Dorado County will have established an overall communications network and field equipment that enables staff to effectively monitor and manage

Americans with Disabilities Act
Formal Transition Plan
For
County Maintained Roadways

I. INTRODUCTION

Background

The Americans with Disabilities Act (ADA) of 1990, along with its implementing regulations, and California Government Code Sections 4450 et seq. prescribe that facilities shall be made accessible to persons with disabilities. The Federal Highway Administration has reaffirmed that the *Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities* (ADAAG) shall apply to the design of Caltrans facilities under Title II of the ADA, which applies to the operations of State and local governments. Federal Funding can be withheld if agencies do not comply with these regulations.

Goals and Objectives

The ADA requires all public agencies to develop an ADA Transition Plan for the installation of curb ramps or other sloped areas at all locations where walkways cross curbs on County maintained roadways. ADA compliance on County maintained roadways is the responsibility of the Community Development Services, Department of Transportation (DOT). This ADA Formal Transition Plan for County Maintained Roadways does not address ADA compliance for other County owned or maintained facilities, such as buildings, that fall under the purview of the County's Facilities Department.

Under Title II of the ADA, when streets or roads are newly built or altered, ramps must be provided wherever there are curbs or other barriers for entry from a pedestrian walkway. Likewise, when new sidewalks or walkways are built or altered, they must contain curb ramps or sloped areas wherever they cross curbs. This ADA Formal Transition Plan is intended to implement the goals and objectives of the County to make existing sidewalks accessible and usable for persons with disabilities.

As a first step to implementation of Title II of the ADA for County maintained roadways, DOT prepared a Preliminary ADA Transition Plan addressing existing and needed curb ramps within County maintained roadways. Following a public review period, DOT finalized this ADA Formal Transition Plan for County Maintained Roadways. The intent of the ADA Formal Transition Plan is to document what has been accomplished to date, what is currently being done, what work is currently needed, and what ongoing efforts will be necessary to ensure that the County creates accessible paths of travel in the public right-of-way for people with disabilities.

The ADA Formal Transition Plan includes the results of a 2016 self-evaluation and survey conducted of known County maintained intersections in both the West Slope and Tahoe Basin of unincorporated El Dorado County. The results of the survey, along with community input, provided a platform from which to develop the initial capital improvement list and implementation schedule identified in Sections VII and VIII.

El Dorado County Commitment

The County has made a significant and long-term commitment to improving the accessibility of the public right-of-way pursuant to ADA requirements. Where there are sidewalks that intersect with curbs, improvements in the public right-of-way can be characterized in the following ways:

1. Maintenance and Repair Projects:

- Work that specifically addresses spot areas that are limited to normal maintenance and repairs in the public right-of-way will maintain accessibility of the public right-of-way.
- Upon request, reasonable accommodations, repairs, and retrofit of facilities are provided on a case by case basis.

2. Capital Improvement Projects:

- Work that under the ADA would be considered an alteration of existing public improvements within the right-of-way will provide new and upgraded accessible features in the project area to meet current ADA standards. Examples include intersection improvements, road widening, and safety improvement projects.
- Work that involves creating new public improvements within the right-of-way will provide accessible features in the project area that meets current ADA standards.

3. Improvements Necessary to Existing Curb Facilities Previously Constructed:

- Since 1990, curb ramps have been required to be constructed to current standards in all new land development projects of the County. Changes in standards since 1990 have resulted in the existence of many curb ramps which are out of compliance with subsequent standards.

The County is thoroughly committed in making all curb ramp areas within the County right-of-way accessible to all pedestrians including those with disabilities. This is needed not only to comply with the ADA requirements, but to also ensure that citizens can travel safely throughout the unincorporated County.

Geographic Limits

This ADA Formal Transition Plan covers intersections on roadways maintained by DOT. Highways, state routes, and other right-of-ways that are not within the jurisdiction of El Dorado County are not addressed, nor will they be addressed in this ADA Formal Transition Plan.

II. ADA LEGISLATIVE REQUIREMENTS/BACKGROUND

The ADA, which was enacted on July 26, 1990, provides comprehensive civil rights protections to persons with disabilities in the areas of employment, state and local government services, transportation, telecommunications, and access to public accommodations. The ADA is a companion civil rights legislation to the Civil Rights Act

III. COUNTY RESPONSIBILITIES UNDER THE ADA

The County has various responsibilities under Title II of the ADA. Title II of the ADA is similar to Section 504 of the Rehabilitation Act of 1973, but differs in that Section 504 applies only to government agencies that receive federal financial assistance.

Title II mandates that a public agency, such as the County of El Dorado, operate each service, program, or activity so that the service, program, or activity, when viewed in its entirety, is readily accessible to and usable by individuals with disabilities. The Joint Technical Assistance on Title II also states that when streets or roads are altered through resurfacing, public agencies are required to install curb ramps if none previously existed or upgrade non-compliant curb ramps to meet applicable standards, where there is an existing pedestrian walkway. However, as described in Title 28 of the Code of Federal Regulations, Section 35.150(a) (hereafter referred to as the ADA Rules), this does not necessarily require a public agency to make each of its existing facilities accessible to and usable by individuals with disabilities. Nor does it require a public agency to take any action that would threaten or destroy the historical significance of a historic property. If the public agency can demonstrate that a modification would fundamentally alter the nature of its service, program, or activity or cause undue financial and administrative burdens, it is not required to make that particular modification.

Title II dictates that a public agency must evaluate its facilities and public areas to determine whether or not they are in compliance with the nondiscrimination requirements of the ADA. The regulations detailing compliance requirements were issued in July 1991. The requirements include:

- Complete a self-evaluation to identify areas not within compliance of ADA standards.
- Prepare a Transition Plan describing any necessary structural or physical changes needed to make all required areas accessible and compliant with ADA.

In 1992 the County adopted an ADA Transition Plan for County facilities. However, that document did not address ADA compliance within County maintained roadways. While the County has not prepared a formal written document regarding County maintained roadways until now, staff has been implementing the processes, procedures, and practices that accomplished the intent of the legislation with each project that came forward.

Specifically, the most current construction standards and requirements are implemented to insure that new development would be ADA compliant. In addition, all new County capital projects are required to meet the latest accessibility requirements and standards for curbs and ramps where sidewalks are present.

Curb Ramps

Outside of sidewalks and pedestrian crossings at traffic signals, curb ramps are the most used public service facilities on the County's roadways. Curb ramps are used by all pedestrians, including blind, disabled, and deaf, to safely cross roads where controlled crossings are provided. Design and construction standards for curb ramps have evolved and

changed over time as consensus has been forged by all users. This evolving nature of the standards has made it somewhat difficult to keep current of new needs, implement new standards, as well as retrofit non-compliant facilities, especially in the more rural areas of the County.

The County's Transition Plan as it relates to curb ramp accessibility on County maintained roadways per Section 35.150(d)(2) of the ADA Rules includes the following:

- Identify inaccessible and non-compliant curb ramps located in the unincorporated portion of the County within County maintained roadways;
- Develop a planning schedule and budget for making corrections and repairs;
- Develop a repair/request procedure;
- Develop a grievance process;
- Implement a public involvement process; and
- Provide a periodic review of standards and procedures.

IV. TRANSITION PLAN CONTENT

In addition to the requirements for County facilities, a public agency that has responsibility or authority over streets, roads, or walkways must also develop an ADA Transition Plan to include a schedule for providing curb ramps or other sloped areas where pedestrian walkways cross curbs, giving priority to walkways serving entities covered by the Act, including local government offices and facilities, transportation, and places of public accommodation. DOT has the responsibility of developing an ADA Transition Plan for County maintained roadways.

A Transition Plan:

- Identifies physical obstacles in the public agency's facilities that limit the accessibility of its programs or activities to individuals with disabilities;
- Describes in detail the methods that will be used to make the facilities accessible;
- Specifies the schedule for taking the steps necessary to achieve ADA compliance in making the facilities accessible; and
- Indicates the official responsible for implementation of the Plan.

V. PUBLIC OUTREACH

The ADA requires the County to "reach out to the local disability community" to obtain input on the development and improvement of facilities and the ADA Transition Plan. Public participation is key to the success of the program.

An ADA Workshop was held on October 24, 2016, in Placerville, California. Notifications were sent to numerous agencies and organizations, including Placerville Mobility Support Group, Mother Lode Rehabilitation Enterprises, Society for the Blind, senior centers, residential care facilities, and many others. An announcement was placed on the County's website and the community was also invited to the workshop through a Press Release.

Attendees had the opportunity to discuss existing needs and share ideas and concerns with staff in order to further define priorities. A survey was distributed to participants, community members and organizations.

Additional outreach efforts on the Draft Preliminary ADA Transition Plan include the following:

- **Cameron Park Community Services District:** The County presented to the Board of Directors and attendees on October 19, 2016.
- **El Dorado Hills Community Services District:** The County presented to the Board of Directors and attendees on October 20, 2016.
- **Placerville Mobility Support Group (PMSG):** The County presented to the PMSG on November 28, 2016. Participants engaged in a discussion sharing their experiences on county maintained roadways, curb ramp designs, and the priority levels.
- **Outreach to Persons with Visual Impairments:** County staff held a conference phone call with a citizen who is visually impaired on January 12, 2017. Items discussed included priority levels, experiences using curb ramps, and the standards that will be used to construct/improve curb ramps. The ADA Formal Transition Plan will be made available to persons who are visually impaired via large print text document or via email where software can convert the text to audio.
- **Survey:** A disabled access survey was distributed at public presentations and made available on the County website. The survey was used to better understand what accessibility conditions exist and how the community can be better served.
- **ADA Website:** The County ADA webpage was created to provide information on ADA Compliance regarding County right-of-ways and facilities, method to report ADA issues, useful links, and access to documents and plans pertaining to ADA.

VI. SELF EVALUATION

DOT has completed the self-evaluation process and completed a survey of County maintained intersections in unincorporated El Dorado County. DOT survey all known existing curb ramps in the West Slope and in the Tahoe Basin of unincorporated El Dorado County, totaling 516 curb ramps and 75 corners where curb ramps are non-existent and needed.

Many areas of the County such as Georgetown, Pollock Pines, and much of Camino lack sidewalks. These areas were visually surveyed through Google Earth¹ for intersections needing curb ramps. Intersections identified as having a need for curb ramps have been noted and will be considered on a case to case basis in context of the priorities established in this ADA Formal Transition Plan. Tables I and II provide a Summary of Existing Curb Ramps per Area and Summary of Curb Ramps Needed per Area.

¹ Survey completed January – November 2016, Google Earth images dated 2016.

El Dorado County Active Transportation Plan

The Active Transportation Plan vision, goals, objectives, and strategies were developed with input from the Stakeholder Advisory Committee. They are intended to address the active transportation needs and to provide guidance and strategies to support the active transportation mode. Within this Chapter these elements are presented by topic area and are not presented in any prioritized manner. Active transportation projects will be considered by the County where needs exist and there is available funding to deliver and maintain the improvements that will serve as a viable transportation alternative.



El Dorado Trail users enjoying the benefits of active transportation on a nice day in El Dorado County.

VISION

El Dorado County aims to be a healthy, safe, and thriving region where walking and bicycling are increasingly feasible options for travel, providing people of all ages and abilities safe, convenient, and accessible multi-modal transportation options.

GOALS

1. **Safety:** Design bicycle and pedestrian facilities that are safe, accessible and comfortable for people of all ages and abilities.
2. **Health:** Provide people of all ages and abilities with access to walking and bicycling facilities to improve health and enhance quality of life.
3. **Connectivity:** Identify, develop, and maintain a connected, safe and convenient bicycle and pedestrian network that meets the needs of commuters and recreational users of all skill levels.
4. **Funding and Implementation:** Identify and pursue local, county, regional, state and federal programs that would fund bicycle and pedestrian capital improvements and programs.



A bicyclist on the El Dorado Trail enjoying the mobility of an active transportation system that allows them to safely and comfortably access different parts of the county.

Objectives & Strategies



GOAL 1: SAFETY

Provide bicycle and pedestrian facilities that are safe, accessible and comfortable for people of all ages and abilities.

Objective 1.1: Improve safety for people walking and bicycling through education and enforcement programs.

- **Strategy 1.1.1:** Work with local law enforcement agencies, EDCTC, schools, and other partners to develop and provide bicycling and walking education to school children in El Dorado County.
- **Strategy 1.1.2:** Work with EDCTC and other partners to maintain a bike map that includes information on safe bicycling behavior.
- **Strategy 1.1.3:** Work with EDCTC to develop an online or printed brochure to educate people of all ages and abilities on how to bicycle safely and drive motorized vehicles with an awareness of bicyclists and pedestrians. Share this information with driver education providers and high schools, and post information on the EDCTC, El Dorado County and City of Placerville websites.

Objective 1.2: Proactively address safety for people walking and bicycling at potential conflict locations.

- **Strategy 1.2.1:** Review the number, locations, and contributing factors of bicycling related collisions to identify and implement ongoing improvements at key locations throughout the transportation network.
- **Strategy 1.2.2:** Enhance the visibility and safety of crossings through enhanced visibility of Class I Shared Use Path crossings, proper marking of Class II bicycle lanes at intersection approaches, and clear marked crosswalks for pedestrians.
- **Strategy 1.2.3:** EDCTC to use performance measures from the El Dorado County Active Transportation Connections Study to understand and develop solutions to barriers to safe pedestrian and bicycle transportation. The County will take this project prioritization into consideration as funds become available.
- **Strategy 1.2.4:** Work to address safety challenges identified by El Dorado County residents and as reported in the El Dorado County Active Transportation Connections Study Survey, and identified in the El Dorado County Bicycle and Pedestrian Safety Assessments.

- **Strategy 1.2.5:** Increase the number of streets in El Dorado County and its communities that are pedestrian and bicycle friendly by closing gaps in the existing active transportation network and providing bicycle and pedestrian amenities in new developments whenever feasible.
- **Strategy 1.2.6:** Analyze the best practices, new technologies, and innovations in active transportation facilities and safety improvements to determine what can be applied in El Dorado County.
- **Strategy 1.2.7:** Encourage retrofit projects on substandard bicycling and walking facilities to meet or exceed most recent design standards.
- **Strategy 1.2.8:** Coordinate with Caltrans to address safety concerns and provide safe and comfortable bicycle and pedestrian facilities on Caltrans maintained facilities in the County.



GOAL 2: HEALTH

Provide people of all ages and abilities with access to walking and bicycling facilities to improve health and enhance quality of life.

Objective 2.1: Increase walking and bicycling as transportation modes to improve air quality and public health.

- **Strategy 2.1.1:** Work to increase the percent of adults in El Dorado County that walk at least 150 minutes per week for transportation or recreation in order to meet the minimum level of physical activity recommended by the Centers for Disease Control and Prevention.
- **Strategy 2.1.2:** Construct active transportation projects and support the implementation of programs that increase the physical activity level of residents.
- **Strategy 2.1.3:** Increase the number of walking and bicycling trips by encouraging the development of infrastructure that provides the amenities of a recreational route, connects to multiple destinations, including work and shopping destinations, and decreases safety concerns.

Objective 2.2: Improve coordination with local and regional public health agencies.

- **Strategy 2.2.1:** Coordinate with the El Dorado County Active Living Leadership and “Well Dorado” initiatives to support the County’s Community Health Improvement Program.
- **Strategy 2.2.2:** Evaluate health outcomes using the preferred criterion identified in the El Dorado County Active Transportation Connections Study when feasible.



GOAL 3: CONNECTIVITY

Identify, develop, and maintain connected and convenient bicycle and pedestrian networks that meet the needs of commuters and recreational users of all skill levels.

Objective 3.1: Provide safe and accessible connections to important community destinations.

- **Strategy 3.1.1:** Support the Safe Routes to School (SRTS) program for students, and support implementation of additional SRTS program activities at schools.
- **Strategy 3.1.2:** Support the development of a bicycle network that safely and comfortably connects residential neighborhoods to destinations like employment centers, grocery stores, community centers, schools and shopping areas.

- **Strategy 3.1.3:** Identify and eliminate gaps to provide comprehensive community-wide networks and reduce travel time and trip distance for bicyclists and pedestrians.
- **Strategy 3.1.4:** Identify major activity centers and coordinate active transportation, housing and land use planning to maximize opportunities for increased active transportation and transit use.
- **Strategy 3.1.5:** Install directional signage to guide people bicycling to key destinations and routes.
- **Strategy 3.1.6:** EDCTC to maintain a robust public outreach strategy to engage and solicit input from community stakeholders, the general public, underrepresented/ disadvantaged communities and local jurisdiction staff regarding active transportation needs and projects.
- **Strategy 3.1.7:** When feasible, analyze priority active transportation improvements using a performance-based approach as identified in the El Dorado County Active Transportation Connections Study.

Objective 3.2: Support regional connectivity for active transportation.

- **Strategy 3.2.1:** Maximize coordination between EDCTC, El Dorado County, the City of Placerville, Community Services Districts, and neighboring jurisdictions to create continuity across boundaries.

- **Strategy 3.2.2:** Develop active transportation routes along major arterials and highways to support long distance bicycle commuting.
- **Strategy 3.2.3:** Coordinate Active Transportation Plan implementation with county and regional planning efforts such as the El Dorado County Regional Transportation Plan and Sacramento Area Council of Governments Metropolitan Transportation Plan/Sustainable Communities Strategy.

Objective 3.3: Maintain the active transportation network at an acceptable condition.

- **Strategy 3.3.1:** Use the California Manual of Uniform Traffic Control Devices (CAMUTCD) and the Caltrans Highway Design Manual as guidance for contractors and County and City inspectors to address the impact of roadway construction and maintenance projects on active transportation facilities, and require safe and convenient accommodation for bicyclists and pedestrians through construction zones.
- **Strategy 3.3.2:** Maintain or develop a system for identifying, evaluating, reporting, and responding to maintenance and safety issues on the active transportation network, including a system for residents to report maintenance needs.

Objective 3.4: Support multimodal connections between active transportation and transit.

- **Strategy 3.4.1:** Support the creation of Safe Routes to Transit for pedestrians and bicyclists.
- **Strategy 3.4.2:** Work with El Dorado Transit Authority to provide bicycle parking at transit stops and bicycle racks on buses.
- **Strategy 3.4.3:** Ensure new transit stops are accessible for pedestrians, including convenient crossings of nearby arterials.

Objective 3.5: Complete development of the El Dorado Trail.

- **Strategy 3.5.1:** Develop sections of the El Dorado Trail as identified in this Plan.
- **Strategy 3.5.2:** Develop bicycle and pedestrian connections from the El Dorado Trail to town centers and other destinations.
- **Strategy 3.5.3:** Develop connections from the El Dorado Trail to the City of Folsom and to the American River Parkway.



GOAL 4: FUNDING AND IMPLEMENTATION

Identify and pursue local, county, regional, state and federal programs that would fund bicycle and pedestrian capital improvements and programs.

Objective 4.1: Identify and prioritize improvements for bicycling and walking in El Dorado County.

- **Strategy 4.1.1:** Incorporate local and regional planning for active transportation infrastructure and support facilities.
- **Strategy 4.1.2:** Use the Capital Improvement Program (CIP) for construction of bicycle and pedestrian projects.
- **Strategy 4.1.3:** Maintain a list of low-cost bicycle and pedestrian improvements to be incorporated into annual transportation budgets, including routine repaving or other maintenance activities as appropriate.
- **Strategy 4.1.4:** Maintain a regularly updated Active Transportation Plan that identifies existing conditions, future needs, and implementation priorities in addition to providing specific recommendations for active transportation facilities in existing, new, and redeveloping areas.

Objective 4.2: Pursue funding to implement and maintain the projects and programs in this Plan.

- **Strategy 4.2.1:** Support the development of an active transportation funding and life cycle maintenance strategy.
- **Strategy 4.2.2:** Partner with other agencies and private businesses and organizations to pursue funding of priority active transportation projects.
- **Strategy 4.2.3:** Support projects that are more competitive for grant funding, including projects that will reduce reliance on motor vehicles, especially for short trips, to reduce greenhouse gases and other pollutants. Where applicable, use findings from the El Dorado County Active Transportation Connections Study in support of this strategy.

The following chapter presents recommended bikeway improvements throughout El Dorado County. These recommendations are based on a review of existing conditions, data-driven analyses, and community input documented in the earlier chapters of this Plan

Bicycle network projects are categorized based on the four classifications recognized by Caltrans, along with two sub-classifications, described in detail in Chapter 2 and the Bicycle and Pedestrian Facility Guidelines in Appendix A. These include:

- **Class I Shared Use Paths:** Dedicated paths for walking and bicycling completely separate from the roadway
- **Class II Bicycle Lanes:** Striped lanes for bicyclists
- **Class II Buffered Bicycle Lanes:** Bicycle lanes that include a striped “buffer” area either between the bicycle lane and travel lane or between the bicycle lane and parked cars

- **Class II Uphill Climbing Lane:** Where roadway width cannot accommodate bicycles lanes on both sides, a bicycle lane is to be installed on one side to give cyclists more protection as they climb uphill, while the bicyclists travelling downhill are to share the lane with traffic
- **Class III Bicycle Routes:** Signed routes for bicyclists on low-speed, low-volume streets where lanes are shared with motorists
- **Class III Advisory Shoulder:** Signed and marked shoulders for bicycle travel when not being used for parking
- **Class IV Separated Bikeways:** On-street bicycle facilities with a physical barrier between the bicycle space and motor vehicle lanes, including bollards, curbs, or parking. These facilities can be one-way or support two-way bicycle travel

Additionally, this chapter defines spot improvement facilities for bicycles. This includes Green Bike Lanes and Bike Racks that are recommended in this Plan. Green bike lanes are more appropriate for community centers, where there are higher levels of traffic and increased need for visibility of bicyclists.

Figure 7-1: Existing and Proposed Bikeway Mileage

Facility	Existing Facility Mileage	Proposed New Facility Mileage	# of Projects	Total Existing + Proposed Miles
Class I Shared Use Paths	29.6	35.9	31	65.5
Class II Bicycle Lanes	31.2	110.1	73	141.3
Class II Uphill Climbing Lanes	0	1.6	2	1.6
Class III Bicycle Routes	1.2	58	49	59.2
Class IV Separated Bikeways	0	1.2	3	1.2
Total	62	206.8	158	268.8

Network Connectivity

The recommended network greatly increases access to the destinations that El Dorado County residents regularly access and care about. Facilities within 1/3 of a mile to the bicycle network doubles (from 95 to 194) with the implementation of this Plan’s recommended bicycle facilities. The results of the increased bicycle network connectivity can be found below in Figure 7-2.

By increasing access to these facilities and destinations, this Plan will help create a more bikeable environment for all users in El Dorado County.

The existing bicycle network, along with the bicycle facility recommendations, are mapped on the following pages.



Multi-generational users taking advantage of the El Dorado Trail, El Dorado County’s longest Class I facility.

Figure 7-2: Increased Bicycle Network Connectivity

Activity Generator	Total	# within 1/3 mile of Existing Bike Network	# within 1/3 mile of Existing and Proposed Bike Network
Trailhead	4	1	3
Bus Stop	142	54	111
Employment Center	8	6	7
Park and Ride	11	5	11
Campground	7	0	1
Grocery Store	17	9	17
Schools	53	13	35
Library	9	6	8
CalTrain Station	1	1	1
Total	252	95 (37%)	194 (77%)



EL DORADO HILLS BICYCLE FACILITIES

Map 1

EL DORADO COUNTY
ACTIVE TRANSPORTATION
PLAN

Maps intended for planning purposes only.
Proposed Improvements are not intended
for route planning or navigation.

- Proposed Improvements**
- Spot Improvement
 - Class I Shared-Use Path
 - Class II Bicycle Lane
 - Class III Bicycle Route
 - Class IV Separated Bike Lane

- Activity Generators**
- Trailhead
 - Bus Stop
 - School
 - Employment Center
 - Campground
 - Grocery Store
 - Library

- Existing Bikeways**
- Class I Shared-Use Path
 - Class II Bicycle Lane
 - Class III Bicycle Route
- Destinations + Boundaries**
- Park
 - Water
 - El Dorado County Boundary

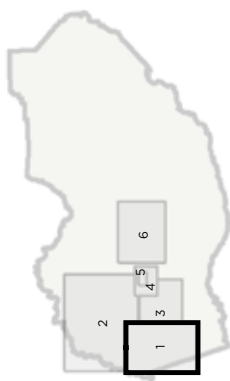
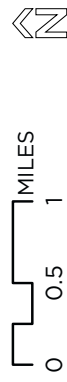






Figure 7-3: El Dorado Hills Proposed Bicycle Facilities

COOL, COLOMA, COLD SPRINGS, AND LOTUS BICYCLE FACILITIES




Map 2

EL DORADO COUNTY ACTIVE TRANSPORTATION PLAN



Proposed Improvements

-  Spot Improvement
-  Class I Shared Use Path
-  Class II Bicycle Lane
-  Class III Bicycle Route




Activity Generators

-  Trailhead
-  Grocery Store
-  School

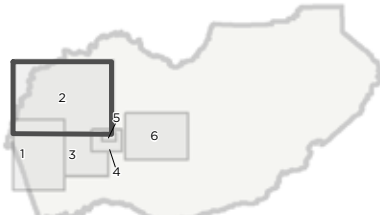
Existing Bikeways

-  Class I Shared-Use Path
-  Class II Bicycle Lane

Destinations + Boundaries

-  Park
-  Water
-  Community Region

Maps intended for planning purposes only. Proposed Improvements are not intended for route planning or navigation.



0 0.75 1.5 MILES



Map produced July 2019
Sources: El Dorado County, Caltrans, Esri, US Census.

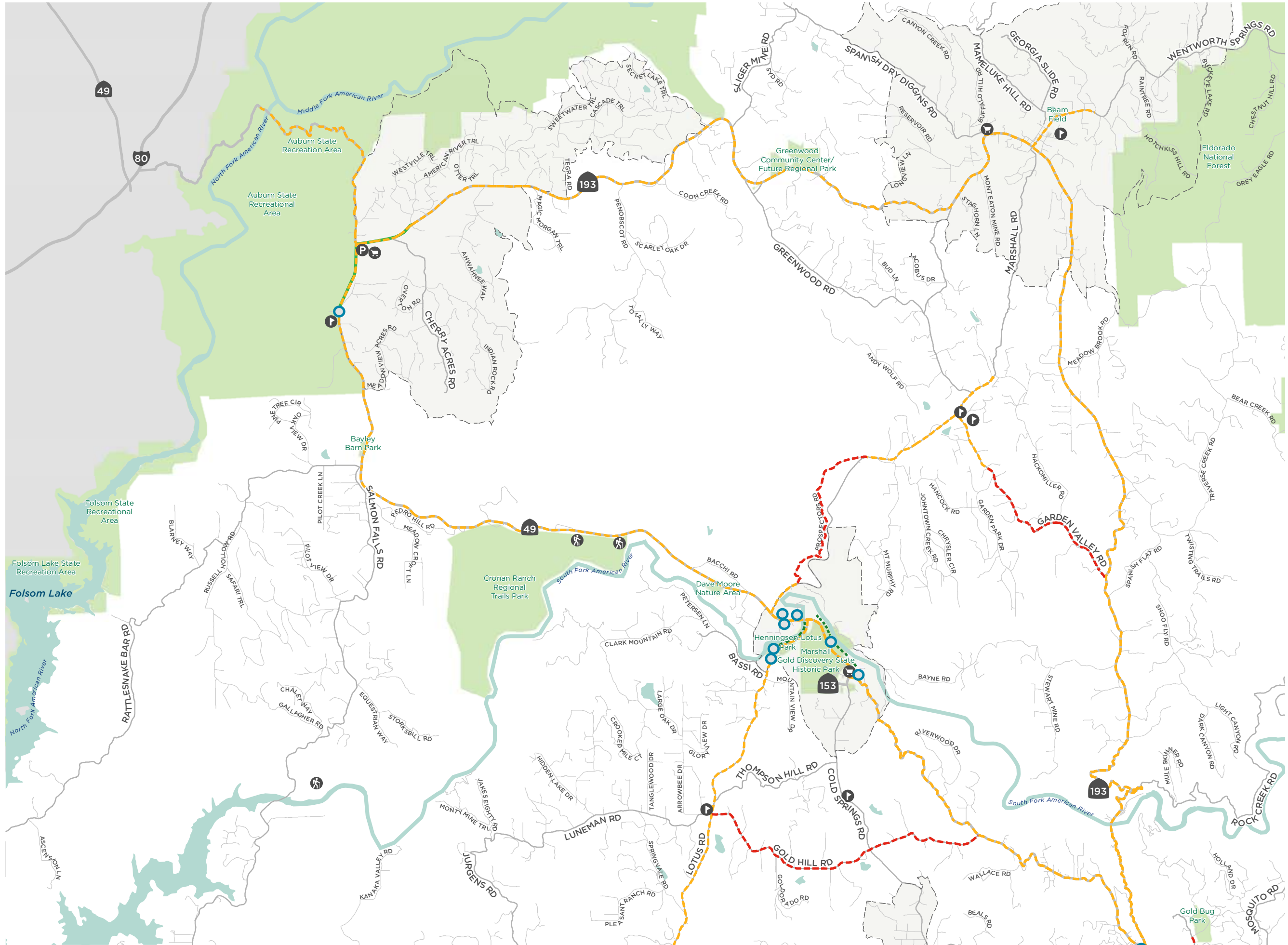








Figure 7-4: Cool, Coloma, Cold Springs, and Lotus Proposed Bicycle Facilities

CAMERON PARK, DIAMOND SPRINGS, AND SHINGLE SPRINGS BICYCLE FACILITIES







Map 3

EL DORADO COUNTY
ACTIVE TRANSPORTATION
PLAN




Proposed Improvements

-  Spot Improvement
-  Class I Shared-Use Path
-  Class II Bicycle Lane
-  Class III Bicycle Route
-  Class III Advisory Shoulder
-  Class IV Separated Bike Lane




Activity Generators

-  Bus Stop
-  Employment Center
-  Campground
-  Grocery Store
-  School
-  Library

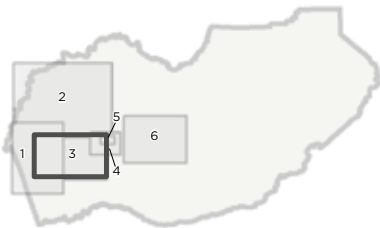
Existing Bikeways

-  Class I Shared-Use Path
-  Class II Bicycle Lane
-  Class III Bicycle Route

Destinations + Boundaries

-  Park
-  Water
-  Community Region

Maps intended for planning purposes only.
Proposed Improvements are not intended
for route planning or navigation.



0 0.5 1 MILES



Map produced July 2019
Sources: El Dorado County,
Caltrain, Esri, US Census.

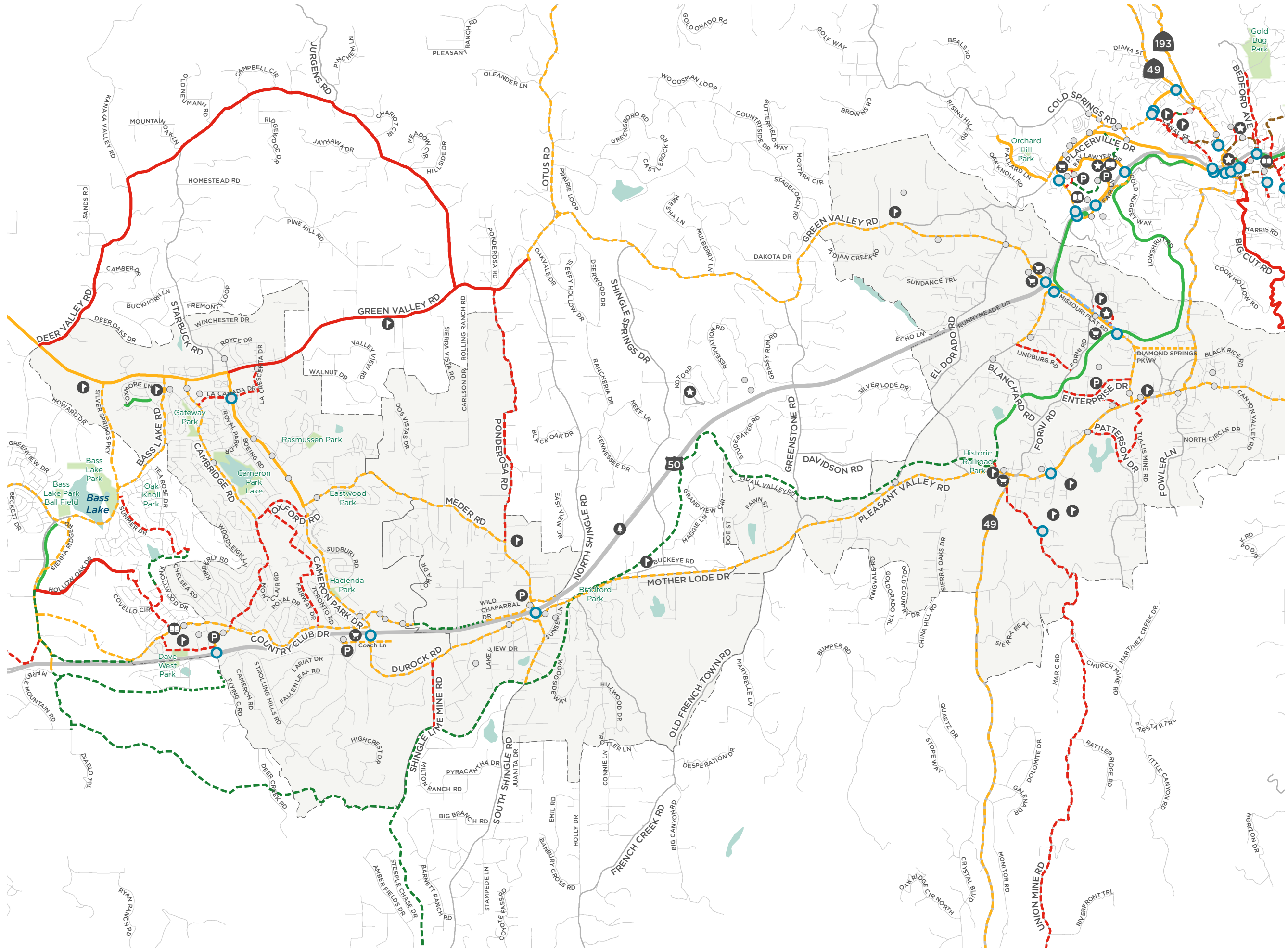


Figure 7-5: Cameron Park, Diamond Springs, and Shingle Springs Proposed Bicycle Facilities








PLACERVILLE BICYCLE FACILITIES

Map 4








EL DORADO COUNTY ACTIVE TRANSPORTATION PLAN

Projects located within the Placerville City limit are shown for context only, not under the jurisdiction of El Dorado County, and are included in more detail in the City of Placerville Active Transportation Plan.





Proposed Improvements

-  Spot Improvement
-  Class I Shared-Use Path
-  Class II Bicycle Lane
-  Class II Uphill Climbing Lane
-  Class III Bicycle Route
-  Class III Advisory Shoulder
-  Class IV Separated Bike Lane

Activity Generators

-  Bus Stop
-  Employment Center
-  Grocery Store
-  School
-  Library
-  Transit Center
-  Trailhead

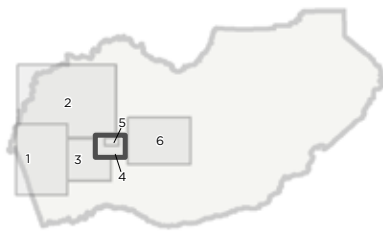
Existing Bikeways

-  Class I Shared-Use Path
-  Class II Bicycle Lane
-  Class III Uphill Climbing Lane
-  Class III Bicycle Route

Destinations + Boundaries

-  Park
-  Water
-  Placerville City Limit

Maps intended for planning purposes only. Proposed Improvements are not intended for route planning or navigation.



0 0.25 0.5 MILES



Map produced July 2019
Sources: El Dorado County, Caltrain, Esri, US Census.

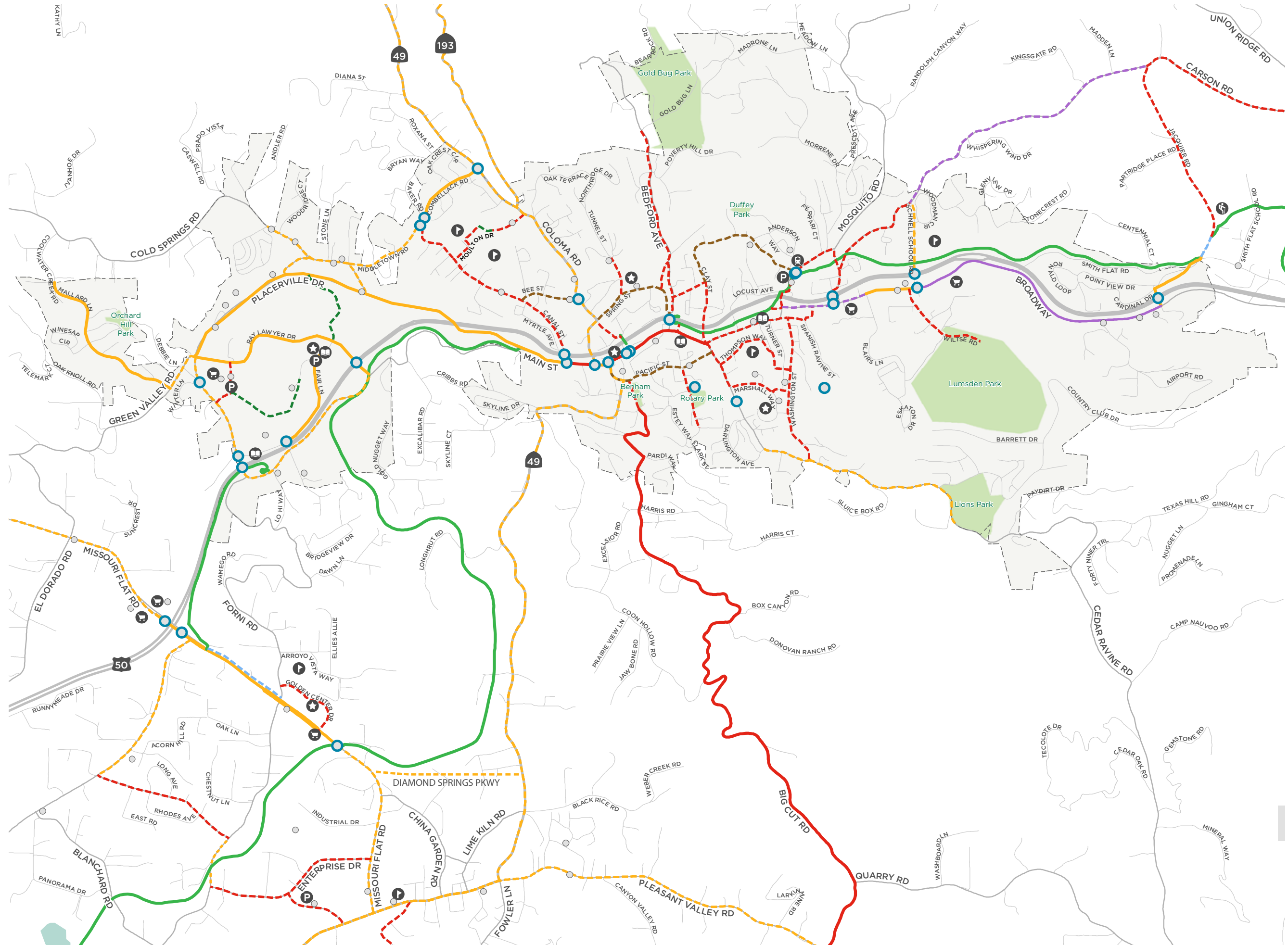


Figure 7-6: Placerville Proposed Bicycle Facilities

DOWNTOWN PLACERVILLE BICYCLE FACILITIES

Map 5

EL DORADO COUNTY ACTIVE TRANSPORTATION PLAN

Projects located within the Placerville City limit are shown for context only, not under the jurisdiction of El Dorado County, and are included in more detail in the City of Placerville Active Transportation Plan.

Proposed Improvements

- Spot Improvement
- Class I Shared-Use Path
- Class II Bicycle Lane
- Class II Uphill Climbing Lane
- - - Class III Bicycle Route
- - - Class III Discretionary Shoulder

Activity Generators

- Bus Stop
- ★ Employment Center
- 🛒 Grocery Store
- 🎓 School
- 📖 Library
- 🚊 Transit Center

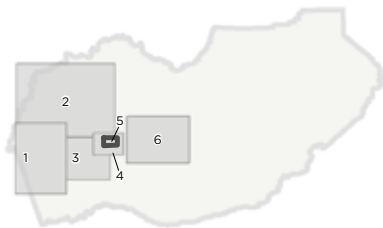
Existing Bikeways

- Class I Shared-Use Path
- Class II Bicycle Lane
- Class IIU Uphill Climbing Lane
- Class III Bicycle Route

Destinations + Boundaries

- Park
- Placerville City Limits

Maps intended for planning purposes only. Proposed Improvements are not intended for route planning or navigation.



0 0.1 0.2 MILES



Map produced July 2019
Sources: El Dorado County, Caltrain, Esri, US Census.

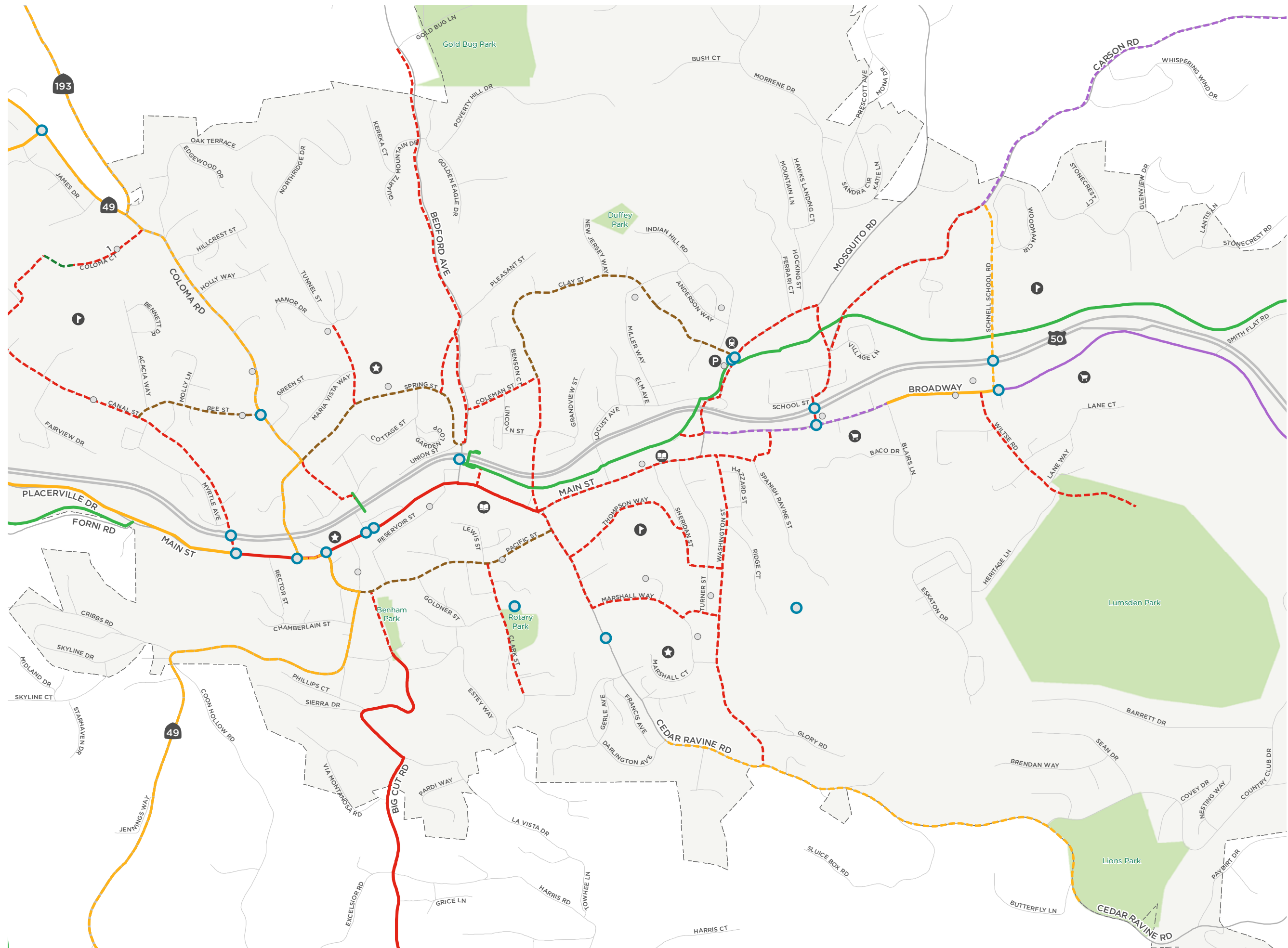






Figure 7-7: Downtown Placerville Proposed Bicycle Facilities

CAMINO AND POLLOCK PINES BICYCLE FACILITIES






Map 6

EL DORADO COUNTY
ACTIVE TRANSPORTATION
PLAN

Proposed Improvements

-  Spot Improvement
-  Class I Shared-Use Path
-  Class II Bicycle Lane
-  Class III Bicycle Route



Activity Generators

-  Bus Stop
-  Campground
-  Grocery Store
-  School
-  Library

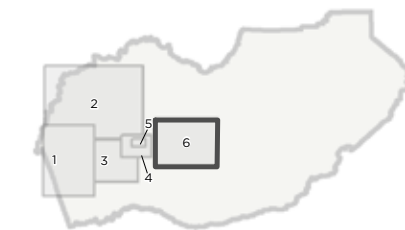
Existing Bikeways

-  Class I Shared-Use Path

Destinations + Boundaries

-  Park
-  Water
-  Community Region

Maps intended for planning purposes only.
Proposed Improvements are not intended
for route planning or navigation.



0 0.5 1 MILES



Map produced July 2019
Sources: El Dorado County,
Caltrain, Esri, US Census.

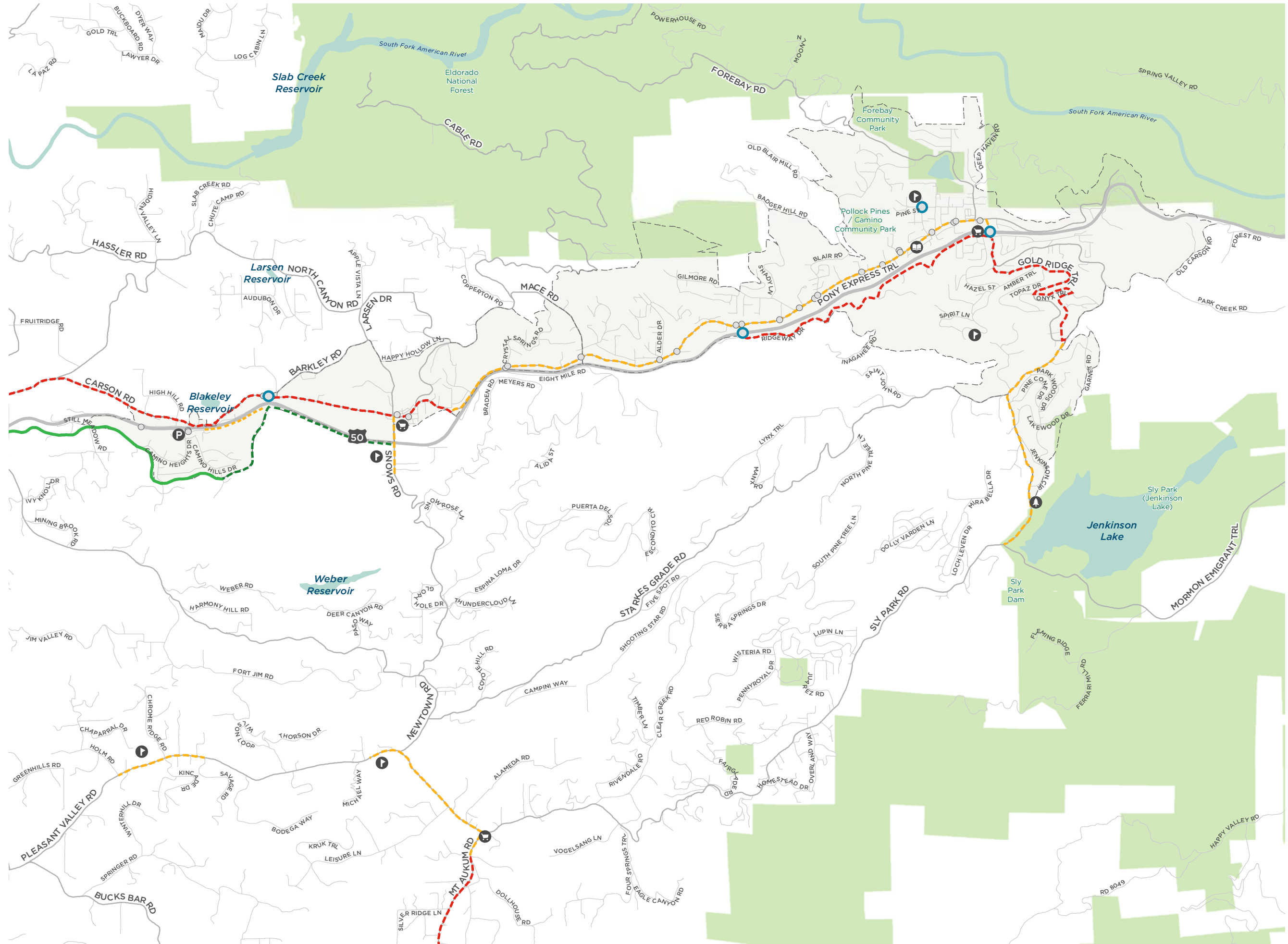


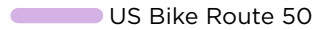

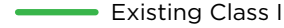
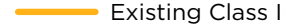
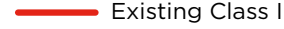



Figure 7-8: Camino and Pollock Pines Proposed Bicycle Facilities

IMPROVEMENTS ALONG US BIKE ROUTE 50








Map 7

EL DORADO COUNTY
ACTIVE TRANSPORTATION
PLAN






Bicycle Facilities

-  US Bike Route 50
-  Spot Improvements
-  Existing Class I
-  Existing Class II
-  Existing Class III
-  Proposed Class I
-  Proposed Class II
-  Proposed Class III

Activity Generators

-  Trailhead
-  Employment Center
-  Campground
-  Grocery Store
-  School
-  Library
-  Transit Center

Destinations + Boundaries

-  Park
-  Water
-  Community Region
-  El Dorado County
-  Placerville City Limits

Maps intended for planning purposes only.
Proposed Improvements are not intended
for route planning or navigation.

0 1 2 MILES



Map produced July 2019
Sources: El Dorado County,
Caltrans, Esri, US Census.

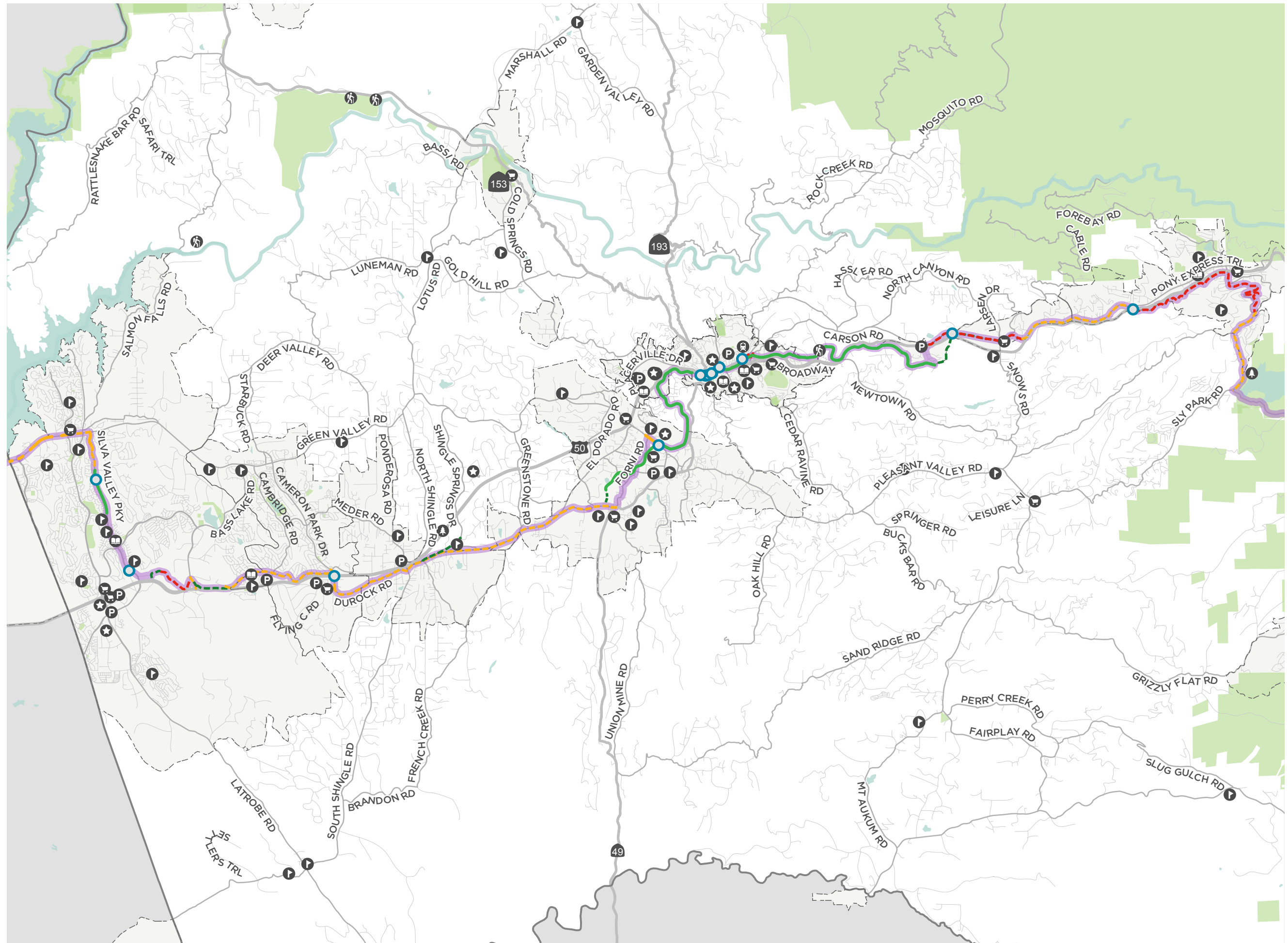


Figure 7-9: Proposed Bicycle Facility Projects along US Bike Route 50 in El Dorado County

This page is intentionally left blank.

BICYCLE ORIENTED SPOT IMPROVEMENT

Green Bike Lanes

Green bike lanes better inform drivers of the distinct lanes of travel and reduce conflicts between bicyclists and drivers.

When approaching intersections, green bike lanes can inform drivers when to look for bicyclists to yield the right-of-way before merging. This is especially important as most bicycle collisions happen near intersections.

Red Bike Lanes

Red bike lanes are an alternative to green bike lanes to increase the visibility of the bicycle facilities. Red bike lanes can be chosen for aesthetic preference to better match the local environment.

El Dorado County has already implemented red bike lanes in conjunction with Caltrans in the community of Coloma.

Bicycle Racks and Bicycle Lockers

Providing adequate bicycle parking is essential to create a more bikeable environment in El Dorado County. Bicycle racks serve people who leave their bicycles for relatively short periods of time, typically for shopping or errands, dining, or recreation. Bicycle racks provide a high level of convenience and moderate security. Bike lockers provide secure long-term bicycle parking options. Bicycle lockers may vary in design and operation, including keyed lockers that are rented to one individual on an annual or monthly basis or e-lockers that can be reserved online in hourly increments and unlocked with a credit card or an access code.



Figure 7-10: Example of green bike lanes



Figure 7-11: Example of red bike lanes on SR 49 in Coloma



Figure 7-12: Example of bike racks in Placerville



Figure 7-13: Example of types of bike racks

BIKE BOX

A bike box is a designated area located at the head of a traffic lane at a signalized intersection that provides bicyclists with a safe and visible space to get in front of queuing motorized traffic during the red signal phase. Motor vehicles must queue behind the white stop line at the rear of the bike box.

Discussion

Bike boxes are considered experimental by the FHWA. They should be placed only at signalized intersections, and right turns on red shall be prohibited for motor vehicles. Bike boxes should be used in locations that have a large volume of bicyclists and are best utilized in central areas where traffic is usually moving more slowly. Prohibiting right turns on red improves safety for bicyclists yet does not significantly impede motor vehicle travel.

References

- NACTO. Urban Bikeway Design Guide. 2012.
- Application of green pavement coloring addressed in:
- FHWA. Interim Approval (IA-14). 2014.

Cost

- Cost varies depending on design and site conditions.

May be combined with intersection crossing markings and colored bike lanes in conflict areas

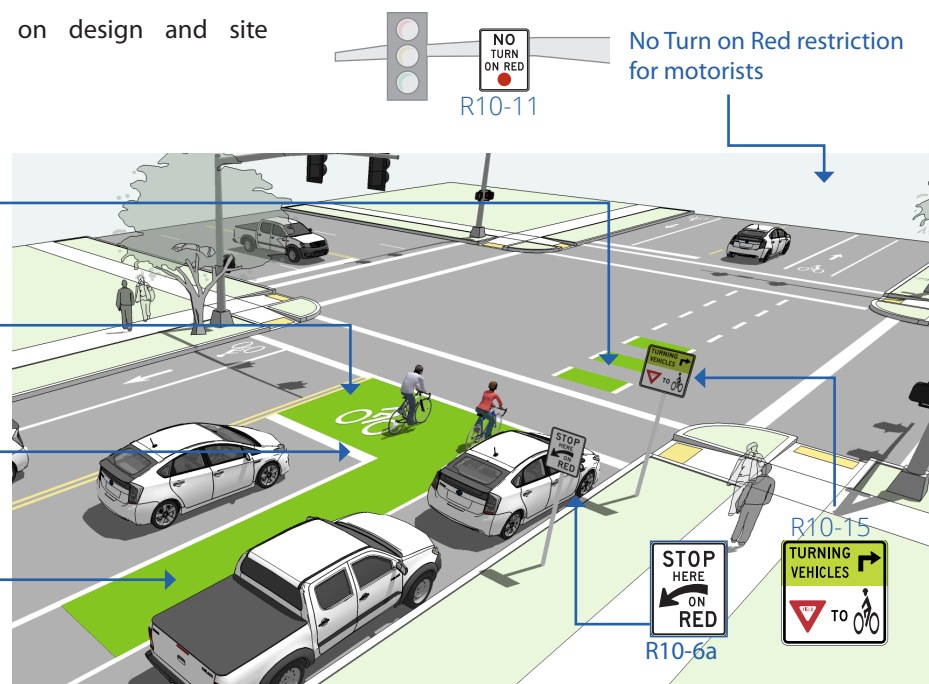
Colored pavement can be used in the box for increased visibility

Wide stop lines used for increased visibility

If used, colored pavement should extend 50' from the intersection

Design Summary

- 14' minimum depth
- A "No Turn on Red" (MUTCD R10-11) sign shall be installed overhead to prevent vehicles from entering the Bike Box.
- A "Stop Here on Red" sign should be post-mounted at the stop line to reinforce observance of the stop line.
- A "Yield to Bikes" sign should be post-mounted in advance of and in conjunction with an egress lane to reinforce that bicyclists have the right-of-way going through the intersection.
- An ingress lane should be used to provide access to the box.
- A supplemental "Wait Here" legend can be provided in advance of the stop bar to increase clarity to motorists.



BUFFERED BIKE LANE

Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space, separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane. Buffered bike lanes are designed to increase the space between the bike lane and the travel lane and/or parked cars. Buffer striping is called Preferential Lane Longitudinal Markings in Section 3D.02 the MUTCD. This treatment is appropriate for bike lanes on roadways with high motor vehicle traffic volumes and speed, adjacent to parking lanes, or a high volume of truck or oversized vehicle traffic.

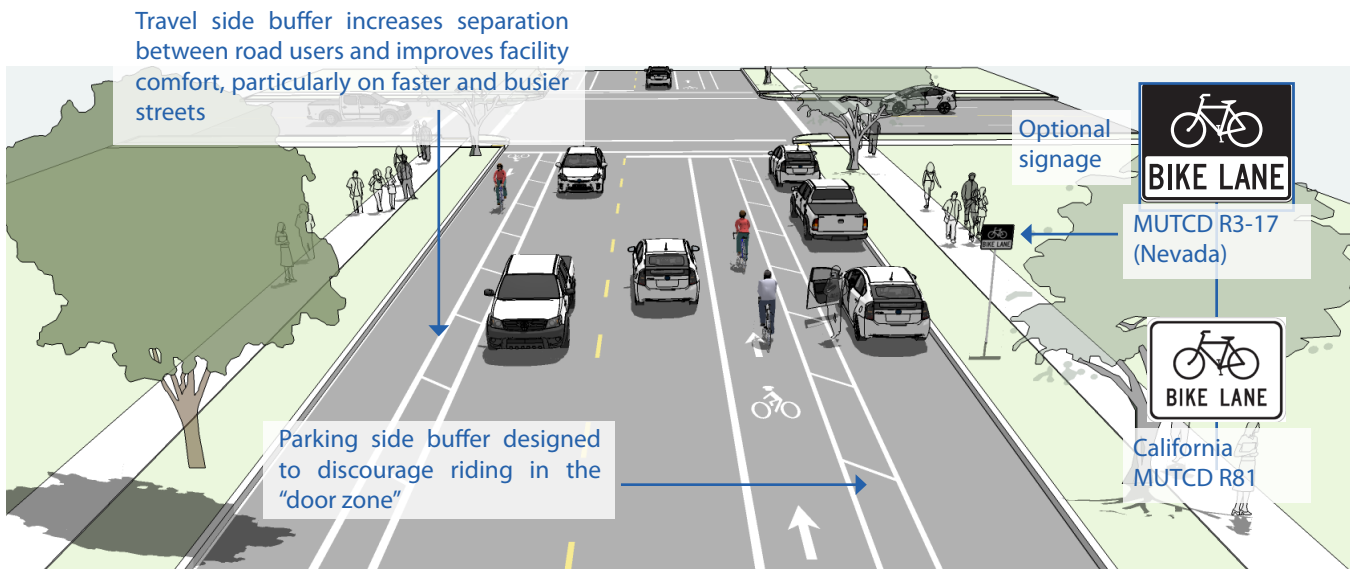
Discussion

Frequency of right turns by motor vehicles at major intersections should determine whether continuous or truncated buffer striping should be used approaching the intersection. Commonly configured as a buffer between the bicycle lane and motor vehicle travel lane, a parking side buffer may also be provided to help bicyclists avoid the 'door zone' of parked cars.

This treatment is appropriate for school zones.

Design Summary

- The minimum bicycle travel area (not including buffer) is 5 feet wide.
- Buffers should be at least 2 feet wide. If 3 feet or wider, mark with diagonal or chevron hatching. For clarity at driveways or minor street crossings, consider a dotted line for the inside buffer boundary where cars are expected to cross.



References

- FHWA. Separated Bike Lane Planning and Design Guide. 2015.
- NACTO. Urban Bikeway Design Guide. 2012.
- Caltrans. MUTCD. 2014.

Cost

- Bike Lane: \$5,000 - \$10,000 per mile

INTERSECTIONS WITH SMALL STREETS

The California and Nevada Vehicle Code requires that motorists yield right-of-way to pedestrians within crosswalks. This requirement for motorists to yield is not explicitly extended to bicyclists, and the rights and responsibilities for bicyclists within crosswalks is ambiguous. On crossings of minor streets, design solutions should resolve this ambiguity where possible by giving people on bicycles priority within the crossing. Where this is not possible, the design should create conditions and slow speeds that encourage safe interactions in the case of a user error. Determination of priority between streets and paths can be found in the TRB Highway Capacity Manual (2010),

Benefits

Crosswalk markings establish a legal crosswalk at areas away from intersections (MUTCD Section 3B.18).

Motorists decrease speed in the vicinity of marked crosswalks and crosswalk usage increases with the installations of crosswalk markings (Knoblauch, 2001).

Motorists are statistically more likely to yield right-of-way to pedestrians in a marked crosswalk than an unmarked crosswalk (Mitman, 2008).

Discussion

Geometric design should promote a high degree of yielding to path users through raised crossings, horizontal deflection, signing, and striping.

The approach to designing path crossings of streets depends on an evaluation of vehicular traffic, line of sight, pathway traffic, use patterns, vehicle speed, road type, road width, and other safety issues such as proximity to major attractions.

On high speed and high volumes roadways, crosswalk markings alone are not a viable safety measure. This supports the creation of more robust crossing solutions (Zeeger, 2001).

Path Priority Crossing

Vertical Deflection:

A raised crossing slows drivers and prepares them to yield to path users.

Median Island:
Provides 8 foot safety area

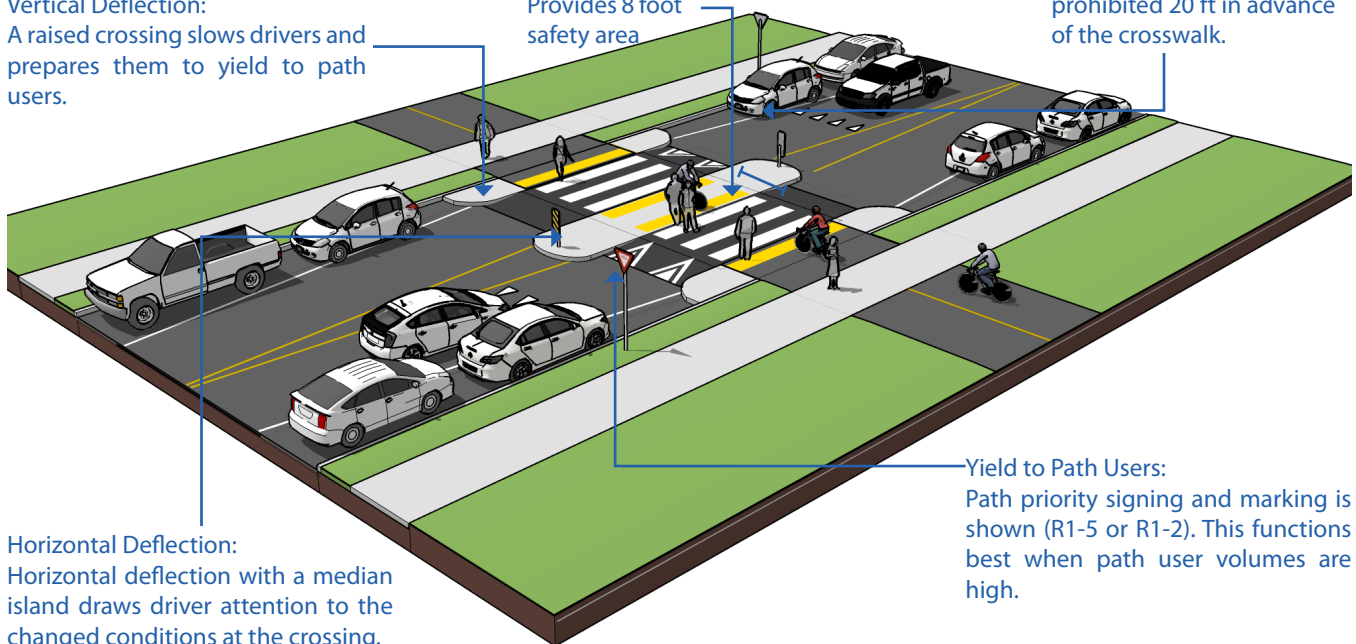
Parking should be prohibited 20 ft in advance of the crosswalk.

Horizontal Deflection:

Horizontal deflection with a median island draws driver attention to the changed conditions at the crossing.

Yield to Path Users:

Path priority signing and marking is shown (R1-5 or R1-2). This functions best when path user volumes are high.



Design Summary

Crossing Geometry

In Nevada, parking is prohibited within 20 feet of any marked crosswalk.

A median safety island should allow path users to cross one lane of traffic at a time. The bicycle waiting area should be 8 feet wide or wider to allow for a variety of bicycle types.

Raised crossings should raise 4 inches above the roadway with a steep 1:6 (16%) ramp. The raise should use a sinusoidal profile to facilitate snow plow operation. Advisory speed signs may be used to indicate the required slow crossing speed.

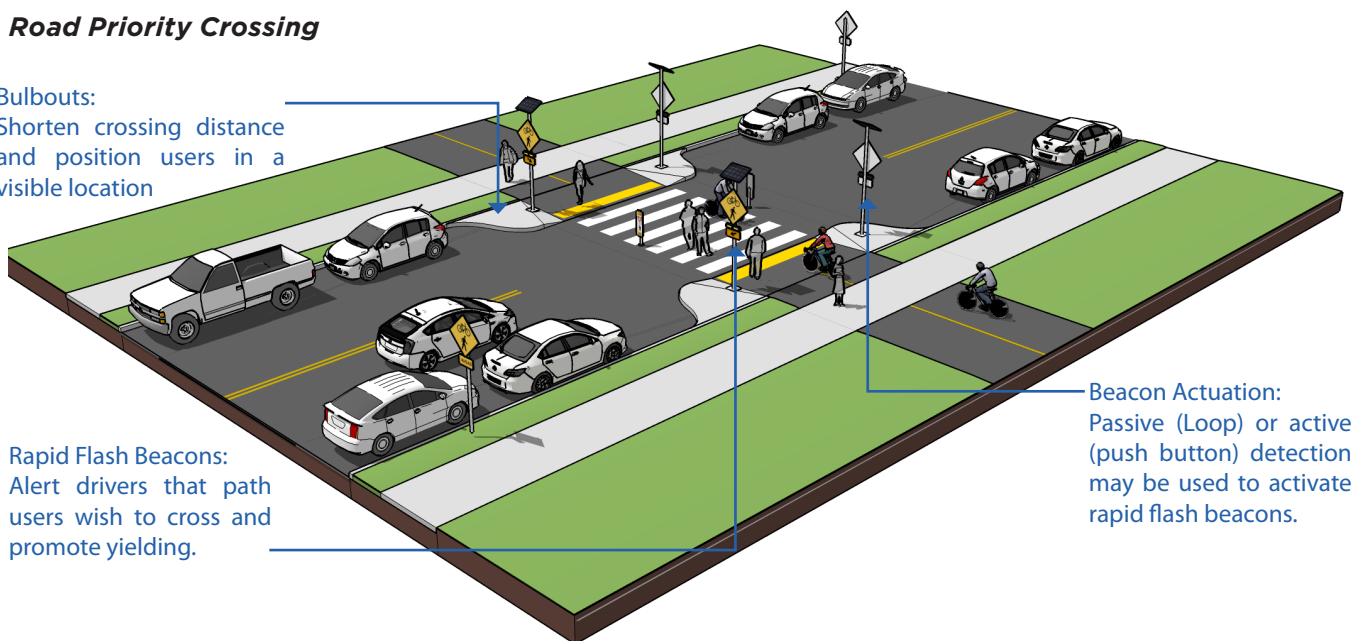
Road Priority Crossing

Bulbouts:

Shorten crossing distance and position users in a visible location

Rapid Flash Beacons:

Alert drivers that path users wish to cross and promote yielding.



Beacon Actuation: Passive (Loop) or active (push button) detection may be used to activate rapid flash beacons.

References

- Caltrans. California Highway Design Manual (CAHDM). 2015.
- Caltrans. California Manual on Uniform Traffic Control Devices (CAMUTCD). 2014.
- ITE. Pavement Marking Patterns Used at Uncontrolled Pedestrian Crossings. 2010.
- Mitman, M.F., Ragland, D.R., and C.V. Zeeger. The Marked Crosswalk Dilemma: Uncovering Some Missing Links in a 35-Year Debate. 2008.
- Knoblauch, R., M. Nitzburg, and R. Seifert. Pedestrian Crosswalk Case Studies. 2001.
- Zeeger, C., J. Stewart, and H. Huang. Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations. 2001.
- NDOT. Standard Specifications for Road and Bridge Construction. 2014.

Cost

- Striped crosswalks costs range from approximately \$100 to 2,100 each.
- Curb extension costs can range from \$2,000 to \$20,000 depending on the design and site condition.
- Rapid flash beacons costs can range from \$15,000 to \$60,000 depending on the number of beacons.

MARKED/UNSIGNALIZED MID-BLOCK CROSSINGS

A marked/unsignalized crossing typically consists of a marked crossing area, signage and other markings to slow or stop traffic. The approach to designing crossings at mid-block locations depends on an evaluation of vehicular traffic, line of sight, pathway traffic, use patterns, vehicle speed, road type, road width, and other safety issues such as proximity to major attractions. When space is available, using a median refuge island improves user safety by providing pedestrians and bicyclists space to perform the safe crossing of one side of the street at a time.

Discussion

Unsignalized crossings of multi-lane arterials over 15,000 ADT may be possible with features such as sufficient crossing gaps (more than 60 opportunities to cross per hour), median refuges, and/or active warning devices like rectangular rapid flash beacons, and excellent sight distance. For more information see the discussion of active warning beacons.

This treatment is appropriate for crossings located in school zones.

Design Summary

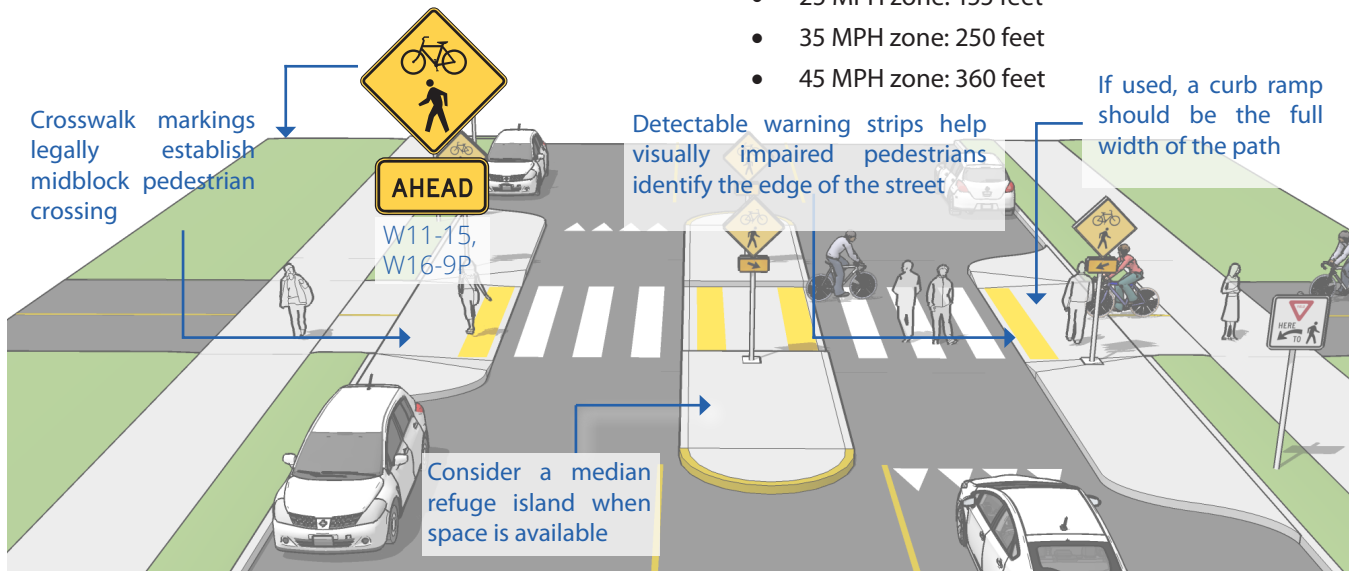
Maximum traffic volumes

- ≤9,000-12,000 Average Daily Traffic (ADT) volume
- Up to 15,000 ADT on two-lane roads, preferably with a median
- Up to 12,000 ADT on four-lane roads with median

Maximum travel speed: 35 MPH

Minimum line of sight

- 25 MPH zone: 155 feet
- 35 MPH zone: 250 feet
- 45 MPH zone: 360 feet



References

- Caltrans. Highway Design Manual. 2015.
- Caltrans. MUTCD. 2014.
- FHWA. MUTCD. 2009.
- NDOT. Process for the Evaluation of Uncontrolled Crosswalk Locations. 2014.

Cost

- Signage: \$125 each
- Marked Crosswalk, \$550 each
- Stop limit bars/yield teeth: \$200-\$530 per set
- Median Refuge Island (optional): \$8,500 - \$33,000 each



SHARED-USE PATH CROSSINGS

PATH CROSSING AT INTERSECTION

The evaluation of a roadway crossing involves analysis of vehicular traffic and path user travel patterns, including speeds, street width, traffic volumes (average daily traffic, peak hour traffic), line of sight, and path user profile (age distribution and destinations). When engineering judgment determines that the visibility of the intersection is limited on the shared-use path approach, Intersection Warning signs should be used.

Design Summary

A path should cross at a signalized intersection if there is a signalized intersection within 350 feet of the path and the crossroad is crossing a major arterial with a high ADT.

Signage

Intersection Warning (W2-1 through W2-5) signs may be used on a roadway, street, or shared-use path in advance of an intersection to indicate the presence of an intersection and the possibility of turning or entering traffic, no less than 50 feet before the intersection. A path-sized stop sign (R1-1) should be placed about 5 feet before the intersection.

Traffic Calming

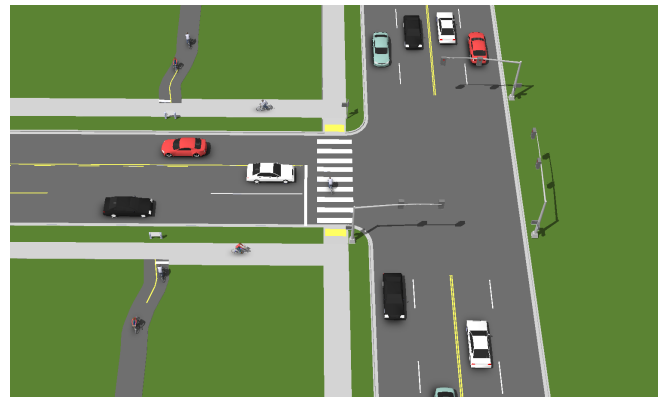
Reducing the speed of the conflicting motor vehicle traffic should be considered. Options may include: transverse rumble strips approaching the path crossing; sinusoidal speed humps (compatible with slow speed snow removal operations).¹

Crosswalk Markings

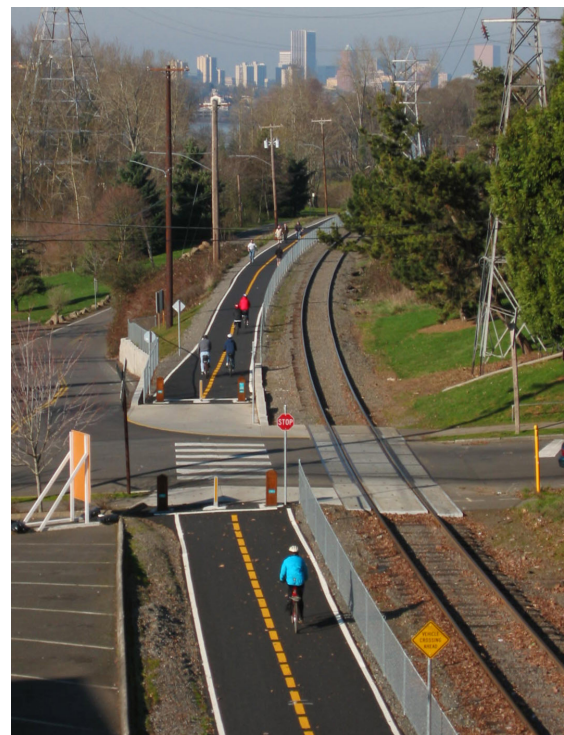
Colored and/or high visibility crosswalks are recommended.

Path Speed Control

A chicane, or swerve in multi-use path approaching the crossing is recommended to slow bicyclist speed. Path users traveling in different directions should be separated either with physical separation (such as a raised median) or a centerline. If a centerline is used, it should be striped for the last 100 feet of the approach.



Recommended "Typical" At-Grade Crossing of a Major Arterial at an Intersection Where Path is Within 350 Feet of a Roadway Intersection



¹ Humps with a sinusoidal profile are similar to round-top humps but have a shallower initial rise (similar to a sine wave). They were developed to provide a more comfortable ride for cyclists in traffic calmed areas.

STOP VERSUS YIELD MARKINGS AT CROSSINGS

Where conditions require path users, but not roadway users, to stop or yield, the STOP sign or YIELD sign should be placed on the path. When placement of STOP or YIELD signs is considered, priority at a shared-use path/roadway intersection should be assigned with consideration of the relative speeds of shared-use path and roadway users, relative volumes of shared-use path and roadway traffic, and whether the crossing is parallel to or across a major roadway.

Discussion

Speed should not be the sole factor used to determine priority, as it is sometimes appropriate to give priority to a high-volume shared-use path crossing a low-volume street, or to a Regional shared-use path crossing a minor collector street. This is most prevalent when crossing a minor street in parallel with a major street, such as a sidepath. In some cases it may be appropriate to control the roadway only, while not controlling the path. The least restrictive appropriate controls should be used. STOP signs should not be used where YIELD signs would be acceptable.

The *Side Paths at Driveways and Minor Streets* reference sheet provides more guidance.



References

- Caltrans. Highway Design Manual. 2015.
- Caltrans. Manual of Uniform Traffic Control Devices. 2014.
- AASHTO. Guide for the Development of Bicycle Facilities,. 2012.

Design Summary

Path Crossing Signage

STOP (R1-1) signs shall be installed on shared-use paths at points where bicyclists are required to stop. YIELD (R1-2) signs shall be installed on shared-use paths at points where bicyclists have an adequate view of conflicting traffic as they approach the sign, and where bicyclists are required to yield the right-of-way to that conflicting traffic.



R1-1



R1-2

Cost

- Stop limit bars/yield teeth: \$200-\$530 per set
- Stop pavement markings: \$420 each
- Pavement Markings (Thermoplastic): \$3.39 per square foot
- Signs, Path Crossing: \$780 each
- Signs, Path Stop/Path Yield: \$520 each
- Signs, Path Regulation: \$150 each

MARKED/UNSIGNALIZED MID-BLOCK CROSSINGS

A marked/unsignalized crossing typically consists of a marked crossing area, signage and other markings to slow or stop traffic. The approach to designing crossings at mid-block locations depends on an evaluation of vehicular traffic, line of sight, pathway traffic, use patterns, vehicle speed, road type, road width, and other safety issues such as proximity to major attractions. When space is available, using a median refuge island improves user safety by providing pedestrians and bicyclists space to perform the safe crossing of one side of the street at a time.

Discussion

Unsignalized crossings of multi-lane arterials over 15,000 ADT may be possible with features such as sufficient crossing gaps (more than 60 opportunities to cross per hour), median refuges, and/or active warning devices like rectangular rapid flash beacons, and excellent sight distance. For more information see the discussion of active warning beacons.

This treatment is appropriate for crossings located in school zones.

Design Summary

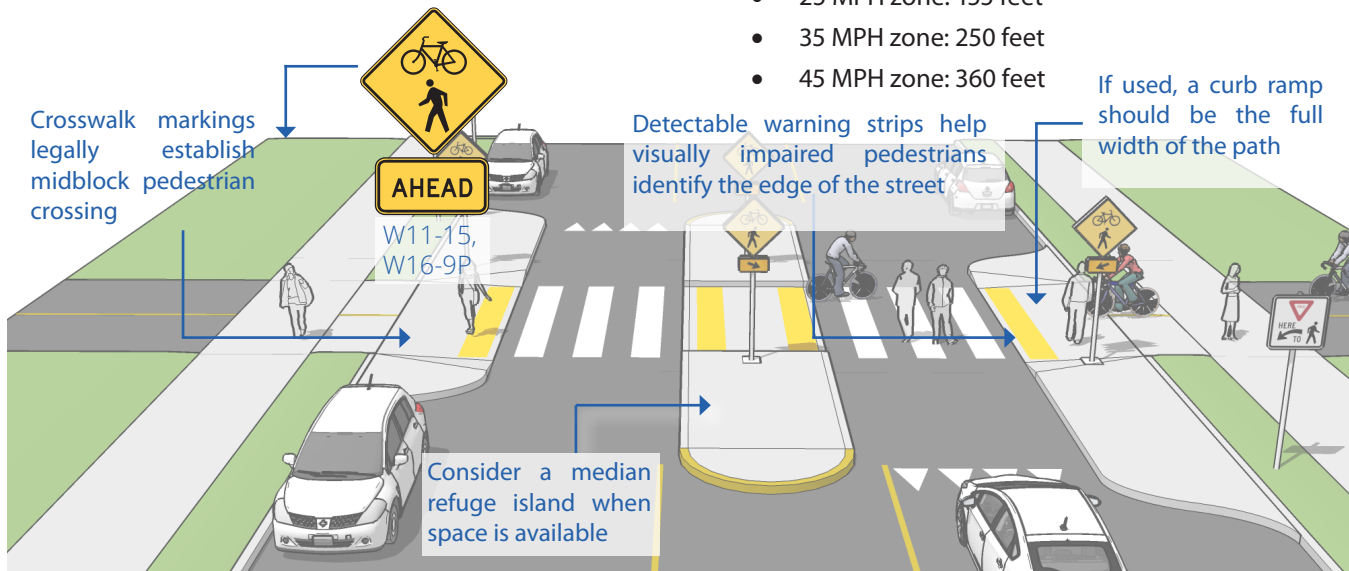
Maximum traffic volumes

- ≤9,000-12,000 Average Daily Traffic (ADT) volume
- Up to 15,000 ADT on two-lane roads, preferably with a median
- Up to 12,000 ADT on four-lane roads with median

Maximum travel speed: 35 MPH

Minimum line of sight

- 25 MPH zone: 155 feet
- 35 MPH zone: 250 feet
- 45 MPH zone: 360 feet



References

- Caltrans. Highway Design Manual. 2015.
- Caltrans. MUTCD. 2014.
- FHWA. MUTCD. 2009.
- NDOT. Process for the Evaluation of Uncontrolled Crosswalk Locations. 2014.

Cost

- Signage: \$125 each
- Marked Crosswalk, \$550 each
- Stop limit bars/yield teeth: \$200-\$530 per set
- Median Refuge Island (optional): \$8,500 - \$33,000 each



SHARED-USE PATH CROSSINGS

HYBRID BEACONS

Hybrid beacons are used to improve non-motorized crossings of major streets. A hybrid beacon consists of a signal-head with two red lenses over a single yellow lens on the major street, and a pedestrian signal head for the crosswalk.

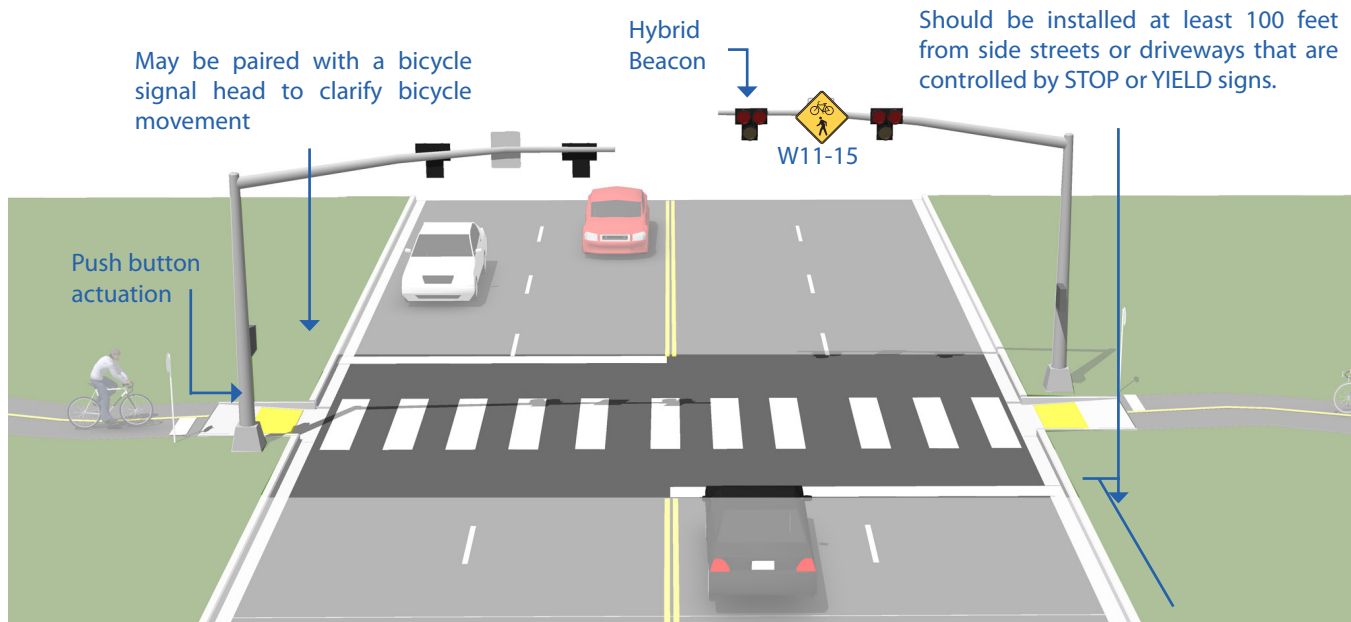
Discussion

Hybrid beacon signals are normally activated by push buttons, but may also be triggered by infrared, microwave or video detectors. The maximum delay for activation of the signal should be two minutes, with minimum crossing times determined by the width of the street. Each crossing, regardless of traffic speed or volume, requires additional review by a registered engineer to identify sight lines, potential impacts on traffic progression, timing with adjacent signals, capacity, and safety.

This treatment is appropriate for crossings located within school zones.

Design Summary

- Hybrid beacons may be installed without meeting traffic signal control warrants if roadway speed and volumes are excessive for comfortable pedestrian crossings.
- If installed within a signal system, signal engineers should evaluate the need for the hybrid signal to be coordinated with other signals.
- Parking and other sight obstructions should be prohibited for at least 100 feet in advance of and at least 20 feet beyond the marked crosswalk to provide adequate sight distance.



References

- Caltrans. Highway Design Manual. 2015.
- Caltrans. MUTCD. 2014.
- FHWA. MUTCD. 2009.
- NACTO. Urban Bikeway Design Guide. 2012.

Cost

- Crossing, Hybrid Beacon \$50,000+ each
- Marked Crosswalk, \$550 each
- Signage: \$125 each

Photo above by Mike Cynecki via PBIC Image Library

SIGNALIZED MID-BLOCK CROSSING

Warrants from the MUTCD combined with sound engineering judgment should be considered when determining the type of traffic control device to be installed at path-roadway intersections. Traffic signals for path-roadway intersections are appropriate under certain circumstances. The MUTCD lists 11 warrants for traffic signals, and although path crossings are not addressed, bicycle traffic on the path may be functionally classified as vehicular traffic and the warrants applied accordingly. Pedestrian volumes can also be used for warrants.

Discussion

Experimental Treatment

A Toucan crossing (derived from: "two can cross") is used in higher traffic areas where pedestrians and bicyclists are crossing together.

This treatment is appropriate for crossings located within school zones.

References

- Caltrans. Highway Design Manual. 2015.
- Caltrans. MUTCD. 2014.
- AASHTO Guide for the Development of Bicycle Facilities. 2012.

Design Summary

Warrants

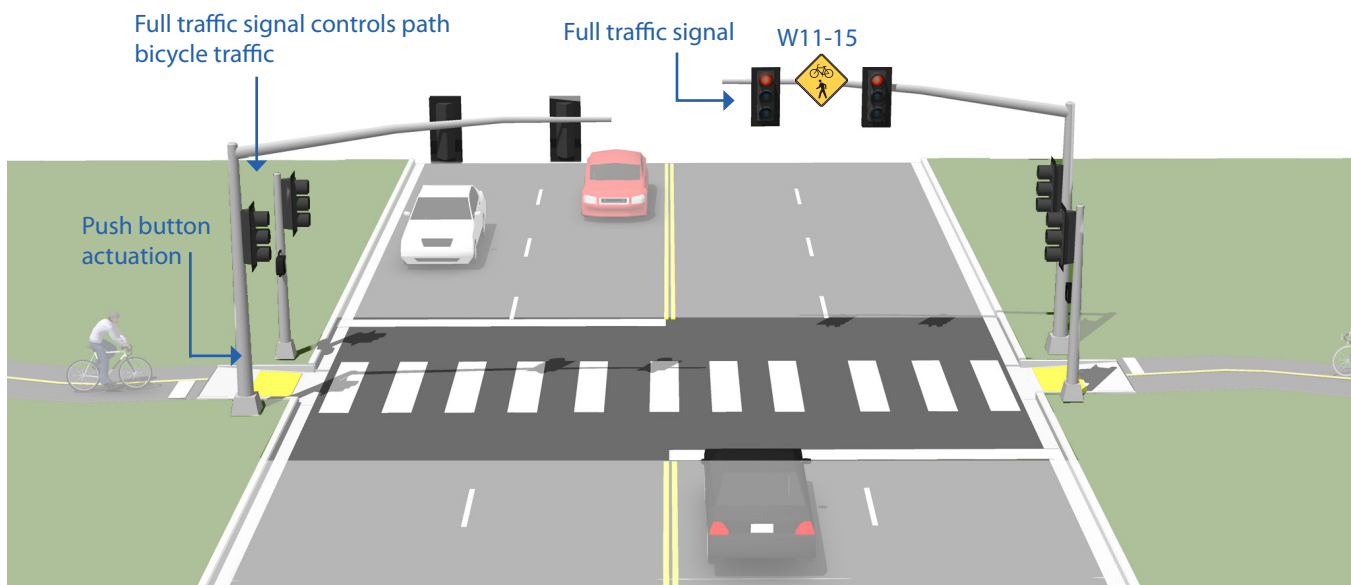
Section 4C.05 in the MUTCD and CAMUTCD describes pedestrian volume minimum requirements (referred to as warrants) for a mid-block pedestrian-actuated signal. Note that California and Nevada have different warrants.

Pavement Markings

Stop lines at midblock signalized locations should be placed at least 40 feet in advance of the nearest signal indication.

Cost

- Crossing, Toucan: \$90,000 each
- Marked Crosswalk, \$550 each
- Signage, \$125 each



INTERSECTIONS WITH SMALL STREETS

The California and Nevada Vehicle Code requires that motorists yield right-of-way to pedestrians within crosswalks. This requirement for motorists to yield is not explicitly extended to bicyclists, and the rights and responsibilities for bicyclists within crosswalks is ambiguous. On crossings of minor streets, design solutions should resolve this ambiguity where possible by giving people on bicycles priority within the crossing. Where this is not possible, the design should create conditions and slow speeds that encourage safe interactions in the case of a user error. Determination of priority between streets and paths can be found in the TRB Highway Capacity Manual (2010),

Benefits

Crosswalk markings establish a legal crosswalk at areas away from intersections (MUTCD Section 3B.18).

Motorists decrease speed in the vicinity of marked crosswalks and crosswalk usage increases with the installations of crosswalk markings (Knoblauch, 2001).

Motorists are statistically more likely to yield right-of-way to pedestrians in a marked crosswalk than an unmarked crosswalk (Mitman, 2008).

Discussion

Geometric design should promote a high degree of yielding to path users through raised crossings, horizontal deflection, signing, and striping.

The approach to designing path crossings of streets depends on an evaluation of vehicular traffic, line of sight, pathway traffic, use patterns, vehicle speed, road type, road width, and other safety issues such as proximity to major attractions.

On high speed and high volumes roadways, crosswalk markings alone are not a viable safety measure. This supports the creation of more robust crossing solutions (Zeeger, 2001).

Path Priority Crossing

Vertical Deflection:

A raised crossing slows drivers and prepares them to yield to path users.

Median Island:
Provides 8 foot safety area

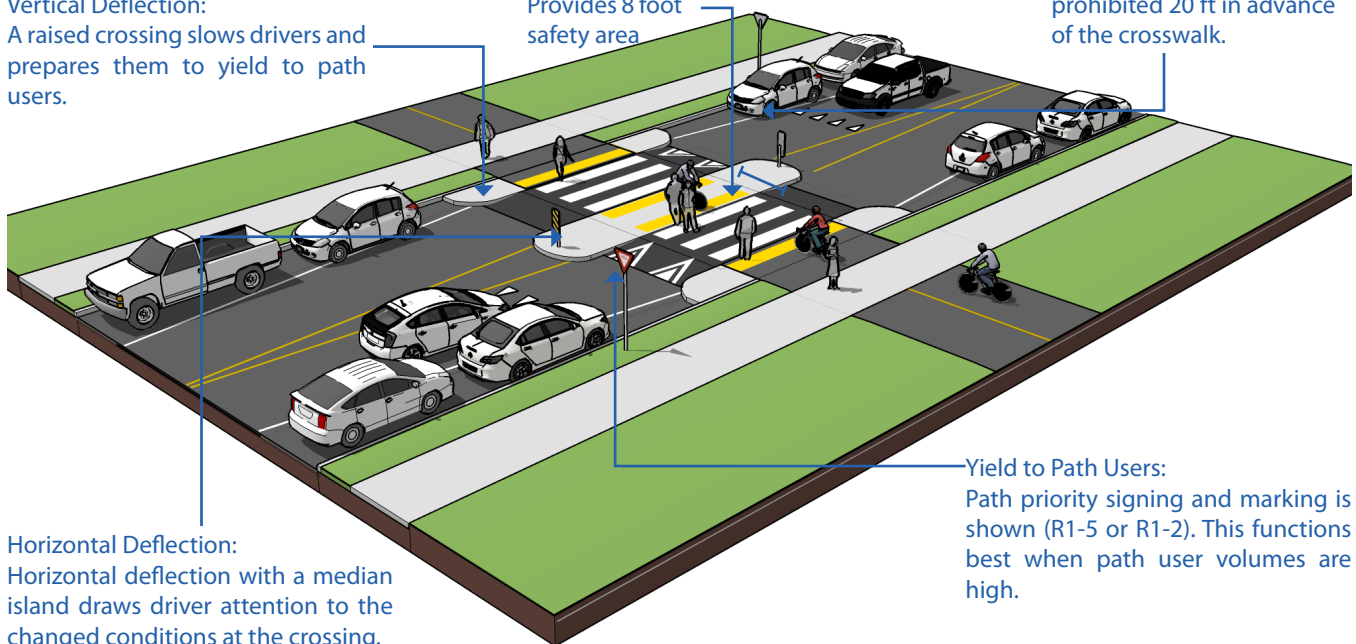
Parking should be prohibited 20 ft in advance of the crosswalk.

Horizontal Deflection:

Horizontal deflection with a median island draws driver attention to the changed conditions at the crossing.

Yield to Path Users:

Path priority signing and marking is shown (R1-5 or R1-2). This functions best when path user volumes are high.



Design Summary

Crossing Geometry

In Nevada, parking is prohibited within 20 feet of any marked crosswalk.

A median safety island should allow path users to cross one lane of traffic at a time. The bicycle waiting area should be 8 feet wide or wider to allow for a variety of bicycle types.

Raised crossings should raise 4 inches above the roadway with a steep 1:6 (16%) ramp. The raise should use a sinusoidal profile to facilitate snow plow operation. Advisory speed signs may be used to indicate the required slow crossing speed.

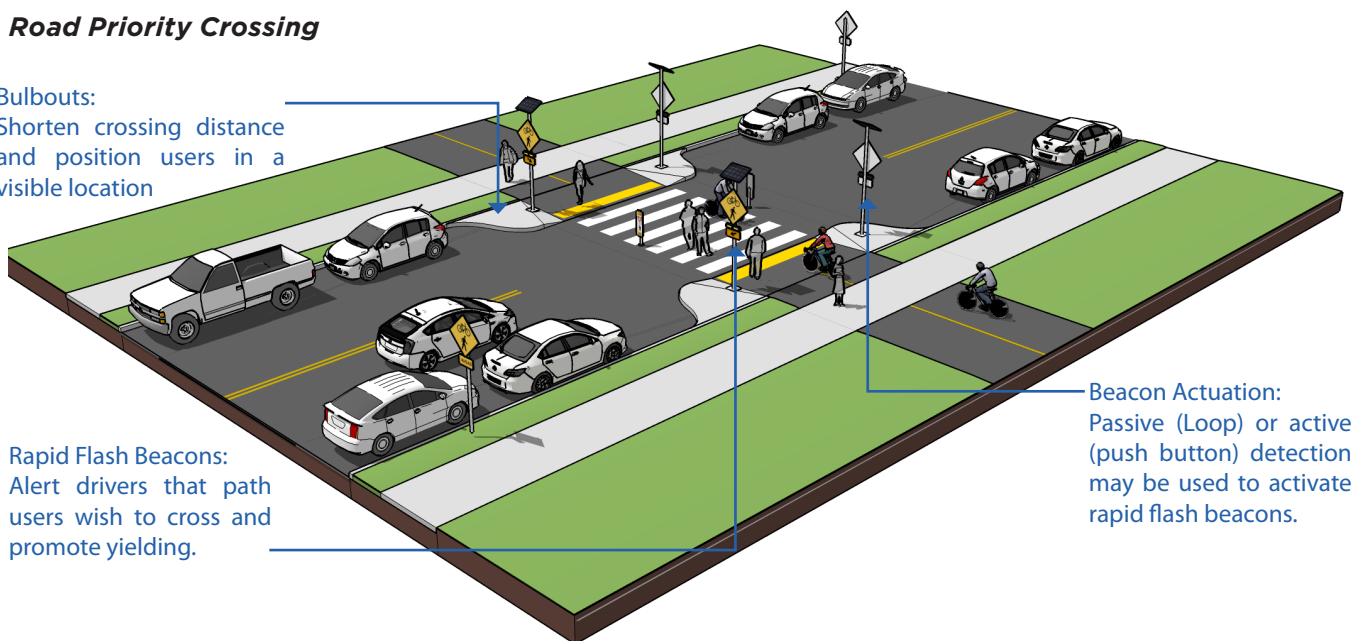
Road Priority Crossing

Bulbouts:

Shorten crossing distance and position users in a visible location

Rapid Flash Beacons:

Alert drivers that path users wish to cross and promote yielding.



Markings

High-visibility crosswalk markings are the preferred marking type at uncontrolled marked crossings (FHWA, 2013). Transverse lines are “essentially not visible” when viewed from a standard approaching vehicle. (ITE, 2010)

Stop or Yield lines may be used on the roadway 20 ft. in advance of crosswalks when right-of-way priority is given to path users (CA MUTCD 3B.18). A yield line must be paired with a Yield (R1-2) or Yield Here To Pedestrians (R1-5) sign.

In roadway Yield to Pedestrians (R1-6) signs may be used along the centerline point of a crosswalk.

References

- Caltrans. California Highway Design Manual (CAHDM). 2015.
- Caltrans. California Manual on Uniform Traffic Control Devices (CAMUTCD). 2014.
- ITE. Pavement Marking Patterns Used at Uncontrolled Pedestrian Crossings. 2010.
- Mitman, M.F., Ragland, D.R., and C.V. Zeeger. The Marked Crosswalk Dilemma: Uncovering Some Missing Links in a 35-Year Debate. 2008.
- Knoblauch, R., M. Nitzburg, and R. Seifert. Pedestrian Crosswalk Case Studies. 2001.
- Zeeger, C., J. Stewart, and H. Huang. Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations. 2001.
- NDOT. Standard Specifications for Road and Bridge Construction. 2014.

Cost

- Striped crosswalks costs range from approximately \$100 to 2,100 each.
- Curb extension costs can range from \$2,000 to \$20,000 depending on the design and site condition.
- Rapid flash beacons costs can range from \$15,000 to \$60,000 depending on the number of beacons.

PEDESTRIAN CROSSWALK DESIGN

Crosswalks are to be marked on all legs of a signalized intersection. At unsignalized intersections, crosswalks should be marked when they help orient pedestrians, or help position pedestrians where they can best be seen by oncoming traffic. At mid-block locations, crosswalks are marked where there is a demand for crossing, and there are no nearby marked crosswalks.

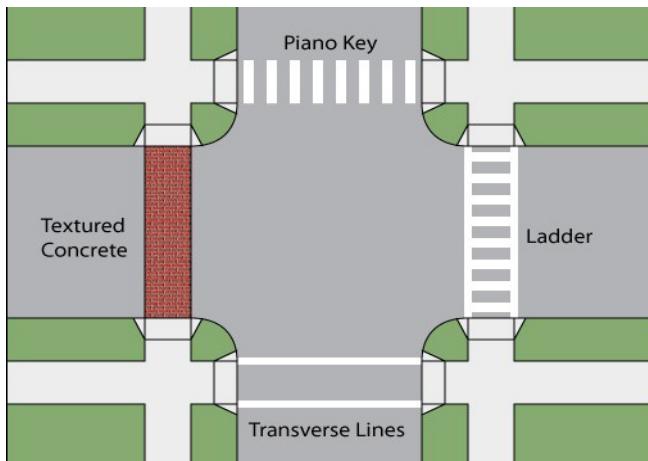
Discussion

High-visibility markings such as Piano Key or Ladder crosswalks are recommended for crosswalks in the Tahoe Region due to their increased visibility and resistance to wear if they are located out of the wheel paths. Crosswalks forming transverse lines will wear quickly in snow country.

Design Summary

Ladder or piano key crosswalk markings are recommended for most crosswalks in the Tahoe Region, including school crossings, across arterial streets for pedestrian-only signals, at mid-block crosswalks, and where the crosswalk crosses a street not controlled by signals or stop signs.

- A piano key pavement marking consists of 2' wide bars spaced 2' apart.
- A ladder pavement marking consists of 2' wide bars spaced 2' apart.
- Transverse lines consist of 1' wide bars spaced no less than 6' apart.



Crosswalk Types



References

- Caltrans. MUTCD. 2014.
- FHWA. MUTCD. 2009.
- AASHTO Guide for the Development of Bicycle Facilities. 2012.

Cost

- Crosswalk, Thermoplastic: \$6 per sf
- Crosswalk, Transverse: \$550 each
- Crosswalk, Permeable Pavement (brick, includes demo of existing): \$14 per sf
- Crosswalk, Scored Concrete (includes demolition of existing): \$9-\$14 each

PEDESTRIAN INTERSECTION DESIGN

PEDESTRIAN REFUGE ISLANDS

Pedestrian refuge islands reduce pedestrian exposure to motor vehicles, allow pedestrians to consider traffic coming from one direction at a time and provide a place for slower pedestrians to rest or wait. Pedestrian refuge islands can be installed at intersections or at mid block locations.

Design Summary

Pedestrian refuge islands should be considered at all crossings of multi-lane roadways. Depending on the signal timing, median islands should be considered when the crossing distance exceeds 60 feet, but can be used at intersections with shorter crossing distances where a need has been recognized. **This treatment is recommended in school zones.**

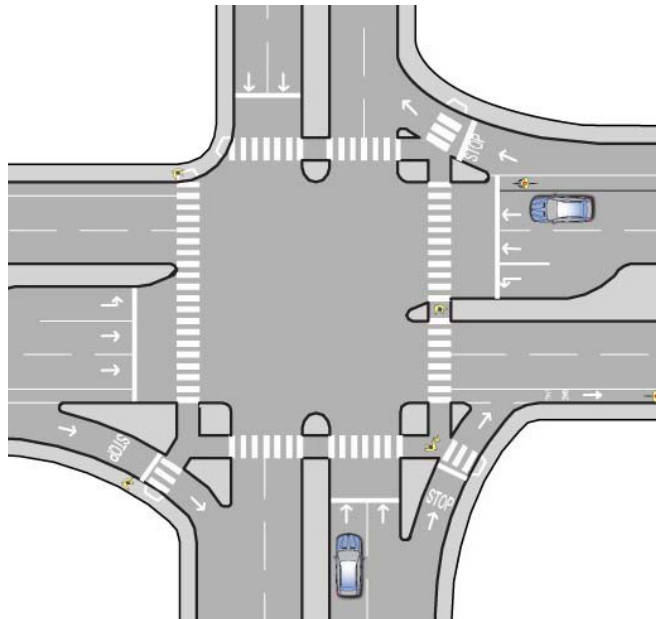
See the ADA Access Board Guidelines on Accessible Public Rights of Way for more information on median islands.

References

- ADA Access Board. Proposed Guidelines on Accessible Public Rights of Way. 2011.
- AASHTO. Guide for the Development of Pedestrian Facilities. 2004.
- AASHTO. Guide for the Planning, Design, and Operation of Pedestrian Facilities. 2010.

Cost

- Median, Pedestrian Refuge Island: \$8,500-\$33,000 each



The median "noses" shown are not required by MUTCD.



Median "nose" (non-local)



PEDESTRIAN INTERSECTION DESIGN

IN-STREET CROSSWALK SIGNAGE

The In-Street Pedestrian Crossing (R1-6) sign should be used to remind users of laws regarding the right of way at an unsignalized pedestrian crossing (CA and NV). These paddles are installed at the center stripe of the roadway on the leading edge of the crosswalk. Approaching motorists are warned to yield to crossing pedestrians.

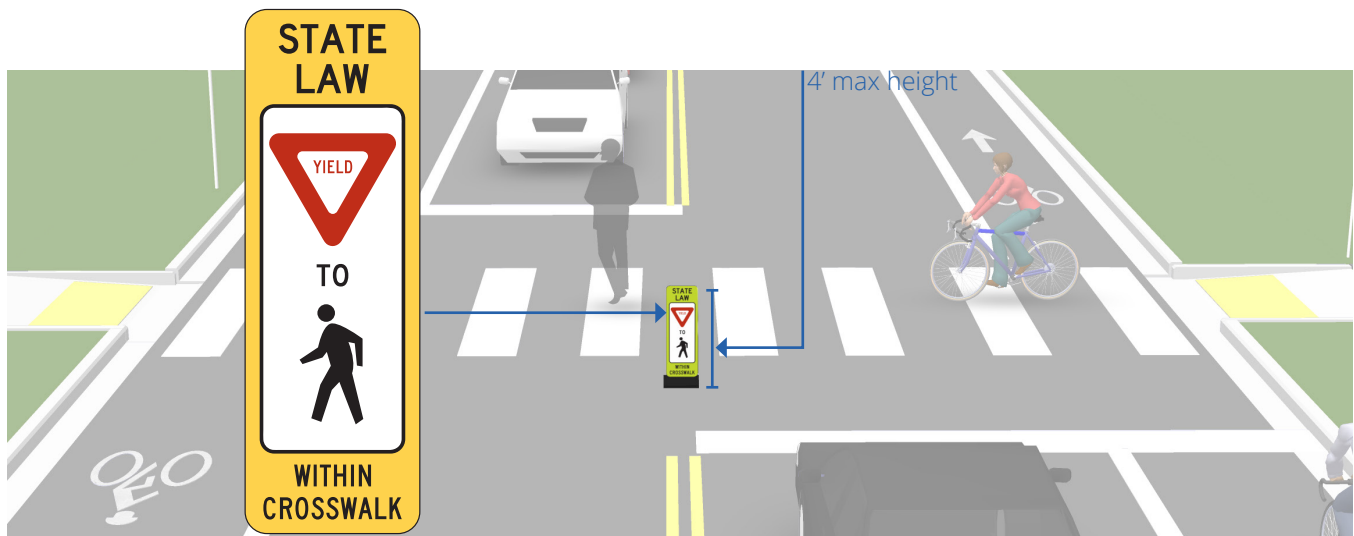
Discussion

These flexible signs must be extremely durable to withstand potential impacts with motor vehicles. Semi-permanent installations are also possible when the sign is combined with a movable base. This allows for day-time only applications. The signs perform better on narrow roadways, where the visibility of the signs is maximized. On multi-lane roadways, consider active warning beacons for improved yielding compliance.

This treatment is appropriate for crosswalks located in school zones.

Design Summary

- The in-street pedestrian crossing sign shall be placed in the roadway at the crosswalk location on the center line, on a lane line, or on a median island. The top of an in-street pedestrian crossing sign shall be a maximum of 4 feet above the pavement or median island surface.
- Install in a manner that does not impede pedestrian flow and outside the turn radius of vehicles that may be approaching from cross street.
- May be placed on a median island (when available).



References

- Caltrans. MUTCD. 2014.
- FHWA. MUTCD. 2009.
- AASHTO. Guide for the Development of Pedestrian Facilities. 2004.

Cost

- Crosswalk, Thermoplastic: \$6 per sf
- Crosswalk, Transverse: \$320-\$550 each
- Crosswalk, Permeable Pavement (brick, includes demo of existing): \$14 per sf
- Crosswalk, Scored Concrete (includes demolition of existing): \$9-\$14 each

CURB EXTENSIONS (BULB OUTS)

Curb extensions minimize pedestrian exposure during crossing by shortening crossing distance and giving pedestrians a better chance to see and be seen before committing to crossing. They are appropriate for any crosswalk where it is desirable to shorten the crossing distance and there is a parking lane adjacent to the curb.

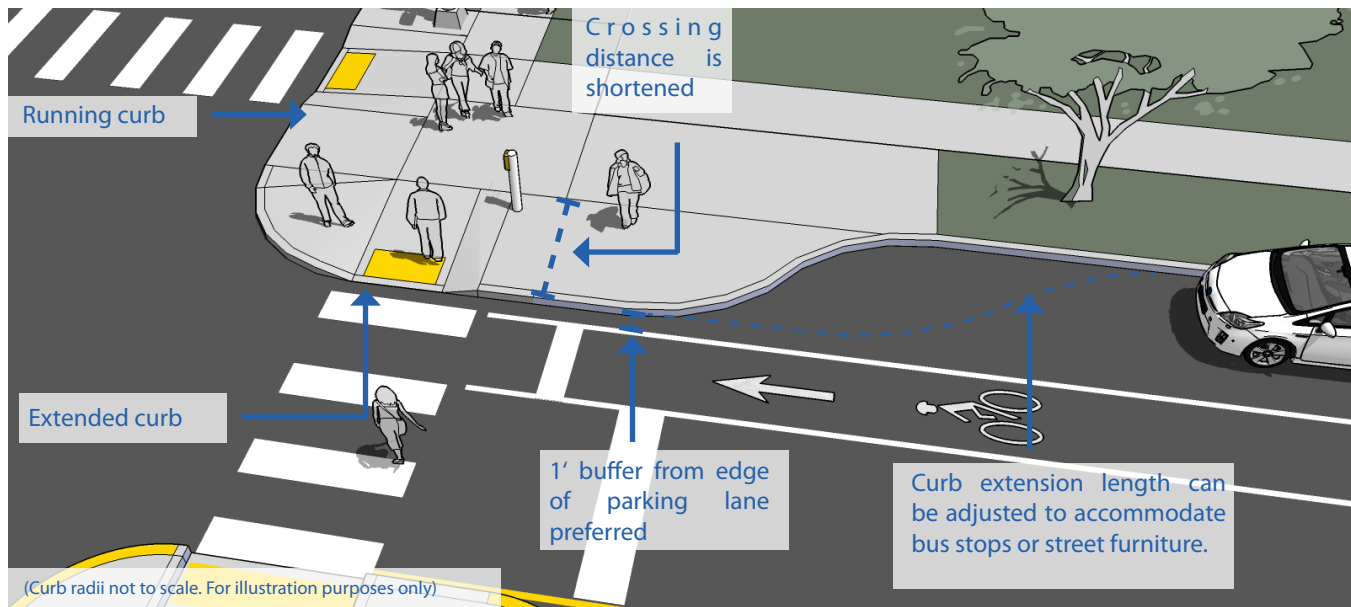
Discussion

Adding curb extensions may not be possible if there is no parking lane. Curb extensions should not block bike lanes or shoulders used by bicyclists.

This treatment is recommended at intersections in school zones.

Design Summary

- In most cases, the curb extensions should be designed to transition between the extended curb and the running curb in the shortest practicable distance.
- For purposes of efficient street sweeping, the minimum radius for the reverse curves of the transition is 10 ft and the two radii should be balanced to be nearly equal.
- Curb extensions should terminate one foot short of the parking lane to maximize bicyclist safety.



References

- AASHTO. Policy on Geometric Design of Highways and Streets. 2011.
- AASHTO. Guide for the Development of Bicycle Facilities. 2012.

Cost

- Curb Extension: \$12,000 each



Existing conditions

Street lighting

Rectangular Rapid Flashing Beacon

Visible waiting area for trail users

High visibility crosswalk





Existing conditions

Some parking restrictions to create pedestrian zone

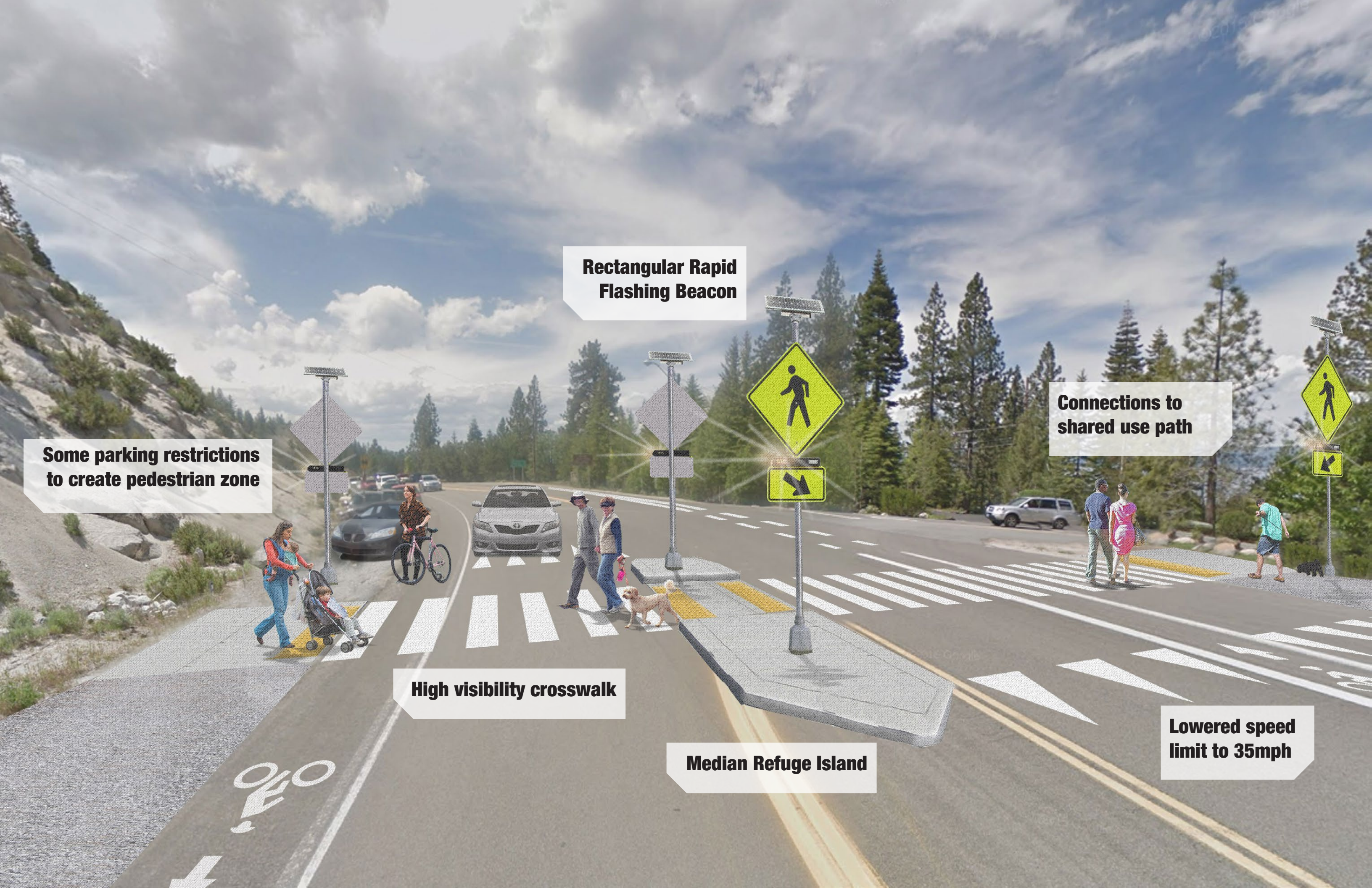
Rectangular Rapid Flashing Beacon

Connections to shared use path

High visibility crosswalk

Median Refuge Island

Lowered speed limit to 35mph





©2015 Google

©2015 Google

Existing conditions



Sidewalk connection to school and parking

Pedestrian Hybrid Beacon

Parking restrictions along Highway 50

Beach access

Bike Lanes

NO PARKING ANY TIME

CROSSWALK
STOP IN FRONT OF CROSSWALK



- Phased Implementation:** Similar to interim treatments, phased implementation gives the community a chance to understand the project and experience benefits. As the project draws closer to completion, public support and desire for the project will be stronger.



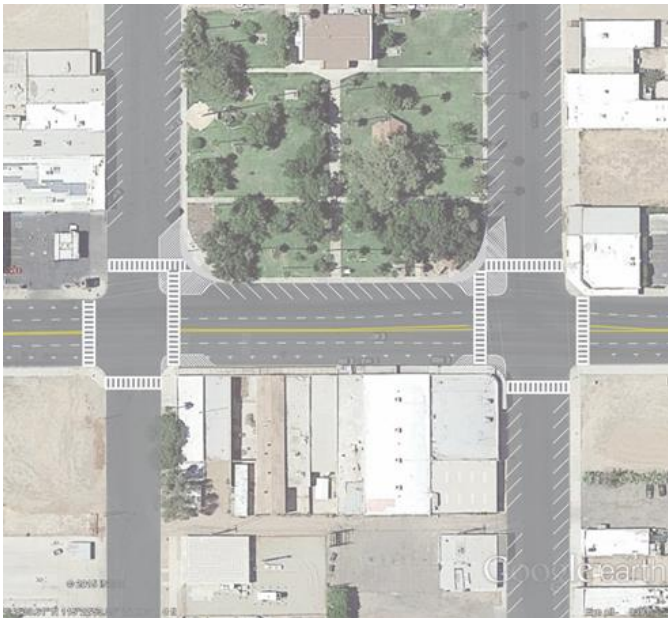
Original Alignment



Phase 1: Painted crosswalks & roadway realignment

Phase 2: Painted Curb Bulbouts & Realigned Crosswalks

Phase 3: Bulbouts made permanent



Example supplied by Alta Planning + Design at the Transforming Tahoe Transportation Workshop

STATE	INJURY CODES	CONVERSION	DEFINITIONS / INSTRUCTIONS / NOTES	SOURCE	LOCATION
	4. Incapacitating Injury	A	Any injury, other than a fatal injury, which prevents the injured person from walking, driving or normally continuing the activities the person was capable of performing before the injury occurred. Often defined as "needing help from the scene." Includes: severe lacerations, broken or distorted limbs, skull or chest injuries, abdominal injuries, unconsciousness when taken from the crash scene.	4ee - Injury Severity	
	3. Non-incapacitating Evident	B	Any injury, other than a fatal injury or an incapacitating injury, which is evident to observers at the scene of the crash in which the injury occurred. Examples: contusions (bruises), laceration, bloody nose, lump on head, or abrasions.	4ee - Injury Severity	
	2. Possible Injury	C	Complaint of pain without visible injury. Includes – momentary unconsciousness, claim of injuries not evident, limping, complaint of pain, nausea or hysteria.	4ee - Injury Severity	
	1. No Injury	O	No complaint or treatment was required by the person.	4ee - Injury Severity	
	99. Not Reported/Unknown	U	Should be used only if the person is not present at the time of investigation. All efforts should be made to make an accurate determination.	4ee - Injury Severity	
ARKANSAS	2015 to Present			AR eCrash Data Element Manual 2015	codes & definitions found on Manual pg57-58
	001 K Fatal Injury	K	Any injury that directly results in the death of a living person within 30 days of a motor vehicle crash.	10.2.1 Injury Status (P5)	
	002 A Suspected serious injury	A	Incapacitating Injury Any injury, other than a fatal injury, which prevents the injured person from walking, driving or normally continuing the activities the person was capable of performing before the injury occurred. Inclusions: Severe lacerations, broken or distorted limbs, skull or chest injuries, abdominal injuries, unconsciousness at or when taken from the scene, unable to leave the scene without assistance, and others. Exclusions: Momentary unconsciousness, and others.	10.2.1 Injury Status (P5)	
	003 B Suspected minor injury	B	Non-incapacitating Injury Any injury other than a fatal injury or an incapacitating injury, which is evident to observers at the scene. Inclusions: Lump on head, abrasions, bruises, minor lacerations, and others. Exclusions: Limping (the injury cannot be seen, and others).	10.2.1 Injury Status (P5)	
	004 C Possible injury	C	Possible Injury Any injury reported or claimed which is not a fatal injury, incapacitating injury or non-incapacitating evident injury. Inclusions: Momentary unconsciousness, claim of injuries not evident, com-plaint of pain, limping, nausea, hysteria, and others.	10.2.1 Injury Status (P5)	
	005 O No apparent injury	O	Property Damage Only (PDO) – or – Non-Injury, No personal injury. Inclusions: Harm to wild animals, or birds, which have monetary value and others. Exclusions: Mechanical failure during normal operation, such as tire blowout, broken fan belt or axle.	10.2.1 Injury Status (P5)	
	2007 to 2015			AR Motor Vehicle Crash Report Instructions Guide 2007	codes & definitions found on pg5 (PDF pg8) , inclusions/exclusions found on pg28 (PDF pg31) .
	1. Fatal Injury	K	Any injury that directly results in the death of a living person within 30 days of a motor vehicle crash. Death to a fetus should be noted in the narrative but not listed or counted as a living person.	Injury Code; (Appendix A) Injury Severity Levels)	
	2. Incapacitating Injury	A	Any injury, other than a fatal injury, which prevents the injured person from walking, driving or normally continuing the activities the person was capable of performing before the injury occurred. This is the most serious survivable injury. Inclusions: Severe lacerations, broken or distorted limbs, skull or chest injuries, abdominal injuries, unconsciousness at or when taken from the scene, unable to leave the scene without assistance, and others. Exclusions: Momentary unconsciousness and others .	Injury Code; (Appendix A) Injury Severity Levels)	
	3. Non-incapacitating Injury	B	Any injury other than a fatal injury or an incapacitating injury, which is evident to observers at the scene. Inclusions: Lump on head, abrasions, bruises, minor lacerations, and others. Exclusions: Limping (the injury cannot be seen), and others .	Injury Code; (Appendix A) Injury Severity Levels)	
4. Possible Injury	C	Any injury reported or claimed which cannot be determined by the officer at the scene and is not a fatal injury, incapacitating injury or non-incapacitating evident injury. Inclusions: Momentary unconsciousness, claim of injuries not evident, complaint of pain, limping, nausea, hysteria, and others.	Injury Code; (Appendix A) Injury Severity Levels)		
5. No Injury / Property Damage Only	O	Property Damage Only (PDO) – or – Non-Injury (Code 5) (no personal injury) Inclusions: Harm to wild animals, or birds, which have monetary value, and others. Exclusions: Mechanical failure during normal operation, such as tire blowout, broken fan belt or axle.	Injury Code; (Appendix A) Injury Severity Levels)		
CALIFORNIA	2003 to present			Collision Investigation Manual 2003	definitions found on PDF pg27-28 .
	Fatal Injury	K	Fatal Injury: Death as a result of injured sustained in a collision or an injury resulting in death within 30 days of the collision. Note: The fetus of a pregnant female involved in a traffic collision will be documented as a fatal injury if the coroner attributes the death to the collision	aa. Injury	
	Severe Injury	A	Severe Injury: An injury other than a fatal injury which results in broken bones, dislocated or distorted limbs, severe lacerations, or unconsciousness at or when taken from the collision scene. It does not include minor laceration.	aa. Injury	
	Other Visible Injury	B	Other Visible Injury: This includes: bruises (discolored or swollen); places where the body has received a blow (black eyes and bloody noses); and abrasions (areas of the skin where the surface is roughened or blotchy by scratching or rubbing which includes skinned shins, knuckles, knees, and elbows).	aa. Injury	

STATE	INJURY CODES	CONVERSION	DEFINITIONS / INSTRUCTIONS / NOTES	SOURCE	LOCATION
	Complaint of Pain	C	Complaint of Pain: This classification could contain authentic internal or other non-visible injuries and fraudulent claims of injury. This includes: 1. Persons who seem dazed, confused, or incoherent (unless such behavior can be attributed to intoxication, extreme age, illness, or mental infirmities). 2. Persons who are limping but do not have visible injuries; 3. Any person who is known to have been unconscious as a result of the collision, although it appears he/she has recovered; 4. Persons who say they want to be listed as injured but do not appear to be so.	aa. Injury	
COLORADO	2006 to present			Investigating Officer's Traffic Accident Reporting Manual 2006	codes & definitions found on pg 49 (PDF pg51) .
	04 Fatal	K	Fatal: For the purposes of the accident report, a fatal injury is any injury that results in death within thirty days of the accident. Example, a pregnant woman is involved in an accident that causes the birth of the child at the accident scene. The child subsequently dies as a result of injuries sustained in the accident. The child will NOT be classified as a fatality. Note: A person must be born prior to the accident to be classified as a fatality.	80. Injury Severity	
	03 Evident Incapacitating Injury	A	Evident Incapacitating Injury: This is any injury other than a fatal injury which prevents the injured person from walking, driving or normally continuing the activities he/she was capable of performing before the injury occurred. Included are severe lacerations, broken or distorted limbs, and internal injuries. This also includes an injured party transported to a hospital because of the severity of the injuries.	80. Injury Severity	
	02 Evident non-incapacitating Injury	B	Evident non-incapacitating Injury: This type of injury is evident to observers at the scene, but is not a fatal or incapacitating injury. These injuries do not prevent the injured person from walking, driving, or normally continuing the activities that he/she was capable of performing before the injury occurred. This includes momentary unconsciousness, bruises, lumps, and minor lacerations. This also includes injuries that are treated at the scene and do not require further medical attention away from the scene.	80. Injury Severity	
	01 Complaint of Injury (prior to 2006, Possible Injury)	C	Complaint of Injury: A complaint of injury is any injury reported or claimed which is not a fatal, incapacitating, or non-incapacitating evident injury. Examples include a claim of injury, complaint of pain, limping, and nausea or hysteria.	80. Injury Severity	
	00 No Injury	O	No Injury: If a party is transported and is subsequently examined and found to have no injuries, that party would be classified as No Injury.	80. Injury Severity	
CONNECTICUT	2015-Present			CT Investigator's Guide for Completing the MMUCC V4 Crash Report 2015	codes found on pg48 (PDF pg51) .
	K: Fatal Injury	K		Injury Status (P5)	
	A. Suspected Serious Injury	A		Injury Status (P5)	
	B. Suspected Minor Injury	B		Injury Status (P5)	
	C. Possible Injury	C		Injury Status (P5)	
	O. No Apparent Injury	O		Injury Status (P5)	
	1995 to 2015			CT Investigator's Guide for Completing the Uniform Police Accident Report Form 1994	codes found on pg8 (PDF pg12) .
	K: Fatal Injury	K	Those individuals who succumb to their injuries within 30 days of the accident. Those becoming deceased after the 30 day period should receive the code "A".	M. Injury Classification	
	A: Incapacitating Injury (Prevents return to normal activity)	A		M. Injury Classification	
	B: Non-incapacitating Injury	B		M. Injury Classification	
	C: Possible Injury (Claim or non-evident injury)	C		M. Injury Classification	
	N: Not injured	O		M. Injury Classification	
DELAWARE	2007 to present			DE TraCS Support Database Map 2007	codes found on pg11
	01 – Fatal Injury	K		31 Injury Status	
	02 – Nonfatal Injury – Incapacitating	A	Incapacitating Injury: Any injury, other than a fatal injury, which prevents the injured person from walking, driving or normally continuing the activities the person was capable of performing before the injury occurred.	31 Injury Status	
	03 – Nonfatal Injury – Non-incapacitating Injury	B	Non-incapacitating Injury: Any injury, other than a fatal injury or an incapacitating injury, which is evident to observers at the scene of the accident in which the injury occurred.	31 Injury Status	
	04 – Nonfatal Injury – Possible	C	Possible Injury: Any injury reported or claimed which is not a fatal injury, incapacitating injury or non-incapacitating injury.	31 Injury Status	
	05 – No Injury	O		31 Injury Status	
	99 – Unknown	U		31 Injury Status	
	1987 to 2006			DE Uniform Traffic Collision Report 1987, DE Traffic Collision Investigation Manual 2001	codes found on Report Form pg3
	Fatal Injury	K		76 Injury Class	
	Incapacitating Injury	A		76 Injury Class	



INTERSECTION NETWORK SCREENING RESULTS

APPENDIX A

APPENDIX B

APPENDIX C

APPENDIX D



Intersection	Cross Street 1	Cross Street 2	OBJECTID	Crashes	Local CCR Differential ¹	EPDO ²	Fatal	Severe Injury	Other Visible Injury	Complaint of Pain	Property Damage Only	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overtaken	Pedestrian	Bicycle	Impaired	Dark	Wet	Priority Location
Signalized Intersections																							
LATROBE & US 50 WB RAMPS	LATROBE	US 50 WB RAMPS	717	32	0.10	305	0	2	1	5	24	8	7	10	2	3	0	0	0	6	14	3	
CAMERON PARK DR & US 50 EB RAMPS	CAMERON PARK DR	US 50 EB RAMPS	2314	29	0.36	83	0	0	4	3	22	12	6	8	3	0	0	0	0	2	4	4	
LATROBE RD & WHITE ROCK RD	LATROBE RD	WHITE ROCK RD	770	27	-0.02	93	0	0	1	11	15	15	2	6	4	0	0	0	0	1	4	0	
GREEN VALLEY RD & FRANCISCO DR	GREEN VALLEY RD	FRANCISCO DR	254	25	-0.02	85	0	0	3	6	16	7	5	9	1	2	0	0	1	1	8	4	
LATROBE RD & TOWN CENTER BLVD	LATROBE RD	TOWN CENTER BLVD	762	24	0.23	63	0	0	3	2	19	9	4	9	1	1	0	0	0	3	5	1	
CAMERON PARK DR & COACH LN	CAMERON PARK DR	COACH LN	2315	24	0.37	49	0	0	1	3	20	9	7	8	0	0	0	0	0	2	5	0	
GREEN VALLEY RD & EL DORADO HILLS BLVD/SALMON FALLS	GREEN VALLEY RD	EL DORADO HILLS BLVD/SALMON FALLS	490	23	0.20	63	0	0	1	6	16	10	1	10	0	1	0	0	0	1	5	4	
MISSOURI FLAT RD & FORNI RD	MISSOURI FLAT RD	FORNI RD	4098	22	-0.03	102	0	0	3	10	9	5	3	8	3	0	0	2	0	3	4	4	X
EL DORADO HILLS BLVD & SARATOGA WAY/PARK DR	EL DORADO HILLS BLVD	SARATOGA WAY/PARK DR	705	20	0.05	208	0	1	4	6	9	3	0	13	2	2	0	0	0	3	7	2	
MISSOURI FLAT RD & MOTHER LODE DR	MISSOURI FLAT RD	MOTHER LODE DR	3950	20	-0.07	75	0	0	2	7	11	3	3	13	0	1	0	0	0	1	2	2	
MISSOURI FLAT RD & PLAZA DR	MISSOURI FLAT RD	PLAZA DR	3877	19	0.05	54	0	0	1	5	13	7	6	6	0	0	0	0	0	0	5	3	
MISSOURI FLAT RD & US 50 EB RAMPS	MISSOURI FLAT RD	US 50 EB RAMPS	3937	19	-0.14	44	0	0	1	3	15	6	4	9	0	0	0	0	0	1	7	3	
GOLDEN CENTER DR & MISSOURI FLAT RD	GOLDEN CENTER DR	MISSOURI FLAT RD	4144	16	-0.04	531	1	3	3	2	7	2	0	5	2	2	0	1	2	4	5	2	X
GREEN VALLEY RD & ALLENGHENY RD/SILVA VALLEY PK	GREEN VALLEY RD	ALLENGHENY RD/SILVA VALLEY PK	607	15	0.10	45	0	0	1	4	10	2	3	6	1	3	0	0	0	3	5	2	
LATROBE RD & GOLDEN FOOTHILL PKWY	LATROBE RD	GOLDEN FOOTHILL PKWY	908	15	-0.10	89	0	0	6	3	6	6	0	6	0	1	1	0	0	0	2	0	
CAMERON PARK DR & PALMER DR	CAMERON PARK DR	PALMER DR	2295	15	-0.03	45	0	0	1	4	10	4	3	5	1	2	0	0	0	1	3	2	
EL DORADO HILLS BLVD & SERRANO PKWY/LASSEN LANE	EL DORADO HILLS BLVD	SERRANO PKWY/LASSEN LANE	701	13	0.00	23	0	0	1	0	12	3	2	7	0	0	0	0	1	2	2	1	
US 50 EB RAMPS & EL DORADO HILLS BLVD	US 50 EB RAMPS	EL DORADO HILLS BLVD	743	13	-0.22	38	0	0	1	3	9	5	0	7	0	1	0	0	0	2	4	1	
SILVA VALLEY PKWY & SERRANO PKWY	SILVA VALLEY PKWY	SERRANO PKWY	834	11	-0.21	21	0	0	1	0	10	3	2	3	0	2	0	0	0	2	4	1	
SILVA VALLEY PKWY & US 50 EB RAMPS	SILVA VALLEY PKWY	US 50 EB RAMPS	1007	11	0.25	50	0	0	3	2	6	4	2	1	1	3	0	0	0	3	2	2	
CAMERON PARK DR & LA CANADA DR	CAMERON PARK DR	LA CANADA DR	1895	11	-0.11	16	0	0	0	1	10	2	1	7	0	0	0	0	0	1	3	0	
WHITE ROCK RD & VINE ST/VALLEY VIEW PKWY	WHITE ROCK RD	VINE ST/VALLEY VIEW PKWY	875	9	-0.07	35	0	0	0	5	4	1	0	4	2	1	0	0	0	1	1	0	
FOWLER LN & PLEASANT VALLEY RD	FOWLER LN	PLEASANT VALLEY RD	4433	9	0.33	24	0	0	1	1	7	1	2	6	0	0	0	0	0	0	0	1	
GREEN VALLEY RD & CAMBRIDGE RD/PERIDOT DR	GREEN VALLEY RD	CAMBRIDGE RD/PERIDOT DR	1734	9	-0.10	44	0	0	2	3	4	1	0	5	0	2	0	0	1	2	2	2	
GREEN VALLEY RD & CAMERON PARK DR/STARBUCK RD	GREEN VALLEY RD	CAMERON PARK DR/STARBUCK RD	1889	9	-0.13	43	0	0	3	1	5	0	2	3	1	0	0	0	2	0	1	0	
EL DORADO HILLS BLVD & WILSON BLVD	EL DORADO HILLS BLVD	WILSON BLVD	569	8	-0.22	8	0	0	0	0	8	1	1	2	1	2	0	0	0	3	3	2	
PONDEROSA RD & WILD CHAPARRAL DR	PONDEROSA RD	WILD CHAPARRAL DR	2754	8	0.99	13	0	0	0	1	7	0	3	4	1	0	0	0	0	0	3	1	
GREEN VALLEY RD & BASS LAKE RD/ALEXANDRITE	GREEN VALLEY RD	BASS LAKE RD/ALEXANDRITE	1622	8	-0.18	33	0	0	2	1	5	2	0	3	0	2	0	0	0	1	5	1	
CAMERON PARK DR & MEDER RD	CAMERON PARK DR	MEDER RD	2115	8	-0.22	18	0	0	0	2	6	2	0	5	0	1	0	0	0	0	1	0	
S SHINGLE RD & DUROCK RD	S SHINGLE RD	DUROCK RD	2776	8	-0.10	23	0	0	1	1	6	3	2	3	0	0	0	0	0	0	1	0	
GREEN VALLEY RD & SOPHIA PKWY	GREEN VALLEY RD	SOPHIA PKWY	2	7	-0.27	22	0	0	1	1	5	0	0	6	0	0	0	0	0	0	1	1	
EL DORADO HILLS BLVD & OLSON LN	EL DORADO HILLS BLVD	OLSON LN	528	7	-0.23	37	0	0	1	4	2	3	0	4	0	0	0	0	0	0	0	0	
CAMBRIDGE RD & US 50 WB RAMPS	CAMBRIDGE RD	US 50 WB RAMPS	1813	7	0.04	27	0	0	1	2	4	2	0	2	0	2	0	1	0	1	3	2	
WHITE ROCK RD & CLARKSVILLE RD/OLD WHITE ROCK	WHITE ROCK RD	CLARKSVILLE RD/OLD WHITE ROCK	976	7	-0.21	27	0	0	1	2	4	0	1	4	0	2	0	0	0	2	1	2	
CAMERON PARK DR & OXFORD RD	CAMERON PARK DR	OXFORD RD	2130	7	-0.23	17	0	0	0	2	5	1	0	4	0	2	0	0	0	0	1	1	
GREEN VALLEY RD & MILLER RD/BROWNS RAVINE	GREEN VALLEY RD	MILLER RD/BROWNS RAVINE	121	6	-0.29	21	0	0	0	3	3	0	0	6	0	0	0	0	0	0	0	0	
LATROBE & GOLDEN FOOTHILL PKWY/MONTE VERDE	LATROBE	GOLDEN FOOTHILL PKWY/MONTE VERDE	812	6	-0.29	31	0	0	2	1	3	2	0	4	0	0	0	0	0	1	0	2	

Intersection	Cross Street 1	Cross Street 2	OBJECTID	Crashes	Local CCR Differential ¹	EPDO ²	Fatal	Severe Injury	Other Visible Injury	Complaint of Pain	Property Damage Only	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Pedestrian	Bicycle	Impaired	Dark	Wet	Priority Location
BASS LAKE RD & US 50 WB RAMPS	BASS LAKE RD	US 50 WB RAMPS	1353	6	-0.02	16	0	0	0	2	4	3	0	3	0	0	0	0	0	0	1	2	
LATROBE RD & SUNCAST LN	LATROBE RD	SUNCAST LN	856	6	-0.29	16	0	0	0	2	4	4	1	0	0	1	0	0	0	1	1	0	
SILVA VALLEY PKWY & US 50 WB RAMPS	SILVA VALLEY PKWY	US 50 WB RAMPS	985	6	-0.29	16	0	0	1	0	5	1	3	1	0	1	0	0	0	1	0	2	
BASS LAKE RD & SERRANO PKWY/SIENNA RIDGE RD	BASS LAKE RD	SERRANO PKWY/SIENNA RIDGE	1361	6	-0.20	6	0	0	0	0	6	1	1	4	0	0	0	0	0	0	2	1	
GREEN VALLEY RD & SILVER SPRINGS PK	GREEN VALLEY RD	SILVER SPRINGS PK	1418	6	-0.16	25	0	0	2	0	4	0	0	2	0	3	0	0	1	0	1	1	
EL DORADO HILLS BLVD & HARVARD WAY	EL DORADO HILLS BLVD	HARVARD WAY	593	5	-0.30	139	0	1	1	1	2	2	1	0	0	1	0	1	0	1	0	0	
S SHINGLE RD/PONDEROSA RD & US 50 WB RAMPS	S SHINGLE RD/PONDEROSA RD	US 50 WB RAMPS	2755	5	0.26	5	0	0	0	0	5	2	1	2	0	0	0	0	0	0	3	1	
SILVA VALLEY PKWY & HARVARD WAY	SILVA VALLEY PKWY	HARVARD WAY	766	5	-0.26	10	0	0	0	1	4	3	0	0	0	1	0	0	0	0	0	0	
PIONEER TRL & BLACK BART AVE	PIONEER TRL	BLACK BART AVE	8858	5	-0.30	10	0	0	0	1	4	0	2	1	0	2	0	0	0	1	1	2	
MISSOURI FLAT & US-50 WB RAMP	MISSOURI FLAT	US-50 WB RAMP	9174	5	-0.32	5	0	0	0	0	5	1	3	1	0	0	0	0	0	0	1	0	
MOTHER LODE DR & FRENCH CREEK RD	MOTHER LODE DR	FRENCH CREEK RD	2869	4	-0.30	14	0	0	1	0	3	1	0	2	0	1	0	0	0	2	1	1	
GREEN VALLEY RD & SCHOOL DRIVEWAY	GREEN VALLEY RD	SCHOOL DRIVEWAY	9172	4	-0.28	14	0	0	0	2	2	0	1	3	0	0	0	0	0	0	1	0	
Unsignalized Intersections																							
BIG CUT RD & PLEASANT VALLEY RD	BIG CUT RD	PLEASANT VALLEY RD	4875	18	1.34	443	0	2	2	5	9	1	2	8	2	4	0	0	0	1	1	1	X
EL DORADO HILLS BLVD & FRANCISCO DR	EL DORADO HILLS BLVD	FRANCISCO DR	346	17	0.13	48	0	0	0	6	11	11	2	3	1	0	0	0	0	0	6	4	
S SHINGLE RD & MOTHER LODE DR	S SHINGLE RD	MOTHER LODE DR	2773	17	0.42	76	0	0	5	2	10	5	3	6	1	0	0	1	0	1	2	0	
CAMERON PARK DR & US 50 WB RAMPS	CAMERON PARK DR	US 50 WB RAMPS	2312	16	0.78	216	0	1	0	2	13	2	3	5	0	4	0	0	1	3	5	1	
MISSOURI FLAT RD & INDUSTRIAL DR	MISSOURI FLAT RD	INDUSTRIAL DR	4246	16	0.32	440	0	2	3	3	8	4	2	5	1	2	1	0	1	1	3	1	
BASS LAKE RD & SILVER SPRINGS PKWY	BASS LAKE RD	SILVER SPRINGS PKWY	1444	11	0.65	420	1	1	3	0	6	0	1	0	0	4	2	0	0	3	4	3	
SUNSET LN & MOTHER LODE DR	SUNSET LN	MOTHER LODE DR	2818	10	0.26	40	0	0	2	2	6	9	0	0	0	1	0	0	0	0	1	0	
MISSOURI FLAT RD & ENTERPRISE DR	MISSOURI FLAT RD	ENTERPRISE DR	4222	10	0.15	219	0	1	2	0	7	4	2	2	1	0	0	0	0	0	2	2	
GATLIN RD & CARSON RD	GATLIN RD	CARSON RD	5724	10	2.27	35	0	0	2	1	7	9	1	0	0	0	0	0	0	1	2	0	
SLY PARK RD & DOE VIEW PL	SLY PARK RD	DOE VIEW PL	6797	10	1.90	239	0	1	4	0	5	0	1	0	1	7	1	0	0	4	4	5	X
PLEASANT VALLEY RD & CEDAR RAVINE RD	PLEASANT VALLEY RD	CEDAR RAVINE RD	5418	9	0.28	29	0	0	1	2	6	2	1	3	1	2	0	0	0	2	1	1	
BLACK BART AVE & MARTIN AVE	BLACK BART AVE	MARTIN AVE	8730	9	0.39	218	0	1	2	0	6	0	0	0	0	7	1	0	1	3	5	3	
SILVA VALLEY PKWY & ENTRADA DR	SILVA VALLEY PKWY	ENTRADA DR	868	8	0.08	18	0	0	1	0	7	1	1	3	0	3	0	0	0	1	3	0	
COLD SPRINGS RD & BEALS RD	COLD SPRINGS RD	BEALS RD	3626	8	1.25	23	0	0	1	1	6	0	0	0	1	7	0	0	0	3	7	1	
MISSOURI FLAT RD & CHINA GARDEN RD	MISSOURI FLAT RD	CHINA GARDEN RD	4255	8	0.06	23	0	0	0	3	5	1	2	3	0	1	0	0	1	1	1	0	
MULBERRY LN & PLEASANT VALLEY RD	MULBERRY LN	PLEASANT VALLEY RD	4540	8	0.34	33	0	0	1	3	4	4	0	3	0	0	0	0	0	0	2	1	
SALMON FALLS RD & LAKEHILLS CT	SALMON FALLS RD	LAKEHILLS CT	526	7	0.21	12	0	0	0	1	6	0	1	0	1	3	1	0	0	0	3	1	
SILVA VALLEY PKWY & APPIAN WAY	SILVA VALLEY PKWY	APPIAN WAY	662	7	-0.04	22	0	0	0	3	4	3	0	1	3	0	0	0	0	0	2	1	
LA CRESCENTA DR & GREEN VALLEY RD	LA CRESCENTA DR	GREEN VALLEY RD	1985	7	0.27	32	0	0	1	3	3	4	1	1	0	0	0	0	0	1	1	1	
LATROBE RD & S SHINGLE RD	LATROBE RD	S SHINGLE RD	2093	7	0.38	46	0	0	4	0	3	4	2	0	0	1	0	0	0	0	2	1	
SHINGLE LIME MINE RD & DUROCK RD	SHINGLE LIME MINE RD	DUROCK RD	2460	7	0.33	222	0	1	1	3	2	0	0	3	1	0	1	0	0	0	0	1	
PRODUCT DR & DUROCK RD	PRODUCT DR	DUROCK RD	2559	7	0.36	36	0	0	3	0	4	2	0	2	1	2	0	0	0	1	3	0	
LOTUS RD & GOLD HILL RD/LUNEMAN ROAD	LOTUS RD	GOLD HILL RD/LUNEMAN ROAD	2920	7	0.21	402	1	1	0	3	2	6	0	0	0	0	0	0	0	1	1	0	X
HOLIDAY LAKE DR & MOTHER LODE DR	HOLIDAY LAKE DR	MOTHER LODE DR	2989	7	0.17	27	0	0	0	4	3	3	0	3	0	0	0	0	0	0	1	1	
NEWTOWN RD & PLEASANT VALLEY RD	NEWTOWN RD	PLEASANT VALLEY RD	6034	7	0.97	7	0	0	0	0	7	6	0	0	0	1	0	0	0	1	1	3	
TAH NEE WAY & HARVARD WAY	TAH NEE WAY	HARVARD WAY	670	6	0.61	21	0	0	0	3	3	2	0	3	0	0	0	0	0	0	3	1	

Intersection	Cross Street 1	Cross Street 2	OBJECTID	Crashes	Local CCR Differential ¹	EPDO ²	Fatal	Severe Injury	Other Visible Injury	Complaint of Pain	Property Damage Only	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Pedestrian	Bicycle	Impaired	Dark	Wet	Priority Location
LOCH WAY & GREEN VALLEY RD	LOCH WAY	GREEN VALLEY RD	783	6	0.16	201	0	1	0	1	4	0	1	3	0	1	0	0	0	0	1	1	
KNOLLWOOD DR & COUNTRY CLUB DR	KNOLLWOOD DR	COUNTRY CLUB DR	1787	6	0.40	216	0	1	1	2	2	4	0	0	1	0	0	0	0	1	3	1	
CAMBRIDGE RD & COUNTRY CLUB DR	CAMBRIDGE RD	COUNTRY CLUB DR	1885	6	0.11	6	0	0	0	0	6	5	0	1	0	0	0	0	0	2	3	0	
CAMERON PARK DR & ROBIN LN	CAMERON PARK DR	ROBIN LN	2316	6	0.18	11	0	0	0	1	5	1	2	1	1	0	0	0	0	1	1	0	
LOTUS RD & OLIVE RIDGE RD	LOTUS RD	OLIVE RIDGE RD	2840	6	0.21	211	1	0	1	1	3	0	2	2	0	0	0	0	0	0	0	0	
LOTUS RD & HEAVENS GATE	LOTUS RD	HEAVENS GATE	3036	6	0.21	581	0	3	0	1	2	0	1	0	1	2	0	0	0	4	2	1	
ROCKING HORSE LN & MOTHER LODE DR	ROCKING HORSE LN	MOTHER LODE DR	3107	6	0.12	40	0	0	3	1	2	4	0	2	0	0	0	0	0	0	3	1	
GREENSTONE RD & GREEN VALLEY RD	GREENSTONE RD	GREEN VALLEY RD	3241	6	0.39	26	0	0	1	2	3	1	0	2	1	0	0	0	0	0	0	1	
GREENSTONE RD & GRASSY RUN RD	GREENSTONE RD	GRASSY RUN RD	3256	6	2.58	216	0	1	1	2	2	3	1	0	1	1	0	0	0	1	2	0	
GREENSTONE RD & BEARS DEN RD	GREENSTONE RD	BEARS DEN RD	3269	6	1.08	16	0	0	1	0	5	0	1	0	0	4	1	0	0	3	4	0	
GREENSTONE RD & GREENSTONE CUTOFF	GREENSTONE RD	GREENSTONE CUTOFF	3273	6	0.72	396	1	1	0	2	2	0	0	0	0	3	0	0	0	1	1	2	
SALLY LN & COLD SPRINGS RD	SALLY LN	COLD SPRINGS RD	3441	6	0.84	16	0	0	1	0	5	0	1	0	0	3	2	0	0	3	4	2	
MOTHER LODE DR & EL DORADO RD	MOTHER LODE DR	EL DORADO RD	3536	6	0.19	25	0	0	2	0	4	4	0	0	1	1	0	0	0	1	2	0	
FORNI RD & IVY TRL	FORNI RD	IVY TRL	3863	6	0.55	196	0	1	0	0	5	0	1	0	0	2	2	0	0	1	3	1	
OLD DEPOT RD & MISSOURI FLAT RD	OLD DEPOT RD	MISSOURI FLAT RD	4197	6	-0.02	220	1	0	2	1	2	1	0	3	0	0	0	1	0	0	3	1	X
PLEASANT VALLEY RD & RACQUET WAY	PLEASANT VALLEY RD	RACQUET WAY	4460	6	0.03	21	0	0	1	1	4	5	0	0	0	0	0	0	0	0	0	0	
CEDAR RAVINE RD & PLEASANT VALLEY RD	CEDAR RAVINE RD	PLEASANT VALLEY RD	5369	6	0.08	206	0	1	0	2	3	2	1	1	0	1	0	0	0	0	0	2	
PLEASANT VALLEY RD & BUCKS BAR RD	PLEASANT VALLEY RD	BUCKS BAR RD	5401	6	0.10	6	0	0	0	0	6	1	1	2	0	1	1	0	0	1	1	0	
PIONEER TRL & ELKS CLUB DR	PIONEER TRL	ELKS CLUB DR	8388	6	0.16	221	0	1	1	3	1	6	0	0	0	0	0	0	0	0	0	0	
SILVA VALLEY PKWY & NETHERDALE WAY	SILVA VALLEY PKWY	NETHERDALE WAY	718	5	0.12	10	0	0	0	1	4	1	1	3	0	0	0	0	0	0	1	0	
SUNSET MOBILES LN & WHITE ROCK RD	SUNSET MOBILES LN	WHITE ROCK RD	844	5	0.08	195	0	1	0	0	4	2	1	1	0	0	0	1	0	2	1	1	
SILVA VALLEY PKWY & CLARKSVILLE RD/OLD WHITE ROCK	SILVA VALLEY PKWY	CLARKSVILLE RD/OLD WHITE ROCK	907	5	-0.01	5	0	0	0	0	5	2	2	0	0	1	0	0	0	0	1	1	
BASS LAKE RD & FRONTAGE RD	BASS LAKE RD	FRONTAGE RD	1355	5	0.04	20	0	0	1	1	3	1	2	1	0	1	0	0	0	2	1	1	
CAMBRIDGE RD & LA CANADA DR	CAMBRIDGE RD	LA CANADA DR	1765	5	0.11	5	0	0	0	0	5	4	0	1	0	0	0	0	0	2	4	0	
CAMBRIDGE RD & KNOLLWOOD DR	CAMBRIDGE RD	KNOLLWOOD DR	1816	5	0.15	10	0	0	0	1	4	2	0	2	0	0	0	0	0	0	1	0	
CAMERON PARK DR & WINTERHAVEN CIR	CAMERON PARK DR	WINTERHAVEN CIR	1892	5	0.08	195	0	1	0	0	4	4	0	0	0	0	0	1	0	0	1	1	
CAMERON PARK DR & MIRA LOMA DR/ALHAMBRA DR	CAMERON PARK DR	MIRA LOMA DR/ALHAMBRA DR	2045	5	0.01	10	0	0	0	1	4	1	1	0	0	2	0	0	1	0	1	0	
CAMERON PARK DR & SUDBURY RD	CAMERON PARK DR	SUDBURY RD	2186	5	0.00	5	0	0	0	0	5	0	0	0	0	4	1	0	0	2	5	3	
S SHINGLE RD & SUNSET LN	S SHINGLE RD	SUNSET LN	2786	5	0.17	200	0	1	0	1	3	1	0	1	0	2	1	0	0	2	3	1	
LOTUS RD & SIERRA ROCK RD	LOTUS RD	SIERRA ROCK RD	2813	5	0.13	195	1	0	0	0	4	0	0	1	1	2	0	0	0	1	1	1	
LOTUS RD & GRANITE CREEK DR	LOTUS RD	GRANITE CREEK DR	3025	5	0.13	210	0	1	1	1	2	0	0	0	0	5	0	0	0	1	2	2	
KINGVALE RD & MOTHER LODE DR	KINGVALE RD	MOTHER LODE DR	3357	5	0.06	205	0	1	0	2	2	0	0	4	0	0	0	1	0	0	3	0	
DAVIDSON RD & MOTHER LODE DR	DAVIDSON RD	MOTHER LODE DR	3409	5	0.06	15	0	0	0	2	3	0	3	1	0	0	0	0	0	0	2	0	
EL DORADO RD & US 50 WB RAMPS	EL DORADO RD	US 50 WB RAMPS	3600	5	-0.01	10	0	0	0	1	4	1	1	0	0	3	0	0	0	2	1	1	
EL DORADO RD & US 50 EB RAMPS	EL DORADO RD	US 50 EB RAMPS	3604	5	0.90	20	0	0	0	3	2	4	0	0	0	0	0	0	0	0	2	0	
EL DORADO RD & DURADO CT	EL DORADO RD	DURADO CT	3616	5	0.34	205	0	1	0	2	2	1	0	0	0	3	1	0	0	2	1	2	
ELIZABETH LN & PLEASANT VALLEY RD	ELIZABETH LN	PLEASANT VALLEY RD	3655	5	0.25	5	0	0	0	0	5	2	2	0	0	1	0	0	0	1	1	1	
FORNI RD & OAK LN	FORNI RD	OAK LN	4073	5	0.16	15	0	0	1	0	4	3	0	1	0	0	0	0	0	0	0	0	
MISSOURI FLAT RD & POCO DOBI LN	MISSOURI FLAT RD	POCO DOBI LN	4249	5	-0.03	30	0	0	2	1	2	4	0	1	0	0	0	0	0	0	1	0	

Intersection	Cross Street 1	Cross Street 2	OBJECTID	Crashes	Local CCR Differential ¹	EPDO ²	Fatal	Severe Injury	Other Visible Injury	Complaint of Pain	Property Damage Only	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Pedestrian	Bicycle	Impaired	Dark	Wet	Priority Location
PLEASANT VALLEY RD & KARL DR	PLEASANT VALLEY RD	KARL DR	4593	5	0.11	385	1	1	0	0	3	0	0	0	0	3	0	0	0	2	2	0	
MOSQUITO RD & WILDER LN	MOSQUITO RD	WILDER LN	4928	5	1.33	10	0	0	0	1	4	0	0	1	0	2	1	0	1	0	3	2	
CEDAR RAVINE RD & QUARRY RD	CEDAR RAVINE RD	QUARRY RD	5215	5	15.45	25	0	0	1	2	2	1	0	0	1	3	0	0	0	1	1	1	
FORT JIM RD & NEWTOWN RD	FORT JIM RD	NEWTOWN RD	6010	5	0.59	10	0	0	0	1	4	2	0	0	0	3	0	0	0	1	3	1	
RIDGEWAY DR & PONY EXPRESS TRL	RIDGEWAY DR	PONY EXPRESS TRL	6485	5	0.32	195	0	1	0	0	4	1	1	0	1	2	0	0	0	0	2	1	
WILLOW ST & PONY EXPRESS TRL	WILLOW ST	PONY EXPRESS TRL	6793	5	0.85	34	0	0	3	0	2	0	0	0	1	1	0	0	1	0	2	1	
SLY PARK RD & RIDGEWAY DR	SLY PARK RD	RIDGEWAY DR	6844	5	0.35	15	0	0	0	2	3	3	0	1	0	1	0	0	0	0	1	1	
ICE HOUSE RD & STREET-UNNAMED_233766	ICE HOUSE RD	STREET-UNNAMED_233766	7275	5	15.45	30	0	0	1	3	1	0	0	0	0	1	3	0	0	0	0	0	
E SAN BERNARDINO AVE & ALGONQUIN CT	E SAN BERNARDINO AVE	ALGONQUIN CT	7840	5	0.87	10	0	0	0	1	4	0	0	1	0	3	0	0	0	1	1	1	
SALMON FALLS RD & VILLAGE CENTER DR	SALMON FALLS RD	VILLAGE CENTER DR	499	4	0.06	194	0	1	0	0	3	2	0	0	0	0	0	0	0	0	1	0	
VILA FLOR PL & SERRANO PKWY	VILA FLOR PL	SERRANO PKWY	807	4	0.11	14	0	0	0	2	2	0	0	1	0	3	0	0	0	4	4	1	
LATROBE RD & LATROBE RD	LATROBE RD	LATROBE RD	1147	4	0.03	23	0	0	2	0	2	0	0	0	1	2	1	0	0	1	3	2	
CAMEO DR & MERRYCHASE DR	CAMEO DR	MERRYCHASE DR	1798	4	1.32	9	0	0	0	1	3	1	1	1	0	0	0	0	0	0	0	0	
FLYING C RD & US 50 EB RAMPS	FLYING C RD	US 50 EB RAMPS	1837	4	11.80	14	0	0	1	0	3	2	0	0	2	0	0	0	0	0	1	1	
ALHAMBRA DR & CAMERON PARK DR	ALHAMBRA DR	CAMERON PARK DR	1958	4	-0.03	9	0	0	0	1	3	2	0	0	1	1	0	0	0	1	0	0	
CAMBRIDGE RD & PASADA RD	CAMBRIDGE RD	PASADA RD	1966	4	0.10	9	0	0	0	1	3	1	0	3	0	0	0	0	0	1	2	1	
WALNUT DR & GREEN VALLEY RD	WALNUT DR	GREEN VALLEY RD	2107	4	0.17	4	0	0	0	0	4	0	0	1	0	2	0	0	0	0	1	0	
STROLLING HILLS RD & COACH LN	STROLLING HILLS RD	COACH LN	2263	4	3.66	19	0	0	1	1	2	1	1	1	1	0	0	0	0	1	3	0	
MANY OAKS LN & WILD CHAPARRAL DR	MANY OAKS LN	WILD CHAPARRAL DR	2593	4	0.21	209	0	1	1	1	1	1	0	0	0	3	0	0	0	3	3	0	
S SHINGLE RD & BIG BRANCH RD	S SHINGLE RD	BIG BRANCH RD	2603	4	0.34	4	0	0	0	0	4	0	1	1	0	0	0	0	0	0	2	0	
PONDEROSA RD & GREEN VALLEY RD	PONDEROSA RD	GREEN VALLEY RD	2636	4	0.07	213	0	1	2	0	1	0	0	1	0	1	0	0	0	1	1	0	
S SHINGLE RD & PYRACANTHA DR	S SHINGLE RD	PYRACANTHA DR	2643	4	0.34	14	0	0	1	0	3	1	0	0	1	2	0	0	0	1	1	0	
LOTUS RD & STAGECOACH RD	LOTUS RD	STAGECOACH RD	2820	4	0.05	19	0	0	0	3	1	1	1	1	0	1	0	0	0	0	2	0	
LOTUS RD & RODAN LN	LOTUS RD	RODAN LN	3029	4	0.05	384	1	1	0	0	2	0	1	0	1	1	1	0	0	4	3	0	
LOTUS RD & FLAPJACK LN	LOTUS RD	FLAPJACK LN	3051	4	0.05	14	0	0	1	0	3	0	0	0	0	4	0	0	0	2	1	0	
MOTHER LODE DR & FAWN ST	MOTHER LODE DR	FAWN ST	3212	4	0.00	204	0	1	0	2	1	1	0	3	0	0	0	0	0	2	0	1	
COLD SPRINGS RD & RETIREMENT LANE	COLD SPRINGS RD	RETIREMENT LANE	3598	4	0.43	4	0	0	0	0	4	0	0	0	0	4	0	0	0	2	4	1	
PLEASANT VALLEY RD & ORIENTAL ST	PLEASANT VALLEY RD	ORIENTAL ST	3732	4	11.80	204	0	1	0	2	1	2	0	2	0	0	0	0	0	1	1	0	
PLEASANT VALLEY RD & CHURCH ST	PLEASANT VALLEY RD	CHURCH ST	3740	4	11.80	4	0	0	0	0	4	0	1	1	0	1	0	0	0	0	0	1	
FORNI RD & NORTH ST	FORNI RD	NORTH ST	3830	4	0.24	19	0	0	1	1	2	1	1	0	0	2	0	0	0	1	1	3	
FORNI RD & ENTERPRISE DR	FORNI RD	ENTERPRISE DR	3983	4	0.14	4	0	0	0	0	4	0	0	3	1	0	0	0	0	0	0	1	
FORNI RD & LINDBERG AVE	FORNI RD	LINDBERG AVE	4016	4	0.25	4	0	0	0	0	4	0	0	3	0	1	0	0	0	0	0	1	
PLEASANT VALLEY RD & ZELLER CT	PLEASANT VALLEY RD	ZELLER CT	4456	4	0.05	9	0	0	0	1	3	2	1	1	0	0	0	0	0	0	1	0	
PLEASANT VALLEY RD & LA SIERRA DR	PLEASANT VALLEY RD	LA SIERRA DR	4582	4	0.05	204	0	1	1	0	2	0	0	1	0	3	0	0	0	2	1	1	
W ZANDONELLA RD SPUR 1 & PLEASANT VALLEY RD	W ZANDONELLA RD SPUR 1	PLEASANT VALLEY RD	4870	4	-0.05	204	0	1	1	0	2	0	1	2	0	0	1	0	0	1	2	0	
PLEASANT VALLEY RD & OAK HILL RD	PLEASANT VALLEY RD	OAK HILL RD	5086	4	-0.02	23	0	0	2	0	2	1	0	0	0	3	0	0	0	1	2	1	
PLEASANT VALLEY RD & SHARON LN	PLEASANT VALLEY RD	SHARON LN	5265	4	0.14	14	0	0	0	2	2	0	0	3	0	0	0	0	0	0	3	0	
PLEASANT VALLEY RD & DEMYHIG LN	PLEASANT VALLEY RD	DEMYHIG LN	5328	4	-0.01	19	0	0	1	1	2	0	0	0	0	3	1	0	0	0	0	1	
SIERRA BLANCA DR & CARSON RD	SIERRA BLANCA DR	CARSON RD	5772	4	0.70	4	0	0	0	0	4	1	0	1	1	1	0	0	0	0	1	0	

Intersection	Cross Street 1	Cross Street 2	OBJECTID	Crashes	Local CCR Differential ¹	EPDO ²	Fatal	Severe Injury	Other Visible Injury	Complaint of Pain	Property Damage Only	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overtaken	Pedestrian	Bicycle	Impaired	Dark	Wet	Priority Location
GRIZZLY FLAT RD & ROOSTER LN	GRIZZLY FLAT RD	ROOSTER LN	6008	4	0.37	204	1	0	1	0	2	0	1	0	0	2	1	0	0	1	2	0	
SLY PARK RD & ALVAREZ LN	SLY PARK RD	ALVAREZ LN	6396	4	0.31	14	0	0	1	0	3	0	0	0	0	1	0	0	0	0	1	3	
PONY EXPRESS CT & GILMORE RD	PONY EXPRESS CT	GILMORE RD	6570	4	0.16	19	0	0	1	1	2	1	0	1	0	1	0	0	0	0	2	0	
ELM ST & PONY EXPRESS TRL	ELM ST	PONY EXPRESS TRL	6828	4	11.80	4	0	0	0	0	4	2	0	1	0	0	0	1	0	1	1	1	
SLY PARK RD & "MORMON EMIGRANT TRAIL"	SLY PARK RD	"MORMON EMIGRANT TRAIL"	6853	4	0.28	204	0	1	1	0	2	0	1	0	1	1	0	0	0	1	1	0	
SLY PARK RD & GOLD RIDGE TRL	SLY PARK RD	GOLD RIDGE TRL	6857	4	0.14	194	0	1	0	0	3	1	0	0	0	2	1	0	0	1	3	0	
PIONEER TRAIL & MEADOW VALE DR	PIONEER TRAIL	MEADOW VALE DR	8160	4	0.08	29	0	0	2	1	1	0	0	1	0	0	0	0	1	1	1	2	
PIONEER TRL & PLAYER DR	PIONEER TRL	PLAYER DR	8344	4	0.08	14	0	0	0	2	2	0	2	2	0	0	0	0	0	0	2	0	
PIONEER TRAIL & BUSCH WAY	PIONEER TRAIL	BUSCH WAY	8400	4	0.08	33	0	0	3	0	1	0	0	0	0	3	1	0	0	2	1	1	

1. Local Critical Crash Rate Differential

2. Equivalent Property Damage Only Crashes



SEGMENT NETWORK SCREENING RESULTS

APPENDIX A

APPENDIX B

APPENDIX C

APPENDIX D



Facility	OBJECTID	Cross Street 1	Cross Street 2	Crashes	Local CCR Differential ¹	EPDO ²	Fatal	Severe Injury	Other Visible Injury	Complaint of Pain	Property Damage Only	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Pedestrian	Bicycle	Impaired	Dark	Wet	Priority Locations
Principal Arterial																							
LAKE TAHOE BLVD	9059	SAWMILL RD	INDUSTRIAL AVE	7	0.36	360	0	2	2	1	2	0	0	0	0	2	3	0	0	2	2	2	x
WHITE ROCK RD	13732	VALLEY VIEW PKWY/VINE ST	OLD WHITE ROCK RD/CLARKSVILLE RD	7	0.32	181	0	1	1	0	5	0	0	2	1	1	2	1	0	2	2	3	
WHITE ROCK RD	13365	KEAGLES LN	VALLEY VIEW PKWY/VINE ST	5	1.37	10	0	0	0	1	4	0	0	3	1	0	0	0	0	1	1	0	
WHITE ROCK RD	13581	LATROBE RD	TOWN CENTER BLVD/WINDFIELD WAY	3	0.25	13	0	0	1	0	2	2	0	0	0	1	0	0	0	1	2	0	
Minor Arterial																							
SALMON FALLS RD	5443	DORADO RIDGE TRL	GALLAGHER RD	21	1.64	428	0	2	6	4	9	0	1	0	0	7	5	0	0	4	3	3	x
MISSOURI FLAT RD	6018	ENTERPRISE DR	CA-49	18	1.65	63	0	0	1	7	10	4	3	9	0	2	0	0	0	1	3	3	
PIONEER TRL	8509	JICARILLA DR	GOLDEN BEAR TRL	18	0.05	221	0	1	4	0	13	1	0	6	2	6	1	1	0	2	7	6	
SALMON FALLS RD	6240	FALCONS CREST LN	HIDDEN BRIDGE RD	15	1.63	1035	1	5	2	3	4	0	0	0	1	6	0	2	0	2	4	3	X
PLEASANT VALLEY RD	11725	NEWTOWN RD	LOCKE RD	14	3.19	246	1	0	7	0	6	0	0	1	0	8	1	0	0	6	3	5	
GREEN VALLEY RD	6696	FRANCISCO DR	EL DORADO HILLS BLVD	12	0.30	38	0	0	0	5	7	0	2	10	0	0	0	0	0	0	3	2	
N SHINGLE RD	5693	EASTVIEW DR	ASCOT LN	11	0.45	518	0	3	1	1	6	0	1	1	0	5	3	0	0	4	4	1	X
MISSOURI FLAT RD	10218	US 50 EB RAMPS	US 50 WB RAMPS	11	3.03	37	0	0	0	5	6	9	0	2	0	0	0	0	0	2	6	0	
PLEASANT VALLEY RD	4199	CLYDESDALE CT	BUCKS BAR RD	10	0.68	30	0	0	1	2	7	0	2	0	0	7	1	0	0	2	4	1	
SALMON FALLS RD	6910	GALLAGHER RD	SALMON FALLS CT/MINERS VALLEY RD	10	3.72	40	0	0	2	2	6	0	3	0	1	1	1	0	0	0	2	0	
LOTUS RD	9557	SPRINGVALE RD	WEBSTER RD	10	0.40	209	0	1	2	3	4	0	0	0	1	4	3	0	0	5	5	0	
SLY PARK RD	9918	MAYFLOWER RD	TOBOGAN RD	9	1.34	357	0	2	1	2	4	0	3	1	2	3	0	0	0	1	1	3	X
PLEASANT VALLEY RD	10106	BODEGA WAY	THORSON DR	9	0.90	28	0	0	2	0	7	0	1	0	0	7	1	0	0	2	8	3	
PIONEER TRL	11681	CA-89	SOUTHERN PINES DR	9	1.16	193	0	1	1	2	5	5	2	0	0	0	0	0	0	0	3	7	
COLD SPRINGS RD	4251	KANE HILL	LAKOTAH LN	8	4.58	192	0	1	1	2	4	1	1	0	1	3	2	0	0	3	4	3	
SALMON FALLS RD	7909	HIDDEN BRIDGE RD	CHATEAU MONTELANA DR	8	3.74	351	0	2	1	1	4	0	0	0	0	3	3	0	0	0	5	2	X
LOTUS RD	9556	WEBSTER LN	GOLD HILL RD	8	-0.13	27	0	0	2	0	6	0	0	1	0	5	1	0	0	0	2	0	
GREEN VALLEY RD	16183	FRANCISCO DR	MILLER RD	8	-0.25	18	0	0	0	2	6	0	2	4	0	0	0	0	0	0	4	0	
GREEN VALLEY RD	548	SILVA VALLEY PKWY	LOCH WAY	7	0.16	27	0	0	1	2	4	0	1	4	0	1	1	0	0	0	1	0	
CAMERON PARK DR	3116	HACIENDA RD	TORONTO RD	7	0.39	191	0	1	1	2	3	0	1	0	0	4	1	0	0	1	4	5	
CAMERON PARK DR	3132	DUROCK RD	COACH LN	7	1.40	171	0	1	0	0	6	2	2	2	0	0	0	0	0	1	1	1	
COLD SPRINGS RD	4261	GOLD HILL RD	THOMPSON HILL RD	7	0.09	26	0	0	2	0	5	0	1	0	0	5	1	0	0	1	5	5	
EL DORADO HILLS BLVD	5792	US-50 WB RAMPS	SARATOGA WAY/PARK DR	7	-0.13	171	0	1	0	0	6	0	3	3	1	0	0	0	0	0	4	0	
NEWTOWN RD	7358	STREET-UNNAMED_239130	GREEN CANYON RD	7	0.63	17	0	0	1	0	6	0	0	0	0	5	2	0	0	2	3	3	
MISSOURI FLAT RD	8340	INDUSTRIAL DR	ENTERPRISE DR	7	0.24	41	0	0	3	1	3	0	2	2	0	1	0	1	0	0	3	0	
PLEASANT VALLEY RD	8635	KEARNS RD	GLEE LN	7	0.90	364	1	1	3	0	1	0	1	0	0	3	0	0	0	3	3	0	X
N UPPER TRUCKEE RD	10688	US-50	OTOMITES ST	7	2.12	186	0	1	1	1	4	0	0	0	0	3	1	0	0	2	2	4	
GREEN VALLEY RD	13237	ROCKY SPRINGS RD	W GREEN SPRINGS RD	7	-0.18	345	1	1	1	0	4	1	0	0	0	2	3	0	0	2	2	0	X
CAMERON PARK DR	518	ALHAMBRA DR	LA CANADA DR	6	-0.24	200	1	0	2	2	1	0	2	0	1	1	0	0	0	3	1	1	
SALMON FALLS RD	889	AQUA HAVEN CT	SALMON VALLEY RD	6	3.30	6	0	0	0	0	6	0	1	0	1	4	0	0	0	0	4	1	
CAMERON PARK DR	3110	MEDER RD	MIRA LOMA DR	6	-0.24	25	0	0	2	0	4	1	0	0	1	3	1	0	0	4	4	0	
N UPPER TRUCKEE RD	5662	POEWIN ST	E SAN BERNARDINO AVE	6	2.71	25	0	0	2	0	4	0	0	0	0	5	1	0	0	2	3	2	
SLY PARK RD	5664	FOUR SPRINGS TRAIL	ALVAREZ LN	6	0.51	11	0	0	0	1	5	0	2	0	0	3	0	0	0	1	1	0	

Facility	OBJECTID	Cross Street 1	Cross Street 2	Crashes	Local CCR Differential ¹	EPDO ²	Fatal	Severe Injury	Other Visible Injury	Complaint of Pain	Property Damage Only	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Pedestrian	Bicycle	Impaired	Dark	Wet	Priority Locations
EL DORADO HILLS BLVD	5787	SERRANO PKWY	WILSON BLVD	6	-0.35	25	0	0	2	0	4	0	2	1	0	3	0	0	0	0	2	2	
PLEASANT VALLEY RD	6313	SLATE CREEK RD	MOTHER LODE DR	6	-0.11	190	0	1	1	2	2	0	0	1	1	1	0	1	0	1	3	1	
MISSOURI FLAT RD	6610	FORNI RD	GOLDEN CENTER DR	6	-0.15	6	0	0	0	0	6	0	2	4	0	0	0	0	0	0	0	0	
GREEN VALLEY RD	9411	LOCH WAY	ROCKY SPRINGS RD	6	-0.11	21	0	0	1	1	4	3	0	1	0	1	0	1	0	1	2	2	
GREEN VALLEY RD	9572	LOTUS RD	RUE DE LAC DR	6	0.04	50	0	0	4	1	1	0	0	0	0	3	2	0	0	2	3	2	
SALMON FALLS RD	11511	PILOT VIEW DR	VIENNA DR	6	1.74	185	0	1	1	1	3	0	2	0	0	2	0	0	0	0	1	1	
N SHINGLE RD	1946	BLACK OAK DR	RED CLOVER LN	5	-0.05	35	0	0	2	2	1	0	0	1	0	4	0	0	0	3	1	0	
SLY PARK RD	2292	BOURBON ST	ROLAND CT	5	0.63	343	0	2	1	0	2	0	0	0	0	2	0	0	0	2	2	1	X
CAMERON PARK DR	3112	EL DORADO ROYALE DR	OXFORD RD	5	-0.13	30	0	0	2	1	2	0	0	0	2	1	2	0	0	2	2	3	
EL DORADO HILLS BLVD	5780	HARVARD WAY	ST ANDREWS DR	5	-0.32	184	0	1	1	1	2	0	0	1	0	2	0	0	0	2	3	1	
SLY PARK RD	7103	GOLD RIDGE TRAIL	RIDGEWAY DR	5	0.12	25	0	0	1	2	2	0	0	1	0	2	0	1	0	1	0	2	
SLY PARK RD	7112	GOLD RIDGE TRAIL	ONYX TRAIL	5	0.19	20	0	0	1	1	3	0	0	0	0	3	1	0	0	1	3	3	
MISSOURI FLAT RD	7150	GOLDEN CENTER DR	HALYARD LN	5	-0.21	5	0	0	0	0	5	0	5	0	0	0	0	0	0	0	0	0	
SLY PARK RD	8489	JENKISON CIR	BELA VISTA DR	5	0.29	189	0	1	2	0	2	0	0	0	1	3	0	0	0	1	3	3	
NEWTOWN RD	10745	PASO WAY	FORT JIM RD	5	0.53	10	0	0	0	1	4	0	1	0	0	4	0	0	0	0	3	2	
GREEN VALLEY RD	10931	DEER VALLEY RD	OLD GREEN VALLEY VALLEY DR	5	-0.12	15	0	0	1	0	4	0	0	3	0	1	1	0	0	0	0	0	
PLEASANT VALLEY RD	11742	PONDERHILL WAY	OAK HILL RD	5	-0.15	179	0	1	0	2	2	0	0	3	0	1	0	1	0	0	0	0	
PLEASANT VALLEY RD	11760	SLATE CREEK RD	EL DORADO RD	5	0.12	35	0	0	2	2	1	2	1	1	0	1	0	0	0	1	2	1	
MOSQUITO RD	14636	WILDLIFE WAY	LADERA LN	5	2.62	24	0	0	2	0	3	0	0	1	0	4	0	0	0	1	1	0	
CARSON RD	1418	BARKLEY RD	PSYLLA LN	4	0.11	14	0	0	1	0	3	0	1	1	0	2	0	0	0	1	0	0	
PLEASANT VALLEY RD	1825	BIG CUT RD	MANOR DR	4	-0.09	4	0	0	0	0	4	0	0	0	0	4	0	0	0	2	4	0	
GREEN VALLEY RD	3023	CAMBRIDGE RD	HASTINGS DR	4	-0.16	9	0	0	0	1	3	0	1	2	0	1	0	0	0	2	3	0	
CEDAR RAVINE RD	3185	CAMP NAUVOO RD	ELYSIAN WAY	4	0.31	24	0	0	1	2	1	0	0	0	1	1	1	0	0	2	1	0	
PLEASANT VALLEY RD	5935	EL DORADO RD	ORIENTAL ST	4	-0.19	14	0	0	1	0	3	0	1	2	0	0	0	0	0	0	0	0	
MOTHER LODE DR	6345	OLD FRENCH TOWN RD	FAWN ST	4	-0.25	178	0	1	1	0	2	0	0	0	0	0	1	0	0	2	3	1	
MISSOURI FLAT RD	6384	FIELDSTONE DR	LIFE WAY	4	-0.39	9	0	0	0	1	3	0	0	1	0	3	0	0	0	0	0	1	
NEWTOWN RD	7357	GREEN CANYON RD	PASO WAY	4	0.19	4	0	0	0	0	4	0	0	0	0	4	0	0	0	1	2	1	
PIONEER TRL	7956	HIGH MEADOW TRL	BLACK BART AVE	4	-0.31	14	0	0	0	2	2	1	0	2	0	1	0	0	0	1	1	2	
GREEN VALLEY RD	8326	INDIAN CREEK RD	MORTARA CIR	4	1.05	9	0	0	0	1	3	0	0	0	0	4	0	0	0	1	1	0	
GREEN VALLEY RD	8791	KIPPS LN	LAKERIDGE OAKS DR	4	-0.31	168	0	1	0	0	3	1	0	0	0	2	0	1	0	1	1	0	
GREEN VALLEY RD	9088	MORMON ISLAND DR/LAKERIDGE OAKS	HIDDEN ACRES DR	4	-0.41	183	0	1	1	1	1	0	0	1	0	2	1	0	0	0	1	1	
LOTUS RD	9368	LISA LN	SIERRA ROCK RD	4	-0.25	4	0	0	0	0	4	0	0	0	0	2	1	0	0	2	4	0	
LOTUS RD	9555	THOMPSON HILL RD	GRANITE CREEK DR	4	-0.41	178	0	1	1	0	2	1	0	0	0	2	0	0	0	3	3	0	
LOTUS RD	9559	LOTUS CT	OLIVE RIDGE RD	4	-0.05	173	0	1	0	1	2	0	0	0	1	0	3	0	0	1	1	2	
SALMON FALLS RD	9786	MANZANITA LN	FREDLENA LN	4	3.48	178	0	1	1	0	2	0	1	0	1	1	1	0	0	0	0	0	
MISSOURI FLAT RD	10223	PERKS CT	MARANATHA LN	4	-0.22	23	0	0	2	0	2	1	1	2	0	0	0	0	0	0	1	0	
GREEN VALLEY RD	10434	MORTARA CIR	GREENWOOD LN	4	-0.01	193	0	1	2	1	0	0	0	0	1	3	0	0	0	1	0	1	
MOTHER LODE DR	10483	SUNSET LN	S SHINGLE RD	4	-0.24	9	0	0	0	1	3	2	1	1	0	0	0	0	0	0	0	0	
PLEASANT VALLEY RD	10786	4 SEASONS WAY	MICHAEL WAY	4	-0.22	188	1	0	1	2	0	0	0	1	0	3	0	0	0	1	2	0	

Facility	OBJECTID	Cross Street 1	Cross Street 2	Crashes	Local CCR Differential ¹	EPDO ²	Fatal	Severe Injury	Other Visible Injury	Complaint of Pain	Property Damage Only	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Pedestrian	Bicycle	Impaired	Dark	Wet	Priority Locations
GREEN VALLEY RD	10861	SIERRA VISTA RD	OAK LN DR	4	0.18	168	0	1	0	0	3	0	2	0	0	2	0	0	0	1	2	1	
GREEN VALLEY RD	12742	SHADOWFAX LN	SOPHIA PKWY	4	-0.27	9	0	0	0	1	3	0	1	2	0	0	0	0	0	0	1	1	
CARSON RD	13889	WHISPERING WIND DR	KINGSGATE DR	4	0.66	34	0	0	2	2	0	1	0	1	0	1	0	0	0	1	0	0	
CARSON RD	14264	N CANYON RD	MICHELANGELO LN	4	0.15	168	0	1	0	0	3	1	0	0	0	2	0	0	0	0	0	0	
CARSON RD	14266	UNION RIDGE RD	N CANYON RD	4	0.16	23	0	0	2	0	2	0	0	0	0	4	0	0	0	1	2	2	
LATROBE RD	16823	US-50 EB RAMPS	TOWN CENTER DR	4	-0.31	9	0	0	0	1	3	2	1	1	0	0	0	0	0	0	1	0	
GREEN VALLEY RD	336	HIDDEN ACRES DR	FRANCISCO DR	3	-0.32	8	0	0	0	1	2	1	1	0	0	0	0	0	0	0	1	0	
COLD SPRINGS RD	4255	VINEYARD LN	MANZANITA LN	3	0.23	22	0	0	2	0	1	0	1	0	0	2	0	0	0	1	1	2	
COLD SPRINGS RD	4275	BROWNS RD	PASO DIABLO RD	3	1.13	167	0	1	0	0	2	0	0	0	0	2	1	0	0	1	2	0	
GREEN VALLEY RD	5201	BASS LAKE RD	SCHOOL DRIVEWAY	3	-0.43	13	0	0	0	2	1	0	0	1	0	0	0	0	0	0	2	0	
LOTUS RD	6411	FIREHOUSE RD	CA-49	3	-0.41	3	0	0	0	0	3	0	1	1	0	1	0	0	0	0	1	0	
NEWTOWN RD	6778	FRIENDSHIP HILL RD	STARKES GRADE RD	3	0.37	172	0	1	0	1	1	0	0	0	0	2	1	0	0	1	2	1	
SLY PARK RD	8767	KINGSWOOD TRL	PINE FOREST DR/PARK WOODS RD	3	0.11	172	0	1	0	1	1	0	0	0	0	3	0	0	0	2	1	0	
MOTHER LODE DR	8774	KINGVALE RD	DAVIDSON RD	3	-0.40	172	1	0	0	1	1	1	1	1	0	0	0	0	0	1	2	0	
SALMON FALLS RD	9071	MILANO CT	KAILA WAY	3	-0.43	13	0	0	0	2	1	1	0	0	0	1	0	0	0	0	1	1	
LATROBE RD	9193	LARKSTONE PL	GOLDEN FOOTHILL PKWY	3	-0.45	8	0	0	0	1	2	1	1	0	0	0	1	0	0	0	1	0	
GREEN VALLEY RD	9318	RANCHO ROCAS DRIVEWAY	OLD GREEN VALLEY RD	3	-0.40	8	0	0	0	1	2	0	0	1	0	2	0	0	0	0	1	1	
PLEASANT VALLEY RD	9418	LOCKE RD	LEISURE LN	3	-0.32	3	0	0	0	0	3	1	0	0	0	2	0	0	0	0	2	1	
PIONEER TRL	9857	MARSHALL TRAIL	FAIRMEADOW TRAIL	3	-0.21	8	0	0	0	1	2	1	0	2	0	0	0	0	0	0	0	0	
MISSOURI FLAT RD	10222	PERKS CT	MOTHER LODE DR	3	-0.34	172	1	0	0	1	1	0	0	2	0	0	0	0	0	1	1	0	
SALMON FALLS RD	10340	SALMON FALLS CT	TIMELESS LN	3	0.27	182	0	1	1	1	0	0	0	0	0	1	0	0	0	0	0	0	
MOTHER LODE DR	10473	ROCKINGHORSE LN	DOE ST	3	-0.39	3	0	0	0	0	3	0	0	1	0	1	0	0	0	0	0	1	0
PLEASANT VALLEY RD	10598	MULBERRY LN	LA SIERRA DR	3	-0.32	8	0	0	0	1	2	0	0	2	0	1	0	0	0	0	1	0	
GREEN VALLEY RD	10605	MULBERRY LN	WILDWOOD LN	3	-0.15	8	0	0	0	1	2	0	0	0	0	2	0	0	0	1	1	0	
SILVA VALLEY PKWY	11399	PEDRA DR	HARVARD WAY	3	-0.38	3	0	0	0	0	3	0	1	0	0	0	0	0	0	0	0	0	
PIONEER TRL	11672	GARBAGE DUMP RD/ELKS CLUB DR	PLAYER DR	3	0.47	18	0	0	1	1	1	0	0	2	0	1	0	0	0	1	0	0	
PLEASANT VALLEY RD	11747	BUCKS BAR RD	CEDAR RAVINE RD	3	-0.20	13	0	0	1	0	2	0	1	1	0	1	0	0	0	1	2	2	
SALMON FALLS RD	12580	SARAH BURNER RD	POND VIEW RD	3	0.19	177	0	1	1	0	1	0	0	0	0	1	1	0	0	1	3	1	
SILVA VALLEY PKWY	12714	SERRANO PKWY	GOLDEN EAGLE LN	3	-0.43	3	0	0	0	0	3	0	1	1	0	0	0	1	0	0	0	1	
SLY PARK RD	12871	BUCKHORN RD	SIERRA SPRINGS DR	3	-0.33	172	0	1	0	1	1	0	0	0	0	3	0	0	0	1	1	0	
GREEN VALLEY RD	12926	SKINNER LN	W PONDEROSA RD	3	-0.05	13	0	0	1	0	2	0	0	0	0	2	1	0	0	0	1	0	
CEDAR RAVINE RD	13463	CEDAR OAK RD	CAMP NAUVOO RD	3	0.78	3	0	0	0	0	3	0	0	0	0	3	0	0	0	1	3	1	
CARSON RD	14088	ZOOT ALLURES RD	UNION RIDGE RD	3	-0.07	8	0	0	0	1	2	0	0	0	0	2	0	0	0	0	1	0	
GREEN VALLEY RD	16186	2801 GREEN VALLEY RD	BASS LAKE RD	3	-0.30	13	0	0	1	0	2	0	0	1	1	0	0	0	0	0	1	1	
Major Collector																							
LATROBE RD	11056	OLD STATION LN	CORINTH RANCH LN	40	0.99	511	1	1	12	5	21	0	5	1	3	22	6	0	0	4	11	12	X
LATROBE RD	13325	LATROBE CREEK RANCH	COTHRIN RANCH RD	30	1.64	959	0	5	9	4	12	0	1	0	2	20	5	0	0	4	6	14	X
BUCKS BAR RD	2724	PALACE LANE	PRIVATE DRIVE	24	1.66	291	0	1	9	3	11	0	0	2	1	14	5	0	0	4	7	11	X
DUROCK RD	3133	ROBIN LANE	SHINGLE LINE MINE RD	20	0.96	412	0	2	5	3	10	2	2	0	0	11	3	0	0	7	10	0	X

Facility	OBJECTID	Cross Street 1	Cross Street 2	Crashes	Local CCR Differential ¹	EPDO ²	Fatal	Severe Injury	Other Visible Injury	Complaint of Pain	Property Damage Only	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Pedestrian	Bicycle	Impaired	Dark	Wet	Priority Locations
EL DORADO RD	4329	HAGEN RANCH RD	COLT CT	12	4.51	12	0	0	0	0	12	3	0	0	1	8	0	0	0	2	7	1	
BUCKS BAR RD	2698	BUCKAROO TRAIL	BUCKS BAR CIR	10	1.14	49	0	0	3	2	5	0	1	0	0	6	1	0	0	1	2	1	
MARSHALL RD	10335	SCOTT RD	STREET-UNNAMED_235072	10	0.40	35	0	0	2	1	7	0	2	0	0	6	1	0	0	1	3	1	
MARSHALL RD	10333	6401 MARSHALL RD	5025 MARSHALL RD	9	0.07	38	0	0	3	0	6	0	1	1	0	7	0	0	0	1	4	2	
BUCKS BAR RD	2712	BUCKS BAR CIR	YOSEMITE PL	8	1.50	8	0	0	0	0	8	0	3	3	0	1	0	0	0	0	0	2	
BUCKS BAR RD	2715	SAND RIDGE RD	BUCKS BAR CT	7	0.58	186	0	1	1	1	4	0	0	0	1	4	0	0	0	1	4	2	
PONY EXPRESS TRL	4899	CRYSTAL SPRINGS RD	MELODY LN	6	0.35	334	1	1	0	0	4	0	0	0	0	6	0	0	0	0	3	3	
PONY EXPRESS TRL	11845	RIDGEWAY DR	PINE HAVEN DR	6	0.57	195	1	0	2	1	2	1	2	1	1	0	0	0	0	2	2	0	
LATROBE RD	12445	WETSEL OVIATT RD	RYAN RANCH RD	6	-0.28	349	0	2	1	1	2	0	0	0	1	4	1	0	0	1	4	1	
BASS LAKE RD	1498	SIENNA RIDGE RD	BARBARY WAY	5	-0.24	5	0	0	0	0	5	0	1	0	0	3	0	0	0	1	2	1	
MORMON EMIGRANT TRL	10963	SLY PARK RD	WATERFALL TRAIL HEAD	5	1.89	333	0	2	0	0	3	0	0	0	0	2	1	0	0	2	3	1	X
S SHINGLE RD	13364	SUNSET LN	DUROCK RD	5	1.07	15	0	0	1	0	4	4	0	1	0	0	0	0	0	0	1	0	
BASS LAKE RD	1499	HAWK VIEW RD	SERRANO PKWY/SIENNA RIDGE RD	4	-0.18	9	0	0	0	1	3	0	1	2	0	0	0	0	0	0	2	1	
PONY EXPRESS TRL	2014	BLAIR RD	5881 PONY AXPRESS TRAIL	4	0.55	173	0	1	0	1	2	0	0	2	0	2	0	0	0	0	0	1	
BUCKS BAR RD	2725	5247 BUCKS BAR RD	CATTLE CREEK LN	4	0.16	23	0	0	2	0	2	0	0	0	0	3	1	0	0	1	1	3	
CAMBRIDGE RD	3059	GREEN GLEN RD	HOLY HILLS LN	4	0.76	9	0	0	0	1	3	0	0	0	0	3	0	0	0	0	2	2	
DUROCK RD	5592	SUNSET LN	OAKMONT DR	4	0.40	9	0	0	0	1	3	1	0	2	0	1	0	0	0	0	1	0	
OXFORD RD	6222	FAIRWAY DR	CAMERON PARK DR	4	0.09	178	0	1	1	0	2	0	0	0	0	4	0	0	0	1	2	0	
MOUNT AUKUM RD	7685	MOON-SHADOW	HAPPY VALLEY CUTOFF RD	4	-0.25	19	0	0	1	1	2	0	1	0	0	2	1	0	0	0	3	1	
PONY EXPRESS TRL	11851	CARSON RD	MT DANAHER RD	4	0.68	178	0	1	1	0	2	0	0	0	1	3	0	0	0	2	1	2	
MALCOLM DIXON RD	617	ALTA VISTA CT	CASA ROBLES RD	3	-0.31	8	0	0	0	1	2	0	0	0	0	2	0	1	0	0	2	1	
BASS LAKE RD	1503	COUNTRY CLUB DR	S SIENNA RIDGE RD	3	-0.18	8	0	0	0	1	2	1	0	0	0	0	1	0	0	1	3	0	
BUCKS BAR RD	2711	W BUCKS BAR CIR	E BUCKS BAR CIR	3	0.34	18	0	0	1	1	1	0	0	0	0	1	2	0	0	0	0	0	
CAMBRIDGE RD	3070	KNOLLWOOD RD	COUNTRY CLUB DR	3	-0.16	8	0	0	0	1	2	0	1	1	0	1	0	0	0	0	0	0	
LATROBE RD	3759	CHAPARRAL DR	S SHINGLE RD	3	-0.43	22	0	0	2	0	1	0	0	0	0	2	1	0	0	1	0	1	
UNION MINE RD	5637	E CHINA HILL RD	WINDWARD WAY	3	-0.23	13	0	0	1	0	2	0	0	0	0	3	0	0	0	0	1	0	
PONY EXPRESS TRL	5946	ELKHORN MILL RD	KIMBERLY LN	3	0.22	22	0	0	2	0	1	0	0	1	1	1	0	0	0	1	2	1	
FRENCH CREEK RD	6736	PINE RIDGE CT	HOLLY DR	3	0.01	22	0	0	2	0	1	0	0	0	0	3	0	0	0	1	1	1	
KNOLLWOOD DR	8832	CHELSEA RD	SHERIDAN RD	3	-0.18	8	0	0	0	1	2	0	0	0	0	1	0	0	0	0	2	1	
KNOLLWOOD DR	8837	WESTRIDGE RD	SOLANO RD	3	0.06	3	0	0	0	0	3	0	1	0	0	1	1	0	0	1	1	0	
SAWMILL RD	9047	LAKE TAHOE BLVD	ECHO VIEW DR	3	0.40	13	0	0	0	2	1	1	0	1	0	1	0	0	0	1	1	0	
MOTHER LODE DR	10459	FLYING CLOUD DR	CRESTVIEW MOBILEHOME PARK	3	-0.06	167	0	1	0	0	2	0	0	0	0	3	0	0	0	1	1	1	
PONY EXPRESS TRL	11842	PONY BOB DR	TRAP LN	3	0.62	13	0	0	1	0	2	2	0	1	0	0	0	0	0	0	1	0	
SERRANO PKWY	12709	TERRACHINA DR	VILLAGE GREEN DR	3	-0.40	8	0	0	0	1	2	0	1	0	0	1	0	1	0	0	1	1	
STARBUCK RD	13204	WINCHESTER DR	WHITETAIL LN	3	3.42	177	0	1	1	0	1	0	0	0	0	3	0	0	0	3	0	0	
Minor Collector																							
MOSQUITO RD	14634	LA PAZ RD	UNNAMED ACCESS RD	11	0.73	200	0	1	2	1	7	0	1	1	1	6	2	0	0	1	3	1	
MOSQUITO RD	4046	CINNAMON RIDGE CT	MOSQUITO RD	9	22.25	198	0	1	2	1	5	0	1	0	1	6	1	0	0	2	4	4	
WENTWORTH SPRINGS RD	8228	HELIX FLAT AVE	ROBS CABIN TRAIL	8	1.45	1012	1	5	2	0	0	0	0	0	0	0	0	0	0	1	0	0	X
S SHINGLE RD	3502	CATTLE DR	OLD OX RD	7	1.70	191	0	1	2	0	4	0	0	0	0	6	0	0	0	4	5	3	

Facility	OBJECTID	Cross Street 1	Cross Street 2	Crashes	Local CCR Differential ¹	EPDO ²	Fatal	Severe Injury	Other Visible Injury	Complaint of Pain	Property Damage Only	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Pedestrian	Bicycle	Impaired	Dark	Wet	Priority Locations
GRIZZLY FLAT RD	7494	SNOWBIRD LN	CASA CONTENTA DR	7	6.54	7	0	0	0	0	7	0	0	0	0	5	2	0	0	1	5	1	
MOSQUITO RD	13790	STREET-UNNAMED_232357	VOLZ LN	7	0.94	340	1	1	0	1	4	0	0	0	1	5	0	0	0	2	3	2	X
WENTWORTH SPRINGS RD	1390	BALDERSTON RD	ROWDY RD	5	0.79	184	0	1	1	1	2	0	0	0	0	3	1	0	0	2	3	1	
WENTWORTH SPRINGS RD	3939	CHIPMUNK TRL	FOX RUN RD	5	1.92	184	0	1	1	1	2	0	1	0	0	3	1	0	0	2	0	1	
ICE HOUSE RD	7274	GRANITE SPRINGS RD	ICE HOUSE RESORT	5	-0.18	10	0	0	0	1	4	0	0	0	0	3	1	0	0	0	0	1	
GRIZZLY FLAT RD	7515	ARCTIC LN	STRING CANYON RD	5	0.32	34	0	0	3	0	2	0	0	0	0	5	0	0	0	4	1	0	
ICE HOUSE RD	8980	PEAVINE RIDGE RD	WEBER MILL RD	5	-0.23	189	0	1	1	2	1	0	1	0	0	2	1	0	0	1	1	2	
WENTWORTH SPRINGS RD	10316	TIGER LN	SCHOOL ST	5	0.51	198	1	0	3	0	1	0	0	0	1	3	1	0	0	1	0	2	
S SHINGLE RD	12910	SILVER OAKS LN	FERNWOOD DR	5	2.33	184	0	1	1	1	2	0	1	0	1	2	1	0	0	0	1	3	
GRIZZLY FLAT RD	3409	CASA CONTENTA DR	MEHWALD LN	4	0.03	19	0	0	1	1	2	0	2	0	0	2	0	0	0	3	1	2	
GRIZZLY FLAT RD	7484	ROOSTER LN	LADYHAWKE WAY	4	0.16	14	0	0	1	0	3	0	0	0	0	3	1	0	0	0	1	0	
GREENWOOD RD	8213	CONIFER CT	MONTE ROBLES CT	4	1.21	4	0	0	0	0	4	0	0	0	0	3	1	0	0	0	4	1	
ICE HOUSE RD	8979	PEAVINE RIDGE RD	DIRT ROAD	4	1.81	14	0	0	1	0	3	0	0	0	0	1	3	0	0	0	0	0	
ICE HOUSE RD	8984	WHITE MEADOW RD	HIKING TRAIL	4	-0.15	193	1	0	2	1	0	0	0	0	0	3	0	0	0	2	2	0	
ROCK CREEK RD	10607	MULE SKINNER RD	10441 ROCK CREEK RD	4	0.10	4	0	0	0	0	4	0	1	0	0	1	2	0	0	1	0	1	
STARKES GRADE RD	3205	5 SPOT RD	CAMPINI WAY	3	-0.17	18	0	0	1	1	1	0	0	0	2	0	1	0	0	0	1	2	
S SHINGLE RD	4694	COYOTE PASS RD	TWILIGHT LN	3	0.68	3	0	0	0	0	3	0	0	0	0	3	0	0	0	2	3	1	
S SHINGLE RD	4835	CROOKED BRANCH RD	STAMPEDE LN	3	0.51	28	0	0	2	1	0	0	0	0	0	3	0	0	0	1	1	1	
GREENWOOD RD	4986	DAM CREEK RD S	SHADRACK LN	3	0.40	167	0	1	0	0	2	0	1	0	0	1	1	0	0	0	2	0	
WENTWORTH SPRINGS RD	5355	DITCH CAMP RD	12 MILE RD	3	3.17	18	0	0	1	1	1	0	0	0	0	1	0	0	0	0	1	1	
FAIRPLAY RD	6188	FAIRPLAY RD	LEAP FROG LN	3	0.61	13	0	0	1	0	2	0	0	0	1	2	0	0	0	3	2	0	
FAIRPLAY RD	6190	STREET-UNNAMED_209012	DORADO CANYON RD	3	0.27	22	0	0	2	0	1	0	0	0	0	3	0	0	0	3	2	0	
GOLD HILL RD	6348	FELDSPAR LN	RANCHO VISTA LN	3	4.58	32	0	0	3	0	0	0	0	0	0	3	0	0	0	2	1	0	
GOLD HILL RD	7088	ORO LOMA DR	FUNNY BUG RD	3	0.87	13	0	0	1	0	2	0	0	1	0	2	0	0	0	0	2	0	
GREENSTONE RD	7096	GOLD LEAF LN	ZARHEMIA RD	3	1.24	182	1	0	1	1	0	0	1	0	0	2	0	0	0	1	1	0	
GREENSTONE RD	7423	QUAIL VALLEY RD	STUDEBAKER RD	3	0.62	172	0	1	0	1	1	0	0	0	0	3	0	0	0	2	2	1	
GRIZZLY FLAT RD	7495	MEHWALD LN	MAHANEY RANCH RD	3	0.25	167	0	1	0	0	2	0	0	1	0	2	0	0	0	1	1	0	
GREENWOOD RD	8212	MINT WAY	BUD LN	3	-0.02	3	0	0	0	0	3	0	0	0	0	3	0	0	0	2	2	1	
ICE HOUSE RD	8964	PICKET PEN RD	JONES FORK CAMPGROUND	3	-0.25	13	0	0	1	0	2	0	0	0	0	3	0	0	0	1	2	1	
WENTWORTH SPRINGS RD	9259	HELIX FLAT AVE	ELEVEN PINES RD	3	0.23	172	0	1	0	1	1	0	0	0	0	1	0	0	0	0	0	0	
WENTWORTH SPRINGS RD	13223	STEAMERS LN	W BALDERSTON RD	3	0.29	341	1	1	1	0	0	0	0	0	0	2	0	0	0	1	1	0	
Local Roads																							
BEATTY DR	1593	POWERS DR	ALEXANDRA DR	9	14.28	183	0	1	1	0	7	0	1	0	0	7	1	0	0	1	7	1	X
PONDEROSA RD	11822	TOIYABE LN	SPIN ACRES LN	8	2.57	23	0	0	0	3	5	0	0	0	0	7	0	0	0	0	3	0	
FORNI RD	2033	BLANCHARD RD	TURBO RD	7	2.36	22	0	0	1	1	5	0	0	0	0	7	0	0	0	0	4	4	
BLACK OAK MINE RD	2528	SCOTCH BROOM LN	OLD SAW MILL ROAD	6	1.99	16	0	0	1	0	5	0	0	0	1	1	1	0	0	0	0	0	
FORNI RD	6599	WAMEGO RD	KIEBER RD	6	4.20	36	0	0	2	2	2	0	0	0	0	4	0	0	0	1	2	1	
PROSPECTORS RD	10337	S MARSHALL RD	N MARSHALL RD	6	2.31	180	0	1	1	0	4	0	0	0	0	4	0	0	0	0	2	0	
SHOO FLY RD	12830	CA-193	DARK CANYON RD	5	4.66	10	0	0	0	1	4	0	2	0	2	1	0	0	0	0	0	1	
PLEASANT VALLEY RD	16500	FOWLER LN	TOYAN DR	5	2.50	10	0	0	0	1	4	1	1	1	2	0	0	0	0	0	0	1	

Facility	OBJECTID	Cross Street 1	Cross Street 2	Crashes	Local CCR Differential ¹	EPDO ²	Fatal	Severe Injury	Other Visible Injury	Complaint of Pain	Property Damage Only	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Pedestrian	Bicycle	Impaired	Dark	Wet	Priority Locations
CIMMARRON RD	3025	CAMBRIDGE RD	LA CANADA DR	4	13.69	4	0	0	0	0	4	0	0	0	0	0	0	0	0	0	3	0	
TULLIS MINE RD	4890	CRYSTAL DR	SUNRISE DR	4	10.55	178	0	1	0	2	1	0	0	0	1	2	1	0	0	1	1	1	
FORNI RD	6615	LINDBERG AVE	CHESTNUT LN	4	1.52	19	0	0	1	1	2	0	0	1	0	2	1	0	0	0	1	0	
HAPPY VALLEY RD	7657	HAPPY VALLEY CUTOFF RD	SWEENEY DR	4	1.11	9	0	0	0	1	3	0	2	0	0	2	0	0	0	0	1	0	
CHERRY ACRES RD	4003	INDIAN ROCK RD	CA-193	3	2.68	3	0	0	0	0	3	0	0	0	0	3	0	0	0	1	2	0	
COACH LN	4209	CAMERON PARK DR	STROLLING HILLS RD	3	20.86	3	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	
S SHINGLE RD	4554	CHAPARRAL DR	COULTER LN	3	1.94	3	0	0	0	0	3	0	1	0	0	2	0	0	0	0	0	0	
DAVIDSON RD	5060	VENTURE RD	MOTHER LODE DR	3	6.00	3	0	0	0	0	3	0	1	0	0	2	0	0	0	1	2	0	
ECHO SUMMIT RD	5703	FIR ALLEY	US-50	3	23.62	18	0	0	1	1	1	0	0	2	1	0	0	0	0	0	0	2	
FOREBAY RD	6543	DRIVEWAY	DEEP HAVEN RD	3	0.79	13	0	0	1	0	2	0	0	0	0	3	0	0	0	3	2	1	
FORT JIM RD	6624	NEWTOWN RD	JIM VALLEY RD	3	5.92	18	0	0	1	1	1	0	0	0	0	2	0	0	0	1	1	0	
GOLD RIDGE TRL	7109	MERCURY TRL	ONYX TRL	3	1.37	3	0	0	0	0	3	0	0	0	0	1	0	0	0	1	2	2	
RATTLESNAKE BAR RD	7195	GOOSE FLAT RD	BLARNEY WAY	3	1.47	18	0	0	1	1	1	0	2	0	0	0	0	0	0	1	0	0	
HANKS EXCHANGE RD	7628	NOWALK DR	ABEL RD	3	12.13	3	0	0	0	0	3	0	1	0	0	1	1	0	0	2	0	0	
LIME KILN RD	9342	LIME PLANT RD	BLACK RICE LN	3	12.61	3	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	0	
RATTLESNAKE BAR RD	12003	QUERCUS RD	GOOSE FLAT RD	3	0.60	8	0	0	0	1	2	0	1	0	0	2	0	0	0	1	2	0	
WILSON BLVD	12614	RIDGEVIEW DR	EL DORADO HILLS BLVD	3	0.14	3	0	0	0	0	3	1	0	0	0	1	0	0	0	0	2	0	
STREET-UNNAMED_207977	16212	ROSECREST CIR	ROAD TERMINUS	3	5.08	13	0	0	1	0	2	0	0	0	0	2	0	0	0	1	2	1	

1. Local Critical Crash Rate Differential

2. Equivalent Property Damage Only Crashes