City of Placerville

Local Road Safety Plan

Prepared for:

Prepared by:

Kimley»Horn

Expect More. Experience Better.

FINAL REPORT

FOR

CITY OF PLACERVILLE
LOCAL ROAD SAFETY PLAN (LRSP)

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LIST OF ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
ARIDE	Advance Roadside Impaired Enforcement
ATP	Active Transportation Program
BCR	Benefit/Cost Ratio
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
EDCTC	El Dorado County Transportation Commission
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+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
OTS	Office of Traffic Safety
PDO	Property Damage Only
RRFB	Rectangular Rapid Flashing Beacon
SACOG	Sacramento Area Council of Governments
SHSP	Strategic Highway Safety Plan
STIP	State Transportation Improvement Program
SWITRS	Statewide Integrated Traffic Records System
VMT	Vehicle Miles Traveled

1. INTRODUCTION

The City of Placerville is located in El Dorado County, between Sacramento County and the California-Nevada state line. The City of Placerville has a population of over 10,000 as of 2020 and covers 5.5 square miles. The City's transportation network includes 73 centerline miles of City-maintained roads and 10 traffic signals located on key arterial roadways.

This Local Roadway Safety Plan (LRSP) identifies emphasis areas to inform and guide further safety evaluation of the City'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 Citywide 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 City'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 City'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 provides a foundation for decision making and prioritization for safety countermeasures and projects that will enhance safety for all modes of travel within the City.

The LRSP complements the efforts that the City has already taken to enhance traffic safety for all road users. Projects such as the Placerville Drive Bike and Pedestrian Project[1] and pilot programs such as the US-50 Trip To Green[2] project have already been identified for their benefits to multi-modal safety and traffic flow. This project will build upon this foundation by identifying other Citywide safety trends and proposing improvements that benefit both local residents and visitors traveling through the City. This LRSP analyzes the most recent range of crash data that was available at the start of the project (January 1, 2018 – December 31, 2022) 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] Capital Improvement Projects, City of Placerville, 2023, Accessed November 2023
[2] Trip to Green, El Dorado County Transportation Commission, Accessed October 2023

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	Contains the LRSP data sources.
Section 6	Provides a summary of safety trends.
Section 7	Presents engineering countermeasures identified for the priority locations.
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	

2. VISION, GOAL, AND OBJECTIVES

This LRSP evaluates the transportation network as well as non-infrastructure programs and policies within the City. 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 also intended to use historical data to identify trends and develop a toolbox of countermeasures applicable to conditions in the City that can be used for proactive identification and implementation of safety improvements, 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 City staff and a review of existing plans and policies for the area, the following Vision, Goal, and Objectives were established for this LRSP:

	***Vision:*** **Support the California vision of significantly reducing fatalities and severe injuries for all road users**
	***Goal:*** 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 City of Placerville.
	Objectives: ▪ 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 throughout the City’s road network ▪ Promote safe, equitable, and multi-modal mobility opportunities ▪ Create an LRSP document to capitalize on established safety initiatives and identify other strategies to prioritize safety investments ▪ Continuing documentation of City of Placerville’s procedures for continuing crash data monitoring

3. PROCESS

Using a network screening process, locations within the City that would most likely benefit from safety enhancements were identified. Using historical crash data, crash risk factors for the entire City 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 the City of Placerville. 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; crash 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 City at a systemic level. Using a network screening process, locations within the City that will most likely benefit from safety enhancements were identified. Using historical crash data, crash risk factors for the entire network were 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 purpose of the *Local Roadway Safety: A Manual for California's Local Road Owners* (Version 1.6, April 2022) (LRSM) 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, Caltrans' Division of Local Assistance is responsible for administering California's federal safety funding intended for local safety improvements[3]. 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] Local Roadway Safety - A Manual for California's Local Road Owners Version 1.6, Caltrans, April 2022

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)*

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 (Arterials, Collectors, and Local Roads). 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 City 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 City.

3.2.2. *Critical Crash Rate (CCR) Analysis*

Reviewing the number of crashes at a location is an effective 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 Citywide crash rate for each facility type, a critical crash rate threshold is established at the 95% 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 the 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 Equivalent Property Damage Only (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. 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, Caltrans LRSM V1.6

To give an example from **Appendix A**, the intersection of Sacramento Street and Main Street experienced 12 crashes from 2018-2022. The crashes are broken down by severity as follows: 0 fatal crashes, 1 crash resulting in severe injuries, 1 crash resulting in other visible injuries, 1 crash resulting in complaint of pain, and 9 PDO crashes.

$$EPDO = \frac{(0 + 1) * 2{,}843{,}000 + (1 * 159{,}900) + (1 * 90{,}900) + (9 * 14{,}900)}{14{,}900} = 217$$

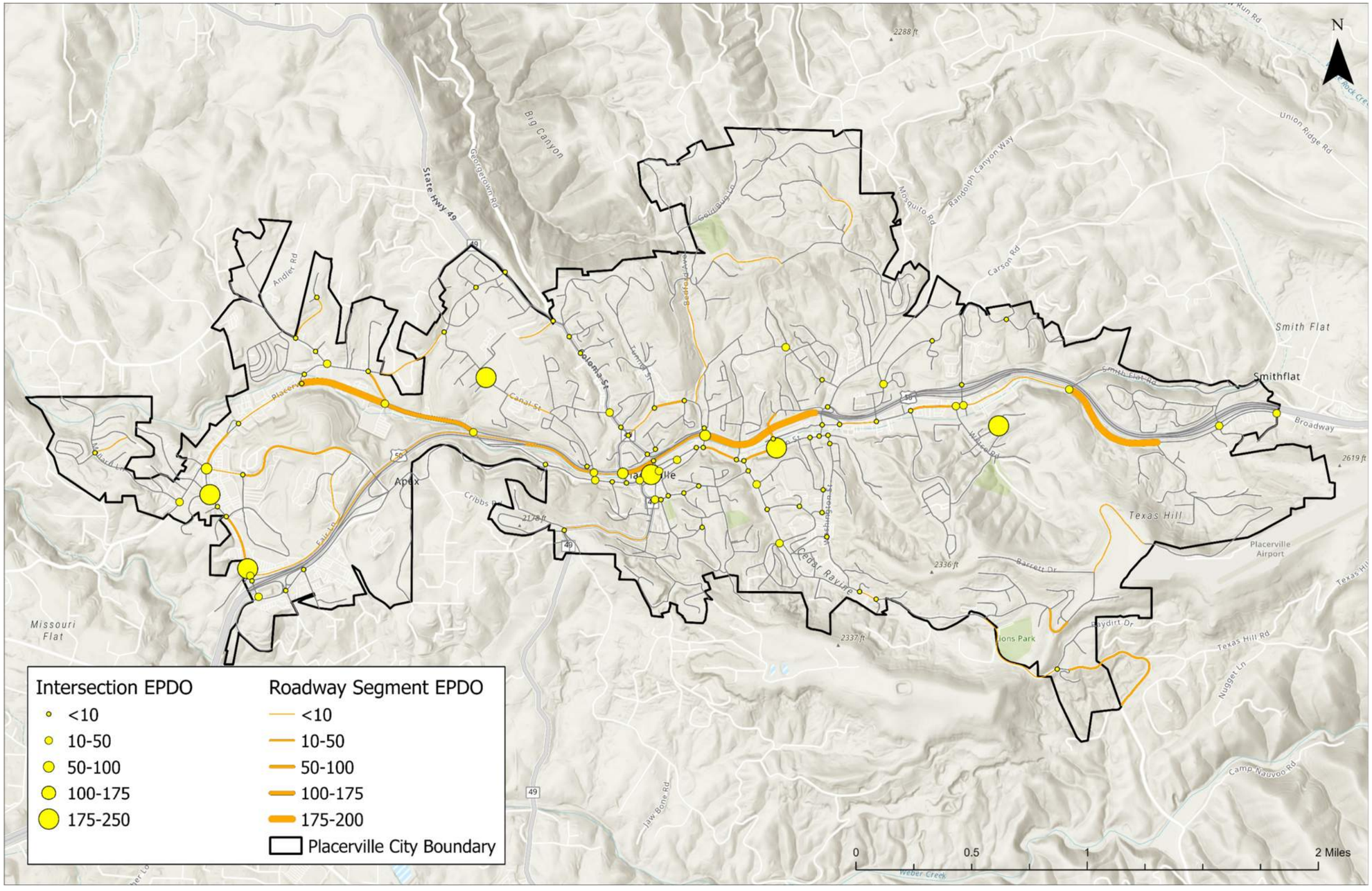
The 12 crashes of ranging severity that took place at the intersection of Sacramento Street and Main Street have the equivalent cost to society of 217 PDO crashes. This intersection has a CCR Differential value of 0.51. Together the EPDO and CCR Differential values show that the intersection has historically had a relative crash rate that is higher than average for similar facilities, and that that the crashes that have occurred there have generally resulted in significant levels of severity.

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 were identified for further study and are discussed in Section 7. **Figure 1** presents the EPDO value of intersections and roadway segments in the City. Listed below are the roadway segment and intersection with the highest EPDO:

- The roadway segment with the highest EPDO value was US-50 E between Bedford Avenue and the Off-ramp to Broadway, with an EPDO value of 198 (1 Fatal crash, 9 crashes total).
- The intersection with the highest EPDO value was Sacramento Street and Main Street, with an EPDO value of 217 (1 Severe Injury crash, 12 crashes total)

The results of the network screening analysis for both intersections and roadway segments is presented in **Appendix A** and **Appendix B**, respectively.

Figure 1 – Citywide EPDO Map



4. STAKEHOLDER ENGAGEMENT

As part of the LRSP, local stakeholders participated in the process to ensure that a local perspective was kept at the forefront of this planning effort. A stakeholder group comprised of City staff and external stakeholders was formed. This group consisted of members of City and County staff representing engineering, education, enforcement, transit, as well as representatives from Caltrans.

The stakeholders were called together to offer insight on the safety concerns present in the City's transportation network. Additionally, subsequent to the network screening and safety analysis, a public meeting was held to gather additional input on the safety challenges and present the potential safety improvements at the priority locations.

4.1. Stakeholder Meeting

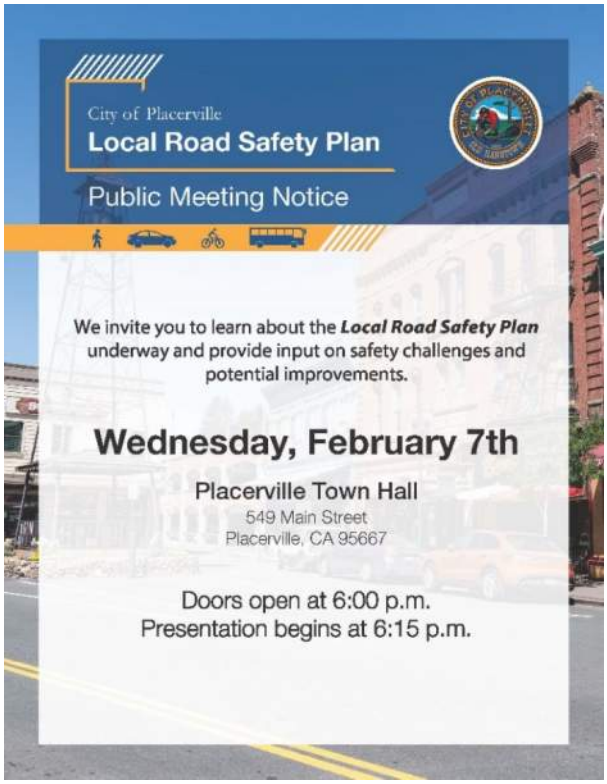
A project stakeholder workshop was conducted virtually on November 9, 2023. At the meeting, the LRSP stakeholder group was introduced to the project and was provided with an overview of the data used, data analysis approach, preliminary results and priority/emphasis areas. In addition to the LRSP overview, 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.

A subsequent meeting was conducted with the stakeholder group virtually on December 18, 2023. In this meeting, a summary of the crash data for each priority location was presented, and the stakeholder group reviewed and discussed existing conditions and safety challenges present. A list of observations regarding known driver behavior, existing infrastructure, and travel patterns was compiled for reference, and potential countermeasures and safety improvements were discussed. Stakeholder input at the meeting played an important role in the development of the engineering countermeasures presented in **Section 7**.

4.2. Public Meeting

A public meeting was convened on February 7, 2024 at Placerville Town Hall. A brief overview of the crash data analysis was presented, along with the proposed safety improvements at the priority locations. Members of the public were invited to ask questions and share feedback on the projects being discussed.

The meeting was promoted using social media and a project website, and information was posted on the City of Placerville and the El Dorado County Transportation Commission (EDCTC) homepages. There were a total of nineteen attendees at the public meeting, including members of the public and members of the stakeholder group.



4.2.1. *Key Takeaways*

- A pedestrian crash at the intersection of Main Street and Locust Avenue was a main topic of discussion. Community members came to show their support for the injured party (who was also in attendance) and to advocate for signage, lighting, and crosswalk improvements at this location.
- There is a desire for increased education and enforcement regarding aggressive driving behavior and drivers not yielding to pedestrians.
- Meeting attendees generally supported Trip-To-Green as the locals know how to get around town without using US-50.
- There is general support for a pedestrian overcrossing at Canal Street.

4.2.2. *Questions/Comments raised during the presentation:*

- Does the City have budget for the Main Street improvements? How soon could improvements be constructed?
- How much money does the City invest every year in crosswalks?
- How can the public support the City's efforts to implement safety improvements? Would it help to write letters of support?
- Where did the fatal and severe injury pedestrian crashes occur?
- What projects are planned for Placerville Drive? Concern about pole placement by gas stations.

Additional feedback was recorded on comment cards and is included in **Appendix C**.

5. DATA SOURCES

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

5.1. Roadway Network

The crash 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 principal arterial, minor arterial, major or minor 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).

5.2. Intersections

The crash analysis also required each intersection within the City to be classified by control type. Intersections throughout the City 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 City.

5.3. Crashes

Crash data for the five-year period from January 1, 2018 through December 31, 2022 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 Crossroads, which contains crash records from the Statewide Integrated Traffic Records System (SWITRS) database. This database contains law enforcement records and provides GPS coordinate data that can be used to geocode crashes into a Geographic Information System (GIS) format.

In total, there were 402 crash records in the City's database from January 1, 2018 to December 31, 2022. These crash records contained GPS data and were used in the statistical analysis.

6. 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 A** and **Appendix B**, respectively.

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

The California SHSP focuses on 16 challenge areas identified by the SHSP Executive Leadership and Steering Committees after an in-depth analysis of California K+SI 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 the City of Placerville'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 City's percentages were higher than the statewide percentages are noted in bold. The City of Placerville is notably higher than the statewide percentages in driver licensing, young drivers, and aging drivers.

Table 1 – City of Placerville K+SI Crashes Compared to Statewide K+SI Crashes

California SHSP Challenge Areas	Placerville Comparison to Statewide Percentages	City of Placerville	Statewide Percentages
Driver Licensing	**Higher**	**66.7%**	**24.7%**
Young Drivers	**Higher**	**28.1%**	**13.1%**
Aging Drivers	**Higher**	**21.9%**	**12.4%**
Occupant Protection	**Higher**	**21.9%**	**14.2%**
Aggressive Driving	**Higher**	**40.6%**	**33.1%**
Lane Departure	**Higher**	**50.0%**	**43.3%**
Commercial Vehicles	**Higher**	**12.5%**	**6.4%**
Motorcyclists	**Higher**	**21.9%**	**21.0%**
Work Zones	Lower	0.0%	1.4%
Distracted Driving	Lower	3.1%	5.0%
Bicyclists	Lower	6.3%	8.3%
Intersections	Lower	18.8%	23.6%
Pedestrians	Lower	12.5%	19.2%
Impaired Driving	Lower	6.3%	25.3%

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
3. Driver Licensing crash data obtained from FARS, sample size of 3 crashes

6.2. 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-seven percent of crashes in City of Placerville in the past five years have occurred at unsignalized intersections, followed by 30% occurring along roadway segments. The smallest percentage of crashes occurred at signalized intersections, which is expected given the limited number of traffic signals in the City.

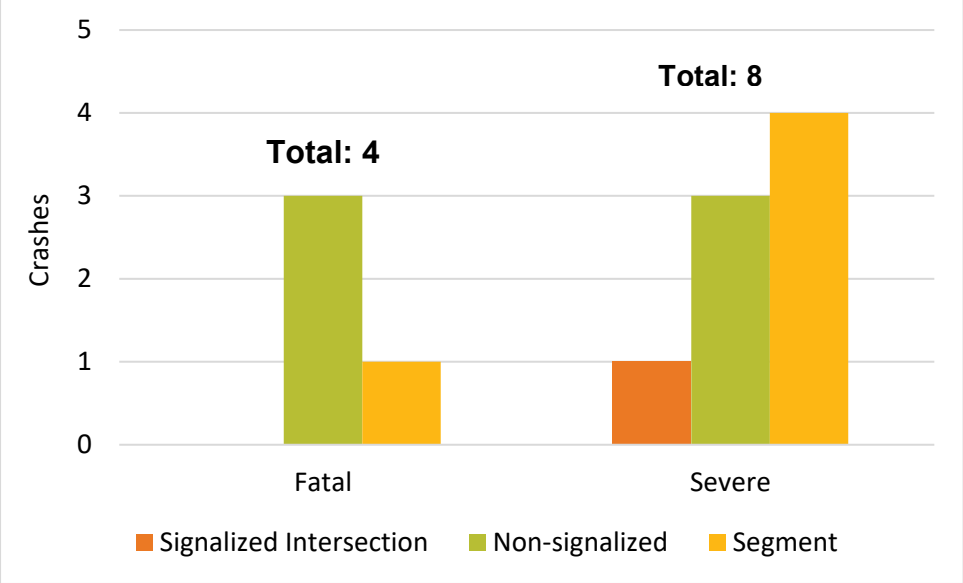
Table 2 – Crashes by Severity

Crash Severity	Signalized Intersection		Non-signalized Intersection		Roadway Segments		Total	
	Crashes	%	Crashes	%	Crashes	%	Crashes	%
Fatal	0	0%	3	2%	1	1%	4	1%
Severe	1	1%	3	2%	4	3%	8	2%
Other Visible Injury	9	10%	29	16%	11	9%	49	12%
Complaint of Pain	20	22%	34	18%	26	21%	80	20%
No Injury (PDO)	63	68%	118	63%	80	66%	261	65%
Total	**93**	**23%**	**187**	**47%**	**122**	**30%**	**402**	**100%**

Source: SWITRS Crash Data (2018 – 2022).

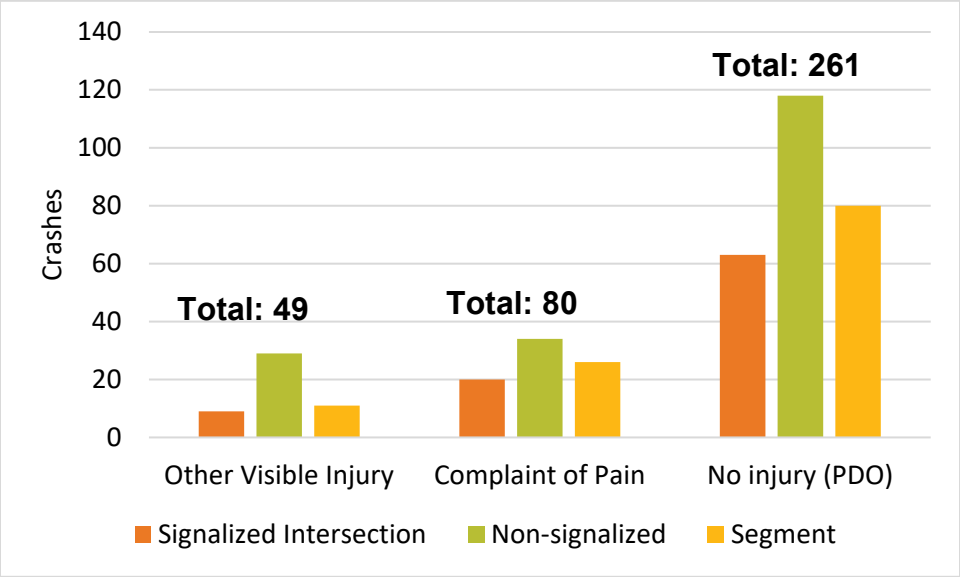
One percent of crashes recorded in the study period were fatal, and 2% resulted in severe injuries. Crashes resulting in property damage only (no injury) accounted for 65% of all crashes. Crashes resulting in the various severity levels are presented in **Figure 2** and **Figure 3.**

Figure 2 – Crashes by Severity (Fatal and Severe)



Source: SWITRS Crash Data (2018 – 2022).

Figure 3 – Crashes by Severity (Other Injury, Complaint of Pain, and PDO)



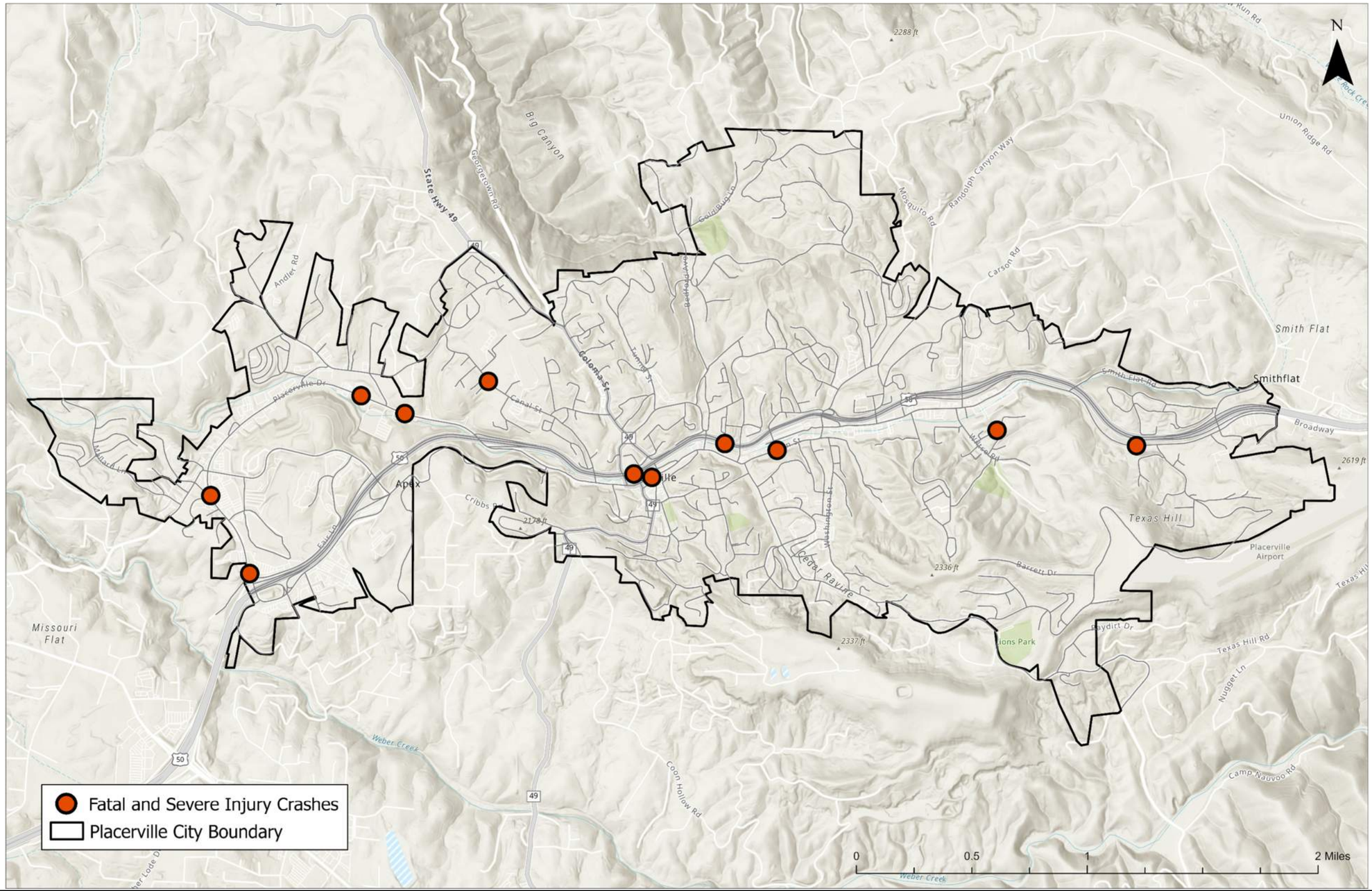
Source: SWITRS Crash Data (2018 – 2022).

Figure 4 on the following page illustrates the fatal and severe injury crashes across the City.

The corridors with the most fatal and severe injury crashes were:

- Placerville Drive: 4 total
- Main Street/Broadway: 3 total
- US-50: 2 total

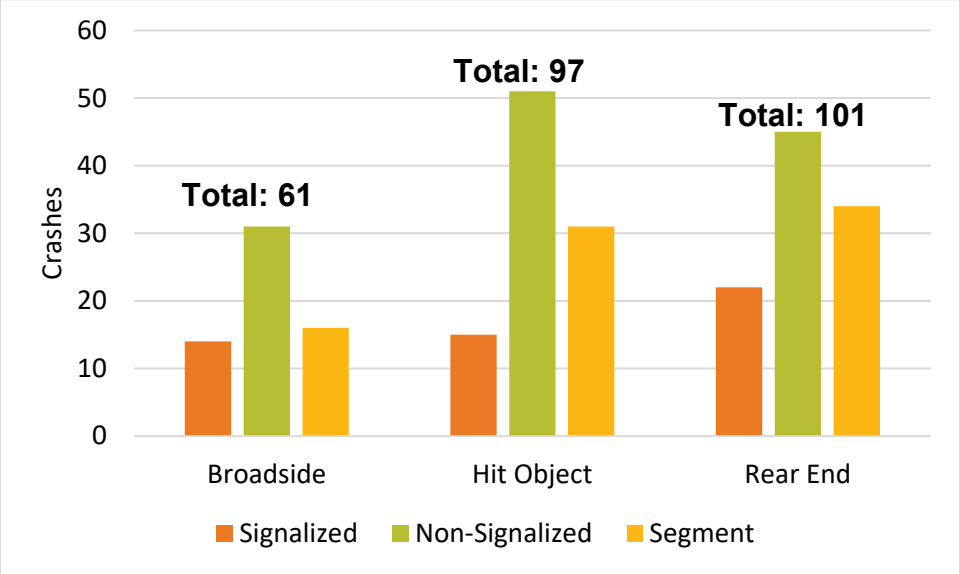
Figure 4 – Fatal and Severe Injury Crash Map



6.3. Highest Occurring Crash Types

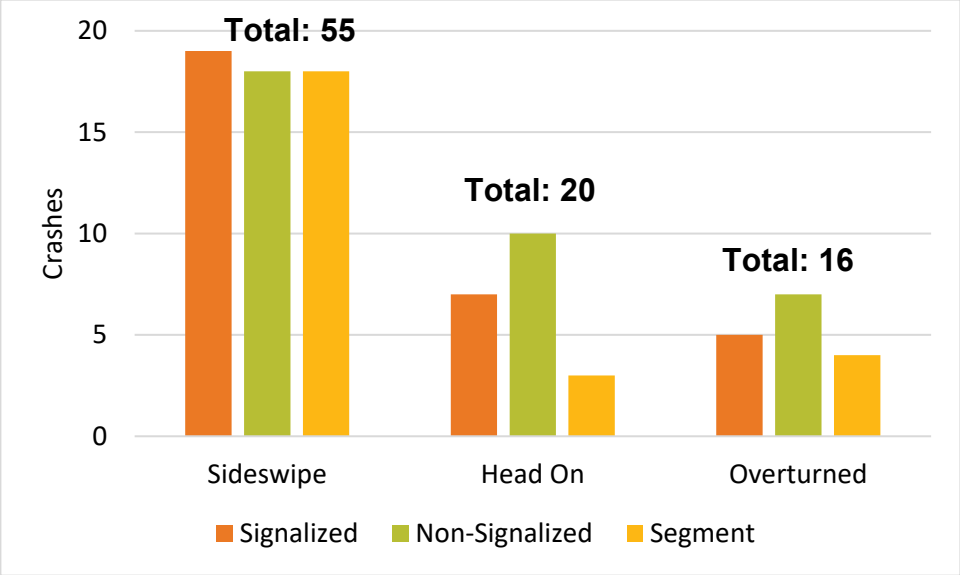
According to reported data, approximately 402 crashes occurred within the City of Placerville during the five-year study period of which 370 had clear, discernable spatial data that did not occur on private property. As shown in **Figure 5** and **Figure 6**, the most common crash types were rear-ends, followed by hit object crashes and broadsides. Hit object crashes are typically single vehicle crashes where a vehicle departs from their lane and hits a fixed object. Broadsides are commonly referred to as "T-Bone" crashes and are right angle crashes.

Figure 5 – Crashes by Type (Broadsides, Hit Object, and Rear Ends)



Source: SWITRS Crash Data (2018 – 2022).

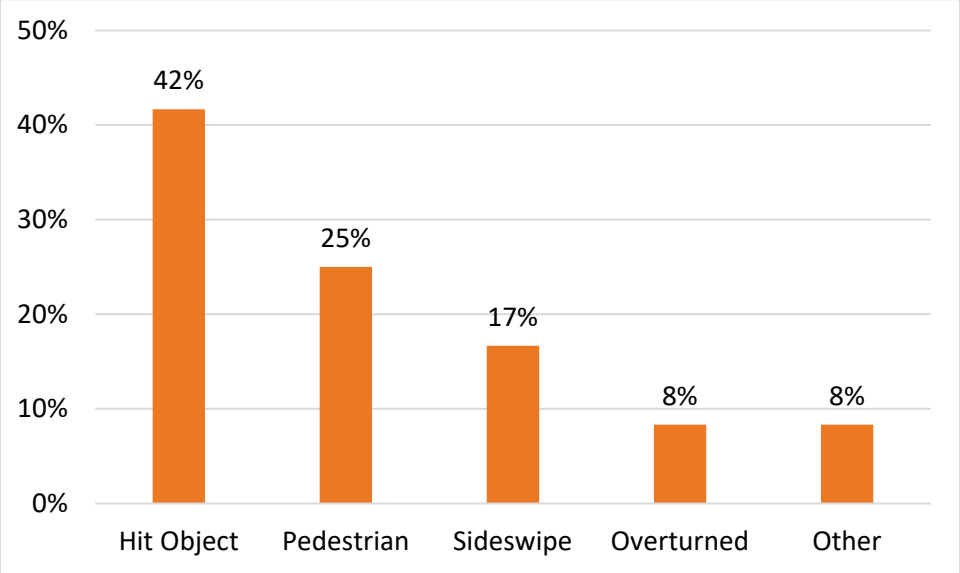
Figure 6 – Crashes by Type (Sideswipe, Head On, and Overturned)



Source: SWITRS Crash Data (2018 – 2022).

Figure 7 presents a breakdown of K+SI crashes by type. Hit object crashes were the most common crash type resulting in fatalities and severe injuries. Pedestrians were the next most common crash type, followed by sideswipes.

Figure 7—K+SI Crashes by Type



Source: SWITRS Crash Data (2018 – 2022).

6.4. Primary Collision Factor

The primary collision factor (PFC) is recorded by the police department in their police report. While there may be many factors involved in a crash occurring, the PCF reports the most impactful factor in causing the crash to occur. **Figure 8** presents the PCFs recorded in the study period, the most common of which were unsafe speed, wrong side of road, and auto right of way violation.

Figure 9 presents a breakdown of the leading PCFs for crashes resulting in fatalities and severe injuries. The leading PCFs were driving under the influence, unsafe speed and driving on the wrong side of the road. These top two factors are largely behavioral and could be addressed by education and enforcement, in addition to engineering countermeasures.

Figure 8 – Primary Collision Factor

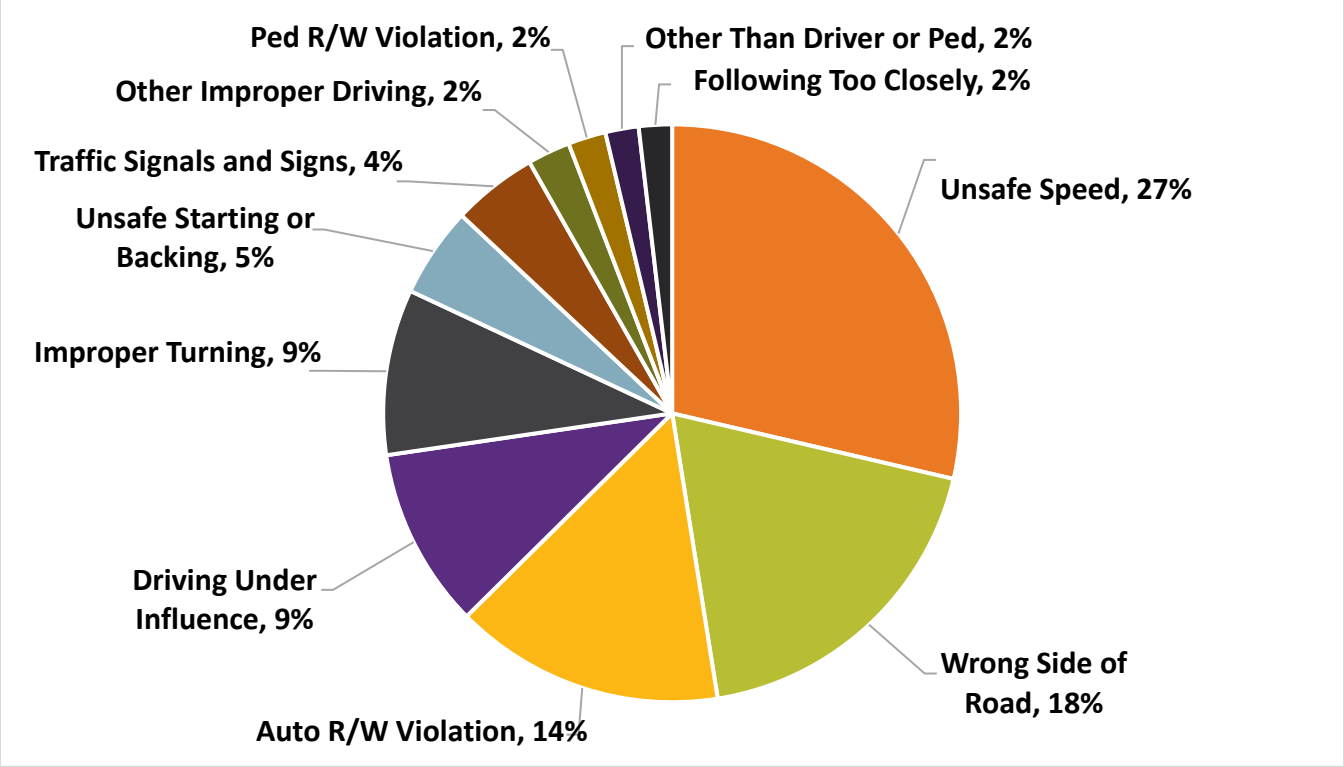
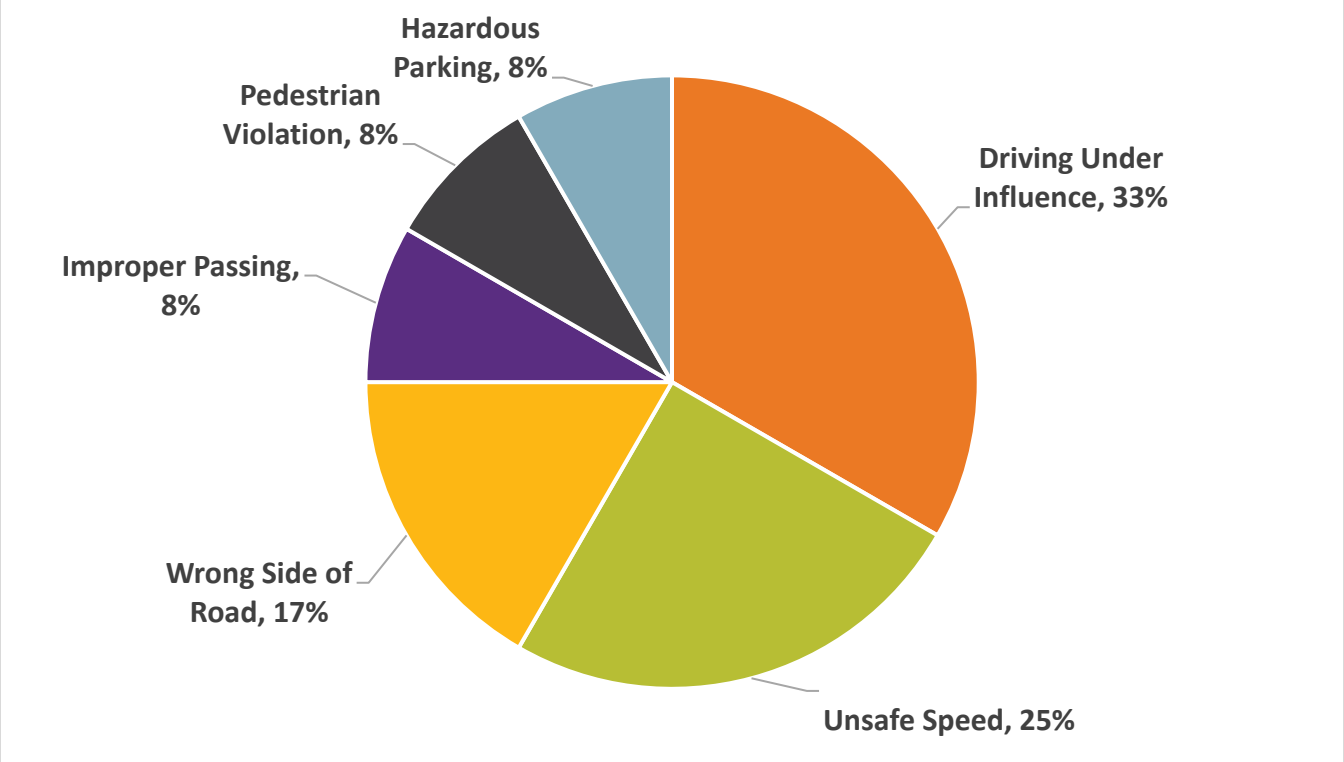


Figure 9 – Primary Collison Factor for K+SI Crashes



6.5. 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 133 lane departure crashes over the study period within the City. Lane departure crashes account for 50% of all fatal and severe injury crashes within the study period. Of the 133 lane departure crashes, 1 was fatal, 5 resulted in severe injuries, 14 with other visible injuries, 16 with complaints of pain, and 97 with PDO.

6.6. Aggressive Driving Crashes

Aggressive driving crashes are crashes that in which the following behaviors played a role: unsafe speed, following too closely, or violations connected to traffic signals and signs. In total, one-third of crashes in the study-period involved aggressive driving, resulting in one fatal crash and two severe-injury crashes. **Figure 10** presents a distribution of aggressive driving across intersections and roadway segments. Unsignalized intersections and roadway segments experienced the most aggressive driving crashes. Aggressive driving was most concentrated along the US-50 corridor (at Bedford Avenue, Spring Street and Canal Street) and at the intersection of Placerville Drive and Ray Lawyer Drive, as is presented in **Figure 11**.

Figure 10 –Aggressive Driving Crashes

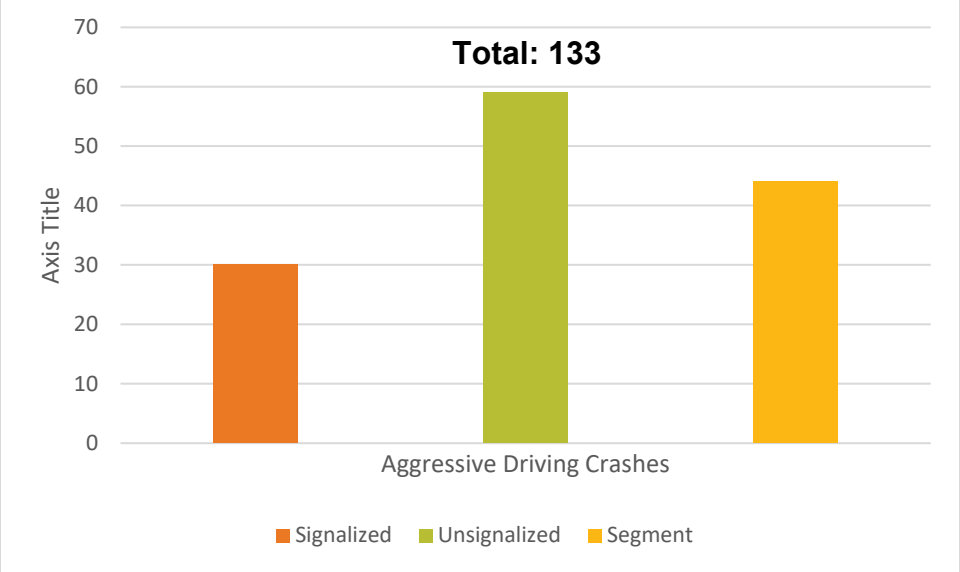
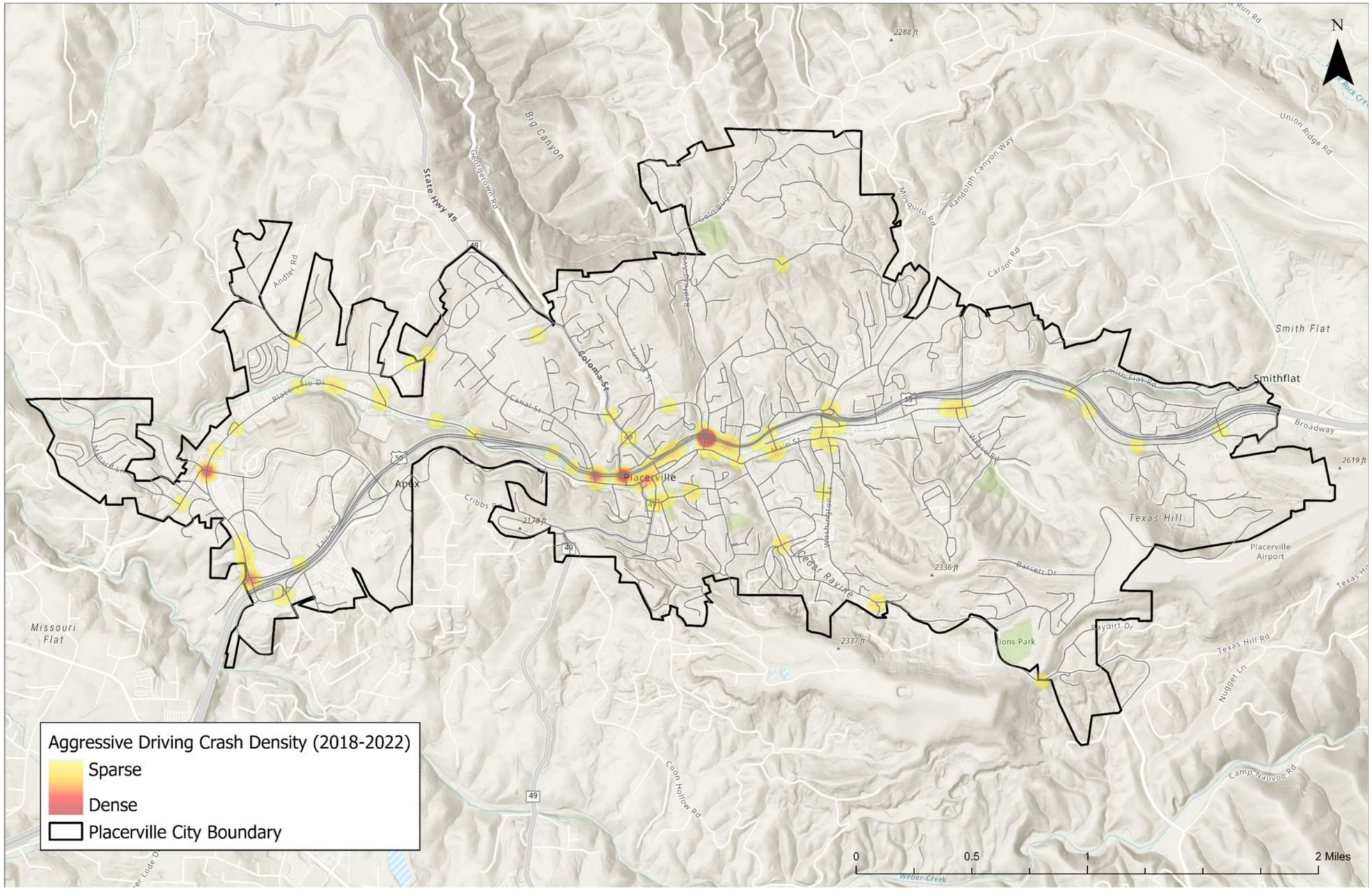


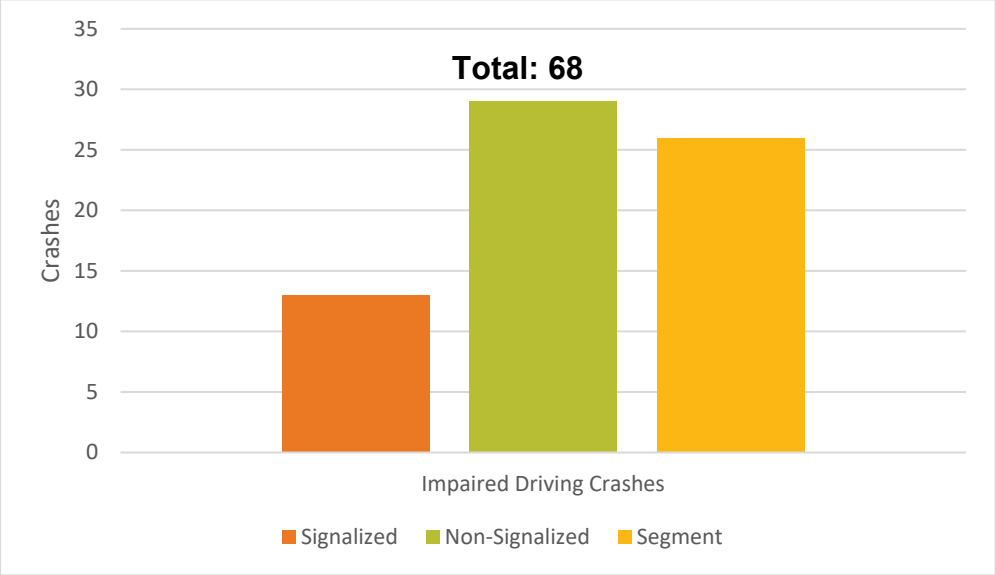
Figure 11 – Aggressive Driving Crash Map



6.7. 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 68 impaired driving crashes between 2018 and 2022. There were 2 fatal crashes and 6 crashes resulting in severe injuries. Impaired driving was a contributing factor in 50% of all fatal and severe injury crashes within the study period. **Figure 12** below shows the distribution of impaired driving crashes across intersections and roadway segments**.**

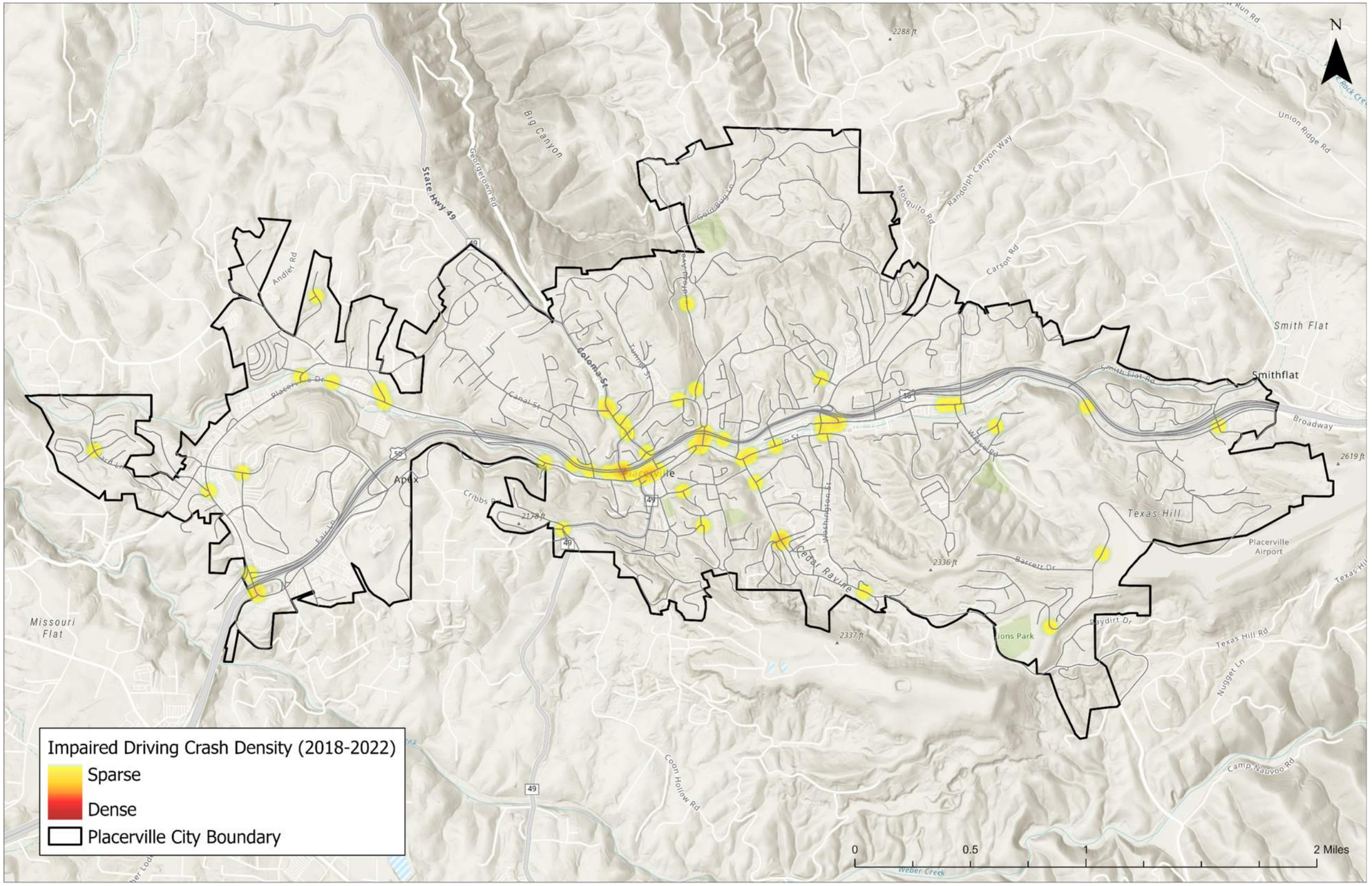
Figure 12 –Impaired Driving Crashes



Source: SWITRS Crash Data (2018 – 2022).

Figure 13 presents a map of the impaired driving crashes across the City.

Figure 13 – Impaired Driving Crash Map



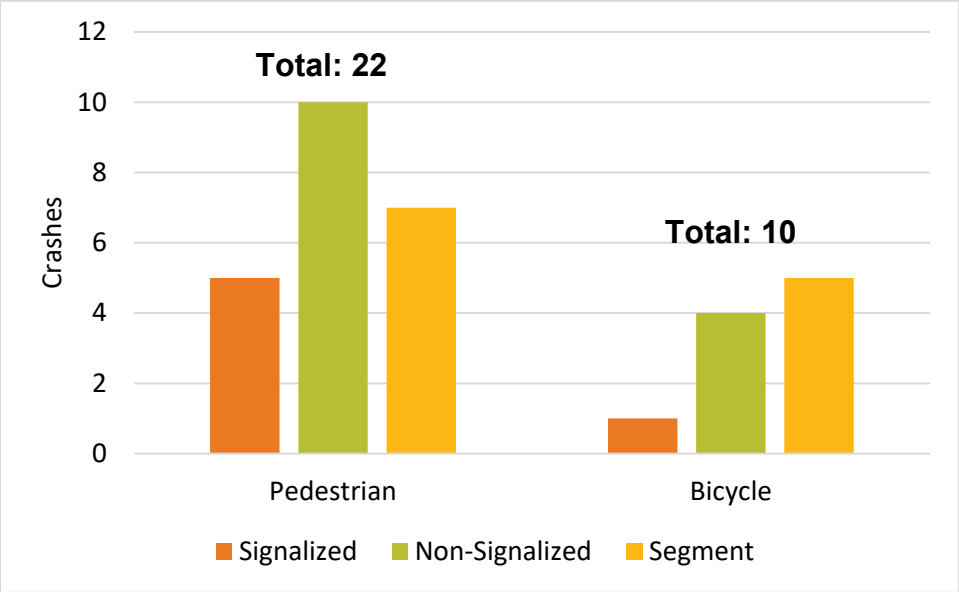
6.8. Bicycle and Pedestrian Crashes

Figure 14 presents the facility types where bicycle and pedestrian crashes occurred. Bicycle crashes were more common along roadway segments and at non-signalized intersections. Pedestrian crashes were most common at non-signalized intersections.

Figure 15 illustrates the locations of pedestrian and bicycle crashes within the City. Additional information on pedestrian and bicycle crashes is provided in the following sections.

Bicycle and pedestrian crashes accounted for approximately 25% of all fatal and severe injury crashes in the study period. Main Street experienced the most pedestrian crashes along its length, while Broadway experienced the most bicycle crashes.

Figure 14 – Bicycle and Pedestrian Crashes



Source: SWITRS Crash Data (2018 – 2022).

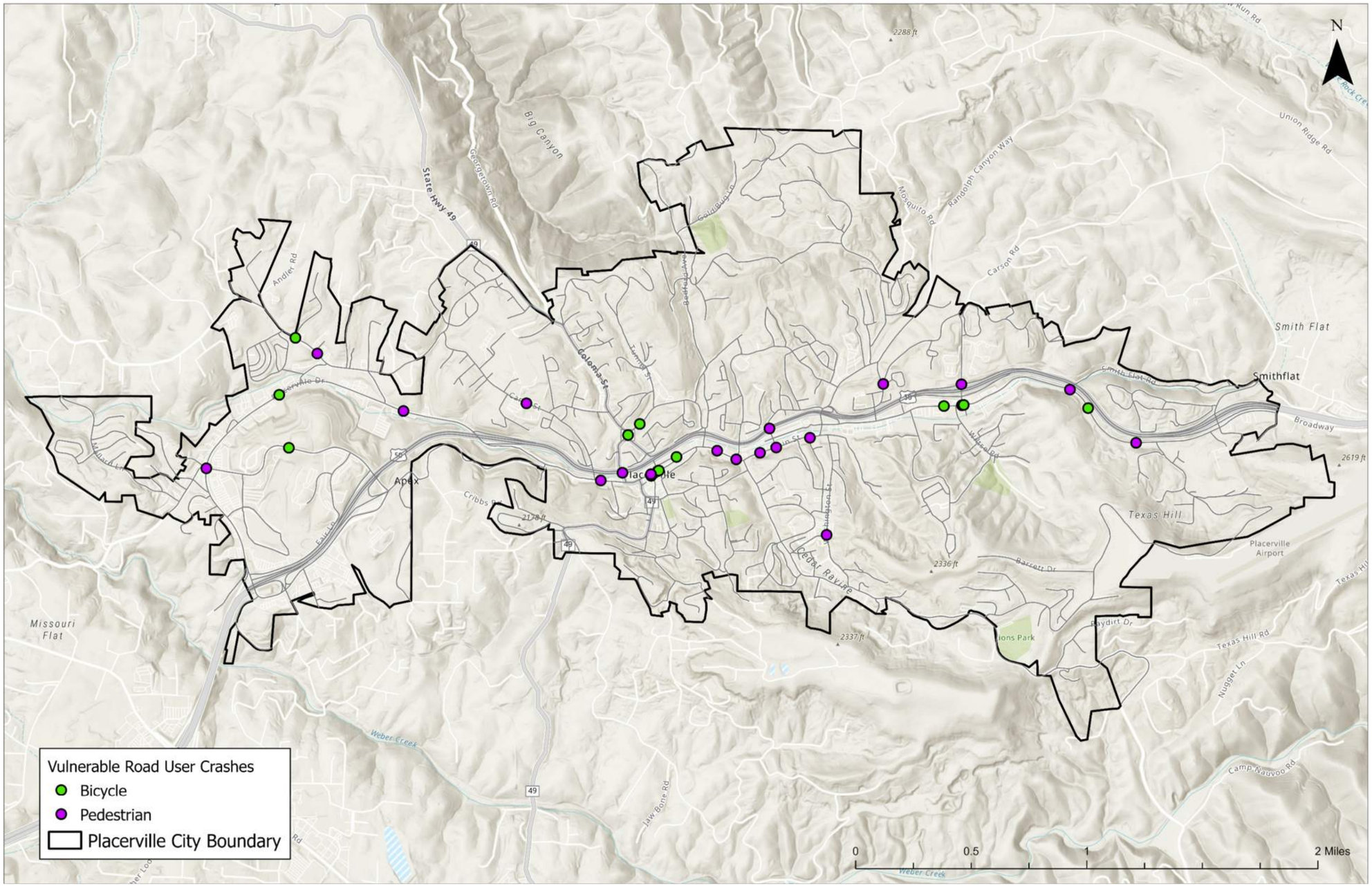
6.8.1. *Bicycle Crashes*

There were 10 bicycle-involved crashes that occurred across the City over the study period. Of the bicycle-involved injury crashes, none resulted in fatalities or severe injuries, though 4 resulted in other visible injuries, 4 with complaints of pain, and 2 with no injuries (PDO).

6.8.2. *Pedestrian Crashes*

Over the span from 2018 to 2022, a total of 22 pedestrian-involved crashes occurred across the City. Of the pedestrian-involved injury crashes, 1 was fatal, 2 were reported with severe injuries, 10 with other visible injuries, 7 with complaints of pain, and 2 with no injuries (PDO).

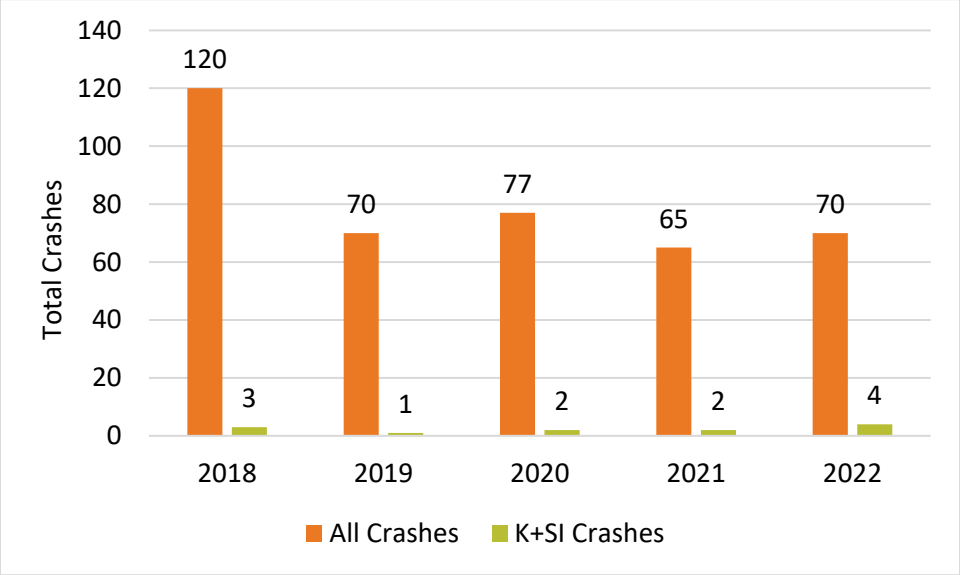
Figure 15 – Non-Motorized Crashes



6.9. Crashes by Year

Figure 16 presents crashes by year over the 5-year study period. The number of annual crashes was highest in 2018 and decreased to 70 in 2019. The number of annual K+SI crashes decreased from 2019-2021, but reached its highest point in 2022.

Figure 16—Crashes by year



7. PRIORITY LOCATIONS

As a result of the Citywide network screening analysis, eight project priority locations were selected for further analysis and development of site-specific safety improvement recommendations. Systemic improvements at unsignalized intersections across the City were also considered. Project sheets were developed to provide a menu of potential safety countermeasures that the City can chose from when applying for funding. These locations were identified through the analysis process based on their crash histories, the observed crash patterns, and their differing characteristics to provide the most insight into potential systemic safety countermeasures that the City can employ to achieve the most cost-effective safety benefits. These project sheet are included in **Appendix D.**

Each project sheet includes location maps with a crash data summary, relevant field notes, and list of recommended safety countermeasures with corresponding CMFs, the number of crashes anticipated to be reduced, 10-year crash reduction estimate and benefit, and planning level construction cost estimates. The potential safety countermeasures identified reflect safety improvements that can be applied to reduce the likelihood of future crashes. Countermeasures were subjected to a benefit/cost assessment to determine their potential return on investment. These case studies can be used to select the most appropriate countermeasure(s), and to potentially phase improvements over the longer-term. The potential benefit of these countermeasures at locations with similar design characteristics can then be extrapolated regardless of crash history. These project sheets can also be used to position the City for future grant funding opportunities.

A project sheet was developed for systemic improvements at unsignalized intersections across the City. The greatest proportion of K+SI crashes occurred at unsignalized intersections, prompting its consideration for Citywide improvements. The installation of retro-reflective signs and strips on stop signs and their posts, along with the installation of retro-reflective pavement markers along intersection approaches, is proposed.

Table 3 presents a summary of recommended safety countermeasures identified for each priority location, the corresponding benefit/cost ratio, and an expected timeline for implementation. Potential funding sources such as local and State funds (Caltrans) are suggested for each improvement, including grant funding sources such as Highway Safety Improvement Program (HSIP) and Safe Streets and Roads for All (SS4A). The funding sources recommended in **Table 3** are not limited to the source(s) listed, as other funding sources may be available. Similarly, the funding suggestions are intended to inform the City of potential opportunities, consistent with Section 9.5 in the report "Funding", and do not obligate it to apply for these grants.

Pursuant to section 15262 in the California Code of Regulations, this plan is exempt from CEQA and does not require the preparation of an Environmental Impact Report (EIR) or a negative declaration. However, the CEQA requirements for each site-specific safety improvement project will need to be evaluated on a case-by-case basis prior to implementation.

Table 3 – Priority Locations

Location	Improvements	B/C*	Potential Funding	Implementation
Roadway Segments				
Main Street, from Cedar Ravine Road to Locust Avenue	Install segment lighting	0	SS4A/Local	Mid-Term
	Improve sight distance to intersection (Clear Sight Triangles) for driveways	121	Local	Near-term
	Remove or relocate fixed objects (utility poles) outside of Clear Recovery Zone	0.9	HSIP/Local	Long-Term
	Install speed limit signs	60.7	Local	Near-Term
Unsignalized Intersections				
Main Street and Locust Avenue	Install bulb-outs and ADA accessible curb ramps at pedestrian crossing across Main St	66	SS4A/HSIP	Mid-Term
	Install Rectangular Rapid Flashing Beacon (RRFB) at crosswalk across Main St and install continental crosswalk across Locust St	37	HSIP	Mid-Term
	Install additional intersection lighting	58	HSIP	Mid-Term
	Install intersection ahead warning signage and pedestrian crossing ahead warning signage on the Main St approaches, as well as speed limit signs	159	Local	Near-Term
	Improve Sight Triangles to Intersection	64	Local	Near-Term
Main Street and Sacramento Street	Install intersection lighting	36	HSIP	Mid-Term
	Install stop bar and centerline at parking lot driveway	3,547	Local	Near-Term
Cedar Ravine Road and Thompson Way	Relocate telephone pole located on the West side of the crosswalk	5.3	HSIP	Long-Term
	Install RRFB at crosswalk	0	SS4A	Mid-Term
	Install bulb-outs and ADA accessible curb ramps at pedestrian crossing across Cedar Ravine Rd	0	SS4A	Mid-Term
	Install high friction surface treatment (HFST) on intersection approaches	1.1	HSIP	Mid-Term
	Install delineators on intersection centerline approaches	8.9	Local	Near-Term

Unsignalized Intersections				
Location	**Improvements**	**B/C***	**Potential Funding**	**Implementation**
Broadway and Monterey Road/Point View Drive	Install intersection lighting	2.5	HSIP	Mid-Term
	Install retro-reflective strips on stop sign posts	25.2	HSIP	Near-Term
	Remove the old striping on the SB approach	0	Local	Near-Term
Systemic Unsignalized Intersection Improvements	Install retro-reflective signs and retro-reflective strips on stop sign posts	5.9	HSIP	Near-Term
	Install retro-reflective stop bars and pavement markings	39.8	HSIP	Near-Term
Signalized Intersections				
US-50 and Bedford Avenue	Install supplemental signal head on the post which faces westbound traffic (the signal will face eastbound traffic). Install supplemental signal head for second westbound through lane	21	Caltrans	Near-Term
	Install "Prepare to stop when flashing" beacon assembly to WB approach	65	Caltrans	Mid-Term
	Install High Friction Surface Treatment on intersection approaches	7	Caltrans	Mid-Term
	Refresh striping with high-visibility (crosswalks, pavement markings, striping, and advanced stop bars)	0	Caltrans	Near-Term
	Extend the EB Right-Turn Pocket to prevent queue from backing up into through lane	-	Caltrans	Near-Term
	Install changeable message board on WB approach (potential location is Carson Rd overcrossing)	-	Caltrans	Mid-Term
	Trim back vegetation as needed to improve signal visibility	-	Caltrans	Near-Term
US-50 and Spring Street	Install supplemental signal head on the post which faces eastbound traffic (the signal will face westbound traffic). Install supplemental signal head for second westbound through lane	17	Caltrans	Near-Term
	Install ped countdown heads	1.8	Caltrans	Near-Term
	Install High Friction Surface Treatment on intersection approaches	5.4	Caltrans	Mid-Term
	Install retro-reflective curve ahead warning signs with reflective strips on posts	151.2	Caltrans	Near-Term

Signalized Intersections				
Location	**Improvements**	**B/C***	**Potential Funding**	**Implementation**
US-50 and Spring Street	Replace signs on mast arms with larger/reflective	-	Caltrans	Near-Term
	Install high-visibility crosswalks and retroreflective pavement markings, striping, and advanced stop bars	-	Caltrans	Near-Term
	Trim back vegetation to improve signal visibility	-	Caltrans	Near-Term
US-50 and Canal Street	Install supplemental signal head on the post which faces westbound traffic (the signal will face eastbound traffic). Install supplemental signal head for second westbound through lane	12	Caltrans	Near-Term
	Install supplemental intersection ahead beacon assembly to EB approach	39	Caltrans	Mid-Term
	Install pedestrian countdown heads	1.8	Caltrans	Near-Term
	Install High Friction Surface Treatment on intersection approaches	3.9	Caltrans	Mid-Term
	Refresh striping with high-visibility (crosswalks, pavement markings, striping, and advanced stop bars)	-	Caltrans	Near-Term
	Install retro-reflective curve ahead warning signs with reflective strips on posts	109	Caltrans	Near-Term
	Replace signs on mast arms with larger/reflective	-	Caltrans	Near-Term
	Install grade separated bike/pedestrian overcrossing over US-50	-	Caltrans SS4A	Long-Term

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 City.

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 City. 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 17** illustrates the definition of CMFs.

Figure 17 – CMF Calculation

CMF = 1.0	Expected to have no impact on safety
CMF < 1.0	Expected to reduce crashes
CMF > 1.0	Expected to increase crashes

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 18** is a sample calculation of the CMF method with one CMF being applied to a particular site for a single year.

Figure 18 – CMF Method Sample Calculation

10.1 crashes / year x 0.91 (CMF) =	9.2 crashes / year: a reduction of 0.9 total crashes per year and a CRF of 9%

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 19** presents how a CRF is calculated in relationship to a CMF.

Figure 19 – CRF Calculation

$$CRF = (1 - CMF) \times 100$$

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 City 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 City in understanding potential reductions from crashes by different countermeasures.

Table 4 – City of Placerville 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%	$$$
Convert intersection to roundabout (from signal)			Varies	Varies	X			90%	$$$
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%	$$
Advanced stop bar before crosswalk and bicycle box	X	X	0.85	15%			X	100%	$
Modify signal to provide a Leading Pedestrian Interval (LPI)	X		0.4	60%			X	100%	$
Flashing yellow arrow			0.94	6%	X			N/A	$
Signal ahead warning signs			0.85	15%	X			N/A	$
Curb extensions	X		0.63	37%			X	100%	$$
Install a raised intersection	X						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%	$ - $$$

$$$ Requires design and construction of extensive infrastructure improvements
$$ Requires procurement and/or minor construction activities
$ Requires limited staff resources and can be implemented in-house with current engineering and/or maintenance staff

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 High Friction Surface Treatment (HFST)			0.55	55%	X			100%	$$$
Install splitter-islands on minor road approaches			0.6	40%	X			100%	$$
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			100%	$
Crosswalk lighting	X		0.6	40%			X	100%	$$
Colored bicycle lanes		X	0.61	39%			X	N/A	$
Curb extensions	X		0.63	37%			X	100%	$$$
Install a raised intersection	X				X			N/A	$$$
Partial street closure or diagonal diverter					X			N/A	$$$
Full street closure	X	X			X			N/A	$$
Roadway Segments									
Add segment lighting			0.65	35%		X		100%	$$
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			OTS funding	$
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%	$$
Install centerline rumble strips/stripes			0.80	20%	X			100%	$$

$$$ Requires design and construction of extensive infrastructure improvements
$$ Requires procurement and/or minor construction activities
$ Requires limited staff resources and can be implemented in-house with current engineering and/or maintenance staff

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 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%	$$
Install/Upgrade signs with new fluorescent sheeting (regulatory/warning)			0.85	15%	X			100%	$
Install delineators, reflectors and/or object markers			0.85	15%	X			100%	$
Install lane narrowing treatments (extend curb inward/extend median)	X				X			N/A	$$
Install a chicane, deviation, or angled slow point					X			N/A	$$$
Install speed hump					X			N/A	$$

$$$ Requires design and construction of extensive infrastructure improvements
$$ 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 City 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 City. 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

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.

- *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 City 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 City. Over the next three to five years, it is recommended that the City concentrate its efforts on the following emphasis areas:

- *Crashes occurring at night*
- *Hit Object Crashes*
- *Pedestrians and Cyclists*

Analysis conducted at the citywide level indicated that these factors were some of the most frequent influences contributing to K+SI crashes within the City. 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 citywide 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 City's LRSP every 5 years or sooner[4].

1) Access necessary data

- *Roadway and intersection classification/configurations*

[4] Local Roadway Safety Plan (Lrsp) Funding Application Form Instructions, Caltrans, September 2020

- *Average Daily Traffic Volumes (Collected from counts where available)*
- *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 the City*
   - *Analyze the crash 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 City can begin at step 1 to continue the LRSP process. Additional items the City 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 2022, 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

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/2022/hsipanalyzermanual2022bcr.pdf

- Funding Set-asides (Non-Benefit Cost Ratio Applications)
  https://dot.ca.gov/-/media/dot-media/programs/local-assistance/documents/hsip/2022/hsipanalyzermanual2022sa.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 the City of Placerville. The City should continue to seek available funding and grant opportunities from local, state, and federal resources to accelerate their ability to implement safety improvements across the City of Placerville. The following is a high-level introduction into some of the main funding programs and grants for which the City 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/equipment*
- *Upgraded guard rails*
- *Marked crosswalks*

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. The HSIP Cycle 12 call-for-projects is expected to be announced in Late April or Early May of 2024.

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. *Safe Streets and Roads for All (SS4A)*

The Safe Streets and Roads for All (SS4A) Grant Program is a federal program established by the Bipartisan Infrastructure Law. A total of $5 billion are available from 2022-2026 in the form of planning grants and implementation grants. Grant applications for projects that implement the Safe Systems Approach, such as those related to speed management, improvements in underserved communities, and vulnerable road users, are encouraged. Implementation grant projects must be identified in an applicant's qualifying Safety Action Plan. The SS4A Self-Certification Eligibility Worksheet describes the required elements of an Action Plan and can be accessed at: https://www.transportation.gov/sites/dot.gov/files/2024-02/SS4A-FY24-Self-Certification-Worksheet.pdf

Additional information about implementation grants can be found at: https://www.transportation.gov/grants/ss4a/implementation-grants

9.4.3. *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/

9.4.4. *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.

9.4.5. *California Senate Bill 1 (SB 1)*

SB 1 is a 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*
  - *This funding 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 subsidy for these projects through the Active Transportation Program (ATP).*
- *Local Planning Grants: $25 million*

9.4.6. *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*

9.4.7. *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*

10. NEXT STEPS

The City of Placerville 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 City. Using the analyzed data and outputs from this LRSP, the City will:

- *Apply for grant funding for safety improvements throughout the City that address the various emphasis areas identified, including intersections and lane departures*
- *Actively seek grant and other funding opportunities to improve safety for all modal users, particularly active transportation users*
- *Collaborate with established stakeholders and neighboring municipalities (i.e. El Dorado County, Caltrans) 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 the City of Placerville*
- *At year 4, begin to reevaluate safety data and update the LRSP*

APPENDIX A

INTERSECTION NETWORK SCREENING RESULTS

Intersection	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	Other	Pedestrian	Bicycle	Aggressive	Impaired	Dark	Wet
Signalized Intersections																					
BEDFORD AVE & US 50	**24**	-0.01	75	0	0	1	8	15	3	3	14	0	2	0	2	0	0	16	2	6	3
CA 49/SPRING ST & US 50	**21**	-0.07	61	0	0	2	4	15	1	4	12	1	0	0	2	1	0	8	4	3	1
CANAL ST & US 50	**14**	0.11	44	0	0	1	4	9	2	0	4	1	4	0	3	0	0	5	1	5	6
PLACERVILLE DR & RAY LAWYER DR	**12**	-0.08	62	0	0	3	4	5	4	0	6	1	0	0	0	1	0	7	0	1	0
CA 49 & MAIN ST	**8**	0.00	18	0	0	0	2	6	2	2	2	0	2	0	0	0	0	3	1	1	0
PLACERVILLE DR & FAIR LN	**7**	-0.21	27	0	0	1	2	4	0	0	5	1	1	0	0	0	0	4	1	2	0
SACRAMENTO ST & PACIFIC ST	**4**	-0.24	14	0	0	0	2	2	3	0	1	0	0	0	0	0	0	2	0	0	0
COLD SPRINGS RD & PLACERVILLE DR	**3**	-0.33	13	0	0	1	0	2	1	0	0	1	0	1	0	0	0	1	1	1	0
Unsignalized Intersections																					
SACRAMENTO ST & MAIN ST	**12**	0.51	217	0	1	1	1	9	1	2	4	0	2	1	0	2	0	4	3	3	1
US-50W OFFRAMP & PLACERVILLE DR	**7**	0.08	22	0	0	1	1	5	0	0	1	3	2	1	0	0	0	1	0	0	1
CA 49 & BEE ST	**7**	0.31	22	0	0	1	1	5	0	0	1	1	1	2	2	0	0	1	2	4	0
CEDAR RAVINE RD & WALL ST	**6**	0.17	16	0	0	0	2	4	1	0	1	0	2	1	1	0	0	2	3	2	2
CANAL ST & MAIN ST	**6**	0.29	31	0	0	2	1	3	1	1	2	0	1	0	0	1	0	1	0	2	0
MOSQUITO RD & BROADWAY	**6**	0.07	6	0	0	0	0	6	1	3	1	1	0	0	0	0	0	1	1	0	0
CENTER ST & MAIN ST	**5**	0.07	25	0	0	1	2	2	0	1	0	0	2	0	0	1	1	0	1	1	0
BROADWAY & MONTEREY RD/POINT VIEW DR	**5**	0.11	15	0	0	0	2	3	2	0	1	0	0	0	2	0	0	1	1	4	0
CEDAR RAVINE RD & THOMPSON WAY	**4**	0.17	14	0	0	1	0	3	0	0	0	0	4	0	0	0	0	0	1	0	0
MAIN ST & STAGE COACH ALLEY	**4**	-0.01	14	0	0	0	2	2	0	1	1	0	1	0	0	0	1	0	0	0	0
BEDFORD AVE & MAIN ST	**4**	-0.04	9	0	0	0	1	3	0	1	1	0	2	0	0	0	0	1	1	1	0
LOCUST AVE & MAIN ST	**4**	0.01	213	0	1	2	0	1	1	0	1	0	0	0	1	1	0	3	1	1	0
CEDAR RAVINE RD & MAIN ST	**4**	-0.03	4	0	0	0	0	4	1	0	1	0	2	0	0	0	0	0	2	1	1
CENTER ST & CA 50	**4**	-0.13	4	0	0	0	0	4	1	0	3	0	0	0	0	0	0	2	0	1	1
RESERVOIR ST & MAIN ST	**4**	0.00	4	0	0	0	0	4	0	1	2	0	0	0	1	0	0	0	1	0	0
WILTSE RD & BROADWAY	**4**	-0.04	14	0	0	0	2	2	2	0	1	0	1	0	0	0	0	2	1	1	0

Kimley»Horn

Intersection	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	Other	Pedestrian	Bicycle	Aggressive	Impaired	Dark	Wet
US-50 WB RAMPS & MOSQUITO RD	**4**	0.02	9	0	0	0	1	3	1	1	2	0	0	0	0	0	0	2	0	1	0
COLD SPRINGS RD & PIERROZ RD	**4**	-0.01	14	0	0	1	0	3	0	0	0	0	4	0	0	0	0	0	0	0	1
PLACERVILE DR & FORNI RD	**3**	-0.11	13	0	0	1	0	2	0	2	0	0	1	0	0	0	0	0	2	0	0
HELMRICH LN & PLACERVILLE DR	**3**	-0.14	198	0	1	0	1	1	0	0	0	0	3	0	0	0	0	1	0	1	1
PACIFIC ST & GOLDNER ST	**3**	0.02	3	0	0	0	0	3	0	0	2	0	1	0	0	0	0	1	1	1	0
CEDAR RAVINE RD & PACIFIC ST	**3**	-0.05	3	0	0	0	0	3	2	0	0	0	1	0	0	0	0	0	0	1	1
US-50 EB OFF-RAMP & BROADWAY	**3**	-0.12	3	0	0	0	0	3	1	0	1	1	0	0	0	0	0	1	2	1	0
COLOMA ST/CA 49 & SPRING ST	**3**	-0.08	8	0	0	0	1	2	0	1	1	0	0	0	0	0	1	2	1	0	1

1. Local Critical Crash Rate Differential

2. Equivalent Property Damage Only Crashes

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APPENDIX B

SEGMENT NETWORK SCREENING RESULTS

Facility	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	Other	Pedestrian	Bicycle	Aggressive	Impaired	Dark	Wet
Freeway or Expressway																							
US 50 E	ON-RAMP FROM PLACERVILLE DR	CANAL ST	**4**	0.11	14	0	0	1	0	3	0	0	2	0	2	0	0	0	0	2	1	2	0
Principal Arterial																							
US 50 E	BEDFORD AVE	OFF-RAMP TO BROADWAY	**9**	0.03	198	1	0	1	3	4	0	4	4	0	1	0	0	0	0	6	1	3	0
US 50 E	CENTER ST	BRENTFORD AVE	**5**	0.00	20	0	0	0	3	2	0	2	3	0	0	0	0	0	0	4	0	1	0
Minor Arterial																							
PLACERVILLE DR	ARMORY AVE	HELMRICH LN	**8**	0.76	13	0	0	0	1	7	3	1	1	0	2	0	1	0	0	4	0	1	3
PLACERVILLE DR	PIERROZ RD	COLD SPRINGS RD	**7**	0.53	176	0	1	0	1	5	1	0	0	0	5	1	0	0	0	2	1	1	2
PLACERVILLE DR	RAY LAWYER DR	VICINI DR	**6**	0.69	40	0	0	3	1	2	4	1	1	0	0	0	0	0	0	1	0	0	0
MAIN ST	CEDAR RAVINE RD	LOCUST AVE	**4**	1.34	14	0	0	1	0	3	0	3	0	0	0	0	0	1	0	0	0	0	0
BROADWAY	BLAIRS LN	WILTSE RD	**3**	0.29	18	0	0	1	1	1	0	1	1	0	0	0	0	0	1	1	1	1	0
BROADWAY	ORCHARD LN	SMITH FLAT RD	**3**	0.36	3	0	0	0	0	3	0	0	0	0	2	0	1	0	0	0	0	1	0
BROADWAY	US-50 OFF-RAMP TO BROADWAY	CARSON RD	**3**	0.44	3	0	0	0	0	3	1	1	1	0	0	0	0	0	0	0	0	0	0
MAIN ST	BEDFORD AVE	CLAY ST	**3**	0.71	13	0	0	1	0	2	0	1	1	0	0	0	0	1	0	1	0	1	0

1. Local Critical Crash Rate Differential

2. Equivalent Property Damage Only Crashes

Kimley»Horn

APPENDIX C

PUBLIC COMMENTS

The following responses below were received during the meeting on comment cards.

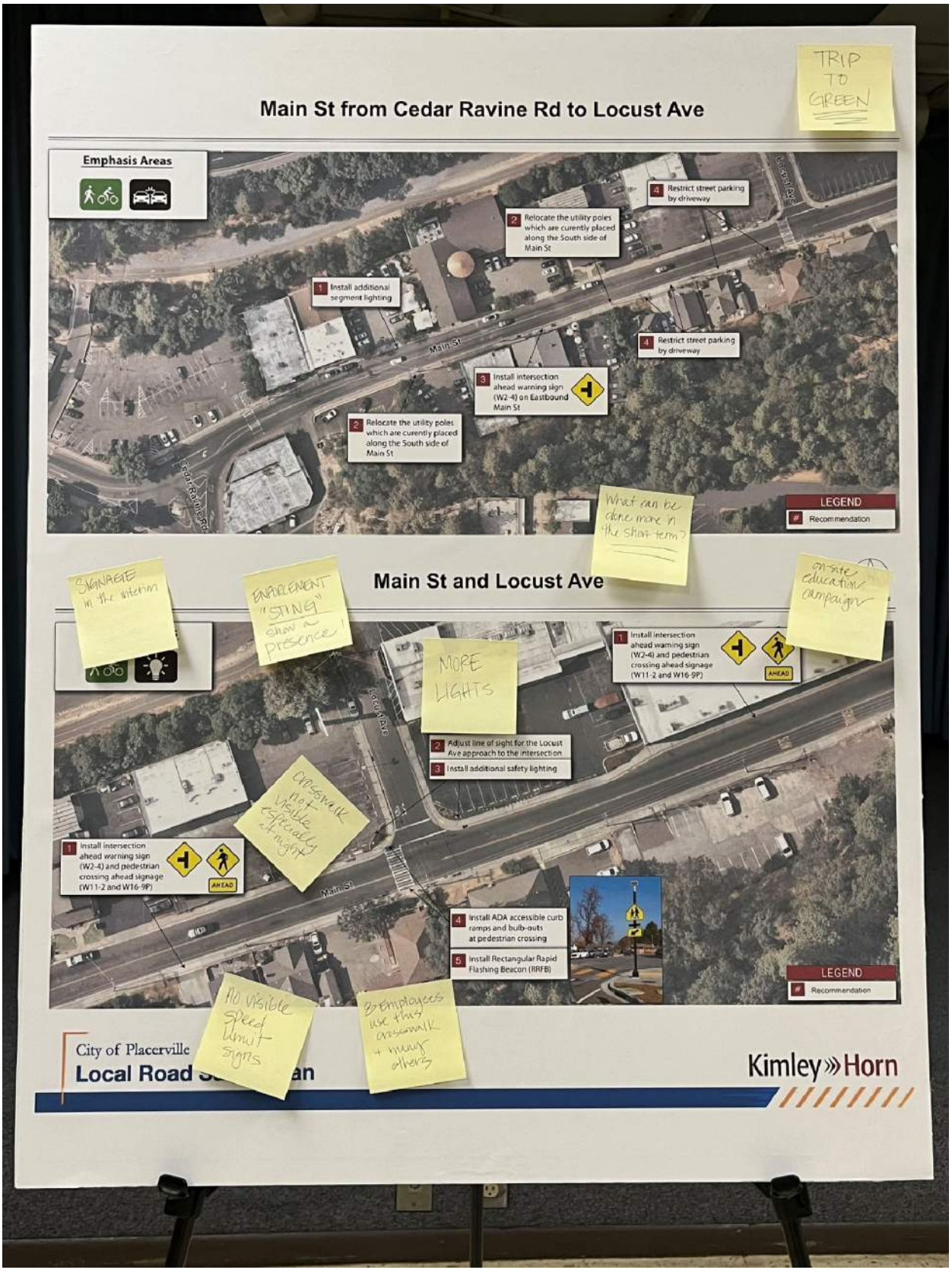
What are your comments regarding the proposed improvements?

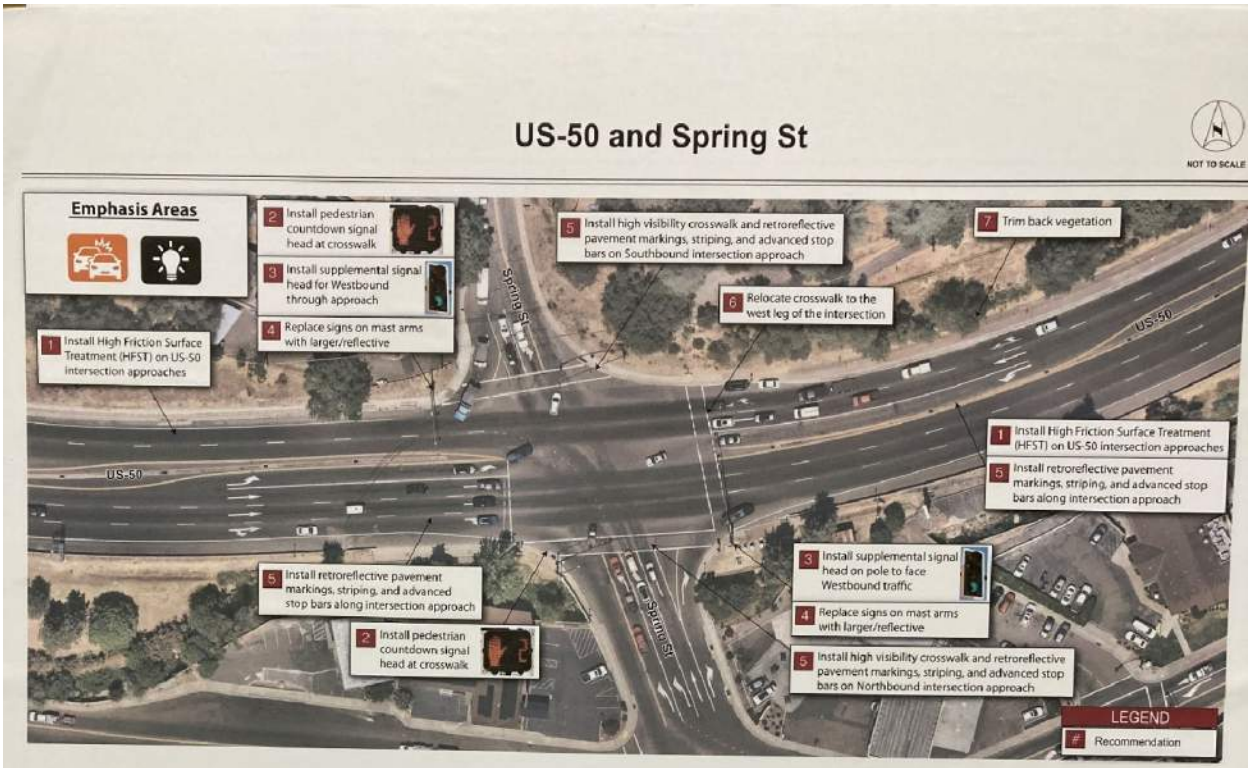
- *Main St and Locust proposal for signage additions, flashing lights for crosswalk. Constant green lights on 50 have been a good improvement in traffic congestion.*
- *Very vague information. Need to present clear, direct information and where I can find it. Not what you might do. Very friendly and enjoyed the meeting. Very inviting. Enjoyed it!*
- *Glad to hear of the proposed improvements. Focusing on the 50 & Street intersections in my mind should be top priority.*
- *Road Safety on Main St is a must! I was hit by a car in the crosswalk at 656 Main + Locust. I suffered 17 injuries but truly am lucky to be alive or not paralyzed.*
- *Appreciate the plans, hope they are implemented sooner rather than later. Glad to see the area my mother-in-law got hit by a car at is a part of your plan. We appreciate the care you have for our safety (Locust+Main St)*

Do you have any additional comments for the project team?

- *Signal light status signage before the Bedford light!*

The following pages present the public comments received on the exhibits of the proposed improvements.


Main St from Cedar Ravine Rd to Locust Ave
TRIP TO GREEN
Emphasis Areas
1 Install additional segment lighting
2 Relocate the utility poles which are curently placed along the South side of Main St
3 Install intersection ahead warning sign (W2-4) on Eastbound Main St
4 Restrict street parking by driveway
Main St
Cedar Ravine Rd
Locust Ave
What can be done more in the short term?
LEGEND
Recommendation
Main St and Locust Ave
SIGNAGE in the interim
ENFORCEMENT "STING" show of presence!
MORE LIGHTS
on-site education campaign
1 Install intersection ahead warning sign (W2-4) and pedestrian crossing ahead signage (W11-2 and W16-9P)
AHEAD
2 Adjust line of sight for the Locust Ave approach to the intersection
3 Install additional safety lighting
Crosswalk not visible especially at night
4 Install ADA accessible curb ramps and bulb-outs at pedestrian crossing
5 Install Rectangular Rapid Flashing Beacon (RRFB)
No visible speed limit signs
Employees use this crosswalk + many others
City of Placerville
Local Road Safety Plan
Kimley»Horn



City of Placerville
Local Road Safety Plan

Kimley»Horn

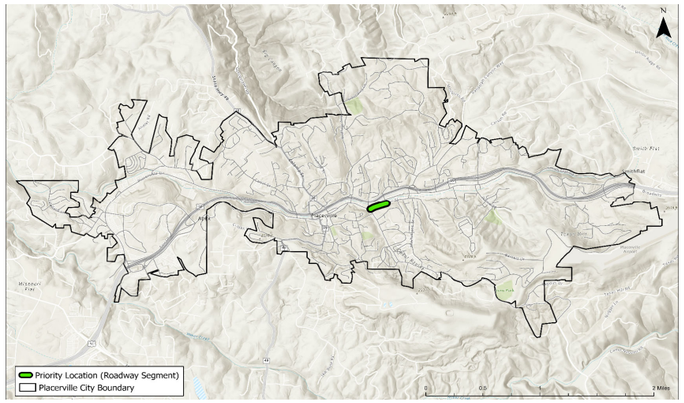
APPENDIX D

PROJECT SHEETS

City of Placerville LRSP
Field Visit 12/5/2023

Roadway Segment

Location: Main Street between Cedar Ravine Rd and Locust Ave
Agency Name: City of Placerville
Contact Name: Melissa McConnell
E-mail: mmcconnell@cityofplacerville.org



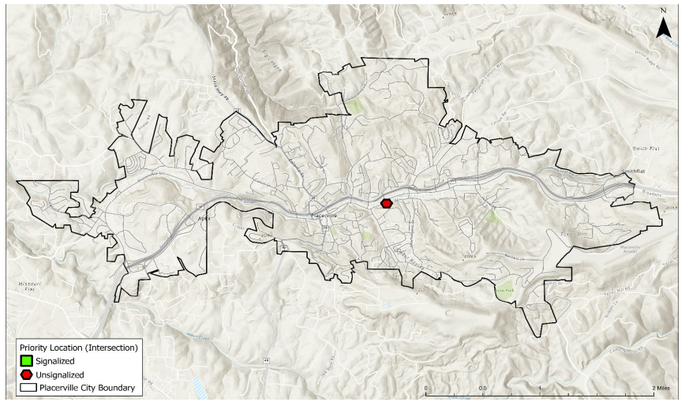
Total Crashes	4
Local CCR Differential	1.34
Equivalent Property Damage Only	14
Fatal	0
Severe Injury	0
Other Visible Injury	1
Complaint of Pain	0
PDO	3
Crash Type	
Broadside	0
Sideswipe	3
Rear End	0
Head On	0
Hit Object	0
Overturned	0
Other	0
Non-Motorist Crashes	
Pedestrian	1
Bicycle	0
Contributing Factors	
Aggressive	0
Impaired	0
Crash Conditions	
Dark	0
Wet	0

NOTES	COLLISION TYPE	RECOMMENDATION	LRSM/CMF COUNTERMEASURE	LRSM #	Expected Life (Years)	CMF	CALTRANS FUNDING	NUMBER OF CRASHES (2018-2022)		NUMBER OF HISTORIC CRASHES REDUCED	10-YEAR CRASH REDUCTION ESTIMATE	CRASH SEVERITY COST	10-YEAR CRASH REDUCTION BENEFIT (2022 $)	TOTAL 10-YEAR CRASH REDUCTION BENEFIT (2022 $)	QUANTITY/ NUMBER OF UNITS	UNIT COST	COST ESTIMATE	BENEFIT/COST
-	Dark	Install segment lighting	Add Segment lighting	R01	20	0.65	90%	FATAL	0	0	0.00	$ 1,590,000	$ -	$ -	3 Luminaires	$ 19,500	$ 58,500	**0.0**
								SEVERE	0	0	0.00	$ 1,590,000	$ -				
								OTHER VISIBLE	0	0	0.00	$ 142,301	$ -				
								COMPLAINT OF PAIN	0	0	0.00	$ 80,900	$ -				
								PDO	0	0	0.00	$ 13,300	$ -				
-	All	Restrict parking by driveways (paint red curb)	Improve sight distance to intersection (Clear Sight Triangles)	NS11	10	0.80	90%	FATAL	0	0	0.00	$ 1,590,000	$ -	$ 72,880	100 SQFT	$ 6	$ 600	**121**
								SEVERE	0	0	0.00	$ 1,590,000	$ -				
								OTHER VISIBLE	1	0.2	0.40	$ 142,301	$ 56,920				
								COMPLAINT OF PAIN	0	0	0.00	$ 80,900	$ -				
								PDO	3	0.6	1.20	$ 13,300	$ 15,960				
-	All	Relocate or underground utility poles	Remove or relocate fixed objects outside of Clear Recovery Zone	R02	20	0.65	90%	FATAL	0	0	0.00	$ 1,590,000	$ -	$ 127,541	7 Poles	$ 20,000	$ 140,000	**0.9**
								SEVERE	0	0	0.00	$ 1,590,000	$ -				
								OTHER VISIBLE	1	0.35	0.70	$ 142,301	$ 99,611				
								COMPLAINT OF PAIN	0	0	0.00	$ 80,900	$ -				
								PDO	3	1.05	2.10	$ 13,300	$ 27,930				
-	All	Install speed limit signs	Install/Upgrade signs with new fluorescent sheeting (regulatory or warning)	R22	10	0.85	90%	FATAL	0	0	0.00	$ 1,590,000	$ -	$ 54,660	2 signs	$ 450	$ 900	**60.7**
								SEVERE	0	0	0.00	$ 1,590,000	$ -				
								OTHER VISIBLE	1	0.15	0.30	$ 142,301	$ 42,690				
								COMPLAINT OF PAIN	0	0	0.00	$ 80,900	$ -				
								PDO	3	0.45	0.90	$ 13,300	$ 11,970				

City of Placerville LRSP
Field Visit 12/5/2023

Unsignalized Intersection

Location: Main Street and Locust Ave
Agency Name: City of Placerville
Contact Name: Melissa McConnell
E-mail: mmcconnell@cityofplacerville.org



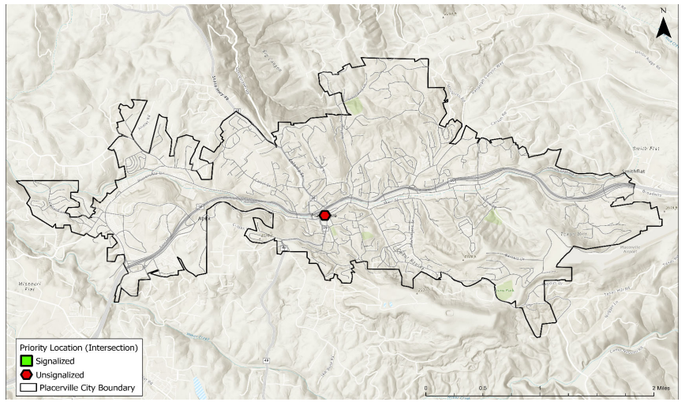
Total Crashes	4
Local CCR Differential	0.01
Equivalent Property Damage Only	213
Fatal	0
Severe Injury	1
Other Visible Injury	2
Complaint of Pain	0
PDO	1
Crash Type	
Broadside	1
Sideswipe	0
Rear End	1
Head On	0
Hit Object	0
Overturned	0
Other	1
Non-Motorist Crashes	
Pedestrian	1
Bicycle	0
Contributing Factors	
Aggressive	3
Impaired	1
Crash Conditions	
Dark	1
Wet	0

NOTES	COLLISION TYPE	RECOMMENDATION	LRSM/CMF COUNTERMEASURE	LRSM #	Expected Life (Years)	CMF	CALTRANS FUNDING	NUMBER OF CRASHES (2018-2022)		NUMBER OF HISTORIC CRASHES REDUCED	10-YEAR CRASH REDUCTION ESTIMATE	CRASH SEVERITY COST	10-YEAR CRASH REDUCTION BENEFIT (2022 $)	TOTAL 10-YEAR CRASH REDUCTION BENEFIT (2022 $)	QUANTITY/ NUMBER OF UNITS	UNIT COST	COST ESTIMATE	BENEFIT/COST
Traffic Calming Measure, Trucks permitting	Bike+Ped	Install bulb-outs and ADA accessible curb ramps at pedestrian crossing across Main St	Install/upgrade pedestrian crossing at uncontrolled locations (with enhanced safety features)	NS21PB	20	0.65	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 1,990,100	3 Bulb Outs	$ 10,000	$ 30,000	**66**
								SEVERE	1	0.35	0.70	$ 2,843,000	$ 1,990,100				
								OTHER VISIBLE	0	0	0.00	$ 159,900	$ -				
								COMPLAINT OF PAIN	0	0	0.00	$ 90,900	$ -				
								PDO	0	0	0.00	$ 14,900	$ -				
-	Bike+Ped	Install RRFB at crosswalk across Main St and install continental crosswalk across Locust St	Install/upgrade pedestrian crossing at uncontrolled locations (with enhanced safety features)	NS22PB	20	0.65	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 1,990,100	1 RRFB	$ 54,000	$ 54,000	**37**
								SEVERE	1	0.35	0.70	$ 2,843,000	$ 1,990,100				
								OTHER VISIBLE	0	0	0.00	$ 159,900	$ -				
								COMPLAINT OF PAIN	0	0	0.00	$ 90,900	$ -				
								PDO	0	0	0.00	$ 14,900	$ -				
-	Dark	Install additional intersection lighting	Add intersection Lighting	R01	20	0.60	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 2,274,400	2 Luminaires	$ 19,500	$ 39,000	**58**
								SEVERE	1	0.4	0.80	$ 2,843,000	$ 2,274,400				
								OTHER VISIBLE	0	0	0.00	$ 159,900	$ -				
								COMPLAINT OF PAIN	0	0	0.00	$ 90,900	$ -				
								PDO	0	0	0.00	$ 14,900	$ -				
MUTCD Signs: R2-1, W2-2, W11-2 and W16-9P	All	Install intersection ahead warning signage and speed limit signs on the Main St approaches	Install/upgrade larger or additional stop signs or other intersection warning/regulatory signs	NS06	10	0.85	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 953,310	8 Signs	$ 750	$ 6,000	**159**
								SEVERE	1	0.15	0.30	$ 2,843,000	$ 852,900				
								OTHER VISIBLE	2	0.3	0.60	$ 159,900	$ 95,940				
								COMPLAINT OF PAIN	0	0	0.00	$ 90,900	$ -				
								PDO	1	0.15	0.30	$ 14,900	$ 4,470				
Parked vehicles at the dealerships block line of sight	All	Improve Sight Triangles to Intersection	Improve sight distance to intersection (Clear Sight Triangles)	NS11	10	0.80	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 81,840	150 LF of Striping and 2 Signs	-	$ 1,275	**64**
								SEVERE	0	0	0.00	$ 2,843,000	$ -				
								OTHER VISIBLE	1	0.2	0.40	$ 159,900	$ 63,960				
								COMPLAINT OF PAIN	0	0	0.00	$ 90,900	$ -				
								PDO	3	0.6	1.20	$ 14,900	$ 17,880				

City of Placerville LRSP
Field Visit 12/5/2023

Unsignalized Intersection

Location: Main Street and Sacramento St
Agency Name: City of Placerville
Contact Name: Melissa McConnell
E-mail: mmcconnell@cityofplacerville.org



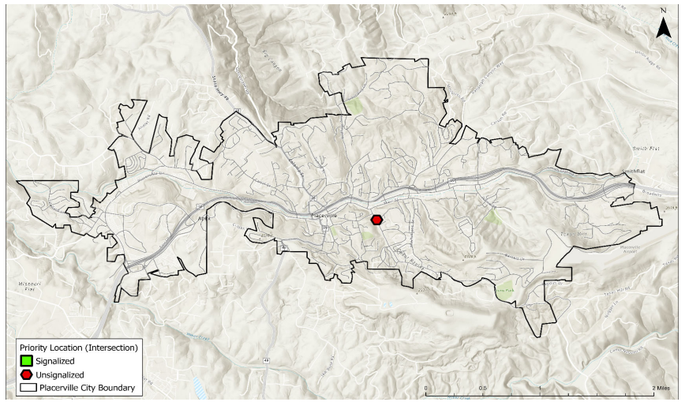
Total Crashes	12
Local CCR Differential	0.51
Equivalent Property Damage Only	217
Fatal	0
Severe Injury	1
Other Visible Injury	1
Complaint of Pain	1
PDO	9
Crash Type	
Broadside	1
Sideswipe	2
Rear End	4
Head On	0
Hit Object	2
Overturned	1
Other	0
Non-Motorist Crashes	
Pedestrian	2
Bicycle	0
Contributing Factors	
Aggressive	4
Impaired	3
Crash Conditions	
Dark	3
Wet	1

NOTES	COLLISION TYPE	RECOMMENDATION	LRSM/CMF COUNTERMEASURE	LRSM #	Expected Life (Years)	CMF	CALTRANS FUNDING	NUMBER OF CRASHES (2018-2022)		NUMBER OF HISTORIC CRASHES REDUCED	10-YEAR CRASH REDUCTION ESTIMATE	CRASH SEVERITY COST	10-YEAR CRASH REDUCTION BENEFIT (2022 $)	TOTAL 10-YEAR CRASH REDUCTION BENEFIT (2022 $)	QUANTITY/ NUMBER OF UNITS	UNIT COST	COST ESTIMATE	BENEFIT/COST
-	Dark	Install intersection lighting	Add intersection lighting (NS.I.)	NS01	20	0.65	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 2,112,460	3 Luminaires	$ 19,500	$ 58,500	**36**
								SEVERE	1	0.35	0.70	$ 2,843,000	$ 1,990,100				
								OTHER VISIBLE	1	0.35	0.70	$ 159,900	$ 111,930				
								COMPLAINT OF PAIN	0	0	0.00	$ 90,900	$ -				
								PDO	1	0.35	0.70	$ 14,900	$ 10,430				
-	All	Install stop bar and centerline at parking lot driveway	Upgrade intersection pavement markings (NS.I.)	NS07	10	0.75	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 1,613,950	65 LF	$ 7	$ 455	**3,547**
								SEVERE	1	0.25	0.50	$ 2,843,000	$ 1,421,500				
								OTHER VISIBLE	1	0.25	0.50	$ 159,900	$ 79,950				
								COMPLAINT OF PAIN	1	0.25	0.50	$ 90,900	$ 45,450				
								PDO	9	2.25	4.50	$ 14,900	$ 67,050				

City of Placerville LRSP
Field Visit 12/5/2023

Unsignalized Intersection

Location: Cedar Ravine Rd and Thompson Way
Agency Name: City of Placerville
Contact Name: Melissa McConnell
E-mail: mmcconnell@cityofplacerville.org



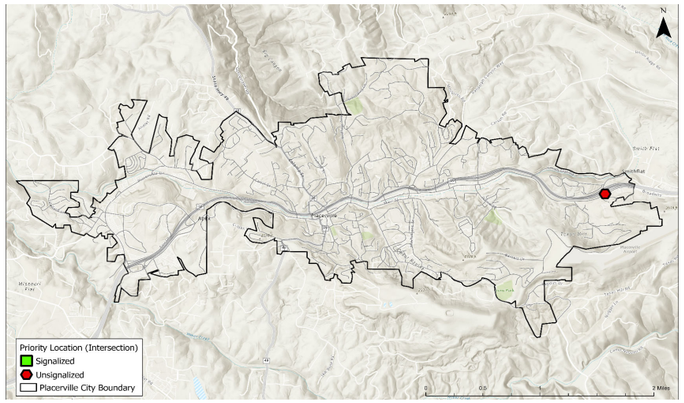
Total Crashes	4
Local CCR Differential	0.17
Equivalent Property Damage Only	14
Fatal	0
Severe Injury	0
Other Visible Injury	1
Complaint of Pain	0
PDO	3
Crash Type	
Broadside	0
Sideswipe	0
Rear End	0
Head On	0
Hit Object	4
Overturned	0
Other	0
Non-Motorist Crashes	
Pedestrian	0
Bicycle	0
Contributing Factors	
Aggressive	0
Impaired	1
Crash Conditions	
Dark	0
Wet	0

NOTES	COLLISION TYPE	RECOMMENDATION	LRSM/CMF COUNTERMEASURE	LRSM #	Expected Life (Years)	CMF	CALTRANS FUNDING	NUMBER OF CRASHES (2018-2022)		NUMBER OF HISTORIC CRASHES REDUCED	10-YEAR CRASH REDUCTION ESTIMATE	CRASH SEVERITY COST	10-YEAR CRASH REDUCTION BENEFIT (2022 $)	TOTAL 10-YEAR CRASH REDUCTION BENEFIT (2022 $)	QUANTITY/ NUMBER OF UNITS	UNIT COST	COST ESTIMATE	BENEFIT/COST
-	All	Relocate telephone pole located on the West side of the crosswalk	Remove or relocate fixed objects outside of Clear Recovery Zone	R02	20	0.65	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 143,220	1 Lump Sum	$ 27,000	$ 27,000	**5.3**
								SEVERE	0	0	0.00	$ 2,843,000	$ -				
								OTHER VISIBLE	1	0.35	0.70	$ 159,900	$ 111,930					
								COMPLAINT OF PAIN	0	0	0.00	$ 90,900	$ -					
								PDO	3	1.05	2.10	$ 14,900	$ 31,290					
-	Bike+Ped	Install RRFB at crosswalk	Install/upgrade pedestrian crossing at uncontrolled locations (with enhanced safety features)	NS22PB	20	0.65	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ -	1 RRFB	$ 54,000	$ 54,000	**0**
								SEVERE	0	0	0.00	$ 2,843,000	$ -				
								OTHER VISIBLE	0	0	0.00	$ 159,900	$ -				
								COMPLAINT OF PAIN	0	0	0.00	$ 90,900	$ -				
								PDO	0	0	0.00	$ 14,900	$ -				
-	Bike+Ped	Install bulb-outs and ADA accessible curb ramps at pedestrian crossing across Cedar Ravine Rd	Install/upgrade pedestrian crossing at uncontrolled locations (with enhanced safety features)	NS21PB	20	0.65	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ -	2 Bulb Outs	$ 10,000	$ 20,000	**0**
								SEVERE	0	0	0.00	$ 2,843,000	$ -				
								OTHER VISIBLE	0	0	0.00	$ 159,900	$ -				
								COMPLAINT OF PAIN	0	0	0.00	$ 90,900	$ -				
								PDO	0	0	0.00	$ 14,900	$ -				
-	All	Install HFST on intersection approaches	Improve pavement friction (High Friction Surface Treatments)	NS12	10	0.45	90%	FATAL	0	0	0.00	$ 1,590,000	$ -	$ 200,421	1 Lump Sum	$ 186,000	$ 186,000	**1.1**
								SEVERE	0	0	0.00	$ 1,590,000	$ -				
								OTHER VISIBLE	1	0.55	1.10	$ 142,301	$ 156,531					
								COMPLAINT OF PAIN	0	0	0.00	$ 80,900	$ -					
								PDO	3	1.65	3.30	$ 13,300	$ 43,890					
To address lane departures	All	Install delineators on intersection centerline approaches	Install delineators, reflectors and/or object markers	R27	10	0.85	90%	FATAL	0	0	0.00	$ 1,590,000	$ -	$ 54,660	0.15 Miles	$ 40,800	$ 6,120	**8.9**
								SEVERE	0	0	0.00	$ 1,590,000	$ -				
								OTHER VISIBLE	1	0.15	0.30	$ 142,301	$ 42,690					
								COMPLAINT OF PAIN	0	0	0.00	$ 80,900	$ -					
								PDO	3	0.45	0.90	$ 13,300	$ 11,970					

City of Placerville LRSP
Field Visit 12/5/2023

Unsignalized Intersection

Location: Broadway and Monterey Rd/Point View Dr
Agency Name: City of Placerville
Contact Name: Melissa McConnell
E-mail: mmcconnell@cityofplacerville.org



Total Crashes	5
Local CCR Differential	0.11
Equivalent Property Damage Only	15
Fatal	0
Severe Injury	0
Other Visible Injury	0
Complaint of Pain	2
PDO	3
Crash Type	
Broadside	2
Sideswipe	0
Rear End	1
Head On	0
Hit Object	0
Overturned	0
Other	2
Non-Motorist Crashes	
Pedestrian	0
Bicycle	0
Contributing Factors	
Aggressive	1
Impaired	1
Crash Conditions	
Dark	4
Wet	0

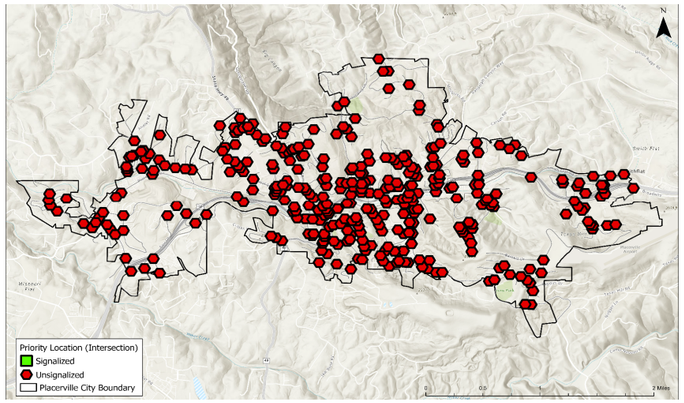
NOTES	COLLISION TYPE	RECOMMENDATION	LRSM/CMF COUNTERMEASURE	LRSM #	Expected Life (Years)	CMF	CALTRANS FUNDING	NUMBER OF CRASHES (2018-2022)		NUMBER OF HISTORIC CRASHES REDUCED	10-YEAR CRASH REDUCTION ESTIMATE	CRASH SEVERITY COST	10-YEAR CRASH REDUCTION BENEFIT (2022 $)	TOTAL 10-YEAR CRASH REDUCTION BENEFIT (2022 $)	QUANTITY/ NUMBER OF UNITS	UNIT COST	COST ESTIMATE	BENEFIT/COST
-	Dark	Install intersection lighting	Add intersection lighting (NS.I.)	NS01	20	0.65	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 148,120	3 Luminaires	$ 19,500	$ 58,500	**2.5**
								SEVERE	0	0	0.00	$ 2,843,000	$ -				
								OTHER VISIBLE	0	0	0.00	$ 159,900	$ -				
								COMPLAINT OF PAIN	2	0.7	1.40	$ 90,900	$ 127,260				
								PDO	2	0.7	1.40	$ 14,900	$ 20,860				
-	All	Install retro-reflective signs and strips on stop sign posts	Install/upgrade larger or additional stop signs or other intersection warning/regulatory signs	NS06	10	0.85	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 67,950	6 Strips and Signs	$ 450	$ 2,700	**25.2**
								SEVERE	0	0	0.00	$ 2,843,000	$ -				
								OTHER VISIBLE	0	0	0.00	$ 159,900	$ -				
								COMPLAINT OF PAIN	2	0.3	0.60	$ 90,900	$ 54,540				
								PDO	3	0.45	0.90	$ 14,900	$ 13,410				
-	All	Remove the old striping on the SB approach	-	-	-	-	-	FATAL	0	-	-	$ 2,843,000	-	$ -	98 SQFT	$ 15	$ 1,460	**-**
								SEVERE	0	-	-	$ 2,843,000	-				
								OTHER VISIBLE	0	-	-	$ 159,900	-				
								COMPLAINT OF PAIN	2	-	-	$ 90,900	-				
								PDO	3	-	-	$ 14,900	-				

NOTE: BCR can only be calculated for improvements that have a corresponding countermeasure in the LRSM.

City of Placerville LRSP
Field Visit 12/5/2023

Citywide Systemic - Unsignalized Intersections

Location: Citywide Unsignalized Intersections
Agency Name: City of Placerville
Contact Name: Melissa McConnell
E-mail: mmcconnell@cityofplacerville.org



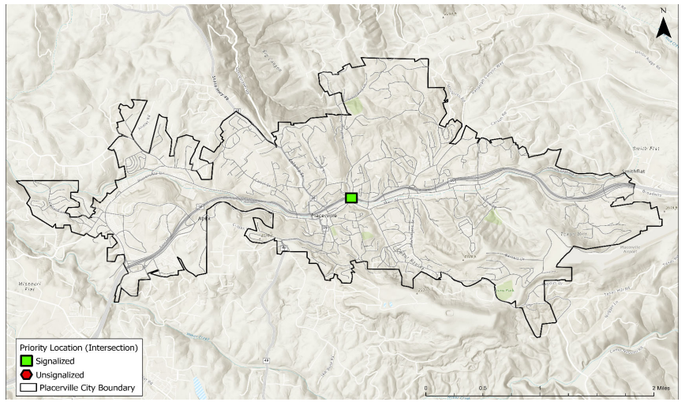
Total Crashes	187
Local CCR Differential	-
Equivalent Property Damage Only	1781
Fatal	3
Severe Injury	3
Other Visible Injury	29
Complaint of Pain	34
PDO	118
Crash Type	
Broadside	31
Sideswipe	18
Rear End	45
Head On	10
Hit Object	51
Overturned	7
Other	10
Non-Motorist Crashes	
Pedestrian	10
Bicycle	4
Contributing Factors	
Aggressive	59
Impaired	29
Crash Conditions	
Dark	42
Wet	22

NOTES	COLLISION TYPE	RECOMMENDATION	LRSM/CMF COUNTERMEASURE	LRSM #	Expected Life (Years)	CMF	CALTRANS FUNDING	NUMBER OF CRASHES (2018-2022)		NUMBER OF HISTORIC CRASHES REDUCED	10-YEAR CRASH REDUCTION ESTIMATE	CRASH SEVERITY COST	10-YEAR CRASH REDUCTION BENEFIT (2022 $)	TOTAL 10-YEAR CRASH REDUCTION BENEFIT (2022 $)	QUANTITY/ NUMBER OF UNITS	UNIT COST	COST ESTIMATE	BENEFIT/COST
-	Dark	Install retro-reflective signs and retro-reflective strips on stop sign posts	Install/upgrade larger or additional stop signs or other intersection warning/regulatory signs	NS06	10	0.85	90%	FATAL	3	0.45	0.90	$ 2,843,000	$ 2,558,700	$ 7,963,170	1127 Retroreflective Strips and 1127 Retroreflective Signs	$450 per strip and $750 per Sign	$ 1,352,400	**5.9**
								SEVERE	3	0.45	0.90	$ 2,843,000	$ 2,558,700					
								OTHER VISIBLE	29	4.35	8.70	$ 159,900	$ 1,391,130					
								COMPLAINT OF PAIN	34	5.1	10.20	$ 90,900	$ 927,180					
								PDO	118	17.7	35.40	$ 14,900	$ 527,460					
-	Dark	Install retro-reflective stop bars and pavement markings	Upgrade intersection pavement markings (NS.I.)	NS07	10	0.75	90%	FATAL	3	0.75	1.50	$ 2,843,000	$ 4,264,500	$ 13,271,950	41,700 SQFT	$ 8	$ 333,592	**39.8**
								SEVERE	3	0.75	1.50	$ 2,843,000	$ 4,264,500					
								OTHER VISIBLE	29	7.25	14.50	$ 159,900	$ 2,318,550					
								COMPLAINT OF PAIN	34	8.5	17.00	$ 90,900	$ 1,545,300					
								PDO	118	29.5	59.00	$ 14,900	$ 879,100					

City of Placerville LRSP
Field Visit 12/5/2023

Signalized Intersection

Location: US-50 and Bedford Ave
Agency Name: City of Placerville
Contact Name: Melissa McConnell
E-mail: mmcconnell@cityofplacerville.org



Total Crashes	24
Local CCR Differential	-0.01
Equivalent Property Damage Only	75
Fatal	0
Severe Injury	0
Other Visible Injury	1
Complaint of Pain	8
PDO	15
Crash Type	
Broadside	3
Sideswipe	3
Rear End	14
Head On	0
Hit Object	2
Overturned	0
Other	2
Non-Motorist Crashes	
Pedestrian	0
Bicycle	0
Contributing Factors	
Aggressive	16
Impaired	2
Crash Conditions	
Dark	6
Wet	3

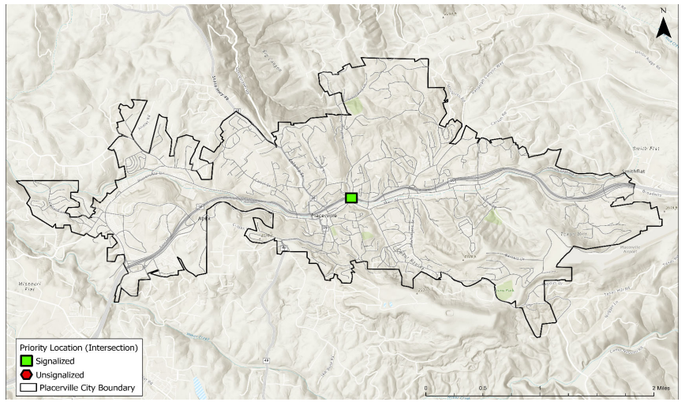
NOTES	COLLISION TYPE	RECOMMENDATION	LRSM/CMF COUNTERMEASURE	LRSM #	Expected Life (Years)	CMF	CALTRANS FUNDING	NUMBER OF CRASHES (2018-2022)		NUMBER OF HISTORIC CRASHES REDUCED	10-YEAR CRASH REDUCTION ESTIMATE	CRASH SEVERITY COST	10-YEAR CRASH REDUCTION BENEFIT (2022 $)	TOTAL 10-YEAR CRASH REDUCTION BENEFIT (2022 $)	QUANTITY/ NUMBER OF UNITS	UNIT COST	COST ESTIMATE	BENEFIT/COST
Cost varies depending on if new pole is required.	All	Install supplemental signal head on the post which faces westbound traffic (the signal will face eastbound traffic). Install supplemental signal head for second westbound through lane.	Improve signal hardware: lenses, back-plates with retroreflective borders, mounting, size, and number	S02	10	0.85	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 333,180	2 Signal Head	$ 8,000	$ 16,000	**21**
								SEVERE	0	0	0.00	$ 2,843,000	$ -				
								OTHER VISIBLE	1	0.15	0.30	$ 159,900	$ 47,970				
								COMPLAINT OF PAIN	8	1.2	2.40	$ 90,900	$ 218,160				
								PDO	15	2.25	4.50	$ 14,900	$ 67,050				
-	All	Install "Prepare to stop when flashing" beacon assembly to WB approach OR additional signal ahead flashing beacon	Install flashing beacons as advance warning (S.I.)	S10	10	0.70	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 666,360	1 Beacon	$ 10,200	$ 10,200	**65**
								SEVERE	0	0	0.00	$ 2,843,000	$ -				
								OTHER VISIBLE	1	0.3	0.60	$ 159,900	$ 95,940				
								COMPLAINT OF PAIN	8	2.4	4.80	$ 90,900	$ 436,320				
								PDO	15	4.5	9.00	$ 14,900	$ 134,100				
Prevent rear-ends by reducing braking distance	All	Install High Friction Surface Treatment on intersection approaches	Improve pavement friction (High Friction Surface Treatments)	S11	10	0.45	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 1,221,660	1 Lump Sum	$ 186,000	$ 186,000	**7**
								SEVERE	0	0	0.00	$ 2,843,000	$ -				
								OTHER VISIBLE	1	0.55	1.10	$ 159,900	$ 175,890				
								COMPLAINT OF PAIN	8	4.4	8.80	$ 90,900	$ 799,920				
								PDO	15	8.25	16.50	$ 14,900	$ 245,850				
-	All	Refresh striping with high-visibility (crosswalks, pavement markings, striping, and advanced stop bars)	-	-	-	-	-	FATAL	0	-	-	$ 2,843,000	-	$ -	3900 LF and 1000 SQFT of striping	-	$ 15,800	**0.0**
								SEVERE	0	-	-	$ 2,843,000	-					
								OTHER VISIBLE	1	-	-	$ 159,900	-					
								COMPLAINT OF PAIN	8	-	-	$ 90,900	-					
								PDO	15	-	-	$ 14,900	-					
-	All	Extend the EB Right-Turn Pocket to prevent queue from backing up into through lane	-	-	-	-	-	FATAL	0	-	-	$ 2,843,000	-	$ -	-	-	-	**-**
								SEVERE	0	-	-	$ 2,843,000	-					
								OTHER VISIBLE	1	-	-	$ 159,900	-					
								COMPLAINT OF PAIN	8	-	-	$ 90,900	-					
								PDO	15	-	-	$ 14,900	-					
-	All	Install changeable message board on WB approach (potential location is Carson Rd overcrossing)	-	-	-	-	-	FATAL	0	-	-	$ 2,843,000	-	$ -	-	-	-	**-**
								SEVERE	0	-	-	$ 2,843,000	-					
								OTHER VISIBLE	1	-	-	$ 159,900	-					
								COMPLAINT OF PAIN	8	-	-	$ 90,900	-					
								PDO	15	-	-	$ 14,900	-					

NOTE: BCR can only be calculated for improvements that have a corresponding countermeasure in the LRSM.

City of Placerville LRSP
Field Visit 12/5/2023

Signalized Intersection

Location: US-50 and Bedford Ave
Agency Name: City of Placerville
Contact Name: Melissa McConnell
E-mail: mmcconnell@cityofplacerville.org



Total Crashes	24
Local CCR Differential	-0.01
Equivalent Property Damage Only	75
Fatal	0
Severe Injury	0
Other Visible Injury	1
Complaint of Pain	8
PDO	15
Crash Type	
Broadside	3
Sideswipe	3
Rear End	14
Head On	0
Hit Object	2
Overturned	0
Other	2
Non-Motorist Crashes	
Pedestrian	0
Bicycle	0
Contributing Factors	
Aggressive	16
Impaired	2
Crash Conditions	
Dark	6
Wet	3

NOTES	COLLISION TYPE	RECOMMENDATION	LRSM/CMF COUNTERMEASURE	LRSM #	Expected Life (Years)	CMF	CALTRANS FUNDING	NUMBER OF CRASHES (2018-2022)		NUMBER OF HISTORIC CRASHES REDUCED	10-YEAR CRASH REDUCTION ESTIMATE	CRASH SEVERITY COST	10-YEAR CRASH REDUCTION BENEFIT (2022 $)	TOTAL 10-YEAR CRASH REDUCTION BENEFIT (2022 $)	QUANTITY/ NUMBER OF UNITS	UNIT COST	COST ESTIMATE	BENEFIT/COST
-	All	Trim back vegetation to improve signal visibility	-	-	-	-	-	FATAL	0	-	-	$ 2,843,000	-	$ -	-	-	$ 2,000	-
								SEVERE	0	-	-	$ 2,843,000	-					
								OTHER VISIBLE	1	-	-	$ 159,900	-					
								COMPLAINT OF PAIN	8	-	-	$ 90,900	-					
								PDO	15	-	-	$ 14,900	-					

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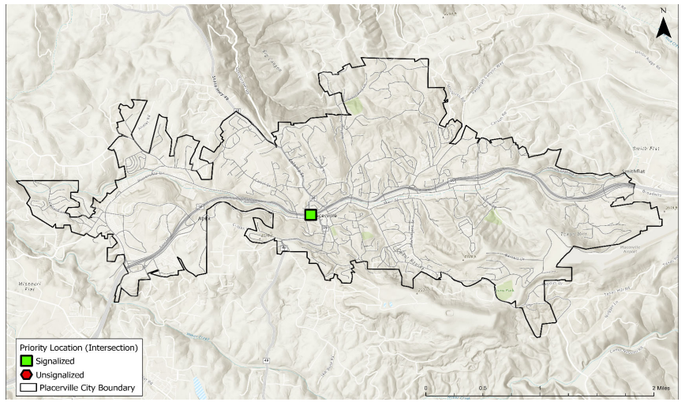
Kimley»Horn

City of Placerville LRSP
Field Visit 12/5/2023

Signalized Intersection

Location: US-50 and Spring St
Agency Name: City of Placerville
Contact Name: Melissa McConnell
E-mail: mmcconnell@cityofplacerville.org



Total Crashes	21
Local CCR Differential	-0.07
Equivalent Property Damage Only	61
Fatal	0
Severe Injury	0
Other Visible Injury	2
Complaint of Pain	4
PDO	15
Crash Type	
Broadside	1
Sideswipe	4
Rear End	12
Head On	1
Hit Object	0
Overturned	0
Other	2
Non-Motorist Crashes	
Pedestrian	1
Bicycle	0
Contributing Factors	
Aggressive	8
Impaired	4
Crash Conditions	
Dark	3
Wet	1

NOTES	COLLISION TYPE	RECOMMENDATION	LRSM/CMF COUNTERMEASURE	LRSM #	Expected Life (Years)	CMF	CALTRANS FUNDING	NUMBER OF CRASHES (2018-2022)		NUMBER OF HISTORIC CRASHES REDUCED	10-YEAR CRASH REDUCTION ESTIMATE	CRASH SEVERITY COST	10-YEAR CRASH REDUCTION BENEFIT (2022 $)	TOTAL 10-YEAR CRASH REDUCTION BENEFIT (2022 $)	QUANTITY/ NUMBER OF UNITS	UNIT COST	COST ESTIMATE	BENEFIT/COST
Cost varies depending on if new pole is required.	All	Install supplemental signal head on the post which faces eastbound traffic (the signal will face westbound traffic). Install supplemental signal head for second westbound through lane.	Improve signal hardware: lenses, back-plates with retroreflective borders, mounting, size, and number	S02	10	0.85	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 272,070	2 Signal Head	$ 8,000	$ 16,000	**17**
								SEVERE	0	0	0.00	$ 2,843,000	$ -				
								OTHER VISIBLE	2	0.3	0.60	$ 159,900	$ 95,940				
								COMPLAINT OF PAIN	4	0.6	1.20	$ 90,900	$ 109,080				
								PDO	15	2.25	4.50	$ 14,900	$ 67,050				
-	Bike+Ped	Install pedestrian countdown heads at existing crosswalks	Install pedestrian countdown signal heads	S17PB	20	0.75	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 79,950	1 Lump Sum	$ 43,680	$ 43,680	**1.8**
								SEVERE	0	0	0.00	$ 2,843,000	$ -				
								OTHER VISIBLE	1	0.25	0.50	$ 159,900	$ 79,950				
								COMPLAINT OF PAIN	0	0	0.00	$ 90,900	$ -				
								PDO	0	0	0.00	$ 14,900	$ -				
Prevent rear-ends by reducing braking distance	All	Install High Friction Surface Treatment on intersection approaches	Improve pavement friction (High Friction Surface Treatment)	S11	10	0.45	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 997,590	1 Lump Sum	$ 186,000	$ 186,000	**5.4**
								SEVERE	0	0	0.00	$ 2,843,000	$ -				
								OTHER VISIBLE	2	1.1	2.20	$ 159,900	$ 351,780				
								COMPLAINT OF PAIN	4	2.2	4.40	$ 90,900	$ 399,960				
								PDO	15	8.25	16.50	$ 14,900	$ 245,850				
-	All	Install retro-reflective curve ahead warning signs with reflective strips on posts	Install/Upgrade signs with new fluorescent sheeting (regulatory or warning)	R22	10	0.85	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 272,070	4 Strips and Signs	$ 450	$ 1,800	**151.2**
								SEVERE	0	0	0.00	$ 2,843,000	$ -				
								OTHER VISIBLE	2	0.3	0.60	$ 159,900	$ 95,940				
								COMPLAINT OF PAIN	4	0.6	1.20	$ 90,900	$ 109,080				
								PDO	15	2.25	4.50	$ 14,900	$ 67,050				
-	All	Refresh striping with high-visibility (crosswalks, pavement markings, striping, and advanced stop bars)	-	-	-	-	-	FATAL	0	-	-	$ 2,843,000	-	$ -	6300 LF and 1600 SQFT of striping	$2/LF and $8/SQFT	$ 25,400	-
								SEVERE	0	-	-	$ 2,843,000	-					
								OTHER VISIBLE	2	-	-	$ 159,900	-					
								COMPLAINT OF PAIN	4	-	-	$ 90,900	-					
								PDO	15	-	-	$ 14,900	-					
-	All	Replace signs on mast arms with larger/reflective	-	-	-	-	-	FATAL	0	-	-	$ 2,843,000	-	$ -	10 Signs	$ 450	$ 4,500	-
								SEVERE	0	-	-	$ 2,843,000	-					
								OTHER VISIBLE	2	-	-	$ 159,900	-					
								COMPLAINT OF PAIN	4	-	-	$ 90,900	-					
								PDO	15	-	-	$ 14,900	-					

NOTE: BCR can only be calculated for improvements that have a corresponding countermeasure in the LRSM.

City of Placerville LRSP
Field Visit 12/5/2023

Signalized Intersection

Location: US-50 and Spring St
Agency Name: City of Placerville
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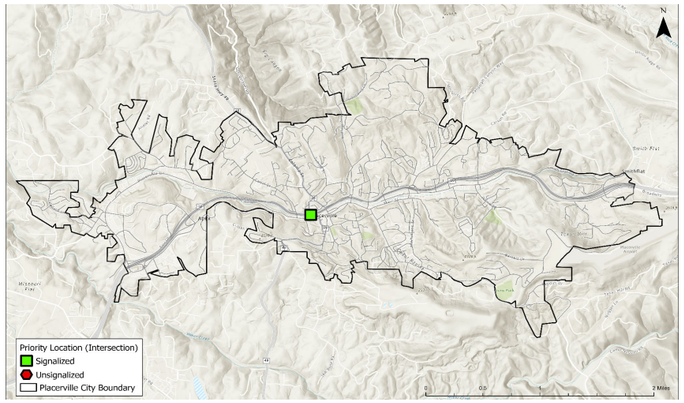

Total Crashes	21
Local CCR Differential	-0.07
Equivalent Property Damage Only	61
Fatal	0
Severe Injury	0
Other Visible Injury	2
Complaint of Pain	4
PDO	15
Crash Type	
Broadside	1
Sideswipe	4
Rear End	12
Head On	1
Hit Object	0
Overturned	0
Other	2
Non-Motorist Crashes	
Pedestrian	1
Bicycle	0
Contributing Factors	
Aggressive	8
Impaired	4
Crash Conditions	
Dark	3
Wet	1

NOTES	COLLISION TYPE	RECOMMENDATION	LRSM/CMF COUNTERMEASURE	LRSM #	Expected Life (Years)	CMF	CALTRANS FUNDING	NUMBER OF CRASHES (2018-2022)		NUMBER OF HISTORIC CRASHES REDUCED	10-YEAR CRASH REDUCTION ESTIMATE	CRASH SEVERITY COST	10-YEAR CRASH REDUCTION BENEFIT (2022 $)	TOTAL 10-YEAR CRASH REDUCTION BENEFIT (2022 $)	QUANTITY/ NUMBER OF UNITS	UNIT COST	COST ESTIMATE	BENEFIT/COST
-	All	Trim back vegetation to improve signal visibility	-	-	-	-	-	FATAL	0	-	-	$ 2,843,000	-	$ -	-	-	$ 2,000	-
								SEVERE	0	-	-	$ 2,843,000	-					
								OTHER VISIBLE	2	-	-	$ 159,900	-					
								COMPLAINT OF PAIN	4	-	-	$ 90,900	-					
								PDO	15	-	-	$ 14,900	-					

NOTE: BCR can only be calculated for improvements that have a corresponding countermeasure in the LRSM.

City of Placerville LRSP
Field Visit 12/5/2023

Signalized Intersection

Location: US-50 and Canal St
Agency Name: City of Placerville
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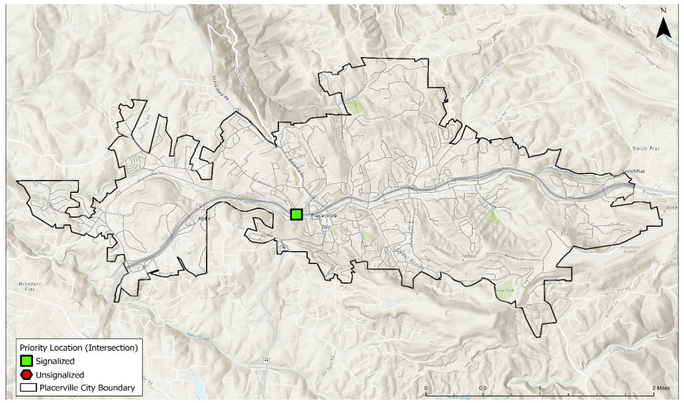

Total Crashes	14
Local CCR Differential	0.11
Equivalent Property Damage Only	44
Fatal	0
Severe Injury	0
Other Visible Injury	1
Complaint of Pain	4
PDO	9
Crash Type	
Broadside	2
Sideswipe	0
Rear End	4
Head On	1
Hit Object	4
Overturned	0
Other	3
Non-Motorist Crashes	
Pedestrian	0
Bicycle	0
Contributing Factors	
Aggressive	5
Impaired	1
Crash Conditions	
Dark	5
Wet	6

NOTES	COLLISION TYPE	RECOMMENDATION	LRSM/CMF COUNTERMEASURE	LRSM #	Expected Life (Years)	CMF	CALTRANS FUNDING	NUMBER OF CRASHES (2018-2022)		NUMBER OF HISTORIC CRASHES REDUCED	10-YEAR CRASH REDUCTION ESTIMATE	CRASH SEVERITY COST	10-YEAR CRASH REDUCTION BENEFIT (2022 $)	TOTAL 10-YEAR CRASH REDUCTION BENEFIT (2022 $)	QUANTITY/ NUMBER OF UNITS	UNIT COST	COST ESTIMATE	BENEFIT/COST
Cost varies depending on if new pole is required.	All	Install supplemental signal head on the post which faces westbound traffic (the signal will face eastbound traffic). Install supplemental signal head for second westbound through lane.	Improve signal hardware: lenses, back-plates with retroreflective borders, mounting, size, and number	S02	10	0.85	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 197,280	2 Signal Head	$ 8,000	$ 16,000	**12**
								SEVERE	0	0	0.00	$ 2,843,000	$ -				
								OTHER VISIBLE	1	0.15	0.30	$ 159,900	$ 47,970				
								COMPLAINT OF PAIN	4	0.6	1.20	$ 90,900	$ 109,080				
								PDO	9	1.35	2.70	$ 14,900	$ 40,230				
-	All	Install supplemental intersection ahead beacon assembly to EB US-50 approach	Install flashing beacons as advance warning (S.I.)	S10	10	0.70	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 394,560	1 Beacon	$ 10,200	$ 10,200	**39**
								SEVERE	0	0	0.00	$ 2,843,000	$ -				
								OTHER VISIBLE	1	0.3	0.60	$ 159,900	$ 95,940				
								COMPLAINT OF PAIN	4	1.2	2.40	$ 90,900	$ 218,160				
								PDO	9	2.7	5.40	$ 14,900	$ 80,460				
	Bike+Ped	Install pedestrian countdown heads	Install pedestrian countdown signal heads	S17PB	20	0.75	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 79,950	1 Lump Sum	$ 43,680	$ 43,680	**1.8**
								SEVERE	0	0	0.00	$ 2,843,000	$ -				
								OTHER VISIBLE	1	0.25	0.50	$ 159,900	$ 79,950				
								COMPLAINT OF PAIN	0	0	0.00	$ 90,900	$ -				
								PDO	0	0	0.00	$ 14,900	$ -				
Prevent rear-ends by reducing braking distance	All	Install High Friction Surface Treatment on intersection approaches	Improve pavement friction (High Friction Surface Treatments)	S11	10	0.45	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 723,360	1 Lump Sum	$ 186,000	$ 186,000	**3.9**
								SEVERE	0	0	0.00	$ 2,843,000	$ -				
								OTHER VISIBLE	1	0.55	1.10	$ 159,900	$ 175,890				
								COMPLAINT OF PAIN	4	2.2	4.40	$ 90,900	$ 399,960				
								PDO	9	4.95	9.90	$ 14,900	$ 147,510				
-	All	Install retro-reflective curve ahead warning signs with reflective strips on posts	Install/upgrade larger or additional stop signs or other intersection warning/regulatory signs	NS06	10	0.85	90%	FATAL	0	0	0.00	$ 2,843,000	$ -	$ 197,280	4 Strips and Signs	$ 450	$ 1,800	**109.6**
								SEVERE	0	0	0.00	$ 2,843,000	$ -				
								OTHER VISIBLE	1	0.15	0.30	$ 159,900	$ 47,970				
								COMPLAINT OF PAIN	4	0.6	1.20	$ 90,900	$ 109,080				
								PDO	9	1.35	2.70	$ 14,900	$ 40,230				
	All	Refresh striping with high-visibility (crosswalks, pavement markings, striping, and advanced stop bars)	-	-	-	-	-	FATAL	0	-	-	$ 2,843,000	-	$ -	4600 LF and 1300 SQFT of striping	$2 per LF and $8 per SQFT	$ 19,600	**-**
								SEVERE	0	-	-	$ 2,843,000	-				
								OTHER VISIBLE	1	-	-	$ 159,900	-				
								COMPLAINT OF PAIN	4	-	-	$ 90,900	-				
								PDO	9	-	-	$ 14,900	-				

NOTE: BCR can only be calculated for improvements that have a corresponding countermeasure in the LRSM.

City of Placerville LRSP
Field Visit 12/5/2023

Signalized Intersection

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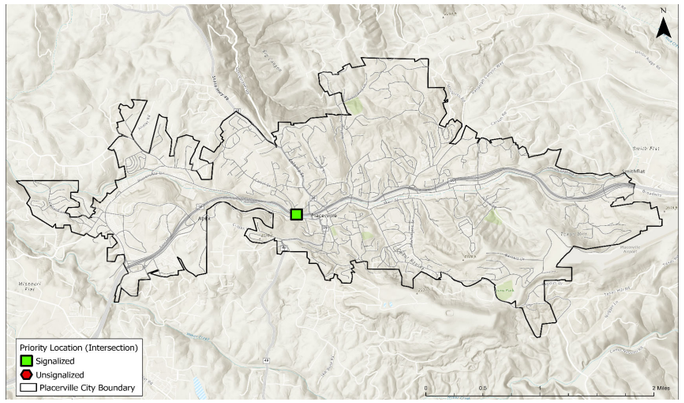

Total Crashes	14
Local CCR Differential	0.11
Equivalent Property Damage Only	44
Fatal	0
Severe Injury	0
Other Visible Injury	1
Complaint of Pain	4
PDO	9
Crash Type	
Broadside	2
Sideswipe	0
Rear End	4
Head On	1
Hit Object	4
Overturned	0
Other	3
Non-Motorist Crashes	
Pedestrian	0
Bicycle	0
Contributing Factors	
Aggressive	5
Impaired	1
Crash Conditions	
Dark	5
Wet	6

NOTES	COLLISION TYPE	RECOMMENDATION	LRSM/CMF COUNTERMEASURE	LRSM #	Expected Life (Years)	CMF	CALTRANS FUNDING	NUMBER OF CRASHES (2018-2022)		NUMBER OF HISTORIC CRASHES REDUCED	10-YEAR CRASH REDUCTION ESTIMATE	CRASH SEVERITY COST	10-YEAR CRASH REDUCTION BENEFIT (2022 $)	TOTAL 10-YEAR CRASH REDUCTION BENEFIT (2022 $)	QUANTITY/ NUMBER OF UNITS	UNIT COST	COST ESTIMATE	BENEFIT/COST
-	All	Replace signs on mast arms with larger/reflective	-	-	-	-	-	FATAL	0	-	-	$ 2,843,000	-	$ -	10 Signs	$ 450	$ 4,500	-
								SEVERE	0	-	-	$ 2,843,000	-					
								OTHER VISIBLE	1	-	-	$ 159,900	-					
								COMPLAINT OF PAIN	4	-	-	$ 90,900	-					
								PDO	9	-	-	$ 14,900	-					
-	Bike+Ped	Install grade separated bike/pedestrian overcrossing over US-50	-	-	-	-	-	FATAL	0	-	-	$ 2,843,000	-	$ -	-	-	-	-
								SEVERE	0	-	-	$ 2,843,000	-					
								OTHER VISIBLE	1	-	-	$ 159,900	-					
								COMPLAINT OF PAIN	4	-	-	$ 90,900	-					
								PDO	9	-	-	$ 14,900	-					

NOTE: BCR can only be calculated for improvements that have a corresponding countermeasure in the LRSM.