

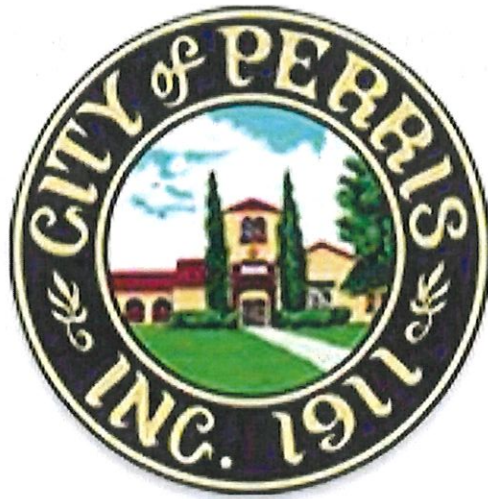
Attachment #2

Final LRSP



# City of Perris

## Local Road Safety Plan (LRSP)



May 2021

Prepared By:

**Kimley»Horn**

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Signature Line

By signing and stamping this Local Road Safety Plan, the engineer is attesting to this report's technical information and engineering data upon which local agency's recommendations, conclusions, and decisions are made.



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# 1 Introduction

The City of Perris is a central community to the Inland Empire due to its commercial and warehousing amenities, transportation links, and recreational attractions. Perris has a population of around 80,000 residents, which has grown roughly 16% since from 2010 to 2019. This quick pace of growth has led to issues and tensions within the City's transportation networks, many of which will be addressed in this report.

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 high-crash locations, high-risk locations, and city-wide trends and patterns. The analysis of crash history throughout the City's transportation network allows for opportunities to: 1) identify factors in the transportation network that inhibit safety for all roadway users, 2) improve safety at specific high-crash locations, and 3) develop safety measures using the five E's of safety: Engineering, Enforcement, Education, Emergency Services, and Emerging Technologies to encourage safer driver behavior and better severity outcomes.

The process and analysis performed for the City's LRSP including initial vision and goals for the LRSP development, crash history analysis, and emphasis areas is included in this Plan. The information compiled will provide a foundation for decision making and prioritization for safety countermeasures and projects that enhance safety for all modes.

Perris has taken steps to enhance all modal safety throughout the City and through this LRSP, is continuing to make safety a priority in its planning processes. This is supported by their California Office of Traffic Safety rankings identifying them in the bottom 30% tier for safety as compared to peer cities in most categories. However, the City ranks well for bicycle & motorcycle crashes. The City builds upon these safety efforts in this LRSP by identifying areas of emphasis and systemic recommendations that can be implemented to enhance safety. This LRSP analyzes the most recent range of SWITRS crash data (January 1, 2015 – December 31, 2019) and roadway improvements to assess historic trends, 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
- Support for grant/funding applications, and
- Help prioritize investments in traffic safety.



## 2 Vision and Goals

The Perris 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, bicyclist, and pedestrians), the interaction of modes, influences on the roadway network from adjacent municipalities, and the potential benefits of safety countermeasures. This effort is intended to use historical data to identify trends and develop a toolbox of countermeasures applicable to conditions in the City that can be used for proactive identification and implementation of opportunities, without relying solely on a reaction and response to crashes as they occur.

The FHWA has found that LRSPs are an effective safety countermeasure that has improved safety performance in cities across the country as they implement them and systemically address the conditions that lead to fatal and severe-injury crashes. They provide a locally developed and customized roadmap to directly address the most common safety challenges in the given jurisdiction. Following discussions with Perris staff and a review of existing plans and policies for the area, the following Vision, Goals, and Objectives have been established for this project.

### **Goal #1: Identify areas with a high risk for crash.**

#### **Objectives:**

- Identify intersections and segments that would most benefit from mitigation.
- Identify areas of interest with respect to safety concerns for vulnerable users (pedestrians and bicyclists).

### **Goal #2: Illustrate the value of a comprehensive safety program and the systemic process.**

#### **Objectives:**

- Demonstrate the systemic process' ability to identify locations with higher risk for crashes based on present characteristics closely associated with severe crashes.
- Demonstrate, through the systemic process, the gaps and data collection activities that can be improved upon.

### **Goal #3: Plan future safety improvements for near-, mid- and long-term.**

#### **Objectives:**

- Identify safety countermeasures for specific locations (case studies).
- Identify safety countermeasures that can be applied city-wide.

### **Goal #4: Define safety projects for future HSIP and other program funding consideration.**

#### **Objectives:**

- Create the outline for a prioritization process that can be used in this and forth-coming cycles to apply for funding.
- Use the systemic process to create Project Case Studies.
- Use Case Studies to apply for HSIP and other funding consideration.
- Demonstrate the correlation between the proposed safety countermeasures with the Vision Zero Initiative and the California State Highway Safety Plan.

## 3 Process

Providing safe, sustainable, and efficient mobility choices for their residents and visitors is a primary goal for the City and their safety partners. The City will continue its collaboration with safety partners to identify and discuss safety issues within the community through the development of the LRSP and its implementation.

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

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 preliminary vision and goals for the LRSP, existing safety efforts, initial crash analysis, and developed emphasis areas. The development of the LRSP recommendations considers the five E's of traffic safety defined by the California Strategic Highway Safety Plan (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 Perris at a systemic level. Using a network screening process, locations within the City that will most likely benefit from safety enhancements will be identified. Using historic crash data, crash risk factors for the entire network are derived. The outcomes will inform the identification and prioritization of engineering and non-infrastructure safety measures that address certain roadway characteristics and related behaviors that contribute to motor vehicle crashes with active transportation users.

This process uses the latest National and State best practices for statistical roadway analysis described as follows.

#### 3.1.1 Local Roads Safety Manual

The *Local Roadway Safety Manual: A Manual for California's Local Road Owners* (Version 1.5, April 2020) purpose is to encourage local agencies to pursue a proactive approach to identifying

and analyzing safety issues, while preparing to compete for project funding opportunities. A proactive approach is defined as analyzing the safety of the entire roadway network through either a one-time, network wide analysis, or by routine analyses of the roadway network.<sup>1</sup>

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

To provide the most benefit and to be competitive for 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. The manual 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 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 a given countermeasure. If more than one countermeasure is under consideration, the LRSM provides guidance on how to apply CMFs appropriately.

### 3.1.2 Highway Safety Manual

“The 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.”<sup>2</sup> 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 to realize a reduction in the frequency of crashes.

The HSM identifies five steps in this process:<sup>3</sup>

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.

<sup>1</sup> Local Roadway Safety Manual (Version 1.5) 2020. Page 5.

<sup>2</sup> AASHTO, *Highway Safety Manual*, 2010, Washington D.C., <http://www.highwaysafetymanual.org/Pages/About.aspx>

<sup>3</sup> AASHTO. *Highway Safety Manual*. 2010. Washington, DC. Page 4-2.

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 principle 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 study uses a method referred to as Critical Crash Rate 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
- Critical Crash Rate (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 study, intersections were grouped by their control type (Signalized, Unsignalized, Roundabout) and segments by their roadway category (Arterial, Collector, Minor Collector, Local). Individual crash rates were calculated for each sub-population. The population level crash rates were then used to assess whether a specific location has more or fewer crashes than expected. These sub-populations were also used to determine typical crash patterns to help identify locations where unusual numbers of specific crash types are seen.

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 1) crash injury (fatal, serious injury, other visible injury, complaint of pain, property damage only), 2) crash type (broadside, rear-end, sideswipe, head-on, hit object, overturned, bicycle, pedestrian, other), 3) environmental factors (lighting, wet roads), and 4) driver behavior (impaired, aggressive, and distracted driving). With these additional factors, the locations were further analyzed and assigned a new rank.

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

### 3.2.2 Critical Crash Rate (CCR) Analysis

Reviewing the number of crashes at a location is a good way to understand the cost to society incurred at the local level but does not give a complete indication of the level of risk for those who use that intersection or roadway segment on a daily basis. The Highway Safety Manual describes the Critical Crash Rate 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 Critical Crash Rate calculation, shown in **Figure 1**, compares the observed crash rate to the expected crash rate at a particular location based on facility type and 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.

**Figure 1: Critical Crash Rate Formula**

$$R_{Ci} = R_a + \left[ P \times \sqrt{\frac{R_a}{MEV_i}} \right] + \left[ \frac{1}{(1.2 \times (MEV_i))} \right]$$

Where,

$R_{Ci}$  = 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 can be calculated using:

- Daily entering volume 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 GIS or tabular form including coordinates or linear measures.

**Strengths**

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

**3.2.3 Probability of Specific Crash Types Exceeding Threshold Proportion**

When analyzing crash data systematically, it is important to identify areas where certain types of crashes are occurring with greater frequency. The Highway Safety Manual 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 (Highway Safety Manual, Chapter 4). The resulting figure allows 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 Highway Safety Manual. This method assigns weighting factors to crashes based on injury level (severe, injury, property damage only) 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 figure 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 figure allows all locations to be compared based on injury crash costs. (Highway Safety Manual, Chapter 4).

## **4 Safety Partners**

As part of the LRSP, local stakeholders were included in the process to ensure the local perspective was kept at the forefront of this planning effort. A stakeholder group of City staff and external partners was formed. This group consisted of members of City staff, representatives from the Riverside Sheriff's Department, Riverside Transit, local school districts, and a representative from the neighboring City of Moreno Valley.

These leaders in the City and community were called together to offer insight on the safety issues present in the city's transportation network. After the initial network screening and safety analysis, the stakeholder group met to discuss potential countermeasures and challenge areas. The summary of the stakeholder meeting(s) are outlined below.

### **4.1 Stakeholder Meeting**

The stakeholder meeting was conducted virtually using the Microsoft Teams platform. At the meeting, stakeholders were introduced to the project and provided an overview of the data used, the required outputs, and the potential outcomes of the study.

In addition to the overview, Stakeholders were asked to provide local insight and knowledge at 10 "case study" locations that were identified after the initial network screening and crash analysis process. Potential countermeasures were recommended and discussed. Additionally, potential emphasis/challenge areas were proposed during the meeting to include semi-truck traffic, pedestrians, bicyclists, aggressive driving, and impaired driving.

Stakeholder feedback regarding the plan and recommendations were reviewed and incorporated into the study process for the development of the LRSP. Most of the feedback received expressed a strong desire to prioritize bicycle safety throughout the City.

## 5 Existing Efforts

Existing plans, policies, and projects that were recently completed, planned, or are on-going within the City of Perris were compiled at the start of the LRSP process in order to gain perspective on the existing efforts for transportation-related improvements within the City. **Table 1** shows the existing documents reviewed in this effort. High-level key points regarding transportation improvements and safety-related topics were identified to inform decision making in this LRSP. Information reviewed included the following:

**Table 1: Existing Documents Reviewed**

Document	Document Year	Agency	Type / Description
Trails Master Plan	2013	City of Perris	Builds upon the City's General Plan Circulation Element to address trails and bikeways for recreational and commuter uses
General Plan - Circulation Element	2008	City of Perris	Sets policies for development of the City's transportation system
Various Specific Plans	1989-2018	City of Perris	Specific Plan (planning documents)
Capital Improvement Program 20/21 Budget	2020	City of Perris	Operating budget for FY 2020-2021
C Street Striping Project	2020	City of Perris	Project
Placentia Avenue Widening Project	2020	City of Perris	Project
I-215 Placentia Avenue Interchange	2020	Riverside County Transportation Commission (RCTC)	Project
Short Range Transit Plan FY20 - FY22	2020-2022	Riverside Transit Agency (RTA)	Implementation and financial plan
RTP 2016-2040 Project List	2016-2040	SCAG	Appendix of the 2016-2040 RTP
Cajalco Road Interim Safety Project	2020	County of Riverside Transportation Dept	Project
Cajalco Road Widening Project	2020	County of Riverside Transportation Dept	Project



Ramona Expressway Resurfacing	2020	County of Riverside Transportation Dept	Project
Ethanac Expressway	2018	County of Riverside Transportation Dept	Project
Transportation Improvement Program 2019/2020	2019 / 2020	County of Riverside Transportation Dept	Project
Traffic Signal Modifications Project	2020	City of Perris	Project
GEAR Project	2019	City of Perris	Project
Perris Blvd Corridor Project	2020	City of Perris	Project
Trails Master Plan	2013	City of Perris	Builds upon the City's General Plan Circulation Element to address trails and bikeways for recreational and commuter uses
Highway Safety Improvement Program (HSIP) Cycle 10	2020-2021	City of Perris	City applied for HSIP Cycle 10 funding for pedestrian and signal improvements throughout the City. The City was awarded funding for these projects in the amount of \$1,423,700.

## 6 Data Summary

As a data driven process, utilizing the most recent and accurate data is crucial. The following section describes the data inputs used for the analysis process of this LRSP.

### 6.1 Roadway Network

The crash analysis is built upon the existing roadway network. **Figure 2** illustrates Perris' roadway network categorized using Caltrans' Classification System. This classification assigned to each corridor roadway segment as either an Arterial, Collector, Minor Collector, or Local road is used in the analysis process. Ultimately, corridors will be compared to roadway segments with similar designations.

### 6.2 Intersections

The crash analysis requires each intersection be classified by type: Signalized or Unsignalized. The safety analysis compares intersection safety performance with to locations with similar control types. This information is also displayed in Figure 2.

### 6.3 Volumes/Count Data

Vehicular count data is used as part of the analysis process to evaluate the impact of traffic flows and understand the natural hierarchy of the roadway network. Count data utilized for this project was pulled from recent traffic counts performed by Advanced Mobility Group for the City of Perris. The volumes were collected at 73 locations from October to December 2020. For locations without volume or count data, other resources were utilized to identify a reasonable assumption for individual corridors and classification types.

### 6.4 Crash Data

Crash data was collected from Crossroads Software for the period from January 1, 2015 through December 31, 2019 in order to have a complete set of crash data for analysis. We utilize five-years of data instead of the standard three to provide more history to evaluate trends or patterns. Analysis of the raw crash data is the first step in understanding the specific and systemic challenges faced throughout the City. Analyzing the five years of data provided insight on the following crash trends and patterns. The density of crashes by intersection and segment can be seen in **Figure 3**.

Figure 2: Functional Classification and Intersection Type

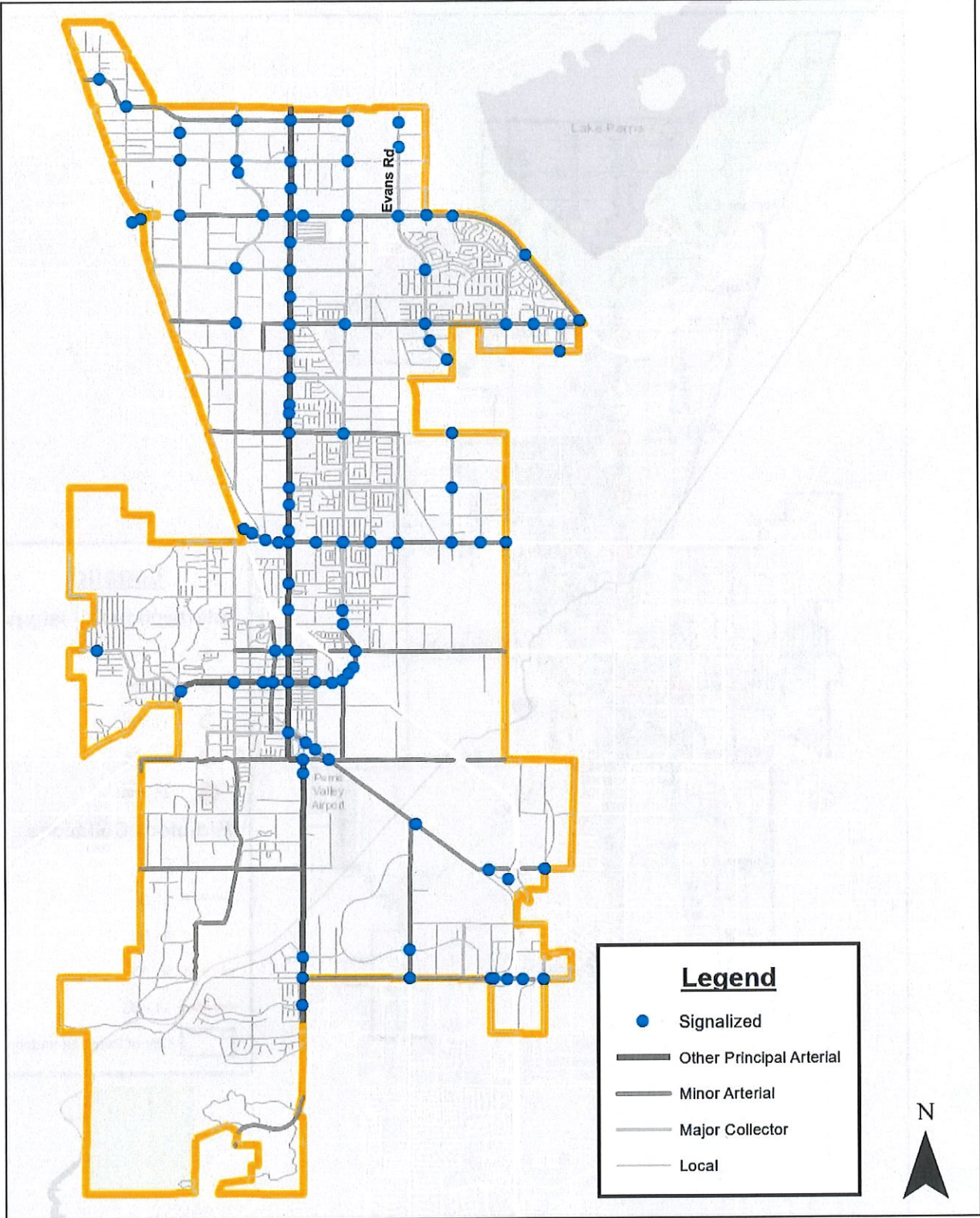
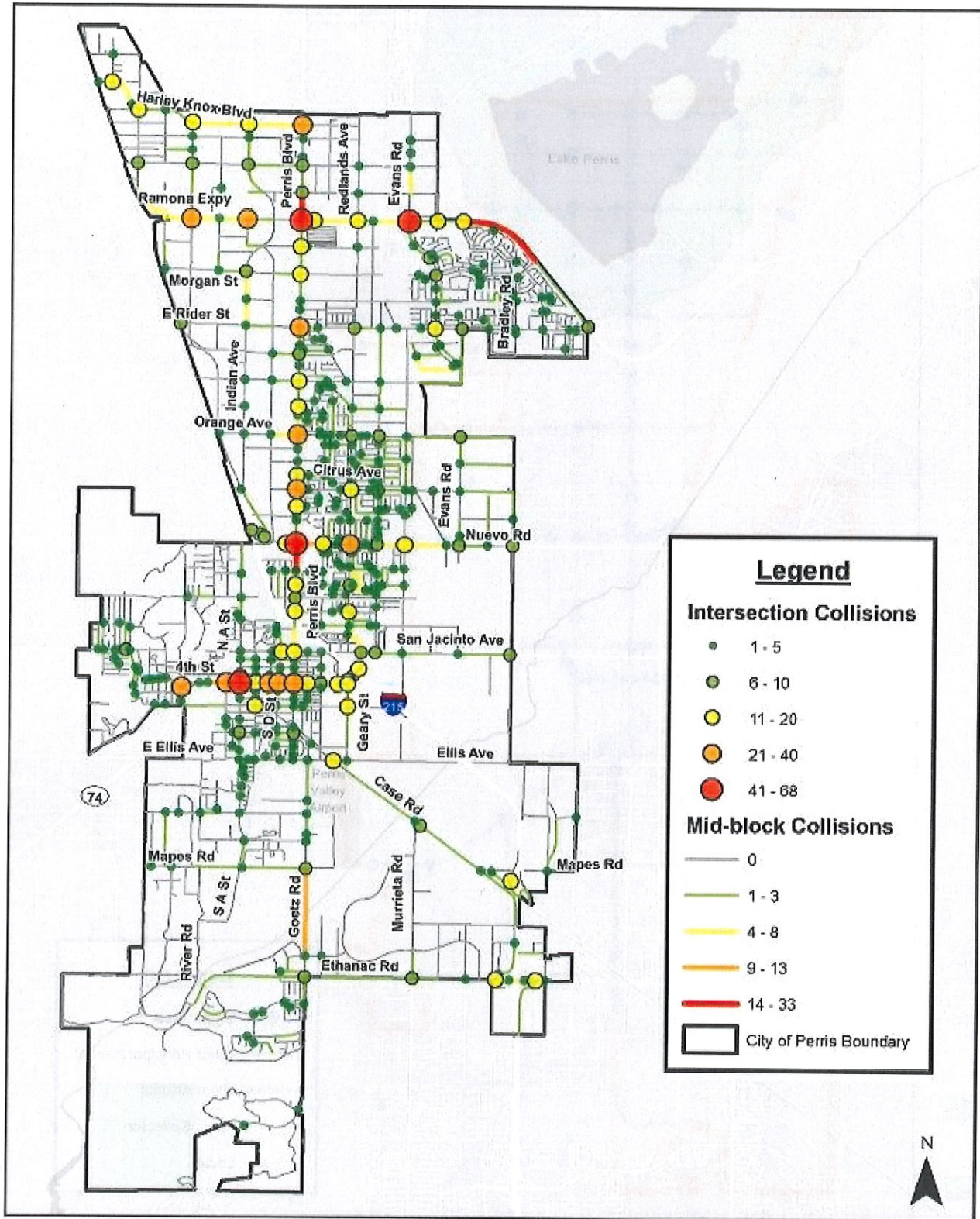


Figure 3: Density of Collisions at Intersection and Segments



## 7 Crash Safety Trends

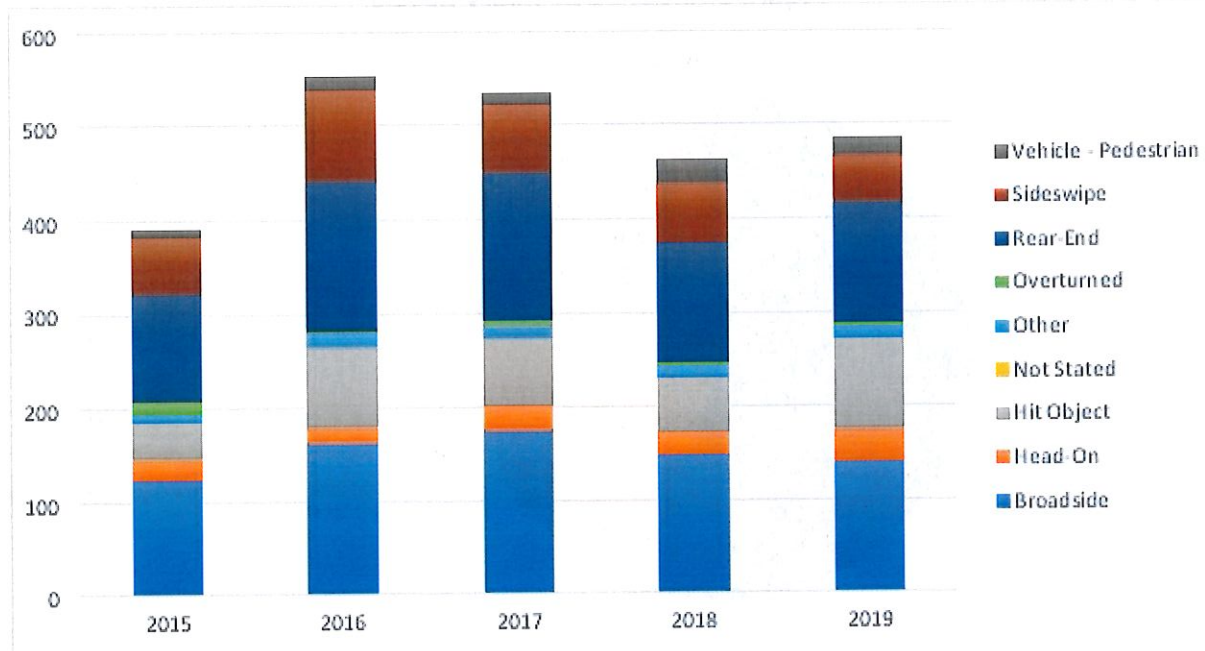
The following section breaks down the crash data for the period from January 1, 2015 through December 31, 2019 by a variety of input factors and user types. This information will be used to highlight areas of concern for the City.

### 7.1 All Crashes

From January 1, 2015 through December 31, 2019, 2,494 crashes occurred within Perris.

**Figure 4** shows the crash types by year. During this time, the most common occurring crash types were Broadsides (31%) and Rear-ends (28%). Although there was a decline in crashes from 2016-2018, the total number of crashes was trending upwards again in 2019.

**Figure 4: Crash Type by Year**



### 7.2 Fatalities

During the study period, 38 fatalities occurred, as seen in **Table 2**. Four involved bicycles and 15 pedestrians. Eight of the fatalities occurred at night without streetlights, and five of these dark crashes involved pedestrians. Three fatalities occurred when it was raining, and the wet road was a factor.

**Table 2: Fatal Crashes Categorized by Modes Involved**

Involved With	# of Fatal Crashes
<b>Bicycle</b>	4
<b>Pedestrian</b>	15
<b>Other Motor Vehicle</b>	11
<b>Parked Motor Vehicle</b>	1
<b>Fixed Object</b>	5

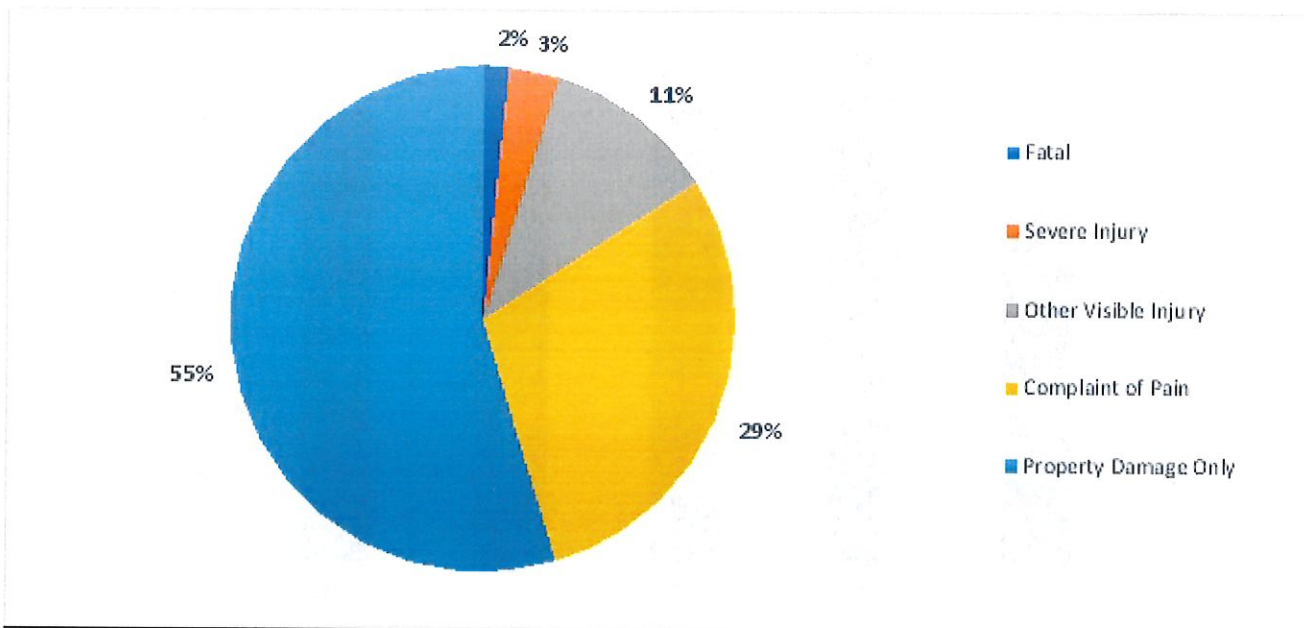
Non - Collision	2
<b>TOTAL</b>	<b>38</b>

### 7.3 Injury Levels

A breakdown of the crash data indicates that more than half of the crashes within Perris only involve property damage (55%). Further evaluation shows the most common property damage only crashes types are: 27% rear-end, 21% sideswipe, 21% broadside, and 19% hit object. A breakdown of crashes by injury levels is shown in **Figure 5**.

Fatalities and severe injuries comprised only 5% of the total crashes. Of the severe injuries, 11 involved pedestrians and two involved bicycles.

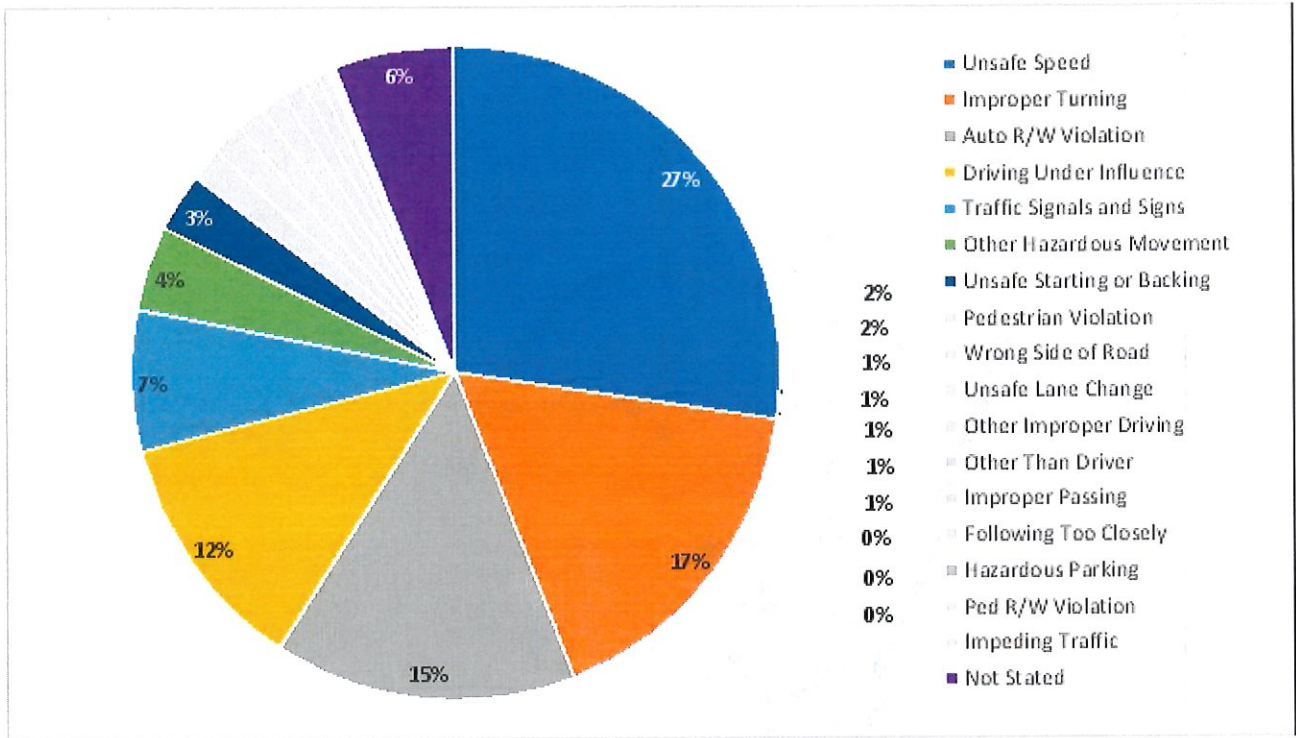
**Figure 5: Crashes by Injury Levels**



### 7.4 Cause of Crash

The highest cause of crashes within Perris is unsafe speed at 27%, and the second highest cause is Improper Turning (17%). The third and fourth highest proportion of crashes are auto right-of-way violation (15%) and driving under the influence (12%), respectively. A breakdown of crashes by cause is shown in **Figure 6**.

Figure 6: Cause of Crashes



### 7.5 Vulnerable Users

Understanding the safety concerns of vulnerable users is important to plan for transportation improvements at all levels. **Figure 7** displays the pedestrian and bicycle crashes within the City.

#### 7.5.1 Pedestrians

Over the study period, 80 crashes occurred involving pedestrians. 59% of the crashes recorded that the pedestrian was either crossing not in a crosswalk or they were in the road. 32% occurred where the pedestrian was utilizing a crosswalk. The remaining were recorded as “not in road”. Pedestrian crashes are concentrated along major corridors. Just under half of the pedestrian crashes occurred along either E 4<sup>th</sup> St (Hwy 74), N Perris Blvd., or Ramona Expwy.

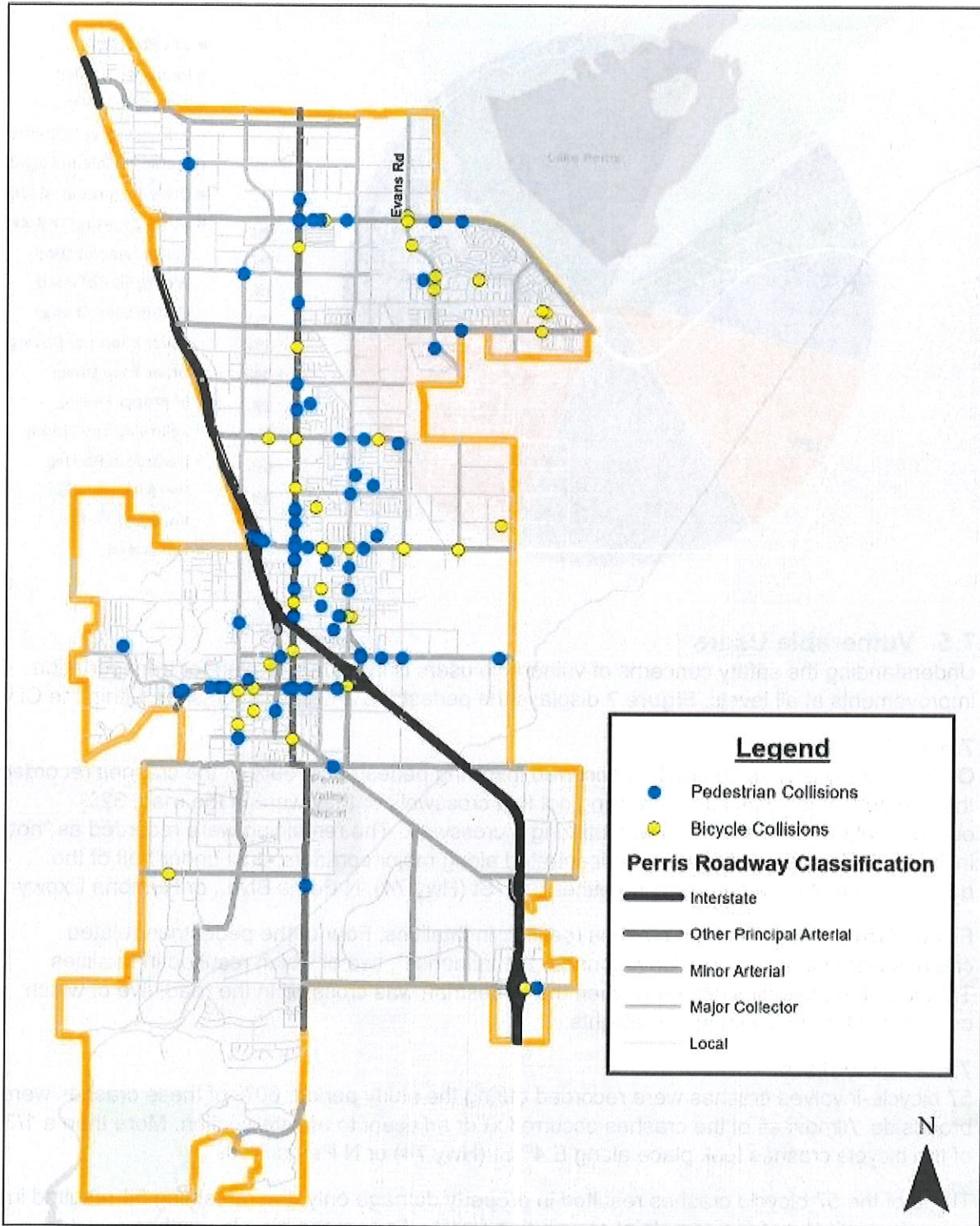
Fifteen (15) of the pedestrian crashes resulted in fatalities. Four of the pedestrian related crashes were identified with “driving under the influence”, two of which resulted in fatalities. Thirteen of the fatalities occurred when the pedestrian was crossing in the road, five of which occurred in the dark without streetlights.

#### 7.5.2 Bicyclists

57 bicycle-involved crashes were recorded during the study period. 60% of these crashes were broadside. Almost all of the crashes occurred at or adjacent to an intersection. More than a 1/3 of the bicycle crashes took place along E 4<sup>th</sup> St (Hwy 74) or N Perris Blvd.

Three of the 57 bicycle crashes resulted in property damage only, the remaining 54 resulted in some form of injury from complaint of pain to a fatality. Four of the bicycle crashes resulted in a fatality, one of which occurred when it was raining.

Figure 7: Bicycle and Pedestrian Crashes





## 7.6 Cars and Trucks

The following highlights additional trends or areas of interest identified in the crash data.

### 7.6.1 Significant Trends for Passenger Vehicles

- Fifteen percent of crashes (382) during the study-period involved a hit-object or overturned vehicle.
- 182 crashes occurred at night when in areas without streetlights (or streetlights were not functioning) or during the dusk/dawn period.

### 7.6.2 Truck Traffic

Four percent of the crashes within Perris were reported to involve a semi-truck. Of these crashes, two resulted in a fatality and five in a severe injury. More than half of the crashes ended in property damage only. Broadsides accounted for 34% of crashes and rear-ends totaled 27%. These crashes occurred throughout the City, but can be found in higher density along the following corridors:

1. Harley Knox Blvd
2. Ramona Expwy
3. N Perris Blvd
4. 4<sup>th</sup> St
5. Goetz Rd (near the Perris Valley Airport)

The primary crash factor as noted in the crash data is listed below in **Table 3**. This is not specifically the truck's action. Unsafe speed and improper turning are the two most prominent causes of crashes where semi-trucks were involved.

**Table 3: Primary Crash Factor**

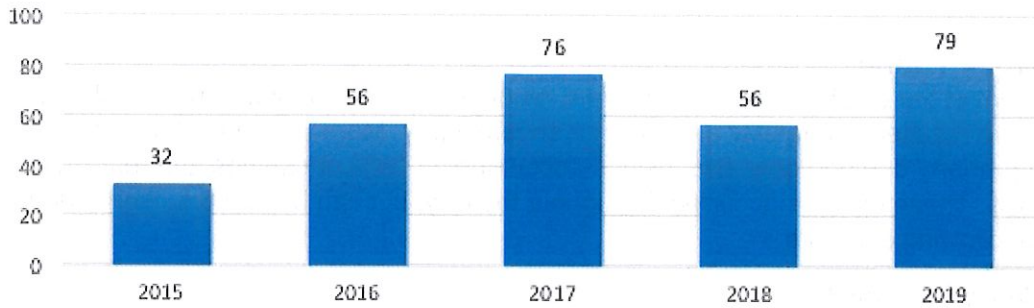
Primary Crash Factor	# of Crashes
Unsafe Speed	20
Improper Turning	18
Auto R/W Violation	15
Driving Under Influence	13
Other Hazardous Movement	7
Traffic Signals and Signs	5
Unsafe Starting or Backing	5
Improper Passing	3
Wrong Side of Road	2
Other Improper Driving	1
Unsafe Lane Change	1
Not Stated	12
<b>TOTAL</b>	<b>102</b>

## 7.7 Behavioral Factors

### 7.7.1 Driving Under the Influence

299 crashes (12%) were reported as the driver being under the influence of alcohol or drugs. Ten of these crashes resulted in a fatality and 22 a severe injury. Almost half of these crashes (144) resulted in Property Damage Only.

**Figure 8: Crashes Reported as Driving Under the Influence by Year**



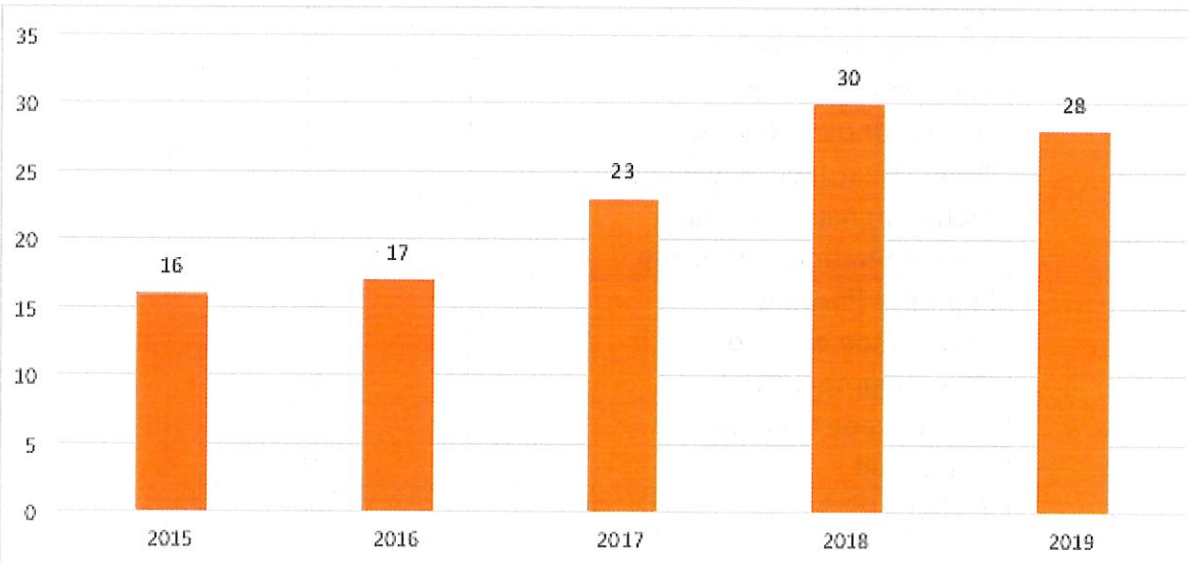
### 7.7.2 Aggressive Driving

Aggressive driving behaviors (unsafe speed or following too closely) accounted for 694 crashes, which is slightly more than a quarter of all crashes within the City. Three resulted in a fatal injury and 10 in a severe injury. Almost 60% of these crashes resulted in property damage only.

### 7.7.3 Distracted Driving

Distracted driving (instances where the driver is not paying attention or is using an electronic device) has been rising as the cause of crashes in recent decades. However, it is generally believed that distracted driving reports are underreported as they are subject to the information able to be gathered at a crash.

**Figure 9: Crashes with Inattention as Primary Crash Factor**



## 7.8 Initial Findings

### 7.8.1 Top Crashes Locations

Through the initial crash and network screening analysis an initial rank of locations of interests was developed. The top locations for intersections and roadway segments by sub-population are identified in **Table 4** and **Table 5**. Locations were only considered if they had three or more crashes to be statistically relevant.

### 7.8.2 Intersections

Table 4: Top Crash Locations - Intersections

INTERSECTION			CRASHES
<b>SIGNALIZED INTERSECTION</b>			
1	N Perris Blvd	Ramona Expy	68
2	W Nuevo Rd	N Perris Blvd	56
3	W 4 <sup>th</sup> St	S A St	52
4	Ramona Expy	Evans Rd	45
5	Orange Ave	N Perris Blvd	34
6	N Webster Ave	Ramona Expy	29
7	E 4 <sup>th</sup> St	S Perris Blvd	27
8	Citrus Ave	N Perris Blvd	26
9	Harley Knox Blvd	N Perris Blvd	26
10	E 4 <sup>th</sup> St	S D St	25
<b>UNSIGNALIZED INTERSECTION</b>			
1	Park Ave	W 4 <sup>th</sup> St	33
2	Navajo Rd	Indian Hills Cir	27
3	Ramona Expy	Indian St	23
4	N Perris Blvd	Avocado Ave	15
5	Geary St	Citrus Ave	14
6	Geary St	E 4 <sup>th</sup> St	13
7	Harley Knox Blvd	N Webster Ave	13
8	S B St	W 7 <sup>th</sup> St	11
9	W 4 <sup>th</sup> St	S B St	11
10	Ethanac Rd	Encanto Dr	11

## 7.8.3 Roadway Segments

Table 5: Top Crash Locations - Segments

SEGMENT	LIMIT 1	LIMIT 2	CRASHES	
<b>PRINCIPAL ARTERIAL</b>				
1	N Perris Blvd	W Bowen Rd	W Nuevo Rd	33
2	N Perris Blvd	Ramona Expy	W Perry St	21
3	W 4 <sup>th</sup> St	Park Ave	W 4 <sup>th</sup> St	13
4	Goetz Rd	Mapes Rd	Fieldstone Dr	9
5	N Perris Blvd	Gallant Fox St	Orange Ave	7
6	N Perris Blvd	San Jacinto Ave	Foss Field Park	7
7	E 4 <sup>th</sup> St	S G St	Wilkerson Ave	6
8	N Perris Blvd	E Morgan St	Sinclair St	3
9	N Perris Blvd	E Jarvis St	W Metz Rd	3
<b>MINOR ARTERIAL</b>				
1	Ramona Expy	Bradley Rd	Evans Pl	22
2	E Nuevo Rd	N Perris Blvd	Ruby Dr	11
3	Ramona Expy	Kitching St	Evans Rd	8
4	Ramona Expy	N Perris Blvd	Redlands Ave	7
5	Harley Knox Blvd	N Webster Ave	Indian Ave	6
6	Ramona Expy	Brennan Ave	N Webster Ave	6
7	Orange Ave	Barrett Ave	N Perris Blvd	6
8	Ramona Expy	Brennan Ave	Indian St	5
9	Harley Knox Blvd	Western Way	W Oleander Ave	5
10	E Nuevo Rd	Wilson Ave		5
<b>MAJOR COLLECTOR</b>				
1	Evans Rd	Perry St	Marbella Gate	8
2	Indian Ave	W Rider St	Morgan St	5
3	Redlands Ave	Dale St	E San Jacinto Ave	4
4	Ethanac Rd	Case Rd	I-215 NB Ramp	4
5	N A St	Serrana Rd	N A St	3
<b>LOCAL</b>				
1	Patterson Ave	W Perry St	Ramona Expy	7
2	Sparrow Way	Curlew St	Barn Owl Dr	4
3	Leopard Ln	Shark St	Mako Ln	4
4	Wilson Ave	Placentia Ave	Wilson Ave	3
5	Dale St	Geary St	La Bonita Ave	3
6	E Jarvis St	N Perris Blvd	E Jarvis St	3
7	Case Rd	Perris Crossing S Entrance	Perris Crossing N Entrance	3

## 8 Emphasis Areas

Emphasis Areas are places where the City of Perris can strategically focus efforts to have a large impact on transportation safety. Emphasis areas were developed by revisiting the Vision and Goals developed at the onset of this planning process and comparing them with the trends and patterns identified in the crash analysis. Where these areas aligned, or major challenges were observed, Emphasis Areas and strategies were developed.

### 8.1 Emphasis Area #1: Commercial Vehicles

**Description:** As a hub for warehousing and goods movement, Perris has a high level of commercial vehicles traffic and crashes involving commercial vehicles. Caltrans has identified commercial vehicles as a challenge area within the SHSP, and defines it as any crash involving a truck, tractor, school bus or other bus.

Four percent of crashes in the City involved a commercial vehicle. Two and five percent of these crashes resulted in fatal and severe injuries, respectively. The two highest crash types for those involving trucks were broadside and rear-end.

#### Goals for Emphasis Area #1:

- Continually identify hot spots and trends of commercial vehicle crashes
- Reduce the frequency of commercial vehicle crashes in the City
- Apply for HSIP and other funding sources to implement countermeasures to reduce commercial vehicle crashes

#### Strategies for Emphasis Area #1:

- Address broadside & rear end crashes involving commercial vehicles by implementing:
  - Advanced dilemma zone detection systems at signalized intersections
  - Signal improvements such as retroreflective backplates & larger signal heads
  - Install radar speed signage of priority corridors
- Identify priority corridors for commercial vehicles and attempt to limit commercial vehicles to those corridors

### 8.2 Emphasis Area #2: Vulnerable Road Users (Pedestrians & Bicyclists)

**Description:** Pedestrians and bicyclists are classified by Caltrans as a vulnerable user, meaning they have the highest potential for severe harm during a crash. These groups need appropriate infrastructure to travel to key destinations such as schools, workplaces, and core commercial areas. The City's Circulation element lays out plans and standards for non-motorized transportation. However, many City roads lack active transportation infrastructures such as sidewalks, crosswalks, bike lanes, intersection control, and speed controls that help provide a safe and comfortable environment for active transportation users. Of the 137 crashes involving vulnerable road users, 19 resulted in a fatal injury and 13 resulted in a severe injury. The City should aim to implement countermeasures to further protect these users from injury.

#### Goals for Emphasis Area #2:

- Improve active transportation infrastructure by adding pedestrian facilities, bike lanes, and other amenities to make it safer for employees and community members to get to key destinations such as school, commercial centers, transit centers, and recreation areas
- Encourage healthier lifestyles through active transportation infrastructure

- Apply for HSIP and other funding to implement countermeasures to address vulnerable road user crashes

### Strategies for Emphasis Area #2:

- Install high-visibility crosswalk markings at the intersection of key destinations
- Ensure all signalized intersections have at least one marked crosswalk
- Provide dedicated pedestrian and bicycle infrastructure to and from bus stops
- Install adequate street lighting
- Widen street shoulders
- Provide signage (e.g., pedestrian crossing ahead) to help drivers expect to slow down for pedestrians and bikes
- Install bicycle lane along key corridors

These strategies will be implemented by the City, while partnering with Caltrans, SCAG, CHP, and other community partners. Funding sources for these strategies may include HSIP, ATP, OTS, and SB1 grant programs.

### 8.3 Emphasis Area #3: Aggressive Driving

**Description:** Aggressive driving, as defined by the Caltrans SHSP, includes several behaviors including speeding, tailgating, and ignoring traffic signals and signs. Aggressive driving behaviors (unsafe speed or following too closely) accounted for 694 crashes, which is slightly more than a quarter of all crashes within the City. Three resulted in a fatal injury and 10 in a severe injury. Almost 60% of these crashes resulted in property damage only.

#### Goals for Emphasis Area #3:

- Reduce the number of crashes due to aggressive driving in the City
- Identify hot spots and priority corridors for aggressive driving
- Apply for funding and implement countermeasures to address aggressive driving

### Strategies for Emphasis Area #1:

- Narrow lane sizes to reduce speeding along City roadways
- Educational campaign to target aggressive drivers
- Increased law enforcement presence near aggressive driving hotspots
- Increased coordination with law enforcement and other community organizations

These strategies will be implemented by the City, law enforcement, and community organizations. Funding sources for these strategies may include HSIP, OTS and SB1 grant programs.

### 8.4 Emphasis Area #4: Impaired Driving

**Description:** Impaired driving crashes are a high priority challenge area within the Caltrans SHSP. Caltrans defines these as crashes where any evidence of drug or alcohol use by the driver is present, even if the driver was not over the legal limit. 299 crashes (12%) were reported as the driver being under the influence of alcohol or drugs. Ten of these crashes resulted in a fatality and 22 a severe injury. Almost half of these crashes (144) resulted in Property Damage Only.

#### Goals for Emphasis Area #4:

- Reduce the number of crashes attributed to impaired driving

- Identify hot spots and priority corridors for countermeasures to reduce impaired driving
- Apply for funding to implement countermeasures to reduce impaired driving crashes

**Strategies for Emphasis Area #4:**

- Authorize, publicize, and conduct sobriety checkpoints programs
- Implement an impaired driving education campaign
- Develop educational programs targeting specific audiences based on age group
- Additional enforcement presence
- Create effective media campaigns in both visual and print media

These strategies will be implemented by the City, law enforcement, and community organizations. Funding sources for these strategies may include HSIP, OTS, and SB1 grant programs.

## 9 Recommendations

The following provides more information on general identified issues, crash modification factors, improvements, and countermeasures identified for the City of Perris, as well as for specific project locations identified as part of this analysis.

### 9.1 Infrastructure Improvements

#### 9.1.1 Countermeasure Selection Process

Part D of the HSM provides information on Crash Modification Factors (CMF) for roadway segments, intersections, interchanges, special facilities, and road networks. CMFs are used to estimate the safety effects of highway improvements and apply CMFs to compare and select highway safety improvements. A CMF less than 1.0 indicates that a treatment has the potential to reduce crashes. A CMF greater than 1.0 indicates that a treatment has the potential to increase crashes. The application of an appropriate CMF can influence the decision to implement a particular project, and the misapplication of CMFs can lead to misinformed decisions. Key factors to consider when applying CMFs include:

1. Selection of an appropriate CMF,
2. Estimation of crashes without treatment,
3. Application of CMFs by type and severity, and
4. Estimation of the combined effect for multiple treatments

Examples of Safety Countermeasures can be found through several sources. This Report utilizes the countermeasures found in the California LRSM (<https://dot.ca.gov/-/media/dot-media/programs/local-assistance/documents/hsip/2020/lrsm2020.pdf>) and the CMF Clearinghouse (CMF CH) website (<http://www.cmfclearinghouse.org/>).

Countermeasures for each of the Safety Project Case Studies are based on the data analysis and site visits. Additional countermeasures were identified for the high-level issues on a city-wide level and are discussed in **General City-Wide Safety Project Recommendations** section of this Report.

#### 9.1.2 Safety Project Case Studies

From the city-wide analysis, ten project case study locations were selected for further analysis and recommendation. For each of these locations, Safety Project Case Studies were developed to provide a case study to organize projects 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.

A Safety Project Case Study was developed for these locations:

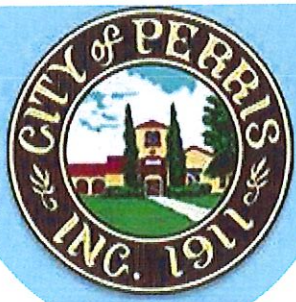
1. Signalized Intersection: Perris Bl & Ramona Expy
2. Signalized Intersection: Ramona Expy & Ramona Crossing
3. Segment: Ramona Expy from Perris Bl to Redlands Ave
4. Unsignalized Intersection: Perris Bl & Avocado Ave
5. Signalized Intersection: Nuevo Rd & Perris Bl
6. Signalized Intersection: 4<sup>th</sup> St & A St



7. Unsignalized Intersection: 4<sup>th</sup> Street & Park Ave
8. Segment: 4<sup>th</sup> Street from Park Ave to Kruse St
9. Unsignalized Intersection: Redlands Ave & 7<sup>th</sup> Street
10. Segment: Redlands Ave from Dale St to San Jacinto Ave

The following pages summarize conditions at each location, and potentially beneficial countermeasures. Countermeasures were subjected to a benefit/cost assessment and scored according to their potential return on investment. These case studies can be used to select the most appropriate countermeasure, 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 case study sheets can also be used to position the City for future grant funding opportunities.





**Perris LRSP: Case Study Location #1**

**Project Name:** Perris LRSP  
**Agency Name:** City of Perris  
**Contact:** City Engineering Department  
**Phone Number:** (951) 943-6504

**Prepared by:** Kimley-Horn  
**Checked by:** Jason Melchor, P.E.  
**Date:** February 2021



**INTERSECTION**

**Project Location Description & Maps:**

**Intersection:** Perris Boulevard & Ramona Expressway

**Examples of Similar Intersections:** Perris Boulevard & Nuevo Road; Ramona Expy & Evans Rd



**Traffic and Geometric Data:**

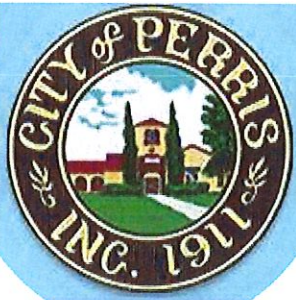
Collision Data	
<b>Total Collisions</b>	68
<b>Fatal and Injury Collisions</b>	Fatal Injury - 2 Severe Injury - 1 Visible Injury - 3
<b>Top 3 Collision Types</b>	Rear-End (41%) Sideswipe (21%) Head-On (18%)
<b>Total Nighttime Collisions</b>	36 (53%)
<b>Wet Surface Collisions</b>	9 (13%)
<b>Drug and Alcohol Related Collisions</b>	11 (16%)

Traffic Data	
<b>Number of Approaches</b>	4
<b>Total Entering Vehicles</b>	57,500
<b>Crosswalk Condition</b>	Fair
<b>Control Type</b>	Signalized
<b>Lighting</b>	LED on all corners
<b>Highest Posted Speed Limit</b>	50 MPH
<b>Median</b>	All approaches

Collision Breakdown		
Veh vs. Veh	Veh vs. Ped	Veh vs. Bike
64	3	1

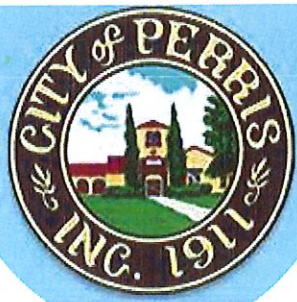
**Additional Notes:**

- This intersection is part of the upcoming Perris BI integration project
- As part of Perris BI project, additional signal heads will be installed on each mast arm



## Countermeasure Evaluation

Primary Issues	Recommendations	Potential Countermeasures	CMF (Expected crash reduction factor)	20 Year Safety Benefit	Rough Estimated OPCC	Safety Related B/C
All	Install improved signal hardware	Improve signal hardware: lenses, back-plates with retroreflective borders, mounting, size, and number	S02	\$5,504,100	\$12,000	459
All	Install advanced dilemma zone detection	Provide Advanced Dilemma-Zone Detection for high speed approaches	S04	\$14,677,600	\$34,000	432
Bike & Ped	Install enhanced crosswalk markings	Install pedestrian crossing (S.I.)	S18PB	\$2,761,920	\$86,667	32
All	Install left-turn guidance striping	Install raised pavement markers and striping (Through Intersection)	S09	\$3,669,400	\$21,667	169
All	Provide additional right lane near intersections & driveways	Install acceleration/ deceleration lanes	R11	\$9,173,500	\$25,000	367.0
All	Reduce lane sizes to discourage speeding	Convert 12-ft lanes to 10-ft lanes	7826 (CMF)	\$9,907,380	\$138,000	71.79
Bike & Ped	Install bicycle lanes on Ramona Expy	Install bike lanes	R32PB	\$6,444,480	\$12,000	616



**Perris LRSP: Case Study Location #2**

**Project Name:** Perris LRSP  
**Agency Name:** City of Perris  
**Contact:** City Engineering Department  
**Phone Number:** (951) 943-6504

**Prepared by:** Kimley-Horn  
**Checked by:** Jason Melchor, P.E.  
**Date:** February 2021



**Project Location Description & Maps:**

**Intersection:** Ramona Expressway & Ramona Crossing  
**Examples of Similar Intersections:** Wilkerson Avenue & 4th Street; Perris BI & Crossroad Center



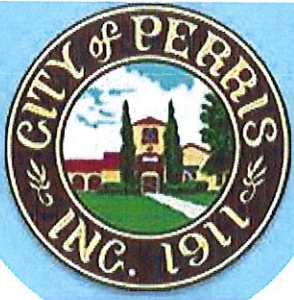
**Traffic and Geometric Data:**

Collision Data	
<b>Total Collisions</b>	16
<b>Fatal and Injury Collisions</b>	Fatal Injury - 1 Severe Injury - 2 Visible Injury - 0
<b>Top 3 Collision Types</b>	Rear-End (38%) Broadside (31%) Vehicle-Ped (13%)
<b>Total Nighttime Collisions</b>	5 (31%)
<b>Wet Surface Collisions</b>	1 (6%)
<b>Drug and Alcohol Related Collisions</b>	4 (25%)

Traffic Data		
<b>Number of Approaches</b>	4	
<b>Total Entering Vehicles</b>	16,545	
<b>Crosswalk Condition</b>	No crosswalks on N/S movements	
<b>Control Type</b>	Signalized	
<b>Lighting</b>	LED on all sides	
<b>Highest Posted Speed Limit</b>	50 MPH	
<b>Median</b>	On E/W approaches	
Collision Breakdown		
<b>Veh vs. Veh</b>	<b>Veh vs. Ped</b>	<b>Veh vs. Bike</b>
14	2	0

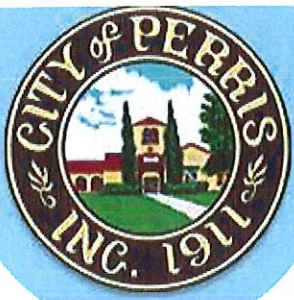
**Additional Notes:**

- This location was added to City CIP a few years ago
- There is no pedestrian crossing on either side to cross Ramona Expressway



## Countermeasure Evaluation

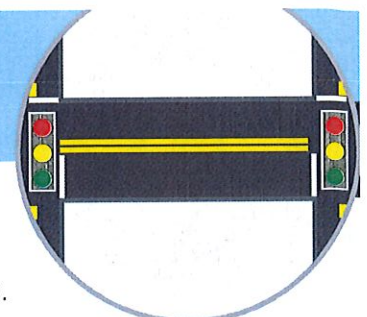
Primary Issues	Recommendations	Potential Countermeasures	CMF (Expected crash reduction factor)	20 Year Safety Benefit	Rough Estimated OPCC	Safety Related B/C
All	Improve signal hardware	Improve signal hardware: lenses, back-plates with retroreflective borders, mounting, size, and number	S02	\$4,126,860	\$12,000	343.91
All	Install advanced dilemma zone detection	Provide Advanced Dilemma-Zone Detection for high speed approaches	S04	\$11,004,960	\$34,000	323.68
Bike & Ped	Install enhanced crosswalk markings	Install pedestrian crossing (S.I.)	S18PB	\$2,628,000	\$86,667	30.32
All	Improve timing for N/S movements	Improve signal timing (coordination, phases, red, yellow, or operation)	S03	\$4,126,860	\$7,667	538.29
All	Install mast arm on N/S approaches	Convert signal to mast arm (from pedestal-mounted)	S08	\$8,253,720	\$32,000	257.93
All	Reduce lane sizes on Ramona Expy	Convert 12-ft lanes to 10-ft lanes	7826 (CMF)	\$7,428,348	\$138,000	53.83
Bike & Ped	Install bicycle lanes on Ramona Expy	Install bike lanes	R32PB	\$6,132,000	\$50,000	122.64



**Perris LRSP: Case Study Location #3**

**Project Name:** Perris LRSP  
**Agency Name:** City of Perris  
**Contact:** City Engineering Department  
**Phone Number:** (951) 943-6504

**Prepared by:** Kimley-Horn  
**Checked by:** Jason Melchor, P.E.  
**Date:** February 2021



**SEGMENT |**

**Project Location Description & Maps:**

**Segment:** Ramona Expy (Perris Bl to Redlands Ave)

**Examples of Similar Segments:** Nuevo Road (Perris Boulevard to Ruby Drive); Ramona Expy (Redlands Ave to Evans Rd)



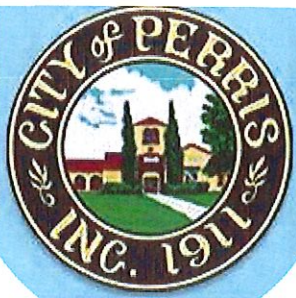
**Traffic and Geometric Data:**

Collision Data	
<b>Total Collisions</b>	7
<b>Fatal and Injury Collisions</b>	Fatal Injury - 1 Severe Injury - 0 Visible Injury - 1
<b>Top 3 Collision Types (percentage)</b>	Broadside (29%) Rear-End (29%) Veh-Ped (29%)
<b>Total Nighttime Collisions</b>	2 (29%)
<b>Wet Surface Collisions</b>	1 (14%)
<b>Drug and Alcohol Related Collisions</b>	0 (0%)

Traffic Data		
<b>Total ADT</b>	33,090	
<b>Lighting</b>	Lighting only from Perris Bl to Ramona Xing	
Collision Breakdown		
<b>Veh vs. Veh</b>	<b>Veh vs. Ped</b>	<b>Veh vs. Bike</b>
4	2	1

**Additional Notes:**

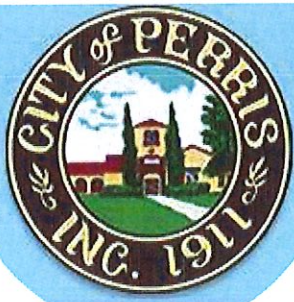
- No sidewalks on south side of Ramona Expy
- High speed/aggressive driving
- High truck volumes; City is updating truck routing to divert away from Ramona Expy & Perris Bl



### Countermeasure Evaluation

Primary Issues	Recommendation	Potential Countermeasures	CMF (Expected crash reduction factor)	20 Year Safety Benefit	Rough Estimated OPCC	Safety Related B/C
Bike & Ped	Install sidewalk on S side of Ramona Expy	Install sidewalk/pathway (to avoid walking along roadway)	R34PB	\$7,722,240	\$247,200	31.24
All	Speed feedback signage	Install dynamic/variable speed warning signs	R26	\$3,121,920	\$32,000	97.56
All	Advanced signal warning signage	Install/Upgrade signs with new fluorescent sheeting (regulatory or warning)	R22	\$1,560,960	\$9,000	173.44
All	Reduce lane sizes on Ramona Expy	Convert 12-ft lanes to 10-ft lanes	7826 (CMF)	\$2,809,728	\$345,000	8.14
Bike & Ped	Install bicycle lanes	Install bike lanes	R32PB	\$3,378,480	\$125,000	27.03





**Perris LRSP: Case Study Location #4**

**Project Name:** Perris LRSP  
**Agency Name:** City of Perris  
**Contact:** City Engineering Department  
**Phone Number:** (951) 943-6504

**Prepared by:** Kimley-Horn  
**Checked by:** Jason Melchor, P.E.  
**Date:** February 2021



**Project Location Description & Maps:**

**Intersection:** Perris Boulevard & Avocado Avenue  
**Examples of Similar Intersections:** Perris Boulevard & Walnut Avenue; Perris BI & Bowen Rd



**Traffic and Geometric Data:**

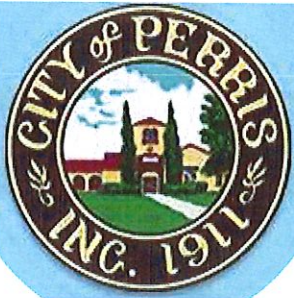
Collision Data	
Total Collisions	15
Fatal and Injury Collisions	Fatal Injury - 1 Severe Injury - 0 Visible Injury - 1
Top 3 Collision Types (percentage)	Rear-End (26%) Broadside (20%) Sideswipe (20%)
Total Nighttime Collisions	8 (53%)
Wet Surface Collisions	0 (0%)
Drug and Alcohol Related Collisions	4 (27%)

Traffic Data	
Number of Approaches	3
Total Entering Vehicles	21,473
Crosswalk Condition	No crosswalk
Control Type	Stop controlled on Avocado Ave
Lighting	LED on NB Perris BI & Avocado Ave
Highest Posted Speed Limit	45 MPH
Median	No median

Collision Breakdown		
Veh vs. Veh	Veh vs. Ped	Veh vs. Bike
15	0	0

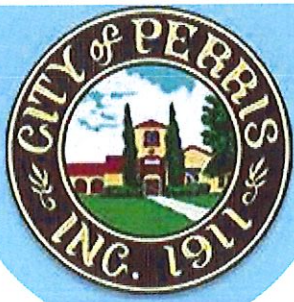
**Additional Notes:**

- Low visibility of street sign from Perris BI
- Stop sign is far from stop bar
- Lack of lighting at intersection
- Wide lanes & gutter on Perris BI (18 ft)
- Foliage along Perris BI is blocking visibility
- Collision history does not meet signal warrant requirements



## Countermeasure Evaluation

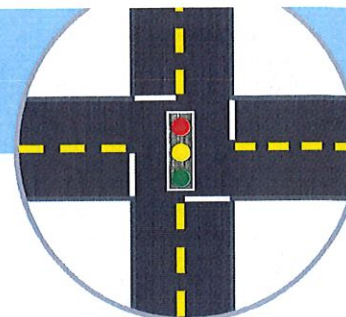
Primary Issues	Recommendations	Potential Countermeasures	CMF (Expected crash reduction factor)	20 Year Safety Benefit	Rough Estimated OPCC	Safety Related B/C
All	Install improved street signage	Install/Upgrade signs with new fluorescent sheeting (regulatory or warning)	NS06	\$1,746,480	\$9,000	194.05
All	Install improved street lighting	Add Intersection Lighting (NS.I.)	NS01	\$3,480,260	\$34,500	101.88
All	Move stop sign up to stop bar	Install/upgrade larger or additional stop signs or other intersection warning/regulatory signs	NS06	\$1,746,480	\$1,500	1164.32
All	Cut back foliage to above sign level	Improve sight distance to intersection (Clear Sight Triangles)	NS11	\$2,328,640	\$9,000	258.74
All	Install right-turn pocket on NB Perris BI	Install right-turn lane (NS.I.)	NS17	\$2,328,640	\$12,500	186.29
All	Restrict left-turn from Avocado Ave onto Perris BI	Create directional median openings to allow (and restrict) left-turns and u-turns (S.I.)	NS15	\$5,821,600	\$7,000	831.66



**Perris LRSP: Case Study Location #5**

**Project Name:** Perris LRSP  
**Agency Name:** City of Perris  
**Contact:** City Engineering Department  
**Phone Number:** (951) 943-6504

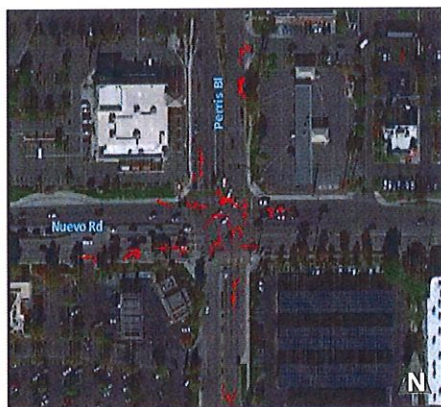
**Prepared by:** Kimley-Horn  
**Checked by:** Jason Melchor, P.E.  
**Date:** February 2021



**INTERSECTION**

**Project Location Description & Maps:**

**Intersection:** Nuevo Road & Perris Boulevard  
**Examples of Similar Intersections:** Perris Boulevard & Ramona Expy; Ramona Expy & Indian Ave



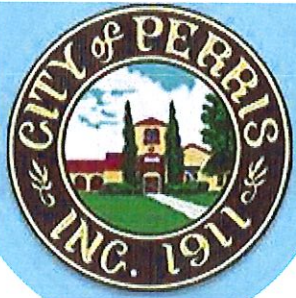
**Traffic and Geometric Data:**

Collision Data	
<b>Total Collisions</b>	56
<b>Fatal and Injury Collisions</b>	Fatal Injury - 0 Severe Injury - 0 Visible Injury - 4
<b>Top 3 Collision Types</b>	Rear-End (43%) Broadside (20%) Sideswipe (11%)
<b>Total Nighttime Collisions</b>	17 (30%)
<b>Wet Surface Collisions</b>	4 (7%)
<b>Drug and Alcohol Related Collisions</b>	3 (5%)

Traffic Data		
<b>Number of Approaches</b>	4	
<b>Total Entering Vehicles</b>	40,583	
<b>Crosswalk Condition</b>	Fair	
<b>Control Type</b>	Signalized	
<b>Lighting</b>	LED on all 4 corners	
<b>Highest Posted Speed Limit</b>	45 MPH	
<b>Median</b>	Raised on all approaches	
Collision Breakdown		
<b>Veh vs. Veh</b>	<b>Veh vs. Ped</b>	<b>Veh vs. Bike</b>
51	1	4

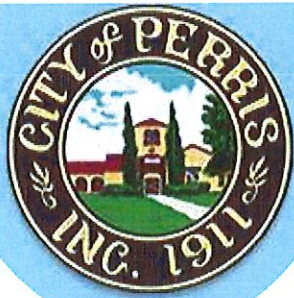
**Additional Notes:**

- No guidance striping on LT movements
- Lane striping is faded
- Many students from Perris HS cross Perris BI on NB approach
- Upcoming Perris BI project is installing leading pedestrian intervals & enhanced pedestrian push buttons at this location



## Countermeasure Evaluation

Primary Issues	Recommendations	Potential Countermeasures	CMF (Expected crash reduction factor)	20 Year Safety Benefit	Rough Estimated OPCC	Safety Related B/C
All	Improve signal hardware	Improve signal hardware: lenses, back-plates with retroreflective borders, mounting, size, and number	S02	\$1,405,440	\$12,000	117.12
All	Install advanced dilemma zone detection	Provide Advanced Dilemma-Zone Detection for high speed approaches	S04	\$3,747,840	\$34,000	110.23
Bike & Ped	Pedestrian fencing along NB Perris Bl	Install pedestrian median fencing on approaches	S13PB	\$557,620	\$33,600	16.60
All	Install guidance striping for LT movements	Install raised pavement markers and striping (Through Intersection)	S09	\$936,960	\$21,667	43.24
All	Refresh lane striping	Install raised pavement markers and striping (Through Intersection)	S09	\$936,960	\$21,667	43.24
Bike & Ped	Part time pedestrian scramble	Pedestrian Scramble	S19PB	\$637,280	\$19,000	33.54
Bike & Ped	Leading pedestrian interval	Modify signal phasing to implement a Leading Pedestrian Interval (LPI)	S21PB	\$955,920	\$7,667	124.69



**Perris LRSP: Case Study Location #6**

**Project Name:** Perris LRSP  
**Agency Name:** City of Perris  
**Contact:** City Engineering Department  
**Phone Number:** (951) 943-6504

**Prepared by:** Kimley-Horn  
**Checked by:** Jason Melchor, P.E.  
**Date:** February 2021



**Project Location Description & Maps:**

**Intersection:** 4th Street & A Street  
**Examples of Similar Intersections:** Perris Boulevard & 4th Street; 4th Street & D Street



**Traffic and Geometric Data:**

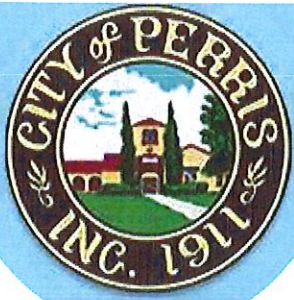
Collision Data	
<b>Total Collisions</b>	52
<b>Fatal and Injury Collisions</b>	Fatal Injury - 0 Severe Injury - 1 Visible Injury - 6
<b>Top 3 Collision Types</b>	Rear-End (58%) Broadside (17%) Sideswipe (13%)
<b>Total Nighttime Collisions</b>	17 (33%)
<b>Wet Surface Collisions</b>	0 (0%)
<b>Drug and Alcohol Related Collisions</b>	11 (21%)

Traffic Data	
<b>Number of Approaches</b>	4
<b>Total Entering Vehicles</b>	31,233
<b>Crosswalk Condition</b>	Good
<b>Control Type</b>	Signalized
<b>Lighting</b>	LED on all approaches
<b>Highest Posted Speed Limit</b>	35 MPH
<b>Median</b>	None

Collision Breakdown		
Veh vs. Veh	Veh vs. Ped	Veh vs. Bike
51	0	1

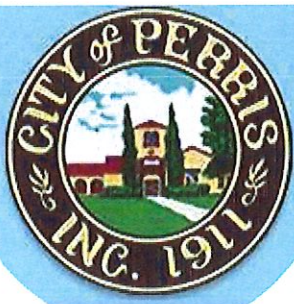
**Additional Notes:**

- Left-turn phasing was installed on N/S movements in 2017
- Wide lane and gutter on 4th Street (16 ft)
- Ped push buttons are out of date
- Crosswalk is far from roadway
- SB right-turn visibility issues



## Countermeasure Evaluation

Primary Issues	Recommendations	Potential Countermeasures	CMF (Expected crash reduction factor)	20 Year Safety Benefit	Rough Estimated OPCC	Safety Related B/C
All	Improve signal hardware	Improve signal hardware: lenses, back-plates with retroreflective borders, mounting, size, and number	S02	\$3,037,140	\$12,000	253.10
All	Install advanced dilemma zone detection	Provide Advanced Dilemma-Zone Detection for high speed approaches	S04	\$8,099,040	\$34,000	238.21
Bike & Ped	Install bicycle lanes along 4th St	Install bike lanes	R32PB	\$113,260	\$50,000	2.27
Bike & Ped	Install leading pedestrian interval	Modify signal phasing to implement a Leading Pedestrian Interval (LPI)	S21PB	\$194,160	\$21,667	8.96
Bike & Ped	Move crosswalks further into roadway	Install pedestrian crossing (S.I.)	S20PB	\$48,540	\$90,000	0.54
All	No right on red on SB approach	Prohibit right turn on red	5194	\$404,952	\$20,000	20.25
All	Improve grading issues on EB 4th St	Improve horizontal alignment (flatten curves)	R17	\$10,123,800	\$112,500	89.99



**Perris LRSP: Case Study Location #7**

**Project Name:** Perris LRSP  
**Agency Name:** City of Perris  
**Contact:** City Engineering Department  
**Phone Number:** (951) 943-6504

**Prepared by:** Kimley-Horn  
**Checked by:** Jason Melchor, P.E.  
**Date:** February 2021



**Project Location Description & Maps:**

**Intersection:** Park Avenue & 4th Street  
**Examples of Similar Intersections:** B Street & 4th Street; 4th Street & F Street



**Traffic and Geometric Data:**

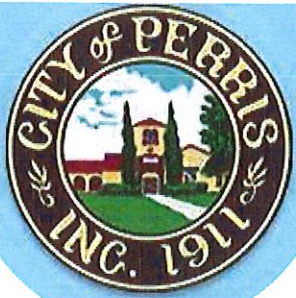
Collision Data	
<b>Total Collisions</b>	33
<b>Fatal and Injury Collisions</b>	Fatal Injury - 2 Severe Injury - 2 Visible Injury - 4
<b>Top 3 Collision Types (percentage)</b>	Broadside (36%) Rear-End (30%) Veh-Ped (12%)
<b>Total Nighttime Collisions</b>	14 (42%)
<b>Wet Surface Collisions</b>	1 (3%)
<b>Drug and Alcohol Related Collisions</b>	6 (18%)

Traffic Data	
<b>Number of Approaches</b>	4
<b>Total Entering Vehicles</b>	30,596
<b>Crosswalk Condition</b>	On E/W movements only
<b>Control Type</b>	Stop controlled on N/S approaches
<b>Lighting</b>	LED on NW and SE corners
<b>Highest Posted Speed Limit</b>	35 MPH, 25 during school hours
<b>Median</b>	No median

Collision Breakdown		
Veh vs. Veh	Veh vs. Ped	Veh vs. Bike
30	3	0

**Additional Notes:**

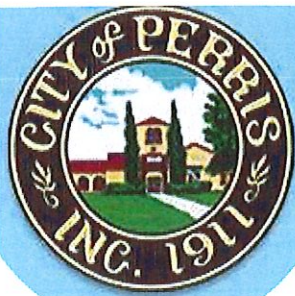
- Street signage is offset from roadway
- Lighting is absent
- Median has been installed for 5-6 years
- NB left-turn has visibility issues due to schoolyard wall
- Collision history does not meet signal warrant requirements



## Countermeasure Evaluation

Primary Issues	Recommendations	Potential Countermeasures	CMF (Expected crash reduction factor)	20 Year Safety Benefit	Rough Estimated OPCC	Safety Related B/C
All	Install improved street signage	Install/Upgrade signs with new fluorescent sheeting (regulatory or warning)	NS06	\$6,364,860	\$9,000	707.21
All	Install lighting	Add Intersection Lighting (NS.I.)	NS01	\$13,284,600	\$46,000	289.80
Bike & Ped	Install pedestrian crossing	Install pedestrian crossing at uncontrolled locations (new signs and markings only)	NS20PB	\$6,570,000	\$86,667	75.81
All	Right turn only on NB Park Ave	Create directional median openings to allow (and restrict) left-turns and U-turns (NS.I.)	NS15	\$21,216,200	\$7,000	3030.89

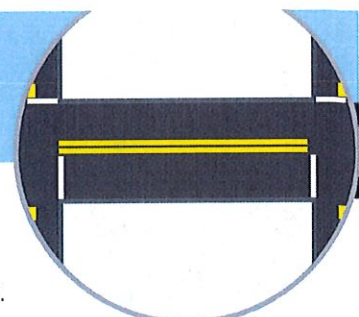




**Perris LRSP: Case Study Location #8**

**Project Name:** Perris LRSP  
**Agency Name:** City of Perris  
**Contact:** City Engineering Department  
**Phone Number:** (951) 943-6504

**Prepared by:** Kimley-Horn  
**Checked by:** Jason Melchor, P.E.  
**Date:** February 2021



**SEGMENT I**

**Project Location Description & Maps:**

**Segment:** 4th Street (Kruse Street and Park Avenue)

**Examples of Similar Segments:** Orange Avenue (Stonybrook Way to Wilson Avenue); Hwy 74 (7th St to Dockery Ln)



**Traffic and Geometric Data:**

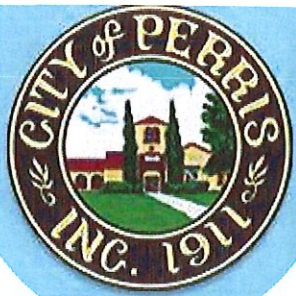
Collision Data	
<b>Total Collisions</b>	13
<b>Fatal and Injury Collisions</b>	Fatal Injury - 1 Severe Injury - 0 Visible Injury - 2
<b>Top 3 Collision Types (percentage)</b>	Broadside (23%) Rear-End (23%) Sideswipe (23%)
<b>Total Nighttime Collisions</b>	8 (62%)
<b>Wet Surface Collisions</b>	0 (0%)
<b>Drug and Alcohol Related Collisions</b>	0 (0%)

Traffic Data	
<b>Total ADT</b>	34,538
<b>Lighting</b>	On N/S sides of 4th St
<b>Highest Posted Speed Limit</b>	45 MPH

Collision Breakdown		
Veh vs. Veh	Veh vs. Ped	Veh vs. Bike
12	1	0

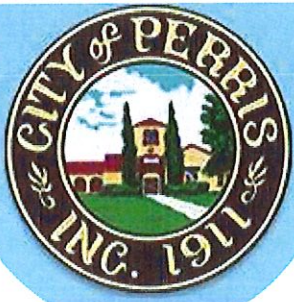
**Additional Notes:**

- Speeding is an issue – speeds are too high for driveway access
- 16' lane/gutter and two-way left-turn lane on 4th Street



### Countermeasure Evaluation

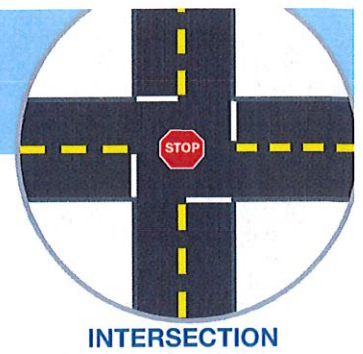
Primary Issues	Recommendation	Potential Countermeasures	CMF (Expected crash reduction factor)	20 Year Safety Benefit	Rough Estimated OPCC	Safety Related B/C
All	Implement a merging lane for cars turning right onto 4th Street (re-striping)	Install acceleration/ deceleration lanes	R11	\$2,742,800	\$50,000	54.86



**Perris LRSP: Case Study Location #9**

**Project Name:** Perris LRSP  
**Agency Name:** City of Perris  
**Contact:** City Engineering Department  
**Phone Number:** (951) 943-6504

**Prepared by:** Kimley-Horn  
**Checked by:** Jason Melchor, P.E.  
**Date:** February 2021



**Project Location Description & Maps:**

**Intersection:** Redlands Avenue & 7th Street  
**Examples of Similar Intersections:** A Street & Serrana Road; Goetz Rd & Malbert St



**Traffic and Geometric Data:**

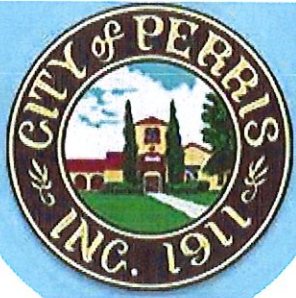
Collision Data	
<b>Total Collisions</b>	11
<b>Fatal and Injury Collisions</b>	Fatal Injury - 0 Severe Injury - 1 Visible Injury - 0
<b>Top 3 Collision Types (percentage)</b>	Broadside (82%) Hit Object (2%)
<b>Total Nighttime Collisions</b>	4 (36%)
<b>Wet Surface Collisions</b>	0 (0%)
<b>Drug and Alcohol Related Collisions</b>	0 (0%)

Traffic Data	
<b>Number of Approaches</b>	3
<b>Total Entering Vehicles</b>	15,612
<b>Crosswalk Condition</b>	Only on SB Redlands Ave
<b>Control Type</b>	Unsignalized
<b>Lighting</b>	No lighting
<b>Highest Posted Speed Limit</b>	40 MPH
<b>Median</b>	No median

Collision Breakdown		
Veh vs. Veh	Veh vs. Ped	Veh vs. Bike
9	0	0

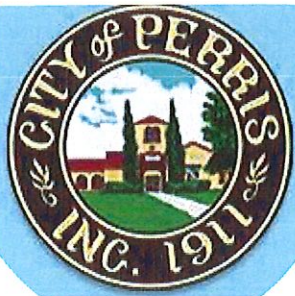
**Additional Notes:**

- Pedestrian ramps on SB Redlands Ave are not ADA compliant
- Lack of lighting at intersection
- Trees & drainage are in clearance zone from SB right turn from Redlands Ave onto 7th Street
- This intersection is a part of Redlands Ave Signing & Striping Plan



## Countermeasure Evaluation

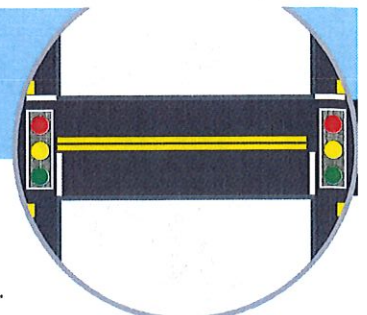
Primary Issues	Recommendations	Potential Countermeasures	CMF (Expected crash reduction factor)	20 Year Safety Benefit	Rough Estimated OPCC	Safety Related B/C
Bike & Ped	Install updated ADA ramps	Install/upgrade pedestrian crossing (with enhanced safety features)	R35PB	\$-	\$9,500	0
All	Install flashing beacons on approaches	Install flashing beacons as advance warning (NS.I.)	NS09	\$3,274,320	\$6,000	545.72
All	Upgrade pavement markings	Install pedestrian crossing at uncontrolled locations (new signs and markings only)	NS20PB	\$-	\$86,667	0
All	Relocate utility poles for better visibility	Remove or relocate fixed objects outside of Clear Recovery Zone	R02	\$3,820,040	\$120,000	31.83
All	Install advanced intersection warning labels & signs	Install/Upgrade signs with new fluorescent sheeting (regulatory or warning)	R22	\$1,637,160	\$4,500	363.81



**Perris LRSP: Case Study Location #10**

**Project Name:** Perris LRSP  
**Agency Name:** City of Perris  
**Contact:** City Engineering Department  
**Phone Number:** (951) 943-6504

**Prepared by:** Kimley-Horn  
**Checked by:** Jason Melchor, P.E.  
**Date:** February 2021



**SEGMENT |**

**Project Location Description & Maps:**

**Segment:** Redlands Avenue (Dale Street and San Jacinto Avenue)  
**Examples of Similar Segments:** Indian Avenue (Ramona Expressway to Morgan Street)

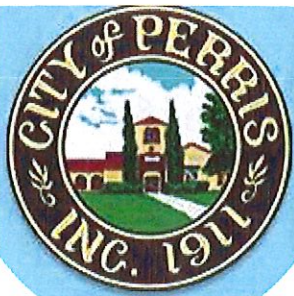


**Traffic and Geometric Data:**

Collision Data	
Total Collisions	4
Fatal and Injury Collisions	Fatal Injury - 0 Severe Injury - 1 Visible Injury - 0
Top 3 Collision Types (percentage)	Sideswipe (50%) Hit Object (25%) Broadside (25%)
Total Nighttime Collisions	2 (50%)
Wet Surface Collisions	0 (0%)
Drug and Alcohol Related Collisions	0 (0%)

Traffic Data		
Total ADT	9,271	
Lighting	On east side of Redlands only	
Highest Posted Speed Limit	45 MPH	
Collision Breakdown		
Veh vs. Veh	Veh vs. Ped	Veh vs. Bike
4	0	0

**Additional Notes:**



### Countermeasure Evaluation

Primary Issues	Recommendation	Potential Countermeasures	CMF (Expected crash reduction factor)	20 Year Safety Benefit	Rough Estimated OPCC	Safety Related B/C
All	Install curve warning signage on SB approach	Install/Upgrade signs with new fluorescent sheeting (regulatory or warning)	R22	\$1,378,500	\$3,000	460
All	Install speed feedback signage	Install dynamic/variable speed warning signs	R26	\$2,757,000	\$32,000	86.16
All	Prohibit U-turns in median gaps	Create directional median openings to allow (and restrict) left-turns and U-turns (NS.I.)	NS15	\$4,595,000	\$7,000	656.43
All	Narrow lane widths	Convert 12-ft lanes to 10-ft lanes	7826 (CMF)	\$2,481,300	\$161,000	15.41

## 9.2 Non-Infrastructure Improvements

Non-Infrastructure recommendations have also been proven to impact safety conditions of the transportation network. These education and enforcement measure recommendations are developed to target specific behavior types and populations. Based on a review of the existing plans, policies, and programs within the City, the following topics have been reviewed to identify areas where the City can implement or enhance safety efforts.

Summary of Programs, Policies, and Practices for City of Perris		
Topic	Initiatives	
	Status	Implement or Enhance
Active Transportation Coordinator	None	Enact active transportation coordinator to address active transportation issues
Safety or Active Advisory Committee	Public Safety Commission	Continue to engage Public Safety Commission in roadway issues
Active Transportation Safety Education Program	None existing	Identify contact at school to develop education campaigns; can coordinate efforts with Sherriff department too
Safe Routes to School	Has successfully received grants in the past	Actively consider pursuing grants to make sure all schools are planned for
Inventory/Mapping of Active Transportation Routes	Yes	Include information on the City website along with the Parks maps
Traffic Calming Policies	No adopted policies; staff does evaluate other options prior to raising speed limits	Consider developing a checklist of approved traffic calming policies to be reviewed prior to any speed limit changes
Inventory of Pedestrian Signs and Signals	In process	Continue to assemble inventor of pedestrian signs & signals
Speed Surveys	Currently updating (2020)	Update & implement often as required by state law
Citizen Feedback	Online app that allows residents to submit the concerns they have	Consider promoting this tool through social media platforms
Institutional Coordination	Coordinates with law enforcement & adjacent jurisdictions	-
School Engagement	Yes	Work with existing programs to increase safety presence near schools, especially near elementary schools for safe walking & biking
Law Enforcement/Emergency Service Engagement	Yes	-
Pedestrian Signal Timing	In works	Implement leading pedestrian intervals (LPIs) at major pedestrian locations
Crosswalks	Yes	Apply for funding to upgrade crosswalks to high-visibility designs





Summary of Programs, Policies, and Practices for City of Perris		
Topic	Initiatives	
	Status	Implement or Enhance
Active Transportation Volume Counting	No	Institute a program to count pedestrians and bicyclists on a bi-annual basis
Traffic Crash Monitoring	By request at hot-spot locations	Consider reviewing crash data bi-monthly to identify emerging hot-spots or trends
Warrants for Stop Signs and Signals	Utilizes CA MUTCD Standards	-
Planning for Density and Walkable Areas	Yes	Continue to plan and encourage infill and walkable development and street infrastructure
Complete Streets	None existing	Develop a complete street policy for the City to adopt and enforce
Active Transportation Master Plan	Currently in the process of updating the ATP	-
Funding for Active Transportation	Applied for HSIP funding for active transportation improvements	Apply for ATP, SB1, and other active transportation funding
Transportation Demand Management	Existing policy in the municipal code	Continue to implement and enhance TDM policies in response to trends

### 9.3 City-wide Countermeasure Toolbox

This evaluation considered city-wide trends to identify countermeasures that would likely provide the most benefit with widespread implementation. Countermeasures for each of the 5E Safety Strategies (Engineering, Enforcement, Education, Emergency Services, and Emerging Technologies) were identified. These include both infrastructure recommendations, non-infrastructure recommendations. **Table 6** outlines the city-wide safety project recommendations, which is also referred to as the “Countermeasure Toolbox”. Within the toolbox, the description of the countermeasure along with its LRSM ID number is listed. The next column, Crash Reduction Factor (CRF) also known as Crash Modification Factor (CMF), are “multiplicative factors used to estimate the expected number of crashes after implementing a given countermeasure at a specific site (the lower the CMF, the greater the expected reduction in crashes)<sup>4</sup>.”

For each of these countermeasures, a planning level benefit/cost analysis was completed. Applying the benefit/cost at the city-wide level was estimated assuming some randomness in crash distribution. The location characteristics, such as whether there is a traffic signal, and the type of crashes, were used at the city-wide level to calculate an average cost of crashes that the countermeasure might reduce. The benefit per location was then factored out to a 20-year life-cycle savings, with an Opinion of Project Probable Cost (OPCC) for the initial installation costs and a per-year maintenance cost estimate. The cost shown in Table 6 should be considered initial planning costs using 2020 dollars and not assumed final.

<sup>4</sup> LRSM Version 1.5 (2020), Page 27

**Table 6: City-wide Recommended Safety Projects (Countermeasure Toolbox)**

COUNTERMEASURE	CMF/LRSM ID	CRF	Crash Type	Total 20-Year Total Costs	Per Unit
<b>ENGINEERING</b>					
Install improved signal hardware	S02	15%	All	\$ 12,000	per intersection
Install advanced dilemma zone detection system	S04	40%	All	\$ 34,000	per intersection
Install enhanced crosswalk markings	S18PB	15%	P & B	\$ 86,667	per intersection
Install left-turn guidance striping	S09	10%	All	\$ 21,667	per intersection
Provide additional right lane near intersections & driveways	R11	25%	All	\$ 50	per linear foot
Reduce lane sizes to discourage speeding	7826 (CMF)	27%	All	\$ 23	per linear foot
Install bicycle lanes	R32PB	35%	P & B	\$ 25	per linear foot
Improve timing	S03	15%	All	\$ 7,667	per intersection
Install mast arms	S08	30%	All	\$ 16,000	per mast arm
Install sidewalk	R34PB	80%	P & B	\$ 240	per linear foot
Install speed feedback signage	R26	30%	All	\$ 16,000	per sign
Install advanced signal warning signage	R22	15%	All	\$ 1,500	per sign
Install improved street signage	R22	15%	All	\$ 1,500	per sign
Install improved street lighting	S01	35%	Night	\$ 11,500	per light
Move stop sign up to stop bar	NS06	15%	All	\$ 1,500	per sign
Cut back foliage to above sign level	NS11	20%	All	\$ 3,000	per location

CITY OF PERRIS LRSP 2021

COUNTERMEASURE	CMF/LRSM ID	CRF	Crash Type	Total 20-Year Total Costs	Per Unit
Install right-turn pocket	NS17	20%	All	\$ 115,000	per approach
Restrict left-turns	NS15	50%	All	\$ 7,000	per structure
Install pedestrian fencing	S13PB	35%	P & B	\$ 160	per linear foot
Refresh lane striping	S09	10%	All	\$ 21,667	per intersection
Part time pedestrian scramble	S19PB	40%	P & B	\$ 19,000	per intersection
Install leading pedestrian interval (LPI)	S21PB	60%	P & B	\$ 7,667	per intersection
Install no right on red signal	5194	2%	All	\$ 20,000	per approach
Improve grading issues	R17	50%	All	\$ 150	per linear foot
Implement a merging lane for cars turning right onto busy road (re-striping)	R11	25%	All	\$ 50	per linear foot
Straighten crosswalks for shorter crossing time	S20PB	15%	P & B	\$ 90,000	per intersection
Install updated ADA ramps	R35PB	35%	P & B	\$ 9,500	per curb ramp
Install flashing beacons on approaches	NS09	30%	All	\$ 3,000	per beacon
Upgrade pavement markings	S18PB	15%	P & B	\$ 86,667	per intersection
Relocate utility poles for better visibility	R02	35%	All	\$ 60,000	per utility pole
Prohibit U-turns in median gaps	NS15	50%	All	\$ 7,000	per structure
Install curve warning signage	R22	15%	All	\$ 1,500	per sign
<b>ENFORCEMENT</b>					

COUNTERMEASURE	CMF/LRSM ID	CRF	Crash Type	Total 20-Year Total Costs	Per Unit
Establish visibility and enforcement program for aggressive driving	-	-	-	varies	-
Continue school zone enforcement	-	-	-	varies	-
Increased crosswalk enforcement	-	-	-	varies	-
<b>EDUCATION</b>					
Campaign to target aggressive driving and DUIs	-	-	-	varies	-
Bicycle and pedestrian safety campaign	-	-	-	varies	-
School zone pedestrian campaign	-	-	-	varies	-
Explore safe routes to school education grants to expand program	-	-	-	varies	-
Coordinate safety education campaigns with SCAG	-	-	-	varies	-
<b>EMERGENCY SERVICES</b>					
Continue to work on interdepartmental communication between City staff and City police department and fire department	-	-	-	varies	-
Incorporate public health agencies and fire departments as stakeholders in safety projects	-	-	-	varies	-
<b>EMERGENCY TECHNOLOGY</b>					
Continue to use best practices for pedestrian crossings at high pedestrian traffic areas	-	-	-	varies	-

CITY OF PERRIS LRSP 2021

COUNTERMEASURE	CMF/LRSM ID	CRF	Crash Type	Total 20-Year Total Costs	Per Unit
Utilize new data sources to monitor traffic conditions and inform City safety plans	-	-	-	varies	-

# 10 Evaluation & Implementation

## 10.1 Evaluation

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

- Quarterly progress meetings will be conducted to track the implementation of the plan. In addition, the success of the plan will be evaluated on an annual basis.
- An update to the plan should be considered after no more than five 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.

## 10.2 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.

### **Near- & Mid-Term Focus Areas**

The opportunities identified in this report 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 emphasis areas:

1. Commercial Vehicles
2. Vulnerable Road Users (Pedestrians & Bicyclists)
3. Aggressive Driving
4. Impaired Driving

Analysis conducted at the citywide level indicated that these factors were some of the most frequent influences contributing to crashes within the City. The countermeasure opportunities previously discussed in this report 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 focused areas can be developed with a high benefit-to-cost ratio (by applying City-wide 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.

## 10.3 Funding

Competitive funding resources are available to assist in the development and implementation of safety projects in Perris. 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 throughout Perris. The following is a high-level introduction into some of the main funding programs and grants for which the City can apply.

### **10.3.1 Highway Safety Improvement Program (HSIP)**

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

- New or upgraded traffic signals
- Upgraded guard rails
- Pedestrian warning flashing beacons
- Marked crosswalks

The City of Perris submitted an application for funding in HSIP Cycle 10 in November 2020.

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

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

### **10.3.2 Caltrans Active Transportation Program**

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

### **10.3.3 California Senate Bill 1 (SB 1)**

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

California's state-maintained transportation infrastructure will receive roughly half of SB 1 revenue: \$26 billion. The other half will go to local roads, transit agencies and an expansion of

the state's growing network of pedestrian and cycle routes. Each year, this new funding will be used to tackle deferred maintenance needs both on the state highway system and the local road system, including:

- Bike and Pedestrian Projects: \$100 million
  - This will go to cities, counties and regional transportation agencies to build or convert more bike paths, crosswalks and sidewalks. It is a significant increase in funding for these projects through the Active Transportation Program (ATP).
- Local Planning Grants: \$25 million

#### **10.3.4 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 report) 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

#### **10.3.5 SCAG Sustainable Communities Program (SCP)**

This program is an innovative vehicle for promoting local jurisdictional efforts to test local planning tools. The SCP provides direct technical assistance to SCAG member jurisdictions to complete planning and policy efforts to implement the regional Sustainable Communities Strategies (SCS). Grants are available in the following three categories:

- Integrated Land Use
  - Sustainable Land Use Planning
  - Transit Oriented Development (TOD)
  - Land Use & Transportation Integration
- Active Transportation
  - Bicycle Planning
  - Pedestrian Planning
  - Safe Routes to School Plans
- Green Region
  - Natural Resource Plans
  - Climate Action Plans (CAPs)
  - Green House Gas (GHG) Reduction programs



**10.3.6 SB 821 (Bicycle and Pedestrian Facilities Program)**

The Bicycle and Pedestrian Facilities Program is funded through a ¼ cent statewide sales tax and provides funding for bicycle and pedestrian facility projects. The program is administered by the Riverside County Transportation Commission (RCTC). The Call for Projects occurs on a biennial basis, with the last call occurring in February 2019. The following types of projects are eligible for funding:

- Construction, including related engineering expenses, of bicycle and pedestrian facilities, or for bicycle safety education programs.
- Maintenance of bicycling trails, which are closed to motorized traffic.
- Maintenance and repairs of Class I off-street bicycle facilities only.
- Restriping Class II bicycle lanes.
- Facilities provided for the use of bicycles that serve the needs of commuting bicyclists, including, but not limited to, new trails serving major transportation corridors, secure bicycle parking at employment centers, park and ride lots, and transit terminals where other funds are available.
- Development of comprehensive bicycle and pedestrian plans (limitations apply). Plans must emphasize bike/pedestrian facilities that support utilitarian bike/pedestrian travel rather than solely recreational activities.

**10.4 Next Steps**

The City of Perris 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, and locations of many crashes. Based on this process, Emphasis Areas were developed. These Emphasis Areas will guide corridor improvements, education programs, and capital improvements for the City.

Using the analyzed data and outputs from this LRSP, the City has completed or plans to complete the following tasks:

- Applied for HSIP Cycle 10 funding for pedestrian and signal improvements throughout the City. The City was awarded funding for these projects in the amount of \$1,423,700.
- Actively seek other funding opportunities to improve safety for all modal users
- Collaborate with established safety partners & neighboring municipalities as improvements are made to create a cohesive transportation network
- Iteratively evaluate existing and proposed transportation safety programs and capital improvements to design a safer transportation network in Perris.

The City also plans to have the City Council formally approve and adopt the Local Road Safety Plan (LRSP) in 2021. Based on current Caltrans guidelines, the City will plan to update the LRSP in five years in 2026.

