Exhibit A

Local Road Safety Plan

Final Draft Document

City of Santa Rosa

June 20, 2022

Acknowledgements

A special thanks to all the Safety Partners that contributed to this plan.

City of Santa Rosa

Mayor and Council Members

Transportation and Public Works

Fire Department

Police Department

Bicycle and Pedestrian Advisory Board

Parking

CityBus

Sonoma County Bicycle Coalition

Safe Routes to School

Midtown 4th Street

Proctor Terrace Elementary School

Junior College Neighborhood Association

St. Eugene's Cathedral School

Roseland Creek Elementary School

Montgomery Village

Sonoma County Water Agency

Executive Summary

In 2020, the City of Santa Rosa was awarded a state grant from Caltrans to perform a Local Roadway (Road) Safety Plan (LRSP). The LRSP will be a requirement for Cycle 11 of the Highway Safety Improvement Program (HSIP). The LRSP grant application included a focus analysis of collision characteristics of specific roadway corridors identified as priority projects in the *City of Santa Rosa Bicycle & Pedestrian Master Plan Update 2018, March 2019* (BPMP) and an analysis of city-wide high-risk roadway characteristics (systemic analysis).

The LRSP will supplement the BPMP by focusing on collisions along BPMP identified priority corridors and providing supplemental citywide analysis of bicycle and pedestrian involved collisions with more recent available data to identify any problematic roadways. The LRSP also evaluated collision trends along roadways identified as part of High-Injury Network (HIN) in the BPMP using more recent collision data.

This study aims to meet goals set forth in the BPMP of increasing access and comfort for bicycle and pedestrian facilities for people of all ages and abilities by identifying safety countermeasures to help mitigate primary crash type trends and reducing the overall collision severity. Additional analysis of bicycle and pedestrian involved collisions with more recent available data was also performed to identify any additional problematic roadways.

The LRSP is a collaborative process with local leadership groups that represents the 5 E's (not just engineering) and public outreach. **The 5 E's of traffic safety include Engineering, Enforcement, Education, Emergency Services, and Emerging Technologies.**

This holistic approach allows certain areas of concern not showing a crash pattern to be analyzed. Also, it fosters local, state, and agency partnerships to advance local road safety.

In following the overall LRSP process, Stakeholder Working Groups (Working Groups) was formed with the City as the lead and local organizations from the 5 E's and anyone with an interest in improving the City's roadway safety. Since the BPMP already identified the focus corridors for the LRSP, multiple Working Groups were formed focusing on each study corridor. The groups gathered for meetings to discuss the overall collision analysis, goals, priorities, safety recommendations, and overall development of the safety plan. The vision, mission statement, and goals of the LRSP will be consistent with that of the BPMP.

It was also decided that the LRSP for the City of Santa Rosa would be a living document with updates every five (5) years.

Based on the *BPMP* list of priority projects, this LRSP will focus on the following corridors in the City of Santa Rosa:

1. Fourth (4th) Street from E Street to Farmers Lane
2. Montgomery Drive from Alderbrook Drive to Hahman Drive
3. College Avenue from Kowell Lane to Morgan Street
4. College Avenue from Morgan Street to 4th Street
5. Stony Point Road from W Third (3rd) Street to Sebastopol Road
6. Roseland Creek Trail from Stony Point Road to Burbank Avenue
7. N Dutton Avenue from W College Avenue to W 3rd Street
8. Cleveland Avenue from Industrial Drive to Guerneville Road

Collision data, field observations, stakeholder and public input, and traffic volumes were gathered for these corridors. Using this information, along with City feedback, countermeasures were recommended for each of the corridors.

Non-engineering strategies were also recommended for City roadways. These countermeasures included Citywide recommendations that can also be used at the focus corridors The table below shows some of the non-engineering strategies that are incorporated in the plan.

Recommended Non-Engineering Strategies

Strategy Type	Recommended Strategy
Education	Bicycle and pedestrian safety campaigns
	Driver education through distracted driving campaigns
	Safe Routes to School maps and outreach at schools
	Social media blasts with quick education tools for all users
	Dangers of speeding/speed management campaigns
	Partnering with agencies such as Sonoma County Health and SCTA for public education
Emerging Technologies	ITS infrastructure, web/mobile application (apps) and smart cities practices
	Bicycle detection
	Upgraded controllers for flashing yellow arrows and leading pedestrian intervals
	Installing touchless Accessible Pedestrian Signals
	Communication with traffic signals
	Changeable message signs
Enforcement	Targeted speed enforcement
	DUI saturation patrols
	Increasing number of traffic enforcement officers
	Distracted driving enforcement
Emergency Response	Emergency vehicle pre-emption at signalized intersections
	Improvements to roadways to increase access and potentially shorten response times

It is important to understand the upcoming funding opportunities in the successful implementation of these safety projects. Most of the proposed countermeasures are HSIP fundable (next cycle 11 is scheduled to open in May 2022). However, countermeasures can be implemented through other funding sources to include

- Active Transportation Program (ATP)
- One Bay Area Grant (OBAG)
- Transportation Fund for Clean Air (TFCA)
- Transportation Development Act Article 3 (TDA3)
- Congestion Mitigation and Air Quality (CMAQ) program
- Sustainable Transportation Planning Grant (Sustainable Communities)
- Stimulus funding sources
- Capital Improvement Program or with on-going maintenance work
- Office of Traffic Safety grants
- Measure M/Go Sonoma (local transportation sales tax)

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List of Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
APS	Accessible Pedestrian Signal
ATP	Active Transportation Program or Plan
AWSC	All Way Stop Control
BCR	Benefit to Cost Ratio
BUI	Biking Under the Influence
CA MUTCD	California Manual on Uniform Traffic Control Devices
CMAQ	Congestion Mitigation and Air Quality
DUI	Driving Under the Influence
EPDO	Equivalent Property Damage Only
FHWA	Federal Highway Administration
FSI	Fatal and Severe Injury Collisions
HSIP	Highway Safety Improvement Program
HSM	Highway Safety Manual
LRSM	Local Roadway Safety Manual
LRSP	Local Roadway/Road Safety Plan
SCTA	Sonoma County Transportation Authority
SHSP	Strategic Highway Safety Plan
SMART	Sonoma Marin Area Rail Transit
SSAR	Systemic Safety Analysis Report
SWITRS	Statewide Integrated Traffic Records System
TIMS	Transportation Injury Mapping System
TWSC	Two Way Stop Control
TWLTL	Two-Way Left-Turn Lane

1. Introduction

The Local Road Safety Plan (LRSP) is a traffic safety planning document for local agencies to address unique roadway safety needs in their jurisdictions. This comprehensive document will both help to guide the City's implementation of safety countermeasures and allow eligibility for funding in future HSIP grant applications. The process of preparing an LRSP creates a framework to systematically identify and analyze local safety problems and recommend engineering safety improvements for future Highway Safety Improvement Program (HSIP) funding.

The City of Santa Rosa adopted the *City of Santa Rosa Bicycle & Pedestrian Master Plan Update 2018* (BPMP) in March 2019. The BPMP provides a long-term vision for improving bicycle and pedestrian facilities in the City. The BPMP recommended a list of corridors to be studied as priority projects. The LRSP will supplement the BPMP by focusing on collisions along BPMP identified priority corridors and providing supplemental analysis of bicycle and pedestrian involved collisions with more recent available data to identify any additional problematic roadways.

Preparing an LRSP facilitates local agency partnerships and collaboration, resulting in a prioritized list of improvements and actions that contribute to California's Strategic Highway Safety Plan (SHSP) overall vision and goals. This SHSP focuses on reducing fatal and severe injury collisions (FSI collisions) with focused challenge areas with a focus on the Five "E's" of Traffic Safety (see **Figure 1**).

Figure 1 California SHSP (2020-2024)

The City and GHD will follow the Federal Highways Administration's (FHWA) Local Road Safety process in the following six (6) steps as shown in **Figure 2**:

Figure 2 FHWA's LRSP Development Process

In establishing the leadership in Step 1, a City of Santa Rosa Public Works staff member was identified as the Safety Champion/Lead for this project. The Safety Champion helped to reach out to the various safety partners for the five traffic safety E's (enforcement, education, emergency response, and emerging technologies) and other important local representatives. The Safety Champion/Lead also facilitated public community meetings to engage and get feedback from the local communities. This stakeholder working groups and the community engagement meetings were paramount in creating a comprehensive safety plan that is tailored to address the local needs and issues.

2. Background

2.1 Purpose and Need

The City of Santa Rosa is located in Sonoma County in the heart of California's Wine County. The City currently has an estimated population of 175,625. Transportation network in the city consists of regional highways, regional and arterial streets connected to transitional and collector streets. The City of Santa Rosa has a mix of traffic that include local and commuter traffic.

In focusing in on the roadway safety needs, the past five years (2015-2019) of collisions were evaluated and the fatal and severe injury (SI) collisions from this period are shown in **Figure 3** on the following page. This does not include collisions on the state highways.

2.1.1 Focus Corridors

This LRSP will supplement the previously adopted 2018 BPMP. The BPMP developed a list of priority projects that proposed improvements or a need for further study based on bicycle and pedestrian needs, collision analysis and community feedback. This LRSP studies the corridors identified as needing further studies and develops countermeasures for these corridors based on collision trends and community feedback.

Per coordination with the City and reviewing the BPMP, there are eight focus corridors identified for this LRSP, seven of which are roadway segments. The focus corridors are as follows.

1. 4th Street from E Street to Farmers Lane
2. Montgomery Drive from Alderbrook Drive to Hahman Drive
3. College Avenue from Kowell Lane to Morgan Street
4. College Avenue from Morgan Street to 4th Street
5. Stony Point Road from W 3rd Street to Sebastopol Road
6. Roseland Creek Trail from Stony Point Road to Burbank Avenue
7. N Dutton Avenue from W College Avenue to W 3rd Street
8. Cleveland Avenue from Industrial Drive to Guerneville Road

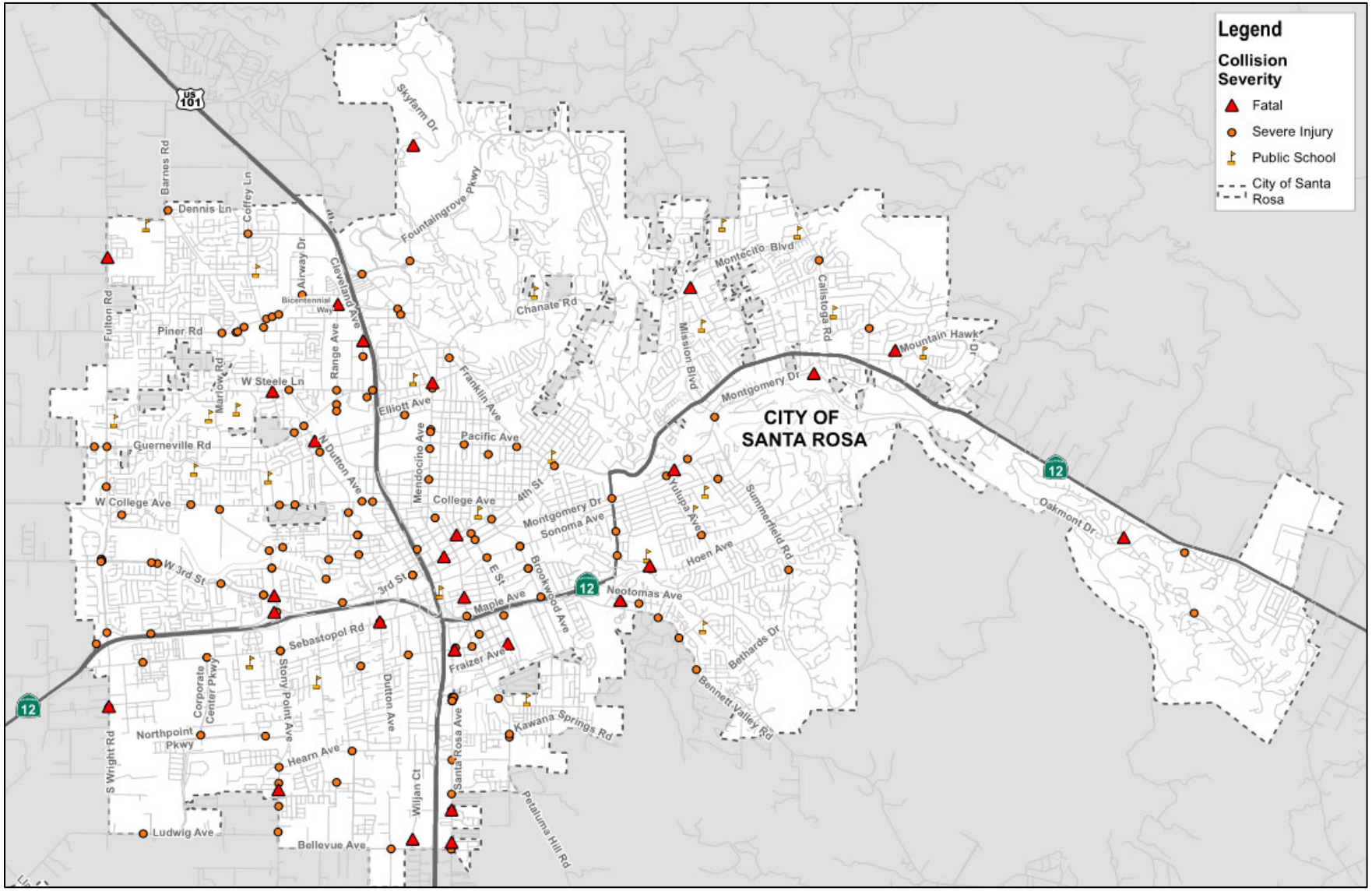

Figure 3 Fatal and Severe Injury Collisions on City of Santa Rosa Roadways (2015-2019)

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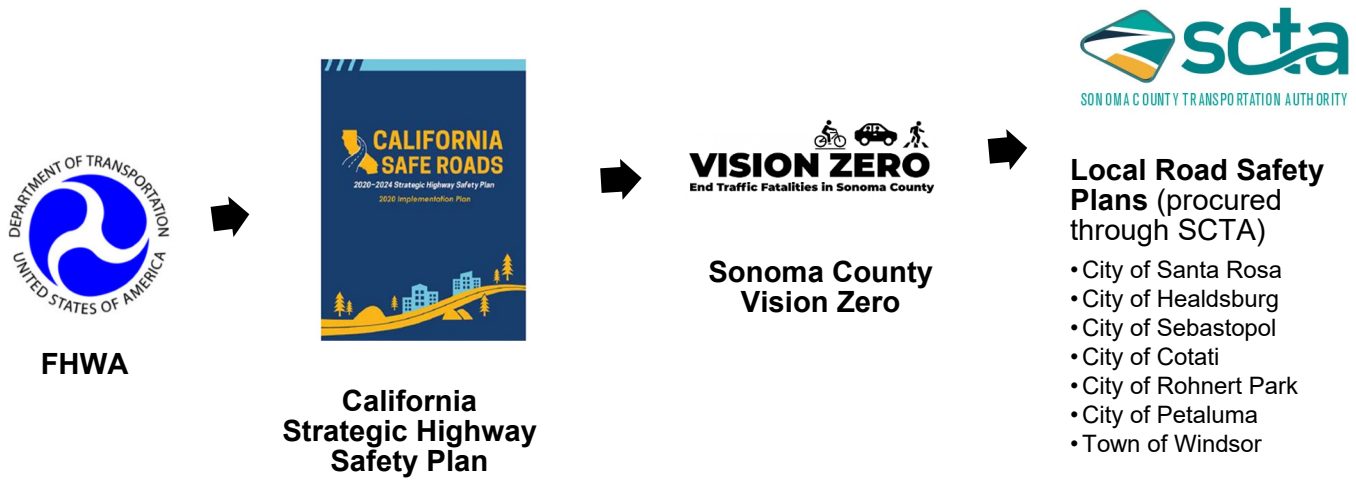
2.2 Guiding Documents and Principles

FHWA requires that each state develop a SHSP to receive federal funding. The California SHSP is a statewide safety plan that helps provide a framework to reduce fatal and high severity collisions. Sonoma County recently completed a countywide Vision Zero Action plan with similar goals (for more information, see **Section 2.2.2**). In 2020, Sonoma County Transportation Authority procured seven (7) LRSPs throughout Sonoma County in a consolidated effort. These LRSPs will have similar goals to the California SHSP and Sonoma County Vision Zero but will be more tailored to the local roadway needs of each agency.



2.2.1 Sonoma County Vision Zero

As shown in **Figure 4**, the Sonoma County Transportation Authority (SCTA) and the Department of Health Services launched a Vision Zero Action Plan for all of Sonoma County. The Countywide Vision Zero Action Plan was adopted by the SCTA in March 2022. This LRSP aims to complement the Vision Zero Action Plan with elements catered specifically for the City of Santa Rosa. SCTA's goal is to produce "a project that will focus on action-oriented strategies to reduce serious injuries and fatalities caused by traffic collisions, and improving health, quality of life and economic vitality, particularly for low-income and disadvantaged communities". The vision and goals of the LRSP will follow similar standards.

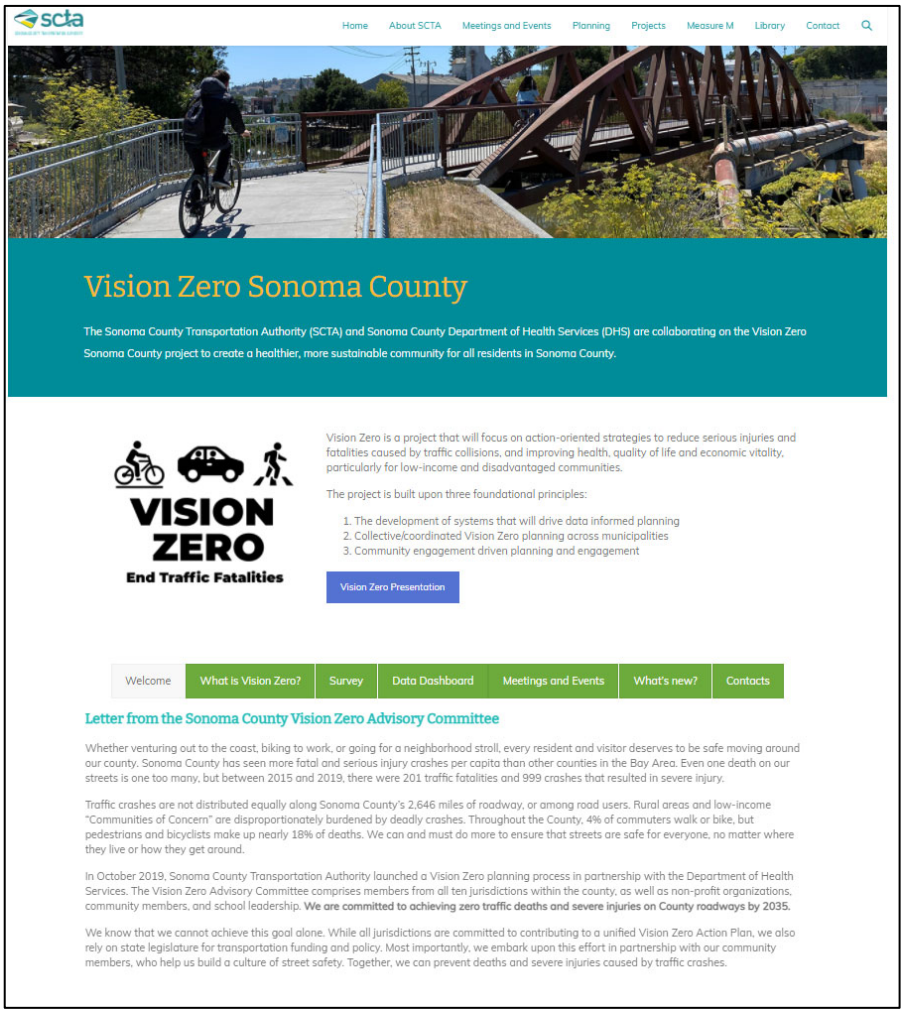


Figure 4 Sonoma County Transportation Authority Vision Zero Website

2.2.1.1 Vision Zero

Vision Zero is a significant departure from the status quo in two major ways:

- Vision Zero recognizes that people will sometimes make mistakes, so the road system and related policies should be designed to minimize those inevitable mistakes and reduce their likelihood to result in severe injuries or fatalities. This means that system designers and policymakers are expected to improve the roadway environment, policies (such as speed management), and other related systems to lessen the severity of crashes. Roadway users are however still responsible for their mistakes and should follow all applicable laws and use reasonable judgement when conducting themselves within the public right of way.
- Vision Zero is a multidisciplinary approach, bringing together diverse and necessary stakeholders to address this complex problem. In the past, meaningful, cross-disciplinary collaboration among local traffic planners and engineers, policymakers, and public health professionals has not been the norm. Vision Zero acknowledges that many factors contribute to safe mobility -- including roadway design, speeds, behaviors, technology, and policies -- and sets clear goals to achieve the shared goal of zero fatalities and severe injuries.

2.2.2 Safe System Approach

The Federal Highway Administration (FHWA) is using the Safe System approach to work towards their goal of zero fatalities in vehicles. This approach coincides with the recent USDOT National Roadway Safety Strategy. In providing a comprehensive approach to safety, the Safe System approach is to design our vehicles and infrastructure in a

manner that anticipates human error and accommodates human tolerances with a goal of reducing fatal and serious injuries. The following framework is intended to assist the vehicle and infrastructure communities in making decisions in alignment with Safe System principles. Implementing and selecting safe system practices and design will incrementally improve safety over time.

FHWA defines the Safe System Approach Principles and Elements as follows:

- *Safe Road Users—The safety of all road users is equitably addressed, including those who walk, bike, drive, ride transit, or travel by other modes.*
- *Safe Vehicles—Vehicles are designed and regulated to minimize the frequency and severity of collisions using safety measures that incorporate the latest technology.*
- *Safe Speeds—Humans are less likely to survive high-speed crashes. Reducing speeds can accommodate human-injury tolerances in three ways: reducing impact forces, providing additional time for drivers to stop, and improving visibility.*
- *Safe Roads—Designing transportation infrastructure to accommodate human mistakes and injury tolerances can greatly reduce the severity of crashes that do occur. Examples include physically separating people traveling at different speeds, providing dedicated times for different users to move through a space, and alerting users to hazards and other road users.*
- *Post-Crash Care—People who are injured in collisions rely on emergency first responders to quickly locate and stabilize their injuries and transport them to medical facilities. Post-crash care also includes forensic analysis at the crash site, traffic incident management, and other activities.*

Adopting a Safe System approach does not absolve users of their responsibility. Other safety practices such as speed management strategies, driver education, enforcement, and effective emergency response will remain essential to improving road safety. With the passing of Assembly Bill (AB) 43, there will are some roadway characteristics that can allow flexibility in setting speed limits which could lend to a safe systems approach.

As shown in **Figure 5**, is a safe systems approach.

Source: FHWA.

Figure 5 Safe System Approach

2.2.3 City of Santa Rosa Bicycle and Pedestrian Master Plan (BPMP)

The Local Road Safety Plan will complement the BPMP and have emphasis areas that align with the focus corridors identified as priority project areas in the BPMP (see **Figure 6**).

The BPMP's vision is that "Santa Rosa is a community where walking and bicycling are comfortable, convenient, and common for people of all ages and abilities." The goals for this plan will be mirrored in the LRSP and are shown below.

1. Increase Access and Comfort
2. Maintain and Expand the Network
3. Support a Culture of Walking and Biking

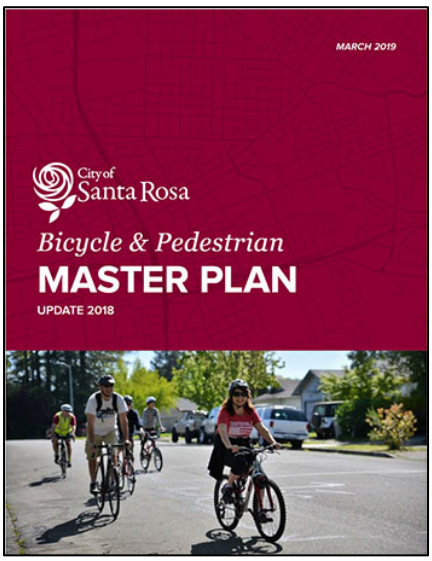


Figure 6 City of Santa Rosa Bicycle & Pedestrian Master Plan

2.2.4 Standards and Guidelines

In developing the City of Santa Rosa LRSP, the following standards and guidelines were followed:

1. "Local Roadway Safety, A Manual for California's Local Road Owners", Caltrans, Version 1.5, April 2020.
2. 2020-2024 California's Strategic Highway Safety Plan (SHSP), "California Safe Roads: 2020-2024 Strategic Highway Safety Plan", Caltrans.
3. "National Roadway Safety Strategy", United States department of Transportation, January 2022.
4. "Developing Safety Plans, A Manual for Local Rural Road Owners", Federal Highway Administration, March 2012.
5. "Local and Rural Road Safety Briefing Sheets: Local Road Safety Plans," Federal Highway Administration, November 2014.
6. "Highway Safety Manual", American Association of State Highway Officials (AASHTO), 1st Edition, 2014 supplement.
7. "California Manual of Uniform Traffic Control Devices (CA MUTCD)", Revision 5, 2014.
8. "Guide to Quantitative Approaches to Systemic Safety Analysis", National Cooperative Highway Research Program, NCHRP Research Report 955, 2020.
9. "Systemic Safety Project Selection Tool", Federal Highway Administration, July 2013.
10. "Urban Bikeway Design Guide", National Association of City Transportation Officials (NACTO), April 2011 Edition

2.3 Methodology

The LRSP methodology followed the FHWA's LRSP development process as shown in **Figure 7** and the Caltrans *Local Roadway Safety Manual* document.

Below is a roadmap created by the Federal Highway Administration to show the process of creating the Local Road Safety Plan. Here are the primary steps used to create this plan:

1. **Identify Stakeholders**

   i) *Working Groups was formed of the 5 E's and other interested representatives.*

2. **Use Safety Data**

   i) *Past 5 years of collisions were analyzed with discussion of other high-risk locations.*

3. **Chose Proven Solutions**

   i) *FHWA Proven Countermeasures and Caltrans safety countermeasures were used in mitigation collision trends and risk characteristics.*

4. **Implement Solutions**

   i) *Projects were identified for specific locations and systemically.*

Figure 7 FHWA's LRSP Development Map (Source: Federal Highway Administration)

3. Safety Partners/Stakeholders

3.1 Stakeholder Working Group Members

Based on community connections, the City of Santa Rosa led the formation of three LRSP Stakeholder Working Groups. These leadership groups were crucial in the development of the LRSP and helped in capturing the safety needs, goals, and priorities including safety countermeasures for the City of Santa Rosa. The LRSP Stakeholder Working Groups included the following representatives:

- City of Santa Rosa
  - Transportation and Public Works
  - Fire Department
  - Police Department
  - Bicycle and Pedestrian Advisory Board
  - Parking
  - CityBus
- Sonoma County Bicycle Coalition
- Safe Routes to School
- Midtown 4th Street
- Proctor Terrace Elementary School
- Junior College Neighborhood Association
- St. Eugene's Cathedral School
- Montgomery Village
- Sonoma County Water Agency
- Sonoma County Transportation Authority
- Roseland Creek Elementary School

The stakeholder working groups provided their feedback during the development of the Local Road Safety Plan. With many of the safety countermeasures including engineering, enforcement, and emergency response, it is important to have buy-inform the stakeholders in understanding how the plan will be implemented.

3.2 Stakeholder Working Group Meetings

There were three stakeholder working group meetings held with various stakeholder working groups. The meetings were as follows:

1. 4th Street and Montgomery Drive Corridors:
   June 30, 2021 from 1:30 p.m. to 3:30 p.m.
2. College Avenue Corridor:
   July 14, 2021 from 1:00 p.m. to 3:00 p.m.
3. Roseland Creek Trail Corridor:
   August 31, 2021 from 10:00 a.m. to 11:00 a.m.

These meetings introduced the respective working groups, explained the LRSP process, provided background on the purpose of the plan, showed collision analysis, and proposed engineering and non-engineering strategies for the respective corridors. The meeting summaries for the stakeholder working group meetings are in **Appendix A: Stakeholder and Public Input**.

In addition to the stakeholder working group meetings, there were two community outreach meetings for Fourth Street and Montgomery Drive and N. Dutton Avenue corridors there were conducted to capture the need and feedback of the local road users. The LRSP process and proposed improvement at the focus corridors were also presented to the Santa Rosa Bicycle and Pedestrian Advisory Board Meeting on September 16, 2021 and April 21, 2022.

3.3 Guiding Principles

The vision and goals for the LRSP were presented to stakeholders at the meetings and are identical to the vision and goals of Santa Rosa's Bicycle & Pedestrian Master Plan. The vision describes the aim of the plan, and the goals describe what the plan is trying to achieve.

VISION

Santa Rosa is a community where walking and bicycling are comfortable, convenient, and common for people of all ages and abilities.

GOALS

Goal #1: Increase access and comfort for bicyclists and pedestrians

Goal #2: Maintain and expand a multimodal network

Goal #3: Support a culture of walking and biking

4. Analyze Safety Data

4.1 Previous Safety Plans and Projects

4.1.1 Bicycle and Pedestrian Master Plan Update 2018

As shown in **Table 1**, **Table 2**, and **Figure 8**, the Bicycle and Pedestrian Master Plan Update identified the bicycle and pedestrian high injury network (HIN) in the City of Santa Rosa.

Table 1 High Injury Bicycle Corridors

Segment Name	From	To	Fatal & Severe Injury Collisions	Collisions/1000 FT.
Mendocino Ave	Elliot Ave	10th St	5	1.0
Santa Rosa Ave	Petaluma Hill Rd	Colgan Ave	3	0.9
Guerneville Rd/ Steele Ln	Dutton Ave	Rowe Dr	5	0.8
Sebastopol Rd	Mattson Rd	Dutton Ave	6	0.6
Stony Point Rd	College Ave	Campbell Dr	5	0.5
Montgomery Dr	Farmers Ln	Mission Blvd	3	0.5

Table 2 High Injury Pedestrian Corridors

Segment Name	From	To	Fatal & Severe Injury Collisions	Collisions/1000 FT.
Santa Rosa Ave	Charles St	Mill St	3	4.7
3rd St	Gate Way	Stony Point Rd	3	2.6
Santa Rosa Ave	Court Rd	Bellevue Ave	4	2.2
Piner Rd	Bay Village Cir	Coffey Ln	3	2.1
Mendocino Ave	McConnell Ave	4th St	9	1.6
Farmers Ln	Long Dr	Sonoma Ave	3	1.4
Guerneville Rd/ Steele Ln	Coffey Ln	Mendocino Ave	8	1.3
Stony Point Rd	Glenbrook Dr	Sebastopol Rd	5	1.3
4th St	Mendocino Ave	College Ave	4	1.2
3rd St	Hwy 101	E St	3	1.2
Range Ave	Bicentennial Way	Guerneville Rd	5	1.1
College Ave	Link Ln	Mendocino Ave	5	1.0

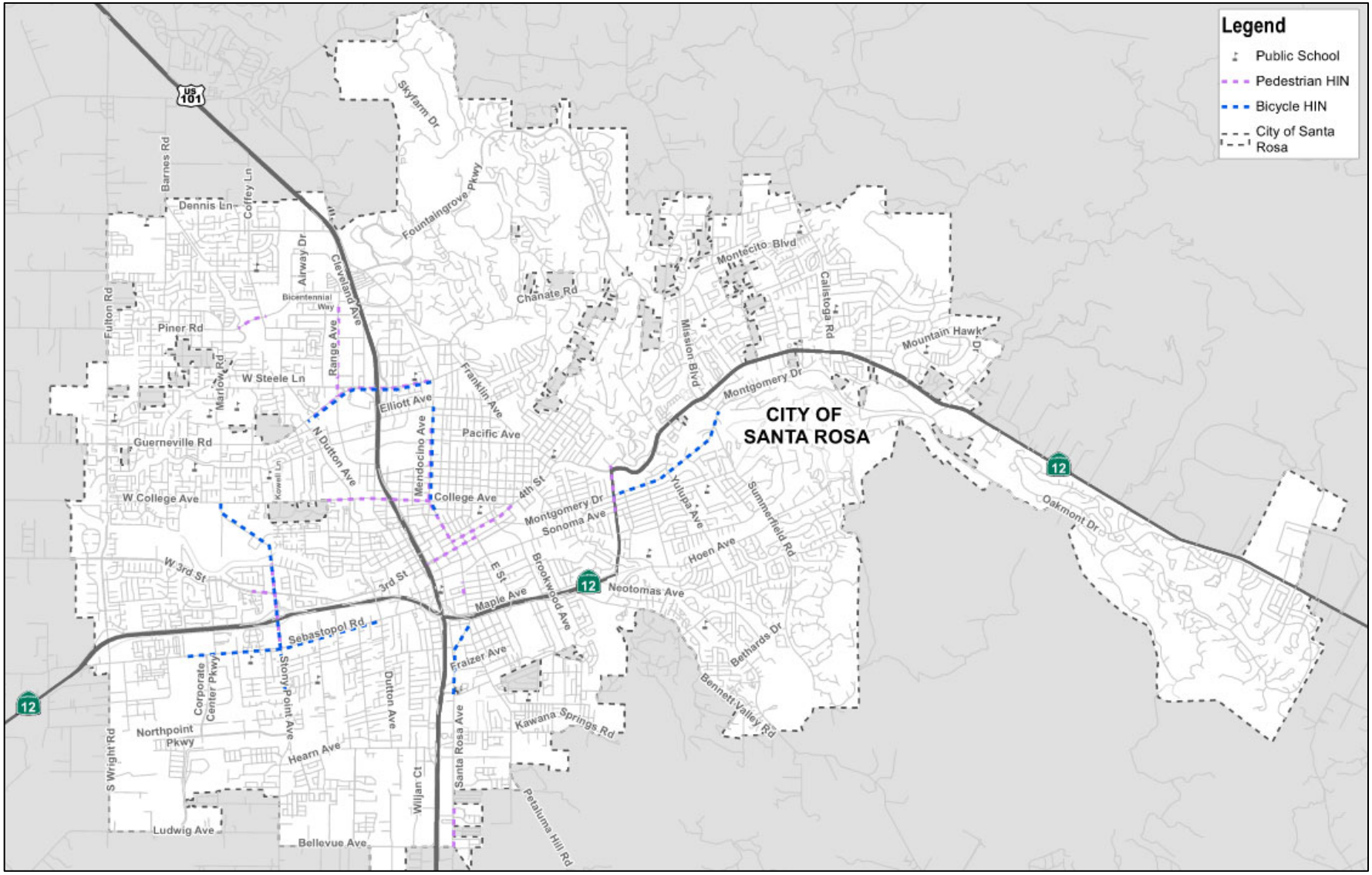


Figure 8 BPMP's High Injury Network (HIN) on City of Santa Rosa Roadways

In addition, the level of traffic stress (LTS) on Santa Rosa major roadways was evaluated. A map of the LTS is shown in **Figure 9** on the following page (LTS of 1 is low, LTS of 4 is high). Nearly 60 percent of Santa Rosa's arterial roads have LTS 4 (highest stress) due to a lack of buffered or protected bicycle facilities, high vehicle speeds and volume, and roadway configuration.

The LRSP updated the collision analysis for the HIN roadways identified in the BPMP to reflect more recent years of collision data. For the HIN corridors, bicycle and pedestrian involved collisions between January 1, 2015 to December 31, 2019 was evaluated based on various collision characteristics. Recently completed and planned projects for these corridors was also reviewed to determine if safety deficiencies on the corridors were already addressed. Engineering countermeasures (systemic and non-systemic) were developed for locations without recent /planned improvements. A further detailed analysis of the BPMP's HIN network is included in **Section 6** of this report.

4.1.2 Stony Point Road Corridor Study for Active Transportation Modes

Stony Point Road is a major north-south travel route connecting numerous neighborhoods and commercial areas within Santa Rosa. Carrying high volumes of traffic, conditions on Stony Point Road can be intimidating for many pedestrians and bicyclists. Due to the high number of collisions involving these vulnerable users, the *Santa Rosa Bicycle and Pedestrian Master Plan Update 2018* identified the Stony Point Road corridor for further study which the Bicycle and Pedestrian Advisory Board (BPAB) identified as the highest priority.

This study was conducted as a separate project and completed in August 2021 which slightly preceded the Local Safety Road Plans initiated in early 2021. Nonetheless, this analysis was scoped in a manner that aligns with the Federal regulations which require that each state has a Strategic Highway Safety Plan (SHSP). The study for Stony Point Road corridor used an approach that created a framework to systematically identify and analyze safety problems and recommend safety improvements.

The recommendations herein grew out of an analysis of transportation facilities in the study area, existing traffic conditions, and identification of key issues by residents. Caltrans was consulted during the process to provide input on the bicycle and pedestrian concept plans as they are ultimately responsible for implementing and maintaining facilities on the state highway system.

The study area includes Stony Point Road from West Third Street to Sebastopol Road in west Santa Rosa, a distance of just under one-half mile. Abutting land uses are primarily commercial, although there are numerous residential neighborhoods nearby. State Route (SR) 12 is a limited access highway that runs east-west through the center of the study area and connects Santa Rosa with Sebastopol. Stony Point Road and SR 12 are connected by a grade separated interchange.

Throughout the project, several strategies were used to consult with members of the community about local needs and to obtain comments on the proposed improvements. These included:

- **Community Meetings:** Two virtual community meetings were held, attracting 60 total participants.
- **Online Surveys:** Two online surveys were developed to solicit input on key issues for pedestrians and bicyclists in the study area and to weigh in on the draft concept plans. Nearly 600 responses were submitted to the two surveys.
- **Bicycle Pedestrian Advisory Board (BPAB) Meetings:** The BPAB received three presentations on the draft concept plans and were asked to provide input to staff and the consultant team. Members of the public also attended meetings and provided comments.

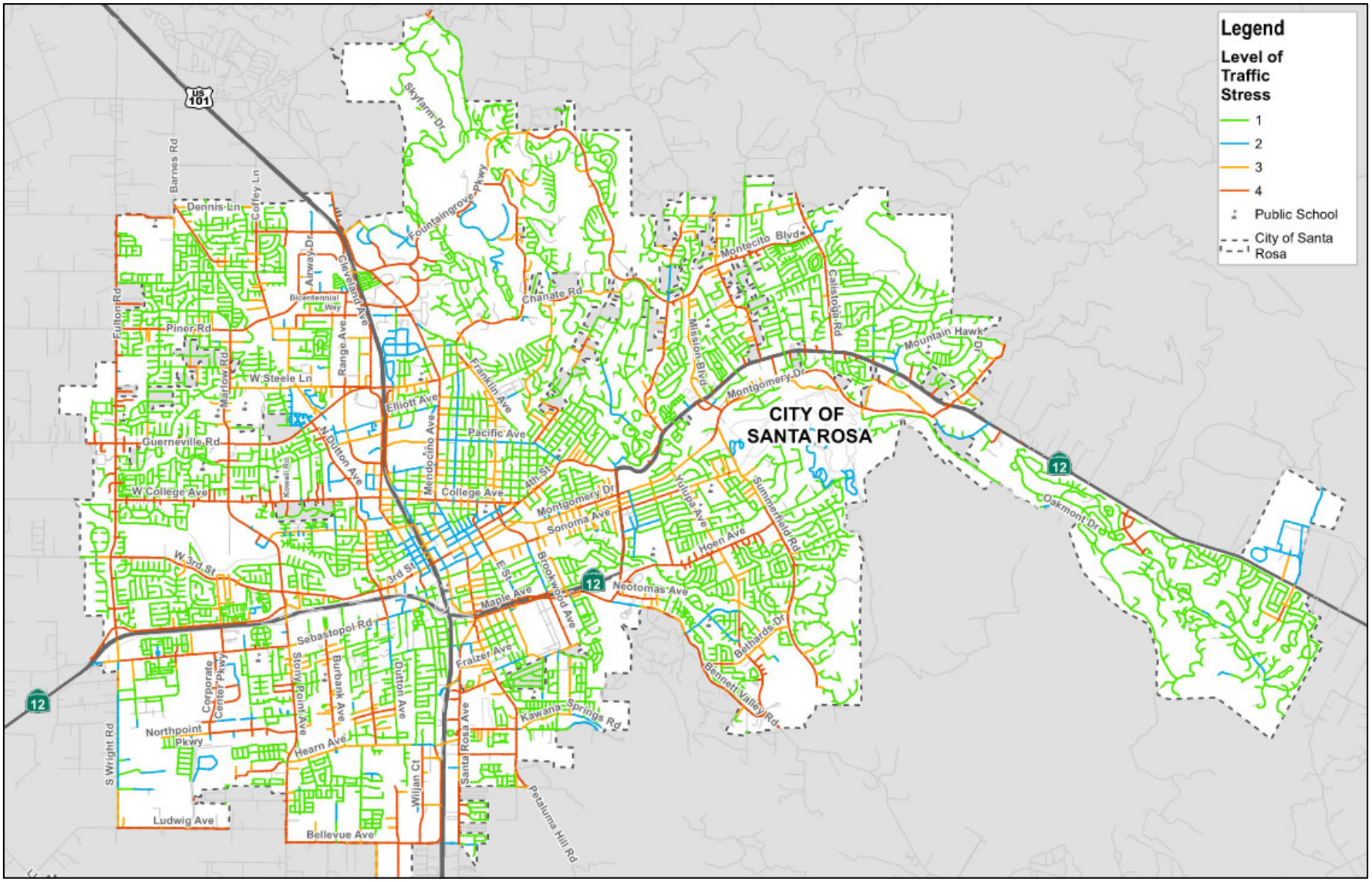


Figure 9 Level of Traffic Stress (LTS) on City of Santa Rosa Roadways

4.1.2.1 Key Issues

Through the analysis of existing conditions along the study corridor and input from the community, several issues to be addressed were identified:

Bicycle Safety – Bicyclists don't feel comfortable riding along Stony Point Road.

Pedestrian Crossings – Crossings along the corridor are wide due to the number of travel lanes, including turn lanes at the intersections. Vehicle speeds were perceived as high as they entered on-ramps to SR 12 and made right turns across crosswalks.

Joe Rodota Trail Crossing – The Joe Rodota Trail runs east-west and crosses Stony Point Road at the SR 12 East ramps. Concerns were expressed about conflicts between vehicle traffic and high number of trail users, which include children traveling to school.

4.1.2.2 Recommendations

Proposed improvements from the study are shown in **Appendix C: Previous Safety Plans and Projects** and listed below.

- Install Class IV protected bike lanes.
- Reconfigure the intersection with Joe Rodota Trail by 1) eliminating the slip lane for northbound drivers accessing eastbound Highway 12, 2) constructing curb extensions to shorten crossing distances, and 3) prohibiting right on red at the eastbound Highway 12 on/off-ramps.
- Reconfigure the westbound on-ramps by 1) shortening the distance where drivers may enter the on-ramps (and thus, exposure for people bicycling across the on-ramp entrances), and 2) installing rectangular rapid flashing beacons at on-ramp crosswalks.
- Install green bicycle conflict zone markings at driveways, intersections, and on/off-ramps.

4.1.2.3 Implementation

The estimated cost to design and construct the recommended project is approximately $2.75 million. Potential funding sources for the proposed improvements include the State's Active Transportation Program, which is California's largest source of funding for pedestrian and bicycle projects. The Highway Safety Improvement Program could potentially provide funding for safety-related improvements, especially at locations where a high number of injury collisions have occurred.

4.2 Citywide Collision Data

The City of Santa Rosa collision data was gathered using the Statewide Integrated Traffic Records System (SWITRS) and City collision records for some focus corridors. Each data set was analyzed, crosschecked, and compiled into one complete comprehensive data set. The data set contains five complete years' worth of collisions spanning from January 1, 2015 to December 31, 2019. The City also provided 2020 data from January 1 to December 31 for 4th Street, Montgomery Drive, and College Avenue.

Between 2015 and 2019, 8656 collisions were recorded on all roadways within the City of Santa Rosa. There are two state highways that provide regional connections through the City: US Highway 101 (US 101) and State Route 12 (SR 12). Citywide collisions based on their location (State highway vs City streets and intersection vs segment) is shown in **Figure 10**.

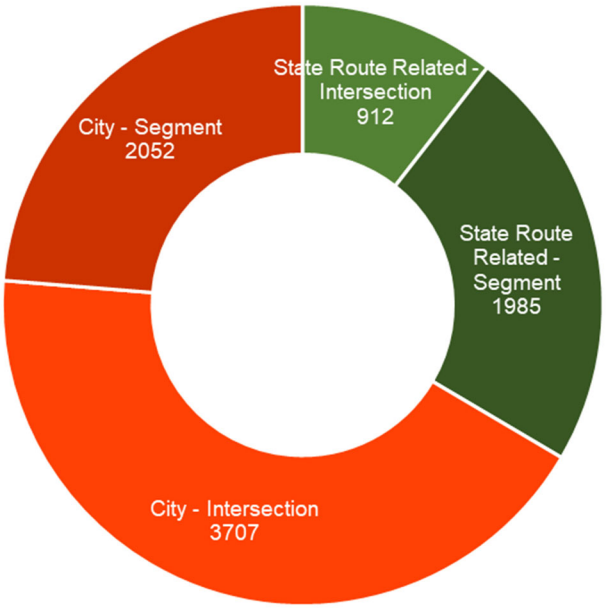


Figure 10 Total Collisions within the City of Santa Rosa (2015-2019)

Figure 11 shows a heatmap of the collisions on City of Santa Rosa roadways. As seen on this map, College Avenue, 4th Street, Dutton Avenue, Stony Point Road, and Cleveland Avenue have high densities of collisions in comparison to other portions of the city. These corridors (along with others identified through the BPMP) will be the focus corridors for this LRSP. Other corridors worth noting include Guerneville Road/Steele Lane, Hearn Avenue, Mendocino Avenue, and Santa Rosa Avenue; all have an above average collision density.

Further collision analysis and maps including collision by violation categories and density map for top violation categories are included in **Appendix B: Additional Collision Analysis**.

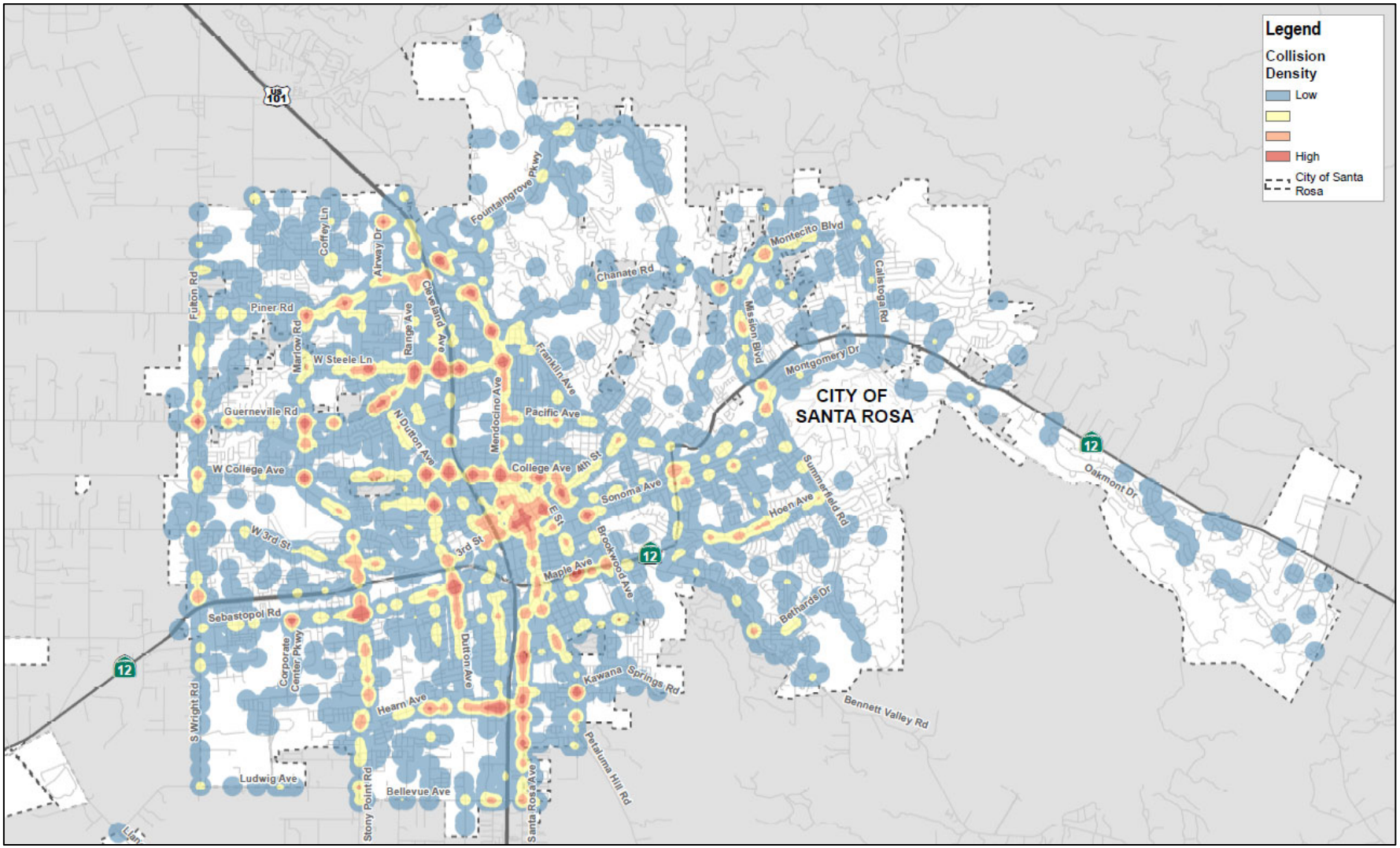


Figure 11 Collision Density on City of Santa Rosa Roadways (2015-2019)

4.2.1 Pedestrian and Bicycle Collisions

Around 10% of the total collisions on City roadways involved pedestrians or bicycles (see **Figure 12**) with vehicles. There were 276 pedestrian involved collisions and 278 bicycle involved collisions on City roadways between 2015 and 2019.

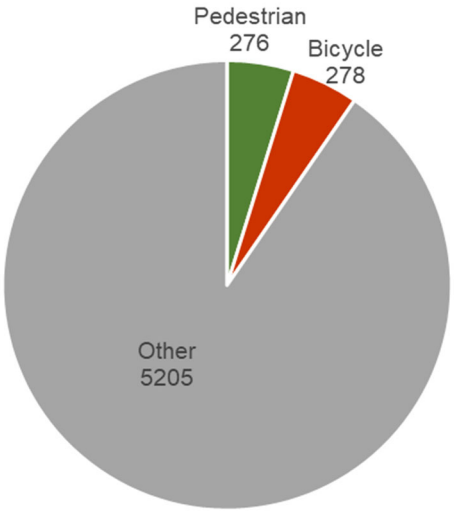


Figure 12 Pedestrian and Bicycle Involved Collisions on City of Santa Rosa Roadways (2015-2019)

For collisions on City roadways (not including State Highway collisions), the pedestrian and bicycle collisions that resulted in fatalities or injuries were compared with the vehicle only collisions that resulted in fatalities or injuries. This comparison showed that the collisions involving pedestrians and bicycles had higher degrees of injury than vehicle only collisions (see **Figures 13** and **14**).

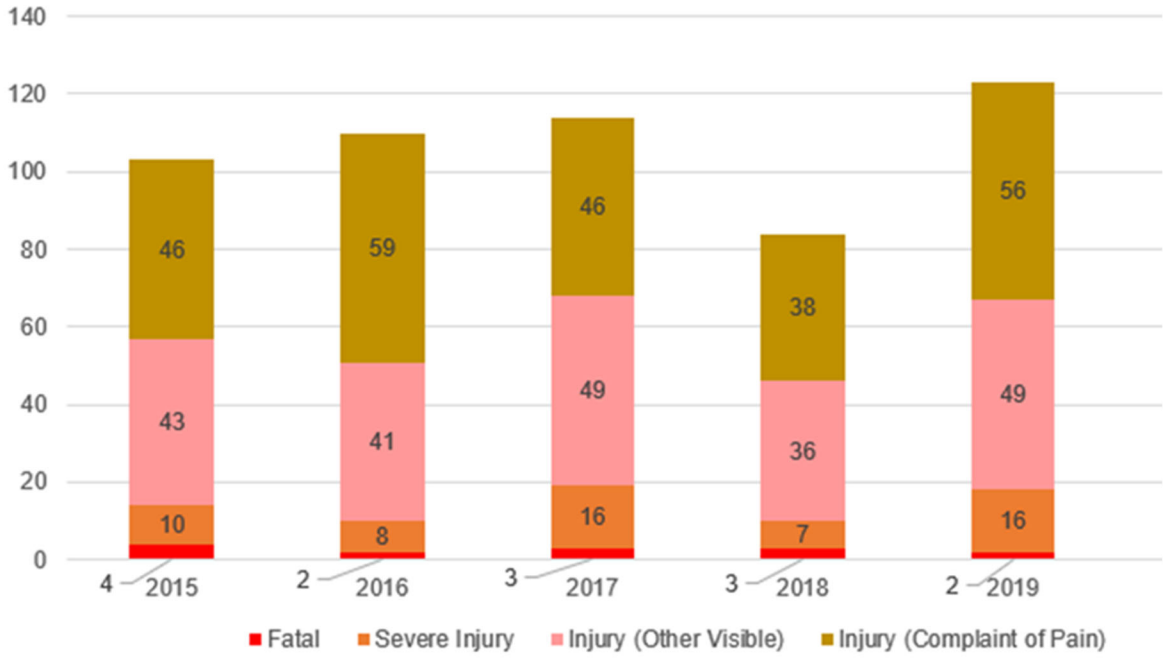


Figure 13 Pedestrian-Bicycle Collisions by Severity and Year (2015-2019)

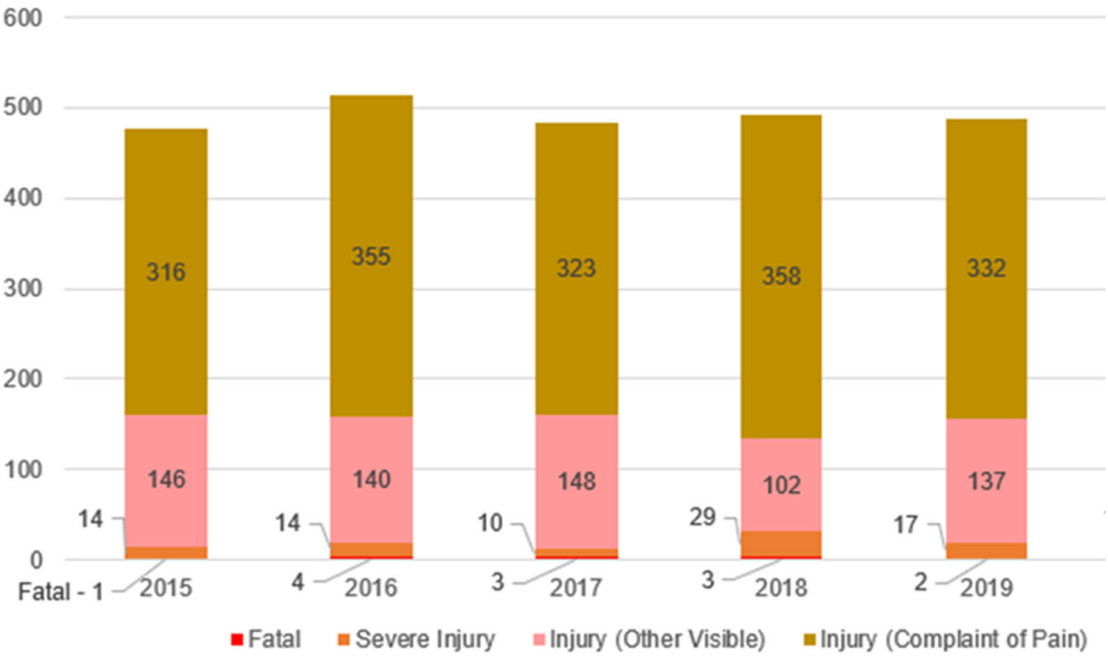


Figure 14 Vehicle Only Collisions by Severity and Year (2015-2019)

Between 2015 and 2019, there were 13 fatal and 38 severe injury (SI) pedestrian collisions on City roadways (see **Figure 15**). Each of the pedestrian collisions, along with their respective severities, are shown in **Figure 16**.

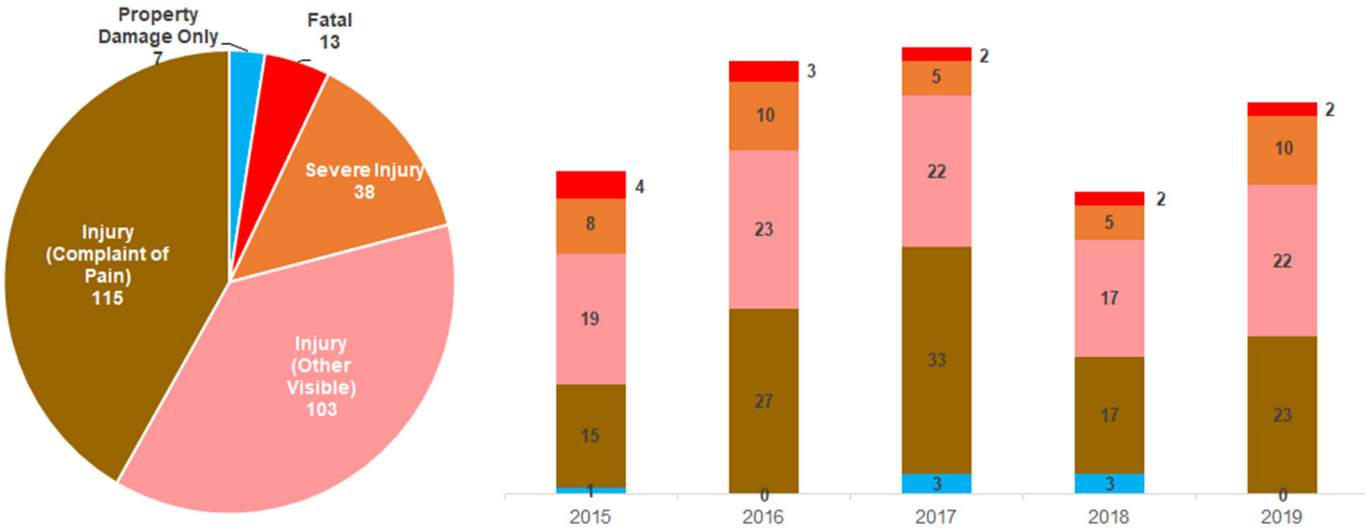


Figure 15 Severity of Pedestrian Collisions on City of Santa Rosa Roadways (2015-2019)

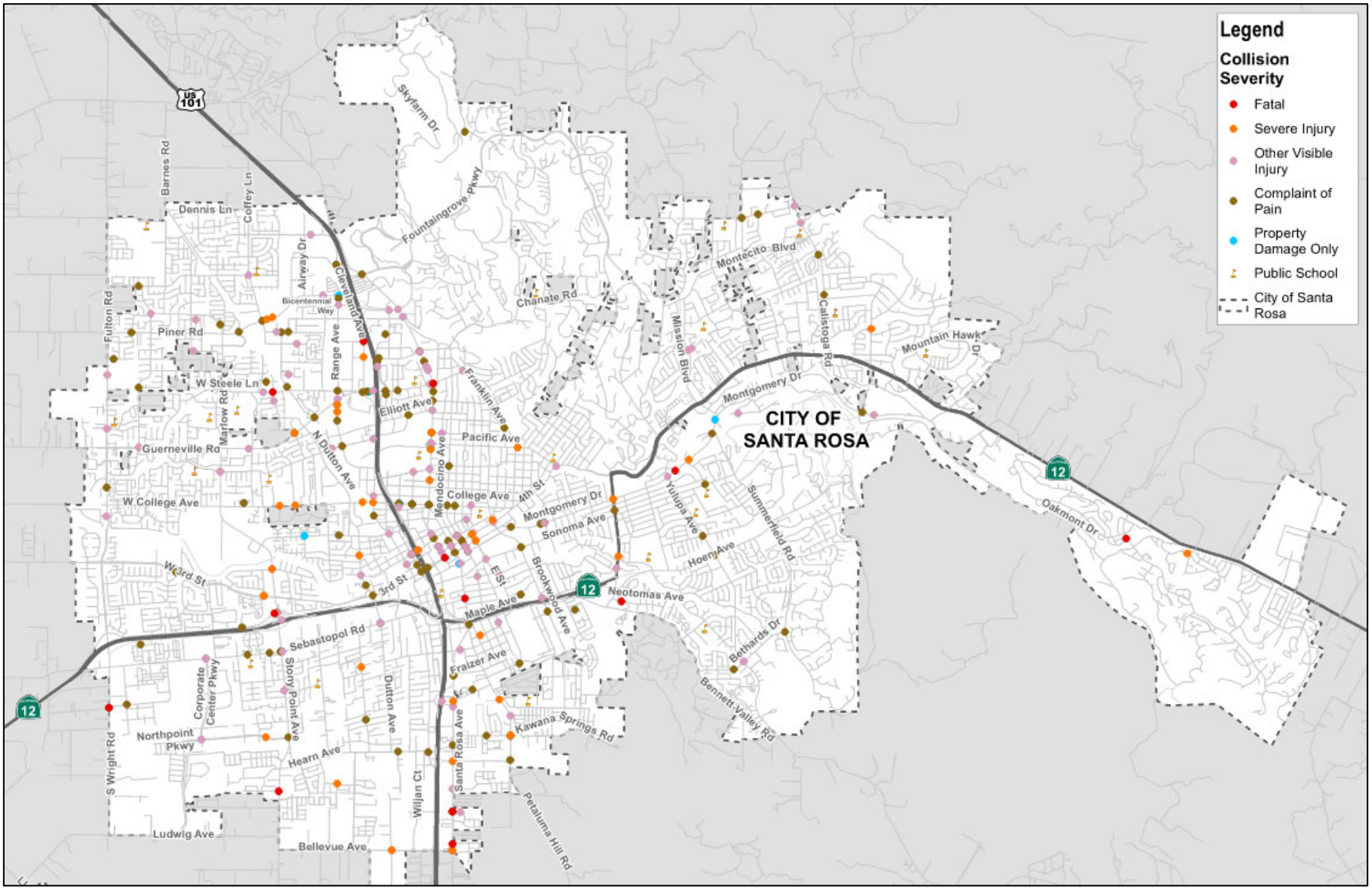


Figure 16 Pedestrian Collisions in the City of Santa Rosa (2015-2019)

The majority of pedestrian collisions occurred when the pedestrian was crossing in a crosswalk at an intersection (see **Figure 17**). A map of the pedestrian collisions with the pedestrian's location at the time of the collision is included in Appendix B.

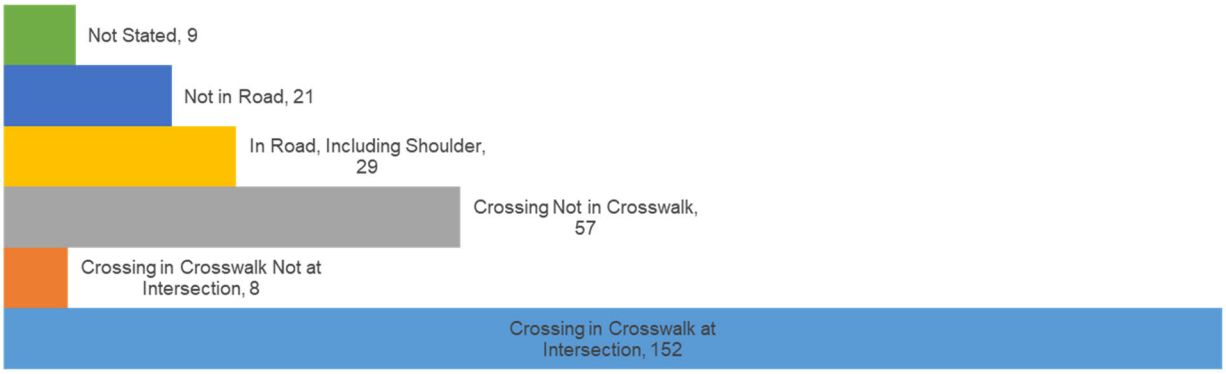


Figure 17 Location of Pedestrian Involved Collision in the City of Santa Rosa (2015-2019)

Between 2015 and 2019, there were 1 fatal and 20 severe injury bicycle collisions on City roadways (see **Figure 18**).

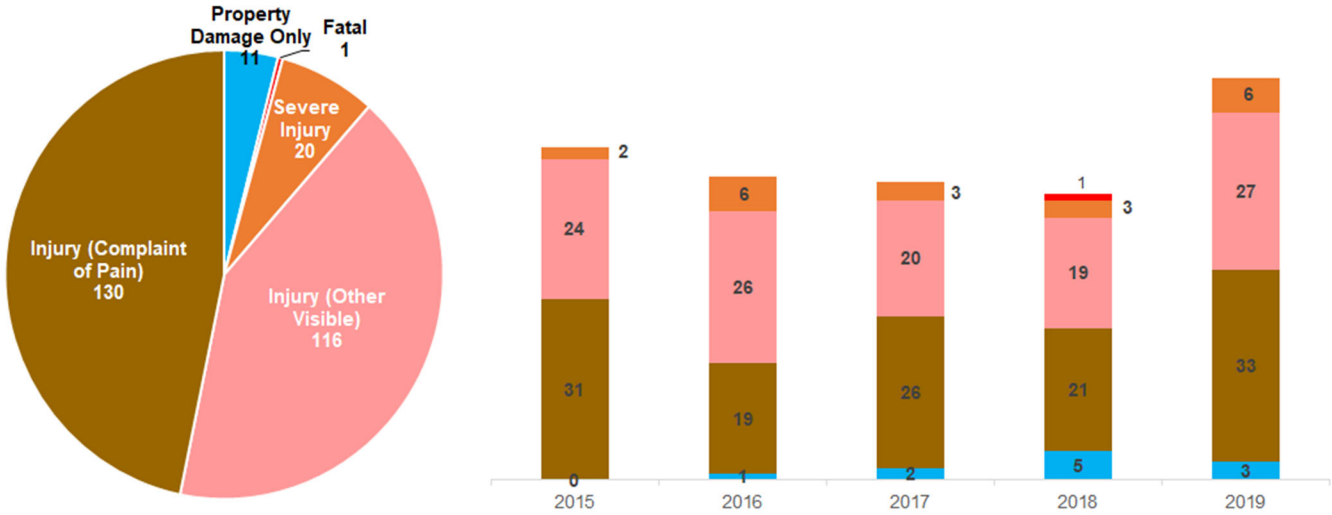


Figure 18 Severity of Bicycle Collisions on City of Santa Rosa Roadways (2015-2019)

The top violation categories (in order) for bicycle-related collisions were automobile right of way, wrong way, and improper turning. Additional collision analysis and maps are included in **Appendix B: Additional Collision Analysis.**

4.3 Collisions on Focus Corridors

4.3.1 4th Street Corridor

There were 173 collisions on 4th Street from E Street to Farmers Lane between 2015 and 2019. The top collision type was rear end, followed by broadside and hit object collisions. The top violation categories in order (not including unknown or not stated collisions) for the 4th Street Corridor are listed below.

- Unsafe Speed
- DUI/BUI
- Improper Turning
- Traffic Signals and Signs
- Automobile Right of Way

Figure 19 summarizes the 4th Street Corridor collisions based on severity and type. **Figure 20** displays the collision severity along the corridor.

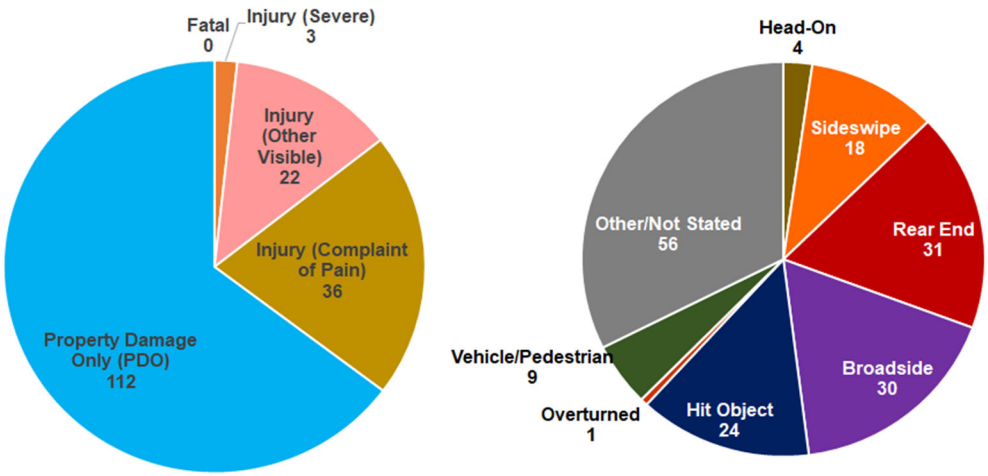


Figure 19 Summary of 4th Street Corridor Collisions

Figure 20 Collision Severity on 4th Street Corridor (2015-2019)

Figures 21 and **22** show maps of the pedestrian and bicycle collisions along the corridor, along with their respective collision severity.

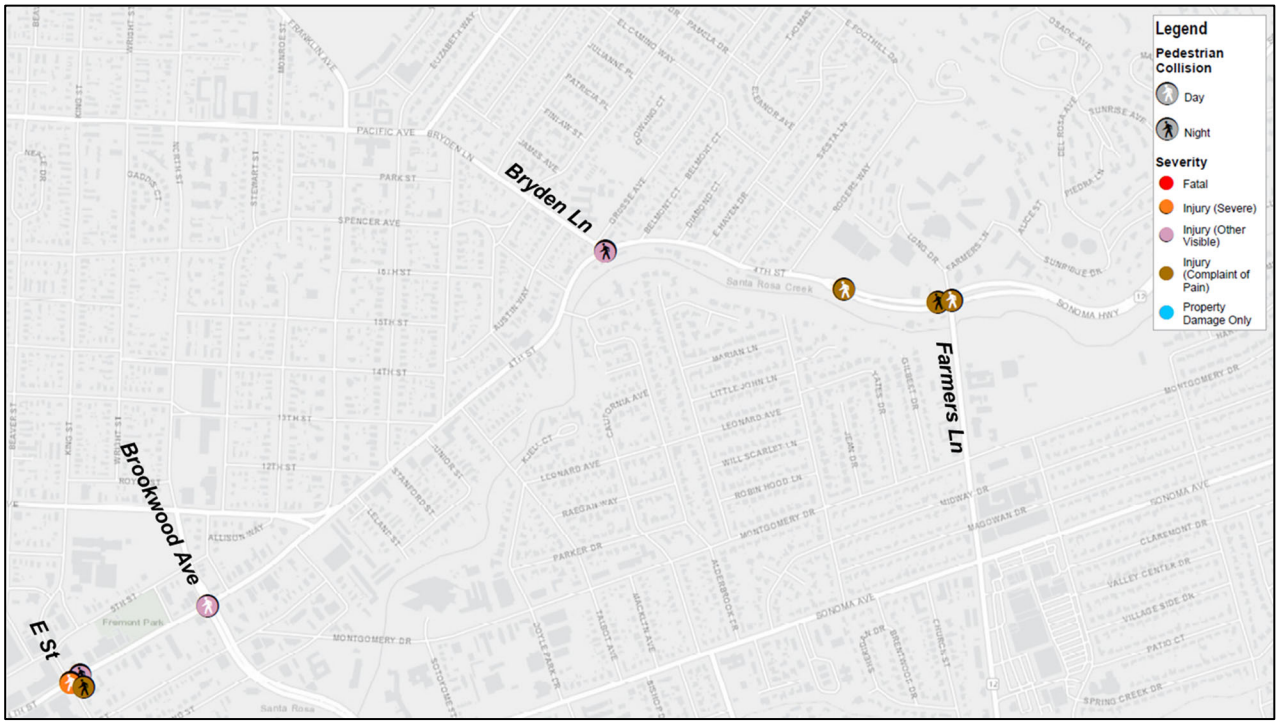


Figure 21 Pedestrian Collisions on the 4th Street Corridor (2015-2019)

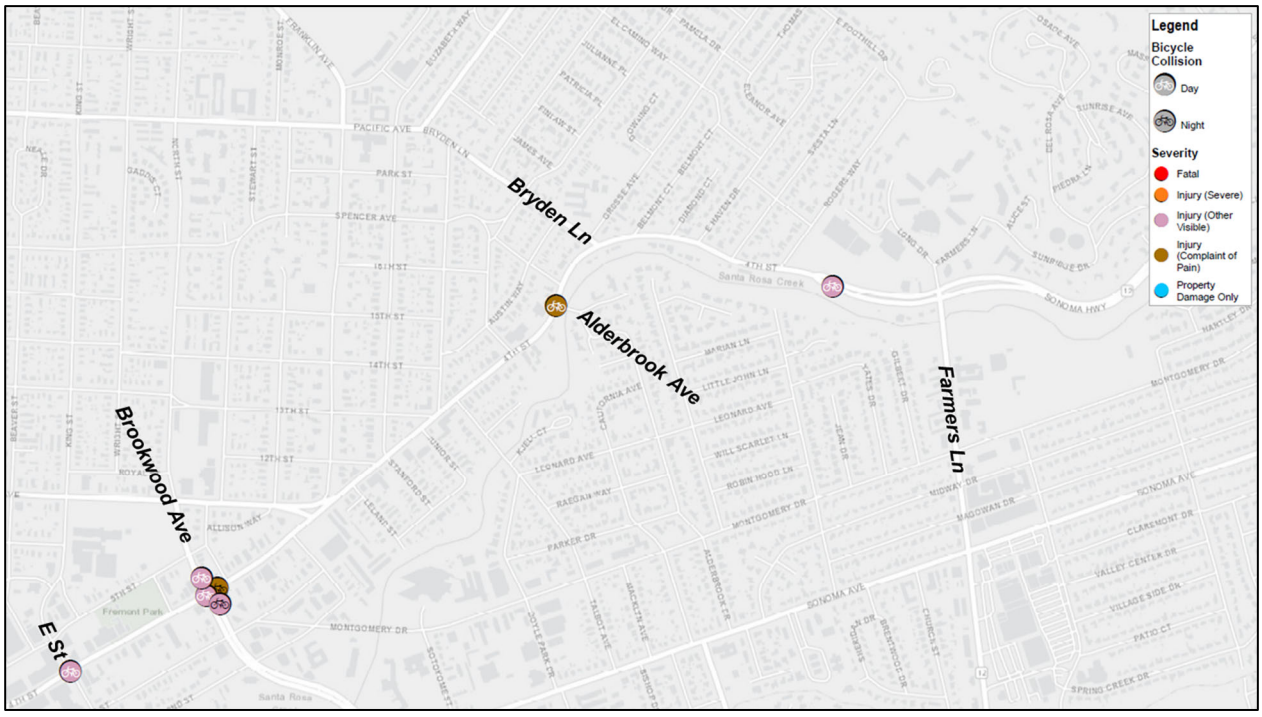


Figure 22 Bicycle Collisions on the 4th Street Corridor (2015-2019)

4.3.2 College Avenue Corridor

There were 367 collisions on College Avenue from Kowell Lane to 4th Street between 2015 and 2019. The top violation categories in order (not including unknown or not stated collisions) for the College Avenue Corridor are listed below.

- Unsafe Speed
- Traffic Signals and Signs
- Automobile Right of Way
- Improper Turning
- DUI/BUI

4.3.2.1 College Avenue between Kowell Lane and Morgan Street

Figure 23 summarizes the College Avenue collisions between Kowell Lane and Morgan Street based on severity and type.

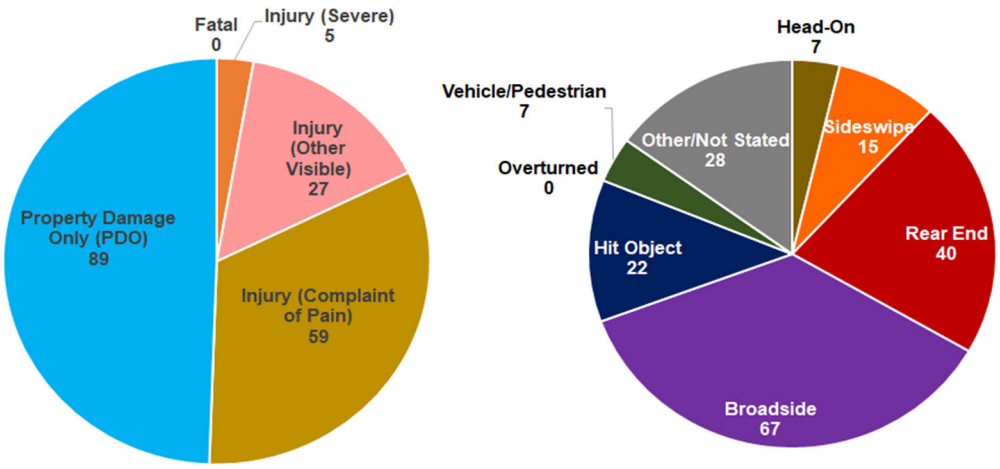


Figure 23 Summary of Collisions on College Avenue from Kowell Road to Morgan Street

Figure 24 displays the collision severity along the corridor.

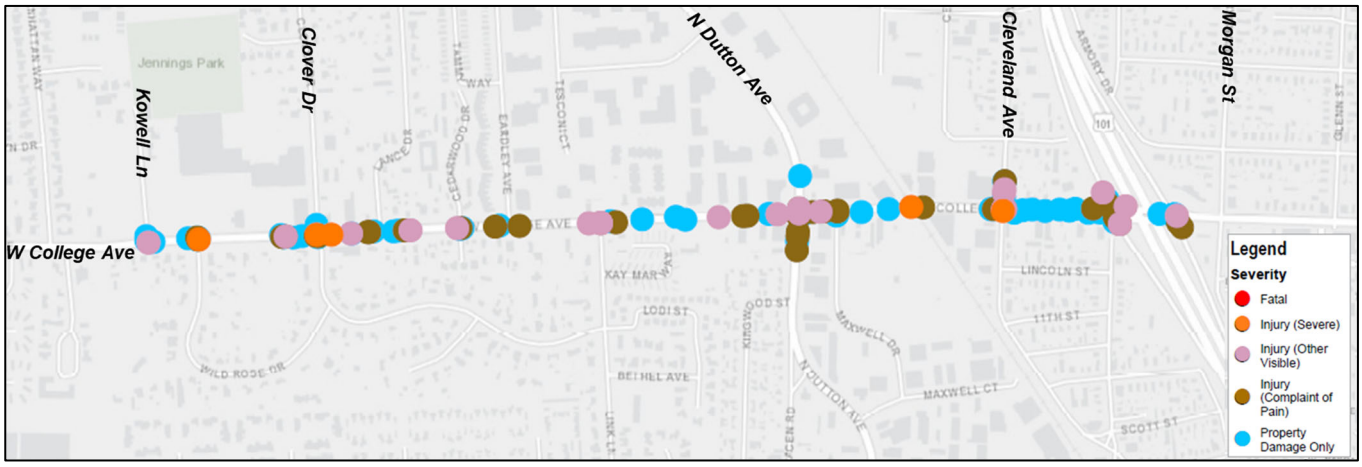


Figure 24 Collision Severity on College Avenue from Kowell Rd to Morgan St (2015-2019)

Figures 25 and **26** show maps of the pedestrian and bicycle collisions along the corridor, along with their respective collision severity.

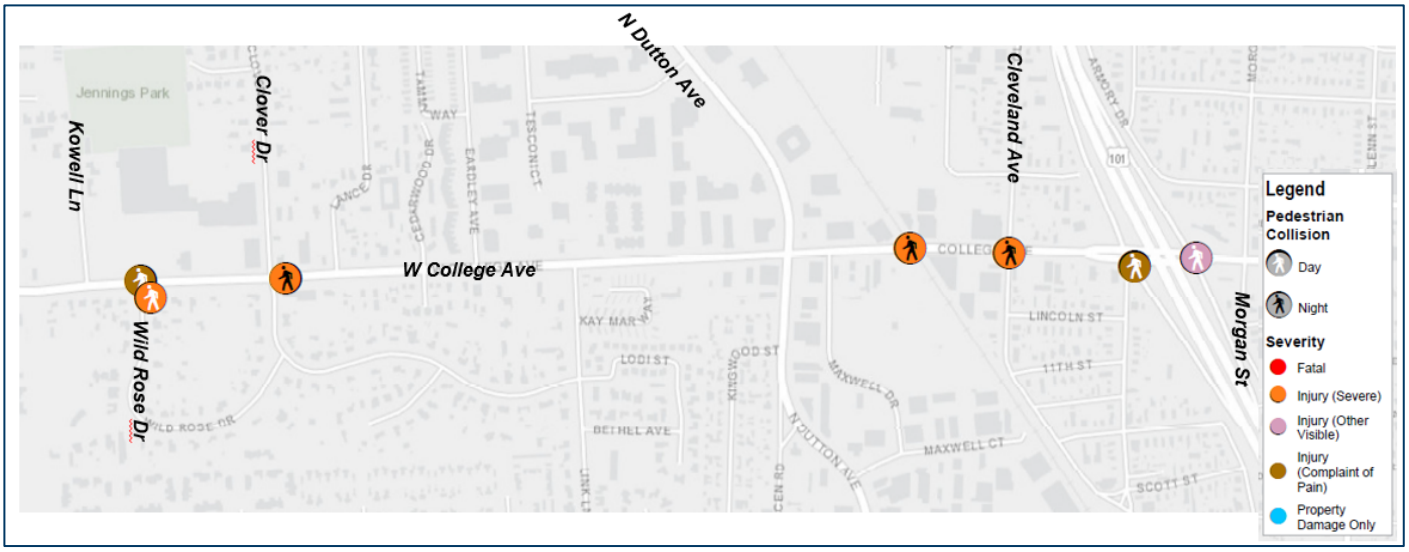


Figure 25 Pedestrian Collisions on College Avenue from Kowell Rd to Morgan St (2015-2019)

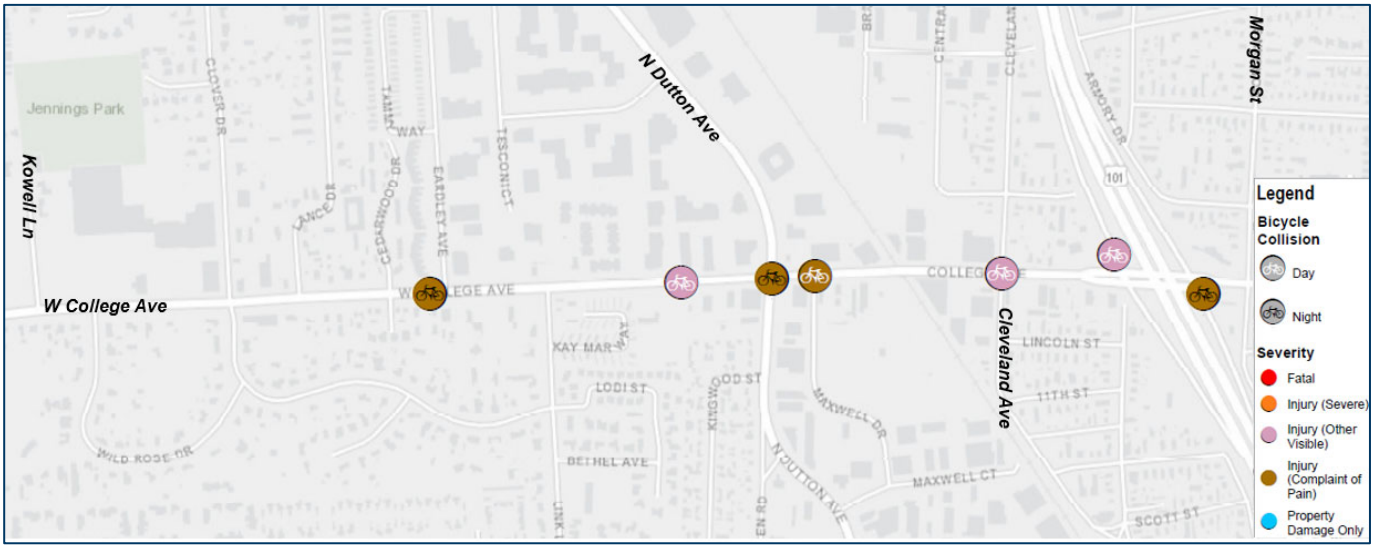


Figure 26 Bicycle Collisions on College Avenue from Kowell Rd to Morgan St (2015-2019)

4.3.2.2 College Avenue between Morgan Street and 4th Street

Figure 27 summarizes the College Avenue collisions between Morgan Street and 4th Street based on severity and type. There were no fatal or severe injury collisions with the main collision type broadside and rear end collisions.

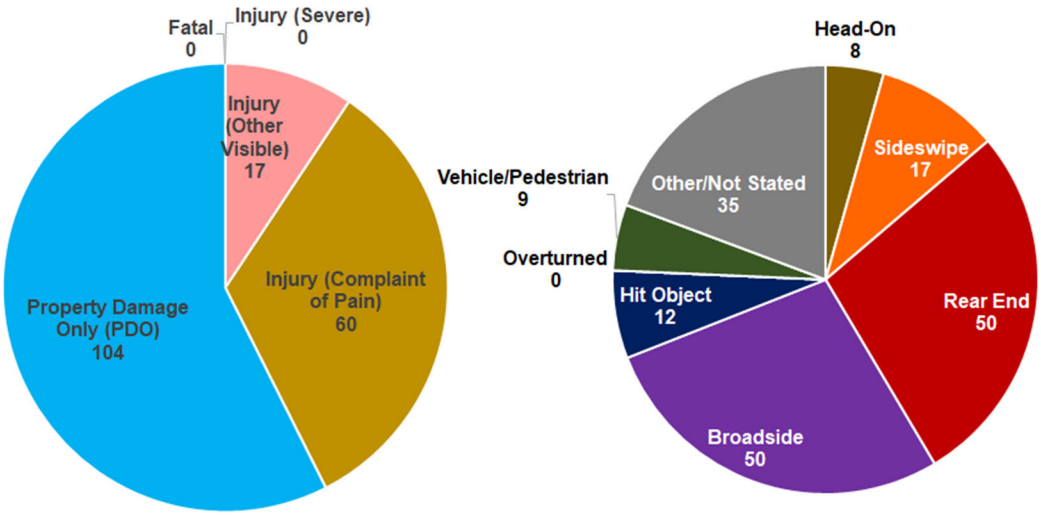


Figure 27 Summary of Collisions on College Ave from Morgan St to 4th St

Figure 28 displays the collision severity along the corridor.

Figure 28 Collision Severity on College Ave from Morgan St to 4th St (2015-2019)

Figures 29 and **30** show maps of the pedestrian and bicycle collisions along the corridor, along with their respective collision severity.

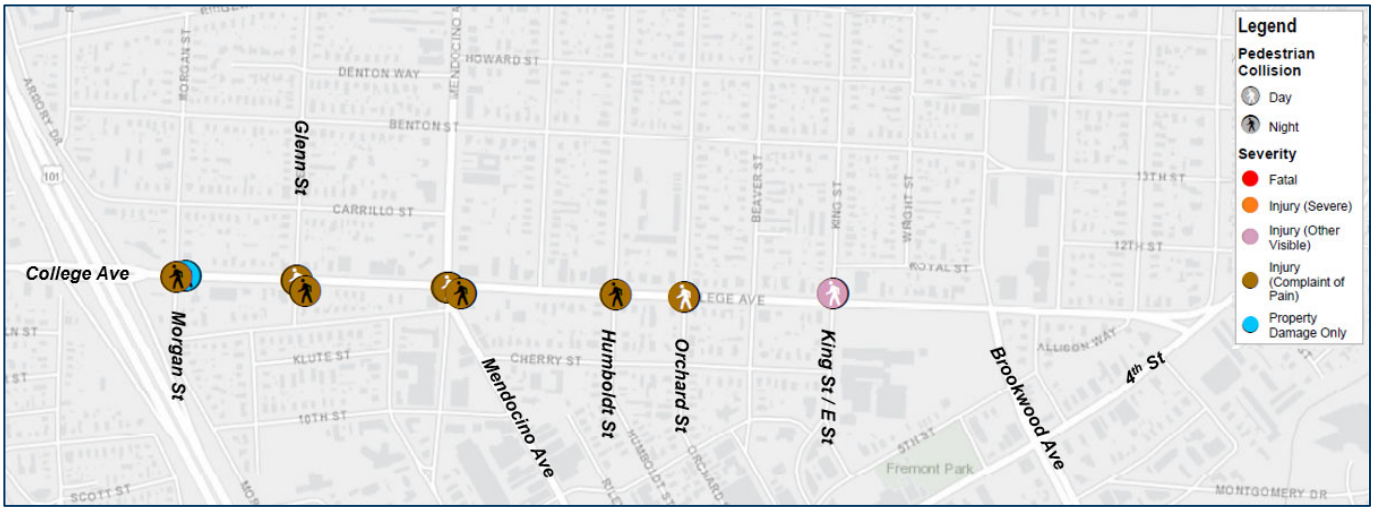


Figure 29 Pedestrian Collisions on College Ave from Morgan St to 4th St (2015-2019)

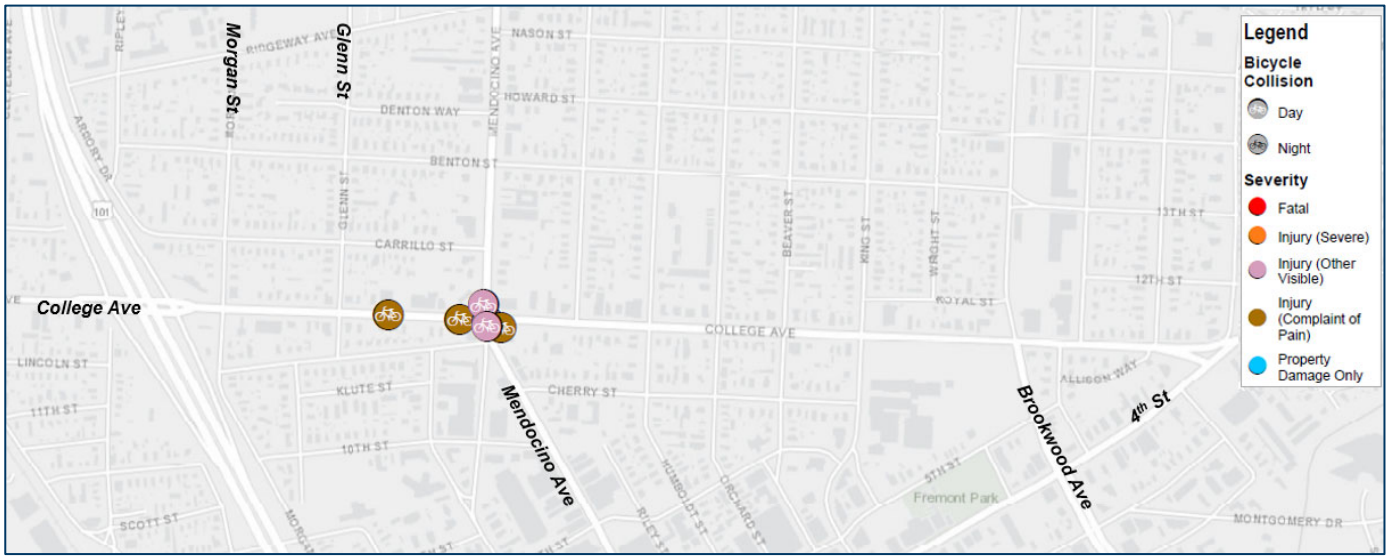


Figure 30 Bicycle Collisions on College Ave from Morgan St to 4th St (2015-2019)

4.3.3 Montgomery Drive Corridor

There were 60 collisions on Montgomery Drive from Alderbrook Drive to Farmers Lane between 2015 and 2019. There were no fatal and one severe injury collision along the corridor. The top collision type was rear end followed by broadside and other collisions. The top violation categories in order (not including unknown or not stated collisions) for the Montgomery Drive Corridor are listed below.

- Unsafe Speed
- Automobile Right of Way
- Improper Turning
- DUI/BUI
- Traffic Signals and Signs

Figure 31 summarizes the College Avenue Corridor collisions based on severity and type. **Figure 32** displays the collisions along the corridor by severity. The concentration of collisions is around the intersection of Montgomery Drive and Farmers Lane (SR 12) with a severe injury pedestrian to vehicle collisions and east of the intersection by Saint Eugene Cathedral Church and Montgomery Village there are other injury vehicle to vehicle collisions. There was also a bicycle to vehicle collision on Montgomery Drive, west of Shortt Road.

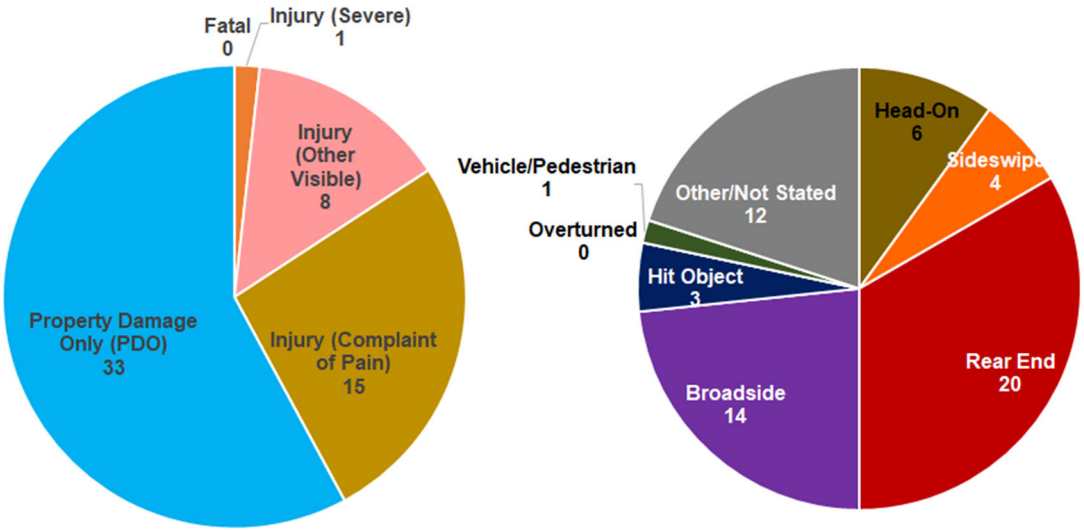


Figure 31 Summary of Montgomery Drive Corridor Collisions

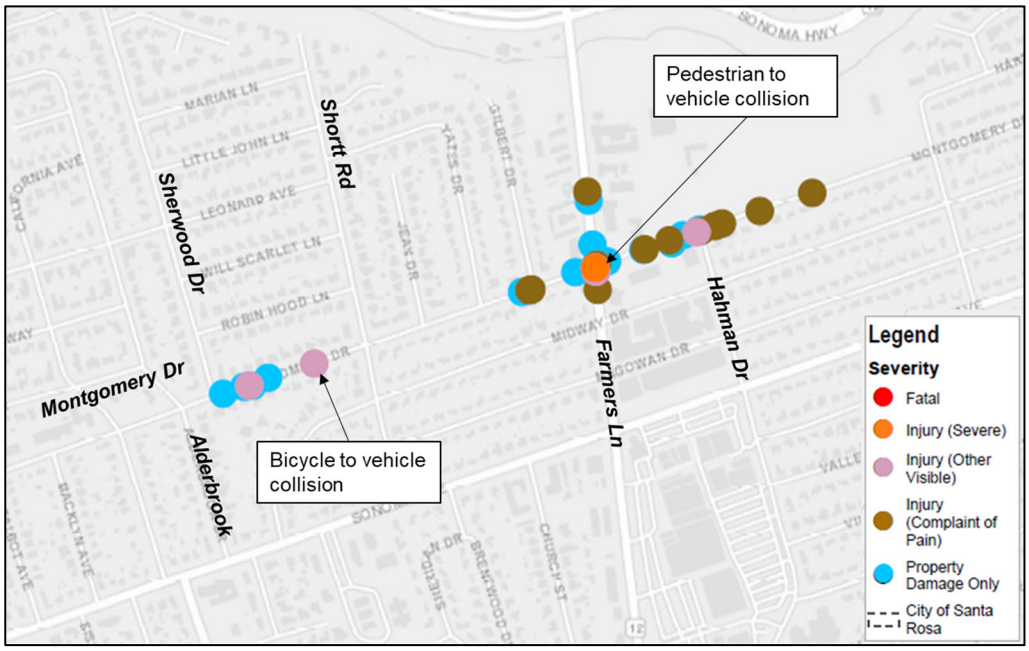


Figure 32 Collision Severity on Montgomery Drive Corridor (2015-2019)

4.3.4 Roseland Creek Trail Corridor

There were no recorded collisions on Roseland Creek Trail from Stony Point Road to Burbank Avenue between 2015 and 2019. Therefore, collisions along Burbank Avenue from Hughes Avenue to Liana Drive and Stony Point Road from Northpoint Parkway to Pearblossom Drive were evaluated. These collisions are summarized in **Table 3**. The majority of collisions occurred on Stony Point Road.

Table 3 Collisions Adjacent to Roseland Creek Trail Corridor (2015-2019)

			Severity					Type										Year					
Road	**From**	**To**	**Fatal**	**Injury (Severe)**	**Injury (Other Visible)**	**Injury (Complaint of Pain)**	**Property Damage Only**	**Head-on**	**Sideswipe**	**Rear End**	**Broadside**	**Hit Object**	**Overturned**	**Vehicle/Pedestrian**	**Other/Not Listed**	**Pedestrian**	**Bicycle**	**2015**	**2016**	**2017**	**2018**	**2019**	**Total**
Burbank Avenue	Hughes Avenue	Liana Drive				1	1			1	1										2		**2**
Stony Point Road	Northpoint Parkway	Pearblossom Drive			4	10	16	4	2	6	8	9		1		1		5	8	6	5	6	**30**
		Total	**0**	**0**	**4**	**11**	**17**	**4**	**2**	**7**	**9**	**9**	**0**	**1**	**0**	**1**	**0**	**5**	**8**	**6**	**7**	**6**	**32**

4.3.5 N Dutton Avenue Corridor

There were 109 collisions on N Dutton Avenue from W College Avenue to W 3rd Street between 2015 and 2019. Of these collisions, 12 occurred on segments and 97 occurred at intersections. The top collision type was rear end and top violation type was automobile right of way

Figure 33 summarizes the N Dutton Avenue Street Corridor collisions based on severity and type. **Figure 34** displays the collision location by severity along the corridor.

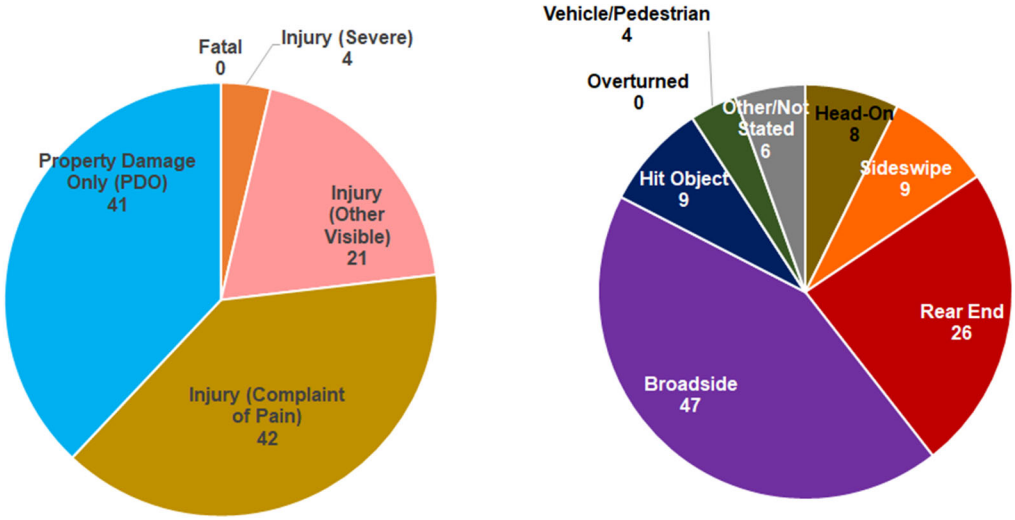


Figure 33 Summary of N Dutton Avenue Corridor Collisions

Figure 34 Collision Severity on N Dutton Avenue Corridor (2015-2019)

Figures 35 and **36** show maps of the pedestrian and bicycle collisions along the corridor, along with their respective collision severity. There was a severe injury pedestrian to vehicle collision at the intersection with Nineth (9th) Street that occurred at night. In addition, there were three injury bicycle to vehicle collisions at 9th Street.

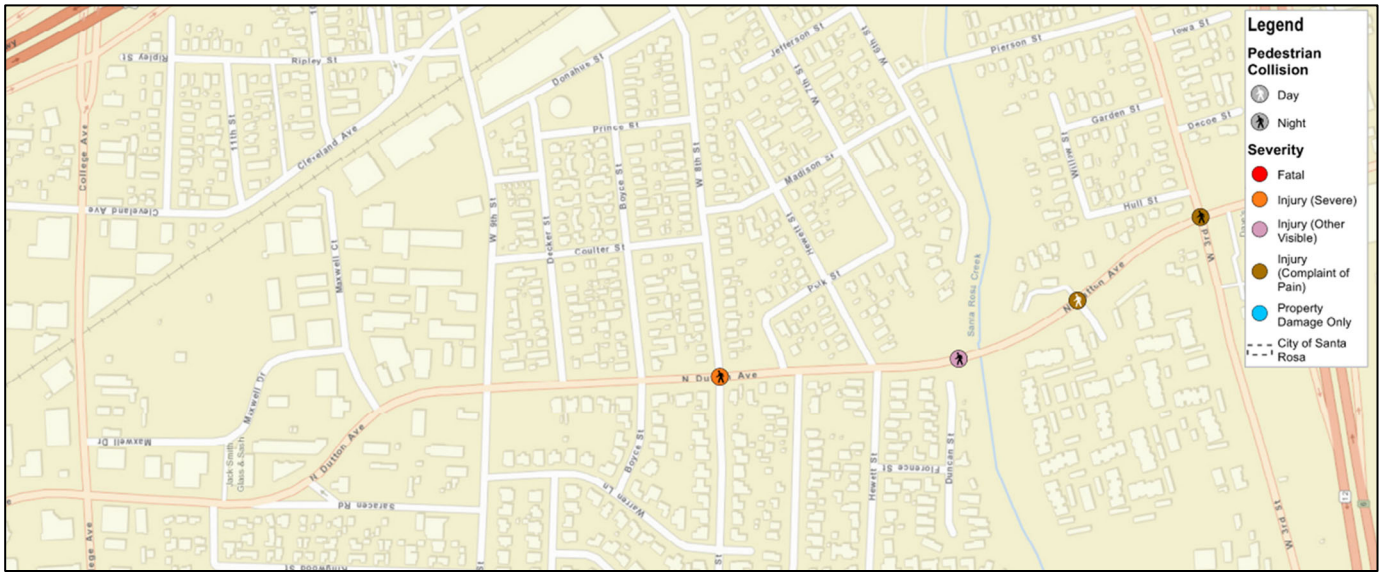


Figure 35 Pedestrian Collisions on N Dutton Avenue Corridor (2015-2019)

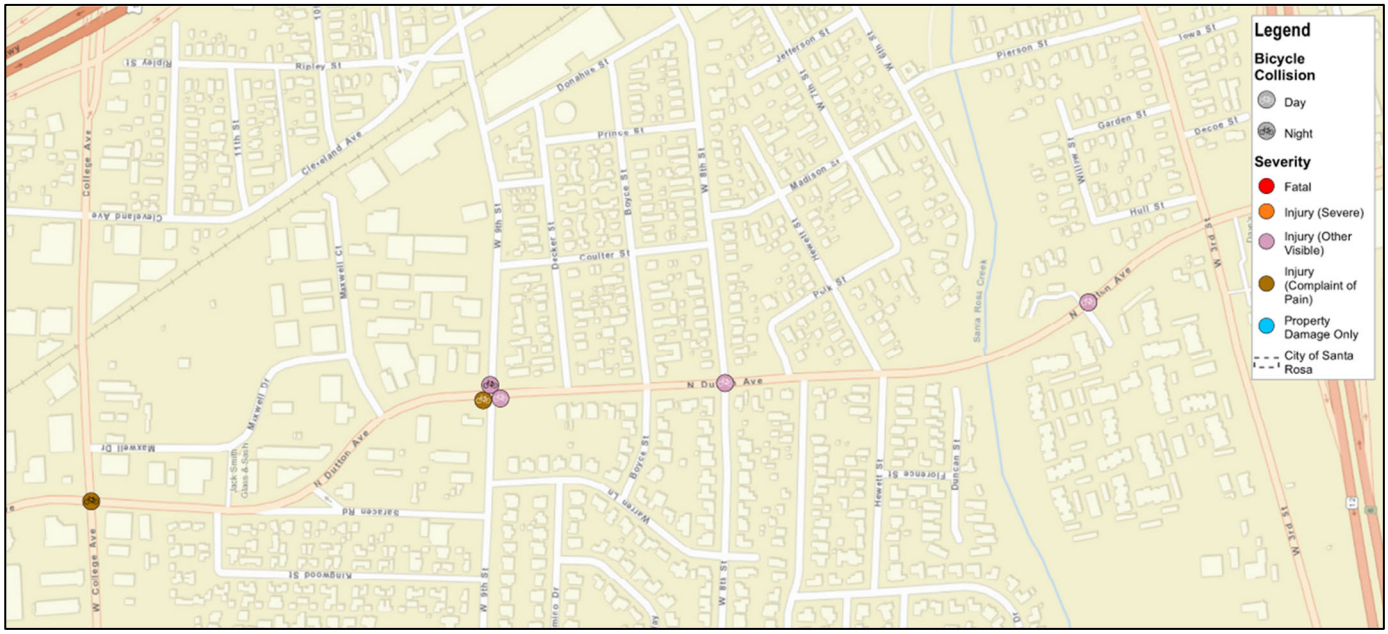


Figure 36 Bicycle Collisions on N Dutton Avenue Corridor (2015-2019)

4.3.6 Cleveland Avenue Corridor

This segment of Cleveland Avenue mainly serves commercial land uses for various businesses and shopping centers. Cleveland Avenue consists of a 5-lane roadway with two travel lanes in each direction and a two way left turn lane (TWLTL). The average daily traffic varies along the corridor, with approximately 10,300 vehicles per day (vpd) in the northern section and approximately 15,600 vpd in the southern section (State Farm to Guerneville Road).

In evaluating the past 5 years of collisions (2015-2019), there were 4 pedestrian to vehicle collisions and 5 bicycle to vehicle collisions. As shown in **Figure 37**, there was one fatal collision and one severe injury collision that involved a pedestrian to vehicle collision and occurred at the intersections of State Farm Drive and Terry Lane, respectively. The most common collision type was broadside collisions which typically occur at intersections.

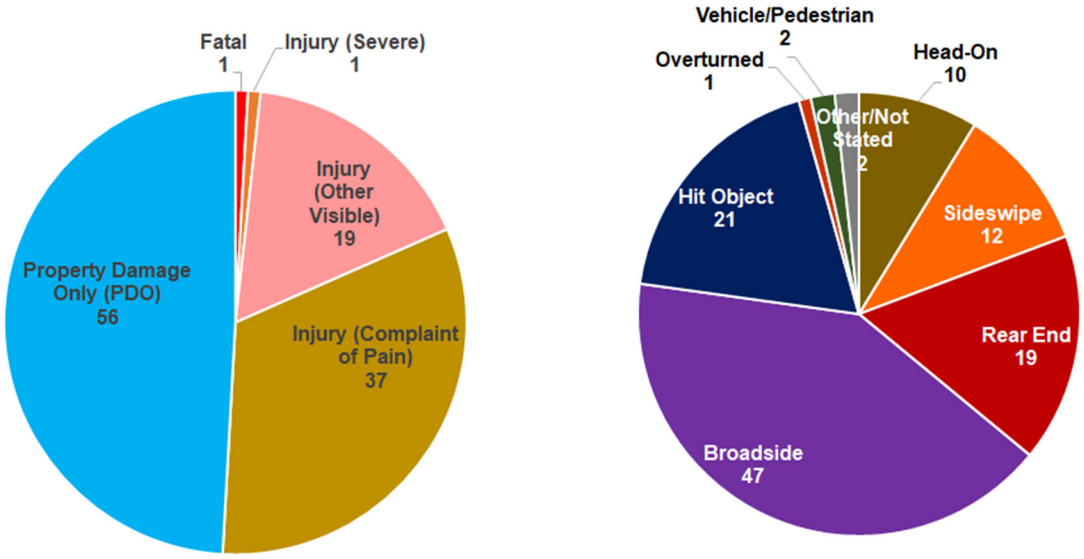


Figure 37 Summary of Cleveland Avenue Corridor Collisions

Cleveland Avenue will be further evaluated for possible striping improvements once a pavement rehabilitation project is programmed. With the current traffic volumes, a road diet is a likely scenario in repurposing the outside travel lanes for buffered bike lanes.

4.4 Collisions on Other Corridors

4.4.1 Collision update for BPMP HIN Corridors

The BPMP identified corridors (HIN Corridors) with high number of collisions based on collision trends at the time. The collision record was updated with more recent collision records, and collision trends were evaluated for these HIN corridors. **Table 4** shows bicycle and pedestrian collisions along BPMP HIN corridors by severity. These locations were also evaluated based on relative severity per the Caltrans Local Roadway Safety Manual. The LRSM recommends ranking locations with higher severity as higher focus. The Highway Safety Manual (HSM) methodology of Equivalent Property Damage Only (EPDO) rating assigns a weight to collisions in capturing the relative severity in equivalent property damage only (PDO =1).

There are some projects that has already been planned or implemented along these corridors to help to improve safety. These projects are discussed in a subsequent section of the report. Systemic countermeasures focused on collision trends and risk characteristics are discussed in **Section 6** of this report.

Table 4 Bicycle and Pedestrian Collisions on BPMP HIN Corridor (2015-2019)

			Collision Severity (Pedestrian Collisions)					Collision Severity (Bicycle Collisions)								
Segment Name	From	To	Fatal	Severe Injury	Other Visible Injury	Complaint of Pain	Property Damage Only	Fatal	Severe Injury	Other Visible Injury	Complaint of Pain	Property Damage Only	Total Pedestrian Involved Collisions	Total Bicycle Involved Collisions	Total Pedestrian & Bicycle Involved Collisions	EPDO
4th St	Mendocino Ave	E St	0	0	0	1	0	0	0	0	1	0	1	1	2	12
Montgomery Dr	Hahman Dr	Mission Blvd	1	1	1	1	1	0	0	1	0	1	5	2	7	602
Mendocino Ave	Elliot Ave	4th St	0	3	8	4	1	1	0	2	2	7	16	12	28	784
Santa Rosa Ave	Petaluma Hill Rd	Colgan Ave	0	1	1	1	0	0	0	2	2	5	3	9	12	85
Santa Rosa Ave	Charles St	Mill St	1	0	0	0	0	0	0	0	0	1	1	1	2	544
Santa Rosa Ave	Court St	Bellevue Ave	2	2	1	1	0	0	0	0	1	2	6	3	9	1169
Guerneville Rd/Steele Ln	N Dutton Ave	Mendocino Ave	0	0	3	5	1	0	0	0	4	5	9	9	18	93
Stony Point Rd	W College Ave	Campbell Dr	0	1	5	5	0	0	2	3	1	1	11	7	18	212
Sebastopol Rd	Mattson Rd	Dutton Ave	0	0	4	2	0	1	0	2	9	5	6	17	23	680
3rd St	Gate Way	Stony Point Rd	0	2	1	0	0	0	0	0	2	2	3	4	7	83
3rd St	Hwy 101	E St	1	1	3	4	0	0	0	0	3	4	9	7	16	651
Piner Rd	Bay Village Cir	Coffey Ln	0	0	0	2	0	0	0	0	0	0	2	0	2	12
Farmers Ln	Long Dr	Sonoma Ave	0	1	0	1	0	0	0	0	2	1	2	3	5	48
Range Ave	Bicentennial Way	Guerneville Rd	0	0	0	1	0	0	0	0	0	1	1	1	2	7

4.4.2 Collisions on Other City Corridors

Citywide pedestrian and bicycle collisions between 2015 to 2019 were evaluated and locations with high numbers of pedestrian and bicycle collisions were identified. Mitigation for these “other” corridors along with systemic countermeasures focused on collision trends are discussed in **Section 6** of this report. **Table 5** shows bicycle and pedestrian collisions along these other corridors by severity. These other corridors do not include the seven (7) focus corridors studied separately for this LRSP. Collisions along BPMP identified HIN corridors are discussed in previous section of this report.

Table 5 Bicycle and Pedestrian Collisions on Other City Corridors (2015-2019)

			Collision Severity (Pedestrian Collisions)					Collision Severity (Bicycle Collisions)								
Segment Name	From	To	Fatal	Severe Injury	Other Visible Injury	Complaint of Pain	Property Damage Only	Fatal	Severe Injury	Other Visible Injury	Complaint of Pain	Property Damage Only	Total Pedestrian Involved Collisions	Total Bicycle Involved Collisions	Total Pedestrian & Bicycle Involved Collisions	EPDO
Piner Rd	Coffey Ln	Cleveland Ave	0	2	1	0	1	0	1	0	1	0	4	2	6	105
Range Ave/Frances St	Guerneville Rd	Cleveland Ave	0	2	1	2	0	0	0	2	0	0	5	2	7	103
Occidental Rd	Stony Point Rd	Brittain Ln	1	0	0	1	0	0	0	0	0	1	2	1	3	550
Sonoma Ave	Santa Rosa Ave	Farmers Ln	0	0	1	1	0	0	1	4	2	0	2	7	9	102
Wright Rd	State Route 12	Ludwig Ave	1	0	0	0	0	0	0	0	1	0	1	1	2	549
Fulton Rd	Casey Dr	W 3rd St	0	0	3	1	0	0	0	0	6	0	4	6	10	75
Temple Ave	Bennett Valley Rd	Milton St	0	0	1	0	0	1	0	0	0	0	1	1	2	554
W Steele Ln	Marlow Rd	Cleveland Ave	1	0	1	0	0	0	0	1	4	0	2	5	7	589
B St	Healdsburg Ave	1st St	0	0	3	2	0	0	0	1	2	0	5	3	8	68
Hearn Ave	Westwood Dr	Corby Ave	0	0	0	1	0	0	0	2	5	0	1	7	8	58
Petaluma Hill Rd	Colgan Ave	Yolanda Ave	0	2	1	2	0	0	0	1	0	1	5	2	7	93
Oakmont Dr	State Route 12	Pythian Rd	1	0	0	0	0	0	0	1	0	0	1	1	2	554
N Dutton Avenue	W 3rd St	Sebastopol Rd	0	0	3	1	0	0	0	1	4	0	4	5	9	74
Mendocino Ave	Fountaingrove Pkwy	Elliot Ave	1	0	4	5	0	0	1	3	7	1	10	12	22	722
Santa Rosa Ave	Colgan Ave	Court St	0	1	1	1	0	0	1	2	10	1	3	14	17	158
Santa Rosa Ave	3rd St	Charles St	0	0	1	0	1	0	0	3	4	0	2	7	9	69
Guerneville Rd/Steele Ln	Fulton Rd	N Dutton Ave	0	1	3	1	0	0	0	2	1	2	5	5	10	98

4.1 Recently Constructed/Planned Projects

4.1.1 BPMP HIN Corridor

Table 6 presents the recently constructed and planned projects along BPMP identified HIN corridors. This list was developed in coordination with the City. The BPMP also proposed improvements along these corridors, these improvements are included in **Appendix C: Previous Safety Plans and Projects**.

Table 6 Recently Constructed/Planned Projects along BPMP HIN Corridors

Segment Name	From	To	Recent Constructed/Planned Improvements
Mendocino Ave	Elliott Ave	4th St	- Pedestrian Hybrid Beacon (HAWK) at Mendocino Ave at McConnell Ave, upgraded from RRFB (Constructed in 2019)
Santa Rosa Ave	Charles St	Mill St	- Road diet with bike lanes, bulbouts, Z crossings, and traffic calming (planned for construction 2022). - Rectangular Rapid Flashing Beacon (RRFB) installed at Santa Rosa Ave at Charles St (Constructed in 2018)
Santa Rosa Ave	Court St	Bellevue Ave	- RRFB installed at Santa Rosa Ave at Court St (Constructed in 2018)
Guerneville Rd/ Steele Ln	N Dutton Ave	Mendocino Ave	- 101 Bike/Ped Overcrossing from Elliott Ave to Edwards Ave will provide alternate route across freeway (est. completion 2025)
Stony Point Rd	W College Ave	Campbell Dr	- Class IV bike lanes from Sebastopol Rd to W 3rd St (planned, unfunded) - Reconfiguration of intersection at Hwy 12 ramps & Joe Rodota Trail (planned, unfunded) - Eliminate slip lane at eastbound on-ramp, prohibit right on red at eastbound off-ramp, shorten crossing distances (planned, unfunded)
Sebastopol Rd	Mattson Rd	Dutton Ave	- Eastbound bike lane gap closure from Avalon Ave to Dutton Ave (planned, unfunded)
3rd St	Gate Way	Stony Point Rd	- Road diet with buffered bike lanes installed from Stony Point Rd to Brittain Ln (Constructed in 2020)
3rd St	Hwy 101	E St	- Buffered bike lanes installed from Morgan St to B St (Constructed in 2018) - RRFB installed east of Old Courthouse Sq (Constructed in 2017)
Piner Rd	Bay Village Cir	Coffey Ln	- Bike lanes installed from Range Ave to Marlow Rd (Constructed in 2020)
Range Ave	Bicentennial Way	Guerneville Rd	- Bike lanes from Bicentennial Way - Russell Ave (planned for construction 2022)

4.1.2 Other High Collision Locations

A list of recently constructed and planned projects along corridors identified to have a high number of fatal and injury bicycle and pedestrian collisions was developed in coordination with the City. These other corridors do not include the eight LRSP focus corridors and BPMP identified HIN corridors. A table of recently constructed and planned improvements along these other corridors is shown in **Table 7.**

Table 7 Recently Constructed/Planned Projects along Other Corridors

Segment Name	From	To	Recent Constructed/Planned Improvements
Piner Rd	Coffey Ln	Cleveland Ave	-Constructed bike lanes in 2020
Range Ave/Frances St	Guerneville Rd/Steele Ln	Cleveland Ave	-Narrowing lanes and installing buffered bike lanes south of first Coddington driveway south of Guerneville (Planned for construction 2022)
Sonoma Ave	Santa Rosa Ave	Farmers Ln	-Narrowing lanes and installing buffered bike lanes between E St and Bobelaine Dr (planned for construction 2023)
Fulton Rd	Casey Dr	W 3rd St	- Fulton to be redesigned between Guerneville & Piner (sidewalks, bike lanes, conflict zone markings) - (estimated completion 2023)
Hearn Ave	Westwood Dr	Corby Ave	-Evaluating at Multi Use Path (MUP) on south side from SMART path to Corby Ave
SMART MUP	Joe Rodota Trail	W 3rd St	-Construct new segment of the SMART MUP from the intersection of the Joe Rodota Trail and Prince Memorial Greenway to W 3rd St (SMART lead agency; estimated completion 2025)
Armory Dr	Ridgway Ave	Elliott Ave	-Install Class IV two-way protected bike lane
Santa Rosa Ave	1st St	Maple St / S. A St	-Implement road diet with buffered bike lanes from Sonoma Ave to Maple St (planned for construction in 2022) - Install Class IV two-way protected bike lane from 1st St to Sonoma Ave (planned for construction in 2023)
Intersection - Primary Road	**Secondary Road/Location**		**Recent Constructed/Planned Improvements**
Wright Rd	State Route 12		- RRFB installed at Price Ave (Constructed in 2020)
Fulton Rd	Casey Dr		- Appletree/Fulton: Leading Pedestrian Interval (LPI) implemented for east/west crossings (2020) - HAWK identified for Piner Creek Crossing
B St	Healdsburg Ave		- B/4th: Eastbound/Westbound LPI (Constructed 2016) - B/5th: Eastbound/Westbound LPI (Constructed 2016) - B/7th: All directions LPI (Constructed 2018)
N Dutton Ave	W 3rd St		Signal conversion at N Dutton Ave at Sebastopol Rd, dual left project identified.
Mendocino Ave	Fountaingrove Pkwy		BPMP Proposed crossing improvements at Mendocino Ave /Lewis Rd/Steele Ln.
W 3rd St	SMART MUP		Install signalized MUP crossing (SMART lead agency; estimated completion 2025)

4.2 Traffic Volumes

Traffic volumes for the focus corridors were compiled to determine the frequency of use and help determine applicable countermeasures. The peak hour volumes for applicable intersections and the daily traffic volumes for the focus corridors are included in **Appendix D: Traffic Volume and Operational Analysis**. The traffic volumes were used for evaluating the different proposed typical sections in the improvement section.

4.3 Field Reconnaissance

A field visit was performed on June 10, 2021, to analyze the roadways throughout the City of Santa Rosa and discuss potential countermeasures with City staff. The findings from this visit were incorporated into the countermeasures suggested in the plan.

5. Public Engagement

5.1 Community Meetings

Community meetings were hosted by the City of Santa Rosa and GHD to gather input on the proposed improvements. These meetings were hosted virtually through the Zoom platform and advertised through the City website, social media, and project website. Each meeting included time for community members to voice questions and comments on the presentation. Details about the community meetings are listed below.

1. 4th Street, College Avenue, and Montgomery Drive Corridors – February 2, 2022 at 5:30 p.m.
2. N Dutton Avenue Corridor– March 3, 2022 at 5:30 p.m.

5.2 Social Pinpoint Website

A project website was created on the Social Pinpoint platform to inform the public about the LRSP and provide a platform for input. **Figure 38** displays the homepage for the website found at *lrsp.mysocialpinpoint.com/santarosa.* The project website had Google Translate enabled that can translate the webpage in over 100 languages and detects the user's browsers settings to automatically display the website in their language preference. In addition, the user can toggle the preferred language on the upper right corner of the webpage. Visitors to the page were invited to provide comments on an interactive project map and share their thoughts through a project survey. Comments from the interactive map and detailed results from the survey are included in **Appendix A: Stakeholder and Public Input**.

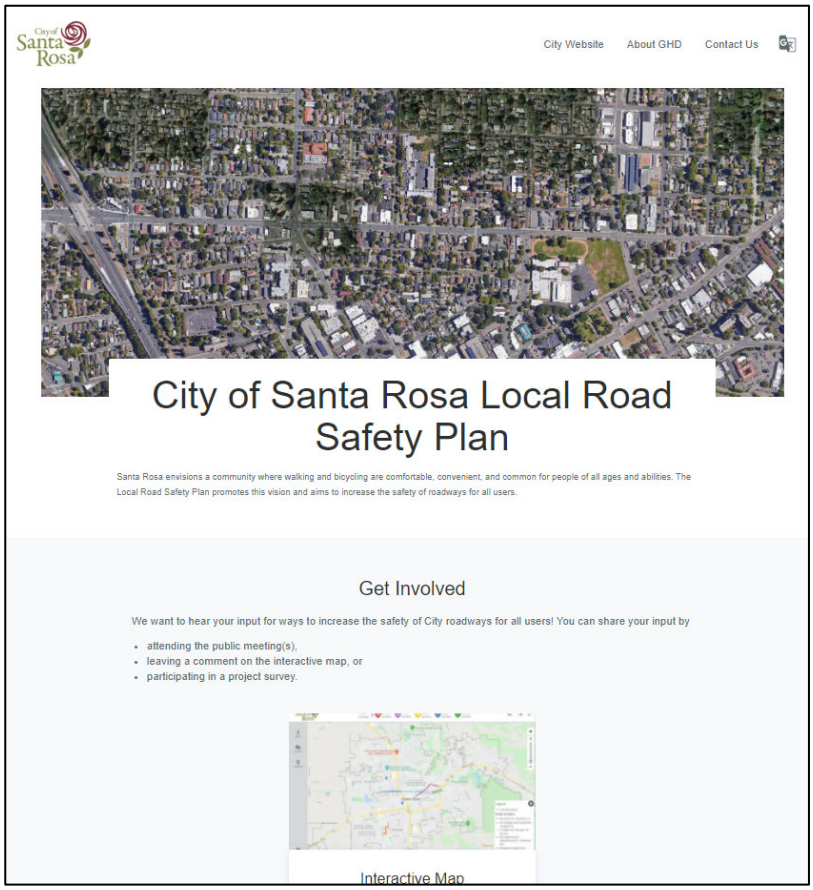


Figure 38 Public Website Home Page

5.2.1 Interactive Map

The interactive map feature on the website allowed the public to drag icons to a location within the City and leave a comment regarding driving, pedestrian, bicycle, and transit suggestions at that location as well as general and circulation comments.

There were 148 comments on the interactive map feature of the website. This feature on the website allowed the public to drag icons to a location within the City and leave a comment regarding driving, transit, schools, biking, or pedestrians at that location. The recorded interactive map comments are included in **Appendix A: Stakeholder and Public Input**. The top comment type was a biking comment (see **Figure 39** for the breakdown of responses).

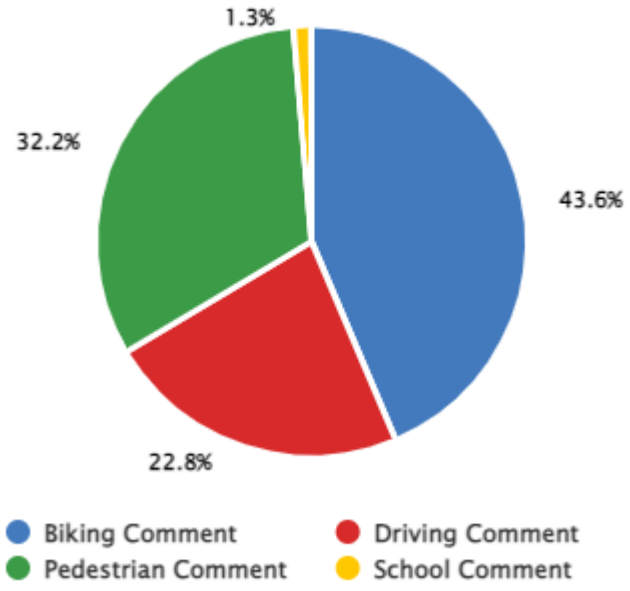


Figure 39 Type of Comments for the Interactive Map

Figure 40 shows a heatmap of the interactive map comments.

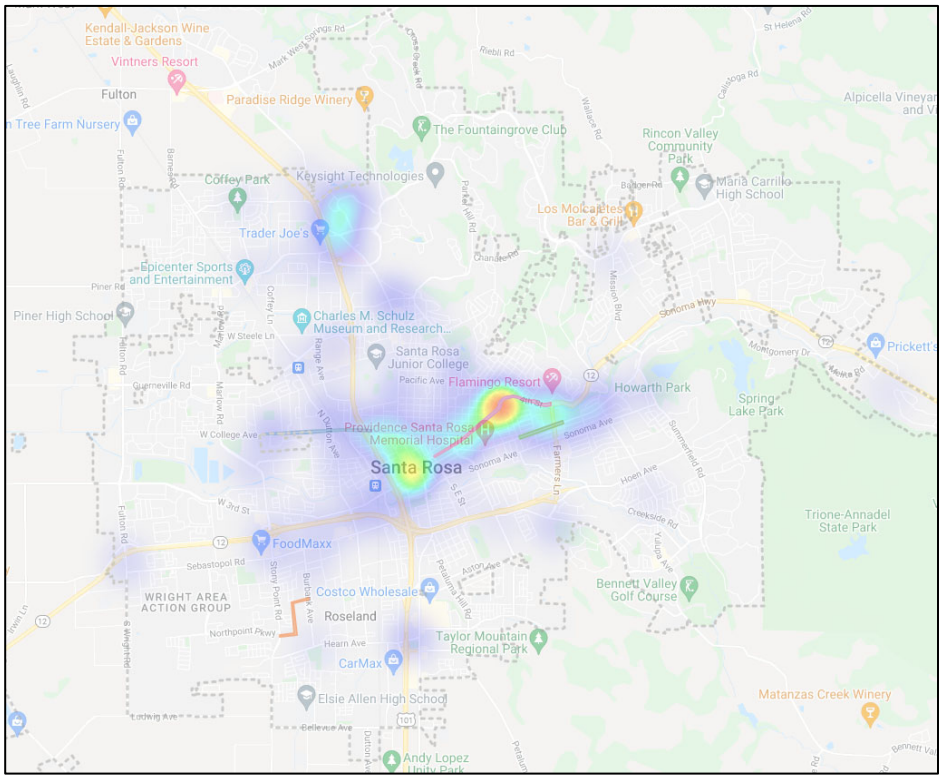


Figure 40 Heatmap of Interactive Map Comments

5.2.2 Public Surveys

Four (4) public surveys were created to gather input on the proposed improvements at the different focus corridors. Details on each survey are displayed below.

- A survey about proposed improvements along **4th Street between E Street and Farmers Lane** was posted to the public website following the public meeting and open until February 28, 2022. It received 119 unique responses. This survey was broken into three sections that coincide with the three study areas for the 4th Street segment: E Street to Brookwood Avenue, Brookwood Avenue to Bryden Lane, and Bryden Lane to Farmers Lane.
- A survey about proposed improvements along **Montgomery Drive between Alderbrook Drive and Farmers Lane** was posted to the public website following the public meeting and open until February 28, 2022. Eight questions were asked in this survey, and it received 200 unique responses.
- A survey about proposed improvements along **College Avenue between Kowell Lane and 4th Street** was posted to the public website open until February 28, 2022. Four questions regarding this corridor were asked. It received 7 unique responses.
- A survey about proposed improvements along **N Dutton Avenue between W College Avenue and W Third Street** was posted to the public website following the public meeting and open until March 18, 2022. It received 17 unique responses.

The results of these surveys are summarized in **Appendix A: Stakeholder and Public Input**.

6. Identify Strategies

Through coordination and feedback from the City of Santa Rosa, LRSP working group, and public outreach; safety projects and strategies were identified for the Local Road Safety Plan. Countermeasure development was coordinated with the City to collect feedback and identify recommended countermeasures.

The LRSP will reference specific location engineering projects and systemic safety applications. In addition, safety strategies and projects that address the other E's to include Enforcement, Education, Emergency Response, and Emerging Technologies will be discussed below.

During the development of the alternatives, stakeholders such as the fire department, police department, and Santa Rosa City Bus were engaged in providing feasible alternatives that didn't impede their access.

6.1 Engineering Strategies

6.1.1 4th Street from E Street to Farmers Lane

The recommended countermeasures for the 4th Street Corridor vary along the segment but all aim to add or improve bicycle facilities. Since the 4th Street project development is still underway, these concepts may change based on additional input from the community and stakeholders. For the purpose of this plan, this document captures the staff recommendations developed thus far.

6.1.1.1 E Street to Brookwood Avenue

For the segment between E Street and Brookwood Avenue, two improvement options were considered. For each option, there will be one 11' lane in each direction, with 16'-18' angled parking on the north side of the street, 8' parallel parking on the south side of the street, and 6' bike lanes with striping buffers. The difference between Option 1 and Option 2 is the location of the bike lane on the north side of the street. In Option 1, the bike lane is between the angled parking and the travel lane with 2' striped buffers (**Figure 41**), whereas in Option 2, the bike lane is between the sidewalk and angled parking with 3' striped buffers (**Figure 42**).

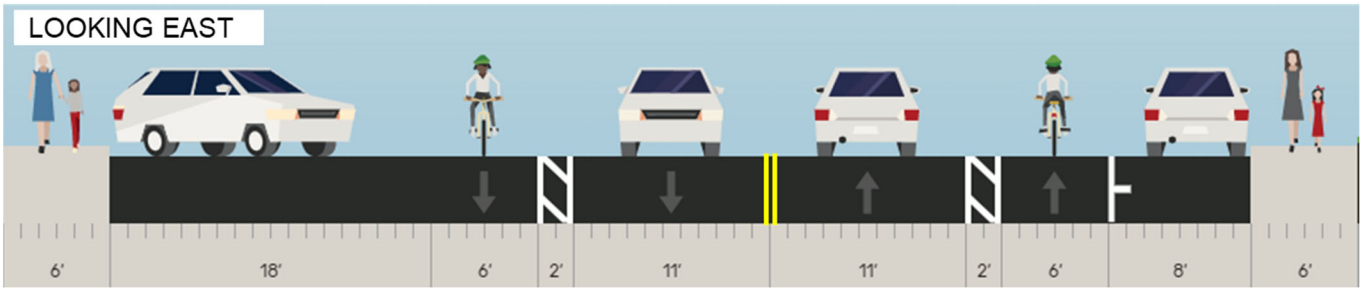


Figure 41 Proposed Improvements on 4th Street from E St to Brookwood Ave (Option 1)

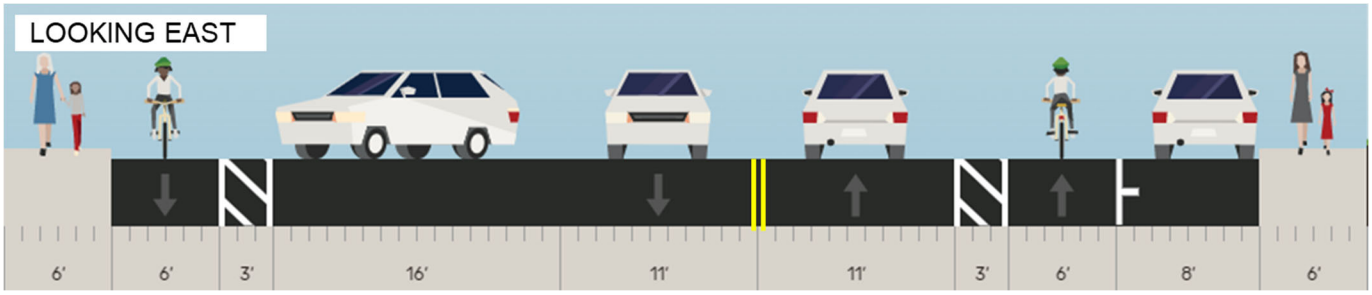


Figure 42 Proposed Improvements on 4th Street from E St to Brookwood Ave (Option 2)

Additionally, at the signalized intersections, signal hardware and operational improvements and Leading Pedestrian Intervals (LPIs) can be added. On the west leg of the 4th Street and Hope Street intersection, curb bulb outs are proposed for increased pedestrian visibility.

6.1.1.2 Brookwood Avenue to Bryden Lane

For the segment spanning between Brookwood Avenue and Bryden Lane, it is recommended that the travel lanes be reduced from two lanes in each direction to one lane to accommodate bike lanes. As shown in **Figure 43**, the proposed conditions consist of a two-way left-turn lane (TWLTL), one travel lane in each direction, painted buffers, bike lanes, and a parking lane in one direction. It is recommended that the bike lanes be painted green with green conflict markings at intersections and major driveway conflict points along the segment.

Figure 43 Proposed Improvements on 4th Street from Brookwood Ave to Bryden Ln (Cross Section View – Looking East)

The intersection of College Avenue at 4th Street is currently a signalized intersection with a free flow right turn for the westbound right turn. With the proposed reduction of travel lanes along 4th Street, operational analysis at this intersection should be considered (see **Figure 44**). Modifying lane configurations on approaches or installing a roundabout to consolidate the movements could be implemented with identified funding. Roundabouts are demonstratively proven to have less injury collisions than signalized intersections because of lower number of intersection conflict points and lower vehicle speeds. Roundabouts also accommodate bicyclists and pedestrian with adjacent shared use paths, median refuge islands, and bicyclists can also choose to travel through the roundabout.

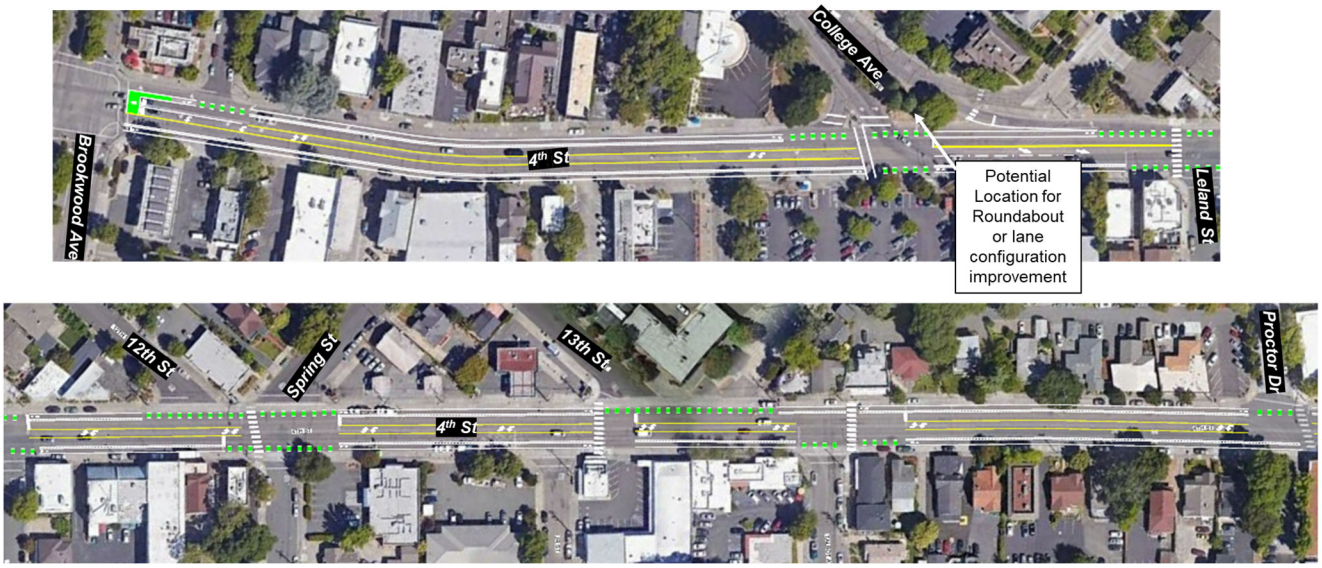


Figure 44 Proposed Improvements on 4th Street from Brookwood Avenue to Proctor Drive (Aerial View)

Between Alderbrook Drive and Bryden Lane, the segment widens out to five (5) lanes with a TWLTL.

As shown in **Figure 45**, the segment spanning between Proctor Drive and Bryden Lane, it is recommended that the travel lanes be reduced from two lanes in each direction to one lane to accommodate bikeways. The proposed conditions consist of a TWLTL, one travel lane in each direction, painted buffers, minimum of 6' bike lanes, and a parking lane in one direction. It is recommended that the bike lanes be painted green with green conflict markings at intersections and major driveway conflict points along the segment.

There is currently an uncontrolled crosswalk at the intersection of Alderbrook Drive and 4th Street (for crossing 4th Street in eastbound and westbound direction). This uncontrolled crosswalk should be improved with enhanced safety features including RRFB, bulbouts (to increase visibility), and high visibility crosswalk markings.

The segment between Alderbrook Drive to Bryden Lane is currently a five-lane segment with a TWLTL. Sidewalks along this segment is narrow. In this segment, sidewalks along the eastbound direction should be widened.

A bicycle signal with a bike box to facilitate eastbound left turning bicyclists is recommended at the intersection of 4th Street at Bryden Lane.

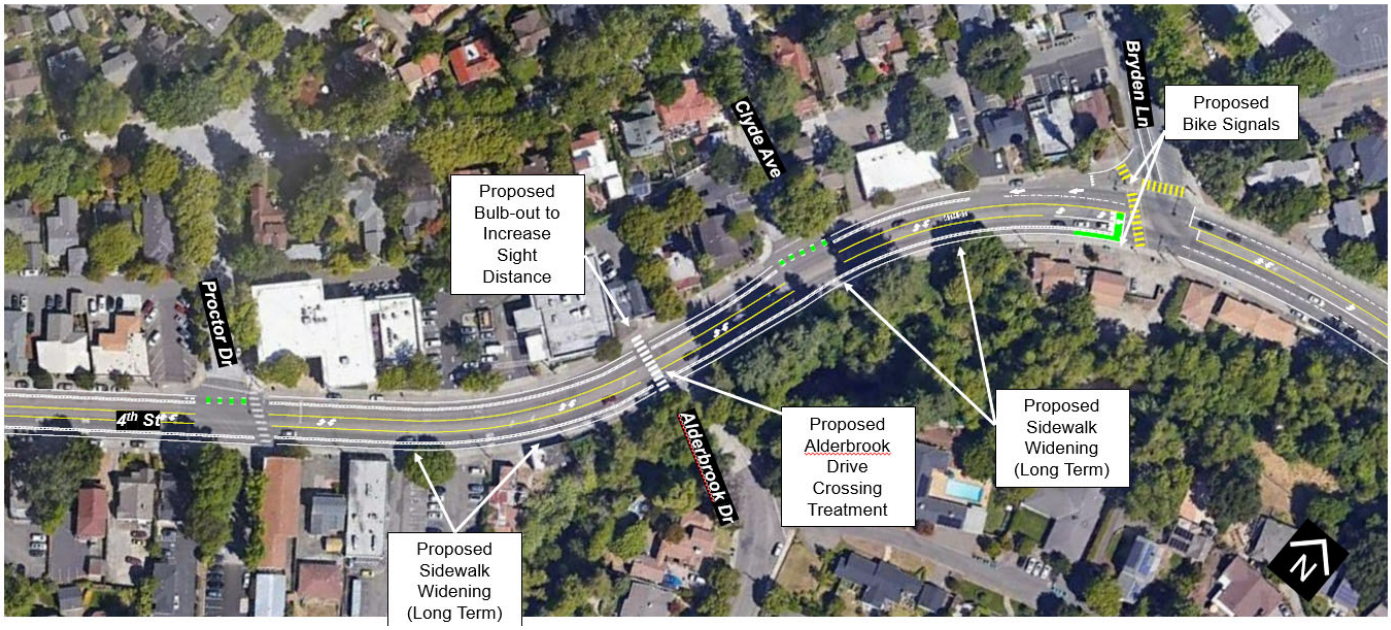


Figure 45 Proposed Improvements on 4th Street from Proctor Drive to Bryden Lane (Aerial view)

6.1.1.3 Bryden Lane to Farmers Lane

The segment between Bryden Lane and Farmers Lane along 4th Street has the heaviest traffic along the corridor. Currently the segment has two (2) travel lanes in each direction with a TWLTL. There is also parking along the south side of the street adjacent to businesses. This segment serves an average daily traffic volume of 33,000 vehicles.

In coordination with the working group for this segment and City staff, it was decided that a reduction of through lanes is not viable for this segment. The proposed bikeway for this segment is an alternative route through neighborhood streets north of 4th street. With this proposed alternative route, wayfinding signage will be important.

The proposed alternative route for eastbound bicyclists is through Groose Avenue, Augustan Avenue and La Paloma Avenue. The proposed alternative route for westbound bicyclists is through La Paloma Avenue, Augustan Avenue, El Camino Way, Gearey Avenue, Morley Way and Clyde Avenue.

The proposed bike signal discussed in the previous section at Bryden Lane at 4th Street intersection will improve safety for bicyclists using these alternative routes. **Figure 46** shows the alternative bike routes for bicyclists between Bryden Lane and Farmers Lane.

WESTBOUND
(VIA GEARY/MORLEY/CLYDE)

EASTBOUND
(CROSS 4th at BRYDEN, RIGHT ON GROSSE)

Figure 46 Proposed Alternative Route on 4th Street from Bryden Lane to Farmers Lane

6.1.2 College Avenue from Kowell Lane to 4th Street

The College Avenue Corridors are broken down into three smaller segments based on roadway characteristics when determining improvements based on the existing conditions.

6.1.2.1 Kowell Lane to Cleveland Avenue

The segment of College Ave from Kowell Lane to Cleveland Avenue is a five (5) lane roadway with two (2) travel lanes in each direction and a TWLTL. There are currently some sidewalk gaps along the north side of the street. These gaps will be completed as development of adjacent lands occurs.

The feasibility of installing bicycle lanes on this segment was analyzed. Due to the high traffic volumes along the segment, lane reduction is not a feasible option. Therefore, alternate bicycle routes are proposed along the segment. The alternate bicycle routes are displayed below (**Figures 47**, **48**, and **49**). Sharrows are recommended along these routes to alert drivers that bicycles and vehicles will be sharing the road along these roadway segments.

Figure 47 Wild Rose Drive/Clover Drive/Link Lane Alternate Route

Figure 48 Stony Point Road/9th Street/Link Lane/SMART Trail Alternate Route

Figure 49 Marlow Road/Jennings Avenue/N Dutton Avenue/SMART Trail Alternate Route

6.1.2.2 Cleveland Avenue to Morgan Street

The second segment is from Cleveland Avenue to Morgan Street and encompasses the US 101 interchange. There are high volumes of turning vehicles through this location which presents a significant number of conflict points for bicyclists. As shown in **Figure 50**, it is recommended that green conflict markings be installed for vehicle and bicycle mixing zones to draw driver attention to potential bicyclists traveling through the area in the bike lane.

Another potential improvement could be to route bicycle traffic onto the widened multi-use path/sidewalk with protected signal phasing for bikes. This would eliminate vehicle to bike conflict at the interchange.

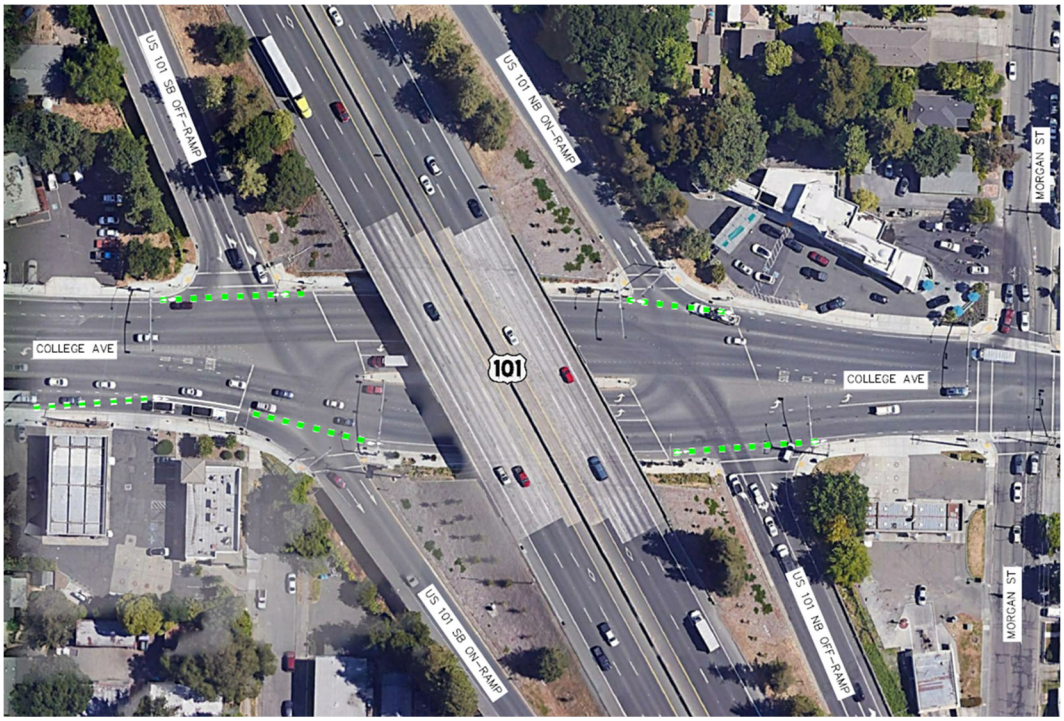


Figure 50 Proposed Improvements on W College Avenue from Cleveland Avenue to Morgan Street

6.1.2.3 Morgan Street to 4th Street

The segment of College Avenue between Morgan Street and 4th Street is a four (4) lane roadway with parking along both sides. Due to the high traffic volume along this corridor, a reduction in the number of travel lanes is not feasible. The College Avenue working group members provided guidance in developing alternative routes along this corridor. The proposed alternative bike route for this section of College Avenue is through Morgan Street, Benton Street and 13th Street. The proposed alternative bicycle route is shown in **Figure 51**.

In addition, the City has a desire to enhance the existing crossing at Benton Street and Mendocino Avenue with a pedestrian hybrid beacon (HAWK). Currently the intersection has an actuated pedestrian flashing beacon overhead. Per the collision analysis, this HAWK will not meet minimum benefit to cost ratios for HSIP funding.

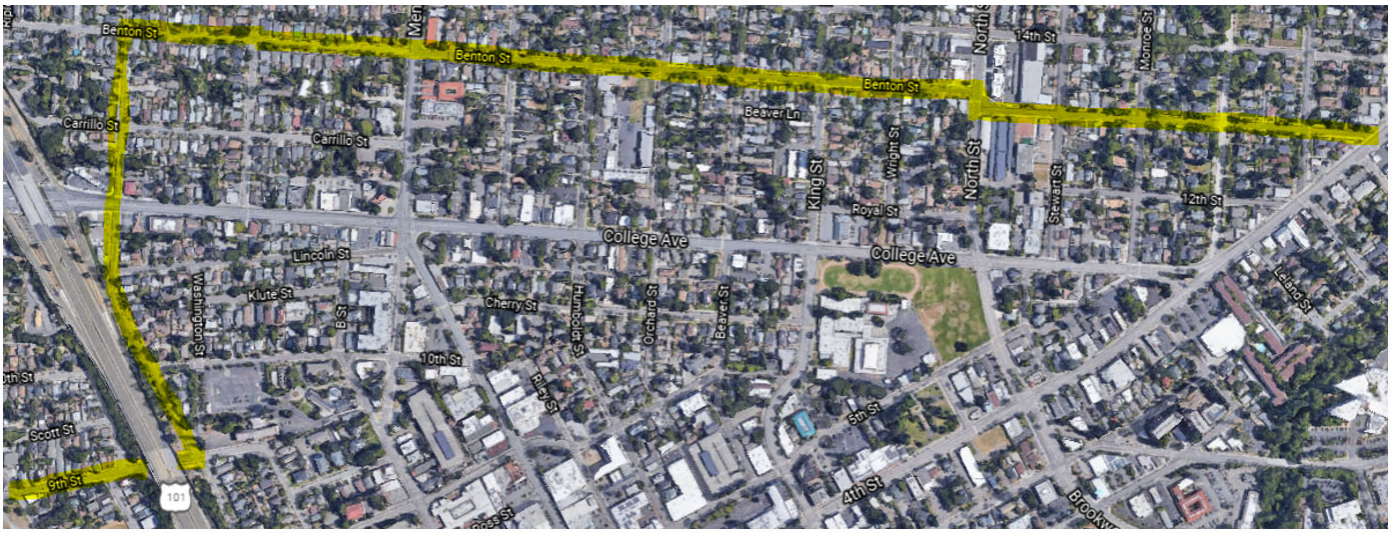


Figure 51 Proposed Alternative Route for College Avenue from Morgan Steet to 4th Street

6.1.3 Montgomery Drive from Alderbrook Drive to Hahman Dr

6.1.3.1 Alderbrook Drive to Farmers Lane

For the segment of the Montgomery Drive Corridor spanning between Alderbrook Drive and Farmers Lane, two options are proposed. As shown in **Figure 52**, Option 1 recommends that the existing TWLTL be removed, parking lanes be reduced to 7', and 5' bike lanes be added in both directions. As shown in **Figure 53**, Option 2 recommends the removal of the existing TWLTL and parking on the north side to add 5' bike lanes and 2' painted buffers in both directions.

The addition of bike lanes will provide an exclusive bikeway and complete bicycle network connectivity, create a buffer between vehicles and bicyclists, and lower vehicle speeds due to narrower lanes.

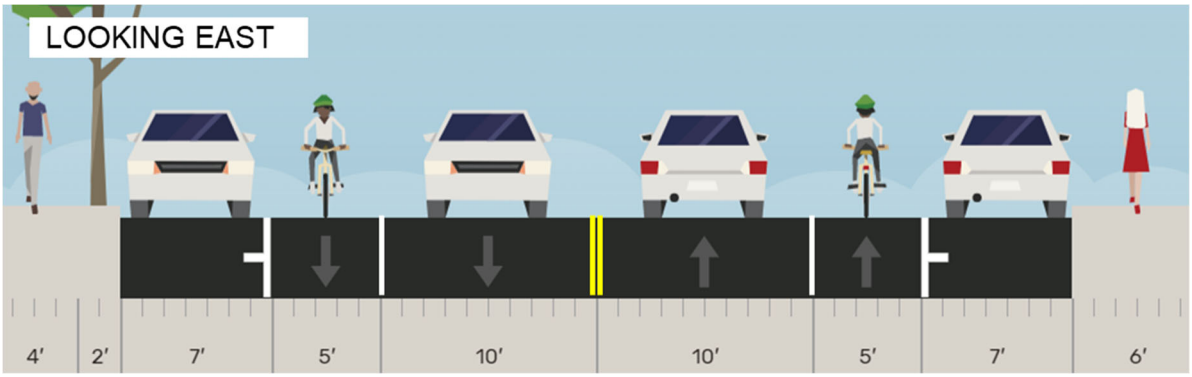


Figure 52 Proposed Improvements on Montgomery Dr from Alderbrook Dr to Farmers Ln (Option 1)

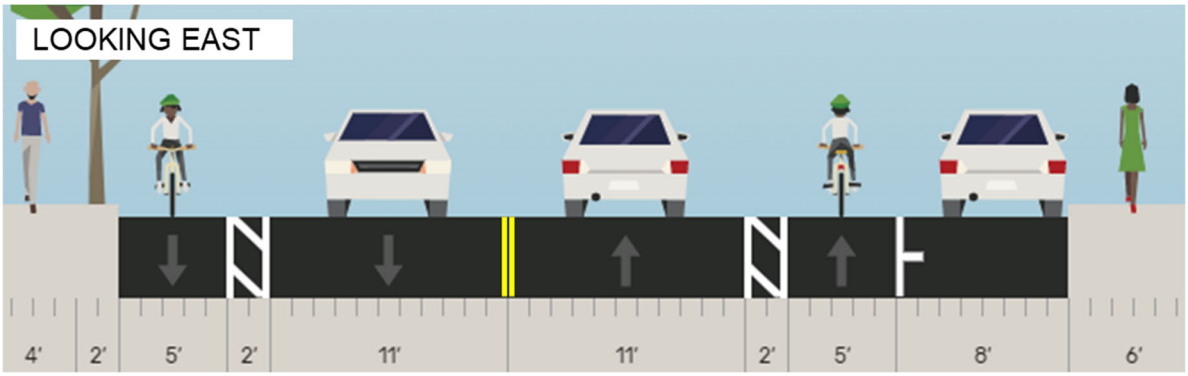


Figure 53 Proposed Improvements on Montgomery Dr from Alderbrook Dr to Farmers Ln (Option 2)

6.1.3.2 Farmers Lane to Hahman Drive

The proposed improvements include bike lanes for Montgomery Drive between Farmers Lane and Hahman Drive (see **Figure 54)**. This segment includes approaches to the intersections of Farmers Lane/Montgomery Drive and Hahman Drive/Montgomery Drive. The turning lanes at these intersections will be accommodated with the proposed configuration.

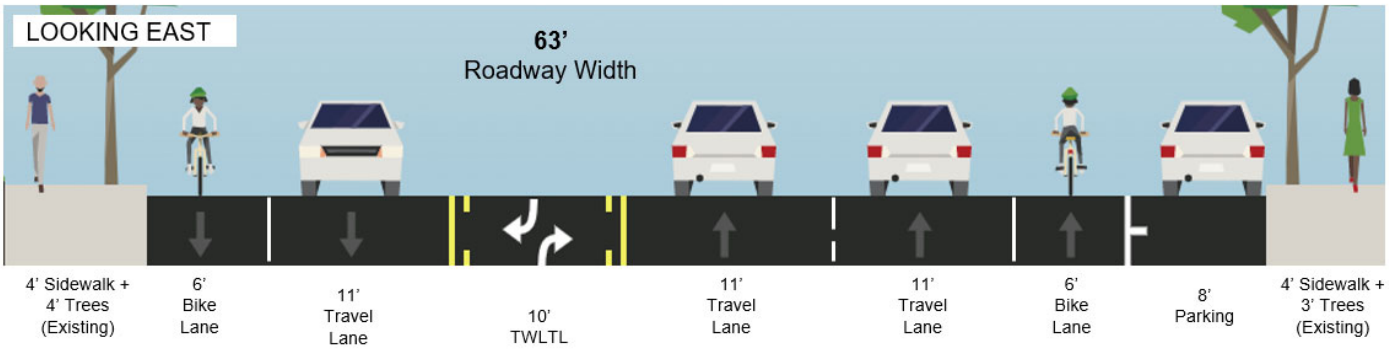


Figure 54 Proposed Improvements on Montgomery Dr Approach to Farmers Ln

6.1.4 Roseland Creek Trail

At the Roseland Creek Trail crossing on Burbank Avenue, it is recommended to maintain the existing crosswalk with overhead beacon and provide frontage improvements along the east side of Burbank Avenue linking north to Roseland Creek Community Park.

Some potential improvements to the trail include installing low-impact, pedestrian-scaled lighting, bilingual wayfinding, and a community garden. Along the creek, there is dense vegetation, so based on working group members guidance, a service road on both sides should be considered. However, the trail improvements should be prioritized over the creek improvements. In general, engaging local students in the improvement process is recommended, as they are frequent users of the trail.

6.1.5 N Dutton Ave Corridor from W College Ave to W Third St

Currently the segment of N Dutton Avenue between W College Avenue to W 3rd Street consists of two travel lanes in each direction (width of travel lane varies throughout the corridor), a TWLTL and parking. Parking is generally on one side of the street but the side of the street changes along the corridor. In some segments there are narrow shoulders instead of parking.

The proposed improvement along the corridor between West College Avenue to Santa Rosa Creek Trail include reducing the number of travel lanes from 2 to 1 in each direction, installing a bicycle lane in each direction with a buffer, and preserve the existing parking (see **Figure 55**). Where feasible the width of the bike lane and buffer can be widened. Installing a raised buffer or a buffer with vertical elements is also an option.

Some potential benefits of these improvements include a buffered/protected bike lane with an increased level of comfort and safety for cyclists, bicycle network connectivity, creating a buffer between pedestrians and vehicles, adding separation between vehicles and bicyclists, and speed management.

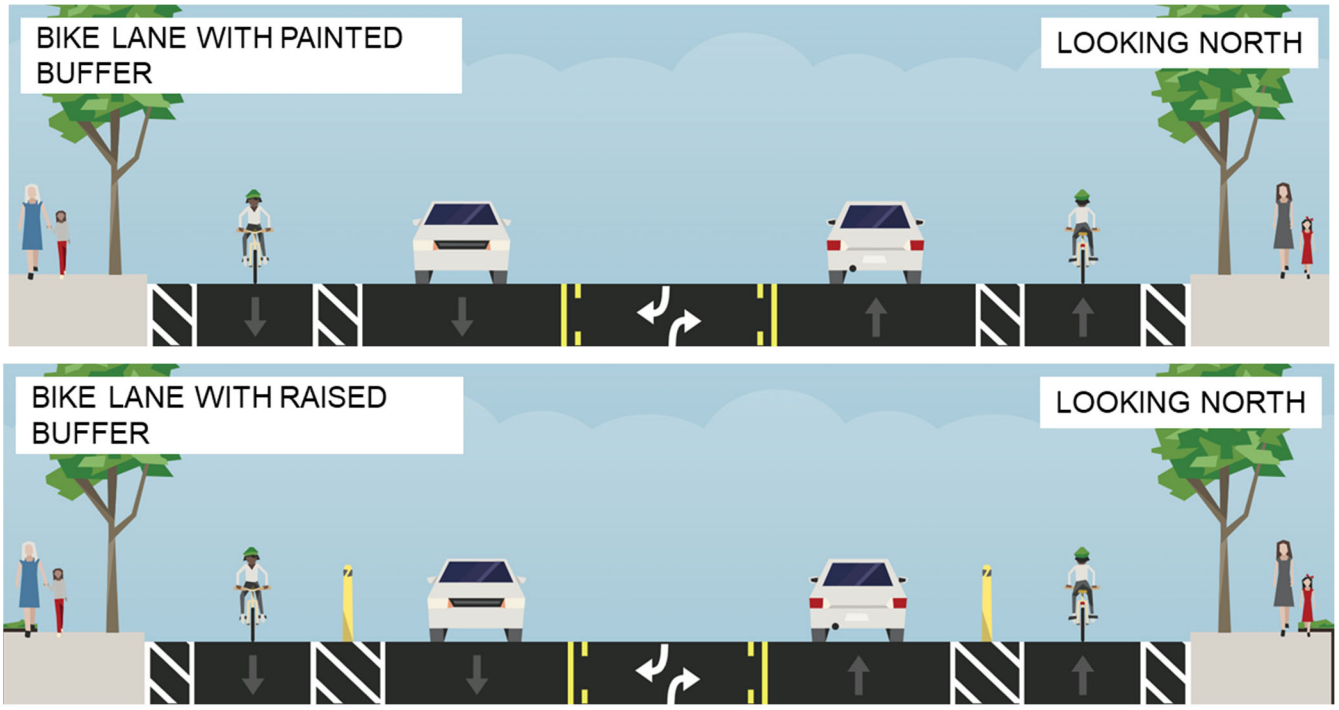


Figure 55 Proposed Improvements on N Dutton Ave between W College Ave to Santa Rosa Creek Trail

On N Dutton Avenue between Santa Rosa Creek Trail and W 3rd Street, the proposed improvements include reducing the width of the current TWLTL and inside travel lanes to 10’ and installing a 5’ bicycle lane in each direction (see **Figure 56**).

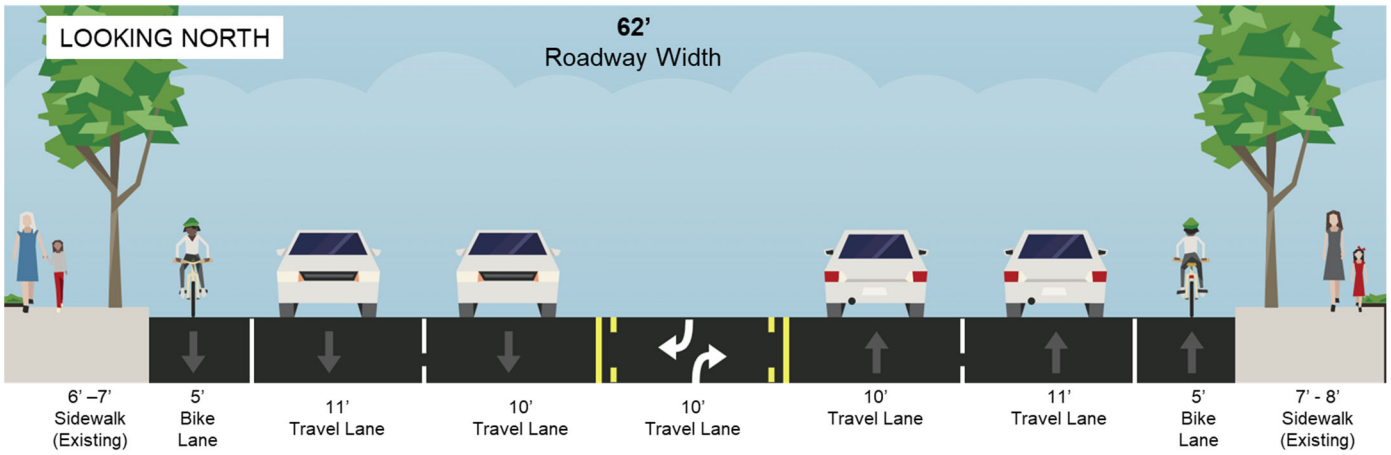


Figure 56 Proposed Improvements on N Dutton Ave between W 9th St and Trowbridge St

Traffic operations at the intersection of N Dutton Avenue and W 9th Street was evaluated in the existing conditions and with the proposed road-diet.

The existing conditions traffic volume is based on May 2018 traffic volumes provided by the City. Traffic operations were analyzed using Highway Capacity Manual, 6th Edition (HCM 6) methodology through the Synchro software. Queuing analysis was performed through microsimulation utilizing SimTraffic software. Existing signal timing was provided by the City for this analysis.

In proposed condition the intersection is assumed to have one through approach lane in each direction with exclusive turn lanes for northbound left, northbound right, southbound left, southbound right, eastbound left and eastbound right movements.

With the proposed changes, the intersection is expected to operate at a Level of Service (LOS) B in the AM and PM peak hours. LOS determinations are presented on a letter grade scale from “A” to “F”, whereby LOS “A” represents “free-flow” conditions and LOS “F” represents over capacity conditions.

The 95th percentile queue lengths are within available storage lengths for all movements except for northbound through movement. The northbound queue length 480 feet in the AM and 310 feet in the PM peak hour. Traffic analysis reports are included in **Appendix E: Traffic Analysis Report**.

6.1.6 Cleveland Avenue from Industrial Drive to Guerneville Road

6.1.6.1 Industrial Drive to Guerneville Road

For the segment spanning between Industrial Drive and Guerneville Road, Cleveland Avenue will be further evaluated for possible striping improvements once a pavement rehabilitation project is programmed and key stake holders have the opportunity for coordination and input. With the current traffic volumes, a road diet is a likely scenario in repurposing the outside travel lanes for buffered bike lanes. By transforming the street right of way via a road diet, bike lanes on each side would provide a safer, more comfortable travel way for cyclists, improve bicycle network connectivity, and lower vehicle speeds due to fewer and narrower lanes.

6.1.7 Strategies for Other City Corridors

In addition to the LRSP focus corridors, countermeasures were developed for roadway segments that have high pedestrian and bicycle collisions. These countermeasures are shown in **Table 8** below. These corridors were identified through a city-wide collision analysis (see **Section 4.4.2** of this report for details).

Countermeasures from Caltrans LRSM were selected based on collision trend and roadway characteristics at each location.

Table 8 Engineering Countermeasures at Other Corridors with High Pedestrian and Bicycle Collisions

Segment Name	From	To	Reccomended Countermeasures	Reasoning
Piner Rd	Coffey Ln	Cleveland Ave	Install pedestrian and bicycle crossing at Piner Creek Trail and Piner Pl.	Multiple pedestrian and bicycle collisions around this crossing.
Range Ave/ Frances St	Guerneville Rd	Cleveland Ave	Install pedestrian crossing at Peddington Shopping Center Dvwy, south of Guernerville Rd.	There are 4 injury collisions at this location.
			Install RRFB at Edwards Ave crossing.	Midblock uncontrolled crossing.
Temple Ave	Bennett Valley Rd	Milton St	Pedestrian Education Campaign.	Pedestrian collision involving pedestrian crossing not at sidewalk.
W Steele Ln	Marlow Rd	Cleveland Ave	Install RRFB W Steele Ln/Apple Valley Ln and at W Steele Ln/Apache St.	Currently uncontrolled midblock crossing - one fatal pedestrian collision. Apache St interesection is uncontrolled pedestrian crossing.
			Upgrade crosswalk to school crosswalk with advanced safty feature at Audubon Ct.	Less than 2000 ft walking distance from Hillard Comstock Middle School.
			Install bicycle conflict markings at intersections and driveways.	Multiple broadside bicycle collisions.
			Remove TWLTL and install preotected bicycle lanes.	Multiple bicycle collisions.
Petaluma Hill Rd	Colgan Ave	Yolanda Ave	Install leading Pedestrian Interval at Peteluma Hill Rd/Kwana Springs Rd.	Severe injury pedestrian collision at this intersection. Existing signal configuration has permitted protected left turn phasing.
			Replace flashing beacon with RRFB at Peteluma Hill Rd/Breeze Way.	Pedestrian vs. Vehicle Severe Injury collision.
			Install bicycle confict markings at intersections and driveways.	2 Broadside bicycle collisions
Oakmont Dr	State Route 12	Pythian Rd	DUI and Speed Enforcement.	Fatal DUI Collision. 1 Injury bike collision due to unsafe speed.
Mendocino Ave	Fountaingrove Pkwy	Elliot Ave	Install leading Pedestrian Interval at Mendocino Ave/Administrative Way, Mendocino Ave/Chanta Rd, Mendocino Ave/Bicentennial Way, and at Mendocino Ave/Lewis Rd/Steele St.	Multiple pedestrian collisions at these signalized intersections with pedestrian right of way violations and pedestrian violations.
			Install RRFB at Mendocino Ave/Russell Ave.	Pedestrian injury collision. Uncontrolled pedestrian crossing.
			Install bicycle conflict markings at intersections and driveways.	Multiple broadside bicycle collisions.
			Bicyclists Education Campaign.	3 Wrong side of road bicycle violations
Santa Rosa Ave	Colgan Ave	Court St	Install bicycle conflict markings at intersections and driveways.	Multiple injury bicycle collisions involving vehicle right of way violaion.
			Bicyclists Education Campaign.	Severe injury collision involving cyclists riding in the wrong direction
Guerneville Rd/ Steele Ln	Fulton Rd	N Dutton Ave	Install bicycle conflict markings at intersections and driveways.	Multiple injury bicycle collisions involving vehicle right of way violaion.
			Bicyclists Education Campaign.	Injury collision involving cyclists riding in the wrong direction.

6.1.8 Systemic Engineering Countermeasures

When selecting countermeasures, focusing on locations with high number of crashes is a reactive approach to roadway traffic safety planning. A reactive approach targets recent hot-spots and specific problems that are associated with these locations; as a result of this approach, locations with low traffic volumes but with similar safety issues as hot spot locations are not addressed. To address this, Caltrans' LRSM suggests agencies utilize a comprehensive approach that includes systemic and spot location improvements in developing a safety plan.

Systemic approach to countermeasure is generally based on 'system wide' crash data. With a systemic approach, locations with high levels (number and severity) of crashes and location with similar geometric features but with lower level of crashes are treated with same low-cost preventable safety measures. Benefits of adopting systemic approach to countermeasures include:

- Widespread effect: As systemic improvement throughout a corridor or roadway network will improve safety at multiple locations under one project. Inclusion of the systemic locations will improve safety at those locations while inclusion of hot-spot locations will maintain positive benefit-to-cost ratio for the project.
- Crash type Prevention: By focusing countermeasures on a predominant crash type, an agency can address locations with fewer number of these crashes but have similar characteristics as a hot-spot locations.
- Cost Effectiveness: Implementing low-cost solutions across an entire system or corridor can be a more cost-effective approach to addressing system-wide safety issues. Even though this approach does not address all (or total) safety issues for a given location, the deployment of low-cost countermeasures often results in the highest overall safety benefit for an agency with limited safety funding.
- Reduced Data Needs: Because this approach does not always address locations with a history of crashes and active stakeholders, it can be difficult to justify the improvements. The Systemic Approach will rarely include a recommendation for a large-scale safety improvement at a single location. Since large-scale projects usually garner attention from decision makers, the media, elected officials, and the general public, safety practitioners often need to make additional efforts to explain the Systemic Approach and its benefits to those groups. Safety practitioners can utilize the high B/C ratios of these systemic projects to convey their benefits compared to high-profile, single location projects with lower B/C ratios.

Tables 9 shows the recommended systemic safety countermeasures for the City intersections and segments. These systemic recommended countermeasures can be applied to locations in the City with similar high-risk roadway characteristics. Systemic applications help to mitigate collisions before a collision issue occurs. This type of countermeasure application is proactive rather than a collision "hot spot" reactive approach.

The systemic countermeasures were developed based on pedestrian and bicyclist collision trends only.

Countermeasure number and collision reduction factor corresponds with countermeasures presented in Caltrans' LRSM.

Table 9 Systemic Engineering Countermeasures

Countermeasure Number	Collision Reduction Factor	Countermeasure Description
R35PB	35%	Install/upgrade pedestrian crossing (with enhanced safety features)
R37PB	35%	Install Rectangular Rapid Flashing Beacon (RRFB)
R33PB	45%	Install Separated Bike Lanes
S21PB	60%	Modify signal phasing to implement a Leading Pedestrian Interval (LPI)
R32PB	35%	Install bike lanes

6.2 Non-Engineering Strategies

A comprehensive approach to selecting countermeasure recognizes that not all safety issues can be addressed through infrastructure improvement. The comprehensive approach to safety involves the 5 E's of traffic safety. Besides engineering safety countermeasures, it is important to recommend safety countermeasures to coincide with the other safety E's.

6.2.1 Education

Education strategies are listed below.

- Bicycle and pedestrian safety campaigns
  - Use a light at night, wear bright clothing
- Driver education through distracted driving campaigns
  - Can be during Distracted Driving Awareness Month in April
- Safe Routes to School maps and outreach at schools
- Social media blasts with quick education tools for all users
- Dangers of speeding/speed management campaigns
  - Keep Kids Alive Drive 25
- Partnering with agencies such as Sonoma County Health and SCTA for public education

The California Office of Traffic Safety has resources that can be used by the City to help in traffic safety education for residents. Some campaigns highlighted in their website include impaired driving, distracted driving, pedestrian & bicycle safety, and speeding. The website provides educational materials, safety tips, facts, and resources to use in educating the public on traffic safety.

6.2.2 Emerging Technologies

Possible emerging technologies strategies are listed below.

- ITS infrastructure, web/mobile application (apps) and smart cities practices
- Bicycle detection
- Upgraded controllers for flashing yellow arrows and leading pedestrian intervals
- Installing touchless Accessible Pedestrian Signals
- Communication with traffic signals
- Changeable message signs

6.2.3 Enforcement

Enforcement strategies are listed below.

- Targeted speed enforcement
  - Focus areas can include:
    - School zones
    - Areas of concern for residents (based on public feedback)
- DUI saturation patrols
- Increasing number of traffic enforcement officers
  - Can be funded through Police Traffic Services grant from the Office of Traffic Safety
- Distracted driving enforcement

6.2.4 Emergency Response

Emergency response strategies are suggested below.

- Emergency vehicle pre-emption at signalized intersections
- Improvements to roadways to increase access and potentially shorten response times

7. Prioritize and Incorporate Strategies

Funding opportunities can come through grant funding such as HSIP, Active Transportation Program (ATP), and other state funded grants. Each HSIP cycle has available project funding for Benefit to Cost Ratio (BCR) and funding set-aside projects. BCR projects use expected benefit and estimated cost to determine eligibility and likelihood for receiving funding. The expected benefit is determined using the crash history and the predicted collision reduction from the recommended countermeasures.

Potential projects for priority locations can be prioritized using estimated BCRs calculated using the HSIP Analyzer. The awarded projects through the BCR application for HSIP Cycle 10 started at a BCR of 12. Even though the minimum for the grant application was a BCR of 3.5, the projects submitted were very competitive. Some of this was due to funding shortfalls with COVID lockdowns and the HSIP grant application deadline extension which allowed more agencies to submit. Therefore, the City should aim for a minimum BCR of 10 for submitted projects.

HSIP also provides funding set-aside projects that do not require a collision history. Per stakeholder confirmation, this next call (HSIP Cycle 11), is expected to have the same set aside funding as last call. Set aside funding will consist of guardrail upgrades, pedestrian crossing enhancements, installing edgelines, and tribes.

For funding for the non-engineering strategies, the California Office of Traffic Safety has resources that can be used by the City to help in traffic safety education for residents. Some campaigns highlighted in their website include impaired driving, distracted driving, pedestrian & bicycle safety, and speeding. The website provides educational materials, safety tips, facts, and resources to use in educating the public on traffic safety.

8. Evaluation Process

To evaluate the success of this plan, collision analysis should be performed every 5 years, along with requests for public feedback. This information can be reviewed and processed to compare results to the established goals and track progress.

- **Goal #1:** Increase access and comfort for bicyclists and pedestrians
    - **Measure of Success:** Increased bicycle and pedestrian facilities. Bicyclists and pedestrians report increased levels comfort with improved bikeways and pedestrian accommodations.
- **Goal #2:** Maintain and expand a multimodal network
    - **Measure of Success:** Engineering, education, enforcement, emerging technologies, and emergency response strategies are implemented that support multimodal travel.
- **Goal #3:** Support a culture of walking and biking
    - **Measure of Success:** Most residents report that they feel safe walking and biking in the Santa Rosa. Higher volumes of pedestrian and bicycle traffic are observed. After 5 years, the number of multimodal collisions decrease from the 5-year period before.

9. Next Steps

The City of Santa Rosa plans to send the Local Road Safety Plan to City Council for adoption in July 2022. This safety plan will be a living document and will guide the City's roadway safety needs for the next five years. It will be updated as needed and the goals will be monitored.

10. References

Traffic Data

- City of Santa Rosa Collision Data, Statewide Integrated Traffic Records System, 2015-2019.
- City of Santa Rosa Collision Data, Transportation Injury Mapping System, 2015-2019.
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Manuals, Plans, and Studies

- "Developing Safety Plans, A Manual for Local Rural Road Owners", Federal Highway Administration, March 2012, http://safety.fhwa.dot.gov/local_rural/training/fhwasa12017/.
- 2020-2024 California's Strategic Highway Safety Plan (SHSP), "California Safe Roads: 2020-2024 Strategic Highway Safety Plan", Caltrans.
- "Local Roadway Safety, A Manual for California's Local Road Owners", Caltrans, Version 1.5, April 2020
- "Highway Safety Manual", American Association of State Highway Officials (AASHTO), 1st Edition, 2014 supplement.
- "California Manual of Uniform Traffic Control Devices (CA MUTCD)", Revision 5, 2014.
- "Bicycle and Pedestrian Master Plan Update 2018", City of Santa Rosa, March 2019.
- "Stony Point Road Corridor Study for Active Transportation Modes", W-Trans, August 2021.
- "Urban Bikeway Design Guide", National Association of City Transportation Officials (NACTO), April 2011 Edition

Websites

- California Department of Transportation, "Strategic Highway Safety Plan (SHSP)", https://dot.ca.gov/programs/safety-programs/shsp.
- California Department of Transportation, "Local Roadway Safety Plan (LRSP) and Systemic Safety Analysis Report Program (SSARP)", https://dot.ca.gov/programs/local-assistance/fed-and-state-programs/highway-safety-improvement-program/local-roadway-safety-plans.
- California Department of Transportation, "HSIP Cycle 10", https://dot.ca.gov/programs/local-assistance/fed-and-state-programs/highway-safety-improvement-program/apply-now.
- City of Santa Rosa Local Road Safety Plan, https://lrsp.mysocialpinpoint.com/SantaRosa.
- Institute of Transportation Engineers, https://www.ite.org/technical-resources/topics/safe-systems/.
- Sonoma County Transportation Authority, "Vision Zero", https://scta.ca.gov/vz/.

Surveys

- Local Road Safety Plan Project Survey, https://lrsp.mysocialpinpoint.com/SantaRosa.

Appendix A

Stakeholder and Public Input

Appendix B

Additional Collision Analysis

Appendix C

Previous Safety Plans and Projects

Appendix D

Traffic Volume and Operational Analysis