VICTORIA, TX

Active Transportation Master Plan

2023

THE CITY OF VICTORIA TEXAS

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Chapter 1

Introduction

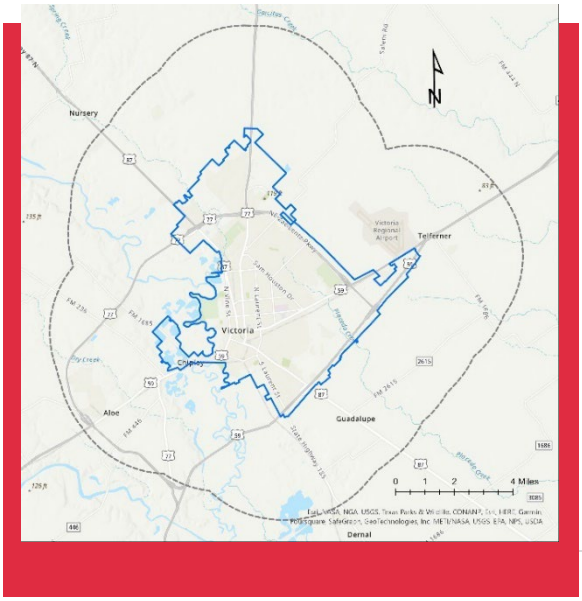
OVERVIEW

The Victoria Active Transportation Master Plan (ATMP) provides a shared vision for the community's priorities for safe and convenient walking, bicycling, wheelchair use, and other means of non-motorized travel for recreation and transportation. The ATMP identifies a network that, when implemented, will provide residents opportunities to walk and bike between neighborhoods and access the existing greenway trails from points throughout the city.

This plan includes a bicycle facility typology for the construction of new facilities and for use when retrofitting the existing street network with facilities for shared use. Priority projects, order of magnitude cost estimates by facility type, potential funding sources, and a framework for implementation are included to ensure that the ATMP's vision is realized.

The Victoria ATMP study area is incorporated City of Victoria in addition to the extraterritorial jurisdiction of the city, with an emphasis on the developed area within the city limits where the most walking and biking trips occur.

FIGURE 1. PROJECT STUDY AREA



WHY ACTIVE TRANSPORTATION?

Choosing to walk or bike for short trips has a myriad of benefits for community members. Investing in infrastructure to make it easier and safer to walk and bike in Victoria will improve quality of life for residents and enable residents and the city to capture the economic benefits of these investments.

PLAN GOALS

SAFETY
To address the safety of a multi-modal transportation system and aim for zero bicycle and pedestrian fatalities and serious injuries

CONNECTIVITY
To provide networks of bikeable and walkable streets with connections to other modes

HEALTH
To improve access to active transportation and outdoor recreation for health and wellness

EQUITY
To prioritize transportation improvements so that vulnerable users needs are met

ECONOMY
To recognize the economic benefits of walkable and bike-friendly communities

RESILIENCY
To support climate action goals by reducing single occupancy trips through transportation choice

PLAN CONSISTENCY

Although the Victoria ATMP is the first Active Transportation Plan for the City of Victoria, several previous planning efforts have acknowledged a need for improved facilities for walking and biking throughout the City.

Goals, Community Input, and Projects identified in these previous planning efforts have been considered and included in the Victoria ATMP.

Plan Review

- Victoria MPO 2045 MTP
- Paseo de Victoria
- The 2035 Comprehensive Plan
- The Thoroughfare Master Plan
- The Victoria Parks and Recreation Master Plan
- The Downtown Master Plan

PUBLIC ENGAGEMENT

OVERVIEW

The planning process included a steering committee to oversee the process, meetings with stakeholders, and on-line and in-person interactive activities to collect data about the experiences and preferences of residents when it comes to traveling on foot or on a bike.

STEERING COMMITTEE

A steering committee comprised of City of Victoria leaders, citizens, and subject matter experts guided the development of the ATMP. The steering committee met three times over the course of plan development, including completing a walking audit to assess the walkability of safety, comfort, and accessibility of several intersections and corridors.

STAKEHOLDER MEETINGS

Stakeholder meetings included were arranged where partner organizations with an insight into populations in need of improved bicycle and walking facilities.

Organizations invited to these meetings include social service non-profits such as United Way and Victoria Christian Assistance Mission (VCAM), Victoria Independent School District (VISD), the County Health Department, Victoria Transit, and various city departments including the Police Department, Development Services, Parks and Recreation, Engineering, and Public.

ONLINE ENGAGEMENT

Survey

An online survey recorded resident's attitudes about bicycling and walking, the barriers they face when walking and biking, and what would be needed to enccourage them to bike and walk more frequently. The City of Victoria (COV) posted yard signs promoting surveys at busy intersections, in locations where people are known to bike, and at transit stops. City staff conducted on-board surveys on transit and conducted in person outreach at the "Got Health 2023 ECI Expo" at the Victoria Mall on April 29, 2023 to encourage participation. Press releases and social media blasts encouraged participation. A total of 528 survey responses were received.

The survey revealed an overwhelming number of respondents walk or bike at least weekly (73%). The primary reason for walking was for health, following by wanting to reduce air pollution, fuel consumption, and save money.

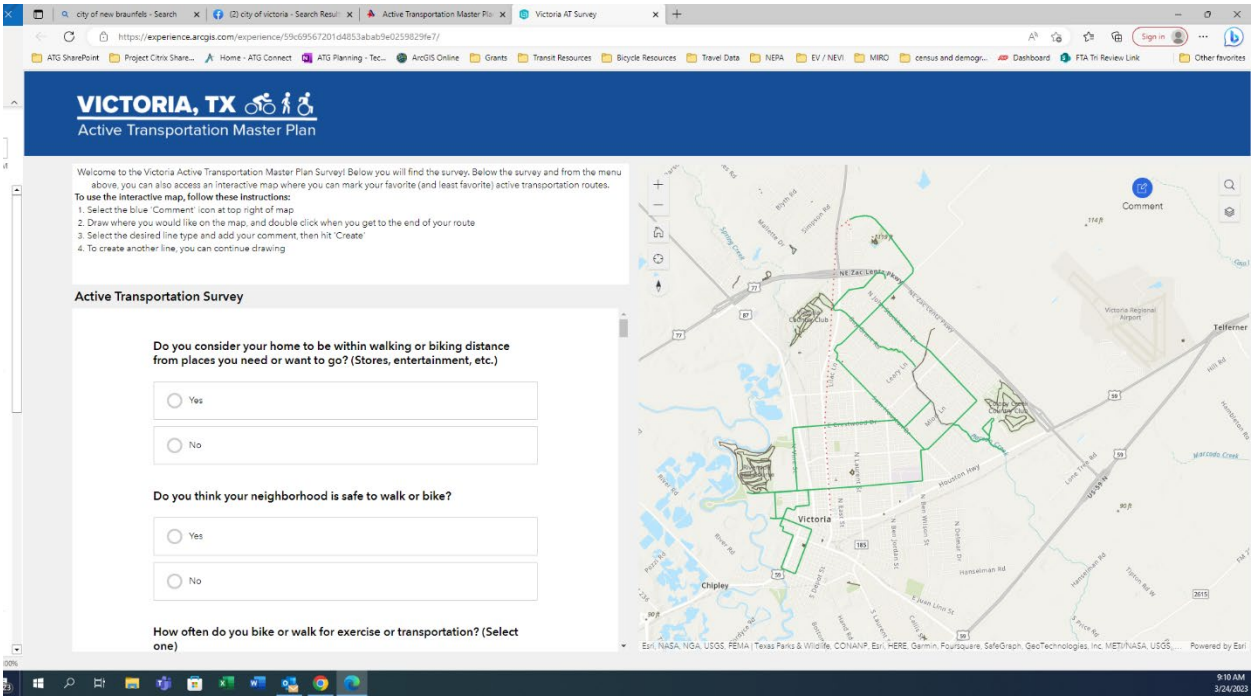
When asked what are the biggest barriers to walking and biking around in Victoria, gaps in sidewalk network, an absence of sidewalks in places people want to walk, and poor sidewalk conditions were the top responses. High traffic volumes and high speeds also ranked high as barriers to walking and biking.

Many respondents said that they would walk or bike more frequently if there were better sidewalks and more of them. Designated bike routes, bike facilities, and improved safety would also increase the likelihood to walk and bike more frequently.

Online Map

An online interactive map provided the public with the chance to provide their input about how they feel walking and biking in specific locations throughout Victoria. Participants could identify routes and intersections where they feel safe, where they don't feel safe, and where they have an idea that would make it safer and more comfortable walking and biking.

This input was used to develop the active transportation network and project recommendations.



Chapter 2
Existing Conditions

OVERVIEW

This chapter summarizes existing conditions related to active transportation in the City of Victoria.

The City of Victoria is the county seat for Victoria County. It is located in south central Texas, about equidistant from San Antonio, Corpus Christi, and Houston.

The City of Victoria was home to 65,634 residents in 2021.[1] Median Household Income was $59,010, with 18.1% of the population living below the poverty threshold. Of the 24,447 occupied housing units, 1,729, or 7.1% do not have vehicle access.

TRANSPORTATION SYSTEM

EXISTING FACILTIES

Sidewalk Inventory

The City of Victoria maintains geospatial data on the public sidewalk network. The sidewalk data includes edgelines of sidewalks from across the city. Generally speaking, the sidewalk network is most complete in the downtown area as well as in areas to the east of Sam Houston Dr., as well as on portions of the commercial corrdiors of N. Ben Wilson Dr., N. Ben Jordan Dr., N. Laurent St., Mockingbird Ln., and North St.

Shared Use Paths

There are two public shared use paths in Victoria. On the west side of town, The Riverside Trail runs adjacent to the Guadalupe River and McCright Dr. and meanders through Riverside Park. The 6' wide concrete surface runs for about 1.9 miles from the Memorial Garden at the north end of the park to its terminus at W. Red River St. and N. Vine St.

On the east side of the city, Lone Tree Creek Trail is a shared use path that begins at East Side High School and terminates at E. Airline Dr. The 10' wide path is 2.4 miles in length.

EXISTING PLANS & PROJECTS

2045 Metropolitan Transportation Plan

The 2045 MTP, passed in 2020, included 13 goals and objectives, of which two focused on active transportation: "Encorage Cycling" and "Encourage Walking." Stakeholders involved in plan preparation noted a lack of sidewalks and bike lanes, and accordingly the plan recommended expanding this infrastructure and encouraging the community to use it.

The Paseo De Victoria

A component of both the City's Comprehensive Plan and the Parks Master Plan, the Paseo de Victoria identifies natural and human-made drainage ways throughout the city that could serve as rights-of-way for trails, so as to improve connectivity of active transportation infrastructure and quality of life for Victoria residents.

The 2035 Comprehensive Plan

Adopted in 2016, the Victoria Comprehensive Plan emphasizes improving the City's

[1] US Bureau of the Census, 2021 ACS Data.

pedestrian and bicycle infrastructure through improved coordination between City departments. Stakeholders identified priority areas for improvement, such as near the City's college campuses.

The Thoroughfare Master Plan

The Thoroughfare Master Plan, adopted in 2021, ranks "Increase multimodal options" as the sixth priority among its six goals. Members of the public who participated in the planning process felt that existing infrastructure was inadequate to support non-motorized transportation options.

The Victoria Parks and Recreation Master Plan

The Parks and Recreation Master Plan was adopted in 2021 and laid the groundwork for this Active Transportation Plan, as it set an objective to improve trail connectivity and bicycle and pedestrian facilities. Public surveys revealed that 60% of respondents used "walking, hiking, and biking trails" most of any type of park facility over the previous year, and that developing new trails is the community's second highest priority for the Parks and Recreation department.

The Downtown Master Plan

Of the nine goals for the 2021 Downtown Master Plan, one is that "Downtown will be a safe, walkable destination for all users." Specific improvements that members of the community identified to improve active transportation downtown include trees and landscaping, street lighting, and benches/rest areas.

ONGOING PROJECTS

TxDOT Road Improvements

There are several TxDOT projects underway or anticipated to begin construction in the coming years that will improve conditions for walking in Victoria. These projects, which include sidewalks, curb ramps, crosswalk striping and pedestrian signal heads at signalized intersections, are noted in Table 1.

TABLE 1. DEMAND ANALYSIS FACTORS

Project	Timeline
Bus 59-T (Ben Wilson St. to N. Laurent St.)	ongoing
US 87 (Navarro St. to Main St.)	0-4 years
Bus 59-T (US 87 to Water St.)	0-4 years
John Stockbauer Dr. (SL 463 to FM 1315)	0-4 years
US 77 (Northside Rd. to LP 463)	0-4 years

ONGOING INITIATIVES

The City of Victoria, in partnership with the County of Victoria Health Department, have ongoing initiatives to promote healthy, active living.

NEEDS ASSESSMENT

The needs assessment supplements data collected from citizen input with a data-driven analysis to identify the best bicycle and pedestrian networks. There were four analyses performed using geospatial and demographic data to understand demand, existing comfort levels, crashes, and walkability.

Needs Assessment

- Latent Demand
- Bicycle Level of Traffic Stress
- Crash Analysis
- Walkability

LATENT DEMAND

Latent demand represents potential demand that is unfulfilled for a variety of reasons. In Victoria, there is latent demand for more active transportation options – bicycling and walking – because the built environment is designed for and dominated by the automobile.

The latent demand analysis combines geospatial data which cumulatively represents want and need for active transportation options.

The rationale for each selected factor is a combination of considerations. Population density, employment density, and destinations are used because we know that enhancing infrastructure in more densely populated areas impacts the most people, with more destinations in closer proximity to one another. The likelihood of people using facilities to walk or bike in these areas is higher.

Transportation disadvantaged communities are more likely to walk or bike, so areas that have a higher than the regional average for minorities, seniors, children under 18, zero car households, and households with disabilities are more likely to need access to safe and accessible infrastructure for walking and biking.

Active transportation begets active transportation, so proximity to transit, commute mode, and proximity to public transit are used in the analysis to create more seamless transitions between facilities.

Latent Demand Factors

- Population Density
- Minority Population
- Senior Population
- Population Under 18
- Zero Car Households
- Households with a Disability
- Commute Mode
- Employment Density
- Active Transportation Facilities
- Access to Public Transportation

The results are shown in Figure 2. The areas with the darkest color are those deemed to have the highest demand for safe and accessible active transportation infrastructure, so that investment there would make the highest impact.

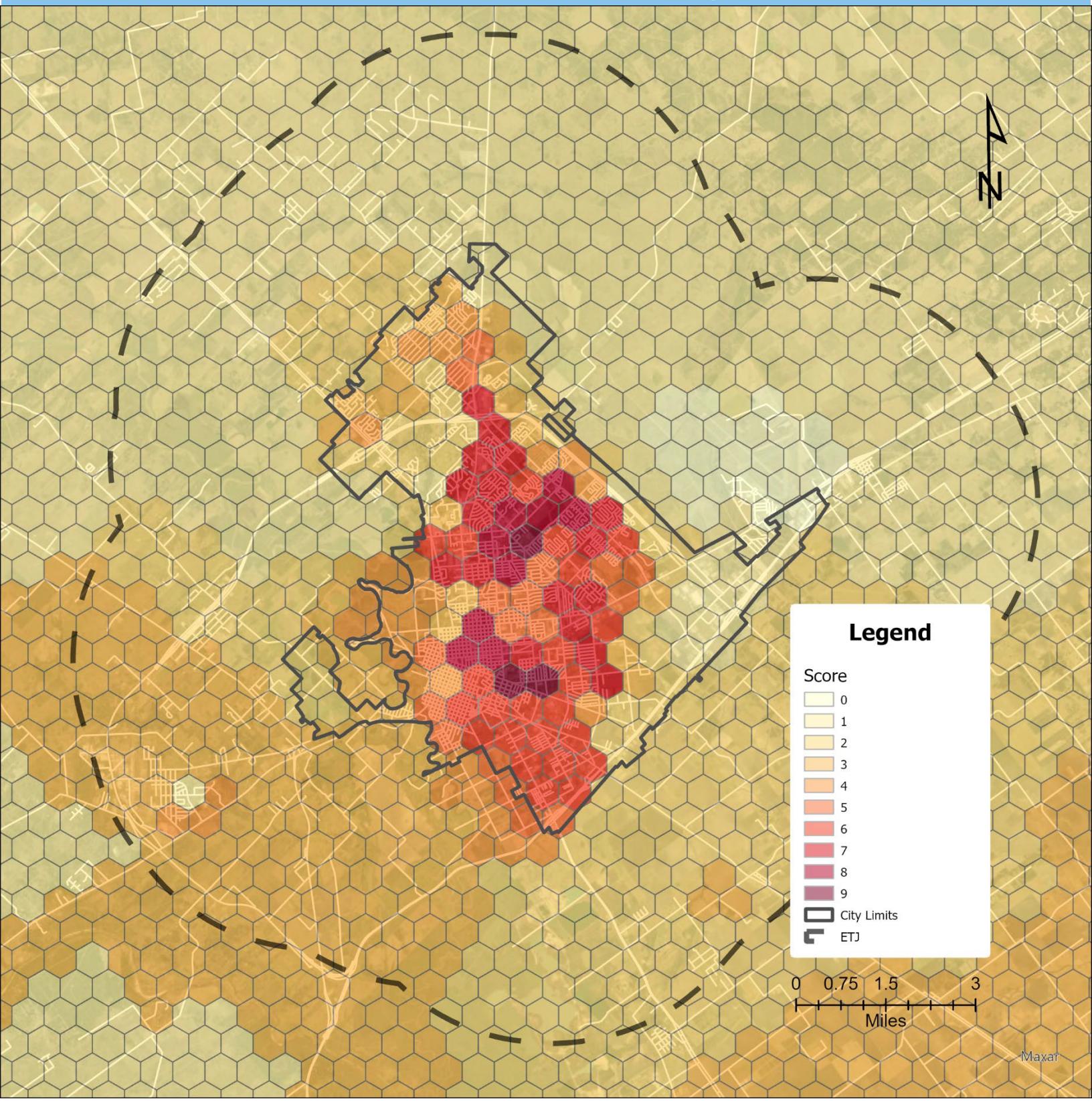


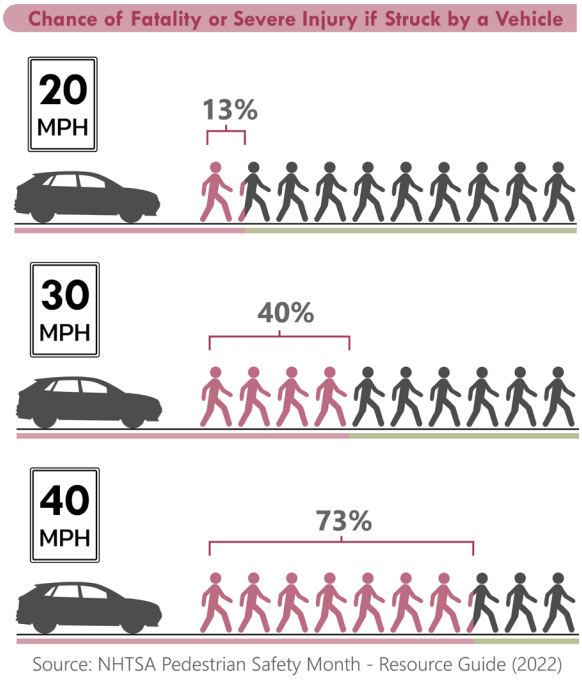
FIGURE 2. LATENT DEMAND ANALYSIS RESULTS

BICYCLE LEVEL OF TRAFFIC STRESS (BLTS)

The purpose of a Bicycle Level of Traffic Stress Analysis is to illustrate the experience of a bicyclist using the existing road network. Roads are categorized on a scale from one to four, with roads on the lower end of the spectrum (ones and twos) being classified as "low stress" and roads on the higher end of the spectrum (threes and fours) being classified as "higher stress."

This analysis was conducted using a method modified from the widely credited report by the Mineta Transportation Institute (MTI) titled, Low-Stress Bicycling and Network Connectivity. The theory behind the analysis is that most people have little tolerance for interacting with traffic when riding a bike and are uncomfortable in mixed traffic situations. This type of rider, known as the "**interested but concerned group**" riders, make up approximately 51% of the population. Another 5% of the population is characterized as "**enthused and confident**" preferring dedicated space but having the skills needed to ride comfortably in mixed traffic where vehicular speeds and volumes are not excessively high. The "**strong and fearless**" riders make up about 7% of the population and are comfortable riding on roads regardless of the speed limit, number of lanes, or long intersection crossing distances. The last group, at 37% of the population is the "**no way, no how**" or non-cyclists.[2]

These cyclist typologies can be used to facilitate an understanding of how the existing road network is working for the current population.



Source: NHTSA Pedestrian Safety Month - Resource Guide (2022)

The LTS score is based on the following factors:

- Number of thru lanes per direction
- Traffic Volume
- Posted Speed Limits
- Presence of bicycle facilities by type

Figure 3 shows the BLTS results for the City of Victoria and its ETJ. The results show that over half of all roadway segments were LTS 4. A review of individual roadway characteristics revealed that the posted speed limit was the determining factor on much (42%) of the local road network. A reduction in the speed limit of 5 MPH would change the result to an LTS 2 for close to half of the road network.

[2] Dill, Jennifer, and Nathan McNeil, "Four Types of Cyclists? Examination of Typology for Better Understanding of Bicycling Behavior and Potential," Transportation Research Record: Journal of the Transportation research Board, 2387: 129-138, 2013.

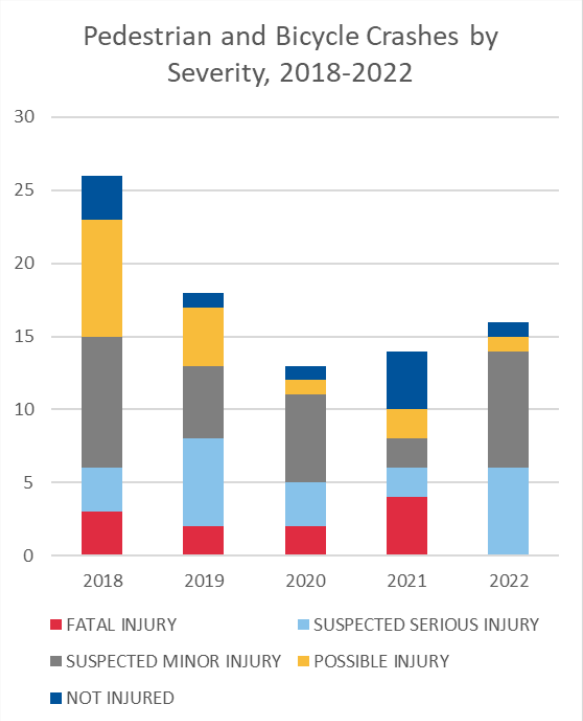
FIGURE 3. BICYCLE LEVEL OF TRAFFIC STRESS (BLTS) ANALYSIS RESULTS

CRASH ANALYSIS

Crash analyses are crucial to expose areas of high crash rates for active transportation modes to address safety concerns. Crash data from the TxDOT Crash Records Information System (CRIS) from 2019 – 2022 was used to identify crashes involving pedestrians and people biking within the City of Victoria and its ETJ.

From 2018-2022, there were 87 crashes involving people walking and biking.

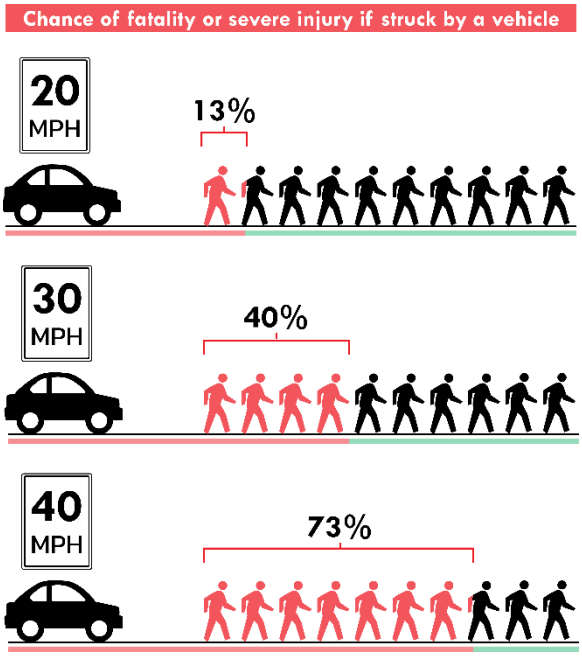
FIGURE 4. PEDESTRIAN AND BICYCLE STRESS BY SEVERITY, 2018-2022



Crashes that involve people walking and biking have disproportionately severe and fatal outcomes when compared to crashes for all modes of transportation. Of the 87 crashes recorded during the study period, 34% were serious or fatal (28).

Speed is a crucial factor in determining the severity of a crash involving a pedestrian. Figure 5 shows the relationship between vehicle speed and crash outcome.

FIGURE 5. RELATIONSHIP BETWEEN SPEED AND PEDESTRIAN CRASH FATALITIES



Crashes involving bicyclists and pedestrians occurred throughout the study area, but several intersections saw higher concentrations of crashes, and concentrations of severe and fatal crashes.

FIGURE 6. HIGH INJURY INTERSECTIONS

Intersection	# of Bicycle and Ped. Crashes
Rio Grande St. (US Bus 59) and N. Delmar Dr.	3
Rio Grande St. (US Bus 59) and N. Ben Wilson Dr.	2
Moody St. and Stayton St.	2
US 77 and Crestwood Dr.	2
US 77 and Mockingbird St.	2
Sam Houston Dr. and N. Laurent St.	2
John Stockbauer Dr. and E. Mockingbird St.	2

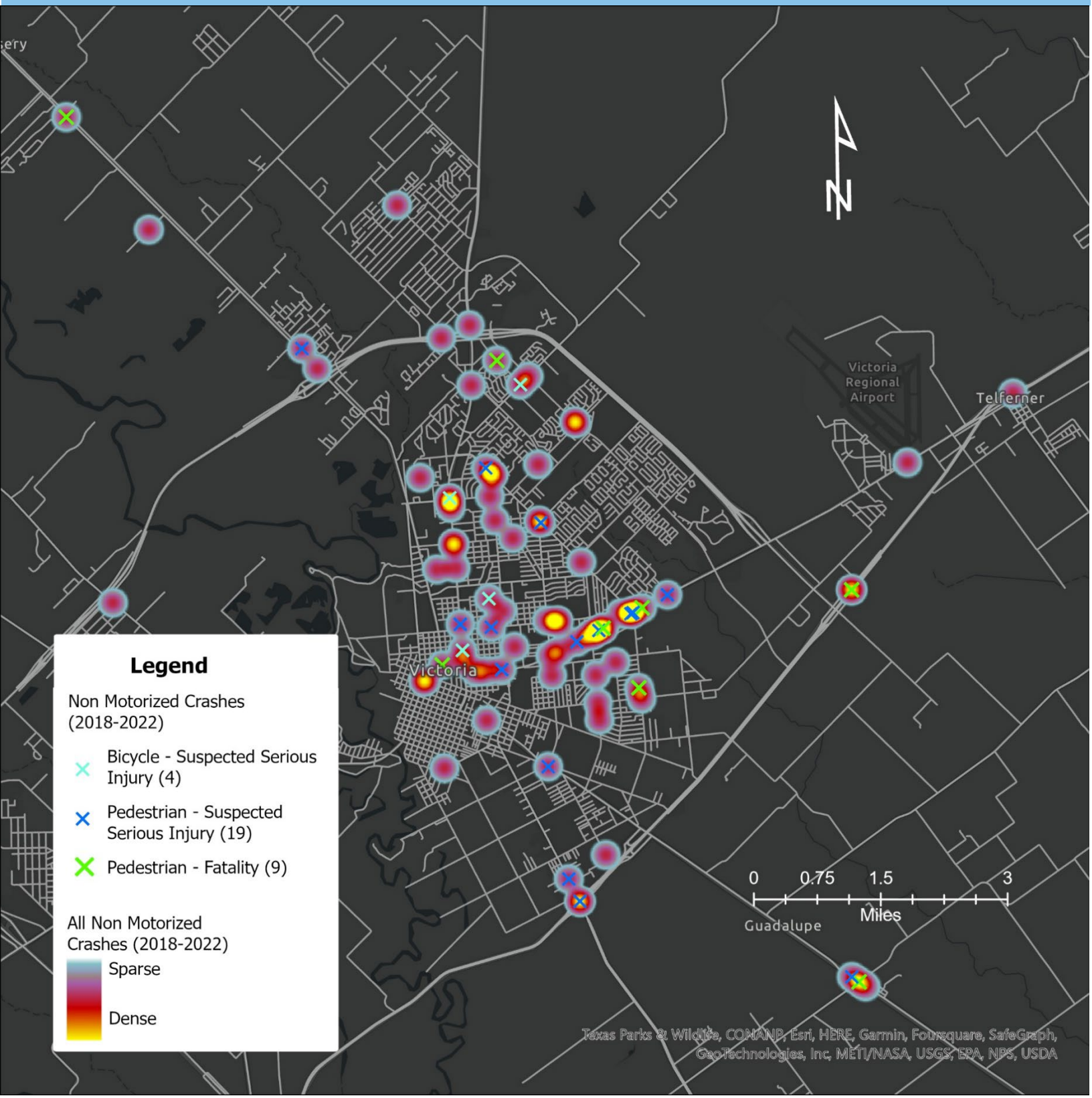


FIGURE 7. BICYCLE AND PEDESTRIAN CRASH ANALYSIS RESULTS

Chapter 3

Active Transportation Network

PLANNING THE NETWORK

The proposed recommendations are the result of a collaborative process that combines community sentiment with a data-driven technical analysis to identify desireable routes and recommend a context appropriate facility type for those locations.

Implementation of this network will help Victoria achieve the goals identified during the planning process – to make it safer to walk and bike throughout the city, while also aiming to provide options for all types of people walking and biking.

Recommendations were made through an iterative process, initially requesting input from stakeholders, the steering committee, and the public, then making adjustments based on feedback from the steering committee. This process was followed by providing a draft of the plan to the public for review, and then ultimately making final revisions based on that public feedback prior to adoption by the City Council on November 7, 2023.

NETWORK RECOMMENDATIONS

The process to assign a context appropriate bicycle facility is grounded in research that balances a variety of factors including identification of community needs and routes, an understanding of the current conditions, and assignment of solutions based on roadway characteristics. As shown in Figure 8, as the speed and volume of vehicles increases, so too must the level of protection to insure for the safety and comfort of a wide range of bicyclist types.

FIGURE 8. BICYCLE FACILITY SELECTION CHART

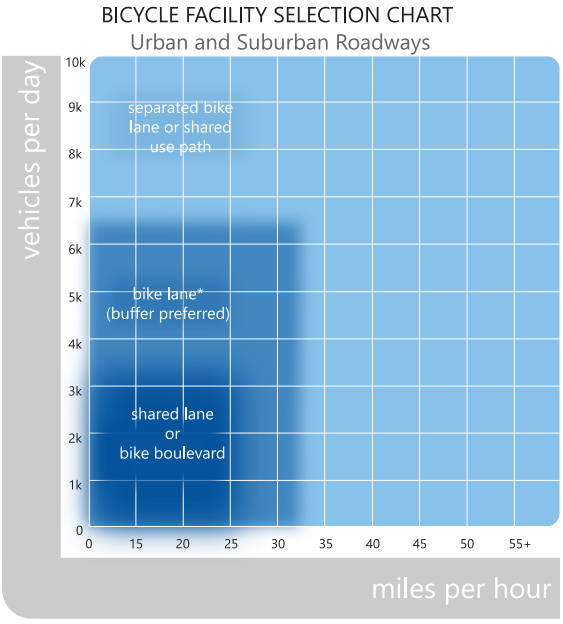


TABLE 2. SUMMARY OF BICYCLE FACILITIES BY TYPE

Facility Type	Quantity
Shared Use Trails	14.8 mi.
Side Paths	17.1 mi.
Protected Bike Lanes	15.3 mi.
Buffered Bike Lanes	5.1 mi.
Bike Lanes	11.8 mi.
Bicycle Boulevards	14.2 mi.
Sidewalks	32.7 mi.
Intersection Improvements	29

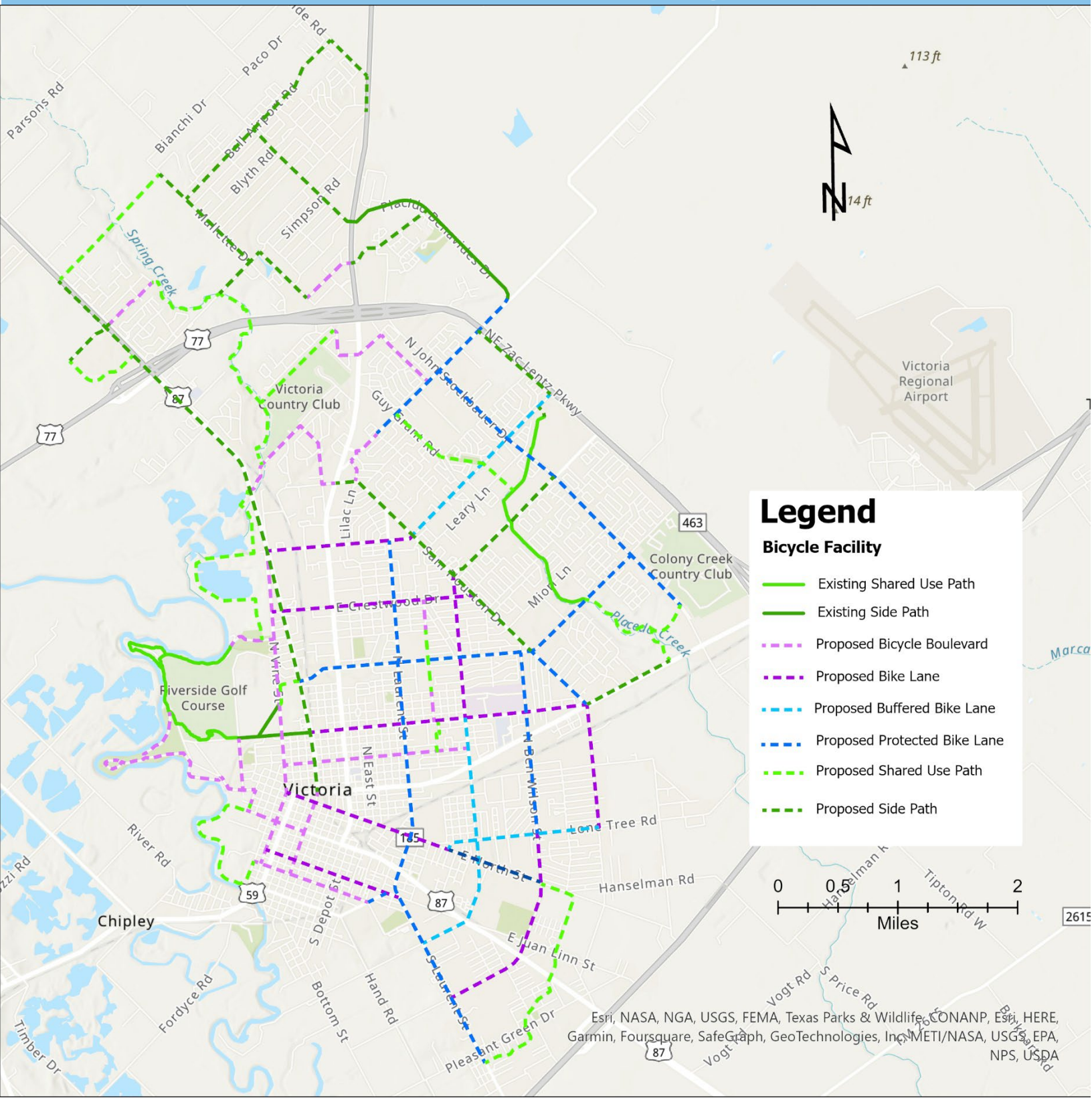


FIGURE 9. BICYCLE NETWORK RECOMMENDATIONS

FIGURE 10. INTERSECTION AND SIDEWALK RECOMMENDATIONS

FACILITY TYPE PROFILES

The following section describes in detail the types of active transportation facilities that can be implemented to create a connected and complete bicycle and pedestrian network. The development of these typologies is supported by information gathered from various sources including the National Association of City Transportation Officials (NACTO), the American Association of State Highway and Transportation Officials (AASHTO), and the Federal Highway Administration (FHWA).

SHARED USE PATH

Shared use paths are intended to be used by both bicyclists and pedestrians. Shared use paths occupy corridors that are completely separated from streets, such as waterways, utility right of ways, greenbelts, or areas within parks.

Benefits

- Highest level of comfort and safety for bicyclists and pedestrians.
- Encourages a wide variety of users.

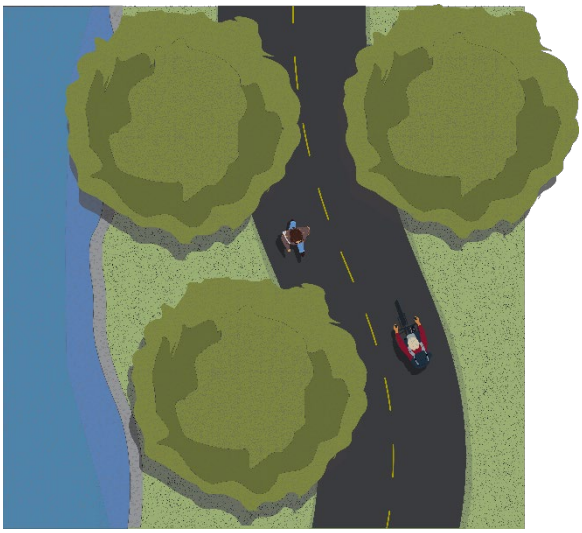
Considerations

- Appropriate for corridors along bodies of water, irrigation channels, drainage canals, utility right of ways, and existing or abandoned rail lines.
- Develop stronger linkages for pedestrians and bicyclists between park facilities and key destinations.
- Depending on the context, variations to the design/construction of a shared use path could include presence or absence of a curb edge and choice of surface materials such as crushed granite, asphalt, or concrete.

Typical Design Standards

- The minimum paved width for a two-directional shared use path is 10 ft with a maximum of 14 ft, but a width of 8 ft may be used for a short distance due to physical constraint.
- Pathways with heavy peak hour and/or seasonal volumes should use a centerline stripe to clarify the direction of travel and organize pathway traffic.
- Vertical clearance of obstructions should be at least 8 ft.
- Minimum separation of trails from roadways should be 5 ft.
- Path/roadway intersections should be carefully designed.

FIGURE 11. SHARED USE PATH



SIDE PATHS

Side paths are a type of shared use path but are located adjacent to a roadway. Unlike sidewalks, side paths are intended for use by both bicyclists and pedestrians and are therefore wider than traditional sidewalks. The co-location of a side path and a sidewalk may be appropriate in locations with high pedestrian traffic.

Benefits

- Removes bicyclists from the roadway while keeping them connected to the overall street network.
- Encourages a wide variety of users by increasing a sense of safety and comfort.

Considerations

- May connect to shared use paths that diverge from the roadway.
- Suitable for streets that have heavy traffic, high speed limits, and few driveway intersections.
- Provides two-way bicycle flow on one side of the street.
- Appropriate where bicycle and pedestrian interactions will not create continual conflict.

Typical Design Standards

- Side paths are most commonly designed for two-way travel accommodated in a single treadway, though multiple treadways are possible.
- The minimum width for a two-directional side path is 10 ft, with the desired width of 12-14 ft.

FIGURE 12. SIDE PATH

CYCLE TRACK

Cycle tracks are exclusive bike facilities that combine the user experience of a separated path with the on-street infrastructure of a conventional bike lane. Cycle tracks are always physically separated from motor traffic and distinct from the sidewalk. Some may be raised to the level of the sidewalk or a level between the roadway and the sidewalk. Cycle tracks traditionally refer to protected bike facilities offering two-way movement for people on bikes, but a protected bike lane in a single direction may be referred to as a one-way cycle track as is the case in the NACTO Urban Bikeway Design Guide.

Benefits

- Improves real and user-perceived safety for bicyclists by protecting cycling space from motor vehicles.
- Track separation prevents motor vehicles from parking in the cycling space.

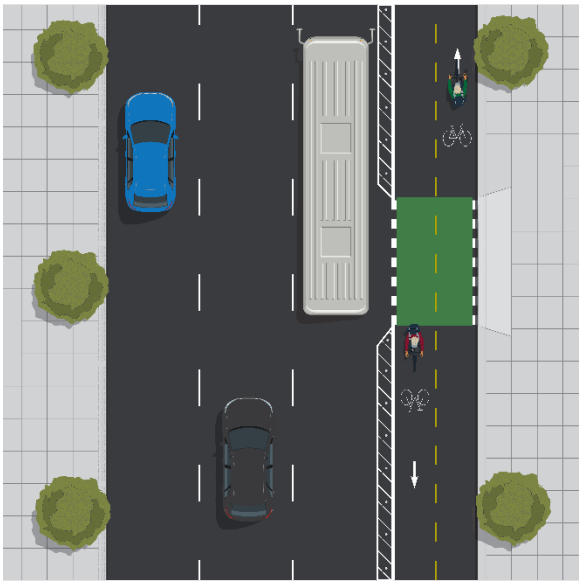
Considerations

- Suitable for streets with parking lanes and high parking demand, high traffic volumes and speeds, and high bicycle volumes.
- Two-way cycle tracks may be used on one-way streets.
- Can control flow of bicyclists between the cycle track and the street by using different separating elements, such as curbs for controlled entrances/exits and bollards or armadillo bumps for more free-flowing entrances/exits.

Typical Design Standards

- Bike lane markings should be painted at the start of the track and at intervals along the facility.
- Depending on context, painted markings or physical barriers can separate the track from adjacent facilities.
- Minimum track width is 6 ft, increased to 7 ft for high bike volume or uphill areas, and 3 ft of buffer should be left between the track and adjacent parking.

FIGURE 13. CYCLE TRACK



PROTECTED BICYCLE LANE

A protected bike lane is an on-street bike lane with an item that provides vertical physical separation from sidewalks and/or motor vehicle traffic. Physical separation can be created by concrete curbs, planters, "armadillos," or bollards. Low-cost premade delineators can be upgraded to more permanent barriers after implementation.

Benefits

- Provides a high level of comfort for a variety of users due to separation from traffic and increased safety.
- Slows traffic and alerts drivers to the presence of bicyclists.

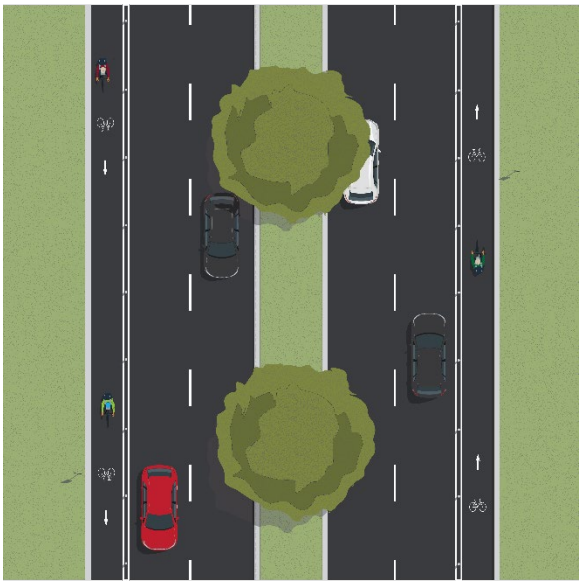
Considerations

- Traffic volume and speed determine what type of barrier is most appropriate, with higher levels benefiting from barriers that provide a significant amount of separation.
- Parked cars can be used as a means of separation, but access to the sidewalk should be considered for passengers with disabilities.
- Delineators that are frequently hit by vehicles may have high maintenance costs.

Typical Design Standards

- Minimum desired width is 5 ft, with a passing width minimum of 7 ft in uphill or high-volume areas.
- If parking is used as a barrier, a buffer of 3 ft should be included to prevent collisions with doors, with a total desired width of 11 ft for parking and the parking buffer.
- Signage and markings should be used to give priority to the bike lane.

FIGURE 14. PROTECTED BICYCLE LANE



BUFFERED BICYCLE LANE

A buffered bike lane is a conventional bike lane paired with a designated buffer space separating the bike lane from the adjacent motor vehicle travel lane and/or parking lane. The buffer typically consists of a zone incorporating pavement striping.

Benefits

- Increases distance between motor vehicles and bicyclists, thereby increasing the space for bicyclists to maneuver and encouraging more cycling by improving perception of safety for bicyclists.
- Separates bicycle and pedestrian traffic.

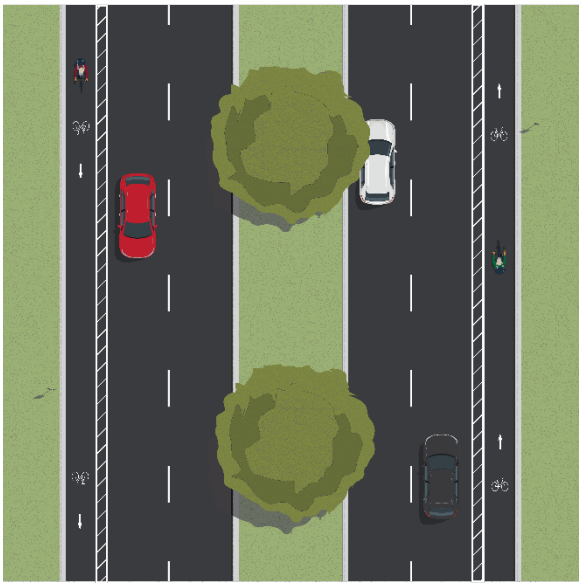
Considerations

- Appropriate anywhere a standard bike lane is being considered, where existing paving allows for more substantive bicycle facilities, and on streets with high speeds and traffic/truck volumes.
- Where street parking turnover is high, consider placing the buffer between the parking lane and the bike lane.

Typical Design Standards

- Typical width for a buffered bike lane is 8 ft - 5 ft bike lane, plus a 3 ft buffer.
- Buffer may be less than 3 ft if vertical delineators are used.
- Bike lane markings should be used to designate the cycling space.
- The buffer should be marked with two solid white lines, with diagonal hatching or chevron marks on the interior if the buffer is 3 ft or wider.
- Buffer boundary lines should be solid if crossing is discouraged and dashed if crossing is permitted.

FIGURE 15. BUFFERED BICYCLE LANE



BICYCLE LANE

Bike lanes use pavement markings and signage to designate cycling space directly on roadways. Bike lanes are found adjacent to and on the right side of the outermost motor vehicle lane, between motor vehicle traffic and the parking lane, curb, or roadway edge. Bike lane traffic typically flows the same direction as motor traffic.

Benefits

- Increases bicyclists' comfort and confidence on busy streets by creating separation between them and motor vehicles.
- Increases predictability of bicyclist and motorist interactions and movements.
- Low-cost treatment for establishing bicycle facilities.

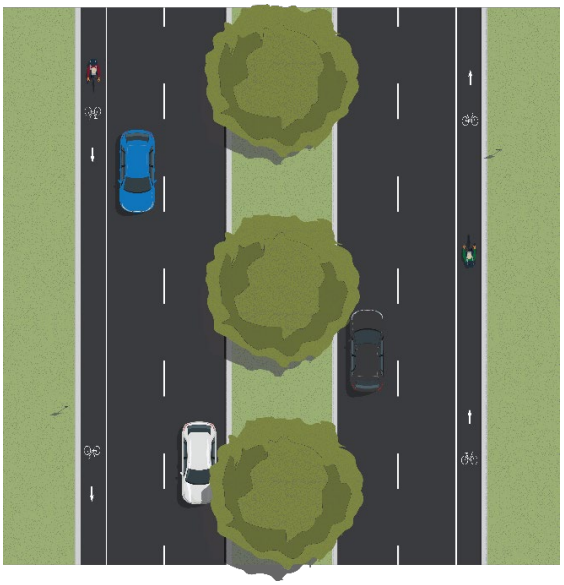
Considerations

- Have the most positive impact on streets with average daily traffic of more than 3,000 vehicles, streets with posted speed between 25-35 mph, and streets with high transit vehicle volume.

Typical Design Standards

- Minimum 5 ft width against a curb or adjacent to a parking lane.
- Adjacent to curb face: desired width of 6 ft.
- Adjacent to parking lane: desired width from curb face to edge of bike lane is 14.5 ft (minimum width is 12 ft), with a bike lane width of 5 ft minimum unless there is a marked buffer between the parking lane and the bike lane.
- Bike lane markings should be used to designate the cycling space.
- A 6-8 in solid white line should be used to mark the boundaries of the bike lane.
- Gutter seams, drainage inlets, and utility covers should be flush with the ground to prevent conflicts with bike tires.

FIGURE 16. BICYCLE LANE



BICYCLE BOULEVARD

Bicycle boulevards are streets with low motorized traffic volumes and speeds, designed and designated to give bicycle travel priority. Bicycle boulevards use signs, pavement markings, and volume/speed management to discourage through trips by motor vehicles and create safe, convenient bicycle crossings at busy streets.

Benefits

- Increases comfort and safety for bicyclists.
- Cost effective use of existing roadways by connecting a series of minor treatments that improve bicycling conditions on local streets.
- Creates alternate routes for bicycles that are still connected to the street network.

Considerations

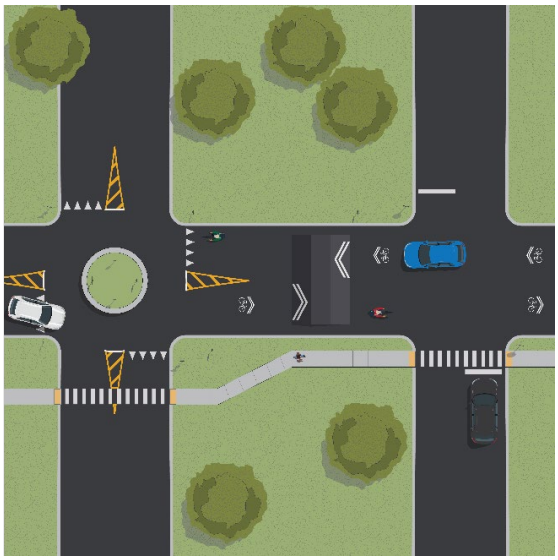
- Suitable for streets with low traffic volumes/speeds and streets that run parallel to popular arterials or collectors.
- Intersection improvements should take advantage of actuated signaling, such as bicycle activated signals, bicycle

sensitive loop detectors, or push button signals conducive to bicycle access.
- A pocket lane at intersections is an appropriate treatment to increase visibility and safety of bicyclists.

Typical Design Standards

- Volume and speed management techniques should be implemented if necessary.
- Treatments for minor street crossings, major street crossings, and offset intersections should be implemented to minimize bicyclist delay and maximize bicyclist safety and comfort.

FIGURE 17. BICYCLE BOULEVARD



SHARED LANE

A shared lane is a travel lane specifically designated to serve both bicyclists and motor vehicles.

Benefits

- Motorists are made aware of the presence of bicycles in the travel lane.
- Low cost to implement.
- Provides bicyclists guidance and wayfinding.

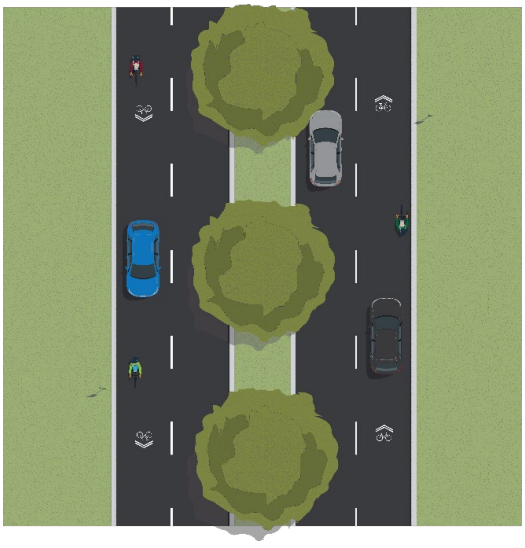
Considerations

- Suitable on streets with low traffic volumes/speeds, but not recommended where speeds and volumes are higher.
- Typically incorporates shared lane pavement markings and signage.
- Shared lanes indicate where bicyclists may be found, but do not necessarily confine bicyclists to a rigidly defined path.

Typical Design Standards

- The shared lane pavement marking, or "sharrow," includes a bicycle below two chevron markings.
- Shared lane markings should not be used on shoulders, in designated bike lanes, or to designate bicycle detection at signalized intersections.
- Centering the marking within the travel lane encourages bicyclists to avoid the "door zone[3]" and encourages safe passing behavior.

FIGURE 18. SHARED LANE



[3] The "door zone" is the common term for the space that an open car door extends beyond a car parked at the curb.

SIDEWALKS

Sidewalks are the basic facility necessary to establish a pedestrian network. Sidewalks are designed for pedestrian use only and are intended to serve all people regardless of age or ability. These facilities are located within or parallel to the street right of way.

Benefits

- Increase comfort and safety by providing a distinct area of travel for pedestrians and significantly limiting their interaction with motor vehicles.
- Provide connectivity within and between urban areas and neighborhoods.

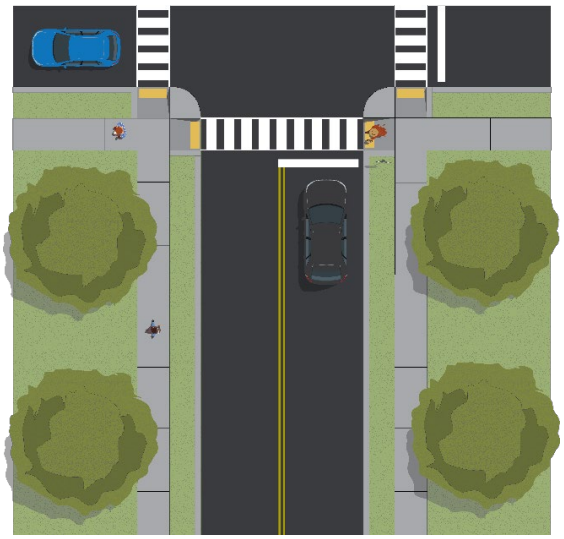
Considerations

- Context of the area and the adjacent roadway should help determine the facility's distance from the street and other dimensional characteristics that will optimize comfort and safety for pedestrians.
- If possible, including a buffer of trees or other vegetation as well as lighting and furniture such as benches adjacent to or along the edge of the sidewalk facility can improve the pedestrian's perception of comfort and safety.

TYPICAL DESIGN STANDARDS

- Minimum desired width for a sidewalk: 5 ft. excluding any attached curb.
- Ideally, sidewalks should be separated from the roadway by an unpaved buffer. If the facility is flush against the curb, wider sidewalk widths of 8-10 ft are preferred.
- Desired width outside core urban area: 6-8 ft.; Desired width in core urban area: 10 ft or wide enough to provide desired volumes.

FIGURE 19. SIDEWALKS



HIGH VISABILITY CROSSWALKS

Crosswalks are designated pedestrian paths that traverse the width of roadways to allow pedestrians to cross streets. Crosswalks are typically found at roadway intersections, but can also be used at mid-block locations.

Benefits

- Provide a distinct space for pedestrians to cross a street safely.
- Can draw the attention of motor vehicles to the presence of pedestrians.
- Provides clarity to both pedestrians and motor vehicle drivers where pedestrians are expected to cross a street.

Considerations

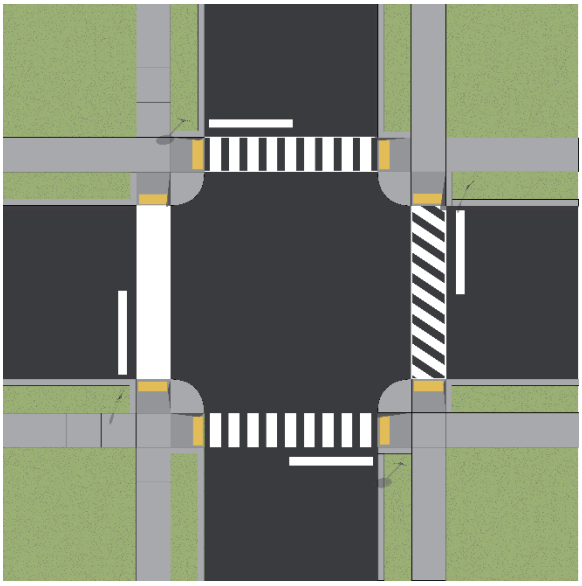
- Frequency of crosswalks should increase where pedestrian volumes are greater.
- Location and illumination of crosswalks should allow pedestrians to see and be seen by approaching motor vehicle traffic while crossing.
- Pedestrians should experience a short wait to cross and adequate time to cross a street.
- Crossing distance should be short or divided into shorter segments with crossing islands when necessary.

- Conflict points with motor vehicle traffic should be few.

Typical Design Standards

- Crosswalk width should reflect the width of the sidewalks that approach the intersection, but no less than 6 ft wide.
- Intersections also require extra consideration for grade changes to ensure the necessary requirements are met under the Americans with Disabilities Act (ADA)

FIGURE 20. HIGH VISIBILITY CROSSWALKS



PEDESTRIAN REFUGE ISLAND

Pedestrian refuge islands utilize median space to create a refuge area between the two directions of traffic flow on a wide and/or busy street. Pedestrians may use the island after crossing one half of the street to wait until it is safe to cross the second half. This shortens the distance a pedestrian needs to travel at once.

Benefits

- Increases pedestrian safety and comfort level when crossing wide and/or busy streets.

Considerations

- Can be utilized on busy two-way streets that have available median space.
- Recommended where pedestrian crossing activity is high.

Typical Design Standards

- The designated pedestrian space on the island should be the same width as the connecting crosswalk.
- Should be protected by some type of barrier element.
- Use of curbing and planted medians clearly differentiates the pedestrian refuge space from the motor vehicle travel area.
- In instances where both pedestrians and bicyclists will share the crossing and median area, additional space or parallel facilities may be appropriate.

PEDESTRIAN SIGNS AND SIGNALS

Pedestrian signs and signals are used to demarcate the location of pedestrian facilities where they meet, cross, or conflict with other types of travel facilities. These signs also provide information about rules for pedestrians, bicyclists, and motor vehicle drivers based on the context and location of the pedestrian facilities within the travel network. The two most used pedestrian signal types at mid-block (non-intersection) crossings are the Pedestrian Hybrid Beacon (HAWK) and Rectangular Rapid Flashing Beacon (RRFB). A HAWK is a traffic control device which provides a solid red for drivers to stop for pedestrians in a crosswalk. An RRFB is a warning device that uses flashing yellow lights to alert drivers to the presence of pedestrians in the crosswalk.

Benefits

- Increase safety for pedestrians, as well as bicyclists and motor vehicle drivers, by providing clarification and

communication for facility users where conflict points occur.
- Help alert bicyclists and motor vehicle drivers to the presence of pedestrians.

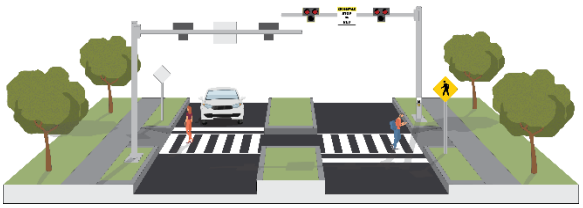
Considerations

- Signs must be easy to read and placed in a readily visible area.
- Vegetation, utility poles, and other objects may obstruct the sightline of pedestrian signs if the signs are not placed carefully and maintained.

Typical Design Standards

- Pedestrian signs have standard design guidelines that can be found in the Manual of Uniform Traffic Control Devices (MUTCD 11th Edition).
- Regulatory signs provide information on the intended use of specific facilities and areas within roadways; Warning signs are used to notify travelers of changes in facility or roadway conditions that will affect traveling actions.
- Accessible pedestrian signals should have audible indications and a tactile push button.

FIGURE 21. HAWK SIGNAL WITH PEDESTRIAN REFUGE ISLAND



ADDITIONAL CONSIDERATIONS

This is only a partial list of improvements that can be used to create a more pedestrian and bicycle friendly environment. Additional examples of countermeasures and treatments, including lighting and speed regulation can be found using resources available through the National Association of City Transportation Officials (NACTO) the American Association of State Highway and Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA).

PROGRAMS

Policies and programs that support people who want to walk and bike are critical components to building a multimodal transportation system. In a world where funding and resources are limited, strong policies and programs provide a framework for directing limited resources towards active transportation needs.

Education: Education involves teaching community members, elected officials, and law enforcement biking and walking skills, laws, and safety.

Encouragement: Encouraging active transportation through programs and policies may encourage community members to switch trips, especially short trips, from driving to biking or walking.

Equitable Enforcement: Equitable enforcement of active transportation laws may make trips safer for all users, while prioritizing benefits to historically marginalized communities.

Evaluation: To understand the impacts of investment in active transportation facilities, it is important that performance metrics be continuously monitored.

EDUCATION

Educational programs teach community members, elected officials, and law enforcement biking and walking skills, laws, and safety.

Examples of Educational Programs include:

Media Awareness Campaigns

Media awareness campaigns present an opportunity to further reach the community through online, print, radio, and television materials. The campaigns can bring more driver awareness to safe driving behaviors when sharing the roadway as well as reminding bicyclists and pedestrians of their rights and responsibilities as they travel. In addition, media campaigns can also celebrate the opening or groundbreaking of new facilities, and usher them into the community.

LCI Instructor Training and Skills Programs

LCI Instructor Training and Skills Programs - League Certified Instructor (LCI) training is for individuals interested in teaching people how to bike safely and confidently. After successfully completing their instructor training, LCIs can lead programs for both adults and children. These programs are a great way to educate the public about bicycle skills, safety, and use of bicycles for transportation. Victoria Police Department's Bike Rodeo is a good local example of bicycle education. LCIs can partner with local school districts, employers, or government agencies to offer reoccurring training.

Safe Routes to School

Safe Routes to School (SRTS) is a federal program created to fund and support communities in their efforts to make walking and biking to and from school safer for children. The program supports safe infrastructure development that connects schools to neighborhoods and transit, as well as non-infrastructure projects, like Bike to School Day, which promotes walking and biking for community health and reduce traffic congestion. SRTS programs are implemented at both the regional and local

level, often in school districts in many areas around the county, as the key tenant of this program is coordination among multiple government entities and school families.

ENCOURAGEMENT

Encouraging active transportation through programs and policies increases ridership when community members switch trips, especially short trips, from driving to biking or walking. Examples of encouragement programs include:

Bike Share Programs

Bike share programs allow users to rent bicycles for short-term or monthly use from a network of closely spaced stations. Successful bike share programs exist in densely populated areas, near trail networks, tourist destinations, and major institutions. The program's success should be measured by equitable pricing structures and station locations, along with number of annual trips and memberships. Successful bike share programs may be a valuable tool to support the key principles of this plan in accessibility and community health.

Open Street Initiatives

Open Street initiatives are temporary closures of public streets to motor vehicle traffic and designed in coordination with the municipality to provide the public access to streets for walking, biking, and recreation. These initiatives may include street festival activities as well as activities to promote walking and biking, and to teach attendees about the economic, health, and social benefits of active transportation. Open Streets began in Colombia as an inexpensive way to promote health using public space. Known as Ciclovia in South America, the events spread across North America where they are known as Open Streets events. Resources for starting Open Streets events are plentiful, with two primary examples being the NACTO Open Streets Guide, and the Open Streets Toolkit found at opentstreetsproject.org.

Walk and Bike Month

National Bike Month in the month of May, as designated by a leading bicycle advocacy group in the United States, the League of American Bicyclists, provides a fun and encouraging platform for communities and local businesses to support residents and employees to commute via bicycle during Bike to Work Month, and even during specific Bike to Work Week, or Day events. Bike to Work Month has evolved to include and encourage commuting by foot and/or by public transit. Bike, bus, and walk to work challenges encourage residents to take part in active transportation through fun events and challenges, and often include incentives for top contestants.

Employer Incentive Programs

The location where individuals are employed often directly impacts their travel behavior. Employer incentive programs are a tool for public and private employers interested in encouraging their employees to walk or bike

to work. Incentives can be physical (e.g., loaner day trip bikes, end of trip facilities) and/or monetary (e.g., transit vouchers, monthly stipend, waived parking fee). End of trip facilities may include, but are not limited to showers, changing rooms, or secure bike parking. Developing strong relationships with Economic Development Councils or Chambers of Commerce is a strong first step to prolonged success working with employers to incentivize active modes.

EQUITABLE ENFORCEMENT

Equitable enforcement of active transportation laws may make trips safer for all users, while prioritizing benefits to historically marginalized communities.

Law Enforcement Training

Law enforcement officers can be champions of cycling and pedestrian safety when equipped with the appropriate training. Law enforcement training should include knowledge of bicycle and pedestrian facilities in their jurisdiction, current bicycle and pedestrian laws at the local and state levels, common collision types and locations, and community education program opportunities, like the LCI programs mentioned above. In addition, officers should review and understand protocols for properly completing collision forms when pedestrians and bicyclists are involved. Such protocols ensure the necessary details of the crash are properly recorded for later crash analyses.

Ordinance Enforcement

Community ordinances requiring safe motor vehicle passing and operation around bicyclists, transit vehicles, pedestrians, and subsequent enforcement of such ordinances are critical to supporting a safe transportation network. Laws, enforcement procedures, and penalties should be stringent enough to influence motorist behavior. Key ordinances and citation structures that should be evaluated include safe passage ordinances, crosswalk encroachments, and right-of-way violations to ensure shoulders remain safe for people cycling.

EVALUATION

To understand the impacts of investment in active transportation facilities, performance metrics are developed and monitored.

Bicycle and Pedestrian Counts

Reliable bicycle and pedestrian count data benefits the planning process. Creating an on-going count dataset can better provide insights and data-driven support for future projects.

Regional Data Portal

A regional data portal allows municipalities to easily upload, maintain, access, and download key pedestrian and bicycle data from across the region. Such a central data resource can better support regional network connectivity by providing easy-to-access data critical for multimodal planning efforts. The portal should include geocoded data such as a regional facility inventory, bicycle and pedestrian counts, pilot project locations, bicycle-friendly destinations, and other information relevant to planning efforts. It should also include information

and tracking on project phase and funding sources.

Safety Measures

Safety measures provide the region with measurements aiming to help reduce crashes involving bicyclists and pedestrians. It is critical to document the relationship between non-motorized and motorized vehicle accidents, to illustrate crash interactions between the two. Bicycle and pedestrian crash data should be utilized to gauge a region's overall active transportation safety.

Accessibility Measures

Accessibility in this case refers to the convenience of bicycle and pedestrian facilities as a transportation option, and how they connect to transit services and school zones.

Transit Access

Active transportation connectivity to transit services is important as those who utilize transit also typically use bike/pedestrian infrastructure. This is especially true in areas that fall outside of a transit line's service area. Transit access metrics should focus on active transportation infrastructure's location and proximity to transit service areas, which in this study have been defined as a quarter-mile buffer 146 (the distance one is typically willing to walk/bike to reach transit).

School Access

A substantial portion of the region's transit dependent population (TDP) is a part of the region's pre-kindergarten through high school population. Because of this, it is critical to examine how well existing active transportation facilities serve the region's schools. This can be done by measuring current bike/pedestrian facilities and roadways within school buffer zones, and examining the systems connectivity between schools.

Project Implementation

Prioritizing and scheduling project implementation allows a region to visualize active transportation facility enhancements. By creating a list of projects ranked by importance and need to the community, initial project phasing/scheduling can be implemented to give the community an idea of which projects have been completed and when improvements will take place. Project implementation should be documented to track progress towards achieving Plan outcomes.

Sidewalk Coverage

It is important for a community and region to quantify and strive to advance existing sidewalk coverage. The following metrics aim to help indicate whether the region has expanded sidewalk coverage, implemented safe and equitable design, and built sidewalk infrastructure where it is most necessary.

Sidewalk Miles

Sidewalk mileage is one of the most common active transportation performance metrics used by municipalities. Creating an inventory of sidewalk facility mileage creates a base figure to compare future inventories, marking a region's overall/pace of progress.

Gaps Completed

Increasing sidewalk mileage can in theory benefit a region's active transportation network, however additional mileage must be implemented in areas of need. These areas, also known as gap areas, must be targeted, and prioritized prior to project implementation to ensure overall connectivity is increased.

ADA Crosswalks Installed

Another key component of sidewalk coverage is accessibility, or how equitably

connected a region's activity nodes are. Creating an inventory of existing ADA crosswalks allows a region to understand which areas do not provide all types of users' access to the active transportation system.

LAND USE REGULATIONS

Local policy and ordinances should be used to guide inclusive and comprehensive active transportation design.

SUPPORTIVE LAND USE POLICY

Land use and transportation policies are linked and can either support or discourage using active modes of transportation. Land use policies that specifically include bicycle and pedestrian network considerations are critical in supporting a safe and connected network. Smart Growth is an approach to urban development that supports a mix of land uses and supports walkable and bikeable communities. The Smart Growth Network published their 2006 guide, *This is Smart Growth,* which is based on ten basic principles to guide urban development. Preservation of right-of-way and the provision of on-site connectivity for new development should be present in land use policies. Connectivity provisions should at a minimum address:

- Dedicated pedestrian pathways from the street to buildings and key land uses.
- Pedestrian pathways between building and uses.
- Shared use connections to trails, public uses, adjacent properties, etc.

Development Code Amendment

To ensure that the city ordinances support active transportation connectivity, the Unified Development Ordinance should promote the connectivity of the trail network to community destinations.

Subdivisions should demonstrate connectivity for pedestrians and bicyclists to adjacent trail or bicycle facilities and between adjacent neighborhoods.

Developments should provide an internal circulation plan that considers bicycle and pedestrian connectivity.

Streets should be designed with appropriate bicycle and pedestrian accommodations to convey people throughout the neighborhood and city.

Parking Minimums

Reevaluating and reducing parking minimums can support an active transportation network by allowing developers to design less vehicle-dominated spaces and allow cities and places to be designed for people rather than cars where the market allows. Requiring bicycle parking or allowing bicycle parking in exchange for vehicular parking stalls can incentivize developers to decrease the footprint of parking in new development, or make redevelopments conform to the code more easily.

Coordination with Roadway Project Implementation

Bicycle transportation facilities and pedestrian walkways are considered, where appropriate, in conjunction with all new construction and reconstruction of transportation facilities, except where bicycle and pedestrian use are not permitted such as the Interstate.

Support Speed Limit Reduction

Additionally, city staff and elected official support for reducing speed limits when a neighborhood requests a change or indicates a reduction in the neighborhood plan moves a city further towards a friendly environment for active transportation.

Connect Major Destinations and Address Barriers

Creating a well-connected network requires identifying areas where people would like to travel at the regional, city, and neighborhood level. Projects that enhance pedestrian and bicycling conditions near major employers, schools and universities, and residential areas, for example, should be given highest priority, as these have the potential to attract the greatest number of trips. Projects that enhance pedestrian and bicycling conditions near transit stops should also be prioritized to take advantage of the complementary nature of these modes. Barriers can take the form of dangerous intersections, controlled access highways, railroad track crossings, bodies of water, gaps in the sidewalk or bike network, or topography, among other physical features of the region. Projects that help address barriers also contribute to safety and regional resilience.

Complete Streets

The Complete Streets movement promotes the concept that roadways are for all users - pedestrians, transit users, cyclists, and vehicular drivers alike. As such, roadway design should facilitate safe and comfortable access for all users. A Complete Streets policy may take the form of ordinance revisions, new street design guidelines or manuals, and capital improvement program criteria to meet the policy goals.

Advisory Committees

A regional bicycle and pedestrian advisory committee can help to ensure the planning process and implementation of plans meet the needs of the community. Members of the committee are ideally active transportation champions who are committed to making their community friendly for biking and walking and ideally represent the demographic makeup of the region.

Safe Systems

Safety systems such as Vision Zero is a holistic strategy to end all traffic-related fatalities and serious injuries while increasing mobility for all. Instead of accepting traffic-related fatalities as the result of unavoidable accidents, Vision Zero holds that such fatalities are preventable with key strategies. It also recognizes and accommodates human error in the design of transportation facilities. These strategies include but are not limited to establishing a Vision Zero action plan, safer street design, targeted law enforcement, evidence-based public policy, and thoughtful public engagement.

Chapter 4
Implementation

The implementation section of the Victoria Active Transportation Plan outlines a series of strategies and actions for the development of the project identified herein.

The success of the plan is dependent upon identification of funding sources to build projects, a cultural acceptance of active transportation as a worthy community investment, and continued partnerships with agencies to provide and increase available programming to support safe and smart behavior by everyone walking, biking, and driving.

FUNDING PROGRAMS

Funding for active transportation projects and programs comes from a variety of sources at the federal, state, and local levels. To effectively use the funding sources available, it's important to understand the range of programs available as well as their timing, limitations and requirements.

FEDERAL SOURCES

The federal government provides multiple funding opportunities for implementation of bicycle and pedestrian improvements. The federal programs that provide the funding to build these improvements regularly requires a local match. Funding from Federal Highway Administration (FHWA), Department of Transportation (DOT), and the Federal Transit Authority (FTA) flows through TxDOT each year. TxDOT then works with local MPOs to prioritize different local transportation projects and administers the funding accordingly. FHWA funds are divided among individual apportioned programs—such as the National Highway Performance Program (NHPP), Surface Transportation Block Grant Program (STBG), and the Highway Safety Improvement Program (HSIP). Then the funding is distributed to local agencies. This section highlights the most relevant federal funding sources for bicycle and pedestrian infrastructure improvements and summarizes program guidelines, key eligibility requirements, and types of eligible projects.

The primary federal transportation funding program for bicycling projects comes from a set-aside of the Surface Transportation Block Grant (STBG) Program funding for transportation alternatives (TA). These set-aside funds are eligible for a variety of smaller-scale transportation projects such as pedestrian and bicycle facilities, recreational trails, and safe routes to school projects. For most projects under the TA set-aside, the Federal share is generally 80 percent Federal and 20 percent state or local match.

Rebuilding American Infrastructure with Sustainability and Equity (RAISE)

Formerly known as BUILD or TIGER grants, RAISE grants are competitive grants that can be used to fund road, rail, transit, or port projects that achieve national objectives or have significant regional impact.

Federal Transit Administration (FTA)

The FTA provides funds for bicycle and pedestrian investment as they relate to transit investment. FTA funds may be used to fund appropriate bicycle and pedestrian infrastructure improvements such as bicycle lanes, bicycle parking, bus shelters/benches, sidewalks, and lighting among others. To qualify for FTA funds, projects must provide or improve access to existing or planned transit facilities such as stops and stations. Multiple FTA grant programs exist that can assist with funding bicycle and pedestrian infrastructure.

Surface Transportation Block Grant Program (STBG)

As the most flexible federal funding program, the STBG Program—redesigned from the traditional Surface Transportation Program—

provides funds that are eligible for use on nearly all projects that include bicycle and pedestrian improvements. Typically, STBG funds are not used on local or rural minor collectors; however, bicycle/pedestrian projects are exceptions to that standard. STBG funds are sub-allocated to the local level based on a municipality's relative share of the state's population and classification as one of the following: an urbanized area with population greater than 200,000, urbanized area with population greater than 5,000 but no more than 200,000, or areas with population less than 5,000. TxDOT prioritizes projects and administer STBG funds.

Highway Safety Improvement Program (HSIP)

The HSIP aims to assist public agencies in improving safety along public roadways. Specifically, HSIP funds are dedicated to projects that reduce conflicts between pedestrian/bicycles and automobiles, such as pedestrian hybrid-beacons and roadway improvements that provide separated facilities (e.g., medians or pedestrian islands). As part of the HSIP, a performance-based approach is used to determine funding projects. To be eligible for HSIP funds, projects must be consistent with State level strategic highway safety plans (SHSP) and must specifically address a hazardous location or safety concern. HSIP funds are administered within Texas by TxDOT.

National Highway Performance Program (NHPP)

NHPP funding provides funding for the construction of new facilities on the National Highway System (NHS). NHPP funds can be utilized to fund bicycle lanes, bicycle parking, curb cuts and ramps, separated bicycle facilities, and shared use paths, among others. NHPP funds are administered by TxDOT in Texas.

Transportation Alternatives Set-aside Program (TA)

TA funding is a set-aside of the STBG Program. Projects that are small-scale in nature typically qualify for TAP funding. TAP funding is a competitive process and now requires states and MPOs to provide annual reports on applications for funding and awarded funds.

Recreational Trails Program (RTP)

The RTP is a set-aside of funds from the TAP. The RTP is administered in Texas by the Texas Parks and Wildlife Department. Eligible projects include maintenance and restoration of existing facilities, construction of new trails, acquisition of easements or property for trails, and the development and rehabilitation of trailside/trailhead facilities and trail linkages. Additional eligibility requirements specific to Texas can be found under the Texas Parks and Wildlife (TPWD) Recreational Trails Grants.

Rapid Response Grants – Advocacy Advance

Rapid Response Grants are administered through the Advocacy Advance organization and help state and local organizations to secure funding for active transportation projects. The funds do not directly assist with the implementation of bicycle and pedestrian projects, they can provide local advocacy organizations with additional funds to campaign for improved funding of the bicycle and pedestrian projects at the state and local level. It is important to note that Rapid Response Grants are only available when funding permits.

Private Grants – Robert Wood Johnson Foundation

The Robert Wood Johnson Foundation invests in grantees (e.g., public agencies, universities, and public charities) that are

working to improve the health of all Americans. Current or past projects in the topic area "walking and biking" include greenway plans, trail projects, advocacy initiatives, and policy development.

Community Grants – People for Bikes

Community Grants, available through the People for Bikes organization, provide funding for projects that leverage federal funding and increase awareness for bicycling projects across the United States. Eligible projects include bike paths and trails.

STATE FUNDING

In addition to local funds, state funding sources can also be leveraged for implementing active transportation infrastructure. The following sources are state-level funding items in Texas.

Texas Department of Transportation (TxDOT)

TxDOT sub-allocates these funds to the local level using twelve funding categories. Relevant bicycle and pedestrian funding categories include:

- Category 1: Preventative Maintenance and Rehabilitation
- Category 2: Metropolitan and Urban Corridor Projects
- Category 4: Connectivity Corridor Projects
- Category 7: Metropolitan Mobility and Rehabilitation
- Category 8: Safety
- Category 9: Transportation Alternatives
- Category 10: Supplemental Transportation Projects
- Category 11: District Discretionary
- Category 12: Strategic Priority

It is important to note, that TxDOT funding categories are filled with federal funds and in some cases additional state funding resources, but contain slightly different labels than federal categories. Apart from federal funding, TxDOT finances transportation infrastructure projects through a variety of revenue sources, including State Highway Funds, bond proceeds, Texas Mobility Fund, General Revenue Fund, and concession fees.

Texas Parks and Wildlife (TPWD) Recreational Trails Grants

The Texas Parks and Wildlife Division (TPWD) administers the Recreational Trails Program in the state of Texas through funds provided by the FHWA, which receives its funding from a federal gas tax paid on fuel for non-highway recreational vehicles. Grants cannot exceed 80% of the project cost and have a $200,000 limit.

LOCAL FUNDING

Dedicated local funding is the most consistent and reliable funding source to implement bikeway projects. It signals a community's commitment to bicycle and pedestrian projects and strengthens applications for federal, state, and private funding.

Property Taxes

Property taxes are, historically, the primary source for local revenue and contribute to a city's general fund. These funds may be used at the discretion of each municipality—subject to local policies, procedures, and availability—to assist in the funding of bicycle and pedestrian infrastructure improvements. Property tax increases can be enacted through a public voting process to assist in the funding of specific bicycle and pedestrian projects.

Sales Taxes

Local sales taxes are another source for local revenue. Like property taxes, these funds may be used at the discretion of each

municipality to fund bicycle and pedestrian infrastructure improvements. Sales taxes are typically a uniform percentage of the selling price and vary between local jurisdictions within Texas. Local sales tax is in addition to statewide sales tax. While sales taxes are typically distributed into the general fund, municipalities may vote to increase sales taxes as an option to fund bicycle and pedestrian projects.

Local Capital Improvement Programs

Capital Improvement Programs (CIPs) are utilized by local municipalities as a framework for financing future capital projects. Using a variety of local funding sources, including property taxes and sales taxes, municipalities can systematically determine which projects should be funded each year based on their anticipated revenues versus operating expenses. The process of developing a CIP allows municipalities to reasonably predict when funds will be available to construct capital improvement projects, as well as prioritize specific projects.

User Fees

User fees are fees that are collected from those who utilize a facility. These fees are collected to pay for the cost of a facility, finance operations, and produce additional revenue. Typically, user fees are charged for the use of specific public utilities/services, such as public parks, water and sewer services, transit systems, and waste facilities. User fees are meant to directly charge those who use a facility, so as to not burden non-users with the additional charges to operate and maintain a service they do not use. User fees may be applicable for off-road facilities and recreational trails.

Bonds

Either general obligation or revenue bonds may be used to fund bicycle and pedestrian facilities. These bonds require approval from the voting public and must be paid back to investors throughout the duration of the bond. Revenues generated from property and sales taxes are generally used to pay off bonds.

Impact/Developer Fees

Development impact fees are an additional funding source that may be utilized at the local level to fund infrastructure improvements. Developer fees are generally collected and administered differently between jurisdictions. Developer fees require policy changes at the local level if no such fee currently exists. Developer fees are meant to ensure that developers pay their fair share of improvements along the transportation system where the development is impacting the system. The use of developer fees to fund bicycle and pedestrian improvements ensures that, as development occurs in an area, pedestrian and bicycle amenities/facilities are able to support the growth.

Special Assessments

A special assessment is a method of generating funds for public infrastructure improvements, of which the cost is directly collected from those who benefit from the project. For example, neighborhoods could coordinate to ensure that a portion of their property tax or an additional fee is used to help fund bicycle and pedestrian improvements along their streets. A specific example of a special assessment is a tax-increment financing district where properties are taxed at an additional rate above the base tax rate to fund specific improvements within a designated area. The difference between the additional rate and the base tax rate (i.e. the increment) is typically used to fund those improvements.

Crowd Funding

Crowd funding is an innovative and increasingly attractive option to fund bicycle

and pedestrian infrastructure improvements. Crowd funding allows individuals to donate money to collectively fund a specific project. While crowd funding can help fund projects, it can also serve as a tool to raise community awareness for bicycle and pedestrian needs and, in turn, potentially attract additional donors and community support for continued investment in bicycle and pedestrian facilities.

Partnerships

Partnerships with local and regional businesses can be integral to securing additional funding for bicycle and pedestrian projects, particularly when local funding is not readily available. Additionally, institutions such as hospitals or universities may be interested in sponsoring bicycle and pedestrian facility improvements near their campuses to promote public health benefits associated with active transportation. Public/private partnerships are becoming increasingly popular as the economic benefits of walkable, pedestrian-friendly environments are being realized at the local level. Active transportation improvements can also revitalize and enhance business corridors by providing better accessibility. Additional partnerships between neighboring communities can lead to increased funding potential for projects that cross municipal boundaries.

SPECIAL PURPOSE DISTRICTS

Tax Increment Reinvestment Zones (TIRZs)

TIRZs are zones created by city councils to attract new investment and redevelopment to blighted areas. TIRZs cap property tax revenues within the designated zone. Then a bond is issued to make near-term public infrastructure investments, and to capture property tax revenue increments that capitalize due to the investment. The bonds are repaid over the life of the TIRZ with incremental tax revenues. Public improvements can include bicycle facilities and amenities. Coordinating and leveraging funding with TIRZs is a strategy that cities can use to build their bicycle network and maintain amenities.

Municipal Management Districts (MMDs)

MMDs are special districts created through the Texas legislature. The businesses within a geographic area can opt to self-impose an assessment fee by establishing an MMD. The fees will be used to help with beautification, maintenance, signage and branding, and general marketing of the businesses. These districts promote transportation and economic development, among other functions in the boundary. MMDs provide maintenance activities for transportation facilities and implement bicycle programs. Most MMDs issue bonds, not to the level of a TIRZ, and receive funding from ad-valorem taxes, assessments, impact fees, or other funds to provide improvements and services. MMDs can be an avenue for cities to grow bicycle infrastructure and ensure investments are maintained.

PROJECT PRIORITIZATION

It is not feasible to implement the entire active transportation plan at one time, so projects have been prioritized according to the priorities established at the onset of the project. Each project was evaluated using a two tiered approach. The first tier of analysis prioritized according to three main criteria:

- **Safety:** Project will improve facilities in areas where bicycle and pedestrian crashes were historically present in higher numbers (0.5 miles to hotspot) or located on a high stress segment.
- **Connectivity:** Project crosses a major barrier, connection to existing facility.

- **Equity:** Project will serve low income or minority community (0.5 miles).

After the initial round of data-driven analyses, the projects were qualitatively assessed based on practicability, cost-effectiveness, logical segments, and network building.

The purpose of this evaluation process was to identify a prioritized list of projects for implementation. These projects are shown as "high priority" in the project list in Appendix A of this report. The high priority list, and the overall project list, may change over time as opportunities arise to implement bike lanes in concert with other roadway projects.

High Priority Projects should be implemented in zero to five years from the adoption of the plan. Moderate Priority Projects should be implemented in five to ten years, and then low priority projects in ten to twenty years.

COST ESTIMATE ASSUMPTIONS

The project list included in Appendix A provides planning level cost estimates. Unit costs were developed using several sources of data, including TxDOT Bicycle Tourism Trail Study (2018); TxDOT Construction Cost Estimate Assistance Tool; TxDOT Bid Averages; FHWA Visibility Enhancement Worksheet. Order of magnitude cost estimates were developed on a project by project basis by applying those assumptions to the quantities for each individual project. Cost estimates do not include right of way, utility work, drainage, and engineering.

PERFORMANCE MANAGEMENT

Critical to the success of the active transportation plan are mechanisms to monitor progress over time. Examples of performance metrics are shown in Table 3. The city can establish performance goals related to each of the metrics identified, with annual reporting to transparently show the community as progress is made.

TABLE 3. PERFORMANCE METRICS

Goal	Metrics
Safety	Reduce bicycle and pedestrian fatalities
Safety	Reduce bicycle and pedestrian severe injuries
Equity	Miles of sidewalks gaps filled in areas with transportation disadvantaged populations
Equity	Share of low-income, people of color, and people with disabilities that live within 0.5 miles of a constructed component of the network
Health	Increase in walking and biking activity
Economic Development	Strategically prioritize investments that maximize benefits to economy

APPENDIX: PROJECT LIST

TABLE A-1: ON STREET BICYCLE FACILITIES

Project No.	Name	From	To	Facility Type	Priority	Length	Estimated Cost
B001	E. Colorado St.	N. Vine St.	N Ben Jordan St.	Bicycle Boulevard	High	1.54	$38,500
B002	N. Main St.	E. Rio Grande St.	E. Goodwin Ave.	Bicycle Boulevard	High	0.35	$8,700
B003	Plantation Rd.	Sam Houston Dr.	Queensway	Bicycle Boulevard	High	0.19	$4,700
B004	Queensway	Salem Rd.	Plantation Rd.	Bicycle Boulevard	High	0.33	$8,400
B005	E. Crestwood Dr.	N. Vine St.	N. Ben Jordan St.	Bike Lane	High	1.69	$152,100
B006	E. Mockingbird Ln.	N. Main St.	Sam Houston Dr.	Bike Lane	High	1.23	$110,700
B007	E. North St.	N. Vine St.	Avenue C	Bike Lane	High	1.44	$129,300
B008	E. Red River St.	N. Ben Wilson St.	N. Delmar Dr.	Bike Lane	High	0.51	$45,600
B009	E. Red River St.	N. Vine St.	N Ben Wilson St.	Bike Lane	High	1.81	$163,000
B010	N. Ben Jordan St.	Sam Houston Dr.	E. Red River St.	Bike Lane	High	1.19	$107,400
B011	N. Delmar Dr.	US 59	Lone Tree Rd.	Bike Lane	High	1.03	$92,800
B012	E. Mockingbird Ln.	Sam Houston Dr.	N. Zac Lentz Pkwy.	Buffered Bike Lane	High	1.65	$247,100
B013	Lone Tree Rd.	E. North St.	N. Delmar St.	Buffered Bike Lane	High	1.30	$194,300
B014	N. Ben Jordan St.	E. Red River St.	E. North St.	Buffered Bike Lane	High	1.20	$179,300
B015	S. Ben Jordan St.	S. Laurent St.	E. North St.	Buffered Bike Lane	High	0.95	$141,900
B016	N. Ben Wilson St.	E. Airline Rd.	Lone Tree Rd.	Protected Bike Lane	High	1.52	$273,600
B017	N. John Stockbauer Dr.	Salem Rd.	Near Colony Creek Dr	Protected Bike Lane	High	2.83	$509,200
B018	N. Laurent St.	E. North St.	E. Airline Rd.	Protected Bike Lane	High	1.46	$262,600
B019	N. Laurent St.	E. Airline Rd.	E. Mockingbird Ln.	Protected Bike Lane	High	1.02	$183,800
B020	S. Laurent St.	E. North St.	Pleasant Green Dr.	Protected Bike Lane	High	2.10	$377,300
B021	Salem Rd.	Queensway	N. John Stockbauer Dr.	Protected Bike Lane	High	0.74	$132,400
B022	Sam Houston Dr.	Houston Hwy.	E. Airline Rd.	Protected Bike Lane	High	0.64	$115,200
B023	Bluff St.	W. Red River St.	W. Stayton Ave	Bicycle Boulevard	Low	0.43	$10,800
B024	Country Club Blvd. / E. Magruder Dr.	Spring Creek Dr.	N. Navarro St.	Bicycle Boulevard	Low	0.66	$16,600
B025	Fox Bend Dr.	Fox Bend Dr. Loop	Fox Bend Dr. Loop	Bicycle Boulevard	Low	0.33	$8,300
B026	Fox Bend Dr.	Fox Bend Dr. Loop	McCright Dr.	Bicycle Boulevard	Low	0.21	$5,200
B027	Kelly Dr.	Champions Row Trail	N. Navarro St.	Bicycle Boulevard	Low	0.39	$9,800
B028	Larkspur St.	Berkman Dr.	N. Navarro St.	Bicycle Boulevard	Low	0.49	$12,200

Project No.	Name	From	To	Facility Type	Priority	Length	Estimated Cost
B029	McCright Dr.	Guadalupe River	N. Vine St.	Bicycle Boulevard	Low	0.40	$10,100
B030	McCright Dr.	Fox Bend Dr.	<Null>	Bicycle Boulevard	Low	0.49	$12,200
B031	McCright Dr.	Fox Bend Dr.	Memorial Dr.	Bicycle Boulevard	Low	0.42	$10,600
B032	McCright Dr.	Fox Bend Dr.	Young Dr.	Bicycle Boulevard	Low	0.39	$9,700
B033	Spring Creek Dr	N. Main St.	Country Club Dr.	Bicycle Boulevard	Low	0.70	$17,600
B034	Tropical St.	Nursery Dr.	Circle Ln.	Bicycle Boulevard	Low	0.49	$12,300
B035	W. Stayton Ave.	Memorial Dr.	N. West St.	Bicycle Boulevard	Low	0.35	$8,700
B036	Dairy Rd.	Huvar St.	Salem Rd.	Bicycle Boulevard	Mod	0.56	$13,900
B037	E. Convent St.	S. East St.	NE. Water St.	Bicycle Boulevard	Mod	0.19	$4,700
B038	E. Goodwin Ave.	N. Vine St.	N. Main St.	Bicycle Boulevard	Mod	0.25	$6,200
B039	Huvar St.	Dairy Rd.	N. Navarro St.	Bicycle Boulevard	Mod	0.25	$6,300
B040	N. Main St.	W. Goodwin Ave.	W. Convent St.	Bicycle Boulevard	Mod	0.37	$9,300
B041	N. Nimitz St.	E. Crestwood Dr.	E. Mesquite Ln.	Bicycle Boulevard	Mod	0.25	$6,300
B042	N. Nimitz St.	E. Loma Vista Ave.	E. Red River St.	Bicycle Boulevard	Mod	0.25	$6,400
B043	N. Vine St.	W. North St.	W. Red River St.	Bicycle Boulevard	Mod	0.48	$12,000
B044	N. Vine St.	W. Convent St.	W. North St.	Bicycle Boulevard	Mod	0.63	$15,900
B045	N. Vine St.	W. Mockingbird Ln.	Red River St.	Bicycle Boulevard	Mod	1.54	$38,500
B046	N. West St.	W. Commercial St.	W. Stayton Ave	Bicycle Boulevard	Mod	0.13	$3,100
B047	W. Convent St.	S. Vine St.	S. East St.	Bicycle Boulevard	Mod	0.83	$20,700
B048	W. Goodwin Ave.	N. Vine St.	N. West St.	Bicycle Boulevard	Mod	0.27	$6,700
B049	E. Juan Linn St.	S. Vine St.	S. Laurent St.	Bike Lane	Mod	1.18	$106,000
B050	Odem St.	S. Laurent St.	Lone Tree Rd.	Bike Lane	Mod	1.73	$155,500
B051	E. North St.	Avenue C	N. Ben Wilson St.	Protected Bike Lane	Mod	0.81	$146,100
B052	E. Airline Rd.	N. Vine St.	Sam Houston Dr.	Protected Bike Lane	Mod	1.97	$355,000
B053	E. Airline Rd.	Sam Houston Dr.	N. Stockbauer Dr.	Protected Bike Lane	Mod	1.16	$208,700
B054	NE. Water St.	E. Convent St.	E. Juan Linn St.	Protected Bike Lane	Mod	0.17	$30,900
B055	Salem Rd.	N. John Stockbauer Dr.	Placido Benavides Dr.	Protected Bike Lane	Mod	0.84	$150,600

FIGURE A-1: ON STREET BICYCLE FACILITIES BY PRIORITY

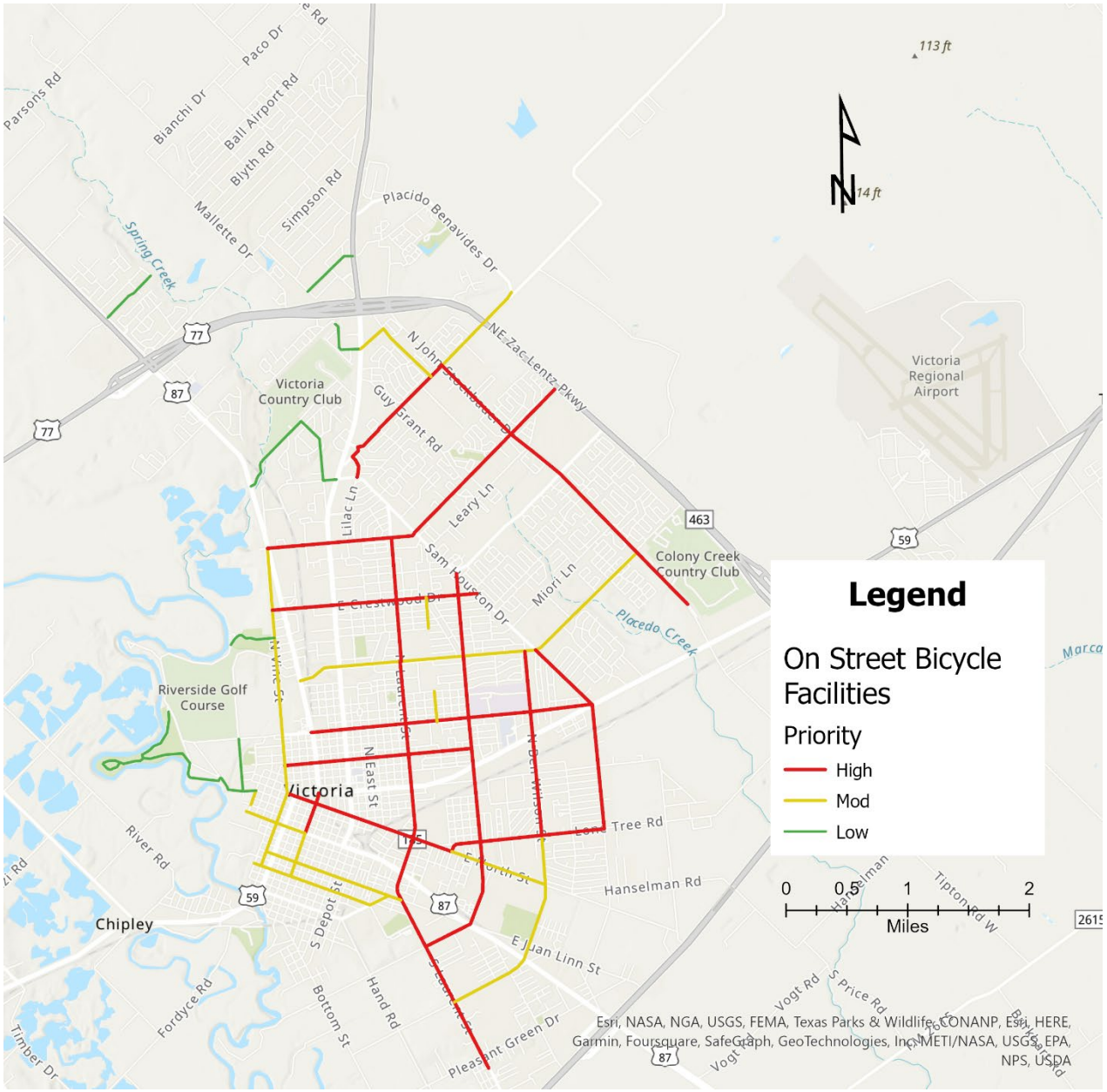


TABLE A-2: SHARED USE FACILITY RECOMMENDATIONS

Project No.	Name	From	To	Facility Type	Priority	Length	Estimated Cost
P001	Houston Hwy	Placido Creek Trail Phase II	Sam Houston Dr.	Side Path	High	0.78	$410,400
P002	N. Ben Jordan St.	Sam Houston Dr.	N. John Stockbauer Dr.	Side Path	High	1.19	$627,000
P003	N. Main St.	W. Tropical Ln.	Spring Creek Ln	Side Path	High	1.84	$966,400
P004	N. Main St.	Spring Creek Dr.	E. Mockingbird Ln.	Side Path	High	0.53	$275,700
P005	N. Main St.	E. Mockingbird Ln.	E. Red River St.	Side Path	High	1.56	$817,300
P006	N. Main St.	E. Red River St.	E. Rio Grande St.	Side Path	High	0.50	$263,200
P007	N. Main St.	City Limits	N. Tropical Dr.	Side Path	High	0.55	$290,300
P008	Sam Houston Dr.	E. Mockingbird Ln.	N. Navarro St.	Side Path	High	0.83	$433,300
P009	Sam Houston Dr.	E. Airline Rd.	E. Mockingbird Ln.	Side Path	High	1.39	$727,900
P010	Ball Airport West Trail	N. Main St.	Mallette Dr.	Shared Use Path	Low	1.21	$637,700
P011	Champions Rd. Trail	Spring Creek Trail	Kelly Dr.	Shared Use Path	Low	0.86	$451,500
P012	Guadalupe River Trail I	S. Victoria St.	Phase II	Shared Use Path	Low	0.86	$454,000
P013	Guadalupe River Trail II	Phase I	N. Main St.	Shared Use Path	Low	0.64	$333,900
P014	Guy Grant Rd.	Salem Rd.	Guy Grant Trail	Shared Use Path	Low	0.51	$270,300
P015	Guy Grant Trail	Guy Grant Rd.	Lone Creek Trail	Shared Use Path	Low	0.70	$368,200
P016	Memorial Trail	N. Vine St.	N. Main St.	Shared Use Path	Low	0.34	$176,000
P017	Placido Creek Trail	E. Airline Rd.	N John Stockbauer Dr.	Shared Use Path	Low	1.07	$562,300
P018	Placido Creek Trail Ph II	Placido Creek Trail	Houston Hwy.	Shared Use Path	Low	0.33	$172,000
P019	Spring Creek	Briggs Blvd.	NE. Zac Lentz Pkwy	Shared Use Path	Low	0.41	$213,600
P020	Spring Creek III	NE Zac Lentz Pkwy.	Spring Creek Dr.	Shared Use Path	Low	1.43	$753,100
P021	Spring Creek Trail I	Tropical Dr.	Briggs Blvd.	Shared Use Path	Low	0.77	$405,100
P022	Spring Creek West Trail	<Null>	<Null>	Shared Use Path	Low	2.14	$1,122,400
P023	West High School Trail	W. Tropical Dr.	N. Main St.	Shared Use Path	Low	0.67	$353,000
P024	Ball Airport Rd.	Mallette Dr.	Northside Rd.	Side Path	Low	1.81	$948,700
P025	Berkman Dr.	Mead Rd.	Larkspur St.	Side Path	Low	0.55	$289,800
P026	Briggs Blvd.	Spring Creek	Berkman Dr.	Side Path	Low	0.48	$253,900
P027	E. Larkspur St.	N. Navarro St.	Placido Benavides Dr.	Side Path	Low	0.80	$422,000
P028	Glascow St.	Ball Airport Rd.	N. Navarro St.	Side Path	Low	1.10	$579,500
P029	Lone Creek Trail Ext.	E. Mockingbird Ln.	Lone Creek Trail start	Side Path	Low	0.10	$51,100

Project No.	Name	From	To	Facility Type	Priority	Length	Estimated Cost
P030	Mallette Dr.	Mead Rd.	Ball Airport Rd.	Side Path	Low	1.06	$554,200
P031	N. Navarro St.	Northside Rd.	Northgate Rd.	Side Path	Low	0.30	$157,300
P032	NE Zac Lentz Pkwy	Salem Rd.	E. Mockingbird Ln.	Side Path	Low	0.81	$423,400
P033	Northside Rd.	Ball Airport Rd.	US Hwy 77 N.	Side Path	Low	0.43	$224,400
P034	N. Nimitz St. Ext.	E. Red River St.	E. Colorado St.	Shared Use Path	Mod	0.28	$147,600
P035	N. Nimitz St. Trail I	E. Mesquite Ln.	E. Airline Dr.	Shared Use Path	Mod	0.25	$132,600
P036	N. Nimitz St. Trail II	E. Airline Dr.	E. Loma Vista Ave.	Shared Use Path	Mod	0.27	$140,100
P037	Silver City Trail	E. North St.	S. Laurent St.	Shared Use Path	Mod	2.07	$1,086,300
P038	W. Tropical St.	Cade Middle School	Nursery Dr.	Side Path	Mod	0.46	$241,100

FIGURE A-2: SHARED USE FACILITY RECOMMENDATIONS BY PRIORITY

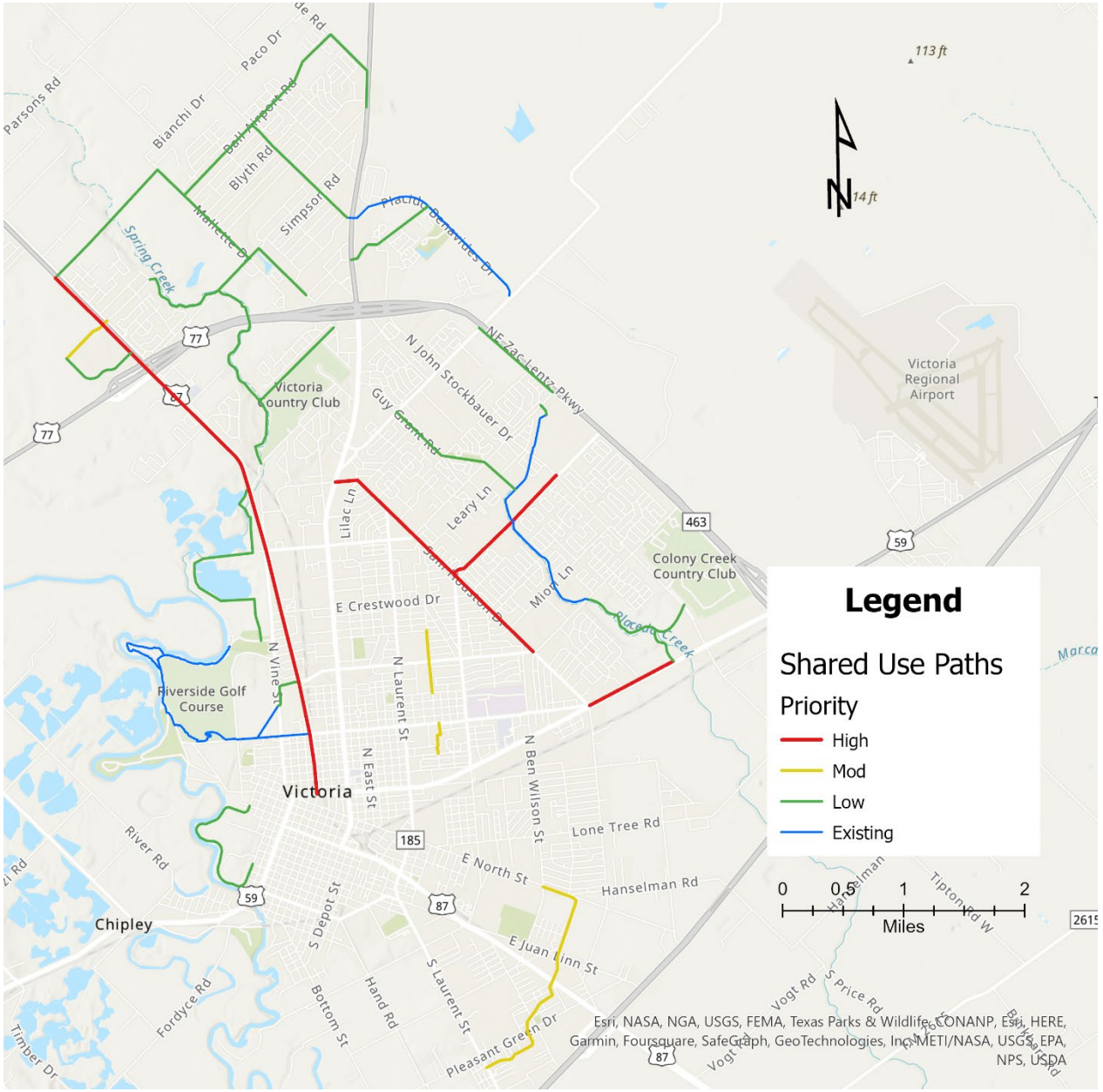


TABLE A-3: SIDEWALK PROJECT RECOMMENDATIONS

Project Identification	Name	From	To	Facility Type	Priority	Length	Estimated Cost
S001	Port Lavaca Dr.	N. George St.	US 59	Sidewalk	High	2.31	$122,000
S002	W. Mockingbird Ln.	N. Vine St.	US 87	Sidewalk	High	0.02	$1,000
S003	US 87	Tropical Dr.	E. Mockingbird Ln.	Sidewalk	High	2.44	$128,600
S004	N. Delmar Dr.	Rio Grande St.	Lone Tree Rd.	Sidewalk	High	1.02	$53,600
S005	E. Red River St.	N. Vine St.	N. Ben Wilson Dr.	Sidewalk	High	1.80	$95,100
S006	N. Vine St.	E. Mockingbird Ln.	E. Red River St.	Sidewalk	High	1.55	$81,900
S007	E. Airline Rd.	N. Vine St.	N. Laurent St.	Sidewalk	High	0.87	$45,800
S008	Placido Benavides Dr. / US 77	NE Zac Lentz Pkwy	Salem Rd.	Sidewalk	High	2.50	$132,200
S009	N. John Stockbauer Dr./Victoria Mall Dr.	E. Mockingbird Ln.	E. Larkspur St.	Sidewalk	High	2.26	$119,200
S010	Salem Dr.	NE Zac Lentz Pkwy.	Guy Grant Rd.	Sidewalk	High	1.00	$52,800
S011	N. Ben Jordan St.	NE Zac Lentz Pkwy.	Sam Houston Dr.	Sidewalk	High	1.71	$90,300
S012	US 87	E. Red River St.	W. Rio Grande St.	Sidewalk	High	0.51	$ 26,800
S013	N. Navarro St.	Northside Rd.	NE Zac Lentz Pkwy.	Sidewalk	High	1.99	$105,100
S014	S. Moody St.	E. Water St.	Rio Grande St.	Sidewalk	High	0.82	$43,500
S015	Rio Grande St.	N. Navarro St.	N. Moody St.	Sidewalk	High	0.44	$23,400
S016	N. Main St.	E. Rio Grande St.	W. Commercial St.	Sidewalk	High	0.27	$14,500
S017	W. Stayton Ave.	N. Moody St.	N. Main St.	Sidewalk	High	0.19	$10,200
S018	N. Navarro St.	Bottom St.	E. Goodwin Ave.	Sidewalk	Mod	0.99	$52,400
S019	E. Juan Linn St.	S. East St.	US 87	Sidewalk	Mod	0.92	$48,600
S020	NE Water St./E. Water St.	S. Vine St.	E. Juan Linn St.	Sidewalk	Mod	1.20	$63,400
S021	N. Vine St.	E. Mockingbird Ln.	W. North St.	Sidewalk	Mod	2.02	$106,800
S022	W. Red River St. / Bluff St.	Memorial Dr.	W. Stayton Ave.	Sidewalk	Mod	0.90	$47,400
S023	N. John Stockbauer Dr.	N. Ben Jordan St.	US 59 Bus / Rio Grande St.	Sidewalk	Mod	1.88	$99,100
S024	Briggs Blvd.	Nursery Dr.	Mallette Dr.	Sidewalk	Low	1.23	$65,200
S025	Mallette Dr.	Briggs Blvd.	Invitational Dr.	Sidewalk	Low	0.86	$45,400
S026	SW Moody St.	W. Water St.	Parsifal St.	Sidewalk	Low	1.04	$54,800

FIGURE A-3: SIDEWALK PROJECT RECOMMENDATIONS BY PRIORITY

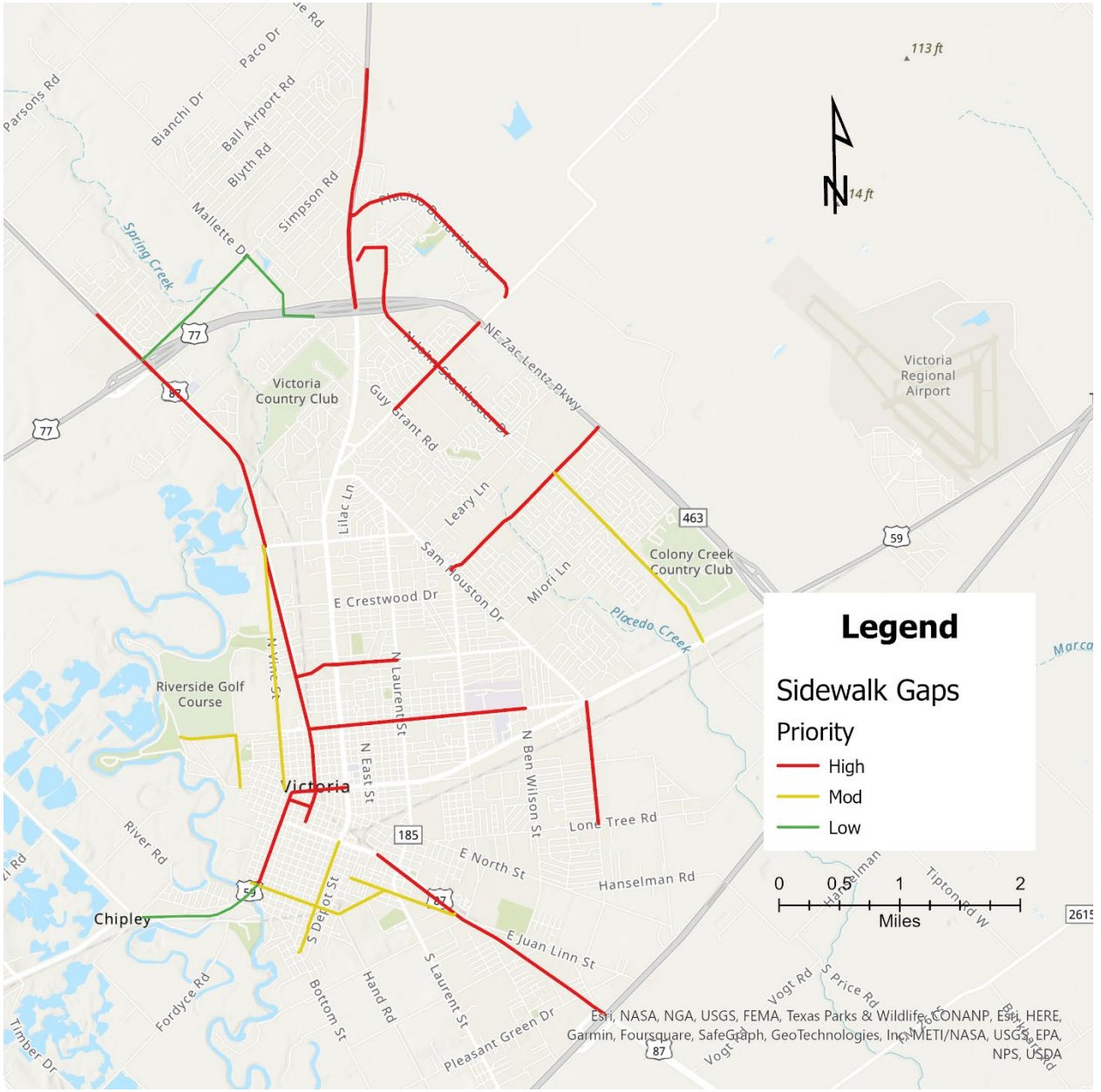


TABLE A-4: INTERSECTION IMPROVEMENT RECOMMENDATIONS

Project No.	Street 1	Street 2	Facility Recommendation	Priority
I001	N. Navarro St.	E. Mockingbird Ln.	Upgrade pedestrian infrastructure	High
I002	N. Vine St.	E. Mockingbird Ln.	Upgrade pedestrian infrastructure	Mod
I003	Spring Creek Dr.	US 87	Add pedestrian infrastructure	Low
I004	E. Colorado St.	N. Navarro St.	Upgrade pedestrian infrastructure	High
I005	N. John Stockbauer Dr.	Salem Rd.	Upgrade pedestrian infrastructure	High
I006	N. John Stockbauer Dr.	Lone Tree Creek Trail crossing	HAWK signal	Mod
I007	E. Airline Rd.	future trail crossing	HAWK signal	Mod
I008	N. Ben Jordan St.	future trail crossing	HAWK signal	Mod
I009	Sam Houston Dr.	N. Laurent St.	Upgrade pedestrian infrastructure	High
I010	Nursery Dr.	Tropical Dr. Access Rd.	Upgrade pedestrian infrastructure	Mod
I011	US 77	Glascow St. / Placido Benavides Dr.	Upgrade pedestrian infrastructure	Low
I012	US 77	Kelly Dr.	Upgrade pedestrian infrastructure	Mod
I013	US 87	W. Red River St.	Upgrade pedestrian infrastructure	Mod
I014	N. Laurent St.	E. San Antonio St.	Upgrade pedestrian infrastructure	High
I015	N. Laurent St.	E. North St.	Upgrade pedestrian infrastructure	High
I016	N. Laurent St.	US 87	Add pedestrian infrastructure	Mod
I017	S. Laurent St.	E. Juan Linn St.	Upgrade pedestrian infrastructure	Mod
I018	S. Laurent St.	SW Ben Jordan St. E.	Add pedestrian infrastructure	Mod
I019	S. Laurent St.	Odem St.	Upgrade pedestrian infrastructure	Mod
I020	S. Laurent St.	Pleasant Green Dr.	Upgrade pedestrian infrastructure	Mod
I021	Sam Houston Dr.	US 59 / Rio Grande St.	Upgrade pedestrian infrastructure	High
I022	E. Airline Rd.	N. Ben Jordan St.	Upgrade pedestrian infrastructure	Low
I023	E. Red River St.	N. Ben Jordan St.	Upgrade pedestrian infrastructure	Mod
I024	US 87	Ben Jordan St.	Upgrade pedestrian infrastructure	High
I025	N. John Stockbauer Dr.	E. Airline Rd.	Upgrade pedestrian infrastructure	Mod
I026	E. Airline Rd.	N. Ben Wilson St.	Upgrade pedestrian infrastructure	Mod
I027	E. Airline Rd.	US 77 / N. Navarro St.	Upgrade pedestrian infrastructure	Mod
I028	Sam Houston Dr. / E. Magruder Dr.	Sam Houston Dr.	Traffic Calming, Reduce Radii	High
I029	N. Ben Wilson St.	E. North St.	Traffic Calming, Reduce Radii	Mod

FIGURE A-4: INTERSECTION IMPROVEMENT RECOMMENDATIONS BY PRIORITY