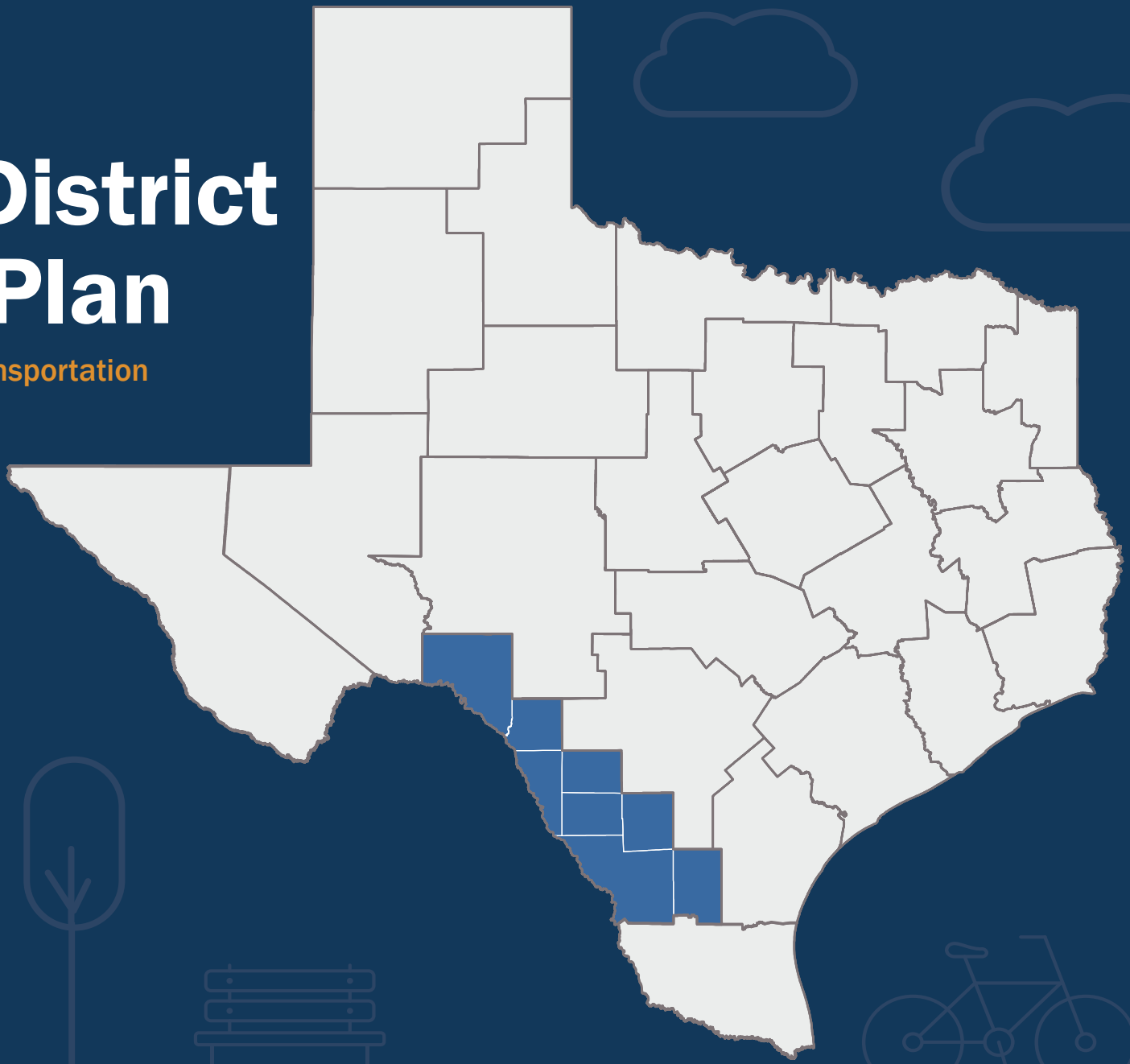
Laredo District Bicycle Plan

Texas Department of Transportation



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Information contained in this document is for planning purposes and should not be used for final design of any project. All results, recommendations, concept drawings, cost opinions, and commentary contained herein are based on limited data and information and on existing conditions that are subject to change. Existing conditions have not been field-verified. Further analysis and engineering design are necessary prior to implementing any of the recommendations contained herein.

Glossary

The list below defines key terms as they are used throughout the Laredo District Bicycle Plan.

- **At-Grade Highway**: Roadways on the State Highway System (SHS) that operate on the same vertical level as non-highway, local roadways with minimal physical separation that limits access.
- **Bicyclist:** This document uses the term bicyclists to include people riding traditional bicycles and a wide variety of other human-powered devices that use typical bicycle facilities. This includes electric-assisted bicycles, recumbent bicycles, bicycles or tricycles adapted for use by those with disabilities, and many others.
- **Bicycle Tourism Trail:** Routes that the Texas Department of Transportation (TxDOT) has recommended for inclusion in a statewide bicycle tourism network. They traverse urban and rural areas and include three types of segments: cross-state spines, connecting spurs, and regional routes.
- **Bikeway Design User Guide:** A user-friendly guide for the Bicycle Facilities section of the Roadway Design Manual.
- **Bikeway Development Priorities**: Segments along the on-system network that have one or more need locations and are scored based on context factors into three categories: opportunistic, proactive, and high priority.
- **Bikeway Functions:** Designations that reflect potential types of users and journeys the route may support, such as whether a route connects children to local K-12 schools or long-distance riders to recreational destinations. The bikeway functions include all-ages bikeway, daily-travel bikeway, long-distance bikeway, and basic bikeway.
- **Community Needs Working Group:** A working group comprised of local and regional stakeholders from community-based organizations, affordable housing providers, educational institutions, and other agencies and organizations.
- **District:** One of the 25 TxDOT jurisdictions that oversee the construction and maintenance of state highways. Each district is composed of a grouping of adjacent counties.
- **Grade-Separated Highway, Limited-Access Highway:** Roadways on the SHS that operate with a degree of physical separation from local roadways. This separation may be vertical differences in height, separating the highway above or below local access.
- **Locally Identified Needs:** These segments and points indicate places where new or improved bikeways should be considered, drawing on local plans, TxDOT/partner input, and public input.
- **Need Location:** An on-system location where there is a bicycling gap or existing bikeways are deficient in some way. Needs are both segments and points. Some are data-driven and others are identified in local plans or by stakeholder input.
- **On-System Transportation Network:** Roads owned, operated, and maintained by TxDOT and connected infrastructure elements such as on- and off-ramps, bridges, and tunnels.
- **Right-of-Way:** The designated area, typically communicated as a width, on and surrounding a roadway over which an agency such as TxDOT has jurisdiction.
- **State Highway System:** Legislatively designated highway network that supports the movement of people and goods across Texas. The Texas state highways include a main network of interstate highways, U.S. highways, state highways, business highways, loops, spurs, farm-to-market roads, park roads, ranch roads, and beltways. “On-system” refers to roadways that are part of the SHS.
- **Technical Working Group:** A working group comprised of local and regional experts who have a close understanding of the processes and technical conditions that inform bicycle planning in their areas.
- **Urbanized Area:** An incorporated city or an unincorporated census-designated place with a population of at least 2,500.

Executive Summary

The Laredo District Bicycle Plan presents a data- and community-driven set of priorities and guidance for Texas Department of Transportation (TxDOT) on-system highways that will meet the specific bicycling needs of the district. This plan provides:

- An analysis of existing bicycling needs that prevent people from being able to ride safely;
- A set of prioritized segments of TxDOT roadways;
- Designated bikeway functions for how bikeways are likely to be used; and
- Refinements to regional long-distance bicycling routes.

Laredo District Today

The district comprised of seven counties (Val Verde, Kinney, Maverick, Zavala, Dimmit, La Salle, Duval, and Webb), is largely rural in nature. Many communities are defined by their relation to the Rio Grande and the United States-Mexico border; the eight international bridge crossings in the district are essential connections for both daily travel and freight commerce. The district also has two international freight rail crossings, one in the city of Laredo and another in Eagle Pass. The city of Laredo, which houses a majority of the district's approximately 430,000 residents, includes four of those bridges. Other notable smaller cities in the district include Eagle Pass and Del Rio, each with two international bridges. While the bridges are significant for commerce and trucking, they are also key connections for residents and workers who cross them every day, many by bicycle. In doing so, they rely on TxDOT roadways and bikeways for their trips.

The Laredo District encompasses 2,306 miles of highways connecting 83 cities, towns, and unincorporated places. For many of these towns, state roadways form major main streets that connect to local destinations while also channeling regional vehicular traffic. As such, these locations involve major barriers to safe bicycling, exacerbated by high trucking volumes on many of the district's routes.

Currently, bicycle facilities in the district are more limited. Cities such as Laredo and Del Rio have some designated bikeways and hike/bicycle trails, but on-system bikeways are generally limited to bikeable shoulders on rural highways. In Webb County, TxDOT has installed marked, non-shoulder bikeways on approximately five miles of highway, such as the U.S. Highway/State Loop 20 (Bob Bullock Loop). However, stakeholder input and existing plans note that there is momentum and desire for expanding bikeways in the district. Other stakeholders noted that the smaller size of many towns means bicycling projects would have outsized impacts on local connectivity. The Laredo and Webb County Area Metropolitan Planning Organization completed an Active Transportation Plan in 2021 that outlines bicycling improvements for the next two decades.

Barriers to Bicycling

The most common factors that likely discourage bicycle trips on the TxDOT system are the lack of bikeways, uncomfortable roadways near school campuses, and existing bikeways that are stressful to ride. For the latter conditions, roadway designs such as high volumes, wide roadways, and narrow facilities that lack separation between modes contribute to high-stress conditions. This may occur, for example, on the district's rural highways with narrow shoulders.

Results from an online community survey and feedback from local stakeholders noted areas along the State Highway System (SHS) and on connecting streets where conditions felt unsafe or facilities were inadequate. Respondents commonly identified segments with high traffic speeds and volumes as contributing to stressful bicycling conditions. They also noted their general comfort with, and preference for, bikeways separated from adjacent vehicular traffic.

Figure 1. Bikeable shoulders on State Highway 85 near Carrizo Springs, Dimmit County

Recommendations

A prioritized set of roadway segments indicates where bikeway improvements are most needed in the district, as determined through a set of goal factors related to safety, connectivity, community input, and other indicators. For the Laredo District, the high-priority segments are generally found in roadways that serve multiple trip types and are central within cities and towns. In the city of Laredo, for instance, Business U.S. Highway (BU) 59 (Saunders Street) connects neighborhoods to the Interstate 35 corridor and hosts a number of shops and local destinations. Improvements on or along high-priority central main street corridors may address critical needs related to bicycling safety and expand the destinations residents are able to reach by bicycle.

Similarly, the bikeway functions identified through the Laredo District Bicycle Plan provide guidance on how residents and visitors are likely to use bikeways in various SHS roadways. Central roadways within and around cities such as Laredo, Eagle Pass, and Carrizo Springs are predominately identified "as all-ages bikeways," as they are likely to be used by both more and less confident riders to reach local destinations such as recreation centers and schools. In some areas outside of the city of Laredo, "daily travel bikeways" are identified. These meet the needs of riders who rely on bicycle trips to reach daily destinations like places of employment and local shops. For most of the geographic area of the Laredo District, "basic bikeways" are identified on the rural highways that connect the district's towns.

"Long-distance bikeways" are those along the TxDOT Bicycle Tourism Trails (BTTs) Network, a series of recreational and tourism-focused bicycling routes that connect to regional destinations with regularly spaced stops at small towns and other travel resources.

The Laredo District Bicycle Plan identifies refinements to the original 2018 Example Network of the BTTs, expanding it further north and east from central Dimmit County. In doing so, new connections can be created for recreational riders seeking access to the Amistad National Recreational Area from the south. The refined route follows the extent of the Rio Grande, connecting to local creeks and ranches between Eagle Pass and Del Rio. It also adds connectivity to the BTT Network from those cities' border crossings and connects to the existing BTT Network's extents serving adjacent districts.

Implementation and Next Steps

By pursuing a range of implementation strategies in cooperation with local and regional partners, the Laredo District can work to add bikeway improvements through a variety of roadway project types. Bikeway projects developed by TxDOT may be structured and delivered as a standalone project, as an improvement within a larger roadway project, and as lower-cost projects such as quick-build, maintenance, or pilot projects. In other project types, bikeway improvements will ultimately be delivered through partnerships with local governments, especially for key connections of local importance. These will include roadway improvements led by local county or city sponsors, as well as improvements required by private development that impact TxDOT roadways and facilities.

As bikeways are implemented throughout the Laredo District, needs and conditions for the region's bicyclists will evolve. Continued engagement with local agencies and stakeholders will be key to maintaining progress on the plan's goals of creating a safer and more comfortable transportation network for all users.

Figure 2. A bicyclist rides on a bicycle lane along BU 35A (Convent Avenue) in Laredo, Webb County

ONE
Introduction

Purpose and Priorities

The Laredo District Bicycle Plan charts a vision for how state highways can contribute to the bicycling networks of Val Verde, Kinney, Maverick, Zavala, Dimmit, La Salle, Duval, and Webb counties. The State of Texas' on-system transportation network – roads owned, operated, and maintained by the Texas Department of Transportation (TxDOT) – connects communities, regions, and destinations within and outside of Texas. While many bikeways are planned and funded at the local level, incorporating bikeways on the Texas highway system strengthens regional bicycling connections. Bicycle connections on the Texas highway system give people a non-driving option to reach and traverse urban and rural destinations. Developing a framework for on-system bikeway investments is vital as the state works to provide safe, thoughtfully designed, well-maintained facilities for people bicycling both within TxDOT districts and across the state.

This plan is one of four pilot District Bicycle Plans that TxDOT is preparing in support of Connecting Texas 2050, the state's long-range transportation plan. The four pilot plans cover the Bryan, Pharr, Laredo, and San Antonio districts, with the intention to complete similar bicycle plans for all 25 TxDOT districts. The District Bicycle Plans analyze needs on the highway system, prioritize routes, and identify potential solution types. This effort includes technical studies, stakeholder engagement, and virtual public meetings.

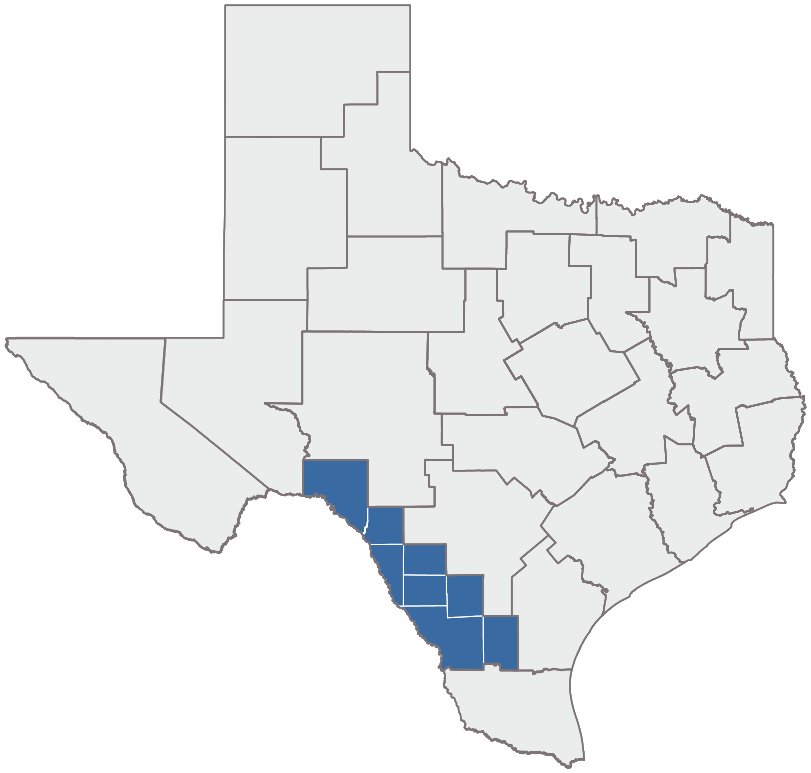


Figure 3. Laredo District

TxDOT's Role in Pedestrian and Bicycle Planning

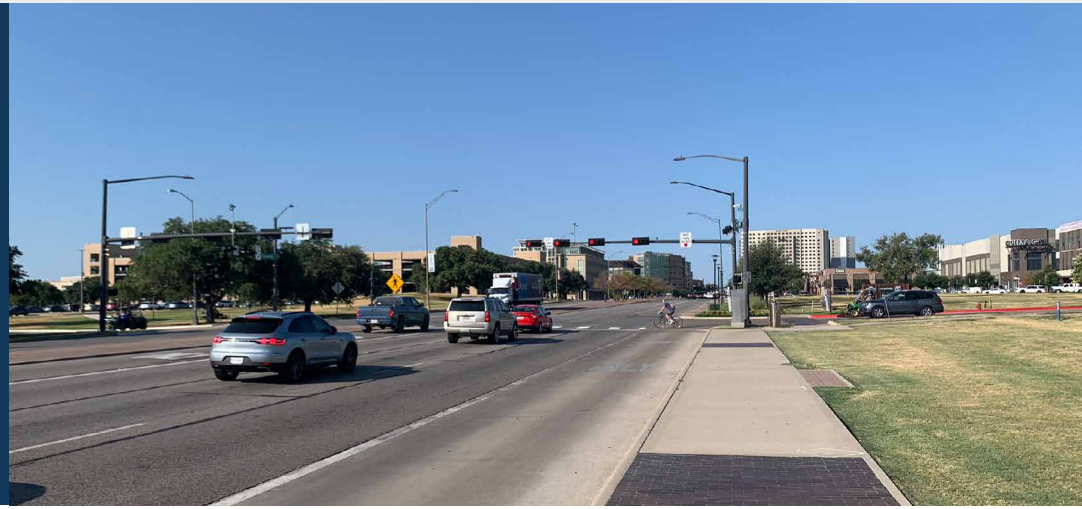
Connecting Texas 2050 is creating a vision for bicycle and pedestrian transportation across the state. TxDOT's role in active transportation includes developing bikeway design guidance, constructing appropriate bicycle accommodation along the State Highway System, providing local active transportation project support, and broadly supporting programs and initiatives that enhance safety for people who walk and bicycle. Major programs and activities performed by TxDOT that are related to bicycle and pedestrian planning include:

- Allocating state and federal funding for local projects and programs.
- Requiring engineers to consider bicycling and walking in construction and reconstruction projects.
- Providing engineering standards and design guidance for pedestrian and bicycle facilities.
- Promoting safe bicycle and pedestrian behavior and multimodal connections.
- Integrating bicycle and pedestrian needs into the TxDOT planning processes.

Together, these TxDOT bicycle and pedestrian activities span planning, engineering, and construction activities to expand regional transportation options across the state.

TxDOT is committed to routinely providing bikeways when planning and designing transportation facilities, addressing the needs of the target design user.

What is a District Bicycle Plan?



The Laredo District Bicycle Plan documents and evaluates bicycling needs on and across the on-system highway network, identifying locations where better bikeways would enhance mobility, connectivity, safety, and tourism. It will guide the Laredo District in future project development and investment decisions by highlighting places where bicycling needs or potential benefits are the greatest. The plan uses information about the district's communities – such as demographics, land use, and destinations – to understand what kinds of travelers and bicycle trips different routes may support, informing design decisions. The ultimate purpose of this plan is to reduce barriers to bicycling in the region and support the growth of healthy, sustainable, connected, and accessible communities by increasing transportation options and supporting economic development.

The plan draws its policy framework from Connecting Texas 2050 and the Texas 2023 to 2027 Strategic Plan, and aims to advance the following goals:

Promote Safety – Champion a culture of safety that reduces crashes and fatalities through a performance-based approach to address negative safety trends.

Deliver the Right Projects – Ensure efficient use of state resources by implementing effective planning processes to help deliver the right projects on time and on budget.

Focus on the Customer – Ensure the public and stakeholders can see and understand TxDOT's decisions and provide feedback that is heard.

Foster Stewardship – Integrate environmental considerations into all TxDOT activities so that future generations of Texans can benefit from the state's valuable natural, historic, and cultural resources.

Optimize System Performance – Develop and operate an integrated transportation system that provides reliable and accessible mobility enabling economic growth.

Preserve Our Assets – Deliver cost-efficient preventive maintenance for the transportation system that keeps Texas roads, bridges, and other infrastructure and technology in good repair.

Products and Outcomes

The Laredo District Bicycle Plan contents include multiple resources that will guide bikeway project development for the Laredo District. It is important to note that the plan can benefit local communities as cities and counties can coordinate with TxDOT on projects along on-system highways that pass through their jurisdictions. The six essential outputs of the TxDOT District Bicycle Plans are identified in Figure 4.

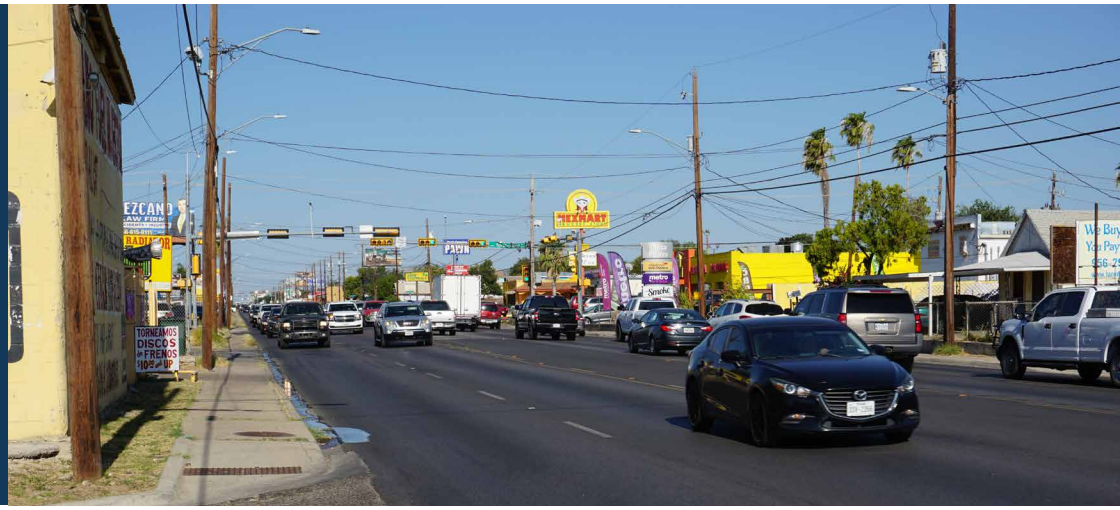
District staff will use the plan outputs to develop projects, select context-sensitive bikeway designs, and broadly make decisions of where, when, and what types of bikeways should be implemented at any given intersection or along any given corridor.

Components

Component	What Question Does It Answer?	Definition
Existing Conditions	*What does it feel like to bicycle on highways in the district today?*	TxDOT and partner data provides a snapshot of on-system conditions at the time this plan was developed, such as existing bikeways, shoulder width, speed limits, crashes, and more.
Bikeway Needs Assessment	*What makes bicycling at this location feel uncomfortable or stressful?*	This analysis uses existing conditions data to identify road segments and crossings where gaps and deficiencies affect people traveling by bicycle. It also incorporates on-the-ground knowledge from TxDOT staff, agency partners, and local plans as locally identified needs.
Bikeway Development Priorities	*How should a project advance to meet these bicycling needs?*	This analysis provides TxDOT districts with guidance regarding how and when to develop bicycling improvements. Bikeway development categories are applied based on a series of prioritization criteria.
Bikeway Functions	*Who will use this bikeway, and for what kinds of trips?*	These segment-level designations indicate the likely type of bicyclist trip and potential users along an on-system highway, such as children or long-distance riders. The bikeway function is intended to inform decisions about where to provide a bikeway and what design is most suitable.
Refined Bicycle Tourism Trails (BTT) Routes	*Where will the district plan for long-distance biking routes?*	The plan includes refinements to the 2018 Bicycle Tourism Trails Example Network based on the results of the Bikeway Needs Assessment and other analyses conducted as part of the Laredo District Bicycle Plan development process.
Bikeway Design User Guide	*How should bikeways be designed to suit the local context and needs?*	This document complements the TxDOT Road Design Manual, which contains bikeway design guidance, by assisting roadway designers in the selection of appropriate bikeway facilities based on the surrounding context and bikeway function.

Figure 4. District Bicycle Plan Products

Plan Timeline and Methodology



The Laredo District Bicycle Plan kicked off in August 2022 and was developed in four distinct phases over a period of a year and a half: Existing Conditions, Needs Assessment, Prioritization, and Plan Development. All four pilot districts worked concurrently on this timeline with the goal of sharing best practices across districts. The district plans were also developed in coordination with the Statewide Long-Range Transportation Plan and used common data sources and planning goals, though the district plans followed an independent schedule.

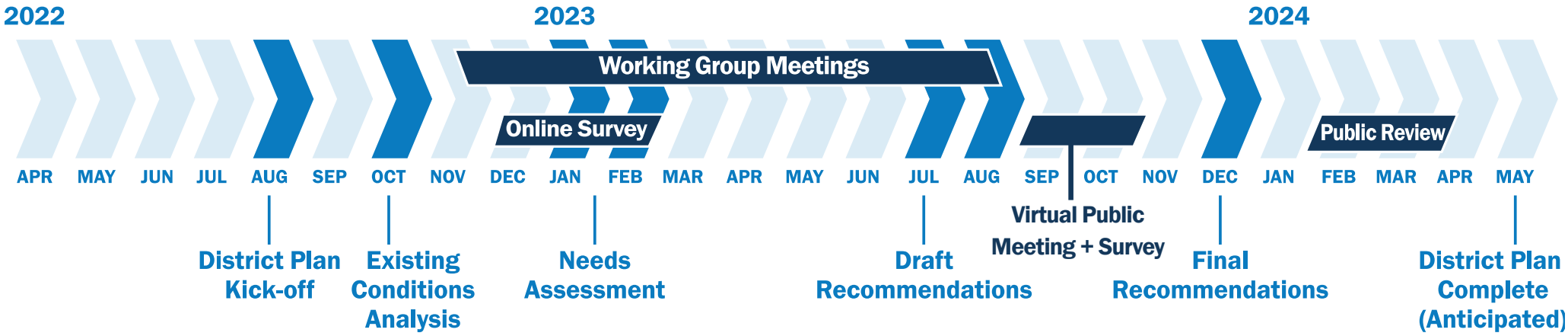


Figure 5. District Bicycle Plan Timeline

Benefits of Bicycling

Research indicates that strategic investments in active transportation infrastructure benefit local businesses, community public health outcomes, and environmental quality. In particular, investing in bikeways and increasing rates of bicycling can encourage physical activity, reduce risk of chronic disease and healthcare costs, and improve health outcomes.

Economic Benefits

Increases in bicycling rates for everyday and recreational purposes yield economic benefits for local communities through increases in local retail sales, bicycle repair services, and hospitality services associated with tourism.[1] Recreational riders may spend between $78 and $275 locally per day during riding trips, for an average of $136 as identified through a literature survey in the 2018 BTT Study.[2] Non-recreational riding boosts sales as well - a study of 14 bicycle projects across 6 cities found that when new bicycle lanes were added to commercial corridors, retail and food service businesses either saw an increase in sales revenue and employment or no impact, with food service seeing the most consistent increase.[3] As new shared-use path infrastructure is added, many communities see modest increases in their property values; for example, a study of home prices in Bexar County found homes near trails valued at 2% more than homes farther from trails.[4]

Public Health

Increases in bicycling brought by comfortable, accessible bicycling infrastructure yield a wide array of health benefits on a personal and community level. Regular active transportation lowers rates of obesity, high blood pressure, and insulin levels in older adults.[5] Regular bicycling exercise can be especially beneficial to upper and lower body strength, endurance, and cholesterol.[6] For mental health concerns, research has shown that frequent bicycle trips (at least three per week) may aid in improving mental wellbeing.[7] A study of bicycle commuters also found reduced rates of overall stress.[8] These benefits can add up; for every dollar spent on a shared-use path, communities can save nearly three dollars in reduced healthcare costs from improved overall health and fitness.[9]

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Enhanced Safety for All Users

Different bicycle lane treatment types yield a variety of safety improvements depending on street context. New bicycling facilities have been found to lead to up to a 65% reduction in crash frequencies.[10] Those safety benefits extend to street safety for other modes, not just bicycling. Research analyzing bicycling rates, safety, and infrastructure prevalence in 12 major U.S. cities found that separated bicycle lanes were associated with improved safety for road users of all modes, possibly owing to traffic calming effects and reduced speeds.[11]

Reductions to crash frequencies through safety improvements also yield benefits through associated societal costs. By comparing the changes in crash frequency to the cost of a hypothetical project involving installation and maintenance of a bicycle lane, researchers found that the expected economic benefit yielded from the reduction in crash frequency was twice the cost to install and maintain the bicycle lane over a 3-year period.[12]

Improved Air Quality

Changes in transportation choices made possible through new and expanded bicycling facilities can yield local and regional environmental benefits, specifically to emissions and air quality. Public health studies have found that the reduction of harmful particulate emissions and ozone associated with shifting vehicle trips to bicycle trips would reduce healthcare needs and costs[13] and save lives in the process. These outcomes would benefit residents both within cities and regionally.

Increased Transportation Options

The addition of bicycling infrastructure expands bicycling as an option for many people. This is especially true for the more than half of U.S. adults who consider themselves "interested but concerned" about bicycling and who require lower stress facilities to ride a bicycle. One study of several major cities surveyed residents who self-identified as "interested but concerned" bicyclists in areas with new protected bicycle lanes. Forty-three percent of these riders surveyed reported that because of a new facility near them, they found themselves riding more often overall.[14] Further, bicycle facilities can expand access to transit service, doubling the accessible distance to stations and complementing transit trips as a first/last-mile mode option.[15]

The option to travel by bicycle presents a more affordable transportation mode when compared to the costs of vehicle ownership, which on average total to $9,561 per year.[16] By contrast, the average annual cost of owning and riding a bicycle is $308.[17]

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TWO
Community and Stakeholder Outreach

The people who live and work in the Laredo District have on-the-ground experience with, and knowledge about, conditions across the district's communities. They understand the challenges and opportunities that TxDOT will encounter as it works to improve conditions for people bicycling. The Laredo District Bicycle Plan was informed by a combination of stakeholder meetings, which brought together representatives with that local knowledge, and interactive mapping surveys that reached the general public. Two working groups were convened to provide invaluable input on overall plan progress, especially the components focused on analysis of local conditions and prioritization. The following section describes how each of the stakeholder groups and surveys came together to support the Laredo District Bicycle Plan process and outcomes.

Technical Working Group

The Technical Working Group (TWG) was comprised of local and regional experts who have a close understanding of the processes and technical conditions that inform bicycle planning in their areas. This includes staff of Laredo Webb County Area Metropolitan Planning Organization (LWCAMPO), relevant TxDOT district staff, Webb County staff, staff of local cities such as Del Rio and Laredo, and institutions whose work centers on project development, safety, and active transportation. TWG members were asked about local conditions, their experiences planning and implementing projects, relevant datasets, and how to align Laredo District Bicycle Plan priorities with local goals. A full list of TWG members is included in the Acknowledgements.

This group met three times during plan development. Key themes identified by the Laredo District TWG include:

- Plan recommendations should consider and serve the needs of people who cross the border, especially those who bring or ride a bicycle.
- Folks in the district generally bicycle recreationally and to get to work.
- Safety is a key issue throughout the district, and often burdens the lowest-income neighborhoods and border communities.
- Bicycling groups are very active in Laredo and have been working with the Metropolitan Planning Organization (MPO) on planning efforts and projects.
- The Laredo District Bicycle Plan should draw on data and planning from partner agencies such as LWCAMPO Comprehensive Operational Analysis, El Metro routes and bus bicycle counts, border crossing counts, and the City of Laredo's Parks Master Plan, Active Transportation Plan, and Comprehensive Plan.

Community Needs Working Group

The Community Needs Working Group (CNWG) was comprised of local and regional stakeholders from community-based organizations, affordable housing providers, educational institutions, and other agencies and organizations. While most of the invitees do not focus their work on transportation, their direct work with local communities gives them insight into the daily needs of the people they serve. They also offered the project team local perspectives on access to opportunity, safety, environmental justice, public health, and related topics.

Through the CNWG, stakeholders shared early insights into the barriers, needs, and opportunities related to bicycling in their communities. The CNWG worked with the project team to determine what publicly available data could be used to locate communities who have limited transportation resources, experience increased burdens from existing roads and traffic, or experience elevated rates of health conditions that can be improved through access to physical activity. A full list of CNWG members is included in the Acknowledgements.

This group met once during plan development. Key themes identified by the Laredo District CNWG included:

- Bicycling today in the Laredo District is often recreational, in and around college campuses, and used in crossing the border.
- In communities where designated bikeways do not exist or are currently limited in scope, such as Del Rio and Eagle Pass, there is momentum to implement bicycle lanes. There is an understanding that improved bicycling conditions could have a big impact on small towns, such as in Del Rio, given the smaller size, proximity of destinations, and compact street network.
- Barriers to bicycling in the Laredo District include safety, lack of connectivity, and discomfort using bicycle facilities.
- There is interest in a couple additional indicators of need, including social determinants of health and unemployment.

Public Input

Online Web Map Surveys

In 2022 and 2023, two interactive map surveys were employed to solicit input from working group members and members of the general public at critical points in the plan's development timeline. In addition to direct outreach to bicycling advocacy groups, the study team encouraged participation through phone calls and emails and engaged local stakeholders in-person at bicycling-related events.

- **Bicycling Conditions Map:** The first map survey, shown in Figure 6, was open from December 2022 to February 2023 to collect input on where people bicycle today or wish to see improvements. This includes locations of bicycling destinations, desired routes, and key safety concerns. This map was part of a survey with questions related to general transportation behavior and desired bicycling facility types. Key findings are shown on page 16.
- **Bicycling Recommendations Map:** Figure 7 shows comments collected in the second interactive map survey, which gathered input on the draft priority network, Bicycle Tourism Trails (BTTs), and network functions from September to October 2023. Stakeholders reviewed recommendations for supporting bicycling on the SHS, providing comments on how those recommendations could be better shaped to address existing needs and opportunities in the Laredo District.

Survey Results Summary

- **Conditions Map Survey responses:** 84 responses, making 200 comments
- **Recommendations Map Survey responses:** 56 responses, 100 comments/inputs

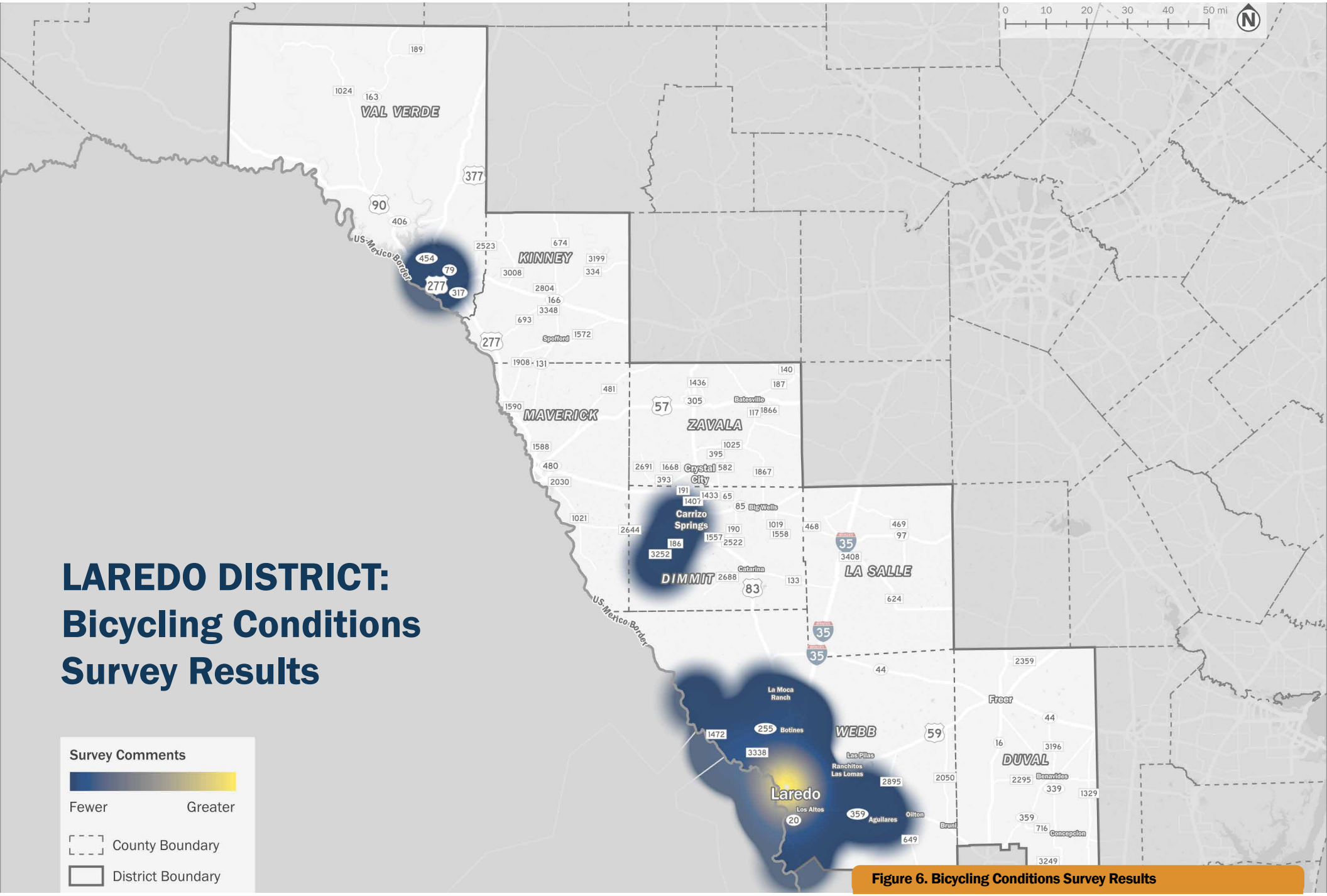


Figure 6. Bicycling Conditions Survey Results

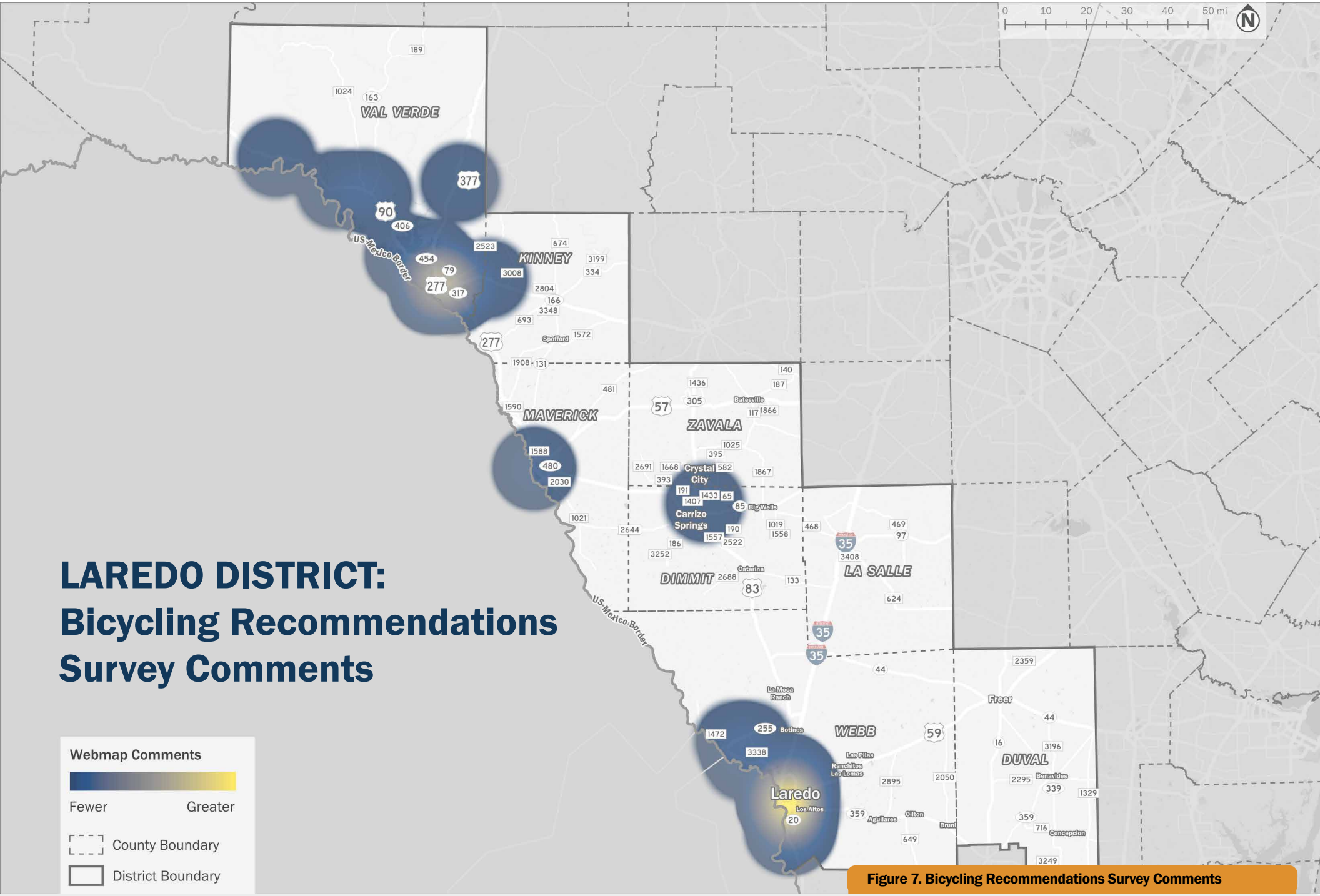


Figure 7. Bicycling Recommendations Survey Comments

Key Findings

Conditions Map Survey

- According to respondents, Laredo District bicycling is mostly recreational (rather than a mode of transportation). Trips by bicycle are most often for exercise, to enjoy time outside, or as a shared activity with friends or family.
- About 10% of survey respondents use a bicycle as their primary mode of travel.
- Personal vehicle travel is common, even amongst respondents who also bicycle regularly.
- Of the 84 respondents, more than 60% bicycle at least once a week, and 1/5 bicycle daily.
- Laredo District riders prefer to bicycle on protected facilities and on streets with low vehicle volumes and speeds, as noted in Figure 8.
- Comments on the SHS primary noted safety concerns and poor conditions. Respondents identified areas where shoulders are too narrow, where bicycle lanes or pavement markings are worn, and where traffic speeds and volumes are high and feel unsafe.

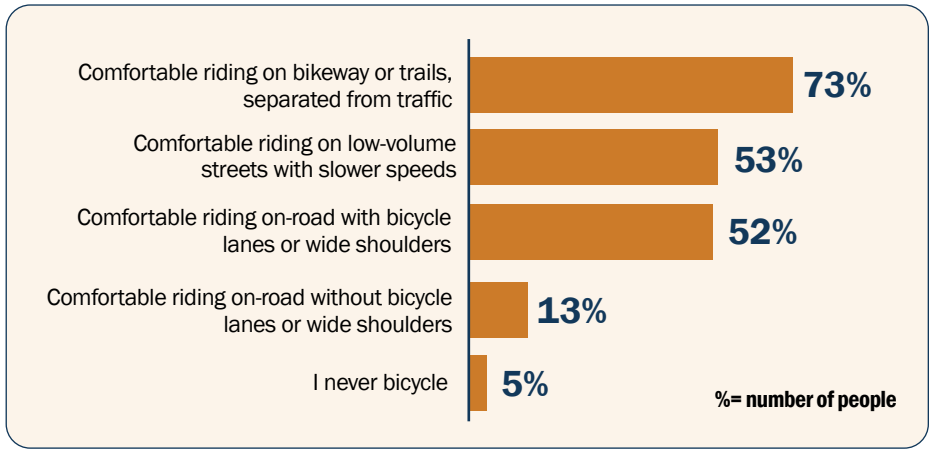


Figure 8. Laredo District Level of Comfort Results
Source: Bicycle Conditions Map, 2023 Online Survey

Recommendations Map Survey

- More than 60% of submitted comments agreed with the draft prioritization, network function, and BTT designations
- Respondents commenting on Plan recommendations support prioritizing segments that connected to local off-street paths, such as the Zacate Creek Trail
- Respondents noted that bikeways along routes that are currently popular with bicyclists today should be assigned the all-ages network function
- Comments included recommendations for specific facility types, such as shared-use paths, along some routes, which would improve their comfort levels.

Virtual Public Meeting

TxDOT uses virtual public meetings to publicize planning projects and ask for input. These meetings are delivered in the form of a pre-recorded presentation that is made available online for a set period of time. The TxDOT District Bicycle Plans virtual public meeting, which was made available in fall 2023, provided an overview of the plans' purpose and products and invited attendees to respond to the second online mapping survey. The meeting had three goals:

1. Invite the public to learn about the planning process
2. Ask the public about their vision for the future of bicycling in Texas
3. Invite the public to provide input and comments on proposed recommendations
4. Input and comments collected during the virtual public meeting are reflected above via survey responses.

Figure 9. Virtual Public Meeting Announcement

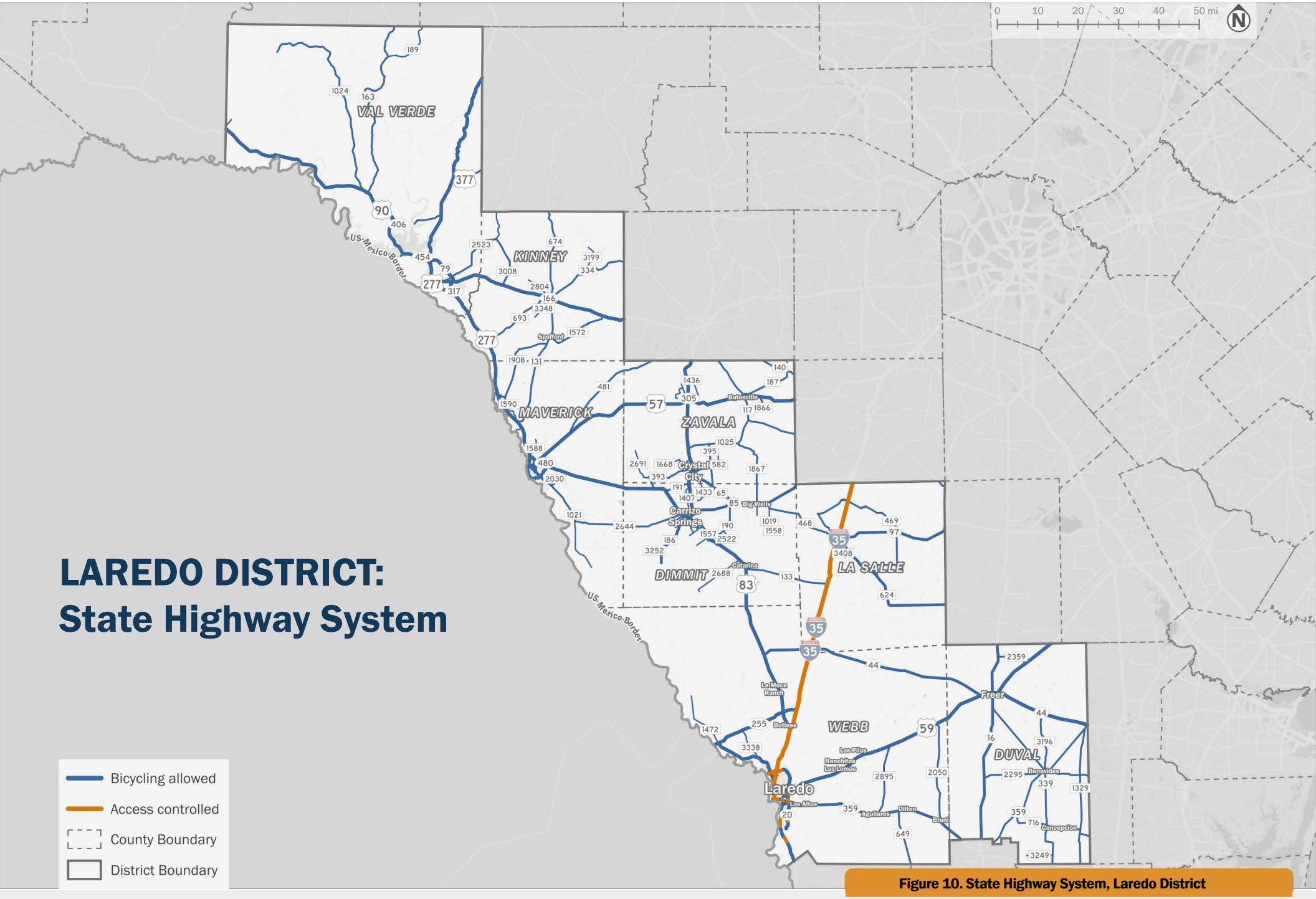
THREE
Existing Conditions

District Profile

The Laredo District spans eight counties along the southeastern border of the state, following the path of the Rio Grande south. These counties – Val Verde, Kinney, Maverick, Zavala, Dimmit, La Salle, Duval, and Webb – are largely rural in nature. As of 2023, 410,595 people reside across 16 incorporated cities and 67 unincorporated places.[18] Of the district's population, 60% live in the City of Laredo in Webb County. An additional approximately 425,000 people live in Nuevo Laredo on the Mexican side of the border and travel to Laredo for reasons such as work and shopping.[19] Webb County's transportation needs have changed significantly, as the population has grown approximately 40% from 2000 to 2020.[20] The other most populous cities in the district, though significantly smaller, include Del Rio (34,543 residents) and Eagle Pass (28,255 residents).[21.]

18 "Laredo District – District Profile," Texas Department of Transportation, https://www.txdot.gov/content/dam/docs/district/laredo-district-profile.pdf.
19 Data Mexico, Nuevo Laredo, https://www.economia.gob.mx/datamexico/en/profile/geo/nuevo-laredo#:~:text=The%20total%20population%20of%20Nuevo,woman%2C%20and%2049.3%25%20men.

20 "Census Factfinder," U.S. Census Bureau, 2020, https://data.census.gov/table?q=webb+county+tx+.
21 "Census QuickFacts – Eagle Pass, Del Rio," U.S. Census Bureau, 2022, https://www.census.gov/quickfacts/fact/table/delriocitytexas,eaglepasscitytexas/PST045222.



LAREDO DISTRICT: State Highway System

Figure 10. State Highway System, Laredo District

Connecting these cities and places are 2,306 miles of SHS roadways. Across those, nearly 4%, or 89 miles, are limited-access highways where bicycling is prohibited. The remaining 2,217 miles are generally rural, at-grade highways; at-grade roadways that function as thoroughfares in cities and towns; or highways with accompanying frontage roads.

Due to the district's location along the United States-Mexico border, state highways in the region carry significant volumes of freight traffic across most of the district's eight international bridges. According to feedback from local advocates, bicyclists, and Community Needs Working Group (CNWG) members, the presence of large trucks contributes to unsafe conditions for bicycling and add to the traffic volumes on rural roadways. Congestion caused by freight trucks is also a major consideration for prioritization and design of future highway system upgrades and expansions.

Residents and visitors in the Laredo District are likely to benefit from expanded transportation options, such as improved public health outcomes associated with improved bicycling facilities, as the district population grows. As shown in Figure 12, the district's residents are more likely than the average Texan to live in lower-income households, and over half are living below 200% of the federal poverty line. Approximately 1/3 of households are cost-burdened by their housing situations, and 6.5% of households do not have access to a personal car. Further, 31.7% of residents in the Laredo District are below the age of 18 and may benefit from expanded mobility options through new bicycling access. Expanding access to safe, comfortable bicycling options in the district would allow residents greater access to jobs, transit, day-to-day needs (e.g., grocery stores), and other community resources.

Figure 11. A person rides north across the Gateway to the Americas International Bridge from Nuevo Laredo to Laredo, Webb County

Community Profile

LAREDO DISTRICT

Population Under 18
31.7% DISTRICT
26.0% STATEWIDE

Population Over 65
10.9% DISTRICT
12.3% STATEWIDE

Population Non-White Latino
93.0% DISTRICT
39.3% STATEWIDE

Population Below 200% of Federal Poverty Line
52.4% DISTRICT
33.6% STATEWIDE

Households with Disabled Residents
33.0% DISTRICT
24.3% STATEWIDE

Zero-Car Households
6.5% DISTRICT
5.3% STATEWIDE

Housing Cost-Burdened Households
30.2% DISTRICT
29.5% STATEWIDE

Population (18+) With Asthma
8.5% DISTRICT
8.6% STATEWIDE

Population (18+) With Heart Disease
6.3% DISTRICT
5.4% STATEWIDE

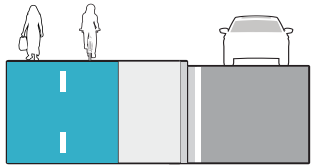
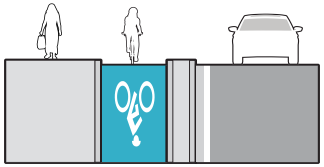
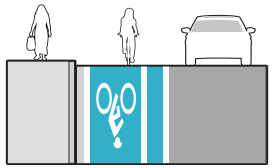
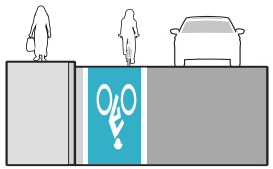
Fatal and Severe Crashes Per 1,000 Residents
10.5 DISTRICT
12.8 STATEWIDE

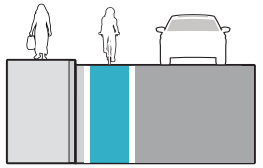
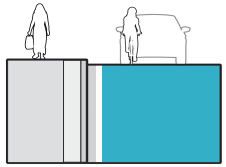
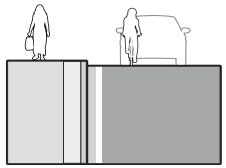
Figure 12. Community Needs in the Laredo District

State Highway System Bikeway Network

As noted in Figure 13, few designated bikeways exist on TxDOT roadways in the Laredo District. The most common bikeway type is bicycle-accessible shoulders along rural roadways, where users may ride in the wider outer area adjacent to the travel lane (743 miles, or 33% of on-system roadways where bicycling is permitted). There are approximately 2 miles each of striped bicycle lanes and separated bicycle lanes in Laredo. The separated lanes are largely composed of the two-way separated bicycle lanes that follow Bob Bullock Loop/U.S. Highway (U.S.) 59 along the west side of the City of Laredo.

Bikeway Facility Types

Facility Type	Miles	
Shared-Use Path	0.0	
Separated Bicycle Lane	1.9	
Buffered Bicycle Lane	1.1	
Bicycle Lane	1.3	

Facility Type	Miles	
Bicycle-Accessible Shoulder	743.0	
Shared Lane	0.2	
None	1,469.7	

NOTE: The bikeway types shown are general in nature and provided as examples. Actual field conditions may vary.

Figure 13. Laredo District Bikeway Types and Mileage

Total District Miles: 2,217.2

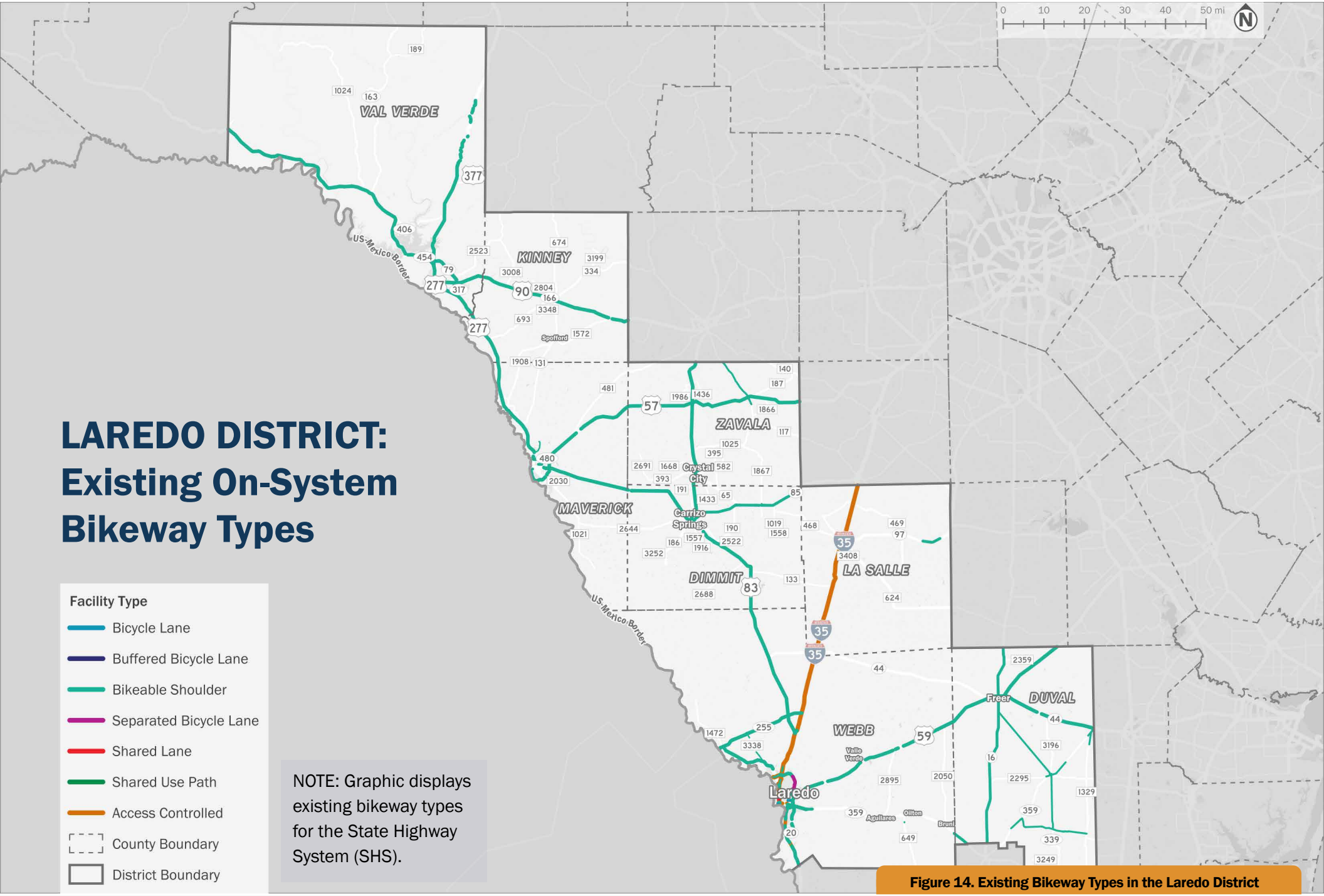


Figure 14. Existing Bikeway Types in the Laredo District

Figure 15. A two-way separated bicycle lane on U.S. 59 (Bob Bullock Loop) in Laredo, Webb County

Within the Laredo District, only TxDOT roads in Webb County have designated bikeways. The other seven counties are much more rural in land use and have significantly smaller cities and unincorporated towns, and fewer on-system bikeways exist among them. These counties do have bikeable shoulders on rural highways; however, Duval and Val Verde Counties, in the southern and northern sections of the district, respectively, have the greatest number by centerline miles, or the total length of roadway regardless of the number of lanes.

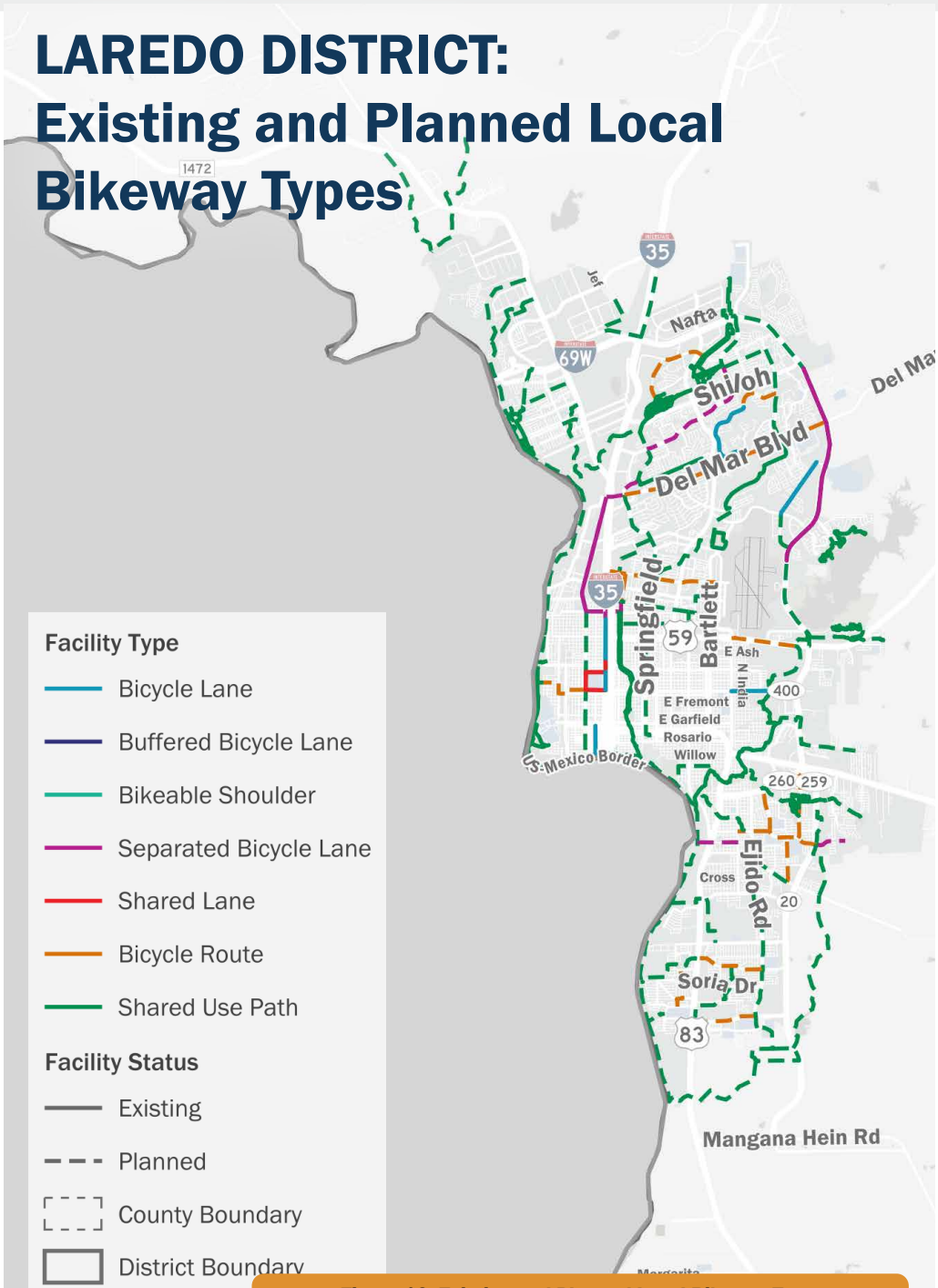


Figure 16. Existing and Planned Local Bikeway Types

Table 1. Existing On-System Bikeways by County (Centerline Miles)

Facility Type	Dimmit	Duval	Kinney	La Salle	Maverick	Val Verde	Webb	Zavala
Bicycle-Accessible Shoulder	75.3	163.8	47.6	7.3	86.1	138.7	135.9	86.9
Buffered Lane	0	0	0	0	0	0	1.0	0
Bicycle Lane	0	0	0	0	0	0	1.3	0
Shared Lane	0	0	0	0	0	0	0.2	0
Shared-Use Path	0	0	0	0	0	0	0	0
Separated Bicycle Lane	0	0	0	0	0	0	1.9	0
No Bikeway	173.2	147.9	155.9	226.2	135.6	185.5	267.8	177.8

Note: Centerline miles refers to the total length of the roadways. By contrast, lane miles refers to the number of centerline miles multiplied by the number of lanes.

Safety Conditions for People Bicycling

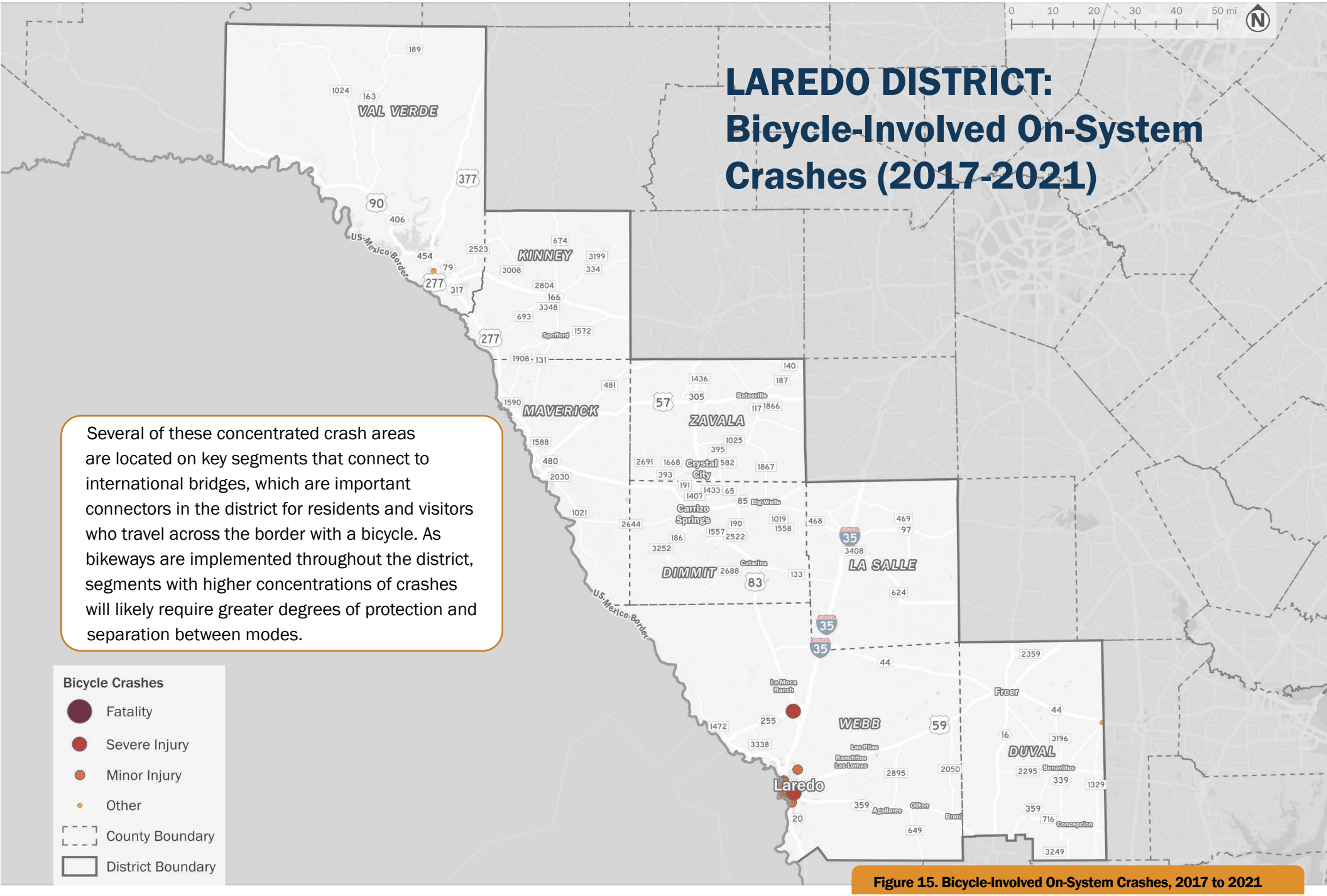
Bicyclist-involved crashes in the Laredo area have historically been concentrated on on-system segments near the centers of the cities of Laredo, Eagle Pass, and Del Rio. Figure 17, below, shows the locations of bicycle-involved crashes from 2017 to 2021. During this period, 189 bicycle-involved crashes occurred on the state highway system, resulting in two fatalities and 11 serious injuries (Table 2).

As seen in the map, crashes tend to be most concentrated on TxDOT-owned streets that also function as main thoroughfares for cities and which are at-grade and not separated facilities. In the City of Laredo, this includes Business U.S. Highway 59/Saunders Street and Clark Boulevard, and in Eagle Pass it includes U.S. 57/Garrison Street. These streets are often multiple lanes, have higher vehicle speeds, and have no dedicated bicycle facilities. These are key safety challenges, as these roadways connect residents and visitors to major shopping, employment, and recreational destinations in each city.

Table 2. Bicycle-Involved Crashes by Severity

Crash Severity	Number of Bicycle-Involved Crashes
Fatal	2
Suspected Serious Injury	11
Suspected Minor Injury	71
Possible Injury	65
Not Injured	40
Total	189

LAREDO DISTRICT: Bicycle-Involved On-System Crashes (2017-2021)



Several of these concentrated crash areas are located on key segments that connect to international bridges, which are important connectors in the district for residents and visitors who travel across the border with a bicycle. As bikeways are implemented throughout the district, segments with higher concentrations of crashes will likely require greater degrees of protection and separation between modes.

Figure 15. Bicycle-Involved On-System Crashes, 2017 to 2021

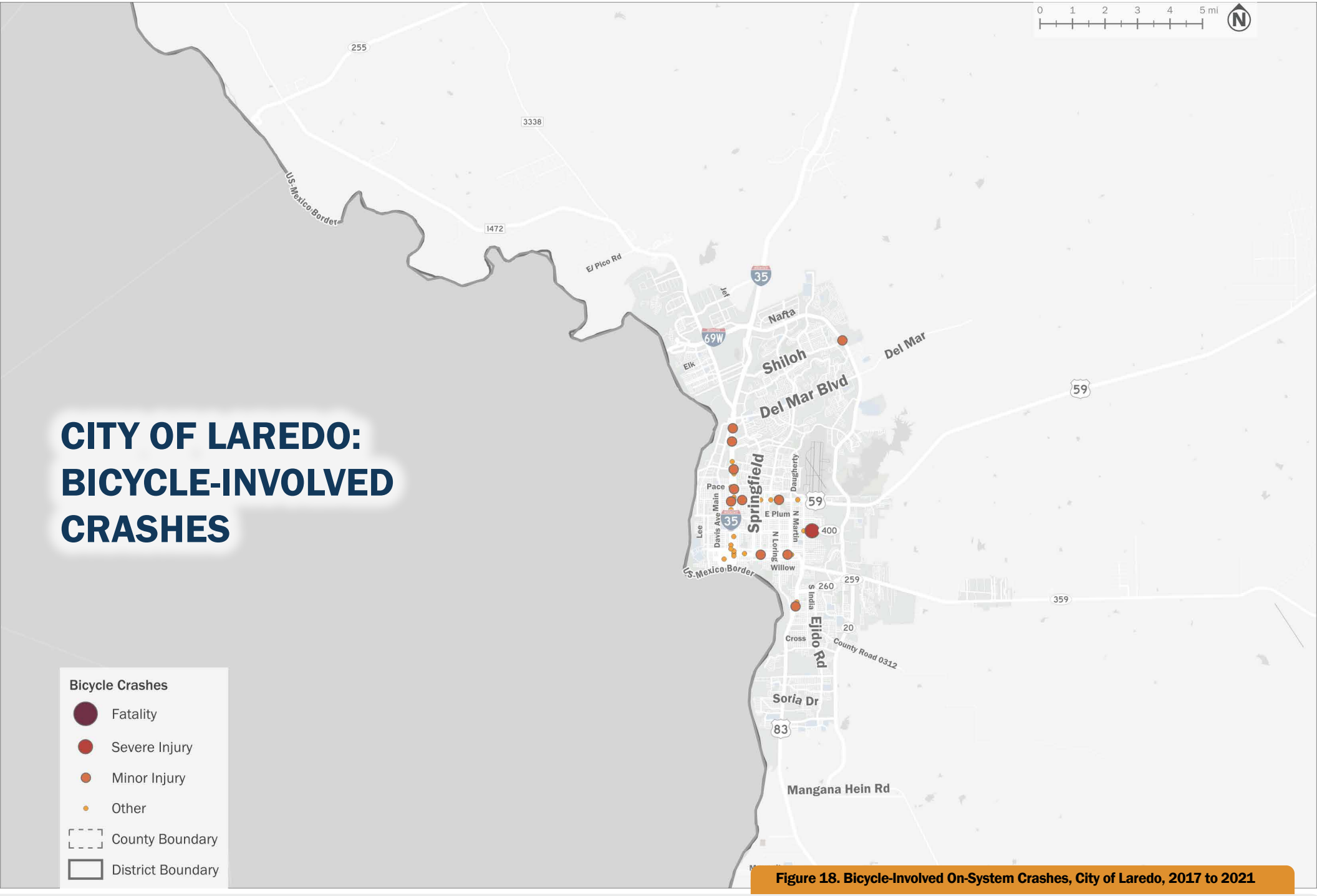


Figure 18. Bicycle-Involved On-System Crashes, City of Laredo, 2017 to 2021

Local Plans and Policies

Local plans and policies can help TxDOT and local agency partners identify complementary opportunities to invest in bikeways that connect to and from larger networks, regardless of road ownership. A number of local and regional plans within the Laredo District shape bicycling-related projects and policies. These largely focus on addressing gaps in the current network in the City of Laredo and Webb County where existing facilities such as the Chacon Creek Bike Trail do not yet connect to form a full bicycling network.

The Laredo and Webb County Area MPO Active Transportation Plan (ATP) outlines the most recent series of recommendations for the Laredo District, focusing on addressing gaps in the existing network. It also includes a 10-year ranked list of bicycle infrastructure projects, as well as a list of 20-year projects and a list of long-term, "build-out" projects. The plan prioritizes facilities based on connectivity, safety, comfort, access to underserved areas, and feasibility. While the ATP focuses on local and regional connections, it does propose a number of facilities that connect to and build off of existing on-system bicycle facilities within the Laredo District. Improvements are recommended to the existing separated bicycle lane along the Bob Bullock Loop/U.S. 59, extending it further north and south. Bicycle lanes are also proposed for the eastern portion of Saunders Street.

The Laredo and Webb County Area MPO ATP also builds upon the Viva Laredo Comprehensive Plan, which was completed in 2017. The plan's proposed bicycle network focuses on extending existing routes and connecting major destinations within the city, such as the Texas A&M International University campus. North of the city, the North Laredo Webb-County Transportation Planning Study has outlined future planned growth in roadway connections to accommodate increasing vehicle and truck traffic, as well as the continued residential population growth of the county. These plans include improved access to the SHS via connections to the I-35 corridor or to I-69W and recommend new bicycle routes and sidewalks.

The City of Del Rio's Comprehensive Plan, adopted in 2007, also recommends bikeways and hike/bicycle trails that better connect the city. It identifies, among other major destinations, the need to improve bicycling conditions near recreational and natural resources like the San Felipe Creek Trail and adjacent parks.

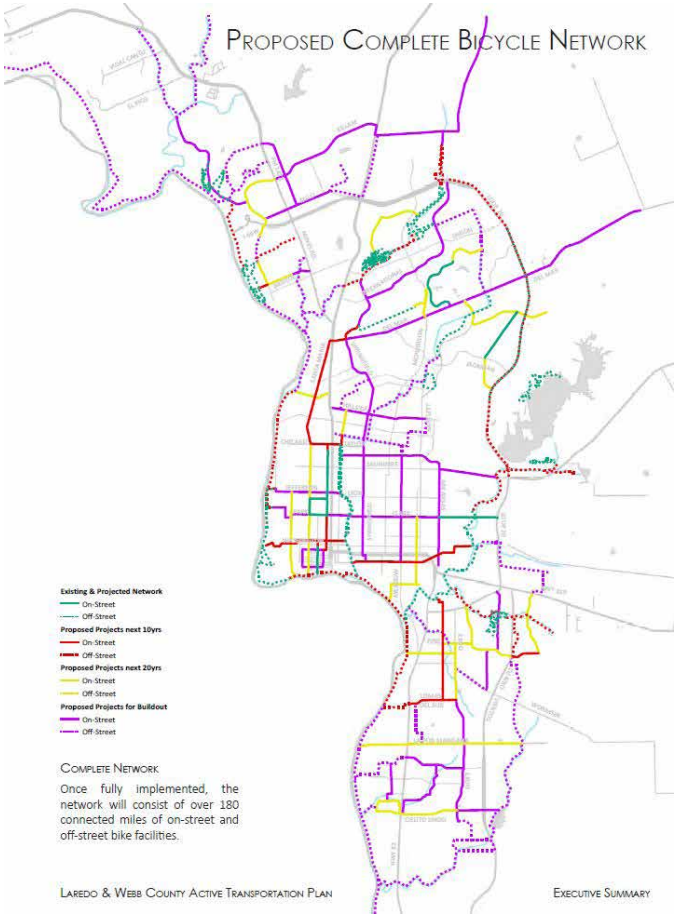


Figure 19. Proposed Build-Out of the Laredo and Webb County Area MPO ATP

FOUR
Needs Assessment

Defining Bicycling Needs

Geographic data from TxDOT and other public sources provide insight into places where on-system bikeways and roads may not meet the needs of people traveling by bicycle. These locations are classified into need types according to specific conditions that indicate the relevant bicycling-related needs. Some bikeway needs are mapped as segments of an existing route, while other types of needs are points representing intersections or other crossing locations. Where geospatial data on planned bikeway projects was available, such as for the Laredo and Webb County Area MPO ATP, planned projects were included in the needs analyses to identify where connections to planned local bikeways are most needed along on-system corridors. Because interstates and other limited-access facilities in urban areas are generally not intended for use by bicyclists, most need types apply only to on-system roads that are designed as at-grade arterials.

Types of Bicycle Needs

- **High-Stress Bikeway:** This analysis identifies at-grade segments of the on-system network where bikeways exist, but conditions will be stressful for most riders. It uses roadway data such as bikeway design, number of lanes, traffic volumes, and posted speeds to calculate a Bicycling Level of Traffic Stress (LTS) score of 1 to 4. A road segment that scores LTS 1 is considered comfortable for all users, while a road segment scored LTS 4 will likely be too stressful for all but the most experienced riders. A segment is considered a high-stress bikeway if the LTS score is 3 or 4.
- **No Bikeway:** This analysis identifies at-grade segments of the on-system network that do not have bikeway facilities or bikeable shoulders. A person riding along these roads would need to share a travel lane with vehicles or use sidewalks if available. While not all such locations are near places that generate or attract bicycle trips, they should be identified as routes that may not be bikeable for most users.
- **Gap Between Existing Bikeways:** This need type occurs where a gap exists between two bikeways segments along an at-grade route. A gap in a bicycle facility introduces stress into the riding experience, discouraging riders from taking a route that might otherwise serve them well.
- **Access to Schools:** This analysis identifies at-grade segments of the on-system network that may not meet the bicycling needs of students attending nearby schools. Within 2 miles of a K-12 school (where school districts do not typically provide school bus services), it identifies road segments without buffered or separated bikeways that would support safe and comfortable bicycle trips for young riders. Higher-education schools serve adult students who are typically able to ride longer distances and navigate a wider range of bikeways. This need type also locates road segments within 3 miles of a higher education school that do not have bikeways of any kind, including bikeable shoulders.
- **BTT Need:** BTTs are routes that TxDOT has recommended for inclusion in a statewide bicycle tourism network. They traverse urban and rural areas, which have different standards for how bicycle trips should be accommodated. In urbanized places, BTT needs are identified along routes with LTS scores of 3 or 4. In rural areas, BTT needs are identified where road shoulders are narrower than 8 feet (the standard the state has set for BTT routes with shoulder bikeways).

- **Lack of Crossing Opportunity:** Where intersections and grade-separated crossings are sparse, highways and other on-system roads become barriers for people who are trying to bicycle from one side of the highway to another. This need occurs on road segments where bicyclists must make long out-of-direction detours to find an opportunity to cross the highway.
- **High-Stress Crossing:** This need locates points on the on-system network where a crossing exists but people bicycling may find it uncomfortable. This version of the LTS analysis considers factors such as traffic volumes, type of traffic control, presence of a median island, number of lanes, and posted speeds. Crossings with an LTS of 3 or 4 are considered to be high-stress.
- **Water Crossing Need:** Waterways can act as natural barriers for all travelers, making bridges and other crossings critical to providing connected networks. This need type identifies points where a state-owned road crossing a stream or river does not provide a bicycle facility (and is not adjacent to a bikeable bridge on a frontage road). Because bridges can be more challenging and expensive to improve than other parts of the road network, it is important to determine whether a bridge project should include bikeways before a project is fully designed.
- **Locally Identified Needs:** Locally identified needs reflect the local knowledge of TxDOT, its agency partners, and the communities they serve. These segments and points indicate places where new or improved bikeways should be considered, often drawing on qualitative data and public input. Locally identified needs include bikeway networks; projects from local plans; or locations where TxDOT staff are aware of bicycling gaps, deficiencies, or community requests for improvements. TxDOT staff considered public survey input when determining locally identified needs.

TxDOT and the TWG reviewed the data-driven needs assessment and used local knowledge to add needs that had been missed or remove needs that are being resolved through another project.

Bicycle Needs in the Laredo District

Figure 20 illustrates an example location, demonstrating how multiple types of needs may be closely spaced or overlap, creating barriers to comfortable, safe bicycling in local communities

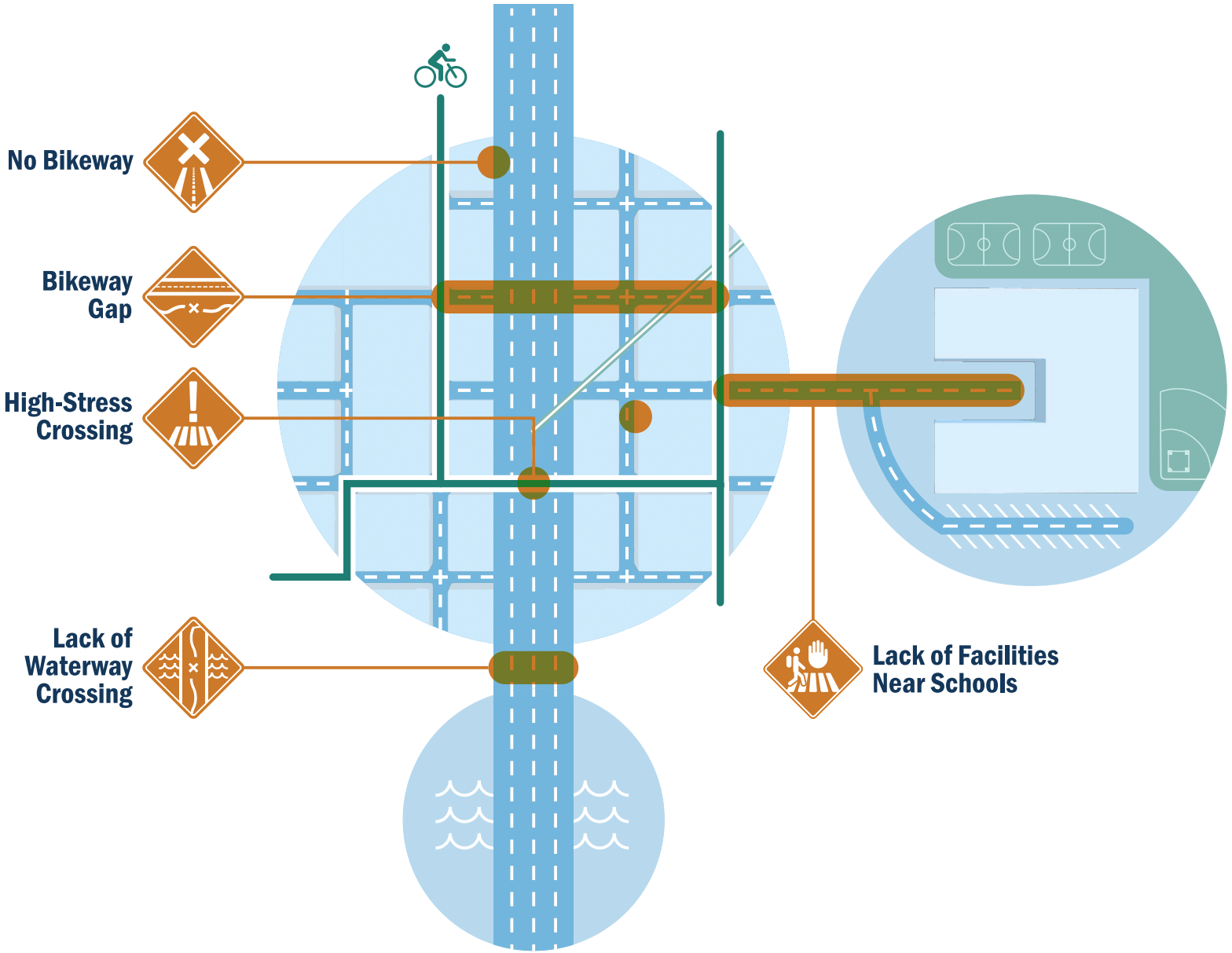


Figure 20. Illustration of Bicycle Need Types

The Needs Assessment Maps shown in Figure 21 visualizes these needs throughout the Laredo District. Overall, 76% of the SHS in the Laredo District exhibited at least one bicycling need. Consistent with the distribution of bikeways detailed above, “No Bikeway” was the most widespread need type, as the majority of TxDOT roadways in the district lack bikeable facilities. As a result, “Gaps Between Bikeways” (designated only where adjacent bikeways exist) was also a rare need type, occurring for only 0.3% of on-system roadways.

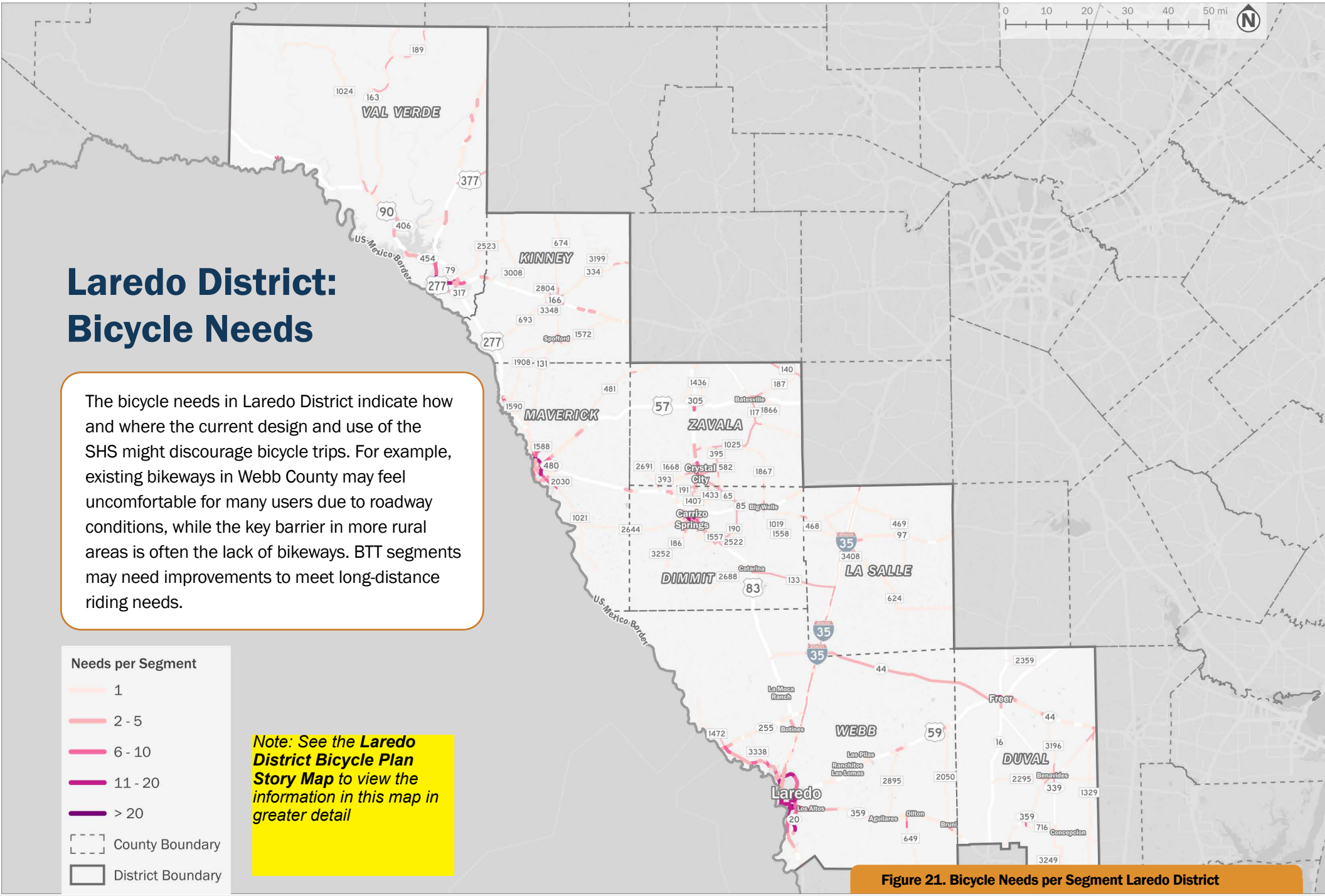
“Access to Schools” was a fairly common need type, as it captured most roadways in cities near school campuses. For example, U.S. 277 in Eagle Pass is a four-lane roadway that connects to multiple schools, such as Eagle Pass High School and Eagle Pass Junior High, creating a barrier for residents who would like to bike along the roadway to access the schools. As existing bikeways are less common in the district, most roadways within the relevant radius (two miles for grade school, three miles for higher education) qualified for inclusion in that category.

Need Type	Miles	Percent of On-System Roadways
High-Stress Bikeway	103.9	4.5%
No Bikeway	1,497.3	64.9%
Gaps Between Bikeways	7.5	0.3%
Access to Schools	273.2	11.8%
Bicycle Tourism Trail	204.4	8.9%
Lack of Crossing Opportunity	60.3	2.6%
Locally Identified Need	9.9	0.4%
Total	3,791.6	120.23%

Table 3. Laredo District Need Type Distribution

Laredo District: Bicycle Needs

The bicycle needs in Laredo District indicate how and where the current design and use of the SHS might discourage bicycle trips. For example, existing bikeways in Webb County may feel uncomfortable for many users due to roadway conditions, while the key barrier in more rural areas is often the lack of bikeways. BTT segments may need improvements to meet long-distance riding needs.



*Note: See the **Laredo District Bicycle Plan Story Map** to view the information in this map in greater detail*

Figure 21. Bicycle Needs per Segment Laredo District

FIVE

Bikeway Development Priorities

As discussed in the previous chapter, there are many locations in the Laredo District's on-system network that may require improvements to provide connected and comfortable bikeways and crossings. To understand what design and operational changes will best meet the needs of nearby communities and the traveling public, TxDOT will need to advance specific locations into project development following the completion of this plan. Project development will allow TxDOT to evaluate options and select solutions based on detailed analysis and local public engagement, which are difficult to achieve in a district-wide planning effort.

To make the most of limited public funding, the project team developed a prioritization process to identify when and how the various bicycling need locations within the district should advance to project development. Prioritizing segments of the on-system network allows the Laredo District to apply for and target funding towards improvements that will have the most impact. By comparing the potential benefits that improved bikeways and crossings could offer at different locations, TxDOT was able to identify where improvements could do the most to increase safety, improve system performance, and meet TxDOT's other statewide goals from the 2022 Strategic Plan. This prioritization process will help TxDOT pursue competitive funding opportunities and support projects that provide safety, economic, health, and other benefits to district residents.

It is important to remember that this plan prioritizes locations where bicycling needs exist; it does not recommend solutions for those needs, which would require more detailed study and local engagement than a districtwide plan can offer.

Goals for Biking in the Laredo District

(Adapted from the TxDOT 2023 to 2027 Strategic Plan goals)

1. **Promote Safety** – Champion a culture of safety.
2. **Deliver the Right Projects** – Implement effective planning and forecasting processes that deliver the right projects on time and on budget.
3. **Focus on the Customer** – People are at the center of everything we do.
4. **Foster Stewardship** – Ensure efficient use of state resources.
5. **Optimize System Performance** – Develop and operate an integrated transportation system that provides reliable and accessible mobility enabling economic growth.
6. **Preserve Our Assets** – Deliver preventive maintenance for TxDOT's system and capital assets to protect our investments.

Prioritization Methodology

Segmenting the System

The first step in the prioritization process was to divide the on-system network in the Laredo District into segments 0.25 mile to 2 miles in length, which is the right scale for future project development efforts. Segments generally start and end at clear landmarks that will be familiar to local community members, such as highway interchanges and at-grade intersections. Segments that contain at least one bicycling need proceeded into prioritization

Using Prioritization Measures to Score Segments

As a second step, each segment on the network was scored based on a range of prioritization measures that align with the goals shown in Table 4. Some of these measures look at characteristics of the route itself that influence bicycling conditions, such as posted speeds or the presence of an existing bikeway. Other measures consider the characteristics of the surrounding community, such as the segment's proximity to schools or whether people are making short trips there today that could be accomplished by bicycling. Some measures identify opportunities to use public funding efficiently by combining bikeway improvements with other upcoming projects, such as repaving, signal replacements, or bridge repair.

Assigning Weights Based on Local Values

To reflect local values and preferences, the scoring calculations incorporated input from TxDOT district staff, members of the TWG, and members of the public who participated in online surveys. First, the statewide project team selected a set of goals and measures that every TxDOT District Bicycle Plan will use in prioritization. While most measures will be used by all districts, the list included a few optional measures that districts can choose to use if locally relevant. By using a consistent set of goals and measures in each TxDOT District Bicycle Plan, TxDOT ensures that all districts consider the same information.

The Laredo District set customized weights for each goal and measure to reflect local values and input from stakeholders and the public, as well as the unique priorities of the district (Table 4). This allowed the analysis to elevate the benefits that are most important to the district's partners and communities.

Goal Area	Weight	Measure Definition
Promote Safety	**20%**	• Crash locations where people walking or bicycling were injured or killed • Proximity to K-12 schools, recreation centers, and community centers serving youth and older adults • Higher posted speed limits
Deliver the Right Projects	**20%**	• Number of bikeway needs present on a segment • Number of programmed upcoming TxDOT projects • Improvements that could close gaps between existing bikeways
Focus on the Customer	**10%**	• Locations with higher numbers of public comments in winter 2022 to 2023 TxDOT District Bicycle Plan survey
Optimize System Performance	**20%**	• Areas where people make more trips of 3 miles or less • Near local destinations such as supermarkets, libraries, healthcare, universities, and parks • Connects to existing and planned local bikeways • Connects to transit stops and stations
Preserve Our Assets	**20%**	• Bridge quality • Pavement quality
Foster Stewardship	**10%**	• Areas with greater densities of residents • Areas with greater densities of jobs • Near communities in need of affordable transportation options • Near communities exposed to high-crash and high-traffic corridors • Near communities with high rates of health issues like asthma and heart disease • Near historic destinations like museums and landmarks

Table 4. Weighing Factors for the Laredo District

Geographic Equity

TxDOT districts have land uses and highways that span communities of many sizes, from major cities to small communities and large rural areas. Several prioritization measures had the potential to elevate dense urban areas above other types of communities. To highlight the high-benefit locations across communities of all sizes, the project team created a geographic-equity methodology that corrected for potential bias in the analysis. Segments of the highway network were sorted into groups based on the population size of the surrounding area. After segments received initial prioritization scores, the analysis compared the range of scores achieved by segments that were located within similarly sized communities. By identifying the highest scoring locations within each community size grouping, this geographic equity adjustment elevated high-benefit locations for communities of all sizes.

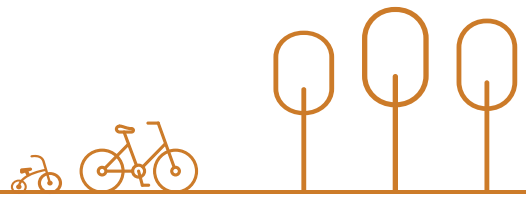
Population Size Categories Used to Apply Geographic Equity Analysis:

- Rural (under 2.5K)
- 2.5-10K
- 10-25K
- 25-50K
- 50-100K
- 100-250K
- 250-500K
- 500K+

Refining Technical Analysis with Local Knowledge

The Laredo District staff reviewed the draft prioritization results and shared them with the TWGs, CNWGs, and the public. After considering the feedback they received, they then refined the prioritization results through two types of adjustments:

- Data-driven adjustments: Changing goal and measure weights to reflect local values more accurately.
- Qualitative adjustments: Manually reassigning a specific location to a different priority category to reflect public input, partner support, or knowledge of opportunities and constraints not fully captured by the available data.



Bikeway Development Priority Categories

The following maps show the Laredo District's priority locations for improving bicycling conditions where needs exist. These priority categories will guide how and when TxDOT develops and funds bicycle projects on its highways.

Improvement Through Other Projects	Proactive Improvement	Constrained Corridor	High-Priority Improvement
Percent of Laredo District need segments assigned to this category: 85.4%	Percent of Laredo District need segments assigned to this category: 13.8%	Percent of Laredo District need segments assigned to this category: 0.1%	Number of Laredo District need segments assigned to this category: 0.7%
Description: Locations where bikeways should be improved when another project is planned in that location.	**Description:** Locations where the benefits of improving bikeways merit standalone development of a bikeway project, with funding opportunities in mind	**Description:** Locations identified as high priority but are known to have significant barriers to improvements such as ROW limitations, utilities, lack of local support, etc.	**Description:** Locations where bikeways should be improved as soon as is feasible, due to intensity of bicycling needs and potential benefits
Why this category? In every state, projects like reconstruction, rehabilitation, and maintenance create cost-effective opportunities to support bicycling. With limited public dollars available to meet the needs of all travelers, locations where bicycling needs are less urgent may wait for another project to provide an opportunity.	**Why this category?** Federal programs are expanding available funding for improving bikeways. Where prioritization shows that there are high benefits to meeting bicycling needs, TxDOT and its partners should develop a preferred design solution they can use to request funds or apply for grants.	**Why this category?** This category designates locations that score highly to indicate that it is a high-priority location. However, due to known challenges, improvements are not likely to be advanced in the near term.	**Why this category?** Between high-scoring locations within the district, a few rose to the top through a combination of technical analysis and public feedback. These are places where communities, agency partners, and TxDOT feel it is most important to advance bikeway improvements in the near term

Table 5. Bikeway Development Priority Categories

Taken together, these three categories allow TxDOT to focus near-term efforts to improve bikeways where they will do the most good, while maintaining awareness of the opportunities provided by expanded federal funding and efficiencies offered by other nearby projects. For more information on funding sources and implementation, see Chapter 8.

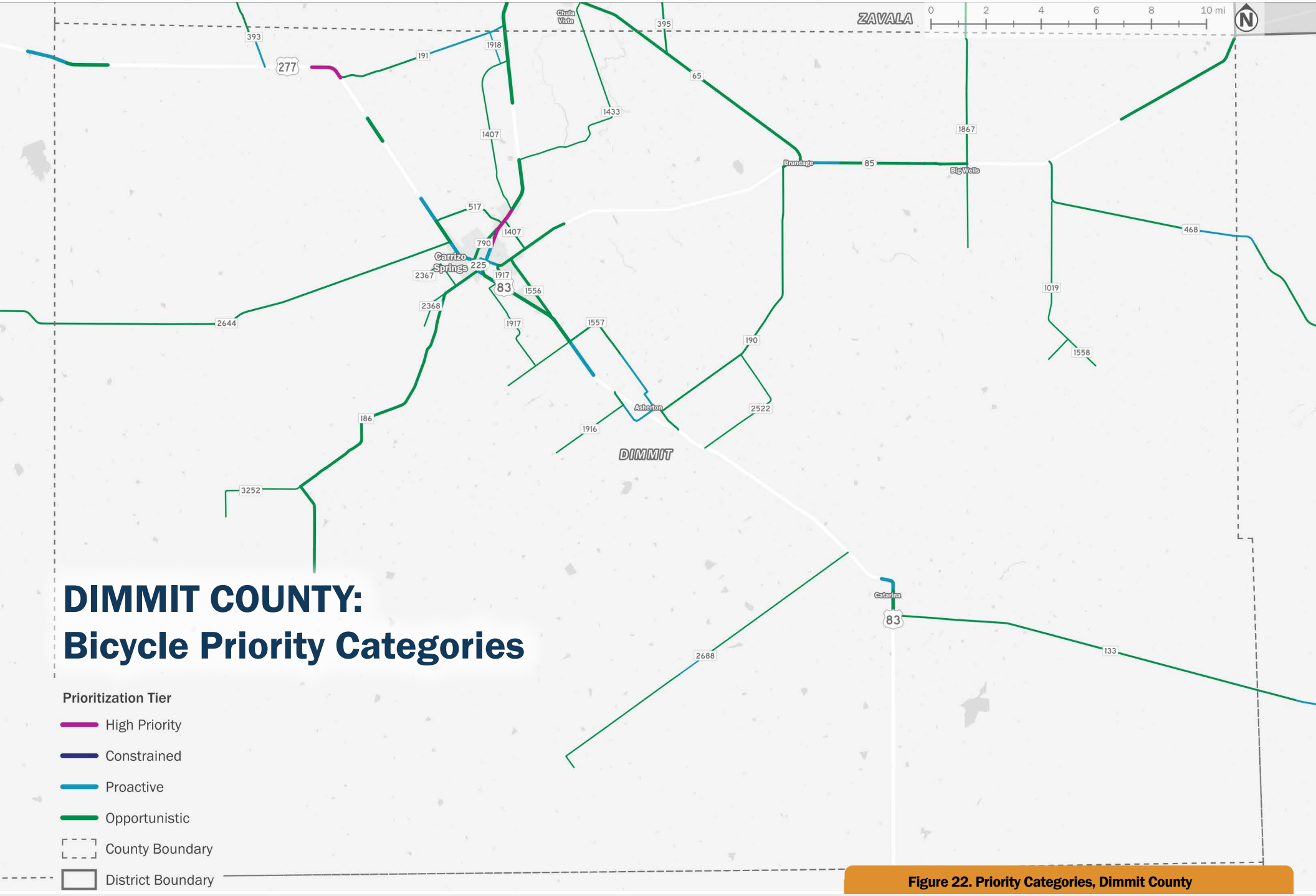


Figure 22. Priority Categories, Dimmit County

DUVAL COUNTY: Bicycle Priority Categories

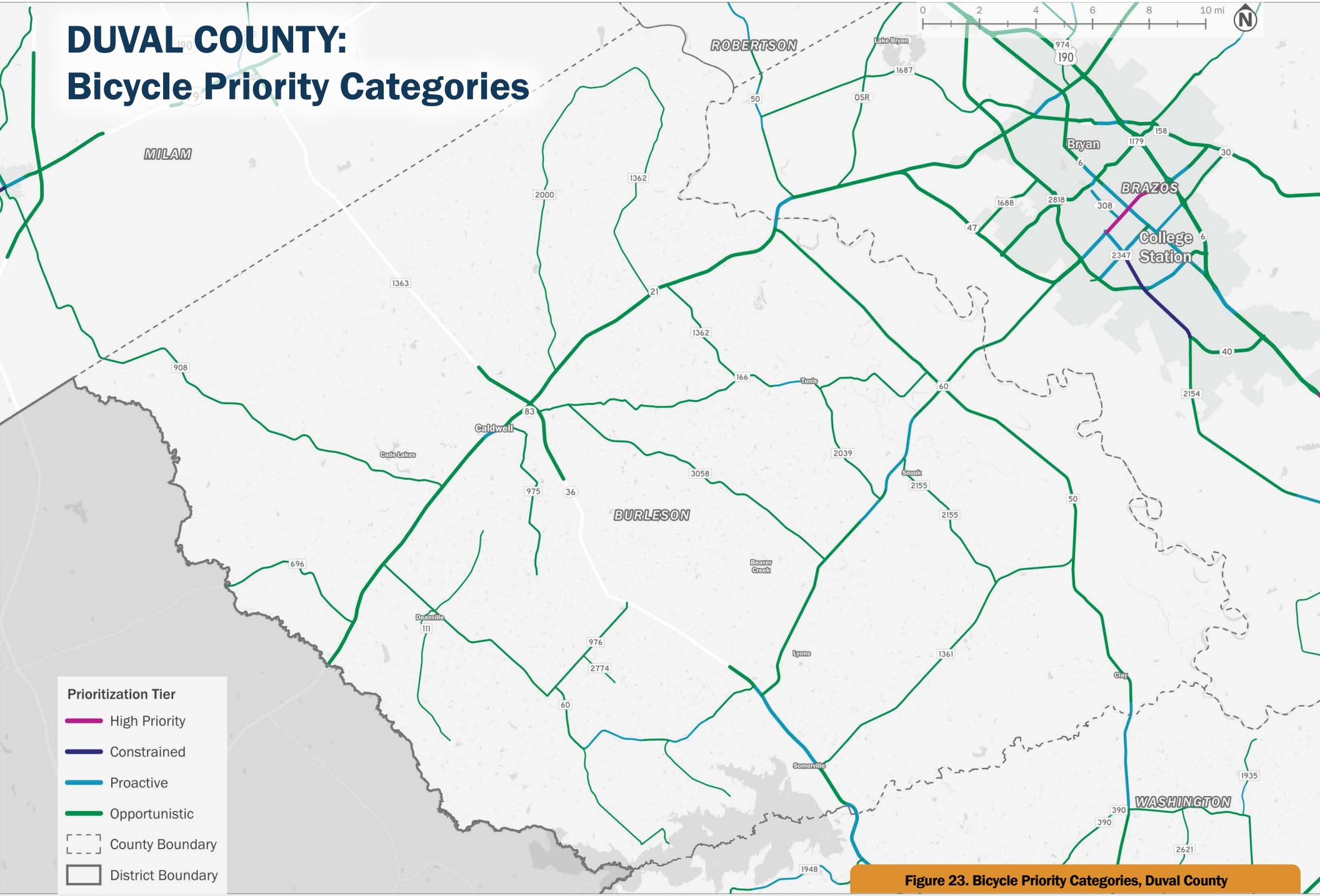


Figure 23. Bicycle Priority Categories, Duval County

KINNEY COUNTY:
Bicycle Priority Categories

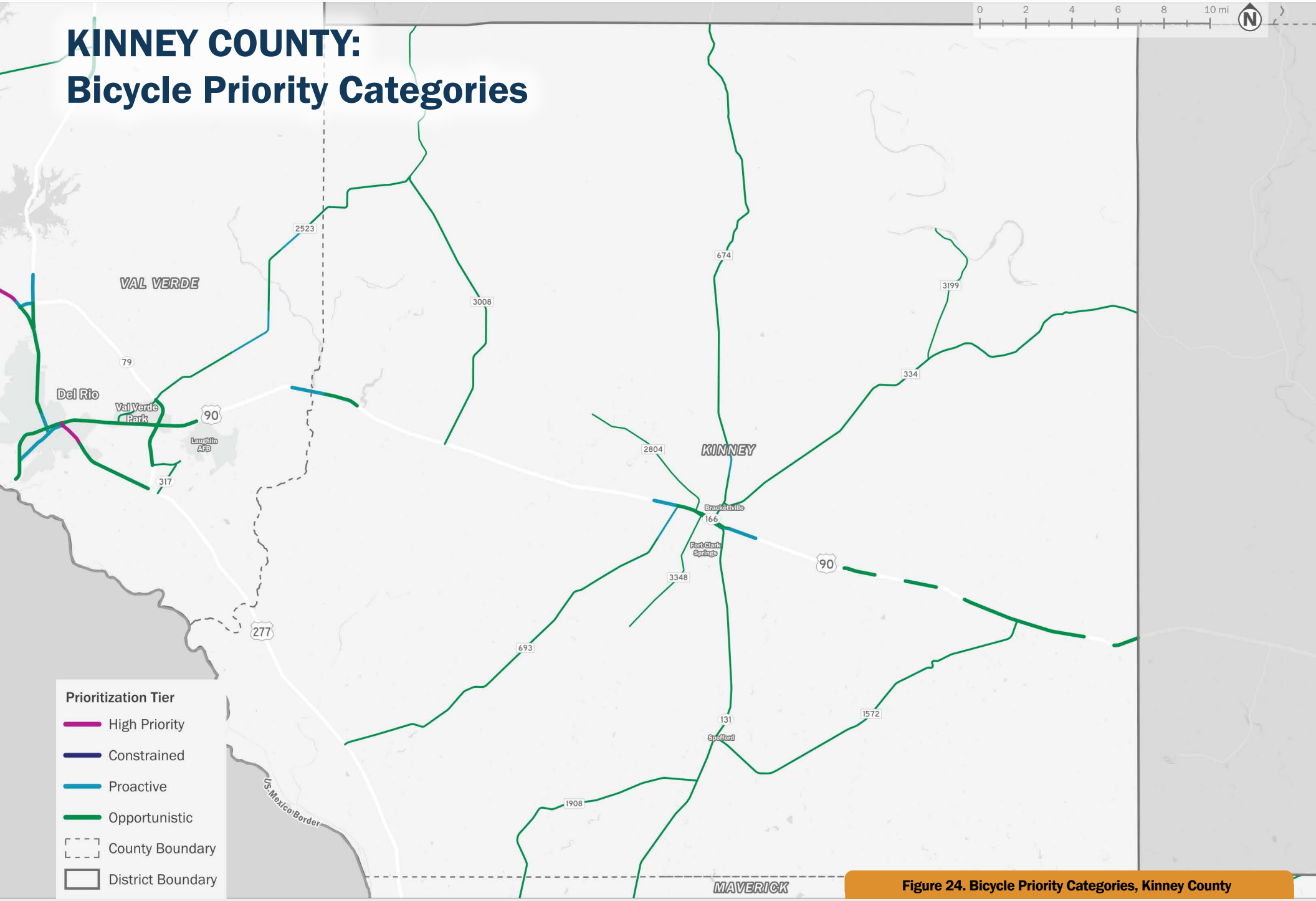


Figure 24. Bicycle Priority Categories, Kinney County

LA SALLE COUNTY: Bicycle Priority Categories

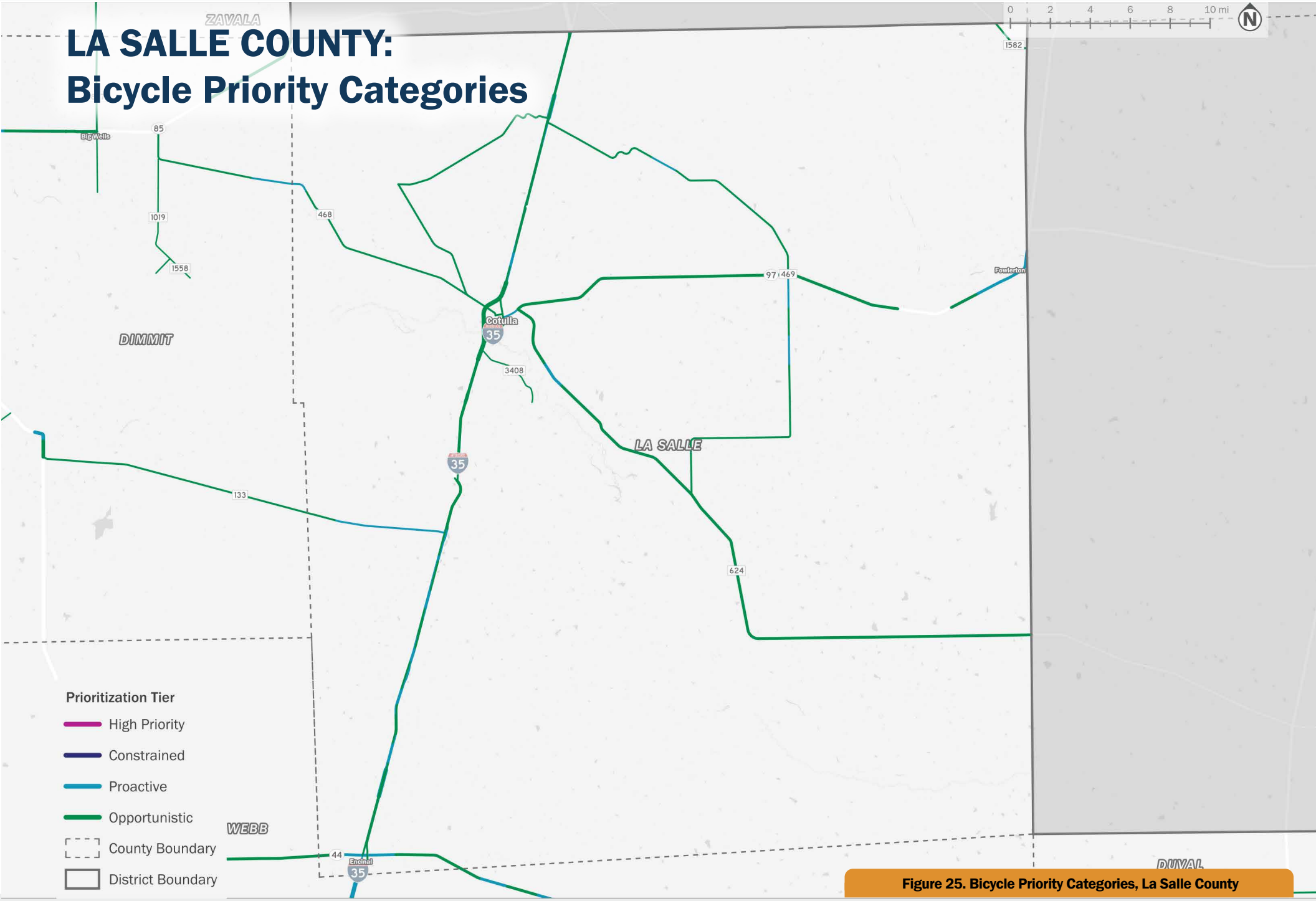


Figure 25. Bicycle Priority Categories, La Salle County

MAVERICK COUNTY: Bicycle Priority Categories

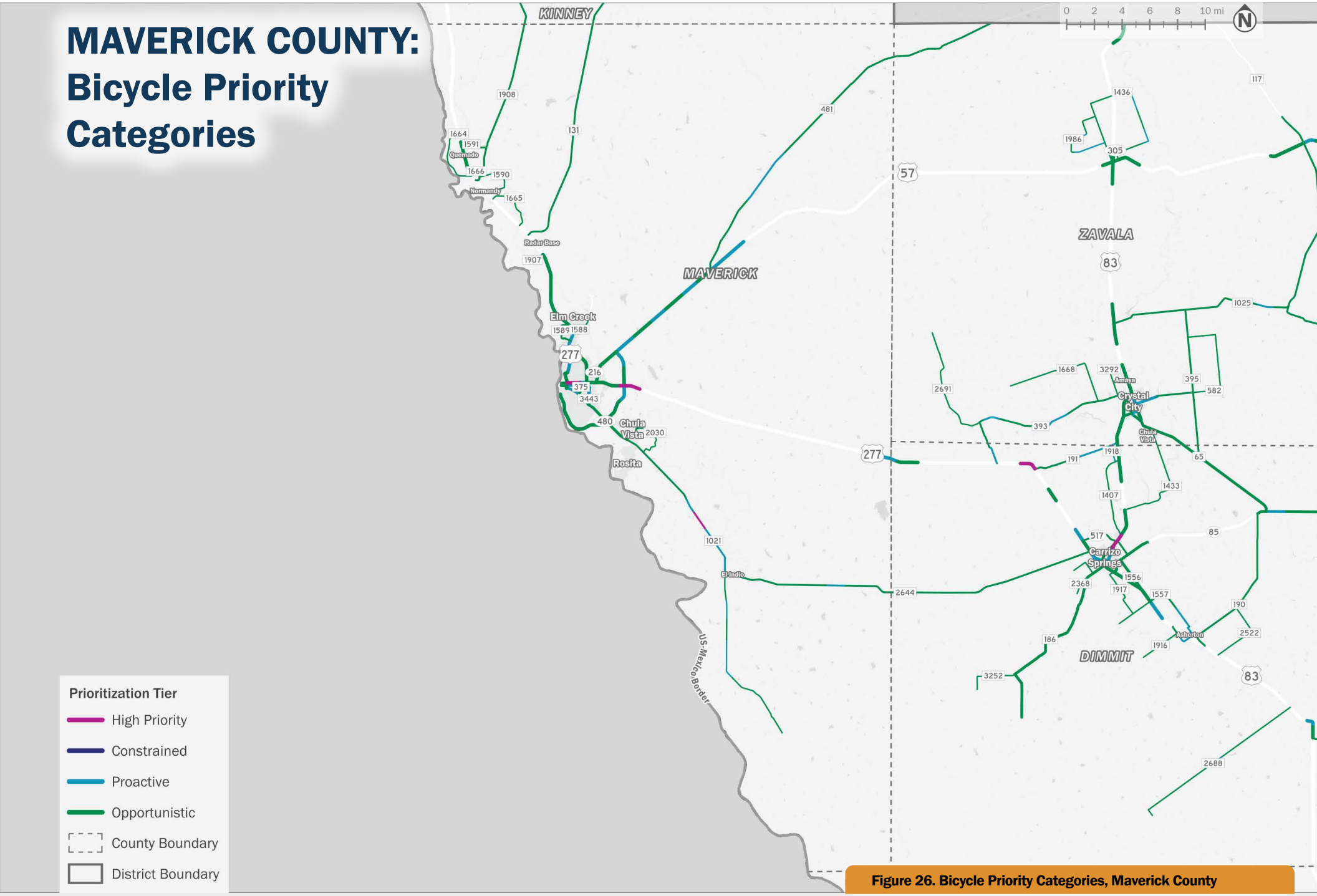


Figure 26. Bicycle Priority Categories, Maverick County

VAL VERDE COUNTY: Bicycle Priority Categories

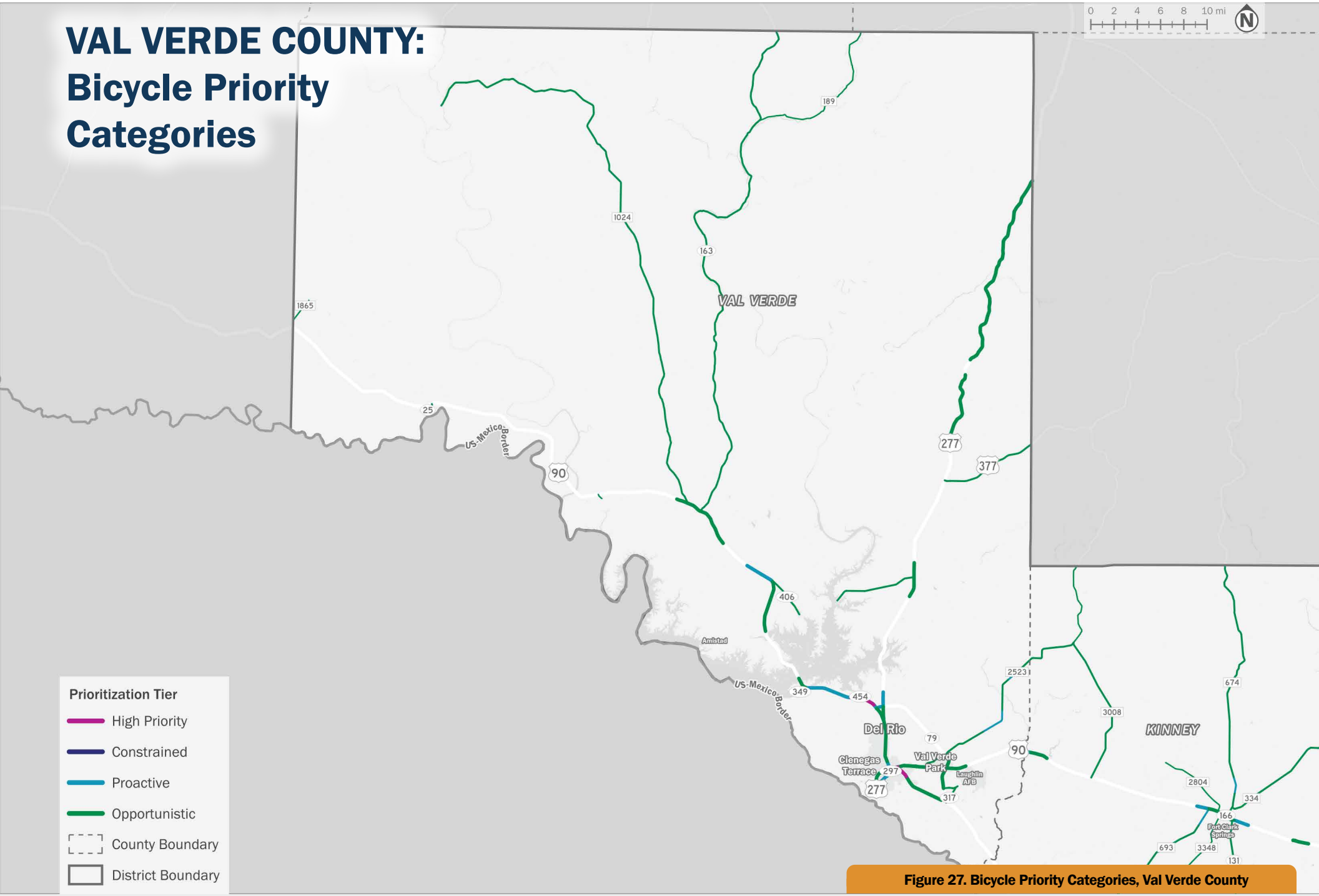


Figure 27. Bicycle Priority Categories, Val Verde County

WEBB COUNTY:
Bicycle Priority Categories

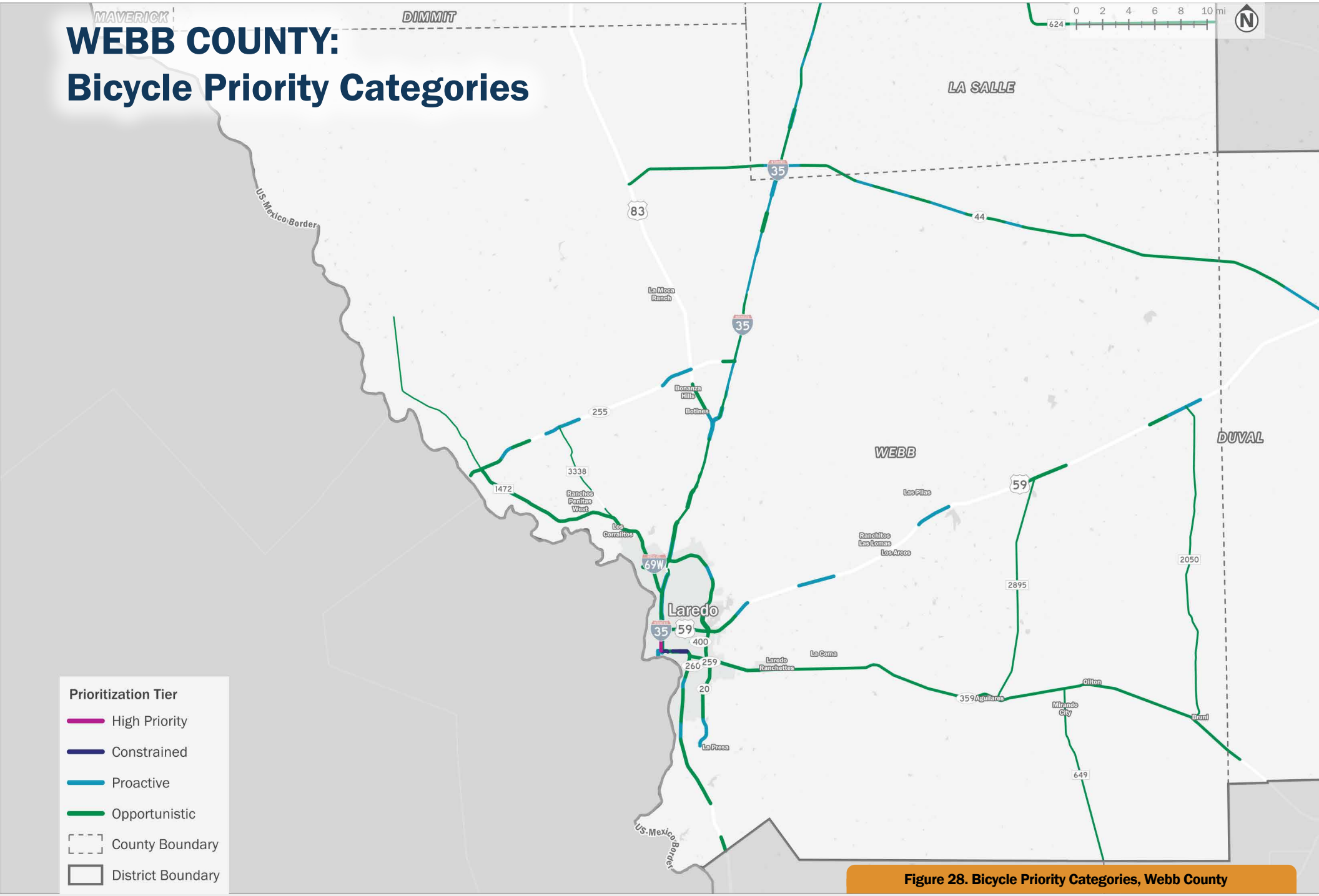


Figure 28. Bicycle Priority Categories, Webb County

Within Maverick County, two high-priority segments exist near Eagle Pass. One is located on US 57 (Garrison Street), serving a multitude of destinations in the center of the city, such as Maverick County Park. It is also the primary connection to the Camino Real International Bridge crossing to Piedras Negras, Mexico, across the Rio Grande. The roadway in this section is five lanes with sidewalks on both sides, but it not have abikeable shoulder area. Further east of Eagle Pass, US 277 (Main Street) is a high-priority segment with five lanes and wide shoulders. It provides direct access to the Eagle Pass Independent School District Student Activity Center. South of Eagle Pass, a short section of Farm to Market Road (FM) 1021 is designated high priority near the Maverick County Landfill.

In Carrizo Springs, one high-priority segment is located on US 83, which also functions as a main street for the town. The segment is five lanes with a shoulder and it serves a number of local destinations such as grocery and retail stores. The segment is also where land uses along the highway begin to change for drivers traveling southbound, introducing more intersections and driveways that front the fast-moving roadway. Northwest of the city, a portion of US 277 is also designated high priority near the intersection with FM 191.

In Del Rio, a high-priority segment is located on US 277 at the intersection with US 90 (East Gibbs Street). Here the roadway has two lanes in each direction, with no shoulder. It connects to the center of Del Rio via a abridge above Romanelli Memorial Park, which has a short shared-use path that intersects with the highway. North of Del Rio, a segment of US 90 is identified as a high-priority segment in the Lake View residential area. The highway functions as the key route connecting the neighborhood to Del Rio, and it hosts several commercial businesses.

SIX
Bicycle Tourism Trails Network

Bicycle Tourism Trails Study

In 2018, TxDOT conducted the BTT Study to identify a statewide network of bicycling routes suitable for long-distance riders that would also provide local access within and between communities. Bicycle tourism is defined as any travel-based activity involving a bicycle, such as bicycle backpacking, long touring rides, or even recreational day rides. The study sought to develop a network of regional tourism trail routes, use research to establish bicycle-related tourism economic benefits, and foster implementation of longer routes that require coordination and partnership between neighboring regions. Long-distance recreational routes that connect to other states were also proposed to be considered as candidates for future U.S. Bicycle Routes. The study development process proposed and prioritized a network of bicycle tourism routes with guidance from a statewide advisory committee, data-driven considerations of roadway suitability, and local and regional refinement from stakeholder groups.

Figure 29. Texas Bicycle Tourism Trails Study (2018)

This statewide network, called the BTT Example Network, presents a possible vision for tourism trails across Texas. It identified three scales of bicycle tourism routes:

- Cross-state spines, which link major urban areas and inter-state bicycling routes.
- Connecting spurs, which link major Texas and regional destinations.
- Regional routes, which provide more local connections between smaller cities.

Refining Laredo's Bicycle Tourism Routes

As part of the District Bicycle Plan development process, the project team took advantage of a more nuanced set of data on bicycling needs and conditions to review and refine the Example Network Routes for the Laredo District. First, the project team used the needs analysis to identify portions of the BTT Example Network with significant barriers, such as high-stress locations or bridges with no bikeways. These were places where it was worth looking for alternative routes that avoided barriers or provided more comfortable connections. By mapping recreational destinations (such as parks, campgrounds, and open spaces) as well as places where travelers could get services (such as community centers and groceries), the team considered where the BTT Example Network could be adjusted to improve access to these resources. New routes were selected and existing routes adjusted where the team found opportunities for better connections to destinations that avoided difficult barriers. Site visits to select potential BTT routes, such as State Highway (SH) 85 approaching Carrizo Springs, were conducted to review conditions for suitability and existing bicycling comfort. Proposed BTT refinements were reviewed by the TWG, TxDOT District staff, and the public, then adjusted to best align to local priorities and projects.

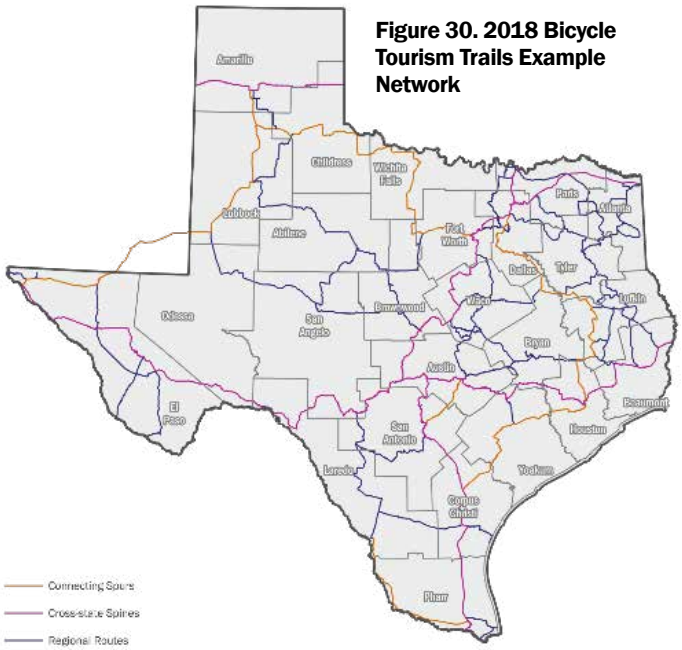


Figure 30. 2018 Bicycle Tourism Trails Example Network

Laredo District Proposed Refinement

The Proposed BTT segment within the Laredo District addresses connectivity to the northwestern cities and destinations in the district. The 2018 BTT Example Network included a broadly north-south route through the district that connects to Uvalde in the north and McAllen to the south, but other areas of the district lacked connections to the BTT network.

Bicycle Tourism Trails Refinement Map

Figure 31 illustrates the refinement proposed to the BTT Example Network in the Laredo District. The proposed addition would connect northern communities such as Del Rio and Eagle Pass more directly to the BTT Example Network. One key aspect of the refinement is that it creates a route from the western side of the district along the Rio Grande to the Amistad National Recreation Area (ANRA). As the BTT prioritizes regional recreational and natural destinations, the ANRA represents the largest destination for outdoor recreation in the district. Prior to the refined route addition, it was served only by an east-west route that connected to Terrell and Edwards counties.

From the ANRA, the route travels along US 277, broadly paralleling the Rio Grande between Del Rio and Eagle Pass. Over this corridor, it serves multiple local destinations such as creeks and small ranches. The route is also notable for connecting to international bridges at both Del Rio and Eagle Pass. From Eagle Pass, the route travels east along US 277 to Carrizo Springs, where it connects to the BTT Example Network route via SH 85.

Some challenging conditions do exist on portions of the refined route. While US 277 does have wide shoulders for much of its length, it also has intermittent passing lanes. In those segments, a lane is added in one direction, narrowing the outer shoulders to widths of about 4 feet, less than the threshold for comfortable bicycling. However, plans exist to upgrade US 277 to a divided interstate, providing an opportunity to create a comfortable long-distance facility such as a shared-use path as the route is improved. Further bikeway improvements such as wide shoulders are also important to prioritize where the route passes through Del Rio, Eagle Pass, and Carrizo Springs.

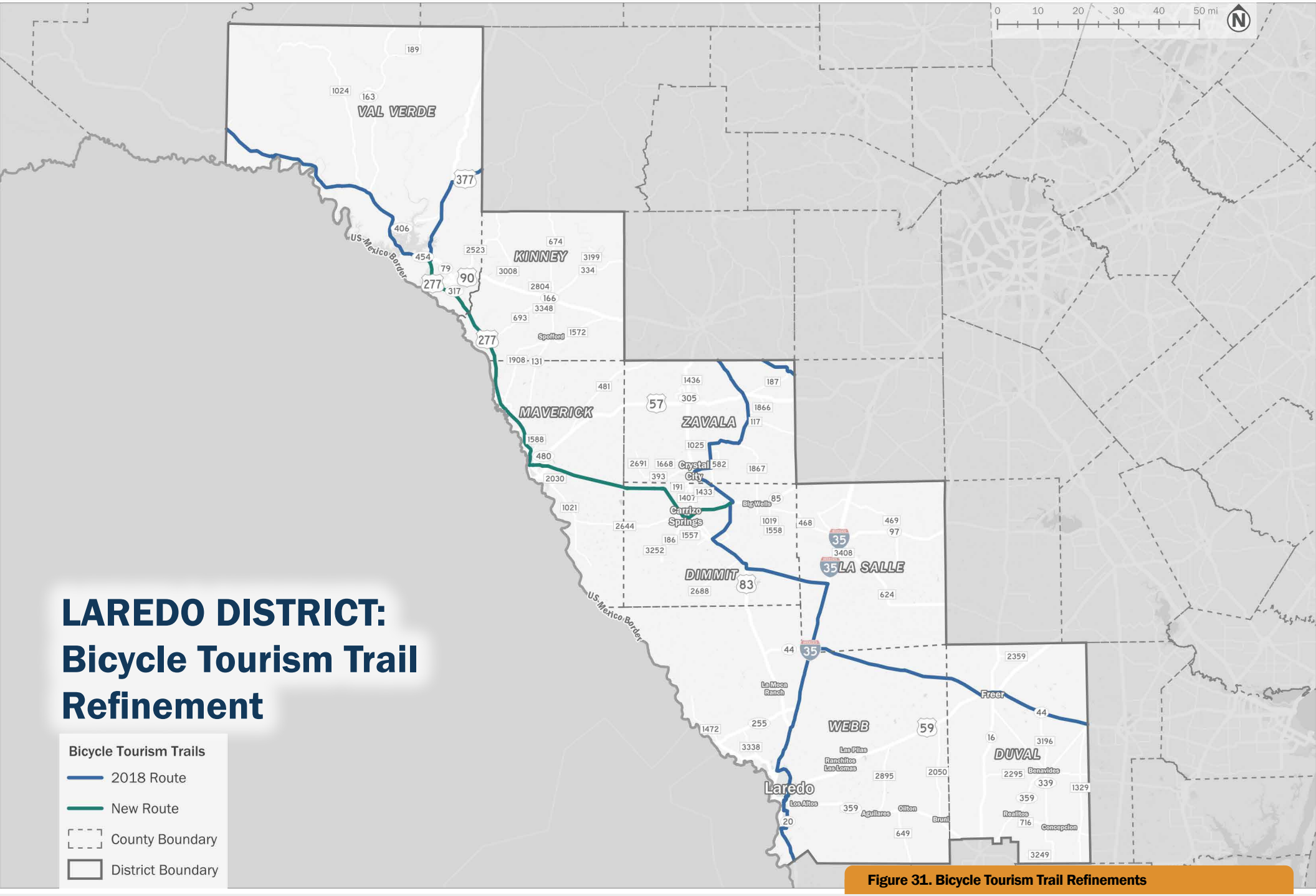


Figure 31. Bicycle Tourism Trail Refinements

Seven

Bikeway Functions and Design Selection

Bikeway functions are the last component of the planning resources produced in the Laredo District Bicycle Plan. Using geographic data, the project team assessed who might want to bicycle along different parts of the on-system network based on nearby destinations and travel activity. Different groups of users benefit from different design approaches – for example, a child may need a very-protective bikeway to safely ride to elementary school, while someone on a multi-day bicycle camping tour may be satisfied with a wide and well-paved road shoulder.

Bikeway functions provide useful guidance when initiating a project and selecting an appropriate bikeway design. They are also useful for design decisions around separation, width, intersection improvements, and maintenance. The Bikeway Design User Guide, described on page 57, is a detailed decision-making tool that describes how designs should adapt to the needs of different users and the surrounding environment.

Bikeway Function Categories

Figure 32 shows how different state-owned routes serve different types of users based on nearby destinations and how people travel in the area today. Proposed functions were developed through spatial analysis then refined by TxDOT staff using feedback from agency partners and the public. The bicycling function categories are:

- **All-Ages Bikeway**: Routes near community destinations serving children, older adults, or people with disabilities. These routes need more separation and protection so vulnerable users can bicycle safely and comfortably.
- **Daily-Travel Bikeway**: Routes in urbanized areas, which contain more closely spaced destinations. These routes should be designed to support frequent bicycling use so that people can make short trips to meet daily needs by bicycling.
- **Long-Distance Bikeway**: Routes that are popular for recreational riding and bicycle tourism, or that connect destinations that could attract longer-distance riders. These routes should be designed to serve experienced bicyclists as well as families on adventures.
- **Basic Bikeway**: Routes where only occasional bicycling is expected based on nearby population and land uses and where a basic design may be enough to meet occasional needs.

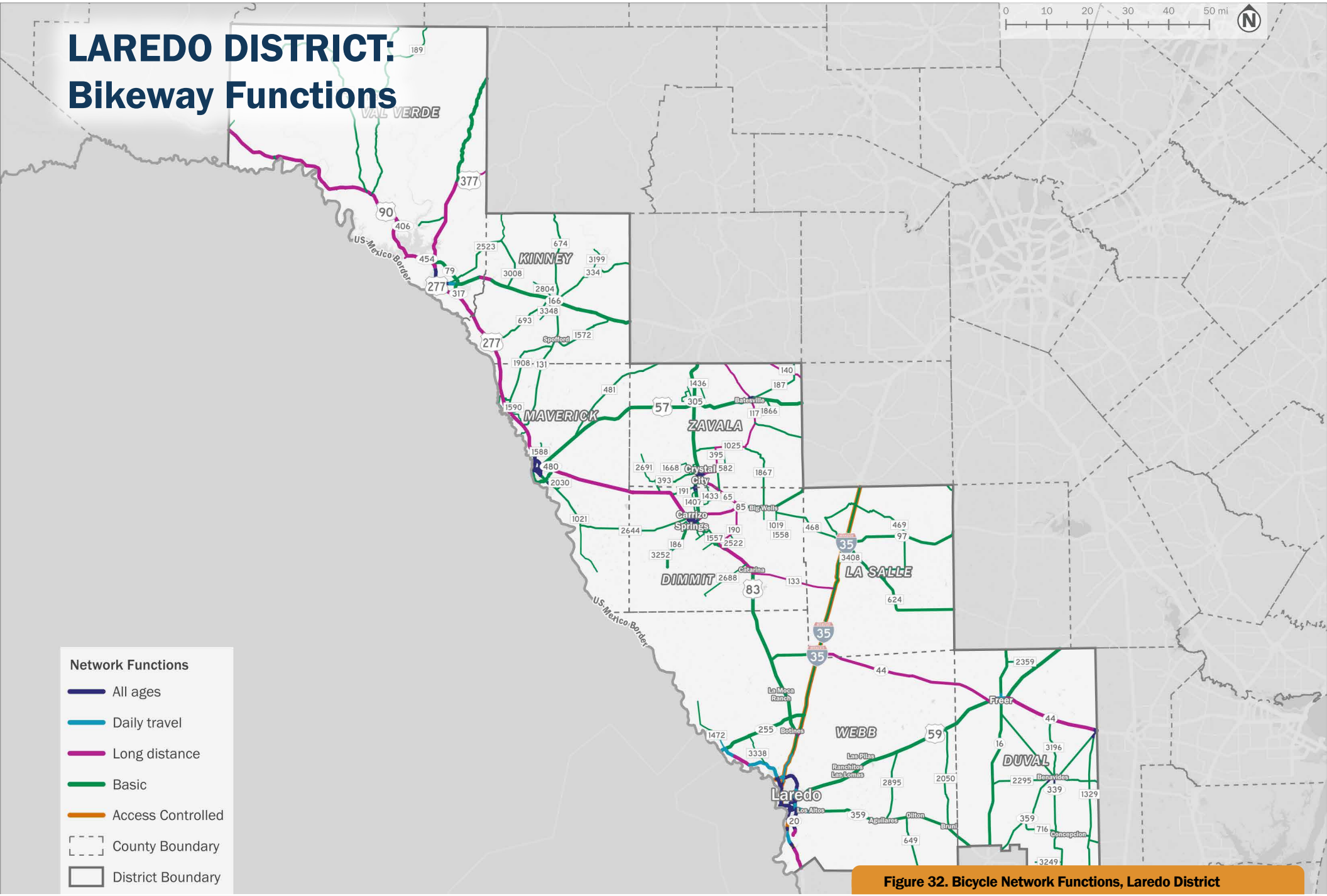


Figure 32. Bicycle Network Functions, Laredo District

Throughout the Laredo District, all-ages bikeways are predominately located within the cities and smaller towns on roadways that most directly serve local destinations such as schools and community centers. Given the wide range of ages, and abilities of riders who use these facilities, all-ages bikeways within cities and towns should accommodate a range of comfort levels.

Daily-travel bikeways are less common in the district due to there being relatively few highway segments in urbanized areas that are not near all-ages community destinations. In Webb County, FM 1472/Mines Road is designated a daily-travel bikeway. It connects a number of neighborhoods on the northern edge of Laredo, serves industrial and shipping centers, and will allow residents to access daily errands and commute trips via bicycle.

Long-distance bikeways occur along the BTTs Example Network in the Laredo District. These segments that are likely to serve long-distance recreational riders. This includes SH 44 between Encinal and Freer, a two-lane highway that connects to local ranches as it passes through the rural portions of Webb County to Duval County.

Many other on-system roads outside of cities and towns have been identified as basic bikeways, such as SH 359 east of Laredo. Here, low population density and rural land uses suggest that few riders are likely to ride on the two-lane highway, but design elements should provide for the safety of occasional riders.

Bikeway Functions

Figure 33. Bikeway Function Identification Methodology

TxDOT has recently updated its Roadway Design Manual22 to match new national standards and best practices for developing bikeways. While the Laredo District Bicycle Plan was under development, the project team created a Bikeway Design User Guide to help TxDOT staff, agency partners, and the public consider what bikeway is the best fit for their location. It uses visuals and plain language to explain how to use community context and the Roadway Design Manual to design better bikeways and overcome design challenges.

Selecting and designing the appropriate bikeway requires answering many questions, such as:

- **What** is the need for a bikeway at this location?
- **Who** is the target user?
- **What** is the land use context?
- **What** is the roadway context?

The Laredo District Bicycle Plan and the data it produced provide a foundation for answering many of these questions.

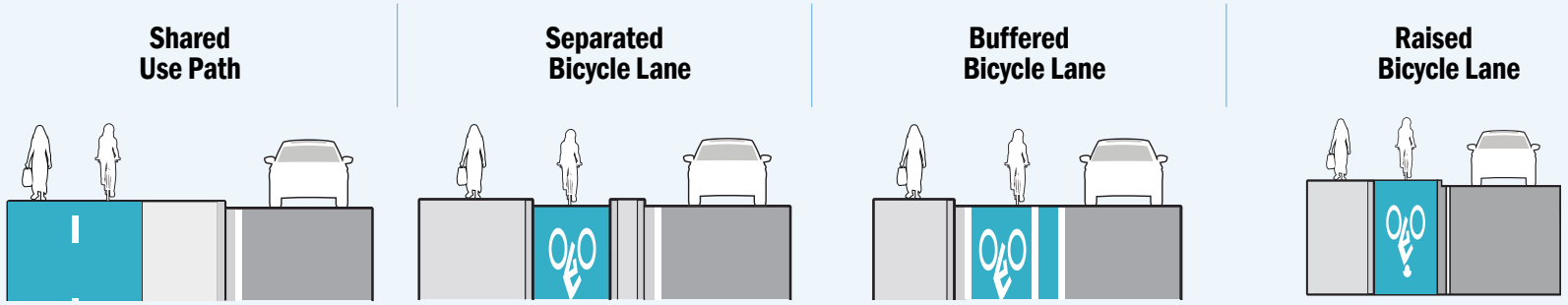
22 Texas Department of Transportation, Roadway Design Manual Section 6.4, http://onlinemanuals.txdot.gov/txdotmanuals/rdw/rdw.pdf.

Bikeway Types

There are several bikeway facility types to choose from. The land use and roadway context, bikeway function, and target design user should guide planners and designers to the ideal bikeway type.

Bikeway Types

Different bikeway types serve different target design users. Section 6.4.4 of the Roadway Design Manual describes each bikeway type, applicability, and design considerations.



Shared-use paths are shared by pedestrians, bicyclists, and micromobility users. They can be located between the roadway and the ROW line or on an independent alignment with their own ROW. When located along a roadway, they are separated from vehicular traffic by a curb and buffer space. Shared-use paths may be applicable in urban and rural areas.

Separated bicycle lanes are located between vehicles and pedestrians. They are buffered from adjacent vehicular traffic by a horizontal buffer space that includes a vertical element such as a raised median or flexible posts. If on-street parking is present, the people on bicycles are buffered from opening doors. People on bicycles are also separated from people walking by a horizontal buffer space and can include vertical elements. Separated bicycle lanes are applicable in urban areas.

Buffered bicycle lanes are separated from adjacent vehicle traffic or the parking lane by a striped buffer. The buffer is generally only space designated by pavement striping. Buffered bicycle lanes are more suitable in urban environments.

Raised bicycle lanes are at sidewalk level or between street level and sidewalk level to provide vertical separation from vehicular traffic. However, they do not provide horizontal separation. They are an option to consider on roadways where separation is needed and width is constrained. Raised bicycle lanes are suitable in urban environments.

Figure 34. Bikeway User Design Guide Excerpt

EIGHT
Implementation

By pursuing a range of different implementation activities in coordination with statewide TxDOT resources and local partners, the Laredo District can build momentum across the district and make bicycling a part of its everyday work.

Advancing Bikeway Projects

Bikeways require funding, coordination, and planning to be successfully implemented. Bikeway implementation is sometimes as simple as quick wins, like striping a bicycle lane where sufficient roadway width already exists. In other cases, bikeway implementation can be one component of a larger project that will be years in the making. With the analysis, priorities, and recommendations contained in this plan, and TxDOT's Roadway Design Manual, TxDOT staff and partners have all the foundational tools to bring a bikeway project from a planning concept to implementation. There are many actions that can be taken at different stages in the bikeway implementation process to advance comfortable and safe communities for bicycling.

Bikeway improvements on the SHS may be developed and implemented through any of the following avenues.

Bikeway improvements developed and delivered by TxDOT.

- **Improving bikeways as a part of a larger project.** Across the country and in Texas, one of the major ways that bikeways get completed is when a roadway is restored, rehabilitated, or reconstructed. In fact, Title 43 §25.53 of the Texas Administrative Code requires TxDOT to take bicycle accommodation into consideration during the planning and implementation of all construction and rehabilitation projects[23]. Most TxDOT projects are scheduled and funded as part of the Unified Transportation Program (UTP), which includes 12 different funding programs that draw on a range of state and federal funding sources. The majority of these funding sources can be used to construct bikeways as one part of a larger project. Categories that are more likely to fund larger roadway projects incorporating bicycling elements include Category 2 – Metropolitan and Urban Area Corridor Projects, Category 4- Statewide Connectivity Corridor Projects, and Category 12 – Strategic Priority. By consulting the Laredo District Bicycle Plan when developing UTP projects, TxDOT will be able to identify bicycling needs early in the project development process and consider how best to improve bicycling conditions.
- **Finding dedicated funding for a standalone project.** While relatively few on-system bikeway improvements have advanced as standalone projects, recent federal actions like the passage of the Bipartisan Infrastructure Law have greatly expanded opportunities to directly fund bikeway projects. These include new discretionary grant programs like the Reconnecting Communities and Neighborhoods Grant Program, where states and other eligible applicants compete for funding. They also include funding increases to longstanding programs like the Transportation Alternatives Set-Aside (TA) Program, where the state of Texas receives a set amount of funding to administer. TxDOT's Federal Grants website can help the district and its partners research and pursue federal funding opportunities. The UTP categories that most frequently fund standalone bikeway improvements are Category 5 – Congestion Mitigation and Air Quality, Category 7 – Metropolitan Mobility and Rehabilitation, and Category 9 – TA Set-Aside.
- **Quick-build, maintenance, and pilot projects.** These projects use low-cost materials or regularly scheduled maintenance activities to get bicycle infrastructure built on a short timeline. While local governments were first to advance projects this way, state governments across the U.S. also use this approach. These types of projects are especially helpful where improvements are urgently needed but the optimal project design may be very expensive or require many years to advance. Examples include restriping roads and bikeways, widening shoulders, or shifting the position of rumble strips to provide an uninterrupted surface for bicycling.

23 Roadway Design Manual Sections 6.3 and 6.4 describe requirements and exceptions for providing bikeway accommodations. Note that section numbering may change in future updates.

Bikeway improvements developed in partnership with local governments.

- **Improvements sponsored by local governments.** Cities, counties, and MPOs can work with TxDOT to champion, fund, and even construct bikeway improvements on TxDOT roads that are important to the local community. Projects sponsored by local governments can sometimes use funding sources that may not be available for projects led by TxDOT, such as city bonds or federal funds administered by MPOs. The Laredo District can help local agency partners understand the process for getting designs and construction plans approved by the state. Detailed guidance can be found in TxDOT's Local Government Projects Policy Manual.
- **Improvements required as a part of private development.** When a developer seeks approval to construct a new building, campus, neighborhood, or other private development, their local government will assess whether the new development will impact public infrastructure like roads and utilities. The local government can require the developer to improve infrastructure so it can handle the increased use the new development will bring. This can include improving bikeways, walkways, intersections, and roads, including on-system elements. Local government staff should coordinate with the Laredo District when reviewing development proposals that may impact TxDOT facilities

Advancing Bicycle Tourism Trails

The BTT Example Network has been evaluated and updated for the Laredo District's current needs, leading to new opportunities for collaboration and coordination to implement the BTT. The 2018 study includes recommendations for implementing the network, which can help guide the efforts of the Laredo District and its partners. The implementation steps noted above also serve as potential pathways to advance the BTT, and the district may identify projects along the BTT that align to identified priority segments. As the Laredo District designs projects that affect BTT routes, the district and its partners will need to refer to the TxDOT Roadway Design Manual for BTT-specific design requirements, such as bicycle-accessible shoulder widths. The Roadway Design Manual includes detailed design guidance on bicycle facilities suitable for rural and long-distance contexts, such as adequate bikeable shoulders, sidepaths, and the ROW necessary to implement them.

Programs that Support Bicycling

TxDOT, local governments, and nonprofit organizations can also support bicycling through technical assistance, education, and research programs. Developing documents like the Bikeway Design User Guide creates resources that can be used across the state. Programs like Safe Routes to Schools train young people to bicycle safely and engage school communities in mapping bicycling and walking needs around their campuses. Campaigns like #EndtheStreakTX encourage all road users to do their part in making sure everyone – including people bicycling, walking, taking transit, and driving – gets home safe. By collecting and sharing data related to crashes and bicycle counts, TxDOT and its partners support research into how best to support bicycling across the state.

Funding Opportunities

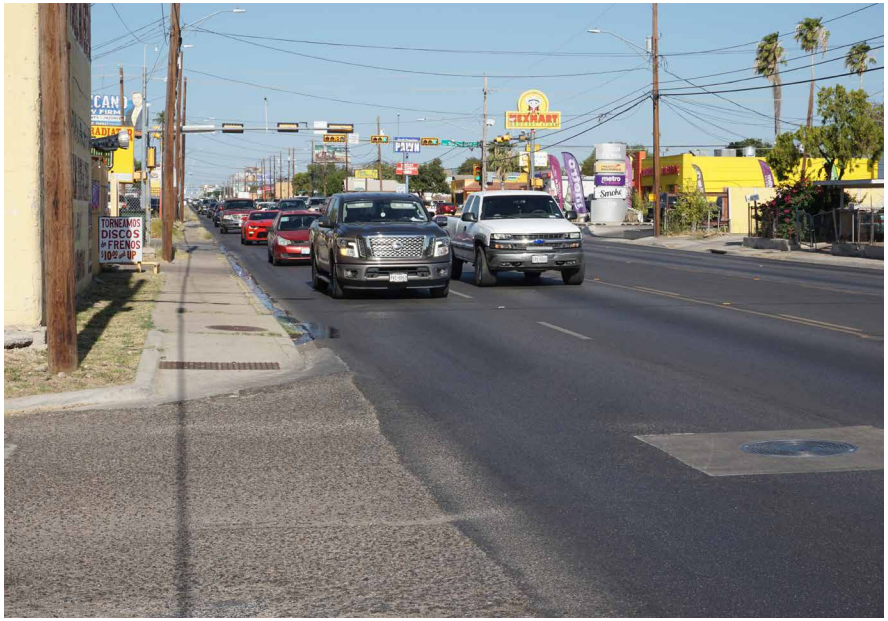
This plan makes the case that improving bikeways will benefit communities throughout the Laredo District. More than 90% of Laredo District highway miles include bicycling needs, and even the high-priority locations alone represent substantial investment. To improve the system, TxDOT and its local partners will need to explore the full range of available funding sources.

Competitive Federal Grant Programs

- Active Transportation Infrastructure Investment Program
- Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program
- Rebuilding American Infrastructure with Sustainability and Equity
- Reconnecting Communities and Neighborhoods
- Safe Streets and Roads for All

State-Administered Funding

- Federal Lands Access Program



- UTP, which includes federal formula funding such as:
  - Carbon Reduction Program
  - Congestion Mitigation and Air Quality
  - Highway Safety Improvement Program
  - TA Program
- Enhanced Mobility of Seniors & Individuals with Disabilities (Section 5310)
- Transportation Alternatives Set-Aside Program

Regional Funding

- Laredo and Webb County Area MPO Transportation Improvement Program, which includes regional apportionments of federal formula funds

What's Next?

The Laredo District recognizes that this plan is a first step that, while significant, only begins to address the need for bicycle improvements on the on-system highway network. Planning for a multimodal system is an ongoing process. As more projects are implemented, needs will evolve and change. To understand these changing needs, the Laredo District will continue to engage local agency partners and stakeholders and is committed to working with them on making the on-system highway network safer and more comfortable for all users, especially those on bicycles.