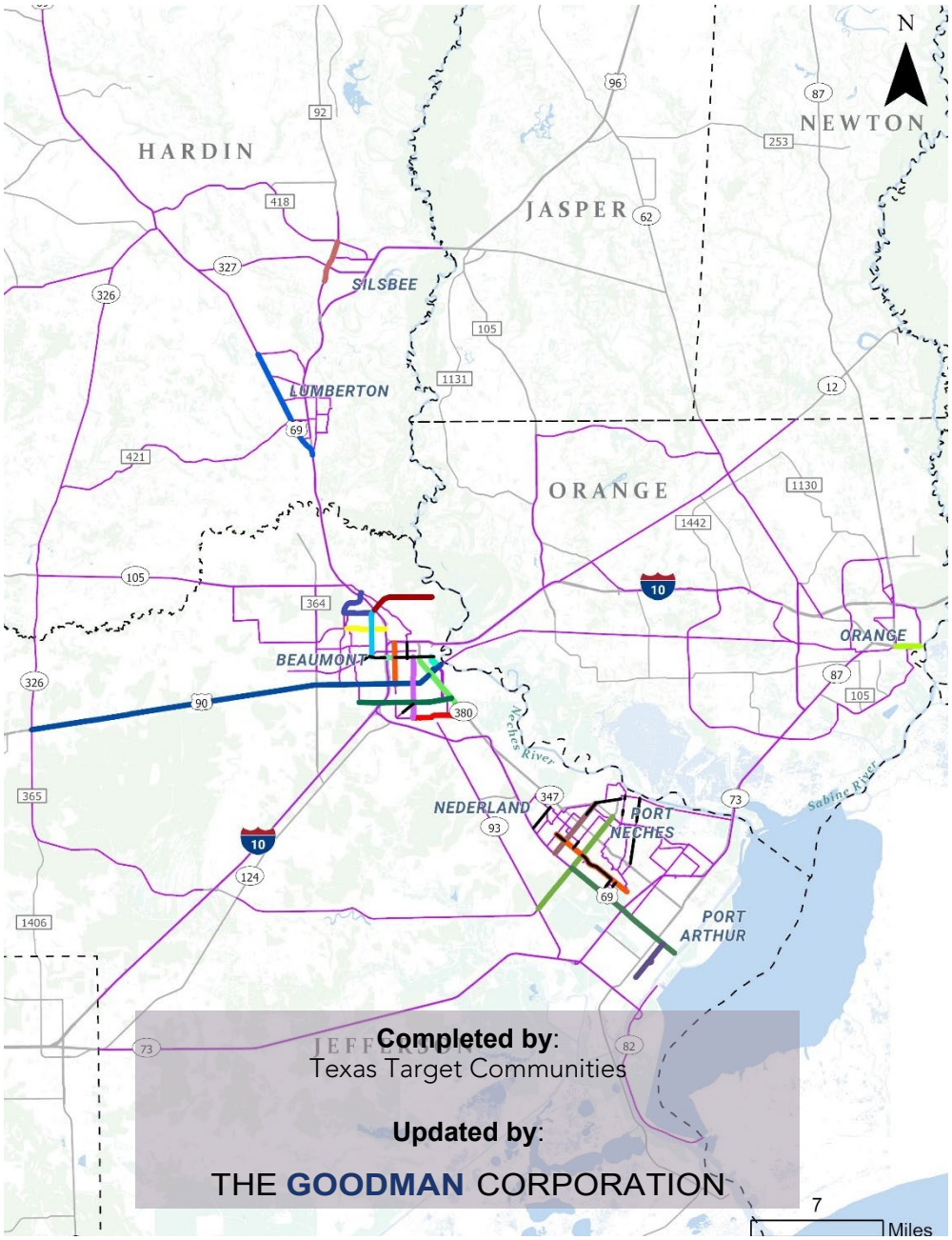
SOUTH EAST TEXAS REGIONAL PLANNING COMMISSION

Southeast Texas Bicycle Plan (2040)



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FOREWARD

In Spring 2017, the Southeast Texas Regional Planning Commission and Texas Target Communities partnered to create a planning task force to develop a Bicycle Plan for the Southeast Texas region. The task force was integral to the six-month planning process, contributing to the desire and enthusiasm for bicycling in the region.

SETRPC is a voluntary association of local governments that serves an area composed of Hardin, Jefferson, and Orange Counties. Established in June 1970 under authority provided by the Texas Legislature in 1965, SETRPC is one of 24 regional planning councils that serve the State of Texas. SETRPC was founded for the purpose of solving area-wide problems by promoting intergovernmental cooperation and coordination, conducting comprehensive regional planning, and providing a forum for the discussion and study of area issues.

The Texas Target Communities program was created in 1980 by the Department of Landscape Architecture and Urban Planning at Texas A&M University. This program selects small cities from the state of Texas and provides the community residents with valuable assistance in planning. At the same time, it serves as a "real world" learning laboratory for graduate students. Students gain valuable planning experience while the targeted community receives assistance that can make a positive difference in the quality of urban life for its residents. Cities are chosen for participation in the program based on demonstrated need and their commitment to the planning process.

In 2020, The Goodman Corporation was hired to review and update the original Bicycle Plan. The scope of work included:

- The review of federal, state, and local guidance to ascertain that the plan is consistent with federal, state, and local bicycle regulations and guidance.
- Further outreach to vet proposed bicycle network.
- And the creation of an excel-based prioritization tool that would allow SETRPC and other local entities to prioritize bicycle projects based on several criteria that could be weighted differently depending on community priorities.

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EXECUTIVE SUMMARY

As a response to the Metropolitan Transportation Plan 2040 by the Southeast Texas Regional Planning Commission Metropolitan Planning Organization, the Southeast Texas Bicycle Plan was created for the Jefferson-Orange-Hardin three-county region. The plan is a guiding document or roadmap to help the region prioritize proposed bicycle routes along existing roads in a way that is not too prescriptive or limiting to the entities that will implement them. The end goal is to provide a basis on which to improve upon in the future. Making bicycling safer and more convenient will have positive impacts on the region's residents in terms of improved health and increased mobility options.

From a robust public outreach process that included a series of public meetings and community advisory groups, the plan identifies suitable bicycle-friendly routes in the region. By looking into their existing conditions, the plan aims to connect major employment centers, schools, and recreational areas through bicycle facilities for recreational and commuter travel. Finally, the plan prescribes design recommendations and action steps for implementation by 2040.

Chapter 1. INTRODUCTION

This chapter includes an overview of the process undergone to complete the Southeast Texas Bicycle Plan, including a description of the vision and goals for the Tri-County area. This chapter also expands on stakeholder engagement practices and public outreach.

Chapter 2. PUBLIC ENGAGEMENT AND THE PLANNING PROCESS

This chapter addresses the planning process, describes the public and stakeholder engagement plan, and establishes the vision, the goals, and the objectives.

Chapter 3. EXISTING CONDITIONS

This chapter includes an overview of the Tri-County area existing conditions which includes a summary of demographic composition, transportation mode share, existing transit services provided, and existing bicycle infrastructure.

Chapter 4. HIKING AND BICYCLING

This chapter includes discussions on active transportation facility types, design considerations and available TxDOT guidance to build these facilities. It also discusses the benefits of walking and bicycling as modes of transportation.

Chapter 5. 2040 BICYCLE NETWORK

This chapter includes a description of the factors originally considered for the creation of the proposed bicycle network. It also discusses the more recently developed excel-based model created to prioritize the proposed projects.

Chapter 6. IMPLEMENTATION

This chapter highlights action items to ensure and document progress towards the implementation of the proposed Bicycle network.

ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
APBP	Association of Pedestrian and Bicycle Professionals
BMT	Beaumont Municipal Transit
JOHRTS	Jefferson Orange Hardin Regional Transportation Study
KCS	Kansas City Southern
LNVA	Lower Neches Valley Authority
LODES	Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistics
MPO	Metropolitan Planning Organization
MTP	Metropolitan Transportation Plan
NACTO	National Association of City Transportation Officials
PAT SETHBC	Port Arthur Transit
SET	Southeast Texas
SETBP	Southeast Texas Bicycle Plan
SETRPC	Southeast Texas Regional Planning Commission
SETT	Southeast Texas Transit
TxDOT	Texas Department of Transportation

CHAPTER 01: INTRODUCTION

Project History and Overview

The Southeast Texas Bicycle Plan (SETBP) is a component of the Metropolitan Transportation Plan 2040 (MTP 2040) carried out by the Jefferson Orange Hardin Regional Transportation Study (JOHRTS). The MTP recognizes the importance of providing sufficient pedestrian and bicycle facilities to ensure that all sectors of the population are given viable transportation options to meet their mobility needs. The Southeast Texas Regional Planning Commission (SETRPC) – Metropolitan Transportation Organization (MPO) also supports local projects that expand the non-motorized transportation network. The MTP 2040 contains a chapter on the bicycle and pedestrian system that includes a summary of the existing system, regional interests, recommended strategies, and several funding opportunities. It also identifies walking and biking as valuable, low-cost, and sustainable modes of transportation.

Bicycling and walking are not only activities for recreational purposes but also for alternative and affordable means of transportation to school, work, and other destinations.

Planning Area

The planning area is a three-county region, known as the Tri-County area, that includes Jefferson, Orange, and Hardin in Southeast Texas (Figure 1, Figure 2). The region boasts a rich history of the lumber industry, rail transportation, and waterways subsequently followed by the petroleum industry. The region is home to more than 396,000 people and 155,000 jobs, and it is anticipated to accommodate approximately 464,000 people and 180,000 jobs by the year 2040.

Figure 1 Location of Planning Area

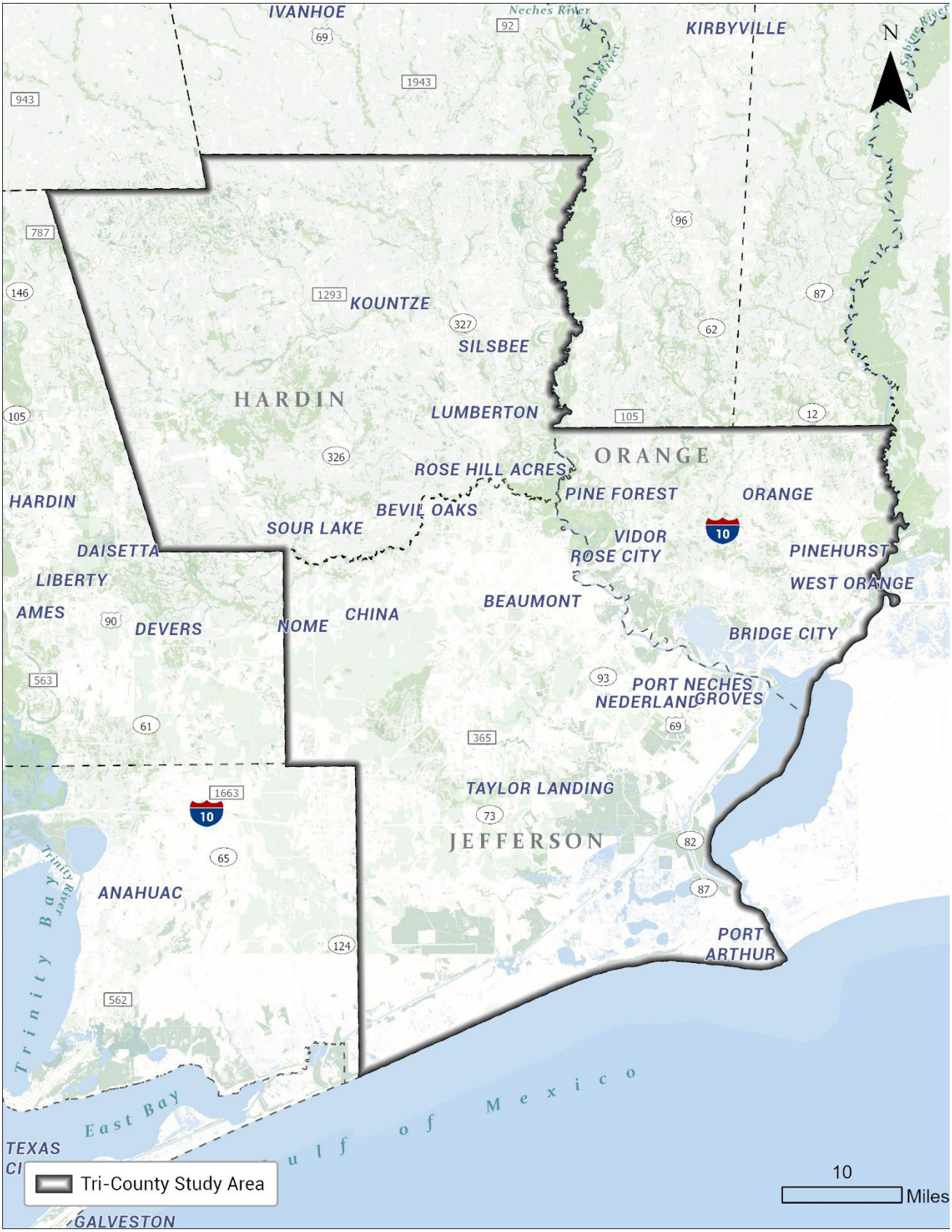


Figure 2 Southeast Texas Regional Planning Commission Area

Bicycle Plan Purpose and Scope

Although the MTP 2040 recognizes the importance of identifying and promoting a regional non-motorized transportation system, it does not include any goals or objectives addressing such needs. The SETHBP builds from the MTP 2040 vision of a regional non-motorized transportation system and is a long-range planning document that undertakes the vision of enhancing bicycle and pedestrian infrastructure for the Tri-County area or MPO. The bicycle plan consists of a vision statement, goals, general strategies, and specific recommendations to achieve those goals.

As the region continues to grow, there is a growing demand active transportation for people of all ages and abilities while improving recreational and public health facilities and creating economic development opportunities.

As a response to these needs, the SETHBP does not replace any existing plan but rather aims to:

1. Guide public investment to establish a framework for bicycle and pedestrian facilities and supporting policies and programs.
2. Identify gaps in the existing system to build or retrofit bike and pedestrian facilities and identify funding opportunities for potential projects.
3. Identify tools and best practices for a safe, comfortable, and multimodal transportation network in the region.
4. Create a framework for interjurisdictional coordination for the construction and operation of the network.
5. Prioritize proposed bicycle facilities along existing roads in a way that is not too prescriptive or limiting to the entities that will implement them.

CHAPTER 02. PUBLIC ENGAGEMENT AND THE PLANNING PROCESS

The Southeast Texas region has a passionate bicycling community who participated in the planning process of developing the Southeast Texas Bicycle Plan. This project provided the opportunity to engage bike enthusiasts and city officials all over the region to take input from their knowledge of the region's streets and infrastructure.

Stakeholder input and public participation are paramount for the development and implementation of any plan. The SETRPC Bicycle plan has had ample stakeholder and public participation input. In 2014, SETRPC held an initial workshop to recognize the SETHBC regular riding routes and bicycle-friendly routes in the region. In 2017, SETRPC held five meetings/workshops to obtain feedback from planning professionals and stakeholders. The input included visioning, goal setting, and identifying the bicycle network.

Vision and Goals

The vision, goals, and objectives for this effort were derived from the initial public outreach process that took place in 2016 and 2017.

The Bike Plan is guided by the following vision:

Bicyclists of all ages and abilities can travel safely and comfortably throughout our region for both recreation and commuting by using an interconnected, well- maintained network of on and off-street pedestrian and bicycle infrastructure.

Goal 1. Coordinate regionally and locally to develop a well-connected regional bicycle network.

- *OBJECTIVE 1.1* Coordinate pedestrian and bicycle planning with local, county, regional, and state transportation plans, programs, and projects.
- *OBJECTIVE 1.2* Facilitate a local evidence-based and citizen-driven decision-making process to advocate the plan.
- *OBJECTIVE 1.3* Secure funding from different sources to carry out short-term projects and develop a long-term funding strategy for continued development and maintenance of network.
- *OBJECTIVE 1.4* Coordinate with cities to ensure the integration of the bike plan in city planning initiatives.

Goal 2. Connect activity nodes, major destinations, and recreational areas in the three- county region through a well-designed bicycle network and support facilities.

- *OBJECTIVE 2.1* Identify and establish connections among major destinations including schools, parks, hospitals, recreation areas, and employment and community centers.
- *OBJECTIVE 2.2* Identify and recommend the use of nationally accepted best practices for the development of bicycle facilities, including standards for construction, intersection treatment, signage, and pavement markings.

Goal 3. Encourage a walking and bicycling culture in the region through education and enforcement programs for healthier and safer communities.

- *OBJECTIVE 3.1* Promote and encourage pedestrian and bicycle safety programs for bicyclists, schools, law enforcement agencies, and motorists for sharing roadways and shared-use paths.

Stakeholder Participation and Public Outreach

The Southeast Texas region has a passionate bicycling community who participated in the planning process of developing the Southeast Texas Bicycle Plan. The Plan provided the opportunity to engage bike enthusiasts, stakeholders, and city officials all over the region to gather their input regarding bicycle-friendly roads, the region's streets, and existing infrastructure.

Stakeholder input and public participation are paramount for the development and implementation of the Plan. The SETRPC Bicycle plan has had ample stakeholder and public participation input. In 2014, SETRPC held an initial workshop to recognize the SETHBC regular riding routes and bicycle-friendly routes in the region. In 2017, SETRPC held five meetings/workshops to obtain feedback from planning professionals and stakeholders. Public participation and input led to visioning, goal setting, and identification of the bicycle network. The proposed bicycle network consists of 368 proposed bicycle projects that span the Tri-County region.

Network Development

The first workshop was held on February 9, 2017, led by SETRPC where stakeholders from Texas Department of Transportation (TXDOT), City of Beaumont, City of Port Neches, City of Nederland, City of Port Arthur, SETHBC, and a local bicycle shop were present. Funding options from TXDOT and several completed and ongoing projects in Beaumont and Port Neches were shown in the presentations. A takeaway from the meeting was that retrofitting existing roadways would be difficult to accomplish due to limited budgets.

On March 1, 2017, a charrette was conducted with stakeholders as a visioning exercise and to understand what streets people thought were appropriate for new or improved bike facilities. The goal was to identify the means to develop a bicycle network that would cater to everyone's needs in the region. By using large, printed maps and colored pens, the following information was gathered in the charrette:

- Points of interest and nodes (recreational, institutional, and other community facilities)
- Service gaps and areas for improvement
- Barriers and hazardous intersections

The planning team carried out a detailed inventory of the bicycle-friendly roads identified in the charrette. On March 23, 2017, a webinar was held between SETRPC and Texas Target Communities to discuss the preliminary bicycle routes map and their feasibility (Figure 15).

Figure 3 Charette activity

In the next workshop on April 24, 2017 (Figure 16), the maps were discussed again for feedback from a larger audience along with the funding opportunities and initial cost estimation. Adjustments to the proposed bike routes were noted from the public input. Note that cost estimation was removed from the plan in 2021 as these were inaccurate.

Figure 4 Workshop on Design Recommendations

The final workshop took place on June 14, 2017, with the presentation of updated bike route maps and design recommendations for bike facilities. After receiving comments from SETRPC on the draft plan, the plan was scheduled to be finalized by September 2018.

Education, Encouragement, and Enforcement Programs

The participants of the early meetings agreed on the importance of education, encouragement, and enforcement programs as part of promoting the Bicycle culture in the region. This plan recommends the promotion of physical activity, support of bicycle clubs, National Bike Month events, Share-the-Road safety programs, community bike programs, summer bike camps, etc. as part of travel demand management activities, Bike to Work programs, and other encouragement activities to promote the concept of people bicycling or walking for utilitarian travel.

Project Prioritization

In 2021, an excel-based tool was created to prioritize the proposed (368) projects. A meeting was held on October 6, 2021 to update stakeholders, introduce the tool, and review preliminary Top 20 projects developed by utilizing the project prioritization tool. Further input for the tool was gathered via survey from October 1 to November 4, 2021. The survey aimed to gather public and stakeholder feedback concerning the prioritization of the criteria used to analyze the proposed projects. A Top 20 Projects list was created utilizing the tool calibrated based on the input received from stakeholders and the

public. Note that further calibration can be done at a more localized level based on the entity's priorities (e.g. city-wide instead of region-wide).

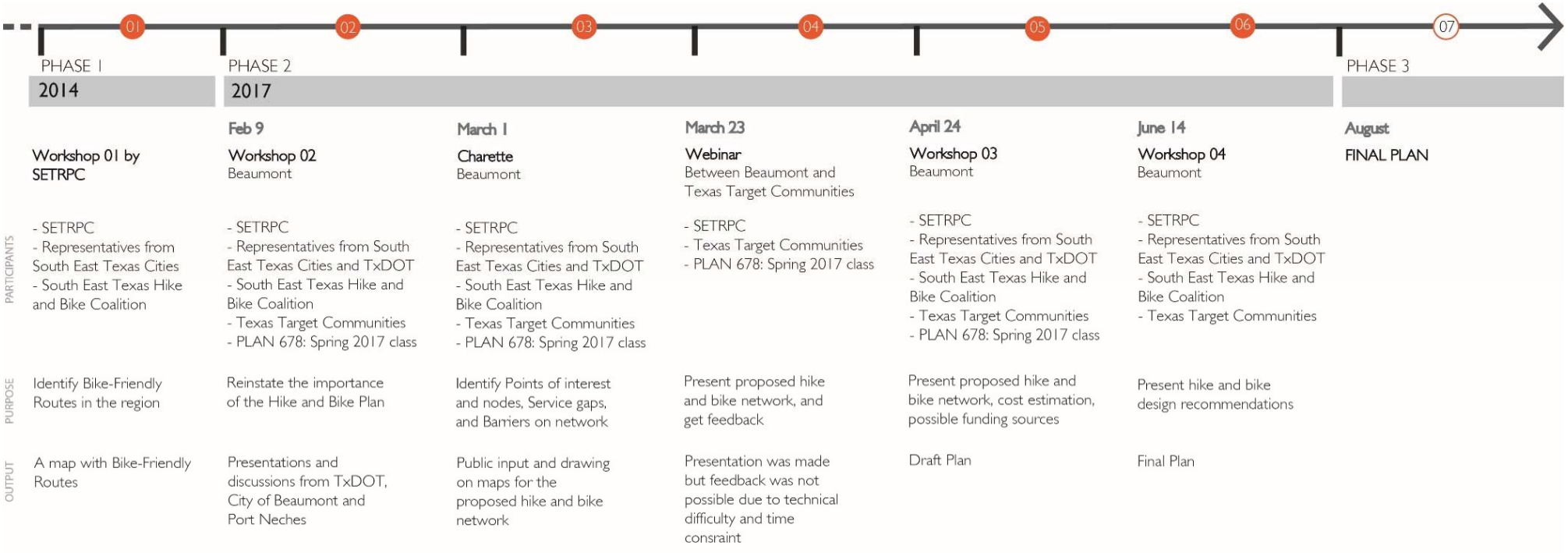


Figure 5 Plan Development Timeline

CHAPTER 03. EXISTING CONDITIONS

Overview

This chapter describes existing conditions and characteristics of the Tri-County region. First, the socio-economic demographics of the region are described by the existing population data. This analysis is followed by a summary of transportation mode share, transit services, and available bicycle infrastructure. A detailed inventory of road segments is included as Appendix A that identifies bicycling conditions, right-of-way, lanes, traffic volumes, and existing bicycle or pedestrian infrastructure. These road segments were identified early on via stakeholder meetings in 2014 as "bicyclist-friendly" connections or routes (Figure 6). Note that exact implementation of these routes will depend on additional factors and considerations at the project level. Considerations include safety, leveraging ongoing or future roadway work, possible partnerships, and costs associated with improvements.

Existing Mode Share

This section describes the existing mode share or commuting to work preferences for each County of the study area. It highlights commuting by Active Transportation modes such as walking and bicycling versus driving alone or carpooling. The section also includes commuting via public transportation. Although not typically defined as active transportation, studies have shown a higher level of physical activity among public transportation riders because people who use public transportation walk to or from stops and stations or make other trips by foot during their day.

Sedentarism and low activity levels is correlated with bad health outcomes. According to the County Health Rankings, longer commuting distances in vehicles is associated with an increase in blood pressure and body mass index, and a decrease in physical activity[1]. Each additional hour spent in a car per day is associated with a 6 percent increase in the likelihood of obesity[2]. Longer commutes have also been associated with poorer mental health[3].

Existing Transit Network

Southeast Texas Transit (SETT), a rural transportation system operated by Southeast Texas Regional Planning Commission, provides curb-to-curb demand response transportation service for healthcare, shopping, social service, employment, education, and recreational needs to seniors and persons with disabilities in the entire Tri-County region.

Existing Bicycle Network

The Tri-County region has a very limited amount of officially designated bicycle routes. Currently, the Tri-County region of Jefferson, Hardin, and Orange has 13.8 miles of existing bicycle facilities in the form of bicycle lanes (Figure 7). Roads identified as "bicycle-friendly" in the 2014 meeting led by SETRPC and SETHBC members are illustrated in Figure 6. The route map includes existing off-road trails and existing roadways with special treatment to accommodate bicycles (such as designated lanes or signed routes), and the aforementioned "bicycle-friendly" roads. These routes indicate the key

[1] Hoehner CM, Barlow CE, Allen P, Schootman M. Commuting distance, cardiorespiratory fitness, and metabolic risk. American Journal of Preventive Medicine. 2012; 42(6):571-578.
[2] Frank LD, Andresen MA, Schmid TL. Obesity relationships with community design, physical activity, and time spent in cars. American Journal of Preventive Medicine. 2004; 27(2):87-96.
[3] Künn-Nelen A. Does commuting affect health? Health Economics. 2016; 25(8):984–1004.

segments currently used by bicyclists in the area and they serve as a base to build upon and develop the robust proposed biking network for the Southeast Texas region.

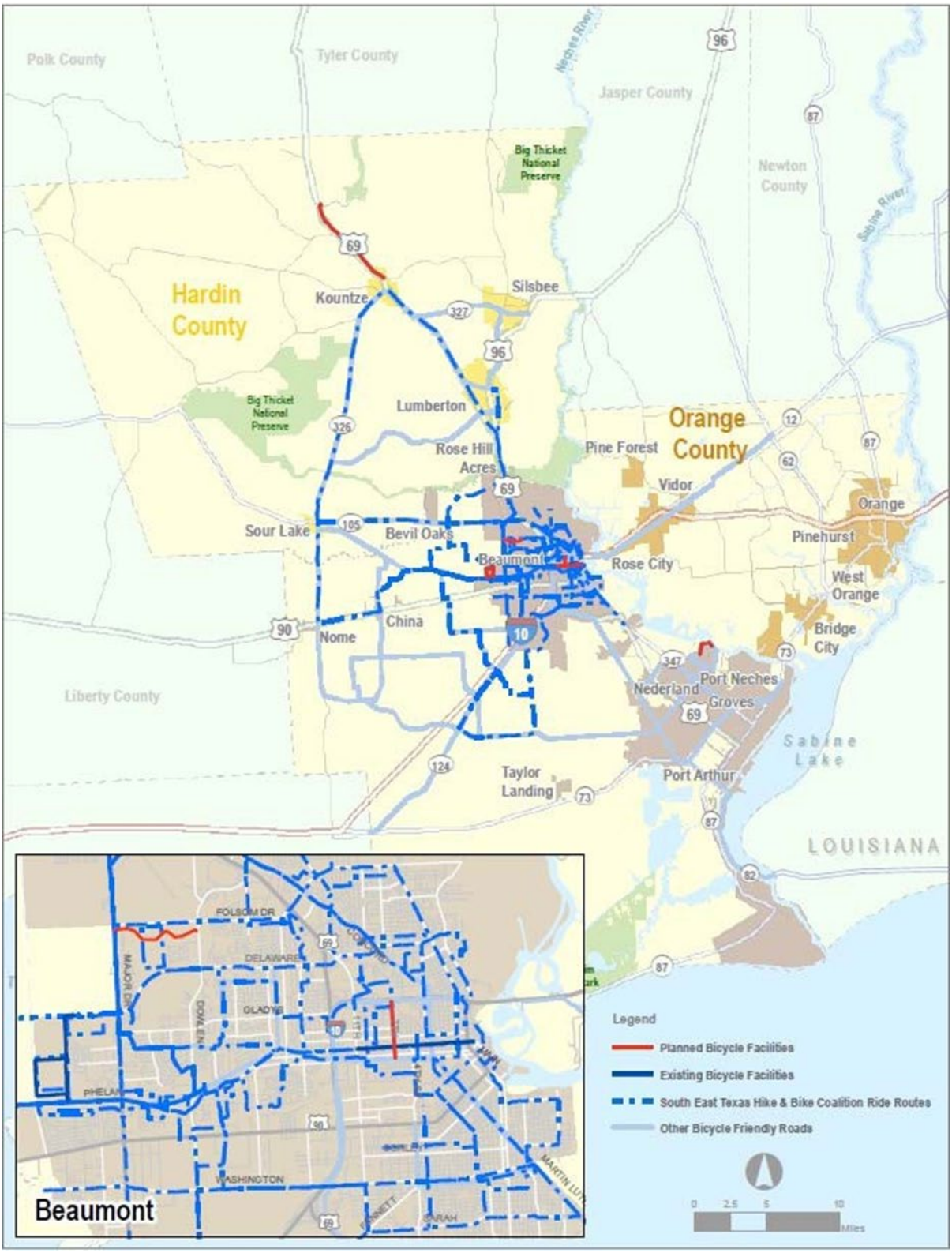


Figure 6 Existing Bicycle Friendly Routes

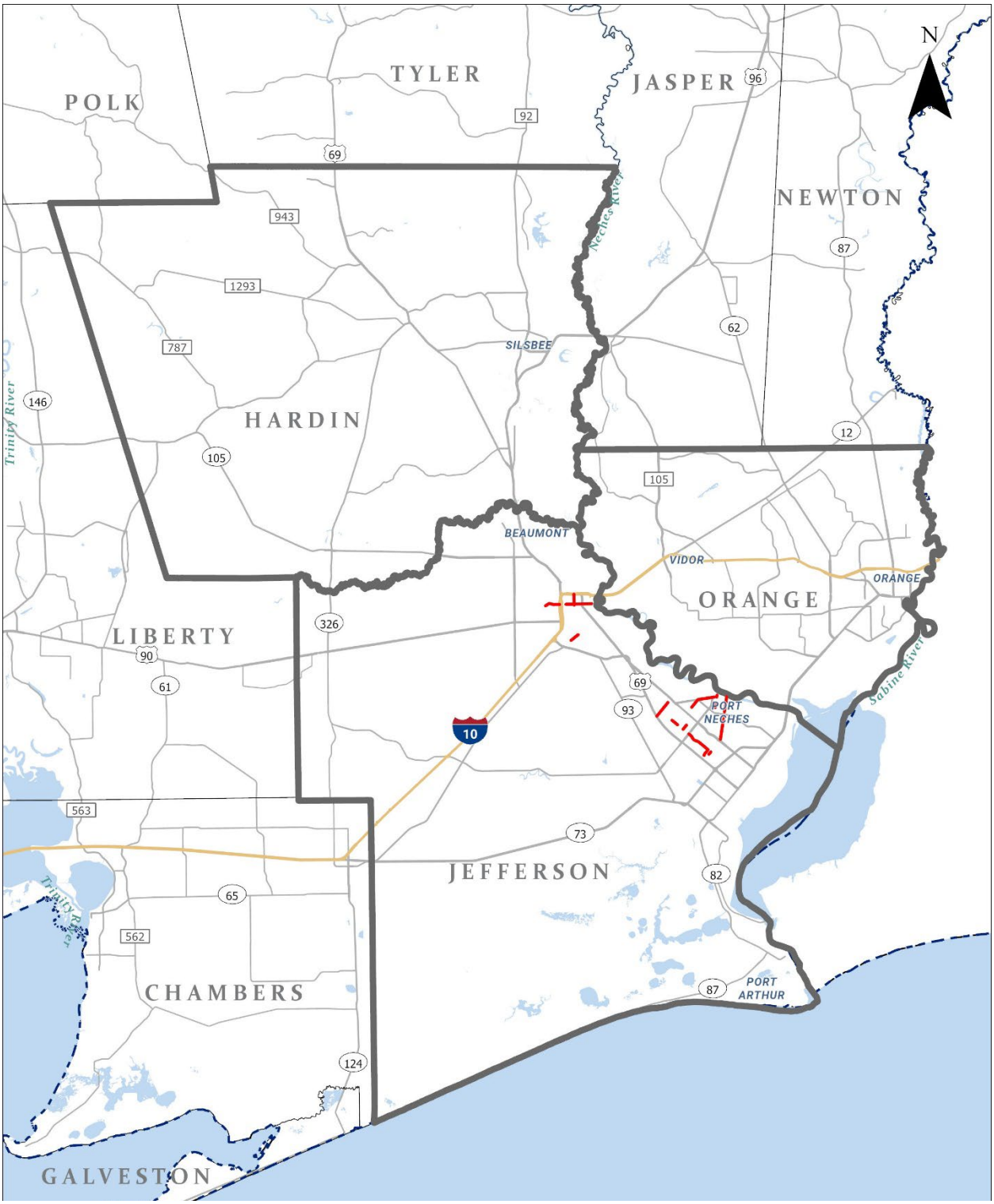
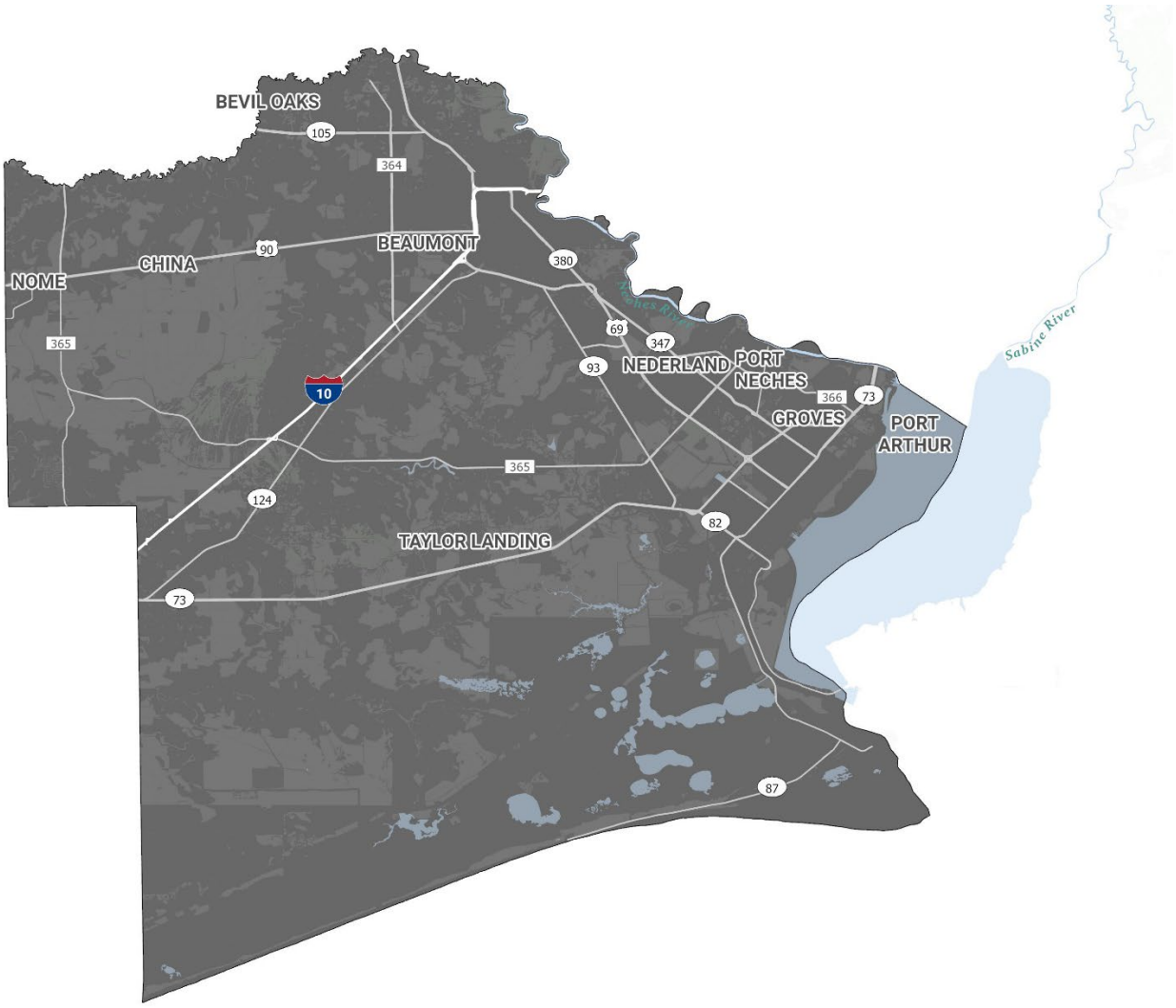


Figure 7 Existing Bicycling Infrastructure in the Tri-County Area

Jefferson County Profile



Demographic

The county seat and the largest city in the Jefferson County is Beaumont with a population of 118,296. Of the three counties, Jefferson has the largest population, 253,780, with the highest density of 255 residents per square mile. The county had a population increase of 0.1% from 2000 to 2010. The racial composition of the county is prominently white (59.3%), followed by African American (43.2%). The Hispanic population accounts for 22.1% of the population. The median age is 41 years, and the median household income is $53,789. In Jefferson County, 14.2% of the population are seniors (65 years and over), and 28.8% of the households have one person or more with a disability.

Table 1 Demographic Profile – Jefferson County

Characteristics	Orange County
Total Population	253,780
Population Density (Pop per Square Mile)	255
Black/African American Non-Hispanic Population (%)	43.2%
White Non-Hispanic Population (%)	49.4%
Hispanic Population (%)	23.1%
Households with 1+ Persons with a Disability (%)*	28.8%
Owner Households with No Vehicles (%)*	2.8%
Population Age 25+: 9-12th Grade/No Diploma (%)	7. 9%
Households Below the Poverty Level (%)*	16.7%
Employed Civilian Population Age 16+	105,455
Workers Age 16+*	104,529
Unemployment Rate	8.2%
Total Population: 65 Years and Over (%)	14.2%
Median Age	37.5
Median Household Income	$53,789

Note: * means the statistics are from the 2019 American Community Survey; the rest are from 2021.

Transportation

Existing Mode Share

According to the 2019 American Community Survey, less than one percent of the workers 16 years and over are active commuters who walk or bike to work. Besides, about 0.6 percent of the workers use public transportation for commuting. Most workers (89.22%) drive alone to work; it is followed by carpooling (6.7%).

Table 2 Means of Transportation to Work for Workers 16 Years and Over (2019)

Characteristics	Population (%)
2019 Workers 16+ Worked at Home	1.83%
2019 Workers 16+ Took Other Means of Transportation	0.67%
2019 Workers 16+ Walked	0.86%
2019 Workers 16+ Bicycled	0.02%
2019 Workers 16+ Motorcycled	0.09%
2019 Workers 16+ Took a Taxicab	0.01%
2019 Workers 16+ Took a Ferryboat	0.00%
2019 Workers 16+ Took a Long-distance Train or Commuter Rail	0.00%
2019 Workers 16+ Took a Subway or Elevated	0.00%
2019 Workers 16+ Took Light Rail, Streetcar or Trolley	0.03%
2019 Workers 16+ Took Public Transportation	0.59%
2019 Workers 16+ Drove Alone to Work	89.22%
2019 Workers 16+ Carpooled	6.71%
Mean travel time to work (minutes), workers age 16 years +, 2016-202	20.5

Source: U.S. Census Bureau, 2019 American Community Survey 5-Year Estimates

Existing Transit Network

Currently there are two transit agencies in Jefferson County that offer fixed-route services: Beaumont Transit (BMT) and Port Arthur Transit (PAT). BMT is a publicly funded transit agency that operates in Beaumont, Texas. BMT owns 17 buses serving 10 fixed routes and eight paratransit vans serving paratransit as shown in Figure 8. According to the 2019 National Transit Database, BMT provided 416,352 passenger trips (NTD 2019).

PAT is a publicly funded transit agency that currently leases 10 fixed-route buses and 15 paratransit vans (Figure 9). PAT operates 11 fixed routes and a paratransit service in the urban area. In 2019, PAT provided 98,069 passenger trips in its fixed-route service and 18,375 in its paratransit service.

Existing Bicycle Network

Of all the Counties, Jefferson County has the most bicycle infrastructure. The images below show existing bicycle facilities in the City of Beaumont (Figure 10) and Cities of Nederland, Port Arthur, Groves, and Port Neches (Figure 11).

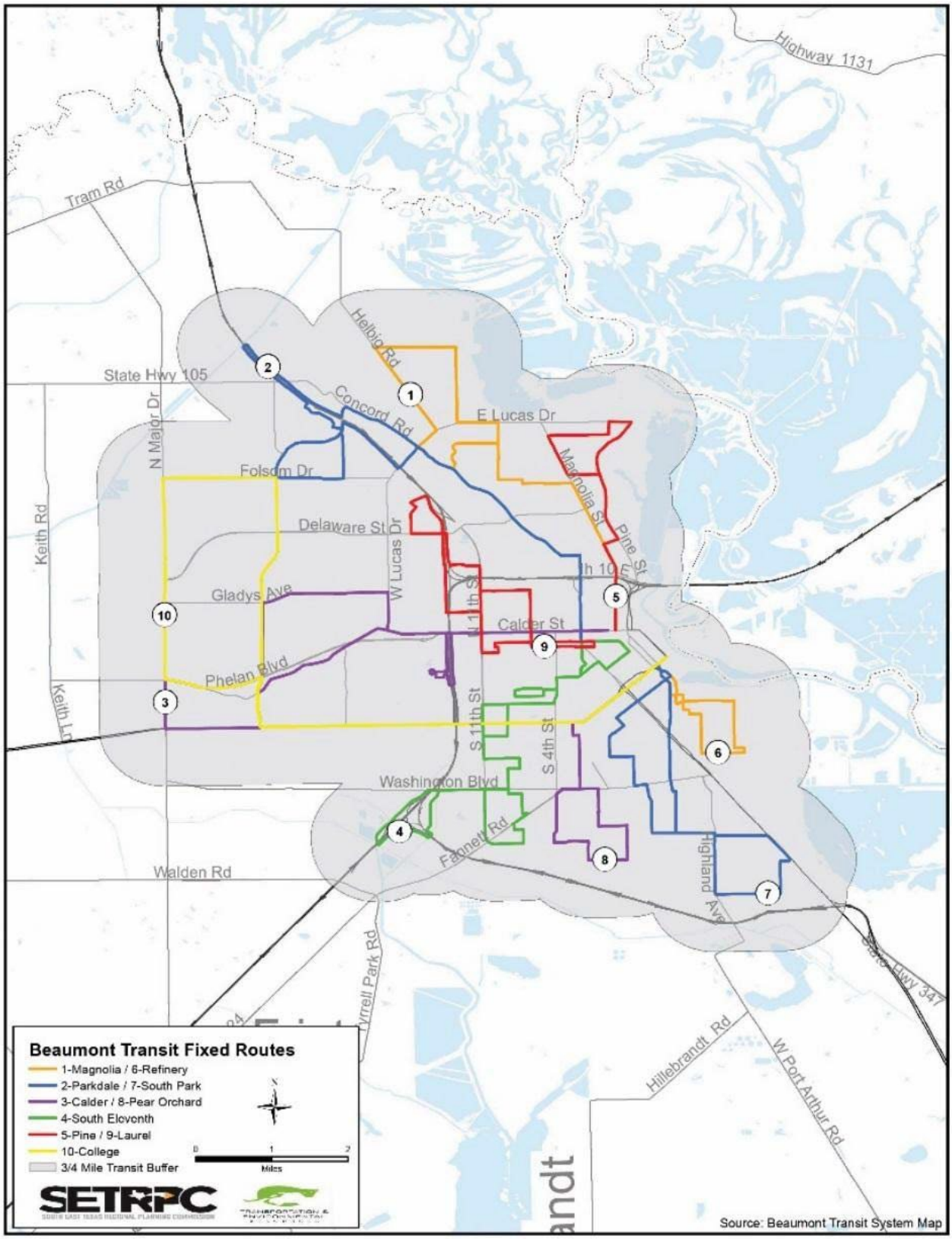


Figure 8 Beaumont Transit Fixed-Routes Map

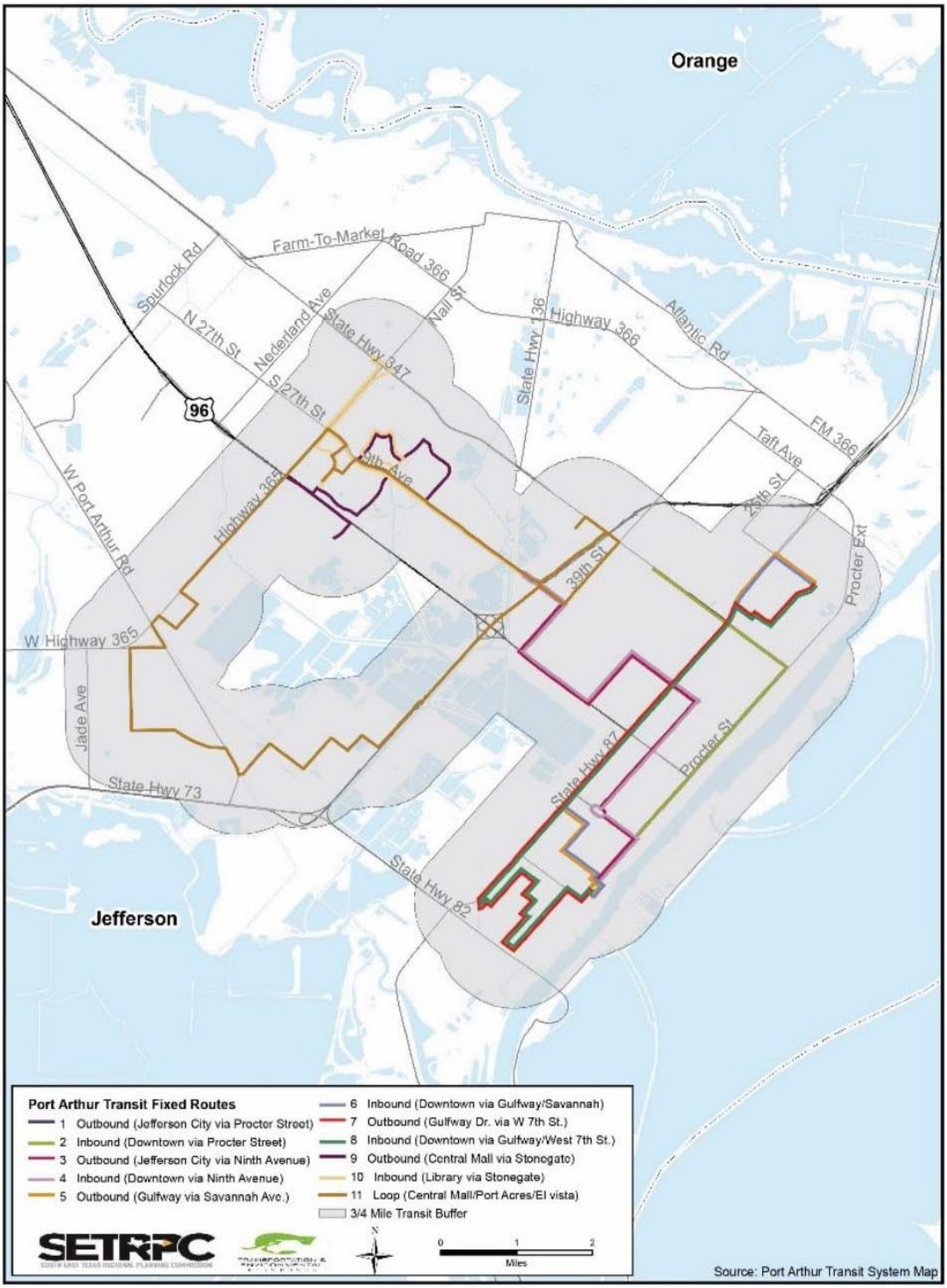


Figure 9 Port Arthur Transit Fixed Routes Map

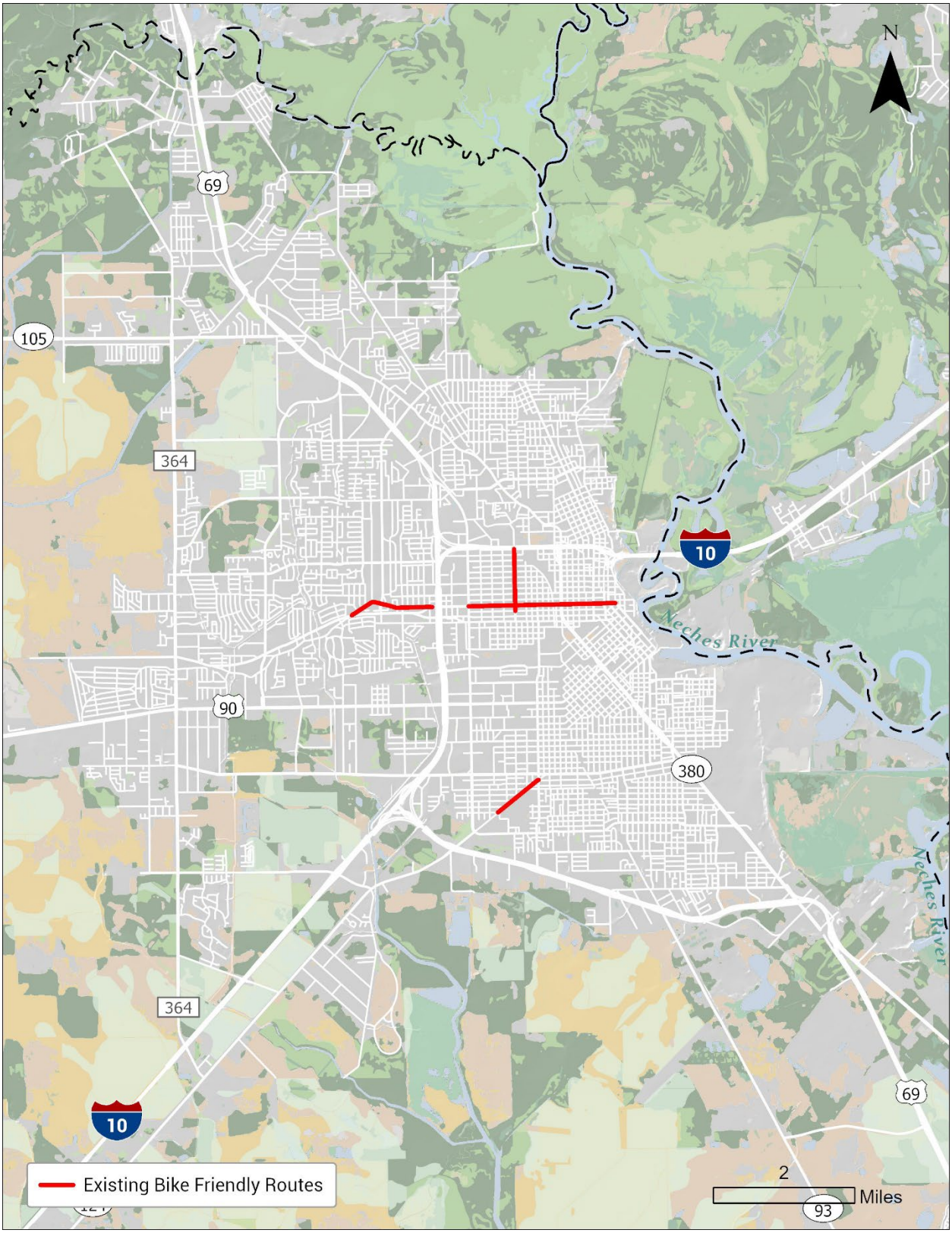


Figure 10 Existing Bicycle Infrastructure in the City of Beaumont

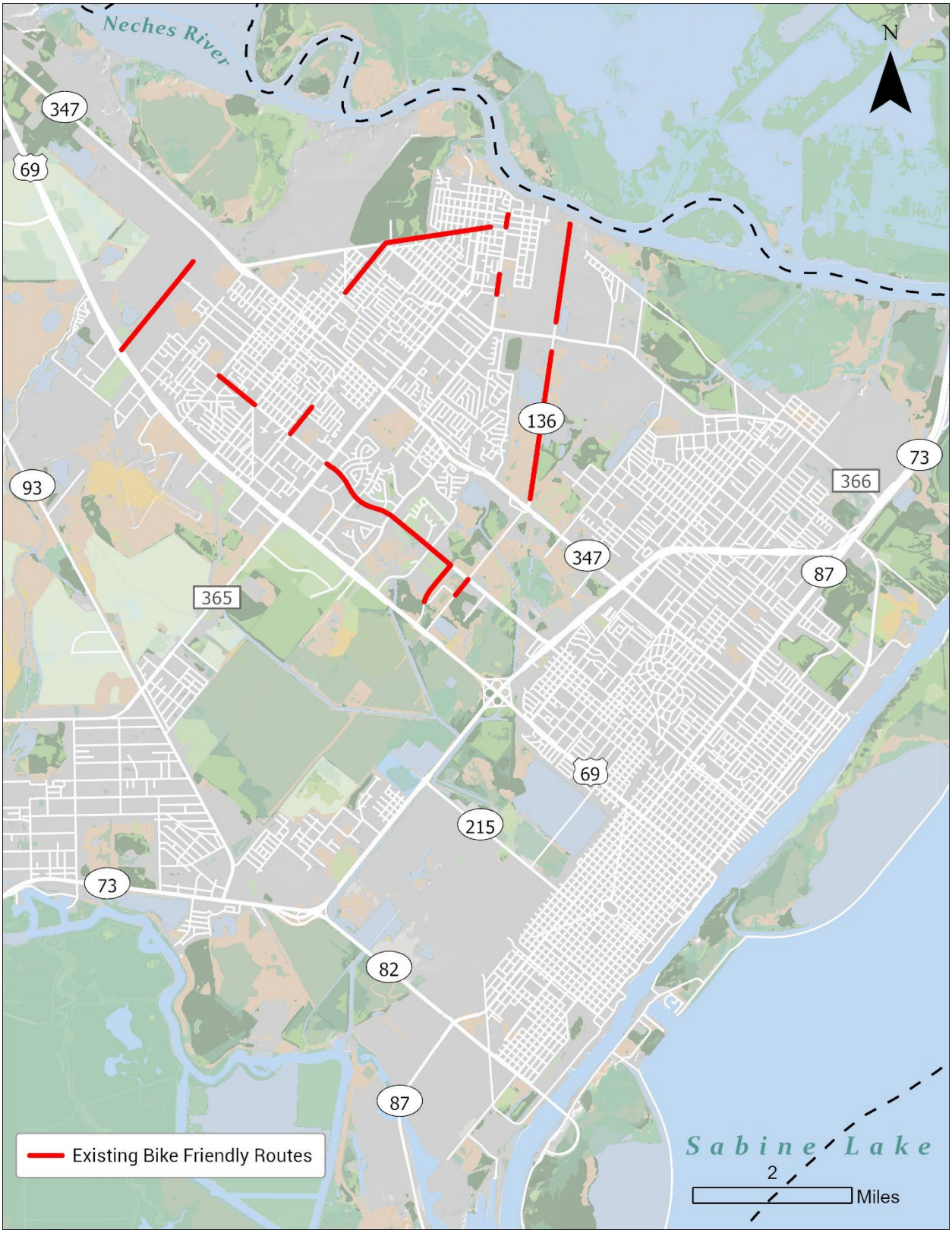


Figure 11 Existing Bicycle Infrastructure in the Cities of Nederland, Port Arthur, Groves, and Port Neches

Orange County Profile

Demographics

The county seat and largest city is Orange with a population of 19,324 according to the 2021 U.S. Census. Among the three counties, Orange County has the second largest population, 84,169, with a density of 228.7 people per square mile. Population has grown slightly by 1.9% from 2010 to 2019. The racial composition of Orange County consists of primarily White people (86.8%). African Americans and Hispanics comprise 9.44% and 9.09% of the population respectively. The median age is 40.7 years, and the median household income is $65,460. In Orange County, 15.6% of the population are seniors (65 years and over), and 33.5% of the households have one person or more with a disability.

Table 3 Demographic Profile - Orange County

Characteristics	Orange County
Total Population	85,169
Population Density (Pop per Square Mile)	229
Black/African American Non-Hispanic Population (%)	9.4%
White Non-Hispanic Population (%)	86.8%
Hispanic Population (%)	9. 1%
Households with 1+ Persons with a Disability (%)*	33.5%
Owner Households with No Vehicles (%)*	2.8%
Population Age 25+: 9-12th Grade/No Diploma (%)	8.1%
Households Below the Poverty Level (%)*	13.2%
Employed Civilian Population Age 16+	37,273
Workers Age 16+*	37,012
Unemployment Rate	7.0%
Total Population: 65 Years and Over (%)	15. 69%
Median Age	40.7
Median Household Income	$65,460

Note: * means the statistics are from the 2019 American Community Survey; the rest are from 2021

Transportation

Existing Mode Share

According to the 2019 American Community Survey, 1.3% of the workers 16 years and over are active commuters who walk or bike to work. Besides, about 0.3% of the workers use public transportation for commuting. Most workers (86.3%) drive alone to work; it is followed by carpooling (9.4%).

Table 4 2019 Workers 16+ Means of Transportation to Work

Characteristic	Population (%)
2019 Workers 16+ Worked at Home	1.75%
2019 Workers 16+ Took Other Means of Transportation	1.01%
2019 Workers 16+ Walked	1.21%
2019 Workers 16+ Bicycled	0.05%
2019 Workers 16+ Motorcycled	0.04%
2019 Workers 16+ Took a Taxicab	0.00%
2019 Workers 16+ Took a Ferryboat	0.00%
2019 Workers 16+ Took a Long-distance Train or Commuter Rail	0.00%
2019 Workers 16+ Took a Subway or Elevated	0.00%
2019 Workers 16+ Took Light Rail, Streetcar or Trolley	0.00%
2019 Workers 16+ Took Public Transportation	0.31%
2019 Workers 16+ Drove Alone to Work	86.27%
2019 Workers 16+ Carpooled	9.36%
Mean travel time to work (minutes), workers age 16 years +, 2016-202	24.0

Source: U.S. Census Bureau, 2019 American Community Survey 5-Year Estimates

Existing Transit Network

Currently there are no fixed-route services operating in Orange County. Southeast Texas Transit (SETT) Orange County Transit, a rural transportation system operated by Southeast Texas Regional Planning Commission (SETRPC), provides curb-to-curb demand/response transportation service for healthcare, shopping, social services, employment, education, and recreational needs to seniors and persons with disabilities in the County.

Existing Bicycle Network

Currently there are no bicycle facilities in Orange County.

Hardin County Profile

Demographics

Hardin County includes a part of the Big Thicket National Preserve. The county seat is Kountze with a population of 2,123 and the largest city is Lumberton with 11,943 people.

Among the three counties, Hardin has the lowest density, 69 pop/sq mi, with a population of 62,259. Lumberton and Silsbee are the most densely populated cities in the County. The County has experienced significant population increase of 13.7% from 2000 to 2010. The racial demography mostly consists of white with 91.4% of the population, followed by African Americans with 5.8% of the population. The Hispanic population accounts for 6.3% of the population. The median age is 40 years, and the median household income is $63,339. In Hardin County, 16.5% of the population are seniors (65 years and over), and 2.7% of the households have one person or more with a disability.

Table 5 Demographic Profile - Hardin County

Characteristics	Hardin County
Total Population	62,259
Population Density (Pop per Square Mile)	69
Black/African American Non-Hispanic Population (%)	5.8%
White Non-Hispanic Population (%)	91.4%
Hispanic Population (%)	6.3%
Households with 1+ Persons with a Disability (%)*	32.6%
Owner Households with No Vehicles (%)*	2.7%
Population Age 25+: 9-12th Grade/No Diploma (%)	7.9%
Households Below the Poverty Level (%)*	14.1%
Employed Civilian Population Age 16+	25.133
Workers Age 16+*	23,842
Unemployment Rate	5.2%
Total Population: 65 Years and Over (%)	16.5%
Median Age	40.1
Median Household Income	$63,339

Note: * means the statistics are from the 2019 American Community Survey; the rest are from 2021

Transportation

Existing Mode Share

According to the 2019 American Community Survey, 1.27% of the population 16 years and older commute to work by Active Transportation (i.e., walking, bicycling, and/or public transportation). Most people (87.09%) drive alone to work. The second most common means of transportation to work is carpooling (8.52%).

Table 6 Workers 16+ Means of Transportation to Work

Characteristic	Population (%)
2019 Workers 16+ Worked at Home	2.53%
2019 Workers 16+ Took Other Means of Transportation	0.55%
2019 Workers 16+ Walked	0.78%
2019 Workers 16+ Bicycled	0.25%
2019 Workers 16+ Motorcycled	0.03%
2019 Workers 16+ Took a Taxicab	0.00%
2019 Workers 16+ Took a Ferryboat	0.00%
2019 Workers 16+ Took a Long-distance Train or Commuter Rail	0.00%
2019 Workers 16+ Took a Subway or Elevated	0.11%
2019 Workers 16+ Took Light Rail, Streetcar or Trolley	0.00%
2019 Workers 16+ Took Public Transportation	0.13%
2019 Workers 16+ Drove Alone to Work	0.24%
2019 Workers 16+ Carpooled	87.09%
Mean travel time to work (minutes), workers age 16 years +, 2016-202	29.3

Source: U.S. Census Bureau, 2019 American Community Survey 5-Year Estimates

Existing Transit Network

Currently there are no fixed-route services operating in Hardin County. Southeast Texas Transit (SETT), a rural transportation system operated by Southeast Texas Regional Planning Commission, provides curb-to-curb demand/response transportation service for healthcare, shopping, social services, employment, education, and recreational needs to seniors and persons with disabilities in the County.

Existing Bicycle Network

Currently there are no bicycle facilities in Hardin County.

CHAPTER 04. HIKING AND BICYCLING

This chapter includes discussion on active transportation facility types, design considerations and available TxDOT guidance to build these facilities. It also discusses the benefits of walking and bicycling as modes of transportation.

Benefits of Hiking and Bicycling

Walking and bicycling as modes of transportation have several benefits. The benefits to provide active transportation options which include:

a) **Improved public health –** Increased walking and biking, for commuting to work and recreation, are among the most effective ways to address America's crisis of physical inactivity. Physical inactivity is a major factor in high and rising rates of chronic diseases that cost the U.S. health care system trillions of dollars each year. Physical activity such as walking and biking in people's daily lives reduces obesity and related diseases such as coronary heart disease, stroke, certain types of diabetes, colon cancer, hypertension, osteoporosis, depression, and lower back pain.

b) **Reduced environmental impact** – Active transportation can replace automobile trips and reduce greenhouse gas emissions from private vehicles. A bicycle commuter who rides four miles to work, five days a week, avoids 2,000 miles of driving and (in the U.S.) about 2,000 pounds of carbon dioxide emissions each year. This amounts to nearly a five percent reduction in the average American's carbon footprint (Gardner, G. 2010).

c) **Improved public safety –** Street-scale features or improvements for walking and biking add more "eyes on the street" for crime reduction.

d) **Enhanced Multimodal Traffic Safety –** Active transportation facilities (i.e., sidewalks and bicycle lanes) in conjunction with other traffic calming measures can be used to encourage reduced vehicular speeds to accommodate bicyclists and walkers.

e) **Increased transportation choices** – Children, senior citizens, and other adults can choose alternative methods as well as those who cannot afford to own a car and have limited options for transportation.

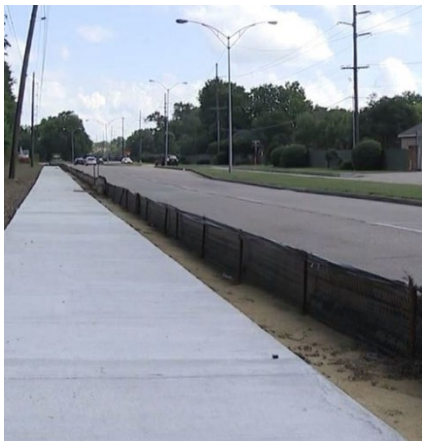
f) **Increased economic development opportunities** – Well-designed active transportation facilities can support economic development opportunities for bussiness and tourism.

Types of Walking and Bicycling Facilities

Active transportation facilities include infrastructure designed and built to accommodate active transportation such as bicycling, walking, wheelchair use, and micro-mobility vehicles such as electric scooters. The Southeast Texas transportation system includes many facility types, including sidewalks, bicycle lanes, shared-use paths, and trails. There are other types of infrastructure that can be implemented in the Tri-County region.

Sidewalk

Description	Most common form of walkway infrastructure, exclusively for pedestrians.
Typical Location	Often run parallel to low-, medium- or high-volume roadways, including arterials and minor arterials.
Design Considerations	The FHWA recommends that sidewalks be at least 5 feet in width if they are set back from the curb. 6-feet wide or wider is preferred, when it touches the curb, or in locations with heavy pedestrian traffic.



Bicycle Lane

Description	On-street dedicated space for bicyclists. Studies show that both drivers and cyclists behave less erratically when cyclists use bicycle lanes. Bike lane configurations include conventional bike lanes, buffered bike lanes, protected bike lanes, contra-flow bike lanes, etc.
Typical Location	Medium- or high- volume roadways, including arterials and minor arterials.
Design Considerations	At least 4 feet wide on roadways with open shoulders, and at least 5 feet wide on roadways with curb and gutter and/or on-street parking. Pavement markings every 1/2 mile. Incorporated into the design of new roadways typically adds a small amount to the total construction cost; however, retrofitting an existing road with additional pavement can have substantial costs.

Shared-Use Path / Trail

Description	Dedicated bicycle facility generally located outside of a road's right-of-way. May also be used by pedestrians, skaters, joggers, and other non-motorized users.
Typical Location	Within an exclusive right of way separated from automobile traffic. Found along utility corridors, waterways, and drainage facilities, and within parks.
Design Considerations	Shared-use paths should be 10 to 14 feet wide to accommodate two-way traffic, with a shoulder 2 feet wide on each side of the facility.

Signed Shared Roadway

Description	Encourage bicyclists and motorists to share the road, especially where a wide outside lane (14 feet or wider) exists. Often denoted using shared-lane markings or "sharrows."
Typical Location	Low- or medium-volume streets (e.g. collector streets).
Design Considerations	Provide shared-lane markings every 250 feet, 4 feet from the edge of pavement or door zone of parked cars. Provide bicycle route signage every 1/4 mile and at intersections.

Signed Shoulder Bicycle Route

Description	Per the 2012 AASHTO Guide for the Development of Bicycle Facilities, shoulders where paved can be used by bicyclists. Shoulders are the portion of roadway contiguous with the travel way that accommodates stopped vehicles, emergency use, and lateral support for sub-base, base, and surface course.
Typical Location	A signed shoulder bike route shall include posted bike route signs and may include pavement markings.
Design Considerations	Provide bicycle route signage every 1/4 mile and intersections.

Bicycle Facilities Design Considerations

Bicycle accommodation design and standards may vary at the local, state and federal levels. This section includes some considerations to take into account when designing bicycle infrastructure and amenities. Note that for TxDOT-maintained roads, TxDOT specifications apply. In 2021, TxDOT provided interim guidance for bicycle infrastructure that further enhances safety and comfort level of most cyclists and is consistent with the draft AASHTO Guide for the Development of Bicycle Facilities (5th Edition) that is under review. This guidance is based on the review of new national guidelines for the best practices for the design of bicycle facilities and supersedes AASHTO's Guide for the Development of Bicycle Facilities (4th Edition, 2012). The AASHTO guidance applies in the event that TxDOT does not provide guidance for a specific design criterion.

Signage and Wayfinding

All bike facilities should have proper signage and wayfinding symbols, both on poles and roadways, to provide points of reference for the bicyclists (Figure 4). This applies to both existing and proposed designated bikeways as part of the road network.

Figure 12 Signage and Wayfinding Examples for Bicycle Facilities

Bike Parking

Proper short or long-term bicycle parking at transit stations, work sites, shopping centers, and similar sites can support the bicycling needs of the region. Cities can adopt their own bicycle parking ordinances while ensuring visibility, access, security, lighting, and weather protection. This plan uses the design recommendations from the *Essentials of Bike Parking: Selecting and Installing Bike Parking That Works* (2015) issued by Association of Pedestrian and Bicycle Professionals (APBP) to provide guidance for bicycle parking site planning, rack-selection, placement and spacing, and installation (Table 5).

Table 7 Recommended Guidelines for Bicycle Parking Locations and Quantities

Land Use or Location	Physical Location	Bicycle Capacity
City park	Adjacent to restrooms, picnic area, fields, and other attractions	8 bicycles per acre
City schools	Near office entrance with good visibility	8 bicycles per 40 students
Public facilities (city hall, libraries, community centers)	Near main entrance with good visibility	8 bicycles per location
Commercial, retail and industrial developments over 10,000 gross square feet	Near office entrance with good visibility	1 bicycle per 50 employees or 8 bicycles per 10,000 gross square feet
Shopping centers over 10,000 gross square feet	Near office entrance with good visibility	8 bicycles per 10,000 gross square feet
Commercial districts	Near office entrance with good visibility, not to obstruct pedestrian and vehicular movement	2 bicycles every 200 feet
Transit stations	Near platform and security guard	1 bicycle per 30 parking spaces

Traffic Calming Strategies

Traffic calming strategies are physical obstructions meant to slow down and possibly divert vehicles. More generally, these strategies change a road to lower vehicle speeds, reduce traffic volumes, divert cut-through traffic, or some combination therein. Several traffic calming strategies can be implemented to provide safer roads for pedestrians and bicyclists.

Widening Sidewalks/Narrowing Streets and Traffic Lanes

Description	These techniques provide a flexible way to take back space from the street for non-motor-vehicle uses. A Policy on Geometric Design of Highways and Streets (1) contains criteria for determining appropriate lane widths and provides significant flexibility to use travel lanes as narrow as 10 ft (3.0 m) in a variety of situations. Factors that should be considered include operating speeds, volumes, traffic mix, horizontal curvature, use of on-street parking, and street context, among others
Benefits	Narrowing lanes and widening sidewalks eases crossing for pedestrians and gives them more space to walk. Traffic lanes can be transformed into bicycle lanes. All street lanes can be narrowed together to create more room for non-auto uses.
Disadvantages	Vehicular traffic might worsen temporarily in some instances.

Diagonal Parking

Description	Cars park diagonally, jutting out from the curb, rather than parallel to it.
Benefits	Changes both the perception and the function of a street. Drivers pulling out and incoming drivers must be alerted to approaching traffic, making it safer for pedestrians and bicyclists Can add up to 40% more parking space than parallel parking.

Changing One-Way Streets to Two-Way Streets

Description	Single or double traffic lanes, either face-to-face or with a median, sometimes flanked by parking.
Benefits	Decreases distance between destinations. Could reduce traffic speed
Disadvantages	Reduction of total network capacity can result in slower speed and congestion. Temporary disruptions to businesses as patrons adjust to new street patterns.

Bulbs, Chokers, and Neckdowns

Description	Interchangeable terms for sidewalk extensions in selected areas – such as at intersections or at mid-block – as opposed to a full sidewalk widening.
Benefits	Provides a haven for pedestrians waiting to cross the street. Shortens the crossing distance. Provide space for amenities and enhancements (e.g., kiosks, trees, lighting).
Disadvantages	Chokers and neckdowns are unfriendly to cyclists unless designed to accommodate.

Chicanes

Description	Sidewalk extensions that jog from one side of a street to the other to replicate a circuitous route.
Benefits	Narrow, curving roads encourage motorists to drive more slowly and carefully. Can be formed using sculpture, plantings, and parking to enhance the appearance and function of a street. Best used on narrow roads to prevent cars from swinging out to maintain their speed around the bends.
Disadvantages	Can be costly, better installed in conjunction with street reconstruction. May create opportunities for head-on conflicts or narrow streets.

	Landscaping area to be maintained increases.

Roundabouts

Description	Large, raised, circular islands at the middle of major intersections, around which all oncoming vehicles must travel until reaching their destination street, where they then turn off.
Benefits	Low- or medium-volume streets (e.g. collector streets).
Disadvantages	Requires additional signage. Initial safety issues as drivers adjust.

Road Humps and Speed Tables

Description	Road humps (or "speed humps") are rounded mounds, approximately three inches high and 10 to 12 feet long. Speed tables are road humps that are flat on top and sometimes slightly longer. They are the same width as the street and rise to meet the grade of the sidewalk.
Benefits	Provide safe and comfortable crossings for walkers and wheelchairs. They effectively slow down traffic to 15-20 mph without making drivers uncomfortable.

Tight Corner Curbs

Description	The longer the radius of a curve, the faster a vehicle can move around that curve – as many pedestrians witness when, in crossing at an intersection, they are confronted by a car whizzing around the corner seemingly out of nowhere.
Benefits	Inhibits the speed of turning vehicles. Gives pedestrians a better chance to see and be seen by approaching traffic. Adds sidewalk space, thereby shortening the distance to the other side of the street.

CHAPTER 05. 2040 BICYCLE NETWORK

This section provides an overview of the proposed bicycle network in the region. The network was created through a process that involved past efforts, public input, field analysis, and technical review by SETRPC. The recommended Bicycle Network comprises 368 segments or projects. These were identified during the workshops held in 2014 and 2017. In 2021, a tool was developed to prioritize these segments according to criteria The combined results were analyzed to see where the networks overlapped and what gaps were left to be filled.

Due to more stakeholders in attendance from Jefferson County, this county received more detailed suggestions. The residents were mainly from Beaumont, with one participant from Port Arthur and Port Neches each. Orange County had only one participant and Hardin County had three representatives. As a result, the proposed bike routes are more detailed at the city level in Jefferson County, where Beaumont, Port Neches, Nederland, Port Arthur, and Groves were focused on separately. Orange and Hardin Counties were addressed as one. The proposed bicycle network (Figure 13) serves the long-range vision of providing a viable form of alternative transportation in the region.

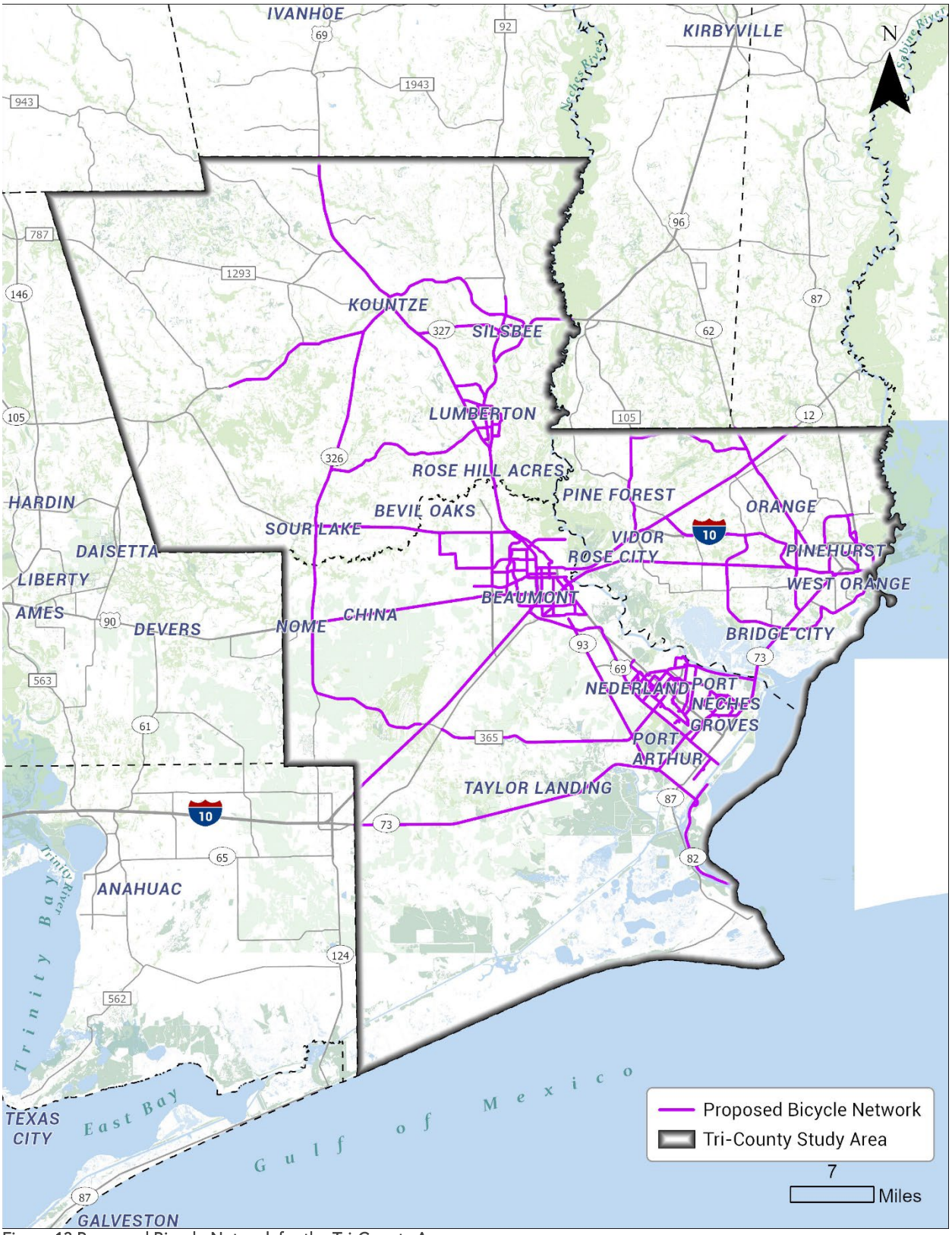


Figure 13 Proposed Bicycle Network for the Tri-County Area

Factors Considered for the Bicycle Network

The proposed bicycle network is a direct result of the community and stakeholder meetings as well as roadway condition investigations. It entails a total of 595 miles of Bicycle infrastructure. Its main objective is to connect points of interest identified at these meetings. A variety of facility types can be designed for pedestrians and bicyclists. The parameters for choosing the most appropriate facility types often include, but are not limited to:

- Right-of-way (ROW) width,
- speed limit and volume,
- expected pedestrian and bicyclist activities,
- existing pedestrian and bicycle infrastructure, and
- cost drivers (e.g. such as bridges,
- surrounding land uses.

A roadway conditions inventory was completed through a combination of desktop review via Google Earth and GIS databases. Information gathered included ROW, speed limit, existence of shoulder, and existing sidewalks. These conditions are notated on Appendix A. Initially, facility type recommendations were provided based on these conditions; however, further planning and engineering are required to provide feasible alternatives. Generally, major highways were avoided as much as possible, due to unsafe biking and walking conditions. Note that alternatives might entail projects shifting to nearby streets with better, safer roadway conditions. The bicycle network will include Bicycle infrastructure that is context sensitive.

Bicycle Projects Prioritization Tool

A Microsoft Excel-based model was developed to prioritize the proposed 368 Bicycle network segments. The objective of the tool is to help SETRPC and other local entities in the region, prioritize the proposed Bicycle segments according to area needs, cost drivers. Projects were evaluated through various lenses or criteria that correspond to current Federal and State policy goals. Criteria weights are based on meeting priority policy objectives at the state and national levels and supporter via stakeholders' input. The criteria were weighted based on the communities' priorities, gathered from stakeholders' responses to a survey that ran from September 28 to November 4, 2021. At closing, the survey had a total of 113 responses. The six criteria and corresponding scoring weight are listed in Table 3. Appendix B describes in detail the methodology of the prioritization tool.

Table 8 Points assigned to Criteria based on survey results from 11/4

Criteria	Points
Safety	60
Connectivity	42
Environmental Justice	25
Human and Built Environment	22
Opportunities	30
Cost Drivers	21
Total	200

* Survey closed on 11/04/2021, includes 113 responses

Safety

The safety evaluation criterion assessed three factors:

- Vehicle crash rate of all types of crashes occurred along the corridor
- Crash rate of fatal and severe bicycle crashes that occurred along the corridor
- Truck percentage

All Crashes – sourced from TxDOT Crash Record Information System (CRIS) database. It is quantified as all vehicle crashes along the project segment.

Fatal and Severe Crashes involving Bicyclists – sourced from TxDOT CRIS database. It is quantified as all crashes involving bicyclists that have resulted in a fatality or a severe injury during a 5-Year period between 2015 and 2019 along the project segment. The bike crash rates (frequency) along the project segment are translated as a percentile rank.

Truck Percentage – sourced from TxDOT State Planning Map. Weighted average of truck percentages available per project segment.

Connectivity

Project should enhance mobility and connectivity to transit, existing bicycle facilities, parks, jobs, grocery stores, and schools.

Environmental Justice (Equity)

Project should provide mobility options for all, inclusive of underserved disadvantaged populations such as low-income, minorities, and households without vehicles.

Human and Built Environment Suitability

Project should provide connectivity in areas that are densely populated, walkable, and compact.

Opportunities

Project implementation can be accomplished with future construction or planned roadway improvements.

Cost Drivers

Project should be mindful of costs drivers (i.e. bridge crossings, railroad crossings, and highway crossings) that will increase total project cost. Cost drivers often make projects cost-prohibitive for agencies and reduce funding for other projects.

Proposed Bicycle Network and Prioritized Projects

A Top 20 Projects List was created based on an initial selection of 150 segments (Figure 14). Sizes vary in sizing due to initial selection and development of projects. Segments have been combined to make longer, more meaningful connections.

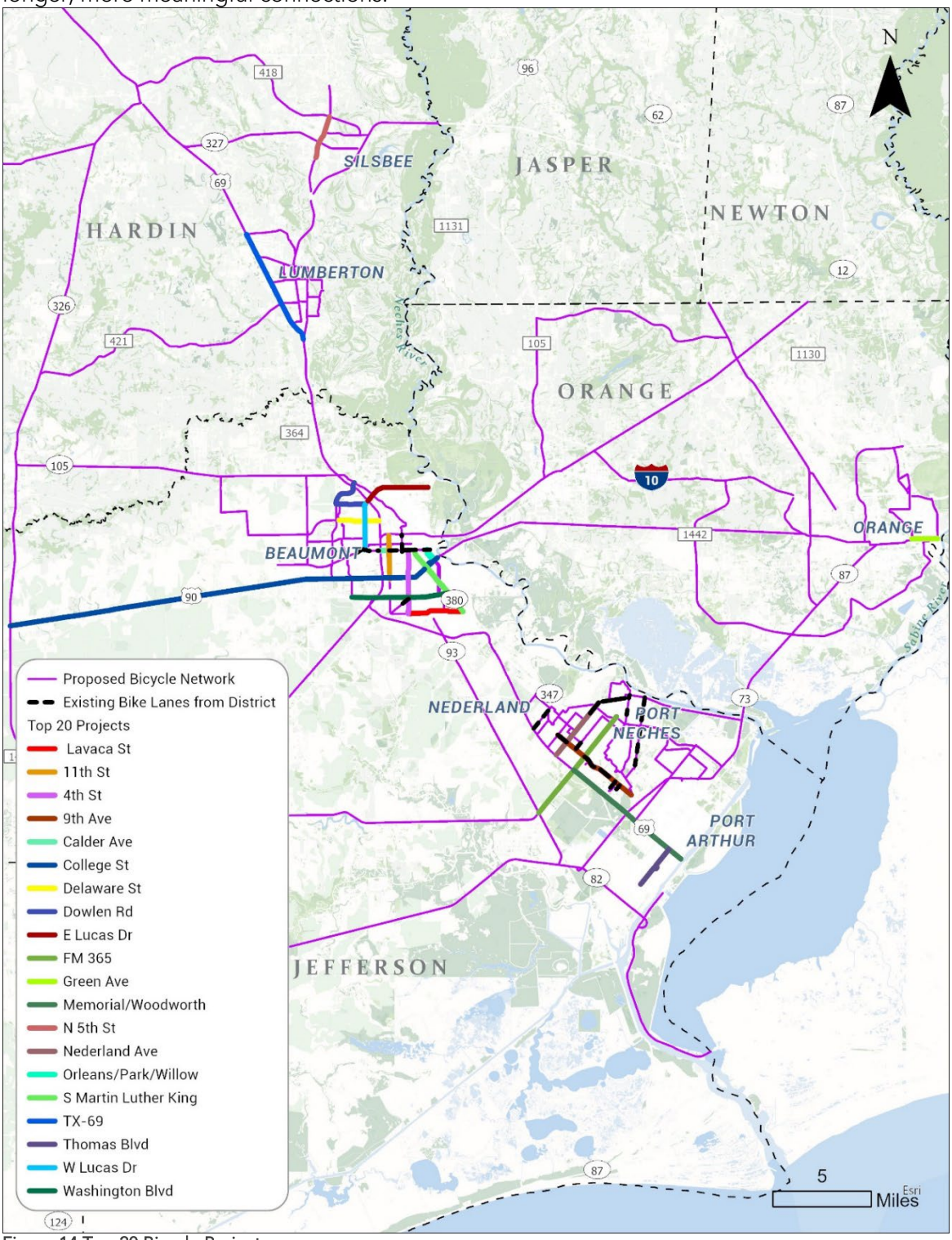


Figure 14 Top 20 Bicycle Projects

Jefferson County

Proposed Bicycle Network in the City of Beaumont

The bicycle network in the City of Beaumont (Figure 15) aimed to connect the north and south parts of the city, Lamar University with the rest of the city, and downtown with other commercial nodes. Interstate 10 goes through the city, limiting the connectivity of the north and south. A few points have been identified through which bike infrastructure has been suggested to maintain connections. Next, the network connected Lamar University to the northern part of the city. Skilled bicyclists can use the highway for this purpose, but for others it might be a hindrance to use a bicycle as a mode. To provide users with a choice, Park Street and Pennsylvania Avenue were suggested as alternative connections. Both streets are one way and have existing bike lanes that can be used. Another point of interest in this city is the Hillebrandt Bayou. The plan proposes a trail along the bayou, which can be a scenic bikeway in the city.

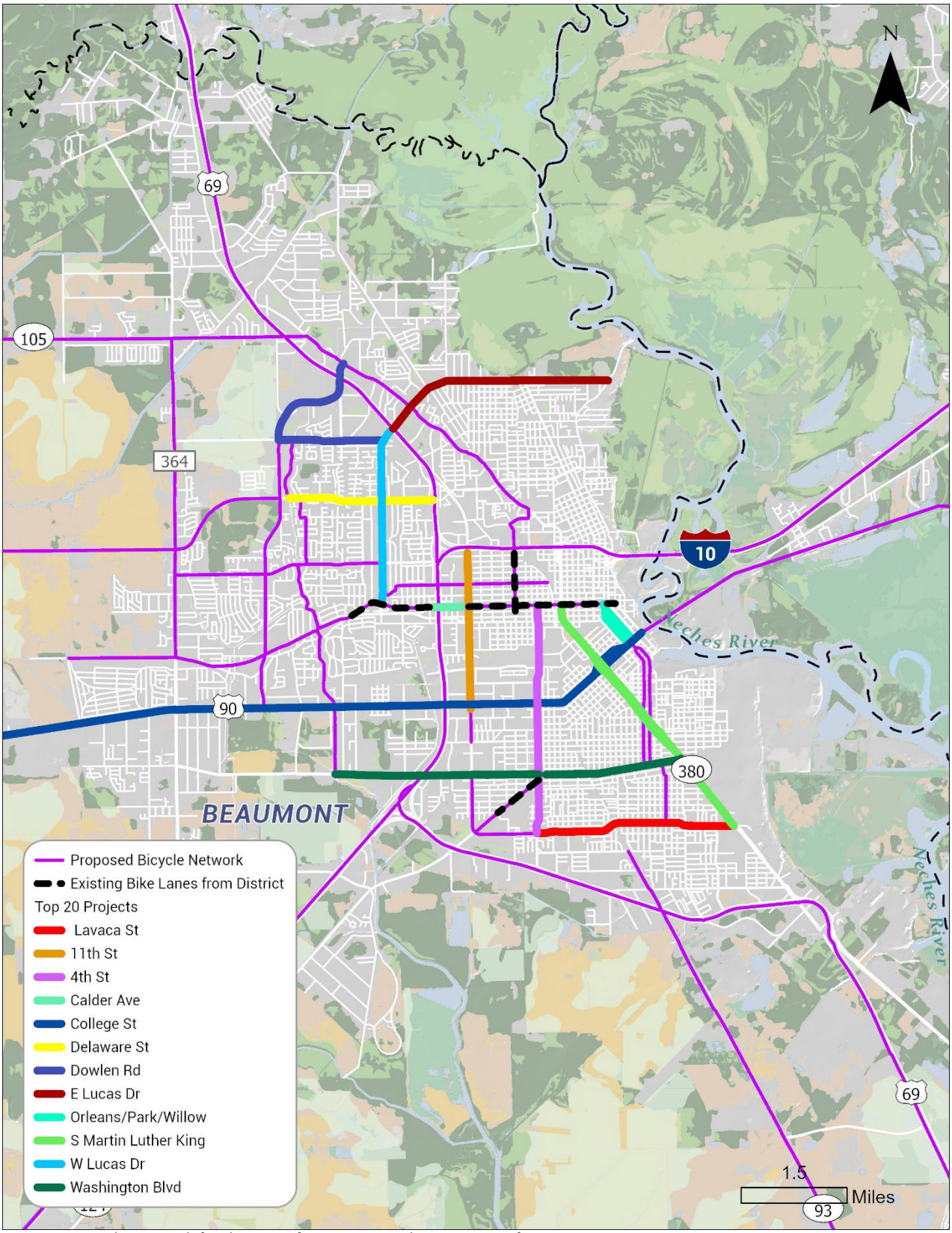


Figure 15 Bicycle Network for the City of Beaumont and Top Projects from Prioritization Run

Proposed Bicycle Network in Cities of Port Neches, Port Arthur, Nederland and Groves

The network (Figure 16) aimed to connect schools, libraries, and parks throughout the cities to provide safe routes for children, joggers, pedestrians, and recreational bike-riders, and to connect downtown and other commercial areas in this part of the county. The Twin Cities Highway and the Kansas City Southern (KCS) railway go through the cities and create some hindrance in the connectivity of the bikeways. A few points were identified where bikeways can be connected without crossing the highway or railroad. Where this was not possible, appropriate signage and safety measures need to be adopted.

The Block Bayou and Oak Memorial Park were connected with the levee and proposed "Port Neches Riverfront", which has the potential to be a recreational hub in this city. There is also a network of canals- the Drainage District 7 (DD7) canals and the Lower Neches Valley Authority (LNVA) canal throughout the cities. The parts of the canals which have sufficient right-of-way can accommodate bike trails along them to increase connectivity. The Main Canal Trail and the LNVA Trail have been proposed alongside the canals to connect to the bikeways on the streets, which provides alternative routes around the cities.

The City of Port Arthur has some major points of interest that have potential for connections with other parts of the city. There is another campus of Lamar University in this city where there is probability of higher biking rates. Moreover, the downtown and waterfront near Lake Sabine could be areas that could generate a lot of recreational bicycling. Parts of the DD7 canals also flow through these cities and have been considered for providing bicycling facilities. The schools, parks, and major commercial nodes have also been connected through bikeways.

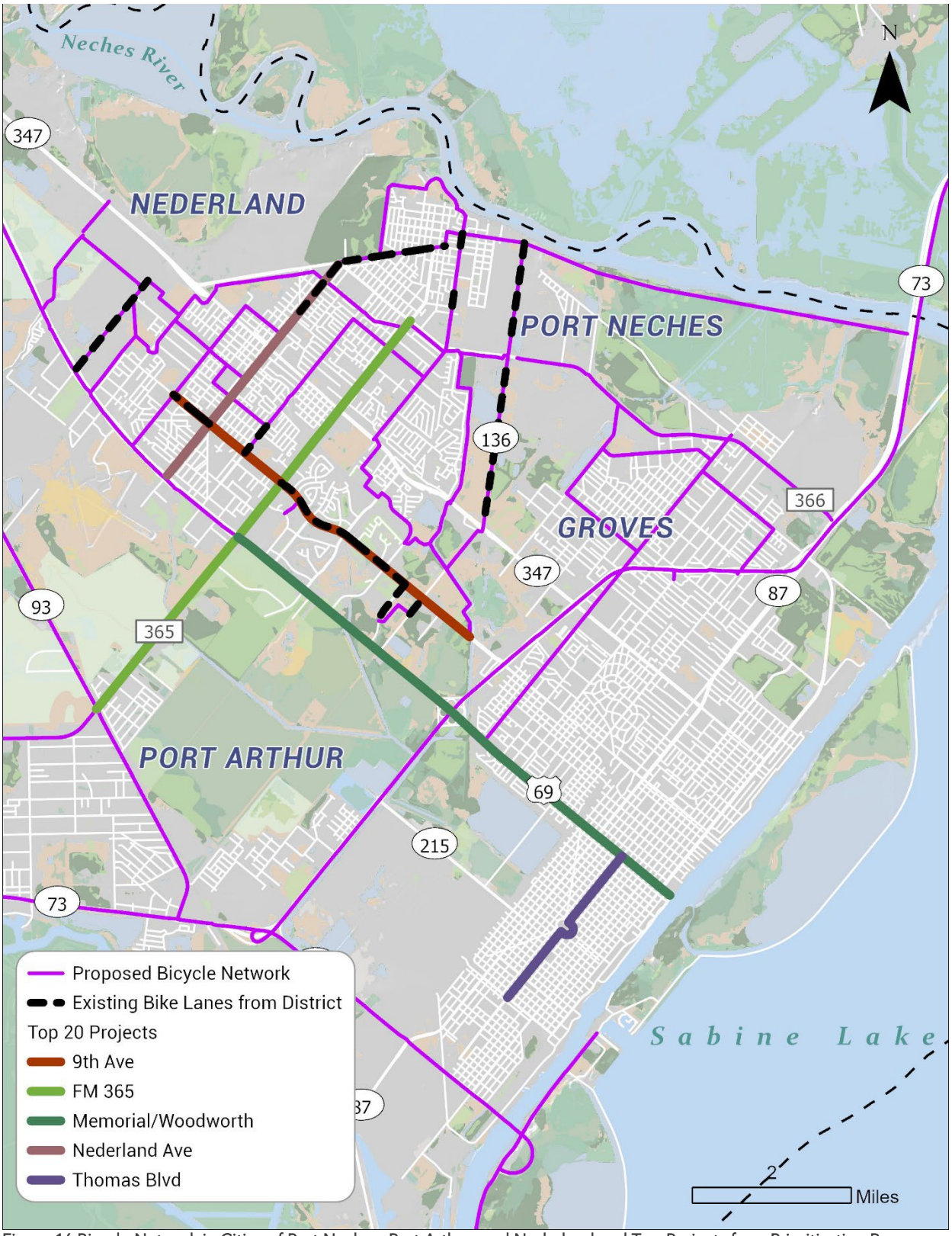


Figure 16 Bicycle Network in Cities of Port Neches, Port Arthur, and Nederland and Top Projects from Prioritization Run

Orange County

The cities within Orange County are quite far from each other, which poses the challenge of connecting the downtowns of each city in the network (Figure 17). There are some parks and educational institutions throughout the cities where connections were attempted through the proposed bikeways. A crucial point in this county is the proximity of the Big Thicket National Park to the city of Pine Forest, which could not be connected due to the wetland in between. The network also connected the City of Vidor with Beaumont, where the only possible road is Rainbow Bridge, a high-speed road, unsuitable for bicycling. A bicycle bridge may be built in the long term.

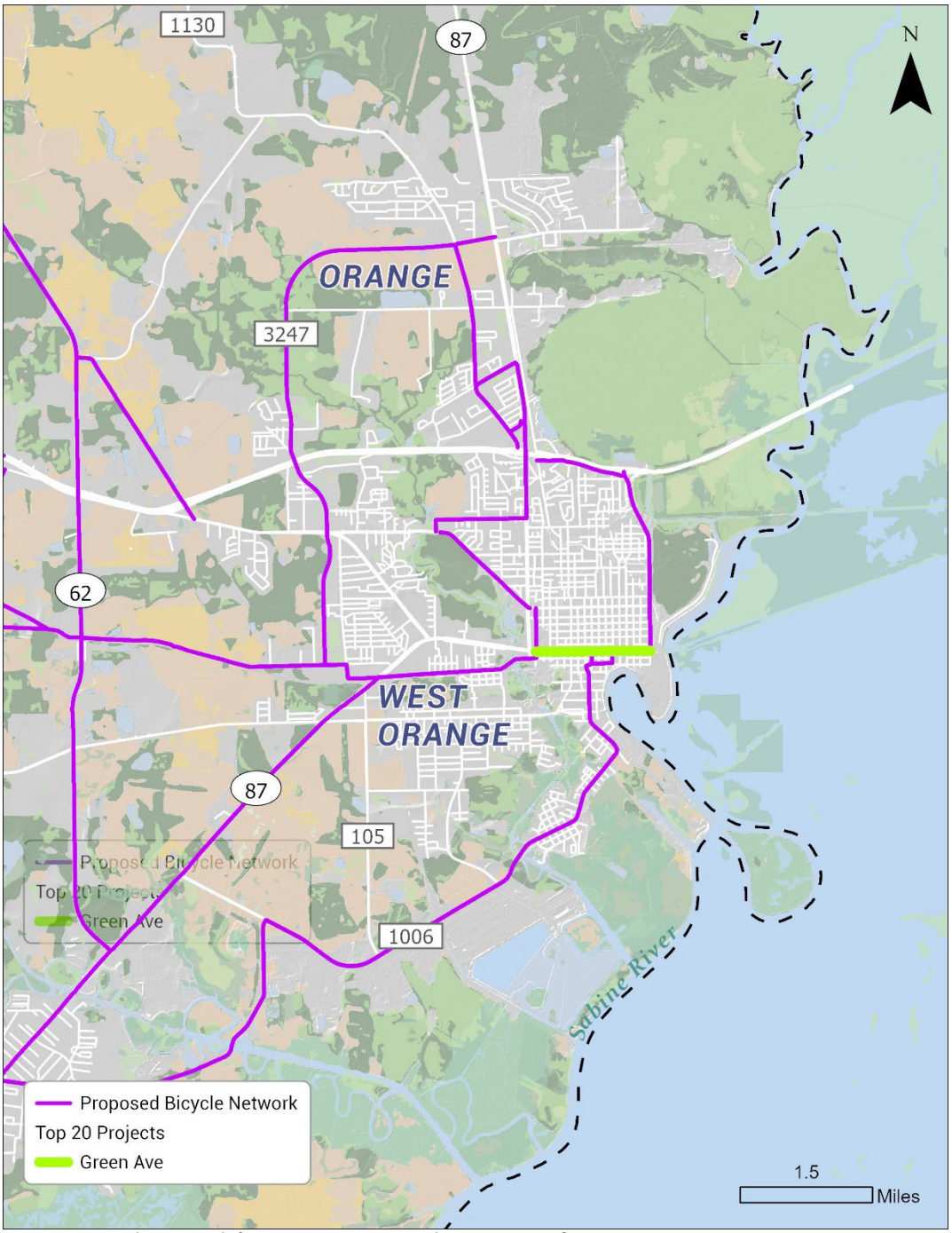


Figure 17 Bicycle Network for Orange County and Top Projects from Prioritization Run

Hardin County

This is the home of the Big Thicket National Park, and consequently a potential hub for recreational cyclists and tourists. The major goal in the network (Figure 18) was to connect the cities, which are quite far from each other, so transit between them was utilized on the connecting highways. The recommendation will be to have policies that ensure buses on these routes have bike racks so that bicyclists can carry them up to a certain point until the streets are safer for biking. The local streets inside the cities were also quite narrow, so the plan recommends signed shared roadways there.

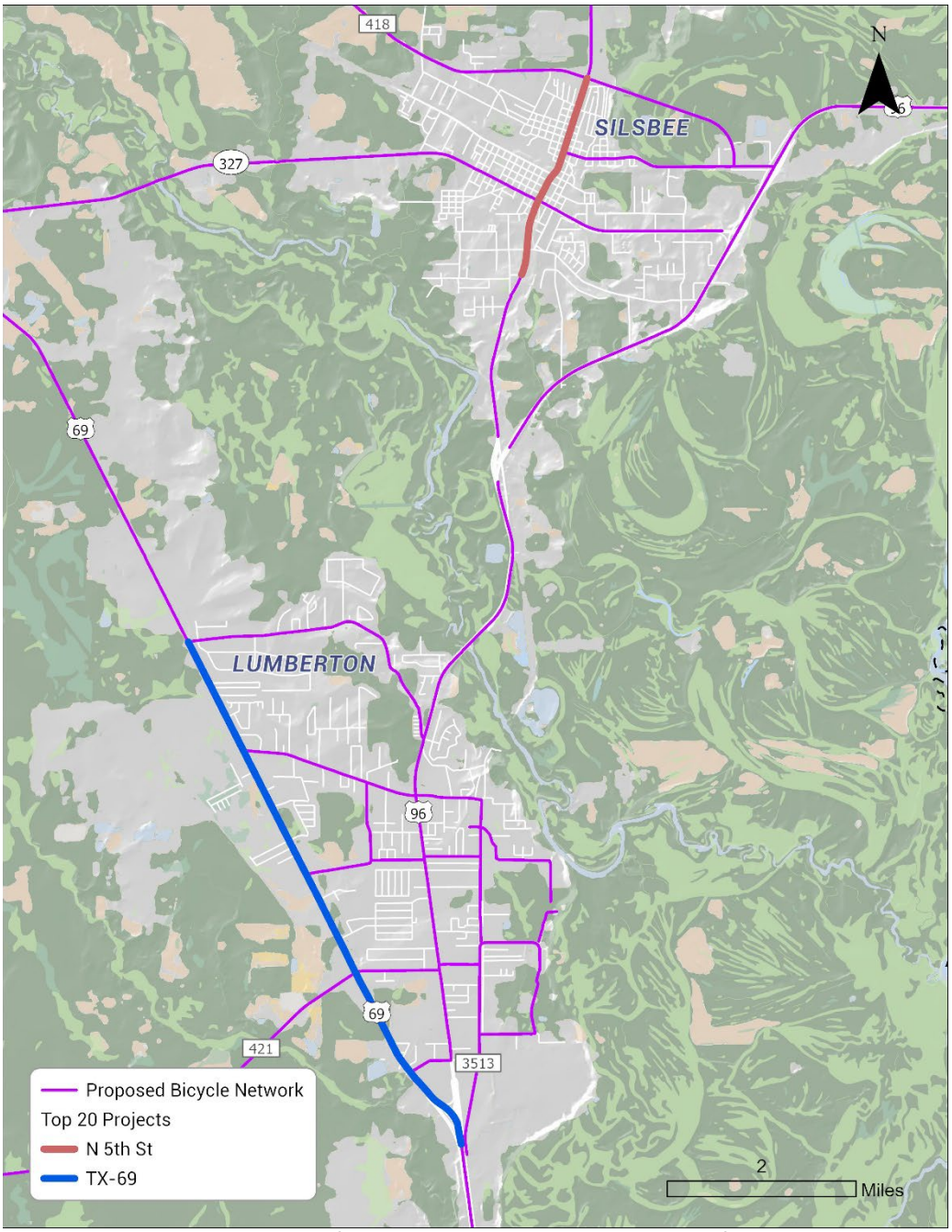


Figure 18 Bicycle Network in Cities of Lumberton and Silsbee and Top Projects from Prioritization Run

Chapter 06: IMPLEMENTATION

Checking Progress

SETRPC will work closely with the Bicycle Plan Advisory Committee and local entities to update the region's Bicycle Plan map. SETRPC should supervise the tasks and prepare an annual progress report to ensure accountability and a consistent roadmap for achieving the goals. The progress report will establish performance measures to evaluate the progress towards achieving the goals and objectives laid out in this plan. After collecting baseline data, the following aspects should be addressed for the evaluation:

- Safety: Measures of bicycle crashes or injuries.
- Usage: Measures of how many people are bicycling on on-road and off-road facilities.
- Facilities: Measures of how many bicycle facilities are available and the quality of these facilities.
- Education/Enforcement: Measures of the number of people educated or number of people ticketed as a part of a bicycle safety campaign.
- Institutionalization: Measures of the total budget spent on bicycle projects and programs, or the number of municipal employees receiving bicycle facility design training.

The progress report should also include the following components to gauge progress on implementation of the Bicycle Network:

- Status of each action step,
- Accomplished actions over the last year,
- Obstacles and constraints for the actions,
- Proposed amendments to the action items for the next year, and
- Proposed additional action items.

Action Type

Capital Improvement Program

The Capital Improvement Program (CIP) action type means there will be a significant investment in the counties and/or cities and should include the efforts of the counties and/or cities in infrastructure, drainage improvements, parks facilities, etc.

Ordinance or Regulation

The ordinance or regulation action type refers to the local government policies that can be formulated and/or adopted as a part of development regulations, and other county and city standards.

Program

The program action type refers to routine activities, special projects, or initiatives taken on by the county, cities, or other organizations that include community outreach efforts, special training, awareness, etc.

Partnership or Collaboration
The partnership or collaboration action type refers to action steps that require additional partners or coordination with other agencies, organizations, or companies from the public and/or private sector. This is often the most critical action type that caters to developing relationships with other partners over a span of time period with fruitful results.

More Targeted Planning
The more targeted planning action type refers to actions that are related to additional studies, plans, reports, etc. that are needed for a more detailed analysis of conditions or more specific solutions.

Action Leaders
To identify the action leaders and responsible parties for the action steps, following codes have been created:

ADM: Staff within (courts, administration, secretary, human resources, and finance)
BUS: Business and stakeholders COC: Chamber of Commerce
EDC: Economic Development Corporation ENG: Engineers
FCL: Facilities
GB: Governing bodies
PLAN: Planning, city management SRV: Services
SD: Special districts

Funding
Many internal and external funding sources are available to assist SETRPC in accomplishing the goals. Internal resources are the taxes and fees relevant to the action items, and numerous external funding resources include federal, state and local funds. The funding column in the Action Tasks table provides suggestions for funding sources or grants for each of the action items. Detailed information on funding sources can be found in Appendix C.

Implementation Table
The following table lists the action steps linked to the goals and objectives stated in Chapter 1. The table also mentions the time frame of the action items, action type, action leaders responsible to manage each item, and possible funding resources for implementing them.

		Short-Term	Medium-Term	Long-Term	Capital Improvement Project	Ordinance or Regulation	Program	Partnership or Collaboration	More Targeted Planning	Action Leaders Funding	Notes
		Time Frame			Action Type						
GOAL 1: COORDINATE REGIONALLY AND LOCALLY											
1.1.1 Create and adopt a bicycle plan											
Create and adobt a bicycle plan that states a vision for your community.	OBJ 1.1	ONGOING						X		ADM, PLAN, GB	
1.1.2 Coordinate with Developers											
Incentivize developers to provide sidewalks and bicycle facilities in new developments.	OBJ 1.1	ONGOING						X		ADM, PLAN, COC, BUS	
1.1.3 Partner with TXDOT											
Meet semiannually with TXDOT, legislators, and SET cities about hike and bike initiatives and link to TXDOT.	OBJ 1.1	ONGOING						X		ADM, PLAN, GB	
1.1.4 Partner with Special Districts											
Meet quarterly with special districts in the cities about hike and bike initiatives installment and maintenance.	OBJ 1.1	ONGOING						X		ADM, PLAN	
1.1.5 Partner with Health and Safety Coalitions											
Meet semiannually with health and safety coalitions in the cities about hike and bike initiatives installment and maintenance.	OBJ 1.1	ONGOING						X		ADM, PLAN	
1.1.6 Coordinate with Utility											
Utility companies must be held responsible for replacing bike facilities when they do work in the public right-of- way. Guidance should be added to TXDOT's Regulations for Openings, Construction and Repair in the Public Way to ensure bike lanes are properly restored.	OBJ 1.1	ONGOING						X		ADM, PLAN, ENG, SRV, SD	
1.2.1 Establish Maintenance Practices											
Keeping barrier-protected bike lanes clear in SET will be just as important as keeping all streets clear. TXDOT will coordinate with the Department of Streets and Sanitation to ensure street sweeping of bike lanes.	OBJ 1.2	X				X				ADM, PLAN, ENG, SRV	

		Short-Term	Medium-Term	Long-Term	Capital Improvement Project	Ordinance or Regulation	Program	Partnership or Collaboration	More Targeted Planning	Action Leaders Funding	Notes
1.2.2 Feasibility Study for Prioritizing Projects											
Prioritize projects using excel based tool, based on your communities' priorities. Conduct feasibility studies of prioritized projects to identify alternatives.	OBJ 1.2	X							X	ADM, PLAN, ENG	- Alternatives Analysis Program - Discretionary Livability Funding Opportunity; - Bus and Bus Initiative Livability Initiative; - Hazard Elimination and Railway-Highway Crossing programs; - Surface Transportation Program (STP).
1.2.3 Establish Performance Measures											
Conduct evidence-based and data-driven study on performance, including usage, safety, facilities, etc.	OBJ 1.2	X							X	ADM, PLAN, ENG	See Section 1.2.2
1.3.1 Establish Funding Sources											
A dedicated funding source must be established that is tied to the life cycle of the facilities in order to keep bicycle infrastructure in a state of good repair.	OBJ 1.3		X						X	ADM, PLAN, BUS	See Section 1.2.2
1.4.1 Mode share & Safety Goal in Comprehensive Plan											
Encourage cities to include mode share and safety goals, based on the USDOT goal of doubling the amount of walking and bicycling and improving safety by 10%.	OBJ 1.4		X					X		ADM, PLAN	See Section 1.2.2
1.4.2 Health & Physical Activity in Comprehensive Plan											
Encourage cities to include health and physical activity with a goal of having all three-county region's residents meet or exceed the U.S. Surgeon General's recommendations for daily physical activity	OBJ 1.4		X					X		ADM, PLAN	See Section 1.2.2
1.4.3 Modify Local Subdivision Ordinances											
Add and/or modify the local subdivision ordinances for accommodating sidewalks and bicycle facilities in all new subdivisions.	OBJ 1.4			X		X				ADM, PLAN	See Section 1.2.2
1.4.4 ROW as Bicycle Facilities											
Acquire land for installing bicycle facilities	OBJ 1.4				X					ADM, PLAN	See Section 1.2.2

		Short-Term	Medium-Term	Long-Term	Capital Improvement Project	Ordinance or Regulation	Program	Partnership or Collaboration	More Targeted Planning	Action Leaders Funding	Notes
1.4.5 Future Road Connect Activity Nodes											
Project future road and bike network to connect major destinations including schools, parks, hospitals recreation areas, employment and community centers.	OBJ 1.4			X					X	ADM, PLAN, ENG, BUS	See Section 1.2.2
1.4.6 Future Land Use											
Ensure that bicycle planning is integrated with transportation planning and land use in future.	OBJ 1.4			X					X	ADM, PLAN, BUS	See Section 1.2.2
GOAL 2: CONNECT ACTIVITY NODES											
2.1.1 Provide End-Of-Trip Facilities											
Encourage the creation of end-of-trip facilities such as bike racks, restrooms, water fountains, etc. along key regional pedestrian and bicycle routes.	OBJ 2.1		X		X					ADM, PLAN, ENG, FCL	- Community Develop Block Grant; - Federal Lands Highway Program; - FTA Livable and Sustainable Communities Initiative; - Land and Water Conservation Fund (LWCF); - National Complete Streets Coalition; - National Highway System (NHS); - National Scenic Byways; - National Trails Training Partnership; - Office of Bicycle and Pedestrian Transportation; - Outdoor Recreation Grants; - Recreational Trail Grants; - Safe Routes to School (SRTS); - City; - Private.
2.1.2 Implement prioritized projects and build connections											
Implement prioritized projects and expand network by building connections to activity centers.	OBJ 2.1	X			X					ADM, PLAN, ENG, FCL	See Section 2.1.1
2.1.3 Adopt Best Practices											
Adopt the nationally accepted best practices for the development of pedestrian and bicycle facilities, including standards for construction, intersection treatment, signage, and pavement markings.	OBJ 2.2			X					X	ADM, PLAN, ENG, FCL	See Section 2.1.1

		Short-Term	Medium-Term	Long-Term	Capital Improvement Project	Ordinance or Regulation	Program	Partnership or Collaboration	More Targeted Planning	Action Leaders Funding	Notes
2.1.4 Increase human comfort for bicycling											
Ensure human comfort including shade, lighting, and design, along key bicycle routes.	OBJ 2.2			X					X	ADM, PLAN, ENG, FCL	See Section 2.1.1
2.1.5 Include walking and biking in school site design											
Partner with Independent School Districts and schools to develop Safe Routes to School project candidates that will allow children to walk or bike to school.	OBJ 2.2			X					X	ADM, PLAN, ENG, FCL	See Section 2.1.1
GOAL 3. ENCOURAGE A HIKE AND BIKE CULTURE											
3.1.1 Organize Bi-Monthly Forums											
To discuss bicycle related issues and stories by the residents	OBJ 3.1	X					X			ADM, PLAN, GB	- Bicycle Friendly Community Program; - Pedestrian and Bicycle Safety Program; - Land and Water Conservation Fund; - National Scenic Byways; - National Trails Training Partnership;
3.1.2 Incorporate in Driving Test											
Add information on safety of pedestrians and bicyclists in driving test.	OBJ 3.1		X				X			ADM, PLAN, GB	See Section 3.1.1
3.1.3 Safe Routes to School											
Teach children in the classroom about bicycle skills and encouraging health and fitness.	OBJ 3.1	X					X			ADM, PLAN, GB	See Section 3.1.1
3.1.4 Bicycle Safety Materials											
Distribute safety and education materials to schools, Department of Public Safety, law enforcement agencies and other organizations and indivuals involved in promoting safe walking and bicycling practives	OBJ 3.1	X					X			ADM, PLAN, GB	See Section 3.1.1
3.1.5 Wayfinding and Signage on Bicycle Routes											
Develop wayfinding signs that are oriented to pedestrians, bicyclists, and transit users.	OBJ 3.1		X				X			ADM, PLAN, GB	See Section 3.1.1
3.1.6 Special University-Based Programs											

		Short-Term	Medium-Term	Long-Term	Capital Improvement Project	Ordinance or Regulation	Program	Partnership or Collaboration	More Targeted Planning	Action Leaders Funding	Notes
Work with local colleges and universities, such as Lamar University to develop a comprehensive network of campus bicycle routes that are connected with bicycle facilities in the surrounding areas.	OBJ 3.1		X				X			ADM, PLAN, GB	See Section 3.1.1
3.1.7 Youth Activities											
Youth programs including a Bike Camp (where kids spend a week or two cycling in the community), Recycle-a-Bicycle (where youth learn mechanical skills building bikes from recycled parts) and Learn-to-Bike programs in conjunction with local YMCA, Boys/Girls Clubs, Scouting, and other programs.	OBJ 3.1		X				X			ADM, PLAN, GB	See Section 3.1.1
3.1.8 Helmet Promotions											
Arrange for giveaways and reduced-cost bicycle helmet programs.	OBJ 3.1		X				X			ADM, PLAN, GB	See Section 3.1.1
3.1.9 Free Bikes											
Give free bikes as a source of revenue by selling advertising on them, and as initial encouragement.	OBJ 3.1		X				X			ADM, PLAN, GB	See Section 3.1.1
3.1.10 "Share the Road" License Plate											
Design and sell to show support for bicycle and highway safety by purchasing a new specialized license plate.	OBJ 3.1		X				X			ADM, PLAN, GB	See Section 3.1.1
3.1.11 Sunday Biking											
Close and/or limit motor traffic on identified streets on Sundays to open them for biking and non-motorized activities.	OBJ 3.1		X				X			ADM, PLAN, GB	See Section 3.1.1
3.1.12 Bike to Work Day											
Encourage employees biking to work.	OBJ 3.1		X				X			ADM, PLAN, GB	See Section 3.1.1

Appendix A

Existing Conditions

FID	Street Name	City	County	ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)
0	Woodworth Blvd	Port Arthur	Jefferson	110	40	√√	x	x	1.3
1	Thomas Blvd	Port Arthur	Jefferson	110	30	√√	x	x	2.78
2	Simmons Dr	Orange	Orange	85	40	x	x	x	1.66
3	W Clark Ln	Orange	Orange	70	30	x	x	x	0.46
4	Meeks Dr	Orange	Orange	70	45	x	x	x	1.98
5	W Beverly Ave	Orange	Orange	25	0	x	x	x	0.15
6	E Lutcher Dr	Orange	Orange	90	45	x	x	x	0.97
7	FM 1442	Orange	Orange	80	65	x	√√	x	5.97
8	W Roundbunch Rd	Bridge City	Orange	80	65	x	x	x	4.76
9	E Roundbunch Rd	Bridge City	Orange	80	65	x	x	x	3.78
10	I-10 Service Road	Vidor/Pinehurst	Orange	90	55	x	x	x	7.52
11	TX 12	Pine Forest/Maurice-ville	Orange	80	65	x	√√	x	7.46
12	Texla Rd	Texla	Orange	75	65	x	√√	x	8.99
13	US 62 N Main St/US	Maurice-ville	Orange	105	55	x	√√	x	1.01
14	105	Pine Forest/	Orange	110	65	x	√√	x	2.09
15	9th Ave	Port Arthur	Jefferson	45	30	√√	x	√	0.24
16	N 5th St	Silsbee	Hardin	65	30	√√	x	x	1.22
17	BUS 96	Silsbee	Hardin	75	35	x	x	x	0.7

FID	Street Name	City	County	ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)
18	S Main St.	Lumberton	Hardin	75	45	x	√√	x	3.57
19	TX-69	Lumberton	Hardin	60	45	x	x	x	3.37
20	N Pine St.	Kountze	Hardin	60	35	x	x	x	0.69
21	W Monroe St.	Kountze	Hardin	75	35	x	x	x	0.46
22	Merriman St	Port Neches	Jefferson	76.4	30	√	x	√	0.22
23	Hwy 136	Port Neches	Jefferson	45.6	50	x	x	√	1.61
24	Hwy 136	Port Neches	Jefferson	53.1	50	x	x	√	1.08
25	Spurlock Ave	Central Gardens	Jefferson	60	30	x	x	√	1.24
26	9th Ave	Port Arthur	Jefferson	124	30	√	x	√	0.29
27	9th Ave	Port Arthur	Jefferson	116	30	√	x	√	0.7
28	Port Neches Ave	Port Neches	Jefferson	71	20	√√	√	√	0.3
29	Port Neches Ave	Port Neches	Jefferson	67	20	√	x	√	0.37
30	Port Neches Ave	Port Neches	Jefferson	64	30	x	x	√	0.52
31	Nederland Ave	Port Neches	Jefferson	61	30	x	x	√	0.26
32	N 27th St	Nederland	Jefferson	65	30	√√	x	√	0.33
33	N 27th St	Nederland	Jefferson	65	30	x	x	√	0.17
34	9th Ave	Port Arthur	Jefferson	124	30	√√	x	√	0.64
35	9th Ave	Port Arthur	Jefferson	113	20	x	x	√	0.15
36	Avenue H	Nederland	Jefferson	60	30	√	x	√	0.37
37	Port Arthur/Beaumont Hwy	Port Arthur	Jefferson	110	40	x	√√	x	0.66
38	Phelan Blvd	Beaumont	Jefferson	80	45	x	x	x	1.83

FID	Street Name	City	County	ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)
39	Calder Ave	Beaumont	Jefferson	60	30	√√	x	√	0.3
40	Calder Ave	Beaumont	Jefferson	60	30	√√	x	√√	0.75
41	N Major Dr	Beaumont	Jefferson	135	60	x	√√	x	2.58
42	N Major Dr	Beaumont	Jefferson	120	55	√	x	x	1.32
43	Hwy 105	Beaumont	Jefferson	80	55	x	x	x	1.33
44	Hwy 105	Beaumont	Jefferson	110	45	x	x	x	1.31
45	Delaware St	Beaumont	Jefferson	80	45	x	x	x	1.14
46	Calder Ave	Beaumont	Jefferson	70	30	√√	x	√	0.84
47	Calder Ave	Beaumont	Jefferson	70	35	√√	x	√	0.96
48	7th St	Beaumont	Jefferson	60	30	√√	x	√	0.75
49	Calder Ave	Beaumont	Jefferson	70	35	√√	x	x	0.33
50	Concord Rd	Beaumont	Jefferson	65	35	√	x	x	1.46
51	7th St	Beaumont	Jefferson	65	30	√	x	x	0.32
52	Hwy 105	Beaumont	Jefferson	75	30	x	x	x	0.34
53	Fannett Rd	Beaumont	Jefferson	120	40	x	x	x	0.19
54	Fannett Rd	Beaumont	Jefferson	120	40	√	x	√	0.64
55	Fannett Rd	Beaumont	Jefferson	110	40	x	x	x	0.18
56	11th St	Beaumont	Jefferson	115	35	x	x	x	0.18
57	11th St	Beaumont	Jefferson	100	35	x	x	x	0.52
58	Pennsylvania Ave	Beaumont	Jefferson	60	30	√	√	x	0.38
59	Park St	Beaumont	Jefferson	55	30	√√	√	x	0.48

FID	Street Name	City	County	ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)
60	Calder Ave	Beaumont	Jefferson	70	35	√√	x	x	0.04
61	Calder Ave	Beaumont	Jefferson	70	35	√√	x	x	0.07
62	Park St	Beaumont	Jefferson	55	30	√√	√	x	0.42
63	Park St	Beaumont	Jefferson	55	30	x	x	x	0.38
64	Pennsylvania Ave	Beaumont	Jefferson	60	30	x	x	x	0.31
65	Pennsylvania Ave	Beaumont	Jefferson	60	30	√√	√	x	0.63
66	Park St	Beaumont	Jefferson	55	35	√√	√	x	0.14
67	Orleans St	Beaumont	Jefferson	60	35	√√	√	x	0.14
68	Orleans St	Beaumont	Jefferson	60	35	√√	√	x	0.15
69	Park St	Beaumont	Jefferson	55	35	√√	√	x	0.15
70	Orleans St	Beaumont	Jefferson	45	25	√√	x	x	0.58
71	Park St	Beaumont	Jefferson	60	30	√√	x	x	0.39
72	Willow St	Beaumont	Jefferson	60	30	√√	x	x	0.13
73	TX 12	Pine Forest/Maurice-ville	Orange	80	65	x		x	2.48
74	N Main St/US 105	Pine Forest	Orange	110	65	x	√√	x	0.79
75	N Main St/US 105	Pine Forest	Orange	110	65	x	√√	x	0.99
76	N Main St/US 105	Pine Forest	Orange	110	65	x	√√	x	3.22
77	Proposed Road	Lumberton	Orange	60	30	x	x	x	0.52
78	LNVA Trail (Proposed)	Nederland	Jefferson	50	0	x	x	x	0.78

FID	Street Name	City	County	ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)
79	LNVA Trail (Proposed)	Nederland	Jefferson	50	0	x	x	x	2.52
80	LNCA Trail (Proposed)	Nederland/Central Gardens	Jefferson	50	0	x	x	x	1.41
81	Main Canal Trail (Proposed)	Central Gardens	Jefferson	50	0	x	x	√	0.97
82	LNVA Trail (Proposed)	Port Neches	Jefferson	50	0	x	x	√	1.78
83	Main Canal Trail (Proposed)	Port Neches	Jefferson	50	0	x	x	x	2.34
84	Block Bayou-Oak Bluff Memorial Park Trail (Proposed)	Port Neches/Port Aruthur	Jefferson	50	0	x	x	x	1.77
85	Hillebrandt Bayou Trail (Proposed)	Beaumont	Jefferson	200	0	x	x	√	3.58
86	Savannah Tree	Beaumont	Jefferson	60	25	x	x	x	0.25
87	Regina Ln	Beaumont	Jefferson	60	25	x	x	x	0.07
88	Belvedere Dr	Beaumont	Jefferson	60	25	x	x	x	0.58
89	LNVA Trail (Proposed)	Groves	Jefferson	0	0	x	x	x	4.31
90	Lee Ave	Port Neches	Jefferson	20	25	x	x	x	0.13
91	T B Ellison Parkway	Port Arthur	Jefferson	30	40	x	√√	√	1.82
92	Martin Luther King Jr Dr	Port Arthur	Jefferson	24	40	x	√√	x	7.61
93	W Port Arthur Rd	Port Arthur	Jefferson	45	40	x	x	x	5.36
94	Nail St	Port Arthur	Jefferson	65	40	√	x	x	1.25
95	Magnolia Ave	Port Arthur	Jefferson	65	45	x	√√	x	1.26
96	Pure Atlantic Rd	Port Arthur	Jefferson	65	60	x	x	x	1.83
97	Pure Atlantic Rd	Port Arthur	Jefferson	75	55	x	x	x	0.94
98	39th St	Port Arthur	Jefferson	45	30	√√	x	x	4.28

FID	Street Name	City	County	ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)
99	Green Ave	Orange	Orange	50	40	√√	x	x	1.12
100	N 15th St	Orange	Orange	55	35	√√	x	x	0.5
101	W Main Ave	Orange	Orange	35	35	x	x	x	0.39
102	W Park Ave	Orange	Orange	40	35	x	x	x	1.28
103	W 28th St	Orange	Orange	40	35	x	x	x	0.11
104	W Sunset Dr	Orange	Orange	50	30	x	x	x	0.89
105	Yale Ln	Orange	Orange	25	0	x	x	x	0.04
106	South Ave	West Orange	Orange	40	30	x	x	x	1.2
107	Masonic Dr	Orange	Orange	40	30	x	x	x	0.29
108	37th St	Orange	Orange	45	30	x	x	x	0.13
109	Evangeline Rd	Vidor	Orange	70	45	x	x	x	1.98
110	Merriman St	Port Neches	Jefferson	56.2	30	√	x	x	1.25
111	Merriman St	Port Neches	Jefferson	49.3	30	x	x	x	0.21
112	Merriman St	Port Neches	Jefferson	65.3	30	√	√	√	0.32
113	Merriman St	Port Neches	Jefferson	83.79	30	√√	x	√	0.19
114	Merriman St	Port Neches	Jefferson	75.23	30	√√	x	√	0.37
115	Grisby Ave	Port Neches	Jefferson	60	30	x	x	x	0.68
116	N 17th St	Nederland	Jefferson	50	30	√	x	x	0.25
117	21st St	Nederland	Jefferson	60	30	x	√	x	0.25
118	S 27th St	Nederland	Jefferson	55	30	x	x	x	0.5
119	S 27th St	Nederland	Jefferson	58	30	x	x	x	0.51

FID	Street Name	City	County	ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)
120	Goodwin Ave	Port Neches	Jefferson	42	30	x	x	x	1
121	Grisby Ave/Ave A	Port Neches	Jefferson	59	30	x	x	x	0.17
122	Llano St	Port Neches	Jefferson	42.3	20	x	x	x	0.16
123	Lake Arthur Ln	Port Arthur	Jefferson	60	30	√	x	x	0.69
124	N 9th St	Nederland	Jefferson	40	20	x	x	x	0.5
125	N 17th St	Nederland	Jefferson	40	30	x	x	x	0.5
126	Fairbanks St	Nederland	Jefferson	40	30	x	x	x	0.28
127	Hill St	Nederland	Jefferson	40	30	x	x	x	0.07
128	Pickard Ave	Central Gardens	Jefferson	40	30	x	x	x	0.22
129	N 17th St	Nederland	Jefferson	50	30	x	x	x	0.25
130	Detroit Ave	Nederland	Jefferson	55	30	x	√	x	0.24
131	Regional Dr	Port Authur	Jefferson	45	30	√	x	x	0.23
132	Park Rd	Port Arthur	Jefferson	45	20	x	x	√	0.46
133	60th St	Port Arthur	Jefferson	45	30	x	x	x	0.54
134	S 21st St	Nederland	Jefferson	50	30	x	x	x	0.5
135	Avenue H	Port Authur	Jefferson	40	30	x	√√	x	0.82
136	Ridgewood Ave	Port Arthur	Jefferson	35	30	x	x	x	0.33
137	Main Canal Trail (proposed)	Port Arthur	Jefferson	35	30	x	x	√	0.12
138	Willowwood Ln	Port Arthur	Jefferson	30	20	x	x	x	0.25
139	5th Ave	Central Gardens	Jefferson	60	30	x	x	x	0.5
140	Nelson/Texas Ave	Nederland	Jefferson	50	30	x	x	x	0.73

FID	Street Name	City	County	ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)
141	Chance Rd	Lumberton	Hardin	20	30	x	x	x	2.23
142	WilliamsRd	Lumberton	Hardin	20	25	x	x	x	0.49
143	W Walton Rd	Lumberton	Hardin	20	30	x	x	x	2.86
144	Horn Rd	Lumberton	Hardin	20	25	x	x	x	0.52
145	Matthews Ln	Lumberton	Hardin	18	30	x	x	x	0.37
146	FM Rd 418	Silsbee	Hardin	25	40	x	x	x	0.21
147	FM Rd 418	Silsbee	Hardin	25	60	x	x	x	1.48
148	Merriman St	Port Neches	Jefferson	63.04	30	√	x	√	0.14
149	60th St	Port Arthur	Jefferson	70	30	x	x	√	0.22
150	61st St	Port Arthur	Jefferson	75	30	x	x	√	0.49
151	Park Rd. 74	Lumberton	Hardin	20	20	x	x	x	0.38
152	Trahan Rd	Lumberton	Hardin	16	25	x	x	x	1.22
153	Alma Dr	Lumberton	Hardin	20	30	x	x	x	1.38
154	Holmes Rd	Lumberton	Hardin	20	30	x	x	x	0.51
155	MLK Jr Dr/FM 3247	Orange/Pinehurst	Orange	100	55	x	√√	x	5.61
156	Phelan Blvd	Beaumont	Jefferson	80	45	√√	x	x	1.31
157	Dowlen Rd	Beaumont	Jefferson	100	45	x	x	x	0.73
158	Dowlen Rd	Beaumont	Jefferson	100	45	√√	x	x	0.22
159	Dowlen Rd	Beaumont	Jefferson	100	45	√	x	x	0.1
160	Dowlen Rd	Beaumont	Jefferson	100	45	√√	x	x	0.22
161	Dowlen Rd	Beaumont	Jefferson	110	35	x	x	x	0.13

FID	Street Name	City	County	ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)
162	Dowlen Rd	Beaumont	Jefferson	110	35	√	x	x	0.27
163	Dowlen Rd	Beaumont	Jefferson	110	35	√	x	x	0.59
164	Dowlen Rd	Beaumont	Jefferson	100	35	x	x	x	0.97
165	Delaware St	Beaumont	Jefferson	100	45	√√	x	x	1.56
166	Gladys Ave	Beaumont	Jefferson	55	35	√	x	x	0.47
167	Gladys Ave	Beaumont	Jefferson	58	35	√√	x	x	0.64
168	Gladys Ave	Beaumont	Jefferson	80	35	x	√	x	0.38
169	Gladys Ave	Beaumont	Jefferson	80	35	x	√√	x	0.05
170	Gladys Ave	Beaumont	Jefferson	80	35	x	x	x	0.27
171	Gladys Ave	Beaumont	Jefferson	80	30	x	x	x	0.55
172	Gladys Ave	Beaumont	Jefferson	80	35	x	x	x	0.2
173	College St	Beaumont	Jefferson	110	50	x	x	x	2.05
174	College St	Beaumont	Jefferson	110	35	x	x	x	0.24
175	College St	Beaumont	Jefferson	110	35	√√	x	x	0.62
176	College St	Beaumont	Jefferson	60	30	√√	x	x	1.04
177	W Lucas Dr	Beaumont	Jefferson	60	35	x	x	x	0.1
178	East Dr	Beaumont	Jefferson	50	25	x	x	x	0.24
179	Harrison Ave	Beaumont	Jefferson	60	25	x	x	x	0.07
180	Harrison Ave	Beaumont	Jefferson	60	30	x	x	x	0.31
181	Harrison Ave	Beaumont	Jefferson	60	30	√	x	x	0.11
182	Harrison Ave	Beaumont	Jefferson	60	30	√√	x	x	0.1

FID	Street Name	City	County	ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)
183	Harrison Ave	Beaumont	Jefferson	60	30	√	x	x	0.09
184	Harrison Ave	Beaumont	Jefferson	60	30	√√	x	x	0.27
185	Harrison Ave	Beaumont	Jefferson	60	25	x	x	x	0.14
186	Harrison Ave	Beaumont	Jefferson	60	25	√√	x	x	0.28
187	Harrison Ave	Beaumont	Jefferson	60	25	√	x	x	0.14
188	Harrison Ave	Beaumont	Jefferson	60	25	√√	x	x	0.07
189	Harrison Ave	Beaumont	Jefferson	60	25	√	x	x	0.14
190	Harrison Ave	Beaumont	Jefferson	60	25	√√	x	x	0.06
191	W Lucas Dr	Beaumont	Jefferson	60	35	x	x	x	2.08
192	E Lucas Dr	Beaumont	Jefferson	60	35	√	x	x	0.65
193	E Lucas Dr	Beaumont	Jefferson	65	35	x	x	x	0.39
194	E Lucas Dr	Beaumont	Jefferson	65	40	x	x	x	0.81
195	E Lucas Dr	Beaumont	Jefferson	65	25	x	x	x	0.26
196	E Lucas Dr	Beaumont	Jefferson	56	40	x	x	x	0.77
197	Concord Rd	Beaumont	Jefferson	65	35	x	x	x	1.6
198	Concord Rd	Beaumont	Jefferson	65	35	√	x	x	0.5
199	St. Helen St	Beaumont	Jefferson	60	30	x	x	x	0.04
200	St. Helen St	Beaumont	Jefferson	60	30	√	x	x	0.07
201	Cottonwood Ave	Beaumont	Jefferson	60	25	√	x	x	0.14
202	Cottonwood Ave	Beaumont	Jefferson	60	25	x	x	x	0.11
203	4th St	Beaumont	Jefferson	60	35	√	x	x	0.1

FID	Street Name	City	County	ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)
204	4th St	Beaumont	Jefferson	60	35	x	x	x	0.03
205	4th St	Beaumont	Jefferson	60	35	√	x	x	0.21
206	4th St	Beaumont	Jefferson	60	35	x	x	x	0.26
207	4th St	Beaumont	Jefferson	60	35	√√	x	x	0.15
208	4th St	Beaumont	Jefferson	60	35	x	x	x	0.28
209	4th St	Beaumont	Jefferson	60	35	√	x	x	0.09
210	4th St	Beaumont	Jefferson	60	35	x	x	x	0.95
211	4th St	Beaumont	Jefferson	60	35	√	x	x	0.66
212	Washington Blvd	Beaumont	Jefferson	80	45	x	x	x	0.93
213	Washington Blvd	Beaumont	Jefferson	70	35	x	x	x	0.9
214	Washington Blvd	Beaumont	Jefferson	100	35	√√	x	x	0.51
215	Washington Blvd	Beaumont	Jefferson	100	35	x	x	x	0.04
216	Washington Blvd	Beaumont	Jefferson	100	35	√√	x	x	1.13
217	11th St	Beaumont	Jefferson	113	45	x	x	x	0.24
218	11th St	Beaumont	Jefferson	75	35	√	x	x	0.27
219	11th St	Beaumont	Jefferson	75	35	√√	x	x	0.33
220	11th St	Beaumont	Jefferson	90	35	x	x	x	0.19
221	11th St	Beaumont	Jefferson	90	35	√	x	x	0.14
222	11th St	Beaumont	Jefferson	80	35	x	x	x	0.07
223	11th St	Beaumont	Jefferson	90	35	√√	x	x	0.17
224	11th St	Beaumont	Jefferson	80	35	√	x	x	0.08

FID	Street Name	City	County	ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)
225	11th St	Beaumont	Jefferson	80	35	x	x	x	0.41
226	11th St	Beaumont	Jefferson	105	35	x	x	x	0.4
227	11th St	Beaumont	Jefferson	105	35	x	x	x	0.4
228	Sarah St	Beaumont	Jefferson	70	35	√	x	x	0.17
229	Sarah St	Beaumont	Jefferson	70	35	x	x	x	0.08
230	Sarah St	Beaumont	Jefferson	70	35	√√	x	x	0.1
231	Sarah St	Beaumont	Jefferson	70	30	√√	x	x	0.41
232	Sarah St	Beaumont	Jefferson	60	30	√	x	x	0.83
233	W Lavaca St	Beaumont	Jefferson	60	30	√	x	x	0.15
234	W Lavaca St	Beaumont	Jefferson	65	30	x	x	x	0.88
235	E Lavaca St	Beaumont	Jefferson	60	30	√√	x	x	0.15
236	E Lavaca St	Beaumont	Jefferson	60	30	x	x	x	0.22
237	E Lavaca St	Beaumont	Jefferson	60	30	x	x	x	0.14
238	E Lavaca St	Beaumont	Jefferson	60	30	√	x	x	0.08
239	Harrison Ave	Beaumont	Jefferson	60	30	√	x	x	0.06
240	Harrison Ave	Beaumont	Jefferson	60	30	√	x	x	0.04
241	Washington Blvd	Beaumont	Jefferson	80	45	x	x	x	0.75
242	College St	Beaumont	Jefferson	110	50	x	x	x	0.05
243	College St	Beaumont	Jefferson	110	50	x	x	x	0.09
244	College St	Beaumont	Jefferson	110	35	x	x	x	0.1
245	Dowlen Rd	Beaumont	Jefferson	100	45	x	x	x	0.17

FID	Street Name	City	County	ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)
246	Dowlen Rd	Beaumont	Jefferson	100	45	√√	x	x	0.15
247	Dowlen Rd	Beaumont	Jefferson	100	45	√	x	x	0.17
248	Dowlen Rd	Beaumont	Jefferson	100	45	√	x	x	0.05
249	Dowlen Rd	Beaumont	Jefferson	100	45	√√	x	x	0.33
250	Folsom Dr	Beaumont	Jefferson	57	35	x	x	x	1.29
251	Kenneth Ave	Beaumont	Jefferson	60	30	√√	x	x	0.61
252	Sabine Pass	Beaumont	Jefferson	60	25	√	x	x	0.14
253	W Port Arthur Rd/US 93	Port Arthur	Jefferson	115	65	x	x	x	7.23
254	Twin City Hwy	Port Arthur	Jefferson	250	65	x	√√	x	0.1
255	Eyre Dr	Port Arthur	Jefferson	25	25	x	x	x	0.14
256	Hogaboom Rd and Gulf Ave	Groves	Jefferson	20	30	x	x	x	2.21
257	Wilson Ave	Groves	Jefferson	20	30	x	x	x	1.3
258	Taft Ave and 25th St	Port Arthur	Jefferson	40	30	x	x	x	1.62
259	Martin Luther King Jr Dr	Port Arthur	Jefferson	40	45	x	√√	x	1.46
260	TX-82	Port Arthur	Jefferson	78	50	x	√√	x	3.54
261	TX-73	Port Arthur	Jefferson	78	65	x	√√	x	2.93
262	H O Mills Highway	Port Arthur	Jefferson	42	60	x	√√	x	0.88
263	FM 365	Port Arthur	Jefferson	75	45	x	√√	x	2.4
264	FM 365	Port Arthur	Jefferson	90	45	x	√√	x	1.79
265	Memorial Blvd	Port Arthur	Jefferson	80	65	x	√√	x	4.84
266	N 4th St	Orange	Orange	60	35	√√	√√	x	0.14

FID	Street Name	City	County	ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)
267	W Front Ave	Orange	Orange	50	35	√√	√√	x	0.21
268	N 7th St	Orange	Orange	60	35	√√	√√	x	0.13
269	N 16th St/87	Orange	Orange	100	50	x	√√	x	1.53
270	W Clark Ln	Orange	Orange	70	30	x	√√	x	0.46
271	W Beverly Ave	Orange	Orange	25	30	x	√√	x	0.15
272	Yale Ln	Orange	Orange	25	30	x	√√	x	0.04
273	Masonic Dr	Orange	Orange	40	30	x	√√	x	0.29
274	37th St	Orange	Orange	45	30	x	√√	x	0.13
275	Dupont Dr/FM 1006	Orange	Orange	50	40	x	√√	x	4.48
276	Border St	Orange	Orange	45	40	√	√√	x	0.99
277	Tulane Rd	Orange	Orange	45	45	x	√√	x	5.16
278	Nederland Ave	Nederland	Jefferson	65	30	√	√√	x	1.03
279	Main Canal Trail (Proposed)	Port Arthur	Jefferson	30	20	x	√√	√	1.53
280	Nederland Ave	Nederland	Jefferson	62	30	√√	√√	√	0.28
281	N 9th St	Nederland	Jefferson	40	20	x	√√	x	0.5
282	Helena Ave	Nederland	Jefferson	40	20	x	√√	x	0.16
283	Canal Ave	Nederland	Jefferson	40	30	x	√√	x	0.08
284	FM 3513	Lumberton	Hardin	40	50	x	√√	x	3.24
285	Country Ln Dr.	Lumberton	Hardin	50	55	x	√√	x	0.78
286	Ariola Rd.	Lumberton	Hardin	30	55	x	√√	x	1.44
287	Forest Rd.	Lumberton	Hardin	55	30	√√	√√	x	1.34

FID	Street Name	City	County	ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)
288	FM Rd 418	Kountze	Hardin	40	45	x	√√	x	10.4
289	Matthews Ln.	Lumberton	Hardin	18	30	x	√√	x	0.37
290	BUS 96	Silsbee	Hardin	85	65	x	√√	x	1.52
291	BUS 96	Silsbee	Hardin	75	35	x	√√	x	0.7
292	Hwy 96	Lumberton	Hardin	115	65	x	√√	x	1.87
293	S Main St.	Lumberton	Hardin	75	45	x	√√	x	3.57
294	E Ave G	Silsbee	Hardin	28	55	x	√√	x	1.36
295	E Ave G	Silsbee	Hardin	45	40	x	√√	x	0.54
296	W Ave N	Silsbee	Hardin	55	35	x	√√	x	0.66
297	TX-327	Silsbee	Hardin	45	55	x	√√	x	1.57
298	TX-327	Silsbee	Hardin	45	65	x	√√	x	3.72
299	E Ave N	Silsbee	Hardin	115	35	x	√√	x	0.38
300	E Ave N	Silsbee	Hardin	115	55	x	√√	x	1.36
301	Hwy 96	Silsbee	Hardin	130	75	x	√√	x	3.63
302	TX-92	Silsbee	Hardin	60	55	x	√√	x	1.36
303	TX-287	Lumberton	Hardin	60	0	x	√√	x	1.29
304	TX-69	Lumberton	Hardin	60	45	x	√√	x	3.37
305	TX-69	Lumberton	Hardin	58	0	x	√√	x	1.07
306	TX-69	Kountze	Hardin	45	0	x	√√	x	3.52
307	TX-69	Kountze	Hardin	105	0	x	√√	x	1.38
308	TX-69	Kountze	Hardin	90	40	x	√√	x	1.12

FID	Street Name	City	County	ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)
309	TX-326	Kountze/Sour Lake	Hardin	45	50	x	√√	x	16.82
310	TX-105	Sour Lake	Hardin	45	55	x	√√	x	7.5
311	TX-105	Beaumont	Jefferson	83	65	x	√√	x	3.96
312	Merriman St	Port Neches	Jefferson	63.04	30	√	√√	√	0.14
313	Nederland Ave	Nederland	Jefferson	62	30	√	√√	√	0.4
314	Hwy 136	Port Neches	Jefferson	73.3	50	x	√√	√	0.16
315	Hwy 136	Port Neches	Jefferson	72.5	50	x	√√	√	0.16
316	Helena Ave	Port Neches	Jefferson	60	20	√	√√	√	0.84
317	Nederland Ave	Nederland	Jefferson	70	30	x	√√	√	0.69
318	Nederland Ave	Nederland	Jefferson	63	30	x	√√	√	0.25
319	Helena Ave	Nederland	Jefferson	60	20	√√	√√	√	0.41
320	Helena Ave	Nederland	Jefferson	60	20	√	√√	√	0.52
321	60th St	Port Neches/Port Arthur	Jefferson	65	40	x	√√	√	0.2
322	Avenue H	Nederland	Jefferson	60	30	x	√√	√	0.68
323	Phelan Blvd	Beaumont	Jefferson	80	45	√√	√√	x	1.31
324	Dishman Rd	Beaumont	Jefferson	70	45	√	√√	x	0.78
325	Delaware St	Beaumont	Jefferson	60	35	x	√√	x	0.63
326	4th St	Beaumont	Jefferson	60	35	√√	√√	x	0.07
327	4th St	Beaumont	Jefferson	60	35	√	√√	x	0.66
328	Washington Blvd	Beaumont	Jefferson	100	35	x	√√	x	0.04
329	Washington Blvd	Beaumont	Jefferson	100	35	√√	√√	x	1.13

FID	Street Name	City	County	ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)
330	S Martin Luther King Pkwy	Beaumont	Jefferson	110	45	√√	√√		0.74
331	College St	Beaumont	Jefferson	95	30	√√	√√	x	0.28
332	Dowlen Rd	Beaumont	Jefferson	100	35	x	√√	x	0.67
333	Phelan Blvd	Beaumont	Jefferson	80	45	x	√√	x	0.03
334	Phelan Blvd	Beaumont	Jefferson	80	45	x	√√	x	0.44
335	College St	Beaumont	Jefferson	80	30	x	√√	x	0.2
336	College St	Beaumont	Jefferson	70	30	√√	√√	x	0.28
337	College St	Beaumont	Jefferson	65	55	√	√√	x	0.23
338	College St	Beaumont	Jefferson	75	30	x	√√	x	0.35
339	S Martin Luther King Pkwy	Beaumont	Jefferson	0	45	x	√√	x	0.74
340	S Martin Luther King Pkwy	Beaumont	Jefferson	0	30	x	√√	x	1.99
341	S Martin Luther King Pkwy	Beaumont	Jefferson	0	30	x	√√	x	1.09
342	S Martin Luther King Pkwy	Beaumont	Jefferson	0	45	x	√√	x	0.75
343	Kenneth Ave	Beaumont	Jefferson	60	30	√√	√√	x	0.61
344	Sabine Pass	Beaumont	Jefferson	60	25	√	√√	x	0.14
345	TX-12	Mauriceville/Newton /Deweyville	Orange	60	55	x	√√	x	10.26
346	Old TX 62/Womack Rd	Mauriceville	Orange	55	55	x	√√	x	9.62
347	TX-62/TX-73	Orange	Orange	80	65	x	√√	x	6.1
348	Edgar Brown Dr	West Orange	Orange	115	50	x	√√	x	14.38
349	W Parkway St/TX-73	Groves	Jefferson	250	65	x	√√	x	2.87
350	Old TX-62-Sabine River Northern	.	Orange	0	0	x	√√	x	25.65

FID	Street Name	City	County	ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)
351	US 96		Orange	0	0	x	√√	x	23.17
352	TX-2246		Orange	0	0	x	√√	x	9.26
353	TX-73 W	Beaumont	Jefferson	215	75	x	√√	x	34.32
354	TX-365	Beaumont	Jefferson	350	60	x	√√	x	14.21
355	Southern Pacific/US-90	Beaumont	Jefferson	250	55	x	√√	x	14.34
356	TX-326/TX 365/Gilbert Rd	Nome/Sour Lake	Jefferson	105	55	x	√√	x	12.42
357	Reins Rd/Dishman Rd	Beaumont	Jefferson	55	50	x	√√	x	5.58
358	FM-421	Lumberton/Kountze	Hardin	75	50	x	√√	x	10.9
359	TX-770	Saratoga	Hardin	70	65	x	√√	x	11.16
360	TX-69/TX 287/N Pines St	Kountze	Hardin	175	65	x	√√	x	11.89
361	Highway 69 S	Lumberton	Hardin	100	65	x	√√	x	0.67
362	TX-969/TX-287	Beaumont	Jefferson	175	65	x	√√	x	11.92

Appendix B

Methodology for SET Bicycle Infrastructure Prioritization Tool

Introduction

What is this Tool?

The SET Bicycle Plan Prioritization tool is an excel-based tool that prioritizes proposed Bicycle projects in the Southeast Texas Tri-County region based on opportunities, safety, connectivity to key destinations, environmental justice, the built environment, and cost drivers. This tool is needed to encourage and enable people who would like to use bicycles more often, but don't feel comfortable to bike due to safety issues, lack of bicycle accommodations, or other reasons. This leads to accomplishing larger goals of increasing biking in the district as well as identifying projects that serve an important regional interconnectivity purpose. Diversity, equity, and inclusion are also integrated as an important part of this methodology. Ultimately, the prioritization tool considered the holistic bike network for all users within and outside the municipal boundaries.

The larger goal of the tool is to help positively influence the Southeast Texas Bike Plan 2040 (the Plan) and create a prototype for other cities/districts to learn from. With a tool of prioritizing projects based on relevant criteria in safety, connectivity, readiness and more, the district is strongly positioned to advocate for better cycling conditions in Jefferson County, Hardin County, and Orange County.

How was this tool developed?

The overall project development of the Southeast Texas Bike Priority Tool (the Tool) has been an effort during almost a one-year period between the local staff from the district, the consulting team at the Goodman Cooperation, and local advocacy and municipal stakeholders.

Starting in fall 2020, the project team began to amass local open-source data to begin reflecting how to build the baseline data index for the tool down the road. The local open-source data includes but not limited to Texas Department of Transportation (TxDOT) State Planning Map, TxDOT Crash Records Information System (C.R.I.S.), American Census Survey 5- year 2015-2019, 2010 US Census and ESRI forecasts, Center for Neighborhood Technology, etc. Along with this local data collection effort, a step-by-step method for the index, ranking, and weighing system, important for cycling, were compiled and revised.

The second phase of work focused on tool testing and public outreach. Once baseline data was collected and a draft methodology was crafted, first analyses were performed and presented to the stakeholders, that included TxDOT, MPO, and Cities staff. The original SET Hike and Bike Plan 2037 was updated, as well, during this phase. Several criteria were considered, and a preliminary score weigh was established. The results were presented to the stakeholders and the public on October 6, 2021, where additional comments were collected.

The last phase of this tool development consisted in minor revisions to the criteria weighs based on public/stakeholder comments gathered in 2021 regarding criteria prioritization via a SurveyMonkey survey. Once the tool was recalibrated and criteria weighs were revised per survey results,were the Top 20 List of Projects was revised.

Figure B-1 Phases and Timeline

Data Collection

The Tool is an open-source data tool to evaluate future bicycle projects in the region and the projects' capacity to serve all ages and abilities bicycling. Roadways always comes top of the list when cities or neighborhoods were designed. Bike lanes, on the other hand are often designed as an "extra credit" of the entire plan, which made bike related data difficult to collect. Having stakeholder meetings and public meetings will help engineers and planners approaching to evaluate proposed bicycle projects on real-world cycling demand and bicycle needs. The Tool synthesizes the stakeholder and public input and open-source data into an analysis to generate compelling outcomes for project prioritization.

Stakeholder & Public Input: This report will present input from the stakeholders and public, and how their opinions would shape the tool.

Data Analysis: Proposed bike projects were overlayed with open-source data to highlight the need for bike infrastructures.

From spreadsheet to storytelling: Data will tell a compelling story of what's the outcome of the data analysis and public communications.

Understanding the Tool

The Tool is based on a comprehensive scoring system that contains 6 categories, including 18 sub-categories, which evaluate the need of 368 bike projects that were proposed in the SET Bicycle Plan 2040. This section will present the 18 criteria that serve as the foundation of this analysis and the 6 categories that they grounded into. See Table B-1 for more details.

Category	Weight	Indicator
Opportunities	15%	Implement with future construction/Planned roadway improvements
Safety	30%	All types of crashes occurred along the corridor from 2015 – 2019.
		Fatal and severe cyclists' crashes occurred along the corridor 2015-2019
		Truck percentage
Connectivity	18%	Connections to schools
		Connections to local transit stops
		Connections to existing bike lanes
		Connections to parks
		Connections to jobs
		Connections to grocery stores over half millions in sales
Environmental Justice	12%	Poverty (Low-income households)
		Zero vehicle available households
		Minority
Human and Built Environment Suitability	15%	Population density
		Compact neighborhood score
Cost Drivers	10%	Bridge Crossings
		Railroad Crossings
		Highway Crossings

Table B-1 Selected Indicators for the Bicycle Projects Prioritization Tool

The objective for this tool was to identify the corridor of highest-need relative to all other corridors in the district area. Therefore, the primary statistical tool used was to transform each indicator value into a normalized percentile rank as compared to all the other project corridors in the district area. The percentile rank reveals how high or low the indicator was for that project corridor in comparison to all others. Higher values mean higher relative priority and/or suitability for bike project. The rating of a project is the average of all 18 indicators. The result is a rating of each project corridor in the District Area. Higher values mean higher relative need for future bike lane project investments and services in support of equitable long-term outcomes.

Indicators such as traffic volume and speed limits were initially considered; however, roadway classification inherently accounts for those factors. Available right of way and other design considerations are difficult to obtain without survey data at such a large scale. Due to the difficulty in obtaining accurate data for all 368 projects or segments, these more specific indicators could be factored in at a Tier 2 or level 2 review, where fewer projects are considered.

Opportunities

The Opportunities indicator quantifies the ability of a bike project to be implemented as part of or in combination of a future reconstruction or new construction project by another/partnering agency. In other words, if the proposed bicycle project can be completed as a component of a larger project. For this criterion, the tool incorporates the TxDOT State Planning Map input and analyzes all proposed bicycle projects against future TxDOT projects. If over 50% of a proposed bicycle project is within the limits of a planned/programmed project by another entity (in this case TxDOT), the proposed bicycle

project scored points. These opportunities are important to consider because they save time and money when implementing bicycle projects.

For use by Cities in the Tri-County region, Capital Improvement Plans, Transportation Plans, and other planning efforts can be used in place of the TxDOT State Planning Map.

Safety

The safety indicator evaluates the weighted number of all types of crashes, as well as fatal and severe bicycle crashes over the past five years. The assumption here is that corridors with extensive crash histories likely prioritize the car and truck throughput to the detriment of a cyclist's safety. Roadway changes aimed at improving the bicycling environment along these corridors will increase a driver's awareness of these road users. Recommended projects were scored by the weighted number of crashes along the corridor. According to the following Equation, the weighted number of crashes would reduce the impact of the length of the corridor on the number of crashes. Since theoretically, longer corridor might have more crashes.

$$Weighted\ number\ of\ crashes = \frac{x_c}{L}$$

..... Equation 1

Where,
x_c = Number of crashes along the project corridor.
L = Project length.

Truck percentage was collected per segment and a weighted average. The higher the truck percentage, the higher the safety score.

Connectivity

Connections to schools, parks, jobs, and grocery stores recognizes that bicycling encourages physical activity, facilitates healthier lifestyles, and reduces carbon emissions. It also supports sustainable transportation choices and offers social wellbeing benefits. Recommended facilities were awarded if any schools, parks, jobs, or grocery stores fell within a half mile radius of the proposed project.

Presence of transit recognizes that bicycle facilities often provide important role in the first and last mile connections to transit stops. Prioritizing projects that have transit stops within the half mile distance is an effective way to encourage transit use, as well as an effective way to tie residents and neighborhoods to desired destinations and employment opportunities.

Closing bike network gap is also important to bike projects. Because these physical gaps cause bicyclists to use circuitous routes, they make it less efficient to travel between key origins and destinations. Projects are prioritized by the existence of existing bike lanes within 500 feet buffer of the proposed project.

Environmental Justice

Low-income households are vitally important to prioritize for bicycle investment as the bicycle is a very inexpensive form of transportation versus the car. The weighted average number of low-income households within half mile buffer was used to prioritize the proposed projects. The following Equation shows the calculation of weighted average of low-income households.

$$Weighted\ number\ of\ low-income\ households = \frac{x_l}{s_{0.5}}$$

..... Equation 2

Where,
x_l = Number of low-income households within a half mile buffer.
$S_{0.5}$ = Size of the 0.5-mile buffer of that project.

Households with zero vehicles also require higher prioritization for bicycle facilities in order to be able to offer residents transportation options beyond the car that are safe and accessible for all. The weighted average number of zero vehicle households within half mile buffer was used to prioritize the proposed projects. The following Equation shows the calculation of weighted average zero vehicle households.

$$Weighted\ number\ of\ zero\ vehicle\ households = \frac{x_z}{S_{0.5}} \quad \text{Equation 3}$$

Where,
x_l = Number of l zero vehicle households.
$S_{0.5}$ = Size of the 0.5-mile buffer of that project.

Human and Built Environment Suitability

Population density estimates were collected from the US Census Bureau's American Community Survey for each census block group in all 2 counties. Higher population density is a clear indicator of a high need area. Bicycle facilities in these areas would service a greater number of users. Corridors' average population density was used in this tool.

According to the Federal Highway Administration, low-income households and minorities are more likely to have jobs that require them to commute outside of the standard "9 am to 5 pm" hours, sometimes in the dark and when public transportation is unavailable (1). Immigrants and individuals with language challenges are more likely to travel by bicycle, but they are also less likely to use safe bicycling techniques (such riding with traffic, using lights, and wearing helmets and reflective clothing) (2). According to the recent League of American Bicyclists' publication, Pedaling Toward Equity, women and minorities feel much less comfortable in riding bicycles than non-minority males. Most women and minorities agreed that if more supportive infrastructure were available, they would be significantly more tempted to bike (2).

The Compact Neighborhood Score is a block group level index that assesses the density and walkability of an area (3). The higher the index, the more walkable and bikeable of that block group. The tool uses the weighted average compact neighborhood score of all the block groups along the proposed project. The following Equation shows the calculation of the weighted compact neighborhood score.

$$Weighted\ compact\ neighborhood\ score = \frac{x_1 * l_1 + x_2 * l_2 + \cdots x_n * l_n}{L} \quad \text{Equation 4}$$

Where,
x_n = Compact neighborhood score of nth segments of that project.
l_n = Length of nth segments of that project.
L = Total length of the project.

Cost Drivers

This indicator evaluates the relative difficulty of putting a bicycle project into action. When establishing bicycle projects, costs must be considered because they can drain agency resources. The cost of a cycling project can be increased by bridge crossings, highway crossings, and railroad crossings. There

are some other costs that could also be considered when the project is being developed but are not included in this tool. Right-of-way acquisition, facility design, mitigation and construction, and environmental implications are only a few examples. When the bike improvements aren't specified or the prioritization exercises cover a vast geographic area, these costs are more difficult to estimate. The weighted average of crossing was used to rank all the projects, see the following equation for the calculation.

$$Weighted\ number\ of\ crossings = \frac{x_{b,h,r}}{L} \quad \text{Equation 5}$$

Where,
$x_{b,h,r}$ = Number of crossings for bridge, highway, and railroad of that project.
L = Total length of the project.

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Appendix C

Funding Sources

As it is the case of most planning efforts, one of the major challenges to implement the proposed bicycling facilities will be existing limited resources. Below are some of the possible funding sources:

Federal

U.S. Department of Housing and Urban Development

Community Development Block Grant (CDBG)

Purpose: Greenways, trails, and bicycle facilities that provide increased safety, access, and transportation options.

Eligibility: Directly provides funds to cities and towns for projects with communitywide benefits. Activities must benefit low to moderate income persons.

U.S. Department of Transportation

Rebuilding American Infrastructure with Sustainability and Equity (RAISE)

Purpose: Allows the USDOT to invest in road, rail, transit and port projects that to achieve a defined set of national objectives.

Eligibility: Project sponsors at the State and local levels can obtain funding for multi-modal, multi-jurisdictional projects that are more difficult to support through traditional USDOT programs. RAISE can fund port and freight rail projects, for example, which play a critical role in our ability to move freight but have limited sources of federal funds. RAISE can provide capital funding directly to any public entity, including municipalities, counties, port authorities, tribal governments, MPOs, or others in contrast to traditional Federal programs which provide funding to very specific groups of applicants (mostly state DOTs and transit agencies).

Safe Streets and Roads for All (SS4A) Grant Program

Purpose: Supports the USDOT goal of zero deaths and serious injuries on our nation's roadways.

Eligibility: Eligible activities include the development or update a Comprehensive Safety Action Plan; planning, design, and development activities in support of an Action Plan; projects and strategies identified in an Action Plan. Entities that can receive funding include metropolitan planning organizations, counties, cities, towns, other special districts that are subdivisions of a State, and transit agencies, federally recognized Tribal governments, and multijurisdictional groups comprised of the above entities.

Federal-Aid Highway Program, Federal Lands Highway Program

Purpose: Assist state transportation agencies in the planning and development of an integrated, interconnected transportation system important to interstate commerce and travel. To provide aid for the repair of federal-aid highways following disasters; to foster safe highway design; to replace or rehabilitate deficient or obsolete bridges; and to provide for other special purposes.

Eligibility: Projects are selected by a Programming Decision Committee (PDC), established in each state.

State

Texas Department of Transportation (TxDOT)

Safe Routes to School (SRTS)

Purpose: Enable and encourage children, including those with disabilities, to walk and bicycle to school. Scope includes sidewalk improvements; traffic calming and speed reduction improvements; pedestrian and bicycle crossing improvements; on-street bicycle facilities; off-street bicycle and pedestrian facilities, secure bicycle parking facilities; traffic diversion improvements in the vicinity of schools; public awareness campaigns and outreach; traffic education and enforcement in the vicinity of schools; student sessions on bicycle and pedestrian safety, health, and environment; funding for training, volunteers, and managers of safe routes to school programs.

Eligibility: Determined by state DOT.

Hazard Elimination and Railway-Highway Crossing Program

Grantor: U.S. Department of Transportation- Federal Highway Administration

Purpose: Address bicycle and pedestrian safety issues.

Eligibility: Each state is required to implement a Hazard Elimination Program to identify and correct locations which may constitute a danger to motorists, bicyclists, and pedestrians.

Limitations: Funds may be used for activities including a survey of hazardous locations and for projects on any publicly owned bicycle or pedestrian pathway or trail, or any safety-related traffic calming measure. Improvements to railway-highway crossings.

Highway Safety Improvement Program (HSIP)

Grantor: U.S. Department of Transportation- Federal Highway Administration

Purpose: Reduction in traffic fatalities and serious injuries on public roads. Improvements for pedestrian/bicyclist safety; construction of yellow-green signs at pedestrian/bicycle crossings and in school zones; correction of hazardous locations including roadside obstacles, railway-highway crossing needs, and poorly marked roads that constitute a danger to bicyclists/pedestrians; highway safety improvement projects on bicycle/pedestrian pathways or trails.

Eligibility: Directly provides funds to cities and towns for projects with community-wide benefits. Activities must benefit low to moderate income persons. Greenways, trails, and bicycle facilities that provide increased safety, access, and transportation options.

National Scenic Byways Program

Grantor: U.S. Department of Transportation

Purpose: Improvement to a scenic byway that will enhance access to an area for the purpose of recreation; development of tourist information to the public (such as biking info and maps on scenic byways).

Eligibility: State DOTs and Native American tribes

Limitations: Livability is a criterion that will be used in the consideration of projects.

National Scenic Byways Foundation

Grantor: U.S. Department of Transportation- Federal Highway Administration

Purpose: Construction along a scenic byway of a facility for pedestrians and bicyclists.

Office of Bicycle and Pedestrian Transportation

Grantor: Texas Department of Transportation- Federal Highway Administration

Purpose: Construction of pedestrian and bicycle facilities, including Rails-to-Trails projects and non-construction projects such as brochures, public service announcements, and route maps.
Eligibility: State may spend a portion of its federally allocated STP funds on bicycle and pedestrian facilities

Pedestrian and Bicycle Safety Program
Grantor: U.S. Department of Transportation
Purpose: Conduct research and develop guidelines, tools, and safety countermeasures to reduce pedestrian and bicycle fatalities.
Eligibility: State/MPO allocated

Rural Transit Assistance Program
Grantor: U.S. Department of Transportation
Purpose: provides a source of funding to assist in the design and implementation of training and technical assistance projects and other support services tailored to meet the needs of transit operators in no[n-]urbanized areas.
Eligibility: States, local governments, and providers of rural transit services.
Limitations: Apportioned to states by a formula.

Highway Bridge Replacement and Rehabilitation (HBRRP)
Grantor: U.S. Department of Transportation- Federal Highway Administration
Purpose: Replace and rehabilitate deficient highway bridges and to seismically retrofit bridges. If a highway bridge deck is replaced or rehabilitated, and bicycles are permitted at each end, then the bridge project must include safe bicycle accommodations.
Eligibility:
Limitations: It is not a funding source for independent bicycle accommodations.

Surface Transportation Program (STP)
Grantor: U.S. Department of Transportation- Federal Highway Administration
Purpose: Construction of pedestrian and bicycle transportation facilities; non- construction projects for safe bicycle use; upgrade public sidewalks to comply with the ADA. Projects do not have to be within the right-of-way of a federal-aid highway.
Eligibility: Construction resurfacing and operational improvements for highways and bridges, including transit and other modes.

Texas Parks and Wildlife

Outdoor Recreation Grants
Purpose: This grant provides 50% matching grant funds to acquire and develop parkland or to renovate existing public recreation areas.
Eligibility: For municipalities, counties, MUDs, and other local units of government with populations less than 500,000. Eligible sponsors include cities, counties, MUDs, river authorities, and other special districts.
Limitations: Projects must be completed within three years of approval. The master plans submission deadline is at least 60 days prior to the application deadline.

Recreational Trail Grants

Purpose: TPWD administers the National Recreational Trails Fund in Texas under the approval of the Federal Highway Administration (FHWA). This program receives its funding from a portion of federal gas taxes paid on fuel used in non-highway recreational vehicles.

Eligibility: Funds can be spent on both motorized and non-motorized recreational trail projects such as the construction of new recreational trails, to improve existing trails, to develop trailheads or trailside facilities, and to acquire trail corridors.

Limitations: The grants can be up to 80% of project cost with a maximum of $200,000 for non-motorized trail grants and currently there is not a maximum amount for motorized trail grants.

Regional

Southeast Texas

City

Capital Improvement Programs

Project Sponsors: Cities in Southeast Texas, including Beaumont, Port Neches, Port Arthur, Orange, Vidor, Nederland, Lumberton, Silsbee, Pine Forest, Kountze.

Eligibility: Variable.

Other

Bicycle Friendly Community (BFC) Program

Grantor: League of American Bicyclists.

Purpose: The program provides a roadmap to communities to improve conditions for bicycling and offers national recognition for communities that actively support bicycling.

Limitations: There are two application cycles a year – one in spring and one in fall. A new cycle usually begins the day after an application cycle closes, so applicants have several months to fill out the online application.

Grants for Transportation of Veterans in Highly Rural Areas

Grantor: Veterans Affairs (VA)

Purpose: to assist veterans in highly rural areas to provide innovative transportation services to travel to VA medical centers and to other VA and non-VA facilities in connection with the provision of VA medical care.

Eligibility: Veteran Service Organizations and State Veteran Service Agencies.

Limitations: Estimated: $3 million, Award Ceiling: $50,000

Land and Water Conservation Fund (LWCF)

Grantor: National Park Service.

Purpose: Build a variety of park and recreation facilities, including trails and greenways. The state side of the LWCF provides matching grants to states and local governments for the acquisition and development of public outdoor recreation areas and facilities.

Limitations: Prior to beginning negotiations with landowners, multiple prerequisite steps must be followed. These include survey and boundary confirmation, mapping and preparation of legal descriptions, and securing title evidence. Additionally, all property acquired for the United States is

assessed to determine whether hazardous substances are present prior to acquisition. An appraisal is then conducted to determine fair market value of the property.

National Complete Streets Coalition

Grantor: Smart Growth America

Purpose: Promote the design and operation of roadways to provide safe, comfortable, and convenient access for all users, from motorists to bicyclists and pedestrians of all ages and abilities.

National Trails Training Partnership (NTTP)

Grantor: American Trails and NTTP

Purpose: For planning, building, designing, funding, managing, enhancing, and supporting trails, greenways, and blue ways.

Appendix D

Glossary of Terms

American Association of State Highway and Transportation Officials (AASHTO) – a nonprofit, nonpartisan association representing highway and transportation departments of all transportation modes in the 50 states, the District of Columbia, and Puerto Rico.

American Disabilities Act of 1991 (ADA) – the act gives civil rights protections to individuals with disabilities including equal opportunities in public accommodations, employment, transportation, state and local government services, and telecommunications.

Alternative/Active Transportation – walking, biking, and other forms of non-motorized, human-powered transportation.

Arterial Connections – interconnected corridors designed to accommodate a large volume of through traffic.

Bicycle – every vehicle propelled solely by human power upon a person may ride, having two tandem wheels, except scooters and similar devices. The term "bicycle" in this document also includes three and four-wheeled human-powered vehicles, but not tricycles for children.

Bicycle Box – a box painted on a roadway at an intersection that allows bicyclists to move to the front of the line in traffic. Generally, a bicycle lane allows cyclists to pass stopped motor vehicle traffic and enter the bicycle box. The bicycle box is located between the intersection and front of the motor vehicle stop line. Bicycle boxes increase awareness of cyclists in the roadway environment and provide the opportunity to cross intersections before motor vehicles.

Bicycle Facilities – a general term denoting improvements and provisions made by public agencies to accommodate or encourage bicycling. Examples include but are not limited to bicycle parking/storage facilities, shared roadways not specifically designated for bicycle use, bicycle lanes, paved shoulders, and side-paths.

Bicycle-Friendly Roads – roads that have existing bicycle facilities, light vehicular traffic, or potential for future bicycle facilities.

Collector Streets – a public road designed to flow traffic from small neighborhood streets and connect to larger thoroughfares.

Connectivity – the logical and physical interconnection of functionally related points so that people can move among them.

Corridor – a spatial link between two or more significant locations.

Crosswalk – a designated point on a road at which some means are employed to assist bicyclists and pedestrians who wish to cross a roadway or intersection. They are designed to keep bicyclists and pedestrians together where they can be seen by motorists, and where they can cross most safely with the flow of vehicular traffic.

Curb Cut – interruption in the curb, as for a driveway.

Curb Extension – a section of sidewalk at an intersection or mid-block crossing that reduces the crossing width for bicyclists and pedestrians and is intended to slow the speed of traffic and increase driver awareness.

Curb Ramp – a ramp leading smoothly down from a sidewalk, greenway, or multiuse path to an intersecting street, rather than abruptly ending with a curb.

First and last-mile – The "first and last-mile" connection describes the beginning or end of an individual trip made primarily by public transportation. In many cases, people will walk to transit if it is close enough. However, on either end of a public transit trip, the origin or destination may be difficult or impossible to access by a short walk. This gap from public transit to destination is termed a *last mile connection*.

Median – a median is a barrier, constructed of concrete, asphalt, or landscaping, which separates two directions of traffic.

Mode Share – a term used to describe percentage splits in transportation options.

Network – connected facilities that form a cohesive system.

Off-road Trail – paths or trails in areas not served by the street system, such as parks and greenbelt corridors. Off-street paths are intended to serve both recreational uses and other trips, and may accommodate other non-motorized travel modes, such as bicycles in addition to walking.

On-road Bicycle Facility – any bicycle facility that is constructed or marked on a roadway, such as a shared roadway, signed route, wide outside lane, bicycle lane, or paved shoulder.

Open Space – empty or vacant land which is set aside for public or private use and will not be developed. The space may be used for passive or active recreation or may be reserved to protect or buffer natural areas.

Pedestrian – a person on foot or a person on roller skates, roller blades, child's tricycle, non- motorized wheelchair, skateboard, or other non-powered vehicles (excluding bicycles).

Quality of Life – a measure of the standard of living which considers non-financial factors such as health, functional status, and social opportunities that are influenced by disease, injury, treatment, or social and political policy.

Regional Bikeway Network – a system of high-quality bicycle facilities, including shared use paths that are a minimum of 10 feet, paved shoulders that are four feet or wider, and bike lanes (see acceptable widths under the definition for bike lanes). In constrained situations, wide curb lanes, with a minimum of 14 feet usable width, can also be used to accommodate bicyclists.

Retrofit – the redesign and reconstruction of an existing facility or subsystem to incorporate new technology, to meet new requirements, or to otherwise provide performance not foreseen in the original design.

Road Diet – reconfiguring or reducing the number of motorized vehicle lanes to provide room to integrate a bicycle facility into a roadway. Commonly used on 4 lane roads with moderate motorized traffic volumes. Generally, roadways are reconfigured to include a center turn lane, two 5' bicycle lanes, and two motor vehicle travel lanes on either side.

Roundabout – traffic calming device at which traffic streams circularly around a central island after first yielding to the circulating traffic.

ROW (right-of-way) – an easement held by the local jurisdiction over land owned by the adjacent property owners that allows the jurisdiction to exercise control over the surface and above and below the ground of the right-of-way; usually designated for passage.

Shared Lane Marking (SLM) or Sharrow – a painted roadway marking that alert motorists that bicyclists are present and frequently use the roadway. Traditionally used in slower, low-volume roadways with wide curb lanes, such as neighborhood routes.

Shoulder – the portion of the roadway contiguous with the traveled way for the accommodation of stopped vehicles, for emergency use, and for lateral support of sub-base, base, and surface courses. Paved shoulders can be used for bicycle travel as well.

Shared Roadway – a roadway that is open to both bicycle and motor vehicle travel. This may be an existing roadway, street with wide curb lanes of 14-feet to 15-feet, or road with paved shoulders. Generally lower speed roadways that are in residential or compact urban environments.

Shared Use Path (Multi Use Path/Side-path) – a bikeway physically separated from motorized vehicular traffic by an open space or barrier and located either within the highway right-of-way (often termed "parallel shared use path") or within an independent right-of-way. Shared use paths may also be used by pedestrians, skaters, wheelchair users, joggers, and other non- motorized users. In some cases, shared use paths also accommodate equestrians. Usually, but not always, located in the public right-of-way adjacent to a roadway. Typically constructed of concrete, but can be made with asphalt, bricks, stone, wood, and other materials.

Signed Shared Roadway (signed bike route) – a shared roadway that has been designated by signing as a preferred route for bicycle use with either a "Share the Road" or "Bike Route" sign.

Thoroughfare – a public road from one place to another, designed for high traffic volumes and essential connections.

Traffic Calming – a range of measures that reduce the impact of vehicular traffic on residents, pedestrians, and cyclists - most commonly on residential streets, but also now on commercial streets.

Traffic Lane or Travel Lane – a lane for the movement of vehicles traveling from one destination to another, not including shoulders.

Wide Outside Lane – roadway with additional unmarked space in the outermost lane that allows motorized vehicles to pass cyclists without changing lanes.