SETRPC
SOUTH EAST TEXAS REGIONAL PLANNING COMMISSION

TRANSPORTATION & ENVIRONMENTAL RESOURCES

SOUTHEAST TEXAS HIKE AND BIKE PLAN 2037

FOREWARD

In Spring 2017, the South East Texas Regional Planning Commission (SETRPC) and Texas Target Communities partnered to create a planning task force to develop a Hike and Bike 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.

The South East Texas Regional Planning Commission (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.

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EXECUTIVE SUMMARY

As a response to the Metropolitan Transportation Plan (MTP) 2040 by the South East Texas Regional Planning Commission Metropolitan Planning Organization (SETRPC-MPO), the South East Texas Hike and Bike Plan (SETHBP) was created for the Jefferson-Orange-Hardin three-county region. The plan will act as a roadmap for augmenting the current automobile-oriented transportation system with new and improved bicycle facilities as an alternative transportation option. 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 the most 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 2037.

Contents

List of Figures

List of Tables

ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
APBP	Association of Pedestrian and Bicycle Professionals
BMT	Beaumont Municipal Transit
JOHRTPS	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 Transportation Organization
MTP	Metropolitan Transportation Plan
NACTO	National Association of City Transportation Officials
PAT	Port Arthur Transit
SETHBC	South East Texas Hike and Bike Coalition
SETHBP	South East Texas Hike and Bike Plan
SETRPC	South East Texas Regional Planning Commission
SETT	South East Texas Transit
TXDOT	Texas Department of Transportation

CHAPTER 01: INTRODUCTION

Project History and Overview

The South East Texas Hike and Bike Plan (SETHBP) is a component of the Metropolitan Transportation Plan 2040 (MTP 2040) carried out by the Jefferson Orange Hardin Regional Transportation Study (JOHRTPS). The MTP recognizes the importance of providing for sufficient pedestrian and bicycle facilities to ensure that all sectors of the population are given viable transportation options to meet their mobility needs. The South East 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 mentions walking and biking as valuable, low-cost, and sustainable modes of transportation. These activities are not only 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: Jefferson, Orange, and Hardin in Southeast Texas (Figure 1). 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

Project 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 three-county MPO. As the region continues to grow, there is a growing demand for active transportation for people of all ages and abilities while improving recreational and public health facilities and creating economic development opportunities (Figure 2).

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

a) Guide public investment to establish a framework for bicycle and pedestrian facilities and supporting policies and programs.
b) Identify gaps in the existing system to build or retrofit bike and pedestrian facilities and identify funding opportunities for potential projects.
c) Identify tools and best practices for a safe, comfortable, and multimodal transportation network in the region.
d) Create a framework for interjurisdictional coordination for the construction and operation of the network.

Benefits of Hike and Bike

There are a number of benefits to providing active transportation options which include:

a) **Improved public health-** Physical activities including walking, biking, and hiking in people's daily lives reduce 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**- Active transportation encourages reduced speeds for automobiles to accommodate bicyclists and walkers as well as add more 'eyes on the street' for crime reduction.

d) **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.

e) **Increased economic development opportunities**- Well-designed active transportation facilities economic development opportunities for business and tourism.

Figure 2: Hike and Bike Activities in Southeast Texas

CHAPTER 02. TRANSPORTATON IN SOUTHEAST TEXAS NOW

Overview

The existing conditions regarding bicycle transportation of the three-county region are described in this chapter. First, the socio-economic demographics and geography of the region are described by the existing population data. This analysis is followed by a summary of existing and projected bicycle-related needs for the region. A detailed inventory of road segments is carried out by identifying the bicycling conditions and summary assessments based on public input during community meetings and workshops.

Demographics

Jefferson County

The county seat and the largest city in the county is Beaumont with a population of 118,296. From Table 1, compared to Orange and Hardin Counties, Jefferson has the greatest population (252,273) with the highest density (287.88 pop/sq.mi) and a population increase of 0.09% from 2000 to 2010. The racial demography mostly consists of white (59.3%) and African-American (34.3%), and the Hispanic population is 19.5%. The median age is 36 years and the median household income is $47,620.

Orange County

The county seat and largest city is Orange with a population of 18,595. Among the three counties, Orange has the lowest population (18,595) with a density of 245.26 pop/sq.mi and a population decrease (.25%) from 2000 to 2010. The racial demography mostly consists of white (87.8%) and African-American (8.8%), and the Hispanic population is 7.1%. The median age is 38.2 years and the median household income is $51,156 (Table 1).

Hardin County

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 (61.35 pop/sq.mi) with a population of 54,635 and a high population increase (13.65%) from 2000 to 2010. The racial demography mostly consists of white (91.9%) and African-American (5.7%), and the Hispanic population is 5.2%. The median age is 38.8 years and the median household income is the highest ($56,201) among the three counties (Table 1).

Looking at the population density map (Figure 3), the most densely populated cities are Beaumont, Port Arthur, Port Neches, Port Arthur, and Nederland in Jefferson County; Orange, Bridge City, Vidor, and Rose City in Orange County; and Lumberton and Silsbee in Hardin County.

Attribute	***Jefferson County***	***Orange County***	***Hardin County***
Population			
Population (2000)	2,52,051	18,643	48,073
Population (2010)	2,52,273	18,595	54,635
Percentage Change (%)	0.09%	-0.25%	13.65%
Population Density (pop/sq.mi)	287.88	245.26	61.35
Race (%)			
White	59.3	87.8	91.9
African American	34.3	8.8	5.7
American Indian and Alaska Native	1	0.7	0.5
Asian	3.9	1.1	0.7
Native Hawaiian and Other Pacific Islander	0.1	0.1	0.0
Other	1.5	1.5	1.2
Hispanic Population	19.5	7.1	5.2
Age			
17 and Under	23.7%	24.8%	24.7%
65 and Older	13.5%	15.3%	15.7%
85 and Older	2%	1.8%	1.7%
Median Age	36	38.2	38.8
Income			
Median Household Income	$47,620	$ 51,156	$56,201

Table 1: Demographics Table for the Three-County Region (Data Source: U.S. Census 2010)

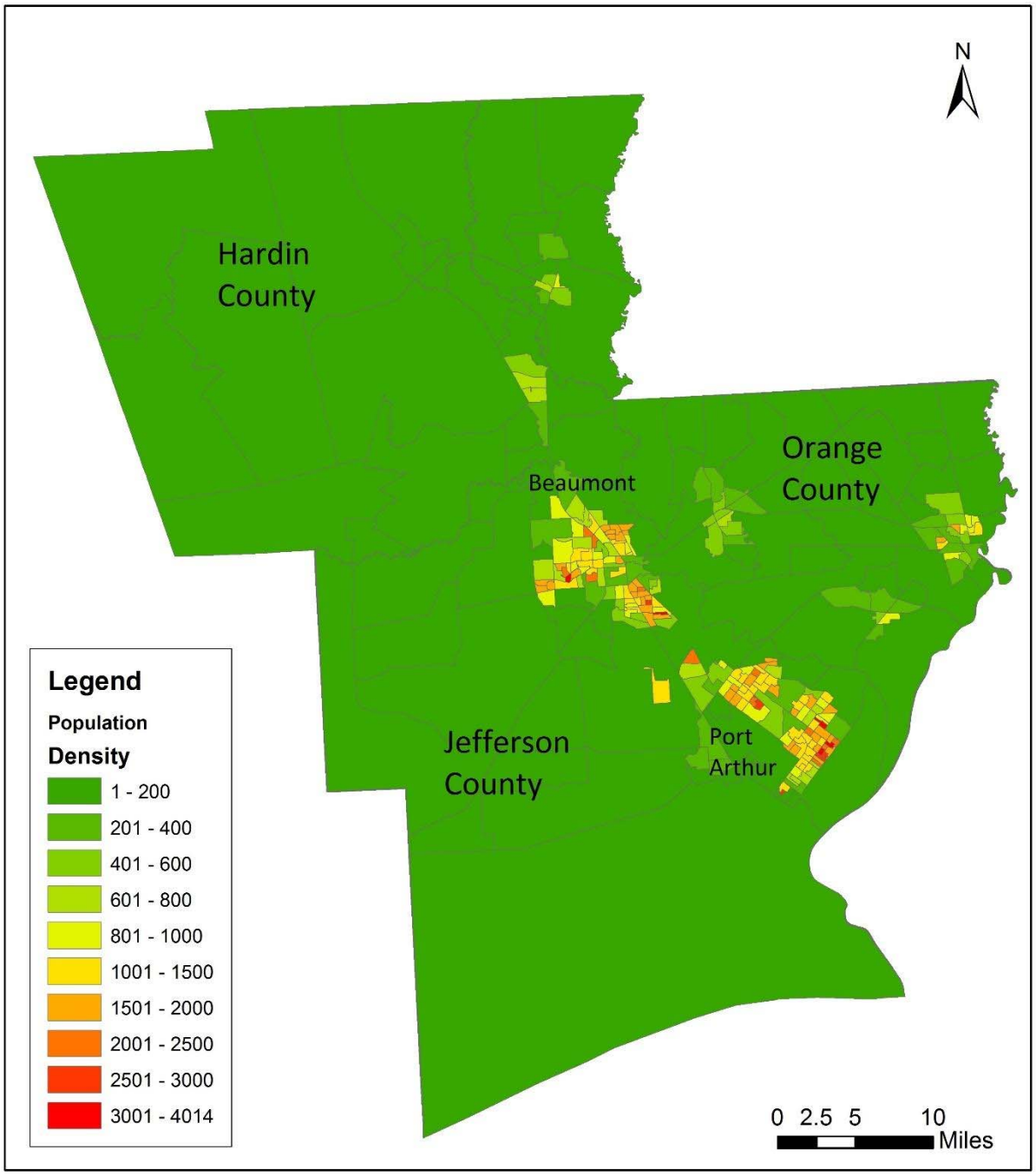


Figure 3: Population Density Map (Data Source: U.S. Census 2010)

Employment and Income

A study[1] shows that out of the 146,303 jobs in the three-county region, 98,498 (67%) are held by residents of the region and the rest of the 47,805 (33%) jobs are held by people from surrounding counties. It was also observed that 49,474 residents of the region hold a job in the neighboring counties (Figure 4). The spatial distribution of median household income (Figure 5) in the region shows concentration of high-income populations in the major cities. Well-designed active transportation facilities can help people commute within or between cities for employment opportunities.

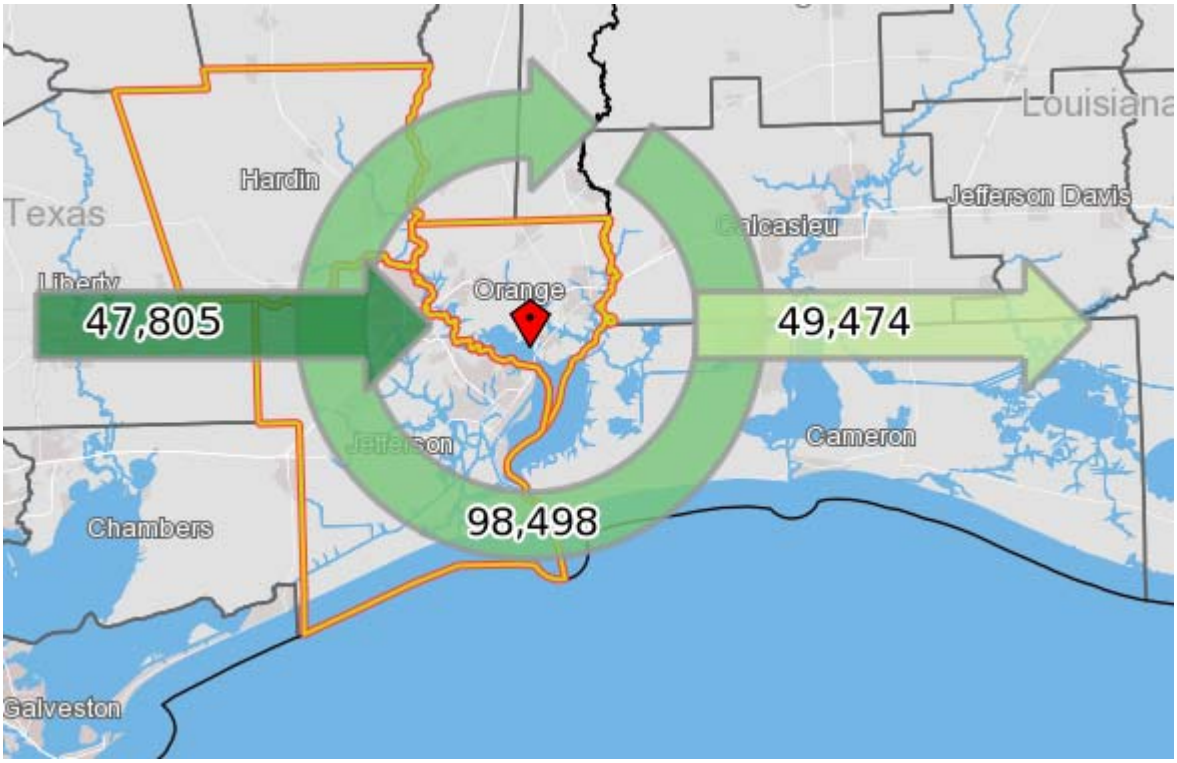


Figure 4: Worker Inflow/Outflow Map
(Source: Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistics (LODES))

Footnote:

1. Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistics (LODES) data for year 2014.

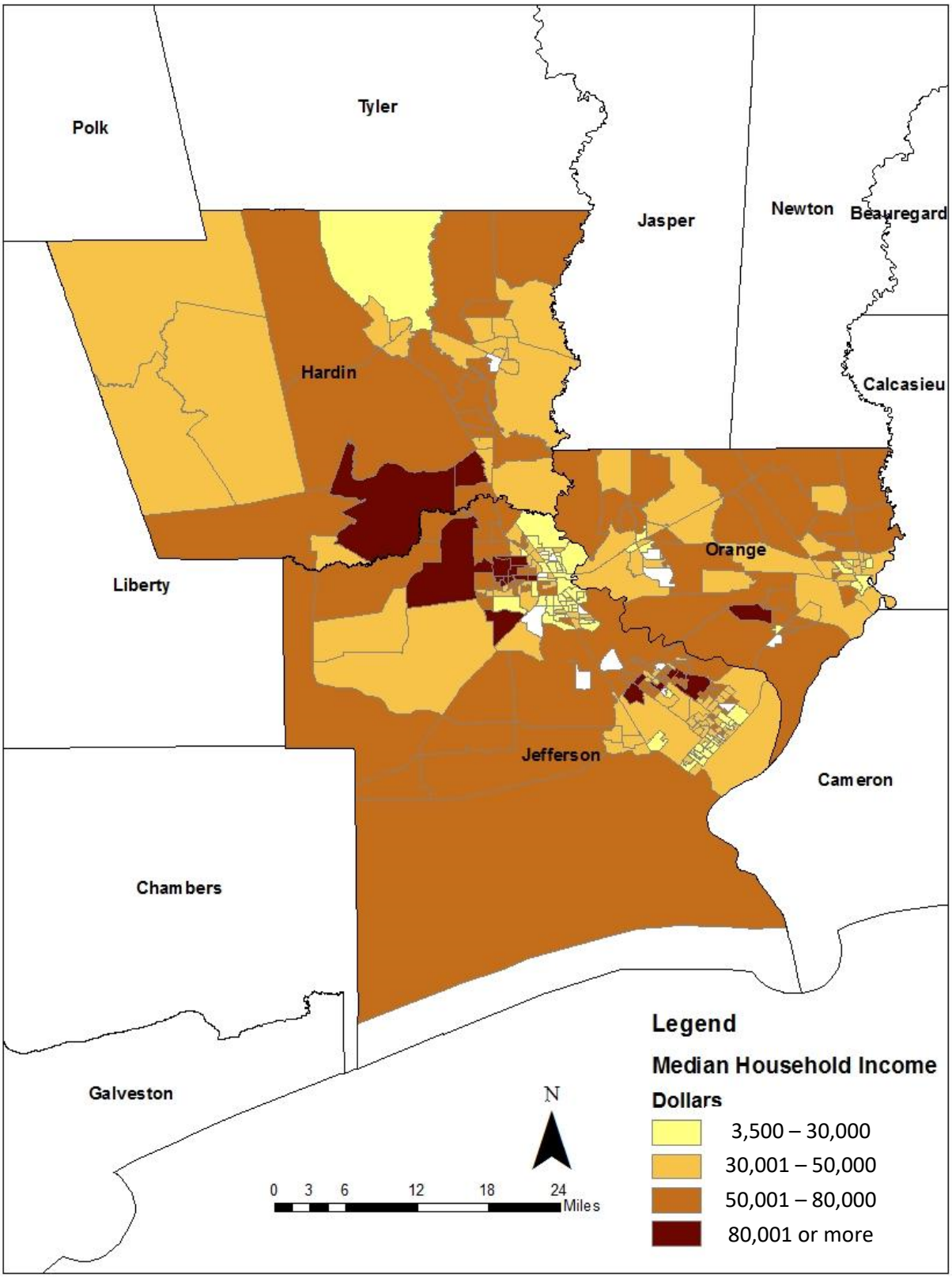


Figure 5: Median Household Income Map (Data Source: U.S. Census)

Climate and Geography

Land Cover

Jefferson County has around 143,751 acres developed (Figure 6). On the other hand, Hardin County has about 468,043 acres of woodlands/forest which is 82% of the total county area. These might be important factors to consider when planning for hike and bike in the region. For example, the natural areas are more suitable for trails whereas developed areas may be more suitable for bike lanes or paths.

Floodplains

Large segments of the three-county region are within the 100-year and 500-year floodplain as shown in Figure 7. The Neches River, Sabine Lake and tributaries of the Trinity River contribute to the vast floodplains in the region. The presence of rivers provides opportunity to develop green corridors along the bayous and riverfronts. Elevation should be examined when considering hike and bike locations given the extensive floodplains.

Activity Nodes

The concentration of activity nodes is important to plan for commuter or tourist bike facilities in the region. Figure 8 shows the activity nodes including parks, museums, hospitals, and schools in the Jefferson-Orange-Hardin region. The urban areas of Beaumont, Orange, and Port Arthur have a large concentration of activity nodes. The proximity of activity centers combined with a bike network could encourage the members of the community to choose an active lifestyle.

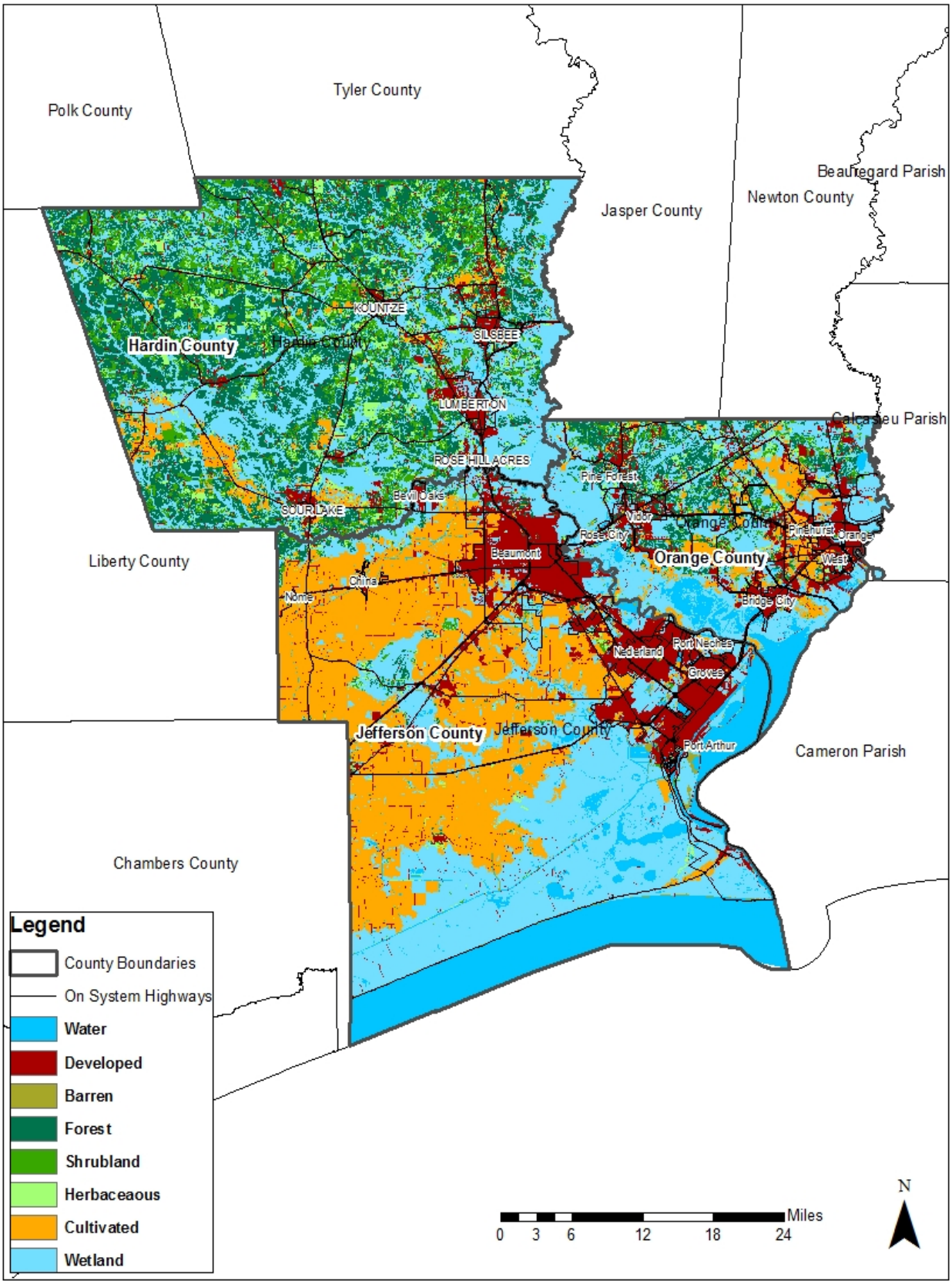


Figure 6: Land Cover Map (Data Source: National Land Cover Database 2011, TNRIS)

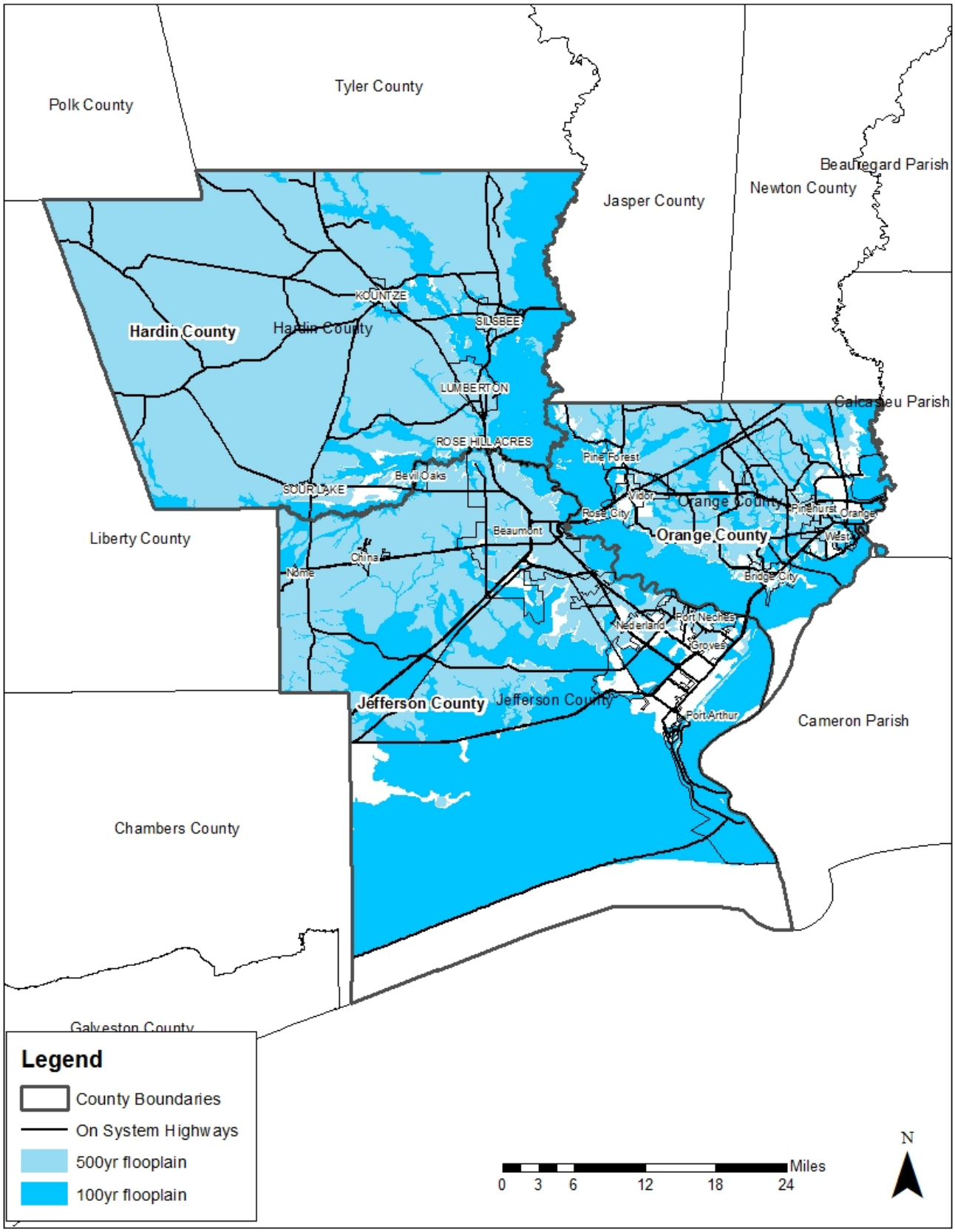


Figure 7: Floodplain Map

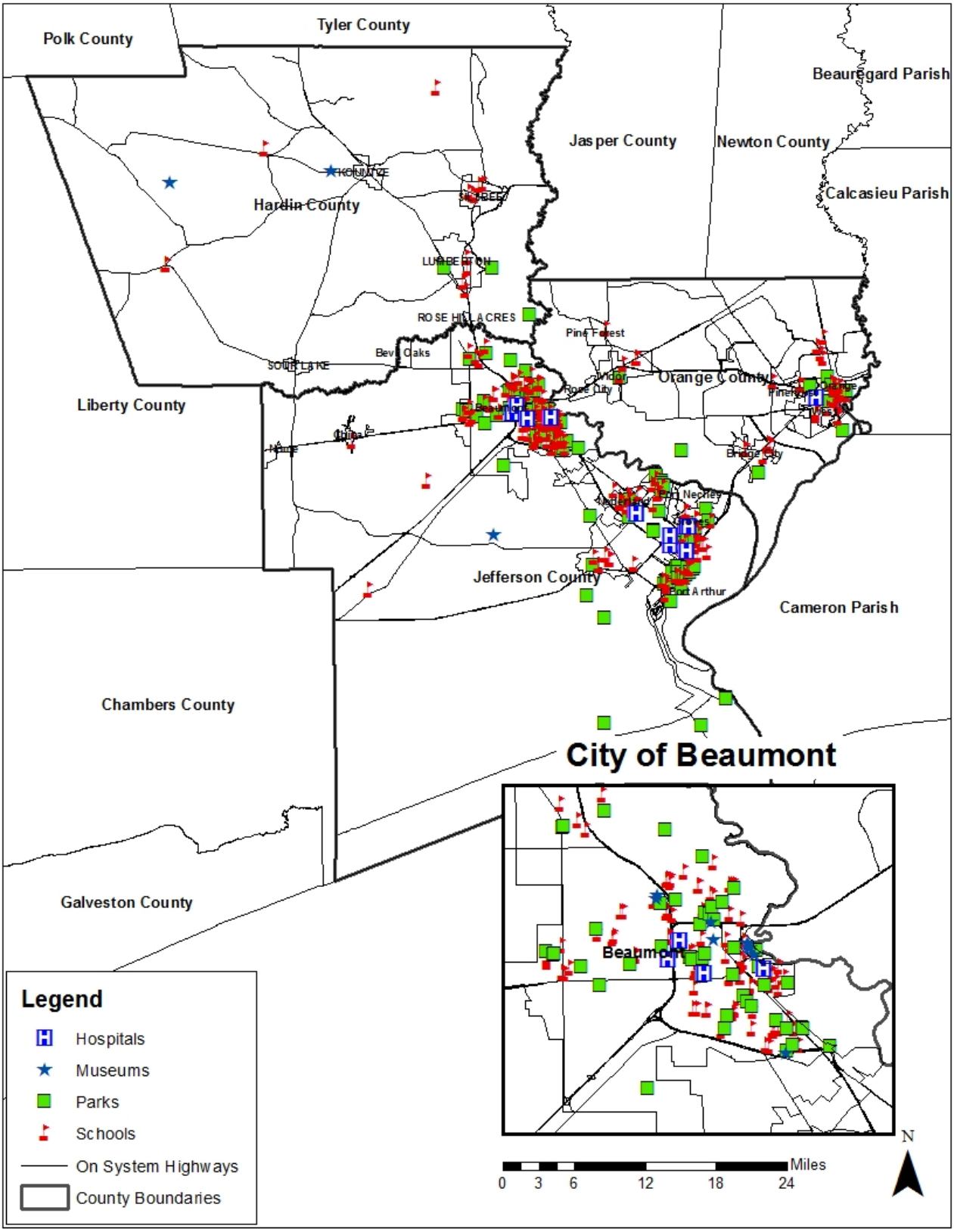


Figure 8: Activity Nodes

Transportation

Existing Mode Share

The 2015 Census data shows that of the 93,495 occupied housing units in Jefferson County, a considerable percent (8.9%) do not own any vehicle. Similarly, 5.6% among 32,054 occupied housing units in Orange County, and 3.8% among 20,799 occupied housing units in Hardin County do not have a vehicle (Table 2). Developing a pedestrian and bicycle infrastructure can cater for the needs of this population to ensure increased job opportunities.

Attribute	***Jefferson County***		***Orange County***		***Hardin County***	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
Occupied housing units	93,495		32,054		20,799	
No vehicles available	8,338	8.9	1,810	5.6	780	3.8
1 vehicle available	35,761	38.2	10,520	32.8	6,208	29.8
2 vehicles available	33,900	36.3	13,860	43.2	9,046	43.5
3 or more vehicles available	15,496	16.6	5,864	18.3	4,765	22.9

Table 2: Vehicle Ownership in Jefferson, Orange, and Hardin Counties.
(Data Source: American Community Survey, 2015)

On the other hand, a significant majority in all three counties drive alone to work (Jefferson: 87.5%, Orange: 87%, and Hardin: 86.3%) and a very limited percent walk (Jefferson: 1.2%, Orange: 1.3%, and Hardin: 0.9%) or take other means (Jefferson: 1.1%, Orange: 1.4%, and Hardin: 1.0%) for commuting to work (Table 3).

Attribute	***Jefferson County***		***Orange County***		***Hardin County***	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
Workers 16 years and over	101,467		34,989		23,758	
Car, truck, or van -- drove alone	88,736	87.5	30,441	87	20,504	86.3
Car, truck, or van -- carpooled	8,130	8	2,918	8.3	2,337	9.8
Public transportation (excluding taxicab)	663	0.7	41	0.1	20	0.1
Walked	1,197	1.2	460	1.3	219	0.9
Other means	1,164	1.1	500	1.4	233	1
Worked at home	1,577	1.6	629	1.8	445	1.9

Table 3: Mode Share in Jefferson, Orange and Hardin Counties.
(Data Source: American Community Survey, 2015)

Existing Transit Network

The three counties are served by two fixed route public transit providers: Beaumont Municipal Transit (BMT), Port of Arthur Transit (PAT), and one rural demand response public service provider, the South East Texas Transit (SETT). Integrating public transit with a strong active transportation network would address concerns of "first and last-mile" connectivity (See Appendix D).

The City of Beaumont is the largest city in the region and it is also one of the main economic centers in the region. BMT is a publicly-funded transit agency which owns 17 buses serving 10 fixed routes and eight paratransit vans serving paratransit as shown in Figure 9. According to the 2014 National Transit Database, BMT provided 651,637 passenger trips in 2009 and 588,439 passenger trips in 2014 (NTD 2014). BMT projects its ridership for 2016 to be 408,576 for fixed routes and 23,155 for paratransit.

Port Arthur is another important economic player in the area. PAT is a publicly funded transit agency that currently leases 10 fixed-route buses and 15 paratransit vans (Figure 10). PAT operates 11 fixed routes and a paratransit service in the urban area. In 2009, PAT provided 148,689 passenger trips and 124,716 passenger trips in 2014.

SETT is a rural transit curb-to-curb demand-response system designed to serve persons residing in non-urbanized areas for healthcare, shopping, social services, employment, education, and recreational transportation needs. Using transit facilities to complement biking infrastructure will foster increased ridership in the community.

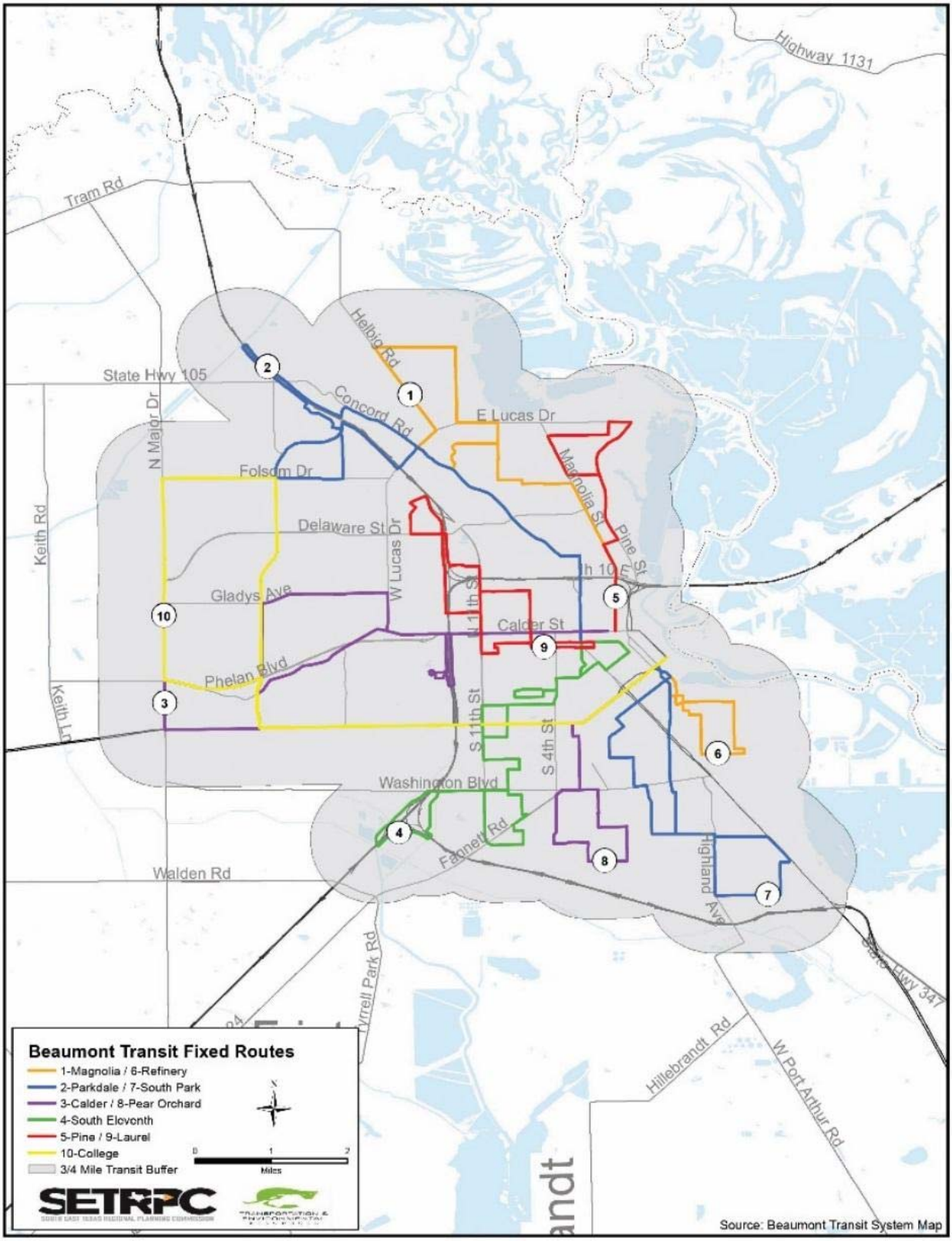


Figure 9: Beaumont Transit Fixed Routes Map (Source: SETRPC)

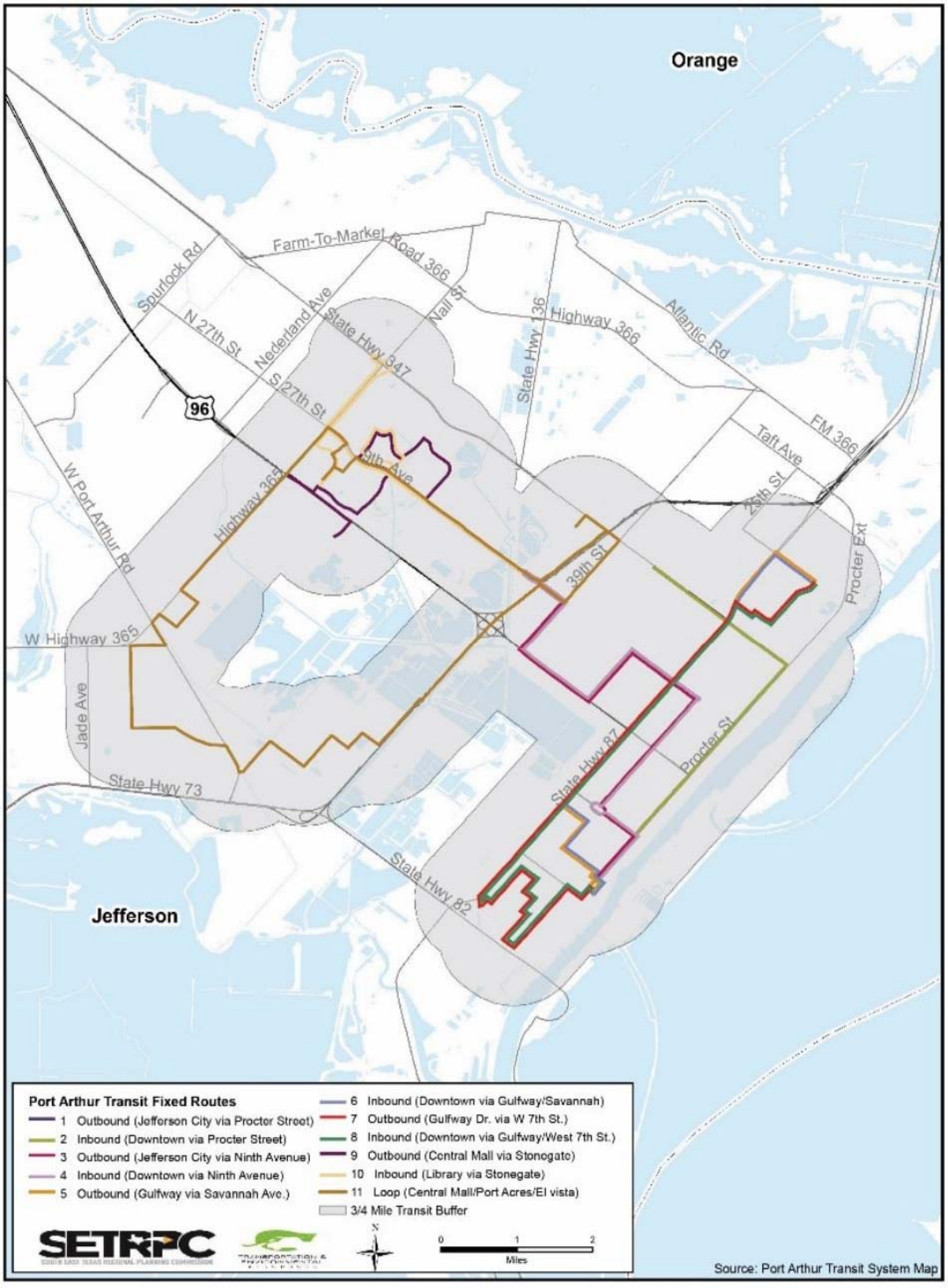


Figure 10: Port Arthur Transit Fixed Routes Map (Source: SETRPC)

Existing Bicycle Network

The three-county region has very limited amount of officially designated bicycle routes. The images below show existing bicycle facility in the Calder Ave. in the City of Beaumont (Figure11) and roads that were identified as "bicycle-friendly" (Figure 12) in a previous meeting by SETRPC and SETHBC members (see Chapter 03 for more on the public engagement process). The route map (Figure 13) 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 segments used by bicyclists and they can serve as a base to build upon and develop a robust biking network in the region.

Figure 11: Street Segment with Existing Bicycle Lane, City of Beaumont, Jefferson County

Figure 12: Bicycle-Friendly Street Segment, City of Beaumont, Jefferson County

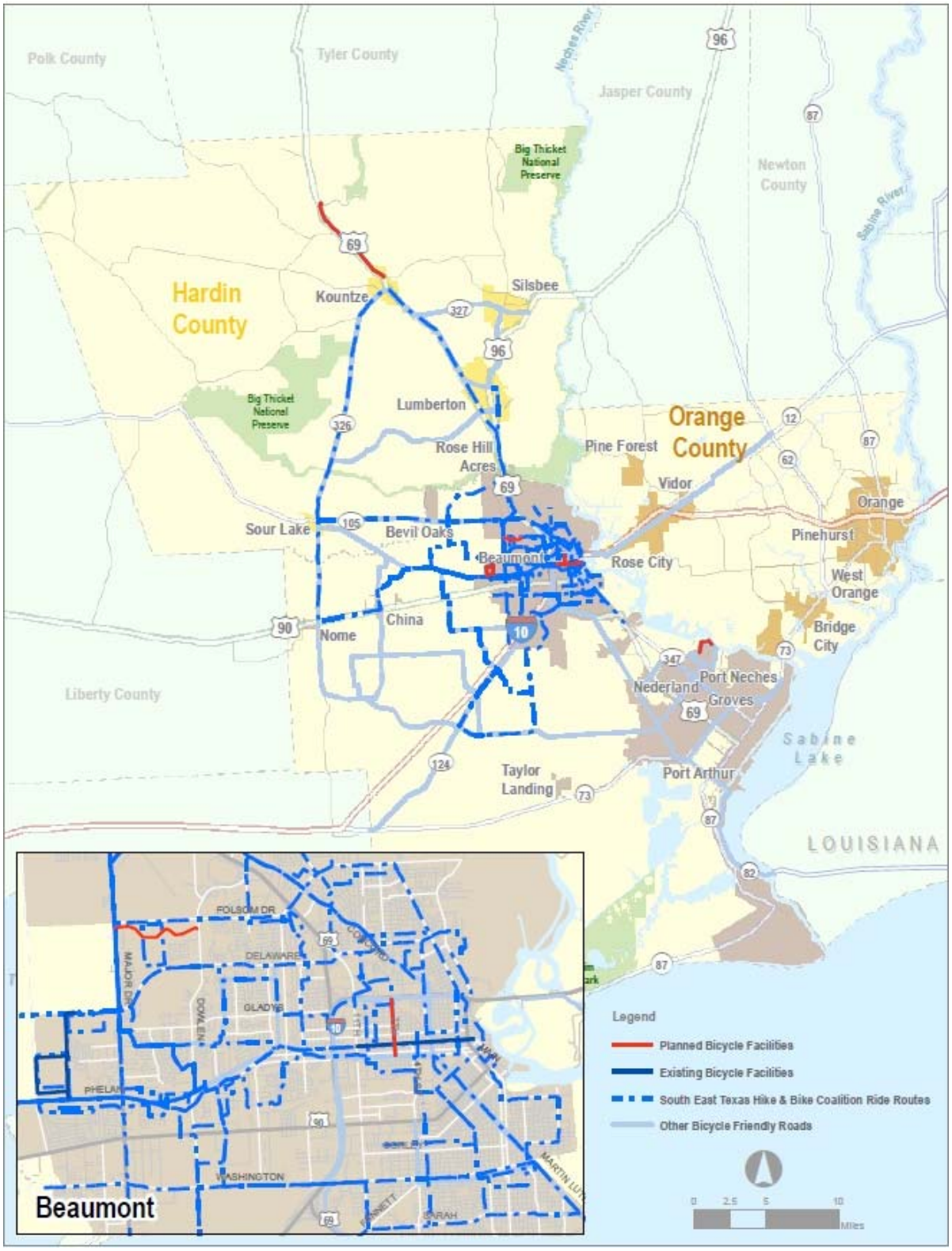


Figure 13: Existing Bicycle Friendly Routes (Source: Workshop 2014, SETRPC)

CHAPTER 03. SETTING THE FRAMEWORK

Overview

South East Texas region has a passionate bicycling community who participated in the planning process of developing the South East Texas Hike and Bike Plan. This project provided the opportunity to engage the bike enthusiasts and city officials all over the region to take input from their knowledge of the region's streets and infrastructure. SET recognizes the four types of bicyclists listed below as the target population for this plan.

Types of Bicyclists

From a study conducted by the City of Portland, Oregon in order to better understand why people ride or don't ride their bicycle, it is revealed that the main reason people do not ride their bike is due to their feeling of unsafety sharing the road with motorists. From the results of the survey, the study identified four distinct types of people who ride bikes in the city.

a) Type A: Strong and Fearless (<1%) - Will ride their bike regardless of the roadway conditions.
b) Type B: Enthused and confident (6%) - Feels safe riding their bike on most of the region's streets, but particularly those with some sort of bike accommodation, whether it is bike lanes or marked shared lanes.
c) Type C: No way no how (33%) - Has no desire to ride their bike on-street, regardless of the types of facilities provided. This represents about a third of the population.
d) Type D: Interested but concerned (60%) - The majority of the population is interested in riding their bike, whether for work, fun, or errands, but are concerned about the safety of riding in traffic. This includes family, children, and seniors. Building safer facilities will encourage this portion of the population to ride their bike.

Public Meetings

As Figure 14 shows, 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 a series of five meetings/workshops to obtain feedback from planning professionals and stakeholders. The

input included visioning, goal setting, and identifying the bicycle network.

The first workshop was held on February 9, 2017 led by SETRPC where stakeholders from 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. It was stressed that retrofitting existing roadways would be a good way to encourage bicycling within a limited budget.

On March 1, 2017, a charrette (Figure 20) 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).

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 cost estimation. Adjustments to the proposed bike routes were noted from the public input.

The final workshop took place in 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 is scheduled to be finalized by September 2017.

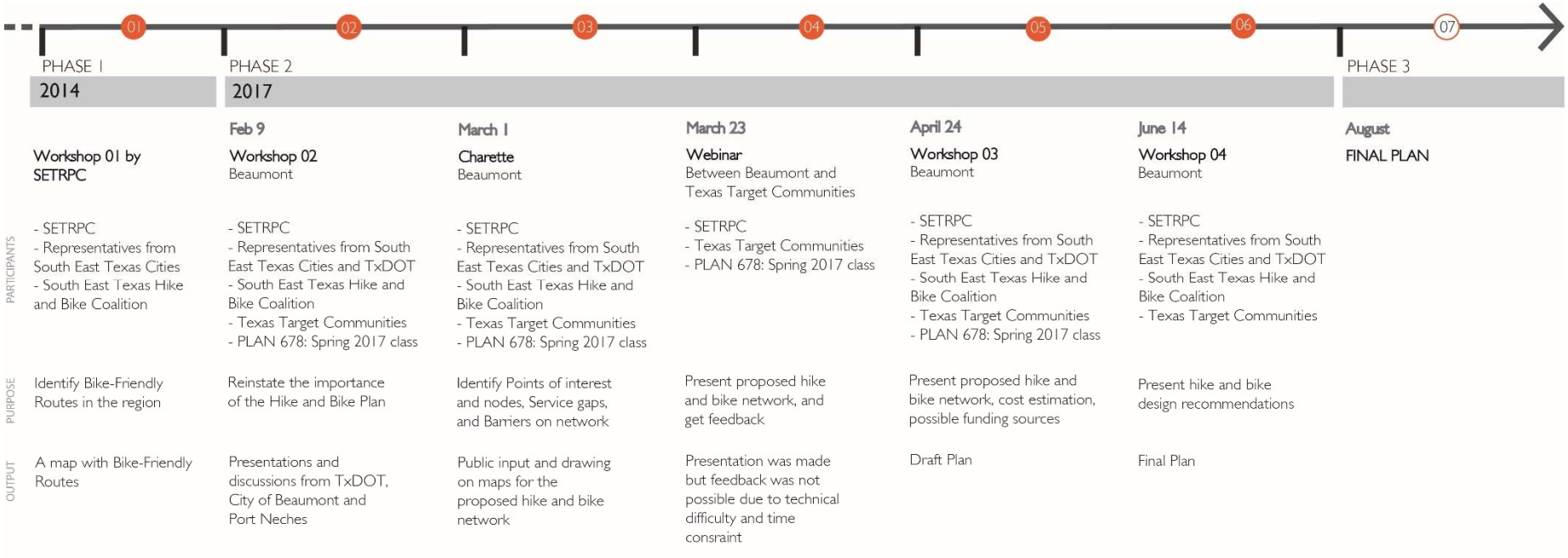


Figure 14: Plan Development Timeline

Figure 15: Charrette Activity

Figure 16: Workshop on Design Recommendations

Complete Streets Policy

One of the central concepts that the participants agreed on during the public meetings was to adopt a Complete Streets Policy in the region as an overarching goal. By adopting a Complete Streets policy, the three-county region can make the roads safer for everyone including drivers, pedestrians, and bicyclists. The National Complete Streets Coalition is a movement that started in 2004 to promote the development and implementation of Complete Streets policies and professional practices in the United States.

According to the National Complete Streets Coalition, **"**Complete Streets are streets for everyone**.** They are designed and operated to enable safe access for all users, including

pedestrians, bicyclists, motorists and transit riders of all ages and abilities. Complete Streets make it easy to cross the street, walk to shops, and bicycle to work." Creating Complete Streets means transportation agencies must change their approach to community roads. By adopting a Complete Streets policy, communities direct their transportation planners and engineers to routinely design and operate the entire right-of-way to enable safe access for all users, regardless of age, ability, or mode of transportation.

There is no singular design prescription for Complete Streets; each one is unique and responds to its community context. A complete street may include sidewalks, bike lanes (or wide paved shoulders), special bus lanes, comfortable and accessible public transportation stops, frequent and safe crossing opportunities, median islands, accessible pedestrian signals, curb extensions, narrower travel lanes, roundabouts, and more. A Complete Street in a rural area will look quite different from a Complete Street in a highly urban area, but both are designed to balance safety and convenience for everyone using the road.

Education, Encouragement, and Enforcement Programs

The participants also agreed on the importance of education, encouragement, and enforcement programs as part of promoting the hike and bike 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.

Visioning and Goal Setting

The current streets of Southeast Texas do not provide enough protection or perceived safety for bicyclists of all ages and abilities. The purpose of the plan is to develop a comprehensive network of bikeways that attracts all kinds of riders. The following vision for the plan was developed based on feedback from the public meetings.

"Pedestrians and 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.

OBJ 1.1 Coordinate pedestrian and bicycle planning with local, county, regional, and state transportation plans, programs, and projects.

OBJ 1.2 Facilitate a local evidence-based and citizen-driven decision-making process to advocate the plan.

OBJ 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.

OBJ 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.

OBJ 2.1 Identify and establish connections among major destinations including schools, parks, hospitals, recreation areas, and employment and community centers.

OBJ 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.

OBJ 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.

CHAPTER 04. 2037 BICYCLE NETWORK

Overview

This section discusses the proposed bike facilities for Jefferson, Orange, and Hardin Counties. The proposed routes are provided based on input from the community meetings. 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 are focused on separately. Orange and Hardin Counties have been addressed as a whole county.

Factors Considered for the Bicycle Network

The main objective was to connect the points of interest which were identified at the community meeting.

A variety of facility types can be designed for pedestrian and bicyclists. The parameters for choosing the most appropriate facility types are:

- Right-of-way (ROW) width,
- speed limit and volume,
- expected pedestrian and bicyclist activities,
- existing pedestrian and bicycle infrastructure, and
- surrounding land uses.

Road condition investigations through Google Earth and GIS yielded information on the right of way (ROW), speed limit, existence of shoulder, and sidewalk. Based on the investigations, the bike infrastructure was proposed. The major highways were avoided as much as possible due to unsafe intersections, high speed traffic, etc. Depending on the needs, a combination of the types can be implemented along a single stretch of bikeway.

Types of Bicycle Facilities

Four facility types[2] that are most appropriate for the three-county region have the characteristics described in the following Tables 5, 6, 7 and 8, and Figures 17 and 18 .

Bicycle Lane		
Description	Bicycle lanes provide dedicated space in the road for bicyclists. Studies show that both drivers and cyclists behave less erratically when cyclists use bicycle lanes.	 Image: http://americablog.com/wp-content/uploads/2015/10/Bike_Lane_Toronto_2011.jpg 
Typical Location	Medium- or high- volume roadways, including arterials and minor arterials.	
Design Considerations	• Bicycle lanes should be 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 should appear every ½ mile. • Bicycle lanes incorporated into the design of new roadways typically add a small amount to the total construction cost; however, retrofitting an existing road with additional pavement can have substantial costs.	
Planning Level Costs	Estimate to convert 4-lane undivided highway to 3 Lanes with a Center Turn Lane (CTL) and bicycle lanes: • Pavement markings (every ½ mile) • Lane striping (yellow stripes for CTL and white stripes for bicycle lane) • Signs (provided with pavement markings every ½ mile) Estimated Cost: $40,000 per mile (both sides)	

Table 4: Bicycle Lane (Reference: Urban Bikeway Design Guide, NACTO)

Footnote:

2. Adapted from National Association of City Transportation Officials (NACTO) 'Urban Bikeway Design Guide'. The American Association of State Highway and Transportation Officials (AASHTO) Guide for the 'Development of Bicycle Facilities' should also be consulted when designing, constructing, and maintaining infrastructure for

bicyclists.

Shared-Use Path/Trail		
Description	A shared-use path is a dedicated bicycle facility generally located outside of a road's right-of-way. Shared-use paths may also be used by-pedestrians, skaters, joggers, and other non-motorized users.	 Image: http://www.americantrails.org/i/resourceimages/shareduse-asheville-2011.jpg 
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.	
Planning Level Costs	• Concrete path (12' Wide): $325,000 per mile • Other costs: $400,000 per mile (includes wayfinding signage, hybrid pedestrian beacons at roadway intersections, drainage improvements, etc.) Estimated Cost: $725,000 per mile (12' path)	

Table 5: Shared-Use Paths (Reference: Urban Bikeway Design Guide, NACTO)

Signed Shared Roadway		
Description	Shared lanes encourage bicyclists and motorists to share the road, especially where a wide outside lane (14 feet or wider) exists. They sometimes utilize shared-lane markings.	 Image: https://can.org.nz/system/files/Ithaca%20Sharrow%20photo.JPG 
Typical Location	Low- or medium-volume streets (e.g. collector streets). Prefer roadways with 4 or more lanes, which ease interactions between cyclists and motorists.	
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 ¼ mile and at intersections.	
Planning Level Costs	• Signs: $400 per sign and post (every ¼ mile) • Pavement markings: $250 per lane-use marking (every 250 feet) Estimated Cost: $13,760 per mile (both sides of roadway)	

Table 6: Signed Shared Roadway (Reference: Urban Bikeway Design Guide, NACTO)

Signed Shoulder Bicycle Route		
Description	According to2012 AASHTO Guide for the Development of Bicycle Facilities: "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. Shoulders where paved are often used by bicyclists."	 Image: http://3.bp.blogspot.com/-1_WvyCxo2yA/UHjLJAc1O2I/AAAAAAAADTU/ZnuG7yP-Mo/s1600/Easter,+Corkscrew+011.jpg 
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 ¼ mile and at intersections.	
Planning Level Costs	• Signs: $400 per sign and post (every ¼ mile) • Pavement markings: $250 per lane-use marking (every 250 feet) Estimated Cost: $13,760 per mile (both sides of roadway)	

Table 7: Signed Shoulder Bicycle Route (Reference: Urban Bikeway Design Guide, NACTO)

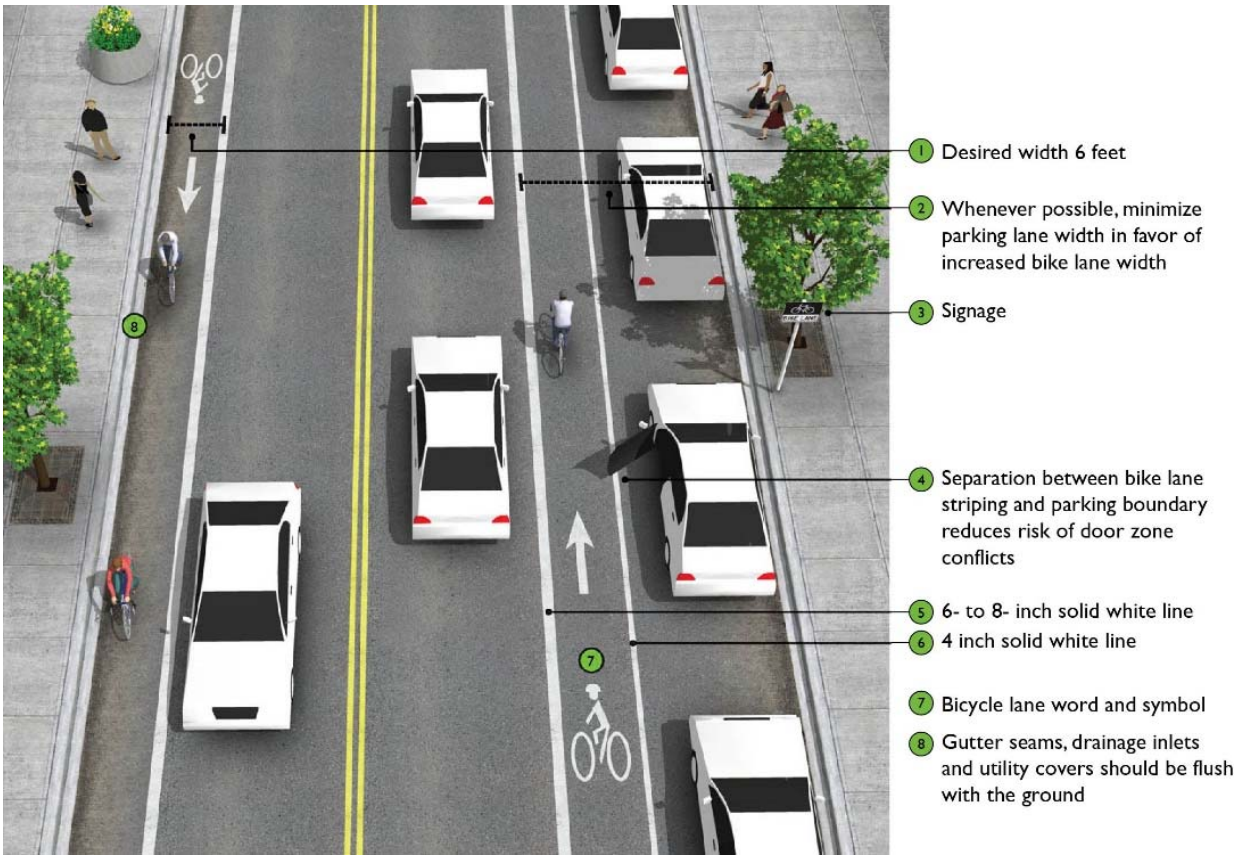
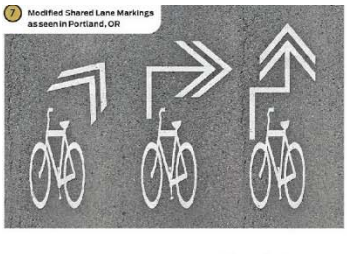
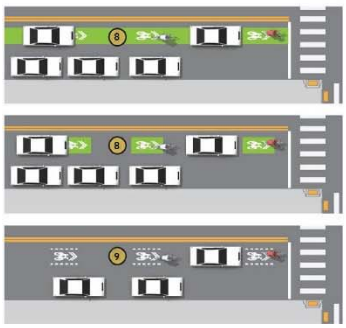


Figure 17: Typical Bicycle Lane Design Recommendations



Optional Shared Lane Marking with Color



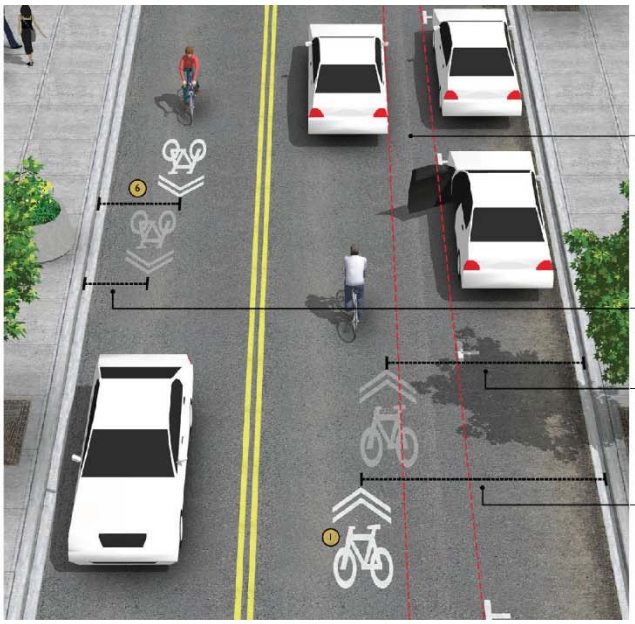


Figure 18: Shared Signed Roadway Design Recommendations

2037 Bicycle Network in Southeast Texas

The 2037 Bicycle Network Plan was created through a process that involved past efforts, public input, field analysis, and technical review by SETRPC. The next sections provide an overview of the proposed bicycle facilities in the region. The recommended network from the previous workshop was overlapped with current recommendations from the public input process. The combined results were then analyzed to see where the networks overlapped and what gaps were left to be filled. The 2037 Bicycle Network (Figure 19) serves the long-range vision of providing a viable form of alternative transportation in the region.

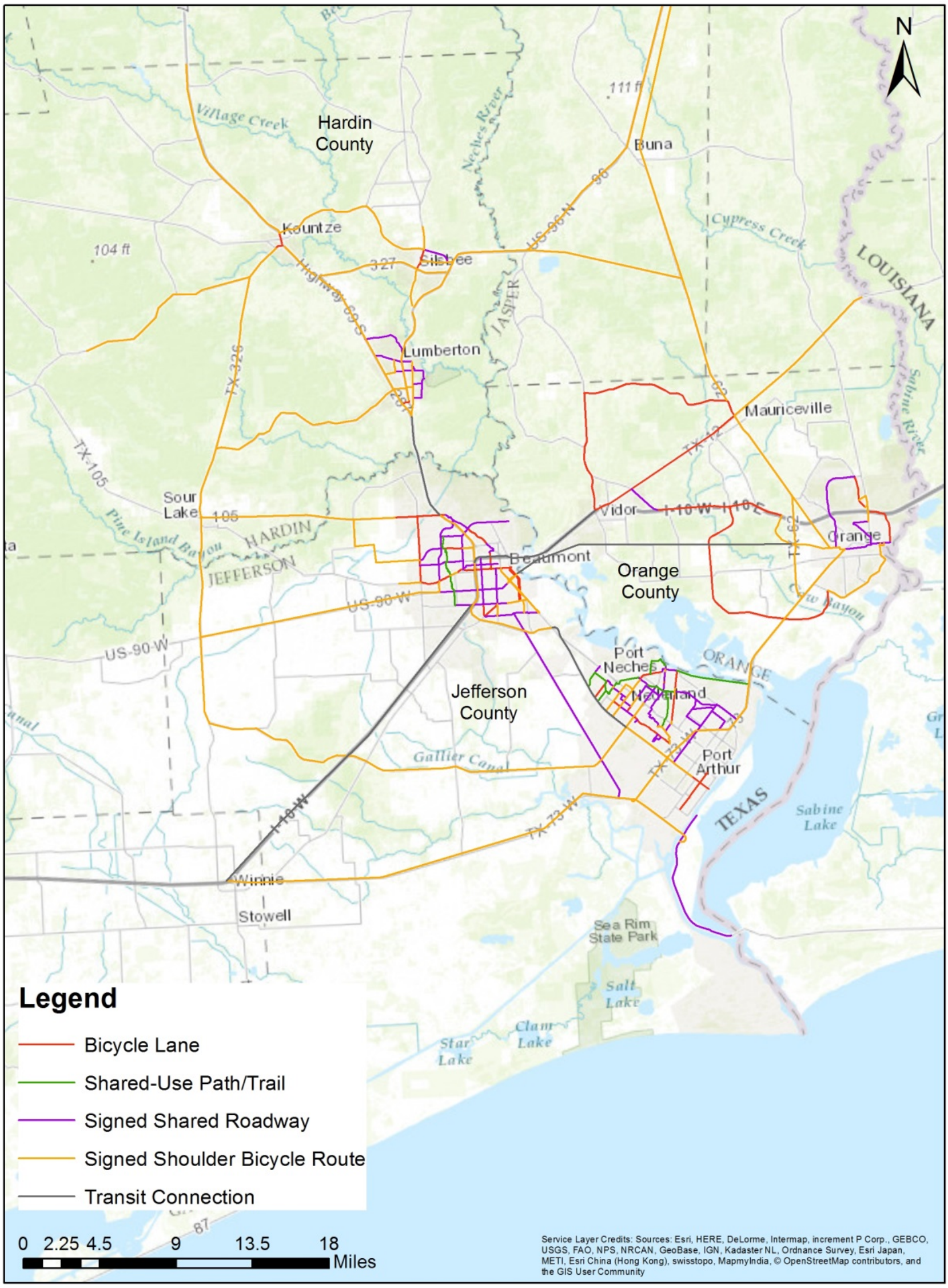


Figure 19: 2037 Bicycle Network in the Jefferson-Orange-Hardin Counties Region

City of Beaumont (Jefferson County)

The bicycle network in the City of Beaumont (Figure 20) 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 these users a choice, the Park Street and Pennsylvania Avenue roads 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 this bayou which can be a scenic bikeway in the city.

Cities of Port Neches, Port Arthur, Nederland, and Groves (Jefferson County)

The network (Figure 21) 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.

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 22). There are some parks and educational institutions throughout the cities where connections were attempted through the proposed bikeways. An important 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 was Rainbow Bridge, a high-speed road, unsuitable for bicycling. So, a bicycle bridge may be built in the long term.

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 this network (Figure 23) 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.

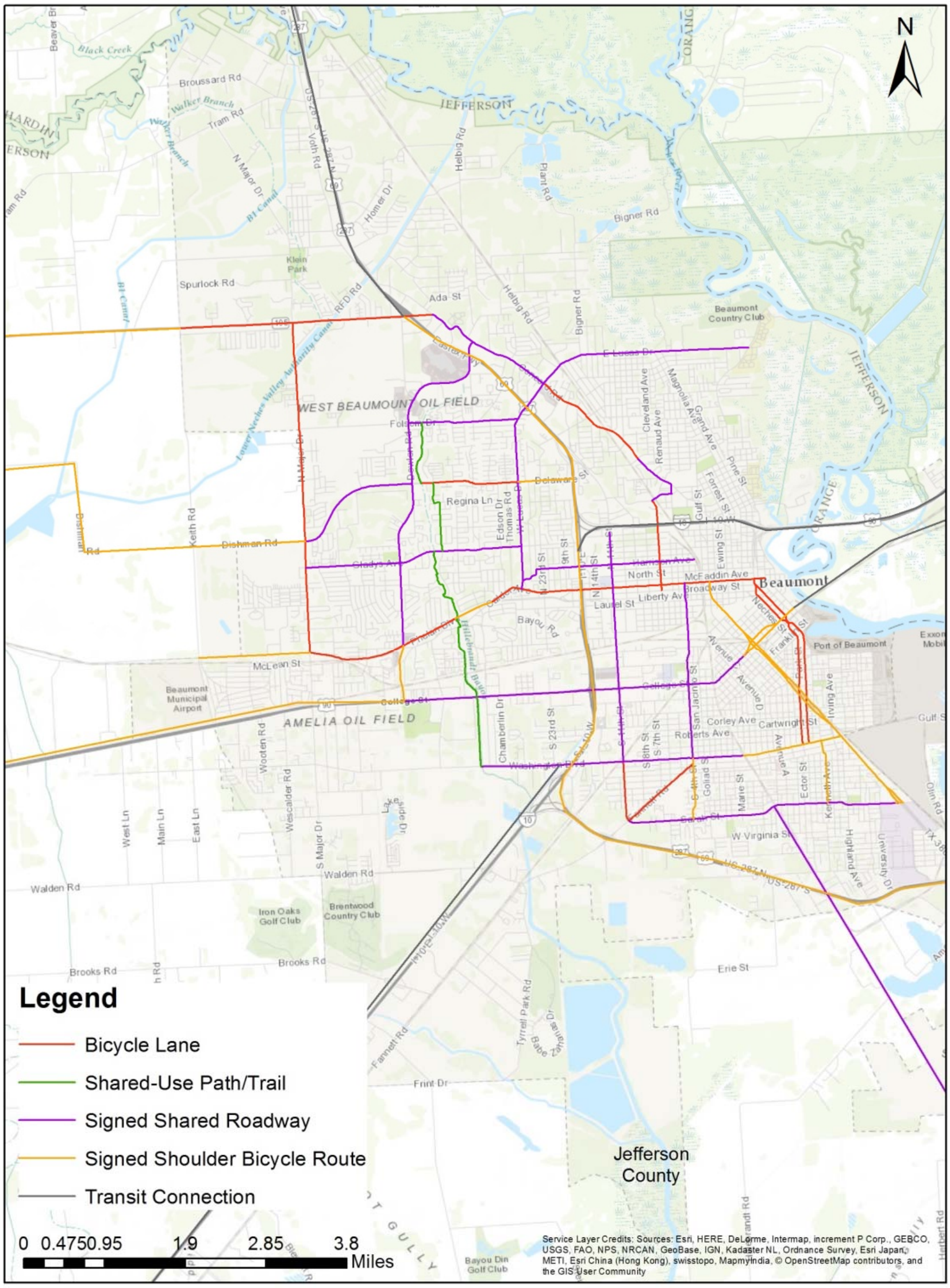


Figure 20: 2037 Bicycle Network for the City of Beaumont

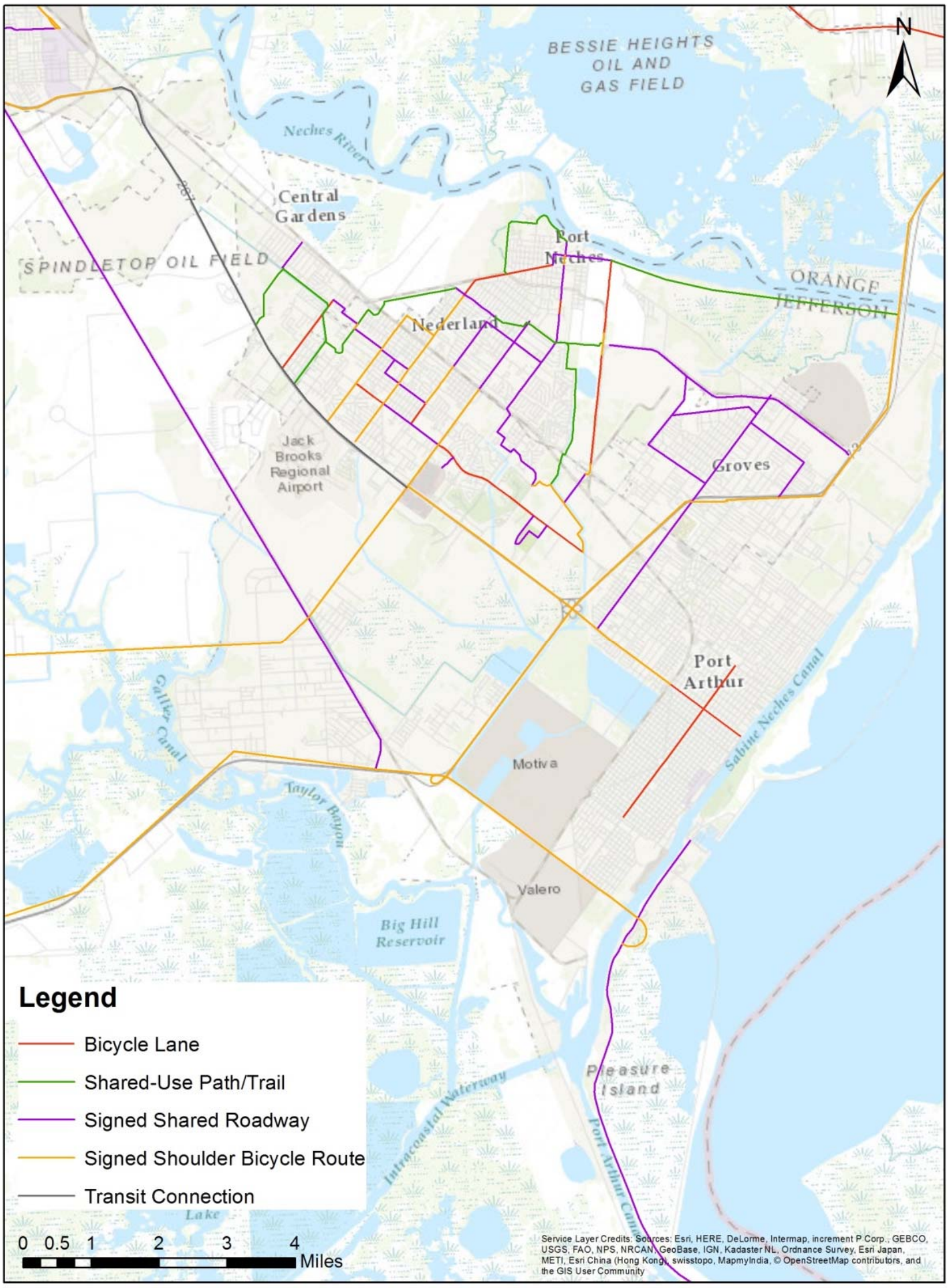


Figure 21: 2037 Bicycle Network in Cities of Port Neches, Port Arthur, and Nederland

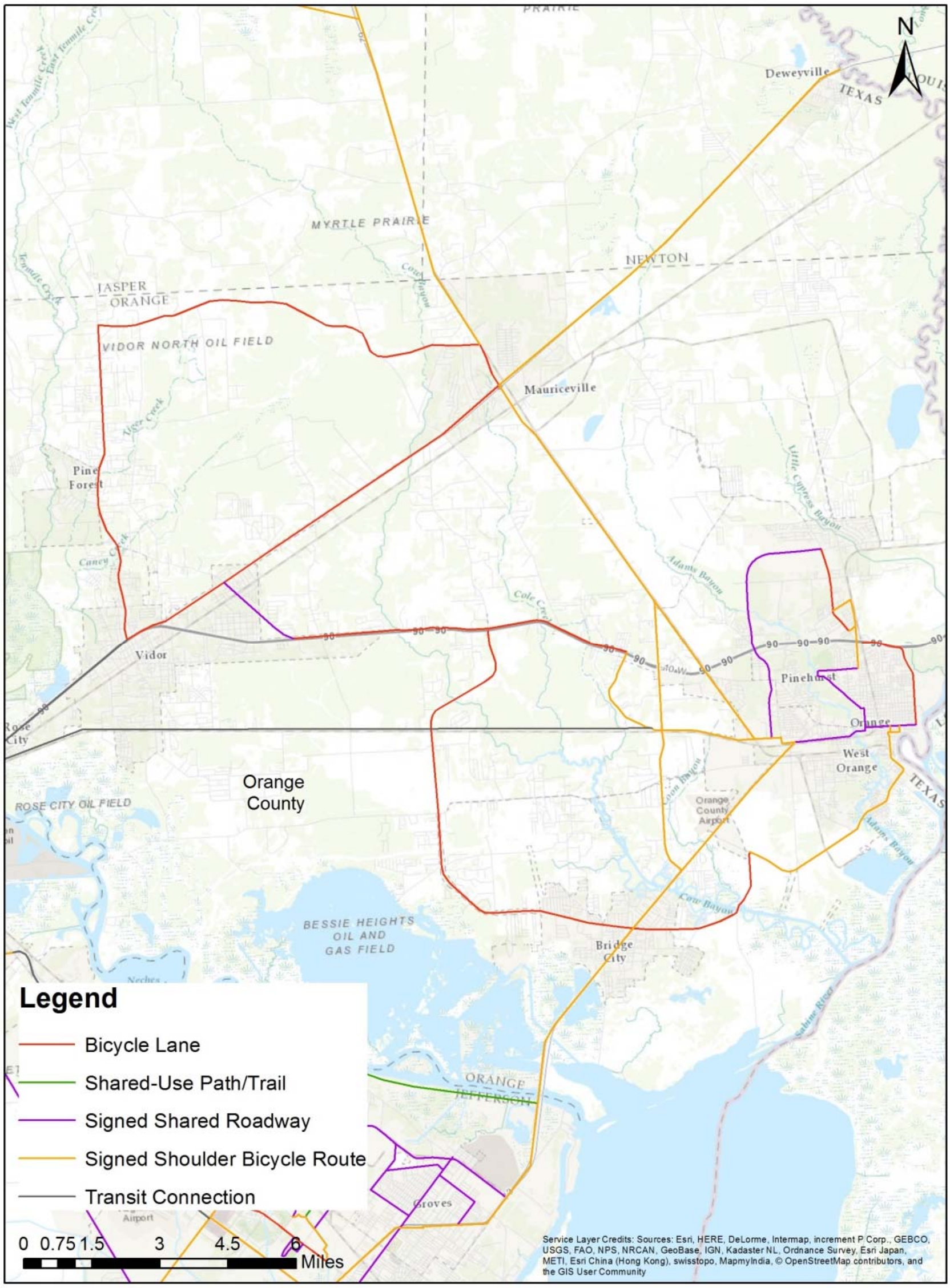


Figure 22: 2037 Bicycle Network in Orange County

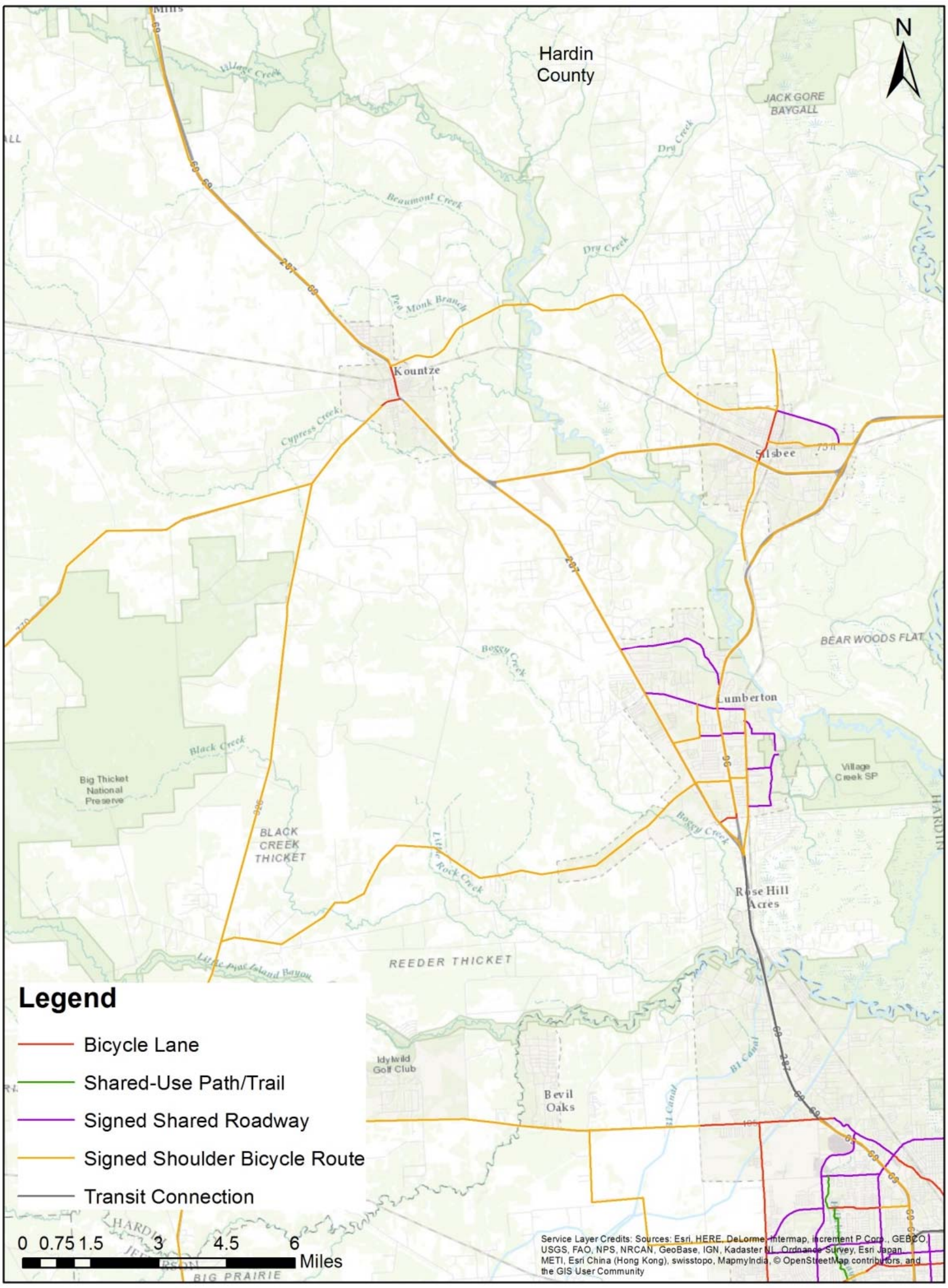


Figure 23: 2037 Bicycle Network in Hardin County

Bicycle Facilities Design Recommendations Recommended Support Facilities

Signage and Wayfinding

This section applies to both existing and proposed designated bikeways as part of the road network. This includes bicycle lanes, shared use paths, signed shared roadways, and signed shoulder bike routes. All bike facility types should have proper signage and wayfinding symbols, both on poles and roadways, to provide points of reference for the bicyclists (Figure 24).

Bike Parking

Proper short/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 (Table 9) for bicycle parking site planning, rack-selection, placement and spacing, and installation.

Figure 24: Signage and Wayfinding Examples for Bicycle Facilities

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

Table 8: Recommended Guidelines for Bicycle Parking Locations and Quantities

Drainage

Poorly designed and maintained drainage grates can damage bicycle wheels or cause accidents. Bicycle-friendly drainage grates (Figure 25) should be installed in all new roadway projects and problem grates should be identified and replaced.

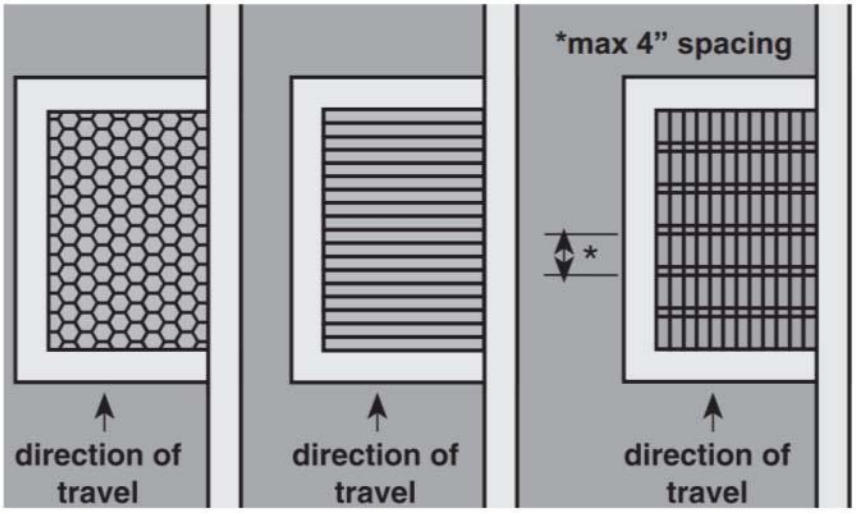


Figure 25: Examples for Bicycle-Friendly Drainage Grates

Traffic Calming Strategies

Several traffic calming strategies can be adopted to provide safer roads for pedestrians and bicyclists. Project for Public Spaces, a nonprofit planning, design, and educational organization dedicated to helping people create and sustain spaces that build stronger communities, has identified several tools for traffic calming listed in Table 10.

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. Traditional traffic engineering calls for 12- to 13-foot lanes, citing "traffic safety" standards – but newer evidence shows that lanes as narrow as nine feet can still be safe for driving.	 Image: http://ocnjdaily.com/wp-content/uploads/2014/08/Bicyclist-crop-640x436.jpg
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.	
Diagonal Parking		
Description	Cars park diagonally, jutting out from the curb, rather than parallel to it.	 Image: http://naturalcyclection.bostonbiker.org/files/2014/08/Reverse-Angle.png
Benefits	• Changes both the perception and the function of a street. • Drivers pulling out and oncoming drivers must be alert 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		
Description	Single or double traffic lanes, either face-to-face or with a median, sometimes flanked by parking.	 Image: http://bloximages.newyork1.vip.townnews.com/southbendtribune.com/content/tncms/assets/v3/editorial/d/63/d63259bb-c16d-5744-a411-6f26855a8770/54e97772bbc27.image.jpg?resize=800%2C531
Benefits	• Decreases distance between destinations. • Reduces traffic speed.	

Bulbs-Chokers-Neckdown		
Description	Interchangeable terms for sidewalk extensions in selected areas – such as at intersections or at mid-block – as opposed to a full sidewalk widening.	 Image: https://s-media-cache-ak0.pinimg.com/originals/f4/d6/c7/f4d6c7aaf31cdbcddea2bc47a77c32c4.jpg
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).	
Chicanes		
Description	Sidewalk extensions that jog from one side of a street to the other to replicate a circuitous route.	 Image: http://nacto.org/wp-content/themes/sink_nacto/views/design-guides/retrofit/urban-street-design-guide/images/chicane/carousel//Austin_unknown.jpg
Benefits	• Narrow, curving roads encourage motorists to drive more slowly and carefully. • Chicanes can be formed using sculpture, plantings, and parking to enhance the appearance and function of a street. • Chicanes are best used on narrow roads to prevent cars from swinging out to maintain their speed around the bends.	
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.	 Image: http://s3.amazonaws.com/lcc_production_bucket/files/4963/in_content.jpg?1349458969
Benefits	• Reduction in conflict points, resulting into fewer accidents. • Traffic signals are not customarily required. • Streets narrow as they approach the roundabout, and crosswalks are installed on these approaches – thereby slowing oncoming vehicles and giving pedestrians a safe, obvious opportunity to cross.	

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.	 Image: http://media.winnipegfreepress.com/images/NEP1665524.jpg
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 pedestrian witness when, in crossing at an intersection, they are confronted by a car whizzing around the corner seemingly out of nowhere.	 Image: http://nacto.org/wp-content/themes/sink_nacto/views/design-guides/retrofit/urban-street-design-guide/images/corner-radii/carousel//stlouis_unknown.jpg
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.	

Table 9: Types of Traffic Calming Strategies

CHAPTER 05: MAKING IT HAPPEN

Model Ordinances

The purpose of this section is to evaluate existing federal, TXDOT, and Southeast Texas policies, codes, and ordinances to determine how these documents support bicycling, and then identify areas where new concepts can be added.

Existing Local Codes and Ordinances

Title 7. Vehicles and Traffic, Subtitle C. Rules of The Road of the State of Texas includes several laws regarding bicycling, such as:

- Bicyclists have the rights and duties of other vehicle operators: (551.101)
- Ride near the curb and go in the same direction as other traffic: (551.103)
- At least one hand on the handlebars (two are safer): (551.102c)
- Use hand and arm signals: (545.107)
- One rider per saddle: (551.102a)
- You may ride two abreast as long as you don't impede traffic: (551.103c)
- Must have a white light on the front and a red reflector or red light on the rear (for riding at night): (551.104b)
- Brakes capable of making the braked wheel skid: (551.104a)

Suggested Examples

This plan recommends several model ordinances that cities can adopt in the three-county region. The suggested languages are referred as examples from Durham Comprehensive Bicycle Transportation Plan (2006) and Chicago Streets for Cycling Plan 2020. They are listed under each action item discussed in Chapter 03.

Action 1.4.1

A. *Increase bicycling and pedestrian mode share to 5% of all trips by 2037.*
B. *Improve pedestrian and bicyclist safety by 10% by 2037.*

Action 1.4.2

A. *Minimize congestion in the streets and reduce reliance on automobiles by providing options for walking, bicycling, and transit use in the Southeast Texas region.*

B. Ensure that all residents meet or exceed the U.S. Surgeon General's recommendations for daily physical activity, including at least 30 minutes of exercise 5 days a week.

Action 1.4.3

A. The traffic analysis will include all modes of travel, including walking, bicycling, and transit.

B. All streets will be planned and designed to accommodate all modes of transportation, including motor vehicles, bicycling, walking, and transit.

C. Either wide outside travel lanes, paved shoulders, or bicycle lanes, as determined by the City Public Works Department or TXDOT, shall be a part of any road improvements made on roadways which are indicated as bicycle routes facilities on Southeast Texas Hike and Bike Plan.

D. In addition to linear bikeways, new and modified traffic signals, roadway crossings, trailheads, transit stops, and other improvements will be designed to be accessible to bicyclists.

E. Intersections will be designed to be ADA compliant, with safe crossings provided for pedestrians and bicyclists in accordance with TXDOT, Manual of Uniform Traffic Control Devices, AASHTO, NACTO, and other applicable guidelines.

Action 1.4.4

A. On and off-street parking facilities for motorized vehicles and bicycles shall be provided for all uses located in the region.

B. Multifamily residential uses shall provide bicycle parking at the rate of one bicycle parking space for every 20 motorized vehicle spaces; however, no more than 100 total bicycle parking spaces shall be required for any single development.

C. Nonresidential uses with an off-street parking requirement for motorized vehicles of at least 15 spaces and not more than 40 spaces shall provide a minimum of two bicycle parking spaces.

D. Nonresidential uses with an off-street parking requirement greater than 40 spaces shall provide bicycle parking spaces equal to 10% of the total number of spaces required up to 100 spaces.

E. *Bicycle parking shall be located in secure, visible areas and sheltered from rain if possible. At long-term parking locations (transit stations, parking garages, park & ride lots, university campuses, etc.) bicycle lockers or secured areas should be provided in addition to racks. Short term bicycle parking should also be included as a routine element in streetscape design for all commercial, institutional, and mixed-use streetscapes. All schools shall provide secure bicycle parking for a minimum of 10% of the student / faculty population.*

Action 1.4.5

A. *Land development and roadway design will support walkable and bicycle-friendly communities to encourage active lifestyles, environmental conservation, and quality of life. Based on the national Trails for All Americans study, all residential areas will be within a 15-minute walk of a trail or bikeway.*

B. *An interconnected street system is necessary to promote orderly and safe development by ensuring that streets function in an interdependent manner, provide adequate access for emergency and service vehicles, enhance access by ensuring connected transportation routes, provide access for people walking and bicycling between neighborhoods, and provide continuous and comprehensible traffic routes. A pathway between neighborhoods for walking, bicycling, and emergency access shall be counted as a link.*

C. *Bicycle facilities shall be established in accordance with the Durham Comprehensive Bicycle Transportation Plan in new construction and reconstruction projects in all urbanized areas unless one or more of three conditions are met:*

1. Bicyclists and pedestrians are prohibited by law from using the roadway. In this instance, a greater effort may be necessary to accommodate bicyclists and pedestrians elsewhere within the right of way or within the same transportation corridor.

2. The cost of establishing bikeways or walkways would be excessively disproportionate to the need or probable use. Excessively disproportionate is defined as exceeding twenty percent of the cost of the larger transportation project.

3. Where sparsity of population or other factors indicate an absence of need. In rural areas, paved shoulders should be included in all new construction and reconstruction projects on roadways used by more than 1,000 vehicles per day.

Action 2.1.7

A. *Schools site plans shall be designed to ensure that children have the choice to walk or bike to school where appropriate.*

Checking Progress

SETRPC should work closely with the Hike and Bike Plan Advisory Committee followed by a Technical Assistance Team based on the various action steps and their action leaders. 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 should establish performance measures to evaluate the progress towards achieving the goals and objectives laid out in this plan. After collecting baseline data, 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 include also include:

- 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.

Time Frame

In order to maintain progress towards the goals, periodic evaluation is needed within an agreed-upon time frame. The suggested time frame for each action step is separated in four categories:

- Short-Term: 0-5 years

- Medium-Term: 5-10 years
- Long-Term: 10-15 years
- Continuous ("ONGOING")

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

In order 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. More detailed information can be found in Appendix D.

Phasing

Currently, the three-county region of Jefferson, Hardin, and Orange has 13.75 miles of existing bicycle facilities in the form of bicycle lanes. As Figure 31 shows, the proposed bike network will be installed in four phases:

PHASE 1 of bike network development will aim at providing the key bicycle facilities within 500 ft of schools and parks. Phase 1 also includes constructing bicycle lane segments less than 3 miles. The estimated cost of Phase 1 is approximately $1 million and will have 55 miles of the bike network.

PHASE 2 will expand the total bike network to 160 mi which adds 105 mi of bike lanes along with shared signed roadways, signed shoulder routes, and wide sidewalks. Phase 2 prioritizes key bicycle facilities within 1000 ft of schools and parks and constructing bicycle lane segments less than 5 miles. The estimated cost of Phase 2 is approximately $5.2 million.

PHASE 3 will expand the total bike network to 227 mi which adds 68 mi of bike lanes along with shared signed roadways, signed shoulder routes, wide sidewalks and shared-use/ multi-use trails. Phase 3 prioritizes the bicycle facilities that are less than 7 miles. The estimated cost of Phase 3 is around $2.65 million.

PHASE 4 will expand the total bike network to 595 mi which includes 366.45 mi of bike lanes along with shared signed roadways, signed shoulder routes, and shared-use/ multi-use trails. Phase 4 prioritizes constructing bicycle lane segments greater than 8 miles and extends the trail systems. The estimated cost of Phase 4 is around $16 million.

The total cost of the bike network is about $25 miliion and will have a total of 595miles of bike path including bike lanes along with shared signed roadways, signed shoulder routes, wide sidewalks and shared-use/ multi-use trails.

Implementation Table

The following table lists the action steps linked to the goals and objectives stated in Chapter 03. 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.

		Time Frame			Action Type					Action Leaders	Funding
		Short-Term	Medium-Term	Long-Term	Capital Improvement Project	Ordinance or Regulation	Program	Partnership or Collaboration	More Targeted Planning		
GOAL 1: COORDINATE REGIONALLY AND LOCALLY											
1.1.1 Adopt the Hike and Bike Plan 2037											
Adopt this plan as the starting point in implementation of Hike and Bike Plan.	OBJ 1.1	ONGOING						x		ADM, PLAN,	
1.1.2 Coordinate with Developers											
Require developers to provide sidewalks and bike lanes 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	

		Short-Term	Medium-Term	Long-Term	Capital Improvement Project	Ordinance or Regulation	Program	Partnership or Collaboration	More Targeted Planning	Action Leaders	Funding
		Time Frame			Action Type					Action Leaders	Funding
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	
1.2.2 Feasibility Study for Prioritizing Projects											
Conduct feasibility study to identify the prioritized projects, next phases, and spots that need immediate attention.	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
1.2.4 Incentivize Alternative Transport											
Consider incentives for development proposals for bicycle facilities and transit.	OBJ 1.2		x			x				ADM, PLAN, EDC, GB	See Section 1.2.2

		Time Frame			Action Type					Action Leaders	Funding
		Short-Term	Medium-Term	Long-Term	Capital Improvement Project	Ordinance or Regulation	Program	Partnership or Collaboration	More Targeted Planning		
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
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

		Time Frame			Action Type					Action Leaders	Funding
		Short-Term	Medium-Term	Long-Term	Capital Improvement Project	Ordinance or Regulation	Program	Partnership or Collaboration	More Targeted Planning		
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 Build Phase I Projects											
Work on Phase I projects to focus on the high priority projects and build momentum to the project implementation. Build the bike network within 500 ft of school and parks, and less than 3 miles.	OBJ 2.1	x			x					ADM, PLAN, ENG, FCL	See Section 2.1.1

		Time Frame			Action Type					Action Leaders	Funding
		Short-Term	Medium-Term	Long-Term	Capital Improvement Project	Ordinance or Regulation	Program	Partnership or Collaboration	More Targeted Planning		
2.1.3 Build Phase II Projects											
Build the bike network within 1000 ft of school and parks, and less than 5 miles.	OBJ 2.1		x		x					ADM, PLAN, ENG, FCL	See Section 2.1.1
2.1.4 Build Phase III Projects											
Bicycle lane length less than 8 miles and key connections through shared signed roadway, shared/multi-use trails, signed shoulders.	OBJ 2.1			x	x					ADM, PLAN, ENG, FCL	See Section 2.1.1
2.1.5 Adopt the 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
2.1.6 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
2.1.7 Include walking and biking in school site design											
Coordinate with school districts to include the potential for children to walk or bike to school as a priority factor in school site location and design criteria.	OBJ 2.2			x					x	ADM, PLAN, ENG, FCL	See Section 2.1.1

		Time Frame			Action Type					Action Leaders	Funding
		Short-Term	Medium-Term	Long-Term	Capital Improvement Project	Ordinance or Regulation	Program	Partnership or Collaboration	More Targeted Planning		
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 individuals involved in promoting safe walking and bicycling practices.	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											
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

		Time Frame			Action Type					Action Leaders	Funding
		Short-Term	Medium-Term	Long-Term	Capital Improvement Project	Ordinance or Regulation	Program	Partnership or Collaboration	More Targeted Planning		
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

Phasing Steps

The rationale for prioritization is summarized below:

PHASE 1:

Facilities within 500 ft of school

Facilities within 500 ft of parks

Bicycle facility length less than 3 miles

PHASE 2:

Facilities within 1000 ft of school

Facilities within 1000 ft of parks

Bicycle facility length less than 5 miles

PHASE 3:

Bicycle lane length less than 8 miles

Key connections through shared signed roadway, shared/multi-use trails, signed shoulders

PHASE 4:

Bicycle lanes > 8 miles

Extension of Trail systems

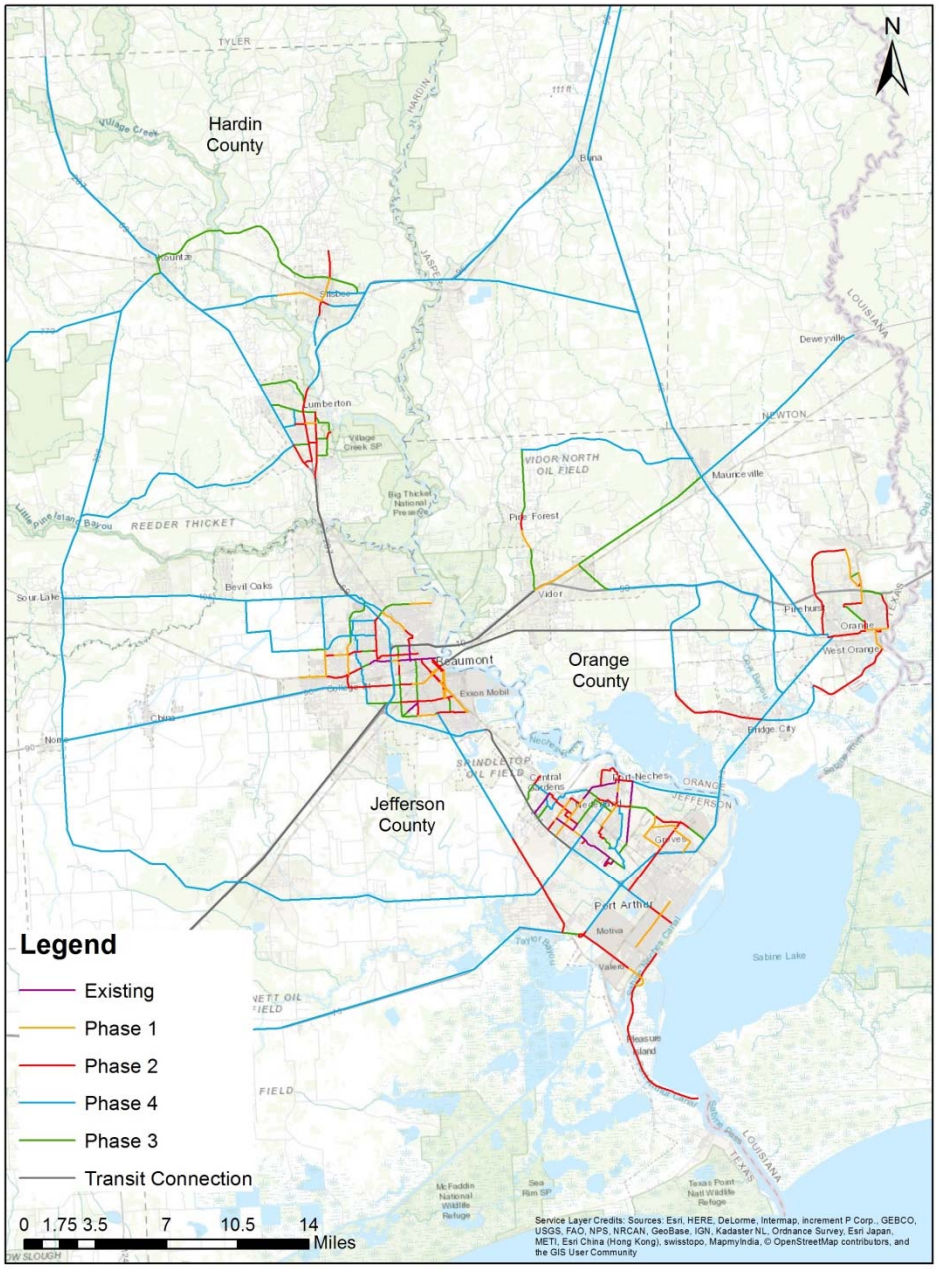


Figure 26: Phasing of 2037 Bike Network in South East Texas

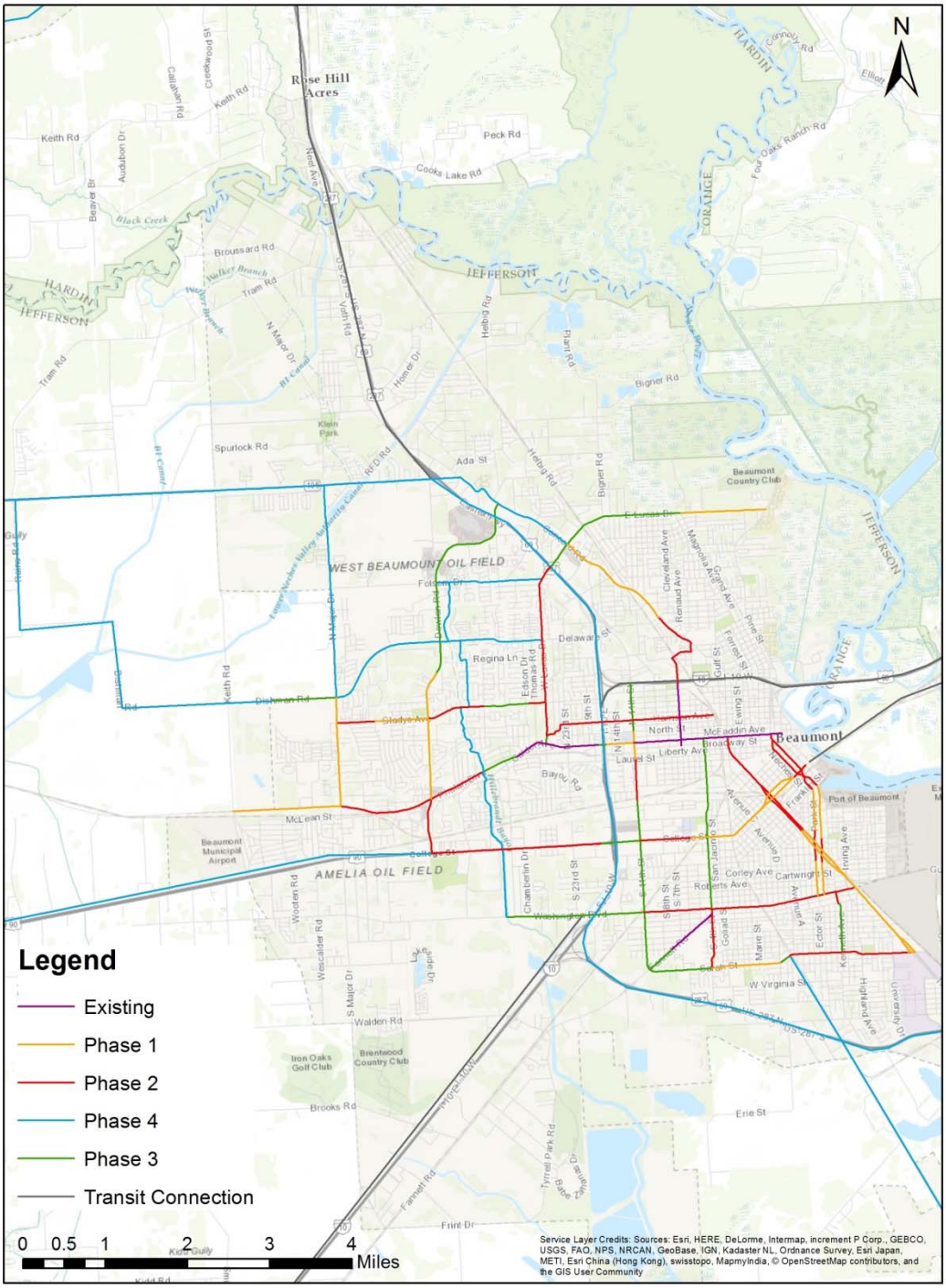


Figure 27: Phasing of 2037 Bike Network in Beaumont

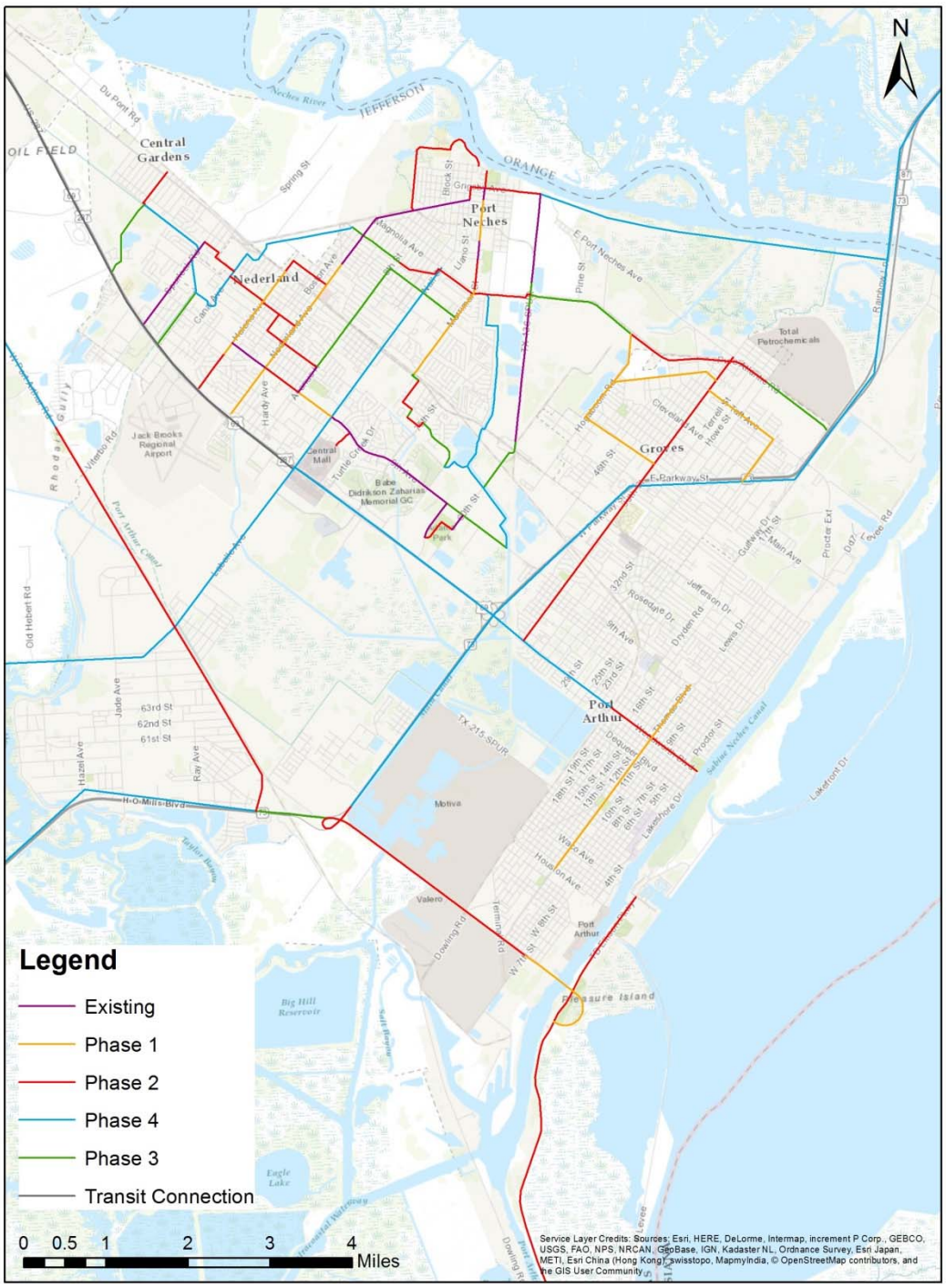


Figure 28: Phasing of 2037 Bike Network in Jefferson County

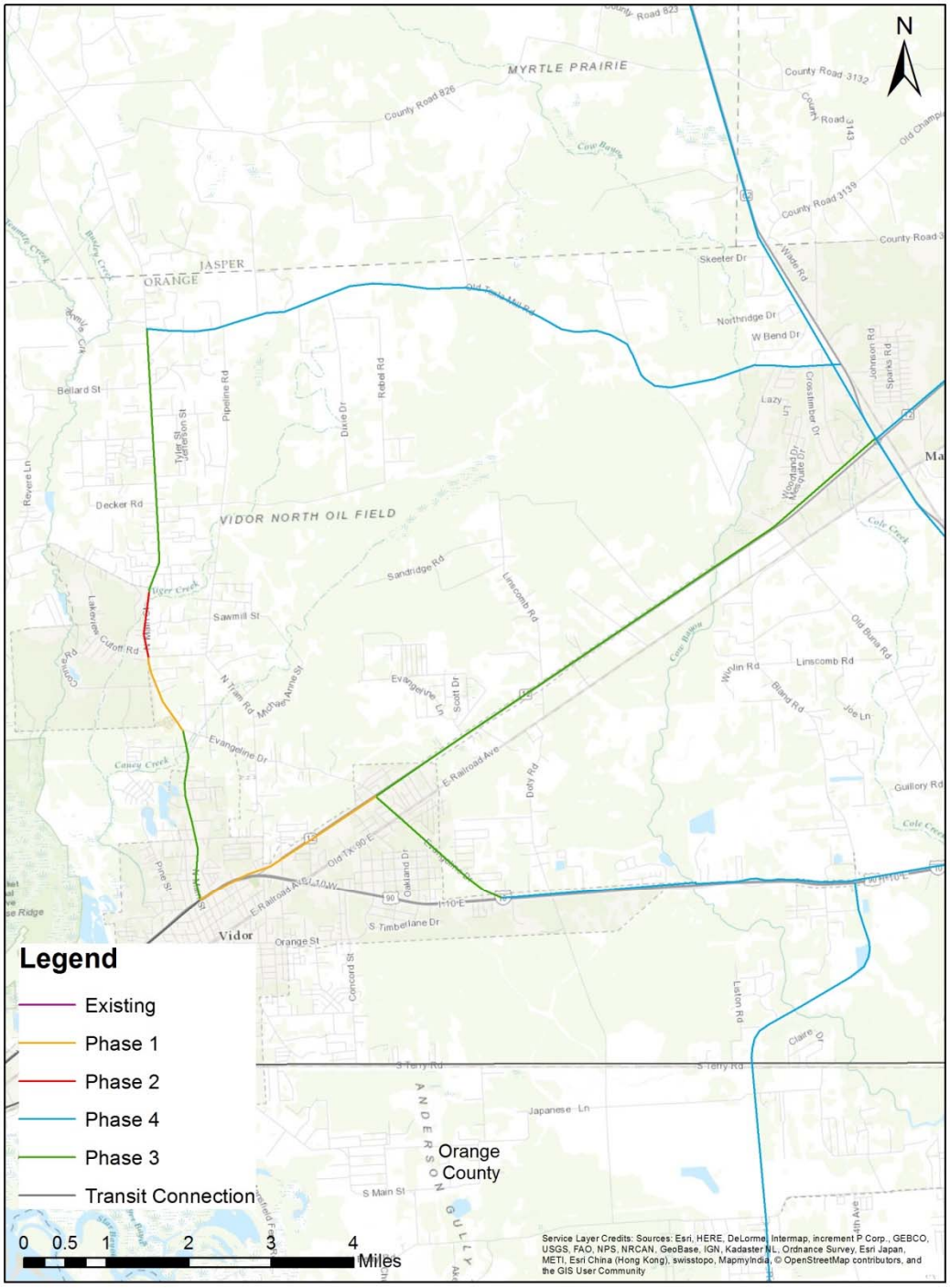


Figure 29: Phasing of 2037 Bike Network in Orange County

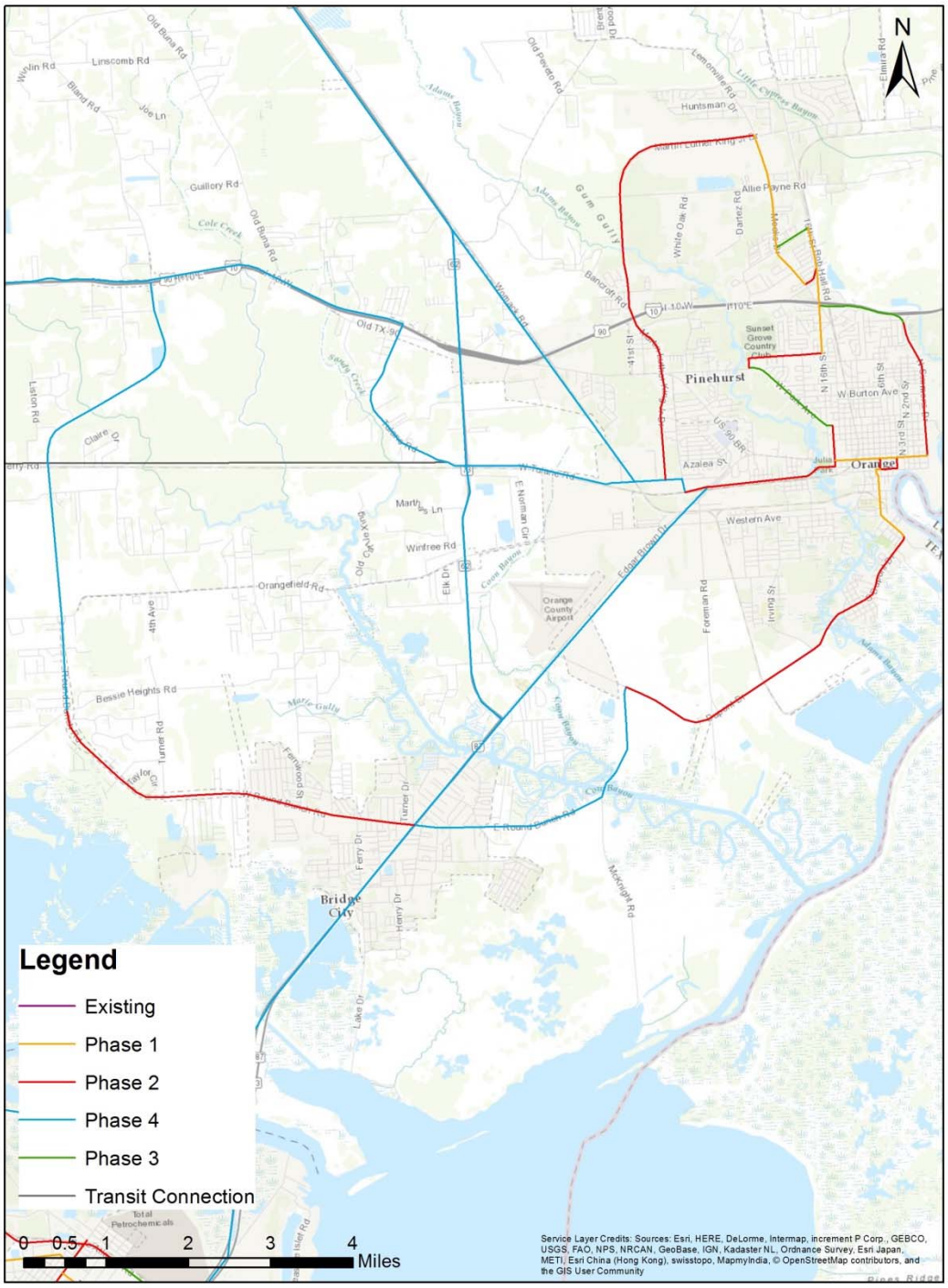


Figure 30: Phasing of 2037 Bike Network in Orange County

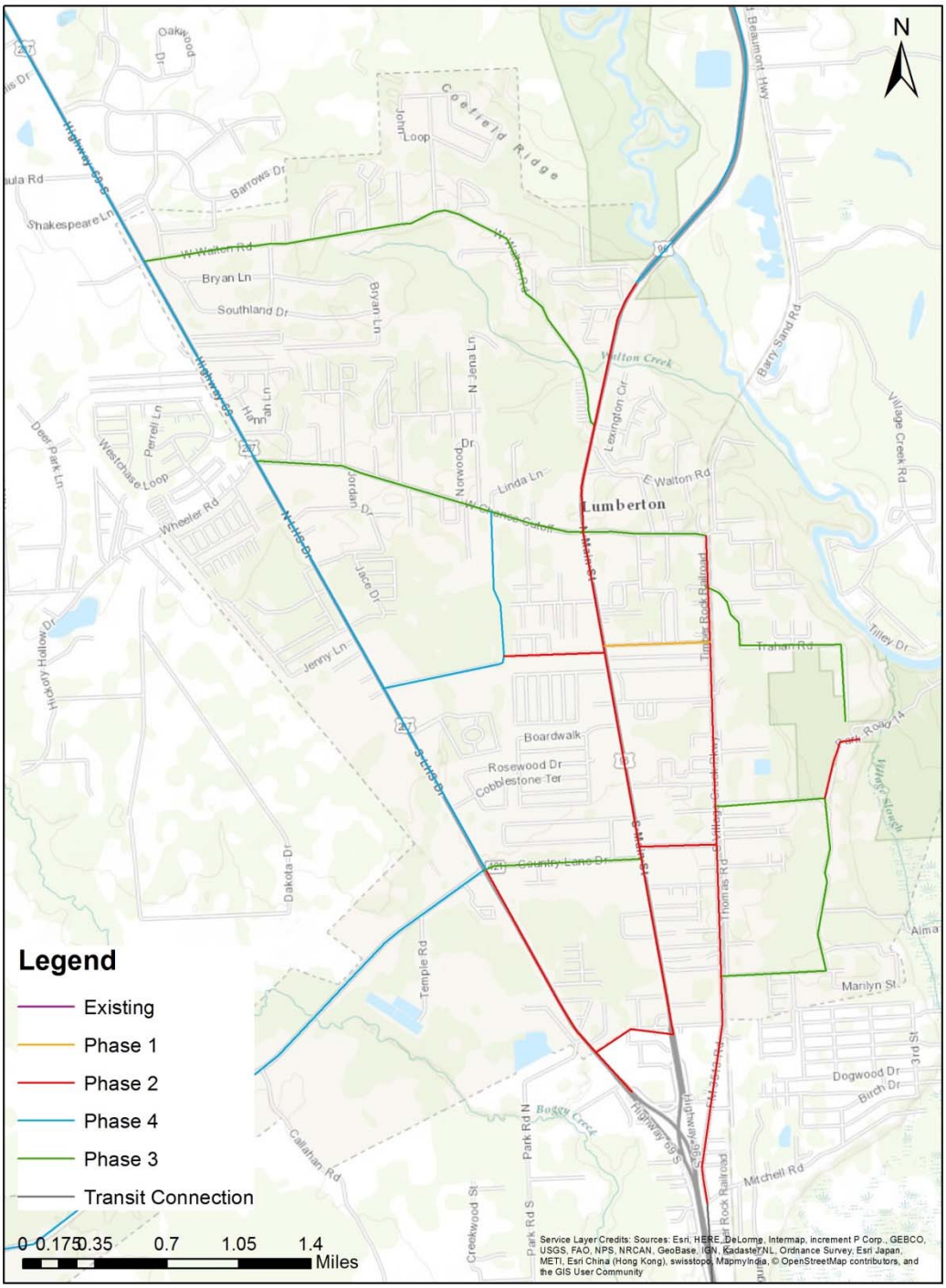


Figure 31: Phasing of 2037 Bike Network in Hardin County

APPENDIX B

Estimated Cost of Proposed Bicycle and Pedestrian Facilities

In a nutshell, the proposed hike and bike network in the region is 538 miles in length, including 100 miles of bicycle lanes, 20 miles of shared-use path/trail, 115 miles of signed shared roadway, and 303 miles of signed shoulder bicycle route. Based on estimated costs for each bicycle facility type that are mentioned above, the total cost is around $24 million, 75% of which will be allocated to Jefferson County for its 283 miles bicycle network. Orange County needs approximately $4 million to construct 180 miles of bikeways, and Hardin County needs the rest $2 million for its potentially frequently-used signed shoulder bicycle route and some bicycle lanes and signed routes in urban areas. The total cost of all the phases according to the type of facilities is shown in Table 11.

County	Category	Mile	Cost Estimation
Jefferson County	Bicycle Lane	34.89 (24.95+9.94 existing)	$ 998,000
	Shared-use Path/Trail	20.49	$ 14,855,250
	Signed Shared Roadway	89.19	$ 1,227,254
	Signed Shoulder Bicycle Route	138.66	$ 1,900,531
	Sum	**283.23**	**$ 18,981,035**
Orange County	Bicycle Lane	54.8	$ 2,192,000
	Signed Shared Roadway	13.54	$ 186,310
	Signed Shoulder Bicycle Route	112.15	$ 1,543,183
	Sum	**180.49**	**$ 3,921,493**
Hardin County	Bicycle Lane	10.01	$ 400,400
	Signed Shared Roadway	11.65	$ 160,304
	Signed Shoulder Bicycle Route	110.5	$ 1,520,480
	Sum	**132.16**	**$ 2,081,184**
Total		**537.80**	**$ 24,983, 713**

Table 10: Cost Estimation for Proposed Bike Facilities in Jefferson-Orange-Hardin County Region

Footnote: All cost estimation is calculated from the cost estimation per mile from Tables 5, 6, 7 and 8. The cost estimation in Table 11 is subject to change depending on the external costs such as utilities, soil, engineering issues etc.

Proposed Bicycle Lane

FID	Street Name	City	County	Existing ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)	Phase	Cost Estimation ($)
0	Woodworth Blvd	Port Arthur	Jefferson	110	40	√√	x	x	1.30	2	52000
1	Thomas Blvd	Port Arthur	Jefferson	110	30	√√	x	x	2.78	1	111200
2	Simmons Dr	Orange	Orange	85	40	x	x	x	1.66	2	66400
3	W Clark Ln	Orange	Orange	70	30	x	x	x	0.46	3	18400
4	Meeks Dr	Orange	Orange	70	45	x	x	x	1.98	1	79200
5	W Beverly Ave	Orange	Orange	25	0	x	x	x	0.15	2	6000
6	E Lutcher Dr	Orange	Orange	90	45	x	x	x	0.97	3	38800
7	FM 1442	Orange	Orange	80	65	x	√√	x	5.97	4	238800
8	W Roundbunch Rd	Bridge City	Orange	80	65	x	x	x	4.76	2	190400
9	E Roundbunch Rd	Bridge City	Orange	80	65	x	x	x	3.78	4	151200
10	I-10 Service Road	Vidor/ Pinehurst	Orange	90	55	x	x	x	7.52	4	300,800
11	TX 12	Pine Forest/ Maurice-ville	Orange	80	65	x	√√	x	7.46	3	298,400
12	Texla Rd	Texla	Orange	75	65	x	√√	x	8.99	4	359,600
13	US 62	Maurice-ville	Orange	105	55	x	√√	x	1.01	4	40,400
14	N Main St/US 105	Pine Forest	Orange	110	65	x	√√	x	2.09	3	83,600
15	9th Ave	Port Arthur	Jefferson	45	30	√√	x	√	0.24	3	9,600
16	N 5th St	Silsbee	Hardin	65	30	√√	x	x	1.22	1	48,800
17	BUS 96	Silsbee	Hardin	75	35	x	x	x	0.70	2	28,000
18	S Main St.	Lumberton	Hardin	75	45	x	√√	x	3.57	2	142,800
19	TX-69	Lumberton	Hardin	60	45	x	x	x	3.37	4	134,800

FID	Street Name	City	County	Existing ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)	Phase	Cost Estimation ($)
20	N Pine St.	Kountze	Hardin	60	35	x	x	x	0.69	3	27,600
21	W Monroe St.	Kountze	Hardin	75	35	x	x	x	0.46	3	18,400
22	Merriman St	Port Neches	Jefferson	76.4	30	√	x	√	0.22	Existing	0
23	Hwy 136	Port Neches	Jefferson	45.6	50	x	x	√	1.61	Existing	0
24	Hwy 136	Port Neches	Jefferson	53.1	50	x	x	√	1.08	Existing	0
25	Spurlock Ave	Central Gardens	Jefferson	60	30	x	x	√	1.24	Existing	0
26	9th Ave	Port Arthur	Jefferson	124	30	√	x	√	0.29	Existing	0
27	9th Ave	Port Arthur	Jefferson	116	30	√	x	√	0.70	Existing	0
28	Port Neches Ave	Port Neches	Jefferson	71	20	√√	√	√	0.30	Existing	0
29	Port Neches Ave	Port Neches	Jefferson	67	20	√	x	√	0.37	Existing	0
30	Port Neches Ave	Port Neches	Jefferson	64	30	x	x	√	0.52	Existing	0
31	Nederland Ave	Neches	Jefferson	61	30	x	x	√	0.26	Existing	0
32	N 27th St	Nederland	Jefferson	65	30	√√	x	√	0.33	Existing	0
33	N 27th St	Nederland	Jefferson	65	30	x	x	√	0.17	Existing	0
34	9th Ave	Port Arthur	Jefferson	124	30	√√	x	√	0.64	Existing	0
35	9th Ave	Port Arthur	Jefferson	113	20	x	x	√	0.15	Existing	0
36	Avenue H	Nederland	Jefferson	60	30	√	x	√	0.37	Existing	0
37	Port Arthur/ Beaumont Hwy	Port Arthur	Jefferson	110	40	x	√√	x	0.66	3	26,400
38	Phelan Blvd	Beaumont	Jefferson	80	45	x	x	x	1.83	2	73,200
39	Calder Ave	Beaumont	Jefferson	60	30	√√	x	√	0.30	Existing	0
40	Calder Ave	Beaumont	Jefferson	60	30	√√	x	√√	0.75	Existing	0

FID	Street Name	City	County	Existing ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)	Phase	Cost Estimation ($)
41	N Major Dr	Beaumont	Jefferson	135	60	x	√√	x	2.58	4	103,200
42	N Major Dr	Beaumont	Jefferson	120	55	√	x	x	1.32	1	52,783
43	Hwy 105	Beaumont	Jefferson	80	55	x	x	x	1.33	4	52,800
44	Hwy 105	Beaumont	Jefferson	110	45	x	x	x	1.31	4	53,200
45	Delaware St	Beaumont	Jefferson	80	45	x	x	x	1.14	4	52,400
46	Calder Ave	Beaumont	Jefferson	70	30	√√	x	√	0.84	2	45,600
47	Calder Ave	Beaumont	Jefferson	70	35	√√	x	√	0.96	2	33,600
48	7th St	Beaumont	Jefferson	60	30	√√	x	√	0.75	2	38,400
49	Calder Ave	Beaumont	Jefferson	70	35	√√	x	x	0.33	1	30,000
50	Concord Rd	Beaumont	Jefferson	65	35	√	x	x	1.46	1	13,200
51	7th St	Beaumont	Jefferson	65	30	√	x	x	0.32	2	58,400
52	Hwy 105	Beaumont	Jefferson	75	30	x	x	x	0.34	3	12,800
53	Fannett Rd	Beaumont	Jefferson	120	40	x	x	x	0.19	3	13,600
54	Fannett Rd	Beaumont	Jefferson	120	40	√	x	√	0.64	Existing	0
55	Fannett Rd	Beaumont	Jefferson	110	40	x	x	x	0.18	3	7,200
56	11th St	Beaumont	Jefferson	115	35	x	x	x	0.18	3	7,200
57	11th St	Beaumont	Jefferson	100	35	x	x	x	0.52	3	20,800
58	Pennsylvania Ave	Beaumont	Jefferson	60	30	√	√	x	0.38	1	15,200
59	Park St	Beaumont	Jefferson	55	30	√√	√	x	0.48	1	19,200
60	Calder Ave	Beaumont	Jefferson	70	35	√√	x	x	0.04	3	1,600
61	Calder Ave	Beaumont	Jefferson	70	35	√√	x	x	0.07	3	2,800
62	Park St	Beaumont	Jefferson	55	30	√√	√	x	0.42	1	16,800
63	Park St	Beaumont	Jefferson	55	30	x	x	x	0.38	2	15,200
64	Pennsylvania Ave	Beaumont	Jefferson	60	30	x	x	x	0.31	2	12,400
65	Pennsylvania Ave	Beaumont	Jefferson	60	30	√√	√	x	0.63	1	25,200
66	Park St	Beaumont	Jefferson	55	35	√√	√	x	0.14	2	5,600
67	Oleans St	Beaumont	Jefferson	60	35	√√	√	x	0.14	2	5,600
68	Oleans St	Beaumont	Jefferson	60	35	√√	√	x	0.15	2	6,000

FID	Street Name	City	County	Existing ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)	Phase	Cost Estimation ($)
69	Park St	Beaumont	Jefferson	55	35	√√	√	x	0.15	3	6,000
70	Orleans St	Beaumont	Jefferson	45	25	√√	x	x	0.58	2	23,200
71	Park St	Beaumont	Jefferson	60	30	√√	x	x	0.39	3	15,600
72	Willow St	Beaumont	Jefferson	60	30	√√	x	x	0.13	2	5,200
73	TX 12	Pine Forest Maurice-ville	Orange	80	65	x	√√	x	2.48	1	99,200
74	N Main St/US 105	Pine Forest	Orange	110	65	x	√√	x	0.79	1	31,600
75	N Main St/US 105	Pine Forest	Orange	110	65	x	√√	x	0.99	2	39,600
76	N Main St/US 105	Pine Forest	Orange	110	65	x	√√	x	3.22	3	128,800
77	Proposed Road	Lumberton	Orange	60	30	x	x	x	0.52	2	20,800

Proposed Shared-Use Path/Trails

FID	Street Name	City	County	Existing ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)	Phase	Cost Estimation ($)
0	LNVA Trail (Proposed)	Nederland	Jefferson	50	0	x	x	x	0.78	3	565500
1	LNVA Trail (Proposed)	Nederland	Jefferson	50	0	x	x	x	2.52	4	1827000
2	LNVA Trail (Proposed)	Nederland/ Central Gardens	Jefferson	50	0	x	x	x	1.41	4	1,022,250
3	Main Canal Trail (Proposed)	Central Gardens	Jefferson	50	0	x	x	√	0.97	3	700,718
4	LNVA Trail (Proposed)	Port Neches	Jefferson	50	0	x	x	√	1.78	2	703,250
5	Main Canal Trail (Proposed)	Port Neches/Port Arthur	Jefferson	50	0	x	x	x	2.34	4	1,696,500
6	Block Bayou-Oak Bluff Memorial Park Trail (prop)	Port Neches	Jefferson	50	0	x	x	x	1.77	2	1,283,250
7	Hillebrandt Bayou Trail (Proposed)	Beaumont	Jefferson	200	0	x	x	√	3.58	4	2,595,500
8	Savannah Tree	Beaumont	Jefferson	60	25	x	x	x	0.25	2	181,250
9	Regina Ln	Beaumont	Jefferson	60	25	x	x	x	0.07	2	50,750
10	Belvedere Dr	Beaumont	Jefferson	60	25	x	x	x	0.58	2	420,500
11	LNVA Trail (Proposed)	Groves	Jefferson	0	0	x	x	x	4.31	4	3,124,750
12	Lee Ave	Port Neches	Jefferson	20	25	x	x	x	0.13	2	94,250

Proposed Signed Shared Roadway

FID	Street Name	City	County	Existing ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)	Phase	Cost Estimation ($)
0	T B Ellison Parkway	Port Arthur	Jefferson	30	40	x	√√	√	1.82	2	25,043
1	Martin Luther King Jr Dr	Port Arthur	Jefferson	24	40	x	√√	x	7.61	2	104,714
2	W Port Arthur Rd	Port Arthur	Jefferson	45	40	x	x	x	5.36	2	73,754
3	Nail St	Port Arthur	Jefferson	65	40	√	x	x	1.25	4	17,200
4	Magnolia Ave	Port Arthur	Jefferson	65	45	x	√√	x	1.26	3	17,338
5	Pure Atlantic Rd	Port Arthur	Jefferson	65	60	x	x	x	1.83	2	25,181
6	Pure Atlantic Rd	Port Arthur	Jefferson	75	55	x	x	x	0.94	3	12,934
7	39th St	Port Arthur	Jefferson	45	30	√√	x	x	4.28	2	58,893
8	Green Ave	Orange	Orange	50	40	√√	x	x	1.12	1	15,411
9	N 15th St	Orange	Orange	55	35	√√	x	x	0.50	2	6,880
10	W Main Ave	Orange	Orange	35	35	x	x	x	0.39	2	5,366
11	W Park Ave	Orange	Orange	40	35	x	x	x	1.28	3	17,613
12	W 28th St	Orange	Orange	40	35	x	x	x	0.11	2	1,514
13	W Sunset Dr	Orange	Orange	50	30	x	x	x	0.89	2	12,246
14	Yale Ln	Orange	Orange	25	0	x	x	x	0.04	2	550
15	South Ave	West Orange	Orange	40	30	x	x	x	1.20	2	16,512

FID	Street Name	City	County	Existing ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)	Phase	Cost Estimation ($)
16	Masonic Dr	Orange	Orange	40	30	x	x	x	0.29	2	3,990
17	37th St	Orange	Orange	45	30	x	x	x	0.13	2	1,789
18	Evangeline Rd	Vidor	Orange	70	45	x	x	x	1.98	3	27,245
19	Merriman St	Port Neches	Jefferson	56.2	30	√	x	x	1.25	1	17,200
20	Merriman St	Port Neches	Jefferson	49.3	30	x	x	x	0.21	2	2,890
21	Merriman St	Port Neches	Jefferson	65.3	30	√	√	√	0.32	1	4,403
22	Merriman St	Port Neches	Jefferson	83.79	30	√√	x	√	0.19	1	2,614
23	Merriman St	Port Neches	Jefferson	75.23	30	√√	x	√	0.37	2	5,091
24	Grisby Ave	Port Neches	Jefferson	60	30	x	x	x	0.68	2	9,357
25	N 17th St	Nederland	Jefferson	50	30	√	x	x	0.25	2	3,440
26	21st St	Nederland	Jefferson	60	30	x	√	x	0.25	2	3,440
27	S 27th St	Nederland	Jefferson	55	30	x	x	x	0.50	2	6,880
28	S 27th St	Nederland	Jefferson	58	30	x	x	x	0.51	1	7,018
29	Goodwin Ave	Port Neches	Jefferson	42	30	x	x	x	1.00	3	13,760
30	Grisby Ave/Ave A	Port Neches	Jefferson	59	30	x	x	x	0.17	2	2,339
31	Llano St	Port Neches	Jefferson	42.3	20	x	x	x	0.16	2	2,202
32	Lake Arthur Ln	Port Arthur	Jefferson	60	30	√	x	x	0.69	3	9,494

FID	Street Name	City	County	Existing ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)	Phase	Cost Estimation ($)
33	N 9th St	Nederland	Jefferson	40	20	x	x	x	0.50	2	6,880
34	N 17th St	Nederland	Jefferson	40	30	x	x	x	0.50	2	6,880
35	Fairbanks St	Nederland	Jefferson	40	30	x	x	x	0.28	2	3,853
36	Hill St	Nederland	Jefferson	40	30	x	x	x	0.07	2	963
37	Pickard Ave	Central Gardens	Jefferson	40	30	x	x	x	0.22	2	3,027
38	N 17th St	Nederland	Jefferson	50	30	x	x	x	0.25	2	3,440
39	Detroit Ave	Nederland	Jefferson	55	30	x	√	x	0.24	2	3,302
40	Regional Dr	Port Arthur	Jefferson	45	30	√	x	x	0.23	2	3,165
41	Park Rd	Port Arthur	Jefferson	45	20	x	x	√	0.46	2	6,330
42	60th St	Port Arthur	Jefferson	45	30	x	x	x	0.54	3	7,430
43	S 21st St	Nederland	Jefferson	50	30	x	x	x	0.50	2	6,880
44	Avenue H	Port Neches	Jefferson	40	30	x	√√	x	0.82	3	11,283
45	Ridgewood Ave	Port Arthur	Jefferson	35	30	x	x	x	0.33	2	4,541
46	Main Canal Trail (Proposed)	Port Arthur	Jefferson	35	30	x	x	√	0.12	3	1,651
47	Willowwood Ln	Port Arthur	Jefferson	30	20	x	x	x	0.25	2	3,440
48	5th Ave	Central Gardens	Jefferson	60	30	x	x	x	0.50	2	6,880
49	Nelson/Texas Ave	Nederland	Jefferson	50	30	x	x	x	0.73	3	10,045

FID	Street Name	City	County	Existing ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)	Phase	Cost Estimation ($)
50	Chance Rd.	Lumberton	Hardin	20	30	x	x	x	2.23	3	30,685
51	Williams Rd.	Lumberton	Hardin	20	25	x	x	x	0.49	2	6,742
52	W Walton Rd.	Lumberton	Hardin	20	30	x	x	x	2.86	3	39,354
53	Horn Rd.	Lumberton	Hardin	20	25	x	x	x	0.52	1	7,155
54	Matthews Ln.	Lumberton	Hardin	18	30	x	x	x	0.37	2	5,091
55	FM Rd 418	Silsbee	Hardin	25	40	x	x	x	0.21	2	2,890
56	FM Rd 418	Silsbee	Hardin	25	60	x	x	x	1.48	3	20,365
57	Merriman St	Port Neches	Jefferson	63.04	30	√	x	√	0.14	0	1,926
58	60th st	Port Arthur	Jefferson	70	30	x	x	√	0.22	0	3,027
59	61st St	Port Arthur	Jefferson	75	30	x	x	√	0.49	0	6,742
60	Park Rd. 74	Lumberton	Hardin	20	20	x	x	x	0.38	2	5,229
61	Trahan Rd.	Lumberton	Hardin	16	25	x	x	x	1.22	3	16,787
62	Alma Dr.	Lumberton	Hardin	20	30	x	x	x	1.38	3	18,989
63	Holmes Rd.	Lumberton	Hardin	20	30	x	x	x	0.51	3	7,018
64	MLK Jr Dr/FM 3247	Orange/Pine hurst	Orange	100	55	x	√√	x	5.61	2	77,194
65	Phelan Blvd	Beaumont	Jefferson	80	45	√√	x	x	1.31	1	18,026
66	Dowlen Rd	Beaumont	Jefferson	100	45	x	x	x	0.73	3	10,045

FID	Street Name	City	County	Existing ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)	Phase	Cost Estimation ($)
67	Dowlen Rd	Beaumont	Jefferson	100	45	√√	x	x	0.22	3	3,027
68	Dowlen Rd	Beaumont	Jefferson	100	45	√	x	x	0.10	3	1,376
69	Dowlen Rd	Beaumont	Jefferson	100	45	√√	x	x	0.22	3	3,027
70	Dowlen Rd	Beaumont	Jefferson	110	35	x	x	x	0.13	3	1,789
71	Dowlen Rd	Beaumont	Jefferson	110	35	√	x	x	0.27	3	3,715
72	Dowlen Rd	Beaumont	Jefferson	110	35	√	x	x	0.59	1	8,118
73	Dowlen Rd	Beaumont	Jefferson	100	35	x	x	x	0.97	1	13,347
74	Delaware St	Beaumont	Jefferson	100	45	√√	x	x	1.56	4	21,466
75	Gladys Ave	Beaumont	Jefferson	55	35	√	x	x	0.47	2	6,467
76	Gladys Ave	Beaumont	Jefferson	58	35	√√	x	x	0.64	1	8,806
77	Gladys Ave	Beaumont	Jefferson	80	35	x	√	x	0.38	2	5,229
78	Gladys Ave	Beaumont	Jefferson	80	35	x	√√	x	0.05	2	688
79	Gladys Ave	Beaumont	Jefferson	80	35	x	x	x	0.27	2	3,715
80	Gladys Ave	Beaumont	Jefferson	80	30	x	x	x	0.55	3	7,568
81	Gladys Ave	Beaumont	Jefferson	80	35	x	x	x	0.20	2	2,752
82	College St	Beaumont	Jefferson	110	50	x	x	x	2.05	2	28,208
83	College St	Beaumont	Jefferson	110	35	x	x	x	0.24	3	3,302

FID	Street Name	City	County	Existing ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)	Phase	Cost Estimation ($)
84	College St	Beaumont	Jefferson	110	35	√√	x	x	0.62	2	8,531
85	College St	Beaumont	Jefferson	60	30	√√	x	x	1.04	1	14,310
86	W Lucas Dr	Beaumont	Jefferson	60	35	x	x	x	0.10	3	1,376
87	East Dr	Beaumont	Jefferson	50	25	x	x	x	0.24	2	3,302
88	Harrison Ave	Beaumont	Jefferson	60	25	x	x	x	0.07	2	963
89	Harrison Ave	Beaumont	Jefferson	60	30	x	x	x	0.31	2	4,266
90	Harrison Ave	Beaumont	Jefferson	60	30	√	x	x	0.11	2	1,514
91	Harrison Ave	Beaumont	Jefferson	60	30	√√	x	x	0.10	2	1,376
92	Harrison Ave	Beaumont	Jefferson	60	30	√	x	x	0.09	2	1,238
93	Harrison Ave	Beaumont	Jefferson	60	30	√√	x	x	0.27	2	3,715
94	Harrison Ave	Beaumont	Jefferson	60	25	x	x	x	0.14	2	1,926
95	Harrison Ave	Beaumont	Jefferson	60	25	√√	x	x	0.28	2	3,853
96	Harrison Ave	Beaumont	Jefferson	60	25	√	x	x	0.14	2	1,926
97	Harrison Ave	Beaumont	Jefferson	60	25	√√	x	x	0.07	2	963
98	Harrison Ave	Beaumont	Jefferson	60	25	√	x	x	0.14	2	1,926
99	Harrison Ave	Beaumont	Jefferson	60	25	√√	x	x	0.06	2	826
100	W Lucas Dr	Beaumont	Jefferson	60	35	x	x	x	2.08	2	28,621

FID	Street Name	City	County	Existing ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)	Phase	Cost Estimation ($)
101	E Lucas Dr	Beaumont	Jefferson	60	35	√	x	x	0.65	3	8,944
102	E Lucas Dr	Beaumont	Jefferson	65	35	x	x	x	0.39	3	5,366
103	E Lucas Dr	Beaumont	Jefferson	65	40	x	x	x	0.81	3	11,146
104	E Lucas Dr	Beaumont	Jefferson	65	25	x	x	x	0.26	1	3,578
105	E Lucas Dr	Beaumont	Jefferson	56	40	x	x	x	0.77	1	10,595
106	Concord Rd	Beaumont	Jefferson	65	35	x	x	x	1.60	4	22,016
107	Concord Rd	Beaumont	Jefferson	65	35	√	x	x	0.50	2	6,880
108	St. Helen St	Beaumont	Jefferson	60	30	x	x	x	0.04	2	550
109	St. Helen St	Beaumont	Jefferson	60	30	√	x	x	0.07	2	963
110	Cottonwood Ave	Beaumont	Jefferson	60	25	√	x	x	0.14	2	1,926
111	Cottonwood Ave	Beaumont	Jefferson	60	25	x	x	x	0.11	2	1,514
112	4th St	Beaumont	Jefferson	60	35	√	x	x	0.10	3	1,376
113	4th St	Beaumont	Jefferson	60	35	x	x	x	0.03	3	413
114	4th St	Beaumont	Jefferson	60	35	√	x	x	0.21	3	2,890
115	4th St	Beaumont	Jefferson	60	35	x	x	x	0.26	3	3,578
116	4th St	Beaumont	Jefferson	60	35	√√	x	x	0.15	3	2,064
117	4th St	Beaumont	Jefferson	60	35	x	x	x	0.28	3	3,853

FID	Street Name	City	County	Existing ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)	Phase	Cost Estimation ($)
118	4th St	Beaumont	Jefferson	60	35	√	x	x	0.09	3	1,238
119	4th St	Beaumont	Jefferson	60	35	x	x	x	0.95	3	13,072
120	4th St	Beaumont	Jefferson	60	35	√	x	x	0.66	2	9,082
121	Washington Blvd	Beaumont	Jefferson	80	45	x	x	x	0.93	3	12,797
122	Washington Blvd	Beaumont	Jefferson	70	35	x	x	x	0.90	2	12,384
123	Washington Blvd	Beaumont	Jefferson	100	35	√√	x	x	0.51	2	7,018
124	Washington Blvd	Beaumont	Jefferson	100	35	x	x	x	0.04	2	550
125	Washington Blvd	Beaumont	Jefferson	100	35	√√	x	x	1.13	2	15,549
126	11th St	Beaumont	Jefferson	113	45	x	x	x	0.24	3	3,302
127	11th St	Beaumont	Jefferson	75	35	√	x	x	0.27	3	3,715
128	11th St	Beaumont	Jefferson	75	35	√√	x	x	0.33	1	4,541
129	11th St	Beaumont	Jefferson	90	35	x	x	x	0.19	2	2,614
130	11th St	Beaumont	Jefferson	90	35	√	x	x	0.14	2	1,926
131	11th St	Beaumont	Jefferson	80	35	x	x	x	0.07	2	963
132	11th St	Beaumont	Jefferson	90	35	√√	x	x	0.17	2	2,339
133	11th St	Beaumont	Jefferson	80	35	√	x	x	0.08	3	1,101

FID	Street Name	City	County	Existing ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)	Phase	Cost Estimation ($)
134	11th St	Beaumont	Jefferson	80	35	x	x	x	0.41	3	5,642
135	11th St	Beaumont	Jefferson	105	35	x	x	x	0.40	3	5,504
136	11th St	Beaumont	Jefferson	105	35	x	x	x	0.40	3	5,504
137	Sarah St	Beaumont	Jefferson	70	35	√	x	x	0.17	3	2,339
138	Sarah St	Beaumont	Jefferson	70	35	x	x	x	0.08	3	1,101
139	Sarah St	Beaumont	Jefferson	70	35	√√	x	x	0.10	3	1,376
140	Sarah St	Beaumont	Jefferson	70	30	√√	x	x	0.41	3	5,642
141	Sarah St	Beaumont	Jefferson	60	30	√	x	x	0.83	1	11,421
142	W Lavaca St	Beaumont	Jefferson	60	30	√	x	x	0.15	3	2,064
143	W Lavaca St	Beaumont	Jefferson	65	30	x	x	x	0.88	2	12,109
144	E Lavaca St	Beaumont	Jefferson	60	30	√√	x	x	0.15	2	2,064
145	E Lavaca St	Beaumont	Jefferson	60	30	x	x	x	0.22	2	3,027
146	E Lavaca St	Beaumont	Jefferson	60	30	x	x	x	0.14	2	1,926
147	E Lavaca St	Beaumont	Jefferson	60	30	√	x	x	0.08	2	1,101
148	Harrison Ave	Beaumont	Jefferson	60	30	√	x	x	0.06	2	826
149	Harrison Ave	Beaumont	Jefferson	60	30	√	x	x	0.04	2	550
150	Washington Blvd	Beaumont	Jefferson	80	45	x	x	x	0.75	3	10,320

FID	Street Name	City	County	Existing ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)	Phase	Cost Estimation ($)
151	College St	Beaumont	Jefferson	110	50	x	x	x	0.05	3	688
152	College St	Beaumont	Jefferson	110	50	x	x	x	0.09	3	1,238
153	College St	Beaumont	Jefferson	110	35	x	x	x	0.10	3	1,376
154	Dowlen Rd	Beaumont	Jefferson	100	45	x	x	x	0.17	3	2,339
155	Dowlen Rd	Beaumont	Jefferson	100	45	√√	x	x	0.15	3	2,064
156	Dowlen Rd	Beaumont	Jefferson	100	45	√	x	x	0.17	3	2,339
157	Dowlen Rd	Beaumont	Jefferson	100	45	√	x	x	0.05	3	688
158	Dowlen Rd	Beaumont	Jefferson	100	45	√√	x	x	0.33	3	4,541
159	Folsom Dr	Beaumont	Jefferson	57	35	x	x	x	1.29	4	17,750
160	Kenneth Ave	Beaumont	Jefferson	60	30	√√	x	x	0.61	3	8,394
161	Sabine Pass	Beaumont	Jefferson	60	25	√	x	x	0.14	2	1,926
162	W Port Arthur Road/US 93	Port Arthur	Jefferson	115	65	x	x	x	7.23	4	99,485
163	Twin City Hwy	Port Arthur	Jefferson	250	65	x	√√	x	0.10	3	1,376
164	Eyre Dr	Port Arthur	Jefferson	25	25	x	x	x	0.14	2	1,926
165	Hogaboom Rd and Gulf Ave	Groves	Jefferson	20	30	x	x	x	2.21	1	30,410
166	Wilson Ave	Groves	Jefferson	20	30	x	x	x	1.30	1	17,888
167	Taft Ave and 25th St	Port Arthur	Jefferson	40	30	x	x	x	1.62	1	22,291

Proposed Signed Shoulder Bicycle Route

FID	Street Name	City	County	Existing ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)	Phase	Cost Estimation ($)
0	Martin Luther King Jr Dr	Port Arthur	Jefferson	40	45	x	√√	x	1.46	1	20,090
1	TX-82	Port Arthur	Jefferson	78	50	x	√√	x	3.54	2	48,710
2	TX-73	Port Arthur	Jefferson	78	65	x	√√	x	2.93	4	40,317
3	H O MIlls Highway	Port Arthur	Jefferson	42	60	x	√√	x	0.88	3	12,109
4	FM 365	Port Arthur	Jefferson	75	45	x	√√	x	2.40	4	33,024
5	FM 365	Port Arthur	Jefferson	90	45	x	√√	x	1.79	4	24,630
6	Memorial Blvd	Port Arthur	Jefferson	80	65	x	√√	x	4.84	4	66,598
7	N 4th St	Orange	Orange	60	35	√√	√√	x	0.14	2	1,926
8	W Front Ave	Orange	Orange	50	35	√√	√√	x	0.21	2	2,890
9	N 7th St	Orange	Orange	60	35	√√	√√	x	0.13	2	1,789
10	N 16th St/87	Orange	Orange	100	50	x	√√	x	1.53	1	21,053
11	W Clark Ln	Orange	Orange	70	30	x	√√	x	0.46	3	6,330
12	W Beverly Ave	Orange	Orange	25	30	x	√√	x	0.15	2	2,064
13	Yale Ln	Orange	Orange	25	30	x	√√	x	0.04	2	550
14	Masonic Dr	Orange	Orange	40	30	x	√√	x	0.29	2	3,990
15	37th St	Orange	Orange	45	30	x	√√	x	0.13	2	1,789
16	Dupont Dr/FM 1006	Orange	Orange	50	40	x	√√	x	4.48	2	61,645
17	Border St	Orange	Orange	45	40	√	√√	x	0.99	1	13,622
18	Tulane Rd	Orange	Orange	45	45	x	√√	x	5.16	4	71,002
19	Nederland Ave	Nederland	Jefferson	65	30	√	√√	x	1.03	1	14,173
20	Main Canal Trail (Proposed)	Port Arthur	Jefferson	30	20	x	√√	√	1.53	4	21,053
21	Nederland Ave	Nederland	Jefferson	62	30	√√	√√	√	0.28	1	3,853
22	N 9th St	Nederland	Jefferson	40	20	x	√√	x	0.50	2	6,880
23	Helena Ave	Nederland	Jefferson	40	20	x	√√	x	0.16	2	2,202

FID	Street Name	City	County	Existing ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)	Phase	Cost Estimation ($)
24	Canal Ave	Nederland	Jefferson	40	30	x	√√	x	0.08	2	1,101
25	FM 3513	Lumberton	Hardin	40	50	x	√√	x	3.24	2	44,582
26	Country Ln Dr.	Lumberton	Hardin	50	55	x	√√	x	0.78	3	10,733
27	Ariola Rd.	Lumberton	Hardin	30	55	x	√√	x	1.44	4	19,814
28	Forest Rd.	Lumberton	Hardin	55	30	√√	√√	x	1.34	4	18,438
29	FM Rd 418	Kountze	Hardin	40	45	x	√√	x	10.40	3	143,104
30	Matthews Ln.	Lumberton	Hardin	18	30	x	√√	x	0.37	2	5,091
31	BUS 96	Silsbee	Hardin	85	65	x	√√	x	1.52	4	20,915
32	BUS 96	Silsbee	Hardin	75	35	x	√√	x	0.70	2	9,632
33	Hwy 96	Lumberton	Hardin	115	65	x	√√	x	1.87	4	25,731
34	S Main St.	Lumberton	Hardin	75	45	x	√√	x	3.57	2	49,123
35	E Ave G	Silsbee	Hardin	28	55	x	√√	x	1.36	4	18,714
36	E Ave G	Silsbee	Hardin	45	40	x	√√	x	0.54	3	7,430
37	W Ave N	Silsbee	Hardin	55	35	x	√√	x	0.66	1	9,082
38	TX-327	Silsbee	Hardin	45	55	x	√√	x	1.57	1	21,603
39	TX-327	Silsbee	Hardin	45	65	x	√√	x	3.72	4	51,187
40	E Ave N	Silsbee	Hardin	115	35	x	√√	x	0.38	2	5,229
41	E Ave N	Silsbee	Hardin	115	55	x	√√	x	1.36	4	18,714
42	Hwy 96	Silsbee	Hardin	130	75	x	√√	x	3.63	4	49,949
43	TX-92	Silsbee	Hardin	60	55	x	√√	x	1.36	2	18,714
44	TX-287	Lumberton	Hardin	60	0	x	√√	x	1.29	2	17,750
45	TX-69	Lumberton	Hardin	60	45	x	√√	x	3.37	4	46,371
46	TX-69	Lumberton	Hardin	58	0	x	√√	x	1.07	4	14,723
47	TX-69	Kountze	Hardin	45	0	x	√√	x	3.52	4	48,435
48	TX-69	Kountze	Hardin	105	0	x	√√	x	1.38	4	18,989
49	TX-69	Kountze	Hardin	90	40	x	√√	x	1.12	4	15,411
50	TX-326	Kountze/Sour Lake	Hardin	45	50	x	√√	x	16.82	4	231,443
51	TX-105	Sour Lake	Hardin	45	55	x	√√	x	7.50	4	103,200

FID	Street Name	City	County	Existing ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)	Phase	Cost Estimation ($)
52	TX-105	Beaumont	Jefferson	83	65	x	√√	x	3.96	4	54,490
53	Merriman St	Port Neches	Jefferson	63.04	30	√	√√	√	0.14	Existing	0
54	Nederland Ave	Nederland	Jefferson	62	30	√	√√	√	0.40	Existing	0
55	Hwy 136	Port Neches	Jefferson	73.3	50	x	√√	√	0.16	3	2,202
56	Hwy 136	Port Neches	Jefferson	72.5	50	x	√√	√	0.16	3	2,202
57	Helena Ave	Port Neches	Jefferson	60	20	√	√√	√	0.84	1	11,558
58	Nederland Ave	Nederland	Jefferson	70	30	x	√√	√	0.69	1	9,494
59	Nederland Ave	Nederland	Jefferson	63	30	x	√√	√	0.25	1	3,440
60	Helena Ave	Nederland	Jefferson	60	20	√√	√√	√	0.41	1	5,642
61	Helena Ave	Nederland	Jefferson	60	20	√	√√	√	0.52	2	7,155
62	60th St	Port Neches/Port Arthur	Jefferson	65	40	x	√√	√	0.20	3	2,752
63	Avenue H	Nederland	Jefferson	60	30	x	√√	√	0.68	3	9,357
64	Phelan Blvd	Beaumont	Jefferson	80	45	√√	√√	x	1.31	1	18,026
65	Dishman Rd	Beaumont	Jefferson	70	45	√	√√	x	0.78	3	10,733
66	Delaware St	Beaumont	Jefferson	60	35	x	√√	x	0.63	2	8,669
67	4th St	Beaumont	Jefferson	60	35	√√	√√	x	0.07	1	963
68	4th St	Beaumont	Jefferson	60	35	√	√√	x	0.66	2	9,082
69	Washington Blvd	Beaumont	Jefferson	100	35	x	√√	x	0.04	2	550
70	Washington Blvd	Beaumont	Jefferson	100	35	√√	√√	x	1.13	2	15,549
71	S Martin Luther King Pkwy	Beaumont	Jefferson	110	45	√√	√√	x	0.74	2	10,182
72	College St	Beaumont	Jefferson	95	30	√√	√√	x	0.28	1	3,853
73	Dowlen Rd	Beaumont	Jefferson	100	35	x	√√	x	0.67	2	9,219
74	Phelan Blvd	Beaumont	Jefferson	80	45	x	√√	x	0.03	3	413
75	Phelan Blvd	Beaumont	Jefferson	80	45	x	√√	x	0.44	3	6,054

FID	Street Name	City	County	Existing ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)	Phase	Cost Estimation ($)
76	College St	Beaumont	Jefferson	80	30	x	√√	x	0.20	2	2,752
77	College St	Beaumont	Jefferson	70	30	√√	√√	x	0.28	2	3,853
78	College St	Beaumont	Jefferson	65	55	√	√√	x	0.23	1	3,165
79	College St	Beaumont	Jefferson	75	30	x	√√	x	0.35	1	4,816
80	S Martin Luther King Pkwy	Beaumont	Jefferson	0	45	x	√√	x	0.74	2	10,182
81	S Martin Luther King Pkwy	Beaumont	Jefferson	0	30	x	√√	x	1.99	1	27,382
82	S Martin Luther King Pkwy	Beaumont	Jefferson	0	30	x	√√	x	1.09	1	14,998
83	S Martin Luther King Pkwy	Beaumont	Jefferson	0	45	x	√√	x	0.75	2	10,320
84	Kenneth Ave	Beaumont	Jefferson	60	30	√√	√√	x	0.61	3	8,394
85	Sabine Pass	Beaumont	Jefferson	60	25	√	√√	x	0.14	2	1,926
86	TX-12	Mauricevill e/Newton/D eweyville	Orange	60	55	x	√√	x	10.26	4	141,178
87	Old TX 62/Womack Rd	Mauricevill e	Orange	55	55	x	√√	x	9.62	4	132,371
88	TX-62/TX-73	Orange	Orange	80	65	x	√√	x	6.10	4	83,936
89	Edgar Brown Dr	West Orange	Orange	115	50	x	√√	x	14.38	4	197,869
90	W Parkway St/TX-73	Groves	Jefferson	250	65	x	√√	x	2.87	4	39,491
91	Old TX-62- Sabine River and Northern		Orange	0	0	x	√√	x	25.65	4	352,944
92	US 96		Orange	0	0	x	√√	x	23.17	4	318,819
93	TX-2246		Orange	0	0	x	√√	x	9.26	4	127,418
94	TX-73 W	Beaumont	Jefferson	215	75	x	√√	x	24.32	4	334,643

FID	Street Name	City	County	Existing ROW (ft)	Existing speed limit (mph)	Existing Sidewalk	Existing Shoulder	Existing Bike Facility	Length (miles)	Phase	Cost Estimation ($)
95	TX-365	Beaumont	Jefferson	350	60	x	√√	x	14.21	4	195,530
96	Southern Pacific/US-90	Beaumont	Jefferson	250	55	x	√√	x	14.34	4	197,318
97	TX-326/TX-365/Gilbert Rd	Nome/Sour Lake	Jefferson	105	55	x	√√	x	22.42	4	308,499
98	Reins Rd/Dishman Rd	Beaumont	Jefferson	55	50	x	√√	x	5.58	4	76,781
99	FM-421	Lumberton/ Kountze	Hardin	75	50	x	√√	x	10.90	4	149,984
100	TX-770	Saratoga	Hardin	70	65	x	√√	x	11.16	4	153,562
101	TX-69/TX-287/N Pines St	Kountze	Hardin	175	65	x	√√	x	11.89	4	163,606
102	Highway 69 S	Lumberton	Hardin	100	65	x	√√	x	0.67	4	9,219
103	TX-69/TX-287	Beaumont	Jefferson	175	65	x	√√	x	11.93	4	164,157

APPENDIX C

Funding Sources

To implement the proposed bicycling and pedestrian facilities, one of the major challenges will be to acquire the funding. Some of the possible funding sources have been shown as follows:

Alternatives Analysis Program - Discretionary Livability Funding Opportunity

- **Grantor:** U.S. Department of Transportation
- **Purpose:** Assist in financing the evaluation of all reasonable modal and multimodal alternatives and general alignment options for identified transportation needs in a particular, broadly-defined travel corridor.
- **Eligibility:** MPOs, city agencies, transit agencies, and other local government authorities.
- **Funding limitations:** $25 million total fund.
- **More information:** http://www.reconnectingamerica.org/resource-center/federal-grant-opportunities/

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.
- **More information:** http://bikeleague.org/content/about-bfc-application-process

Bus Initiative Livability Initiative

- **Grantor:** U.S. Department of Transportation
- **Purpose:** Provide funding to transit agencies to replace, rehabilitate, and purchase buses and related equipment, as well as construct or rehabilitate bus facilities.
- **Eligibility:** Transit agencies or other public transportation providers, States and Indian Tribes.

- **Limitations:** $125 million total fund
- **More information:** http://www.reconnectingamerica.org/resource-center/federal-grant-opportunities/

Community Development Block Grant (CDBG)

- **Grantor:** U.S. Department of Housing and Urban Development
- **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.
- **More information:** https://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/about/cpdta

Federal-Aid Highway Program, Federal Lands Highway Program

- **Grantor**: U.S. Department of Transportation
- **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.
- **More information:** https://flh.fhwa.dot.gov/programs/flap/

Federal Transit Administration (FTA) Livable and Sustainable Communities Initiative

- **Grantor:** U.S. Department of Transportation
- **Purpose:** Uses sustainable design concepts such as TOD to strengthen linkages between transportation services and communities. Eligible recipients are transit operators, MPOs, city and county governments, states, planning agencies, and other public bodies with the authority to plan or construct transit projects.

- **Eligibility:** Nonprofit, community, and civic organizations are encouraged to participate in project planning and development as partners with eligible recipients.
- **More information:** http://www.fa.dot.gov/about/13747.html

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
- **More information:** http://www.reconnectingamerica.org/resource-center/federal-grant-opportunities/

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.
- **More information:** https://safety.fhwa.dot.gov/hsip/xings/

Highway Safety Improvement Program (HISP)

- **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.
- **More information:** https://safety.fhwa.dot.gov/hsip/hsip.cfm

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.
- **More information:** https://www.nps.gov/subjects/lwcf/land-acquisition-process.htm

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.
- **More Information**: http://www.smartgrowthamerica.org/complete-streets

National Highway System (NHS)

- **Grantor:** U.S. Department of Transportation- Federal Highway Administration
- **Purpose:** Improvements to roads that are part of the NHS and NHS Intermodal connectors.

- **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.
- **More information:** https://www.fhwa.dot.gov/hep/guidance/#planningguidance

National Scenic Byways

- **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.
- **More Information**: http://www.reconnectingamerica.org/resource-center/federal-grant-opportunities/

National Scenic Byways

- **Grantor**: U.S. Department of Transportation- Federal Highway Administration
- **Purpose**: Construction along a scenic byway of a facility for pedestrians and bicyclists.
- **More Information**: http://www.nsbfoundation.com/

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.
- **More information**: http://www.americantrails.org/resources/funding/

National Trails Training Partnership (NTTP)

- **Grantor**: Bureau of Land Management's Watchable Wildlife for Youth and Families
- **Purpose**: Offers workshops and webinars on successful trail development and implementation.

- **More Information**: http://www.americantrails.org/nttp/

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
- **More information:** http://www.txdot.gov/inside-txdot/division/public-transportation/bicycle-pedestrian.html

Outdoor Recreation Grants

- **Grantor**: Texas Parks and Wildlife Department
- **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.
- **More information**: For complete information on this grant, please download the outdoor recreation grant application; http://www.nps.gov/lwcf/index.htm

Outdoor Recreation Grants

- **Grantor**: Texas Parks & Wildlife Department
- **Purpose**: Provides 50% matching funds to renovate existing public recreation areas.
- **More Information**: http://www.tpwd.state.Texas.us/business/grants/trpa/

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
- **More Information**: http://www.reconnectingamerica.org/resource-center/federal-grant-opportunities/

Recreational Trail Grants

- **Grantor**: Texas Parks and Wildlife Department
- **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 (call 512-389-8224 for motorized trail grant funding availability).
- **More information**: https://tpwd.texas.gov/business/grants/recreation-grants/recreational-trails-grants

Recreational Trails Grants

- **Grantor**: Texas Parks & Wildlife Department
- **Purpose**: Can be up to 80% of project cost for new recreational trails, improvements, trailheads, trailside facilities, or acquiring trail corridors
- **More Information**: http://www.tpwd.state.Texas.us/business/grants/trpa/

Recreational Trails Program (RTP)

- **Grantor:** U.S. Department of Transportation-Federal Highway Administration
- **Purpose:** Develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses, including hiking, bicycling, in-line

skating, equestrian use, cross-country skiing, snowmobiling, off-road motorcycling, all-terrain vehicle riding, four-wheel driving, or using other off-road motorized vehicles.

- **Eligibility:** Non-motorized or mixed use (motorized and non-motorized) trails. Eligible categories are trail maintenance and rehabilitation, trailside or trailhead facilities, construction and maintenance equipment, trail construction, trail assessments, and trail safety and environmental protection education.
- **Funding limitations:** Each state administers its own program. The state RTP Administrator needs to be contacted for guidance on State policies and project eligibility requirements. 30 percent must be used for motorized trail uses, 30 percent for non-motorized trail uses, and 40 percent for diverse trail uses.
- **More information:** https://www.fhwa.dot.gov/environment/recreational_trails/

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 urbanized areas.
- **Eligibility**: States, local governments, and providers of rural transit services.
- **Limitations**: Apportioned to states by a formula.
- **More Information:** http://www.reconnectingamerica.org/resource-center/federal-grant-opportunities/

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.
- **More information:** https://www.fhwa.dot.gov/bridge/hbrrp.cfm

Safe Routes to School (SRTS)

- **Grantor:** U.S. Department of Transportation- Federal Highway Administration
- **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
- **More information:** https://ftp.dot.state.tx.us/pub/txdot-info/library/pubs/cit/srts_app_instructions.pdf

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.
- **More information:** https://www.fhwa.dot.gov/map21/funding.cfm

City

- **Grantor:** Cities in South East Texas, such as Beaumont, Port Neches, Port Arthur, Orange, Vidor, Nederland, Lumberton, Silsbee, Pine Forest, Kountze.
- **Eligibility:** Variable.

Private

- **Grantor:** Private funds from health, art, and conservation.
- **Eligibility:** Variable

APPENDIX D

Glossary of Terms

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

"A" Cyclist/ Strong and Fearless- a term generally used to describe experienced or advanced bicyclists that are comfortable in all cycling environments, even busy roadways that lack bicycle facilities. "A" Cyclists will typically bicycle in any condition, whether hospitable or not.

ADA - American Disabilities Act of 1991: 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**.**

"B" Cyclist/Enthused and Confident - a term generally used to describe intermediate level cyclists, who bicycle for reasons ranging from recreation and fitness riding to commuting. "B" cyclists typically prefer on-street bicycle facilities, such as bicycle lanes and paved shoulders.

Bicycle - every vehicle propelled solely by human power upon which any 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.

"C" Cyclist/No Way No How - a term generally used to describe beginner, juvenile, or elderly cyclists who are not comfortable bicycling in an environment with significant motor vehicle traffic. Typically, "C" cyclists prefer to cycle on shared-use paths, greenways, and calm neighborhood streets.

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.

"D" Cyclist/ Interested but Concerned – a term generally used for individuals who are interested in riding their bike, whether for work, fun, or errands, but are concerned about the safety of riding in traffic. The majority of bicyclists fall under this category.

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, that 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)/Sharrow – painted roadway marking that alerts 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 located 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/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.